



Industrial Controls

SIRIUS ACT

3SU1 Pushbuttons and Signaling Devices

System Manual

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Industrial Controls

Command and signaling devices SIRIUS ACT 3SU1 pushbuttons and signaling devices

System Manual

<u>Introduction</u>	1
<u>Safety notes</u>	2
<u>Overview</u>	3
<u>3SU1 range of devices</u>	4
<u>3SU11 complete units</u>	5
<u>3SU12 compact units</u>	6
<u>3SU14 modules</u>	7
<u>3SU15 holders</u>	8
<u>3SU18 enclosures</u>	9
<u>AS-Interface</u>	10
<u>IO-Link</u>	11
<u>Accessories</u>	12
<u>Technical specifications</u>	13
<u>Dimension drawings</u>	14
<u>Application examples</u>	15
<u>Appendix</u>	A

Legal information

Warning notice system

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WARNING

indicates that death or severe personal injury **may** result if proper precautions are not taken.

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indicates that minor personal injury can result if proper precautions are not taken.

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We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Table of contents

1	Introduction	15
1.1	Responsibility of the user for system configuration and functionality	15
1.2	Target group	15
1.3	Purpose of this documentation	15
1.4	Required knowledge	16
1.5	Scope of validity of the system manual	16
1.6	Further documentation	16
1.7	Siemens Industry Online Support	17
1.8	Configurator for SIRIUS ACT command devices and signaling devices	18
1.9	Advantages through energy efficiency	19
1.10	Recycling and disposal	20
2	Safety notes	21
2.1	Intended use	23
2.2	Current information about operational safety	24
2.3	ATEX for intrinsically safe circuits	25
2.4	Security information	26
3	Overview	27
3.1	Overview of the device range	27
3.2	Application areas	31
3.3	Media resistance	31
3.4	Failure rates	32
4	3SU1 range of devices	33
4.1	Types of 3SU1 actuating elements and signaling elements	33
4.1.1	Design of a 3SU1 actuating or signaling element	33
4.1.2	3SU10 actuating and signaling elements	34
4.1.3	3SU15 holders	35
4.1.4	3SU14 modules	35
4.1.5	Design of a 3SU10 and 3SU11 command point	36
4.2	Holders	38
4.3	3SU10 devices for use on 3-slot holder	42
4.3.1	22.5 mm pushbuttons	42
4.3.2	22.5 mm illuminated pushbuttons	44
4.3.3	30.5 mm pushbuttons	46
4.3.4	Twin pushbuttons	47

4.3.5	Mushroom pushbuttons	49
4.3.6	Special variants of mushroom pushbuttons	53
4.3.7	Illuminated mushroom pushbuttons	53
4.3.8	EMERGENCY STOP mushroom pushbuttons	57
4.3.9	22.5 mm indicator lights	60
4.3.10	30.5 mm indicator lights	62
4.3.11	22.5 mm selector switches	63
4.3.12	30.5 mm selector switches	70
4.3.13	Toggle switches	73
4.3.14	STOP buttons	74
4.3.15	22.5 mm key-operated switches	75
4.3.16	30.5 mm key-operated switches	79
4.3.17	ID key-operated switches	80
4.3.17.1	Design of a command point with ID key-operated switch	81
4.3.17.2	Operating principle of the command point with ID key-operated switch	82
4.3.18	Devices with inscription	89
4.3.18.1	22.5 mm pushbuttons with standard inscription	89
4.3.18.2	Twin pushbuttons with standard inscription	90
4.3.18.3	Inscription of actuating and signaling elements	93
4.4	3SU10 devices for use on 4-slot holder	95
4.4.1	Coordinate switches	95
4.4.2	Selector switches 4 switch positions	96
4.5	Mounting	97
4.5.1	Front plate mounting	97
4.5.2	Mounting on printed-circuit boards	99
4.5.3	Base mounting for the enclosure	100
4.5.4	Installation sequence illustrated by example of EMERGENCY STOP mushroom pushbutton	100
4.5.5	Installation steps for 30.5 mm devices	102
4.5.6	Mounting a command point with ID key-operated switch	103
4.5.7	Alignment	104
4.5.8	Disassembly sequence illustrated by example of EMERGENCY STOP mushroom pushbutton	105
4.5.9	Disassembly steps for 30.5 mm devices	108
4.5.10	Disassembly of buttons	109
5	3SU11 complete units	111
5.1	Product description	111
5.2	3SU11 devices for use on 3-slot holder	112
5.2.1	Pushbuttons	112
5.2.2	Illuminated pushbuttons	115
5.2.3	Mushroom pushbuttons	117
5.2.4	EMERGENCY STOP mushroom pushbuttons	118
5.2.5	Indicator lights	120
5.2.6	Selector switches	122
5.2.7	Key-operated switches	123
5.3	3SU11 devices for use on 4-slot holder	126
5.3.1	Coordinate switches	126
5.4	Mounting	129
5.4.1	Front plate mounting	129

6	3SU12 compact units	131
6.1	Overview	133
6.1.1	Pushbuttons with extended stroke	133
6.1.2	Potentiometers	135
6.1.3	Sensor switches	136
6.2	Mounting	138
6.2.1	Front plate mounting	138
6.2.2	Front plate mounting, sensor switches	139
6.3	Connecting	145
7	3SU14 modules	147
7.1	Overview	147
7.1.1	Contact modules	147
7.1.2	Terminal designations	148
7.1.3	Contact modules for front plate mounting	149
7.1.4	Contact modules for base mounting (enclosure mounting)	150
7.1.5	LED modules	155
7.1.6	LED modules for front plate mounting	156
7.1.7	LED modules for base mounting (enclosure mounting)	157
7.1.8	LED modules for PCB mounting	158
7.1.9	LED test module for base mounting (enclosure mounting)	159
7.1.10	ASIsafe F adapters for front plate mounting	160
7.1.11	AS-Interface modules for front plate mounting	162
7.1.12	AS-Interface modules for base mounting (enclosure mounting)	162
7.1.13	Electronic modules for ID key-operated switches	163
7.1.14	Electronic module for IO-Link	163
7.2	Mounting	165
7.2.1	Front plate mounting	165
7.2.1.1	Contact and LED modules	165
7.2.1.2	AS-Interface modules, electronic modules for ID key-operated switch / IO-Link	166
7.2.2	Mounting on printed-circuit boards	166
7.2.3	Base mounting for the enclosure	167
7.2.3.1	Contact and LED modules	167
7.2.3.2	AS-Interface modules, electronic modules for IO-Link	167
7.3	Connecting	168
7.3.1	Contact and LED modules	168
7.3.2	Electronic modules for ID key-operated switches	169
7.3.3	AS-Interface modules and electronic module for IO-Link	170
8	3SU15 holders	171
8.1	Holders	171
8.2	Holders with modules	175
9	3SU18 enclosures	177
9.1	Enclosures for actuating and signaling elements	177
9.1.1	Overview of empty enclosures	178
9.1.2	Mounting positions	181
9.1.3	Mounting	182
9.1.3.1	Fitting with contact modules and LED modules	183

9.1.3.2	Mounting the enclosure cover.....	184
9.1.3.3	Removal of the modules	185
9.1.3.4	Mounting of connection pieces	186
9.2	Enclosures with EMERGENCY STOP devices	189
9.2.1	Overview of enclosures with EMERGENCY STOP mushroom pushbuttons	190
9.3	Enclosures with standard fittings	190
9.4	3SU18..-3 two-hand operation console	192
9.4.1	Application areas.....	192
9.4.2	Function	192
9.4.3	Overview of two-hand operation consoles.....	193
9.4.4	Mounting	194
9.4.4.1	Installation and wiring of two-hand operation console.....	194
9.4.4.2	Mounting on stand	196
9.4.5	Equipment.....	198
10	AS-Interface.....	199
10.1	Application areas.....	199
10.1.1	Application area of the AS-Interface modules	199
10.1.2	Application areas for AS-Interface modules for front plate mounting	200
10.2	ASIsafe F adapters for front plate mounting	200
10.3	AS-Interface modules for front plate mounting	202
10.4	AS-Interface modules for base mounting (enclosure mounting)	203
10.5	Enclosure with standard equipment for AS-Interface	204
10.5.1	Overview of standard enclosures with AS-Interface	204
10.5.2	Equipping with AS-Interface modules by the customer	205
10.6	Mounting and disassembly of the AS-Interface modules for front plate mounting	206
10.6.1	Mounting	206
10.6.2	Removal	208
10.7	Installing AS-Interface modules (3SU1400-1E.10-6AA0).....	209
10.7.1	Mounting	209
10.8	Installing and dismantling AS-Interface modules for base mounting.....	210
10.8.1	Mounting / installation positions	210
10.8.2	Mounting position of AS-Interface slave	212
10.8.3	Mounting position of AS-Interface F slave	213
10.8.4	Mounting of the contact modules and AS-Interface F-Safe slaves.....	214
10.8.5	Mounting the contact modules and AS-Interface modules	215
10.8.6	Removal of the modules	216
10.9	Connecting	217
10.9.1	Connection with AS-Interface modules.....	217
10.9.2	Connecting the ASIsafe modules for front plate mounting	217
10.9.3	Terminal labeling and conductor cross-sections (AS-Interface modules for front plate mounting)	222
10.9.4	Connection option AS-Interface bus (AS-Interface modules for base mounting).....	224
10.9.5	Terminal labeling and conductor cross sections (AS-Interface modules for base mounting)	225

10.10	Configuring the AS-Interface	228
10.10.1	Setting the AS-i address	228
10.10.2	Addressing the AS-Interface modules for front plate mounting	230
10.10.3	Addressing the AS-Interface modules for base mounting	231
10.11	Diagnosis of ASIsafe F adapters for front plate mounting	232
10.12	Diagnosis of AS-Interface modules for base mounting	234
10.13	Wiring examples	235
11	IO-Link.....	243
11.1	Configuring the IO-Link	243
11.1.1	Combinations	243
11.1.2	Configuring with STEP 7 and the S7-PCT Port Configuration Tool	244
11.1.2.1	Basic procedure and prerequisites	244
11.1.2.2	Configuration.....	245
11.1.3	Configuring with the S7-PCT Stand Alone Port Configuration Tool	245
11.1.3.1	Application	245
11.1.3.2	Basic procedure and prerequisites	246
11.1.3.3	Configuration.....	246
11.1.4	Acyclic data exchange with the IO_LINK_MASTER function block	247
11.1.5	Acyclic data exchange with the IO_LINK_DEVICE function block	247
11.1.6	Replacing an IO-Link device	248
11.1.6.1	Introduction	248
11.1.6.2	Replacing an IO-Link device (according to IO-Link specification V1.0).....	248
11.1.6.3	Replacing an IO-Link Device (according to IO-Link specification V1.1)	249
11.1.7	Integration into the SIMATIC environment.....	250
11.2	Electronic modules for ID key-operated switches.....	251
11.2.1	Design of a command point with ID key-operated switch.....	251
11.2.2	Operating principle of the command point with ID key-operated switch.....	253
11.2.3	Parameters	259
11.2.3.1	Parameters	259
11.2.3.2	"Incremental switching mode" parameter	260
11.2.3.3	"Switch position memory" parameter	260
11.2.3.4	"Switch position retentive memory" parameter	261
11.2.3.5	"Individually codable ID keys only" parameter	261
11.2.3.6	"Switch position delay" parameter	262
11.2.3.7	"Select memory range" parameter.....	262
11.2.3.8	"Restore Factory Setting" parameter	262
11.2.3.9	Manage authorization level (individually encodable ID keys).....	263
11.2.3.10	Parameters for IO-Link devices (according to IO-Link communication specification V1.1).....	266
11.2.4	Process image	267
11.2.5	Diagnostics	268
11.2.5.1	IO-Link diagnostics	268
11.2.6	Mounting a command point with ID key-operated switch	271
11.2.7	Connecting.....	272
11.2.7.1	Electronic modules for the ID key-operated switches for IO-Link.....	272
11.3	Electronic modules for IO-Link.....	273
11.3.1	Electronic module for IO-Link	273

11.3.2	Functions.....	274
11.3.2.1	Input functions.....	274
11.3.2.2	Output functions.....	277
11.3.3	Parameters.....	280
11.3.3.1	"Input delay" parameter.....	280
11.3.3.2	"Inverting input" parameter.....	281
11.3.3.3	"Switching input" parameter.....	281
11.3.3.4	"Active edge" parameter input.....	281
11.3.3.5	"Threshold" parameter input.....	282
11.3.3.6	"Inverting output" parameter.....	282
11.3.3.7	"PWM frequency" parameter output.....	282
11.3.3.8	"PWM duty cycle" parameter output.....	283
11.3.3.9	"Dimming time" parameter output.....	283
11.3.3.10	"Switching output" parameter.....	283
11.3.3.11	"Active edge" parameter output.....	284
11.3.4	Diagnostics.....	285
11.3.4.1	IO-Link diagnostics.....	285
11.3.5	Installing and removing electronic modules for IO-Link.....	286
11.3.5.1	Installing IO-Link electronic modules for front plate mounting.....	286
11.3.5.2	Mounting position of IO-Link modules for base mounting.....	287
11.3.5.3	Mounting contact modules and IO-Link modules for base mounting.....	288
11.3.5.4	Removal of the modules.....	289
11.3.6	Connecting.....	290
11.3.6.1	Electronic modules for IO-Link.....	290
11.3.7	Example of wiring.....	291
12	Accessories.....	293
12.1	Backing plates.....	293
12.1.1	Labeling plate 12.5 x 27 mm.....	293
12.1.2	Labeling plate 17.5 x 27 mm.....	296
12.1.3	Labeling plate 27 x 27 mm.....	297
12.1.4	Label holders.....	299
12.1.5	Labeling plates for enclosures (22 x 22 mm).....	300
12.1.6	Labeling plates for enclosures with EMERGENCY STOP.....	303
12.1.7	Labeling plate for potentiometer.....	303
12.1.8	Insert label.....	304
12.1.9	Customized inscriptions.....	307
12.1.10	Labels for printing.....	310
12.1.11	EMERGENCY STOP.....	310
12.1.12	Square single frame.....	311
12.1.13	Unit labeling plate.....	311
12.2	Protection.....	312
12.2.1	Sealable cap.....	312
12.2.2	Protective cap.....	312
12.2.3	Sun collar.....	314
12.2.4	Protective collar.....	314
12.2.5	Locking device.....	317
12.2.6	Cover.....	319
12.2.7	Mounting.....	319
12.2.7.1	Installation steps for dust cover.....	319
12.2.7.2	Installation steps for locking device.....	320

12.3	Actuators	322
12.4	ID keys	323
12.5	Sealing plug	324
12.6	Accessories for enclosures	325
12.6.1	Enclosure cover monitoring	327
12.6.2	Installation steps for enclosure cover monitoring	328
12.7	Additional Accessories	331
12.8	Combination options for accessories	332
12.9	Use of accessories for the enclosure	333
13	Technical specifications	335
13.1	Product data sheet	335
13.2	Pushbuttons	336
13.3	Mushroom pushbuttons	337
13.4	EMERGENCY STOP mushroom pushbuttons	339
13.5	Selector switches	340
13.6	Toggle switches	340
13.7	Key-operated switches	341
13.8	Coordinate switches	342
13.9	Indicator lights	343
13.10	Acoustic signaling devices	343
13.11	Potentiometers	344
13.12	Sensor switches	344
13.13	Contact modules	345
13.14	LED modules	347
13.15	Electronic modules for ID key-operated switches	348
13.16	Two-hand operation console	350
14	Dimension drawings	351
14.1	Mounting dimensions	351
14.2	3SU10 devices	356
14.2.1	STOP buttons	356
14.2.2	Pushbuttons / illuminated pushbuttons	356
14.2.3	Twin pushbuttons	358
14.2.4	30.5 mm pushbuttons / illuminated pushbuttons	360
14.2.5	Indicator lights	360
14.2.6	Selector switches	361
14.2.7	30.5 mm selector switches	362
14.2.8	Selector switches 4 switch positions	363
14.2.9	Toggle switches	363
14.2.10	Mushroom pushbuttons / illuminated mushroom pushbuttons	363

14.2.11	Key-operated switches.....	365
14.2.12	30.5 mm key-operated switches	366
14.2.13	ID key-operated switches.....	367
14.2.14	EMERGENCY STOP with rotate-to-unlatch mechanism.....	367
14.2.15	EMERGENCY STOP with pull-to-unlatch mechanism	368
14.2.16	EMERGENCY STOP with lock	369
14.2.17	Coordinate switches.....	372
14.3	3SU12 devices	372
14.3.1	Pushbuttons with extended stroke	372
14.3.2	Potentiometers	373
14.3.3	Sensor switches	374
14.4	3SU14 modules.....	374
14.4.1	Contact modules for front plate mounting	374
14.4.2	Contact modules for base mounting	376
14.4.3	LED modules for front plate mounting	378
14.4.4	LED modules for base mounting.....	379
14.4.5	LED modules for PCB mounting	379
14.4.6	LED test module for base mounting (enclosure mounting)	380
14.4.7	AS-Interface modules for front mounting	381
14.4.8	AS-Interface modules for base mounting	384
14.4.9	Electronic modules for ID key-operated switches.....	385
14.4.10	Electronic modules for IO-Link.....	385
14.5	3SU15 holders	386
14.5.1	Holders with contact modules	387
14.5.2	Holders with contact and LED modules	389
14.6	3SU18 enclosures.....	390
14.6.1	Enclosures, plastic	390
14.6.2	Enclosures, metal.....	396
14.6.3	Two-hand operation console.....	401
14.7	Accessories.....	407
14.7.1	Labels and label holders	407
14.7.1.1	Labels.....	407
14.7.1.2	Label holders.....	411
14.7.2	Protection	416
14.7.2.1	Protective caps.....	416
14.7.2.2	Protection for sensor switch.....	420
14.7.2.3	Protective collars.....	420
14.7.2.4	Locking devices.....	423
14.7.3	Keys	426
14.7.4	Actuators	429
14.7.5	Accessories for enclosures	430
14.7.5.1	Cable glands and connection pieces	430
14.7.5.2	Adapters for AS-i shaped cables	433
14.7.5.3	Adapters for AS-i tab connection	434
14.7.5.4	Enclosure cover monitoring	438
14.7.6	Miscellaneous accessories	438

15	Application examples	441
15.1	Examples of EMERGENCY STOP shutdown applications	441
15.1.1	Emergency stop shutdown to SIL 3 or PL e with a safety relay	441
15.1.2	Emergency stop shutdown via AS-i with a Modular Safety System to SIL 3 or PL e	443
15.2	Examples of two-hand operation console applications.....	444
15.2.1	Safety Evaluation Tool	444
15.2.2	Two-hand operation to SIL 3 or PL e with a safety relay	445
15.2.3	Two-hand operation to SIL 3 or PL e with a Modular Safety System.....	446
15.3	Application examples for ID key-operated switches	448
A	Appendix.....	449
A.1	Process data and data sets	449
A.1.1	Electronic module for ID key-operated switches	449
A.1.1.1	Structure of the data sets.....	449
A.1.1.2	IO-Link communication parameters	450
A.1.1.3	Identification data.....	451
A.1.1.4	System commands - data set (index) 2	452
A.1.1.5	Delete individually encodable ID key - data set (index) 80.....	452
A.1.1.6	Memory for the individually encodable ID keys (1-30) - data set (index) 81	453
A.1.1.7	Memory for the individually encodable ID keys (31-50) - data set (index) 82	454
A.1.1.8	Diagnostics - data set (index) 92	456
A.1.1.9	Diagnostics - data set (index) 94	457
A.1.1.10	Parameters - Data set (index) 131.....	458
A.1.2	Electronic module for IO-Link	459
A.1.2.1	Structure of the data sets.....	459
A.1.2.2	IO-Link communication parameters.....	460
A.1.2.3	Identification data.....	461
A.1.2.4	System commands - data set (index) 2	462
A.1.2.5	Process Data Out - data set (index) 67	463
A.1.2.6	Process Data In - data set (index) 69	464
A.1.2.7	Diagnostics - data set (index) 92	465
A.1.2.8	Diagnostics - data set (index) 94	466
A.1.2.9	Parameters - Data set (index) 131.....	468
A.2	Certifications and approvals	471
	Index.....	473

Introduction

1.1 Responsibility of the user for system configuration and functionality

The products described here have been developed to perform safety-related functions as part of an overall system or machine.

A complete safety-related system generally includes sensors, evaluation units, signaling devices and concepts for safe tripping.

The manufacturer of a system or machine is responsible for ensuring its correct overall function.

Siemens AG, its subsidiaries and affiliated companies (hereinafter referred to as "Siemens") are not able to guarantee all properties of an overall system or machine not designed by Siemens.

Siemens also does not assume any liability for recommendations that are made or implied in the following description. No new guarantee, warranty, or liability claims beyond the scope of the general terms of delivery of Siemens may be derived based on the following description.

1.2 Target group

This documentation contains information for the following target groups:

- Decision makers
- Technologists
- Project planning engineers
- Commissioning engineers

1.3 Purpose of this documentation

This System Manual describes the many different possible uses of the SIRIUS ACT (3SU1) pushbuttons and signaling devices and provides the following information:

- Information regarding integration of the 3SU1 pushbuttons and signaling devices into the system environment
- Information on the principle of operation, selection, installation, and connection of pushbuttons and signaling devices
- Technical information such as dimension drawings

The information in this manual enables you to configure and commission the pushbuttons and signaling devices.

1.4 Required knowledge

A general knowledge of the following areas is needed in order to understand this documentation:

- Low-voltage industrial controls
- Digital circuit logic
- Automation systems
- AS-Interface
- IO-Link
- Safety technology

1.5 Scope of validity of the system manual

The system manual is valid for the present pushbuttons and signaling devices. It contains a description of the devices that are valid at the time of publication.

1.6 Further documentation

Please observe the following Operating Instructions for this system manual.

Operating Instructions title ¹⁾	Article number ¹⁾
SIRIUS Complete Units with EMERGENCY STOP 3SU11...-1.	3ZX1012-0SU11-1AA1
SIRIUS AS-Interface Module (Front Plate Mounting) 3SU14.0-1E..0-AA0	3ZX1012-0SU14-1AA1
SIRIUS AS-Interface Module (Base Mounting) in accordance with the Machinery Directive	3ZX1012-0SU14-1CA1
SIRIUS Enclosures with EMERGENCY STOP 3SU18...-N	3ZX1012-0SU18-1NA1
SIRIUS Two-Hand Operation Consoles 3SU18...-3 in accordance with the Machinery Directive	3ZX1012-0SU18-3AA1
SIRIUS Two-Hand Operation Consoles 3SU18...-3	3ZX1012-0SU18-3NA1
SIRIUS AS-Interface Module (Base Element) 3SU14...-E	3ZX1012-0SU14-1EA1
SIRIUS Electronic Module for ID Key-Operated Switches 3SU14...-G	3ZX1012-0SU14-1GA1
SIRIUS Sensor Switches	3ZX1012-0SU12-1SA1

¹⁾ The documents are available for download free of charge in the Service&Support Portal.

1.7 Siemens Industry Online Support

Information and Service

In Siemens Industry Online Support, you can obtain up-to-date information from our global support database quickly and simply. To accompany our products and systems, we offer a wealth of information and services that provide support in every phase of the lifecycle of your machine or plant – from planning and implementation, through commissioning, up to maintenance and modernization:

- Product support
- Application examples
- Services
- Forum
- mySupport

Link: Siemens Industry Online Support (<https://support.industry.siemens.com/cs/de/en>)

Product support

You will find here all the information and comprehensive know-how covering all aspects of your product:

- **FAQs**
Our answers to frequently asked questions.
- **Manuals/operating instructions**
Read online or download, available as PDF or individually configurable.
- **Certificates**
Clearly sorted according to approving authority, type and country.
- **Characteristic curves**
For support in planning and configuring your system.
- **Product announcements**
The latest information and news concerning our products.
- **Downloads**
You can find here updates, service packs, HSPs and much more for your product.
- **Application examples**
Function blocks, background and system descriptions, performance statements, demonstration systems, and application examples, clearly explained and represented.
- **Technical data**
Technical product data for support in planning and implementing your project.

Link: Product support (<https://support.industry.siemens.com/cs/ww/en/ps>)

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1.8 Configurator for SIRIUS ACT command devices and signaling devices

Various configurators are available online to assist you during the configuration process.

The configurator for SIRIUS ACT pushbuttons and signaling devices and matching accessories is an easy-to-use selection and configuration tool. You can select the individual components and plan your system in accordance with your specific requirements. You can save your selection, export it as a text file or order it directly.

The configurator automatically compiles a document list of the information available in Service&Support for every component. You can use it as the basis for putting together your system documentation.

A further aid to configuring your customized device is the **Configuration Identification Number (CIN)**.

When you finish configuring your customized device, you receive a CIN. With this number, you can retrieve and order your configuration from anywhere in the world. The CINs are also saved with the user login and can be selected on your Start page.

Link: Configurator (<https://www.siemens.com/sirius-act/configurator>)

1.9 Advantages through energy efficiency

Advantages through energy efficiency

Siemens offers you a unique portfolio for efficient energy management in industry – a process that serves to optimally shape your energy requirement. Operational energy management is subdivided into three phases:

- Identifying
- Evaluating
- Realizing

Siemens supports you with suitable hardware and software solutions in every phase of a project.

More information can be found on the Internet

(<http://www.automation.siemens.com/mcms/industrial-controls/en/energy-efficiency>).

The 3SU1 pushbuttons and signaling devices contribute to energy efficiency throughout the plant as follows:

- Low power consumption as a result of LED technology
- Long service life

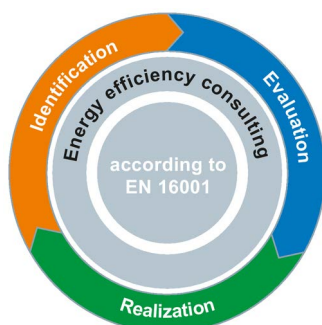


Image 1-1 Overview of the energy management process

1.10 Recycling and disposal

Recycling and disposal

These devices can be recycled thanks to their low pollutant content. For environmentally-friendly recycling and disposal of your electronic waste, please contact a company certified for the disposal of electronic waste.

DANGER

Hazardous voltage. Will cause death or serious injury.

- Turn off and lock out all power supplying this device before working on this device.
- Secure against switching on again.
- Verify that the equipment is not live.
- Ground and short-circuit.
- Erect barriers around or cover adjacent live parts.

DANGER

Hazardous voltage. Will cause death or serious injury.

Qualified Personnel.

The equipment / system may only be commissioned and operated by qualified personnel. For the purpose of the safety information in this documentation, a “qualified person” is someone who is authorized to energize, ground, and tag equipment, systems, and circuits in accordance with established safety procedures.

CAUTION

Safe equipment operation

Safe operation of the equipment is only ensured with certified components.

NOTICE

Grounding

Grounding is required for voltages higher than safety extra-low voltage!

NOTICE

Radio interference

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Note

No liability shall be accepted for any damage or injuries sustained as a result of improper use or incorrect dismantling of the equipment (i.e. opening of components other than those specifically designed to be opened by the user). Any improper handling of the equipment can result in very serious physical injury.

Note

Lamps and LED modules are designed solely for use with SIRIUS pushbuttons and signaling devices. They are not suitable for use in domestic lighting systems.

Note

Always make sure that the components (particularly those with a holder or actuator) are securely installed (free from vibration). Mount them on a support of at least 1 mm thickness.

Note

The 3SU1 devices described in this manual may only be installed at temperatures of $> -5\text{ }^{\circ}\text{C}$.

2.1 Intended use

WARNING

Hazardous Voltage
Can Cause Death, Serious Injury, or Property Damage.
Intended use of hardware products

This equipment is only allowed to be used for the applications described in the catalog and in the technical description, and only in conjunction with non-Siemens equipment and components recommended by Siemens.

Correct transport, storage, installation and assembly, as well as careful operation and maintenance, are required to ensure that the product operates safely and without faults.

EU note: Commissioning is absolutely prohibited until it has been ensured that the machine in which the component described here is to be installed complies with the stipulations of the Directive 2006/42/EC.

WARNING

Hazardous Voltage
Can Cause Death, Serious Injury, or Damage to Property.
Carry out function test of the system

To ensure the safety of the system, any changes to it or any replacement of defective components must be followed by a thorough and successfully completed function test of the system.

A complete function test consists of the following tests:

- Configuration test (test of the configuration)
- System test (wiring test of the connected sensors and actuators)

2.2 Current information about operational safety

Important note for maintaining operational safety of your system



WARNING

Hazardous Voltage

Can Cause Death, Serious Injury, or Property Damage.

Please take note of our latest information.

Systems with safety-related characteristics are subject to special operational safety requirements on the part of the operator. The supplier is also obliged to comply with special product monitoring measures. For this reason, we publish a special newsletter containing information on product developments and features that are (or could be) relevant to operation of safety-related systems. By subscribing to the appropriate newsletter, you will ensure that you are always up-to-date and able to make changes to your system, when necessary:

SIEMENS newsletter (<http://www.industry.siemens.com/newsletter>)

Request the following newsletter under "Products and Solutions":

- Industrial Controls - SIRIUS News (en)
- Safety Integrated Newsletter

2.3 ATEX for intrinsically safe circuits

The intrinsic safety of a circuit is achieved by limiting the current and voltage. This property limits the "intrinsically safe" protection type to circuits with relatively low power. Suitable applications are found, for example, in measuring and control engineering.

The purpose of pushbuttons and signaling devices is to reliably signal conditions (for example, sources of faults or interference factors) on machinery and installations so that the affected equipment can be controlled and brought into a safe state if a hazardous situation develops.

From our portfolio of pushbuttons and signaling devices, non-illuminated actuators, contact modules, empty enclosures and special accessories (see table below) are categorized in accordance with the ATEX Directive 94/9/EC as simple electrical equipment and are thus suitable for use in intrinsically safe circuits.

The devices listed in the overview below are assigned to Temperature Class T4.

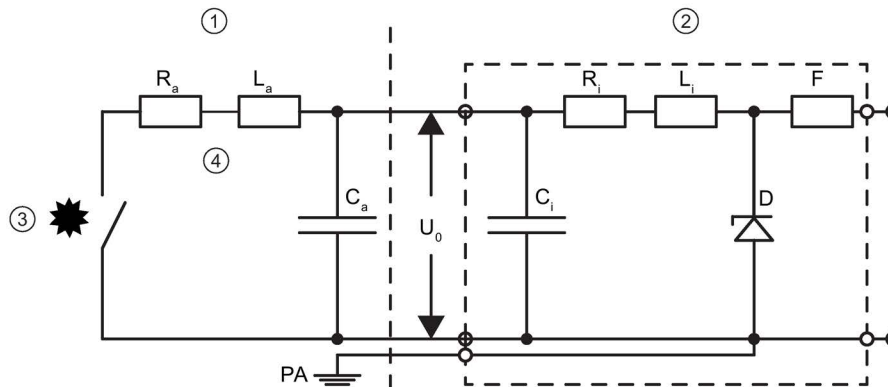
3SU1 pushbuttons and signaling devices

	Type	Version	Basis for approval
Actuating and signaling elements	3SU10.0-.....-.... 3SU10.2-.....-.... 3SU11.0-.....-.... 3SU12.0-.....-....	Plastic or metal version	Simple electrical equipment according to DIN EN 60079-11
Contact modules	3SU1400-AA10-..A0	Spring-loaded terminals or screw terminals	
Holders	3SU1500-0AA10-0AA0 3SU1550-0AA10-0AA0	Plastic or metal version	
Empty enclosure	3SU18..-AA..-....	Plastic or metal version	
Accessories	3SU19.0-0A...-0..0 3SU19.0-0B...-0..0		

Setting up an intrinsically safe area

To avoid closing and opening sparks, the capacitance and inductance of an intrinsically safe circuit are also limited depending on the maximum voltage and current values. No sparks and no thermal effects that could result in the ignition of a potentially explosive atmosphere can occur either in standard operation or in the event of a fault. For this reason, intrinsically safe circuits may be connected or disconnected under power during operation because safety is ensured even in the event of short-circuit or interruption.

The circuit principle of the intrinsically safe protection type is shown in the diagram below:



- ① Hazardous area
- ② Safe area
- ③ Spark energy limited
- ④ Temperature rise limited
- U_0 Max. output voltage
- I_0 Max. output current
- R_i Internal resistance
- L_i Internal inductance
- C_i Internal capacitance
- F Fuse
- D Z diode
- PA Equipotential bonding
- R_a External resistance
- L_a External inductance
- C_a External capacitance

2.4 Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, solutions, machines, equipment and/or networks. They are important components in a holistic industrial security concept. With this in mind, Siemens' products and solutions undergo continuous development. Siemens recommends strongly that you regularly check for product updates.

For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g. cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered. You can find more information about industrial security under:
<http://www.siemens.com/industrialsecurity>

To stay informed about product updates as they occur, sign up for a product-specific newsletter. You can find additional information on this at:
<http://support.automation.siemens.com>.

Overview

3.1 Overview of the device range

3SU1 pushbuttons and signaling devices

	SIRIUS ACT pushbuttons and signaling devices			
	3SU10 actuating and signaling elements 3SU11 complete units ¹⁾ 3SU12 compact units ¹⁾	3SU14 modules without holder 3SU15 modules with holder	3SU18 enclosures	3SU18...3 two-hand operation consoles
Description	• Pushbuttons • Mushroom pushbuttons • EMERGENCY STOP mushroom pushbuttons • Sensor switches • Selector switches • Twin pushbuttons • Key-operated switches • Indicator lights • Illuminated pushbuttons • ID key-operated switches • Stop pushbuttons • Toggle switches • Coordinate switches • Potentiometers	• Contact modules • LED modules • LED test modules • AS-Interface module (front plate mounting) • AS-Interface module (base mounting) • IO-Link	• Unequipped enclosures with 1, 2, 3, 4 or 6 command points • EMERGENCY STOP enclosures • Enclosures with 1, 2 or 3 command points pre-equipped • Customized enclosures on request	• Two-hand operation consoles including EMERGENCY STOP and two mushroom pushbuttons • Additional command devices can be mounted
Version	Front ring / Collar: • Metal / Metal • Metal, matte / Metal • Metal, matte / Plastic • Plastic / Plastic	• Plastic, black	• Plastic • Metal	• Plastic • Metal

3.1 Overview of the device range

	SIRIUS ACT pushbuttons and signaling devices			
	3SU10 actuating and signaling elements 3SU11 complete units ¹⁾ 3SU12 compact units ¹⁾	3SU14 modules without holder 3SU15 modules with holder	3SU18 enclosures	3SU18..-3 two-hand operation consoles
Installation / Connection	- One-man installation without special tools - Modular equipping of the actuating elements with contact and/or LED modules - Screw terminal, spring-loaded terminal, solder pin connection	- Front plate mounting - Base mounting - Mounting on printed-circuit boards - Screw terminals - Spring-loaded terminals - Solder pin connections - Push-in for AS-I - Insulation piercing method for AS-I	- Vertical / Horizontal - AS-I adapter M12 - AS-I cable gland with insulation piercing method - Circular cable glands - Circular cable glands with AS-I cable entry - Enclosure cover monitoring	Can be mounted on a wall, stand, or directly within the system
Degree of protection	IP66 / IP67 / IP69²⁾ (plastic / metal)	Enclosure: IP40 Connecting terminals: IP20	IP66 / IP67 / IP69 (plastic / metal)	IP66 (plastic / metal)
Approval	- UL - CSA - CE - CCC - VDE - NEMA: 1, 3, 3R, 4, 4x, 12	- UL, CSA, CE - c UL us, CE, C-Tick, KCC, TÜV, CCC	- UL - CSA - CE - CCC - NEMA: 1, 3, 3R, 4, 4x, 12	- UL - CSA - CE - CCC - NEMA: 1, 3, 3R, 4, 4x, 12, 13

	SIRIUS ACT pushbuttons and signaling devices			
	3SU10 actuating and signaling elements 3SU11 complete units ¹⁾ 3SU12 compact units ¹⁾	3SU14 modules without holder 3SU15 modules with holder	3SU18 enclosures	3SU18...3 two-hand operation consoles
Relevant standards	- IEC/EN 60947-1 - IEC/EN 60947-5-1 - IEC/EN 60947-5-5 - EN ISO 13850	- IEC/EN 60947-1 - IEC/EN 60947-5-1 - IEC/EN 61508 - EN ISO 13849-1	- IEC/EN 60947-5-1 - IEC/EN 60947-5-5 - EN ISO 13850 - IEC/EN 60947-1 - EN ISO 13849-1	- IEC/EN 60947-5-1 - IEC/EN 60947-5-5 - IEC/EN 61508 - EN ISO 13850
AS-Interface	Fast and easy connection to AS-Interface. Possibility of direct connection of EMERGENCY STOP devices via standard ASi bus with safety-related communication.		- Enclosure with integrated AS-Interface - Standard command devices and EMERGENCY STOP can be mounted inside an enclosure. - Modular structure	Metal consoles can be retrofitted with safe AS-Interface.
Safety	EMERGENCY STOP mushroom pushbuttons for shutdown of systems in an emergency situation The devices can be used up to SIL CL 3 according to IEC 62061 and PL e Cat. 4 according to ISO 13849-1.	Contact module with installation monitoring	EMERGENCY STOP function with latching according to ISO 13850	EMERGENCY STOP function with latching according to ISO 13850

3.1 Overview of the device range

	SIRIUS ACT pushbuttons and signaling devices			
	3SU10 actuating and signaling elements 3SU11 complete units ¹⁾ 3SU12 compact units ¹⁾	3SU14 modules without holder 3SU15 modules with holder	3SU18 enclosures	3SU18..-3 two-hand operation consoles
Options	Link to the configurator for customized enclosures: Configurator (http://www.siemens.com/sirius-act/configurator)			
	Do-it-yourself labeling using Label Designer. Label Designer (http://www.siemens.com/sirius-label-designer) (labels for self-inscription)			

¹⁾ Holder included in the scope of supply

²⁾ IPX9 - Protection against high pressure and high jet-water temperatures

- a) IPX9 according to EN 60529
The IPX9 test as defined by EN 60529 is carried out under standardized laboratory conditions and certifies resistance of equipment to water penetration during cleaning with high-pressure water.

According to the standard, the IPX9 test must be conducted with the following parameters:
 - Water temperature approximately 80° C
 - Pressure approximately 80 bar
 - Spray angles 0°, 30°, 60°, 90°, spraying time approximately 30 seconds
 - Distance between spray nozzle and equipment approximately 125 mm
- b) High-pressure cleaners in practice
 - Laboratory tests carried out in accordance with a standard can generally only approximate a complex reality.
 - In order to preserve the service life of the devices, therefore, it is recommended that a significantly larger distance than that specified in the standard for one-time loading is maintained between the spray nozzle and the equipment.

3.2 Application areas

Enclosures

When controllers are at a physically separate location, actuating elements and indicator lights in enclosures serve as manual control devices. Their enclosures are equipped with the actuating elements and the round lens assemblies with a nominal diameter of 22.5 mm.

EMERGENCY STOP mushroom pushbuttons

- Safe and fast stopping of systems and machines in dangerous situations

Two-hand operation consoles

The two-hand operation consoles are required for use with machines and systems that have hazardous areas, in order to direct both hands of the operator to one position.

The two-hand operation consoles are used for the following safety requirements:

- Safety at presses and punching machines
- Safety at printing presses
- Safety at paper processing machines
- Safety in the chemical industry
- Safety in the rubber and plastics industries

3.3 Media resistance

The devices are suitable for use in any climate (KTW 24) and designed for standard industrial applications.

The use of the resistant material polyamide as standard gives the SIRIUS ACT devices improved resistance to oils and detergents. Most actuating and indicating elements can still be labeled customer-specifically by laser.

3.4 Failure rates

Using the B10 value, the failure rate of the command and signaling devices is calculated according to the following formula:

$$\lambda = [0.1 \times C / B10]$$

$$\lambda D = [0.1 \times C / B10d]$$

λ = Total failure rate of a command and signaling device

λD = Failure rate of dangerous failures

C = Operating cycle per hour

B10d = B10 / Proportion of dangerous failures

SN 31920 standard

The B10 value for devices subject to wear is expressed in the number of operating cycles. This is the number of operating cycles at which during a lifetime test, 10% of the test objects have failed (or: number of operating cycles after which 10% of the devices have failed).

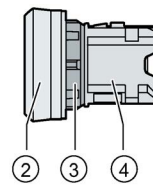
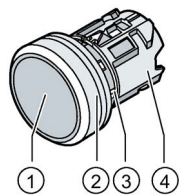
Note

Refer to the respective data sheet for the B10 value and the proportion of dangerous failures.

3SU1 range of devices

4.1 Types of 3SU1 actuating elements and signaling elements

4.1.1 Design of a 3SU1 actuating or signaling element



- ① Actuator (in this case: pushbutton)
- ② Front ring
- ③ Seal
- ④ Collar

4.1.2 3SU10 actuating and signaling elements

The 3SU10 actuating and signaling elements are available in the following designs:

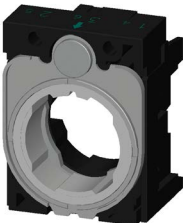
- Front ring and collar in plastic
- Front ring in metal matte and collar in plastic
- Front ring and collar in metal
- Front ring in metal matte and collar in metal

Front ring material	Collar material	Examples
Plastic	Plastic	 3SU100
Metal, matte	Plastic	 3SU103
Metal	Metal	 3SU105
Metal, matte	Metal	 3SU106

4.1.3 3SU15 holders

Holders are available in plastic and metal versions.

A holder has three slots as standard. Holders with four slots are available for the actuating elements, coordinate switches and selector switches with four switch positions.

Material	Examples
Plastic	
Metal	

4.1.4 3SU14 modules

The contact modules are equipped with a slow-action contact (1 NO contact or 1 NC contact). These ensure a high contact stability even with small voltages and currents (e.g., 5 V/1 mA).



Image 4-1 Example: 3SU1400-2AA10-1BA0 contact module

Connection system

Devices with the following connections are available:

- Screw terminals with open terminal points, captive screws, funnel-shaped cable entries and screwdriver guides
- Spring-loaded terminals for vibration-resistant connection
- Solder pin connection (0.8 mm × 0.8 mm solder pins)

4.1.5 Design of a 3SU10 and 3SU11 command point

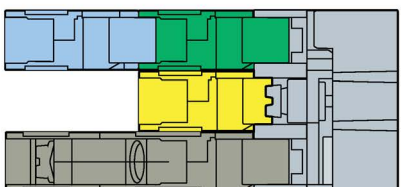
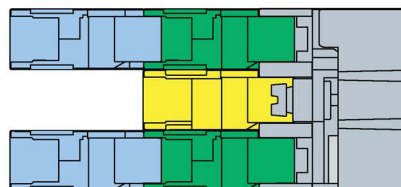
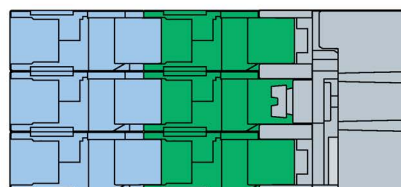
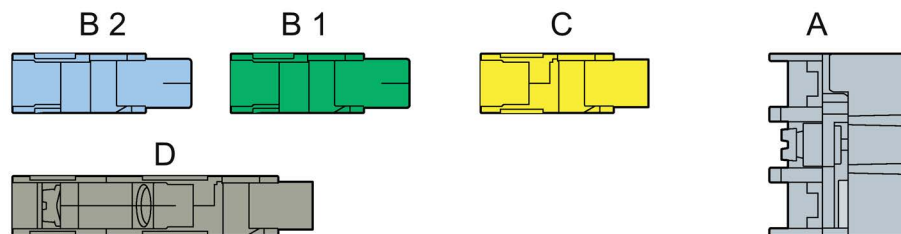
A modular command point consists of the following elements:

- An actuating or signaling element in front of the control panel
- A holder for securing behind the control panel
- Up to three contact modules in a row and/or two contact modules and one LED module behind the control panel
- A maximum of 3x2 (1-pole) contact modules can be stacked with a 3-slot holder
- A maximum of 4x2 (1-pole) contact modules can be stacked with a 4-slot holder
- A comprehensive range of accessories for labeling

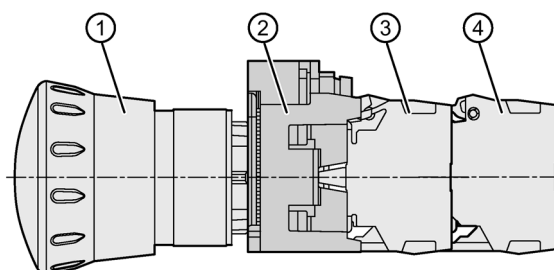
Stackability

With SIRIUS ACT, the modules are mounted on the holder without any further accessories. The modules can be stacked without needing to use a tool (max. 2 x 1-pole modules behind one other).

The following picture is an **example** of the mounting and stacking of the modules on a holder.



- | | |
|---------|-----------------------|
| A | Holder |
| B1 / B2 | Contact module 1-pole |
| C | LED module |
| D | Contact module 2-pole |



- | | |
|---|--|
| ① | Actuating element (here: EMERGENCY STOP mushroom pushbutton) |
| ② | Holder |
| ③ | Module 1 |
| ④ | Module 2 |

4.2 Holders

The holders are used to secure the actuating or signaling elements and the contact module or LED module. The holders are designed for mounting in front plates with a plate thickness of 1 to 6 mm.

When delivered, the holders are set to a control panel thickness of approximately 4.5 mm. They are placed in the ↑ arrow direction from the rear onto the actuating and signaling elements. The fastening screw is located at the top. If they are to be mounted on a control panel that is > 4.5 mm thick, you must adjust the fastening screw of the holder before you install the holder.

Note

Note the maximum permissible front plate thickness!

When label holders, protective caps or similar accessories are used, it is important to remember that the maximum permissible front plate thickness must be reduced by the plate thickness of the relevant accessory.

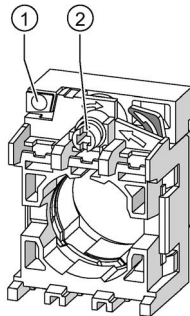
Tool

For securing, we recommend a size 2 screwdriver (cross-tip DIN ISO 87641PZD1 or flat-head DIN ISO 2380-1 A/B 1 x 4.5). The tightening torque is 1.0 to 1.2 Nm.

Grounding of the front plate

If you mount a metal actuator on a metal front plate using a metal holder, the actuator is grounded via the tip of the fastening screw. This enables grounding via the connection on the front plate.

If the metal holder is to be used several times, grounding via the grounding stud is recommended!



- ① Hole for grounding stud (accessory: 3SU1950-0KK80-0AA0)
- ② Fastening screw

NOTICE**Mounting in front plates / enclosures made of electrically non-conductive material**

If you use an enclosure made of plastic, you must loop a grounding cable ① through the metal holders, and connect it to ground by means of a grounding stud (3SU1950-0KK80-0AA0).

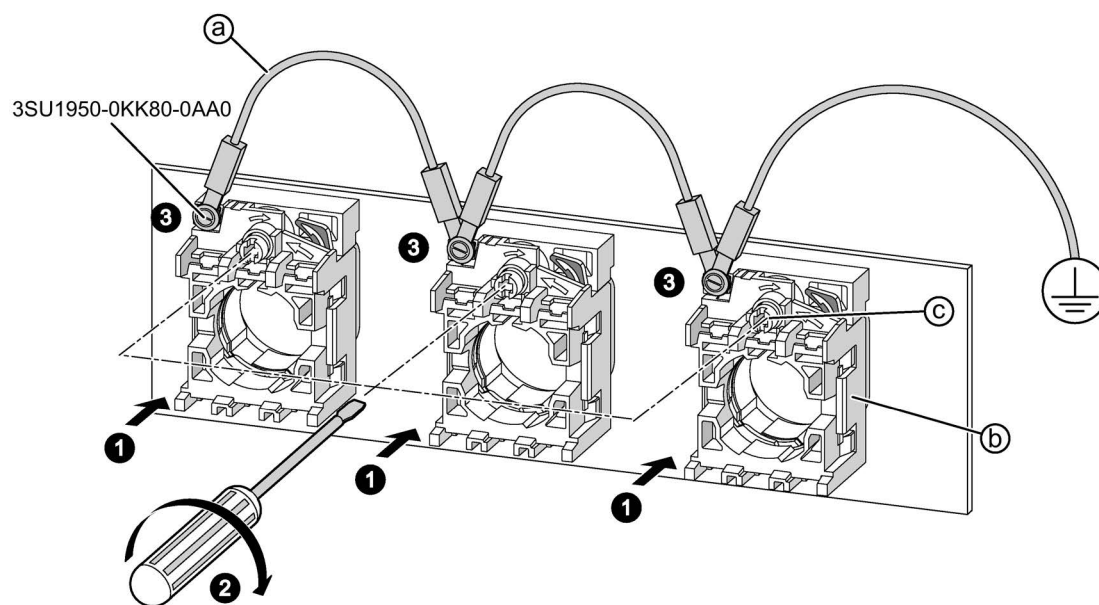
⚠ CAUTION**Risk of injury**

To ensure secure connection of the grounding cable, the grounding studs (3SU1950-0KK80-0AA0) must be fastened with ring cable lugs.

The grounding stud is not included in the scope of supply and must be ordered separately. For information, please refer to Chapter "Accessories (Page 331)".

Note

The operator is responsible for checking that the protective measure (grounding) is effective.

Procedure

1. Attach the holder (b) to the actuating element from behind.
2. Tighten the holder screw (c).
3. Secure the grounding cable (a) with ring cable lugs to the grounding stud (3SU1950-0KK80-0AA0), tightening torque: 0.8 - 1.0 Nm.

Module slot position

Holders made of metal or plastic and with 3 or 4 slots for contact or LED modules are available.

The module slot positions (contact or LED modules) are indicated on top of the holder. The large digits designate the modules that are snapped directly onto the holder. The small digits indicate the position of stacked modules.

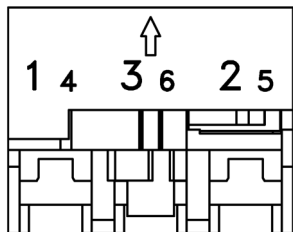


Image 4-2 Marking of slot positions on the 3-slot holder

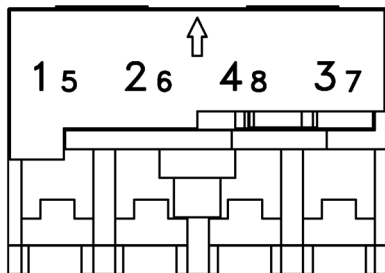


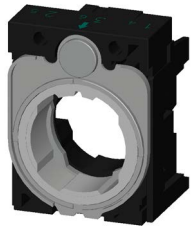
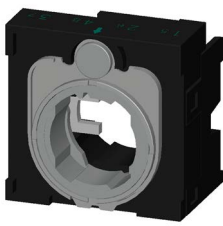
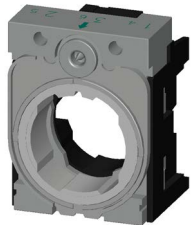
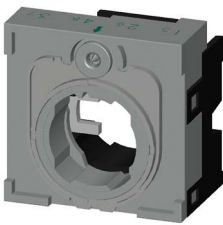
Image 4-3 Marking of slot positions on the 4-slot holder

Assignment of the holders to the actuating and signaling elements

The following assumptions apply when assigning holders to the actuating elements and signaling elements:

Front ring material	Collar material	Bore diameter	Holder (plastic)	Holder (metal)
Plastic	Plastic	22.5 mm	✓	✓
Metal, matte	Plastic	22.5 mm	✓	✓
Metal	Metal	22.5 mm	---	✓
Metal, matte	Metal	30.5 mm	---	✓

Overview of holders without modules

Material	3-slot holder (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221520)	4-slot holder (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221520)
Plastic	 3SU1500-0AA10-0AA0	 3SU1500-0BA10-0AA0
Metal	 3SU1550-0AA10-0AA0	 3SU1550-0BA10-0AA0

You can find information on the pre-assembled holders with modules in Chapter "Holders with modules (Page 175)".

4.3 3SU10 devices for use on 3-slot holder

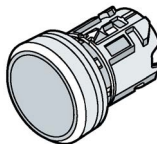
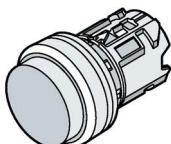
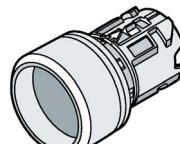
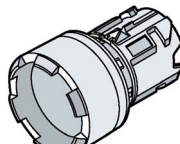
4.3.1 22.5 mm pushbuttons

Pushbuttons are used to actuate contact modules and allow short-time contact or permanent closing / opening of a contact element. The buttons can be replaced from the front by the user.

Pushbuttons are available in different variants according to the following features:

- Height of button
- Height of front ring
- Collar and front ring material
- Colors of the buttons
- Switching function: momentary contact variants and latching variants

For further information, refer to Chapters "Mounting (Page 97)", "22.5 mm pushbuttons with standard inscription (Page 89)" and "Accessories (Page 293)"

	Pushbuttons			
				
	Flat button Flat front ring	Raised button Flat front ring	Flat button Raised front ring	Flat button Raised, castellated front ring
Collar / Front ring material	Article number			
Plastic / Plastic				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221475)				
• Black	3SU1000-0Ax10-0AA0	3SU1000-0Bx10-0AA0	3SU1000-0Cx10-0AA0	3SU1000-0DB10-0AA0
• Red	3SU1000-0Ax20-0AA0	3SU1000-0Bx20-0AA0	3SU1000-0Cx20-0AA0	3SU1000-0DB20-0AA0
• Yellow	3SU1000-0Ax30-0AA0	3SU1000-0Bx30-0AA0	3SU1000-0Cx30-0AA0	3SU1000-0DB30-0AA0
• Green	3SU1000-0Ax40-0AA0	3SU1000-0Bx40-0AA0	3SU1000-0Cx40-0AA0	3SU1000-0DB40-0AA0
• Blue	3SU1000-0Ax50-0AA0	3SU1000-0Bx50-0AA0	3SU1000-0Cx50-0AA0	3SU1000-0DB50-0AA0
• White	3SU1000-0Ax60-0AA0	3SU1000-0Bx60-0AA0	3SU1000-0Cx60-0AA0	3SU1000-0DB60-0AA0
• Clear	3SU1000-0AB70-0AA0	—	—	—

Plastic / Metal, matte				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226610)				
• Black	3SU1030-0Ax10-0AA0	3SU1030-0Bx10-0AA0	3SU1030-0Cx10-0AA0	—
• Red	3SU1030-0Ax20-0AA0	3SU1030-0Bx20-0AA0	3SU1030-0Cx20-0AA0	—
• Yellow	3SU1030-0Ax30-0AA0	3SU1030-0Bx30-0AA0	3SU1030-0Cx30-0AA0	—
• Green	3SU1030-0Ax40-0AA0	3SU1030-0Bx40-0AA0	3SU1030-0Cx40-0AA0	—
• Blue	3SU1030-0Ax50-0AA0	3SU1030-0Bx50-0AA0	3SU1030-0Cx50-0AA0	—
• White	3SU1030-0Ax60-0AA0	3SU1030-0Bx60-0AA0	3SU1030-0Cx60-0AA0	—
• Clear	3SU1030-0AB70-0AA0	—	—	—
Metal / Metal				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221476)				
• Black	3SU1050-0Ax10-0AA0	3SU1050-0Bx10-0AA0	3SU1050-0Cx10-0AA0	—
• Red	3SU1050-0Ax20-0AA0	3SU1050-0Bx20-0AA0	3SU1050-0Cx20-0AA0	—
• Yellow	3SU1050-0Ax30-0AA0	3SU1050-0Bx30-0AA0	3SU1050-0Cx30-0AA0	—
• Green	3SU1050-0Ax40-0AA0	3SU1050-0Bx40-0AA0	3SU1050-0Cx40-0AA0	—
• Blue	3SU1050-0Ax50-0AA0	3SU1050-0Bx50-0AA0	3SU1050-0Cx50-0AA0	—
• White	3SU1050-0Ax60-0AA0	3SU1050-0Bx60-0AA0	3SU1050-0Cx60-0AA0	—
• Clear	3SU1050-0AB70-0AA0	—	—	—

x: A = latching (push to unlatch)

x: B = momentary contact

Note

Not all combinations listed in the tables are available. In the case of special versions, please consult Technical Assistance, or initiate a PI1000 request.

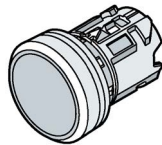
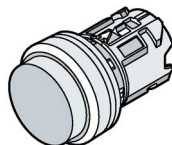
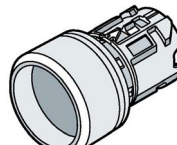
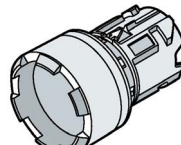
4.3.2 22.5 mm illuminated pushbuttons

Illuminated pushbuttons are used to actuate contact modules and can also function as display devices by means of an LED module. A variant with a fixed pushbutton can be used as an indicator light. The buttons can be replaced from the front by the user.

The illuminated pushbuttons are available in different variants according to the following features:

- Height of button
- Collar and front ring material
- Colors of the buttons
- Switching function: momentary contact variants and latching variants.
- Illumination

For further information, refer to Chapters "Mounting (Page 97)" and "Accessories (Page 293)"

	Illuminated pushbuttons			
				
	Flat button Flat front ring	Raised button Flat front ring	Flat button Raised front ring	Flat button Raised, castellated front ring
Collar / Front ring material	Article number			
Plastic / Plastic				
Siemens Industry Mall (https://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221475)				
• Amber	3SU1001-0Ax00-0AA0	3SU1001-0Bx00-0AA0	—	—
• Red	3SU1001-0Ax20-0AA0	3SU1001-0Bx20-0AA0	3SU1001-0BB20-0AA0	—
• Yellow	3SU1001-0Ax30-0AA0	3SU1001-0Bx30-0AA0	3SU1001-0BB30-0AA0	—
• Green	3SU1001-0Ax40-0AA0	3SU1001-0Bx40-0AA0	3SU1001-0BB40-0AA0	—
• Blue	3SU1001-0Ax50-0AA0	3SU1001-0Bx50-0AA0	3SU1001-0BB50-0AA0	—
• White	3SU1001-0Ax60-0AA0	3SU1001-0Bx60-0AA0	—	—
• Clear	3SU1001-0Ax70-0AA0	3SU1001-0Bx70-0AA0	3SU1001-0BB70-0AA0	3SU1001-0DB70-0AA0

Plastic / Metal, matte				
Siemens Industry Mall (https://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221475)				
• Amber	3SU1031-0Ax00-0AA0	3SU1031-0Bx00-0AA0	—	—
• Red	3SU1031-0Ax20-0AA0	3SU1031-0Bx20-0AA0	3SU1031-0BB20-0AA0	—
• Yellow	3SU1031-0Ax30-0AA0	3SU1031-0Bx30-0AA0	3SU1031-0BB30-0AA0	—
• Green	3SU1031-0Ax40-0AA0	3SU1031-0Bx40-0AA0	3SU1031-0BB40-0AA0	—
• Blue	3SU1031-0Ax50-0AA0	3SU1031-0Bx50-0AA0	3SU1031-0BB50-0AA0	—
• White	3SU1031-0Ax60-0AA0	3SU1031-0Bx60-0AA0	—	—
• Clear	3SU1031-0Ax70-0AA0	3SU1031-0Bx70-0AA0	3SU1031-0BB70-0AA0	—
Metal / Metal				
Siemens Industry Mall (https://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221475)				
• Amber	3SU1051-0Ax00-0AA0	3SU1051-0Bx00-0AA0	—	—
• Red	3SU1051-0Ax20-0AA0	3SU1051-0Bx20-0AA0	3SU1051-0BB20-0AA0	—
• Yellow	3SU1051-0Ax30-0AA0	3SU1051-0Bx30-0AA0	3SU1051-0BB30-0AA0	—
• Green	3SU1051-0Ax40-0AA0	3SU1051-0Bx40-0AA0	3SU1051-0BB40-0AA0	—
• Blue	3SU1051-0Ax50-0AA0	3SU1051-0Bx50-0AA0	3SU1051-0BB50-0AA0	—
• White	3SU1051-0Ax60-0AA0	3SU1051-0Bx60-0AA0	—	—
• Clear	3SU1051-0Ax70-0AA0	3SU1051-0Bx70-0AA0	3SU1051-0BB70-0AA0	—

x: A = latching (push to unlatch)

x: B = momentary contact

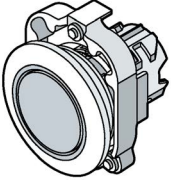
Note

Not all combinations listed in the table are available. In the case of special versions, please consult Technical Assistance, or initiate a PI1000 request.

4.3.3 30.5 mm pushbuttons

Pushbuttons and illuminated pushbuttons in the 30.5 mm diameter size are intended for flat mounting. The series is available in metal and metal matte versions. The 30.5 mm pushbuttons are suitable for installation on front plates with a maximum thickness of 4 mm. You must use the metal holder (3SU1550-0AA10-0AA0) for mounting. In addition, the adapter (3SU1950-0KJ80-0AA0) for actuators and indicators for flat mounting must be mounted between the front plate and the holder. The adapter is included in the scope of delivery, but can also be ordered as a separate item.

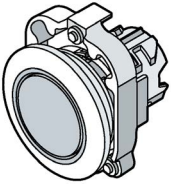
Pushbuttons

 Typical diagram	Collar / Front ring material	Article number
	Metal / Metal, matte Siemens Industry Mall http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226911	
	• Black	3SU1060-0Jx10-0AA0
	• Red	3SU1060-0Jx20-0AA0
	• Yellow	3SU1060-0Jx30-0AA0
	• Green	3SU1060-0Jx40-0AA0
	• Blue	3SU1060-0Jx50-0AA0
	• White	3SU1060-0Jx60-0AA0

x: A = latching (push to unlatch)

x: B = momentary contact

Illuminated pushbuttons

 Typical diagram	Collar / Front ring material	Article number
	Metal / Metal, matte Siemens Industry Mall http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10228067	
	• Red	3SU1061-0Jx20-0AA0
	• Yellow	3SU1061-0Jx30-0AA0
	• Green	3SU1061-0Jx40-0AA0
	• Blue	3SU1061-0Jx50-0AA0
	• Clear	3SU1061-0Jx70-0AA0

x: A = latching (push to unlatch)

x: B = momentary contact

Note

Not all combinations listed in the tables are available. In the case of special versions, please consult Technical Assistance, or initiate a PI1000 request.

4.3.4 Twin pushbuttons

Twin pushbuttons are used to actuate contact modules and can also function as display devices. Thanks to separate actuating surfaces, it is possible to switch up to 2 independent module positions separately using only one command point. The switching function of all versions of the twin pushbuttons is latching.

Twin pushbuttons are available in different variants according to the following features:

- Height of button (flat or raised) with 2 different button combinations:
 - Flat / flat
 - Flat / raised
- Collar and front ring material
- Colors of the buttons

Twin pushbuttons are supplied as standard with pressure plates ①.

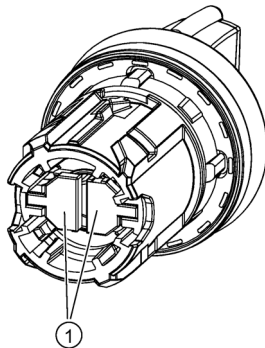


Image 4-4 Typical diagram

The diagram above is an example of the pressure plates on a selector switch. The procedure for a twin pushbutton corresponds to that for a selector switch.

Each pressure plate can be individually removed and reinstalled.

The twin pushbuttons are designed in such a way that, by using an LED module, the center surface of the twin pushbutton can be illuminated.

The pressure plates must be removed before the LED module is installed.

In the case of illuminated twin pushbuttons, this step is not necessary. They are already prepared for illumination at the factory.

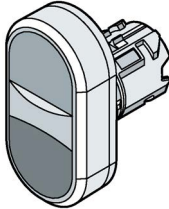
For further information, refer to Chapters "Mounting (Page 97)" and "Twin pushbuttons with standard inscription (Page 90)"

With standard installation (arrow on collar at the top), the upper button always has the first specified color and the lower button the second specified color. The same principle is used with the button heights. The first specified height refers to the top button, and the second specified height to the lower button.

Example: 3SU1051-3BB42-0AA0

Top button = green and flat

Lower button = red and raised

	Twin pushbuttons	Illuminated twin pushbuttons
Typical diagram		
Collar / Front ring material	Article number	
Plastic / Plastic		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221485)		
• Black / Black	3SU1000-3xB11-0AA0	---
• Green / Red	3SU1000-3xB42-0AA0	3SU1001-3xB42-0AA0
• White / Black	3SU1000-3xB61-0AA0	3SU1001-3xB61-0AA0
• White / White	3SU1000-3xB66-0AA0	3SU1001-3xB66-0AA0
Plastic / Metal, matte		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226612)		
• Black / Black	3SU1030-3xB11-0AA0	---
• Green / Red	3SU1030-3xB42-0AA0	3SU1031-3xB42-0AA0
• White / Black	3SU1030-3xB61-0AA0	3SU1031-3xB61-0AA0
• White / White	3SU1030-3xB66-0AA0	3SU1031-3xB66-0AA0
Metal / Metal		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221486)		
• Black / Black	3SU1050-3xB11-0AA0	---
• Green / Red	3SU1050-3xB42-0AA0	3SU1051-3xB42-0AA0
• White / Black	3SU1050-3xB61-0AA0	3SU1051-3xB61-0AA0
• White / White	3SU1050-3xB66-0AA0	3SU1051-3xB66-0AA0

x: A = twin pushbutton with flat / flat button

x: B = twin pushbutton with flat / raised button

Note

Not all combinations listed in the table are available. In the case of special versions, please consult Technical Assistance, or initiate a PI1000 request.

4.3.5 Mushroom pushbuttons

Mushroom pushbuttons are used to actuate contact modules. Their large, easily accessible button surface makes them easy to operate with the whole palm of the hand. By pressing or pulling these buttons, it is possible to generate up to 3 signals with just a single device.

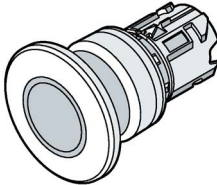
They are available with actuators in diameter 30 mm, 40 mm or 60 mm.

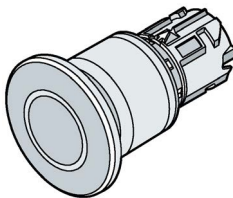
Mushroom pushbuttons are available in different variants according to the following features:

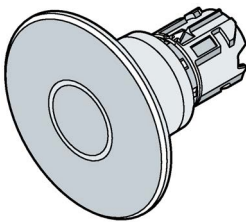
- Collar and front ring material
- Color of actuators
- Switching functions: latching / momentary contact
- Switch positions 2 (all mushroom pushbuttons) or 3 positions (only mushroom pushbuttons in diameter 40 mm)

For further information, refer to Chapter "Mounting (Page 97)".

Overview of mushroom pushbuttons

 Typical diagram		Diameter 30 mm	
		Latching (pull to unlatch)	Momentary contact
Collar / Front ring material	Switch positions	Article number	
Plastic / Plastic			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221478)			
• Black	2-position	3SU1000-1AA10-0AA0	3SU1000-1AD10-0AA0
• Red	2-position	3SU1000-1AA20-0AA0	3SU1000-1AD20-0AA0
• Yellow	2-position	3SU1000-1AA30-0AA0	3SU1000-1AD30-0AA0
• Green	2-position	—	3SU1000-1AD40-0AA0
Plastic / Metal, matte			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226614)			
• Black	2-position	3SU1030-1AA10-0AA0	3SU1030-1AD10-0AA0
• Red	2-position	3SU1030-1AA20-0AA0	3SU1030-1AD20-0AA0
• Yellow	2-position	—	3SU1030-1AD30-0AA0
• Green	2-position	—	3SU1030-1AD40-0AA0
Metal / Metal			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221477)			
• Black	2-position	3SU1050-1AA10-0AA0	3SU1050-1AD10-0AA0
• Red	2-position	3SU1050-1AA20-0AA0	3SU1050-1AD20-0AA0
• Yellow	2-position	—	3SU1050-1AD30-0AA0
• Green	2-position	—	3SU1050-1AD40-0AA0

		Diameter 40 mm	
		Latching (pull to unlatch)	Momentary contact
Typical diagram			
Collar / Front ring material	Switch positions	Article number	
Plastic / Plastic			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221478)			
• Black	2-position	3SU1000-1BA10-0AA0	3SU1000-1BD10-0AA0
• Red	2-position	3SU1000-1BA20-0AA0	3SU1000-1BD20-0AA0
• Yellow	2-position	3SU1000-1BA30-0AA0	3SU1000-1BD30-0AA0
• Green	2-position	3SU1000-1BA40-0AA0	3SU1000-1BD40-0AA0
Plastic / Metal, matte			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226614)			
• Black	2-position	3SU1030-1BA10-0AA0	3SU1030-1BD10-0AA0
• Red	2-position	3SU1030-1BA20-0AA0	3SU1030-1BD20-0AA0
• Yellow	2-position	3SU1030-1BA30-0AA0	3SU1030-1BD30-0AA0
• Green	2-position	3SU1030-1BA40-0AA0	3SU1030-1BD40-0AA0
Metal / Metal			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221477)			
• Black	2-position	3SU1050-1BA10-0AA0	3SU1050-1BD10-0AA0
	3-position	3SU1050-1EA20-0AA0	3SU1050-1ED10-0AA0
• Red	2-position	3SU1050-1BA20-0AA0	3SU1050-1BD20-0AA0
	3-position	3SU1050-1EA20-0AA0	3SU1050-1ED20-0AA0
• Yellow	2-position	3SU1050-1BA30-0AA0	3SU1050-1BD30-0AA0
• Green	2-position	3SU1050-1BA40-0AA0	3SU1050-1BD40-0AA0

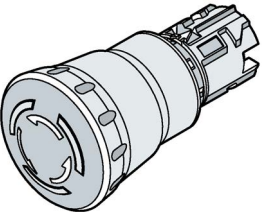
 Typical diagram		Diameter 60 mm	
		Latching (pull to unlatch)	Momentary contact
Collar / Front ring material	Switch positions	Article number	
Plastic / Plastic			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221478)			
• Black	2-position	3SU1000-1CA10-0AA0	3SU1000-1CD10-0AA0
• Red	2-position	3SU1000-1CA20-0AA0	3SU1000-1CD20-0AA0
• Yellow	2-position	—	3SU1000-1CD30-0AA0
• Green	2-position	—	3SU1000-1CD40-0AA0
Plastic / Metal, matte			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221478)			
• Black	2-position	3SU1030-1CA10-0AA0	3SU1030-1CD10-0AA0
• Red	2-position	3SU1030-1CA20-0AA0	3SU1030-1CD20-0AA0
• Yellow	2-position	—	3SU1030-1CD30-0AA0
• Green	2-position	—	3SU1030-1CD40-0AA0
Metal / Metal			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221477)			
• Black	2-position	3SU1050-1CA10-0AA0	3SU1050-1CD10-0AA0
• Red	2-position	3SU1050-1CA20-0AA0	3SU1050-1CD20-0AA0
• Yellow	2-position	—	3SU1050-1CD30-0AA0
• Green	2-position	—	3SU1050-1CD40-0AA0

4.3.6 Special variants of mushroom pushbuttons

These mushroom pushbuttons have a tamper-proof latching function.

For further information, refer to Chapter "Mounting (Page 97)". Please also note the information (on equipping) in Chapter "3SU14 contact modules and LED modules (Page 147)".

Overview of special versions of mushroom pushbuttons

	
Typical diagram	
Collar / Front ring material	Article number
Plastic / Plastic	
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221479)	
• Black	3SU1000-1HB10-0AA0
• Blue	3SU1000-1HB50-0AA0
Metal / Metal	
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221480)	
• Black	3SU1050-1HB10-0AA0
	3SU1050-1HU10-0AA0
• Yellow	3SU1050-1HB30-0AA0

4.3.7 Illuminated mushroom pushbuttons

Illuminated mushroom pushbuttons are used to actuate contact modules and can also function as display devices by means of an LED module. Their large, easily accessible button surface makes them easy to operate with the whole palm of the hand. By pressing or pulling these buttons, it is possible to generate up to 3 signals with just a single device.

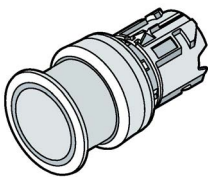
They are available with actuators in diameter 30 mm, 40 mm or 60 mm.

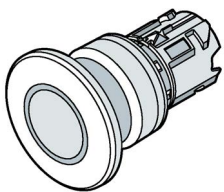
Illuminated pushbuttons are available in different variants according to the following features:

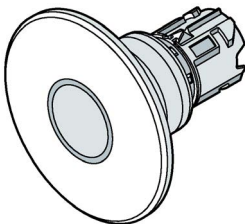
- Collar and front ring material
- Color of actuators
- Switching functions: latching / momentary contact
- Switch positions: 2 (all illuminated mushroom pushbuttons) or 3 positions (only illuminated mushroom pushbuttons in diameter 40 mm)
- Illumination

For further information, refer to Chapter "Mounting (Page 97)".

Overview of illuminated mushroom pushbuttons

		Diameter 30 mm	
		Latching (pull to unlatch)	Momentary contact
Collar / Front ring material	Switch positions	Article number	
Plastic / Plastic			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221478)			
• Red	2-position	3SU1001-1AA20-0AA0	3SU1001-1AD20-0AA0
• Yellow	2-position	3SU1001-1AA30-0AA0	3SU1001-1AD30-0AA0
• Green	2-position	3SU1001-1AA40-0AA0	3SU1001-1AD40-0AA0
• Blue	2-position	3SU1001-1AA50-0AA0	3SU1001-1AD50-0AA0
• White	2-position	3SU1001-1AA60-0AA0	3SU1001-1AD60-0AA0
• Clear	2-position	—	3SU1001-1AD70-0AA0
Plastic / Metal, matte			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226614)			
• Red	2-position	3SU1031-1AA20-0AA0	3SU1031-1AD20-0AA0
• Yellow	2-position	3SU1031-1AA30-0AA0	3SU1031-1AD30-0AA0
• Green	2-position	3SU1031-1AA40-0AA0	3SU1031-1AD40-0AA0
• Blue	2-position	3SU1031-1AA50-0AA0	3SU1031-1AD50-0AA0
• White	2-position	3SU1031-1AA60-0AA0	3SU1031-1AD60-0AA0
• Clear	2-position	—	3SU1031-1AD70-0AA0
Metal / Metal			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221477)			
• Red	2-position	3SU1051-1AA20-0AA0	3SU1051-1AD20-0AA0
• Yellow		3SU1051-1AA30-0AA0	3SU1051-1AD30-0AA0
• Green	2-position	3SU1051-1AA40-0AA0	3SU1051-1AD40-0AA0
• Blue	2-position	3SU1051-1AA50-0AA0	3SU1051-1AD50-0AA0
• White	2-position	3SU1051-1AA60-0AA0	3SU1051-1AD60-0AA0
• Clear	2-position	—	3SU1051-1AD70-0AA0

		Diameter 40 mm	
		Latching (pull to unlatch)	Momentary contact
Collar / Front ring material	Switch positions	Article number	
Plastic / Plastic			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221478)			
• Red	2-position	3SU1001-1BA20-0AA0	3SU1001-1BD20-0AA0
• Yellow	2-position	3SU1001-1BA30-0AA0	3SU1001-1BD30-0AA0
• Green	2-position	3SU1001-1BA40-0AA0	3SU1001-1BD40-0AA0
• Blue	2-position	3SU1001-1BA50-0AA0	3SU1001-1BD50-0AA0
• White	2-position	3SU1001-1BA60-0AA0	3SU1001-1BD60-0AA0
• Clear	2-position	—	3SU1001-1BD70-0AA0
Plastic / Metal, matte			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226614)			
• Red	2-position	3SU1031-1BA20-0AA0	3SU1031-1BD20-0AA0
• Yellow	2-position	3SU1031-1BA30-0AA0	3SU1031-1BD30-0AA0
• Green	2-position	3SU1031-1BA40-0AA0	3SU1031-1BD40-0AA0
• Blue	2-position	3SU1031-1BA50-0AA0	3SU1031-1BD50-0AA0
• White	2-position	3SU1031-1BA60-0AA0	3SU1001-1BD60-0AA0
• Clear	2-position	—	3SU1031-1BD70-0AA0
Metal / Metal			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221477)			
• Red	2-position	3SU1051-1BA20-0AA0	3SU1051-1BD20-0AA0
	3-position	3SU1051-1EA20-0AA0	3SU1051-1ED20-0AA0
• Yellow		3SU1051-1BA30-0AA0	3SU1051-1BD30-0AA0
• Green	2-position	3SU1051-1BA40-0AA0	3SU1051-1BD40-0AA0
	3-position	3SU1051-1EA40-0AA0	—
• Blue	2-position	3SU1051-1BA50-0AA0	3SU1051-1BD50-0AA0
• White	2-position	3SU1051-1BA60-0AA0	3SU1051-1BD60-0AA0
	3-position	—	3SU1051-1ED60-0AA0
• Clear	2-position	—	3SU1051-1BD70-0AA0

		Diameter 60 mm	
		Latching (pull to unlatch)	Momentary contact
Collar / Front ring material	Switch positions	Article number	
Plastic / Plastic			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221478)			
• Black	2-position	3SU1001-1CA10-0AA0	3SU1001-1CD10-0AA0
• Red	2-position	3SU1001-1CA20-0AA0	3SU1001-1CD20-0AA0
• Yellow	2-position	—	3SU1001-1CD30-0AA0
• Green	2-position	—	3SU1001-1CD40-0AA0
Plastic / Metal, matte			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226614)			
• Black	2-position	3SU1031-1CA10-0AA0	3SU1031-1CD10-0AA0
• Red	2-position	3SU1031-1CA20-0AA0	3SU1031-1CD20-0AA0
• Yellow	2-position	—	3SU1031-1CD30-0AA0
• Green	2-position	—	3SU1031-1CD40-0AA0
Metal / Metal			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221477)			
• Black	2-position	3SU1051-1CA10-0AA0	3SU1051-1CD10-0AA0
• Red	2-position	3SU1051-1CA20-0AA0	3SU1051-1CD20-0AA0
• Yellow	2-position	—	3SU1051-1CD30-0AA0
• Green	2-position	—	3SU1051-1CD40-0AA0

4.3.8 EMERGENCY STOP mushroom pushbuttons

EMERGENCY STOP mushroom pushbuttons are devices for actuating contact modules, and they are used in conjunction with a safety relay to bring a machine / plant to a safe state.

The EMERGENCY STOP mushroom pushbuttons are equipped with tamper protection (trigger action). The EMERGENCY STOP mushroom pushbutton does not latch without generating an EMERGENCY STOP signal. The EMERGENCY STOP signal is maintained until the EMERGENCY STOP device is reset (unlatched).

All SIRIUS ACT EMERGENCY STOP mushroom pushbuttons comply with DIN EN ISO 13850.

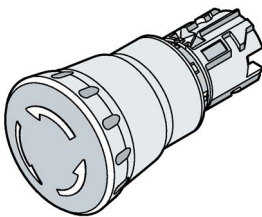
These pushbuttons are operated by pressure applied by the whole palm of the hand. EMERGENCY STOP mushroom pushbuttons are available with actuators in diameter 30 mm, 40 mm or 60 mm.

EMERGENCY STOP mushroom pushbuttons are available in different variants according to the following features:

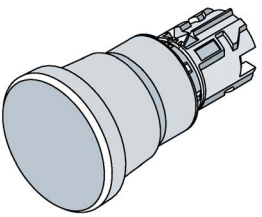
- Collar and front ring material
- Switching function: latching
- Illumination
- Rotate to unlatch
- Pull to unlatch
- Key-operated release (tamper-proof)

For further information refer to Chapter "Installation (Page 97)". Please also note the information (on equipping) in Chapter "3SU14 contact modules and LED modules (Page 147)".

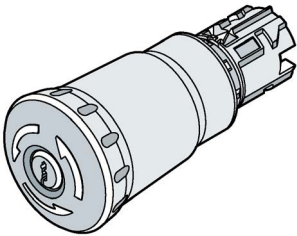
Overview of EMERGENCY STOP mushroom pushbuttons, rotate-to-unlatch type

	Diameter 30 mm	Diameter 40 mm	Diameter 60 mm
Typical diagram			
Collar / Front ring material	Article number		
Plastic / Plastic			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221479)			
• Red	3SU1000-1GB20-0AA0	3SU1000-1HB20-0AA0	3SU1000-1JB20-0AA0
Metal / Metal			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221480)			
• Red	3SU1050-1GB20-0AA0	3SU1050-1HB20-0AA0	3SU1050-1JB20-0AA0

Overview of EMERGENCY STOP mushroom pushbuttons, pull-to-unlatch type

 Typical diagram	Diameter 40 mm
Collar / Front ring material	Article number
Plastic / Plastic	
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221479)	
• Red	3SU1000-1HA20-0AA0
Metal / Metal	
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221480)	
• Red	3SU1050-1HA20-0AA0

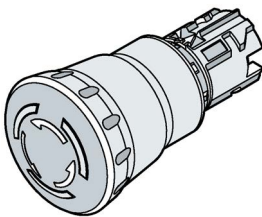
Overview of EMERGENCY STOP mushroom pushbuttons, key-operated release (key-operated switch)

 Typical diagram		Diameter 40 mm
Collar / Front ring material	Version	Article number
Plastic / Plastic		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221479)		
Red	RONIS, SB30	3SU1000-1HF20-0AA0
	RONIS, 455	3SU1000-1HG20-0AA0
	CES, SSG10	3SU1000-1HR20-0AA0
	CES, SSP9	3SU1000-1HS20-0AA0
	CES, SMS1	3SU1000-1HT20-0AA0
	BKS, S1	3SU1000-1HK20-0AA0
	BKS, E7 ¹⁾	3SU1000-1HM20-0AA0
	BKS, E9 ¹⁾	3SU1000-1HN20-0AA0
	O.M.R 73037, red	3SU1000-1HQ20-0AA0
Metal / Metal		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221480)		
Red	RONIS, SB30	3SU1050-1HF20-0AA0
	RONIS, 455	3SU1050-1HG20-0AA0
	RONIS, 421	3SU1050-1HH20-0AA0
	CES, SSG10	3SU1050-1HR20-0AA0
	CES, SSP9	3SU1050-1HS20-0AA0
	CES, VL5	3SU1050-1HU20-0AA0
	CES, VL1	3SU1050-1HV20-0AA0
	BKS, S1	3SU1050-1HK20-0AA0
	BKS, E7 ¹⁾	3SU1050-1HM20-0AA0
	BKS, E9 ¹⁾	3SU1050-1HN20-0AA0
	O.M.R 73037, red	3SU1050-1HQ20-0AA0
Black	IKON, 360012K1	3SU1050-1HX20-0AA0
		3SU1050-1HU10-0AA0

¹⁾ Key not included in the scope of supply

For further information about keys, please refer to paragraph "Special locks for key-operated switches" in Chapter "Key-operated switches 22.5" (Page 75).

Overview of illuminated EMERGENCY STOP mushroom pushbuttons

	Diameter 30 mm	Diameter 40 mm	Diameter 60 mm
Typical diagram			
Collar / Front ring material	Article number		
Plastic / Plastic			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221479)			
• Red	3SU1001-1GB20-0AA0	3SU1001-1HB20-0AA0	3SU1001-1JB20-0AA0
Metal / Metal			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221480)			
• Red	3SU1051-1GB20-0AA0	3SU1051-1HB20-0AA0	3SU1051-1JB20-0AA0

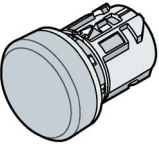
4.3.9 22.5 mm indicator lights

Indicator lights function as indicators and signaling devices. They are equipped with a smooth-surfaced lens that cannot be replaced by the user.

Indicator lights are available in different variants according to the following features:

- Collar and front ring material
- Color of the lenses

For further information, refer to Chapter "Mounting (Page 97)".

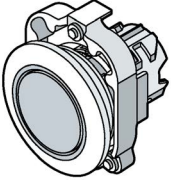
 Typical diagram	Indicator lights
Collar / Front ring material	Article number
Plastic / Plastic Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221491)	
• Amber	3SU1001-6AA00-0AA0
• Red	3SU1001-6AA20-0AA0
• Yellow	3SU1001-6AA30-0AA0
• Green	3SU1001-6AA40-0AA0
• Blue	3SU1001-6AA50-0AA0
• White	3SU1001-6AA60-0AA0
• Clear	3SU1001-6AA70-0AA0
Metal / Metal Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221492)	
• Amber	3SU1051-6AA00-0AA0
• Red	3SU1051-6AA20-0AA0
• Yellow	3SU1051-6AA30-0AA0
• Green	3SU1051-6AA40-0AA0
• Blue	3SU1051-6AA50-0AA0
• White	3SU1051-6AA60-0AA0
• Clear	3SU1051-6AA70-0AA0

4.3.10 30.5 mm indicator lights

Indicator lights in the 30.5 mm diameter size are intended for flat mounting. These are pushbuttons in which the button has been locked (fixed button). The series is available in the metal matte version. The 30.5 mm indicator lights are suitable for installation on front plates with a maximum thickness of 4 mm.

The metal holder (3SU1550-0AA10-0AA0) must be used when mounting.

In addition, the adapter (3SU1950-0KJ80-0AA0) for actuators and indicators for flat mounting must be mounted between the front plate and the holder. The adapter is included in the scope of delivery, but can also be ordered as a separate item.

 Typical diagram	Indicator lights	
	Collar / Front ring material	Article number
	Metal / Metal, matte Siemens Industry Mall http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226911	
	• Red	3SU1061-0JD20-0AA0
	• Yellow	3SU1061-0JD30-0AA0
	• Green	3SU1061-0JD30-0AA0
	• Blue	3SU1061-0JD50-0AA0
	• Clear	3SU1061-0JD70-0AA0

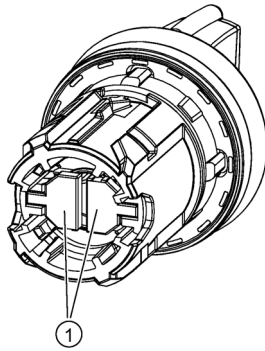
4.3.11 22.5 mm selector switches

The selector switch is an actuator with 2 or 3 switch positions. Thanks to the rotary actuation, up to 3 contact modules can be operated with momentary contact or latching operation. The fiber-optic conductor integrated into the actuator can be illuminated using an LED module.

Selector switches are available in different variants according to the following features:

- Actuators (short / long selector or rotary knob)
- Switch positions
- Collar and front ring material
- Color of actuators
- Switching functions: latching / momentary contact
- Illumination

In the delivery state, selector switches are equipped with two pressure plates ①.



Typical diagram

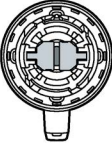
Each pressure plate can be individually removed and reinstalled. A pressure plate always actuates the contact modules mounted on the holder at position 3/6 (center position), and the corresponding outer contact modules at position 1/4 or 2/5.

If a pressure plate is not used, only the corresponding outer contact at position 1/4 or 2/5 is actuated.

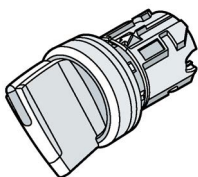
Note about installation of LED modules: The pressure plates must be removed before the LED module is installed.

For further information, refer to Chapter "Installation (Page 97)".

The table shows the contact module / LED module actuation with differently mounted pressure plates using the example of a selector switch with 3 switch positions and equipped contact modules and LED modules.

	Switch position left			Switch position right		
						
Pressure plate ①	Contact module Position 1/4	Contact / LED module Position 3/6	Contact module Position 2/5	Contact module Position 1/4	Contact / LED module Position 3/6	Contact module Position 2/5
2 pressure plates mounted 						
1 pressure plate mounted on the right 						
1 pressure plate mounted on the left 						
No pressure plate mounted 						

Selector switches with short selector

	2 switch positions	
	Latching, 90° (10:30/1:30 o'clock) 	Momentary contact 45° (10:30/12 o'clock), reset from center to left 
Typical diagram		
Collar / Front ring material	Article number	
Plastic / Plastic		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221483)		
• Red	3SU1002-2BF20-0AA0	3SU1002-2BC20-0AA0
• Yellow	3SU1002-2BF30-0AA0	3SU1002-2BC30-0AA0
• Green	3SU1002-2BF40-0AA0	3SU1002-2BC40-0AA0
• Blue	3SU1002-2BF50-0AA0	3SU1002-2BC50-0AA0
• Black / White	3SU1002-2BF60-0AA0	3SU1002-2BC60-0AA0
Plastic / Metal, matte		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226611)		
• Red	3SU1032-2BF20-0AA0	3SU1032-2BC20-0AA0
• Yellow	3SU1032-2BF30-0AA0	3SU1032-2BC30-0AA0
• Green	3SU1032-2BF40-0AA0	3SU1032-2BC40-0AA0
• Blue	3SU1032-2BF50-0AA0	3SU1032-2BC50-0AA0
• Black / White	3SU1032-2BF60-0AA0	3SU1032-2BC60-0AA0
Metal / Metal		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221484)		
• Red	3SU1052-2BF20-0AA0	3SU1052-2BC20-0AA0
• Yellow	---	3SU1052-2BC30-0AA0
• Green	3SU1052-2BF40-0AA0	3SU1052-2BC40-0AA0
• Blue	---	3SU1052-2BC50-0AA0
• Black / White	3SU1052-2BF60-0AA0	3SU1052-2BC60-0AA0

	3 switch positions
Collar / Front ring material	Article number
Plastic / Plastic	
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221483)	
• Red	3SU1002-2Bx20-0AA0
• Yellow	3SU1002-2Bx30-0AA0
• Green	3SU1002-2Bx40-0AA0
• Blue	3SU1002-2Bx50-0AA0
• Black / White	3SU1002-2Bx60-0AA0
Plastic / Metal, matte	
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226611)	
• Red	3SU1032-2Bx20-0AA0
• Yellow	3SU1032-2Bx30-0AA0
• Green	3SU1032-2Bx40-0AA0
• Blue	3SU1032-2Bx50-0AA0
• Black / White	3SU1032-2Bx60-0AA0
Metal / Metal	
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221484)	
• Red	3SU1052-2Bx20-0AA0
• Yellow	3SU1052-2Bx30-0AA0
• Green	3SU1052-2Bx40-0AA0
• Blue	3SU1052-2Bx50-0AA0
• Black / White	3SU1052-2Bx60-0AA0

x: L = selector switch latching, 2x45°
(10:30/12/1:30 o'clock)



x: M = selector switch momentary contact, 2x45°
(10:30/12/1:30 o'clock), reset from left + right



x: N = selector switch latching/momentary contact, 2x45°
(10:30/12/1:30 o'clock), reset from right, latching to the left



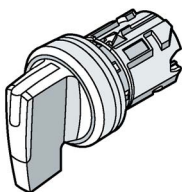
x: P = selector switch momentary contact/latching, 2x45°
(10:30/12/1:30 o'clock), reset from left, latching to the right



Note

Not all combinations listed in the tables are available. In the case of special versions, please consult Technical Assistance, or initiate a PI1000 request.

Selector switches with long selector

	2 switch positions	
Typical diagram	Latching, 90° (10:30/1:30 o'clock) 	Momentary contact 45° (10:30/12 o'clock), reset from center to left 
Collar / Front ring material	Article number	
Plastic / Plastic		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221483)		
• Red	3SU1002-2CF20-0AA0	3SU1002-2CC20-0AA0
• Yellow	3SU1002-2CF30-0AA0	3SU1002-2CC30-0AA0
• Green	3SU1002-2CF40-0AA0	3SU1002-2CC40-0AA0
• Blue	3SU1002-2CF50-0AA0	3SU1002-2CC50-0AA0
• Black / White	3SU1002-2CF60-0AA0	3SU1002-2CC60-0AA0
Plastic / Metal, matte		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226611)		
• Red	3SU1032-2CF20-0AA0	3SU1032-2CC20-0AA0
• Yellow	3SU1032-2CF30-0AA0	3SU1032-2CC30-0AA0
• Green	3SU1032-2CF40-0AA0	3SU1032-2CC40-0AA0
• Blue	3SU1032-2CF50-0AA0	3SU1032-2CC50-0AA0
• Black / White	3SU1032-2CF60-0AA0	3SU1032-2CC60-0AA0
Metal / Metal		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221484)		
• Red	3SU1052-2CF20-0AA0	3SU1052-2CC20-0AA0
• Yellow	3SU1052-2CF30-0AA0	3SU1052-2CC30-0AA0
• Green	3SU1052-2CF40-0AA0	3SU1052-2CC40-0AA0
• Blue	3SU1052-2CF50-0AA0	3SU1052-2CC50-0AA0
• Black / White	3SU1052-2CF60-0AA0	3SU1052-2CC60-0AA0

	3 switch positions
Collar / Front ring material	Article number
Metal / Metal	
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221484)	
• Red	3SU1052-2Cx20-0AA0
• Yellow	3SU1052-2Cx30-0AA0
• Green	3SU1052-2Cx40-0AA0
• Blue	3SU1052-2Cx50-0AA0
• Black / White	3SU1052-2Cx60-0AA0

x: L = selector switch latching, 2x45° (10:30/12/1:30 o'clock)



x: M = selector switch momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from left + right



x: N = selector switch latching/momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from right, latching to the left



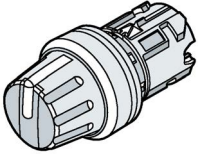
x: P = selector switch momentary contact/latching, 2x45° (10:30/12/1:30 o'clock), reset from left, latching to the right



Note

Not all combinations listed in the tables are available. In the case of special versions, please consult Technical Assistance, or initiate a PI1000 request.

Selector switches with rotary knob

 Typical diagram	2 switch positions Latching, 90° (10:30/1:30 o'clock) 
Collar / Front ring material	Article number
Plastic / Plastic	
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221483)	
• Red	3SU1002-2AF20-0AA0
• Black / White	3SU1002-2AF60-0AA0
Plastic / Metal, matte	
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226611)	
• Red	3SU1002-2AF20-0AA0
• Black / White	3SU1032-2AF60-0AA0
Metal / Metal	
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221484)	
• Red	3SU1002-2AF20-0AA0
• Black / White	3SU1052-2AF60-0AA0

4.3.12 30.5 mm selector switches

The selector switch is an actuator with 2 or 3 switch positions. Thanks to the rotary actuation, up to 3 contact modules can be operated with momentary contact or latching operation. The fiber-optic conductor integrated into the actuator can be illuminated using an LED module.

Selector switches in the 30.5 mm size are intended for flat mounting. The 30.5 mm selector switches are suitable for installation on front plates with a maximum thickness of 4 mm. The series is available in metal and metal matte versions.

Selector switches are available in different variants according to the following features:

- Actuators (short / long selector)
- Switch positions
- Collar and front ring material
- Color of actuators
- Switching functions: latching / momentary contact
- Illumination

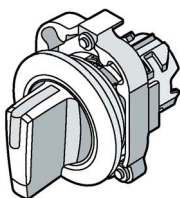
Note about installation:

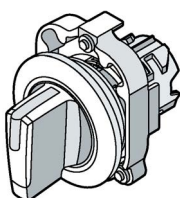
The metal holder (3SU1550-0AA10-0AA0) must be used when mounting.

In addition, the adapter (3SU1950-0KJ80-0AA0) for actuators and indicators for flat mounting must be mounted between the front plate and the holder. The adapter is included in the scope of delivery, but can also be ordered as a separate item.

The pressure plates (standard scope of supply) must be removed before the LED module is installed.

Selector switches with short selector

	2 switch positions	
	Latching, 90° (10:30/1:30 o'clock) 	Momentary contact 45° (10:30/12 o'clock), reset from center to left 
Typical diagram		
Collar / Front ring material	Article number	
Metal / Metal, matte		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226912)		
• Red	3SU1062-2DF20-0AA0	3SU1062-2DC20-0AA0
• Green	3SU1062-2DF40-0AA0	3SU1062-2DC40-0AA0
• Black / White	3SU1062-2DF60-0AA0	3SU1062-2DC60-0AA0

 Typical diagram	3 switch positions
Collar / Front ring material	Article number
Metal / Metal, matte	
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226912)	
• Red	3SU1062-2Dx20-0AA0
• Green	3SU1062-2Dx40-0AA0
• Black / White	3SU1062-2Dx60-0AA0

x: L = selector switch latching, 2x45° (10:30/12/1:30 o'clock)

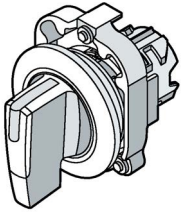


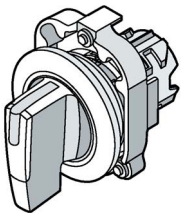
x: M = selector switch momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from left + right

**Note**

Not all combinations listed in the tables are available. In the case of special versions, please consult Technical Assistance, or initiate a PI1000 request.

Selector switches with long selector

 Typical diagram	2 switch positions	
	Latching, 90° (10:30/1:30 o'clock) 	Momentary contact 45° (10:30/12 o'clock), reset from center to left 
Collar / Front ring material	Article number	
Metal / Metal, matte Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226912)		
• Red	3SU1062-2EF20-0AA0	3SU1062-2EC20-0AA0
• Green	3SU1062-2EF40-0AA0	3SU1062-2EC40-0AA0
• Black / White	3SU1062-2EF60-0AA0	3SU1062-2EC60-0AA0

 Typical diagram	3 switch positions
Collar / Front ring material	Article number
Metal / Metal, matte Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226912)	
• Red	3SU1062-2Ex20-0AA0
• Green	3SU1062-2Ex40-0AA0
• Black / White	3SU1062-2Ex60-0AA0

x: L = selector switch latching, 2x45° (10:30/12/1:30 o'clock)



x: M = selector switch momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from left + right

**Note**

Not all combinations listed in the tables are available. In the case of special versions, please consult Technical Assistance, or initiate a PI1000 request.

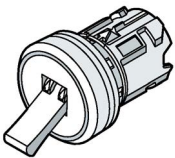
4.3.13 Toggle switches

Toggle switches are used to actuate contact modules and allow short-time contact or permanent closing / opening of a contact element. They are operated by a vertical linear movement using several fingers.

Toggle switches are available in different variants according to the following features:

- Collar and front ring material
- Switching function: momentary contact and latching

You will find additional information in Chapters "Mounting (Page 97)" and "Accessories (Page 293)"

 Typical diagram	Toggle switch 2 switch positions	
Collar / Front ring material	Article number	
	Latching	Momentary contact
Plastic / Plastic		
	3SU1000-3EA10-0AA0	3SU1000-3EC10-0AA0
Plastic / Metal, matte		
	3SU1030-3EA10-0AA0	3SU1030-3EC10-0AA0
Metal / Metal		
	3SU1050-3EA10-0AA0	3SU1050-3EC10-0AA0

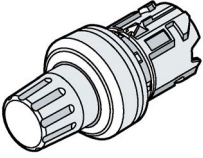
4.3.14 STOP buttons

STOP buttons are used to actuate contact modules and allow short-time contact or permanent closing / opening of a contact element. 2 functionalities (momentary contact, latching) are combined in the STOP buttons. The STOP button is operated by pressing and rotating the actuating element with several fingers. A contact element is briefly closed / opened by pressing the STOP button. After pressing, locking is effected by turning the actuating element to the right. This effects permanent closing / opening of a contact element. The STOP button is unlocked again by turning the actuating element to the left.

The STOP buttons are available in different variants according to the following features:

- Colors

You will find additional information in Chapters "Mounting (Page 97)" and "Accessories (Page 293)"

 Typical diagram	STOP buttons
Collar / Front ring material	Article number
Plastic / Plastic	
• Black	3SU1000-0HC10-0AA0
• Red	3SU1000-0HC20-0AA0

4.3.15 22.5 mm key-operated switches

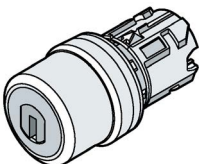
Key-operated switches are equipped with a lock for safety reasons. Only an authorized group of persons who have access to the relevant key can perform a switching operation (in this case, actuation of contact modules). Up to 3 switch positions can be temporarily or permanently selected using a key-operated switch.

Key-operated switches are available in different variants according to the following features:

- Key-operated switch manufacturer
- Key removal positions
- Switch positions
- Collar and front ring material
- Switching functions: latching / momentary contact

For further information, refer to Chapter "Mounting (Page 97)".

Key-operated switches 2 switch positions (0 - I)

 Typical diagram	Version	Article number
Momentary contact		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221489)		
Momentary contact 45° (10:30/12 o'clock), reset from center to left 	Ronis, SB30	3SU10x0-4BCy1-0AA0
	Ronis, 455	3SU10x0-4CCy1-0AA0
	O.M.R. 73037, red	3SU10x0-4FCy1-0AA0
	O.M.R. 73038, light blue	3SU10x0-4GCy1-0AA0
	O.M.R. 73034, black	3SU10x0-4HCy1-0AA0
	O.M.R. 73033, yellow	3SU10x0-4JCy1-0AA0
	CES, SSG10	3SU10x0-5BCy1-0AA0
	CES, LSG1	3SU10x0-5HCy1-0AA0
	BKS, S1	3SU10x0-5PCy1-0AA0
	IKON, 360012K1	3SU10x0-5XCy1-0AA0

Latching		
Siemens Industry Mall (https://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221489)		
Latching, 90° (10:30/1:30 o'clock) 	Ronis, SB30	3SU10x0-4BFy1-0AA0
	Ronis, 455	3SU10x0-4CFy1-0AA0
	Ronis, 421	3SU10x0-4DFy1-0AA0
	O.M.R. 73037, red	3SU10x0-4FFy1-0AA0
	O.M.R. 73038, light blue	3SU10x0-4GFy1-0AA0
	O.M.R. 73034, black	3SU10x0-4HFy1-0AA0
	O.M.R. 73033, yellow	3SU10x0-4JFy1-0AA0
	CES, SSG10	3SU10x0-5BFy1-0AA0
	CES, LSG1	3SU10x0-5HFy1-0AA0
	CES, SSG10 with key monitoring	3SU10x0-5JFy1-0AA0
	BKS, S1	3SU10x0-5PFy1-0AA0
	BKS, E1 ¹⁾	3SU10x0-5QFy1-0AA0
	BKS, E2 ¹⁾	3SU10x0-5RFy1-0AA0
	BKS, E7 ¹⁾	3SU10x0-5SFy1-0AA0
	BKS, E9 ¹⁾	3SU10x0-5TFy1-0AA0
	IKON, 360012K1	3SU10x0-5XFy1-0AA0

x: 0 = Material plastic

x: 3 = Material metal matte

x: 5 = Material metal

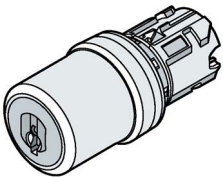
y: 0 = Key can be removed in position O

y: 1 = Key can be removed in any position

y: 2 = Key can be removed in position I

¹⁾ Key not included in the scope of supply

Key-operated switches 3 switch positions (I - 0 - II)

 Typical diagram	Version	Article number
Momentary contact Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221489)		
Momentary contact 2x45° (10:30/12/1:30 o'clock), 3 switch positions, momentary contact, reset from left + right 	Ronis, SB30	3SU10x0-4BMy1-0AA0
	O.M.R. 73037, red	3SU10x0-4FMy1-0AA0
	O.M.R. 73034, black	3SU10x0-4HMy1-0AA0
	CES, SSG10	3SU10x0-5BMy1-0AA0
	BKS, S1	3SU10x0-5PMY1-0AA0
	IKON, 360012K1	3SU10x0-5XMy1-0AA0
Latching Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221489)		
Latching, 2x45° (10:30/12/1:30 o'clock) 	Ronis, SB30	3SU10x0-4BLy1-0AA0
	Ronis, 455	3SU10x0-4CLy1-0AA0
	O.M.R. 73037, red	3SU10x0-4FLy1-0AA0
	O.M.R. 73038, light blue	3SU10x0-4GLy1-0AA0
	O.M.R. 73034, black	3SU10x0-4HLY1-0AA0
	O.M.R. 73033, yellow	3SU10x0-4JLy1-0AA0
	CES, SSG10	3SU10x0-5BLy1-0AA0
	CES, SSG10 with key monitoring	3SU10x0-5JLy1-0AA0
	BKS, S1	3SU10x0-5PLy1-0AA0
	BKS, E2 ¹⁾	3SU10x0-5RLy1-0AA0
	BKS, E9 ¹⁾	3SU10x0-5TLy1-0AA0
Momentary contact / latching Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221489)		
Momentary contact / latching, 2x45° (10:30/12/1:30 o'clock), reset from left, latching to the right 	Ronis, SB30	3SU10x0-4BPY1-0AA0
	CES, SSG10	3SU10x0-5BPY1-0AA0
	BKS, S1	3SU10x0-5PPY1-0AA0

Momentary contact / latching		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221489)		
Latching / momentary contact, 2x45° (10:30/12/1:30 o'clock), reset from right, latching to the left 	Ronis, SB30	3SU10x0-4BNy1-0AA0
	O.M.R. 73038, light blue	3SU10x0-4GNy1-0AA0
	O.M.R. 73034, black	3SU10x0-4HNY1-0AA0
	CES, SSG10	3SU10x0-5BNy1-0AA0
	BKS, S1	3SU10x0-5PNy1-0AA0
	IKON, 360012K1	3SU10x0-5XNy1-0AA0

x: 0 = Material plastic

x: 3 = Material metal matte

x: 5 = Material metal

y: 0 = Key can be removed in position O,

y: 1 = Key can be removed in any position

y: 2 = Key can be removed in position I

y: 3 = Key can be removed in position II (right, with 3 positions only)

y: 4 = Key can be removed in positions I + II (left, right, with 3 positions only)

y: 5 = Key can be removed in positions O + I (center, left, with 3 positions only)

¹⁾ Key not included in the scope of supply

Note

Not all combinations listed in the tables are available. In the case of special versions, please consult Technical Assistance, or initiate a PI1000 request.

Special locks for key-operated switches

The plastic and metal key-operated switches of type Ronis, BKS, CES and IKON can be optionally ordered with additional locks.

Please note:

- For applications in which access security is important and several lock numbers are used, we recommend the use of BKS or CES key-operated switches.
- Special locks for **VW (E1, E2, E7, E9)** are supplied without keys. All other key-operated switches are supplied with 2 keys.
- With Ronis, the special locks SB31, 421 and 455 are possible.

Master and master-pass key systems

The following key systems can be supplied with BKS, CES or IKON key-operated switches:

- Central lock systems
- Master key systems
- Central master key systems
- Master-pass key systems

A security certificate is required when ordering key systems.

4.3.16 30.5 mm key-operated switches

Key-operated switches are equipped with a lock for safety reasons. Only an authorized group of persons who have access to the relevant key can perform a switching operation (in this case, actuation of contact modules). Up to 3 switch positions can be temporarily or permanently selected using a key-operated switch. The 30.5 mm key-operated switches are suitable for installation on front plates with a maximum thickness of 4 mm.

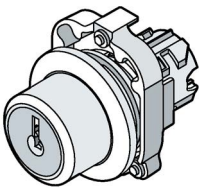
The metal holder (3SU1550-0AA10-0AA0) must be used when mounting.

In addition, the adapter (3SU1950-0KJ80-0AA0) for actuators and indicators for flat mounting must be mounted between the front plate and the holder. The adapter included in the scope of delivery, but can also be ordered as a separate item.

Key-operated switches are available in different variants according to the following features:

- Switch positions
- Key removal positions
- Color of actuators

30.5 mm diameter key-operated switches

	Version	Article number
 Typical diagram	Latching	
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226917)	
	Ronis, SB30	 3SU1060-4LFy1-0AA0 (2 switch positions, latching, 90° (10:30/1:30 o'clock))
		 3SU1060-4LCy1-0AA0 (2 switch positions, momentary contact, 45° (10:30/12 o'clock), reset from center to left)
		 3SU1060-4LLy1-0AA0 (3 switch positions, latching, 2 x 45°, (10:30/12/1:30 o'clock))

y: 0 = Key can be removed in position O,

y: 1 = Key can be removed in any position

y: 2 = Key can be removed in position I

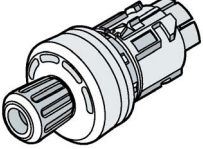
4.3.17 ID key-operated switches

The ID key-operated switch is an electronic key-operated switch and has four switch positions that are selected by keys with different codes. Using the four ID keys with different codes, it is possible to select 1 to 4 positions. The ID keys are color-coded (yellow, blue, red, green, white) so that they can be clearly differentiated at a glance. The ID key-operated switch is intended primarily to replace the mechanical locks on different machines.

You will find additional information in Chapters "Installation (Page 97)" and "Application examples ID key-operated switches (Page 448)".

For the ID key-operated switches, two different versions of the electronic modules for ID key-operated switches without / with IO-Link communications interface are available. You will find information on the electronic modules in Chapters: 3SU14 contact modules and LED modules "Electronic module for ID key-operated switches (Page 163)", "Technical data (Page 335)".

You can find information on using the ID key-operated switch with IO-Link in Chapter "IO-Link (Page 243)".

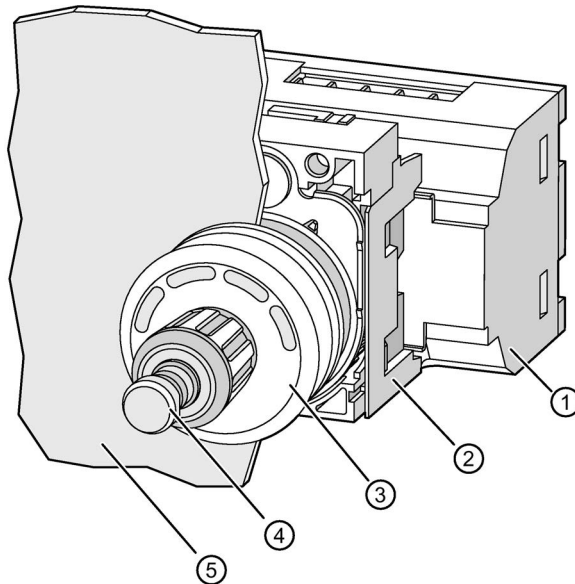
	Collar / Front ring material	Article number
	Plastic / Plastic	
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221495)	
	• Black	3SU1000-4WS10-0AA0
	Plastic / Metal, matte	
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226617)	
	• Black	3SU1030-4WS10-0AA0

You can find the appropriate ID keys in Chapter ID keys (Page 323).

4.3.17.1 Design of a command point with ID key-operated switch

Command point with ID key-operated switch on front plate

A modular command point with ID key-operated switch on a front plate consists of the following elements:



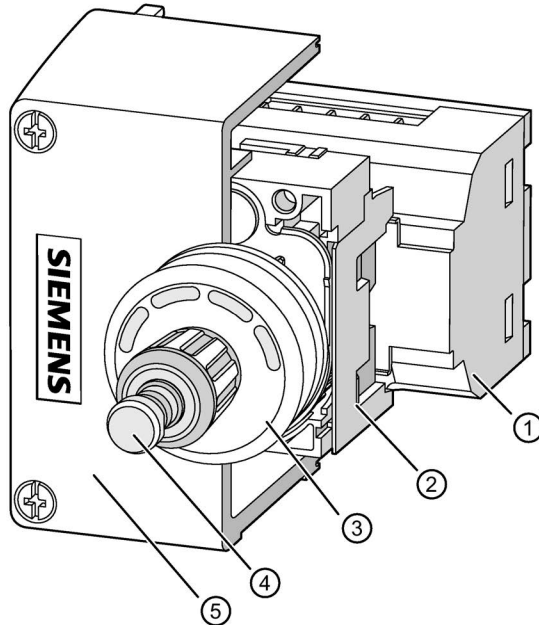
- ① Electronic module for ID key-operated switches 3SU1400-1Gx10-1AA0 (Page 163)
- ② 3-slot holder 3SU1500-0AA10-0AA0 (Page 38) for securing behind the control panel
- ③ ID key-operated switch 3SU10x0-4WS10-0AA0 (Page 80) in front of the control panel
- ④ ID key 3SU1900-0Fxy0-0AA0 (Page 323)
- ⑤ Front plate

Note

The minimum clearance between two command points when mounted on the front plate is 10 cm in all directions.

Command point with ID key-operated switch in an enclosure

A modular command point with ID key-operated switch in an enclosure consists of the following elements:



- ① Electronic module for ID key-operated switches 3SU1400-1Gx10-1AA0 (Page 163)
- ② 3-slot holder 3SU1500-0AA10-0AA0 (Page 38) for securing in the enclosure
- ③ ID key-operated switch 3SU10x0-4WS10-0AA0 (Page 80)
- ④ ID key 3SU1900-0Fxy0-0AA0 (Page 323)
- ⑤ Enclosure with raised cover, command point in center 3SU18x1-1AA00-1AA1 (Page 178)

4.3.17.2 Operating principle of the command point with ID key-operated switch

The ID key-operated switch is used primarily to set the current key position by rotation. To set the current key position, the rotary knob of the ID key-operated switch is turned clockwise or counter-clockwise. There is an opening in the rotary knob into which the ID key is inserted. Actuation is only possible if a valid ID key has been recognized, and the authorization level of the relevant ID key corresponds to, or is higher than, the current key position. The rotary knob can be turned clockwise and counter-clockwise through 360° in 45-degree steps.

The switch position delay is started and the temporary key position is incremented by turning clockwise.

The temporary key position is indicated by the illuminated surfaces in the ID key-operated switch flashing green. During the switch position delay, the temporary key position can be changed by turning the knob clockwise or counter-clockwise. The switch position delay is restarted by turning the knob clockwise. During the switch position delay, the outputs are not yet affected by the temporary key position. After the delay has expired, the temporary key position is adopted as the current key position, and the outputs are switched in accordance with this position.

By turning counter-clockwise, the current key position is changed to 0, and the outputs are switched immediately in accordance with this position.

Note

In a configuration with electronic module for ID key-operated switches for IO-Link, the parameters can be set via IO-Link.

You will find additional information in Chapter "Configuring IO-Link (Page 243)".

Settings on the electronic module for ID key-operated switches

The electronic modules for ID key-operated switches have five digital outputs. Setting of outputs 0 to 3 depends on the current key position and the module settings. If a valid ID key has been recognized, output 4 is active; otherwise output 4 is inactive.

Table 4- 1 Individual method

Key position	Output			
	0	1	2	3
0	Inactive	Inactive	Inactive	Inactive
1	Active	Inactive	Inactive	Inactive
2	Inactive	Active	Inactive	Inactive
3	Inactive	Inactive	Active	Inactive
4	Inactive	Inactive	Inactive	Active

Table 4- 2 Addition method (incremental method)

Key position	Output			
	0	1	2	3
0	Inactive	Inactive	Inactive	Inactive
1	Active	Inactive	Inactive	Inactive
2	Active	Active	Inactive	Inactive
3	Active	Active	Active	Inactive
4	Active	Active	Active	Active

Note

The addition method (incremental method) can only be set on the electronic modules for ID key-operated switches for IO-Link.

Short-circuit protection

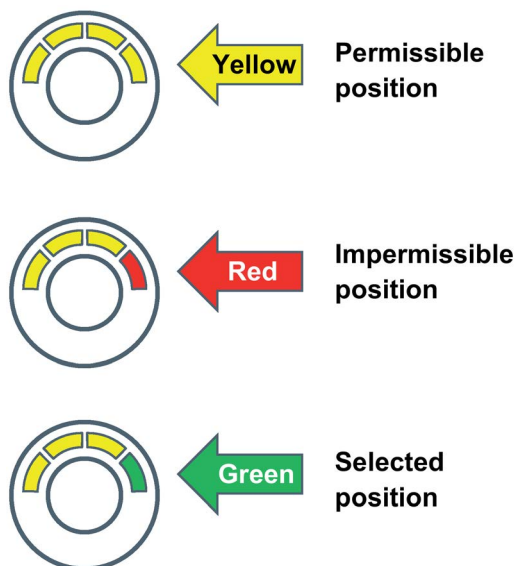
If a short-circuit occurs at one or more outputs, the occurrence of a fault event is sent and the fault flag is set. All outputs are deactivated for one second. Then the relevant outputs are re-activated to monitor whether the short-circuit is still active. This temporary state exists for approximately 0.1 seconds. If no short-circuit is determined during this period, the fault event is revoked, and the fault flag is deleted. However, if a short-circuit is detected during this time, all outputs are deactivated again, and the short-circuit device fault remains.

Function of the LEDs in the ID key-operated switch

In the enclosure of the ID key-operated switch are four illuminated surfaces that can assume the following states:

- Showing a green light: Indication of the current key position and the switched outputs.
- Flashing green: Indication of the temporary key position.
- Showing a yellow light: Indication of the associated authorization level (key position that can be reached by turning the rotary knob).
- Flashing yellow (all 4 illuminated surfaces): Indication for the individually codable ID key used that has not yet been configured.
- Showing a red light: Indicates that the relevant key position is higher than permissible for the relevant authorization level. (This key position cannot be reached by turning the rotary knob.) The indicator also shows a red light when there is no ID key plugged in.
- Flashing red (all 4 illuminated surfaces): When using a colored ID key with permanently encoded authorization level (ID group 1 to 4), this indicates when the parameter "Individually codable ID keys only" is enabled.
- Not illuminated: The electronic module is switched off.

Displayed colors



Selectable positions dependent on ID key using the adjustment method

In this case, "DS 131 Incremental switching mode" must be set to "disabled" on the electronic modules for ID key-operated switches for IO-Link.



Selectable positions dependent on ID key using the adjustment method

In this case, "DS 131 Incremental switching mode" must be set to "disabled" on the electronic modules for ID key-operated switches for IO-Link.

Key color	Output 4 (DQ.4) active	Outputs 0 and 4 (DQ.0 and DQ.4) active	Outputs 1 and 4 (DQ.1 and DQ.4) active	Outputs 2 and 4 (DQ.2 and DQ.4) active	Outputs 3 and 4 (DQ.3 and DQ.4) active
Green					
Yellow					
Red					
Blue					

Selectable positions dependent on ID key using the addition method (only for electronic modules for ID key-operated switches for IO-Link).

With this method, "DS 131 Incremental switching mode" must be set to "Unlocked" on the electronic modules for ID key-operated switches for IO-Link.



Selectable positions dependent on ID key using the addition method (only for electronic modules for ID key-operated switches for IO-Link).

With this method, "DS 131 Incremental switching mode" must be set to "Unlocked" on the electronic modules for ID key-operated switches for IO-Link.

Key color	Output 4 (DQ.4) active	Outputs 0, 4 (DQ.0 and DQ.4) active	Outputs 0, 1, 4 (DQ.0, DQ.1, DQ.4) active	Outputs 0, 1, 2, 4 (DQ.0, DQ.1, DQ.2, DQ.4) active	Outputs 0, 1, 2, 3, 4 (DQ.0, DQ.1, DQ.2, DQ.3, DQ.4) active
Green					
Yellow					
Red					
Blue					

You can find more information about data sets in Section "Electronic modules for ID key-operated switches (Page 163)" in Chapter "Process data and data sets" in the appendix.

4.3.18 Devices with inscription

4.3.18.1 22.5 mm pushbuttons with standard inscription

Pushbuttons with standard inscription are available in the design with flat button and flat front ring.

For further information refer to Chapters "22.5 mm pushbuttons (Page 42)" and "Mounting (Page 97)".

Overview of pushbuttons

Collar / Front ring material	Inscription	Article number
Plastic / Plastic		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221475)		
• Black	O	3SU1000-0AB10-0AD0
• Red	O	3SU1000-0AB20-0AD0
• Green	I	3SU1000-0AB40-0AC0
• Blue	R	3SU1000-0AB50-0AR0
• White	I	3SU1000-0AB60-0AC0
• Black	Auto (at 90° angle)	3SU1001-0AB10-0AQ0 ¹⁾
Plastic / Metal, matte		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226610)		
• Black	O	3SU1030-0AB10-0AD0
• Red	O	3SU1030-0AB20-0AD0
• Green	I	3SU1030-0AB40-0AC0
• Blue	R	3SU1030-0AB50-0AR0
• White	I	3SU1030-0AB60-0AC0
Metal / Metal		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221476)		
• Black	O	3SU1050-0AB10-0AD0
• Red	O	3SU1050-0AB20-0AD0
• Green	I	3SU1050-0AB40-0AC0
• Blue	R	3SU1050-0AB50-0AR0
• White	I	3SU1050-0AB60-0AC0

¹⁾ Pushbutton cannot be illuminated

4.3.18.2 Twin pushbuttons with standard inscription

Twin pushbuttons are used to actuate contact modules and can also function as display devices. Thanks to separate actuating surfaces, it is possible to switch up to 2 independent module positions separately using only one command point. The switching function of all versions of the twin pushbuttons is latching.

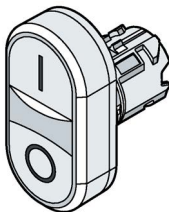
For further information refer to Chapters "Twin pushbuttons (Page 47)" and "Mounting (Page 97)".

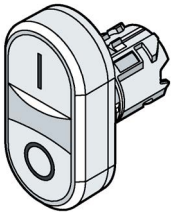
With standard installation (arrow on collar at the top), the upper button always has the first specified color and the lower button the second specified color. The same principle is used with the button heights. The first specified height refers to the top button, and the second specified height to the lower button.

Example: 3SU1051-3BB42-0AA0

Top button = green and flat

Lower button = red and raised

		Twin pushbuttons flat / flat	Twin pushbuttons flat / raised
Typical diagram			
Collar / Front ring material	Inscription	Article number	
Plastic / Plastic			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221485)			
• Black / Black	Symbol No. 5264 / 5265 (IEC 60417)	3SU1000-3AB11-0AQ0	---
• Green / Red	I / O	3SU1000-3AB42-0AK0	3SU1000-3BB42-0AK0
• White / Black	I / O	3SU1000-3AB61-0AK0	3SU1000-3BB61-0AK0
• White / White	- / +	3SU1000-3AB66-0AL0	---
	Arrows, horizontal	3SU1000-3AB66-0AM0	---
	Arrows, vertical	3SU1000-3AB66-0AN0	---
Plastic / Metal, matte			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226612)			
• Black / Black	Symbol No. 5264 / 5265 (IEC 60417)	3SU1030-3AB11-0AQ0	---
• Green / Red	I / O	3SU1030-3AB42-0AK0	3SU1030-3BB42-0AK0
• White / Black	I / O	3SU1030-3AB61-0AK0	3SU1030-3BB61-0AK0
• White / White	- / +	3SU1030-3AB66-0AL0	---
	Arrows, horizontal	3SU1030-3AB66-0AM0	---
	Arrows, vertical	3SU1030-3AB66-0AN0	---
Metal / Metal			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221486)			
• Black / Black	Symbol No. 5264 / 5265 (IEC 60417)	3SU1050-3AB11-0AQ0	---
• Green / Red	I / O	3SU1050-3AB42-0AK0	3SU1030-3BB42-0AK0
• White / Black	I / O	3SU1050-3AB61-0AK0	3SU1030-3BB61-0AK0
• White / White	- / +	3SU1050-3AB66-0AL0	---
	Arrows, horizontal	3SU1050-3AB66-0AM0	---
	Arrows, vertical	3SU1050-3AB66-0AN0	---

		Twin pushbuttons illuminated flat / flat	Twin pushbuttons illuminated flat / raised
Collar / Front ring material	Inscription	Article number	
Plastic / Plastic			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221485)			
• Green / Red	I / O	3SU1001-3AB42-0AK0	3SU1001-3BB42-0AK0
	Arrows, horizontal	3SU1001-3AB42-0AN0	---
• White / Black	I / O	3SU1001-3AB61-0AK0	3SU1001-3BB61-0AK0
• White / White	- / +	3SU1001-3AB66-0AL0	---
	Arrows, horizontal	3SU1001-3AB66-0AN0	---
	Symbols "Circular saw blade" / "Tilt tipper"	3SU1001-3AB66-0AP0	---
Plastic / Metal, matte			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226612)			
• Green / Red	I / O	3SU1031-3AB42-0AK0	3SU1031-3BB42-0AK0
	Arrows, horizontal	3SU1031-3AB42-0AN0	---
• White / Black	I / O	3SU1031-3AB61-0AK0	3SU1031-3BB61-0AK0
• White / White	- / +	3SU1031-3AB66-0AL0	---
	Arrows, horizontal	3SU1031-3AB66-0AN0	---
	Symbols "Circular saw blade" / "Tilt tipper"	3SU1031-3AB66-0AP0	---
Metal / Metal			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221486)			
• Green / Red	I / O	3SU1051-3AB42-0AK0	3SU1051-3BB42-0AK0
	Arrows, horizontal	3SU1051-3AB42-0AN0	---
• White / Black	I / O	3SU1051-3AB61-0AK0	3SU1051-3BB61-0AK0
• White / White	- / +	3SU1051-3AB66-0AL0	---
	Arrows, horizontal	3SU1051-3AB66-0AN0	---
	Symbols "Circular saw blade" / "Tilt tipper"	3SU1051-3AB66-0AP0	---

4.3.18.3 Inscription of actuating and signaling elements

Direct inscription

Actuating and signaling elements of all design lines can be optionally inscribed with a laser. The laser inscription is applied to the actuator, or to the front ring in the case of the selector switch and the key-operated switch.

The following types of device can be inscribed:

- Pushbuttons
- Illuminated pushbuttons
- Twin pushbuttons
- Illuminated twin pushbuttons
- Mushroom pushbuttons
- Illuminated mushroom pushbuttons
- EMERGENCY STOP buttons
- Illuminable EMERGENCY STOP buttons
- Indicator light lenses
- Selector switches
- Key-operated switches

Certain pushbuttons and twin pushbuttons with printed characters are available as standard.



Image 4-5 Example of laser inscription

Inscription version

A letter height of 4 mm is used as standard for text inscriptions:

The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

The maximum possible number of characters per line is as follows:

- 10 characters for one line of text
- 8 characters for 2 lines of text
- 6 characters for 3 lines of text, but 10 characters in the middle line.

Ordering notes

To order, the inscribed actuating and signaling elements can be selected via the SIRIUS ACT Configurator. An electronic order form is then generated.

- See Internet (<http://www.siemens.de/sirius-act/konfigurator>) for Configurator
- Electronic Catalog CA 01 on DVD or
- Industry Mall: Internet (<http://www.siemens.com/industrymall>)

When ordering, supplement the Article No. of the actuating element or the indicator light with "-Z" and an order code:

Text line in upper/lower case, always upper case for beginning of line (e.g. "Lift / Off"): **Y10**

Text in upper case (e.g. "LIFT"): **Y11**

Text in lower case (e.g. "lift / off / lower"): **Y12**

Text in upper/lower case, all words begin with upper case letters (e.g. "On Off"): **Y15**

Symbol with number according to ISO 7000 or IEC 60417: **Y13**

Any inscription or symbol according to order form supplement: **Y19**

When ordering, specify the required inscription in plain text in addition to the Article No. and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language. In the case of symbols with number, quote the corresponding standard (see ordering example 1).

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 = Lower". For long words you can also specify the end-of-line division.

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering examples 2 and 3).

The SIRIUS ACT Configurator must be used to select special inscriptions and symbols (order code Y19). In this case a "CIN" (Configuration Identification Number) is generated for placement of future orders. It is then possible to place an order directly using the CIN and the SIRIUS ACT Configurator (Mall shopping cart) or via the standard order channels.

Ordering example 1 A round pushbutton with the inscription "Reset" is required:

3SU1030-0AD20-0AZ0

Y10 Z = Reset (English)

Ordering example 2 A square pushbutton inscribed with symbol No. 5389 according to ISO 60417:

3SU1030-0AD20-0AZ0

Y13 Z = 5389 IEC is required:

Ordering example 3 A round pushbutton inscribed with symbol No. 1118 according to ISO 7000:

3SU1030-0AD20-0AZ0

Y13 Z = 1118 ISO is required:

Insert labels

You can use insert labels for labeling your devices.

You will find insert labels with standard inscriptions in Chapter "Accessories (Page 293)".

4.4 3SU10 devices for use on 4-slot holder

4.4.1 Coordinate switches

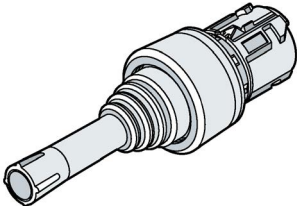
Coordinate switches are used to temporarily or permanently select up to 4 positions. They are operated by a vertical and horizontal movement using several fingers. Only one position on the holder is actuated in each case. The coordinate switch is suitable for simple navigation tasks thanks to its 4 selectable directions.

Coordinate switches are available in different variants according to the following features:

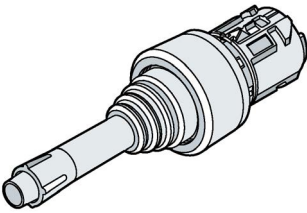
- Switch positions
- Collar and front ring material
- Locking (in the middle position)

A holder for 4 modules (3SU15.0-0BA10-0AA0) is required to install any of the devices listed below (see also Chapter "Holders (Page 38)"). For further information, refer to Chapter "Mounting (Page 97)".

Without mechanical interlock

			2 switch positions	4 switch positions
Collar / Front ring material	Operating principle	Direction of actuation	Article number	
Plastic / Plastic	Momentary contact	Horizontal	3SU1000-7AC10-0AA0	3SU1000-7AF10-0AA0
		Vertical	3SU1000-7AD10-0AA0	
Plastic / Metal, matte	Momentary contact	Horizontal	3SU1030-7AC10-0AA0	3SU1030-7AF10-0AA0
		Vertical	3SU1030-7AD10-0AA0	

With mechanical interlock

			2 switch positions	4 switch positions
Collar / Front ring material	Operating principle	Direction of actuation	Article number	
Plastic / Plastic	Momentary contact	Horizontal	3SU1000-7BC10-0AA0	3SU1000-7BF10-0AA0
		Vertical	3SU1000-7BD10-0AA0	
Plastic / Metal, matte	Momentary contact	Horizontal	3SU1030-7BC10-0AA0	3SU1030-7BF10-0AA0
		Vertical	3SU1030-7BD10-0AA0	

4.4.2 Selector switches 4 switch positions

Selector switches are used to actuate contact modules. No more than 2 contact modules can be actuated at once. The selector switch has 4 defined switch positions. When changing these switch positions, the current operation is concluded before the new one is activated.

These devices are available in different variants according to the following features:

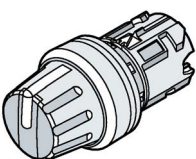
- Collar and front ring material

Note about installation:

A holder for 4 modules (3SU15.0-0BA10-0AA0) is required for all the devices listed below (see also Chapter "Holders (Page 38)").

You can find additional information in Chapter "Mounting (Page 97)".

Selector switches 4 switch positions (rotary knob)

		4 switch positions
Collar / Front ring material		
Plastic / Plastic		
• Black / White		3SU1000-2AS60-0AA0
Plastic / Metal, matte		
• Black / White		3SU1030-2AS60-0AA0
Metal / Metal		
• Black / White		3SU1050-2AS60-0AA0

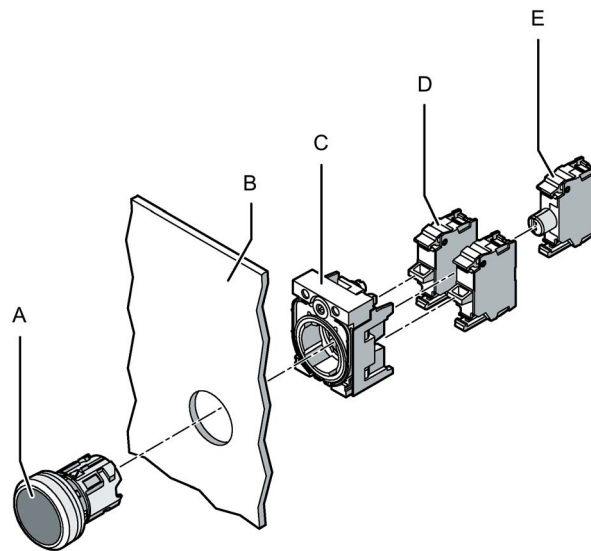
4.5 Mounting

4.5.1 Front plate mounting

Requirement

You need at least the following elements in order to construct a command point:

- An actuating or signaling element (3SU1) in front of the control panel
- A holder (3SU15) for securing behind the control panel
- Contact modules and / or an LED module (3SU14) behind the control panel



Typical diagram

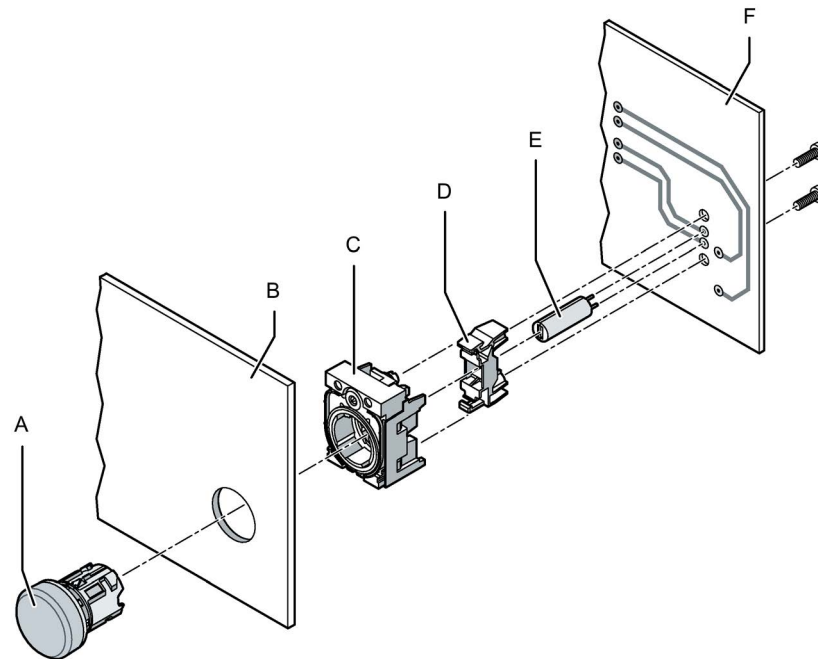
- | | |
|---|---|
| A | Actuating or signaling element |
| B | Front plate |
| C | Holder |
| D | Contact module |
| E | LED module (only possible with 3-slot holder) |

Procedure

1. Insert the actuating or signaling element (A) from the front through the mounting opening of the front plate (B).
2. Fit the holder (C) from behind (wiring side) onto the actuating or signaling element and lock it into place.
3. The unit must be aligned before it is finally tightened and secured against twisting (see Chapter Alignment (Page 104)).
4. Turn the screw at the holder until the actuating or signaling element is fixed securely and cannot vibrate or twist (tightening torque 1.0 ... 1.2 Nm).
5. Snap the contact module(s) (D) from behind onto the holder. To do this, hold the modules so that they are tilted downwards slightly and place them onto the holder from behind and then press them upwards until you feel the module latch in the holder.
Single- or two-pole contact modules can be mounted on the holder.
The modules can be stacked (max. 2 modules behind one another).
6. Mount an LED module (E), if necessary. You can mount the LED module on the holder only in position 3/6 (center position).

4.5.2 Mounting on printed-circuit boards

Mounting on PCBs is only possible with 3-slot holders.



Typical diagram

- A Actuating or signaling element (in this case: indicator light)
- B Front plate
- C Holder
- D PCB carrier
- E LED
- F Printed-circuit board

Procedure

1. Insert the actuating or signaling element (A) from the front through the mounting opening of the front plate (B).
2. Fit the holder (C) from behind onto the actuating or signaling element and lock it into place.
3. The unit must be aligned before it is finally tightened and secured against twisting (see Chapter "Alignment" (Page 104)).
4. Turn the screw at the holder until the actuating or signaling element is fixed securely and cannot vibrate or twist (tightening torque 1.0 ... 1.2 Nm).
5. Snap the PCB carrier (D) from behind onto the holder. To do this, hold the PCB carrier so that it is tilted downwards slightly and place it onto the holder from behind and then press it upwards until you feel the PCB carrier latch in the holder.
6. Equip the printed-circuit board (F) with the components.
7. Screw the PCB securely onto the PCB carrier.

Note

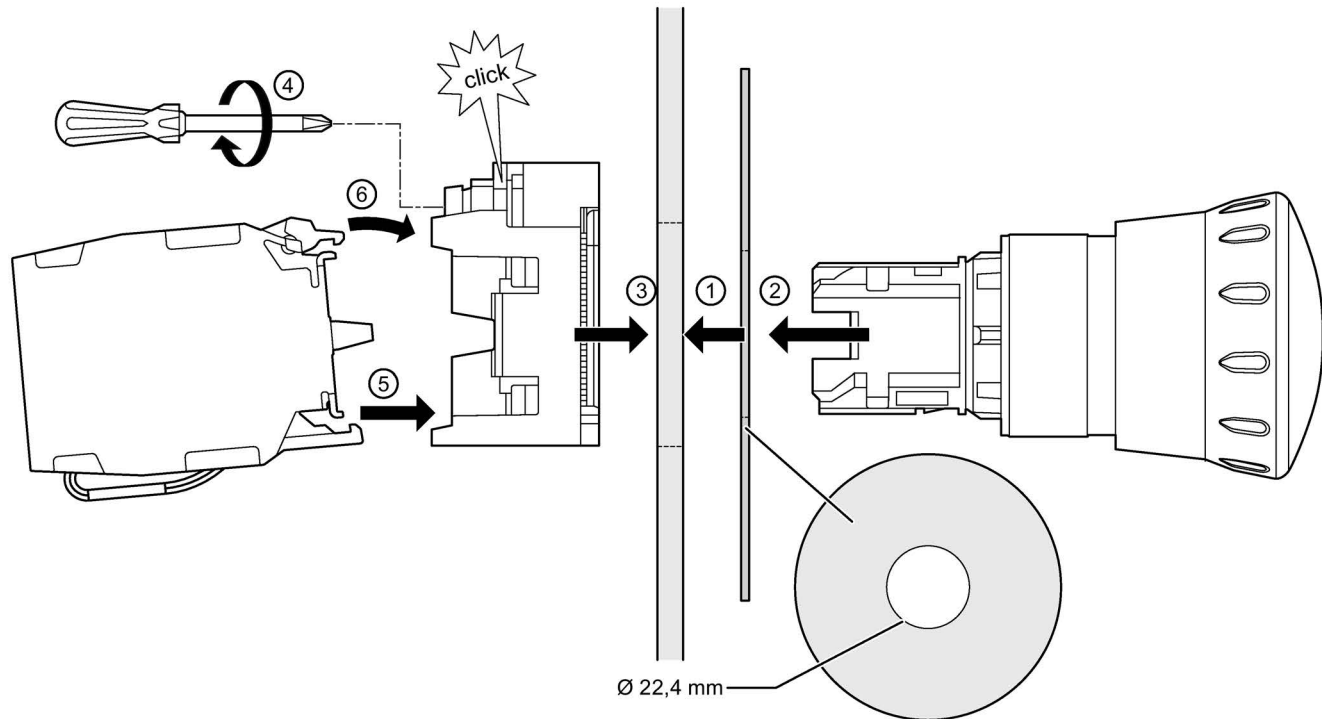
Number of PCB carriers

Make sure there is sufficient stability. Use several PCB carriers if necessary.

4.5.3 Base mounting for the enclosure

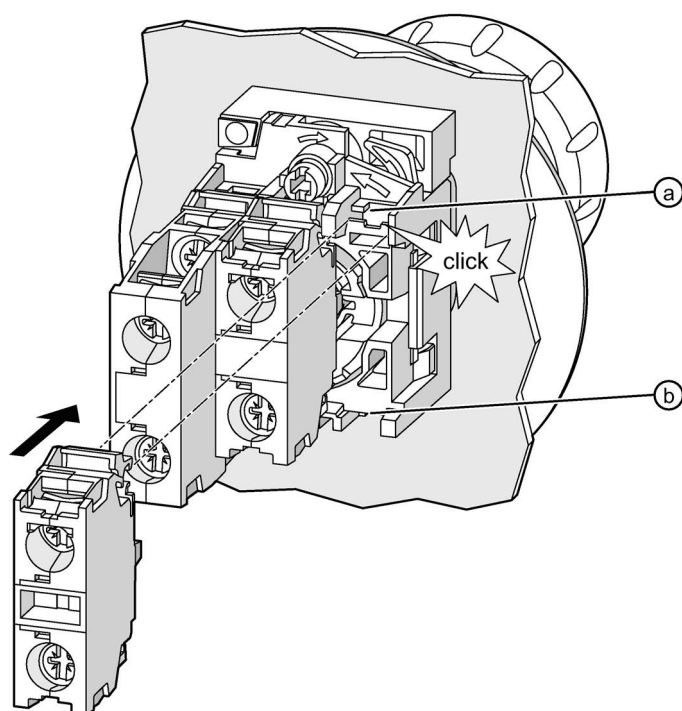
You can find information on base mounting in the section "3SU18 enclosures" in Chapter "Installation (Page 182)"

4.5.4 Installation sequence illustrated by example of EMERGENCY STOP mushroom pushbutton



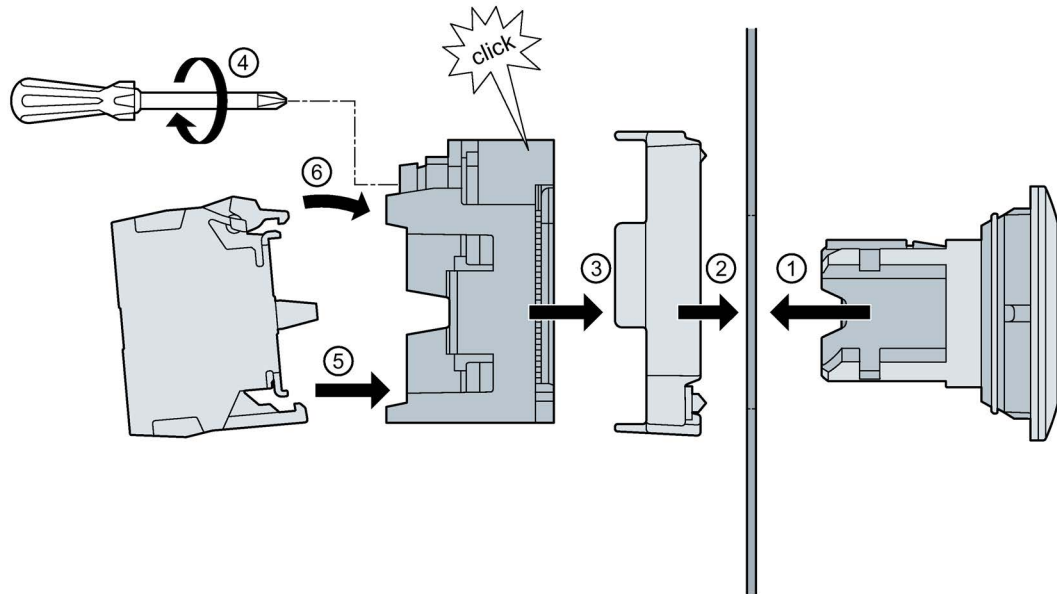
Procedure

- ① Hold the backing plate (optional accessory) onto the front plate.
- ② Insert the actuating/signaling element (EMERGENCY STOP mushroom pushbutton in this example) from the front into the opening of the backing plate and the front plate.
- ③ Fit the holder from behind.
- ④ Tighten the screw on the holder (tightening torque 1.0 to 1.2 Nm).
- ⑤ Snap the contact module(s) / LED module from behind onto the holder.
Fit the narrow snap hook (b) into the associated contour on the holder.
- ⑥ Engage the broad snap hook (a) into the associated contour on the holder.
Ensure secure latching



- a Broad snap hook
- b Narrow snap hook

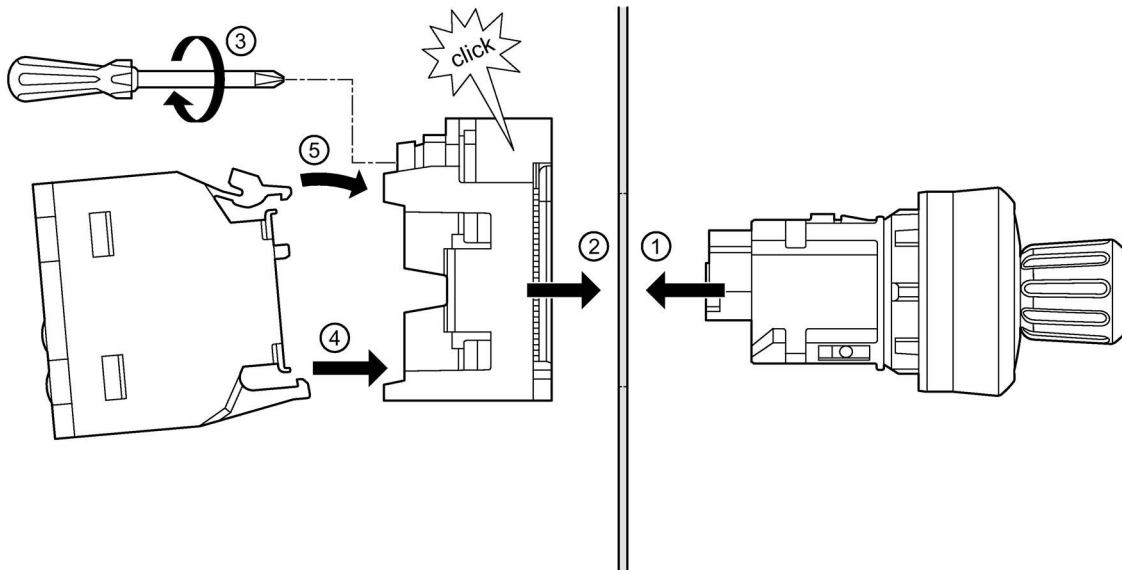
4.5.5 Installation steps for 30.5 mm devices



Procedure

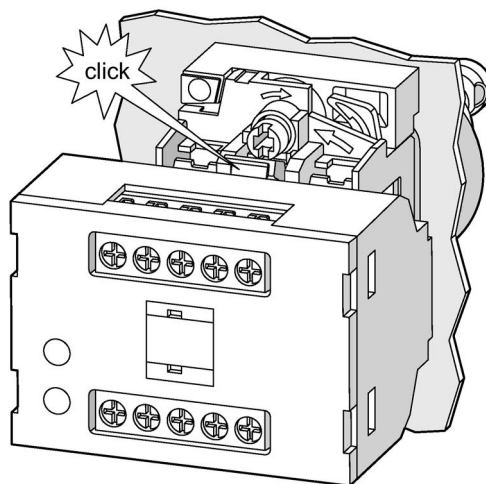
- ① Insert the 30.5 mm actuating / signaling element from the front into the opening of the front plate.
- ② Fit the adapter from behind.
- ③ Fit the holder from behind.
- ④ Tighten the screw on the holder (tightening torque 1.0 to 1.2 Nm).
- ⑤ Snap the contact module(s) / LED module from behind onto the holder.
Fit the narrow snap hook into the associated contour on the holder.
- ⑥ Engage the broad snap hook into the associated contour on the holder.
Ensure secure latching.

4.5.6 Mounting a command point with ID key-operated switch



Procedure

- ① Insert the ID key-operated switch from the front into the opening of the front plate.
- ② Place the holder from behind onto the ID key-operated switch.
- ③ Tighten the screw on the holder (tightening torque 1.0 to 1.2 Nm).
- ④ Snap the electronic module for ID key-operated switch onto the back of the holder.
Fit the narrow snap hook into the associated contour on the holder.
- ⑤ Engage the broad snap hook into the associated contour on the holder.
Ensure secure latching



Snapping an electronic module onto the holder ④ / ⑤

4.5.7 Alignment

You must align the SIRIUS ACT devices before you finally tighten and secure them against twisting. You can do this in 4 different ways:

1. Alignment on horizontal guide line
2. Alignment with guide line on the arrow of the holder
3. Alignment with spirit level/ruler
4. Alignment on the fixing point

Procedure

Alignment on horizontal guide line

For this purpose, a horizontal line is drawn 18.5 mm above the center point of the 22.5 mm fixing hole. The holder can be aligned with this line when tightening the fixing screw.

Alignment with guide line on the arrow of the holder

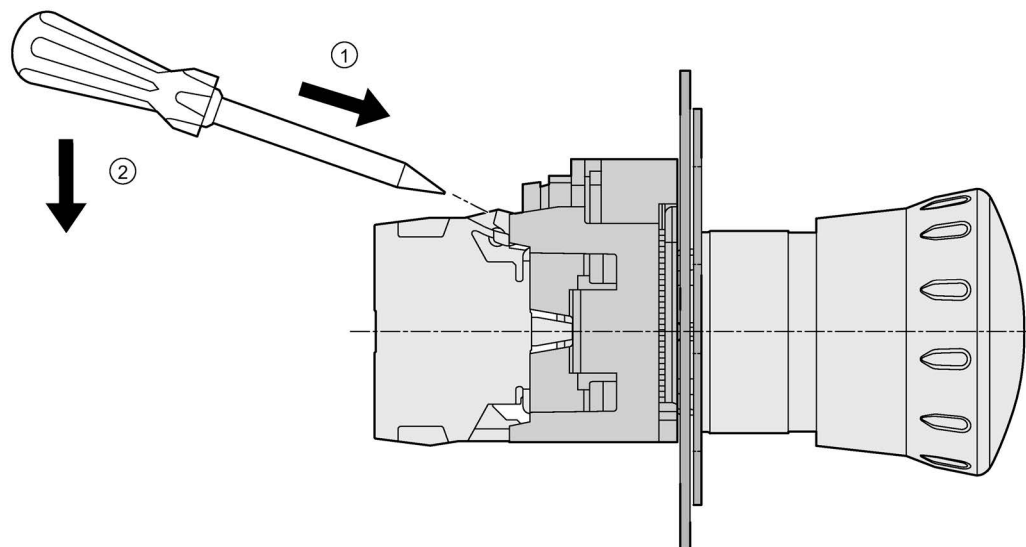
In vertical alignment of the fixing hole, a vertical line is drawn to which the holder is aligned with the help of the printed arrow.

Alignment with spirit level/ruler

The spirit level is placed on an even surface of the holder. After alignment on the horizontal, the fixing screw is tightened. Alternatively, a ruler can be used with a range of devices. For this purpose, all holders must first be roughly aligned under the ruler. Then one holder after another is precisely aligned with the help of the applied ruler, and fixed with the fixing screw.

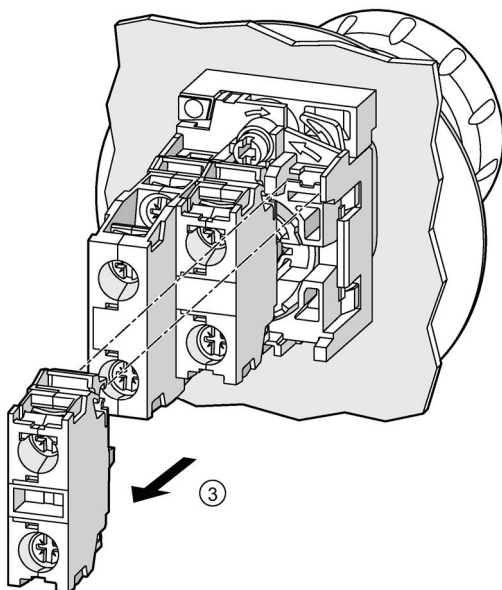
After the device has been aligned, you must tighten the fastening screw with a torque of between 1.0 and 1.2 Nm. The high transformation ratio of the fixing mechanism and the pointed teeth of the fixing collar provide rugged and long-lasting protection against twisting. You can then install the contact module and/or LED module(s) as required.

4.5.8 Disassembly sequence illustrated by example of EMERGENCY STOP mushroom pushbutton

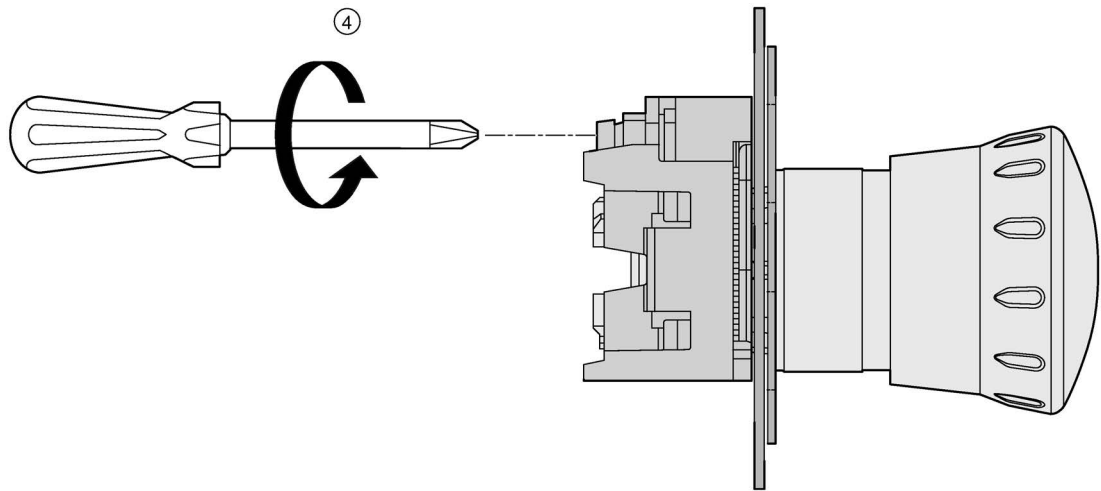


Procedure

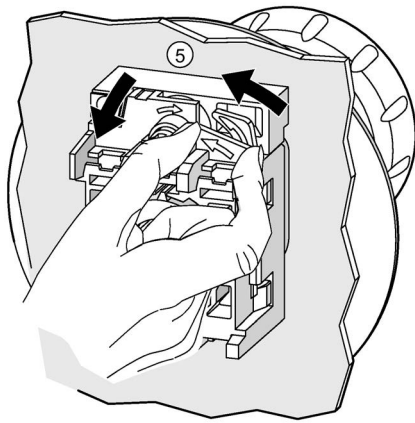
- ① Insert a screwdriver into the opening of the latches (broad snap hook) of the contact modules or LED modules.
- ② Press the screwdriver down to open the latches of the modules.



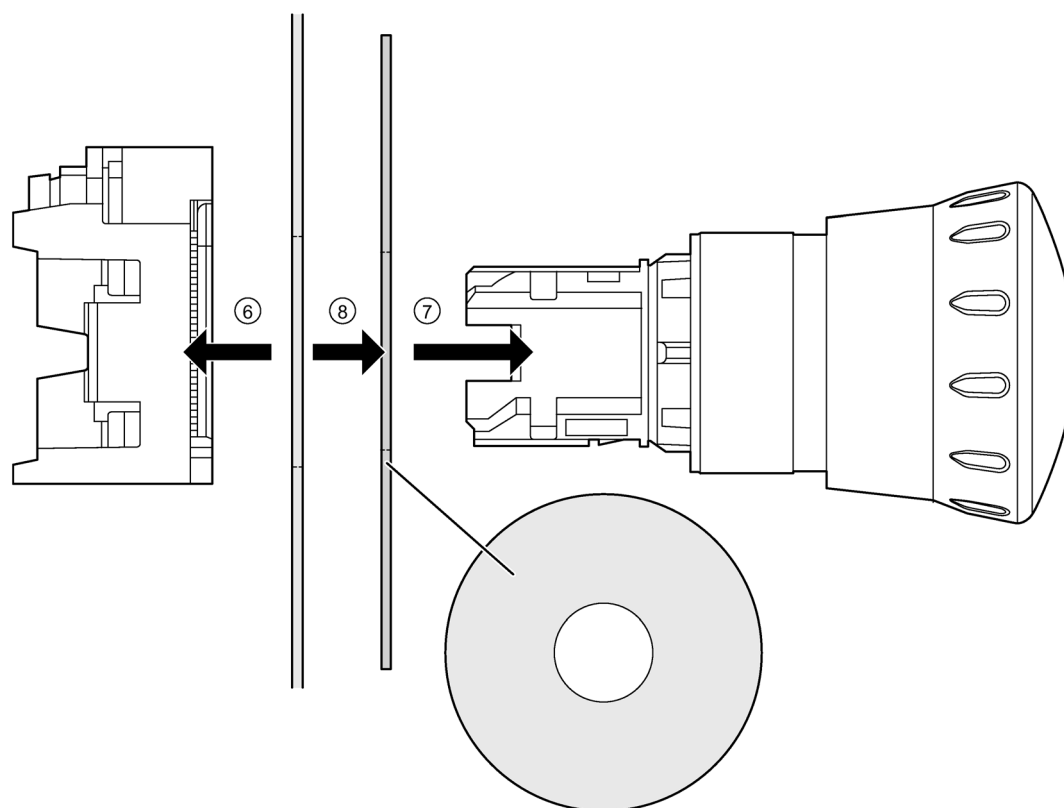
- ③ Remove the modules.



- ④ Remove the fastening screw from the holder.

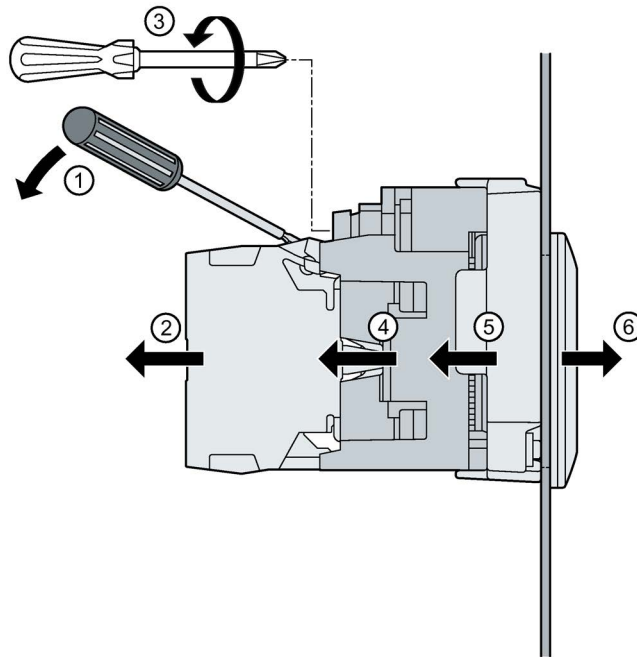


- ⑤ Unlock the holder.



- ⑥ Remove the holder to the rear from the EMERGENCY STOP mushroom pushbutton (or any other actuating or signaling element).
- ⑦ Remove the EMERGENCY STOP mushroom pushbutton.
- ⑧ Remove the backing plate (optional step).

4.5.9 Disassembly steps for 30.5 mm devices



Procedure

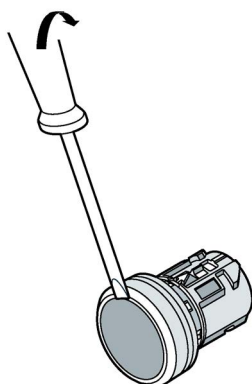
- ① Insert a screwdriver into the opening of the latches (broad snap hook) of the contact modules or LED modules.
Press the screwdriver down to open the latches of the modules.
- ② Remove the modules.
- ③ Remove the fastening screw from the holder.
- ④ Unlock the holder.
Remove the holder to the rear from the actuating or signaling element.
- ⑤ Remove the adapter to the rear from the actuating or signaling element.
- ⑥ Remove the actuator or signaling element.

4.5.10 Disassembly of buttons

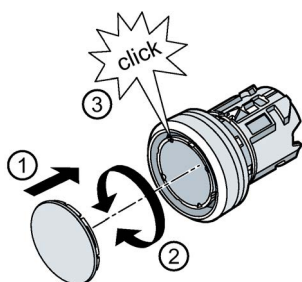
The buttons of the pushbuttons and illuminated pushbuttons can be replaced from the front by the user.

Procedure:

Insert a precision screwdriver into the gap between the button and the front ring and lever the button out.



Mounting the button



Procedure:

1. Place the button on the device ①. Make sure the insert label is correctly mounted (aligned).
2. To prevent incorrect mounting when reattaching the button, coding lugs are positioned at 90° intervals. For this reason, turn the button to the left or right ② until it engages ③.

3SU11 complete units

5.1 Product description

The 3SU11 complete units are a modular range of devices for front plate mounting and rear cable connection. Complete units made up of an actuating or signaling element and contact modules and/or LED modules are offered for the most common applications.

The 3SU11 complete units are available in the following versions:

Material	Article number
Plastic	3SU110
Plastic / Metal, matte	3SU113
Metal	3SU115

3SU11 complete units are supplied with the following components:

- An actuating or signaling element in front of the control panel
- A holder for securing behind the control panel
- Up to two contact modules and / or one LED module

The complete units are supplied without the individual components installed.

You can find information on installing in Chapter "Installation (Page 129)".

For further information about contact modules refer to Chapter "3SU14 contact modules and LED modules (Page 147)".

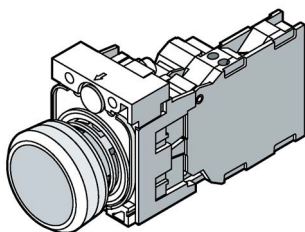
5.2 3SU11 devices for use on 3-slot holder

5.2.1 Pushbuttons

Pushbuttons are used to actuate contact modules and allow short-time contact or permanent closing / opening of a contact element. The button caps can be replaced from the front by the user.

Pushbuttons are available in different variants according to the following features:

- Height of button
- Height of front ring
- Collar and front ring material
- Colors of the buttons
- Quantity and type of modules included in the scope of supply



Typical diagram

Pushbuttons (momentary contact type)

	Number of modules	Number of NO contacts	Number of NC contacts	Flat button	Raised button
Collar / Front ring material				Article number	
Plastic / Plastic					
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226606)					
• Black	1	1	0	3SU1100-0AB10-xBA0	—
	1	0	1	3SU1100-0AB10-xCA0	3SU1100-0BB10-1CA0 ¹⁾
• Red	1	1	0	3SU1100-0AB20-xBA0	—
	1	0	1	3SU1100-0AB20-xCA0	3SU1100-0BB20-1CA0 ¹⁾
• Yellow	1	1	0	3SU1100-0AB30-xBA0	—
• Green	1	1	0	3SU1100-0AB40-xBA0	—
• Blue	1	1	0	3SU1100-0AB50-xBA0	3SU1100-0BB50-1BA0 ¹⁾
• White	1	1	0	3SU1100-0AB60-xBA0	—
• Clear	1	1	0	3SU1100-0AB70-1BA0 ¹⁾	—
Plastic / Metal, matte					
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221496)					
	Number of modules	Number of NO contacts	Number of NC contacts	Flat button	Raised button
• Black	1	1	0	3SU1130-0AB10-xBA0	—
	1	0	1	3SU1130-0AB10-xCA0	—
• Red	1	1	0	3SU1130-0AB20-xBA0	—
	1	0	1	3SU1130-0AB20-xCA0	—
• Yellow	1	1	0	3SU1130-0AB30-xBA0	—
• Green	1	1	0	3SU1130-0AB40-xBA0	—
• Blue	1	1	0	3SU1130-0AB50-xBA0	—
• White	1	1	0	3SU1130-0AB60-xBA0	—

Metal / Metal					
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221497)					
	Number of modules	Number of NO contacts	Number of NC contacts	Flat button	Raised button
• Black	1	1	0	3SU1150-0AB10-xBA0	—
	1	0	1	3SU1150-0AB10-xCA0	3SU1150-0BB10-1CA0 ¹⁾
• Red	1	1	0	3SU1150-0AB20-xBA0	---
	1	0	1	3SU1150-0AB20-xCA0	3SU1150-0BB20-1CA0 ¹⁾
• Yellow	1	1	0	3SU1150-0AB30-xBA0	—
• Green	1	1	0	3SU1150-0AB40-xBA0	—
• Blue	1	1	0	3SU1150-0AB50-xBA0	—
• White	1	1	0	3SU1150-0AB60-xBA0	—

x: 1 = screw terminals

x: 3 = spring-loaded terminals

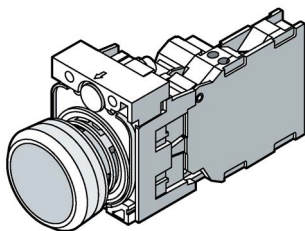
¹⁾ Available only with screw terminals

5.2.2 Illuminated pushbuttons

Illuminated pushbuttons are used to actuate contact modules and can also function as display devices by means of an LED module. The buttons can be replaced from the front by the user.

The illuminated pushbuttons are available in different variants according to the following features:

- Height of button
- Collar and front ring material
- Colors of the buttons
- Illumination
- Quantity and type of modules included in the scope of supply



Typical diagram

Illuminated pushbuttons (momentary contact type)

Collar / Front ring material	Number of modules	Number of NO contacts	Number of NC contacts	Article number
Plastic / Plastic				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221496)				
• Red	1	1	0	3SU110y-0AB20-xBA0
	1	0	1	3SU110y-0AB20-xCA0
• Yellow	1	1	0	3SU110y-0AB30-xBA0
• Green	1	1	0	3SU110y-0AB40-xBA0
• Blue	1	1	0	3SU110y-0AB50-xBA0
• White	1	1	0	3SU110y-0AB60-xBA0
• Clear	1	1	0	3SU1100-0AB70-xBA0

Plastic / Metal, matte				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226606)				
	Number of modules	Number of NO contacts	Number of NC contacts	Article number
• Red	1	1	0	3SU113y-0AB20-xBA0
	1	0	1	3SU113y-0AB20-xCA0
• Yellow	1	1	0	3SU113y-0AB30-xBA0
• Green	1	1	0	3SU113y-0AB40-xBA0
• Blue	1	1	0	3SU113y-0AB50-xBA0
• White	1	1	0	3SU113y-0AB60-xBA0
• Clear	1	1	0	3SU113y-0AB70-xBA0
Metal / Metal				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221497)				
	Number of modules	Number of NO contacts	Number of NC contacts	Article number
• Amber	1	1	0	3SU115y-0AB00-xBA0
• Red	1	1	0	3SU115y-0AB20-xBA0
	1	0	1	3SU115y-0AB20-xCA0
• Yellow	1	1	0	3SU115y-0AB30-xBA0
• Green	1	1	0	3SU115y-0AB40-xBA0
• Blue	1	1	0	3SU115y-0AB50-xBA0
• White	1	1	0	3SU115y-0AB60-xBA0
• Clear	1	1	0	3SU115y-0AB70-xBA0

x: 1 = screw terminals

x: 3 = spring-loaded terminals

y: 2 = 24 V AC/DC LED

y: 3 = 110 V AC LED

y: 6 = 230 V AC LED

Note

Not all combinations listed in the tables are available. In the case of special versions, please consult Technical Assistance, or initiate a PI1000 request.

5.2.3 Mushroom pushbuttons

Overview of mushroom pushbuttons, Ø 40 mm

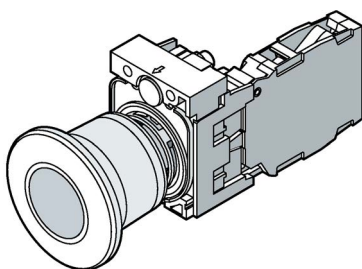
Mushroom pushbuttons are used to actuate contact modules.

Their large, easily accessible button surface makes them easy to operate with the whole palm of the hand.

The actuator is available in diameter 40 mm.

Mushroom pushbuttons are available in different variants according to the following features:

- Collar and front ring material
- Quantity and type of modules included in the scope of supply



Typical diagram

Collar / Front ring material	Number of modules	Number of NO contacts	Number of NC contacts	Article number
Plastic / Plastic				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221498)				
• Red	1	0	1	3SU1100-1BA20-xCA0
Plastic / Metal, matte				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226607)				
• Red	1	0	1	3SU1130-1BA20-1CA0
Metal / Metal				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221499)				
• Red	1	0	1	3SU1150-1BA20-xCA0

x: 1 = screw terminals

x: 3 = spring-loaded terminals

5.2.4 EMERGENCY STOP mushroom pushbuttons

EMERGENCY STOP mushroom pushbuttons are devices for actuating contact modules, and they are used in conjunction with a safety relay to bring a machine / plant to a safe state.

The EMERGENCY STOP mushroom pushbuttons are equipped with tamper protection (trigger action). The EMERGENCY STOP mushroom pushbutton does not latch without generating an EMERGENCY STOP signal. The EMERGENCY STOP signal is maintained until the EMERGENCY STOP device is reset (unlatched).

All SIRIUS ACT EMERGENCY STOP mushroom pushbuttons comply with DIN EN ISO 13850.

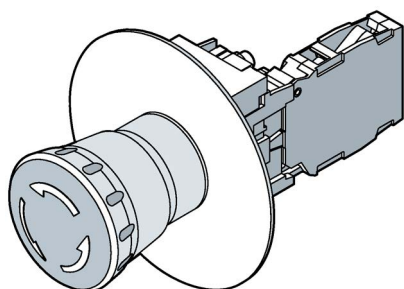
These pushbuttons are operated by pressure applied by the whole palm of the hand.

The actuators are available in diameter 40 mm.

EMERGENCY STOP mushroom pushbuttons are available in different variants according to the following features:

- Collar and front ring material
- Colors (special variants)
- Switching function: latching
- Rotate to unlatch
- Pull to unlatch
- Quantity and type of modules included in the scope of supply

Overview of 40 mm diameter EMERGENCY STOP mushroom pushbuttons, rotate-to-unlatch type



Typical diagram

Collar / Front ring material	Number of modules	Number of NO contacts	Number of NC contacts	Article number
Plastic / Plastic				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221500)				
• Red	1	0	1	3SU1100-1HB20-xCy0
	1	1	1	3SU1100-1HB20-xFy0
	1	0	2	3SU1100-1LB20-xPy0
Metal / Metal				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221501)				
• Red	1	0	1	3SU1150-1HB20-xCy0
	1	1	1	3SU1150-1HB20-xFy0
	1	0	2	3SU1150-1LB20-xPy0

x: 1 = screw terminals

x: 3 = spring-loaded terminals

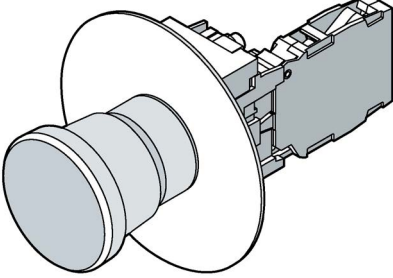
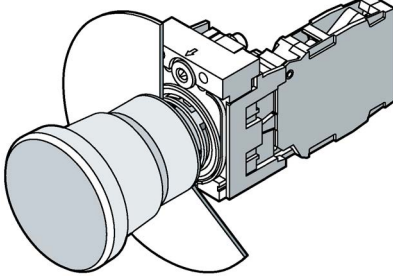
y: F = without backing plate

y: G = backing plate: EMERGENCY STOP

y: H = backing plate: NOT-HALT

y: J = backing plate: ARRET D'URGENCE

Overview of 40 mm diameter EMERGENCY STOP mushroom pushbuttons, pull-to-unlatch type

				
Typical diagram			Typical diagram	
Collar / Front ring material	Number of modules	Number of NO contacts	Number of NC contacts	Article number
Plastic / Plastic				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221500)				
• Red	1	0	1	3SU1100-1HA20-xCy0
	1	1	1	3SU1100-1HA20-xFy0
Metal / Metal				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221501)				
• Red	1	0	1	3SU1150-1HA20-xCy0
	1	1	1	3SU1150-1HA20-xFy0

x: 1 = screw terminals

x: 3 = spring-loaded terminals

y: F = without backing plate

y: G = backing plate: EMERGENCY STOP

y: H = backing plate: NOT-HALT

y: J = backing plate: ARRET D'URGENCE

Note

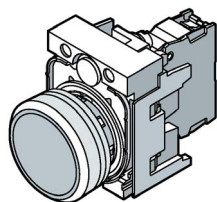
Not all combinations listed in the tables are available. In the case of special versions, please consult Technical Assistance, or initiate a PI1000 request.

5.2.5 Indicator lights

Indicator lights function as indicators and signaling devices. They are equipped with a smooth-surfaced lens that cannot be replaced by the user.

Indicator lights are available in different variants according to the following features:

- Collar and front ring material
- Colors
- Quantity and type of LED modules included in the scope of supply



Typical diagram

Indicator lights with holder (available with screw terminals and spring-loaded terminals)

Collar / Front ring material	Article number
Plastic / Plastic	
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221512)	
• Amber	3SU110y-6AA00-xAA0
• Red	3SU110y-6AA20-xAA0
• Yellow	3SU110y-6AA30-xAA0
• Green	3SU110y-6AA40-xAA0
• Blue	3SU110y-6AA50-xAA0
• White	3SU110y-6AA60-xAA0
• Clear	3SU110y-6AA70-xAA0
Metal / Metal	
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221513)	
• Amber	3SU115y-6AA00-xAA0
• Red	3SU115y-6AA20-xAA0
• Yellow	3SU115y-6AA30-xAA0
• Green	3SU115y-6AA40-xAA0
• Blue	3SU115y-6AA50-xAA0
• White	3SU115y-6AA60-xAA0
• Clear	3SU115y-6AA70-xAA0

x: 1 = screw terminals

x: 2 = spring-loaded terminals

y: 2 = variant with LED: 24 V AC/DC

y: 3 = variant with LED: 110 V AC

y: 6 = variant with LED: 230 V AC

Note

Not all combinations listed in the tables are available. In the case of special versions, please consult Technical Assistance, or initiate a PI1000 request.

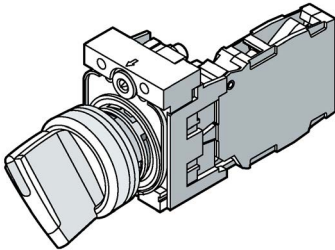
5.2.6 Selector switches

The selector switch is an actuator with 2 or 3 switch positions. Thanks to the rotary actuation, up to 3 contact modules can be operated with momentary contact or latching operation. The fiber-optic conductor integrated into the actuator can be illuminated using an LED module.

Selector switches are available in different variants according to the following features:

- Switch positions
- Collar and front ring material
- Quantity and type of modules included in the scope of supply

Short black actuator, 2 switch positions, latching



Typical diagram

Collar / Front ring material	Number of modules	Number of NO contacts	Number of NC contacts	Article number
				Latching, 90° (10:30/1:30 o'clock) 
Plastic / Plastic				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221504)				
• White	1	1	0	3SU1100-2BF60-xBA0
	1	1	1	3SU1100-2BF60-xMA0
Plastic / Metal, matte				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226609)				
• White	1	1	0	3SU1130-2BF60-xBA0
	1	1	1	3SU1130-2BF60-xMA0
Metal / Metal				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221505)				
• White	1	1	0	3SU1150-2BF60-xBA0
	1	1	1	3SU1150-2BF60-xMA0

x: 1 = screw terminals

x: 3 = spring-loaded terminals

Short black actuator, 3 switch positions

Collar / Front ring material	Number of modules	Number of NO contacts	Number of NC contacts	Article number	
				Latching 2x45° 	Momentary contact 2x45° reset from left + right 
Plastic / Plastic					
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221504)					
• White	2	2	2	3SU1100-2BL60-xLA0	3SU1100-2BM60-xLA0
	2	2	0	3SU1100-2BL60-xNA0	3SU1100-2BM60-xNA0
Plastic / Metal, matte					
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226609)					
• White	2	2	0	3SU1130-2BL60-xLA0	3SU1130-2BM60-xLA0
	2	2	0	3SU1130-2BL60-xNA0	3SU1130-2BM60-xNA0
Metal / Metal					
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221505)					
• White	2	2	0	3SU1150-2BL60-xLA0	3SU1150-2BM60-xLA0
	2	2	0	3SU1150-2BL60-xNA0	3SU1150-2BM60-xNA0

x: 1 = screw terminals

x: 3 = spring-loaded terminals

Note

Not all combinations listed in the tables are available. In the case of special versions, please consult Technical Assistance, or initiate a PI1000 request.

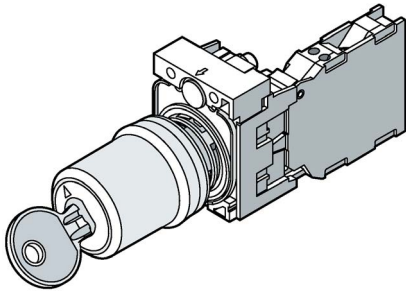
5.2.7 Key-operated switches

Key-operated switches are equipped with a lock for safety reasons. Only an authorized group of persons who have access to the relevant key can perform a switching operation (in this case, actuation of contact modules). Up to 3 switch positions can be temporarily or permanently selected using a key-operated switch.

Key-operated switches are available in different variants according to the following features:

- Key-operated switch manufacturer
- Key removal positions
- Switch positions
- Collar and front ring material
- Color of actuators
- Quantity and type of modules included in the scope of supply

With Ronis SB30 lock, 2 switch positions; key removal in any position



Typical diagram

Collar / Front ring material	Number of modules	Number of NO contacts	Number of NC contacts	Article number
Latching, 90° (10:30/1:30 o'clock)				
Plastic / Plastic				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221510)				
• Black	1	1	0	3SU1100-4BF11-xBA0
	1	1	1	3SU1100-4BF11-xFA0
Plastic / Metal, matte				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226615)				
• Black	1	1	0	3SU1130-4BF11-xBA0
	1	1	1	3SU1130-4BF11-xFA0
Metal / Metal				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221511)				
• Black	1	1	0	3SU1150-4BF11-xBA0
	1	1	1	3SU1150-4BF11-xFA0

x: 1 = screw terminals

x: 3 = spring-loaded terminals

With CES SSG10 lock, 2 switch positions; key removal in any position

Collar / Front ring material	Number of modules	Number of NO contacts	Number of NC contacts	Article number
Latching, 90° (10:30/1:30 o'clock)				
				
Plastic / Plastic Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221510)				
• Black	1	1	0	3SU1100-5BF11-3FA0 ¹⁾

1) Spring-loaded terminal

With Ronis SB30 lock, 3 switch positions; key removal in any position

Collar / Front ring material	Number of modules	Number of NO contacts	Number of NC contacts	Article number
Latching, 2x45° (10:30/12/1:30 o'clock)				
				
Plastic / Plastic Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221510)				
• Black	1	2	0	3SU1100-4BL11-1NA0 ²⁾
Plastic / Metal, matte Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226615)				
• Black	1	2	0	3SU1130-4BL11-1NA0 ²⁾

2) Screw terminal

5.3 3SU11 devices for use on 4-slot holder

5.3.1 Coordinate switches

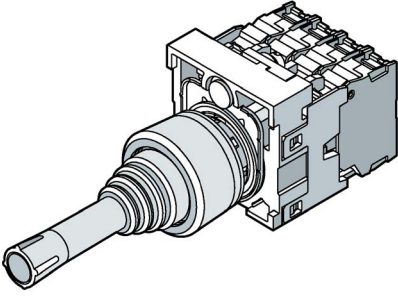
Coordinate switches are used to temporarily or permanently select up to 4 positions. They are operated by a vertical and horizontal movement using several fingers. Only one position on the holder is actuated in each case. The coordinate switch is suitable for simple navigation tasks thanks to its 4 selectable directions.

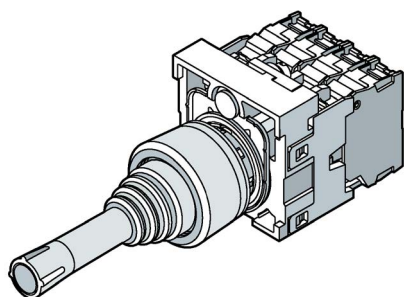
Coordinate switches are available in different variants according to the following features:

- Switch positions
- Collar and front ring material
- Locking (in the middle position)

A holder for 4 modules (3SU15.0-0BA10-0AA0) is required to install any of the devices listed below (see also Chapter "Holders (Page 38)"). For further information, refer to Chapter "Mounting (Page 129)".

Without mechanical interlock

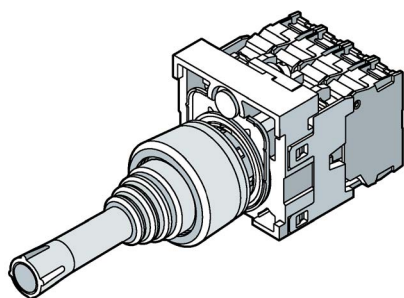
						2 switch positions
Typical diagram						
Collar / Front ring material	Operating principle	Direction of actuation	Number of modules	Number of NO contacts	Number of NC contacts	Article number
Plastic / Plastic	Momentary contact	Horizontal	2	2	0	3SU1100-7AC10-1NA0
		Vertical	2	2	0	3SU1100-7AD10-1NA0
Plastic / metal, matte	Momentary contact	Horizontal	2	2	0	3SU1130-7AC10-1NA0
		Vertical	2	2	0	3SU1130-7AD10-1NA0



4 switch positions

Typical diagram

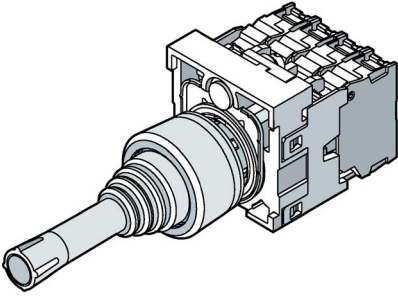
Collar / Front ring material	Operating principle	Direction of actuation	Number of modules	Number of NO contacts	Number of NC contacts	Article number
Plastic / Plastic	Momentary contact	Horizontal	4	4	0	3SU1100-7AF10-1QA0
Plastic / metal, matte	Momentary contact	Horizontal	4	4	0	3SU1130-7AF10-1QA0

With mechanical interlock

2 switch positions

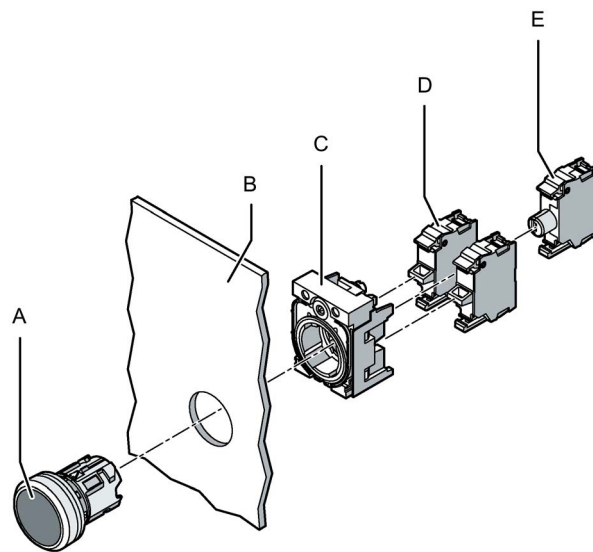
Typical diagram

Collar / Front ring material	Operating principle	Direction of actuation	Number of modules	Number of NO contacts	Number of NC contacts	Article number
Plastic / Plastic	Momentary contact	Horizontal	2	2	0	3SU1100-7BC10-1NA0
		Vertical	2	2	0	3SU1100-7BD10-1NA0
Plastic / metal, matte	Momentary contact	Horizontal	2	2	0	3SU1130-7BC10-1NA0
		Vertical	2	2	0	3SU1130-7BD10-1NA0

 Typical diagram						4 switch positions
Collar / Front ring material	Operating principle	Direction of actuation	Number of modules	Number of NO contacts	Number of NC contacts	Article number
Plastic / Plastic	Momentary contact	Horizontal	4	4	0	3SU1100-7BF10-1QA0
Plastic / metal, matte	Momentary contact	Horizontal	4	4	0	3SU1130-7BF10-1QA0

5.4 Mounting

5.4.1 Front plate mounting



- A Actuating element
- B Front plate
- C Holder
- D Contact module
- E LED module

Procedure

1. Remove the components of the complete unit from the packaging
2. Insert the actuating or signaling element (A) from the front through the mounting opening of the front plate (B).
3. Fit the holder (C) from behind (wiring side) onto the actuating or signaling element and lock it into place.
4. The unit must be aligned before it is finally tightened and secured against twisting (see Chapter "Alignment").
5. Turn the screw at the holder until the actuating or signaling element is fixed securely and cannot vibrate or twist (tightening torque 1.0 ... 1.2 Nm).
6. Snap the contact module(s) (D) from behind onto the holder. To do this, hold the modules so that they are tilted downwards slightly and place them onto the holder from behind and then press them upwards until you feel the module latch in the holder.
7. Mount an LED module (E), if necessary. You can mount the LED module on the holder only in position 3/6 (center position).

3SU12 compact units

Types of 3SU12 compact units

On the 3SU12 compact units, the electrical function (illumination and / or switching functions) is integrated into the actuating or signaling element. The electrical function is not expandable or replaceable. The compact versions are also not combinable with other modules of the 3SU10 / 3SU11 modular series.

The compact units are secured with the holder included in the scope of supply. The cables of the compact units are connected via the screw terminals / M12 connector attached to the rear.

You can find information on the holders in Chapter "Holders (Page 38)".

The following compact units are available:

- Pushbuttons with extended stroke
- Potentiometers
- Sensor switches

3SU12 actuating and signaling elements

The 3SU12 actuating and signaling elements are available in the following designs:

- Front ring and collar in plastic
- Front ring in metal matte and collar in plastic
- Front ring and collar in metal

Actuating element material	Collar material	Examples
Plastic	Plastic	 3SU120
Plastic	Metal matte	 3SU123
Metal	Metal	 3SU125

Holders

The holders with three slots are available in plastic and metal versions.

The following assumptions apply when assigning holders to the actuating elements and signaling elements:

Material	Plastic holder (3SU1500-0AA10-0AA0)	Metal holder (3SU1550-0AA10-0AA0)
Plastic	✓	✓
Metal	---	✓

Structure of a 3SU12 command point

A compact command point consists of the following elements:

- An actuating or signaling element in front of the control panel
- A holder for securing behind the control panel

6.1 Overview

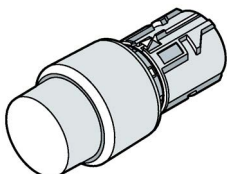
6.1.1 Pushbuttons with extended stroke

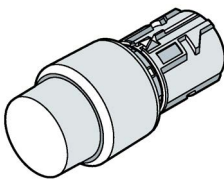
Pushbuttons with extended stroke are used to actuate a relay in the control cabinet. The pushbuttons are used, for example, as accessories for the Siemens Sivacon modules. They are used as actuating elements without contact modules. These pushbuttons can only be used in conjunction with a 3SU1900-0KG10-0AA0 extension plunger.

Pushbuttons are available in different variants according to the following features:

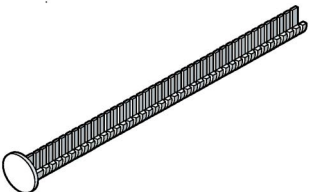
- Height of button
- Collar and front ring material
- Colors of the buttons

For further information refer to Chapters "Holders (Page 38)" and "Mounting (Page 138)".

	Pushbuttons with covered button	
	Flat button	Raised button
Typical diagram		
Collar / Front ring material	Article number	
Plastic / Plastic		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226601)		
• Black	---	3SU1200-0FB10-0AA0
• Red	3SU1200-0EB20-0AA0	---
• Green	3SU1200-0EB40-0AA0	---
Plastic / Metal, matte		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226627)		
• Black	---	3SU1230-0FB10-0AA0
• Red	3SU1230-0EB20-0AA0	---
• Green	3SU1230-0EB40-0AA0	---
Metal / Metal		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226602)		
• Black	---	3SU1230-0FB10-0AA0
• Red	3SU1250-0EB20-0AA0	---
• Green	3SU1250-0EB40-0AA0	---

	Pushbuttons with transparent button Labeling of the button is possible, see Chapter "Devices with labeling (Page 89)" in this respect	
	Flat button	Raised button
Typical diagram		
Collar / Front ring material	Article number	
Plastic / Plastic Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226601)		
• Red	3SU1201-0EB20-0AA0	---
• Clear	3SU1201-0EB70-0AA0	---
Plastic / Metal, matte Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226627)		
• Red	3SU1231-0EB20-0AA0	---
• Clear	3SU1231-0EB70-0AA0	---
Metal / Metal Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226602)		
• Red	3SU1251-0EB20-0AA0	---
• Clear	3SU1251-0EB70-0AA0	---

The extension plunger compensates the distance between the pushbutton and the unlatching button of an overload relay. The length of the extension plunger can be adapted individually.

	Extension plungers	
	Material	Article number
	Plastic	3SU1900-0KG10-0AA0 http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221537

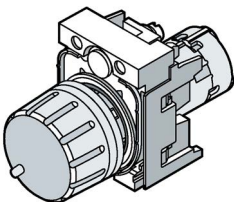
6.1.2 Potentiometers

Potentiometers are devices for the mechanical (linear) regulation of different resistance values. They are operated by turning the actuator.

These devices are available in different variants according to the following features:

- Collar and front ring material
- Resistance areas

For further information refer to Chapters "Holders (Page 38)", "Mounting (Page 138)" and "Accessories (Page 303)".

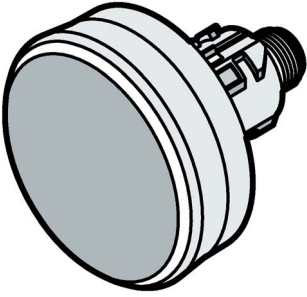
Potentiometers		
	Collar / Front ring material	Article number
	Plastic / Plastic	
	• 1 kohm	3SU1200-2PQ10-1AA0
	• 4.7 kohm	3SU1200-2PR10-1AA0
	• 10 kohm	3SU1200-2PS10-1AA0
	• 47 kohm	3SU1200-2PT10-1AA0
	• 100 kohm	3SU1200-2PU10-1AA0
	• 470 kohm	3SU1200-2PV10-1AA0
	Metal / Metal	
	• 1 kohm	3SU1250-2PQ10-1AA0
	• 4.7 kohm	3SU1250-2PR10-1AA0
	• 10 kohm	3SU1250-2PS10-1AA0
	• 47 kohm	3SU1250-2PT10-1AA0
	• 100 kohm	3SU1250-2PU10-1AA0
	• 470 kohm	3SU1250-2PV10-1AA0

6.1.3 Sensor switches

Sensor switches are capacitive sensors that are actuated when the sensor surface is touched by hand without the application of force or pressure. The sensor switch can be actuated by someone wearing thin gloves. In this case, however, it might be necessary to apply light pressure to the sensor surface.

Sensor switches are used to operate machines or as door opening switches and stop call buttons. Thanks to the water-sealed electronic circuitry and rugged enclosure materials used in their construction, these capacitive and fully electronic sensors are extremely durable.

Since sensor switches have no moving mechanical parts, they are maintenance-free. Two integrated status display LEDs provide the user with visual feedback.

Sensor switches		
 Typical diagram	Material	Article number
	Plastic / Plastic	3SU1200-1SK10-2SA0 (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221502)

Application example

When the sensor switches are combined with the appropriate Siemens DIN EN 574-compliant evaluation devices with type III C certificate (devices from the SIRIUS 3SK1 Advanced safety relay range or devices from the 3RK3 Modular Safety System (MSS)), they can be deployed as a safety relay, for example, in two-hand control applications. A two-hand control device requires simultaneous actuation with both hands in order to start up a machine and to keep it in operation in a potentially risky situation. The two-hand control device must be located outside the hazard zone (and the hazard zone must be clearly visible) in order to prevent the operator from entering the zone before the machine has reached a complete standstill.

The control command is sent by actuating both pushbuttons simultaneously within 0.5 s.

The following properties must be provided for mobile two-hand control devices:

- Stability
- The safety distance must be maintained between the control actuating devices and the hazard zone
- In the case of adjustable control actuating devices, a latch must be available

The sensor switch provides effective shock protection and the operating surface is easy to clean (protection class IP 69).

A function test must be carried out before commissioning. The following properties must be checked in the function test:

- Simultaneous actuation (use of both hands)
- Synchronous actuation (synchronism ≤ 500 ms)
- Relationship between input signals and output signals
- Renewed generation of the output signal

For further information refer to Chapters "Mounting (Page 139)", "Two-hand operation console (Page 192)" and "Application examples (Page 441)".

You can find an overview of the evaluation units that can be used in conjunction with the sensor switches at this website.

<https://support.industry.siemens.com/cs/document/109038855/auswertegerte-fr-eine-2-hand-applikation-mit-dem-3su1200-1sk10-2sa0?pnid=16445&lc=de-WW>

You will find further information about the use of sensor switches in the two-hand operation console (wiring to Siemens safety relays and safety design) in the following FAQs: Sensor switches in the two-hand operation console

<https://support.industry.siemens.com/cs/document/109479531/Einsatz>

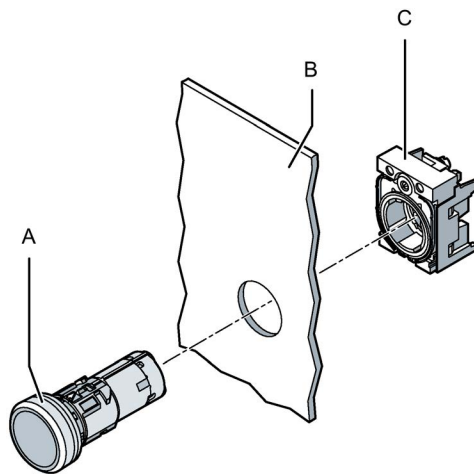
6.2 Mounting

6.2.1 Front plate mounting

Requirement

You need at least the following elements in order to construct a command point:

- An actuating or signaling element (3SU12) in front of the control panel
- A holder (3SU15) for securing behind the control panel



Typical diagram

- A Actuating or signaling element
B Front plate
C Holder

Procedure

1. Insert the actuating or signaling element (A) from the front through the mounting opening of the front plate (B).
2. Fit the holder (C) from behind (wiring side) onto the actuating or signaling element and lock it into place.
3. The unit must be aligned before it is finally tightened and secured against twisting (see Chapter Alignment (Page 104)).
4. Turn the screw at the holder until the actuating or signaling element is fixed securely and cannot vibrate or twist (tightening torque 1.0 ... 1.2 Nm).
5. Wire the actuating or signaling element.

6.2.2 Front plate mounting, sensor switches

Systems designed for the installation and commissioning of the sensor switch must comply with the requirements of EN 574: 2008.

Prevention of accidental actuation and defeat (please also read EN 574, Section 8)

The sensor switches for a two-hand control circuit must be arranged according to the risk assessment for the individual application in such a way that the protective effect of the two-hand control circuit cannot be defeated. The probability of accidental actuation must be minimized. The use of a single hand, possible combinations of one hand and/or other parts of the body and/or the use of simple aids which would allow the protective circuit to be defeated must be taken into consideration so that there is no possibility that persons can enter the hazard zone when hazards exist. Accidental actuation (e.g. by the operator's clothing) must also be taken into account.

The following measures as defined by standard **EN 574: 2008** must be complied with:

- Prevention of protective circuit defeat by one hand
 - Spatial separation between control actuating devices (clearance) of at least 260 mm
- Prevention of defeat by hand and elbow of the same arm
 - Spatial separation between control actuating devices (clearance) of at least 550 mm. This clearance should not exceed 600 mm for ergonomic reasons
- Prevention of defeat by one hand and any other part of the body (e.g. knee, hip)
 - Arrangement of control actuating devices on a horizontal surface at a distance of at least 1100 mm above the floor or the access level.

The sensor switches should not be installed in an exposed location (i.e. without operation console or protective cover for switch) so as to prevent accidental actuation of the switch by falling objects.

Safety distance (refer also to EN 574, Section 9.8)

The safety distance between the sensor switches and the hazard zone must be large enough to ensure that the operator cannot enter the hazard zone after release of a sensor switch until all potentially hazardous machinery has ceased moving.

The safety distance "S" in mm is calculated according to the following formula:

$$S = V \times T + C$$

Key to formula:

V = Hand/arm speed = 1600 mm/s

T = Reaction time in seconds (the reaction time of the sensor switch is max. **50 ms**)

C = Additional value = 250 mm

If entry of persons into the hazard zone following actuation of the sensor switch can be reliably prevented, the additional value C can be set to "0".

However, the minimum clearance must always be 100 mm.

Mounting

The sensor switch can be mounted on front plates and in the following enclosures of the SIRIUS ACT series:

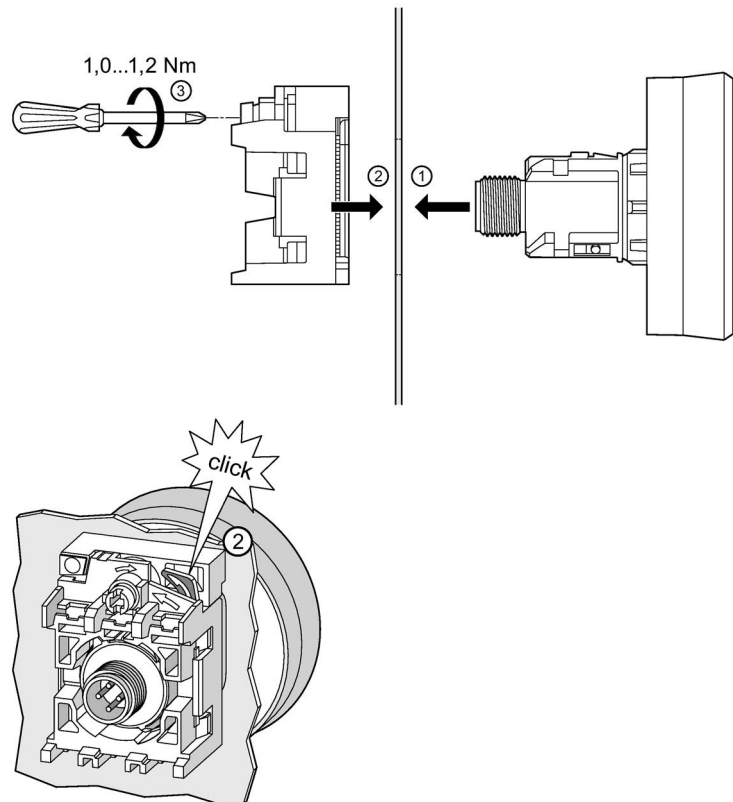
- 3SU1801-1AA00-1AA1 (plastic enclosure; command point in center)
- 3SU1851-1AA00-1AA1 (metal enclosure; command point in center)
- 3SU1803-3AA00-0AA1 (two-hand operation console, plastic)
- 3SU1853-3AA00-0AA1 (two-hand operation console, metal)

Note

The following applies for the American market:

The devices must only be connected with cables and connectors listed in CYJV.

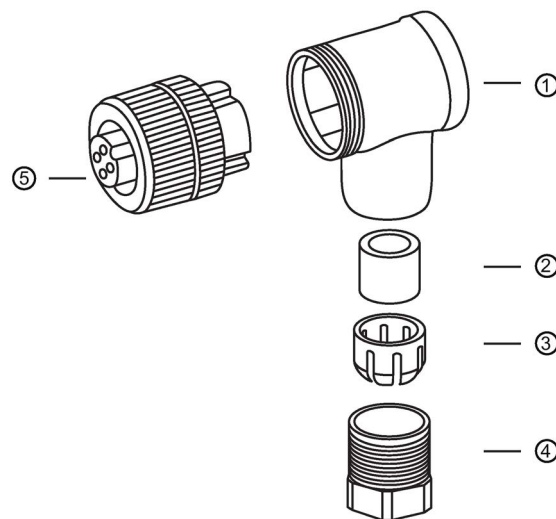
Procedure (example of mounting on front plate)



- ① Insert the sensor switch into an enclosure (e.g. 3SU18..-3 two-hand operation console) or front plate.
Align the sensor switch so that it is positioned correctly (LED).
- ② Place the holder from behind onto the sensor switch and lock it in position
- ③ Turn the screw on the holder until the sensor switch is fixed securely and cannot vibrate or twist (tightening torque 1.0 to 1.2 Nm).
Then connect the sensor switch to a controller using a connector (3SU1900-0KL10-0AA0).

Note

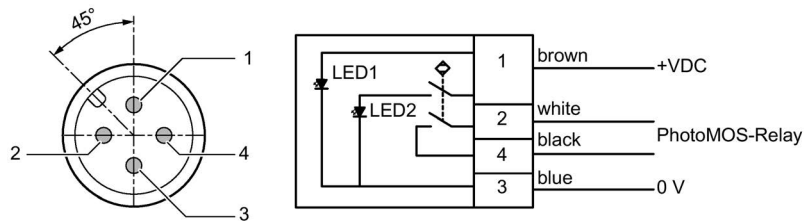
The connecting cables are not included in the scope of delivery. The cable used must not be more than 5 m long.

Connector (3SU1900-0KL10-0AA0)


- ① Angled enclosure
- ② Seal
- ③ Pinch ring
- ④ Clamping screw
- ⑤ Female contact insert

Tightening torque for the connector fastening screws 3SU1900-0KL10-0AA0: 0.4 Nm

Connector pin assignment for connection to sensor switch

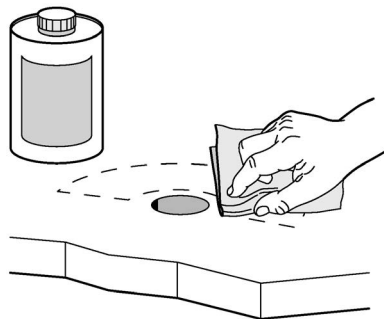


A floating contact is located between contacts 2 and 4.

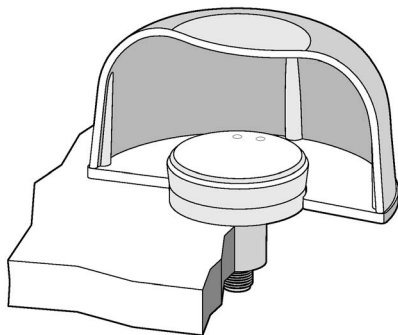
You can find more information in the "Technical data (Page 344)"

Installation of protective cover

1. Before you install the protective cover (3SU1900-0EC10-0AA0), you must clean the surface on which the cover will be mounted



2. Install the sensor switch
3. Remove the protective film from the rear face of the protective cover
4. Mount the protective cover in the space provided (use adhesive to fix cover in position)

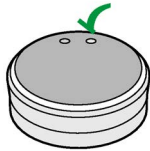


Switching states of the sensor switch

- LED shows a green light ⇒ sensor switch active
- LED shows a yellow light ⇒ sensor switch actuated

Commissioning

Operating state: Green LED steadily illuminated (O. K.)



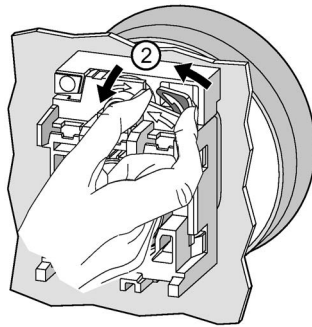
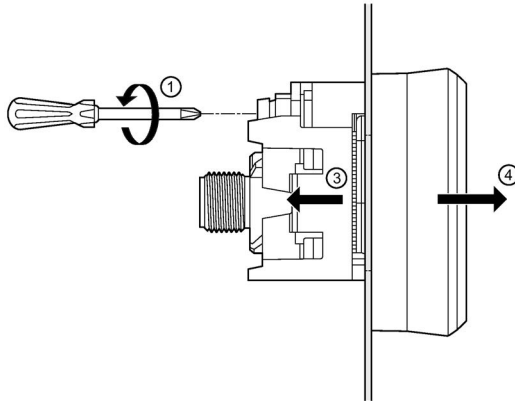
Error: Green LED off -> check the supply voltage

The yellow LED lights up when the switch is actuated.



The contact remains closed while the hand remains in contact with the sensor switch surface. No force needs to be applied in order to actuate the switch.

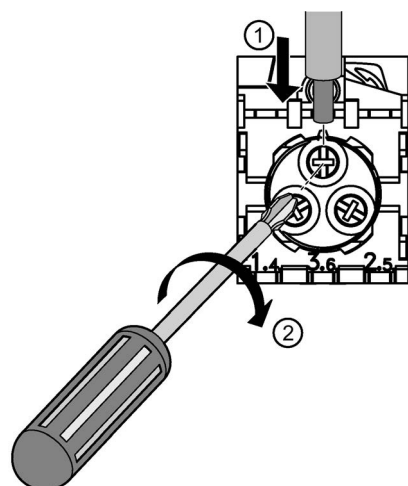
Removal



- ① Remove the screw from the holder
- ② Unlock the holder
- ③ Remove the holder from the sensor switch
- ④ Remove the sensor switch

6.3 Connecting

Procedure for wiring compact units



- ① Insert the relevant cable as far as it will go into the opening of the screw terminal of the compact unit.
- ② Insert the screwdriver (DIN ISO 8764-1-PZD1) into the opening for the screw.
Tighten the screw.
 - Tightening torque: 0.8 ... 1.0 Nm
 Pull on the cable to ensure it is screwed tight.

Conductor cross-sections for compact units

Screw terminals	
 DIN ISO 8764-1-PZD1	Tightening torques: 0.8 ... 1.0 Nm
	2 x (1.0 ... 1.5) mm ²
	2 x (0.5 ... 0.75) mm ²
	2 x (1.0 ... 1.5) mm ²
	2 x (0.5 ... 1.5) mm ²
AWG	2 x (18 to 14)

3SU14 modules

7.1 Overview

7.1.1 Contact modules

Contact modules

Contact modules are used to switch circuits. The mechanical motion of the actuator is converted to electrical signals in interaction with the contact module when contacts are opened or closed.

The following variants of contact module are available:

- Spring-loaded terminals
- Screw terminals
- Front plate mounting
- Base mounting (enclosure mounting)
- 1-pole
- 2-pole
- Different functions (NC contact, NO contact and combinations thereof)

Color coding of the switching variants depends on the colors of the ID keys:

- 1NO → Green
- 1NC → Red
- 2NC → Red
- 2NO → Green
- 1NO1NC → Gray
- 1NC1NC → yellow

7.1.2 Terminal designations

The terminal designations of the contact modules comply with EN 50013.

The terminal designations are 2-digit, e.g. 13, 14; 21, 22:

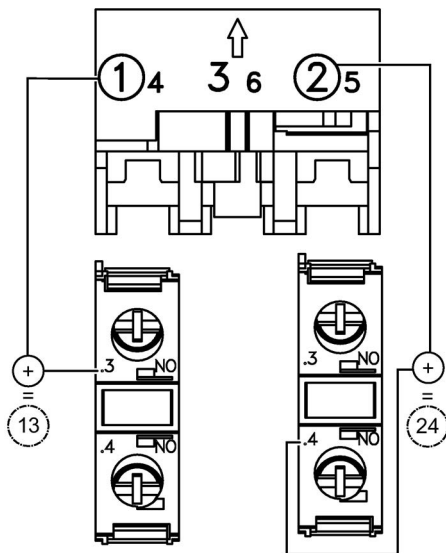
Units digit = function digit (specify on the contact module)

- 1-2 for normally closed contacts (NC)
- 3-4 for normally open contacts (NO)

Tens digit = Identification number (specify on the holder)

- Related terminals have the same sequence digit

Terminal designation example



Left-hand module:

- Sequence digit on holder = 1
- Function digit on module = .3

⇒ Terminal designation = 13

Right-hand module:

- Sequence digit on holder = 2
- Function digit on module = .4

⇒ Terminal designation = 24

7.1.3 Contact modules for front plate mounting

Contact modules for front plate mounting are installed on the rear face of a holder.

For further information refer to Chapters "Holders (Page 171)" and "Mounting (Page 165)"

Number of NO contacts	Number of NC contacts	Product function positive opening	Suitable for enclosure mounting	Article number
Contact modules				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221526)				
1	0	No	Yes	3SU1400-1AA10-xBA0
0	1	Yes	Yes	3SU1400-1AA10-xCA0
2	0	No	No	3SU1400-1AA10-xDA0
0	2	Yes	No	3SU1400-1AA10-xEA0
1	1	Yes	No	3SU1400-1AA10-xFA0
0	2 (1 contact for installation monitoring)	Yes	No	3SU1400-1AA10-xHA0 ¹⁾

x: 1 = screw terminals; 3 = spring-type terminals

- ¹⁾ The 3SU1400-1AA10-.HA0 contact modules with installation monitoring can only be mounted at positions 1 and 2 on the holder when combined with 3SU1 actuating and signaling elements.

Exception: They can be mounted at all 3 holder positions when they are combined with a non-illuminated EMERGENCY STOP.

Operating principle of 3SU1400-1AA10-.HA0 contact modules with installation monitoring

The 3SU1400-1AA10-.HA0 contact module monitors proper installation or correct connection to an EMERGENCY STOP actuator. If the contact module is incorrectly installed or is disconnected from the actuator, the contact module initiates an automatic shutdown of the machine or system. As long as operation continues, it is assured that all necessary contacts are functioning properly.

Machinery Directive

In addition to increased safety, the 3SU1400-1AA10-.HA0 contact module also supports compliance with the Machinery Directive.

Initial commissioning

The circuits are closed and the contact module is ready for use only after completion of the function test prescribed by the directive, i.e. when activated for the first time.

During operation

The installation status of the contact module is continuously monitored. If an error occurs, the machine is shut down automatically.

7.1.4 Contact modules for base mounting (enclosure mounting)

The contact modules for enclosure mounting are installed in 3SU18 enclosures. On enclosures with raised cover (Article No.: 3SU180(5)1-1AA00-0AA1) base mounting is not envisaged.

For further information refer to Chapter "3SU18 enclosures (Page 177)"

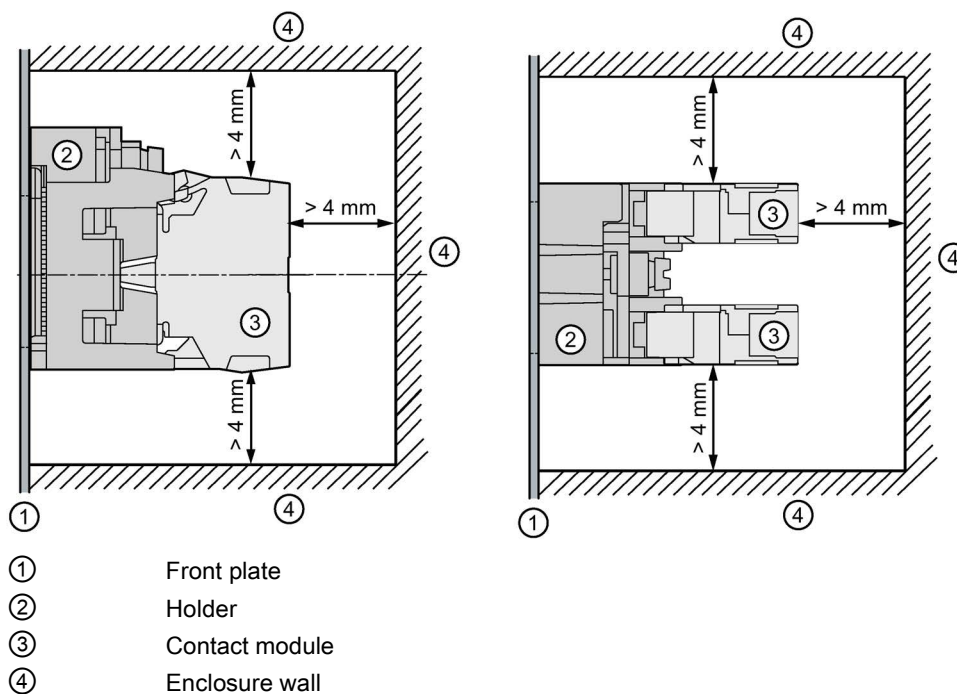
Number of NO contacts	Number of NC contacts	Product function positive opening	Article number
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10227974)			
1	0	No	3SU1400-2AA10-xBA0
0	1	Yes	3SU1400-2AA10-xCA0

x: 1 = screw terminals

x: 3 = spring-loaded terminals

Minimum clearance for front plate mounting

When contact modules are mounted on the front plate, they must be installed at a minimum distance of 4 mm from the closest enclosure wall.
(Typical diagram)



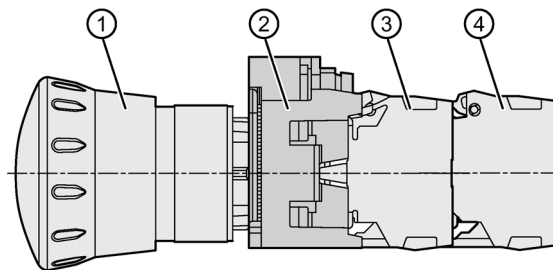
Stackability of contact modules

Note

Stackability

With SIRIUS ACT, the modules are mounted on the holder without any further accessories. The modules can be stacked without needing to use a tool (max. 2 x 1-pole modules behind one other).

Please note that a 2-pole contact module may not be stacked on a 1-pole contact module.



- | | |
|---|--|
| ① | Actuating element (here: EMERGENCY STOP mushroom pushbutton) |
| ② | Holder |
| ③ | Module 1 |
| ④ | Module 2 |

Number of contact modules per holder without EMERGENCY STOP

3-slot holder:

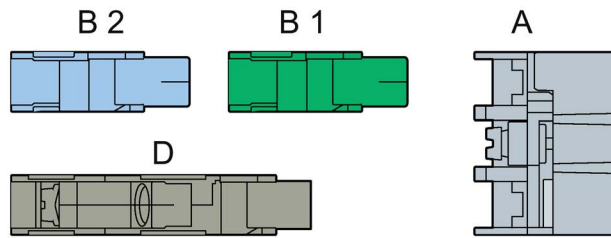
- 3x 2 single-pole contact modules
Max. 2 single-pole contact modules can be stacked in each holder slot
- 3 two-pole contact modules

4-slot holder:

- 4x 2 single-pole contact modules
Max. 2 single-pole contact modules can be stacked in each holder slot
- 4 two-pole contact modules

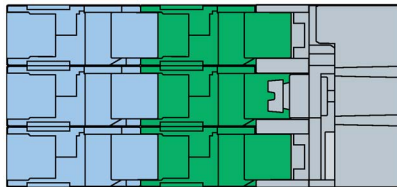
It is possible to mix both variants (single-pole and two-pole contact modules), e.g. 3-slot holder with 4 single-pole contact modules + 1 two-pole contact module.

The following diagrams illustrate by way of an example the maximum number of contact modules that can be installed in a 3-slot holder (in this case without EMERGENCY STOP).

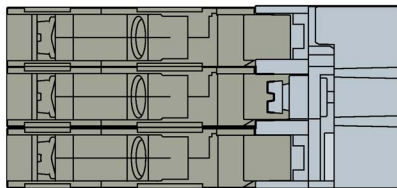


- A 3-slot holder
 B1 / B2 Contact module 1-pole
 D Contact module 2-pole

3-slot holder 3 x 2 single-pole contact modules (4-slot holder 4 x 2 single-pole contact modules)



3-slot holder 3 x two-pole contact modules (4-slot holder 4 x two-pole contact modules)

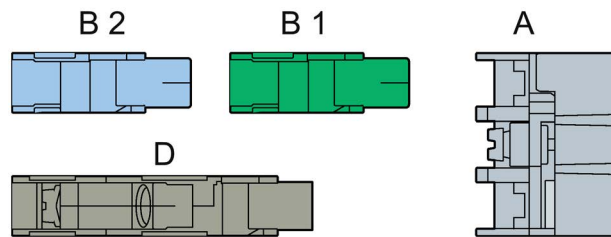


Equipping of EMERGENCY STOP with contact modules

A holder must be equipped with at least one contact system with 1NC switching functionality.
 A maximum total of 4 circuits may be connected.

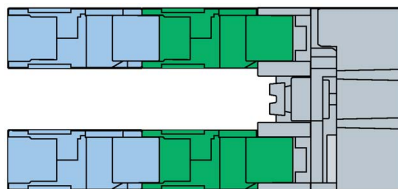
Number of contact modules per holder with EMERGENCY STOP without contact modules for installation monitoring

The following diagrams illustrate by way of an example the maximum number of contact modules that can be installed in a 3-slot holder (in this case with EMERGENCY STOP).

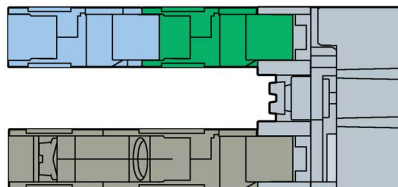


A	Holder
B1 / B2	Contact module 1-pole
D	Contact module 2-pole

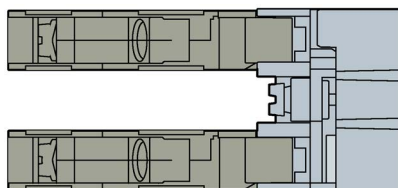
3-slot holder 2x2 single-pole contact modules



3-slot holder 2x1 single-pole and 1 two-pole contact module



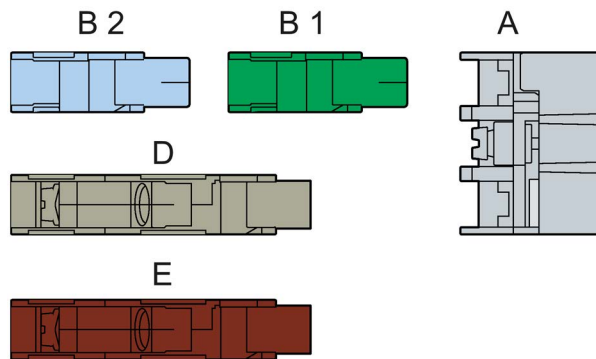
3-slot holder 2 two-pole contact modules



Number of contact modules per holder with EMERGENCY STOP with contact modules for installation monitoring

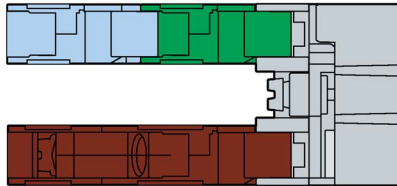
When using the 3SU1400-1AA10-.HA0 contact module (1 NC with installation monitoring) the maximum permissible number of circuits is: 3.

The following diagrams illustrate by way of an example the maximum number of contact modules that can be installed in a 3-slot holder

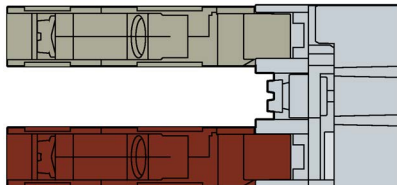


- A Holder
- B1 / Contact module 1-pole
- B2
- D Contact module 2-pole
- E Contact module for installation monitoring

1 contact module for installation monitoring (1 NC with installation monitoring) and 2x 1 single-pole contact module

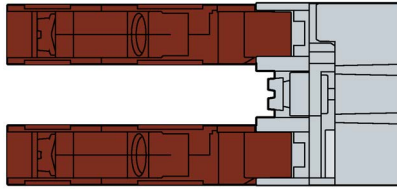


1 contact module for installation monitoring (1 NC with installation monitoring) and 1x two-pole contact module



2x 1 contact module for installation monitoring (1 NC with installation monitoring)

For this application, the maximum permissible number of circuits is: 2.



7.1.5 LED modules

Only LED modules with permanently integrated LEDs are available for illuminating the 3SU1 pushbuttons and signaling devices.

LED modules can only be mounted on a 3-slot holder or in the enclosure. LED modules are always snap-mounted at position 3 in the holder or in the enclosure.

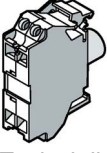
These devices are available in different variants according to the following features:

- Spring-loaded terminals
- Screw terminals
- PCB installation
- Front plate mounting
- Base mounting (enclosure mounting)
- Colors
- Voltages

LED modules bear terminal designations in accordance with EN 50013.

7.1.6 LED modules for front plate mounting

LED modules for front plate mounting are installed on the rear face of a holder.
For further information refer to Chapters "Holders (Page 38)", "Mounting (Page 165)"

 Typical diagram	Operating voltage	Color of the LED	Article number
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221527)		
	24 V AC/DC	Amber	3SU1401-1BB00-xAA0
		Red	3SU1401-1BB20-xAA0
		Yellow	3SU1401-1BB30-xAA0
		Green	3SU1401-1BB40-xAA0
		Blue	3SU1401-1BB50-xAA0
		White	3SU1401-1BB60-xAA0
	110 V AC	Amber	3SU1401-1BC00-xAA0
		Red	3SU1401-1BC20-xAA0
		Yellow	3SU1401-1BC30-xAA0
		Green	3SU1401-1BC40-xAA0
		Blue	3SU1401-1BC50-xAA0
		White	3SU1401-1BC60-xAA0
	230 V AC	Amber	3SU1401-1BF00-xAA0
		Red	3SU1401-1BF20-xAA0
		Yellow	3SU1401-1BF30-xAA0
		Green	3SU1401-1BF40-xAA0
		Blue	3SU1401-1BF50-xAA0
		White	3SU1401-1BF60-xAA0

x: 1 = screw terminals

x: 3 = spring-loaded terminals

 Typical diagram	Operating voltage	Color of the LED	Article number
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221527)		
	6 ... 24 V AC/DC	Amber	3SU1401-1BG00-xAA0
		Red	3SU1401-1BG20-xAA0
		Yellow	3SU1401-1BG30-xAA0
		Green	3SU1401-1BG40-xAA0
		Blue	3SU1401-1BG50-xAA0
		White	3SU1401-1BG60-xAA0
	24 ... 240 V AC / DC	Amber	3SU1401-1BH00-xAA0
		Red	3SU1401-1BH20-xAA0
		Yellow	3SU1401-1BH30-xAA0
		Green	3SU1401-1BH40-xAA0
		Blue	3SU1401-1BH50-xAA0
		White	3SU1401-1BH60-xAA0

x: 1 = screw terminals

x: 3 = spring-loaded terminals

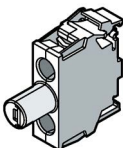
Note

LED modules 6 ... 24 V AC/DC must not be operated in systems with a programmable logic controller because a weak current of 5 V is sufficient to light up the LEDs on the module.

7.1.7 LED modules for base mounting (enclosure mounting)

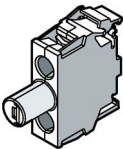
The LED modules for enclosure mounting are installed in 3SU18 enclosures. On enclosures with raised cover (Article No.: 3SU180(5)1-1AA00-0AA1) base mounting is not envisaged.

For further information refer to Chapter "3SU18 enclosures (Page 177)"

 Typical diagram	Operating voltage	Color of the LED	Article number
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10251008)		
	24 V AC/DC	Amber	3SU1401-2BB00-xAA0
		Red	3SU1401-2BB20-xAA0
		Yellow	3SU1401-2BB30-xAA0
		Green	3SU1401-2BB40-xAA0
		Blue	3SU1401-2BB50-xAA0
		White	3SU1401-2BB60-xAA0
	110 V AC	Amber	3SU1401-2BC00-xAA0
		Red	3SU1401-2BC20-xAA0
		Yellow	3SU1401-2BC30-xAA0
		Green	3SU1401-2BC40-xAA0
		Blue	3SU1401-2BC50-xAA0
		White	3SU1401-2BC60-xAA0
	230 V AC	Amber	3SU1401-2BF00-xAA0
		Red	3SU1401-2BF20-xAA0
		Yellow	3SU1401-2BF30-xAA0
		Green	3SU1401-2BF40-xAA0
		Blue	3SU1401-2BF50-xAA0
		White	3SU1401-2BF60-xAA0

x: 1 = screw terminals

x: 3 = spring-loaded terminals

 Typical diagram	Operating voltage	Color of the LED	Article number
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10251008)		
	6 ... 24 V AC/DC	Amber	3SU1401-2BG00-xAA0
		Red	3SU1401-2BG20-xAA0
		Yellow	3SU1401-2BG30-xAA0
		Green	3SU1401-2BG40-xAA0
		Blue	3SU1401-2BG50-xAA0
		White	3SU1401-2BG60-xAA0
	24 ... 240 V AC / DC	Amber	3SU1401-2BH00-xAA0
		Red	3SU1401-2BH20-xAA0
		Yellow	3SU1401-2BH30-xAA0
		Green	3SU1401-2BH40-xAA0
		Blue	3SU1401-2BH50-xAA0
		White	3SU1401-2BH60-xAA0

x: 1 = screw terminals

x: 3 = spring-loaded terminals

Note

LED modules 6 ... 24 V AC/DC must not be operated in systems with a programmable logic controller because a weak current of 5 V is sufficient to light up the LEDs on the module.

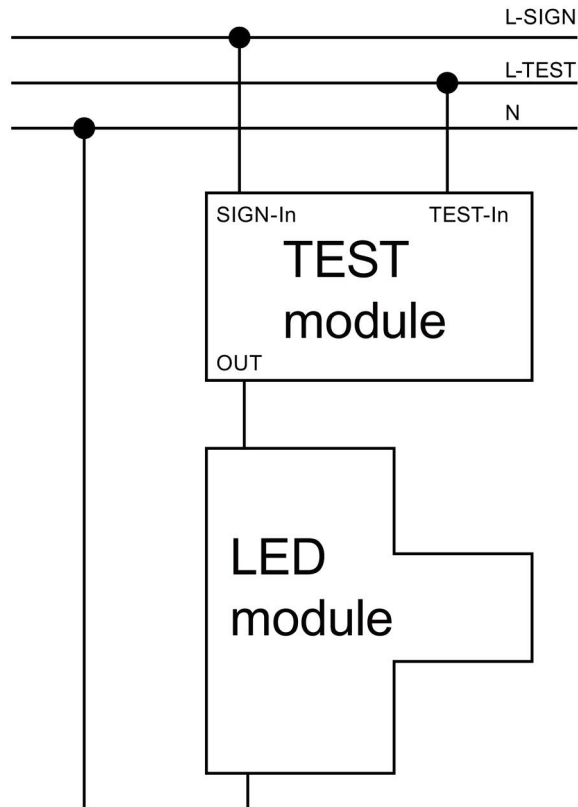
7.1.8 LED modules for PCB mounting

Operating voltage	Color of the LED	Article number
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221527)		
5 V DC	Amber	3SU1401-3BA00-5AA0
	Red	3SU1401-3BA20-5AA0
	Yellow	3SU1401-3BA30-5AA0
	Green	3SU1401-3BA40-5AA0
	Blue	3SU1401-3BA50-5AA0
	White	3SU1401-3BA60-5AA0

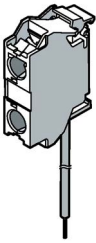
Socket terminal (THT)

7.1.9 LED test module for base mounting (enclosure mounting)

The LED test modules are used to test the LED modules (AC/DC variants). The LED test module is activated via a contact module. This supplies the connected LED modules (to be tested) with a test voltage. The test module can be used to test LED modules (6-24 V AC/DC, 24 V AC/DC, 24-240 V AC/DC). Up to 30 LED modules can be connected to the test module for testing purposes (max. temperature here 70 °C).



For further information refer to Chapters "Holders (Page 38)", "Mounting (Page 165)"

	Operating voltage	Article number
	12-240V AC / DC	3SU1400-2CK10-1AA0

Typical diagram

7.1.10 ASIsafe F adapters for front plate mounting

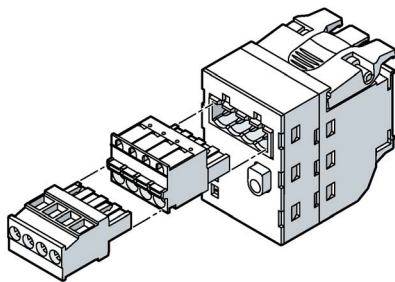
With ASIsafe F adapters, distributed SIRIUS ACT pushbuttons and indicator lights can be quickly connected to the AS-Interface communication system. ASIsafe F adapters for front plate mounting are installed on the rear face of a holder.

For more detailed information, refer to Chapter “Mounting (Page 97)”.

AS-Interface EMERGENCY STOP according to ISO 13850

Via the standard AS-Interface with safety-related communication, EMERGENCY STOP devices according to ISO 13850 can be directly connected using the AS-Interface modules.

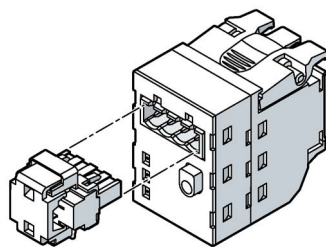
AS-Interface modules, screw terminals + spring-loaded terminals



Typical diagram

Slave type	Number of digital inputs		Number of digital outputs	Article number
	Standard inputs	Fail-safe inputs		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221528)				
2 F-DI	—	2	—	3SU1400-1EA10-2AA0
2 F-DI + 1 LED	—	2	1 for activating the red LED (LED not replaceable)	3SU1401-1EE20-2AA0
2 F-DI + 1 DO	—	2	1 unassigned	3SU1400-1EC10-2AA0

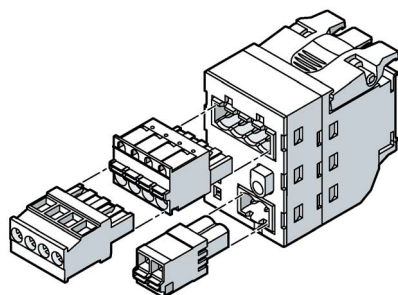
AS-Interface modules, insulation piercing method



Typical diagram

Slave type	Number of digital inputs		Number of digital outputs	Article number
	Standard inputs	Fail-safe inputs		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221528)				
2 F-DI	—	2	—	3SU1400-1EA10-4AA0
2 F-DI + 1 LED	—	2	1 for activating the red LED (LED not replaceable)	3SU1401-1EE20-4AA0

AS-Interface modules, spring-loaded terminals + insulation piercing method

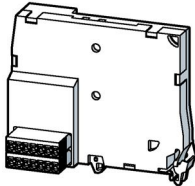


Typical diagram

Slave type	Number of digital inputs		Number of digital outputs	Article number
	Standard inputs	Fail-safe inputs		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221528)				
2 F-DI + 1 DO	—	2	1 unassigned	3SU1400-1EC10-4AA0

7.1.11 AS-Interface modules for front plate mounting

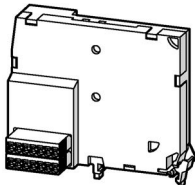
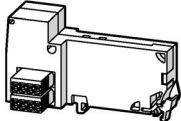
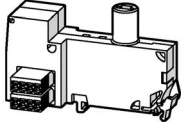
With AS-Interface modules, distributed SIRIUS ACT pushbuttons and indicator lights can be quickly connected to the AS-Interface communication system. AS-Interface modules for front plate mounting are installed on the rear face of a holder.

	Slave type	Number of digital inputs		Number of digital outputs	Article number
		Standard inputs	Fail-safe inputs		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221528)					
	4 DI / 4 DQ	4	—	4	3SU1400-1EK10-6AA0
	4 DI / 3 DQ AB	4	—	3	3SU1400-1EJ10-6AA0

7.1.12 AS-Interface modules for base mounting (enclosure mounting)

With AS-Interface modules, distributed SIRIUS ACT pushbuttons and indicator lights can be quickly connected to the AS-Interface communication system. The AS-Interface modules for base mounting are installed in 3SU18 enclosures. On enclosures with raised cover (Article No.: 3SU180(5)1-1AA00-0AA1) base mounting is not envisaged.

AS-Interface modules with push-in terminal

	Slave type	Number of digital inputs		Number of digital outputs	Article number
		Standard inputs	Fail-safe inputs		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10251009)					
	4 DI / 4 DQ	4	—	4	3SU1400-2EK10-6AA0
	4 DI / 3 DQ AB	4	—	3	3SU1400-2EJ10-6AA0
	2F-DI	—	2	—	3SU1400-2EA10-6AA0
	2F-DI/1LED	—	2	1 for activating the red LED (LED not replaceable)	3SU1401-2EE20-6AA0

7.1.13 Electronic modules for ID key-operated switches

The electronic modules for ID key-operated switches are designed for use with the ID key-operated switch. The electronic modules for ID key-operated switches can be installed in a 3SU18.1-1AA00-1AA1 enclosure for one command point, or in a front plate using 3-slot holders. The 3SU1400-1GD10-1AA0 electronics modules for ID key-operated switches can be parameterized via IO-Link.

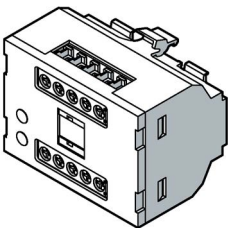
For further information refer to Chapters "ID key-operated switches (Page 80)", "ID keys (Page 323)" and "Technical data (Page 335)".

You can find information on using the electronic modules for ID key-operated switches for IO-Link in Chapter "IO-Link (Page 243)".

Article numbers

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221530>)

	IO-Link protocol supported	Power supply via IO-Link master	IO-Link transfer rate	Article number
	No	---	---	3SU1400-1GC10-1AA0
	Yes	Yes	COM2 (38.4 kBaud)	3SU1400-1GD10-1AA0

7.1.14 Electronic module for IO-Link

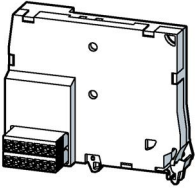
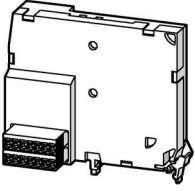
The electronic modules for IO-Link can be installed in 3SU1 enclosures or mounted on a front plate.

The modules are controlled by IO-Link communication. The rated supply voltage of the module is 24 V.

Variants

- **Front variant 6DI/2DO**
For front plate mounting. The 8 digital inputs and outputs can be parameterized individually as required. The default setting is 6 digital inputs and 2 digital outputs. The inputs and outputs can only be parameterized by IO-Link communication.
- **Basic variant 6DI/2DO**
For use in a 3SU1 enclosure. The 8 digital inputs and outputs can be parameterized individually as required. The default setting is 6 digital inputs and 2 digital outputs. The inputs and outputs can only be parameterized by IO-Link communication.
- **Basic variant 6DI/2DO**
6DI/2DO means that the variant has 6 digital inputs and 2 digital outputs. It is not possible to change the number of inputs and outputs.
- **Basic variant 4DI/4DO**
4DI/4DO means that the variant has 4 digital inputs and 4 digital outputs. It is not possible to change the number of inputs and outputs.
- **Basic variant 2DI/6DO**
2DI/6DO means that the variant has 2 digital inputs and 6 digital outputs. It is not possible to change the number of inputs and outputs.

Article numbers

	Mounting type	Digital inputs	Digital outputs	Article number
	Front plate mounting	6 ¹⁾	2 ¹⁾	3SU1400-1HL10-6AA0
	Base mounting	6 ¹⁾	2 ¹⁾	3SU1400-2HL10-6AA0
	Base mounting	6 ²⁾	2 ²⁾	3SU1400-2HK10-6AA0
	Base mounting	4 ²⁾	4 ²⁾	3SU1400-2HM10-6AA0
	Base mounting	2 ²⁾	6 ²⁾	3SU1400-2HN10-6AA0

¹⁾ Default setting. The 8 digital inputs and outputs can be parameterized individually as required.

²⁾ It is not possible to change the number of inputs and outputs.

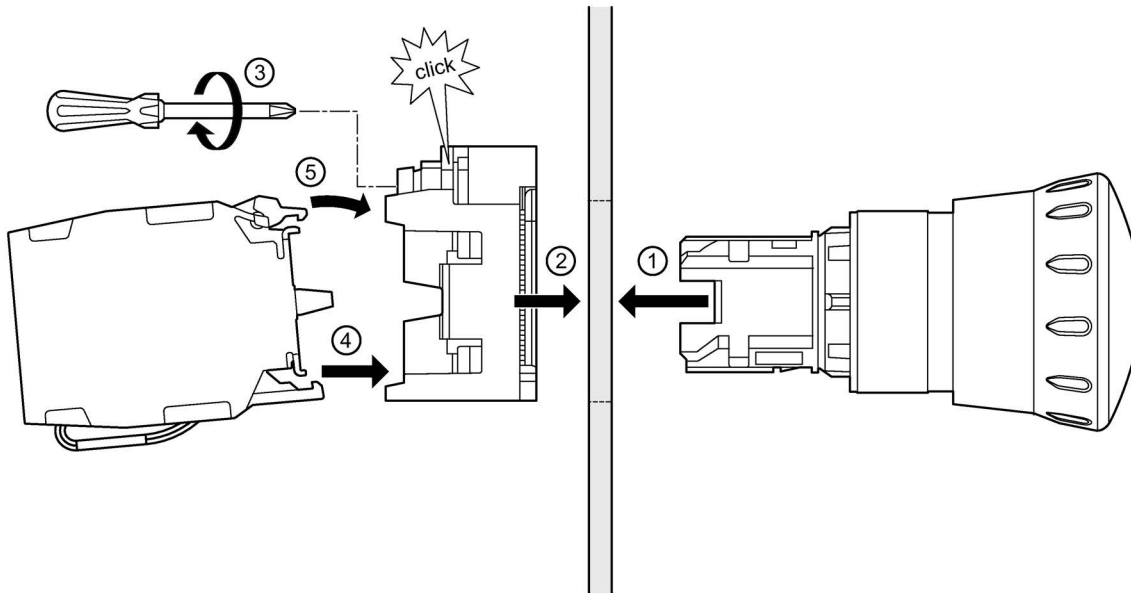
Short-circuit protection

If a short-circuit occurs at one or more outputs, the occurrence of a fault event is sent and the fault flag is set. All outputs are deactivated for one second. Then the relevant outputs are re-activated to monitor whether the short-circuit is still active. This temporary state exists for approximately 0.1 seconds. If no short-circuit is determined during this period, the fault event is revoked, and the fault flag is deleted. However, if a short-circuit is detected during this time, all outputs are deactivated again, and the short-circuit device fault remains.

7.2 Mounting

7.2.1 Front plate mounting

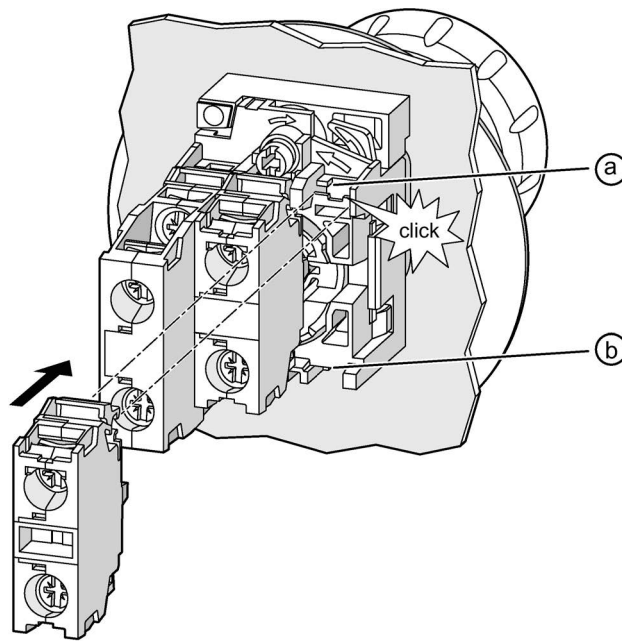
7.2.1.1 Contact and LED modules



Typical diagram

Procedure

1. Insert the actuating or signaling element from the front through the mounting opening of the front plate.
2. Fit the holder from behind (wiring side) onto the actuating or signaling element and lock it into place.
3. The unit must be aligned before finally tightening and securing against twisting.
4. Turn the screw at the holder until the actuating or signaling element is fixed securely and cannot vibrate or twist (tightening torque 1.0 to 1.2 Nm).
5. Snap the contact module(s) from behind onto the holder.
To do this, hold the modules so that they are tilted downward slightly and place them onto the holder from behind (snap the narrow snap hook (b) into the appropriate contour on the holder) and then press them upwards until you feel the broad wide snap hook (a) latch in the holder.
Single- or two-pole contact modules can be mounted on the holder.
6. Ensure secure latching.
7. Connect the cables to the modules. You can find the relevant information in Chapter "Wiring (Page 168)".



- a Broad snap hook
b Narrow snap hook

Typical diagram

7.2.1.2 AS-Interface modules, electronic modules for ID key-operated switch / IO-Link

You can find information about installing ASi modules in the section AS-Interface in Chapter "Mounting (Page 206)".

You can find information about installing electronic modules for ID keys in the section IO-Link in Chapter "Mounting (Page 271)".

You can find information about installing electronic modules for IO-Link in the section IO-Link in Chapter "Mounting (Page 286)".

7.2.2 Mounting on printed-circuit boards

Procedure

1. Insert the actuating or signaling element (A) from the front through the mounting opening of the front plate (B).
2. Fit the holder (C) from behind onto the actuating or signaling element and lock it into place.
3. Turn the screw at the holder until the actuating or signaling element is fixed securely and cannot vibrate or twist.
4. Equip the printed-circuit board (F) with the components.

Note

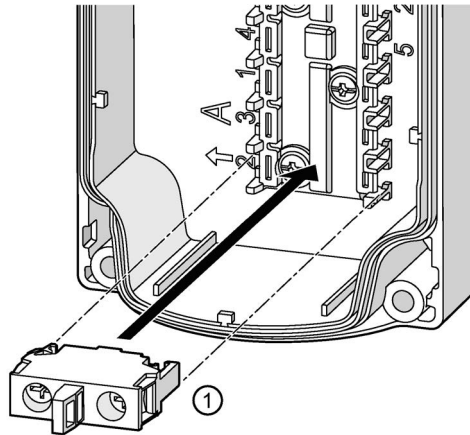
Number of PCB carriers

One or more PCB carriers must be used, depending on the application.

If the printed-circuit board is attached, one PCB carrier is sufficient. For an unattached printed-circuit board, at least two PCB carriers must be used.

7.2.3 Base mounting for the enclosure

7.2.3.1 Contact and LED modules



The contact modules and LED modules are mounted in the enclosure base.

To equip an enclosure, follow these steps:

1. Snap the module ① onto a slot in the enclosure. The narrow snap hook must point in direction "A" here.

Refer also to the information on fitting in Chapter "Mounting positions (Page 181)".

7.2.3.2 AS-Interface modules, electronic modules for IO-Link

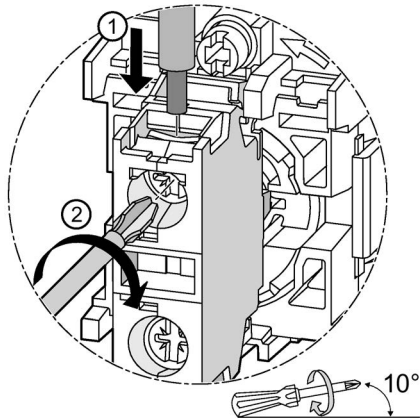
You can find information about installing ASi modules in the section AS-Interface in Chapter "Mounting (Page 210)".

You can find information about installing electronic modules for IO-Link in the section IO-Link in Chapter "Mounting (Page 288)".

7.3 Connecting

7.3.1 Contact and LED modules

Procedure for wiring a screw terminal



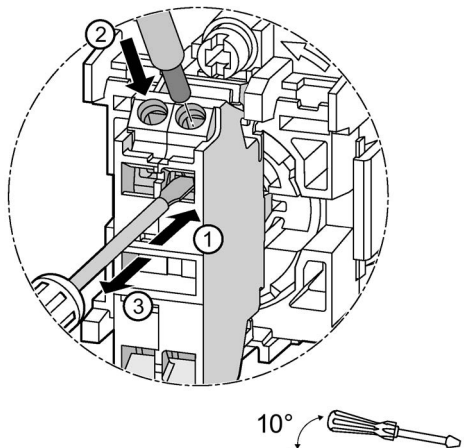
- ① Insert the relevant cable into the opening of the screw terminal of the module until it engages.
- ② Insert the screwdriver (DIN ISO 8764-1-PZD1) at an angle of 10° into the opening for the screw.

Tighten the screw.

- Tightening torque for contact modules: 0.8 ... 0.9 Nm
- Tightening torque for LED modules: 0.8 ... 1.0 Nm

Pull on the cable to ensure it is screwed tight.

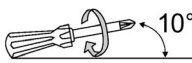
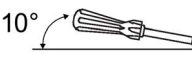
Procedure for wiring a spring-loaded terminal



- ① Insert the screwdriver (3RA2908-1A: 3.0 mm x 0.5 mm) into the rectangular opening to open the terminal (round opening).
- ② Insert the cable as far as it will go into the round opening
- ③ Remove the screwdriver.

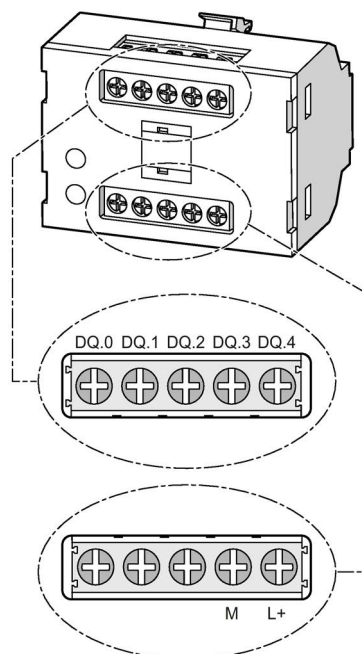
Pull on the cable to ensure it is tight.

Conductor cross-sections for contact and LED modules

Screw terminals		Spring-loaded terminals	
 DIN ISO 8764-1-PZD1	Tightening torques: for contact modules: 0.8 ... 0.9 Nm LED modules: 0.8 ... 1.0 Nm	 3RA2908-1A: diameter 3.0 mm x 0.5 mm	---
	2 x (1.0 ... 1.5) mm ²		2 x (0.25 ... 1.5) mm ²
	2 x (0.5 ... 0.75) mm ²		—
	2 x (1.0 ... 1.5) mm ²		2 x (0.25 ... 1.5) mm ²
	2 x (0.5 ... 1.5) mm ²		2 x (0.25 ... 0.75) mm ²
AWG	2 x (18 to 14)	AWG	2 x (24 to 16)

7.3.2 Electronic modules for ID key-operated switches

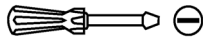
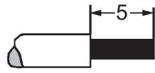
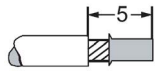
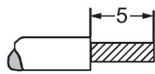
3SU1400-1GC10-1AA0 electronic module for ID key-operated switches



Terminal labeling

Terminal labeling					
Pin	X1		Pin	X2	
1	DQ.0	Digital output	6	—	—
2	DQ.1	Digital output	7	—	—
3	DQ.2	Digital output	8	—	—
4	DQ.3	Digital output	9	M	Ground
5	DO.4	Digital output	10	L+	24 V DC

Conductor cross-sections

 SZM (Ø 3.5 mm x 0.6 mm)	0.4 Nm 3.5 lb in
	1 x 0.2 ... 2.5 mm ²
	1 x 0.25 ... 1.5 mm ² 2 x 0.25 ... 0.75 mm ²
	1 x 0.2 ... 2.5 mm ² 2 x 0.2 ... 0.75 mm ²
AWG	26 to 14

7.3.3 AS-Interface modules and electronic module for IO-Link

You can find information on connecting the ASi modules in the section AS-Interface in Chapter "Connecting (Page 217)".

You can find information on connecting the electronic modules for IO-Link in the section IO-Link of Chapter "Connecting (Page 272)".

3SU15 holders

8.1 Holders

The holders are used to secure the actuating or signaling elements and the contact module or LED module. The holders are designed for mounting in front plates with a plate thickness of 1 to 6 mm.

When delivered, the holders are set to a control panel thickness of approximately 4.5 mm. They are placed in the ↑ arrow direction from the rear onto the actuating and signaling elements. The fastening screw is located at the top. If they are to be mounted on a control panel that is > 4.5 mm thick, you must adjust the fastening screw of the holder before you install the holder.

Note

Note the maximum permissible front plate thickness!

When label holders, protective caps or similar accessories are used, it is important to remember that the maximum permissible front plate thickness must be reduced by the plate thickness of the relevant accessory.

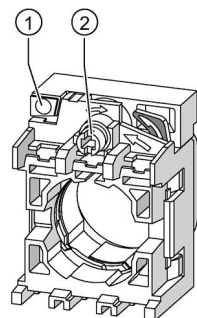
Tool

For securing, we recommend a size 2 screwdriver (cross-tip DIN ISO 87641PZD1 or flat-head DIN ISO 2380-1 A/B 1 x 4.5). The tightening torque is 1.0 to 1.2 Nm.

Grounding of the front plate

If you mount a metal actuator on a metal front plate using a metal holder, the actuator is grounded via the tip of the fastening screw. This enables grounding via the connection on the front plate.

If the metal holder is to be used several times, grounding via the grounding stud is recommended!



- ① Hole for grounding stud (accessory: 3SU1950-0KK80-0AA0)
- ② Fastening screw

NOTICE**Mounting in front plates / enclosures made of electrically non-conductive material**

If you use an enclosure made of plastic, you must loop a grounding cable ① through the metal holders, and connect it to ground by means of a grounding stud (3SU1950-0KK80-0AA0).

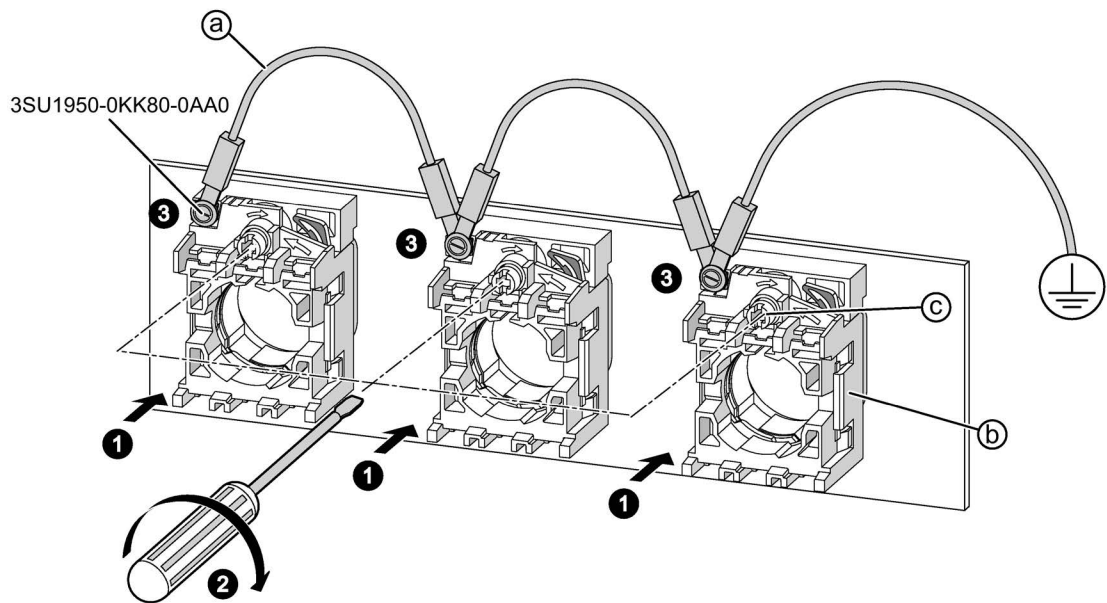
⚠ CAUTION**Risk of injury**

To ensure secure connection of the grounding cable, the grounding studs (3SU1950-0KK80-0AA0) must be fastened with ring cable lugs.

The grounding stud is not included in the scope of supply and must be ordered separately. For information, please refer to Chapter "Accessories (Page 331)".

Note

The operator is responsible for checking that the protective measure (grounding) is effective.

Procedure

1. Attach the holder (b) to the actuating element from behind.
2. Tighten the holder screw (c).
3. Secure the grounding cable (a) with ring cable lugs to the grounding stud (3SU1950-0KK80-0AA0), tightening torque: 0.8 - 1.0 Nm.

Module slot position

Holders made of metal or plastic and with 3 or 4 slots for contact or LED modules are available.

The module slot positions (contact or LED modules) are indicated on top of the holder. The large digits designate the modules that are snapped directly onto the holder. The small digits indicate the position of stacked modules.

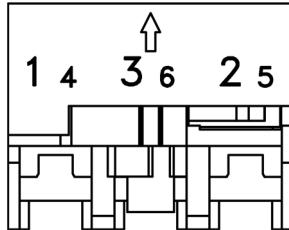


Image 8-1 Marking of slot positions on the 3-slot holder

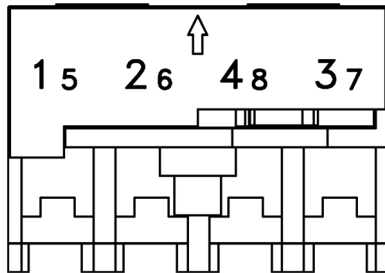


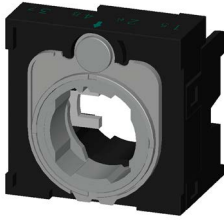
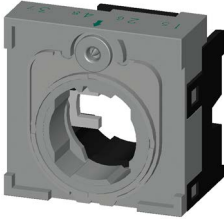
Image 8-2 Marking of slot positions on the 4-slot holder

Assignment of the holders to the actuating and signaling elements

The following assumptions apply when assigning holders to the actuating elements and signaling elements:

Front ring material	Collar material	Bore diameter	Holder (plastic)	Holder (metal)
Plastic	Plastic	22.5 mm	✓	✓
Metal, matte	Plastic	22.5 mm	✓	✓
Metal	Metal	22.5 mm	---	✓
Metal, matte	Metal	30.5 mm	---	✓

Overview of holders without modules

Material	3-slot holder (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221520)	4-slot holder (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221520)
Plastic	 3SU1500-0AA10-0AA0	 3SU1500-0BA10-0AA0
Metal	 3SU1550-0AA10-0AA0	 3SU1550-0BA10-0AA0

You can find information on the pre-assembled holders with modules in Chapter "Holders with modules (Page 175)".

8.2 Holders with modules

Overview of holders with contact module

These variants are preassembled. You need only snap them onto the actuator, tighten the fastening screws and connect the cables.

You can find information about the contact modules used in Chapter "Contact modules for front plate mounting (Page 149)".

Holder position 1	Holder position 2	Holder position 3	Article number
Plastic			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221521)			
3SU1400-1AA10-1BA0	—	—	3SU1500-1AA10-1BA0
3SU1400-1AA10-1CA0	—	—	3SU1500-1AA10-1CA0
3SU1400-1AA10-1BA0	—	3SU1400-1AA10-1BA0	3SU1500-1AA10-1NA0
Metal			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221521)			
3SU1400-1AA10-1BA0	—	—	3SU1550-1AA10-1BA0
3SU1400-1AA10-1CA0	—	—	3SU1550-1AA10-1CA0
3SU1400-1AA10-1BA0	—	3SU1400-1AA10-1BA0	3SU1550-1AA10-1NA0

3SU1400-1AA10-1BA0: Contact module 1NO normally open contact

3SU1400-1AA10-1CA0: Contact module 1NC normally closed contact

Overview of holders (plastic) with 1 contact and LED module

These variants are preassembled. You need only snap them onto the actuator, tighten the fastening screws and connect the cables.

The LED module included in the scope of supply is a wide-voltage module with a voltage range from 6 to 24 V AC/DC.

You can find information on the contact and LED modules used in Chapters "Contact modules for front plate mounting (Page 149)" and "LED modules for front plate mounting (Page 156)".

Holder position 1	Holder position 2	Holder position 3	Article number
Plastic			
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221521)			
3SU1400-1AA10-1BA0	—	3SU1401-1BG00-1AA0	3SU1501-1AG00-1BA0
3SU1400-1AA10-1CA0	—	3SU1401-1BG00-1AA0	3SU1501-1AG00-1CA0
3SU1400-1AA10-1BA0	3SU1400-1AA10-1BA0	3SU1401-1BG00-1AA0	3SU1501-1AG00-1NA0
3SU1400-1AA10-1BA0	—	3SU1401-1BG20-1AA0	3SU1501-1AG20-1BA0
3SU1400-1AA10-1CA0	—	3SU1401-1BG20-1AA0	3SU1501-1AG20-1CA0
3SU1400-1AA10-1BA0	3SU1400-1AA10-1BA0	3SU1401-1BG20-1AA0	3SU1501-1AG20-1NA0
3SU1400-1AA10-1BA0	—	3SU1401-1BG30-1AA0	3SU1501-1AG30-1BA0
3SU1400-1AA10-1CA0	—	3SU1401-1BG30-1AA0	3SU1501-1AG30-1CA0
3SU1400-1AA10-1BA0	3SU1400-1AA10-1BA0	3SU1401-1BG30-1AA0	3SU1501-1AG30-1NA0
3SU1400-1AA10-1BA0	—	3SU1401-1BG40-1AA0	3SU1501-1AG40-1BA0
3SU1400-1AA10-1CA0	—	3SU1401-1BG40-1AA0	3SU1501-1AG40-1CA0
3SU1400-1AA10-1BA0	3SU1400-1AA10-1BA0	3SU1401-1BG40-1AA0	3SU1501-1AG40-1NA0
3SU1400-1AA10-1BA0	—	3SU1401-1BG50-1AA0	3SU1501-1AG50-1BA0
3SU1400-1AA10-1CA0	—	3SU1401-1BG50-1AA0	3SU1501-1AG50-1CA0
3SU1400-1AA10-1BA0	3SU1400-1AA10-1BA0	3SU1401-1BG50-1AA0	3SU1501-1AG50-1NA0
3SU1400-1AA10-1BA0	—	3SU1401-1BG60-1AA0	3SU1501-1AG60-1BA0
3SU1400-1AA10-1CA0	—	3SU1401-1BG60-1AA0	3SU1501-1AG60-1CA0
3SU1400-1AA10-1BA0	3SU1400-1AA10-1BA0	3SU1401-1BG60-1AA0	3SU1501-1AG60-1NA0

3SU1400-1AA10-1BA0: Contact module 1NO normally open contact

3SU1400-1AA10-1CA0: Contact module 1NC normally closed contact

3SU1401-1BG.0-1AA0: LED module

You can find further information on the holders in Chapter "Holders (Page 38)".

3SU18 enclosures

The enclosed pushbuttons and indicator lights are available with conventional controls as well as for connection to AS-Interface.

The following versions of the 3SU18 enclosure are available:

- Empty enclosures with 1 to 6 command points (the installed components must be ordered separately)
- Enclosures with standard fittings with 1 to 3 command points
- Enclosures with customized fittings with 1 to 6 command points
- Two-hand operation consoles

9.1 Enclosures for actuating and signaling elements

Enclosures

For the 3SU1 actuating elements and signaling elements, plastic enclosures and metal enclosures with 1, 2, 3, 4 or 6 command points are available.

Cable entry is on the top or bottom of the enclosure front by means of a metric M20 or M25 cable gland (for 1 to 3 command points) or M25 (for 4 and 6 command points).

The enclosures are available in the following colors:

- Enclosure cover:
 - Gray
 - Yellow
- Enclosure base:
 - Black

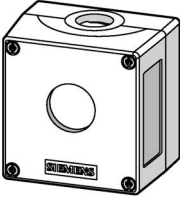
The enclosures are available for devices with diameter 22.5 mm

Enclosures are available in different variants according to the following features:

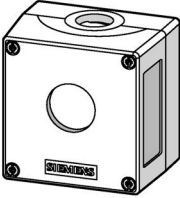
- Empty enclosure and enclosure with standard fittings
- With and without labeling fields
- With protective collar

9.1.1 Overview of empty enclosures

Enclosures with raised cover

 Typical diagram	No. of command points	Article number
	Enclosure material plastic	
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221522)	
	1	3SU1801-1AA00-0AA1
	Enclosure material metal	
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221522)	
	1	3SU1851-1AA00-0AA1

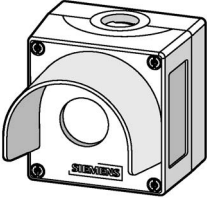
Enclosure with command point in center

 Typical diagram	No. of command points	Article number
	Enclosure material plastic	
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221522)	
	1	3SU1801-0AA00-0AAy
	Enclosure material metal	
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221522)	
	1	3SU1851-0AA00-0AAy

y: 1 = color gray

y: 2 = color yellow

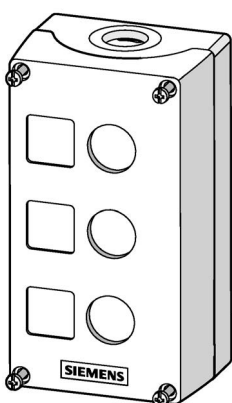
Enclosure with protective collar in center

 Typical diagram	No. of command points	Article number
	Enclosure material plastic	
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221522)	
	1	3SU1801-0AA00-0ACy
	Enclosure material metal	
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221522)	
	1	3SU1851-0AA0x-0ACy

y: 1 = color gray

y: 2 = color yellow

Enclosure with recess for labeling plate

 Typical diagram	No. of command points	Article number
	Enclosure material plastic	
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221522)	
	1	3SU1801-0AA00-0ABy
	2	3SU1802-0AA00-0ABy
	3	3SU1803-0AA00-0AB1
	4	3SU1804-0AA00-0AB1
	6	3SU1806-0AA00-0AB1
	Enclosure material metal	
	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221522)	
	1	3SU1851-0AA00-0ABy
	2	3SU1852-0AA00-0ABy
	3	3SU1853-0AA00-0AB1
	4	3SU1854-0AA00-0AB1
	6	3SU1856-0AA00-0AB1

y: 1 = color gray

y: 2 = color yellow

Note

Not all combinations listed in the tables are available. In the case of special versions, please consult Technical Assistance, or initiate a PI1000 request.

Actuating and signaling elements with nominal diameter 22.5 mm can be used.

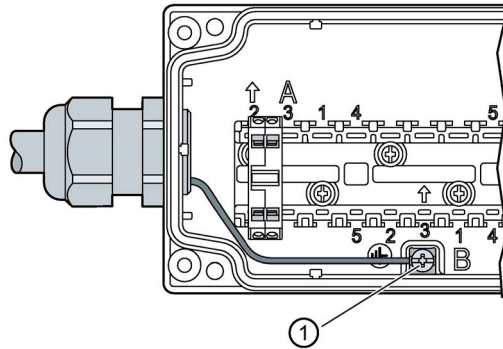
Plastic enclosures are normally equipped with actuating or signaling elements made of plastic. Metal enclosures are equipped as standard with actuating or signaling elements made of metal. If otherwise equipped, please note the grounding information below.

EMERGENCY STOP according to ISO 13850

For control systems according to IEC 60204-1 or DIN EN 60204-1 (VDE 0113 Part 1), the mushroom pushbuttons of the 3SU10 series can be used as EMERGENCY STOP devices.

Grounding

The enclosure must be grounded if it contains metal actuating elements. Grounding is possible on the base of metal enclosures (grounding stud) ①.



Plastic enclosures containing metal actuating elements can be grounded via metal holders. For further information refer to Chapter "Holders (Page 38)".

Contact modules and LED modules

Contact modules and LED modules for base mounting are snapped into the enclosure base. Base mounting is not provided for on the enclosures with raised cover. The following elements can be attached for each command point:

- 3 contact modules or
- 2 contact modules and 1 LED module or
- 2 contact modules and 1 ASIM 2F-DI / LED

Due to the high contact stability, the contact modules are also suitable for use in electronic controllers. The function numbers are located on the contact modules.

As well as base mounting, it is also possible to use 1-pole contact and LED modules for front plate mounting.

You can find information on the modules in Chapter "3SU14 modules (Page 147)".

9.1.2 Mounting positions

The mounting position of the contact modules or LED modules is specified by the combination of letters and numbers (permissible numbers: 1, 2, 3).

The lowest mounting position of an actuating or signaling element is always A and the highest possible is F (for enclosures with 6 command points). This yields the following highest possible mounting positions, depending on the number of command points in the enclosure:

- Enclosures with 2 actuating or signaling elements $\Rightarrow$ B
- Enclosures with 3 actuating or signaling elements $\Rightarrow$ C
- Enclosures with 4 actuating or signaling elements $\Rightarrow$ D
- Enclosures with 6 actuating or signaling elements $\Rightarrow$ F

Contact modules can be mounted at the mounting positions 1 and/or 2 and/or 3, but LED modules only at mounting position 3.

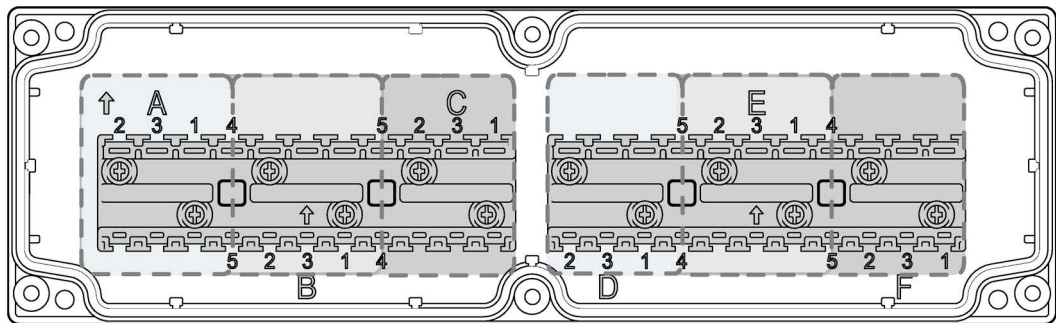
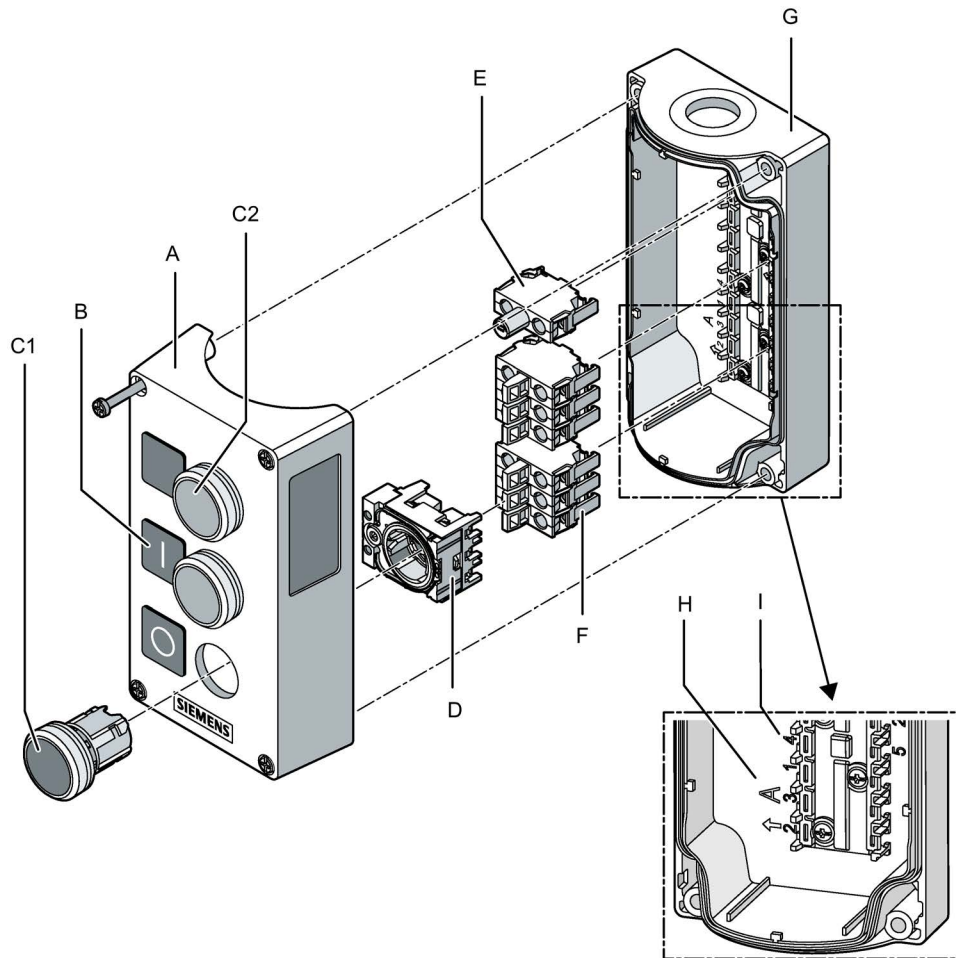


Image 9-1 Labeling for mounting positions in the enclosure base for enclosures with 1 to 6 command points.

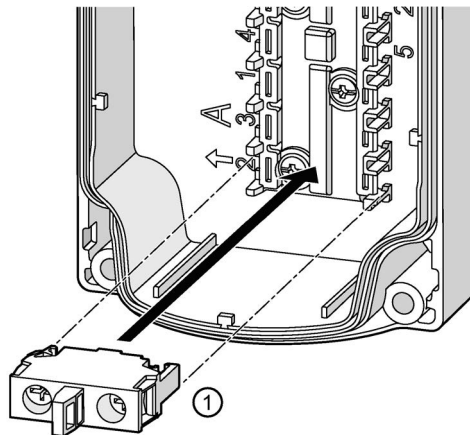
9.1.3 Mounting



- A Enclosure cover
- B Labeling plates
- C1 Actuating or signaling element (in this case: pushbutton)
- C2 Actuating or signaling element (in this case: indicator light)
- D Holder
- E LED module
- F Contact modules
- G Enclosure base
- H Identification letters for the command points
- I Module position (identical to holder labeling)

Procedure

1. Undo the screws and remove the enclosure cover.
2. Insert the actuating or signaling element (C1) from the front through the opening of the enclosure cover (A).
3. Fit the holder (D) from behind onto the actuating or signaling element and lock it into place.
4. Turn the screw at the holder until the actuating or signaling element is fixed securely and cannot vibrate or twist (tightening torque 1.0 to 1.2 Nm).
5. Mount an LED module, if necessary. An LED module can only be installed in slot number 3 (e.g. A3, B3, C3 etc.).
6. Mount the contact module(s) in the enclosure base (see Chapter Fitting with contact modules and LED modules (Page 183) for this).
7. Mount the enclosure cover (see Chapter Mounting the enclosure cover (Page 184) for this).

9.1.3.1 Fitting with contact modules and LED modules

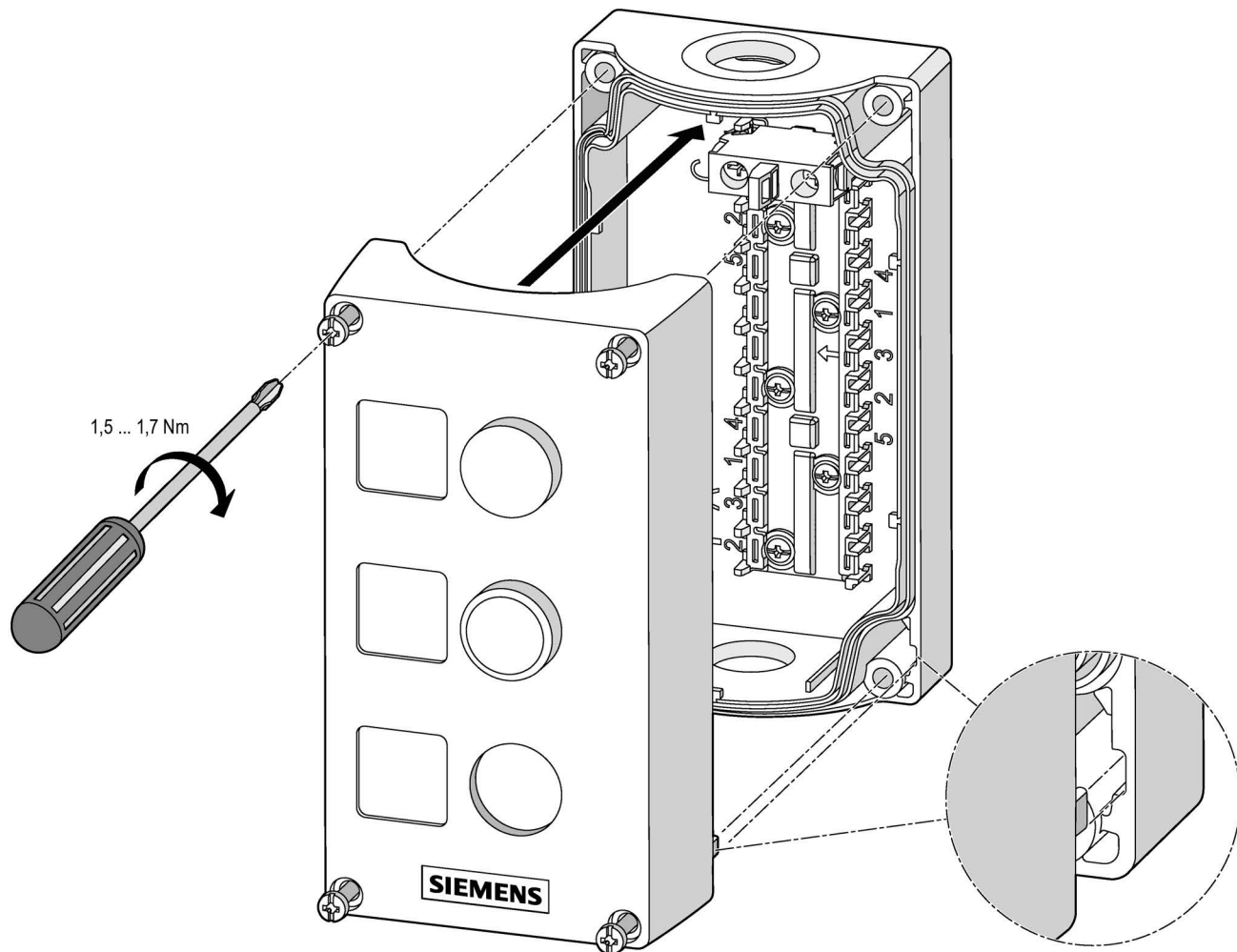
The contact modules and LED modules are mounted in the enclosure base.

To equip an enclosure, follow these steps:

1. Snap the module ① onto a slot in the enclosure. The broad snap hook must be pointing in direction "A".

Refer also to the information on fitting in Chapter "Mounting positions (Page 181)".

9.1.3.2 Mounting the enclosure cover



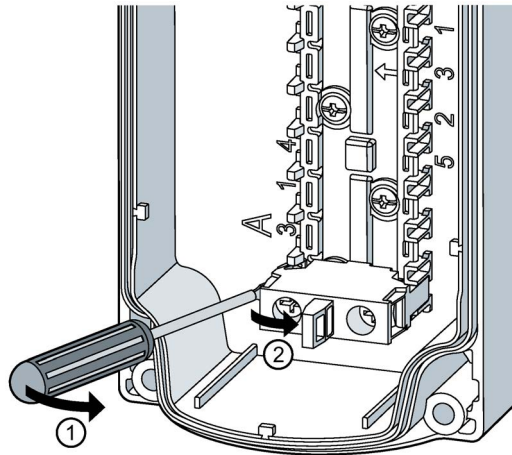
Note

Pay attention to the proper position when mounting the enclosure cover. Only one position is possible, recognizable by the coding lugs at the bottom left and right in the enclosure.

9.1.3.3 Removal of the modules

Requirement

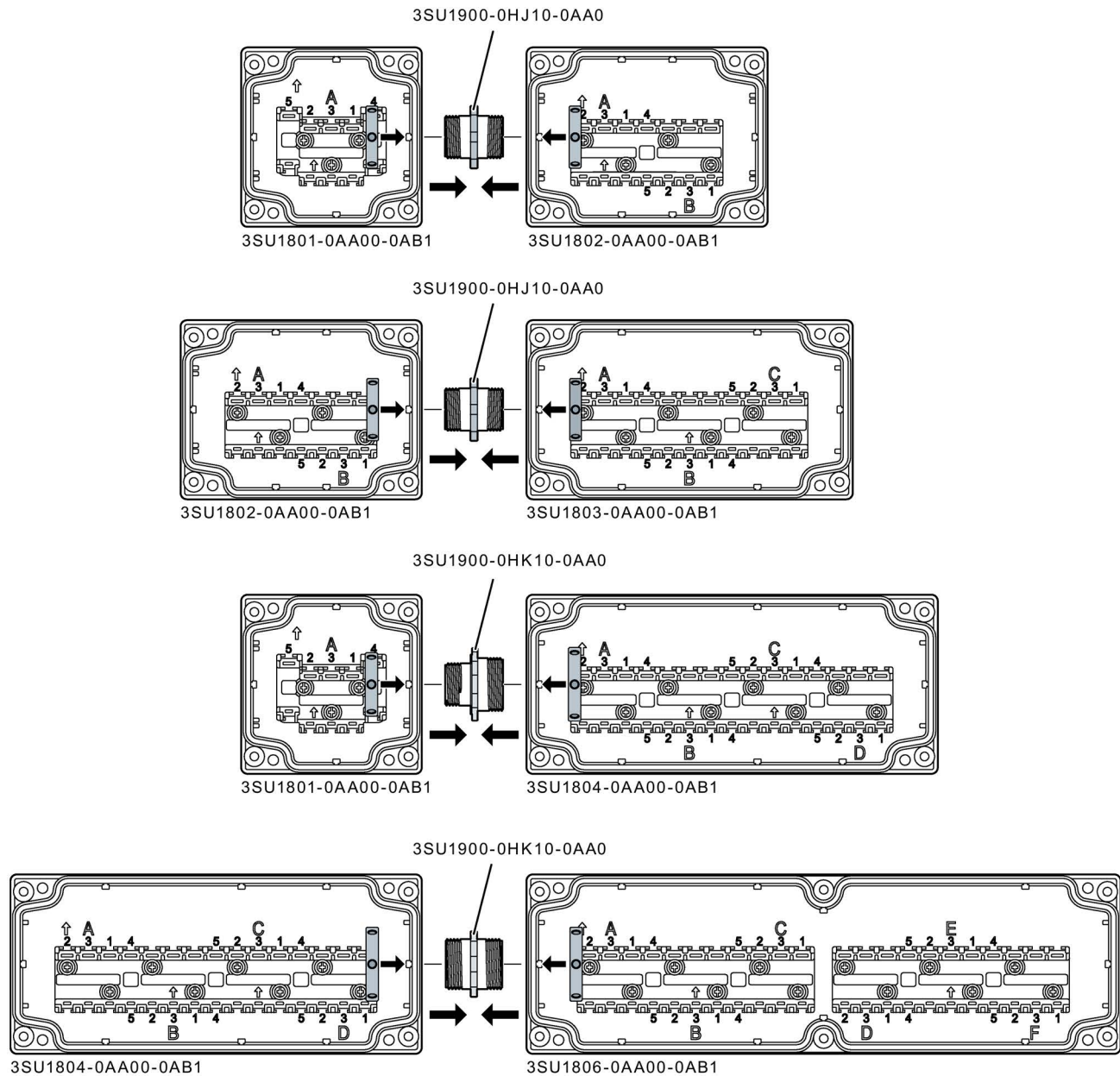
Enclosure cover is disassembled.

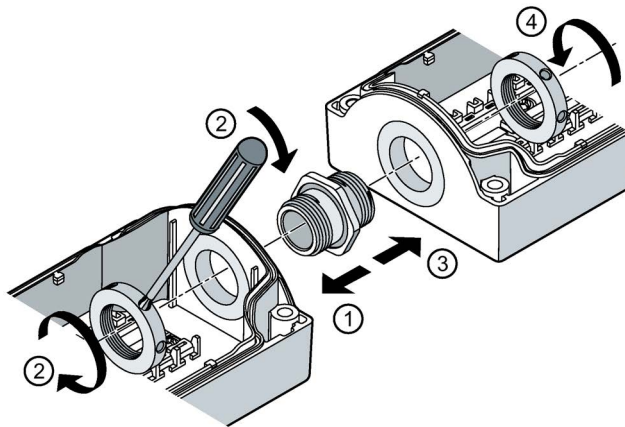


- ① Insert a screwdriver into the opening of the latches (broad snap hook) of the contact modules or LED modules.
- ② Press the screwdriver in the direction of the module you want to remove to open the latches of the modules.
Remove the modules.

9.1.3.4 Mounting of connection pieces

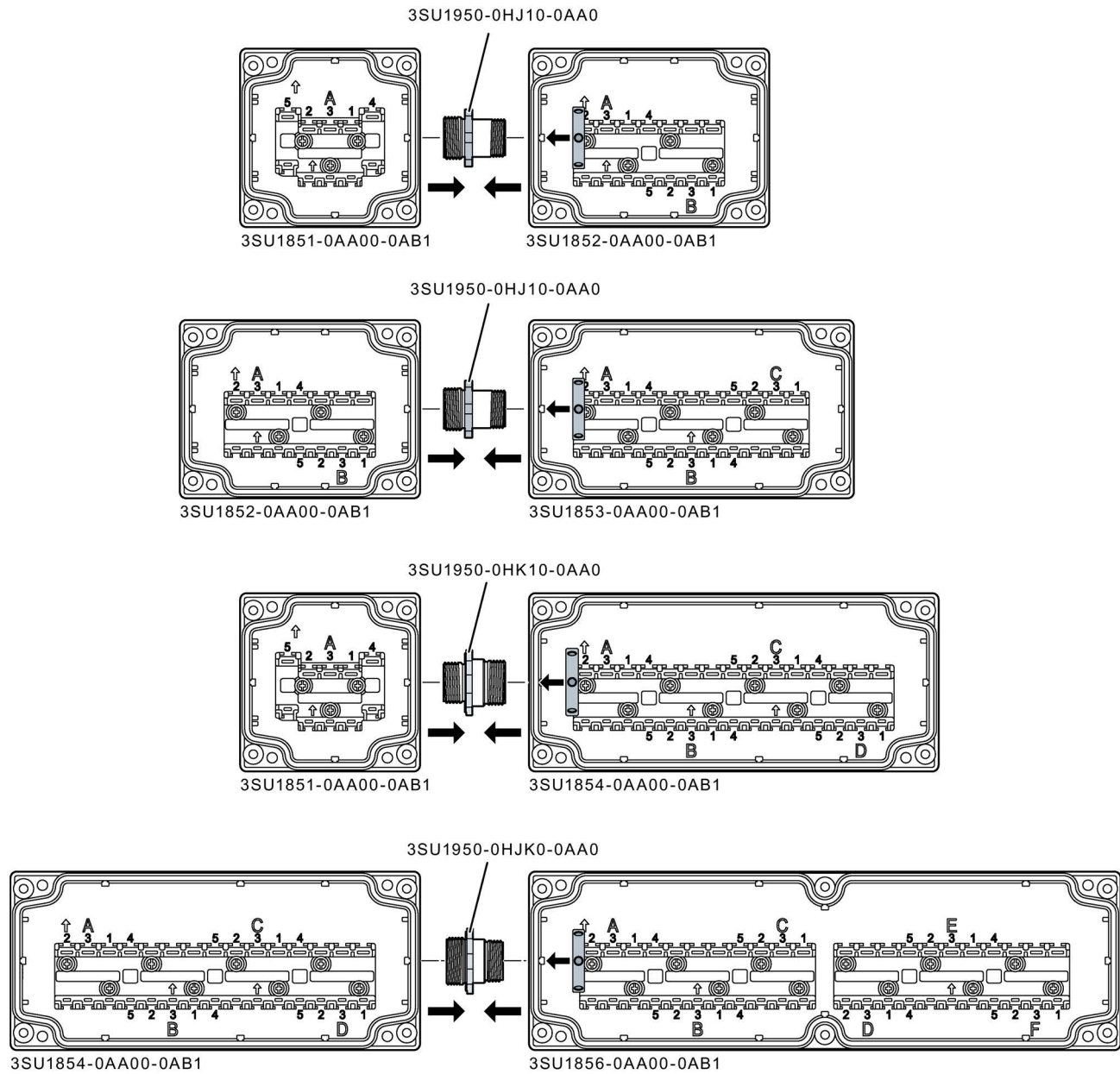
Mounting of plastic connection pieces (M20 as an example)

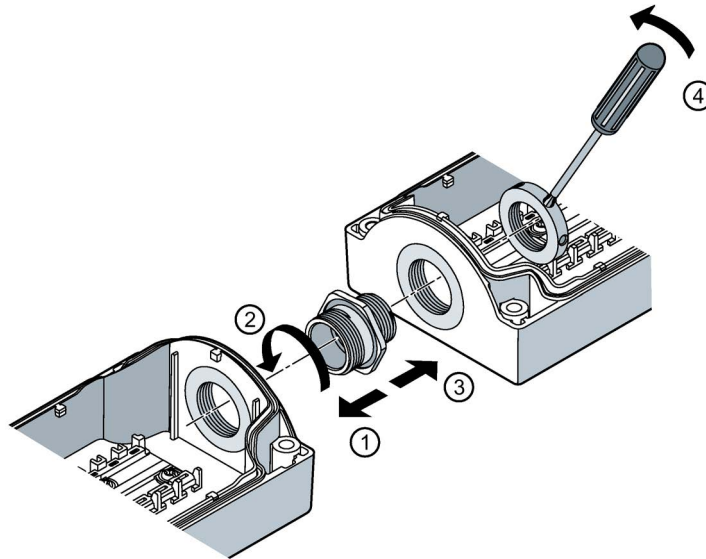


Procedure (M20 as an example)

- ① The opening must first be broken out on plastic enclosures.
Insert the connection piece into the opening of the enclosure.
- ② Screw the connection piece with a screwdriver.
- ③ Insert the connection piece into the opening of the 2nd enclosure.
- ④ Screw the connection piece with a screwdriver.

Mounting of metal connection pieces (M20 as an example)



Procedure (M20 as an example)

- ① Screw the connection piece into the enclosure.
- ② Insert the connection piece into the opening of the 2nd enclosure.
- ③ Screw the connection piece with a screwdriver.

9.2 Enclosures with EMERGENCY STOP devices

EMERGENCY STOP according to ISO 13850

For control systems according to IEC 60204-1 or DIN EN 60204-1 (VDE 0113 Part 1), the EMERGENCY STOP mushroom pushbuttons of the 3SU1 series can be used as EMERGENCY STOP devices.

Safety circuits

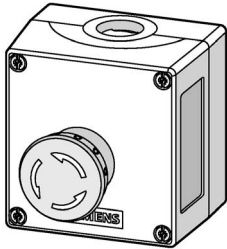
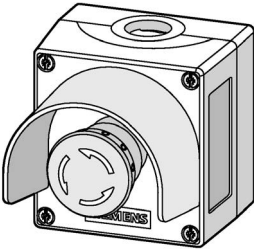
Standards IEC 60947-5-1 and EN 60947-5-5 require positive opening. With regard to personal protection, positive opening of normally closed contact elements in all safety circuits is expressly prescribed for the electrical equipment of machines and is designated according to IEC 60947-5-1 with the positive opening symbol ➔.

With the EMERGENCY STOP mushroom pushbuttons, PL e according to ISO 13849-1 or SIL 3 according to IEC 62061 can be achieved if the corresponding fail-safe evaluation devices are selected and correctly connected. The 3SK safety relays, the 3RK3 Modular Safety System, or the corresponding devices from the ASIsafe, SIMATIC and SINUMERIK programs can be used as fail-safe evaluation devices.

9.2.1 Overview of enclosures with EMERGENCY STOP mushroom pushbuttons

EMERGENCY STOP mushroom pushbuttons are certified according to ISO 13850/EN 418. The EMERGENCY STOP mushroom pushbutton enables fast and safe stopping of systems in dangerous situations. The metal version is suitable for use even in the harshest conditions.

EMERGENCY STOP devices can be connected directly via the standard AS-Interface with safety-related communication.

	Enclosure	Enclosure with collar
		
Material	Article number	
Plastic	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221523)	
	3SU1801-0NA00-2AA2	3SU1801-0NA00-2AC2
Metal	Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221523)	
	3SU1851-0NA00-2AA2	3SU1851-0NA00-2AC2

9.3 Enclosures with standard fittings

Enclosures (standard fittings) with pushbuttons and indicator lights are available in the following versions:

- 1 to 3 command points
- Operating voltage up to 500 V
- Vertical mounting type
- Contact modules and LED modules for base mounting (are snapped into the enclosure base); screw terminals as standard; some versions also with spring-loaded terminals

The enclosures have a recess for labeling plate(s). The color of the enclosure cover is gray, and the enclosure base is black.

Plastic version				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221523)				
No. of command points	Fittings	Color of the actuating or signaling element	Label	Article number
1	Pushbuttons	Green	"I"	3SU1801-0AB00-2AB1
		Red	"O"	3SU1801-0AC00-2AB1
		White	"I"	3SU1801-0AD00-2AB1
		Black	"O"	3SU1801-0EB00-2AB1
2	Pushbuttons	Red	"O"	3SU1802-0AB00-2AB1
	Pushbuttons	Green	"I"	
	Pushbuttons	Black	"O"	3SU1802-0AC00-2AB1
	Pushbuttons	White	"I"	
3	Pushbuttons	Red	"O"	3SU1803-0AB00-2AB1
	Pushbuttons	Green	"I"	
	Indicator lights	Clear	"Without inscription"	
	Pushbuttons	Black	"O"	3SU1803-0AC00-2AB1
	Pushbuttons	White	"I"	
	Indicator lights	Clear	"Without inscription"	
	Pushbuttons	Red	"O"	3SU1803-0AD00-2AB1
	Pushbuttons	Black	"I"	
	Pushbuttons	Black	"II"	

Metal version				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221523)				
No. of command points	Fittings	Color of the actuating or signaling element	Label	Article number
1	Pushbuttons	Green	"I"	3SU1851-0AB00-2AB1
		Red	"O"	3SU1851-0AC00-2AB1
		White	"I"	3SU1851-0AD00-2AB1
		Black	"O"	3SU1851-0EB00-2AB1
2	Pushbuttons	Red	"O"	3SU1852-0AB00-2AB1
	Pushbuttons	Green	"I"	
	Pushbuttons	Black	"O"	3SU1852-0AC00-2AB1
	Pushbuttons	White	"I"	
3	Pushbuttons	Red	"O"	3SU1853-0AB00-2AB1
	Pushbuttons	Green	"I"	
	Indicator lights	Clear	"Without inscription"	
	Pushbuttons	Black	"O"	3SU1853-0AC00-2AB1
	Pushbuttons	White	"I"	
	Indicator lights	Clear	"Without inscription"	
	Pushbuttons	Red	"O"	3SU1853-0AD00-2AB1
	Pushbuttons	Black	"I"	
	Pushbuttons	Black	"II"	

9.4 3SU18..-3 two-hand operation console

9.4.1 Application areas

Two-hand operation consoles, approved according to EN 574, are used for machines and systems with danger areas for the purpose of controlling the location of both hands of the operator. Through a simultaneous and location-controlled use of both hands, protection from dangerous movement in the danger area of the machine is ensured.

Two-hand operation consoles are used for the following safety requirements:

- Safety at presses and punches
- Safety at printing presses
- Safety at paper processing machines

9.4.2 Function

The synchronous and location-controlled operation using both hands occurs throughout the duration of the danger. Bypassing of the safety mechanism or accidental actuation, e.g., by elbows, arms or knees, is effectively prevented by protective collars over the actuating elements. The sloping shape of the top side enables ergonomic operation and working position. Expansion to include additional operator controls is possible.

The two-hand control device must be located outside the hazard zone in order to prevent the operator from entering the zone before the machine has reached a complete standstill.

The following properties must be provided for mobile two-hand control devices:

- Stability
- The safety distance must be maintained between the control actuating devices and the hazard zone
- In the case of adjustable control actuating devices, a latch must be available

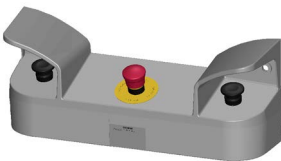
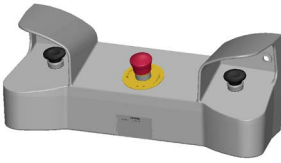
The control command is given by pressing the two pushbuttons on the sides simultaneously (within 0.5 s of each other) and must be maintained for as long as a hazard exists.

Appropriate two-hand control devices from the 3SK1 Advanced device range are available for evaluating control commands.

A function test must be carried out before commissioning. The following properties must be checked in the function test:

- Simultaneous actuation (use of both hands)
- Synchronous actuation (synchronism ≤ 500 ms)
- Relationship between input signals and output signals
- Renewed generation of the output signal

9.4.3 Overview of two-hand operation consoles

Two-hand operation consoles		Article number
Plastic enclosure Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221525)		
	With standard fittings ¹⁾ and preset breaking points for 8 additional 22.5 mm pushbuttons, with knock-outs for metric cable glands	3SU1803-3NB00-1AE1
	Empty enclosure, unequipped	3SU1803-3AA00-0AA1
Metal enclosure Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221525)		
	With standard fittings ¹⁾	3SU1853-3NB00-1AA1
	With standard fittings ¹⁾ and 4 additional holes for 22.5 mm pushbuttons	3SU1853-3NB00-1AD1
	Empty enclosure, unequipped	3SU1853-3AA00-0AA1
Accessories for two-hand operation consoles		
	Stands for two-hand operation console	
	With knock-outs for metric cable glands	3SU1950-0HN10-0AA0 (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221536)

¹⁾ The standard fittings comprise:

- Two black mushroom pushbuttons, diameter 40 mm, 1 NO + 1 NC, Article No. 3SU1000-1BD10-0AA0 (plastic) or 3SU1050-1BD10-0AA0 (metal)
- One red EMERGENCY STOP mushroom pushbutton according to EN ISO 13850, diameter 40 mm, with positive latching, 2 NC, Article No. 3SU1000-1HB20-0AA0 (plastic) or 3SU1050-1HB20-0AA0 (metal)

The two-hand operation consoles can be equipped with sensor switches. You can find information about sensor switches in section "Sensor switches" of Chapter 3SU12 compact units.

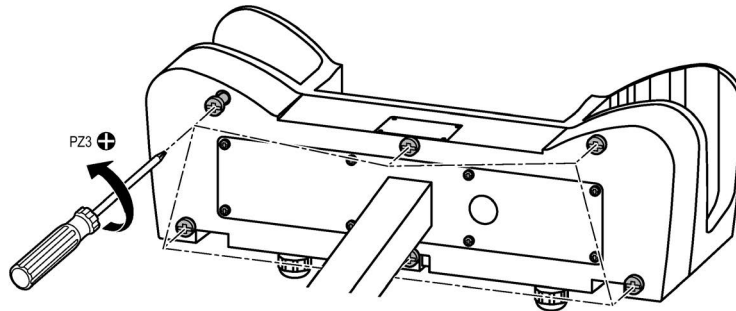
You can find further information about potential applications of two-hand operation consoles in Chapter "Application examples for two-hand operation consoles (Page 444)".

9.4.4 Mounting

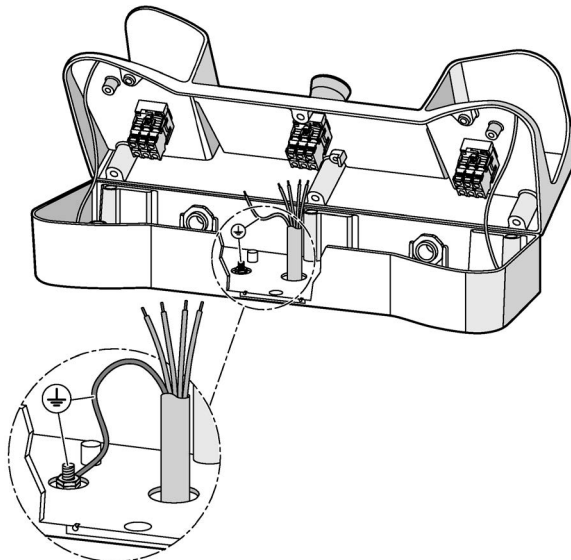
The two-hand operation console can be mounted on the associated stand or directly on the machine using the holes in the rear wall.

9.4.4.1 Installation and wiring of two-hand operation console

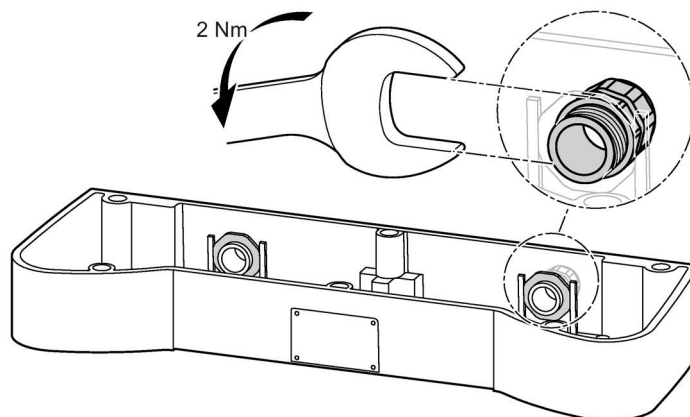
1. Unscrew the cover on the bottom of the two-hand operation console.



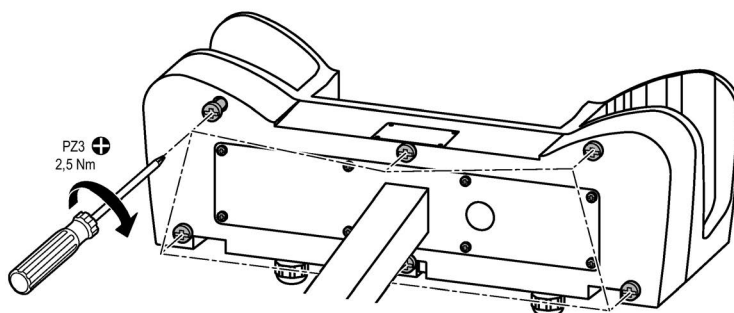
2. Wire and ground the two-hand operation console. The diagram shows a typical grounding arrangement for a two-hand operation console mounted on a stand. You can find information on fitting and wiring with modules in Chapter "3SU14 modules (Page 147)"



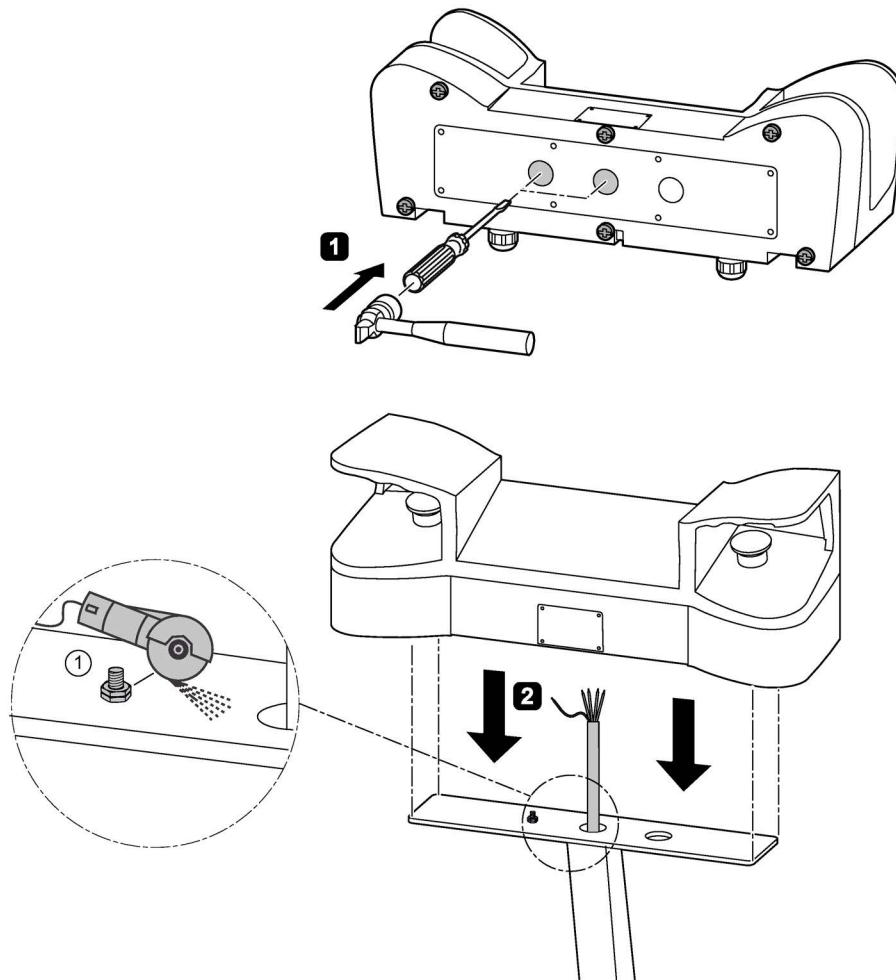
3. Fit the cable gland (optional step)



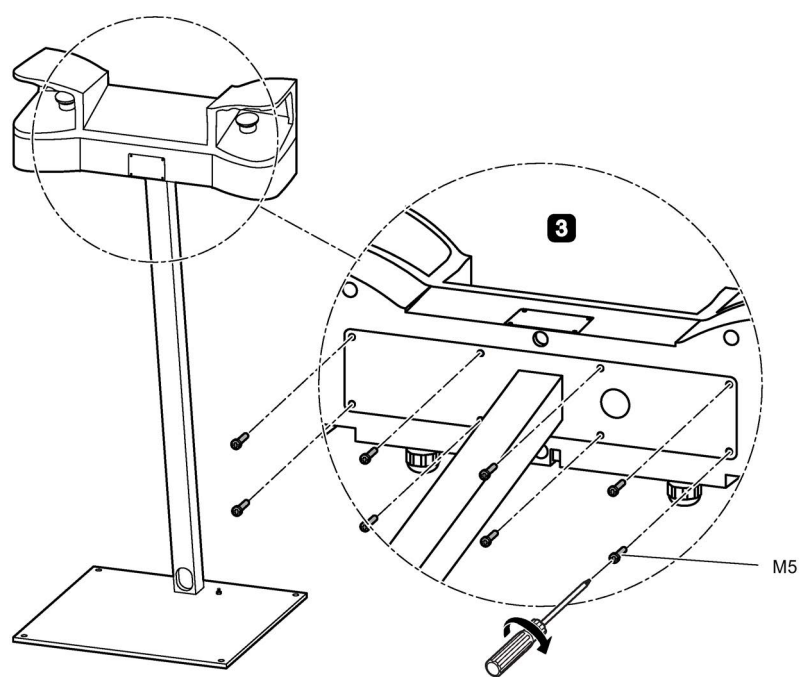
4. Screw on the cover.



9.4.4.2 Mounting on stand



- ① When mounting the 3SU1803-3NB00-1AE1 plastic enclosure on the stand, the grounding stud on the stand must be removed.



Tightening torque: 1.5 ... 2 Nm

9.4.5 Equipment

The two-hand operation consoles are pre-equipped with 3SU1 pushbuttons. In the case of plastic enclosures the command points are equipped as standard with actuators and indicators made of plastic, in the case of metal enclosures they are equipped with actuators and indicators made of metal.

The standard fittings are:

- Two black mushroom pushbuttons, Ø 40 mm, 1 NO + 1 NC,
Article No. 3SU1000-1BD10-0AA0 or 3SU1050-1BD10-0AA0
- One red EMERGENCY STOP mushroom pushbutton according to EN ISO 13850,
Ø 40 mm, with positive latching, 2 NC,
Article No. 3SU1000-1HB20-0AA0 or 3SU1050-1HB20-0AA0

An unequipped enclosure with 8 additional holes made of plastic is available, as is a metal enclosure with 4 additional holes.

Depending on customer requirements, up to 8 command points can be retrofitted in the plastic enclosure, and up to 4 command points in the metal enclosure. The surface of the console has premachined breaking points for this purpose.

AS-Interface

10.1 Application areas

With AS-Interface modules, distributed pushbuttons from the SIRIUS ACT range can be connected to the AS-Interface bus system. With the help of the modular system, you can assemble your own enclosures with integrated AS-Interface or flexibly modify existing enclosures.

AS-Interface modules are used as the basis or networked systems within a plant. The individual AS-Interface components are fully compatible with one another and can be operated jointly on the yellow AS-Interface cable.

The following solutions are available:

- AS-Interface modules for front plate mounting (Page 200)
- AS-Interface modules for base mounting (Page 203)
- AS-Interface enclosures with 1 to 3 command points (Page 204)

10.1.1 Application area of the AS-Interface modules

AS-Interface safety module (F slave)

Installed in a standard enclosure, the AS-Interface safety module is used for detecting safety-related switching statuses of one- or two-channel EMERGENCY STOP actuators with isolated contact elements. For this purpose, a code table with 8x4 bits is transferred via the AS-Interface bus and evaluated by the safety monitor. When operated properly, the system fulfills safety category 4 according to EN 13849-1. If an EMERGENCY STOP actuator is queried on just one channel (terminals for F-IN2 jumpered by means of wire), the system fulfills a maximum of safety category 2.

In accordance with IEC 61508, the module can be used in loops up to SIL 3. The PFD value of the entire loop must be calculated by the user.

You can find help and support for calculating at: Safety Evaluation Tool

(<http://www.industry.siemens.com/topics/global/en/safety-integrated/machine-safety/safety-evaluation-tool/Pages/default.aspx>)

AS-Interface standard modules (slave 4I/4O and A/B slave 4I/3O)

Mounted in a 3SU1 enclosure, the AS-Interface modules 4I/4O and 4I/3O can query 4 mechanical contacts. The AS-Interface module 4I/4O also enables control of 4 indicator lights, while the module 4I/3O enables control of 3 indicator lights. The power required is supplied by the AS-Interface system. In conjunction with an A/B-compatible AS-Interface master, up to 62 x 4I/3O modules can be operated in one AS-Interface network.

10.1.2 Application areas for AS-Interface modules for front plate mounting

The AS-Interface modules for front plate mounting are used to connect an EMERGENCY STOP device from the SIRIUS ACT series to the AS-Interface bus system according to ISO 13850. The modules for front plate mounting are suitable for pushbuttons with front plate mounting.

The AS-Interface modules for front plate mounting have a safe AS-Interface slave 2I and are snapped onto the holder from behind.

The expanded version 2I/1O includes an output for controlling a signaling element with LED.

Depending on the version, the connection to the AS-Interface bus cable is by means of screw terminals, spring-loaded terminals or insulation displacement method. Addressing is performed using the AS-Interface connection or the integrated addressing socket.

With the modules for front plate mounting, applications up to SILCL 3 as per IEC 62061, SIL 3 as per IEC 61508 and PL e (Cat. 4) as per ISO 13849-1 can be implemented depending on the connection of evaluation unit and actuators.

10.2 ASIsafe F adapters for front plate mounting

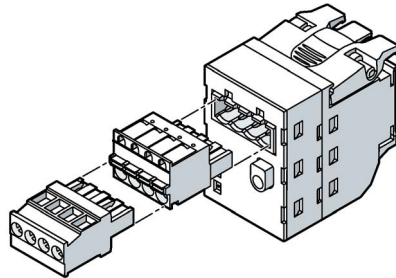
With ASIsafe F adapters, distributed SIRIUS ACT pushbuttons and indicator lights can be quickly connected to the AS-Interface communication system. ASIsafe F adapters for front plate mounting are installed on the rear face of a holder.

For more detailed information, refer to Chapter "Mounting (Page 97)".

AS-Interface EMERGENCY STOP according to ISO 13850

Via the standard AS-Interface with safety-related communication, EMERGENCY STOP devices according to ISO 13850 can be directly connected using the AS-Interface modules.

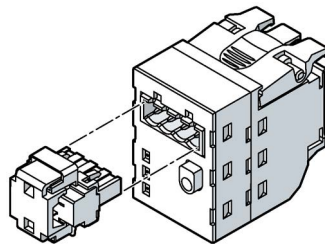
AS-Interface modules, screw terminals + spring-loaded terminals



Typical diagram

Slave type	Number of digital inputs		Number of digital outputs	Article number
	Standard inputs	Fail-safe inputs		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221528)				
2 F-DI	—	2	—	3SU1400-1EA10-2AA0
2 F-DI + 1 LED	—	2	1 for activating the red LED (LED not replaceable)	3SU1401-1EE20-2AA0
2 F-DI + 1 DO	—	2	1 unassigned	3SU1400-1EC10-2AA0

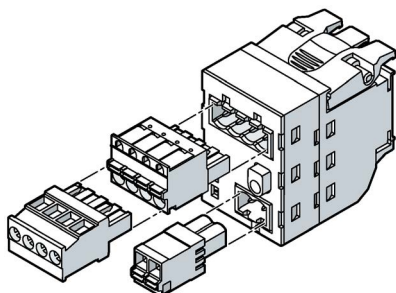
AS-Interface modules, insulation piercing method



Typical diagram

Slave type	Number of digital inputs		Number of digital outputs	Article number
	Standard inputs	Fail-safe inputs		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221528)				
2 F-DI	—	2	—	3SU1400-1EA10-4AA0
2 F-DI + 1 LED	—	2	1 for activating the red LED (LED not replaceable)	3SU1401-1EE20-4AA0

AS-Interface modules, spring-loaded terminals + insulation piercing method

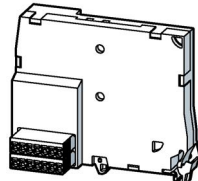


Typical diagram

Slave type	Number of digital inputs		Number of digital outputs	Article number
	Standard inputs	Fail-safe inputs		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221528)				
2 F-DI + 1 DO	—	2	1 unassigned	3SU1400-1EC10-4AA0

10.3 AS-Interface modules for front plate mounting

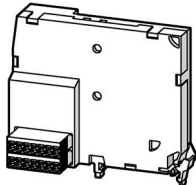
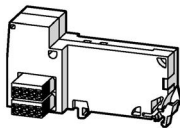
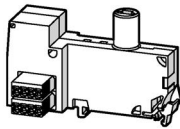
With AS-Interface modules, distributed SIRIUS ACT pushbuttons and indicator lights can be quickly connected to the AS-Interface communication system. AS-Interface modules for front plate mounting are installed on the rear face of a holder.

	Slave type	Number of digital inputs		Number of digital outputs	Article number
		Standard inputs	Fail-safe inputs		
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221528)					
	4 DI / 4 DQ	4	—	4	3SU1400-1EK10-6AA0
	4 DI / 3 DQ AB	4	—	3	3SU1400-1EJ10-6AA0

10.4 AS-Interface modules for base mounting (enclosure mounting)

With AS-Interface modules, distributed SIRIUS ACT pushbuttons and indicator lights can be quickly connected to the AS-Interface communication system. The AS-Interface modules for base mounting are installed in 3SU18 enclosures. On enclosures with raised cover (Article No.: 3SU180(5)1-1AA00-0AA1) base mounting is not envisaged.

AS-Interface modules with push-in terminal

	Slave type	Number of digital inputs		Number of digital outputs	Article number
		Standard inputs	Fail-safe inputs		
Siemens Industry Mall					
	4 DI / 4 DQ	4	—	4	3SU1400-2EK10-6AA0
	4 DI / 3 DQ AB	4	—	3	3SU1400-2EJ10-6AA0
	2F-DI	—	2	—	3SU1400-2EA10-6AA0
	2F-DI/1LED	—	2	1 for activating the red LED (LED not replaceable)	3SU1401-2EE20-6AA0

See also

AS-i base modules

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10251009>)

10.5 Enclosure with standard equipment for AS-Interface

10.5.1 Overview of standard enclosures with AS-Interface

The enclosures with integrated AS-Interface are equipped with contact modules and LED modules with spring-loaded terminals from the SIRIUS ACT series as well as the slave(s) required for connecting the contact modules and LED modules to AS-Interface. Wiring is carried out at the factory. You only need to connect the enclosure to the ASi bus. For information, please refer to Chapter "Connecting (Page 217)".

Enclosures with standard fittings are available in the following versions:

- 1 to 3 command points
- Operational voltage through AS-Interface (approx. 30 V)
- Vertical mounting type
- Plastic enclosure with plastic actuating and signaling elements
- Metal enclosure with metal actuating and signaling elements

The enclosures without EMERGENCY STOP each have one A/B slave 4I/3O; the enclosures with EMERGENCY STOP mushroom pushbuttons have an AS-Interface F slave mounted in the enclosure.

For enclosures with EMERGENCY STOP mushroom pushbuttons, two NC contact modules are mounted inside the enclosure and wired to the safe F slave. The contact or LED modules of the pushbuttons as well as the AS-Interface slaves are secured by base mounting and connected via cables.

The plastic enclosures are designed with a connection for the AS-Interface flat cable (the cable is routed along the outside of the enclosure). For metal enclosures, the AS-Interface cable is run inside the enclosure (round cable connection).

Plastic version				
Siemens Industry Mall (http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221524)				
No. of command points	Fittings	Color of the actuating or signaling element	Label	Article number
1	EMERGENCY STOP mushroom pushbuttons	Red	Label without inscription	3SU1801-0NB10-4HB2
2	Pushbuttons	Red	"O"	3SU1802-0AB10-4HB1
	Pushbuttons	Green	"I"	
	Pushbuttons	Black	"O"	3SU1802-0AC10-4HB1
	Pushbuttons	White	"I"	
3	Pushbuttons	Red	"O"	3SU1803-0AB10-4HB1
	Pushbuttons	Green	"I"	
	Indicator lights	Clear	Label without inscription	

10.5.2 Equipping with AS-Interface modules by the customer

Self-equipping of enclosures

The following slave types are available for connecting the actuating and signaling elements:

- **AS-Interface A/B slave** with 4 inputs and 3 outputs (4I/3O AB)
- **AS-Interface slave** with 4 inputs and 4 outputs (4I/4O)
- **AS-Interface F slave** with 2 safe inputs for EMERGENCY STOP (2F-DI & 2F-DI/ 1LED)

The following table shows the maximum number of slaves possible:

Enclosure for	Number of AS-i slaves for enclosures without EMERGENCY STOP	Number of AS-i slaves for enclosures with EMERGENCY STOP
1 command point	Not possible	• 1 x F slave ¹⁾
2 command points	• 1 x slave 4I/4O or 4I/3O	• 1 x slave 4I/4O or 4I/3O
3 command points	• 2 x slave 4I/4O or 4I/3O	• 2 x slave 4I/4O or 4I/3O ²⁾ or • 1 x 4I/4O or 4I/3O + 1 x F slave
4 command points	• 3 x slave 4I/4O or 4I/3O	• 2 x slave 4I/4O or 4I/3O ²⁾ or • 2 x 4I/4O or 4I/3O + 1 x F slave
6 command points	• 3 x slave 4I/4O or 4I/3O	• 3 x slave 4I/4O or 4I/3O ²⁾ or • 2 x 4I/4O or 4I/3O + 1 x F slave

1) With recess for a labeling plate

2) EMERGENCY STOP conventionally wired

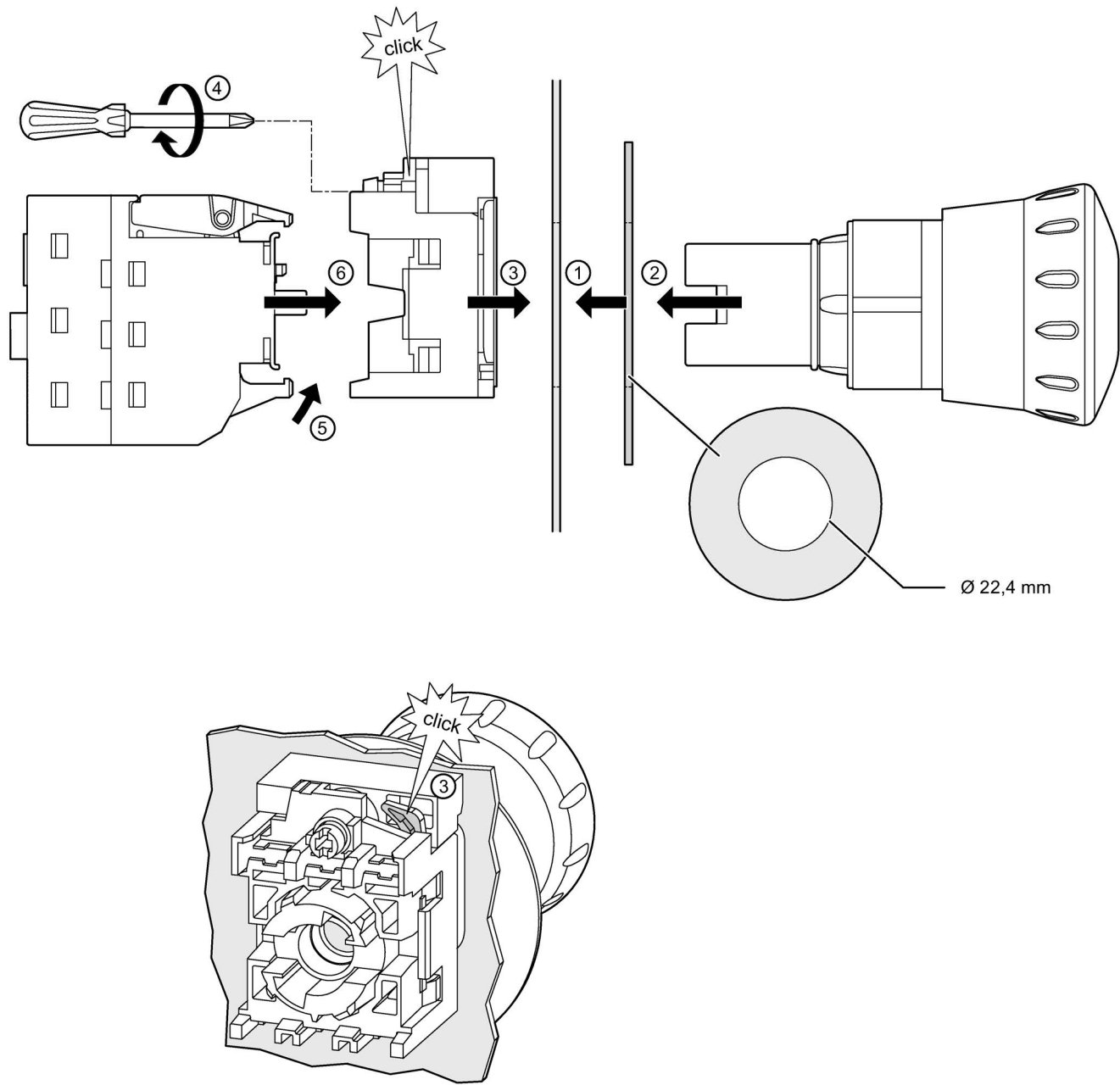
Notes on installation

- The maximum current with which the enclosures with contact modules may be equipped is 100A. For example, 10 contact modules 10 A.
- With the AS-Interface F slave modules, the (neighboring) contact modules immediately next to the module may only be used for the inputs of the AS-i module.

10.6 Mounting and disassembly of the AS-Interface modules for front plate mounting

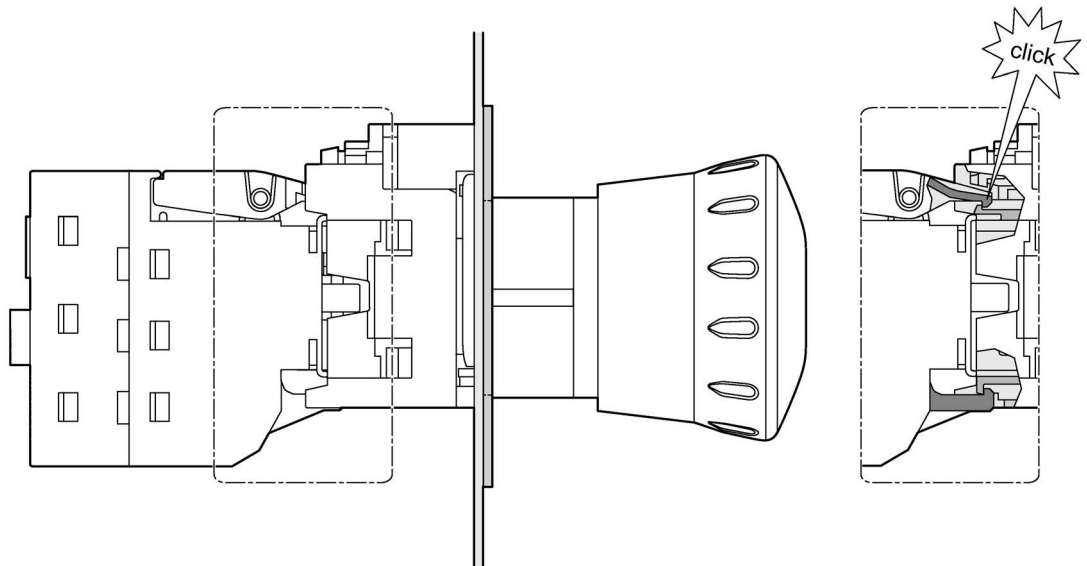
10.6.1 Mounting

Installing AS-Interface modules for front plate mounting (3SU140.-1E..0-2AA0, 3SU140.-1E..0-4AA0)



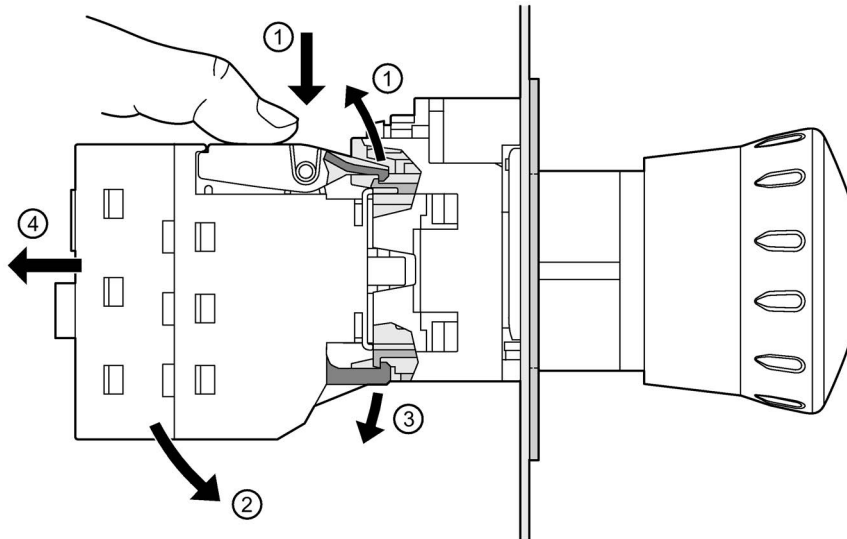
Procedure

- ① Hold the EMERGENCY STOP backing plate onto the front plate.
- ② Insert the EMERGENCY STOP mushroom pushbutton from the front through the opening of the EMERGENCY STOP backing plate and the front plate.
- ③ Fit the holder from behind. Ensure secure latching here.
- ④ Tighten the screw on the holder (tightening torque 1.0 to 1.2 Nm).
- ⑤ / ⑥ Snap the AS-i module for front plate mounting from behind onto the holder.



Ensure the AS-i module for front plate mounting is securely snapped into place.

10.6.2 Removal



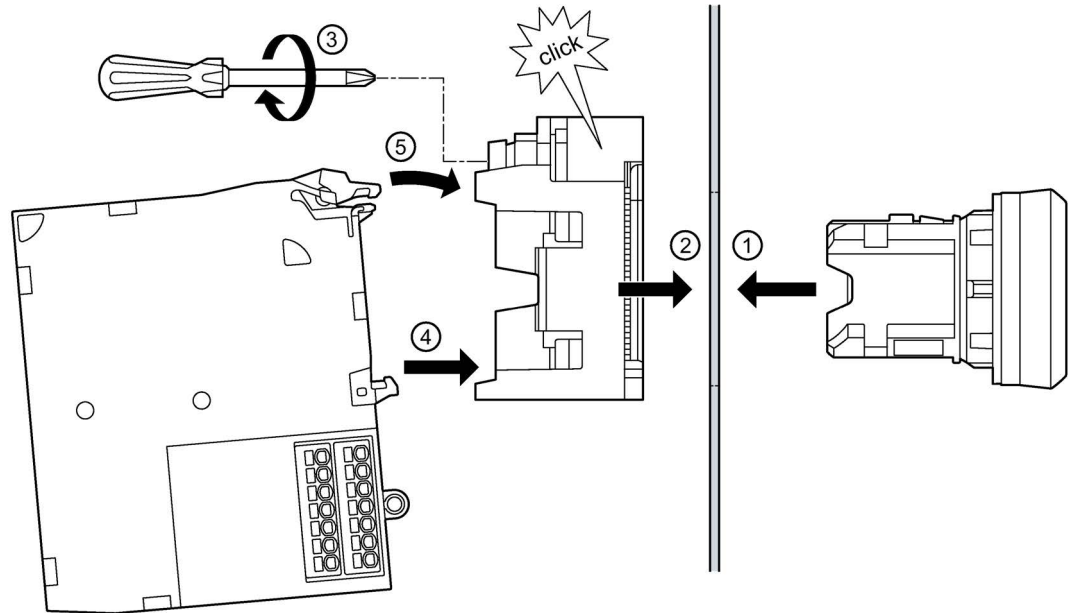
Procedure

- ① Press the lever of the AS-i module for front plate mounting down. The AS-i module is unlatched.
- ② Move the AS-i module down.
- ③ Unlatch the AS-i module.
- ④ Remove the AS-i module backwards from the holder.

10.7 Installing AS-Interface modules (3SU1400-1E.10-6AA0)

10.7.1 Mounting

Installing AS-Interface modules for front plate mounting (3SU1400-1E.10-6AA0)



Procedure

- ① Insert the actuating / signaling element from the front into the opening of the front plate.
- ② Fit the holder from behind. Ensure secure latching here.
- ③ Tighten the screw on the holder (tightening torque 1.0 to 1.2 Nm).
- ④ / ⑤ Snap the AS-i module for front plate mounting from behind onto the holder.

Ensure the AS-i module for front plate mounting is securely snapped into place.

10.8 Installing and dismantling AS-Interface modules for base mounting

10.8.1 Mounting / installation positions

The mounting position of the contact modules or LED modules is specified by the combination of letters and numbers (permissible numbers: 1, 2, 3).

The lowest mounting position of an actuating or signaling element is always A and the highest possible is F (for enclosures with 6 command points). This yields the following highest possible mounting positions, depending on the number of command points in the enclosure:

- Enclosures with 2 actuating or signaling elements ⇒ B
- Enclosures with 3 actuating or signaling elements ⇒ C
- Enclosures with 4 actuating or signaling elements ⇒ D
- Enclosures with 6 actuating or signaling elements ⇒ F

Contact modules can be mounted at the mounting positions 1 and/or 2 and/or 3, but LED modules only at mounting position 3.

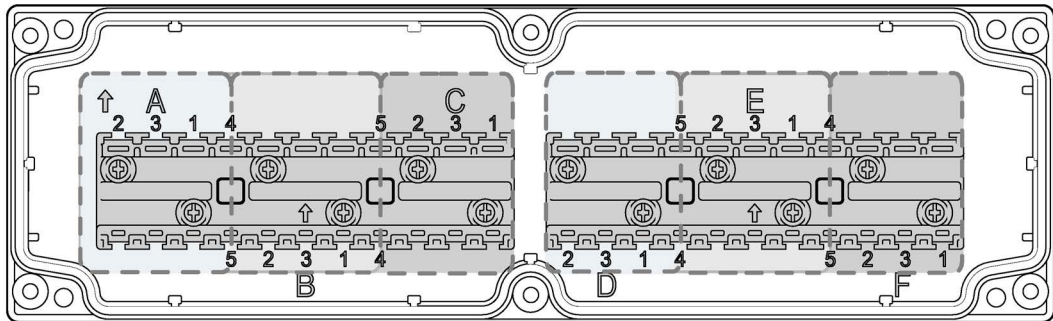


Image 10-1 Labeling for mounting positions in the enclosure base for enclosures with 1 to 6 command points.

Mounting positions of the AS-Interface F slaves

Note

Mounting position of the AS-Interface F slave

The AS-i F slave may only be mounted in the enclosure at the slots marked with "3".

The AS-Interface F slaves are factory-mounted at mounting position A3. At the customer's request, the AS-Interface F slave can also be mounted at the highest mounting position of the actuator. The following mounting positions are possible:

- Enclosure with 1 command point ⇒ A3
- Enclosure with 3 command points ⇒ C3
- Enclosure with 4 command points ⇒ D3
- Enclosure with 6 command points ⇒ F3

Note

Enclosures with 2 command points

Enclosures with 2 command points cannot be equipped with an AS-Interface F slave.

Mounting positions of the AS-Interface slaves and AS-Interface A/B slaves

The AS-Interface slaves and AS-Interface A/B slaves are always mounted in the positions between the command points, and they can be recognized by the additional rib of the mounting support.

Note

Enclosures with one command point

Enclosures with only one command point cannot be equipped with AS-Interface slaves and AS-Interface A/B slaves.

Mounting position of the AS-Interface slave as the first slave

Command points in the enclosure	Mounting position between mounting panels
2	A and B
3	A and B B and C
4	Always A and B except when an EMERGENCY STOP is mounted, then B and C
6	A and B B and C D and E E and F

Mounting position of the AS-Interface slave as the second slave

Command points in the enclosure	Mounting position between mounting panels
4	C and D
6	D and E

Example

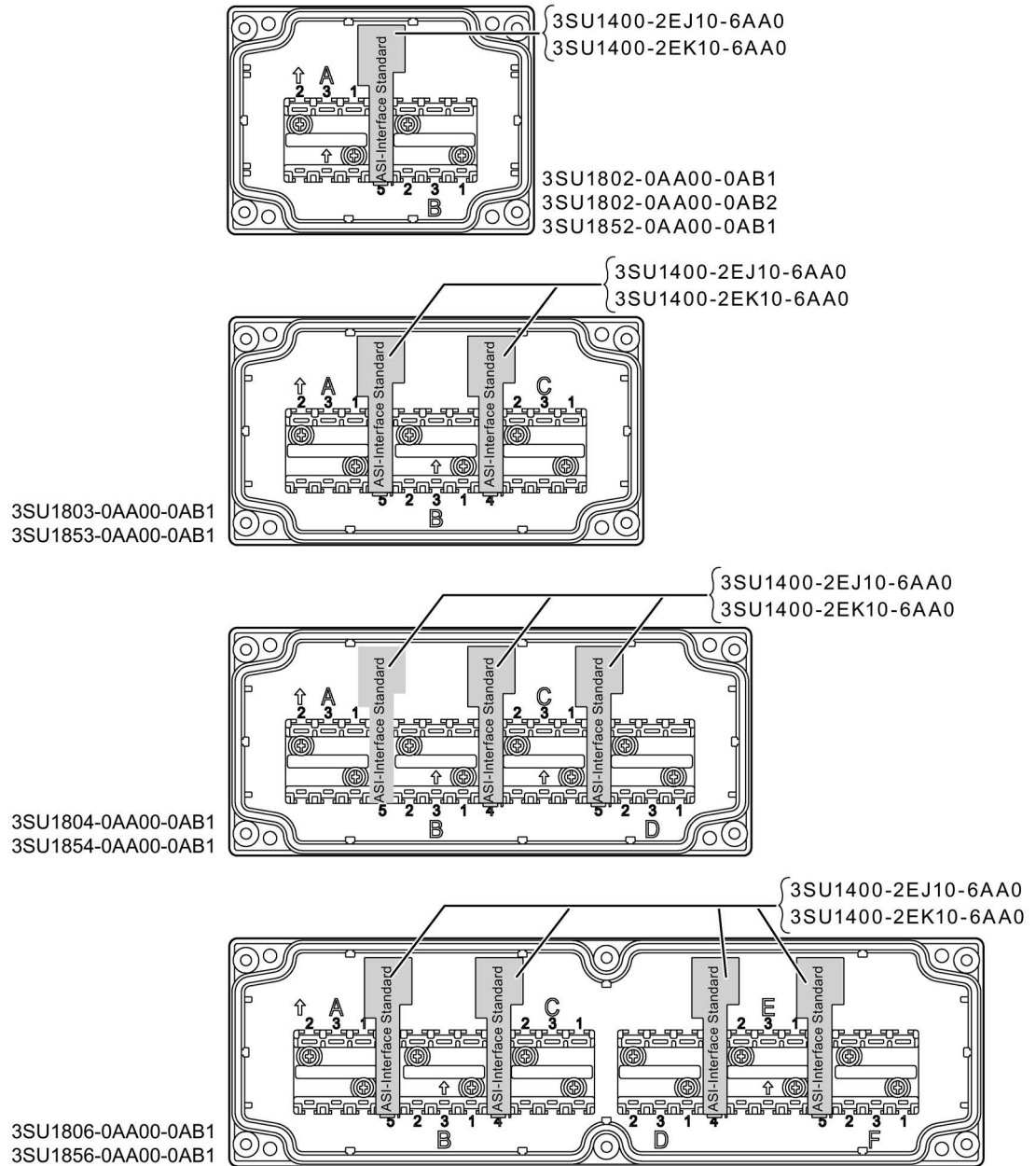
An enclosure with 6 command points is to be equipped with 2 AS-Interface slaves and one AS-Interface F slave.

1. Mount AS-Interface slave 1 between command points B and C.
2. Mount AS-Interface slave 2 between command points D and E.
3. Mount the AS-Interface F slave at A3.

You will find more examples in Chapter "Wiring examples (Page 235)".

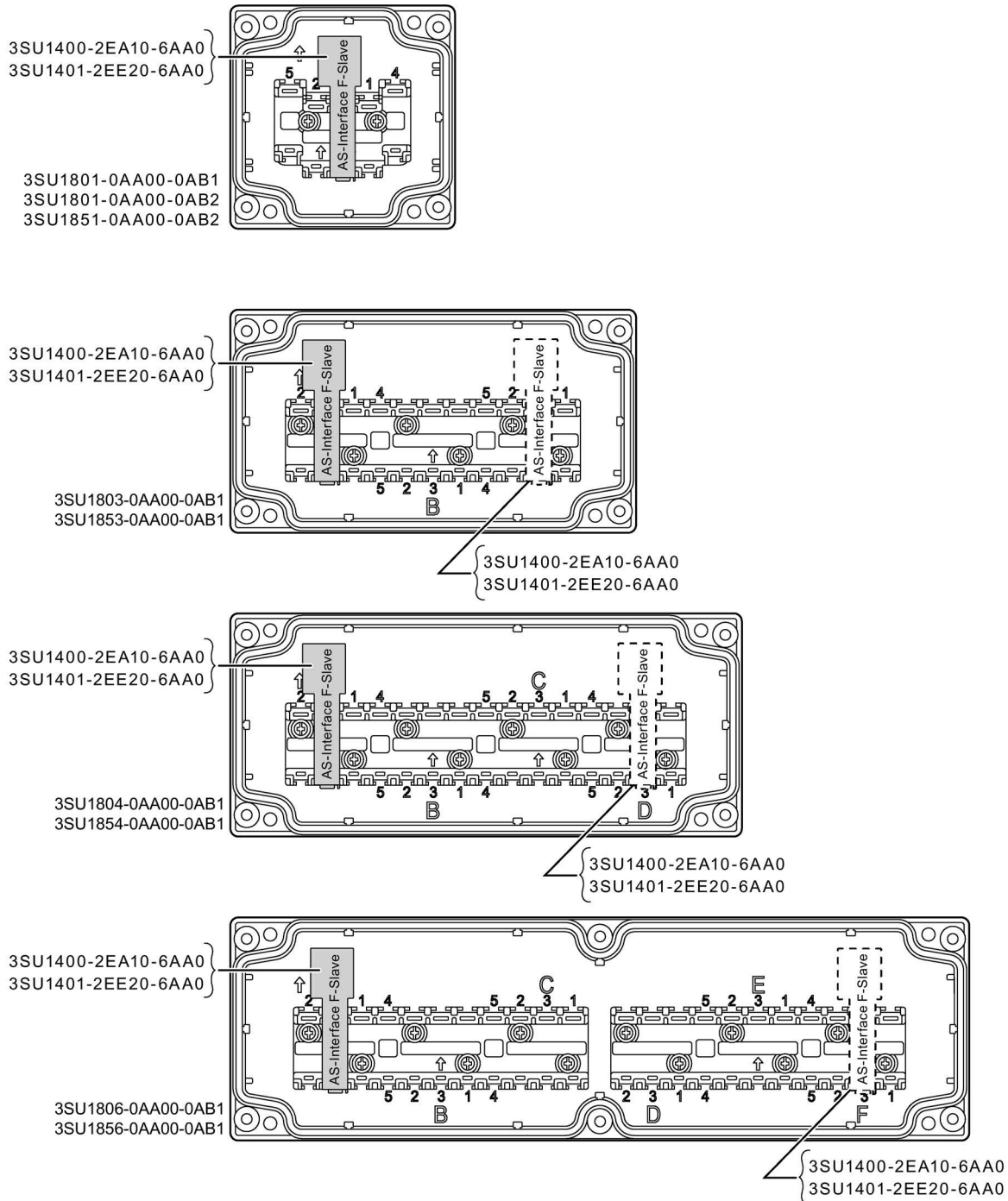
10.8.2 Mounting position of AS-Interface slave

The following mounting positions are available for the AS-Interface slaves:



10.8.3 Mounting position of AS-Interface F slave

The following mounting positions are available for the ASIsafe modules:



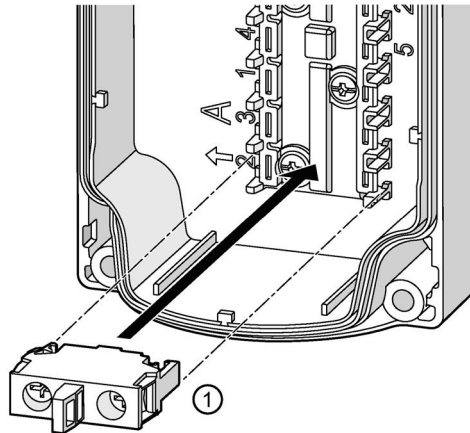
Note

The figures above show a typical representation of the possible mounting positions. The broken lines do not indicate a second module but only the second possible mounting position.

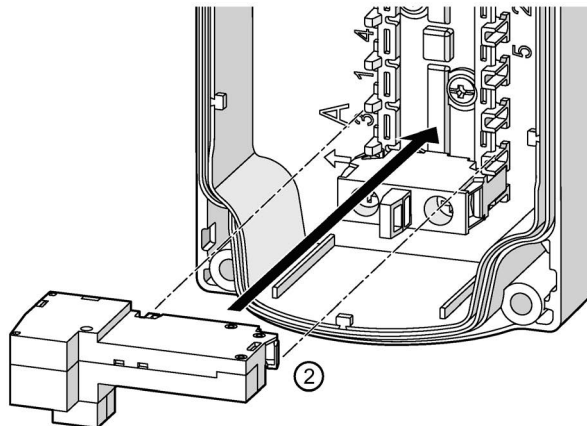
10.8.4 Mounting of the contact modules and AS-Interface F-Safe slaves

The AS-Interface slaves are mounted in the enclosure base like contact modules or LED modules. To equip an enclosure with contact modules and an AS-Interface F slave, follow these steps:

1. Snap the contact module onto the slot in the enclosure marked "1", "2" or "3".



2. Insert the AS-Interface F slave (3SU1400-2EA10-6AA0) into the slot marked with "3".



Note**Mounting position of the AS-Interface F slave**

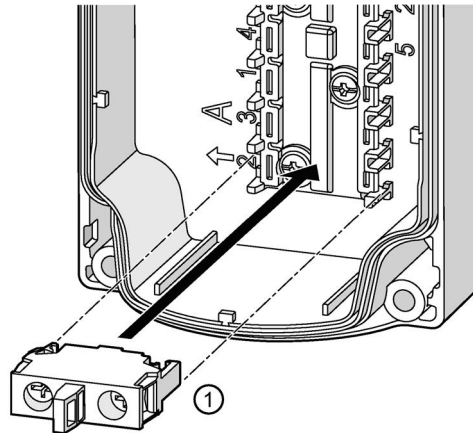
The AS-Interface F slave may only be mounted in the enclosure at the slots marked with "3".

You can find information on the accessories in Chapter "Accessories (Page 293)".

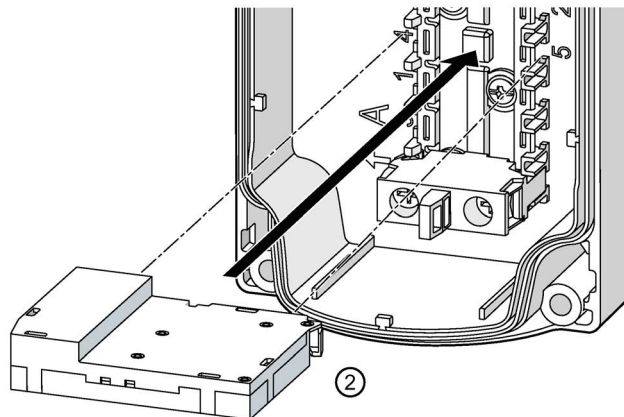
10.8.5 Mounting the contact modules and AS-Interface modules

The AS-Interface modules are mounted in the enclosure base like contact modules or LED modules. To equip an enclosure with contact modules and an AS-Interface module, follow these steps:

1. Snap the contact module onto the slot in the enclosure marked "1", "2" or "3".



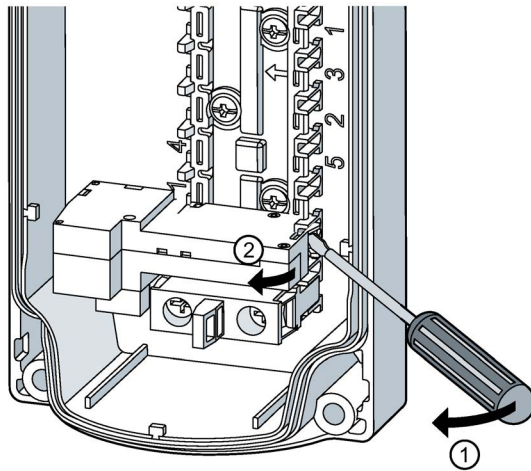
2. Insert the AS-Interface module into the slot marked with "5".



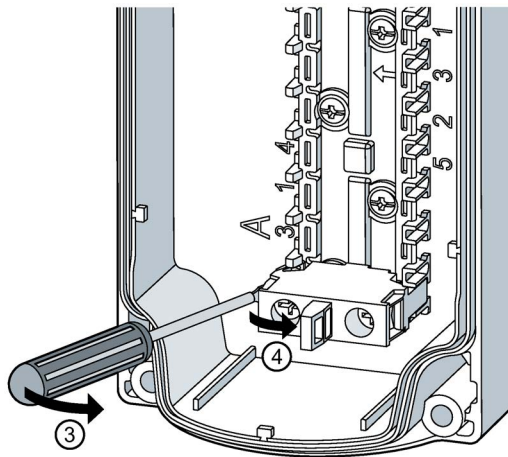
10.8.6 Removal of the modules

Requirement

Enclosure cover is disassembled.



- ① insert a screwdriver into the opening of the latches of the AS-Interface modules for base mounting.
- ② Press the screwdriver in the direction of the module you want to remove to open the latches of the modules.
Remove the modules.



- ③ Insert a screwdriver into the opening of the latches (broad snap hook) of the contact modules or LED modules.
- ④ Press the screwdriver in the direction of the module you want to remove to open the latches of the modules.
Remove the modules.

10.9 Connecting

10.9.1 Connection with AS-Interface modules

Connection options

- Conventional connection with AS-Interface
- Safe connection using ASIsafe
- With 3SK1, 3RK3 safety relays
- Connection to distributed I/O ET 200SP, SIMATIC S7-1500

Safe communication via ASIsafe

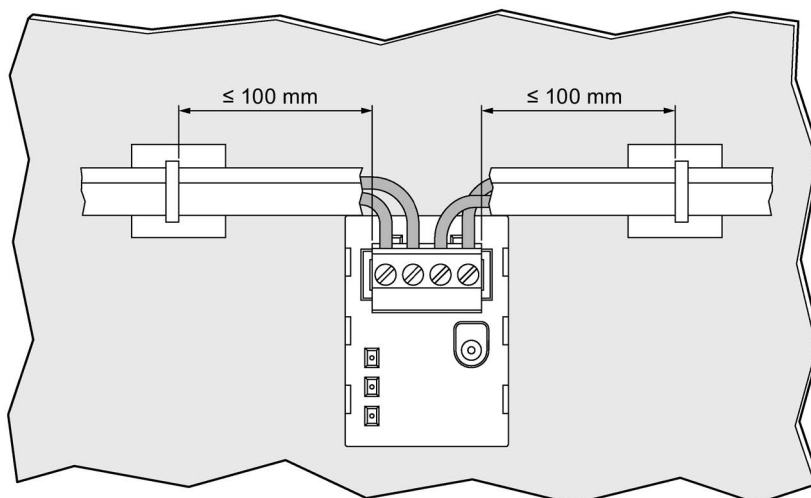
Safety-related components can be integrated in AS-Interface by means of ASIsafe – up to PL e as per ISO 13849-1 or SIL 3 as per IEC 62061. Use the yellow AS-Interface cable to make this connection.

Safe and standard I/O modules are installed and operated together in a single network. Safety-related data is transferred over the existing standard bus.

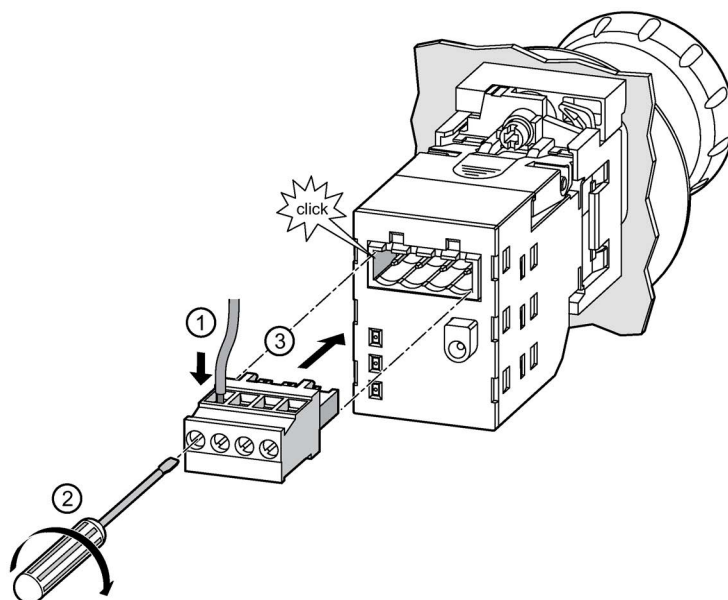
10.9.2 Connecting the ASIsafe modules for front plate mounting

When connecting, note that the maximum cable length up to the first mounting support must be ≤ 100 mm.

Maximum current $I_{\max} = 8$ A.



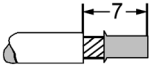
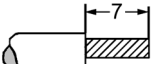
Screw terminal connection



Procedure

- ① Insert the connecting lead into the screw terminal
- ② Tighten the screws (tightening torque 0.5 - 0.6 Nm)
- ③ Insert the screw terminal into the AS-i module for front plate mounting

Conductor cross-sections

 Flat-blade screwdriver (Ø 3.5 mm x 0.6 mm)	0.5 ... 0.6 Nm 4.4 to 5.3 lb in
	1 x 0.2 ... 2.5 mm ² 2 x 0.2 ... 1.0 mm ²
	1 x 0.25 ... 2.5 mm ² 2 x 0.25 ... 1.0 mm ²
	1 x 0.2 ... 2.5 mm ² 2 x 0.2 ... 1.5 mm ²
AWG	30 to 12

Spring-loaded terminal connection

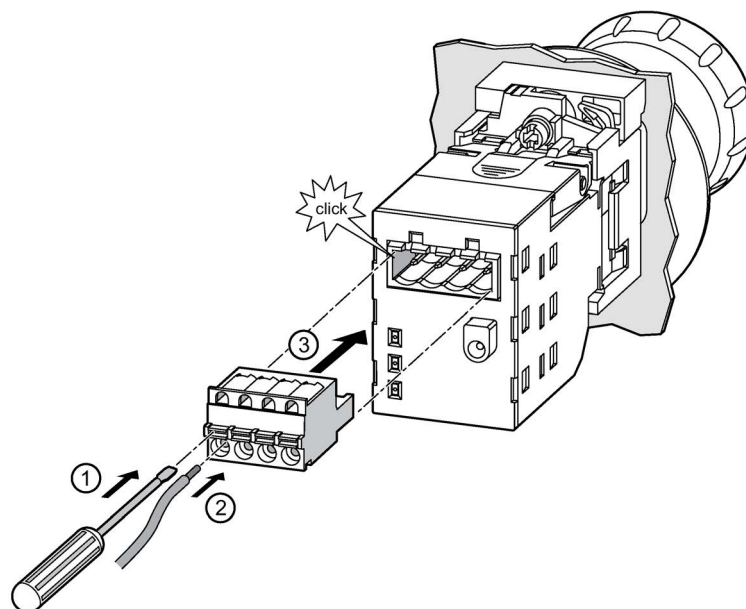
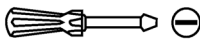
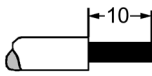
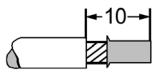
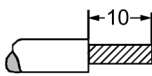


Image 10-2 ASIM+spring-type terminal_70

Procedure

- ① Insert a flat-blade screwdriver into the unlocking groove of the spring-loaded terminal
- ② Insert the connecting lead into the spring-loaded terminal
- ③ Insert the spring-loaded terminal into the AS-i module for front plate mounting

Conductor cross-sections

 Flat-blade screwdriver (Ø 3.5 mm x 0.6 mm)	—
	1 x 0.2 ... 2.5 mm ²
	1 x 0.25 ... 2.5 mm ²
	1 x 0.2 ... 2.5 mm ²
AWG	26 to 12

AS-Interface connection using insulation piercing method

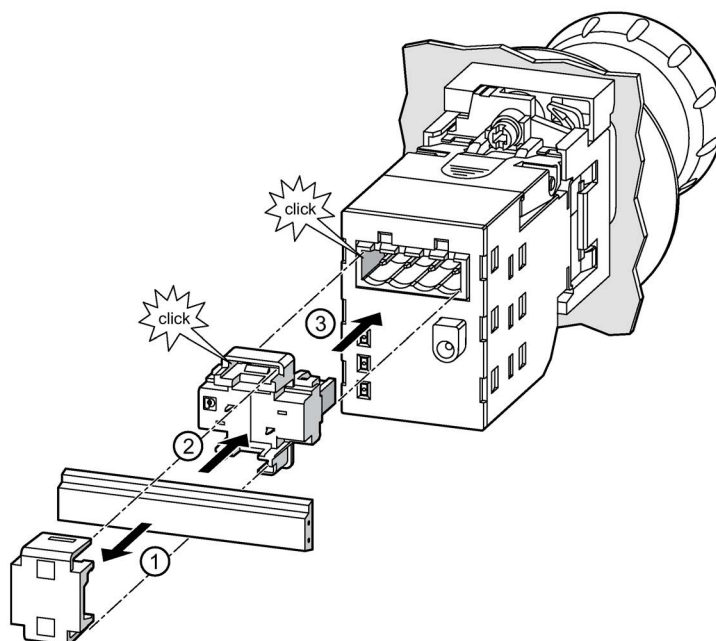


Image 10-3 ASIM+AS-Interface_70

Procedure

- ① Connect the AS-i shaped cable to the upper part of the adapter for AS-i shaped cable
- ② Insert the upper part with the AS-i shaped cable into the adapter
- ③ Snap the adapter onto the male connector of the AS-i module for front plate mounting

Plug connection

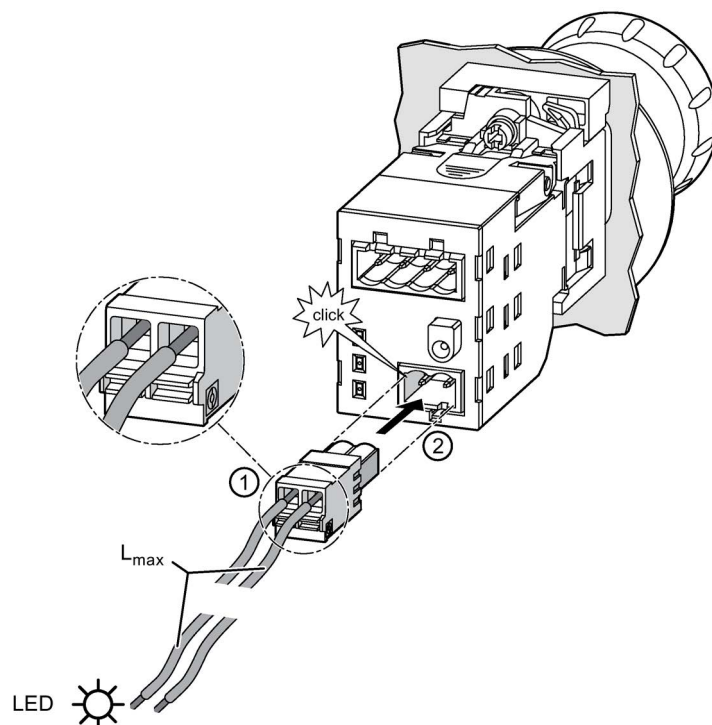
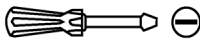
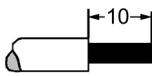
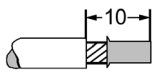
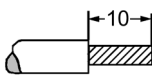


Image 10-4 ASIM+connector_70

Procedure

- ① Insert a flat-blade screwdriver into the unlocking groove of the spring-loaded terminal
- ② Insert the connecting lead into the spring-loaded terminal
- ③ Insert the spring-loaded terminal into the AS-i module for front plate mounting

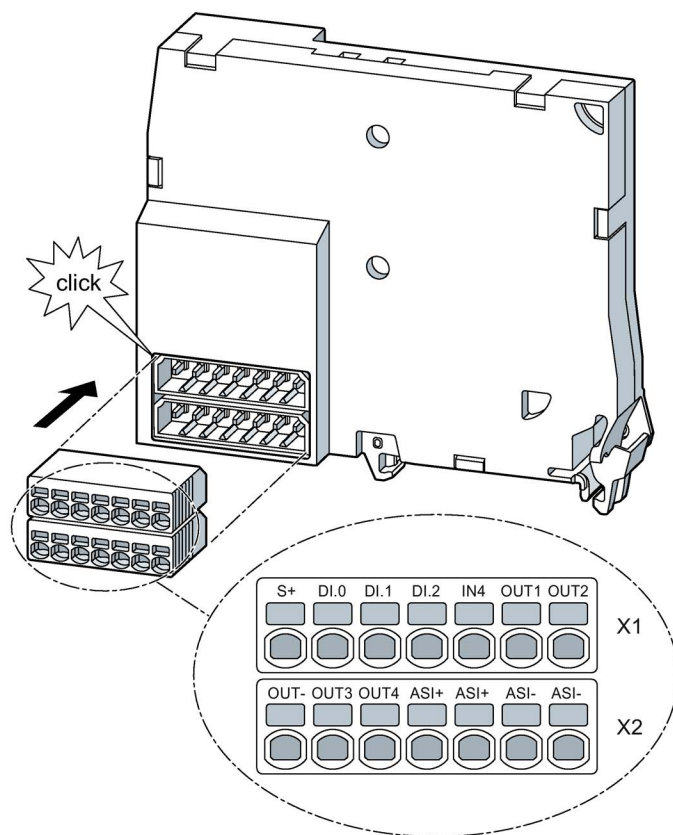
Conductor cross-sections

 Flat-blade screwdriver ($\varnothing$ 3.5 mm x 0.6 mm)	—
	1 x 0.2 ... 1.5 mm ²
	1 x 0.25 ... 1.5 mm ²
	1 x 0.2 ... 1.5 mm ²
AWG	24 to 16

$I_{out\ max}$	20 mA
U_{out}	18 V ... 24 V
L_{max}	$\leq$ 100 mm

10.9.3 Terminal labeling and conductor cross-sections (AS-Interface modules for front plate mounting)

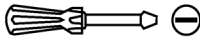
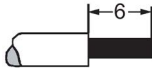
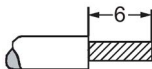
AS-Interface modules for front plate mounting



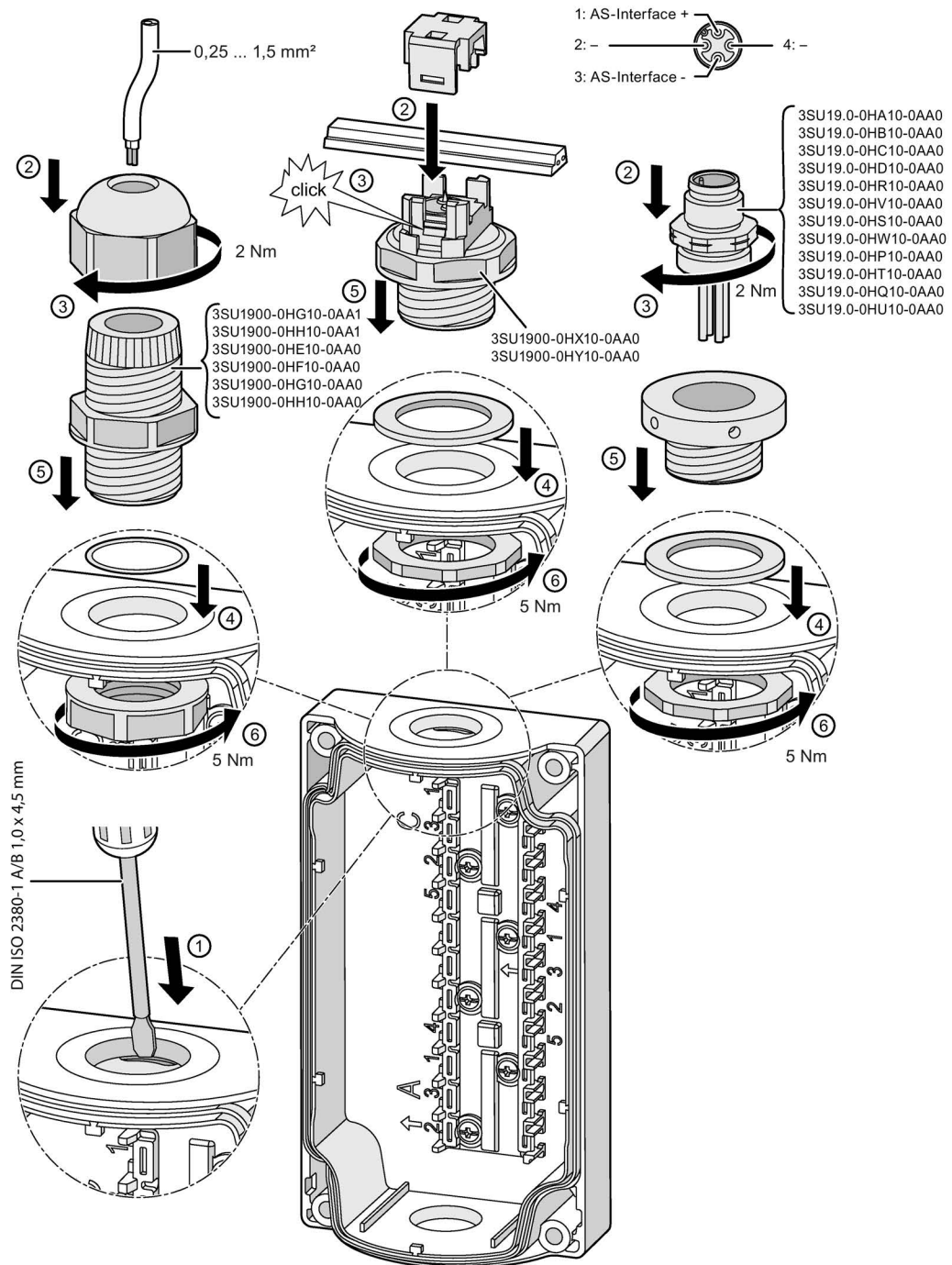
3SU1400-1EK10-6AA0 terminal labeling				
Pin	X1		X2	
1	S+	Sensor supply	OUT-	Ground
2	DI.0	Digital input	OUT3	Digital output
3	DI.1	Digital input	OUT4	Digital output
4	DI.2	Digital input	ASI+	AS-i connection – positive polarity
5	IN4	Digital input	ASI+	AS-i connection – positive polarity
6	OUT1	Digital output	ASI-	AS-i connection – negative polarity
7	OUT2	Digital output	ASI-	AS-i connection – negative polarity

3SU1400-1EJ10-6AA0 terminal labeling				
Pin	X1		X2	
1	S+	Sensor supply	OUT-	Ground
2	DI.0	Digital input	OUT3	Digital output
3	DI.1	Digital input	—	—
4	DI.2	Digital input	ASI+	AS-i connection – positive polarity
5	IN4	Digital input	ASI+	AS-i connection – positive polarity
6	OUT1	Digital output	ASI-	AS-i connection – negative polarity
7	OUT2	Digital output	ASI-	AS-i connection – negative polarity

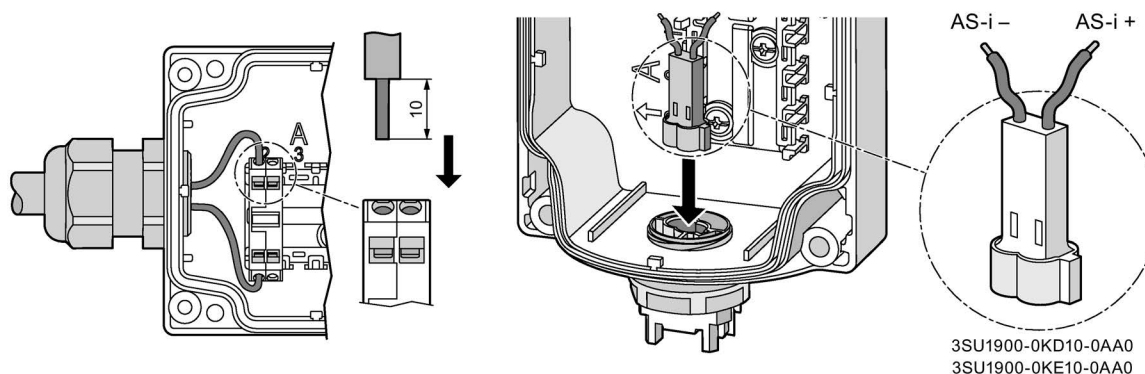
3SU1400-1E.10-6AA0 conductor cross-sections

 SZM (Ø 2.0 mm x 0.4 mm)	—
	1 x 0.14 ... 0.5 mm ²
	1 x 0.2 ... 0.5 mm ²
AWG	26 to 20

10.9.4 Connection option AS-Interface bus (AS-Interface modules for base mounting)

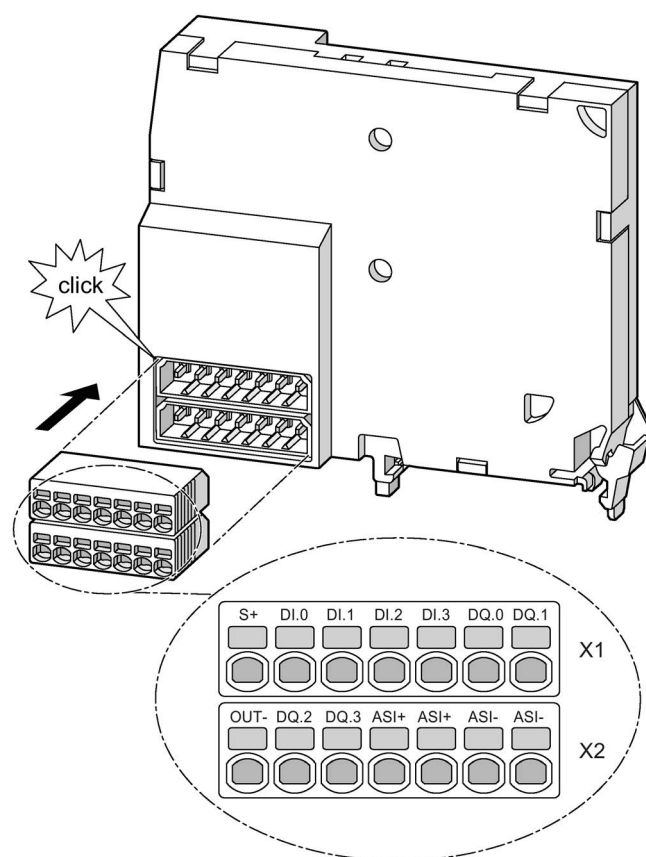


Connection to AS-Interface bus connection element



10.9.5 Terminal labeling and conductor cross sections (AS-Interface modules for base mounting)

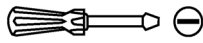
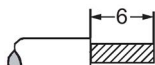
AS-Interface modules



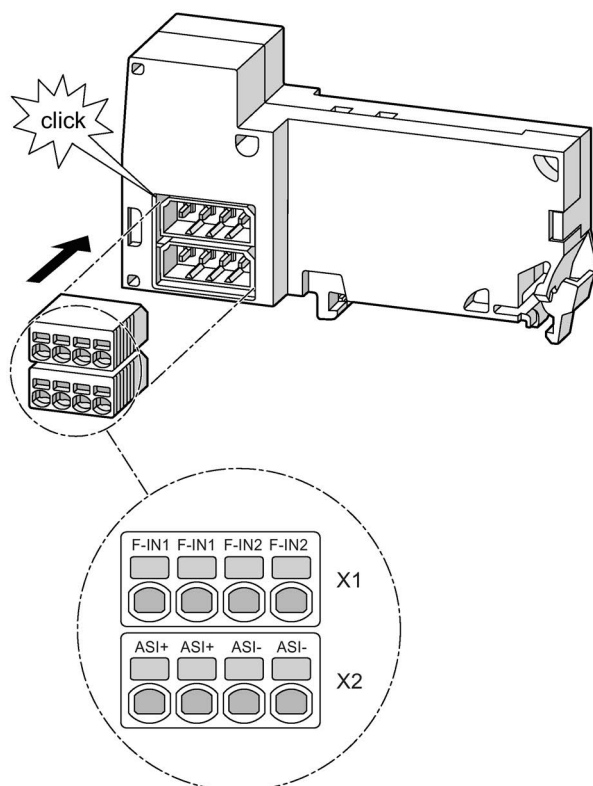
Terminal labeling 3SU1400-2EK10-6AA0				
Pin	X1		X2	
1	S+	Sensor supply	OUT-	Ground
2	DI.0	Digital input	DQ.2	Digital output
3	DI.1	Digital input	DQ.3	Digital output
4	DI.2	Digital input	ASI+	AS-i connection – positive polarity
5	DI.3	Digital input	ASI+	AS-i connection – positive polarity
6	DQ.0	Digital output	ASI-	AS-i connection – negative polarity
7	DQ.1	Digital output	ASI-	AS-i connection – negative polarity

Terminal labeling 3SU1400-2EJ10-6AA0				
Pin	X1		X2	
1	S+	Sensor supply	OUT-	Ground
2	DI.0	Digital input	DQ.2	Digital output
3	DI.1	Digital input	—	—
4	DI.2	Digital input	ASI+	AS-i connection – positive polarity
5	DI.3	Digital input	ASI+	AS-i connection – positive polarity
6	DQ.0	Digital output	ASI-	AS-i connection – negative polarity
7	DQ.1	Digital output	ASI-	AS-i connection – negative polarity

Conductor cross-sections (3SU1400-2EK10-6AA0 and 3SU1400-2EJ10-6AA0)

 SZM (Ø 2.0 mm x 0.4 mm)	—
	1 x 0.14 ... 0.5 mm ²
	1 x 0.2 ... 0.5 mm ²
AWG	26 to 20

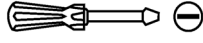
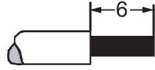
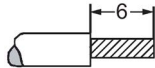
AS-Interface modules with fail-safe digital inputs



Terminal labeling 3SU1400-2EA10-6AA0				
Pin	X1		X2	
1	F-IN1	Fail-safe digital input	ASI+	AS-i connection – positive polarity
2	F-IN1	Fail-safe digital input	ASI+	AS-i connection – positive polarity
3	F-IN2	Fail-safe digital input	ASI-	AS-i connection – negative polarity
4	F-IN2	Fail-safe digital input	ASI-	AS-i connection – negative polarity

Terminal labeling 3SU1401-2EE20-6AA0				
Pin	X1		X2	
1	F-IN1	Fail-safe digital input	ASI+	AS-i connection – positive polarity
2	F-IN1	Fail-safe digital input	ASI+	AS-i connection – positive polarity
3	F-IN2	Fail-safe digital input	ASI-	AS-i connection – negative polarity
4	F-IN2	Fail-safe digital input	ASI-	AS-i connection – negative polarity

Conductor cross-sections (3SU1400-2EA10-6AA0 and 3SU1401-2EE20-6AA0)

 SZM (Ø 2.0 mm x 0.4 mm)	—
	1 x 0.14 ... 0.5 mm ²
	1 x 0.2 ... 0.5 mm ²
AWG	26 to 20

10.10 Configuring the AS-Interface

10.10.1 Setting the AS-i address

Operation of the addressing unit is described in the operating instructions of the AS-Interface addressing unit (article number of the operating instructions: 3ZX1012-0RK10-4AB1).

Unique addressing

In the factory setting, a module for AS-Interface has the address 0. It is detected by the master as a new slave that has not yet been addressed and, in this condition, has not yet been integrated in standard communication/data exchange. The modules for AS-Interface are A/B slaves in accordance with AS-i spec. 2.1.

To enable data to be exchanged between the master and slaves, you have to assign a **unique** address for each slave (i.e. each slave address must be different) when commissioning the AS-Interface network.

You can select any address in the address range 1A to 31A and 1B to 31B.

Addresses can also be assigned once the devices have been installed.

Addressing the slaves

You can set the slave address in different ways:

- Offline with the addressing unit via the addressing socket or at the AS-i connection.
Recommended when assigning addresses for the entire system. The direct connection between the slave and addressing unit ensures that the slave modules are not mixed up.
- Online by the AS-i master and in the PLC configuration software.
Recommended for assigning addresses to individual slaves if an addressing unit is not available. Before assigning addresses, you must ensure that each address exists only once in the AS-i network, that is, several new, additional modules (with address 0 in the factory setting) must not be connected to the AS-i cable.

You can also find further information in the AS-Interface system manual (<http://support.automation.siemens.com/WW/view/en/26250840>).



CAUTION

Follow-on switching operations after addressing

As soon as you have assigned a valid address, the master can start cyclic data communication immediately, that is, outputs can be set or inputs read that result in follow-up switching operations.

Make sure that you take appropriate measures to exclude the risk of hazardous conditions. Disconnect the AS-i voltage, for example.

Offline addressing with the addressing unit

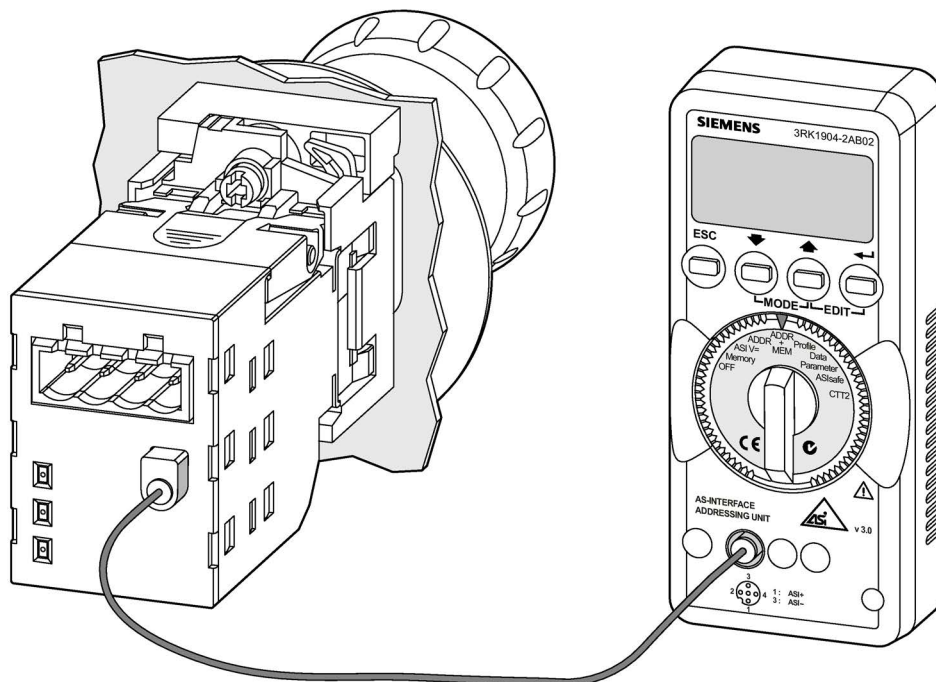
Procedure

1. Connect the module to the addressing unit 3RK1904-2AB02.
2. Assign an address to the module:
 - Switch the selector switch to **ADDR**.
 - Press . The address of the connected module is read and displayed.
 - Select the address with .

Transfer the address to the module with .

3. Remove the addressing cable.

10.10.2 Addressing the AS-Interface modules for front plate mounting

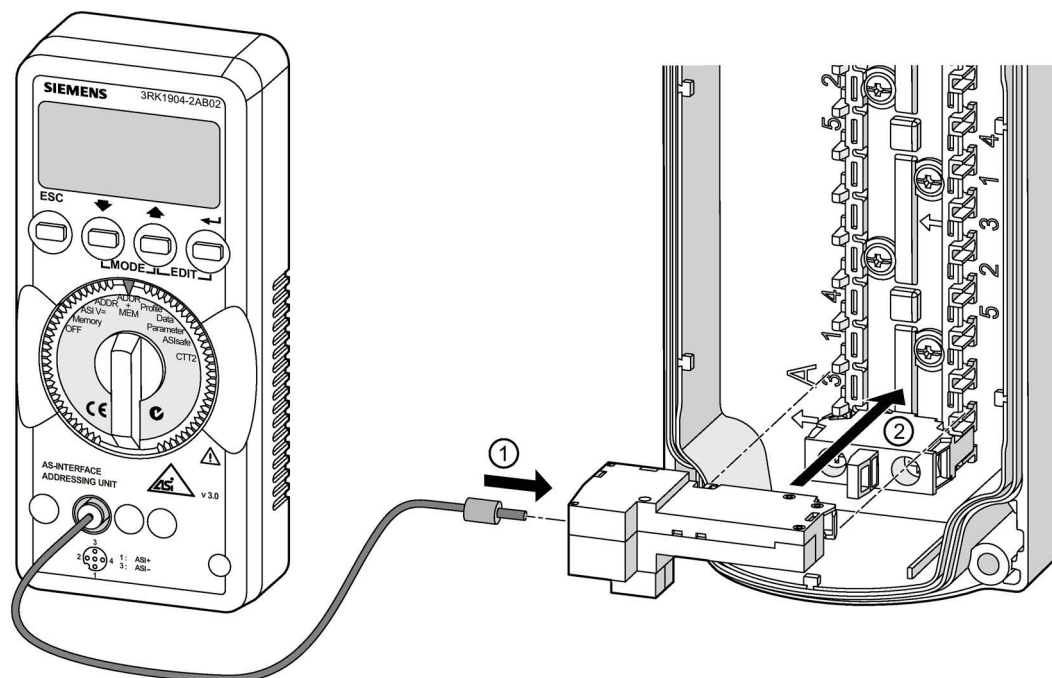


To address the AS-Interface modules for front plate mounting, connect the 3RK1904-2AB02 AS-Interface addressing unit.

3SU1400-1EC10-AA0 / 3SU1400-1EE20-AA0 and 3SU1400-1EA10-AA0 AS-Interface modules with fail-safe digital inputs

Technical data		
	3SU1400-1EC10-AA0 3SU1400-1EE20-AA0	3SU1400-1EA10-AA0
I_e	< 60 mA	
U_e	26.5 V ... 31.6 V SELV / PELV	
PL	e	
Cat.	4	
SILCL	3	
PFH [1/h]	< 4.5×10^{-9} [1/h]	
PFD_{avg}	< 5.0×10^{-6}	
SFF	> 99 %	
DC_{avg}	> 99 %	
AS-i slave profile IO / ID / ID2 (HEX)	7 / B / F	0 / B / F
ID1 code (HEX)	1 ... F	1 ... F

10.10.3 Addressing the AS-Interface modules for base mounting



To address the AS-Interface modules for base mounting, connect the 3RK1904-2AB02 AS-Interface addressing unit.

3SU1400-2EK10-6AA0 and 3SU1400-2EJ10-6AA0 AS-Interface modules

Technical data		
	3SU1400-2EK10-6AA0	3SU1400-2EJ10-6AA0
I_e	< 260 mA	
U_e	18.0 V ... 31.6 V	
AS-i slave profile IO / ID / ID2 (HEX)	7 / 0 / E	7 / A / E
ID1 code (HEX)	1 ... F	1 ... F

3SU1401-2EE20-6AA0 and 3SU1400-2EA10-6AA0 AS-Interface modules with fail-safe digital inputs

Technical data		
	3SU1400-2EA10-6AA0	3SU1401-2EE20-6AA0
I _e	< 60 mA	
U _e	18.0 V ... 31.6 V	
PL	e	
Cat.	4	
SILCL	3	
PFH [1/h]	< 4.8 x 10 ⁻⁹ [1/h]	
PFD _{avg}	< 5.0 x 10 ⁻⁶	
SFF	> 99 %	
DC _{avg}	> 99 %	
AS-i slave profile IO / ID / ID2 (HEX)	0 / B / F	7 / B / 0
ID1 code (HEX)	1 ... F	1 ... F

10.11 Diagnosis of ASIsafe F adapters for front plate mounting**Status display**

The status of a module is indicated by LEDs with continuous or flashing light. This enables diagnostics at a glance:

- for AS-i communication via a dual LED
- for the switching state of the inputs with yellow LEDs

The following chapters provide an overview of the LED status displays of the AS-i modules.

Inputs

Each input has a yellow LED with designation "F-INx". For the functions, see the table below:

Table 10- 1 Diagnostics of the inputs via LED

F-IN x	Meaning
Yellow	Signal activated
OFF	Signal deactivated

Status display AS-i / FAULT

All modules have a dual LED (green/red) for the "AS-i / FAULT" status display. For the functions and remedies, see the table below:

Table 10- 2 Diagnostics of the AS+i status via LEDs

AS-i / FAULT (green / red)	Possible cause	Possible remedial measures
Green	Normal operation, AS+i communication OK	—
Red	No AS+i communication: Master is switched off or offline	Ensure AS+i communication: Switch on the master or switch it to online mode
	Slave is not configured in the master	Reconfigure the master
	Incorrect slave type is connected	Connect the correct module
	Slave has the wrong address	Check/correct the slave address
Flashing yellow/red	Module has slave address "0" (delivery condition)	Assign an address other than "0"
OFF	No AS+i voltage	Switch on AS+i voltage
	AS-i voltage has been connected with reverse polarity	Connect it correctly
	AS+i voltage too low	Measure the AS-i voltage (approx. 30 V DC)

10.12 Diagnosis of AS-Interface modules for base mounting

Status display

The status of a module is indicated by LEDs with continuous or flashing light. This enables diagnostics at a glance:

- for AS-i communication via a red and green LED

The following chapters provide an overview of the LED status displays of the AS-i modules.

Status display AS-i / FAULT

All modules have green and red LEDs for the "AS-i / FAULT" status display. For the functions and remedies, see the table below:

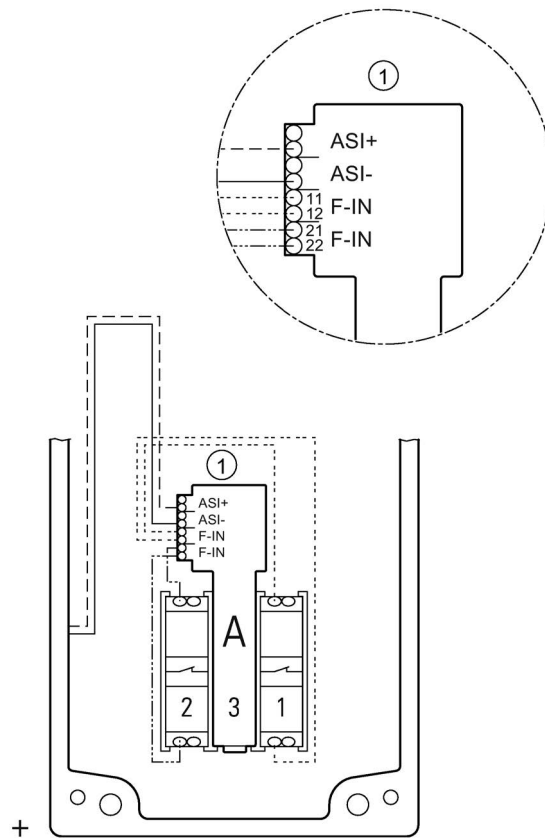
Table 10- 3 Diagnostics of the AS+i status via LEDs

AS-i / FAULT (green / red)	Possible cause	Possible remedial measures
Green	Normal operation, AS+i communication OK	—
Green Red	No AS+i communication:	Ensure AS+i communication:
	• Master is switched off or offline	• Switch on the master or switch it to online mode
	• Slave is not configured in the master	• Reconfigure the master
	• Incorrect slave type is connected	• Connect the correct module
	• Slave has the wrong address	• Check/correct the slave address
Flashing green/red	Module has slave address "0" (delivery condition)	Assign an address other than "0"
Flashing alternately green/red*)	Overload of the outputs	Disconnect actuator cables Check actuators and cables
OFF	No AS+i voltage	Switch on AS+i voltage
	AS-i voltage has been connected with reverse polarity	Connect it correctly
	AS+i voltage too low	Measure the AS-i voltage (approx. 24 V DC or 30 V DC)

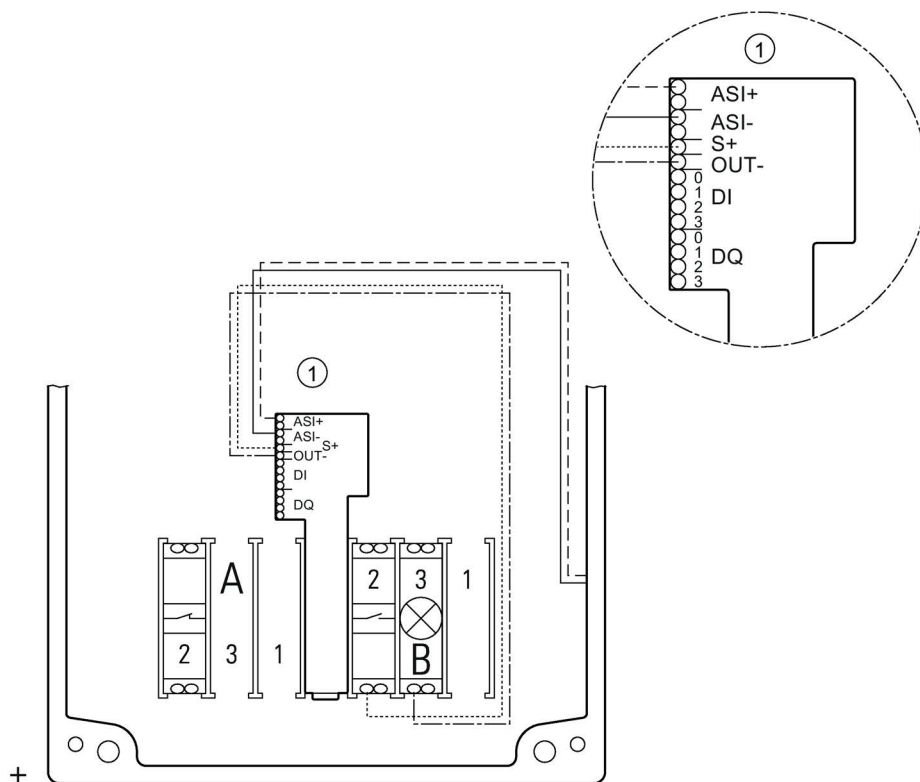
*) Only 4DI/4DO and 4DI/3DOAB modules

10.13 Wiring examples

AS-i enclosure with one command point with one AS-Interface F slave and EMERGENCY STOP, wired to the left



AS-i enclosure with two command points with EMERGENCY STOP, wired to the right



Note

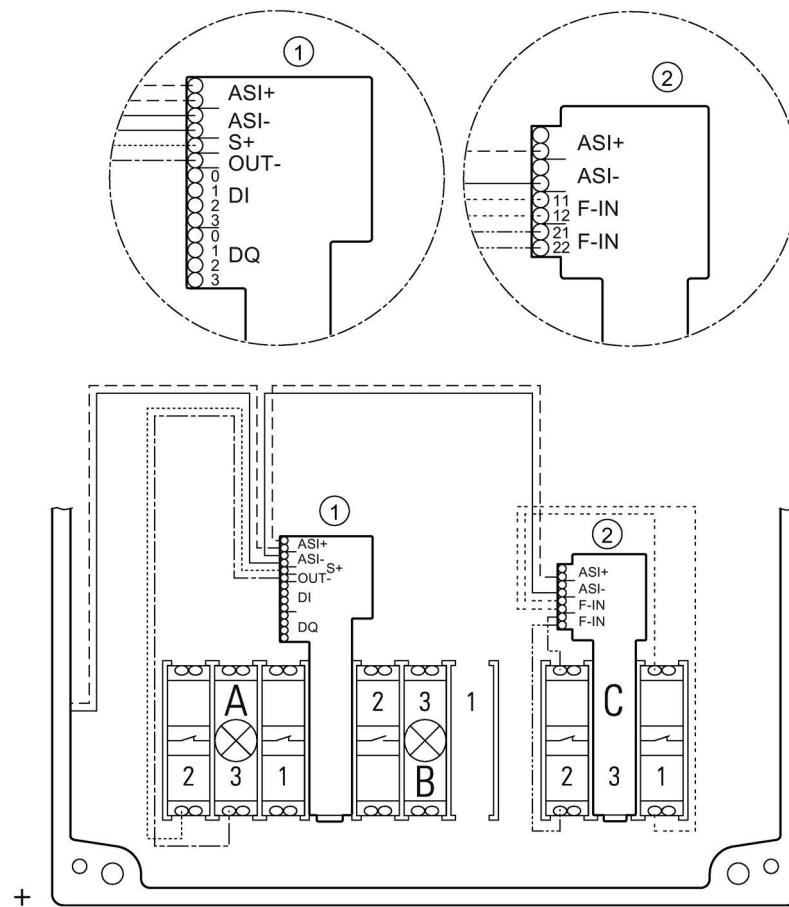
EMERGENCY STOP conventionally wired

Note

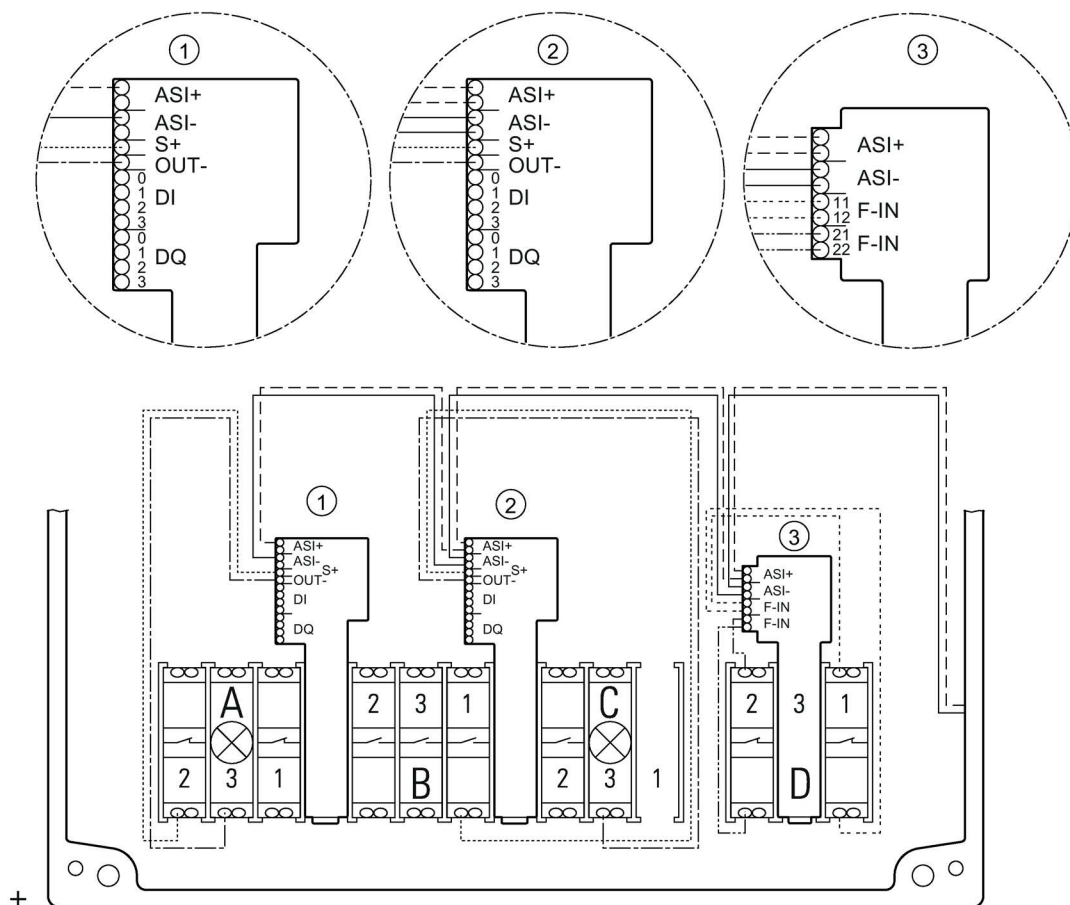
Position of EMERGENCY STOP

If the EMERGENCY STOP is mounted at command point B, the wiring must be to the left.

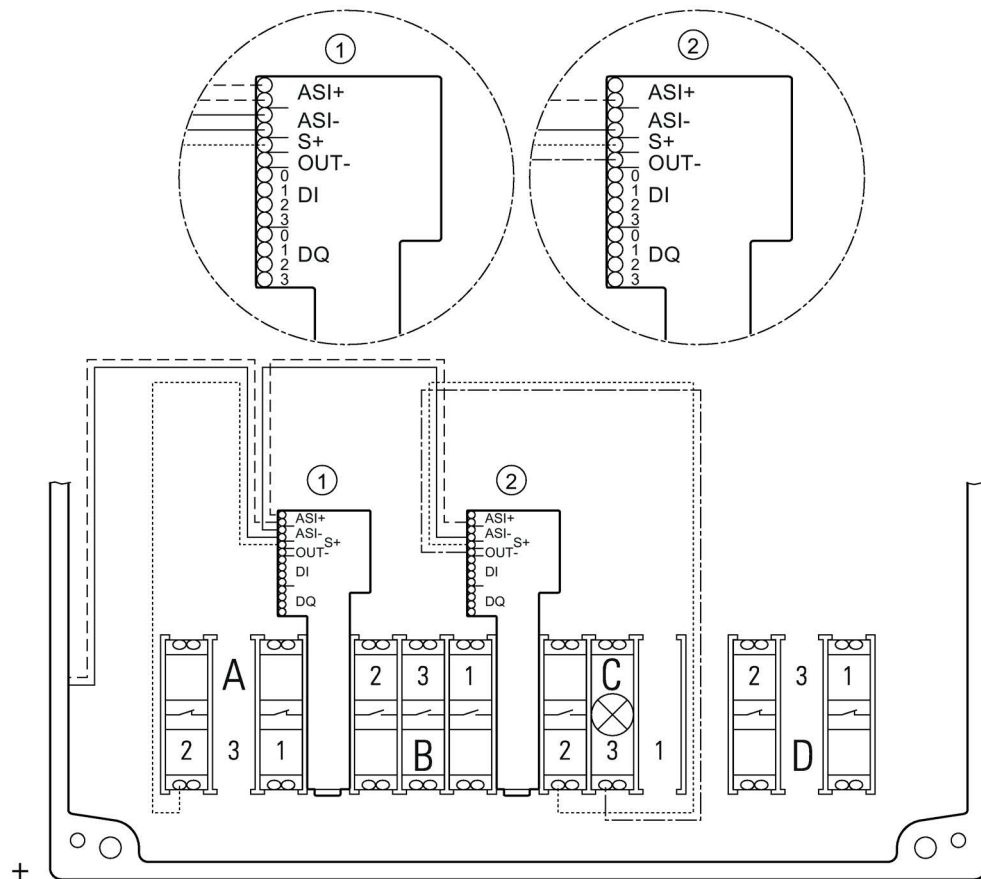
AS-i enclosure with three command points with one AS-Interface F slave and EMERGENCY STOP in C, wired to the left



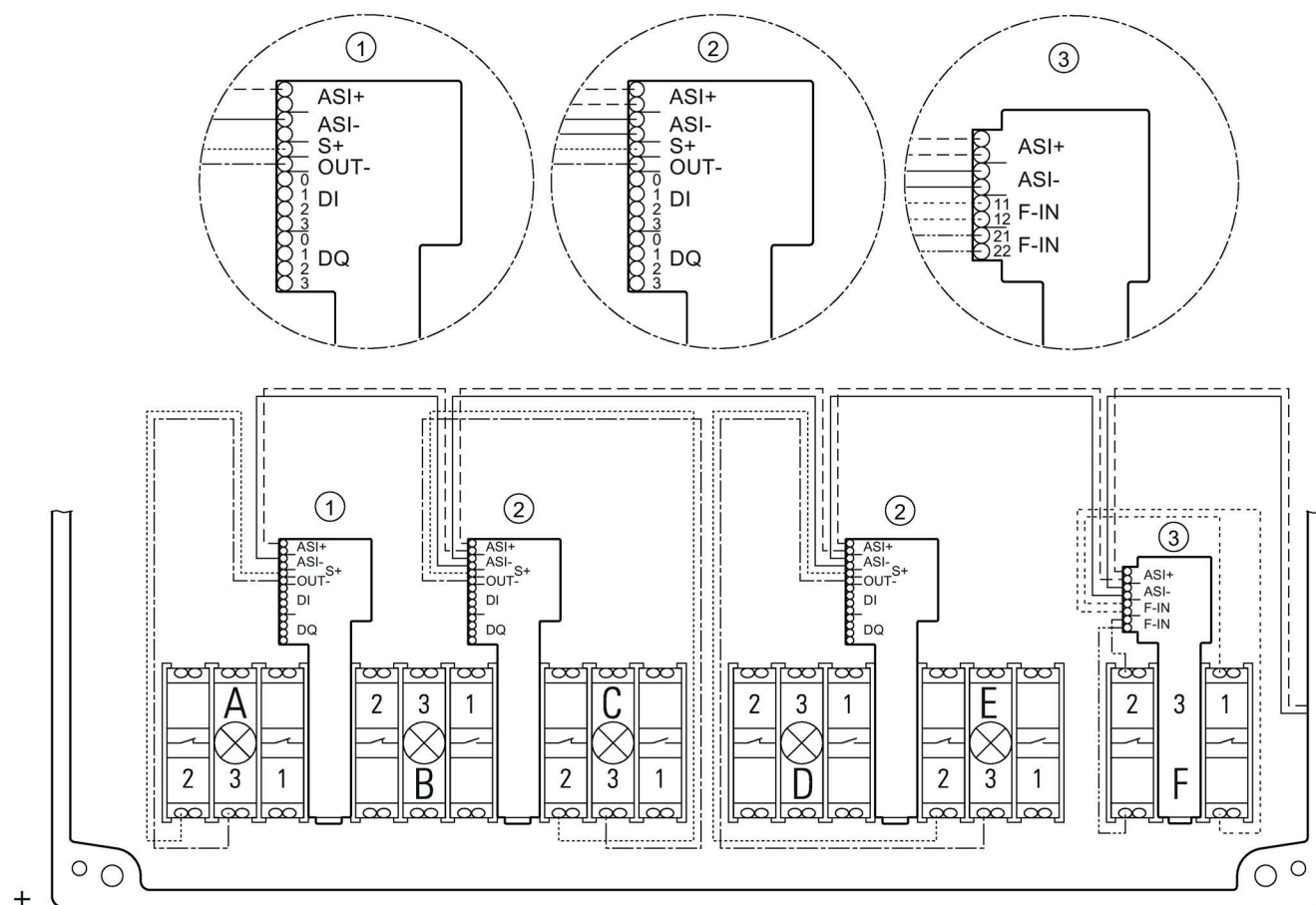
AS-i enclosure with four command points with EMERGENCY STOP in D, wired to the right



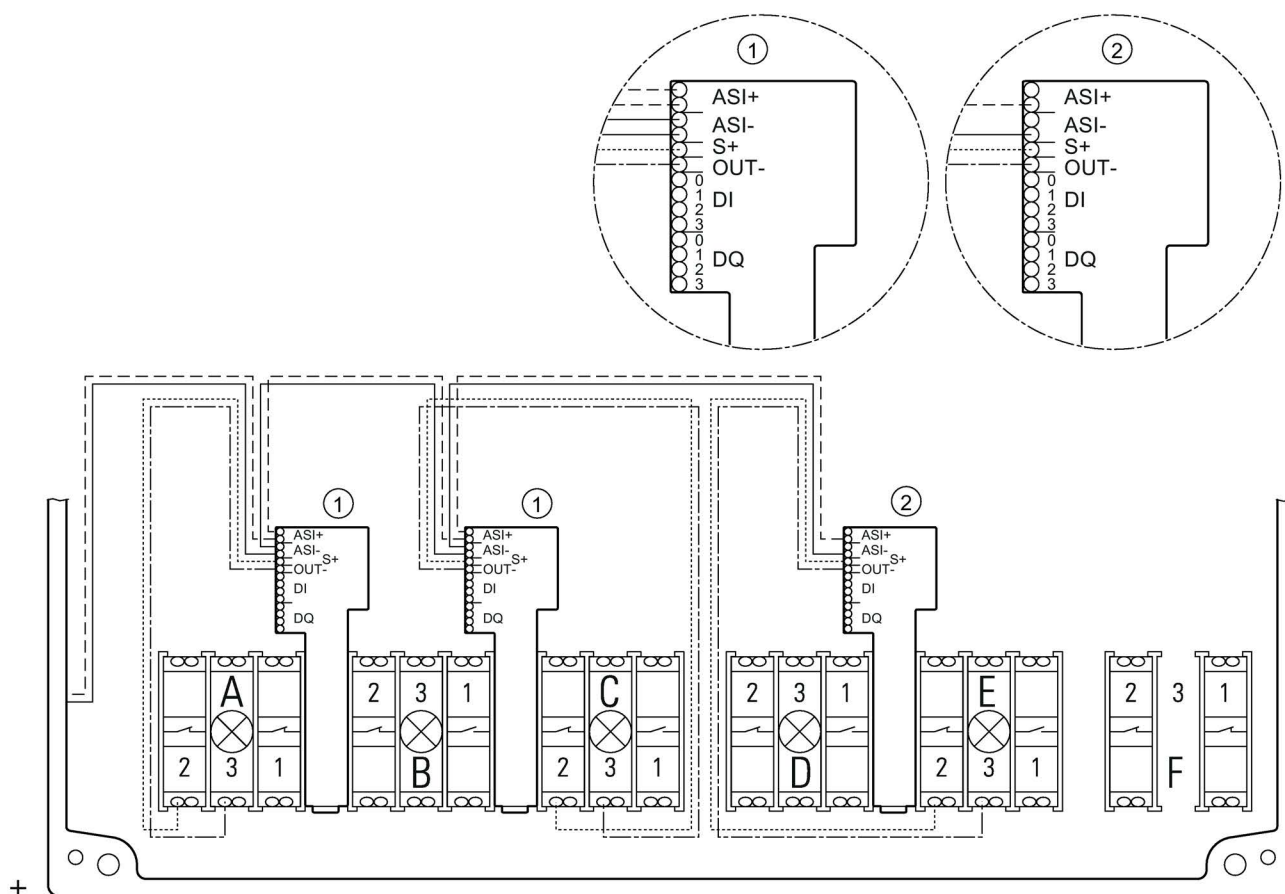
AS-i enclosure with four command points with 2 AS-Interface slaves, wired to the left



AS-i enclosure with six command points with AS-Interface F slave and EMERGENCY STOP in F, wired to the right



AS-i enclosure with six command points with 3 AS-Interface slaves, wired to the left



IO-Link

11.1 Configuring the IO-Link

11.1.1 Combinations

IO-Link master and IO-Link device combinations are shown in the following table.

IO-Link master...	IO-Link device...	
	... according to the IO-Link communication specification V1.0	... according to the IO-Link communication specification V1.1
...according to IO-Link communication specification V1.0	Operation according to specification V1.0	Operation according to specification V1.0
...according to IO-Link communication specification V1.1	Operation according to specification V1.0	Operation according to specification V1.1¹⁾

¹⁾ By selection of IODD V1.0.1, the device can be operated according to IO-Link communication specification V1.0.

Differences between IO-Link communication specifications V1.0 and V1.1

- Usable IO-Link message frame length (not relevant)
- Application-specific name: V1.0: 64 bytes max./V1.1: 32 bytes max.
- Parameter server functionality: V1.0: not available/V1.1: available

11.1.2 Configuring with STEP 7 and the S7-PCT Port Configuration Tool

11.1.2.1 Basic procedure and prerequisites

Procedure when configuring IO-Link master and IO-Link devices

Configuration takes place in two steps with STEP 7, V5.4 SP5 or STEP 7 TIA Portal, V12.0 or higher:

1. Configure the IO-Link master in *HW Config*. You will find IO-Link master on the Internet (<http://www.siemens.com/industrymall>) under "Automation" > "Industrial communication" > "IO-Link" > "Master".
2. With the Port Configuration Tool *S7-PCT*, you configure the connected IO-Link devices.

Note

An application example facilitates connection of IO-Link devices using a block library, and demonstrates the use of the block library using specific examples. You will find the application example on the Internet (<http://support.automation.siemens.com/WW/view/en/90529409>).

Requirements

- STEP 7 V5.4 SP5 or higher (you can download Service Pack 5 from the Internet (<http://support.automation.siemens.com/WW/view/en/36184684>)) or STEP 7 TIA Portal V12.0 or higher.
- The Port Configuration Tool *S7-PCT* is installed on the PG/PC. You can either install *S7-PCT* together with or STEP 7 or you can download it from the Internet (<http://support.automation.siemens.com/WW/view/en/37936752>).
- IO-Link IODD files (IO Device Description) are installed in the *S7-PCT hardware catalog*. You can download all current IODD files for the SIRIUS devices from the Internet (<https://support.industry.siemens.com/cs/#products?search=IODD&o=DefaultRankingDesc&lc=en-WW>). IODD files for V1.0 and V1.1 are available for the combination of an IO-Link master and an IO-Link device according to the IO-Link communication specification V1.1. You may need IODD files according to the IO-Link communication specification V1.0 when replacing devices in existing installations.
- The GSD files of the IO-Link masters are already installed in *STEP 7 HW Config*. You can download all current GSD files for the Siemens IO-Link masters from the Internet (<http://www.siemens.com/comdec>).
- Optional: Install the IO_LINK_MASTER and IO_LINK_DEVICE function blocks for backing up / restoring IO-Link master parameters, IO-Link device parameters, parameterization of IO-Link devices during operation, and reading out IO-Link port functions. You can find the function blocks on the Internet (<https://support.industry.siemens.com/cs/ww/en/view/82981502>). You can find more information about the function blocks in Chapters "Acyclic data exchange with the IO_LINK_MASTER function block (Page 247) function block" and "Acyclic data exchange with the IO_LINK_DEVICE function block (Page 247)".

11.1.2.2 Configuration

Configuring the IO-Link master in *HW Config*

1. Start the SIMATIC Manager (*STEP 7*) or the TIA Portal and configure the project as described in the *STEP 7* online help.
2. Select the IO-Link master in the hardware catalog of *HW Config*.
3. Drag and drop the IO-Link master from the hardware catalog to the configuration table.
4. Select the IO-Link master in the configuration table (*STEP 7*)/ device view (TIA Portal).
5. Press the right mouse button and select "**Object Properties**" from the shortcut menu.
Result: The "**Properties**" window of the IO-Link master opens.
6. Check the settings of the addresses.
Every IO-Link master port needs a corresponding overall address range depending on the IO-Link device used.

Configuring the IO-Link device with the S7-PCT port configuration tool

1. Select the configured IO-Link master.
2. Press the right mouse button and select "**Start device tool**" (*STEP 7* or TIA Portal)/"**Configure IO-Link**" (*STEP 7* or TIA Portal) from the shortcut menu depending on the configuration tool used.
3. Select the IO-Link device in the component catalog of the S7-PCT port configuration tool.
4. Drag the IO-Link device out of the component catalog to the required port of the IO-Link master.
5. Start by parameterizing the IO-Link device.
Additional information is available in the *S7-PCT* online help.

11.1.3 Configuring with the S7-PCT Stand Alone Port Configuration Tool

11.1.3.1 Application

Configuration is always done with the S7-PCT port configuration tool whenever no SIMATIC CPU is available.

11.1.3.2 Basic procedure and prerequisites

Basic procedure when configuring IO-Link master and IO-Link devices with the S7-PCT Port Configuration Tool (stand-alone)

1. You configure the connected IO-Link devices with the *S7-PCT* Port Configuration Tool.

Requirements

- The *S7-PCT* Port Configuration Tool is installed on the PG/PC.
You can either install *S7-PCT* together with STEP 7 V5.4 SP5 or higher or STEP 7 TIA Portal V12.0 or higher, or you can download it from the Internet (<http://support.automation.siemens.com/WW/view/en/37936752>).
- IO-Link IODD files (IO Device Description) are installed in the *S7-PCT* hardware catalog. All current IODD files of the SIRIUS devices are available on the Internet (<https://support.industry.siemens.com/cs/#products?search=IODD&o=DefaultRankingDesc&lc=en-WW>).
IODD files for V1.0 and V1.1 are available for the combination of an IO-Link master and an IO-Link device according to the IO-Link communication specification V1.1. You may need IODD files according to the communication specification V1.0 when replacing devices in existing installations.

Note

Configuring with S7-PCT stand-alone is not possible for the CPU versions of the ET 200.

11.1.3.3 Configuration

Configuring the IO-Link device with the S7-PCT port configuration tool

1. Start the *S7-PCT* port configuration tool.
2. Create a new project or open an existing project as described in the online help.
3. Select a bus category (PROFIBUS DP/PROFINET IO).
4. Select an IO-Link master.
5. Select the IO-Link device in the component catalog of the *S7-PCT* port configuration tool.
6. Drag the IO-Link device out of the component catalog to the required port of the IO-Link master.
7. Load the configuration into the IO-Link master before parameterizing the IO-Link device.
8. Start by parameterizing the IO-Link device.
Additional information is available in the *S7-PCT* online help.

Note

To be able to access the IO-Link master or an IO-Link device online, communication between the ET 200 and the higher-level controller must be active (BF LED on ET 200 interface module is off).

11.1.4 Acyclic data exchange with the IO_LINK_MASTER function block

For acyclic data exchange, the IO_LINK_MASTER function block is available as a download for controllers of the S7 families.

With the help of this block, you can back up or restore the device parameters and settings of an IO-Link communication module (e.g. ET 200SP CM 4xIO-Link) via the S7 program.

Requirements

- Install the IO_LINK_MASTER function block.
You can download the IO_LINK_MASTER function block and the description from the Internet (<https://support.industry.siemens.com/cs/ww/en/view/82981502>).

Procedure when using the IO_LINK_MASTER function block

1. Copy the IO_LINK_MASTER function block (including data block DB10) to a STEP 7 project.
2. Use the IO_LINK_MASTER function block as described in the documentation.

11.1.5 Acyclic data exchange with the IO_LINK_DEVICE function block

For acyclic data exchange, the IO_LINK_DEVICE function block is available as a download for controllers of the S7 families.

The block supports you in the following tasks:

- Parameterization of an IO-Link device during operation
- Executing IO-Link port functions
- Backing up/restoring IO-Link device parameters

Requirements

- Install the IO_LINK_DEVICE function block.
You can download the IO_LINK_DEVICE function block and the description from the Internet (<https://support.industry.siemens.com/cs/ww/en/view/82981502>).

Procedure when using the IO_LINK_DEVICE function block

1. Copy the IO_LINK_DEVICE function block (including data block DB10) to a STEP 7 project.
2. Use the IO_LINK_DEVICE function block as described in the documentation.
3. You can find an application example of how to use the IO-Link devices with the IO_LINK_DEVICE function block on the Internet (<http://support.automation.siemens.com/WW/view/en/90529409>).

11.1.6 Replacing an IO-Link device

11.1.6.1 Introduction

To replace an IO-Link device, the devices must be isolated from communication and disconnected from the power supply. After the connections have been restored and communication has been resumed, the parameterization can be restored according to the respective IO-Link communication specification:

- IO-Link communication specification V1.0: concerning the IO_LINK_DEVICEfunction block.
- IO-Link communication specification V1.1: concerning the function of automatic parameter assignment by the IO-Link master modules of the ET 200SP, ET 200AL and S7-1200

11.1.6.2 Replacing an IO-Link device (according to IO-Link specification V1.0)

Procedure

When replacing an IO-Link device, the plug-in connection to the IO-Link port can be removed without isolating the control voltage supply.

Parameter data and configuration data specially optimized by the user for a specific application are stored in an IO-Link device. This data deviates in many cases from the default values stored in the IO-Link device.

In the event of replacement of an IO-Link device (referred to below as a "module"), the optimized data must be transferred to the new module because the parameters are stored only in the IO-Link device itself.

Data can be transferred via two channels:

- Module replacement with PG/PC
- Module replacement without PG/PC

Procedure with PG/PC

In the event of a replacement, a PG/PC is available with the SIMATIC project of the plant.

With the data stored in the SIMATIC project, and the *S7-PCT* port configuration tool, you transfer the parameters belonging to the replaced IO-Link-Device to the new IO-Link-Device.

Procedure without PG/PC

Requirements

- Install the IO_LINK_DEVICE function block.
You can download the IO_LINK_DEVICE function block and the description from the Internet (<https://support.industry.siemens.com/cs/ww/en/view/82981502>).

On completion of commissioning, a PG/PC with the project is no longer available. For backing up and restoring the parameter data and configuration data from or to a module, the IO_LINK_DEVICE function block is available for the SIMATIC controllers of the S7 family.

With this function block, you back up all relevant data records of a module after commissioning, in a data block (DB), for example. In the event of a replacement, write the relevant data from the data block to the replaced module with the IO_LINK_DEVICE function block.

Refer to the Appendix "Process data and data sets (Page 449)" for data records to be backed up in the case of a module.

Procedure

1. Copy the IO_LINK_DEVICE function block (including data block DB10) to a STEP 7 project.
2. Use the IO_LINK_DEVICE function block as described in the documentation.
3. You will find an application example of how to use the IO-Link devices with the IO_LINK_DEVICE function block on the Internet (<http://support.automation.siemens.com/WW/view/en/90529409>).

Note

An IO-Link device is a module that communicates with the IO-Link master via its communication connection.

11.1.6.3 Replacing an IO-Link Device (according to IO-Link specification V1.1)

Automatic saving of parameter data

If IO-Link masters and IO-Link devices according to the IO-Link Communication Specification V1.1 are available, the "parameter server" function can be used to automatically back up parameter data.

When devices are replaced, this parameter data is written back to the new IO-Link device automatically on system startup.

11.1.7 Integration into the SIMATIC environment

Integration into the SIMATIC environment

Systematic diagnostics concepts and efficient handling of parameter data are demanded at all levels of automation engineering. It is essential here that sensors and switching devices are integrated into the automation network. The communication standard IO-Link offers new possibilities in this regard by means of intelligent connection of sensors and switching devices to the control level. The core points are switching, protecting, monitoring, commanding and signaling at the field level. A block library is designed to make it easier for end users to connect the IO-Link devices, and to demonstrate use of the library using actual examples

You can download the library from the Internet

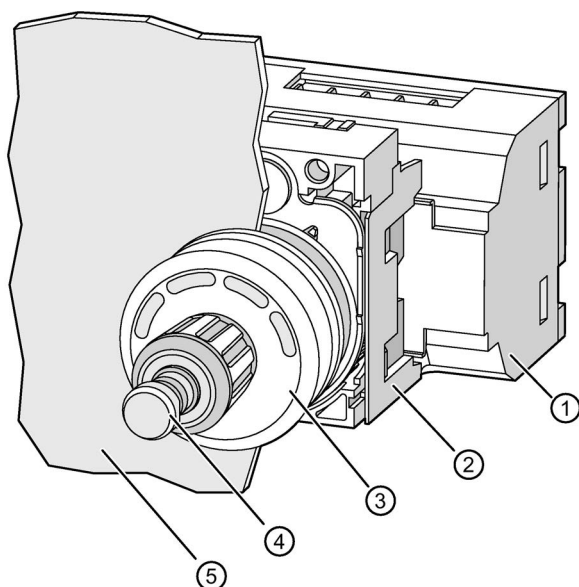
(<https://support.industry.siemens.com/cs/ww/en/view/90529409>) free of charge.

11.2 Electronic modules for ID key-operated switches

11.2.1 Design of a command point with ID key-operated switch

Command point with ID key-operated switch on front plate

A modular command point with ID key-operated switch on a front plate consists of the following elements:



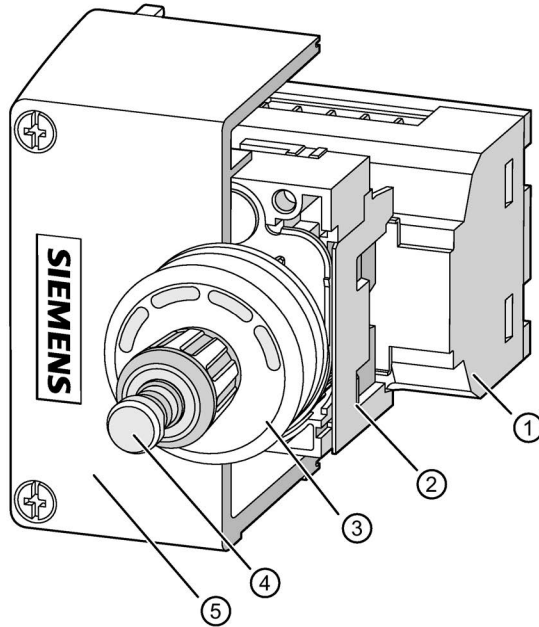
- ① Electronic module for ID key-operated switches 3SU1400-1Gx10-1AA0 (Page 163)
- ② 3-slot holder 3SU1500-0AA10-0AA0 (Page 38) for securing behind the control panel
- ③ ID key-operated switch 3SU10x0-4WS10-0AA0 (Page 80) in front of the control panel
- ④ ID key 3SU1900-0Fxy0-0AA0 (Page 323)
- ⑤ Front plate

Note

The minimum clearance between two command points when mounted on the front plate is 10 cm in all directions.

Command point with ID key-operated switch in an enclosure

A modular command point with ID key-operated switch in an enclosure consists of the following elements:



- ① Electronic module for ID key-operated switches 3SU1400-1Gx10-1AA0 (Page 163)
- ② 3-slot holder 3SU1500-0AA10-0AA0 (Page 38) for securing in the enclosure
- ③ ID key-operated switch 3SU10x0-4WS10-0AA0 (Page 80)
- ④ ID key 3SU1900-0Fxy0-0AA0 (Page 323)
- ⑤ Enclosure with raised cover, command point in center 3SU18x1-1AA00-1AA1 (Page 178)

11.2.2 Operating principle of the command point with ID key-operated switch

The ID key-operated switch is used primarily to set the current key position by rotation. To set the current key position, the rotary knob of the ID key-operated switch is turned clockwise or counter-clockwise. There is an opening in the rotary knob into which the ID key is inserted. Actuation is only possible if a valid ID key has been recognized, and the authorization level of the relevant ID key corresponds to, or is higher than, the current key position. The rotary knob can be turned clockwise and counter-clockwise through 360° in 45-degree steps.

The switch position delay is started and the temporary key position is incremented by turning clockwise.

The temporary key position is indicated by the illuminated surfaces in the ID key-operated switch flashing green. During the switch position delay, the temporary key position can be changed by turning the knob clockwise or counter-clockwise. The switch position delay is restarted by turning the knob clockwise. During the switch position delay, the outputs are not yet affected by the temporary key position. After the delay has expired, the temporary key position is adopted as the current key position, and the outputs are switched in accordance with this position.

By turning counter-clockwise, the current key position is changed to 0, and the outputs are switched immediately in accordance with this position.

Note

In a configuration with electronic module for ID key-operated switches for IO-Link, the parameters can be set via IO-Link.

You will find additional information in Chapter "Configuring IO-Link (Page 243)".

Settings on the electronic module for ID key-operated switches

The electronic modules for ID key-operated switches have five digital outputs. Setting of outputs 0 to 3 depends on the current key position and the module settings. If a valid ID key has been recognized, output 4 is active; otherwise output 4 is inactive.

Table 11- 1 Individual method

Key position	Output			
	0	1	2	3
0	Inactive	Inactive	Inactive	Inactive
1	Active	Inactive	Inactive	Inactive
2	Inactive	Active	Inactive	Inactive
3	Inactive	Inactive	Active	Inactive
4	Inactive	Inactive	Inactive	Active

Table 11- 2 Addition method (incremental method)

Key position	Output			
	0	1	2	3
0	Inactive	Inactive	Inactive	Inactive
1	Active	Inactive	Inactive	Inactive
2	Active	Active	Inactive	Inactive
3	Active	Active	Active	Inactive
4	Active	Active	Active	Active

Note

The addition method (incremental method) can only be set on the electronic modules for ID key-operated switches for IO-Link.

Short-circuit protection

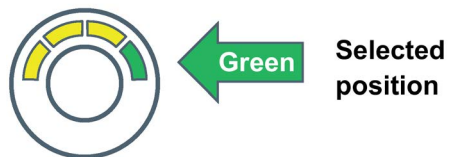
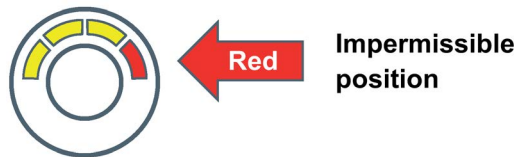
If a short-circuit occurs at one or more outputs, the occurrence of a fault event is sent and the fault flag is set. All outputs are deactivated for one second. Then the relevant outputs are re-activated to monitor whether the short-circuit is still active. This temporary state exists for approximately 0.1 seconds. If no short-circuit is determined during this period, the fault event is revoked, and the fault flag is deleted. However, if a short-circuit is detected during this time, all outputs are deactivated again, and the short-circuit device fault remains.

Function of the LEDs in the ID key-operated switch

In the enclosure of the ID key-operated switch are four illuminated surfaces that can assume the following states:

- Showing a green light: Indication of the current key position and the switched outputs.
- Flashing green: Indication of the temporary key position.
- Showing a yellow light: Indication of the associated authorization level (key position that can be reached by turning the rotary knob).
- Flashing yellow (all 4 illuminated surfaces): Indication for the individually codable ID key used that has not yet been configured.
- Showing a red light: Indicates that the relevant key position is higher than permissible for the relevant authorization level. (This key position cannot be reached by turning the rotary knob.) The indicator also shows a red light when there is no ID key plugged in.
- Flashing red (all 4 illuminated surfaces): When using a colored ID key with permanently encoded authorization level (ID group 1 to 4), this indicates when the parameter "Individually codable ID keys only" is enabled.
- Not illuminated: The electronic module is switched off.

Displayed colors



Selectable positions dependent on ID key using the adjustment method

In this case, “DS 131 Incremental switching mode” must be set to “disabled” on the electronic modules for ID key-operated switches for IO-Link.



Selectable positions dependent on ID key using the adjustment method

In this case, "DS 131 Incremental switching mode" must be set to "disabled" on the electronic modules for ID key-operated switches for IO-Link.

Key color	Output 4 (DQ.4) active	Outputs 0 and 4 (DQ.0 and DQ.4) active	Outputs 1 and 4 (DQ.1 and DQ.4) active	Outputs 2 and 4 (DQ.2 and DQ.4) active	Outputs 3 and 4 (DQ.3 and DQ.4) active
Green					
Yellow					
Red					
Blue					

Selectable positions dependent on ID key using the addition method (only for electronic modules for ID key-operated switches for IO-Link).

With this method, "DS 131 Incremental switching mode" must be set to "Unlocked" on the electronic modules for ID key-operated switches for IO-Link.



Selectable positions dependent on ID key using the addition method (only for electronic modules for ID key-operated switches for IO-Link).

With this method, "DS 131 Incremental switching mode" must be set to "Unlocked" on the electronic modules for ID key-operated switches for IO-Link.

Key color	Output 4 (DQ.4) active	Outputs 0, 4 (DQ.0 and DQ.4) active	Outputs 0, 1, 4 (DQ.0, DQ.1, DQ.4) active	Outputs 0, 1, 2, 4 (DQ.0, DQ.1, DQ.2, DQ.4) active	Outputs 0, 1, 2, 3, 4 (DQ.0, DQ.1, DQ.2, DQ.3, DQ.4) active
Green					
Yellow					
Red					
Blue					

You can find more information about data sets in Section "Electronic modules for ID key-operated switches (Page 449)" in Chapter "Process data and data sets" in the appendix.

11.2.3 Parameters

11.2.3.1 Parameters

The following parameters can be set:

- Incremental switching mode
- Switch position memory
- Switch position retentive memory
- Individually codable ID keys only
- Switch position delay
- Select memory range
- Restore Factory Setting
- Add new individual ID key
- Delete individually codable ID key
- Parameter (write) Access Lock (parameters for IO-Link devices according to IO-Link communication specification V1.1)
- Data Storage Lock (parameters for IO-Link devices according to IO-Link communication specification V1.1)

The "Parameter (write) Access Lock" and "Data Storage Lock" parameters can be set in the **"Port Configuration Tool S7-PCT"** V3.0 or higher.

Notes on parameter assignment

Transfer of the parameters with the "Parameterserver" function if IO-Link masters and IO-Link devices according to the IO-Link communication specification V1.1 are available:

1. The "Parameter server" function backs up the parameter data from the IO-Link devices.
2. Replace the IO-Link device.
3. The parameter data is automatically written back to the new IO-Link device on system startup.

11.2.3.2 "Incremental switching mode" parameter

"Incremental switching mode" parameter

The "Incremental switching mode" parameter influences the evaluation of the current key position.

1) "Incremental switching mode" disabled: The adjustment method is used.

- Key position ≥ 1 : The output corresponding to the current key position-1 is switched on; the remaining outputs 0 ... 3 are inactive.
- Key position 0: All outputs 0 ... 3 are inactive.

Example: Key position = 2: Output 0: Off, output 1: On, output 2: Off, output 3: Off

2) "Incremental switching mode" enabled: The addition method is used.

- Key position ≥ 1 : The outputs with the indices from 0 to the current switch position-1 are switched on; the remaining outputs 0 ... 3 are inactive.
- Key position 0: All outputs 0 ... 3 are inactive.

Example: Key position = 2: Output 0: On, output 1: On, output 2: Off, output 3: Off

Settings	Description	Default setting
0	Incremental switching mode: disabled	Disabled
1	Incremental switching mode: enabled	—

11.2.3.3 "Switch position memory" parameter

"Switch position memory" parameter

1) "Switch position memory" disabled:

- No ID key recognized. The current switch position is changed to 0 immediately after removing the ID key, and all active outputs are deactivated.

2) "Switch position memory" enabled:

- No ID key recognized. The last current switch position is retained after the ID key has been removed, and all active outputs remain in the switched-on state. The authorization level of the currently used ID key must correspond to the authorization level of the current switch position or higher.

This value can be changed by:

- Using an ID key with suitable authorization level and turning the rotary knob on the ID key-operated switch.
- Switching off the power supply (if the parameter "switch position retentive memory" is disabled).

Settings	Description	Default setting
0	Switch position memory: disabled	Disabled
1	Switch position memory: enabled	—

11.2.3.4 "Switch position retentive memory" parameter

"Switch position retentive memory" parameter

Prerequisite:

The "Switch position retentive memory" parameter only functions in combination with the "Switch position memory" parameter. The "Switch position memory" parameter must be enabled.

1) "Switch position retentive memory" disabled:

- After shutting down the power supply of the electronic module, the last current switch position is lost, and the module is set to 0 after switching on again

2) "Switch position retentive memory" enabled:

- After shutting down the power supply of the electronic module, the last current switch position is saved to the permanent memory and renewed after the electronic module is switched on again.

Settings	Description	Default setting
0	Switch position retentive memory: disabled	Disabled
1	Switch position retentive memory: enabled	—

11.2.3.5 "Individually codable ID keys only" parameter

"Individually codable ID keys only" parameter

1) "Individually codable ID keys only" disabled:

- All authorization levels are activated.

2) "Individually codable ID keys only" enabled:

- Only individually codable ID keys are permitted. In this case, only individually codable ID keys are recognized, regardless of whether they are listed in the key list in the electronic module or not. The ID groups 1 ... 4 are ignored.

Settings	Description	Default setting
0	Individually codable ID keys only: disabled	Disabled
1	Individually codable ID keys only: enabled	—

11.2.3.6 "Switch position delay" parameter

Switch position delay

The switch position delay specifies how long a temporary key position is displayed at the ID key-operated switch (by green flashing of the LED on the electronic module for ID key-operated switches). During this time, it is still possible to change the temporary key position by turning the knob. The switch position delay restarts when turning of the rotary knob is detected. During the switch position delay, the values at the outputs are not changed. When the switch position delay has expired, the temporary key position is accepted as the current key position. The status of the outputs is changed in accordance with this position.

Settings	Description	Default setting
1	Switch position delay: Minimum value	20 (2 seconds)
100	Switch position delay: Maximum value	—

Increment: 0.1 seconds

11.2.3.7 "Select memory range" parameter

"Select memory range" parameter

The Port Configuration Tool *S7-PCT* includes a dropdown menu with which you can select the part of the data set to be displayed. The memory range in which the individually codable ID keys are saved can be selected and displayed.

Settings	Description	Default setting
1	Select memory range: Minimum value	1 (individually codable key 1 ... 10)
5	Select memory range: Maximum value	—

Increment: 10 keys

11.2.3.8 "Restore Factory Setting" parameter

"Restore Factory Setting" parameter

In some situations, the electronic module for ID key-operated switches for IO-Link has to be changed to the standard state quickly and simply. For this purpose, the standardized system command "Restore Factory Setting" (value 0x82 in the data set (Index) 2 - system commands or the button in the Port Configuration Tool *S7-PCT*) is used.

This command triggers the following:

- Standard settings for parameters - data set (index) 131
- Deleting the list of keys
- Data set (index) 24 (Application Specific Name) is deleted

Settings	Description
130	Restore Factory Setting

Standard values for parameters - data set (index) 131

Parameters	Setting
Incremental switching mode	Disabled
Switch position memory	Disabled
Switch position retentive memory	Disabled
Individually codable ID keys only	Disabled
Switch position delay	20 (2 seconds)
Select memory range	1 (individually codable key 1 ... 10)

11.2.3.9 Manage authorization level (individually encodable ID keys)

"Add new individual ID key" parameter

The electronic module can store up to 50 individually encodable ID keys in its permanent memory, and it can assign each of these individually encodable ID keys to group 1 ... 4 respectively. When an individually encodable ID key from the list is used, it behaves like an ID key from the relevant authorization level.

A list of the individually encodable ID keys can be displayed in the Port Configuration Tool *S7-PCT*.

If an individually encodable ID key is used in the ID key-operated switch, the electronic module detects that it belongs to the group of individually encodable ID keys. A check is then made to see whether this key is included in the individual key list stored in the electronics module. If the identification number of the key used is in the list, the corresponding authorization level is determined using this list and assigned to the key used. This key behaves like a key belonging to the relevant authorization level.

One of the authorization levels 1 ... 4 can be assigned to each individually encodable ID key. If the identification number of the key used is not found in the individual key list, it is assigned to the authorization level "Individual ID key".

In this case, only output 4 is activated, and the illuminated surfaces on the ID key-operated switch flash yellow.

The authorization level is assigned via the Port Configuration Tool *S7-PCT*.

Procedure:

To add a new individually encodable ID key to the list of individually encodable ID keys, or to change the authorization level of an already added individually encodable ID key, the following steps are required:

- Use individually encodable ID key in the ID key-operated switches.
- Wait for detection of the ID key
- Write the system command "Set authorization level x"; "x" represents the authorization level assigned to the ID key used (value 0xAx in the data set (index) 2 - system commands or button in the Port Configuration Tool *S7-PCT*)
- Check: Status of the individually encodable ID key (data set (index) 92 - diagnostics)
- Remove the ID key from the ID key-operated switch

Settings	Description
161	Define authorization level 1 for the individually encodable ID key.
162	Define authorization level 2 for the individually encodable ID key.
163	Define authorization level 3 for the individually encodable ID key.
164	Define authorization level 4 for the individually encodable ID key.

Status of the individually encodable ID key (data set (index) 92 - diagnostics, byte 19.0 ... 19.7)

You will find additional information in Chapter "Data set (Index) 92 - diagnostics (Page 456)".

Value	Description
0	Individually encodable ID key detected.
1	Electronic module memory is full.
2	No valid individually encodable ID key used.

"Delete individual ID key" parameter

To delete an individually encodable ID key from the key list, the following steps are required.

Procedure:

- Use individually encodable ID key in the ID key-operated switches
- Wait for detection of the ID key
- Write the system command "Delete individual ID key" (value 0xA5 in data set (index) 2 - system commands or button in the Port Configuration Tool *S7-PCT*)
- Check: Status of the individually encodable ID key (data set (index) 92 - diagnostics)
- Remove the ID key from the ID key-operated switch

Settings	Description
165	Delete individual ID key used in the ID key-operated switch.

Status of the individually encodable ID key (data set (index) 92 - diagnostics, byte 19.0 ... 19.7)

You will find additional information in Chapter "Data set (Index) 92 - diagnostics (Page 456)".

Value	Description
0	Individually encodable ID key detected.
2	No valid individually encodable ID key used.
3	Deleted ID key not in the memory of the electronic module.

Delete individually encodable ID key using data set 80

If the individually encodable ID key is lost or stolen, it is possible to remove the individually encodable ID key from the key list without the individually encodable ID key being physically available.

In this case, the electronics module offers the option of deleting the key from the key list using data set 80.

Procedure:

To delete an individually encodable key from the list using data set 80, the following steps are required:

- Write the identification number of the ID key to be deleted to data set (index) 80, or enter it in a form field in the Port Configuration Tool *S7-PCT*
- Load the entered identification number into the electronic module in the Port Configuration Tool *S7-PCT*
- Write the system command "Delete individually encodable ID key using data set 80" (value 0xA6 in data set (index) 2 - system commands or button in the Port Configuration Tool *S7-PCT*)
- Check: Status of the individually encodable ID key (data set (index) 92 - diagnostics)

Settings	Description
166	Delete individually encodable ID key using data set 80.

Delete all individual ID keys

With the system command "Delete all individual ID keys" (value 0xA7 in data set (index) 2 - system commands or button in the Port Configuration Tool *S7-PCT*), all ID keys of the key list can be deleted.

The complete list of the set authorization levels for the individually encodable ID keys in the electronic module for ID key-operated switch for IO-Link is deleted (memory of the individually encodable ID keys (1-30) - data set (index) 81 and memory of the individually encodable ID keys (31-50) - data set (index) 82).

Settings	Description
167	All individually encodable keys stored in the electronic module for ID key-operated switches for IO-Link, and the set authorization levels, are deleted.

11.2.3.10 Parameters for IO-Link devices (according to IO-Link communication specification V1.1)

Parameter "Parameter (write) access"

With the "Parameter (write) access" parameter, you define whether or not all write and read access parameters can be accessed.

The table below shows the parameter values.

Table 11- 3 "Parameter (write) Access Lock" parameter

Value	Description	Default setting
0	Parameter (write) access: Unlocked	Unlocked
1	Parameter (write) access: disabled	—

"Data Storage" parameter

With the "Data Storage" parameter, you define whether or not the mechanism for data storage is disabled.

The table below shows the parameter values.

Table 11- 4 "Data Storage Lock" parameter

Value	Description	Default setting
0	Data Storage: Unlocked	Unlocked
1	Data Storage: disabled	—

11.2.4 Process image

Process image input (PII)

The process image input contains the most important status information of the electronic modules for the ID key-operated switch for IO-Link.

Table 11- 5 PII - status information

DI (2 bytes)	PII
DI0.0	1: Ready
DI0.1	1: Group error
DI0.2	Reserved
DI0.3	Reserved
DI0.4	Reserved
DI0.5	Reserved
DI0.6	Reserved
DI0.7	Reserved
DI1.0	1: ID key recognized
DI1.1 - DI1.3	1: Authorization level
DI1.4 - DI1.6	1: Switch position

11.2.5 Diagnostics

11.2.5.1 IO-Link diagnostics

IO-Link diagnostics

On the electronic modules for ID key-operated switches for IO-Link, it is possible to carry out diagnostics via IO-Link. Short-circuit is signaled via the diagnostics mechanism of IO-Link. With all further diagnostics messages, the corresponding bit is set in data set (index) 92 - diagnostics.

The table below provides information on possible causes and remedial measures:

Table 11- 6 Possible causes and remedial measures

Diagnostics and messages	Possible cause	Possible remedial measures
Short-circuit	- The electrical cable connection on at least one of the digital outputs has been short-circuited. - The connected actuator is defective. The current consumption of the connected actuator is too high.	- Check the electrical cable connection of the digital outputs. - Check the current consumption of the connected actuator. - Use a new actuator.
Self-test error / internal error	- Fault in internal test. - The data saved in the device are invalid.	- Reset the electronic module to the delivery state and reconfigure the electronic module. - Return the device to the manufacturer.
Individually codable ID key cannot be saved: Key list is full	50 individually codable keys have already been saved, and the available memory range is full.	- Check the data in data sets 81 and 82 (memory of the individually codable ID keys (1-30) - data set (index) 81, and memory of the individually codable ID keys (31-50) - data set (index) 82) - Delete the no longer used individually codable ID keys from the memory.
Individually codable ID key cannot be saved: invalid key	- No valid individually codable ID key inserted. - The inserted individually codable ID key is defective.	- Use an individually codable ID key if, for example, a colored ID key has been inserted. - Use another individually codable ID key since the inserted ID key could be defective. - Check that the ID key has been inserted as far as it will go.

Diagnostics and messages	Possible cause	Possible remedial measures
Individually codable ID key cannot be deleted: invalid key	- No valid individually codable ID key inserted. - The inserted individually codable ID key is defective.	- Use an individually codable ID key (white). - Check that the ID key has been inserted as far as it will go. - Delete the corresponding ID key by manually entering the identification number in data set 80.
Individually codable ID key cannot be deleted: Key to be deleted is not in the key list	- The inserted individually codable ID key was not previously assigned an authorization level. - The manually entered identification number in data set 80 has not been assigned an authorization level	- Assign an authorization level to the ID key. - Check the manually entered identification number of the ID key in data set 80.

The table below indicates how the manufacturer-specific diagnostics are reported:

Table 11- 7 Diagnostics and messages

Diagnostics and messages	IO-Link for event code ¹⁾	PII ²⁾	Data set 92	LED
		SF ³⁾		DEVICE
Short-circuit	0x7710	X	X	Red
Self-test error / internal error	—	X	X	Red
Individually codable ID key cannot be saved: Key list is full	—	—	X	—
Individually codable ID key cannot be saved: invalid key	—	—	X	—
Individually codable ID key cannot be deleted: invalid key	—	—	X	—
Individually codable ID key cannot be deleted: Key to be deleted is not in the key list	—	—	X	—

¹⁾ The manufacturer-specific diagnostic events listed in the table are reported to the IO-Link master via the diagnostics mechanism of IO-Link.

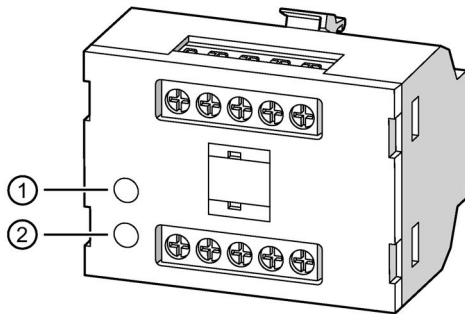
²⁾ With the "process image input" (see Chapter "Process image (Page 267)"), you can determine via the group error (GE) bit or general warning (GW) bit in the user program whether detailed information on diagnostics or messages is available in diagnostic data set 92. If bit (= 1) is set, you can obtain detailed information on what caused a "group error" by reading data set 92.

³⁾ GE = Group error: You can find detailed information in diagnostics data set 92 (see Chapter "Data set (index) 92 - diagnostics (Page 456)").

x: Bit set

—: Status does not change

Device LED



- ① DEVICE (device LED)
- ② IO-Link

The device LEDs are used to indicate the correct functioning of the electronic module for ID key-operated switches. If a short-circuit or internal fault occurs, this is indicated by these LEDs.

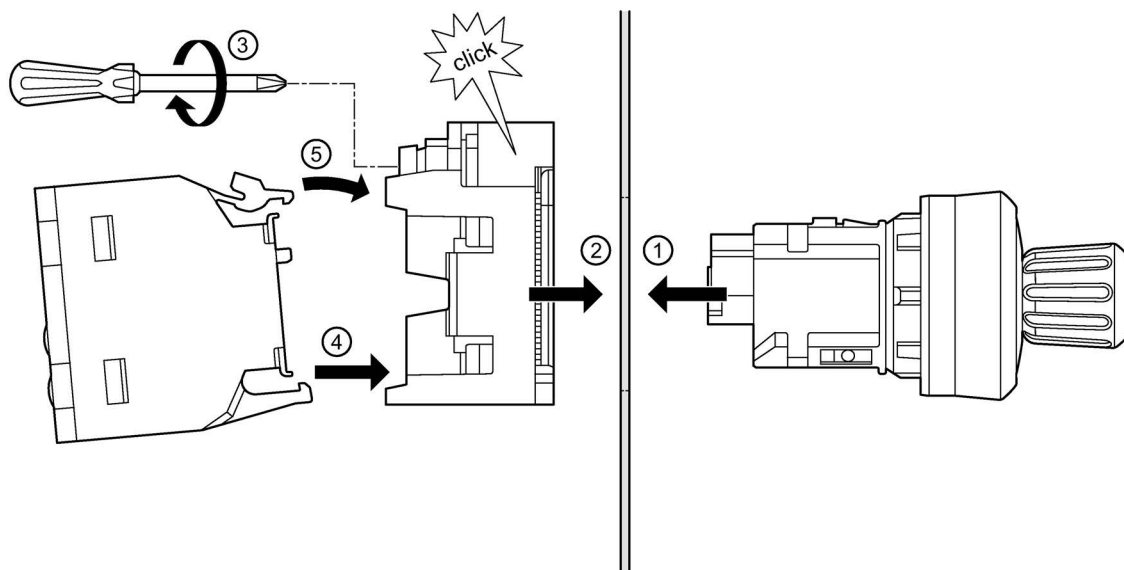
- Green device LED (DEVICE) lights up: Normal operation
- Red device LED (DEVICE) lights up: Fault display

IO-Link LED

The IO-Link LED is only used with the electronic module for ID key-operated switches for IO-Link, and is inactive with the electronic module for ID key-operated switches.

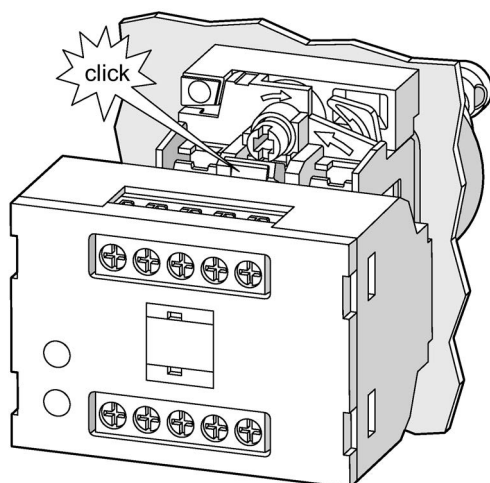
- Normal operation:
When IO-Link communication functions properly, the green IO-Link LED flashes in accordance with the IO-Link communication specification V1.1 (time duration approximately 1 second, ON time approximately 0.9 seconds).
- Fault display:
The IO-Link LED shows a red light in the event of IO-Link communication faults.

11.2.6 Mounting a command point with ID key-operated switch



Procedure

- ① Insert the ID key-operated switch from the front into the opening of the front plate.
- ② Place the holder from behind onto the ID key-operated switch.
- ③ Tighten the screw on the holder (tightening torque 1.0 to 1.2 Nm).
- ④ Snap the electronic module for ID key-operated switch onto the back of the holder.
Fit the narrow snap hook into the associated contour on the holder.
- ⑤ Engage the broad snap hook into the associated contour on the holder.
Ensure secure latching

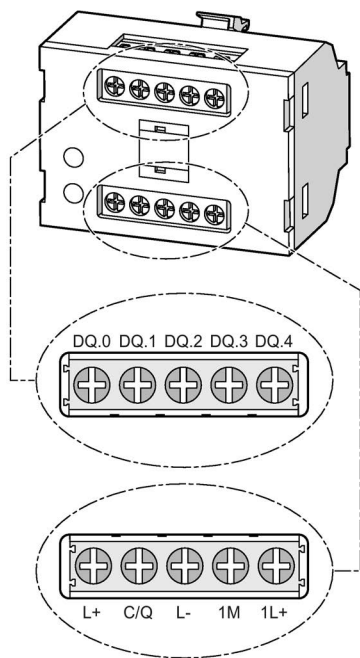


Snapping an electronic module onto the holder ④ / ⑤

11.2.7 Connecting

11.2.7.1 Electronic modules for the ID key-operated switches for IO-Link

3SU1400-1GD10-1AA0 electronic module for ID key-operated switches for IO-Link

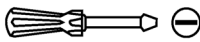
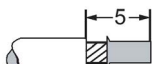
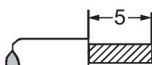


Terminal labeling

The IO-Link device is connected to the IO-Link master via the terminals L+, C/Q and L-. The IO-Link device is powered (24 V DC) via the two cables L+ and L-. Communication of the IO-Link device with the IO-Link master takes place via the cable C/Q. The current available at one IO-Link port of the IO-Link master is 200 mA. If more than 200 mA are required for the IO-Link device, the terminals 1M and 1L+ can be additionally connected.

Terminal labeling					
Pin	X1		Pin	X2	
1	DQ.0	Digital output	6	L+	Supply voltage for IO-Link
2	DQ.1	Digital output	7	C/Q	Communication signal/switching signal
3	DQ.2	Digital output	8	L-	IO-Link ground
4	DQ.3	Digital output	9	1M	Ground
5	DO.4	Digital output	10	1L+	24 V DC

Conductor cross-sections

 SZM (Ø 3.5 mm x 0.6 mm)	0.4 Nm 3.5 lb in
	$1 \times 0.2 \dots 2.5 \text{ mm}^2$
	$1 \times 0.25 \dots 1.5 \text{ mm}^2$ $2 \times 0.25 \dots 0.75 \text{ mm}^2$
	$1 \times 0.2 \dots 2.5 \text{ mm}^2$ $2 \times 0.2 \dots 0.75 \text{ mm}^2$
AWG	26 to 14

11.3 Electronic modules for IO-Link

11.3.1 Electronic module for IO-Link

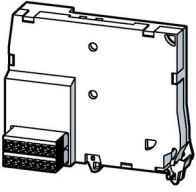
The electronic modules for IO-Link can be installed in 3SU1 enclosures or mounted on a front plate.

The modules are controlled by IO-Link communication. The rated supply voltage of the module is 24 V.

Variants

- **Front variant 6DI/2DO**
For front plate mounting. The 8 digital inputs and outputs can be parameterized individually as required. The default setting is 6 digital inputs and 2 digital outputs. The inputs and outputs can only be parameterized by IO-Link communication.
- **Basic variant 6DI/2DO**
For use in a 3SU1 enclosure. The 8 digital inputs and outputs can be parameterized individually as required. The default setting is 6 digital inputs and 2 digital outputs. The inputs and outputs can only be parameterized by IO-Link communication.
- **Basic variant 6DI/2DO**
6DI/2DO means that the variant has 6 digital inputs and 2 digital outputs. It is not possible to change the number of inputs and outputs.
- **Basic variant 4DI/4DO**
4DI/4DO means that the variant has 4 digital inputs and 4 digital outputs. It is not possible to change the number of inputs and outputs.
- **Basic variant 2DI/6DO**
2DI/6DO means that the variant has 2 digital inputs and 6 digital outputs. It is not possible to change the number of inputs and outputs.

Article numbers

	Mounting type	Digital inputs	Digital outputs	Article number
	Front plate mounting	6 ¹⁾	2 ¹⁾	3SU1400-1HL10-6AA0
	Base mounting	6 ¹⁾	2 ¹⁾	3SU1400-2HL10-6AA0
	Base mounting	6 ²⁾	2 ²⁾	3SU1400-2HK10-6AA0
	Base mounting	4 ²⁾	4 ²⁾	3SU1400-2HM10-6AA0
	Base mounting	2 ²⁾	6 ²⁾	3SU1400-2HN10-6AA0

¹⁾ Default setting. The 8 digital inputs and outputs can be parameterized individually as required.

²⁾ It is not possible to change the number of inputs and outputs.

Short-circuit protection

If a short-circuit occurs at one or more outputs, the occurrence of a fault event is sent and the fault flag is set. All outputs are deactivated for one second. Then the relevant outputs are re-activated to monitor whether the short-circuit is still active. This temporary state exists for approximately 0.1 seconds. If no short-circuit is determined during this period, the fault event is revoked, and the fault flag is deleted. However, if a short-circuit is detected during this time, all outputs are deactivated again, and the short-circuit device fault remains.

11.3.2 Functions

11.3.2.1 Input functions

Static input

Description

This function is intended for general use. In this mode, a value at the input can be read and transferred to the IO-Link master via IO-Link communication. The output is deactivated in this mode.

Parameters

- Input delay
- Inverting input

Switching input

Description

A value at the input is read in this mode. Signal changes are monitored. The actual value of the relevant counter "Switching cycle number" is incremented by a predefined signal change. The actual value of this counter is compared to the parameterized number of switching cycles. If the actual switching cycle number reaches this value, the switching cycle number status is set to "threshold reached". If the actual switching cycle number reaches 4 294 967 295 (0xFFFFFFFF [hex]), counting ceases and the status for the switching cycle number is set to "expired". If the actual switching cycle number is lower than the number of switching cycles and less than 4 294 967 295 (0xFFFFFFFF [hex]), the status for the switching cycle number is set to "active". When the switching input mode is deselected, the status for the switching cycle number is set to "deactivated". The actual switching cycle number is stored in a buffer memory and is available as the start value for continued counting when the switching input mode is selected again. When the device is switched off, the actual switching cycle number is transferred to the non-volatile memory of the device so that it can be retrieved when the device is next switched on.

The actual switching cycle number can be reset to zero by the following methods:

- Change the number of switching cycles.
- Switch over from the switching input mode to the switching output mode, and vice versa.
- Change the type of counted edges.
- Use the standard command "Restore factory setting".
- Use the standard command "Application Reset".
- Use the standard command "Reset switching cycle counter at pin x" (x refers to the number of the corresponding IO).
- Use the standard command "Switching cycle counter at pins 1-8".

Parameters

- Input delay
- Threshold switching cycle counter
- Active edges
- Inverting input

Switch-on duration input

Description

A value at the input is read in this mode. Signal changes are monitored. The value at the input is monitored. If the input is switched on for 1000 ms, the actual switch-on duration counter is incremented. This increase represents the total period of time during which the input is switched on and may include several pulses that are shorter than 1000 ms. The actual value of this counter is compared to the parameterized time period. If the actual switch-on duration counter reaches this value, the switch-on duration status is set to "threshold reached". If the actual switch-on duration counter reaches 4 294 967 295 (0xFFFFFFFF [hex]), counting ceases and the status for the switch-on duration is set to "expired". If the actual switch-on duration count is shorter than the parameterized time period and less than 4 294 967 295 (0xFFFFFFFF [hex]), the status for the switch-on duration is set to "active".

When the switch-on duration input mode is deselected, the status for the switch-on duration is set to "deactivated". The actual switch-on duration count is stored in a buffer memory and is available as the start value for continued counting when the switch-on duration input mode is selected again. When the device is switched off, the actual switch-on duration count is transferred to the non-volatile memory of the device so that it can be retrieved when the device is next switched on.

The actual switch-on duration count can be reset to zero by the following methods:

- Change the parameterized time period.
- Switch over from the switch-on duration input mode to the switch-on duration output mode, and vice versa.
- Use the standard command "Restore Factory Setting".
- Use the standard command "Application Reset".
- Use the standard command "Reset switch-on duration at pin x" (x refers to the number of the corresponding IO).
- Use the standard command "Reset switch-on duration at pins 1-8".

Parameters

- Input delay
- Threshold switch-on duration
- Inverting input

11.3.2.2 Output functions

Static output

Description

In this mode, a value for the relevant output can be set and transferred from the IO-Link master to the device. The value for the output is set by means of the output process data.

The output voltage corresponds to EN 61131-2.

Parameters

- Inverting output

PWM output

Description

The value of the output process data is read in this mode. The relevant output can be set as a PWM output in this mode. PWM is activated by means of the output process data.

Parameters

- PWM frequency
- PWM duty cycle
- Inverting output
If "Inverting output" is deactivated, PWM is active at the output for as long as the corresponding output process data bit is activated. If the relevant process data bit is deactivated, the output is OFF.

If "Inverting output" is activated, PWM is active at the output for as long as the corresponding output process data bit is deactivated. If the relevant process data bit is activated, the output is OFF.

Dimming output

Description

The relevant output can be switched on gradually in this mode. The dimming output is activated by means of the output process data. The dimming frequency is 100 Hz. The duty factor increases linearly from 0 to 100%. The output is fully ON when the dimming time expires. Dimming is activated when the output is switched on. When the output is switched off, it is deactivated instantaneously. The dimming status can be read in parameter Dimming Status. The possible values of this parameter are "Deactivated", "Active" and "Expired". This function is used primarily to gradually illuminate LED modules.

Parameters

- Dimming time
- Inverting output
If "Inverting output" is deactivated, dimming activates a rising edge in the output process data. When the parameterized dimming time expires, the output is activated. If the output process data are deactivated, the output is OFF.
If "Inverting output" is activated, dimming activates a falling edge in the output process data. When the parameterized dimming time expires, the output is activated. If the output process data are activated, the output is OFF.

Switching output

Description

The value of the output process data is read in this mode. Signal changes are monitored. The switching output mode is activated by means of the output process data. The actual value of the relevant counter "Switching cycle number" is incremented by a predefined signal change. The actual value of this counter is compared to the parameterized number of switching cycles. If the actual switching cycle number reaches this value, the switching cycle number status is set to "threshold reached". If the actual switching cycle number reaches 4 294 967 295 (0xFFFFFFFF [hex]), counting ceases and the status for the switching cycle number is set to "expired". If the actual switching cycle number is lower than the number of switching cycles and less than 4 294 967 295 (0xFFFFFFFF [hex]), the status for the switching cycle number is set to "active". When the switching output mode is deselected, the status for the switching cycle number is set to "deactivated". The actual switching cycle number is stored in a buffer memory and is available as the start value for continued counting when the switching output mode is selected again. When the device is switched off, the actual switching cycle number is transferred to the non-volatile memory of the device so that it can be retrieved when the device is next switched on. The actual switching cycle number can be reset to zero by the following methods:

- Change the number of switching cycles.
- Switch over from the switching output mode to the switching input mode, and vice versa.
- Change the type of counted edges.
- Use the standard command "Restore Factory Setting".
- Use the standard command "Application Reset".
- Use the standard command "Reset switching cycle counter at pin x" (x refers to the number of the corresponding IO).
- Use the standard command "Switching cycle counter at pins 1-8".

Parameters

- Threshold switching cycle counter
- Active edges
- Inverting output

Switch-on duration output

Description

A value at the output is read in this mode. Signal changes are monitored. The switch-on duration output mode is activated by means of the output process data. The value at the output is monitored. If the output is switched on for 1000 ms, the actual switch-on duration counter is incremented. This increase represents the total period of time during which the output is switched on and may include several pulses that are shorter than 1000 ms. The actual value of this counter is compared to the parameterized time period. If the actual switch-on duration counter reaches this value, the switch-on duration status is set to "threshold reached". If the actual switch-on duration counter reaches 4 294 967 295 (0xFFFFFFFF [hex]), counting ceases and the status for the switch-on duration is set to "expired". If the actual switch-on duration count is shorter than the parameterized time period and less than 4 294 967 295 (0xFFFFFFFF [hex]), the status for the switch-on duration is set to "active". When the switch-on duration output mode is deselected, the status for the switch-on duration is set to "deactivated". The actual switch-on duration count is stored in a buffer memory and is available as the start value for continued counting when the switch-on duration output mode is selected again. When the device is switched off, the actual switch-on duration count is transferred to the non-volatile memory of the device so that it can be retrieved when the device is next switched on.

The actual switch-on duration count can be reset to zero by the following methods:

- Change the parameterized time period.
- Switch over from the switch-on duration output mode to the switch-on duration input mode, and vice versa.
- Use the standard command "Restore Factory Setting".
- Use the standard command "Application Reset".
- Use the standard command "Reset switch-on duration at pin x" (x refers to the number of the corresponding IO).
- Use the standard command "Reset switch-on duration at pins 1-8".

Parameters

- Threshold
- Inverting output

11.3.3 Parameters

The following input parameters can be set:

- Input delay
- Inverting input
- Switching input
- Active edges
- Threshold switch-on duration

The following output parameters can be set:

- Inverting output
- PWM frequency
- PWM duty cycle
- Dimming time
- Switching output
- Active edges

Notes on parameter assignment

Transfer of the parameters with the "Parameterserver" function if IO-Link masters and IO-Link devices according to the IO-Link communication specification V1.1 are available:

1. The "Parameter server" function backs up the parameter data from the IO-Link devices.
2. Replace the IO-Link device.
3. The parameter data is automatically written back to the new IO-Link device on system startup.

11.3.3.1 "Input delay" parameter

"Input delay" parameter

A delay time must be set at the input as a filter. Signal changes are ignored if they are shorter than the parameterized values. The input values are delayed by the time set for the filter. Values of between 3 and 255 ms can be set as the input delay.

Settings	Description	Default setting
3	Input delay: Minimum value	3 ms
255	Input delay: Maximum value	—

Increment: 1 ms

11.3.3.2 "Inverting input" parameter

"Inverting input" parameter

Each input can be parameterized as a normal or an inverting input.

Settings	Description	Default setting
0	Inverting input: disabled	disabled
1	Inverting input: enabled	—

11.3.3.3 "Switching input" parameter

"Switching input" parameter

Target value with which the actual switching cycle number is compared. The number of switching cycles can be set to between 0 and 4 294 967 295 (0xFFFFFFFF [hex]).

Settings	Description	Default setting
0	Number of switching cycles: Minimum value	0
4294967295	Number of switching cycles: Maximum value	—

Increment: 1

11.3.3.4 "Active edge" parameter input

"Active edge" parameter

Selection of type of edges to be counted. The following edge types are available for selection:

- None
- Rising edge
- Falling edge
- All edges

Settings	Description	Default setting
0	None	Rising edge
1	Rising edge	—
2	Falling edge	—
3	All edges	—

11.3.3.5 "Threshold" parameter input

"Threshold" parameter

Target value with which the actual switch-on duration count is compared. The target value can be set to between 0 and 4 294 967 295 (0xFFFFFFFF [hex]) seconds. This approximately corresponds to: 0 to 136 years.

Settings	Description	Default setting
1	Threshold: Minimum value	0
4294967295	Threshold: Maximum value	—

Increment: 1 second

11.3.3.6 "Inverting output" parameter

"Inverting output" parameter

Each output can be parameterized as a normal or an inverting output.

Settings	Description	Default setting
0	Inverting output: disabled	disabled
1	Inverting output: enabled	—

11.3.3.7 "PWM frequency" parameter output

"PWM frequency" parameter

The PWM frequency can be set to values between 1 and 255 Hz.

Settings	Description	Default setting
1	PWM frequency: Minimum value	1 Hz
255	PWM frequency: Maximum value	—

Increment: 1 Hz

11.3.3.8 "PWM duty cycle" parameter output

"PWM duty cycle" parameter

The PWM duty cycle can be set to values between 10 and 90 %.

Settings	Description	Default setting
10	PWM duty cycle: Minimum value	50 %
90	PWM duty cycle: Maximum value	—

Increment: 1 %

11.3.3.9 "Dimming time" parameter output

"Dimming time" parameter

The dimming time can be set to between 0.1 and 25.5 seconds.

Settings	Description	Default setting
0.1	Dimming time: Minimum value	1 second
25.5	Dimming time: Maximum value	—

Increment: 0.1 seconds

11.3.3.10 "Switching output" parameter

"Switching output" parameter

Target value with which the actual switching cycle number is compared. The number of switching cycles can be set to between 0 and 4 294 967 295.

Settings	Description	Default setting
1	Number of switching cycles: Minimum value	0
4294967295	Number of switching cycles: Maximum value	—

Increment: 1

11.3.3.11 "Active edge" parameter output**"Active edge" parameter**

Selection of type of edges to be counted. The following edge types are available for selection:

- None
- Rising edge
- Falling edge
- All edges

Settings	Description	Default setting
0	None	Rising edge
1	Rising edge	—
2	Falling edge	—
3	All edges	—

11.3.4 Diagnostics

11.3.4.1 IO-Link diagnostics

Electronic modules for IO-Link can be diagnosed via IO-Link. Short-circuit is signaled via the diagnostics mechanism of IO-Link. With all further diagnostics messages, the corresponding bit is set in data set (index) 92 - diagnostics.

The table below provides information on possible causes and remedial measures:

Table 11- 8 Possible causes and remedial measures

Diagnostics and messages	Possible cause	Possible remedial measures
Short-circuit	- The electrical cable connection on at least one of the digital outputs has been short-circuited. - The connected actuator is defective. The current consumption of the connected actuator is too high.	- Check the electrical cable connection of the digital outputs. - Check the current consumption of the connected actuator. - Use a new actuator.
Self-test error / internal error	- Fault in internal test. - The data saved in the device are invalid.	- Reset the electronic module to the delivery state and reconfigure the electronic module. - Return the device to the manufacturer.

The table below indicates how the manufacturer-specific diagnostics are reported:

Table 11- 9 Diagnostics and messages

Diagnostics and messages	IO-Link for event code ¹⁾	PII ²⁾	Data set 92	LED
		SF ³⁾		DEVICE
Short-circuit	0x7710	X	X	Red
Self-test error / internal error	—	X	X	Red

¹⁾ The manufacturer-specific diagnostic events listed in the table are reported to the IO-Link master via the diagnostics mechanism of IO-Link.

²⁾ With the "process image input", you can determine via the group error (GE) bit in the user program whether detailed information on diagnostics or messages is available in diagnostic data set 92. If bit (= 1) is set, you can obtain detailed information on what caused a "group error" by reading data set 92.

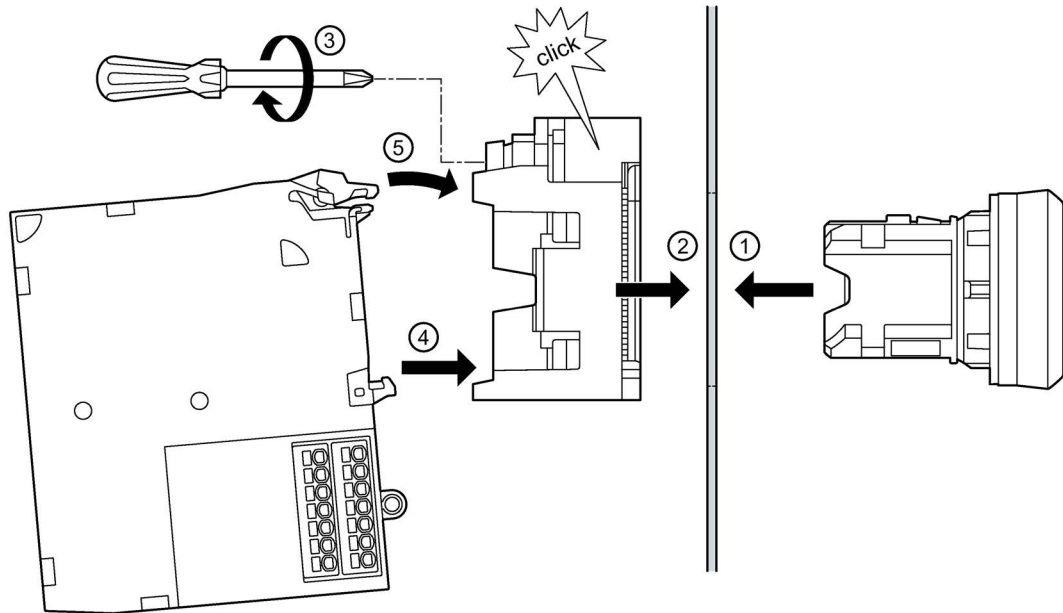
³⁾ GE = Group error: You can find detailed information in diagnostics data set 92 (see Chapter "Diagnostics - data set (index) 92 (Page 465)").

x: Bit set

—: Status does not change

11.3.5 Installing and removing electronic modules for IO-Link

11.3.5.1 Installing IO-Link electronic modules for front plate mounting



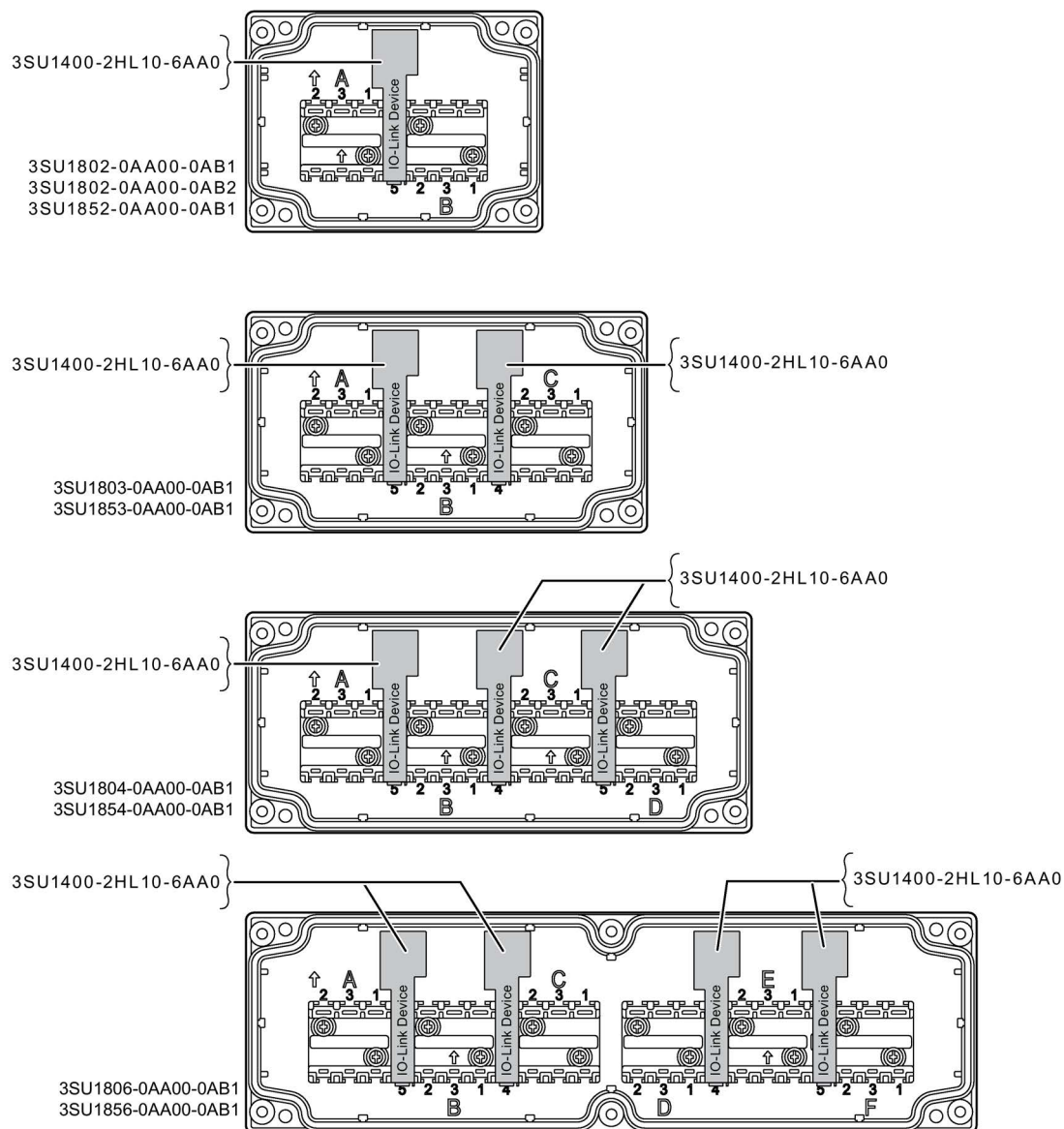
Procedure

- ① Insert the actuating or signaling element from the front into the opening of the front plate.
- ② Fit the holder from behind. Ensure secure latching here.
- ③ Tighten the screw on the holder (tightening torque 1.0 to 1.2 Nm).
- ④ / ⑤ Snap the IO-Link electronic module for front plate mounting from behind onto the holder.

Ensure the IO-Link electronic module for front plate mounting is securely snapped into place.

11.3.5.2 Mounting position of IO-Link modules for base mounting

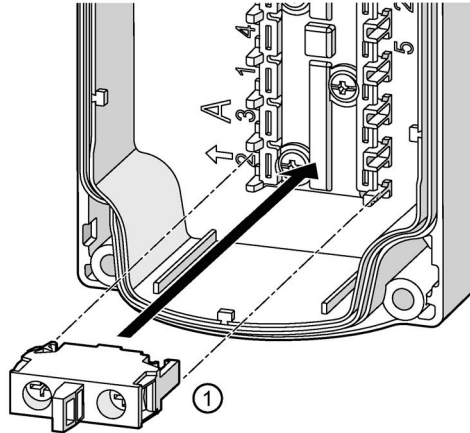
IO-Link modules for base mounting can be mounted in the following positions:



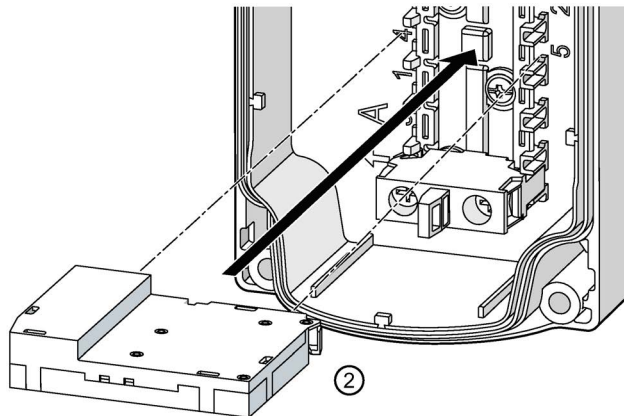
11.3.5.3 Mounting contact modules and IO-Link modules for base mounting

The electronic modules for IO-Link are mounted in the enclosure base like contact modules or LED modules. To equip an enclosure with contact modules and an electronic module for IO-Link, follow these steps:

1. Snap the contact module onto the slot in the enclosure marked "1", "2" or "3".



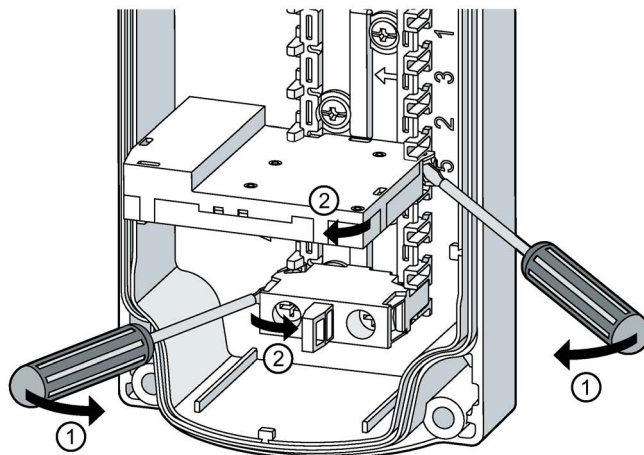
2. Insert the electronic module for IO-Link in an "intermediate slot, e.g. A / B or B / C.



11.3.5.4 Removal of the modules

Requirement

Enclosure cover is disassembled.

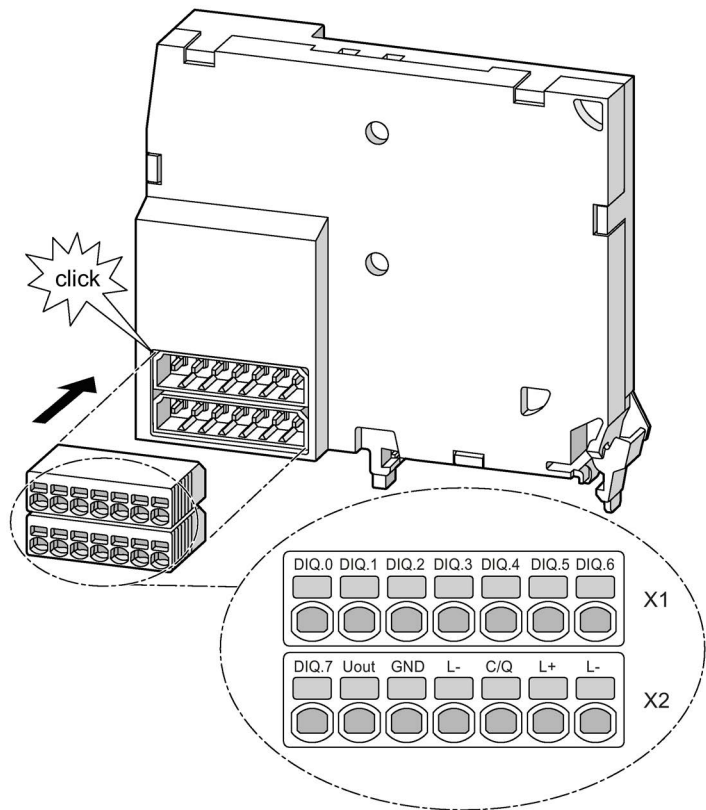


- ① Insert a screwdriver into the opening of the latches (broad snap hook) of the contact modules or LED modules.
Or insert a screwdriver into the opening of the latches of the electronic modules for IO-Link.
- ② Press the screwdriver in the direction of the module you want to remove to open the latches of the modules.
Remove the modules.

11.3.6 Connecting

11.3.6.1 Electronic modules for IO-Link

IO-Link module for base mounting

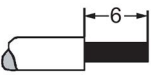
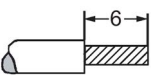


Terminal labeling

The IO-Link device is connected to the IO-Link master via the terminals L+, C/Q and L-. The IO-Link device is powered (24 V DC) via the two cables L+ and L-. The IO-Link device communicates with the IO-Link master via cable C/Q. A 200 mA current is available at an IO-Link port of the IO-Link master.

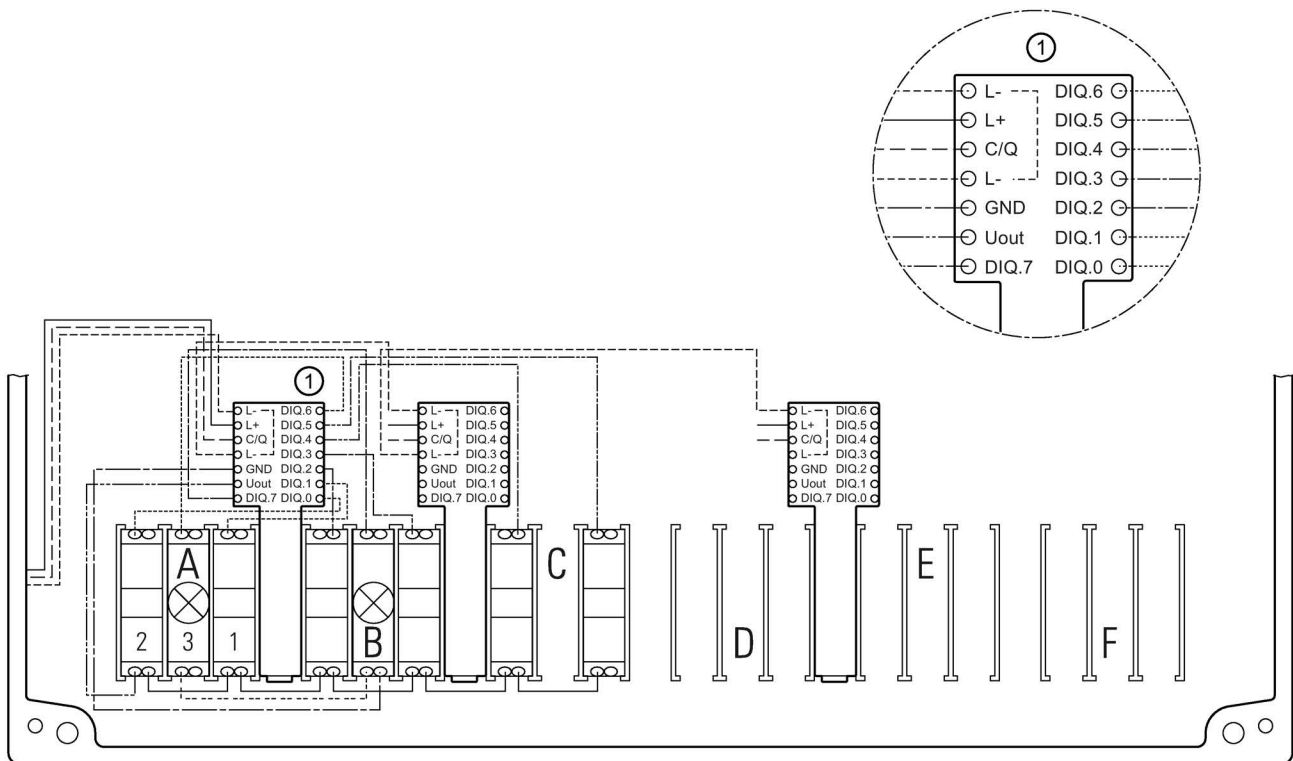
Terminal labeling					
Pin	X1		Pin	X2	
1	DIQ.0	Digital input/output	8	DIQ.7	Digital input/output
2	DIQ.1	Digital input/output	9	Uout	Module supply voltage
3	DIQ.2	Digital input/output	10	GND	Grounding for modules
4	DIQ.3	Digital input/output	11	L-	IO-Link ground for further modules
5	DIQ.4	Digital input/output	12	C/Q	Communication signal/switching signal
6	DIQ.5	Digital input/output	13	L+	Supply voltage
7	DIQ.6	Digital input/output	14	L-	Supply voltage

Conductor cross-sections

 SZM (Ø 3.5 mm x 0.6 mm)	0.4 Nm 3.5 lb in
	1 x 0.2 ... 2.5 mm ²
	1 x 0.2 ... 2.5 mm ² 2 x 0.2 ... 0.75 mm ²
AWG	26 to 14

11.3.7 Example of wiring

Enclosure with six command points with three IO-Link modules, wired to the left



Accessories

12.1 Backing plates

Backing plates are used for more detailed labeling of a command point. They are typically used under a pushbutton or indicator light. However, there are special backing plates for coordinate switches and twin pushbuttons. They are not suitable for EMERGENCY STOP buttons.

The backing plates consist of a black molded-plastic label holder and a labeling plate (black with white print or silver-colored with black print) for sticking or snapping in place.

Note

The front plate thickness is restricted to < 4 mm for all accessory components that are installed beneath an actuator

12.1.1 Labeling plate 12.5 x 27 mm

Labeling plates can be snapped on or attached by sticking to the holder. Labeling plates are used in combination with label holders.

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226804>)

	Description	Article number
	Labeling plate	3SU1900-0AC16-0AA0

Labeling plate with inscription in German

Description	Article number
Ein	3SU1900-0AC16-0AB0
Aus	3SU1900-0AC16-0AC0
Auf	3SU1900-0AC16-0AD0
Ab	3SU1900-0AC16-0AE0
Vor	3SU1900-0AC16-0AF0
Zurück	3SU1900-0AC16-0AG0
Rechts	3SU1900-0AC16-0AH0
Links	3SU1900-0AC16-0AJ0
Halt	3SU1900-0AC16-0AK0
Zu	3SU1900-0AC16-0AL0
Betrieb	3SU1900-0AC16-0AP0
Störung	3SU1900-0AC16-0AQ0
Hand Auto	3SU1900-0AC16-0DB0
Hand O Auto	3SU1900-0AC16-0DD0

Labeling plate with inscription in English

Description	Article number
On	3SU1900-0AC16-0DJ0
Off	3SU1900-0AC16-0DK0
Up	3SU1900-0AC16-0DL0
Down	3SU1900-0AC16-0DM0
Forward	3SU1900-0AC16-0DN0
Reverse	3SU1900-0AC16-0DP0
Right	3SU1900-0AC16-0DQ0
Left	3SU1900-0AC16-0DR0
Stop	3SU1900-0AC16-0DS0
Start	3SU1900-0AC16-0DT0
Reset	3SU1900-0AC16-0DU0
Test	3SU1900-0AC16-0DV0
Open	3SU1900-0AC16-0DW0
Close	3SU1900-0AC16-0DX0
Jog	3SU1900-0AC16-0DE0
Running	3SU1900-0AC16-0EB0
Fault	3SU1900-0AC16-0EC0
Run	3SU1900-0AC16-0ED0
Stop Start	3SU1900-0AC16-0DC0
Off On	3SU1900-0AC16-0DH0
Power off	3SU1900-0AC16-0DF0
Power on	3SU1900-0AC16-0DG0
Man O Auto	3SU1900-0AC16-0DY0
Man Auto	3SU1900-0AC16-0EA0

Labeling plate with inscription in French

Description	Article number
Marche	3SU1900-0AC16-0GA0
Arrêt	3SU1900-0AC16-0GB0
Montée	3SU1900-0AC16-0GC0
Descente	3SU1900-0AC16-0GD0
Avant	3SU1900-0AC16-0GE0
Retour	3SU1900-0AC16-0GF0
Droite	3SU1900-0AC16-0GG0
Gauche	3SU1900-0AC16-0GH0
Ouvert	3SU1900-0AC16-0GJ0
Fermé	3SU1900-0AC16-0GK0
Rapide	3SU1900-0AC16-0GL0
En Service	3SU1900-0AC16-0GM0
Défaut	3SU1900-0AC16-0GN0
Reglage	3SU1900-0AC16-0GP0
Arrêt d'urgence	3SU1900-0AC16-0GQ0
Hors service	3SU1900-0AC16-0GR0
Sous tension	3SU1900-0AC16-0GS0
Manu Auto	3SU1900-0AC16-0GT0
Marche Arrêt	3SU1900-0AC16-0GU0
Rearmement	3SU1900-0AC16-0GV0

Labeling plate with symbol

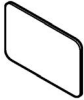
Printed symbols	Article number
O	3SU1900-0AC16-0QA0
I	3SU1900-0AC16-0QB0
O I	3SU1900-0AC16-0QG0
1 2	3SU1900-0AC16-0QJ0
Motion arrow direction up	3SU1900-0AC16-0QS0

12.1.2 Labeling plate 17.5 x 27 mm

Labeling plates can be snapped on or attached by sticking to the holder. Labeling plates are used in combination with label holders.

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226804>)

	Description	Article number
	Labeling plate	3SU1900-0AD16-0AA0

Labeling plate with inscription in German

Description	Article number
Ein	3SU1900-0AD16-0AB0
Aus	3SU1900-0AD16-0AC0
Auf	3SU1900-0AD16-0AD0
Ab	3SU1900-0AD16-0AE0
Vor	3SU1900-0AD16-0AF0
Zurück	3SU1900-0AD16-0AG0
Halt	3SU1900-0AD16-0AK0
Zu	3SU1900-0AD16-0AL0
Betrieb	3SU1900-0AD16-0AP0
Störung	3SU1900-0AD16-0AQ0
Hand Auto	3SU1900-0AD16-0DB0

Labeling plate with inscription in English

Description	Article number
Stop Start	3SU1900-0AD16-0DC0
On	3SU1900-0AD16-0DJ0
Off	3SU1900-0AD16-0DK0
Up	3SU1900-0AD16-0DL0
Down	3SU1900-0AD16-0DM0
Forward	3SU1900-0AD16-0DN0
Reverse	3SU1900-0AD16-0DP0
Right	3SU1900-0AD16-0DQ0
Left	3SU1900-0AD16-0DR0
Stop	3SU1900-0AD16-0DS0
Start	3SU1900-0AD16-0DT0
Open	3SU1900-0AD16-0DW0
Close	3SU1900-0AD16-0DX0

Description	Article number
Man Auto	3SU1900-0AD16-0EA0
Running	3SU1900-0AD16-0EB0
Fault	3SU1900-0AD16-0EC0

Labeling plate with inscription in French

Description	Article number
Marche	3SU1900-0AD16-0GA0
Arrêt	3SU1900-0AD16-0GB0
Droite	3SU1900-0AD16-0GG0
Gauche	3SU1900-0AD16-0GH0
En Service	3SU1900-0AD16-0GM0
Défaut	3SU1900-0AD16-0GN0
Sous tension	3SU1900-0AD16-0GS0
Manu Auto	3SU1900-0AD16-0GT0
Marche Arrêt	3SU1900-0AD16-0GU0
Rearmement	3SU1900-0AD16-0GV0

Labeling plate with symbol

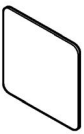
Printed symbols	Article number
O	3SU1900-0AD16-0QA0
I	3SU1900-0AD16-0QB0
O I	3SU1900-0AD16-0QG0
Motion arrow direction to right	3SU1900-0AD16-0QR0
Motion arrow direction up	3SU1900-0AD16-0QS0

12.1.3 Labeling plate 27 x 27 mm

Labeling plates can be snapped on or attached by sticking to the holder. Labeling plates are used in combination with label holders.

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226804>)

	Description	Article number
	Labeling plate	3SU1900-0AE16-0AA0

12.1 Backing plates

Labeling plate with inscription in German

Description	Article number
Ein	3SU1900-0AE16-0AB0
Aus	3SU1900-0AE16-0AC0
Auf	3SU1900-0AE16-0AD0
Ab	3SU1900-0AE16-0AE0
Vor	3SU1900-0AE16-0AF0
Zurück	3SU1900-0AE16-0AG0
Rechts	3SU1900-0AE16-0AH0
Links	3SU1900-0AE16-0AJ0
Halt	3SU1900-0AE16-0AK0
Zu	3SU1900-0AE16-0AL0
Betrieb	3SU1900-0AE16-0AP0
Störung	3SU1900-0AE16-0AQ0
Hand Auto	3SU1900-0AE16-0DB0

Labeling plate with inscription in English

Description	Article number
On	3SU1900-0AE16-0DJ0
Off	3SU1900-0AE16-0DK0
Up	3SU1900-0AE16-0DL0
Down	3SU1900-0AE16-0DM0
Forward	3SU1900-0AE16-0DN0
Reverse	3SU1900-0AE16-0DP0
Stop	3SU1900-0AE16-0DS0
Start	3SU1900-0AE16-0DT0
Emergency Stop	3SU1900-0AE16-0DA0
Stop Start	3SU1900-0AE16-0DC0

Labeling plate with inscription in French

Description	Article number
Marche	3SU1900-0AE16-0GA0
Arrêt	3SU1900-0AE16-0GB0
Montée	3SU1900-0AE16-0GC0
Descente	3SU1900-0AE16-0GD0
En Service	3SU1900-0AE16-0GM0
Défaut	3SU1900-0AE16-0GN0
Sous tension	3SU1900-0AE16-0GS0
Manu Auto	3SU1900-0AE16-0GT0
Marche Arrêt	3SU1900-0AE16-0GU0

Labeling plate with symbol

Printed symbols	Article number
O I	3SU1900-0AE16-0QG0
Motion arrow direction to right	3SU1900-0AE16-0QR0

12.1.4 Label holders

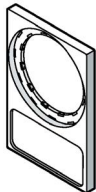
Label holders are used to attach labeling plates. Labeling plates can be snapped on or attached by sticking to the holder.

Siemens Industry Mall

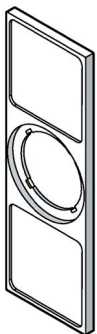
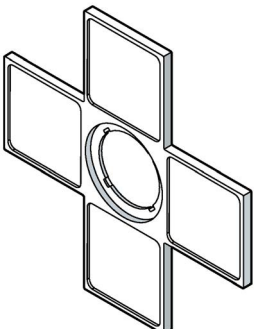
(<https://mall.industry.siemens.com/mall/en/en/Catalog/Products/10231447>)

Note

The front plate thickness is restricted to < 5 mm for all label holders that are installed beneath an actuator.

	Description	Size of the labeling plate	Shape	Article number
	Label holder for labeling plate (self-adhesive)	12.5 x 27 mm	Rounded on one side	3SU1900-0AG10-0AA0
		17.5 x 27 mm		3SU1900-0AH10-0AA0
		27 x 27 mm		3SU1900-0AJ10-0AA0
	Label holder for labeling plate (snap-on)	12.5 x 27 mm		3SU1900-0AR10-0AA0
		17.5 x 27 mm		3SU1900-0AS10-0AA0
		27 x 27 mm		3SU1900-0AT10-0AA0
	Label holder for labeling plate (self-adhesive)	12.5 x 27 mm	Square	3SU1900-0AN10-0AA0
		17.5 x 27 mm		3SU1900-0AP10-0AA0
		27 x 27 mm		3SU1900-0AQ10-0AA0
	Label holder for labeling plate for twin pushbutton	12.5 x 27 mm	Rectangular	3SU1900-0AK10-0AA0

12.1 Backing plates

	Description	Size of the labeling plate	Shape	Article number
	Label holder for labeling plate for coordinate switches and toggle switches	27 x 27 mm	Rectangular	3SU1900-0AL10-0AA0
	Label holder for labeling plate for coordinate switches and 4-slot selector switches	27 x 27 mm	Cross	3SU1900-0AM10-0AA0

12.1.5 Labeling plates for enclosures (22 x 22 mm)

The labeling plates in size 22 mm x 22 mm can be attached to enclosures with recesses for labels. There are versions in black with white print or silver-colored with black print.

You can find information on labeling in Chapter "Customized inscriptions (Page 307)"

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226805>)

	Description	Article number
	Labeling plate	3SU1900-0AF16-0AA0

Labeling plate with inscription in German

Description	Article number
Ein	3SU1900-0AF16-0AB0
Aus	3SU1900-0AF16-0AC0
Auf	3SU1900-0AF16-0AD0
Ab	3SU1900-0AF16-0AE0
Vor	3SU1900-0AF16-0AF0
Zurück	3SU1900-0AF16-0AG0
Rechts	3SU1900-0AF16-0AH0
Links	3SU1900-0AF16-0AJ0
Halt	3SU1900-0AF16-0AK0
Zu	3SU1900-0AF16-0AL0
Schnell	3SU1900-0AF16-0AM0
Langsam	3SU1900-0AF16-0AN0
Betrieb	3SU1900-0AF16-0AP0
Störung	3SU1900-0AF16-0AQ0
Einrichten	3SU1900-0AF16-0AR0
NOT-AUS	3SU1900-0AF16-0AS0

Labeling plate with inscription in English

Description	Article number
On	3SU1900-0AF16-0DJ0
Off	3SU1900-0AF16-0DK0
Up	3SU1900-0AF16-0DL0
Down	3SU1900-0AF16-0DM0
Forward	3SU1900-0AF16-0DN0
Reverse	3SU1900-0AF16-0DP0
Right	3SU1900-0AF16-0DQ0
Left	3SU1900-0AF16-0DR0
Stop	3SU1900-0AF16-0DS0
Start	3SU1900-0AF16-0DT0
Reset	3SU1900-0AF16-0DU0
Test	3SU1900-0AF16-0DV0
Open	3SU1900-0AF16-0DW0
Close	3SU1900-0AF16-0DX0
Running	3SU1900-0AF16-0EB0
Fault	3SU1900-0AF16-0EC0
Fast	3SU1900-0AF16-0EE0
Slow	3SU1900-0AF16-0EF0
Emergency Stop	3SU1900-0AF16-0DA0

Labeling plate with inscription in French

Description	Article number
Marche	3SU1900-0AF16-0GA0
Arrêt	3SU1900-0AF16-0GB0
Montée	3SU1900-0AF16-0GC0
Descente	3SU1900-0AF16-0GD0
Avant	3SU1900-0AF16-0GE0
Retour	3SU1900-0AF16-0GF0
Droite	3SU1900-0AF16-0GG0
Gauche	3SU1900-0AF16-0GH0
Ouvert	3SU1900-0AF16-0GJ0
Fermé	3SU1900-0AF16-0GK0
Rapide	3SU1900-0AF16-0GL0
En Service	3SU1900-0AF16-0GM0
Défaut	3SU1900-0AF16-0GN0
Sous tension	3SU1900-0AF16-0GS0
Manu Auto	3SU1900-0AF16-0GT0
Marche Arrêt	3SU1900-0AF16-0GU0
Rearmement	3SU1900-0AF16-0GV0
Lent	3SU1900-0AF16-0GW0
Arrêt d'urgence	3SU1900-0AF16-0GQ0

Labeling plate with symbol (ON/OFF)

Printed symbols	Article number
O	3SU1900-0AF16-0QA0
I	3SU1900-0AF16-0QB0
II	3SU1900-0AF16-0QC0
III	3SU1900-0AF16-0QD0
O I	3SU1900-0AF16-0QG0
I O II	3SU1900-0AF16-0QK0
I O (one below the other)	3SU1900-0AF16-0QP0
II O I (one below the other)	3SU1900-0AF16-0QQ0

Labeling plate with symbol

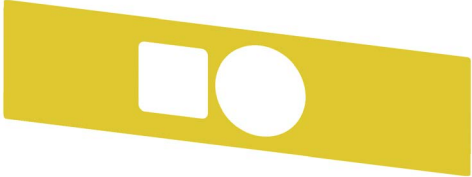
Printed symbols	Article number
Motion arrow direction to right	3SU1900-0AF16-0QR0
Pump	3SU1900-0AF16-0RD0
Fan	3SU1900-0AF16-0RV0
Cooling	3SU1900-0AF16-0RW0
Illumination	3SU1900-0AF16-0RX0
Motor	3SU1900-0AF16-0RY0

12.1.6 Labeling plates for enclosures with EMERGENCY STOP

The yellow labeling plates for emergency stop mushroom pushbuttons can be stuck onto gray enclosures. The labeling plates can be used on all enclosures without protective collar.

Siemens Industry Mall

(<https://mall.industry.siemens.com/mall/en/en/Catalog/Products/10228442>)

	
Typical diagram	
Description	Article number
Labeling plates without inscription	3SU1900-0BE31-0AA0
Labeling plate with inscription: NOT-AUS	3SU1900-0BE31-0AS0
Labeling plate with recess w/o inscription	3SU1900-0BF31-0AA0

12.1.7 Labeling plate for potentiometer

The labeling plates for potentiometers are used to improve the readability of the potentiometer setting. They are clipped immediately under the actuator. A label holder is not required for this.

Siemens Industry Mall

(<https://mall.industry.siemens.com/mall/en/en/Catalog/Products/10228442>)

	Description	Article number
	Labeling plates for self-inscription	3SU1900-0BG16-0AA0
	Labeling plate with inscription: 0 ... 10	3SU1900-0BG16-0RT0
	Labeling plate with graphical symbol: Startup	3SU1900-0BG16-0RU0
Typical diagram		

12.1.8 Insert label

The insert labels can be inserted under the buttons of the pushbuttons (only with clear button 3SU10x0-0AB70-0AA0) and illuminated pushbuttons. They are also suitable for illuminated pushbuttons of the size 30.5 mm. These insert labels are made of translucent plastic with a black inscription. They can be inserted at any 90° angle.

Insert labels without an inscription are intended for user marking using a permanent marker pen.

You can find information on installing and disassembling in the chapter titled "Mounting (Page 109)".

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10226803>)

Description		Article number
	Insert label for self-inscription	3SU1900-0AB71-0AA0

Insert label with inscription in German

Description	Article number
Ein	3SU1900-0AB71-0AB0
Aus	3SU1900-0AB71-0AC0
Auf	3SU1900-0AB71-0AD0
Ab	3SU1900-0AB71-0AE0
Vor	3SU1900-0AB71-0AF0
Zurück	3SU1900-0AB71-0AG0
Rechts	3SU1900-0AB71-0AH0
Links	3SU1900-0AB71-0AJ0
Halt	3SU1900-0AB71-0AK0
Zu	3SU1900-0AB71-0AL0
Schnell	3SU1900-0AB71-0AM0
Langsam	3SU1900-0AB71-0AN0
Betrieb	3SU1900-0AB71-0AP0
Störung	3SU1900-0AB71-0AQ0
Einrichten	3SU1900-0AB71-0AR0

Insert label with inscription in English

Description	Article number
On	3SU1900-0AB71-0DJ0
Off	3SU1900-0AB71-0DK0
Down	3SU1900-0AB71-0DM0
Forward	3SU1900-0AB71-0DN0
Reverse	3SU1900-0AB71-0DP0
Right	3SU1900-0AB71-0DQ0
Left	3SU1900-0AB71-0DR0
Stop	3SU1900-0AB71-0DS0
Start	3SU1900-0AB71-0DT0
Reset	3SU1900-0AB71-0DU0
Test	3SU1900-0AB71-0DV0
Open	3SU1900-0AB71-0DW0
Close	3SU1900-0AB71-0DX0
Running	3SU1900-0AB71-0EB0
Fast	3SU1900-0AB71-0EE0
Slow	3SU1900-0AB71-0EF0

Insert label with symbol (ON/OFF)

Description	Printed symbols	Article number
Black/White (label/lettering)	O I	3SU1900-0AB16-0QE0
White/Black (label/lettering)	O I	3SU1900-0AB61-0QE0
Clear/Black (label/lettering)	O	3SU1900-0AB71-0QA0
	I	3SU1900-0AB71-0QB0
	II	3SU1900-0AB71-0QC0
	III	3SU1900-0AB71-0QD0

Insert label with symbol (graphical)

Description	Printed symbols	Article number
Clear/Black (label/lettering)	Motion arrow direction to right	3SU1900-0AB71-0QR0
	Motion arrow direction up	3SU1900-0AB71-0QS0
	Clockwise rotation	3SU1900-0AB71-0QT0
	Counterclockwise rotation	3SU1900-0AB71-0QU0
	Rapid traverse	3SU1900-0AB71-0QV0
	Feed	3SU1900-0AB71-0QW0
	Increase, plus	3SU1900-0AB71-0QX0
	Decrease, minus	3SU1900-0AB71-0QY0
	Electric motor	3SU1900-0AB71-0RA0
	Horn	3SU1900-0AB71-0RB0
	Water tap	3SU1900-0AB71-0RC0
	Pump	3SU1900-0AB71-0RD0
	Coolant pump	3SU1900-0AB71-0RE0
	Lock, tighten	3SU1900-0AB71-0RF0
	Unlock, unclamp	3SU1900-0AB71-0RG0
	Brake	3SU1900-0AB71-0RH0
	Release brake	3SU1900-0AB71-0RJ0
	Interlock	3SU1900-0AB71-0RK0
	Unlock	3SU1900-0AB71-0RL0
	Setting	3SU1900-0AB71-0RM0
	ON-OFF momentary contact type	3SU1900-0AB71-0RN0
	Manual operation	3SU1900-0AB71-0RP0
	Automatic cycle	3SU1900-0AB71-0RQ0
	Suction	3SU1900-0AB71-0RR0
	Blowing	3SU1900-0AB71-0RS0

12.1.9 Customized inscriptions

Insert labels

The labels can be inscribed with text and symbols not listed in the ordering data.

By default, a letter height of 4 mm (for a single line of text) or 3 mm (for two or three lines of text) is used for text inscriptions.

The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

For round insert labels, the maximum possible number of characters per line is:

- 10 characters for one line of text
- 8 characters for 2 lines of text
- 6 characters for 3 lines of text, but 10 characters in the middle line.

Examples for customized inscription of the insert labels



Image 12-1 Two-line inscription in upper/lower case lettering (Q0Y)



Image 12-2 Single-line inscription in upper case lettering (Q1Y)



Image 12-3 Three-line inscription in lower case lettering (Q2Y)

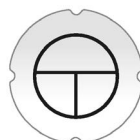


Image 12-4 Symbol number 5011 according to IEC 60417 (Q3Y)



Image 12-5 Any symbol according to order form supplement (Q9Y)

Labeling plates

The labels can be inscribed with text and symbols not listed in the ordering data.

The following letter heights are used as standard for text inscriptions:

- Label size 12.5 mm × 27 mm: 3 lines with letter height 4 mm (1-line), 3.5 mm (2-line) or 2.5 mm (3-line)
- Label size 17.5 mm × 27 mm: 3 lines with letter height 4 mm (1- to 2-line) or 3 mm (3-line)
- Label size 27 mm × 27 mm: 5 lines with letter height 4 mm (1- to 5-line)
- Label size 2 mm × 22 mm: with letter height 4 mm (1- to 3-line)

Up to 11 characters per line are possible. The typeface used is Arial. Other letter heights and typefaces are possible, but must be specified when ordering.

Examples for customized inscription of the insert labels



Image 12-6 Two-line inscription in upper/lower case lettering (Q0Y)



Image 12-7 Single-line inscription in upper case lettering (Q1Y)



Image 12-8 Three-line inscription in lower case lettering (Q2Y)



Image 12-9 Symbol number 5011 according to IEC 60417 (Q3Y)



Image 12-10 Any symbol according to order form supplement (Q9Y)

Ordering notes

If an order involves a specific inscription, the Article No. must be supplemented with one of the following order codes:

- Text line(s) in upper/lower case, upper case always for beginning of line (e.g. "Lift / Off"): **Q0Y**
- Text line(s) in upper case (e.g. "LIFT"): **Q1Y**
- Text line(s) in lower case (e.g. "lift / off / lower"): **Q2Y**
- Text line(s) in upper/lower case, all words begin with upper case letters (e.g. "On Off"): **Q5Y**
- Symbol with number according to ISO 7000 or IEC 60417: **Q3Y**
- Any inscription or symbol according to order form supplement: **Q9Y**

When ordering, specify the required inscription in plain text in addition to the article number and order code. In the case of special inscriptions with words in languages other than German, give the exact spelling and specify the language.

In the case of multi-line inscriptions, the text must be assigned to the respective line, e.g. "Z1 = Lift, Z2 = Lower". For long words you can also specify the end-of-line division (see ordering example 1).

Symbols can also be ordered with numbers according to ISO 7000 or IEC 60417 (see ordering examples 2 and 3).

For special symbols (order code Q9Y), a CAD drawing in DXF format must be submitted. The SIRIUS ACT Configurator must be used to select special inscriptions and symbols (order code Q9Y). In this case a "CIN" (Configuration Identification Number) is generated for placement of future orders. It is then possible to place an order directly using the CIN and the SIRIUS ACT Configurator (Mall shopping cart) or via the standard ordering channels.

Standard ordering channels:

- Configurator: Internet (<http://www.siemens.en/sirius-act/konfigurator>)
- Electronic Catalog CA 01 on DVD
- Industry Mall: Internet (<http://www.siemens.com/industrymall>)

Ordering example 1

A label with a two-line text is required: 3SU1900–0AF16-0AZ0

Q1Y

Z1 = LIFT

Z2 = LOWER

Ordering example 2

A label inscribed with symbol No. 5011 according to IEC 60417 is required: 3SU1900–0AF16–0AZ0

Q3Y

Z = 5011 IEC

Ordering example 3

A label inscribed with symbol No. 1118 according to ISO 7000 is required: 3SU1900–0AF16–0AZ0

Q3Y

Z = 1118 ISO

12.1.10 Labels for printing

The labels for printing are supplied as preformatted labels on A4 size sheets and can be printed individually.

Using the Label Designer software, which can be downloaded from the Internet, and the labeling plates for laser inscription, you can create your own customized labels with a standard laser printer. The self-adhesive or snap-on labels can be stuck or snapped onto the corresponding label holder. Round labels are provided for inserting in illuminated pushbuttons and switches. The labels are suitable for printing with one to three lines of text or symbols. For applications with more exacting requirements we recommend preprinted labeling plates and insert labels (laser-printed or engraved depending on the type).

You can download the Label Designer software from the following website: LabelDesigner (<http://support.automation.siemens.com/WW/view/en/24559069>)

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10231346>)

Description	Article number
A4 sheets of insert labels, semi-transparent	3SU1900-0BH60-0AA0
A4 sheets of labeling plates 12.5 x 27 mm, white	3SU1900-0BJ61-0AA0
A4 sheets of labeling plates 17.5 x 27 mm, white	3SU1900-0BK61-0AA0
A4 sheets of labeling plates 27 x 27 mm, white	3SU1900-0BL61-0AA0
A4 sheets of labeling plates 22 x 22 mm, white	3SU1900-0BM61-0AA0

Note about installation

When mounting the insert labels, the existing insert label must be removed and then the printed label inserted in its place.

For additional information on the procedure, please refer to Chapter "Disassembling pushbuttons (Page 109)".

12.1.11 EMERGENCY STOP

Backing plate diameter 45 mm

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10228442>)

Inscription	Article number
None	3SU1900-0BA31-0AA0

Backing plate diameter 75 mm

Inscription	Article number
None	3SU1900-0BB31-0AA0
NOT-AUS	3SU1900-0BB31-0AS0
NOT-HALT	3SU1900-0BB31-0AT0

Backing plate diameter 75 mm, self-adhesive

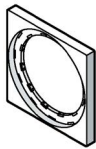
Inscription	Article number
None	3SU1900-0BC31-0AA0
NOT-AUS	3SU1900-0BC31-0AS0
NOT-HALT	3SU1900-0BC31-0AT0
EMERGENCY STOP	3SU1900-0BC31-0DA0
Arrêt d'urgence	3SU1900-0BC31-0GQ0
EMERGENZA	3SU1900-0BC31-0JA0
NODSTOP	3SU1900-0BC31-0LA0
NOT-HALT, EMERGENCY STOP, EMERGENZA, EMERGENCIA (de, en, it, sp)	3SU1900-0BC31-0NB0
EMERGENCY STOP in Chinese	3SU1900-0BC31-0MA0

12.1.12 Square single frame

You can mount the square single frame over a round signal panel cutout to change its appearance to "square".

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Product/?mlfb=3SU1900-0AX10-0AA0>)

	Description	Article number
	Square single frame (suitable for front plate thickness of < 4 mm)	3SU1900-0AX10-0AA0

12.1.13 Unit labeling plate

The unit labeling plate is snapped onto the back of the contact modules or LED modules (front mounting) and is used for labeling them.

Siemens Industry Mall

(<https://mall.industry.siemens.com/mall/en/en/Catalog/Products/10228442>)

Description	Article number
Unit labeling plate	3SU1900-0AY61-0AA0

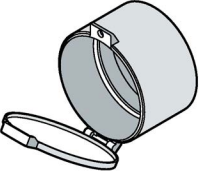
12.2 Protection

12.2.1 Sealable cap

The sealable cap is fitted before the pushbutton is installed so as to prevent unauthorized access to the pushbutton.

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221534>)

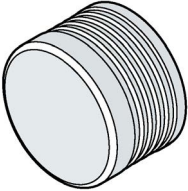
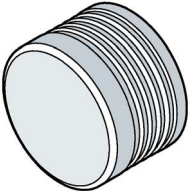
	Description		Article number
	Sealable cap for pushbutton (suitable for front plate thickness of < 4 mm)	Black	3SU1900-0DA10-0AA0
		Clear	3SU1900-0DA70-0AA0
	Sealable cap for pushbutton with extended stroke (suitable for front plate thickness of < 4 mm)	Black	3SU1900-0EL10-0AA0
		Clear	3SU1900-0EL70-0AA0

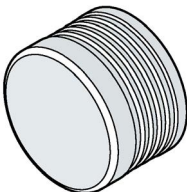
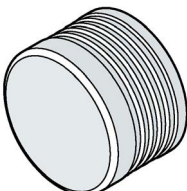
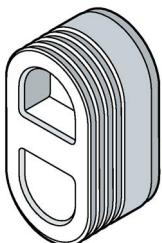
12.2.2 Protective cap

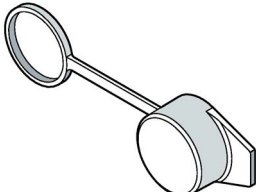
The protective cap is fitted before the actuating element is installed so as to protect the element against dust and contamination.

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221534>)

	Description	Article number
	Protective cap for pushbuttons, flat	3SU1900-0DB70-0AA0
	Protective cap for pushbuttons, flat, silicone-free	3SU1900-0ED70-0AA0
	Protective cap for pushbuttons, raised	3SU1900-0DC70-0AA0

	Description	Article number
	Protective cap for pushbuttons, raised, silicone-free	3SU1900-0EE70-0AA0
	Protective cap for selector switch (short selector)	3SU1900-0DD70-0AA0
	Protective cap for mushroom pushbutton, diameter 40 mm	3SU1900-0DE70-0AA0
	Protective cap for EMERGENCY STOP button	3SU1900-0DF70-0AA0
	Protective cap for twin pushbutton, flat	3SU1900-0EJ70-0AA0
	Protective cap for twin pushbutton, raised	3SU1900-0EK70-0AA0

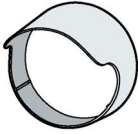
	Description	Article number
	Dust cap for key-operated switches	3SU1900-0EB10-0AA0

12.2.3 Sun collar

The sun collar is fitted after the illuminated pushbutton is installed and helps to improve the visibility of the illuminated pushbutton.

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221534>)

	Description	Article number
	Sun collar	3SU1900-0DJ10-0AA0

12.2.4 Protective collar

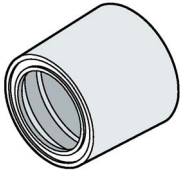
Note

The front plate thickness is restricted to < 4 mm for all accessory components that are installed beneath an actuator

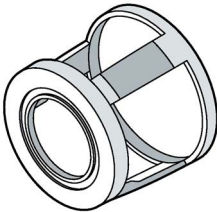
The protective collar is fitted before the pushbutton / illuminated pushbutton is installed. It is designed to protect the pushbutton. In addition, the visibility of the illuminated pushbutton is improved.

Siemens Industry Mall

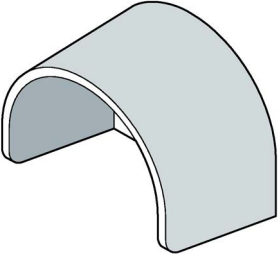
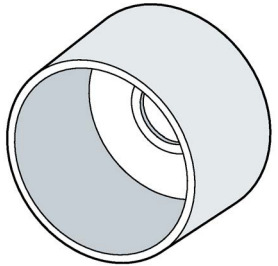
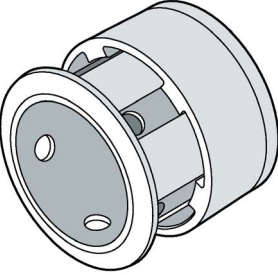
(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221534>)

	Description		Article number
	360° protective collar for pushbutton and short selector switch (suitable for front plate thickness of < 4 mm)	Plastic, black	3SU1900-0DW10-0AA0

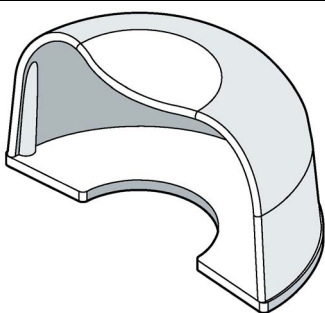
The protective collar is fitted before the pushbutton / mushroom pushbutton is installed and is designed to protect the pushbutton against very heavy blows / shocks.

	Description		Article number
	360° protective collar for pushbutton, visible from the side (suitable for front plate thickness of < 4 mm)	Metal, gray	3SU1950-0DK80-0AA0
	360° protective collar for mushroom pushbutton, diameter 40 mm, visible from the side (suitable for front plate thickness of < 4 mm)		3SU1950-0DL80-0AA0

The protective collar is fitted before the EMERGENCY STOP button is installed and is designed to protect the button against heavy blows/shocks.

	Description		Article number
	Protective collar for EMERGENCY STOP (suitable for front plate thickness of < 4 mm)	Plastic, yellow	3SU1900-0DY30-0AA0
		Plastic, gray	3SU1900-0DY80-0AA0
	Protective collar for EMERGENCY STOP, SEMI-Industry (front plate thickness of < 4 mm)	Plastic, yellow	3SU1900-0EA30-0AA0
	Protective collar for padlocks (suitable for front plate thickness of < 4 mm) (Lock not included in the scope of delivery) In order to prevent tampering with safety locks, padlocks with a shackle of 6 mm in diameter should/must be used. The protective collar for padlocks can be used in combination with the following devices:	Metal, yellow	3SU1950-0DX30-0AA0
		Metal, gray	3SU1950-0DX80-0AA0

The protection for sensor switch is used in combination with the sensor switch and is designed to protect the switch against heavy blows/shocks. The protection for sensor switch can be installed retrospectively.

	Description		Article number
	Protection for sensor switch	Cover: Plastic transparent Base: Plastic, black	3SU1900-0EC10-0AA0

12.2.5 Locking device

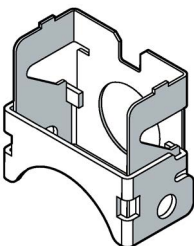
Note

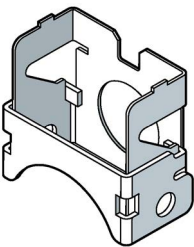
The front plate thickness is restricted to < 4 mm for all accessory components that are installed beneath an actuator

Locking devices are designed to protect pushbuttons and switches against unauthorized actuation.

Siemens Industry Mall

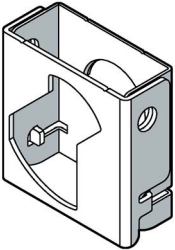
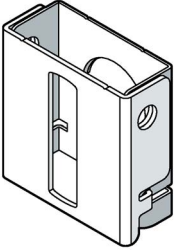
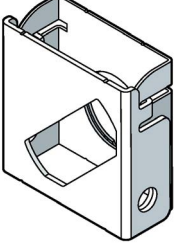
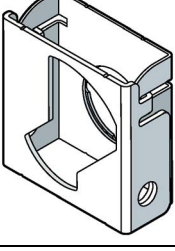
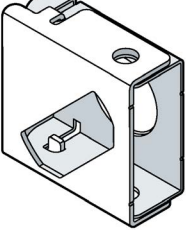
(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221534>)

	Description	Article number
	Locking device for pushbuttons, flat (suitable for front plate thickness of < 4 mm)	3SU1950-0DM80-0AA0
	Locking device for pushbuttons, raised (suitable for front plate thickness of < 4 mm)	3SU1950-0DN80-0AA0

	Description	Article number
	Locking device for mushroom pushbuttons in diameter 30 mm or 40 mm (suitable for front plate thickness of < 4 mm)	3SU1950-0DP80-0AA0

Note

Locking devices for selector switches require a hole (diameter 22.5 mm) with knock-out (acc. to IEC 60947-5-1 D22) to prevent unauthorized switch actuation.

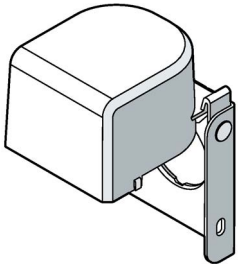
	Description	Article number
	Locking device for selector switches (short / long actuator), position on left (suitable for front plate thickness of < 4 mm)	3SU1950-0DQ80-0AA0
	Locking device for selector switches (short / long actuator), position in center (suitable for front plate thickness of < 4 mm)	3SU1950-0DR80-0AA0
	Locking device for selector switches (short / long actuator), position on right (suitable for front plate thickness of < 4 mm)	3SU1950-0DS80-0AA0
	Locking device for selector switches (short / long actuator), position on left only (suitable for front plate thickness of < 4 mm)	3SU1950-0DT80-0AA0
	Locking device for selector switches (short / long actuator), position on right only (suitable for front plate thickness of < 4 mm)	3SU1950-0DU80-0AA0

12.2.6 Cover

The cover is designed to prevent unintentional operation of an actuator.

Siemens Industry Mall

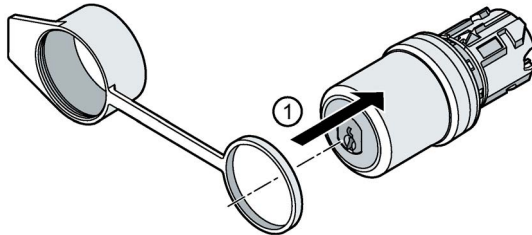
(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221534>)

	Description	Article number
	Cover (front plate thickness of < 4 mm)	3SU1950-0DV80-0AA0

12.2.7 Mounting

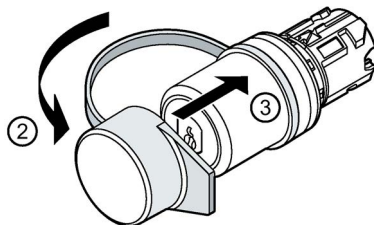
12.2.7.1 Installation steps for dust cover

Procedure



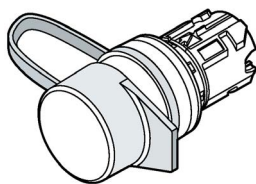
Typical diagram

- ① Place the dust cover from the front onto the key-operated switch.



Typical diagram

- ② Fold the dust cover over.
③ Push the dust cover onto the key-operated switch to protect the switch surface.



Typical diagram

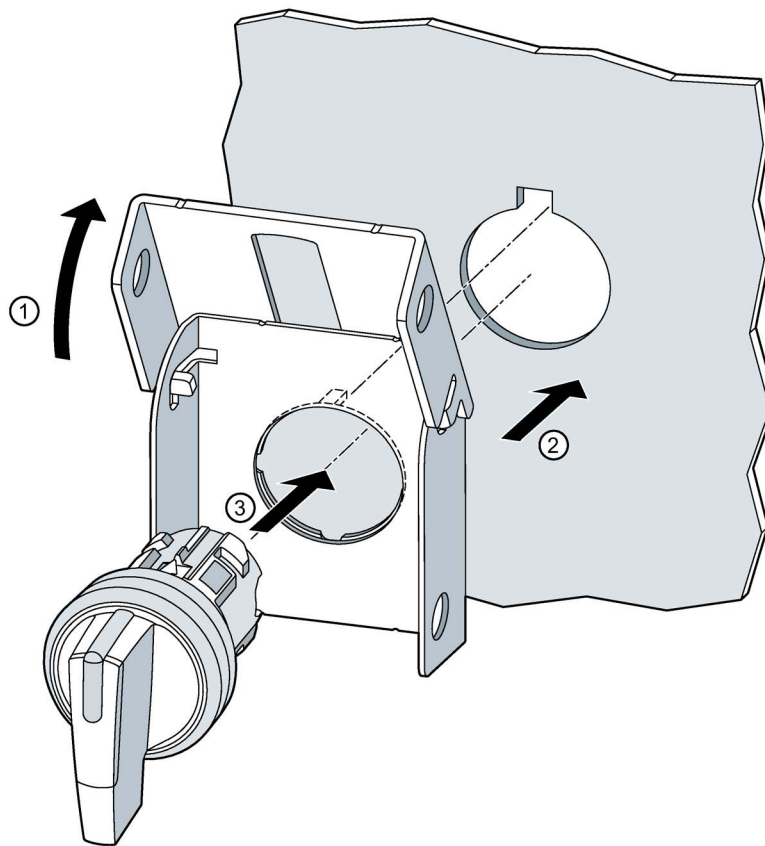
12.2.7.2 Installation steps for locking device

The installation steps for a locking device are shown using a "locking device for selector switches".

Requirement

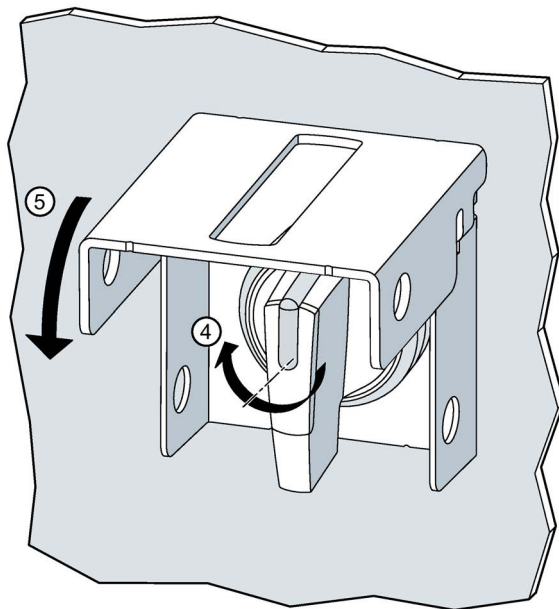
Before installing the locking device, you must remove the foil from the rear of the locking device.

Procedure



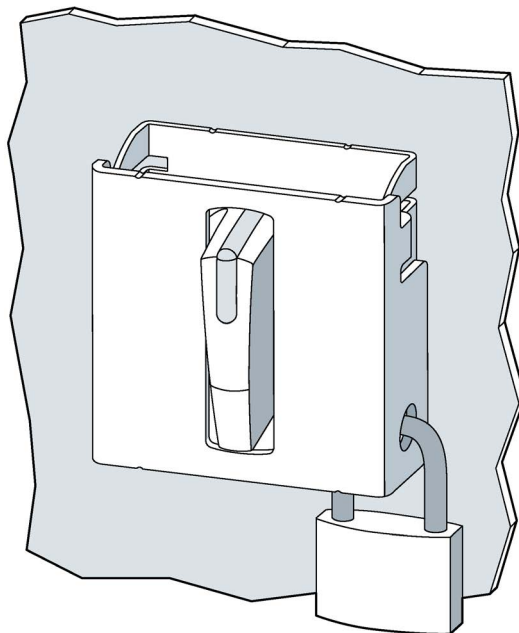
Typical diagram

- ① Open the locking device
- ② Hold the locking device at the hole of the front plate.
Only for selector switches: Ensure here that the recess at the hole and the latch on the locking device fit together.
- ③ Insert the control element (in this case: selector switch) from the front through the locking device and the front plate.
Mount the holder and the contact modules.
You can find information in Chapter "Mounting (Page 97)".



Typical diagram

- ④ Optional step: Turn the selector switch to the switch position provided.
- ⑤ Close the locking device.
Insert a lock into the hole provided to protect the control element against unauthorized access.



Typical diagram. Lock not included in the scope of supply.

12.3 Actuators

Flat button

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221535>)

Description		Article number
Flat button for pushbutton, plastic		
	Black	3SU1900-0FT10-0AA0
	Red	3SU1900-0FT20-0AA0
	Yellow	3SU1900-0FT30-0AA0
	Green	3SU1900-0FT40-0AA0
	Blue	3SU1900-0FT50-0AA0
	White	3SU1900-0FT60-0AA0
Flat button for illuminable pushbutton, plastic		
	Amber	3SU1901-0FT00-0AA0
	Red	3SU1901-0FT20-0AA0
	Yellow	3SU1901-0FT30-0AA0
	Green	3SU1901-0FT40-0AA0
	Blue	3SU1901-0FT50-0AA0
	White	3SU1901-0FT60-0AA0
	Clear	3SU1901-0FT70-0AA0

Raised button

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221535>)

Description		Article number
Flat button for pushbutton, plastic		
	Black	3SU1900-0FS10-0AA0
	Red	3SU1900-0FS20-0AA0
	Yellow	3SU1900-0FS30-0AA0
	Green	3SU1900-0FS40-0AA0
Flat button for illuminable pushbutton, plastic		
	Red	3SU1901-0FS20-0AA0
	Yellow	3SU1901-0FS30-0AA0
	Green	3SU1901-0FS40-0AA0
	Blue	3SU1901-0FS50-0AA0
	Clear	3SU1901-0FS70-0AA0

Key

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221535>)

Description		Article number
Ronis key		
	SB30	3SU1950-0FB80-0AA0
	455	3SU1950-0FC80-0AA0
BKS key		
	S1	3SU1950-0FD80-0AA0
CES key		
	LSG1	3SU1950-0FN80-0AA0
	SSG10	3SU1950-0FP80-0AA0
	VL5	3SU1950-0FQ80-0AA0
IKON key		
	360012K1	3SU1950-0FR80-0AA0

12.4 ID keys

The ID keys are used in the ID key-operated switches. Using the four ID keys with different codes, it is possible to select 1 of 4 positions. The ID keys are color-coded (yellow, blue, red, green, white) so that they can be clearly differentiated at a glance. The white ID key is supplied without coding and can be individually encoded via IO-Link using the electronic module for ID key-operated switches for IO-Link.

Different versions of ID keys are available depending on the following features:

- Authorization level (different colors)

For further information refer to Chapters "Operating principle of the command point with ID key-operated switch (Page 253)" and "ID key-operated switches (Page 80)".

Authorization level

The ID keys are divided into five authorization levels. The authorization levels 1, 2, 3 and 4 as well as "Individually codable ID key". Authorization levels 1 to 4 correspond to the maximum key position. The authorization level "Individually codable ID key" has no maximum key position in the standard setting. The user can configure the key position in accordance with one of the authorization levels 1 to 4. This configuration option is only available with the white ID key.

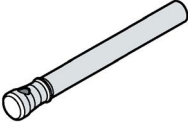
12.5 Sealing plug

Article numbers

ID keys

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/de/de/Catalog/Products/10221535>)

		Authorization level	Key color	Article number
	ID group 1	1	Green	3SU1900-0FV40-0AA0
	ID group 2	1 ... 2	Yellow	3SU1900-0FW30-0AA0
	ID group 3	1 ... 3	Red	3SU1900-0FX20-0AA0
	ID group 4	1 ... 4	Blue	3SU1900-0FY50-0AA0
	- Individually codable - Multiple teach-in capability - Can only be used for IO-Link	Can assume all authorization levels	White	3SU1900-0FU60-0AA0

12.5 Sealing plug

The sealing plug is used in place of an actuating or signaling element in a command point. You can thus carry out the complete wiring without the need for the actuating or signaling element to be available. You then remove the sealing plug and install the configured actuating or signaling element.

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221535>)

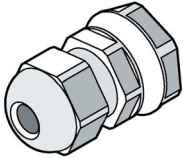
Description	Article number
Sealing plug, plastic, black	3SU1900-0FA10-0AA0
Sealing plug, metal matte	3SU1930-0FA80-0AA0
Sealing plug, metal	3SU1950-0FA80-0AA0

12.6 Accessories for enclosures

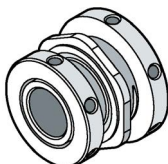
Cable glands

Siemens Industry Mall

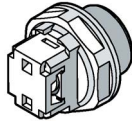
(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221536>)

	Description	Material	Article number
 Typical diagram	Metric M20 cable gland with AS-i cable entry	Plastic	3SU1900-0HE10-0AA0
	Metric M25 cable gland with AS-i cable entry		3SU1900-0HF10-0AA0
	Metric M20 cable gland for enclosure		3SU1900-0HG10-0AA0
	Metric M25 cable gland for enclosure		3SU1900-0HH10-0AA0

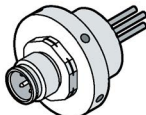
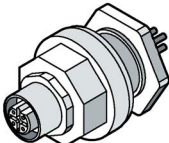
Connection pieces

	Description	Material	Article number
 Typical diagram	For plastic enclosure		
	M20/M20 connection piece for connecting 2 enclosures	Plastic	3SU1900-0HJ10-0AA0
	M20/M25 connection piece for connecting 2 enclosures		3SU1900-0HK10-0AA0
	M25/M25 connection piece for connecting 2 enclosures		3SU1900-0HL10-0AA0
For metal enclosure			
 Typical diagram	M20/M20 connection piece for connecting 2 enclosures	Metal	3SU1950-0HJ10-0AA0
	M20/M25 connection piece for connecting 2 enclosures		3SU1950-0HK10-0AA0
	M25/M25 connection piece for connecting 2 enclosures		3SU1950-0HL10-0AA0

Adapter for AS-i shaped cables

	Description	Material	Article number
 Typical diagram	Insulation piercing method, for M20	Plastic	3SU1900-0HX10-0AA0
	Insulation piercing method, for M25		3SU1900-0HY10-0AA0

Adapter for AS-i tab connection

	Description	Material	Article number
 Typical diagram	For plastic enclosure		
	M12 socket, 4-pole, for M20	Plastic	3SU1930-0HA10-0AA0
	M12 socket, 4-pole, for M25		3SU1930-0HB10-0AA0
	M12 connector, 4-pole, for M20		3SU1930-0HC10-0AA0
	M12 connector, 4-pole, for M25		3SU1930-0HD10-0AA0
	M12 socket, 5-pole, for M20		3SU1930-0HP10-0AA0
	M12 socket, 5-pole, for M25		3SU1930-0HQ10-0AA0
	M12 connector, 5-pole, for M20		3SU1930-0HR10-0AA0
	M12 connector, 5-pole, for M25		3SU1930-0HS10-0AA0
	M12 socket, 8-pole, for M20		3SU1930-0HT10-0AA0
	M12 socket, 8-pole, for M25		3SU1930-0HU10-0AA0
	M12 connector, 8-pole, for M20		3SU1930-0HV10-0AA0
	M12 connector, 8-pole, for M25		3SU1930-0HW10-0AA0
	For metal enclosure		
 Typical diagram	M12 socket, 4-pole, for M20	Metal	3SU1950-0HA10-0AA0
	M12 socket, 4-pole, for M25		3SU1950-0HB10-0AA0
	M12 connector, 4-pole, for M20		3SU1950-0HC10-0AA0
	M12 connector, 4-pole, for M25		3SU1950-0HD10-0AA0
	M12 socket, 5-pole, for M20		3SU1950-0HP10-0AA0
	M12 socket, 5-pole, for M25		3SU1950-0HQ10-0AA0
	M12 connector, 5-pole, for M20		3SU1950-0HR10-0AA0
	M12 connector, 5-pole, for M25		3SU1950-0HS10-0AA0
	M12 socket, 8-pole, for M20		3SU1950-0HT10-0AA0
	M12 socket, 8-pole, for M25		3SU1950-0HU10-0AA0
	M12 connector, 8-pole, for M20		3SU1950-0HV10-0AA0
	M12 connector, 8-pole, for M25		3SU1950-0HW10-0AA0

For mounting of the above-named accessories, see Chapter "Mounting of connection pieces (Page 186)".

12.6.1 Enclosure cover monitoring

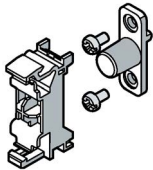
Enclosure cover monitoring

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221536>)

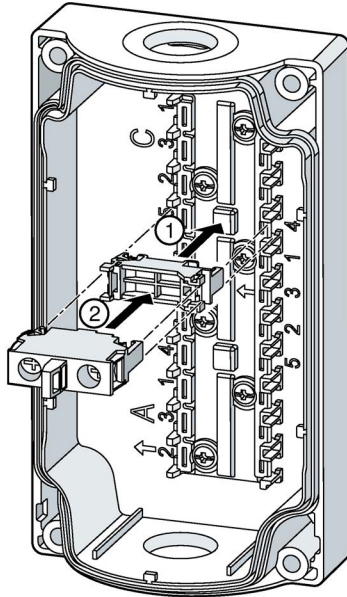
Enclosure cover monitoring is fitted at the intermediate position of the command points. The plunger is screwed onto the enclosure cover (tightening torque: plastic: 0.6 ... 0.8 Nm, metal: 0.8 ... 1.0 Nm). The module attachment is snapped into the intermediate position on the enclosure base and fitted with 1 NO (normally-open) contact module (3SU1400-2AA10-.BA0). The entire circuit is routed via this contact module. When the enclosure has been correctly screwed together, the circuit closes and the controlled device can be operated. Please note that the enclosure cover monitoring cannot be used with the raised enclosures with one command point (3SU18.1-1AA00-1AA1).

For further information about installing the enclosure cover monitoring system, refer to Chapter "Installation steps for enclosure cover monitoring (Page 328)".

	Description	Material	Article number
	Enclosure cover monitoring (module with extension plunger)	Plastic	3SU1900-0HM10-0AA0

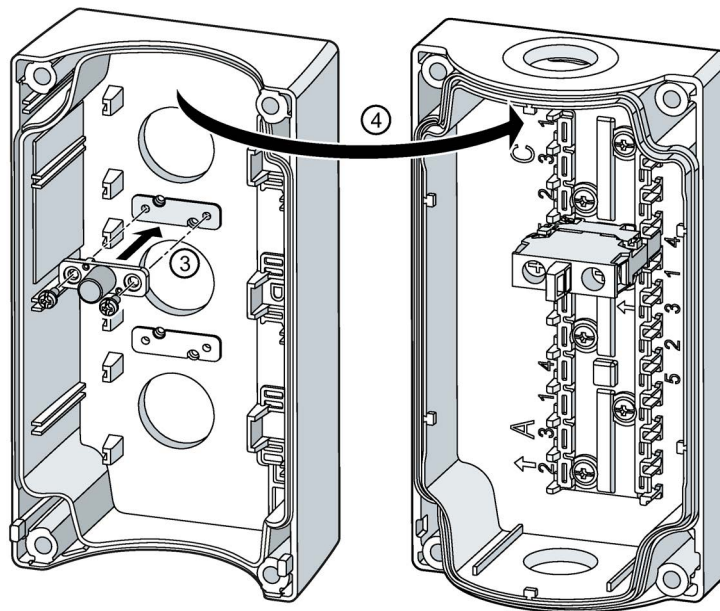
12.6.2 Installation steps for enclosure cover monitoring

Procedure



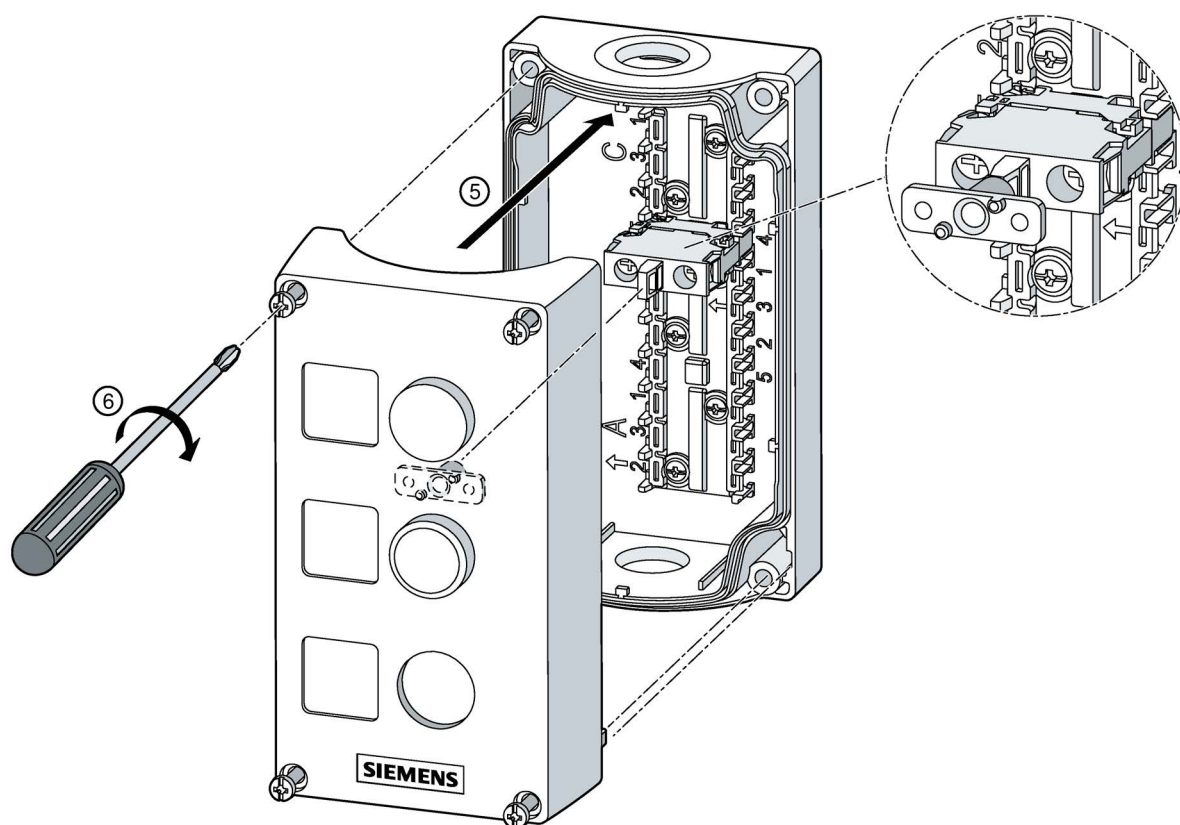
Typical diagram

- ① Fit the adapter for the enclosure cover monitoring system in the enclosure base.
- ② Mount the contact module on the base element of the enclosure cover monitoring system.



Typical diagram

- ③ Screw the push rod of the enclosure cover monitoring system to the enclosure cover.
Tightening torques:
- Plastic enclosure: 0.6 ... 0.8 Nm
 - Metal enclosure: 0.8 ... 1.0 Nm
- ④ Place the enclosure cover on the enclosure base.



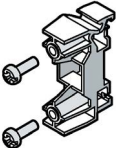
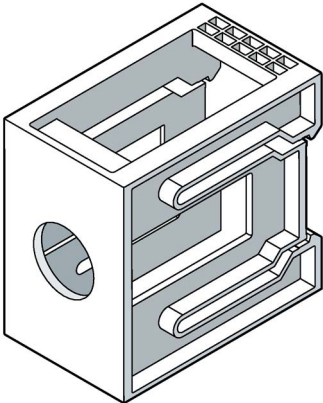
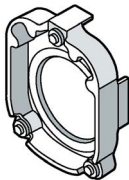
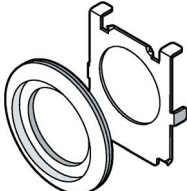
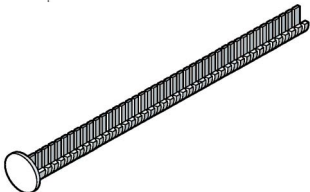
Typical diagram

- ⑤ Place the enclosure cover on the enclosure base.
- ⑥ Screw the enclosure cover into position.

12.7 Additional Accessories

Siemens Industry Mall

(<http://mall.industry.siemens.com/mall/en/en/Catalog/Products/10221537>)

	Description	Material	Article number
	PCB carrier	Plastic	3SU1900-0KA10-0AA0
	Standard mounting rail adapters	Plastic	3SU1900-0KH80-0AA0
	Pressure plates for selectors and locks	Plastic	3SU1900-0KC10-0AA0
	Adapters for actuators and indicators with front ring for flat mounting	Metal	3SU1950-0KJ80-0AA0
	Adapter for installing 22.5 mm actuators in a 30.5 mm mounting hole With the adapter, all 22.5 mm pushbuttons can also be used in a 30.5 mm mounting hole.	Metal	3SU1950-0KB10-0AA0
	Drilling template for 30 x 40 grid, horizontal	Plastic	3SU1900-0KF10-0AA0
	Extension plungers For compensation of the distance between a pushbutton and the unlatching button of an overload relay	Plastic	3SU1900-0KG10-0AA0

12.8 Combination options for accessories

	Description	Material	Article number
	Grounding stud	Metal	3SU1950-0KK80-0AA0
	Angle plug For connecting the sensor switch	Plastic	3SU1900-0KL10-0AA0

12.8 Combination options for accessories

Please note when ordering accessories that several accessory items from the same group cannot be installed. (Reason: reduced level of protection, etc.)

	Mounting position				
	Behind the illuminated pushbutton / button	On the front ring	Under the command point, in front of the front plate	Behind the front plate	In combination with the enclosure
Insert label	✓	—	—	—	—
Label holder with labeling plate	—	—	✓	—	—
Single frames	—	—	✓	—	—
Backing plates	—	—	✓	—	—
Backing plates	—	—	✓	—	—
Device identification label	—	—	—	✓	—
Sealable cap	—	—	✓	—	—
Protective cap	—	—	✓	—	—
Sun collar	—	✓	—	—	—
360° protective collar	—	—	✓	—	—
Protective collar visible from the side	—	—	✓	—	—
Protective collar for EMERGENCY STOP	—	—	✓	—	✓
Protective collar for padlocks	—	—	✓	—	—
Protection for sensor switch	—	—	✓	—	—
Locking devices	—	—	✓	—	—
Cover for locking device	—	—	✓	—	—
Sealing plug	—	—	—	—	✓
Labeling plate 22 mm x 22 mm	—	—	—	—	✓ ¹⁾
Labeling plates for enclosures with EMERGENCY STOP	—	—	—	—	✓ ²⁾
Labeling plates for enclosures with EMERGENCY STOP with recess	—	—	—	—	✓ ¹⁾

	Mounting position				
	Behind the illuminated pushbutton / button	On the front ring	Under the command point, in front of the front plate	Behind the front plate	In combination with the enclosure
Adapters for actuators and indicators with front ring for flat mounting	—	—	—	✓	—
Adapter for mounting hole 30.5 mm	—	—	✓	—	—

¹⁾Enclosure with recess for labeling plate

²⁾ Enclosure with command point, center without protective collar

12.9 Use of accessories for the enclosure

Please note the following instructions for using the accessories:

Enclosure with recess for labeling plate		
Accessories	Suitable for front mounting	Suitable for base mounting
Label holder	✓	—
Single frame, square	✓	—
EMERGENCY STOP backing plate	—	—
Protective collar for EMERGENCY STOP	—	—
Protective collar for EMERGENCY STOP, SEMI-Industry	—	—
Protective collar for pushbutton	✓	—
Protective collar for mushroom pushbutton	✓	—
Sun collar	✓	✓
Protective collar 360° for pushbutton and short selector	✓	—
Locking device	—	—
Protective collar for padlocks	—	—
Protective caps	✓	—
Dust cap for key-operated switches	✓	✓
Sealable cap	✓	—
Labeling plates for enclosures with EMERGENCY STOP with recess	✓	✓
Sealing plug	✓	✓
Enclosure cover monitoring	—	✓

Enclosure without recess for labeling plate (except enclosures with protective collar)		
Accessories	Suitable for front mounting	Suitable for base mounting
Label holder	✓	—
Single frame, square	✓	—
EMERGENCY STOP backing plate	—	—
Protective collar for EMERGENCY STOP	✓	—
Protective collar for EMERGENCY STOP, SEMI-Industry	✓	—
Protective collar for pushbutton	✓	—
Protective collar for mushroom pushbutton	✓	—
Sun collar	✓	✓
Protective collar 360° for pushbutton and short selector	✓	—
Locking device	—	—
Padlock	✓	—
Protective caps	✓	—
Dust cap for key-operated switches	✓	✓
Sealable cap	✓	—
Labeling plates for enclosures with EMERGENCY STOP	✓	—
Sealing plug	—	—
Enclosure cover monitoring	—	✓

When using an accessory that is mounted between the actuating element and the front plate, the maximum thickness of the front plate is reduced by the corresponding value of the accessory.

Technical specifications

13.1 Product data sheet

You can find the technical data of the devices at Siemens Industry Online Support (<https://support.industry.siemens.com/cs/de/en>).

Enter the article number of the desired device in the "Product" field to search for it. A view of the device appears with the link to the technical data.

Product tree

All

Product

Entry type Date

> Search product



3SU1000-0AA40-0AA0
PUSHBUTTON, GREEN
PUSHBUTTON, 22MM, ROUND, PLASTIC, GREEN, FLAT BUTTON, LATCHING, PUSH TO UNLATCH

> Product details > **Technical data**

13.2 Pushbuttons

Type	3SU1..0-.AA 3SU1..0-.JA	3SU1..1-.AA 3SU1..1-.JA
Operating principle of the actuating element	Latching	
Product expansion, optional light source	No	Yes
Mechanical durability (operating cycles) typical	500000	
Switching frequency maximum	1/h	1800
Shock resistance according to IEC 60068-2-27	11 ms, 50g, half-sine	
Vibration resistance according to IEC 60068-2-6	10 ... 500 Hz: 5g	
Degree of protection	IP66, IP67, IP69	
Climate class in operation according to EN 60721	3K6 ¹⁾ , 3C3 ²⁾ , 3S2, 3M6	
Ambient temperature		
• during operation	°C	-25 ... +70
• during storage	°C	-40 ... +80

1) with a relative air humidity of 10 to 95 %

2) with non-illuminated variants

Type	3SU1..0-.AB 3SU1..0-.BB 3SU1..0-.CB 3SU1..0-.DB 3SU1..0-.JB	3SU1..1-.AB 3SU1..1-.BB 3SU1..1-.JB	3SU1..0-.HC
Operating principle of the actuating element	Momentary contact		Momentary contact, latching
Product expansion, optional light source	No	Yes	No
Mechanical durability (operating cycles) typical	10000000	3000000	1000000
Switching frequency maximum	1/h 3600	3600	1800
Shock resistance according to IEC 60068-2-27	11 ms, 50g, half-sine		
Vibration resistance according to IEC 60068-2-6	10 ... 500 Hz: 5g		
Degree of protection	IP66, IP67, IP69		
Climate class in operation according to EN 60721	3K6 ¹⁾ , 3C3 ²⁾ , 3S2, 3M6		
Ambient temperature			
• during operation	°C	-25 ... +70	
• during storage	°C	-40 ... +80	

1) with a relative air humidity of 10 to 95 %

2) with non-illuminated variants

13.3 Mushroom pushbuttons

Type	3SU1.00-.AA	3SU1.00-.BA 3SU1.00-.CA 3SU1.30-.AA 3SU1.30-.BA 3SU1.50-.AA 3SU1.50-.BA 3SU1.50-.CA	3SU1.50-.EA	3SU1.01-.AA 3SU1.01-.BA 3SU1.51-.AA 3SU1.51-.BA 3SU1.51-.CA
Operating principle of the actuating element		Latching		
Product expansion, optional light source	No	No	No	Yes
Mechanical durability (operating cycles) typical	500000	500000	300000	500000
Switching frequency maximum	1/h 3600	1800	1800	1800
Shock resistance according to IEC 60068-2-27		11 ms, 50g, half-sine		
Vibration resistance according to IEC 60068-2-6		10 ... 500 Hz: 5g		
Degree of protection		IP66, IP67, IP69		
Climate class in operation according to EN 60721		3K6 ¹⁾ , 3C3 ²⁾ , 3S2, 3M6		
Ambient temperature				
• during operation	°C	-25 ... +70		
• during storage	°C	-40 ... +80		

¹⁾ with a relative air humidity of 10 to 95 %

²⁾ with non-illuminated variants

13.3 Mushroom pushbuttons

Type	3SU1.00-.AD 3SU1.00-.BD 3SU1.00-.CD 3SU1.30-.AD 3SU1.30-.BD 3SU1.50-.AD 3SU1.50-.BD 3SU1.50-.CD	3SU1.50-.ED	3SU1.01-.AD 3SU1.01-.BD 3SU1.31-.AD 3SU1.31-.BD
Operating principle of the actuating element		Momentary contact	
Product expansion, optional light source	No	No	Yes
Mechanical durability (operating cycles) typical	10000000	300000	3000000
Switching frequency maximum	1/h 3600	1800	3600
Shock resistance according to IEC 60068-2-27		11 ms, 50g, half-sine	
Vibration resistance according to IEC 60068-2-6		20 ... 500 Hz: 5g	
Degree of protection		IP66, IP67, IP69	
Climate class in operation according to EN 60721		3K6 ¹⁾ , 3C3 ²⁾ , 3S2, 3M6	
Ambient temperature			
• during operation	°C	-25 ... +70	
• during storage	°C	-40 ... +80	

¹⁾ with a relative air humidity of 10 to 95 %

²⁾ with non-illuminated variants

13.4 EMERGENCY STOP mushroom pushbuttons

Type	3SU1...-G 3SU1...-H 3SU1...-J 3SU1...-L 3SU1...-N
Operating principle of the actuating element	
Product expansion, optional light source	
Mechanical durability (operating cycles) typical	300000
Switching frequency maximum	1/ h 600
Shock resistance according to IEC 60068-2-27	11 ms, 50g, half-sine
Vibration resistance according to IEC 60068-2-6	10 ... 500 Hz: 5g
Degree of protection	IP66, IP67, IP69
Climate class in operation according to EN 60721	3K6 ¹⁾ , 3C3 ²⁾ , 3S2, 3M6
Ambient temperature	
• during operation	°C -25 ... +70
• during storage	°C -40 ... +80

1) with a relative air humidity of 10 to 95 %

2) with non-illuminated variants

13.5 Selector switches

Type	3SU100.-2B	3SU105.-2B
	3SU100.-2C	3SU105.-2C
	3SU103.-2B	3SU106.-2D
	3SU103.-2C	3SU106.-2E
Mechanical durability (operating cycles) typical	1000000	300000
Switching frequency maximum	1/h	1800
Shock resistance according to IEC 60068-2-27	11 ms, 50g, half-sine	
Vibration resistance according to IEC 60068-2-6	10 ... 500 Hz: 5g	
Degree of protection	IP66, IP67, IP69	
Ambient temperature		
• during operation	°C	-25 ... +70
• during storage	°C	-40 ... +80

13.6 Toggle switches

Type	3SU1...-3E	
Mechanical durability (operating cycles) typical	1000000	
Switching frequency maximum	1/h	1800
Shock resistance according to IEC 60068-2-27	11 ms, 50g, half-sine	
Vibration resistance according to IEC 60068-2-6	10 ... 500 Hz: 5g	
Degree of protection	IP66, IP67, IP69	
Ambient temperature		
• during operation	°C	-25 ... +70
• during storage	°C	-40 ... +80

13.7 Key-operated switches

Type	3SU100.-4B 3SU100.-4C 3SU100.-4D 3SU100.-4F 3SU100.-4G 3SU100.-4H 3SU100.-4J 3SU100.-4L	3SU100.-5B 3SU100.-5H 3SU100.-5J 3SU100.-5K 3SU100.-5L 3SU100.-5P 3SU100.-5Q 3SU100.-5R 3SU100.-5S 3SU100.-5T 3SU100.-5X	3SU103.-4B 3SU103.-4C 3SU103.-4D 3SU103.-4F 3SU103.-4G 3SU103.-4H 3SU103.-4J 3SU103.-4L	3SU103.-5B 3SU103.-5H 3SU103.-5J 3SU103.-5K 3SU103.-5L 3SU103.-5P 3SU103.-5Q 3SU103.-5R 3SU103.-5S 3SU103.-5T 3SU103.-5X
Mechanical durability (operating cycles) typical	1000000			
Switching frequency maximum	1/h	1800		
Shock resistance according to IEC 60068-2-27	11 ms, 50g, half-sine			
Vibration resistance according to IEC 60068-2-6	10 ... 500 Hz: 5g			
Degree of protection	IP66, IP67, IP69			
Ambient temperature				
• during operation	°C	-25 ... +70		
• during storage	°C	-40 ... +80		

Type	3SU105.-4B 3SU105.-4C 3SU105.-4D 3SU105.-4F 3SU105.-4G 3SU105.-4H 3SU105.-4J 3SU105.-4L	3SU105.-5B 3SU105.-5H 3SU105.-5J 3SU105.-5K 3SU105.-5L 3SU105.-5P 3SU105.-5Q 3SU105.-5R 3SU105.-5S 3SU105.-5T 3SU105.-5X	3SU1060-0J
Mechanical durability (operating cycles) typical		300000	
Switching frequency maximum	1/h	1800	
Shock resistance according to IEC 60068-2-27		11 ms, 50g, half-sine	
Vibration resistance according to IEC 60068-2-6		10 ... 500 Hz: 5g	
Degree of protection		IP66, IP67, IP69	
Ambient temperature			
• during operation	°C	-25 ... +70	
• during storage	°C	-40 ... +80	

13.8 Coordinate switches

Type	3SU1...-7A 3SU1...-7B
Mechanical durability (operating cycles) typical	250000 per direction
Switching frequency maximum	1/h 3600
Shock resistance according to IEC 60068-2-27	11 ms, 50g, half-sine
Vibration resistance according to IEC 60068-2-6	10 ... 500 Hz: 5g
Degree of protection	IP66, IP67
Ambient temperature	
• during operation	°C -25 ... +70
• during storage	°C -40 ... +80

13.9 Indicator lights

Type		Modular 3SU11-.....-6A
Light source integrated in product		Yes
Type of light source		LED
Insulation voltage, rated value	V	320
Pollution degree		3
Rated impulse withstand voltage, rated value	kV	4
Operating time, typical	h	100000
Vibration resistance according to IEC 60068-2-6		10 ... 500 Hz: 5g
Shock resistance according to IEC 60068-2-27		11 ms, 50g, half-sine
Degree of protection		IP66, IP67, IP69
Climate class in operation according to EN 60721		3K6 ¹⁾ , 3S2, 3M6
Ambient temperature		
• during operation	°C	-25 ... +70
• during storage	°C	-40 ... +80

¹⁾ with a relative air humidity of 10 to 95 %

13.10 Acoustic signaling devices

Type		3SU1...-6K
Voltages (AC/DC)	V	6 ... 24 24 ... 240
Volume level	dB	75
Switching frequency maximum	1/h	1800
Shock resistance according to IEC 60068-2-27		11 ms, 50g, half-sine
Vibration resistance according to IEC 60068-2-6		10 ... 500 Hz: 5g
Degree of protection	IP	IP66, IP67, IP69
Ambient temperature		
• during operation	°C	-25 ... +70
• during storage	°C	-40 ... +80

13.11 Potentiometers

Type	3SU1...-2P	
Mechanical durability (operating cycles) typical	25000	
Switching frequency maximum	1/h	1800
Relative accuracy of the resistor	%	10
Shock resistance according to IEC 60068-2-27	11 ms, 50g, half-sine	
Vibration resistance according to IEC 60068-2-6	10 ... 500 Hz: 5g	
Degree of protection	IP	IP66, IP67, IP69
Ambient temperature		
• during operation	°C	-25 ... +70
• during storage	°C	-40 ... +80

13.12 Sensor switches

Type	3SU1200-1SK10-2SA0	
Actuation type:	Capacitive	
Actuating force	No	
Rated insulation voltage	V	32
Rated impulse withstand voltage	V	800
OFF delay, max.	ms	50
ON delay, max.	ms	25
Rated operating voltage	V	DC 24
Operating voltage	V	24 DC (19.2 to 28.8 V)
Contact rating	100 mA (max. power loss 300 mW)	
Output	PhotoMOS relay, NO contact	
Output pulse	Continuous signal when sensor is actuated	
LED1	Green LED	
LED2	Yellow LED	
Reverse polarity protection	+VDC and 0 V	
Short-circuit protection	Short-circuit proof (latch type)	
Current consumption max. at 24 V	mA	5
Operating temperature	°C	-25...+70

13.13 Contact modules

Type	3SU1400-.....-1	3SU1400-.....-3	3SU1400-.....-5
Insulation voltage, rated value	V	500	
Pollution degree		3	
Rated impulse withstand voltage, rated value	kV	6	
Operating voltage type		AC/DC	
Operating voltage			
• At AC			
– Rated value	V	5 ... 500	
• At DC			
– Rated value	V	5 ... 500	
Thermal current	A	10	
Operational current, rated value			
• At AC-12			
– At 24 V	A	10	
– At 230 V	A	8	
• At AC-15			
– At 24 V	A	6	
– At 230 V	A	6	
– At 400 V	A	3	
– At 500 V	A	1.4	
• At DC-12			
– At 24 V	A	10	
– At 48 V	A	5	
– At 110 V	A	2.5	
– At 230 V	A	1	
– At 400 V	A	0.3	
– At 500 V	A	0.3	
• At DC-13			
– At 24 V	A	3	
– At 48 V	A	1.5	
– At 110 V	A	0.7	
– At 230 V	A	0.3	
– At 400 V	A	0.1	
– At 500 V	A	0.1	

Type	3SU1400-.....-1	3SU1400-.....-3	3SU1400-.....-5
Contact reliability	One contact failure per 100 million (17 V, 5 mA), one contact failure per 10 million (5 V, 1 mA)		
Mechanical durability (operating cycles) typical	10 000 000		
Switching frequency, maximum	1/h	3600	
Type of short-circuit protection / auxiliary switches / fuse link (weld-free protection at short-circuit current I _k of ≤ 1kA)	gG / Dz 10 A, quick-response / Dz 10 A		
Type of short-circuit protection / auxiliary switches / miniature circuit breakers C char- acteristic (short-circuit current I _k of ≤ 400A)	A	10	
Vibration resistance according to IEC 60068-2-6	10 ... 500 Hz: 5g		
Shock resistance according to IEC 60068-2-27	11 ms, 50g, half-sine		
Climate class in operation according to EN 60721	3K6 ¹⁾ , 3C3, 3S2, 3M6		
Ambient temperature			
• during operation	°C	-25 ... +70	
• during storage	°C	-40 ... +80	
Degree of protection	IP		
• of the enclosure		40	
• of the terminal		20	
Type of electrical connection	Screw terminals	Spring-loaded terminals	Socket terminals (THT)
Stripped lengths	7 mm	7 mm	---
Type of connectable conductor cross- sections			
• For auxiliary contacts			
– Solid	2x (1.0 ... 1.5 mm²)	2x (0.25 ... 1.5 mm²)	0.8 mm x 0.8 mm x 4 mm
– With end sleeves	2x (0.5 ... 0.75 mm²)		---
– Finely stranded			
– Without end sleeves	2x (1.0 ... 1.5 mm²)	2x (0.25 ... 1.5 mm²)	---
– With end sleeves	2x (0.5 ... 1.5 mm²)	2x (0.25 ... 0.75 mm²)	---
• For AWG cables for auxiliary contacts	2x (18 ... 14)	2x (24 ... 16)	---
Tightening torque			
• For screw terminals	Nm	0.8 ... 0.9	---

¹⁾ no condensation in operation permitted in atmospheres with a relative air humidity of 10 to 95 %

13.14 LED modules

Type	3SU1401-.....-1	3SU1401-.....-3	3SU1401-.....-5
Light source integrated in product		Yes	
Type of light source		LED	
Insulation voltage, rated value	V	320	
Pollution degree		3	
Rated impulse withstand voltage, rated value	kV	4	
Operating time, typical	h	100000	
Vibration resistance according to IEC 60068-2-6		10 ... 500 Hz: 5g	
Shock resistance according to IEC 60068-2-27		11 ms, 50g, half-sine	
Climate class in operation according to EN 60721		3K6 ¹⁾ , 3S2, 3M6	
Ambient temperature			
• during operation	°C	-25 ... +70	
• during storage	°C	-40 ... +80	
Degree of protection of the terminal	IP	20	
Type of electrical connection	Screw terminals	Spring-loaded terminals	Socket terminals (THT)
Type of connectable conductor cross-sections			
• For auxiliary contacts			
– Solid	2x (1.0 ... 1.5 mm ²)	2x (0.25 ... 1.5 mm ²)	0.8 mm x 0.8 mm x 4 mm
– With end sleeves	2x (0.5 ... 0.75 mm ²)		---
– Finely stranded			
– Without end sleeves	2x (1.0 ... 1.5 mm ²)	2x (0.25 ... 1.5 mm ²)	---
– With end sleeves	2x (0.5 ... 1.5 mm ²)	2x (0.25 ... 0.75 mm ²)	---
• For AWG cables for auxiliary contacts	2x (18 ... 14)	2x (24 ... 16)	---
Tightening torque			
• For screw terminals	Nm	0.8 ... 1.0	---

¹⁾ no condensation in operation permitted in atmospheres with a relative air humidity of 10 to 95 %

13.15 Electronic modules for ID key-operated switches

Communication

Type		3SU1400-1GC10-1AA0	3SU1400-1GD10-1AA0
Protocol is supported, IO-Link protocol		No	Yes
Product function		Group ID 24 V DC	IO-Link 24 V DC
IO-Link transfer rate		—	COM2 (38.4 kBaud)
Point-to-point cycle time between the master and the IO-Link device minimum	ms	—	10
Type of power supply via IO-Link Master		—	Yes
Data volume			
• of the address area of the inputs with cyclic transfer, total	bytes	—	2
• of the address area of the outputs with cyclic transfer total	bytes	---	0
Number of NO contacts		5	5

General data

Type		3SU1400-1GC10-1AA0	3SU1400-1GD10-1AA0
Rated impulse withstand voltage	V		800
Insulation voltage rated value	V		30
Pollution degree			3
Type of voltage			
• Operating voltage			DC
• Input voltage			DC
Operating voltage			
• 1 at DC rated value	V		24
• Rated value	V		18 ... 30
Current consumed, maximum	mA		49
Ambient temperature			
• during operation	°C		-25 ... +70
• during storage	°C		-40 ... +80
IP degree of protection			20
Touch protection against electric shock			Finger-safe

Connections

Type	3SU1400-1GC10-1AA0	3SU1400-1GD10-1AA0
Type of electrical connection	Screw terminals	
Connectable conductor cross-section for auxiliary contacts		
• Solid or stranded	mm²	0.2 ... 2.5
• Solid with end sleeve	mm²	0.2 ... 0.75
• Finely stranded with end sleeve	mm²	0.25 ...1.5
• Finely stranded without end sleeve	mm²	0.2 ... 2.5
AWG number as coded connectable conductor cross-section		
• For auxiliary contacts		26 ... 14
Tightening torque		
• For screw terminals	Nm	0.4 ... 0.8

13.16 Two-hand operation console

Type	3SU1803-3.	3SU1853-3.
Two-hand operation consoles		
Standards	IEC 60947-5-1 / IEC 60947-5-5, EN ISO 13850, EN 574	
Material of the enclosure	Plastic	Metal
Material of the actuator and indicator	Plastic	Metal
Degree of protection according to IEC 60529 (VDE 0470 Part 1)	IP66	
Climatic test in accordance with EN ISO 6270-2: Change of condensation water atmosphere with change of air temperature	KTW24	
Rated insulation voltage U_i	V	400
Rated impulse withstand voltage U_{imp}	kV	6
Power P_{vmax}	W	2.5
$I_e @$	A	≥ 10
$I_e @ \leq 3 x$	A	≤ 8
Ambient temperature	°C	-25 ... +70
Conductor cross-sections screw terminal ¹⁾		
• Finely stranded, without end sleeves	2 × (1 ... 1.5 mm ²)	
• Finely stranded, with end sleeves according to DIN 46228	2 × (0.5 ... 1.5 mm ²)	
• Solid	2 × (1 ... 1.5 mm ²)	
• Solid, with end sleeves according to DIN 46228	2 × (0.5 ... 0.75 mm ²)	
• AWG cables, solid or stranded	2 × AWG 18 ... 14	
Tightening torque, connection screw	Nm	0.8 ... 0.9

1) For standard screwdriver size 2 or Pozidriv 2

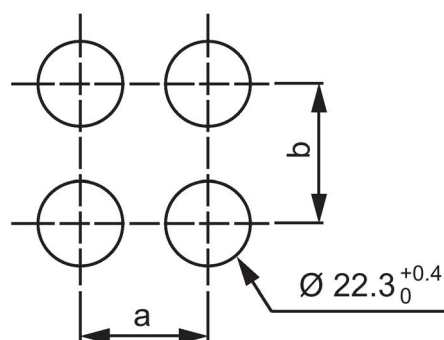
Dimension drawings

14.1 Mounting dimensions

Minimum clearances

Minimum clearances for devices in the following design series:

- Plastic
- Metal shiny
- Metal matte

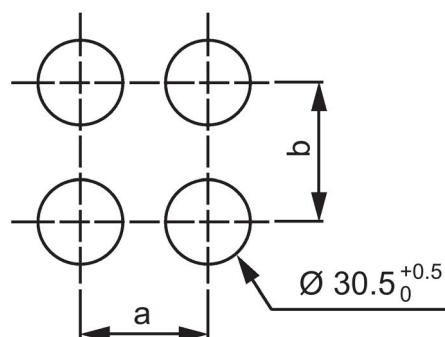


14.1 Mounting dimensions

	3-slot holder		4-slot holder	
	a	b	a	b
Standard (all actuators that are not listed below)	30 mm	40 mm	40 mm	40 mm
EMERGENCY STOP mushroom pushbutton, Ø 30 mm	33 mm	40 mm	—	—
Mushroom pushbutton, diameter 40 mm EMERGENCY STOP mushroom pushbutton diameter 40 mm	40 mm	40 mm	—	—
Mushroom pushbutton, diameter 60 mm EMERGENCY STOP mushroom pushbutton diameter 60 mm	60 mm	60 mm	—	—
Twin pushbuttons	30 mm	60 mm	—	—
Sensor switches	55 mm	55 mm	—	—
Electronic module for IO-Link (front variant)	55 mm	70 mm	—	—
AS-Interface modules for front plate mounting	55 mm	70 mm	—	—
Electronic module for ID key-operated switches	100 mm	100 mm	—	—
Label holders 12.5 x 27 mm	30	45	40	45
Label holders 17.5 x 27 mm	30	50	40	50
Label holders 27 X 27 mm	30	60	40	60
Label holders 2 x 27 x 27 mm	30	90	40	90
Label holders 4 x 27 x 27 mm	90	90	90	90
Label holders for twin pushbuttons	30	75	—	—

Minimum clearances for devices in the following design series:

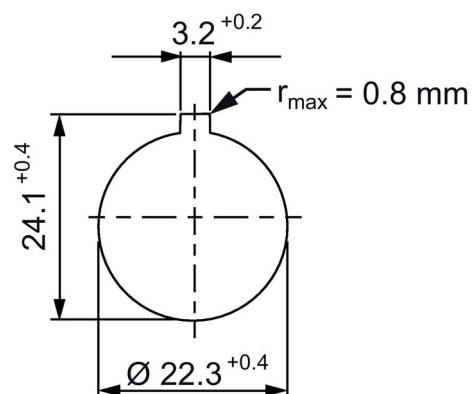
- Metal matte for recessed mounting



	3-slot holder	
	a	b
Standard	40 mm	45 mm

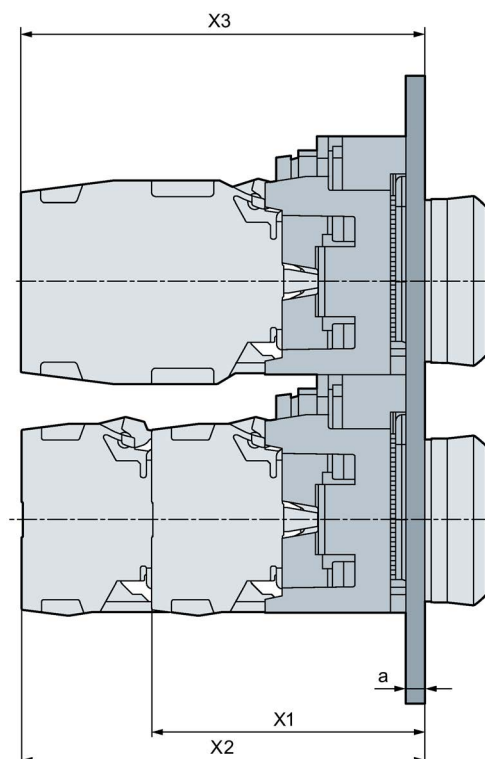
Fastening hole for locking device

Fastening holes in accordance with IEC 60947-5-1 must be provided for locking devices.



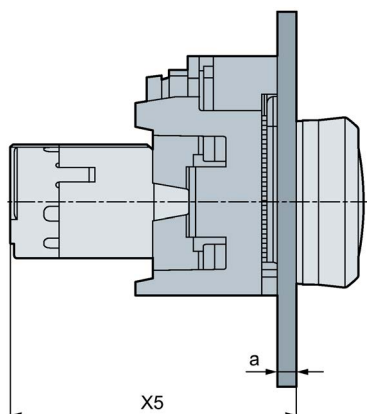
Overview of mounting depths

Devices with modules



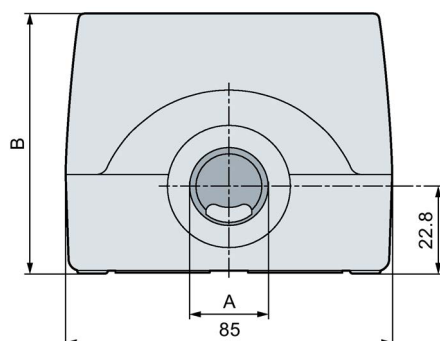
	3-slot holder	4-slot holder
X1	49.7 mm	53.7 mm
X2	71.7 mm	75.7 mm
X3	71.7 mm	75.7 mm
a	1 ... 6 mm	

Compact units



	Device	3-slot holder
X5	Potentiometers	46.9 mm
	Acoustic signaling devices; indicator lights	49.6 mm
a	1 ... 6 mm	

Enclosures



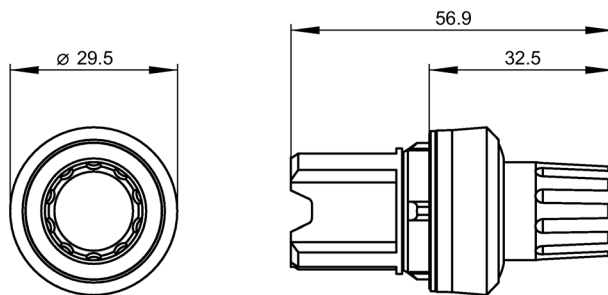
Enclosures with:	A	B
1 command point	20 mm	64 mm
1 command point, raised	20 mm	68 mm
1 command point with protective collar	20 mm	112.5 mm
2 command points	20 mm	64 mm
3 command points	20 mm	64 mm
4 command points	25 mm	64 mm
6 command points	25 mm	64 mm

14.2 3SU10 devices

14.2.1 STOP buttons

STOP buttons

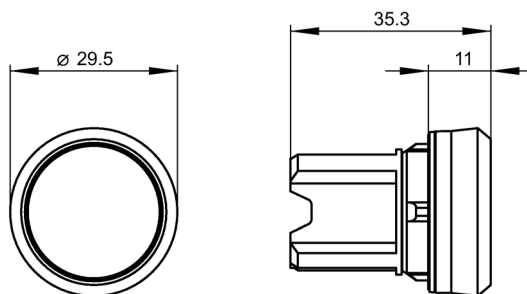
Article No.: 3SU1000-0HC10-0AA0,
3SU1000-0HC(1,2)0-0AA0



14.2.2 Pushbuttons / illuminated pushbuttons

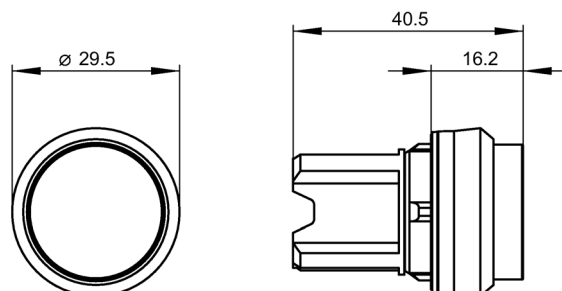
Pushbuttons or illuminated pushbuttons, flat button, flat front ring

Article No.: 3SU1001-0AA20-0AA,
3SU10(0,3,5)(0,1)-0A(A,B,D).0-0A(A,B,C,D,Q,R)0



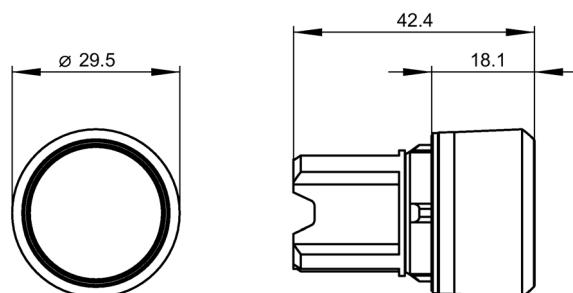
Pushbuttons or illuminated pushbuttons, raised button, flat front ring

Article No.: 3SU1001-0BB20-0AA0,
3SU10(0,3,5)(0,1)-0BB.0-0AA0



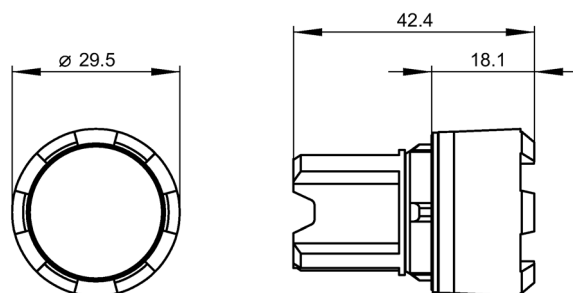
Pushbuttons or illuminated pushbuttons, flat button, raised front ring

Article No.: 3SU1001-0DB50-0AA0,
3SU10(0,3,5)0-0CB.0-0AA0



Pushbuttons or illuminated pushbuttons, flat button, raised castellated front ring

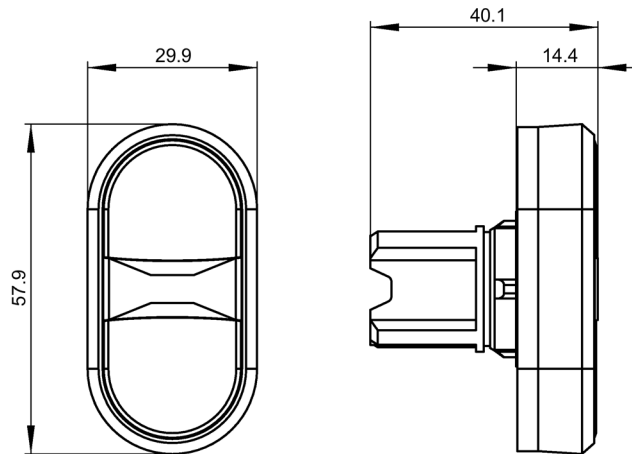
Article No.: 3SU1050-0CB20-0AA0,
3SU100(0,1)-0DB.0-0AA0



14.2.3 Twin pushbuttons

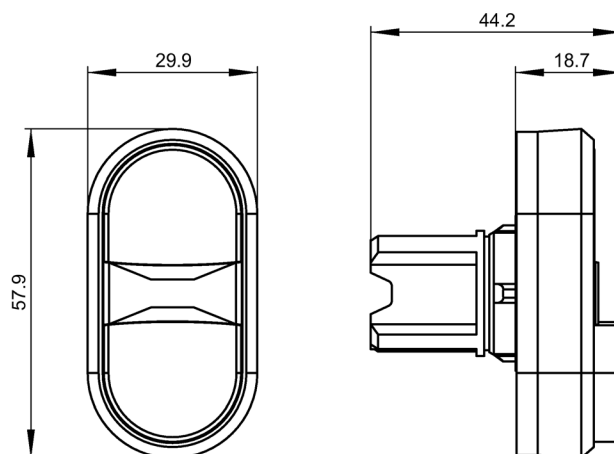
Twin pushbuttons, flat button

Article No.: 3SU1050-3AB42-0AK0,
3SU10(0,3,5)0-3AB(1,4,6)(1,2,6)-0A(A,K,L,M,N,P,Q)0



Twin pushbuttons, raised button

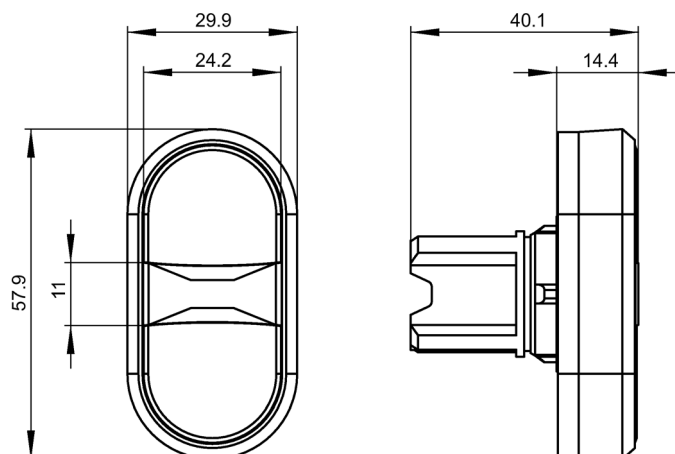
Article No.: 3SU1050-3BB42-0AA0,
3SU10(0,3,5)0-3BB(4,6)(1,2)-0A(A,K)0



Twin pushbuttons, flat illuminable button

Article No.: 3SU1001-3AB66-0AA0,

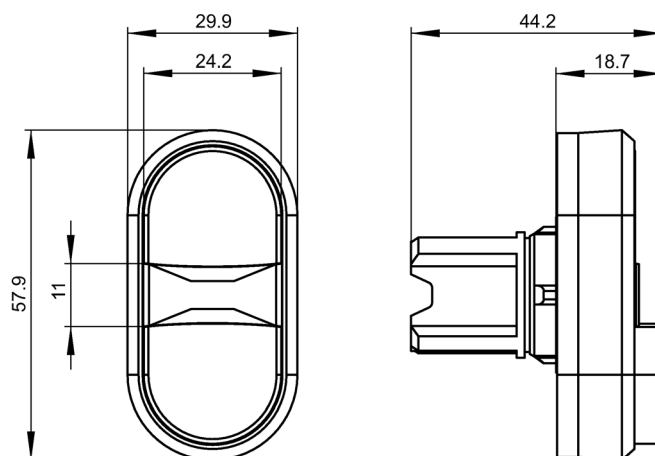
3SU10(0,3,5)1-3AB(4,6)(1,2,6)-0A(A,K)0



Twin pushbuttons, raised illuminable button

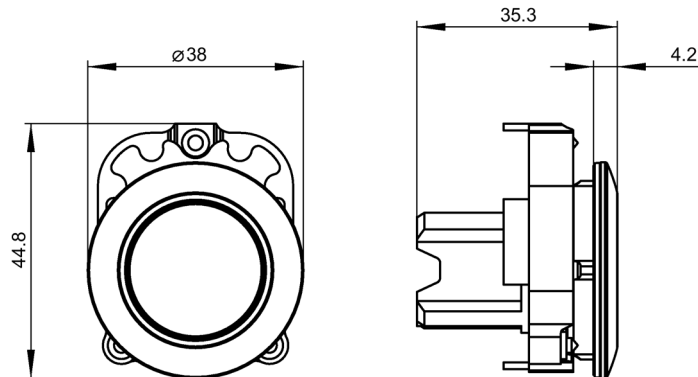
Article No.: 3SU1001-3BB42-0AA0,

3SU10(0,3,5)1-3BB(4,6)(1,2)-0A(A,K)0



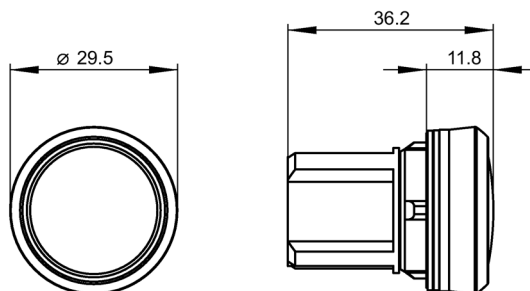
14.2.4 30.5 mm pushbuttons / illuminated pushbuttons

Article No.: 3SU1061-0JA20-0AA0,
3SU106(0,1)-0J(A,B,D).0-0AA0



14.2.5 Indicator lights

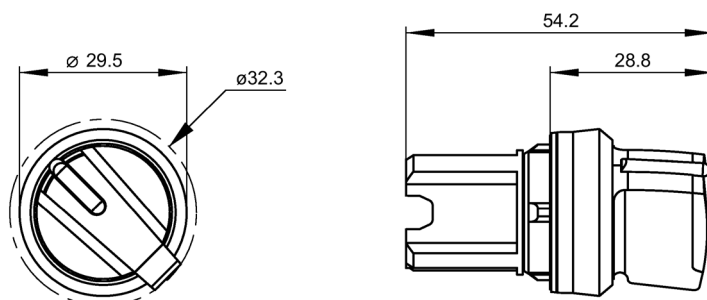
Article No.: 3SU1001-6AA20-0AA0,
3SU10(0,5)1-6AA.0-0AA0



14.2.6 Selector switches

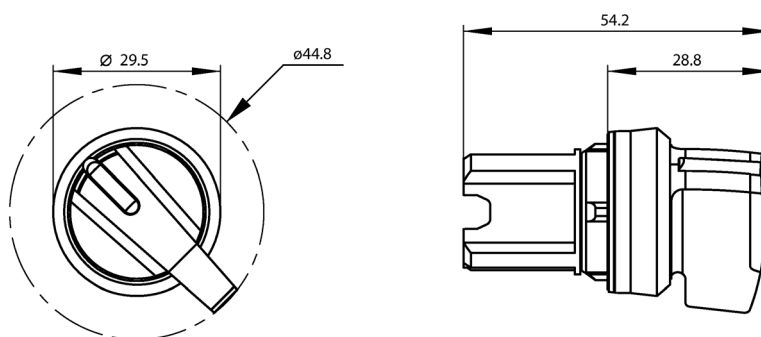
Short actuator

Article No.: 3SU1032-2BF20-0AA0,
3SU10(0,3)2-2B(F,C,L,M,N,P).0-0AA0
3SU1052-2B(C,F,L,M,N,P).0-0AA0



Long actuator

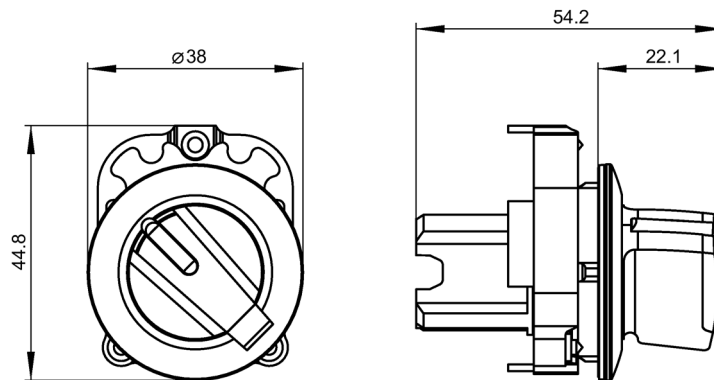
Article No.: 3SU1032-2CF20-0AA0,
3SU10(0,3)2-2CF.0-0AA0
3SU1052-2C(C,F,L,M,N,P).0-0AA0



14.2.7 30.5 mm selector switches

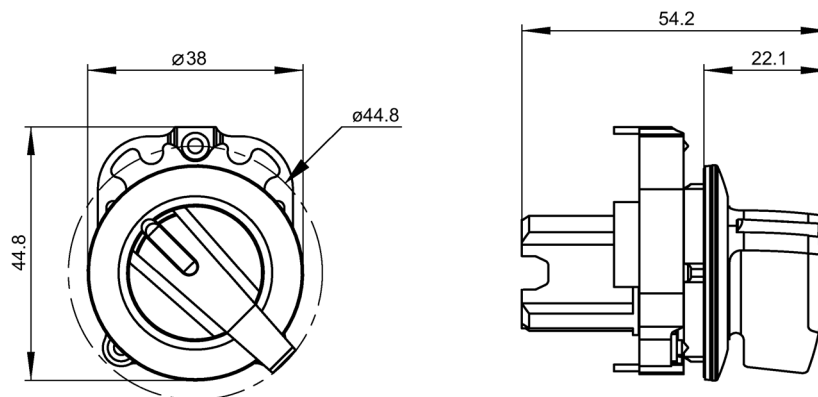
Short actuator

Article No.: 3SU1062-2DF20-0AA0,
3SU1062-2D(C,F,L,M).0-0AA0



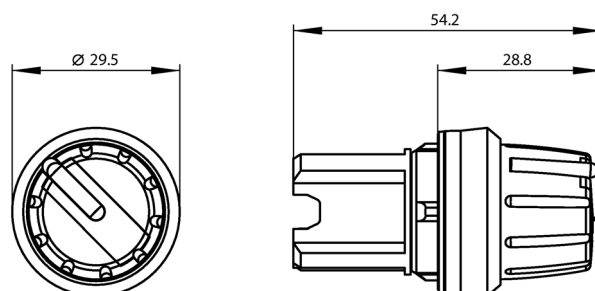
Long actuator

Article No.: 3SU1062-2EF20-0AA0,
3SU1062-2E(C,F,L,M,N,P).0-0AA0



14.2.8 Selector switches 4 switch positions

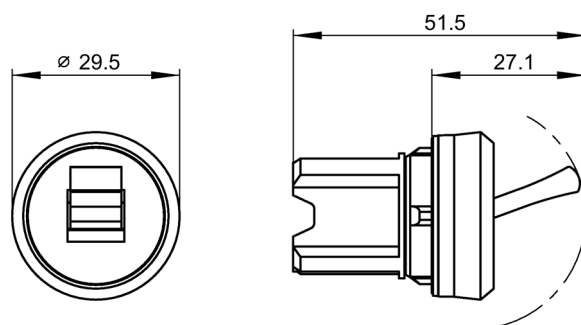
Article No.: 3SU1002-2AF20-0AA0,
3SU10(0,3)2-2AF.0-0AA0



14.2.9 Toggle switches

Toggle switches

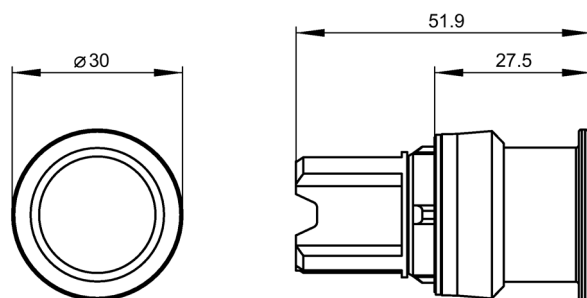
Article No.: 3SU1000-3EA10-0AA0,



14.2.10 Mushroom pushbuttons / illuminated mushroom pushbuttons

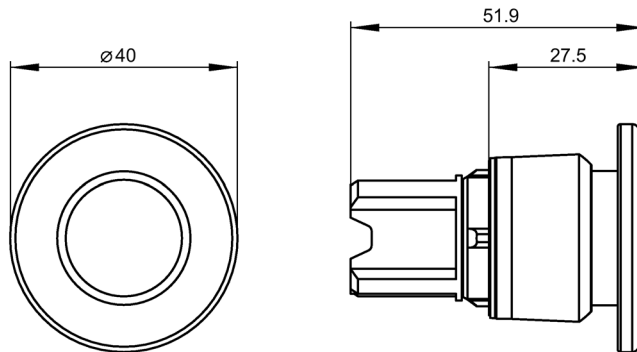
Diameter 30 mm

Article No.: 3SU1000-1AD10-0AA0,
3SU10(0,3,5).-1(A,B)D..-0AA0



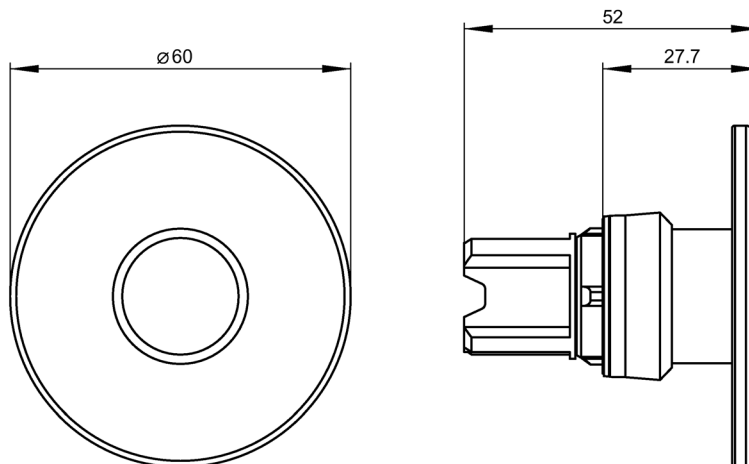
Diameter 40 mm

Article No.: 3SU1000-1BA10-0AA0,
3SU10(0,3,5).-1(B,E)(A,D)..-0AA0



Diameter 60 mm

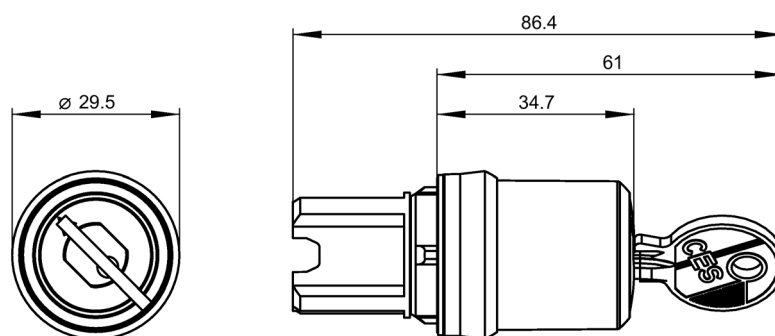
Article No.: 3SU1000-1CD10-0AA0,
3SU10(0,3,5).-1C(A,D)..-0AA0



14.2.11 Key-operated switches

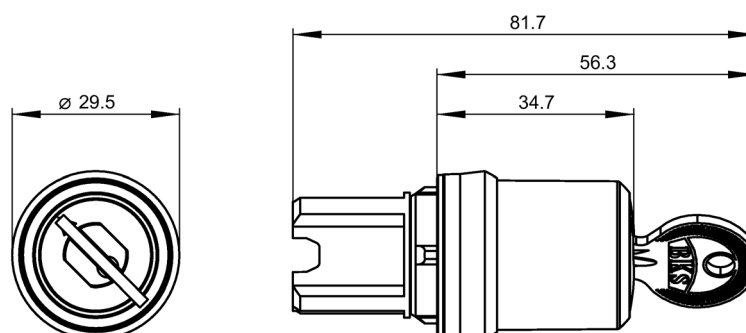
With CES lock

Article No.: 3SU1000-5BF11-0AA0,
3SU10(0,3)0-5(B,L,H)(C,F,L,M,N,P)..-0AA0
3SU1050-5(B,L,H)(C,F,L,M,N,P)..-0AA0



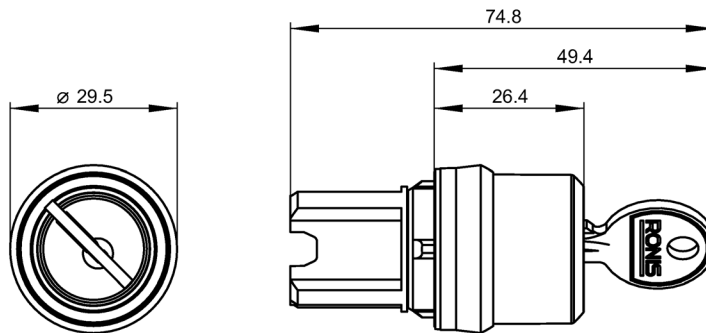
With BKS lock

Article No.: 3SU1000-5PF11-0AA0,
3SU10(0,3)0-5(P,Q,R,S,T)(C,F,L,M,N,P)..-0AA0
3SU1050-5(P,Q,R,S,T)(C,F,L,M,N,P)..-0AA0



With RONIS lock

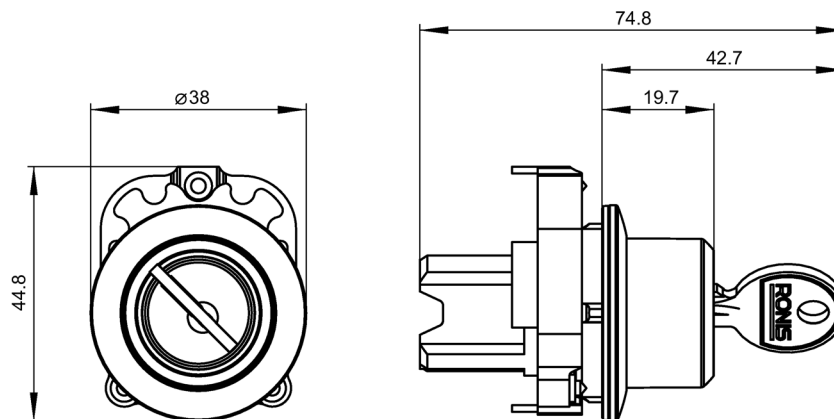
Article No.: 3SU1000-4BF11-0AA0,
3SU10(0,3,5)0-(4,5)(B,C,D,X)(C,F,L,M,N)(0,1,5)1-0AA0



14.2.12 30.5 mm key-operated switches

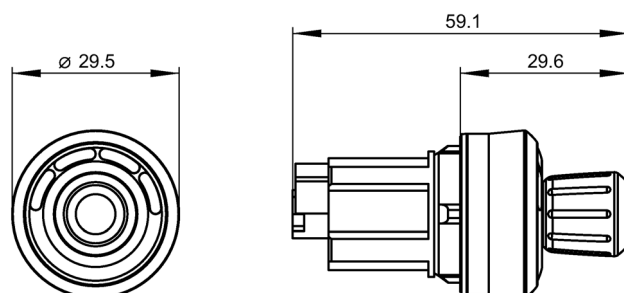
With RONIS lock

Article No.: 3SU1060-4LF11-0AA0,
3SU1060-4L(C,F,L,M,P,N)..-0AA0



14.2.13 ID key-operated switches

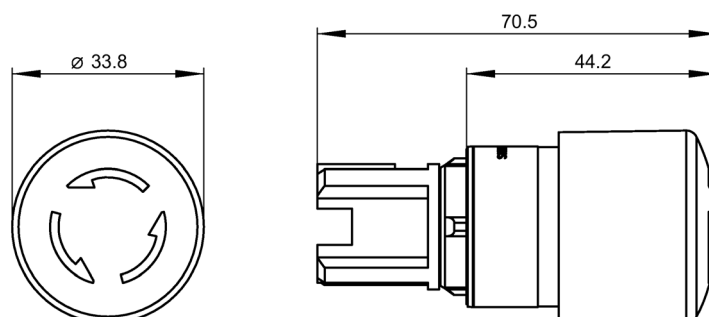
Article No.: 3SU1000-4WS10-0AA0,
3SU10(0,3)0-4WS10-0AA0



14.2.14 EMERGENCY STOP with rotate-to-unlatch mechanism

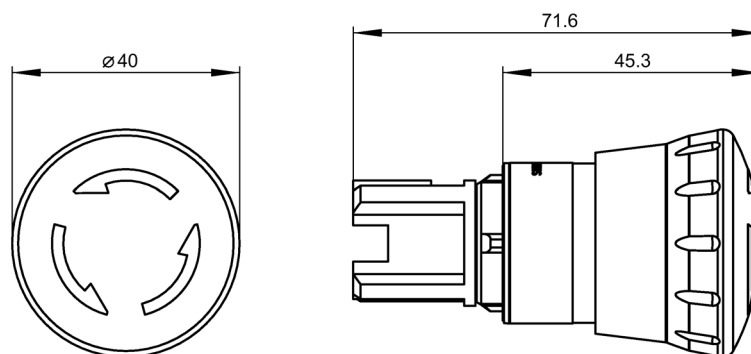
Diameter 30 mm

Article No.: 3SU1000-1GB20-0AA0,
3SU10(0,5)(0,1)-1GB..-0AA0



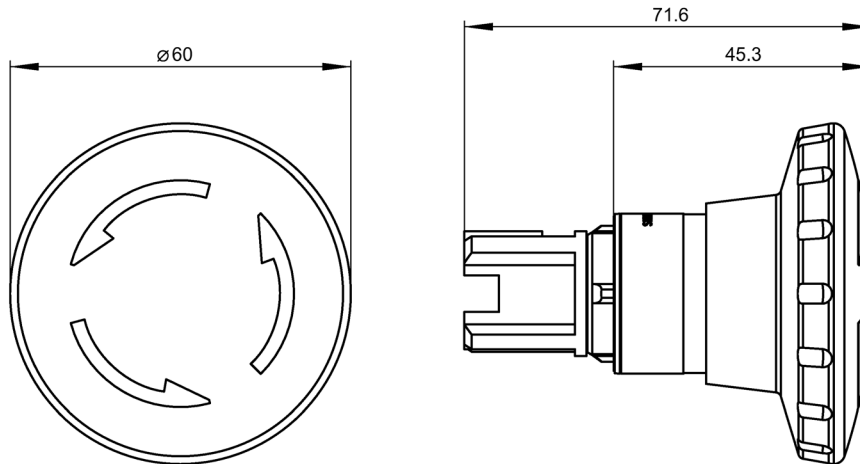
Diameter 40 mm

Article No.: 3SU1000-1HB20-0AA0,
3SU10(0,5)(0,1)-1HB..-0AA0



Diameter 60 mm

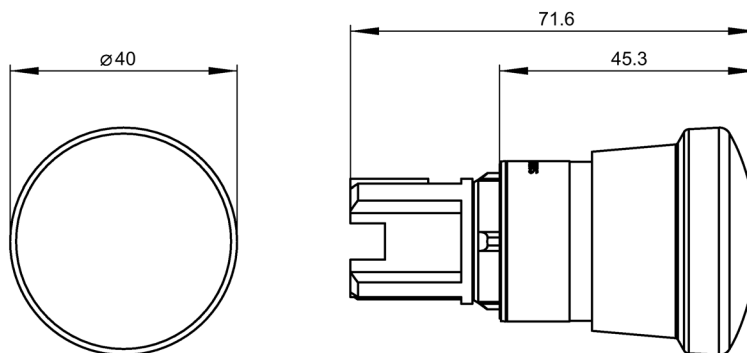
**Article No.: 3SU1000-1JB20-0AA0,
3SU10(0,5)(0,1)-1JB..-0AA0**



14.2.15 EMERGENCY STOP with pull-to-unlatch mechanism

Diameter 40 mm

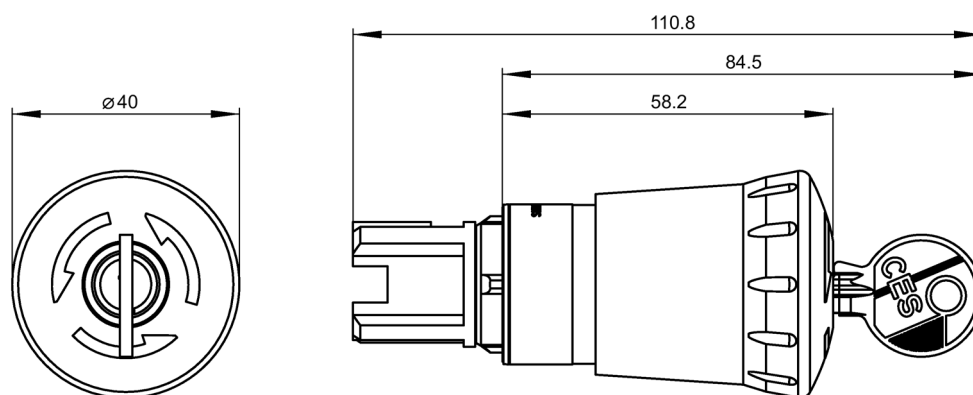
**Article No.: 3SU1000-1HA20-0AA0,
3SU10(0,5)(0,1)-1HA..-0AA0**



14.2.16 EMERGENCY STOP with lock

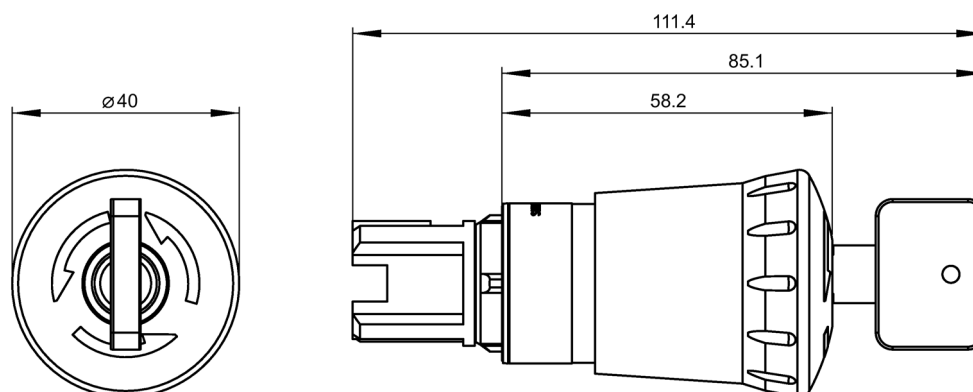
Diameter 40 mm with CES lock

Article No.: 3SU1000-1HR20-0AA0,
3SU10(0,3,5)0-1H(S,T,R)..-0AA0



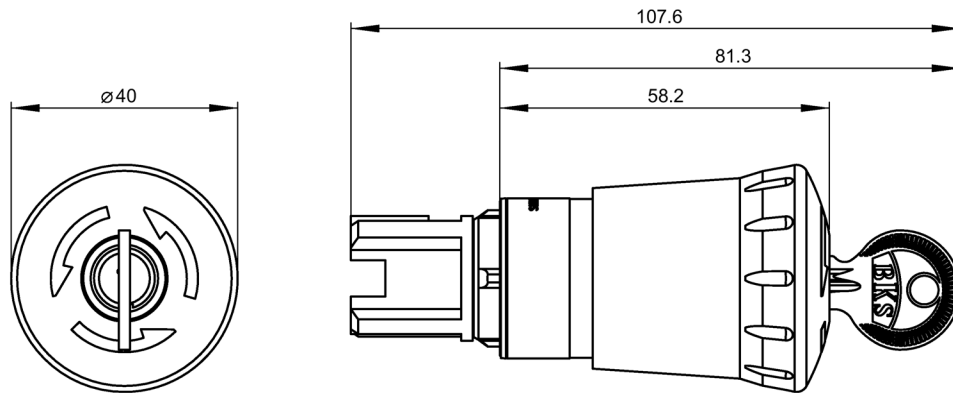
Diameter 40 mm with CES lock

Article No.: 3SU1050-1HU20-0AA0,
3SU1050-1H(U,V)..-0AA0



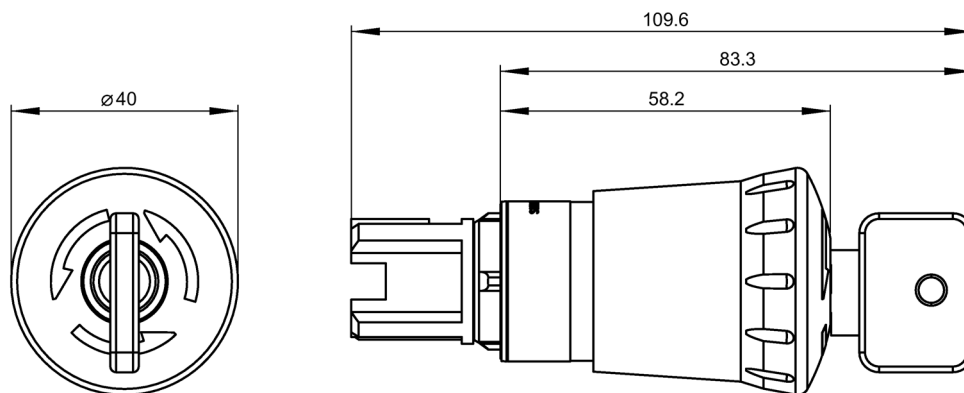
Diameter 40 mm with BKS lock

Article No.: 3SU1000-1HK20-0AA0,
3SU10(0,5)0-1H(K,M,N)..-0AA0



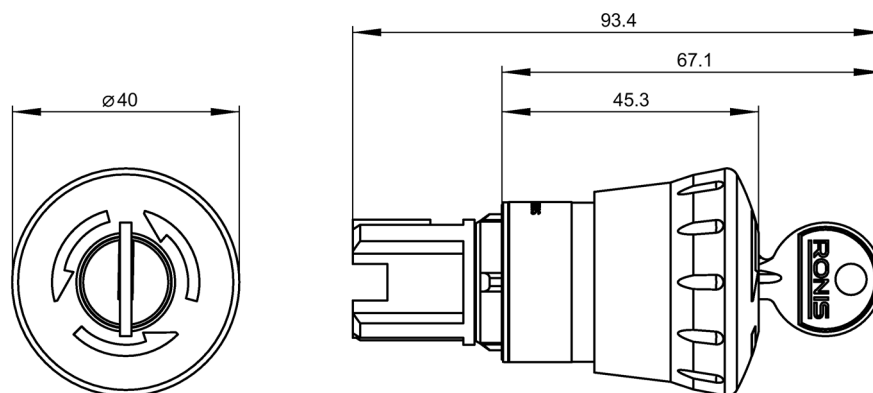
Diameter 40 mm with OMR lock

Article No.: 3SU1000-1HQ20-0AA0,
3SU10(0,5)0-1HQ..-0AA0



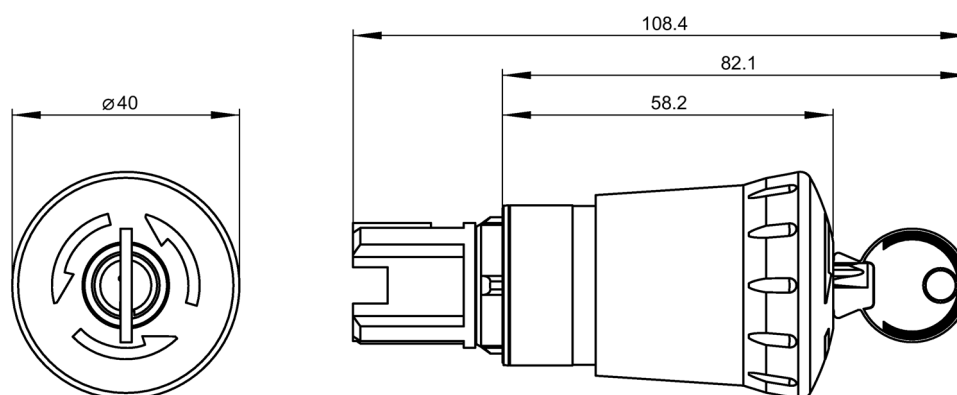
Diameter 40 mm with Ronis lock

Article No.: 3SU1000-1HF20-0AA0,
3SU10(0,3,5)0-1H(F,G,H)...0AA0



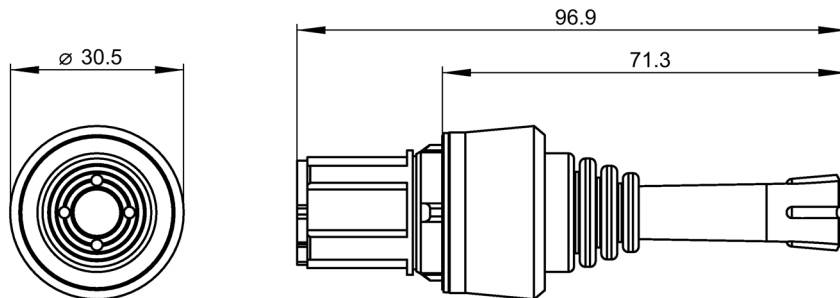
Diameter 40 mm with IKON lock

Article No.: 3SU1050-1HX20-0AA0,
3SU1050-1HX20-0AA0



14.2.17 Coordinate switches

Article No.: 3SU1000-7AA10-0AA0,
3SU10(0,3,5)0-7A(A,B,C,D,E,F)(1,8)(0,8)-0AA0

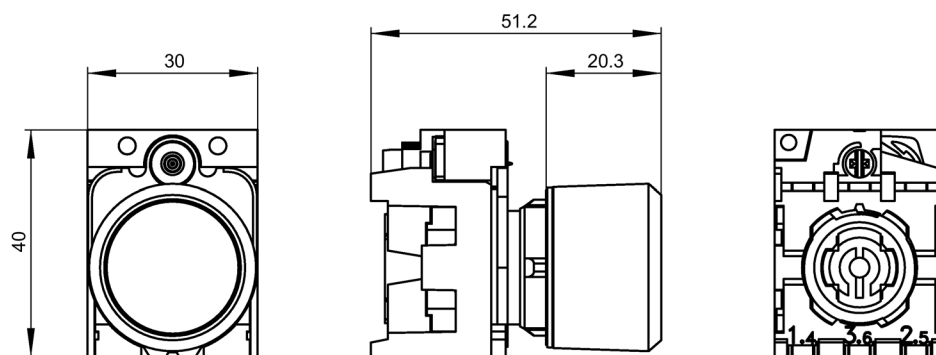


14.3 3SU12 devices

14.3.1 Pushbuttons with extended stroke

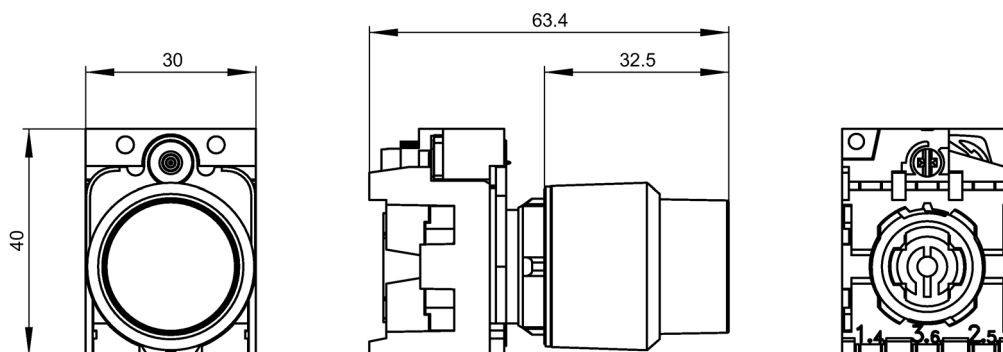
Flat button

Article No.: 3SU1251-0EB20-0AA0,
3SU12(0,3,5)(0,1)-0EB(2,4,7)0-0AA0

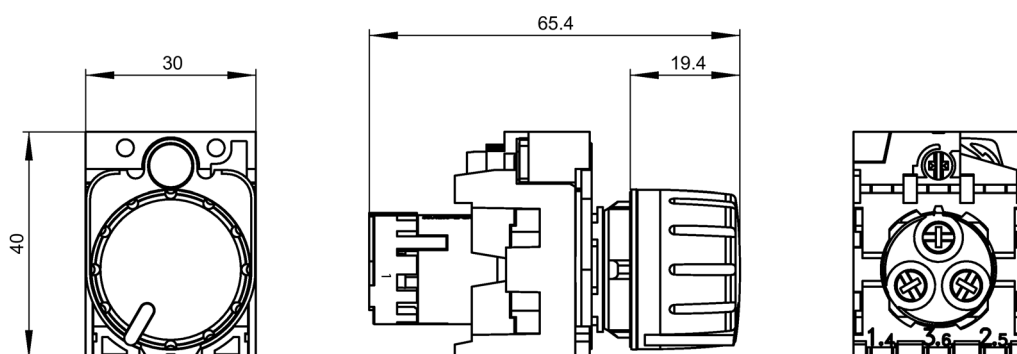


Raised button

Article No.: 3SU1250-0FB10-0AA0,
3SU12(0,3,5)0-0FB10-0AA0

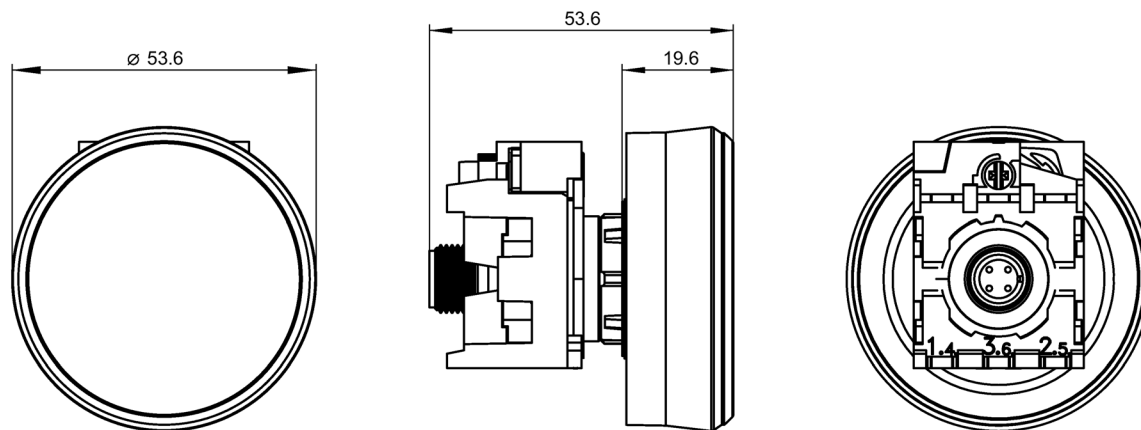
**14.3.2****Potentiometers**

Article No.: 3SU1201-6AB00-1AA0,
3SU1200-2P(Q,R,S,T,U,V)10-1AA0
3SU1250-2P(Q,R,S,T,U,V)10-1AA0



14.3.3 Sensor switches

Article No.: 3SU1200-1SK10-2SA0



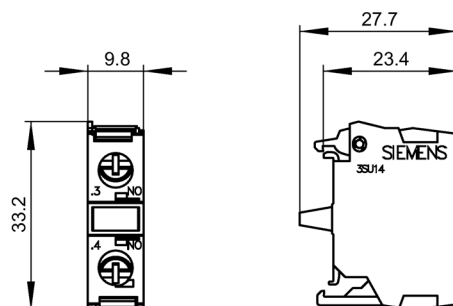
14.4 3SU14 modules

14.4.1 Contact modules for front plate mounting

Contact module 1NO, screw terminals

Article No.: 3SU1400-1AA10-1BA0

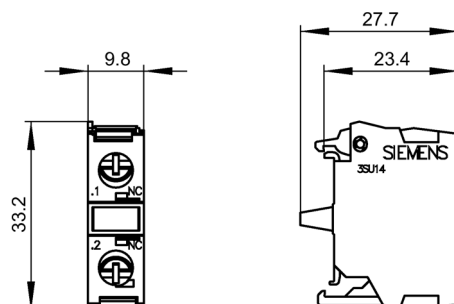
3SU1400-1AA10-1(B,L)A0



Contact module 1NC, screw terminals

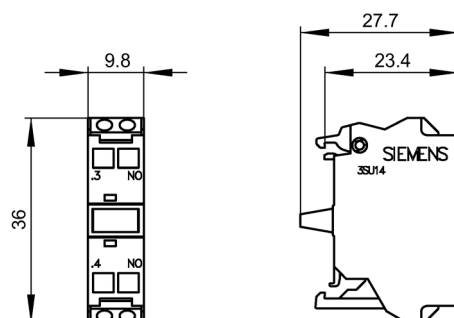
Article No.: 3SU1400-1AA10-1CA0

3SU1400-1AA10-1(C,M)A0



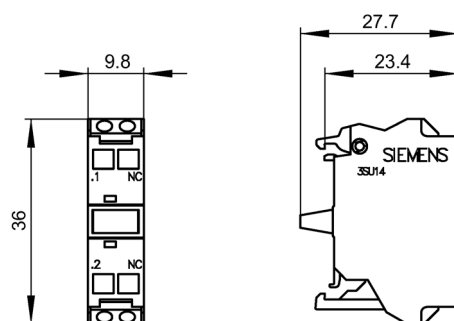
Contact module 1NO, spring-loaded terminals

Article No.: 3SU1400-1AA10-3BA0



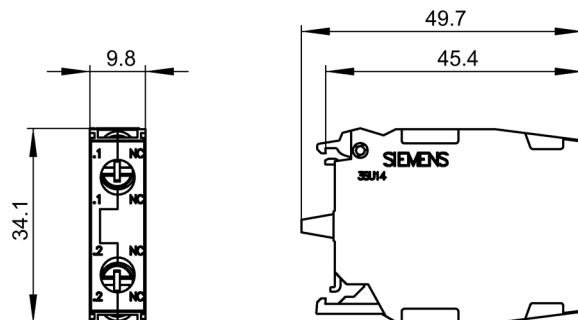
Contact module 1NC, spring-loaded terminals

Article No.: 3SU1400-1AA10-3CA0



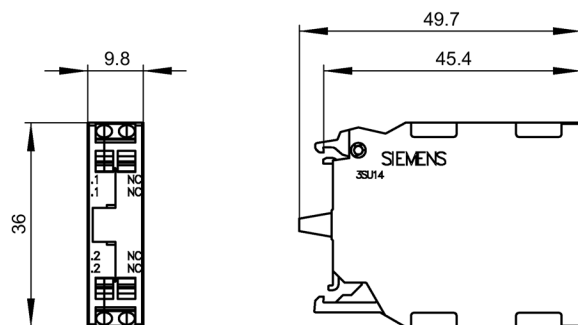
Contact module 2NC, screw terminals

Article No.: 3SU1400-1AA10-1EA0



Contact module 2NC, screw terminals

Article No.: 3SU1400-1AA10-3EA0

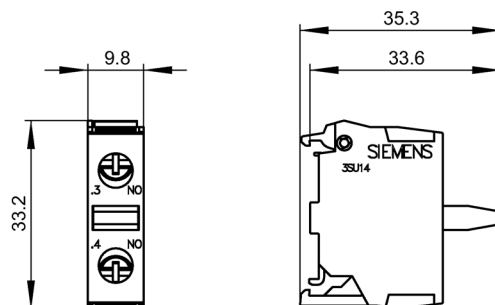


14.4.2 Contact modules for base mounting

Contact module 1NO, screw terminals

Article No.: 3SU1400-2AA10-1BA0

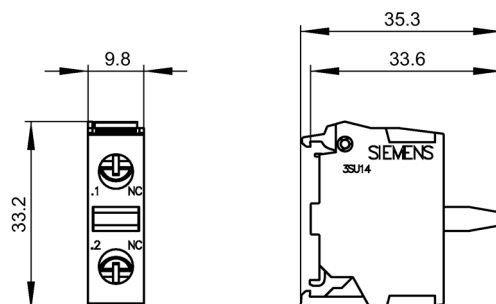
3SU1400-2AA10-1BA0



Contact module 1NC, screw terminals

Article No.: 3SU1400-2AA10-1CA0

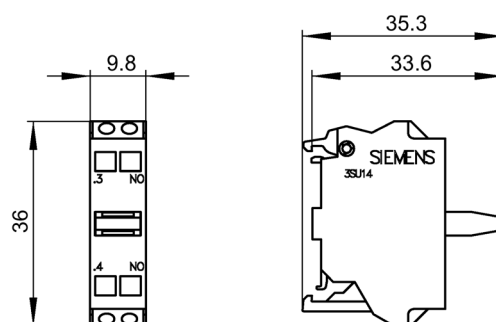
3SU1400-2AA10-1CA0



Contact module 1NO, spring-loaded terminals

Article No.: 3SU1400-2AA10-3BA0

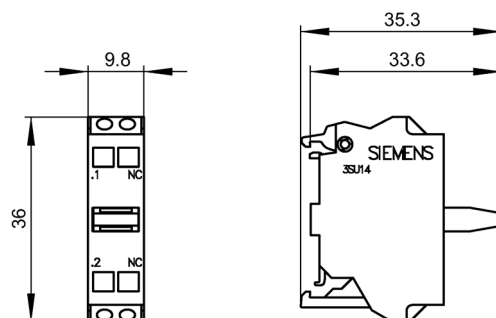
3SU1400-2AA10-3BA0



Contact module 1NC, spring-loaded terminals

Article No.: 3SU1400-2AA10-3CA0

3SU1400-2AA10-3CA0

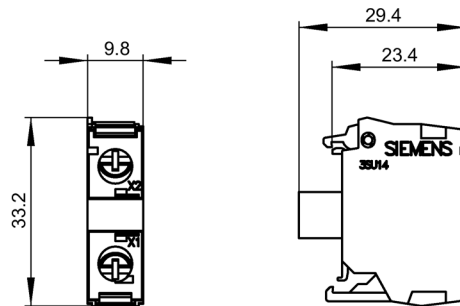


14.4.3 LED modules for front plate mounting

LED module, screw terminals

Article No.: 3SU1401-1BG20-1AA0

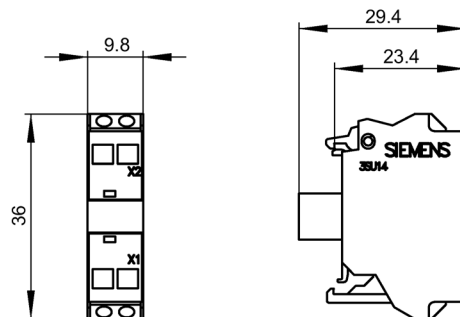
3SU1401-1B..0-1AA0



LED module, spring-loaded terminals

Article No.: 3SU1401-1BG20-3AA0

3SU1401-1B..0-3AA0

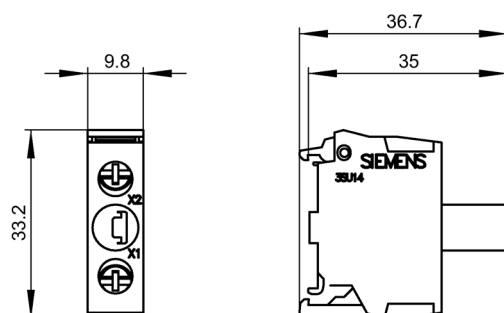


14.4.4 LED modules for base mounting

LED module, screw terminals

Article No.: 3SU1401-2BG20-1AA0

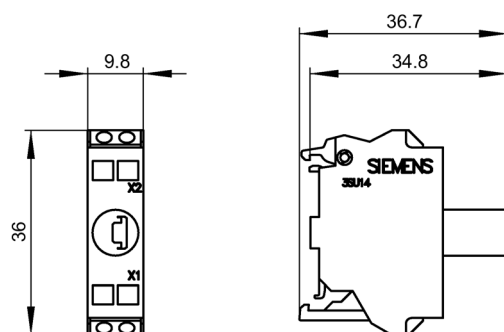
3SU1401-2B(B,C,F,G,H).0-1AA0



LED module, spring-loaded terminals

Article No.: 3SU1401-2BG20-3AA0

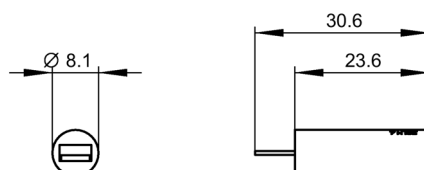
3SU1401-2B(B,C,F,G,H).0-3AA0



14.4.5 LED modules for PCB mounting

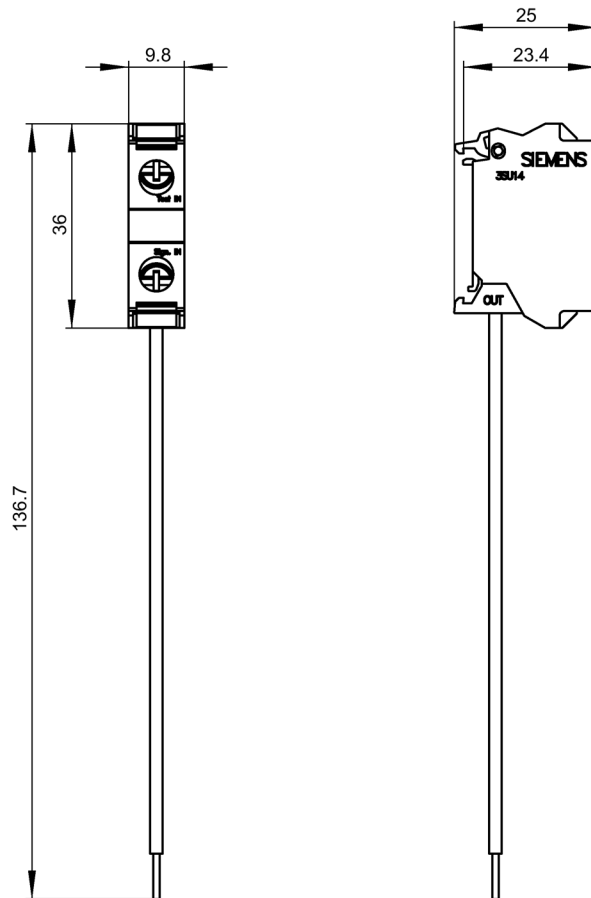
Article No.: 3SU1401-3BA20-5AA0

3SU1401-3BA.0-5AA0



14.4.6 LED test module for base mounting (enclosure mounting)

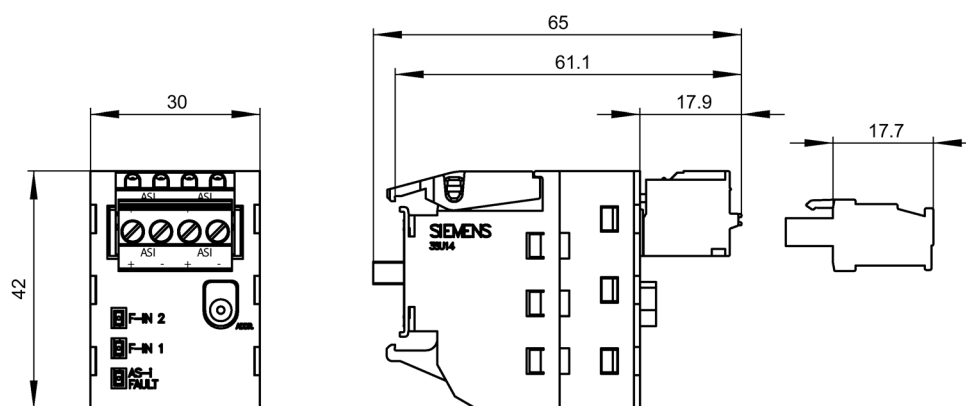
Article No.: 3SU1400-2CK10-1AA0



14.4.7 AS-Interface modules for front mounting

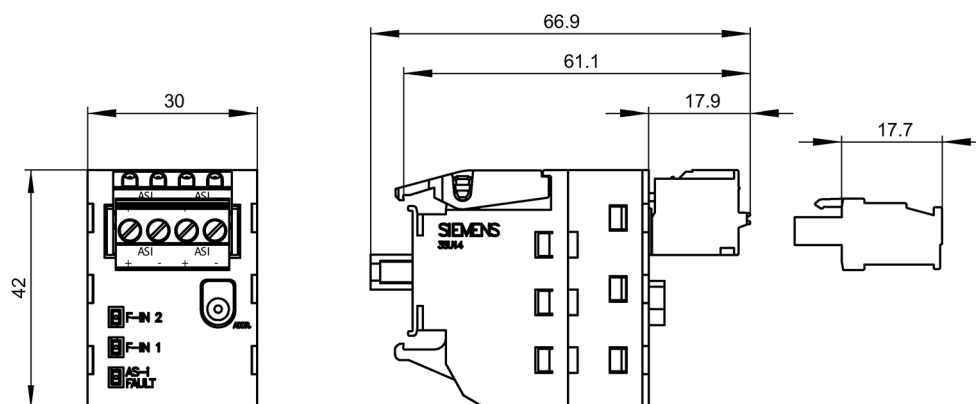
2F-DI screw terminals and spring-loaded terminals

Article No.: 3SU1400-1EA10-2AA0



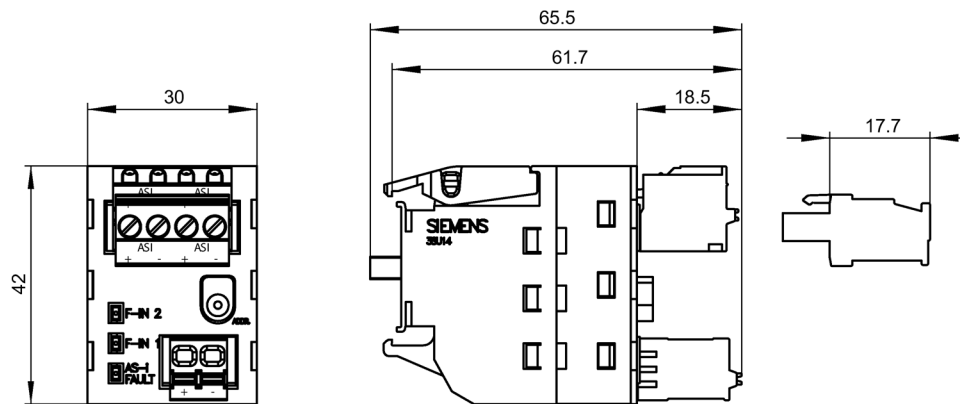
2F-DI + 1 LED screw terminals and spring-loaded terminals

Article No.: 3SU1401-1EE20-2AA0



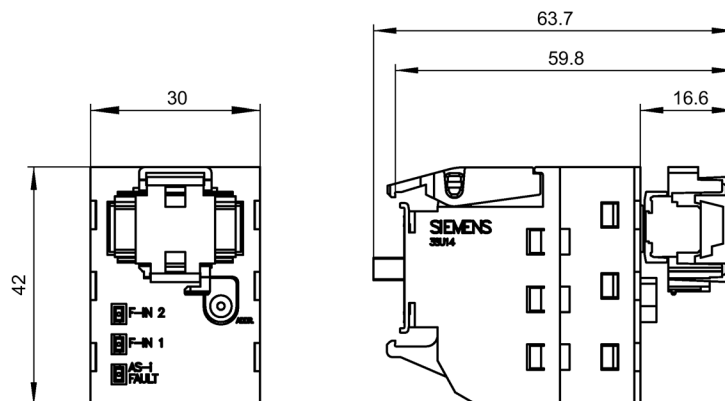
2F-DI + 1 DO screw terminals and spring-loaded terminals

Article No.: 3SU1400-1EC10-2AA0



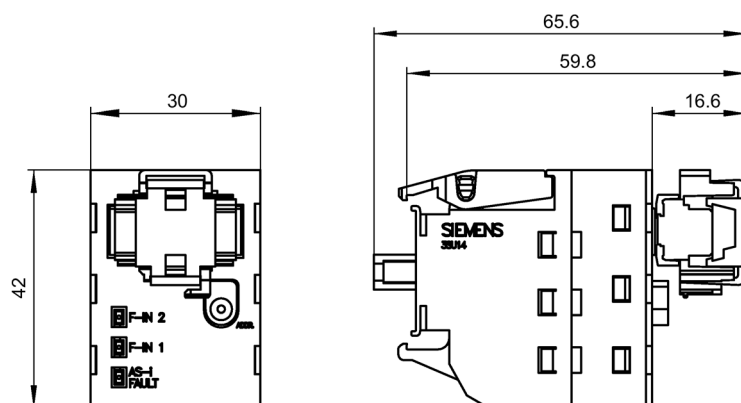
2F-DI insulation piercing method

Article No.: 3SU1400-1EA10-4AA0



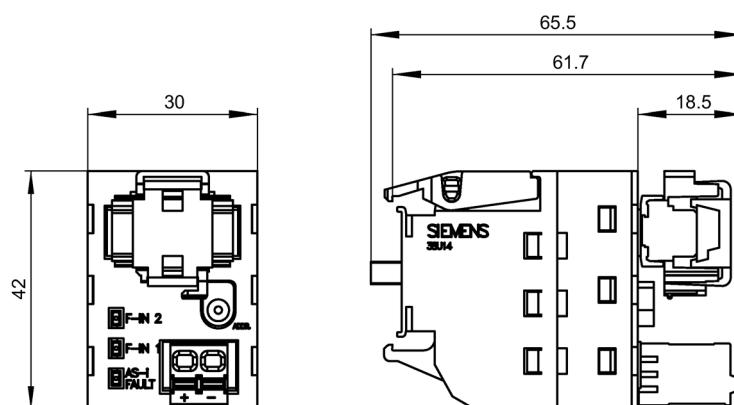
2F-DI + 1 LED insulation piercing method

Article No.: 3SU1401-1EE20-4AA0



2 F-DI + 1 DO spring-loaded terminals and insulation piercing method

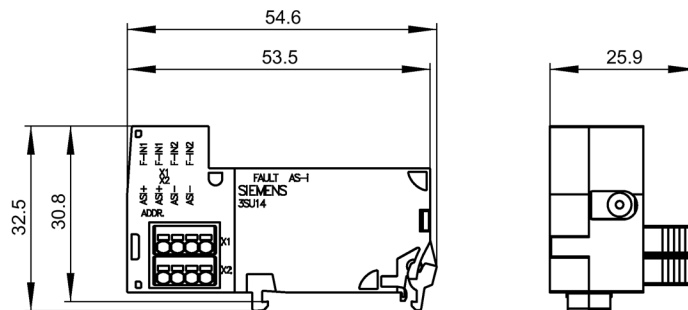
Article No.: 3SU1400-1EC10-4AA0



14.4.8 AS-Interface modules for base mounting

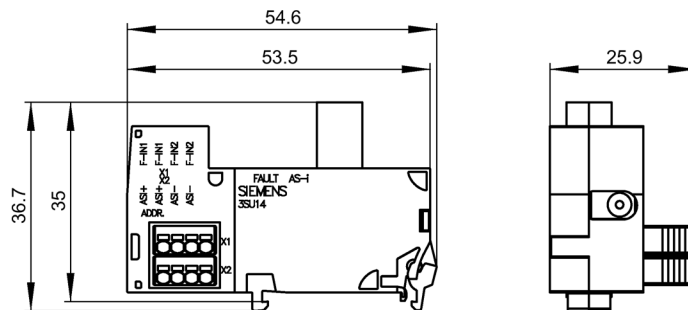
2F-DI

Article No.: 3SU1400-2EA10-6AA0



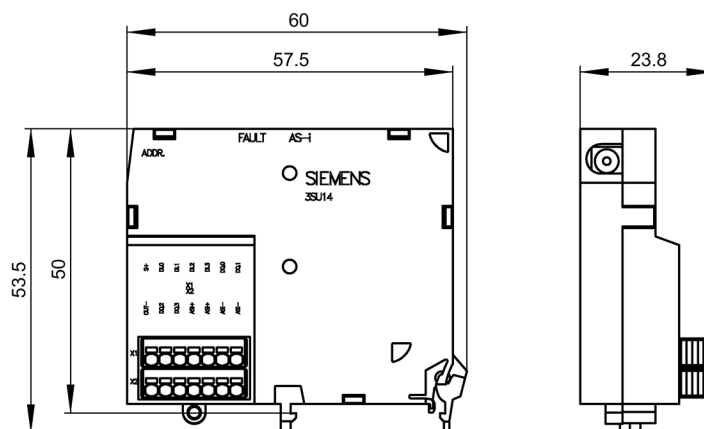
2F-DI/1LED

Article No.: 3SU1401-2EE20-6AA0



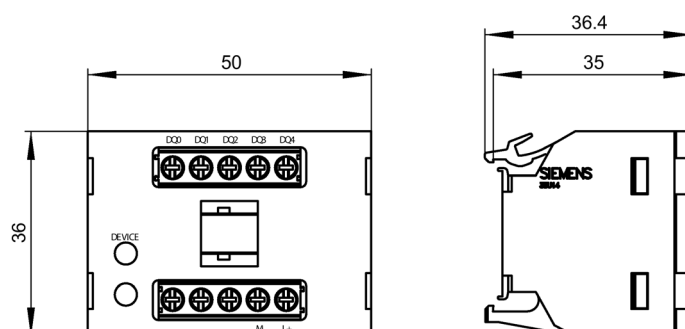
4DI/3DO AB and 4DI/4DO

Article No.: 3SU1400-2E.10-6AA0



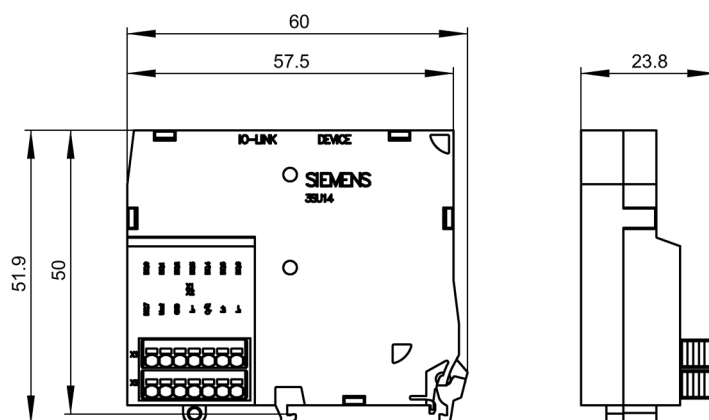
14.4.9 Electronic modules for ID key-operated switches

Article No.: 3SU1400-1G.10-1AA0



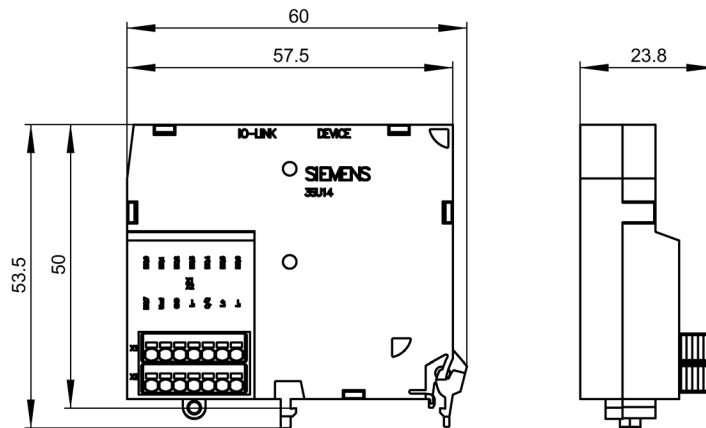
14.4.10 Electronic modules for IO-Link

Article No.: 3SU1400-1HL10-6AA0



Article No.: 3SU1400-2HL10-6AA0

3SU1400-2H(K,M,N)10-6AA0



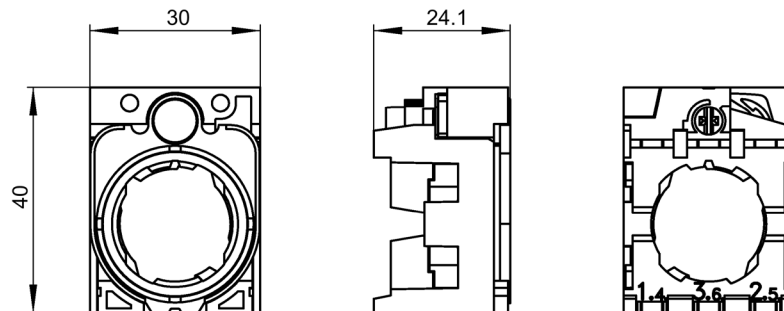
14.5

3SU15 holders

3-slot holder

Article No.: 3SU1500-0AA10-0AA0

3SU15(0, 5)0-0AA10-0AA0



4-slot holder

Article No.: 3SU1500-0BA10-0AA0

3SU15(0, 5)0-0BA10-0AA0

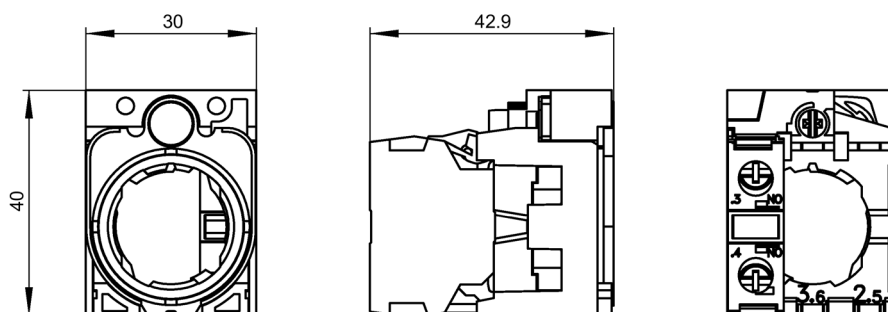


14.5.1

Holders with contact modules

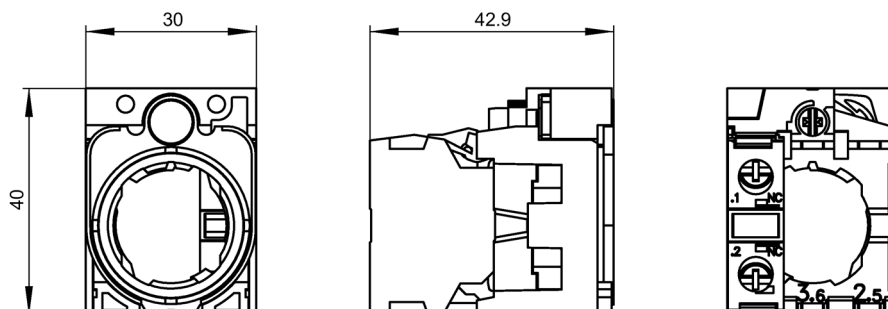
Holder, plastic with contact module 1NO + 1NC

Article No.: 3SU1500-1AA10-1BA0



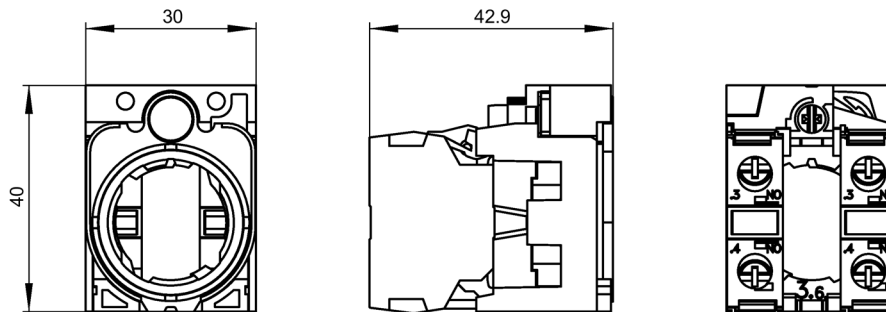
Holder, plastic with contact module 1NC

Article No.: 3SU1500-1AA10-1CA0



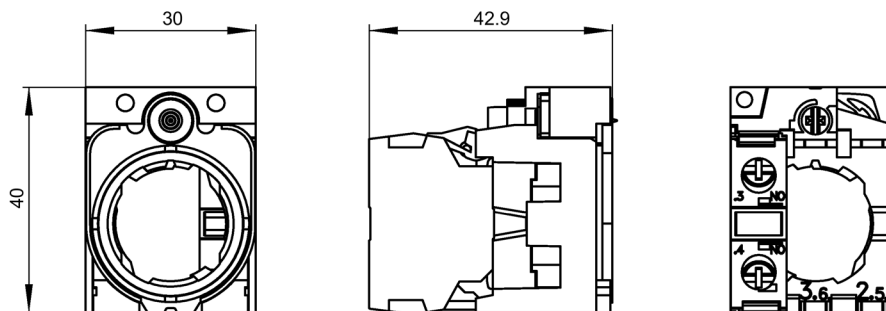
Holder, plastic with contact module 1NO + 1NC

Article No.: 3SU1500-1AA10-1NA0



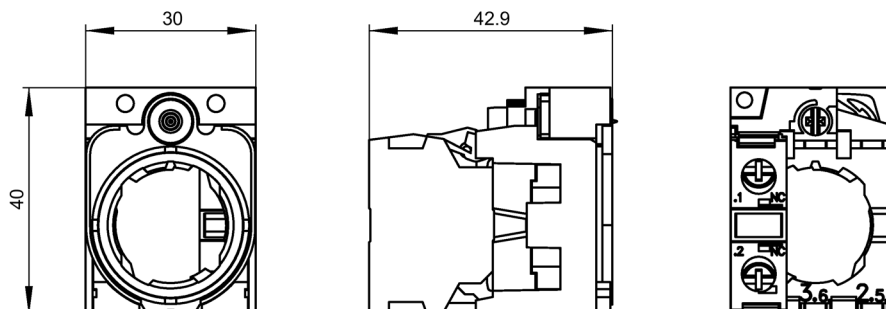
Holder, metal with contact module 1NO

Article No.: 3SU1550-1AA10-1BA0



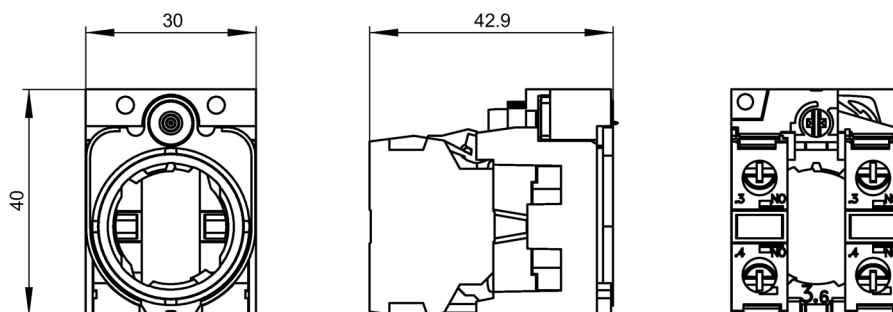
Holder, metal with contact module 1NC

Article No.: 3SU1550-1AA10-1CA0



Holder, metal with contact module 1NO + 1NC

Article No.: 3SU1550-1AA10-1NA0

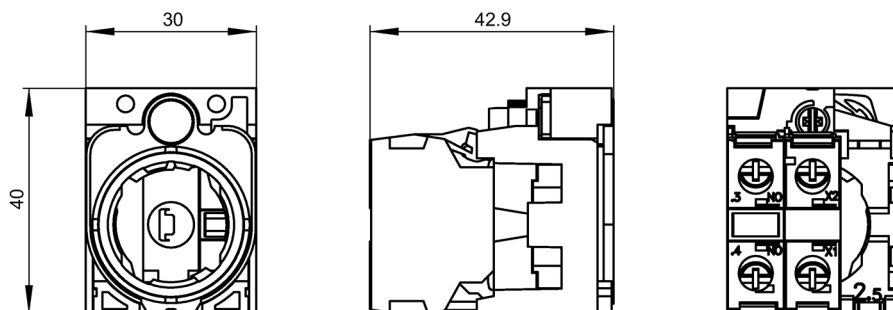


14.5.2

Holders with contact and LED modules

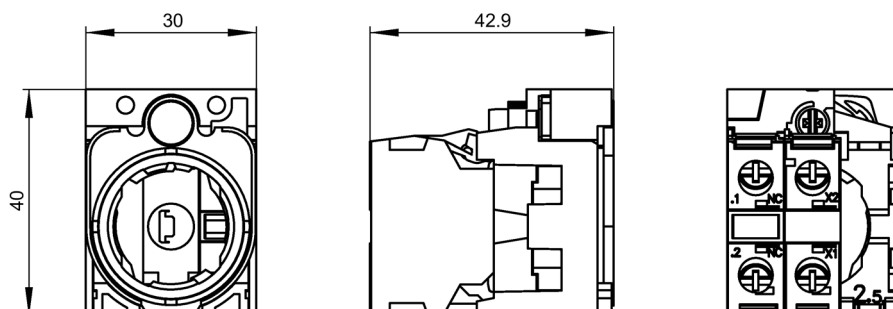
Holder, plastic with contact module 1NO and LED module

Article No.: 3SU1501-1AG.0-1BA0



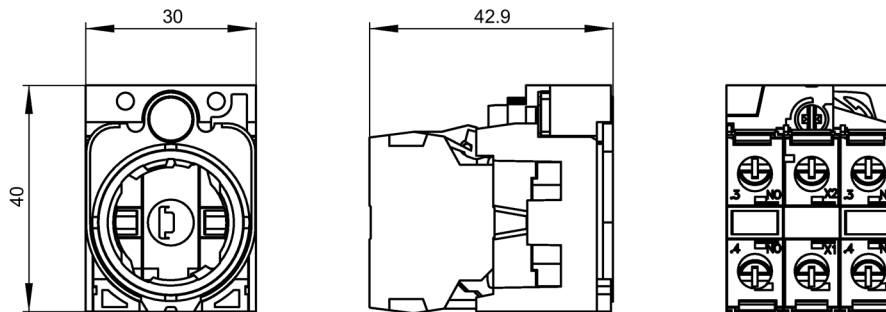
Holder, plastic with contact module 1NC and LED module

Article No.: 3SU1501-1AG.0-1CA0



Holder, plastic with contact module 1NO + 1NC and LED module

Article No.: 3SU1501-1AG.0-1NA0

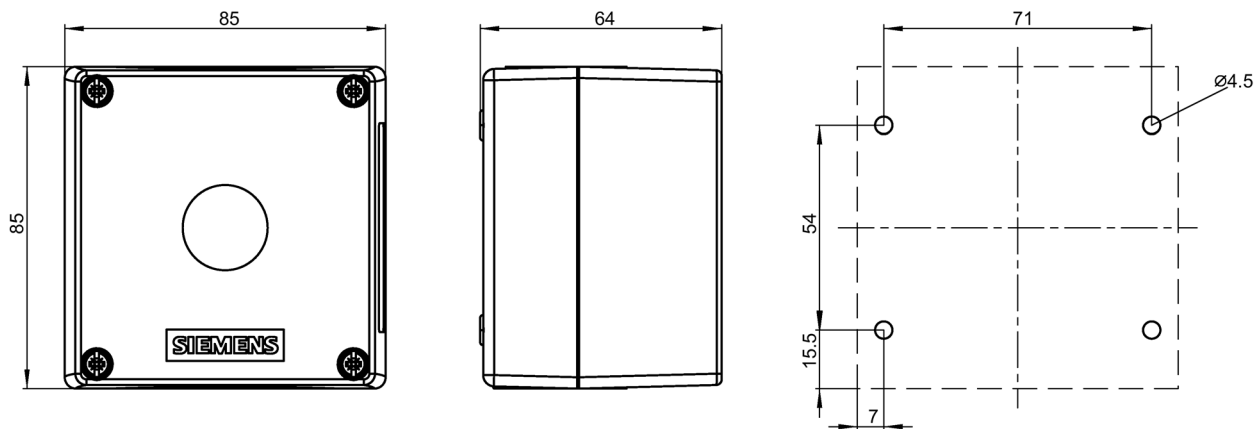


14.6 3SU18 enclosures

14.6.1 Enclosures, plastic

Enclosures with 1 command point

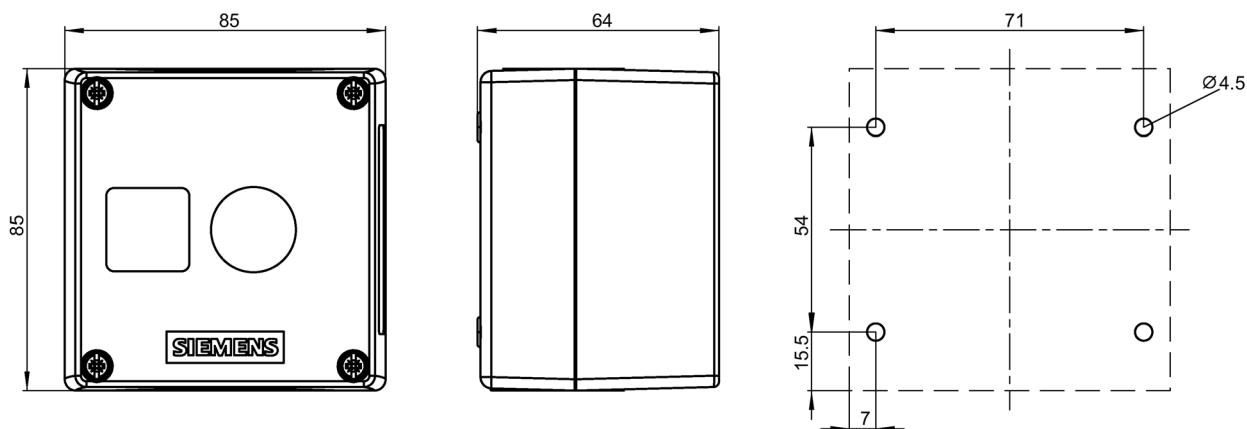
Article No.: 3SU1801-0AA00-0AA2



The thickness of the enclosure cover is 4 mm

Enclosure with 1 command point with recess for labeling plate

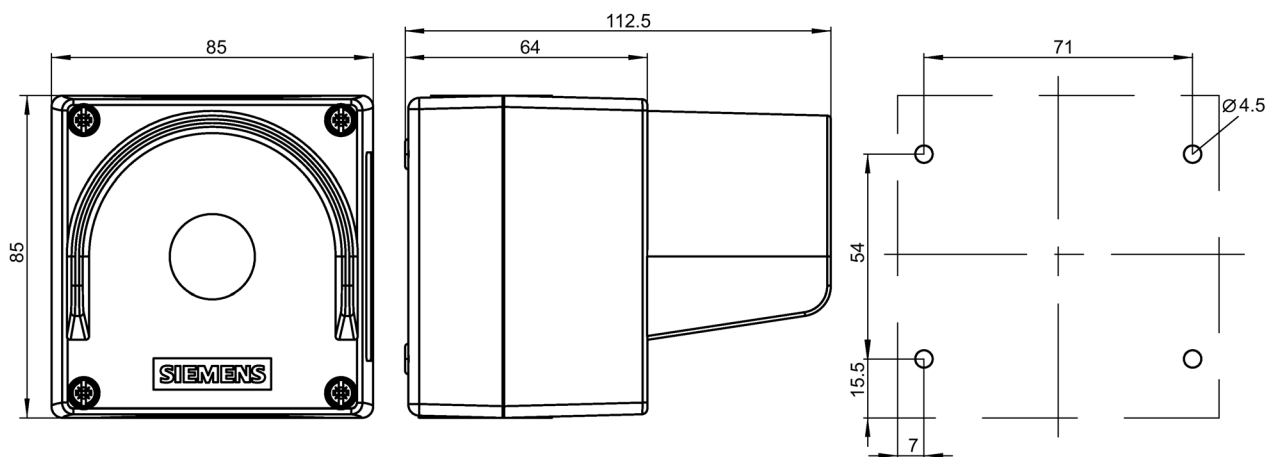
Article No.: 3SU1801-0AA00-0AB1, 3SU1801-0AA00-0AB2



The thickness of the enclosure cover is 4 mm

Enclosure with 1 command point with protective collar

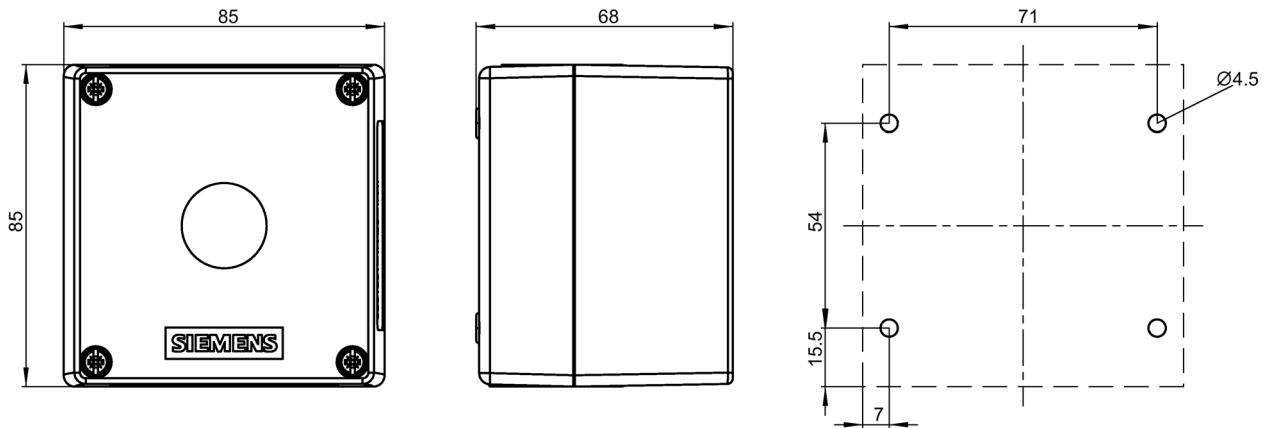
Article No.: 3SU1801-0AA00-0AC2



The thickness of the enclosure cover is 4 mm

Enclosure with 1 command point with raised cover

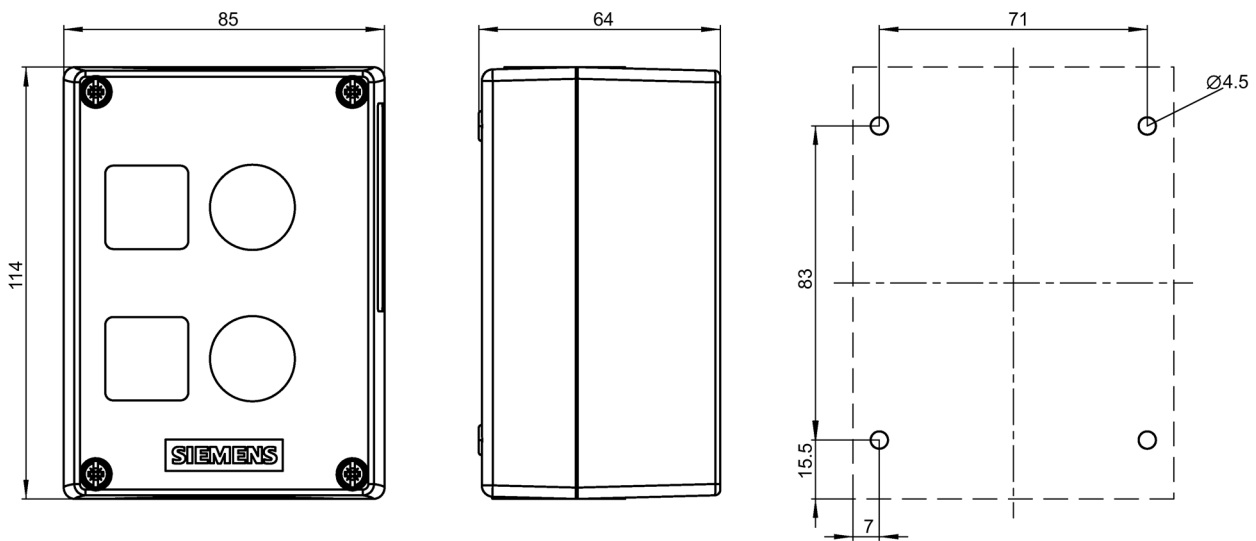
Article No.: 3SU1801-1AA00-1AA1



The thickness of the enclosure cover is 4 mm

Enclosure with 2 command points with recess for labeling plate

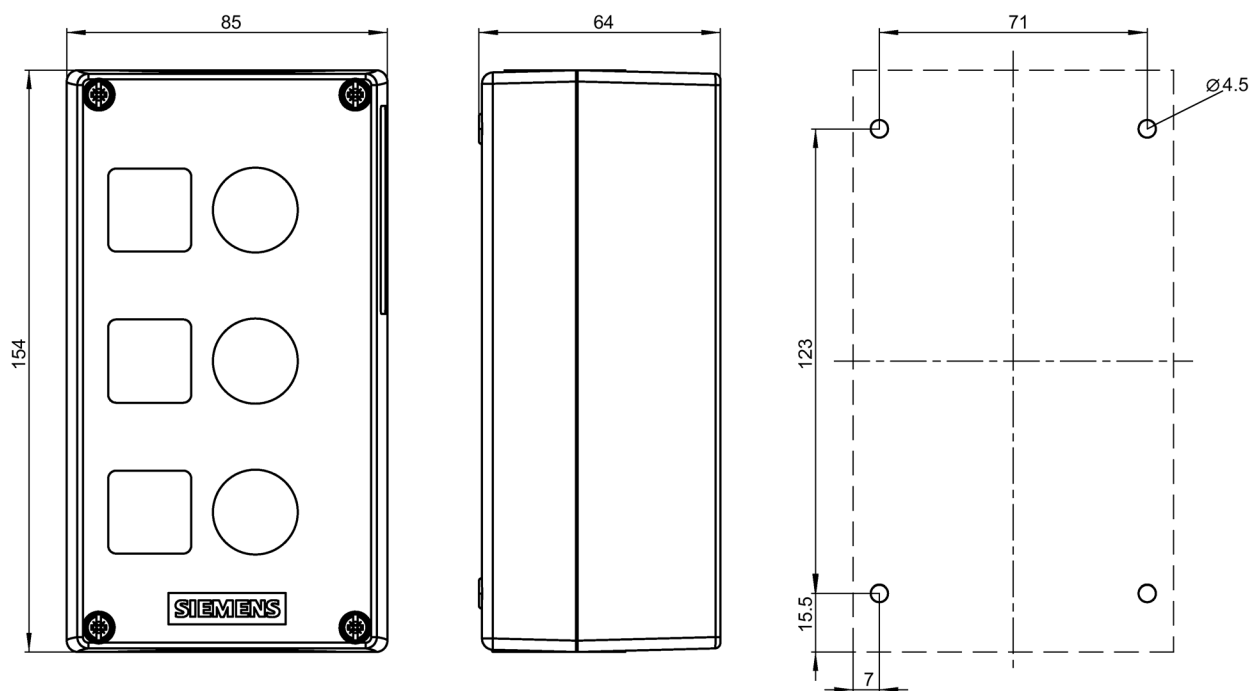
Article No.: 3SU1802-0AA00-0AB1, 3SU1802-0AA00-0AB2



The thickness of the enclosure cover is 4 mm

Enclosure with 3 command points with recess for labeling plate

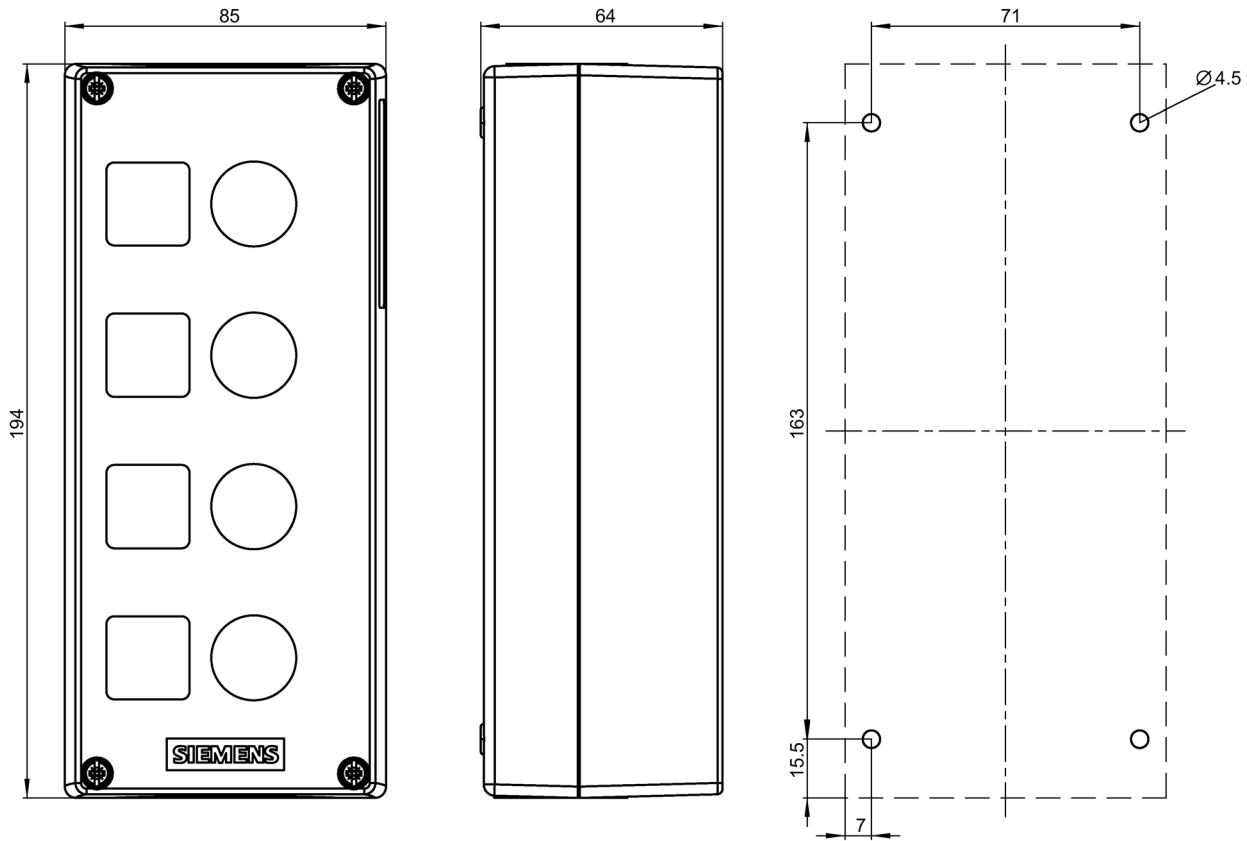
Article No.: 3SU1803-0AA00-0AB1



The thickness of the enclosure cover is 4 mm

Enclosure with 4 command points with recess for labeling plate

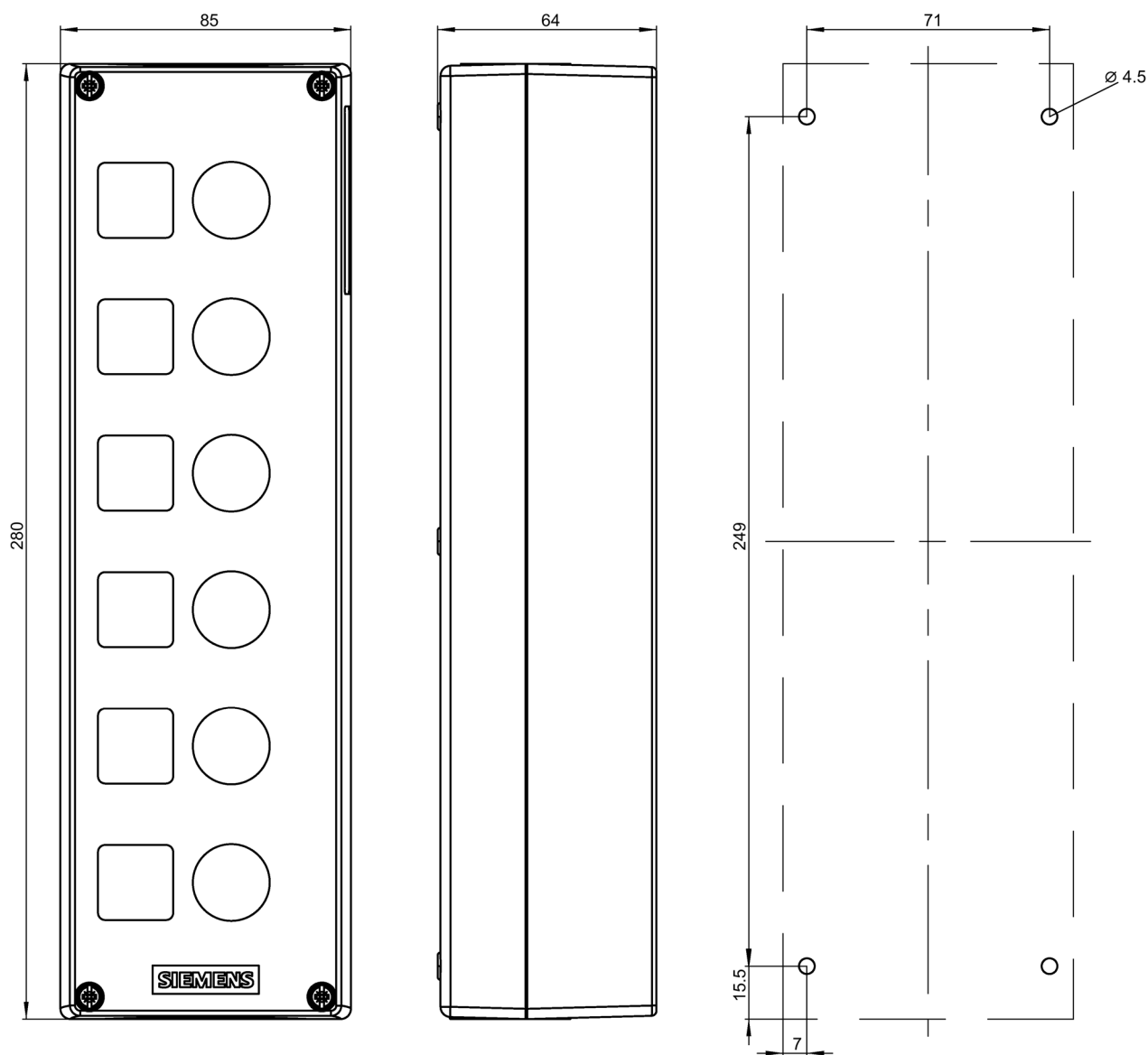
Article No.: 3SU1804-0AA00-0AB1



The thickness of the enclosure cover is 4 mm

Enclosure with 6 command points with recess for labeling plate

Article No.: 3SU1806-0AA00-0AB1

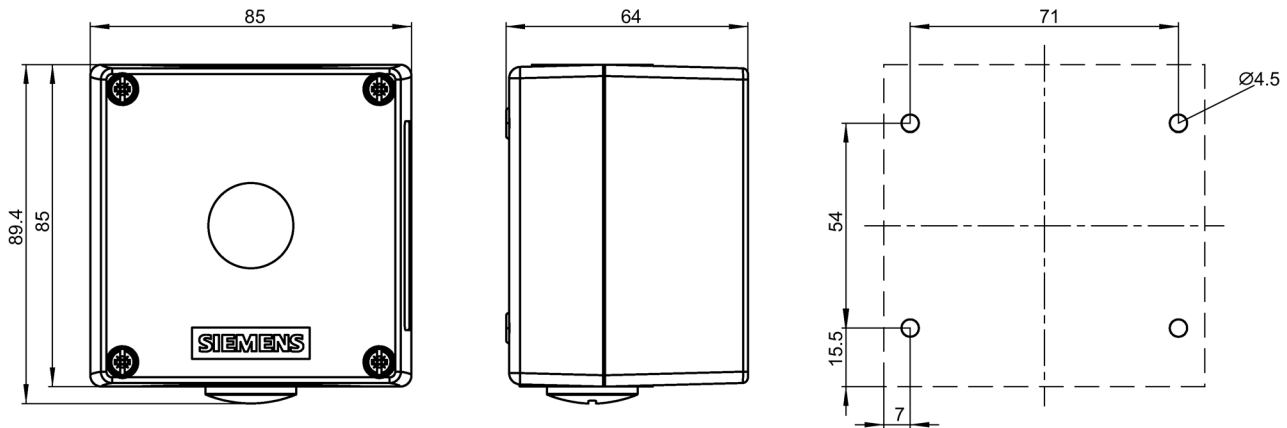


The thickness of the enclosure cover is 4 mm

14.6.2 Enclosures, metal

Enclosures with 1 command point

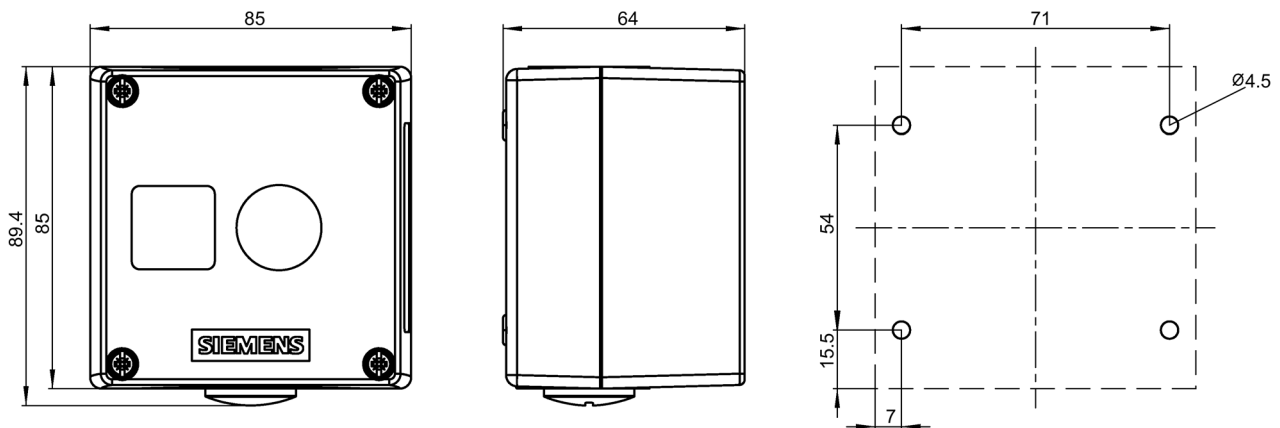
Article No.: 3SU1851-0AA00-0AA2



The thickness of the enclosure cover is 4 mm

Enclosure with 1 command point with recess for labeling plate

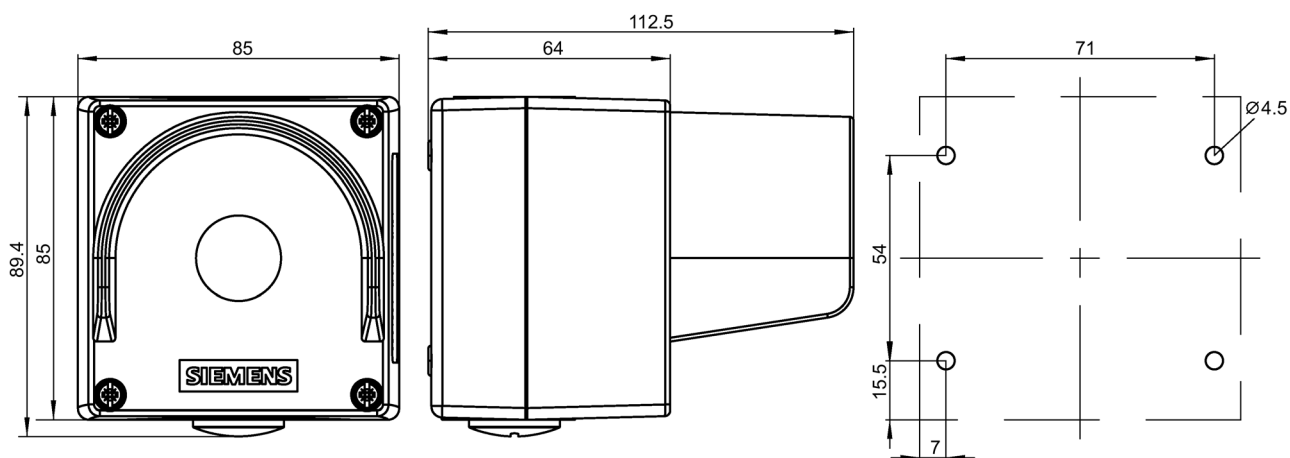
Article No.: 3SU1851-0AA00-0AB1, 3SU1851-0AA00-0AB2



The thickness of the enclosure cover is 4 mm

Enclosure with 1 command point with protective collar

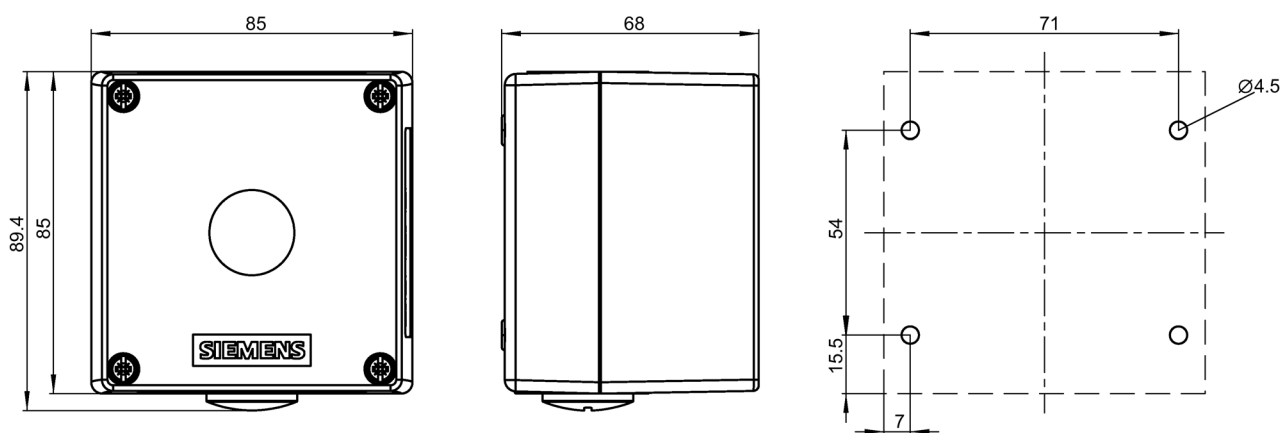
Article No.: 3SU1851-0AA00-0AC2



The thickness of the enclosure cover is 4 mm

Enclosure with 1 command point with raised cover

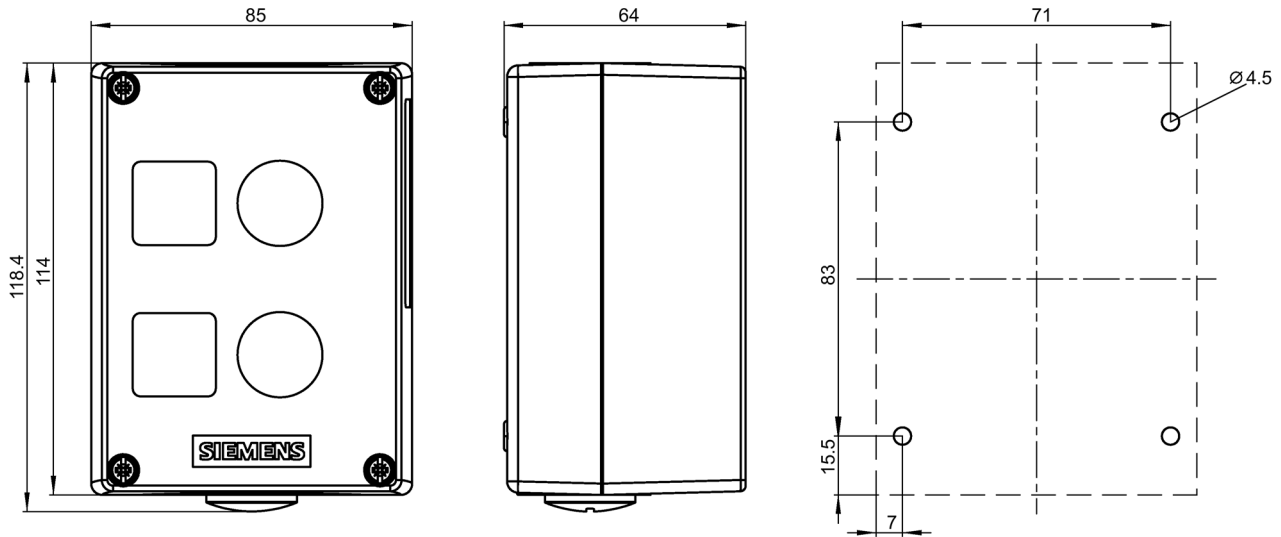
Article No.: 3SU1851-1AA00-1AA1



The thickness of the enclosure cover is 4 mm

Enclosure with 2 command points with recess for labeling plate

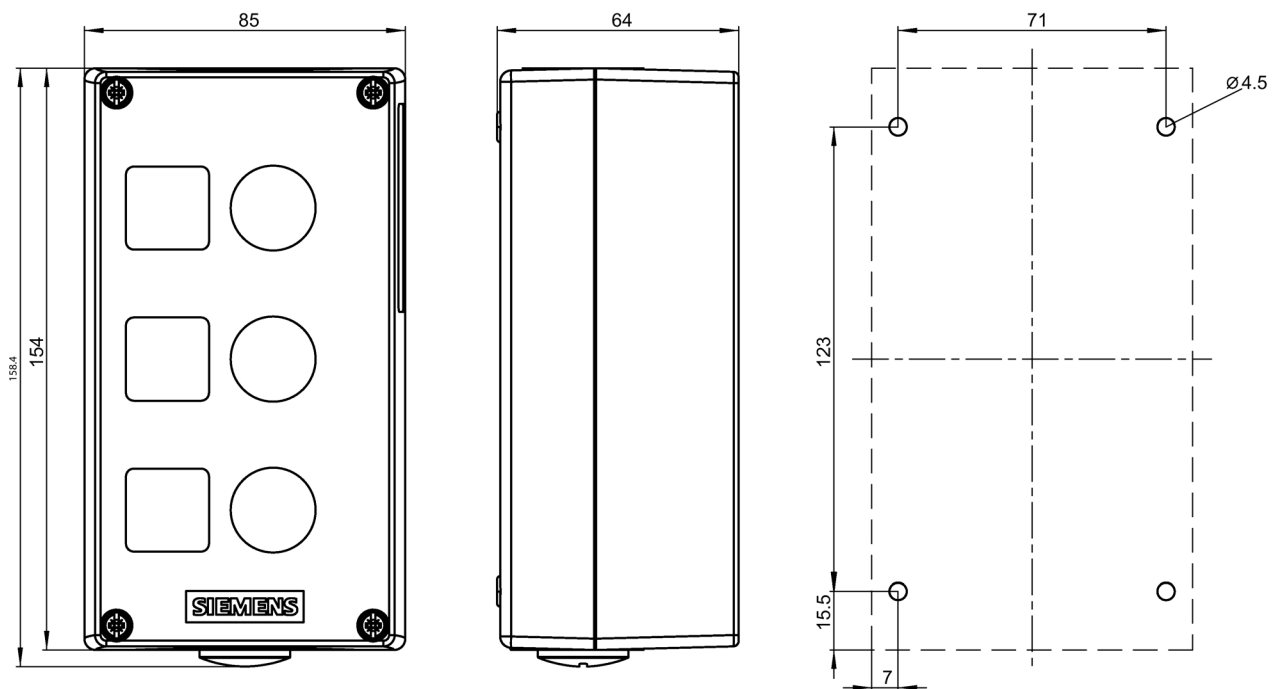
Article No.: 3SU1852-0AA00-0AB1, 3SU1852-0AA00-0AB2



The thickness of the enclosure cover is 4 mm

Enclosure with 3 command points with recess for labeling plate

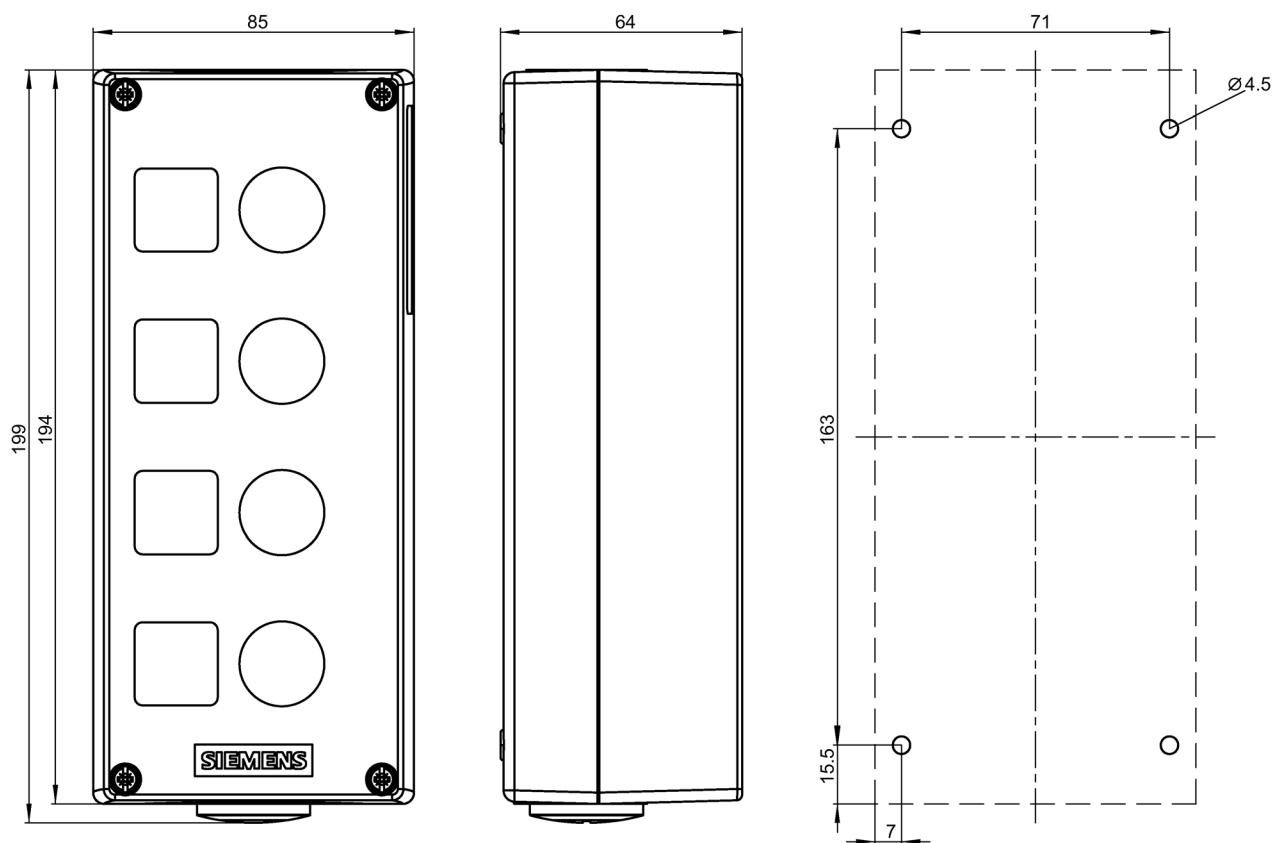
Article No.: 3SU1853-0AA00-0AB1



The thickness of the enclosure cover is 4 mm

Enclosure with 4 command points with recess for labeling plate

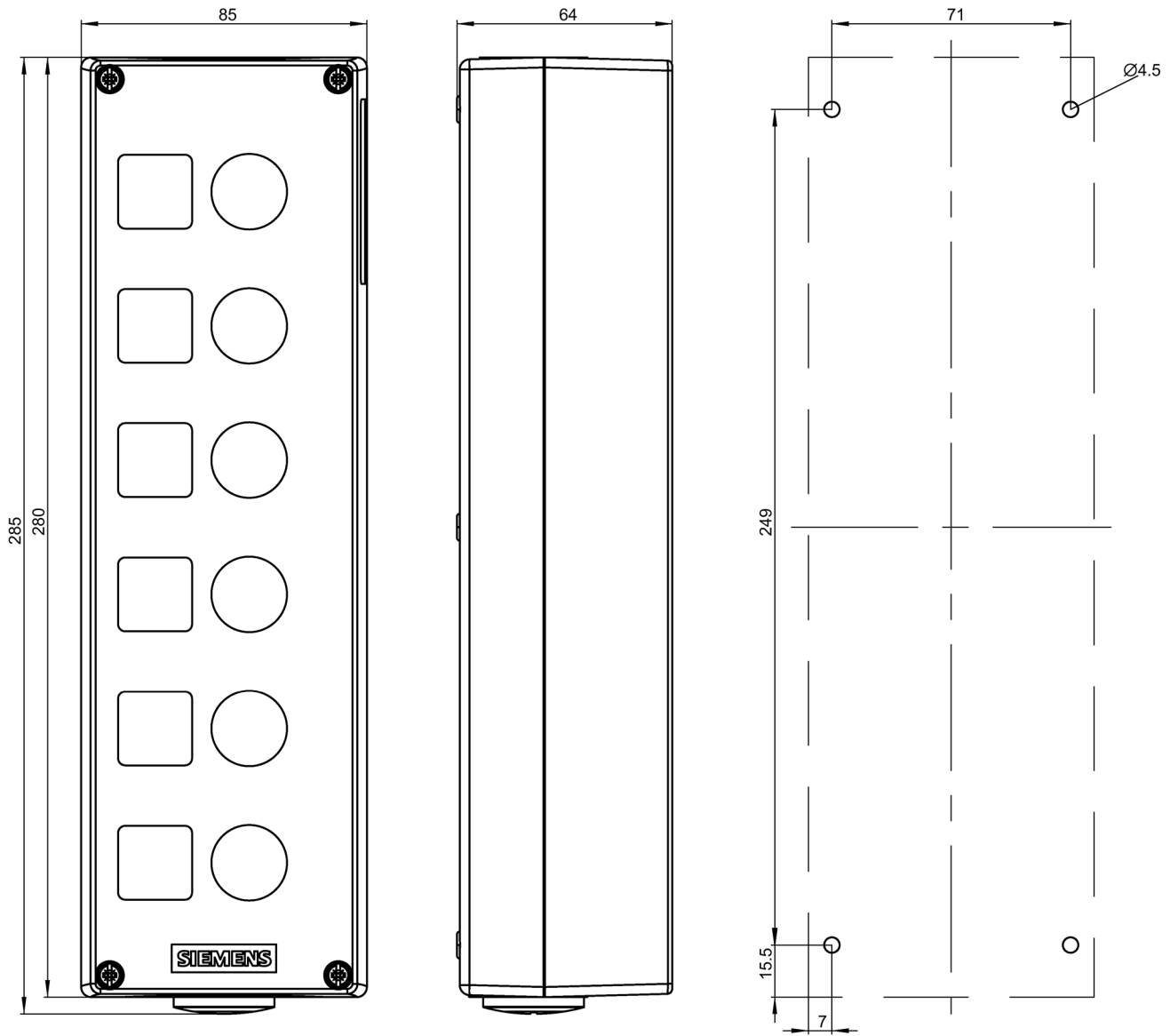
Article No.: 3SU1854-0AA00-0AB1



The thickness of the enclosure cover is 4 mm

Enclosure with 6 command points with recess for labeling plate

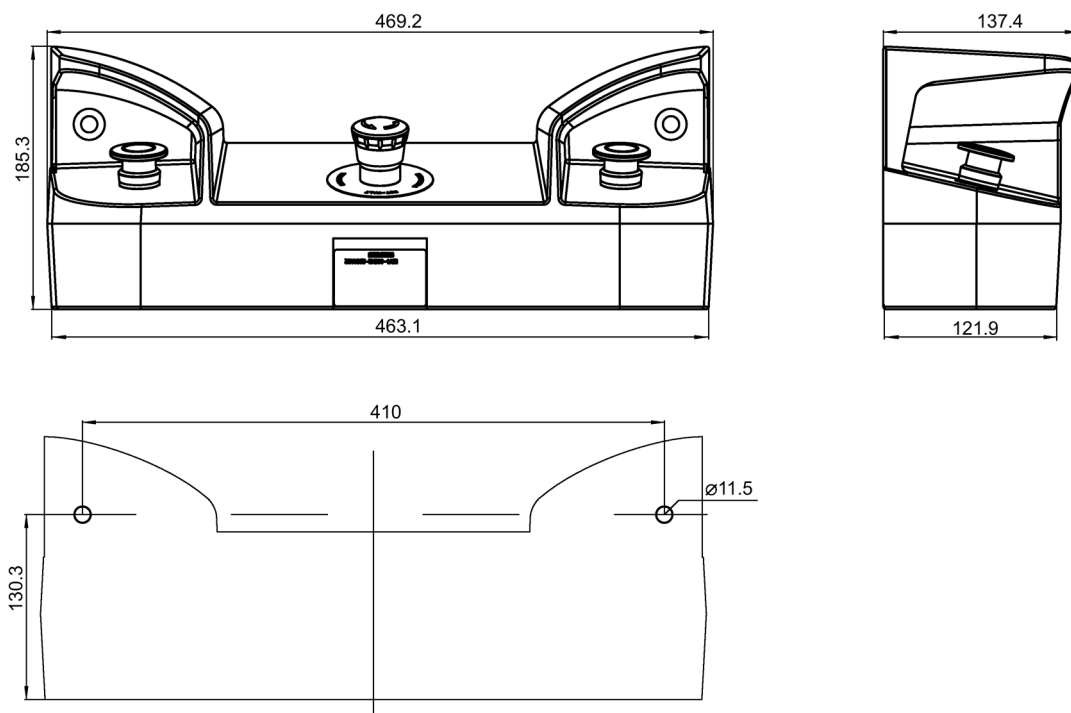
Article No.: 3SU1856-0AA00-0AB1



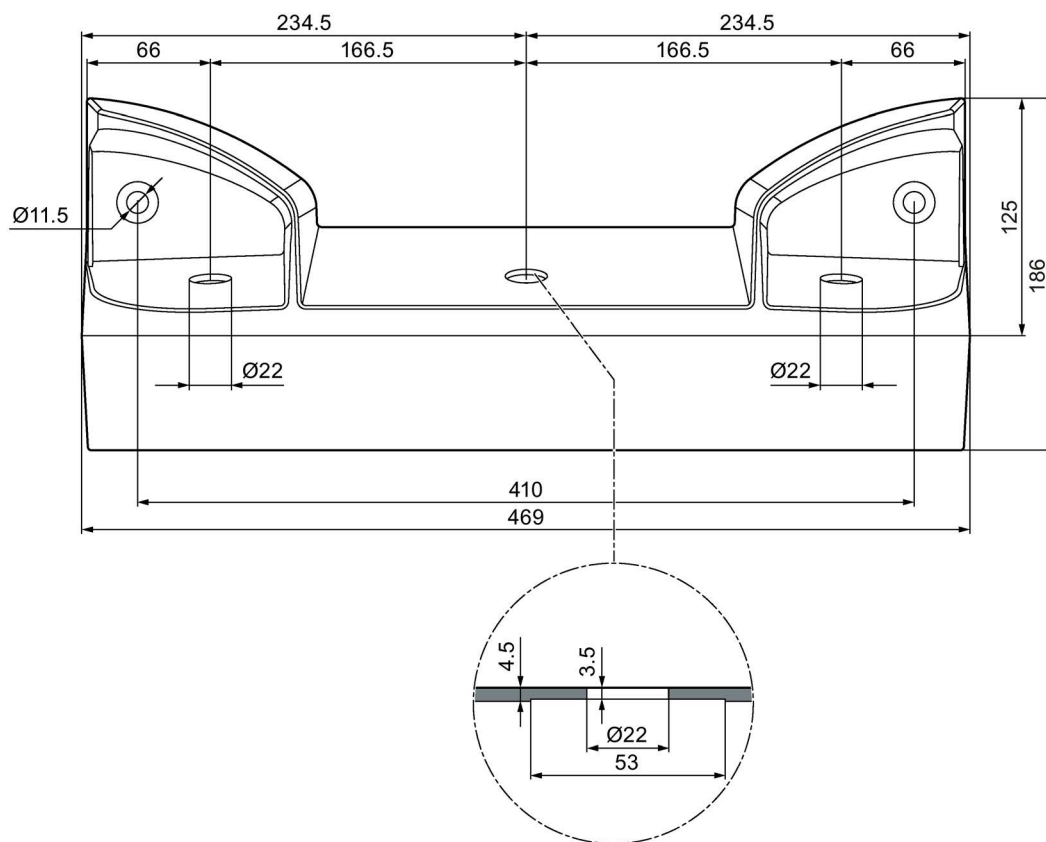
The thickness of the enclosure cover is 4 mm

14.6.3 Two-hand operation console

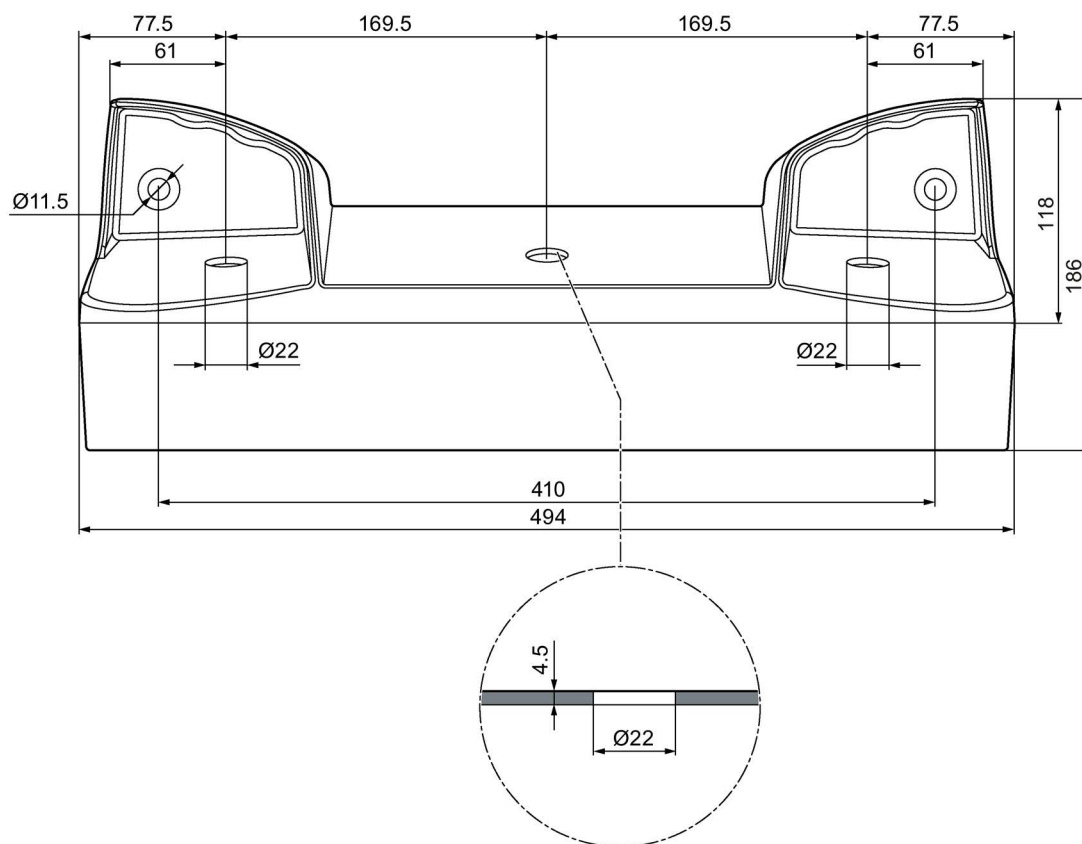
Article No.: 3SU1803-3NB00-0AE1



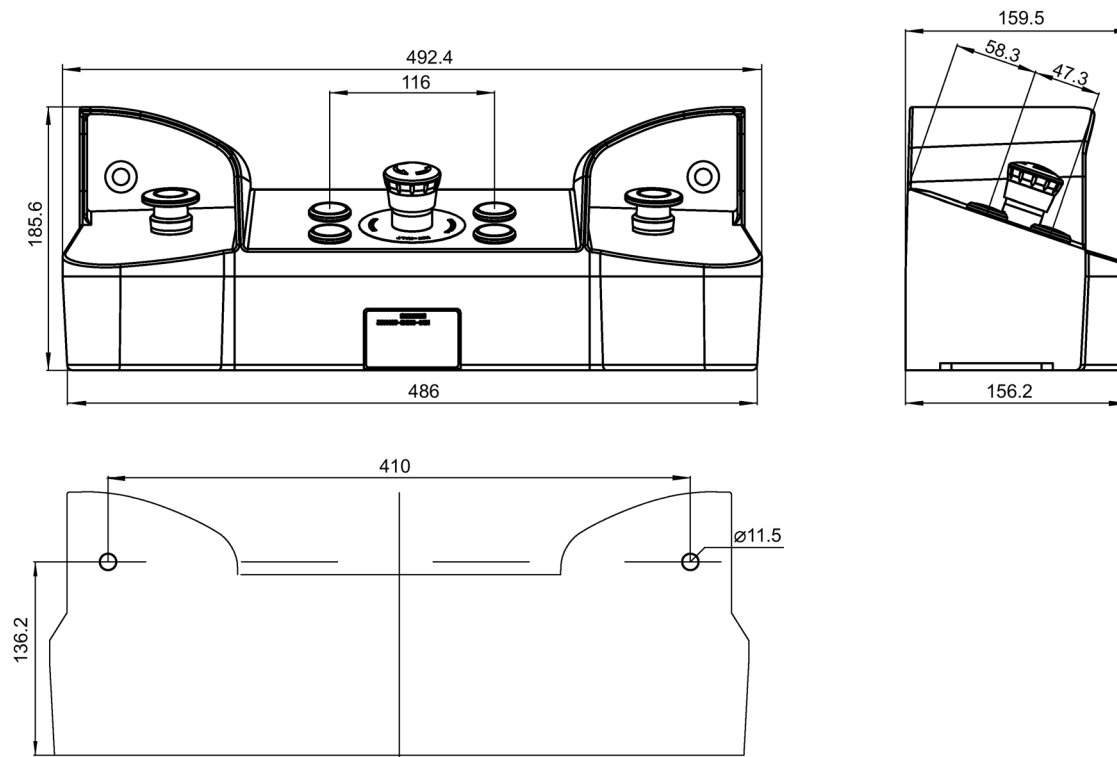
Article No.: 3SU1803-3AA00-0AA1

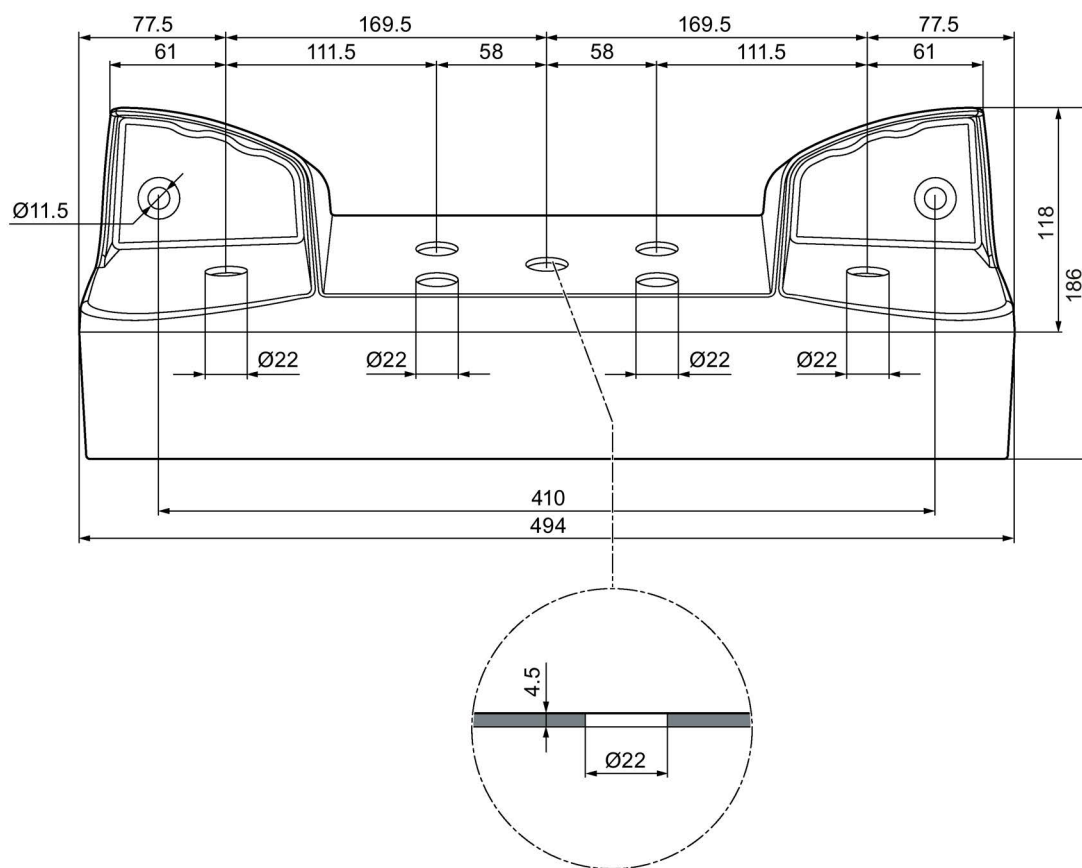


Article No.: 3SU1853-3AA00-0AA1



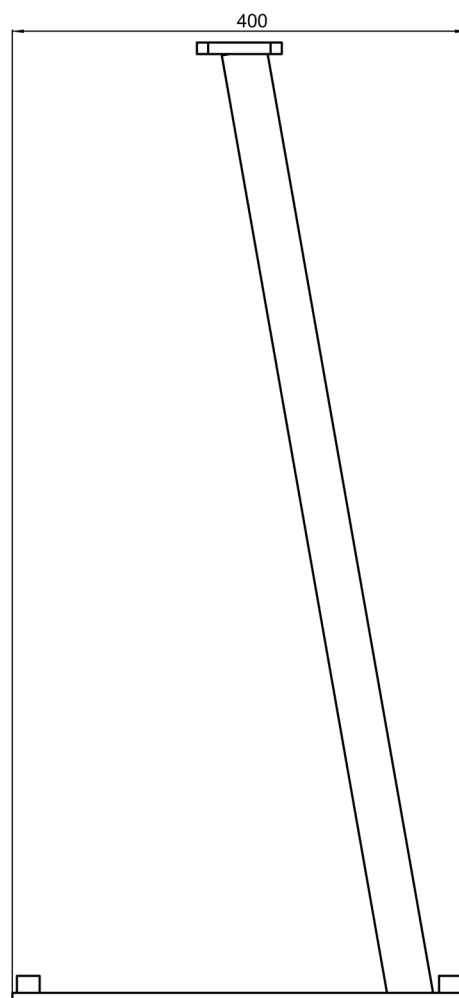
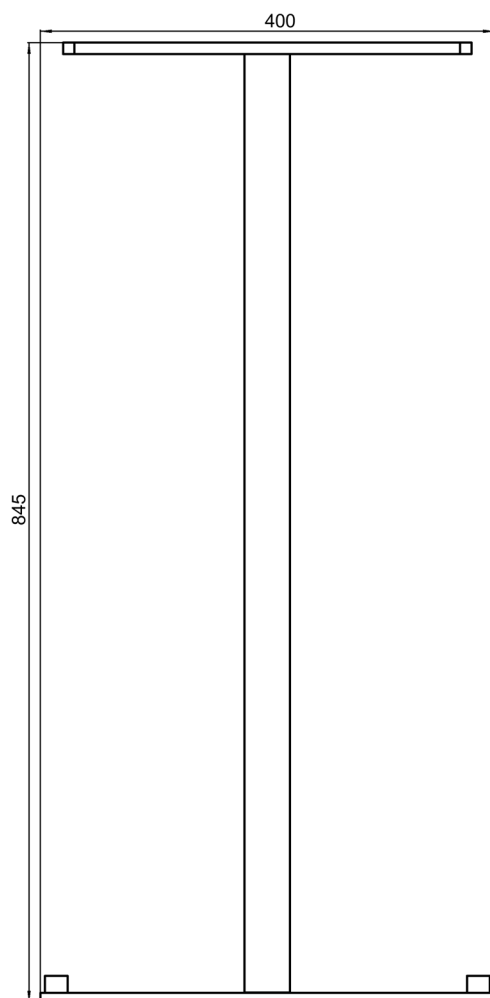
Article No.: 3SU1853-3NB00-1AD1





Stand for two-hand operation console

Article No.: 3SU1950-0HN10-0AA0



14.7 Accessories

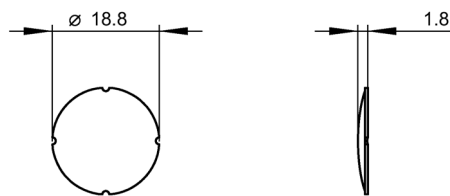
14.7.1 Labels and label holders

14.7.1.1 Labels

Insert labels

Article No.: 3SU1900-0AB71-0AA0

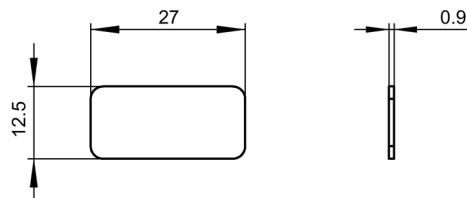
3SU1900-0AB(1,6,7)(1,6)-0(A,D,E,Q,R).0



Labeling plate 12.5 mm x 27 mm

Article No.: 3SU1900-0AC81-0AA0

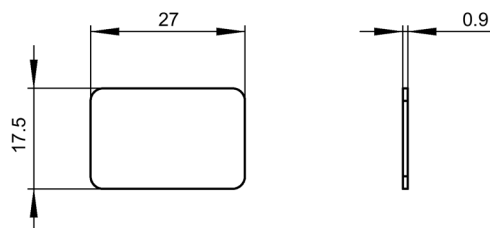
3SU1900-0AC..-0..0



Labeling plate 17.5 mm x 27 mm

Article No.: 3SU1900-0AD16-0AA0

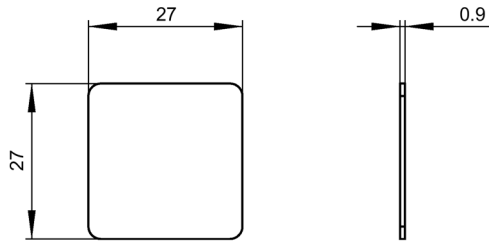
3SU1900-0AD..-0..0



Labeling plate 27 mm x 27 mm for sticking or snapping onto enclosure

Article No.: 3SU1900-0AE16-0AA0

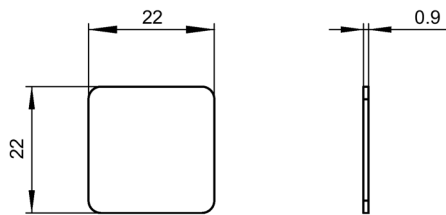
3SU1900-0AE..-0..0



Labeling plate 22 mm x 22 mm for sticking onto enclosure

Article No.: 3SU1900-0AF16-0AA0

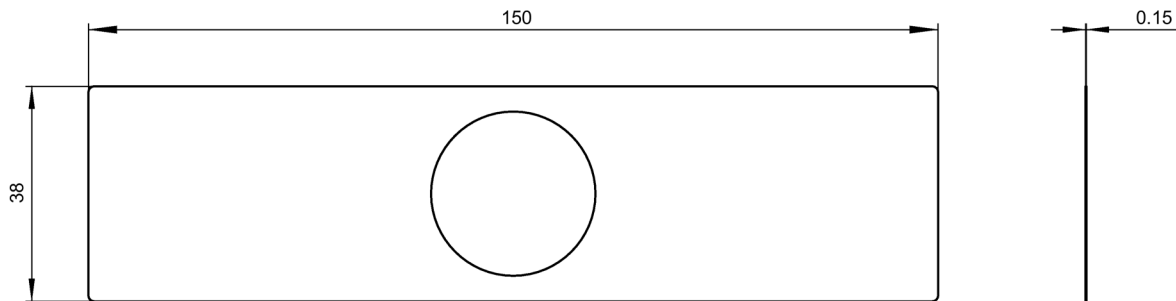
3SU1900-0AF..-0..0



Labeling plate for enclosures with EMERGENCY STOP

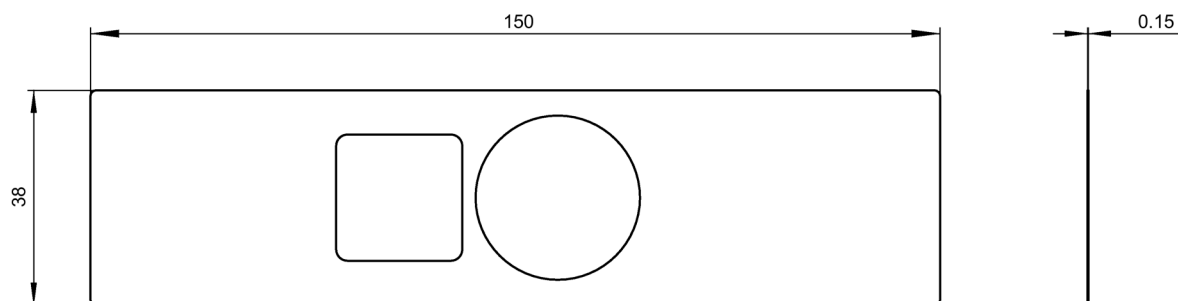
Article No.: 3SU1900-0BE31-0AA0

3SU1900-0BE31-0A(A,S)0



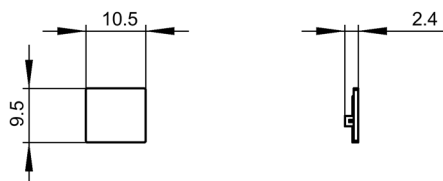
Labeling plates for enclosures with EMERGENCY STOP with recess

Article No.: 3SU1900-0BF31-0AA0



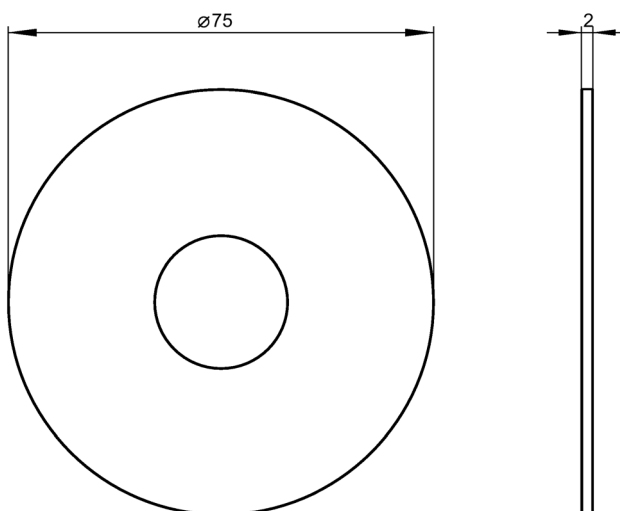
Unit labeling plate

Article No.: 3SU1900-0AY61-0AA0



EMERGENCY STOP backing plate diameter 45 mm

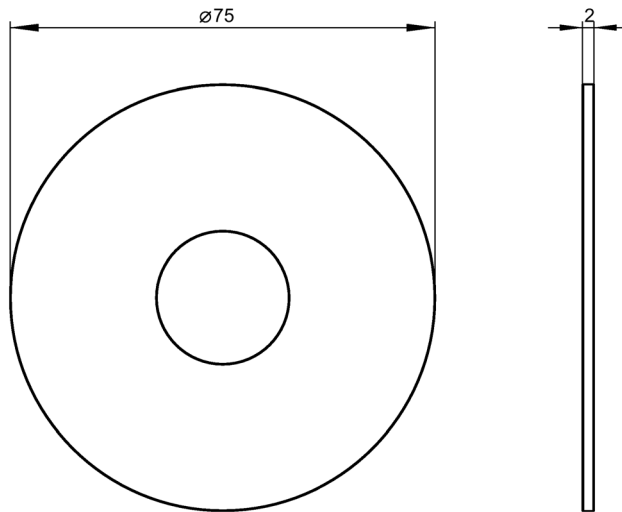
Article No.: 3SU1900-0BA31-0AA0



EMERGENCY STOP backing plate diameter 75 mm

Article No.: 3SU1900-0BB31-0AA0

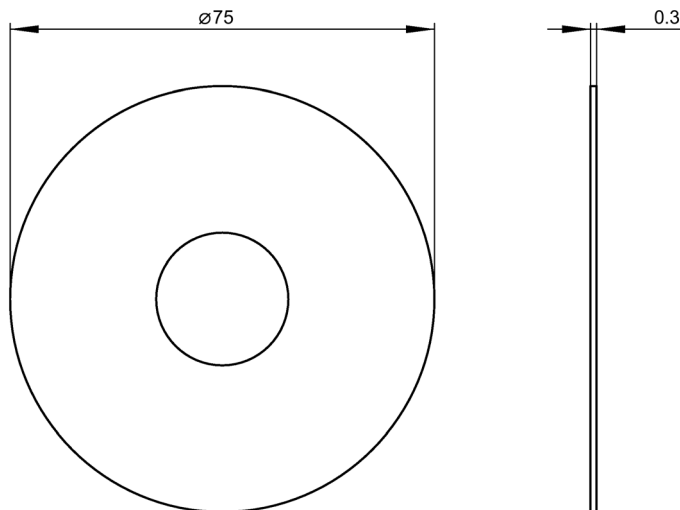
3SU1900-0BB31-0A(A,S,T)0



EMERGENCY STOP backing plate diameter 75 mm

Article No.: 3SU1900-0BC31-0DA0

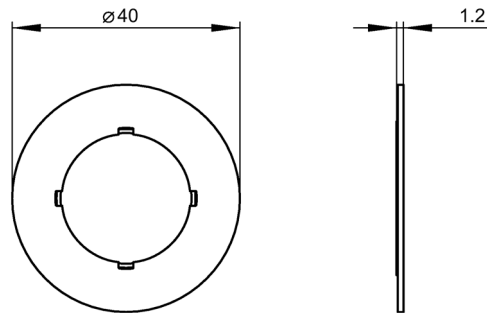
3SU1900-0BC31-0(A,D,G,J,L,M,N)(A,B,Q,S,T)0



Backing plate for potentiometer

Article No.: 3SU1900-0BG16-0RT0

3SU1900-0BG16-0(A,R)(A,T,U)0



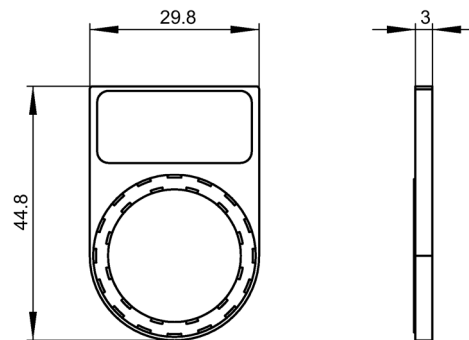
14.7.1.2

Label holders

Label holder for labeling plates with rounded bottom 12.5 mm x 27 mm

Article No.: 3SU1900-0AG10-0AA0 adhesive

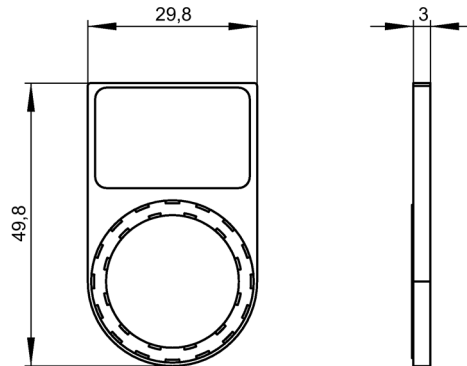
Article No.: 3SU1900-0AR10-0AA0 snap-on



Label holder for labeling plates with rounded bottom 17.5 mm x 27 mm

Article No.: 3SU1900-0AG10-0AA0 adhesive

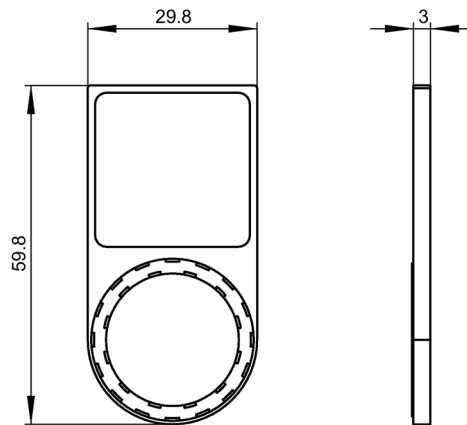
Article No.: 3SU1900-0AS10-0AA0 snap-on



Label holder for labeling plates with rounded bottom 27 mm x 27 mm

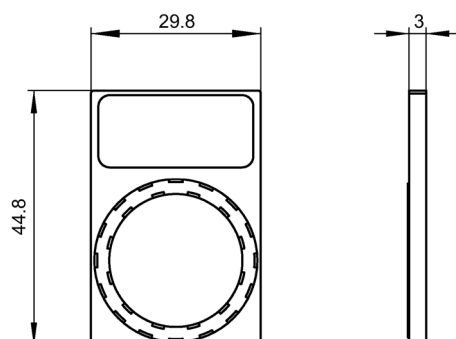
Article No.: 3SU1900-0AJ10-0AA0 adhesive

Article No.: 3SU1900-0AT10-0AA0 snap-on



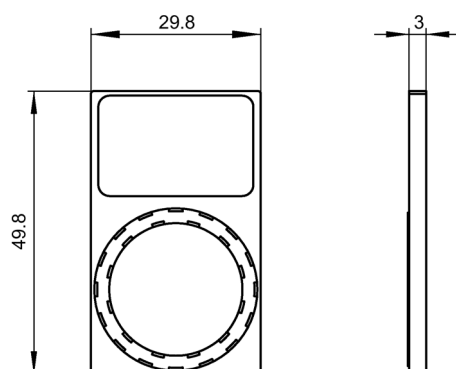
Label holder for labeling plates with square bottom 12.5 mm x 27 mm self-adhesive

Article No.: 3SU1900-0AN10-0AA0



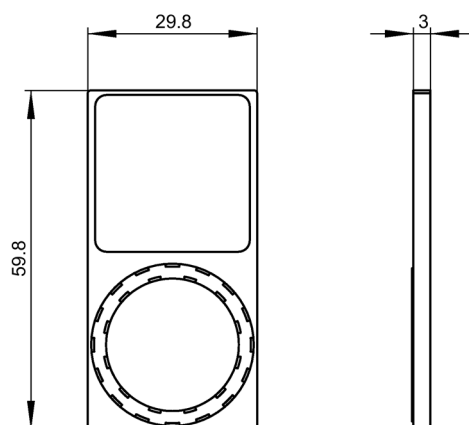
Label holder for labeling plates with square bottom 17.5 mm x 27 mm self-adhesive

Article No.: 3SU1900-0AP10-0AA0



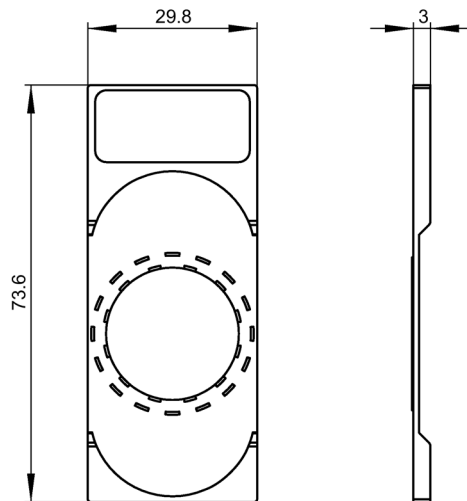
Label holder for labeling plates with square bottom 27 mm x 27 mm self-adhesive

Article No.: 3SU1900-0AQ10-0AA0



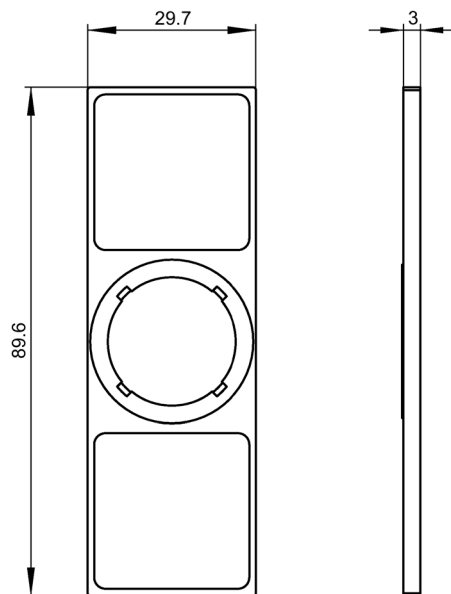
Label holder for twin pushbuttons self-adhesive

Article No.: 3SU1900-0AK10-0AA0



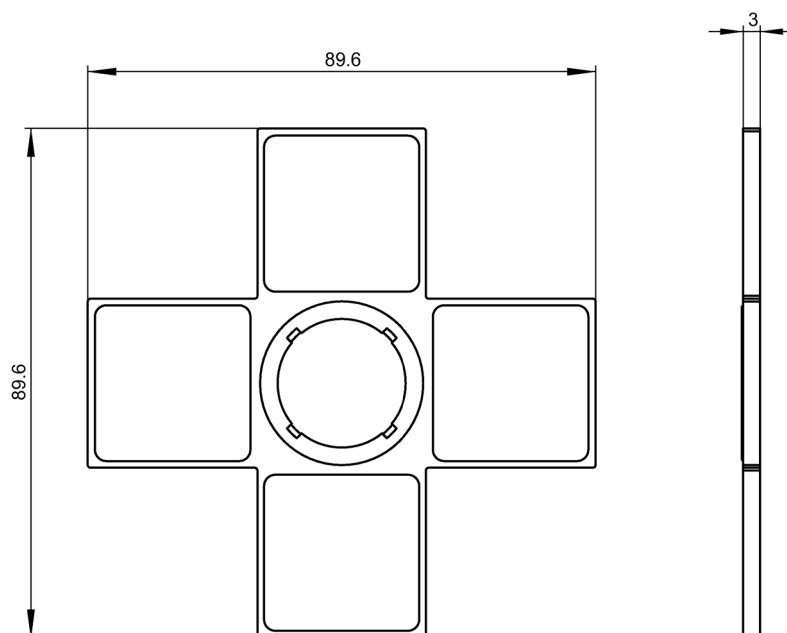
Label holder for coordinate switches self-adhesive

Article No.: 3SU1900-0AL10-0AA0



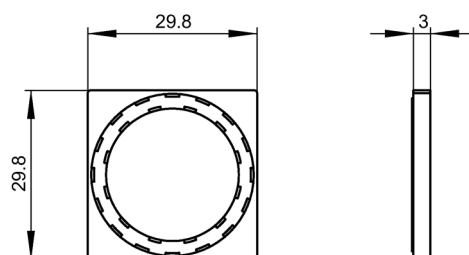
Label holder for coordinate switches self-adhesive

Article No.: 3SU1900-0AM10-0AA0



Single frame, square

Article No.: 3SU1900-0AX10-0AA0



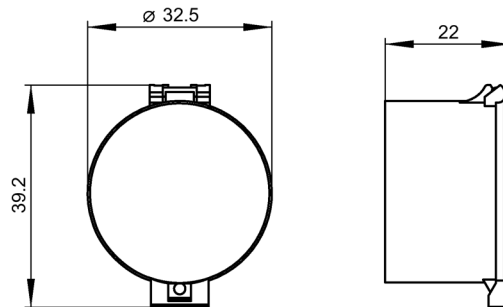
14.7.2 Protection

14.7.2.1 Protective caps

Sealable cap for pushbuttons, flat

Article No.: 3SU1900-0DA10-0AA0

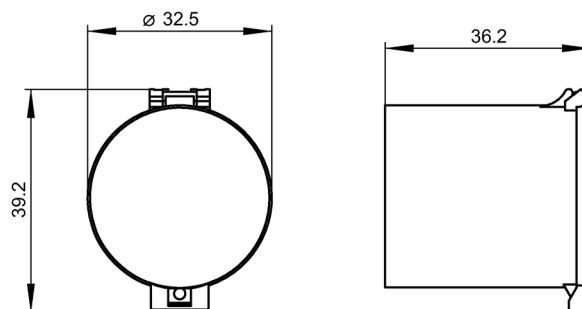
3SU1900-0DA(1,7)0-0AA0

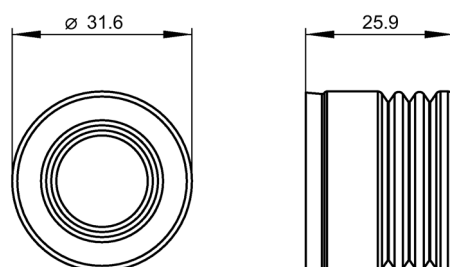
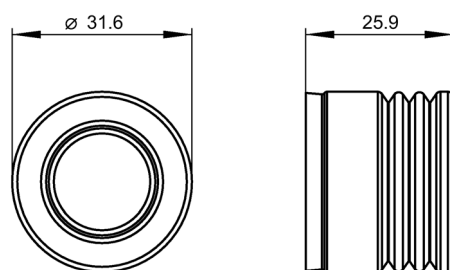
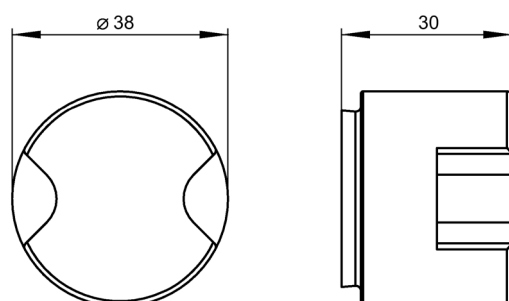


Sealable cap for pushbuttons, raised

Article No.: 3SU1900-0EL10-0AA0

3SU1900-0EL(1,7)0-0AA0

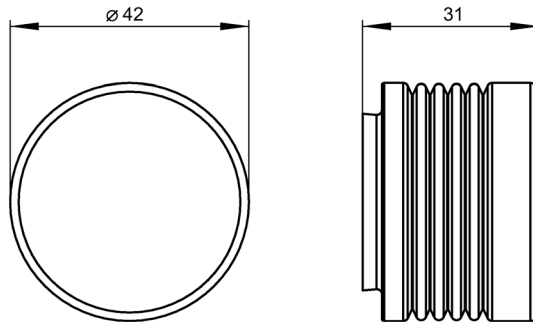


Protective cap for pushbuttons, flat**Article No.: 3SU1900-0DB70-0AA0****Protective cap for pushbuttons, raised****Article No.: 3SU1900-0DC70-0AA0****Protective cap for selectors, short****Article No.: 3SU1900-0DD70-0AA0**

Protective cap for mushroom pushbuttons, diameter 40 mm

Article No.: 3SU1900-0DE70-0AA0

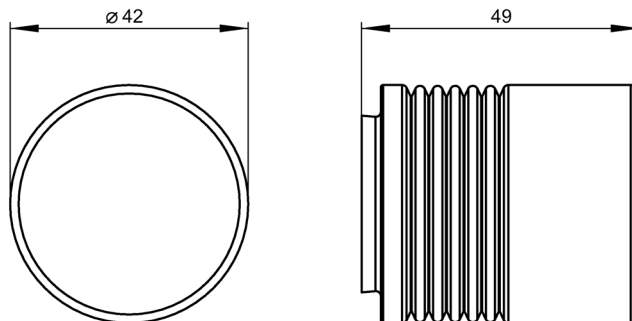
3SU1900-0(D,E)(E,G)70-0AA0



Protective cap for EMERGENCY STOP

Article No.: 3SU1900-0DF70-0AA0

3SU1900-0(D,E)(F,H)70-0AA0

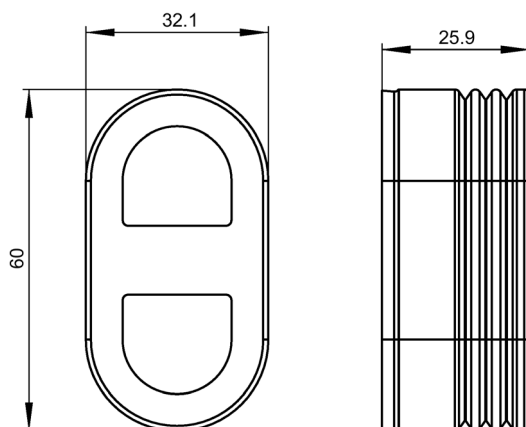


Protective cap for twin pushbuttons

Article No.: 3SU1900-0DG70-0AA0

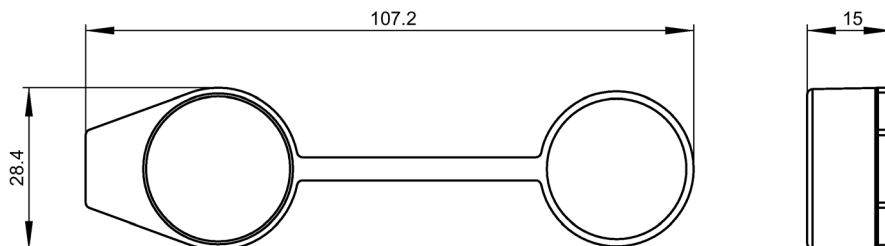
3SU1900-0(D,E)(H,K)70-0AA0

3SU1900-0(D,E)(G,J)70-0AA0



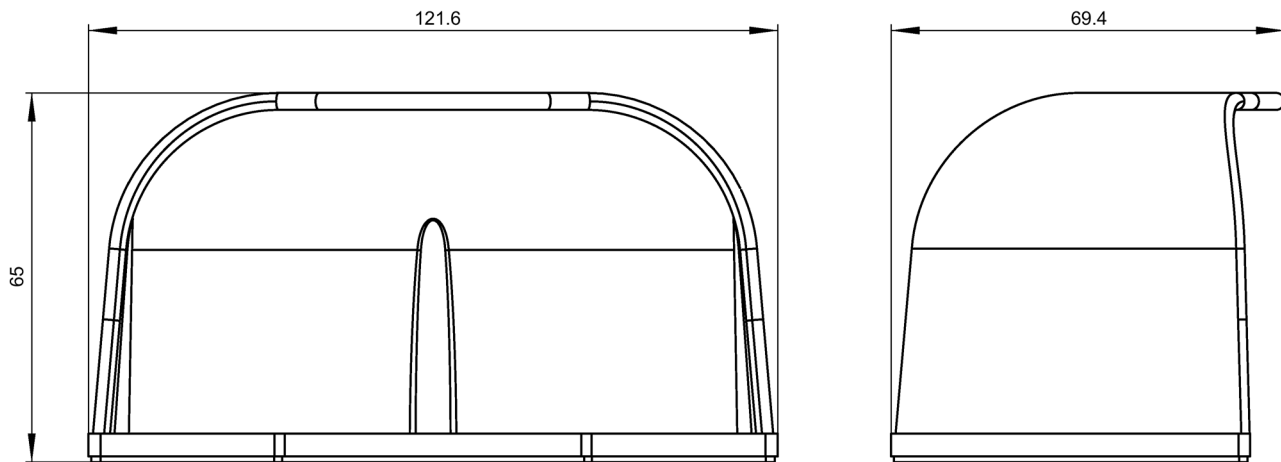
Dust cap for key-operated switches

Article No.: 3SU1900-0EB10-0AA0



14.7.2.2 Protection for sensor switch

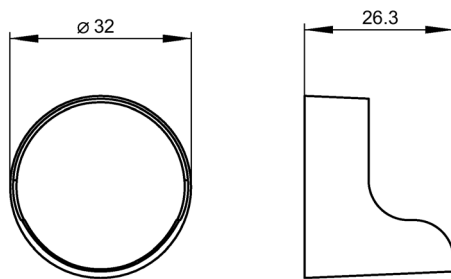
Article No.: 3SU1900-0EC10-0AA0



14.7.2.3 Protective collars

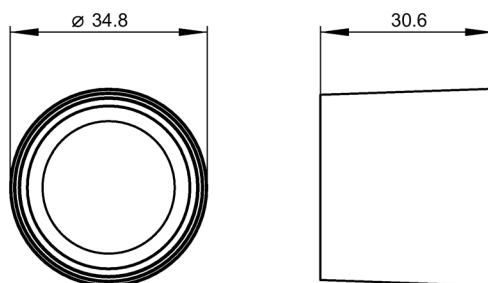
Sun collar

Article No.: 3SU1900-0DJ10-0AA0



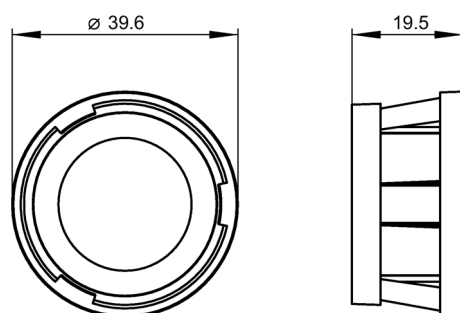
360° protective collar for pushbuttons and selectors, short

Article No.: 3SU1900-0DW10-0AA0



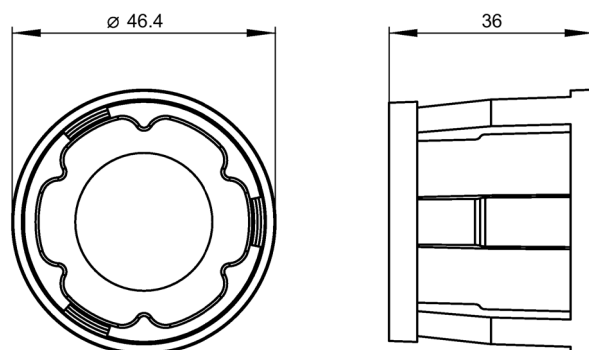
360° protective collar for pushbuttons, visibility from the side

Article No.: 3SU1950-0DK80-0AA0



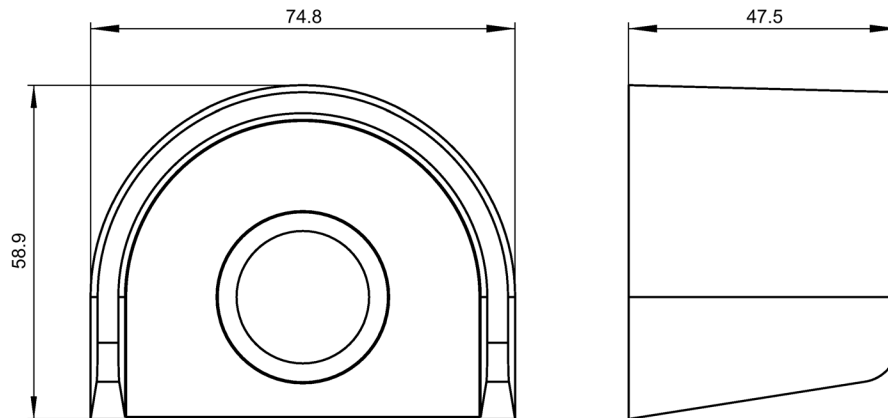
360° protective collar for mushroom pushbuttons 40 mm, visibility from the side

Article No.: 3SU1950-0DL80-0AA0



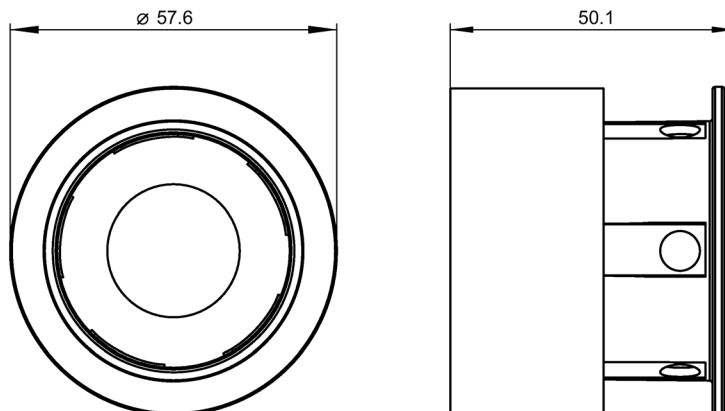
Protective collar for EMERGENCY STOP

Article No.: 3SU1900-0DY30-0AA0



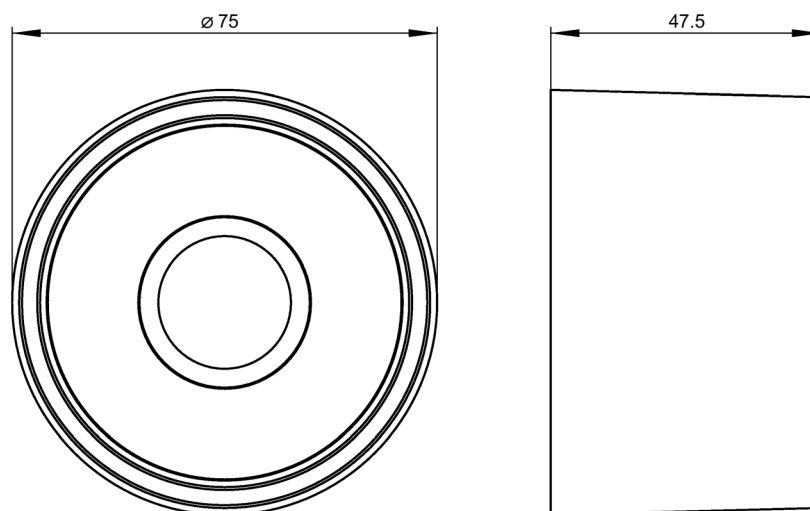
Protective collar for padlocks

Article No.: 3SU1950-0DX30-0AA0



360° protective collar for EMERGENCY STOP, SEMI-Industry

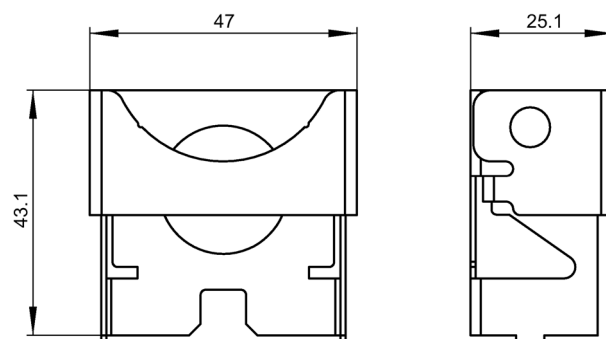
Article No.: 3SU1900-0EA30-0AA0



14.7.2.4 Locking devices

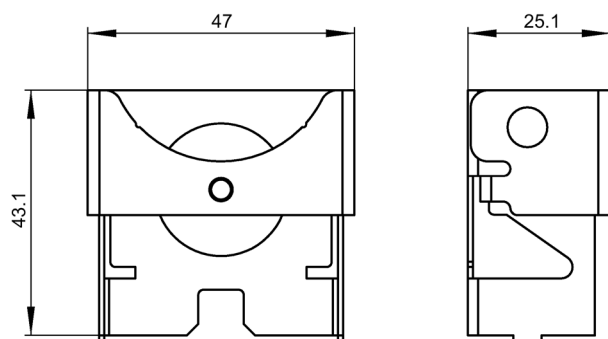
Locking device for pushbuttons, flat

Article No.: 3SU1950-0DM80-0AA0



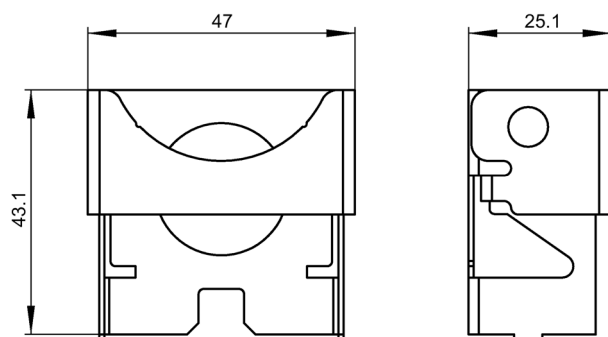
Locking device for pushbuttons, raised

Article No.: 3SU1950-0DN80-0AA0



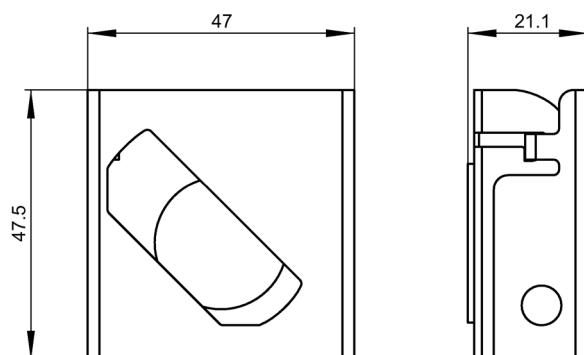
Locking device for mushroom pushbuttons, diameter 30 mm and 40 mm

Article No.: 3SU1950-0DP80-0AA0



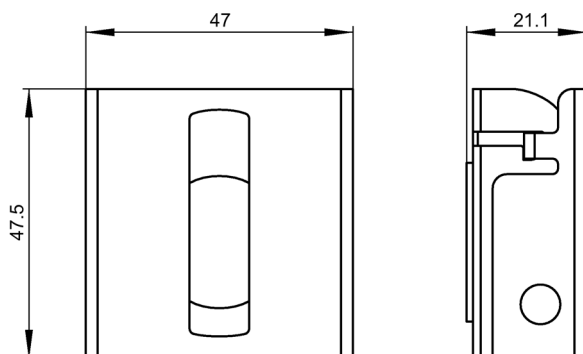
Locking device for selector switches, in the left position

Article No.: 3SU1950-0DQ80-0AA0



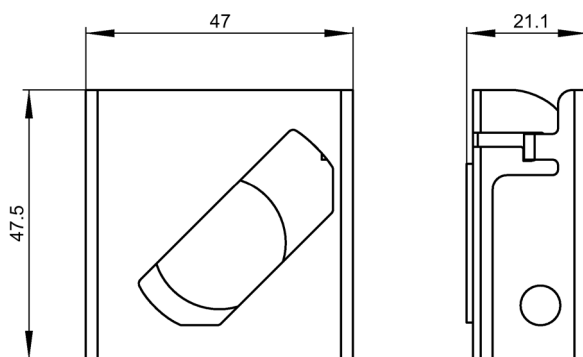
Locking device for selector switches, in the center position

Article No.: 3SU1950-0DR80-0AA0



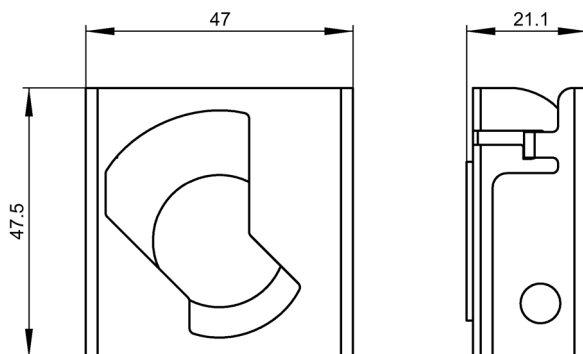
Locking device for selector switches, in the right position

Article No.: 3SU1950-0DS80-0AA0



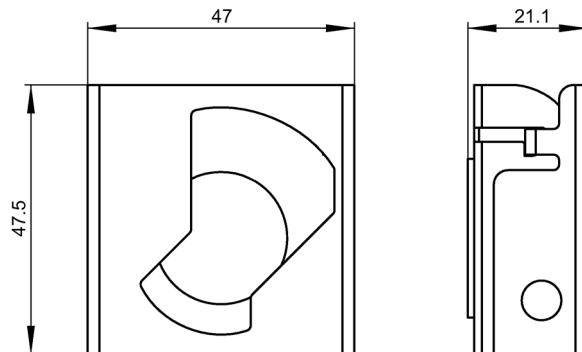
Locking device for selector switches, window from center to left, blocked on right

Article No.: 3SU1950-0DU80-0AA0



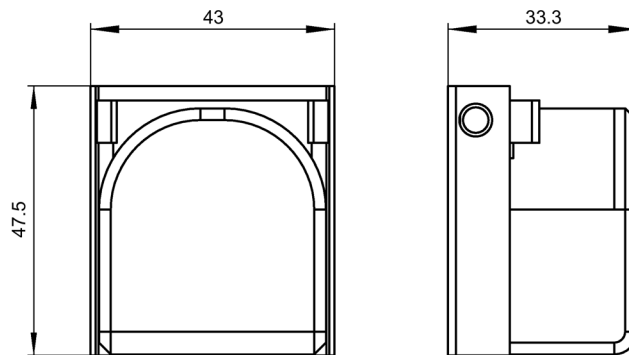
Locking device for selector switches, window from center to right, blocked on left

Article No.: 3SU1950-0DT80-0AA0



Cover for locking device

Article No.: 3SU1950-0DV80-0AA0

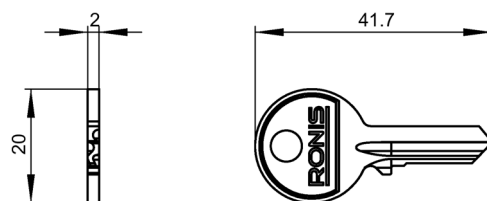


14.7.3 Keys

Ronis keys

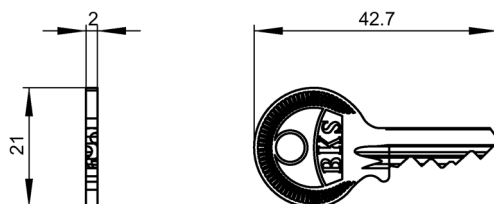
Article No.: 3SU1950-0FB80-0AA0

3SU1950-0F(B,C)80-0AA0

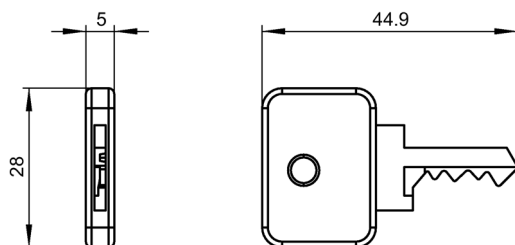


BKS keys**Article No.: 3SU1950-0FD80-0AA0**

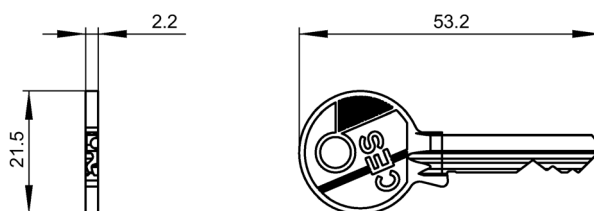
3SU1950-0F(D,E,F,G,H)80-0AA0

**OMR keys****Article No.: 3SU1950-0FJ50-0AA0**

3SU1950-0F(J,K,L,M)(1,2,3,5)0-0AA0

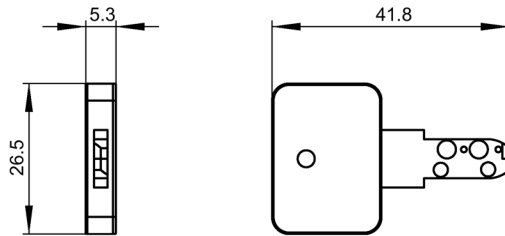
**CES LSG1 keys****Article No.: 3SU1950-0FN80-0AA0**

3SU1950-0F(N,P)80-0AA0



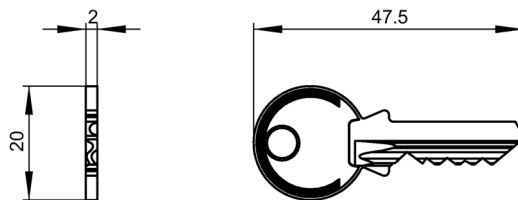
CES VL5 keys

Article No.: 3SU1950-0FQ80-0AA0



IKON keys

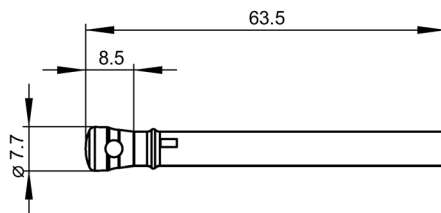
Article No.: 3SU1950-0FR80-0AA0



ID keys

Article No.: 3SU1900-0FV40-0AA0

3SU1900-0F(U,V,W,X,Y).0-0AA0

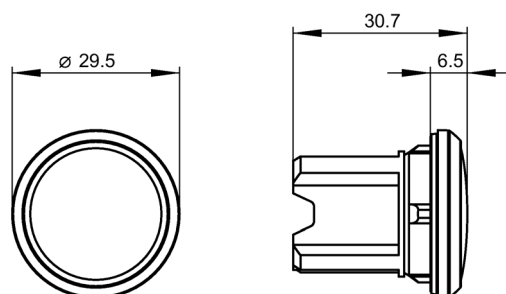


14.7.4 Actuators

Sealing plug

Article No.: 3SU1950-0FA80-0AA0

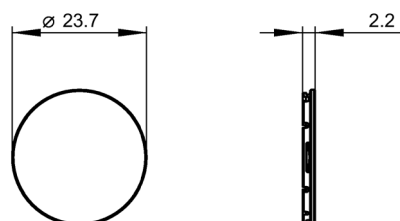
3SU19(0,3,5)0-0FA(1,8)0-0AA0



Flat button

Article No.: 3SU1900-0FT20-0AA0

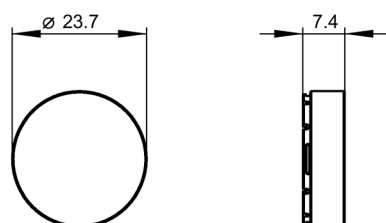
3SU190(0,1)-0FT.0-0AA0



Raised button

Article No.: 3SU1900-0FS20-0AA0

3SU190(0,1)-0FS.0-0AA0



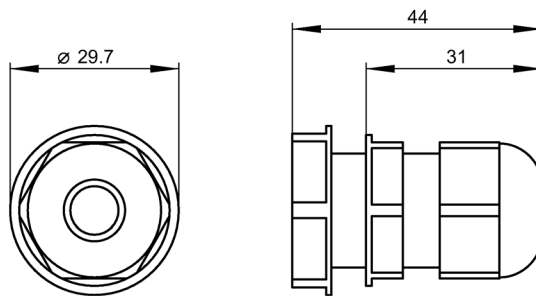
14.7.5 Accessories for enclosures

14.7.5.1 Cable glands and connection pieces

Cable glands for plastic enclosure

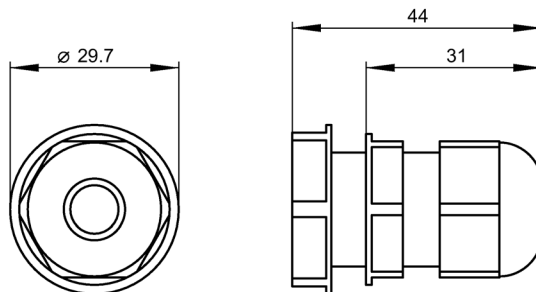
Metric M20 cable gland

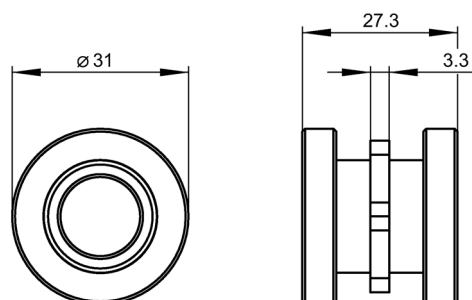
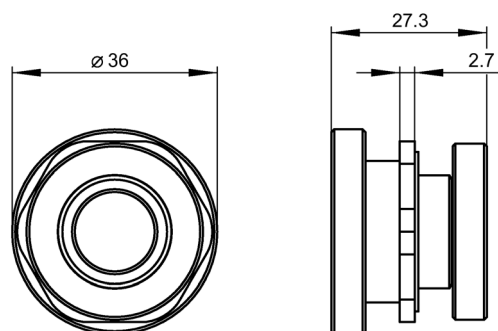
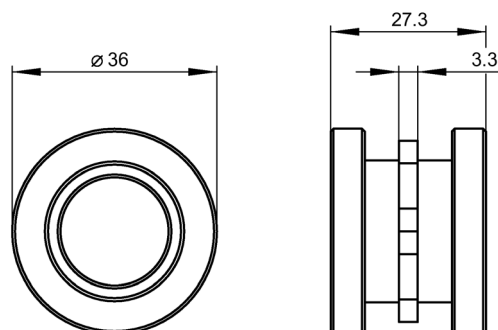
Article No.: 3SU1900-0HG10-0AA0



Metric M25 cable gland

Article No.: 3SU1900-0HH10-0AA0

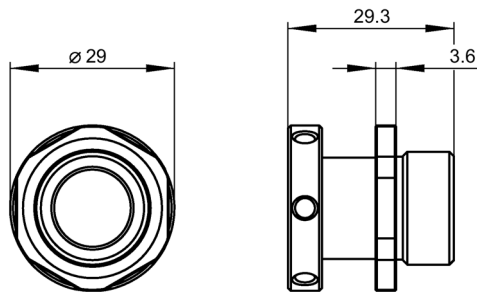


Connection pieces for plastic enclosures**M20/M20 connection piece****Article No.: 3SU1900-0HJ10-0AA0****M20/M25 connection piece****Article No.: 3SU1900-0HK10-0AA0****M25/M25 connection piece****Article No.: 3SU1900-0HL10-0AA0**

Connection pieces for metal enclosures

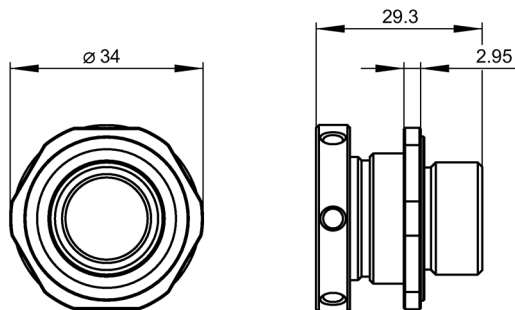
M20/M20 connection piece

Article No.: 3SU1950-0HJ10-0AA0



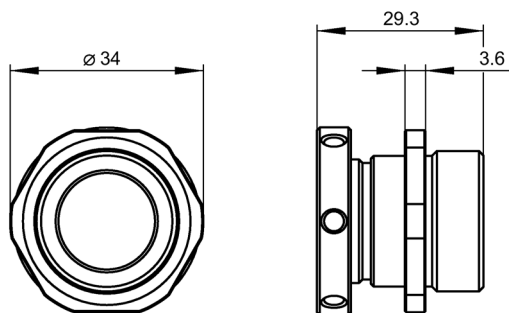
M20/M25 connection piece

Article No.: 3SU1950-0HK10-0AA0



M25/M25 connection piece

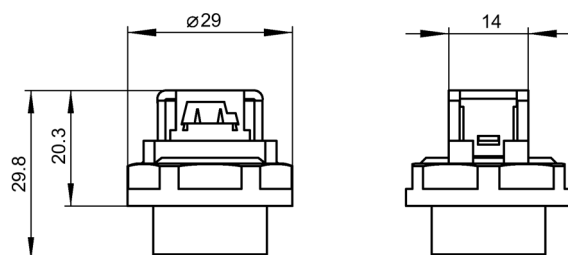
Article No.: 3SU1950-0HL10-0AA0



14.7.5.2 Adapters for AS-i shaped cables

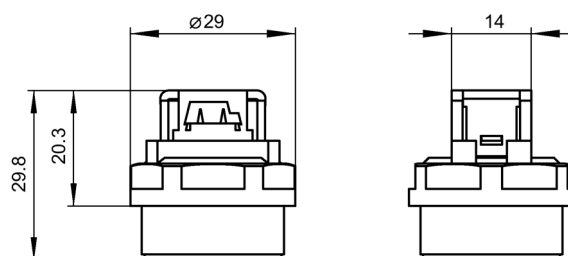
Adapter for AS-i shaped cables, insulation piercing method M20

Article No.: 3SU1900-0HX10-0AA0



Adapter for AS-i shaped cables, insulation piercing method M25

Article No.: 3SU1900-0HY10-0AA0



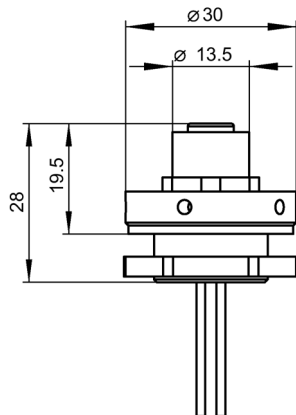
14.7.5.3 Adapters for AS-i tab connection

Adapter for plastic enclosure

M12 socket, M20

Article No.: 3SU1930-0HA10-0AA0

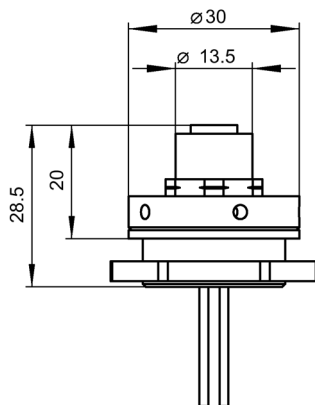
3SU1930-0H(A,P,T)10-0AA0



M12 socket, M25

Article No.: 3SU1930-0HB10-0AA0

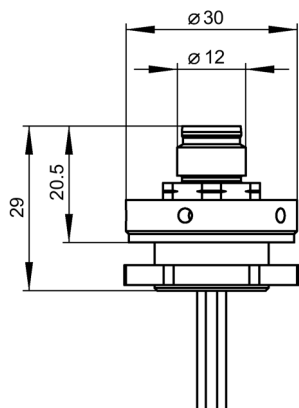
3SU1930-0H(B,Q,U)10-0AA0



M12 connector, M20

Article No.: 3SU1930-0HC10-0AA0

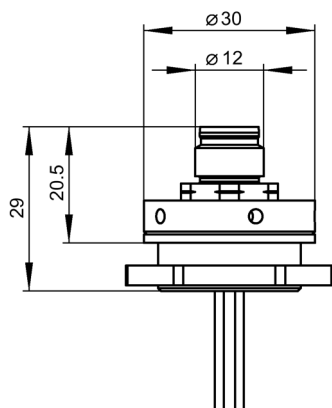
3SU1930-0H(C,R,V)10-0AA0



M12 connector, M25

Article No.: 3SU1930-0HD10-0AA0

3SU1930-0H(D,S,W)10-0AA0

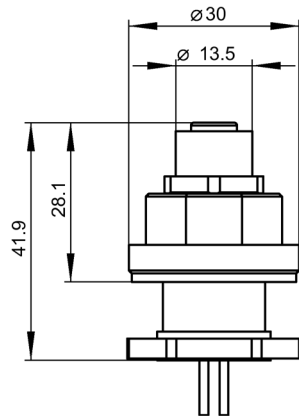


Adapter for metal enclosure

M12 socket, M20

Article No.: 3SU1950-0HA10-0AA0

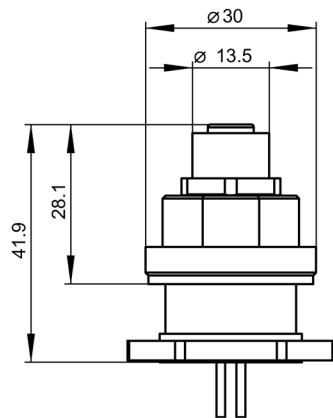
3SU1950-0H(A,P,T)10-0AA0



M12 socket, M25

Article No.: 3SU1950-0HB10-0AA0

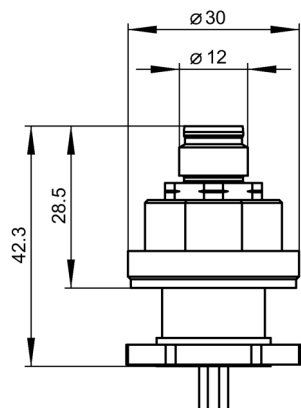
3SU1950-0H(B,Q,U)10-0AA0



M12 connector, M20

Article No.: 3SU1950-0HC10-0AA0

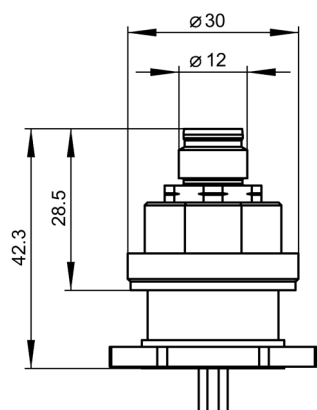
3SU1950-0H(C,R,V)10-0AA0



M12 connector, M25

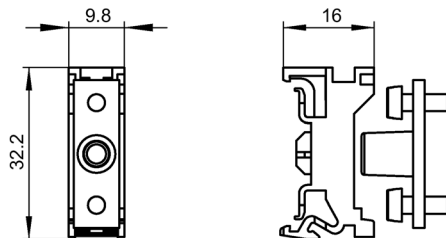
Article No.: 3SU1950-0HD10-0AA0

3SU1950-0H(D,S,W)10-0AA0



14.7.5.4 Enclosure cover monitoring

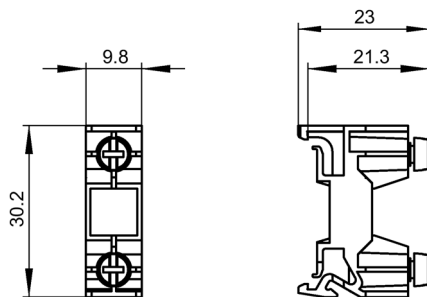
Article No.: 3SU1900-0HM10-0AA0



14.7.6 Miscellaneous accessories

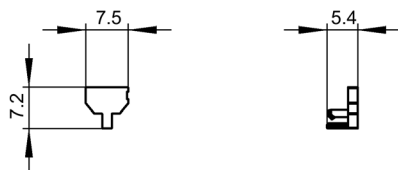
PCB carrier

Article No.: 3SU1900-0KA10-0AA0



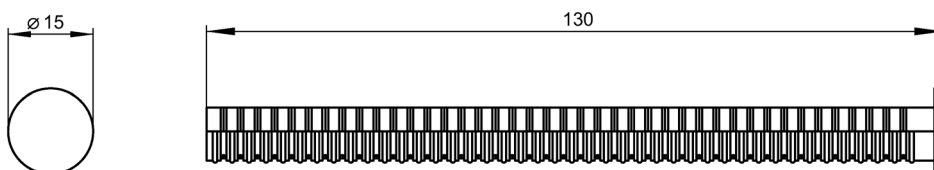
Pressure plate for selectors and locks

Article No.: 3SU1900-0KC10-0AA0



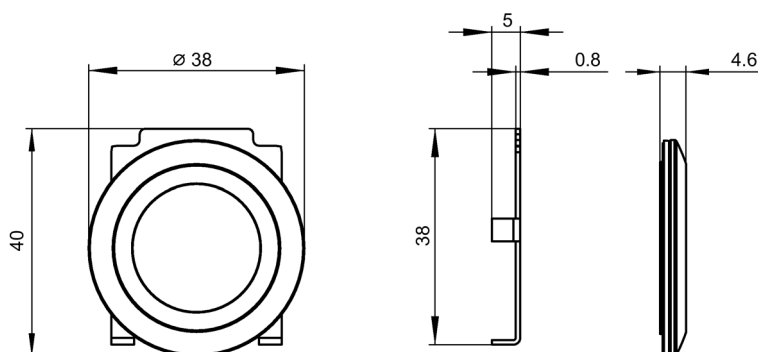
Extension plungers

Article No.: 3SU1900-0KG10-0AA0



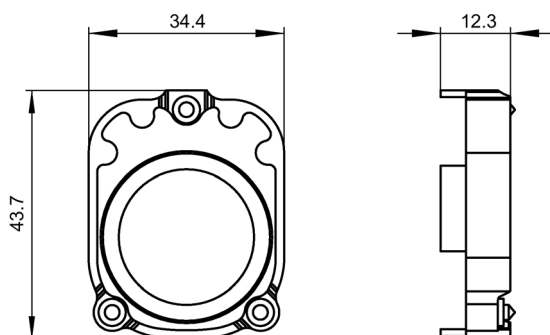
Adapter for installing 22.5 mm actuators in a 30.5 mm mounting hole

Article No.: 3SU1950-0KB10-0AA0



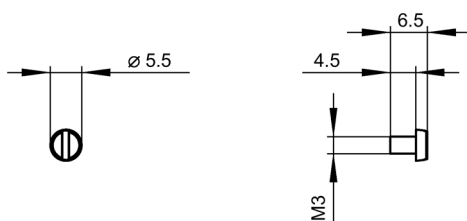
Adapter for actuators and indicators with front ring for flat mounting

Article No.: 3SU1950-0KJ80-0AA0



Grounding stud

Article No.: 3SU1950-0KK80-0AA0



Application examples

15.1 Examples of EMERGENCY STOP shutdown applications

15.1.1 Emergency stop shutdown to SIL 3 or PL e with a safety relay

Application

Two-channel emergency stop shutdown of a motor by a 3SK1 safety relay and power contactors.

Configuration

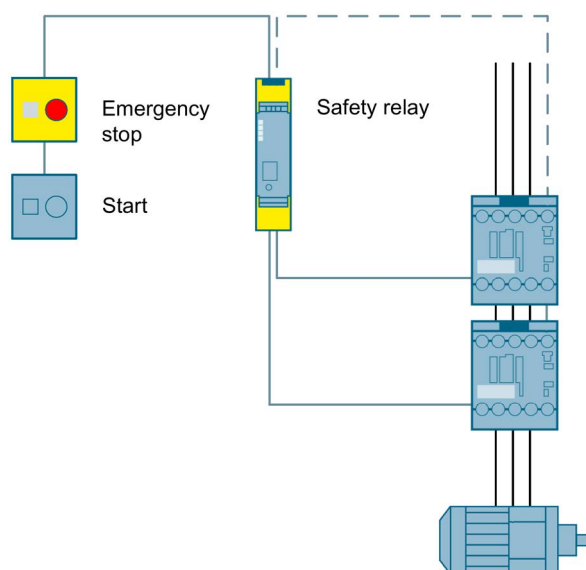
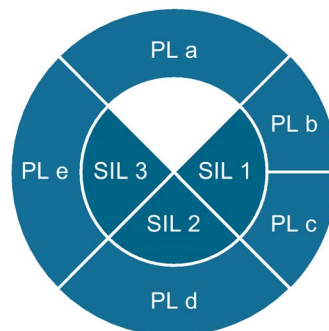


Image 15-1 Emergency stop shutdown to SIL 3 or PL e with a safety relay

Operating principle

The safety relay monitors the emergency stop device on two channels. When the emergency stop device is actuated, the safety relay opens the enabling circuits and switches the power contactors off in a safety-related way. If the emergency stop device is unlatched and the feedback circuit is closed, the Start button can be used to switch on again.



Safety-related components

Emergency stop device	Safety relay	Contactor
		
3SU1	3SK1	2x 3RT20

15.1.2 Emergency stop shutdown via AS-i with a Modular Safety System to SIL 3 or PL e

Application

Monitoring of multiple emergency stop devices via AS-i with a 3RK3 Modular Safety System.

Configuration

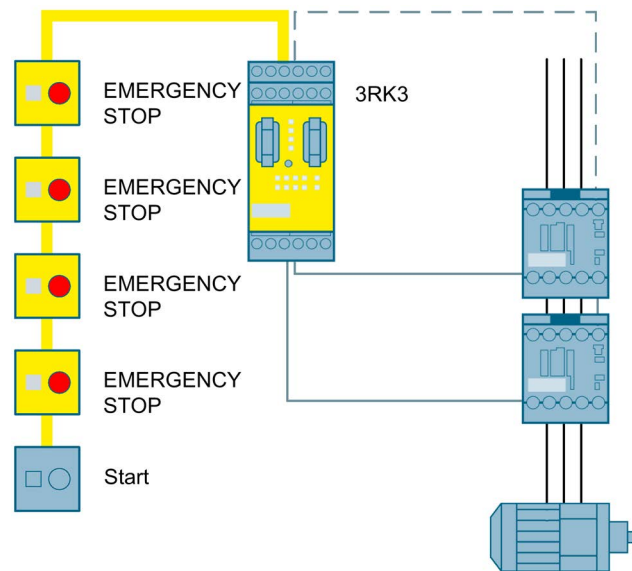
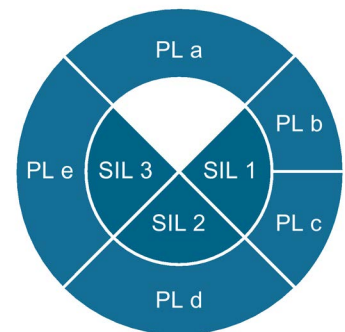


Image 15-2 Emergency stop shutdown via AS-i to SIL 3 or PL e with a Modular Safety System

Operating principle

The Modular Safety System monitors each of the two-channel emergency stop devices connected to AS-i. When one of the emergency stop devices is actuated, the Modular Safety System opens the enabling circuits and switches the power contactors off in a safety-related way. If the emergency stop device is unlatched and the feedback circuit is closed, the Start button can be used to switch on again.



Safety-related components

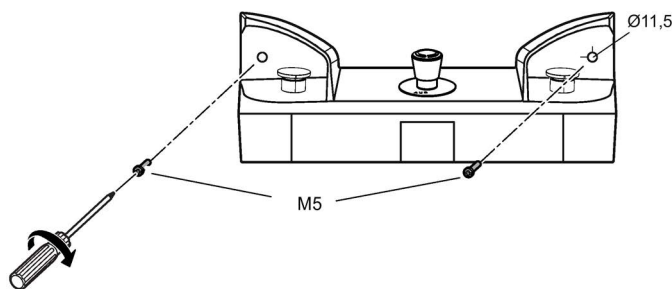
Emergency stop device	Modular Safety System	Contactors
		
3SU1	3RK3	2 x 3RT20

Note

In addition to the safety-related components, operation of an AS-i network requires an AS-i master and an AS-i power supply.

15.2 Examples of two-hand operation console applications

Two-hand operation console, wall-mounted



For further examples of applications refer to Chapter "Application examples (Page 441)"

15.2.1 Safety Evaluation Tool

The Safety Evaluation Tool for the standards IEC 62061 and ISO 13849-1 gets you straight to your goal. This TÜV-tested online tool provides you with swift and reliable help in assessing the safety functions of your machine. It provides you with a standard-compliant report that can be integrated into the documentation as a safety verification.

Link: Safety Evaluation Tool (<http://www.industry.siemens.com/topics/global/en/safety-integrated/maschinensicherheit/safety-evaluation-tool/Seiten/default.aspx>)

15.2.2 Two-hand operation to SIL 3 or PL e with a safety relay

Application

Two-hand operation consoles comprise two pushbuttons (e.g. mushroom pushbuttons or sensor switches) that must be pressed simultaneously to operate a machine. This prevents the operator from reaching into the danger zone during operation.

Configuration

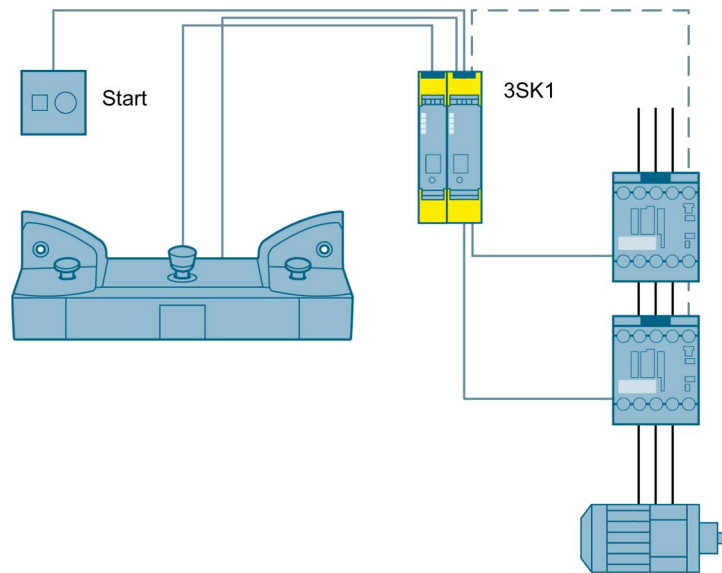


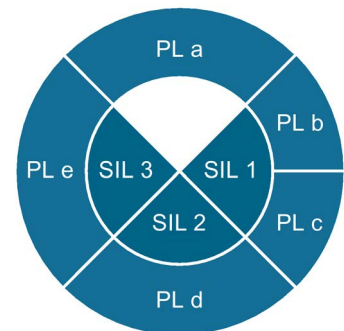
Image 15-3 Two-hand operation to SIL 3 or PL e with a safety relay

Operating principle

By imposing the condition of simultaneous pressing of both pushbuttons, the operator is restricted to the two-hand operation console and is thus unable to reach into the danger zone. The safety relay only switches the enabling circuits when both signals are active within 500 ms and the feedback circuit is closed.

If one of the two pushbuttons is released, the safety relay immediately switches the machine off in a safety-related manner.

After the emergency stop is actuated, the Start button must be used to restart.



Safety-related components

Two-hand operation console	Safety relay	Input expansion	Contactor
			
3SU18	3SK1	3SK1	2x 3RT20

15.2.3 Two-hand operation to SIL 3 or PL e with a Modular Safety System

Application

Two-hand operation consoles comprise two pushbuttons (e.g. mushroom pushbuttons or sensor switches) that must be pressed simultaneously to operate a machine. This prevents the operator from reaching into the danger zone during operation.

Configuration

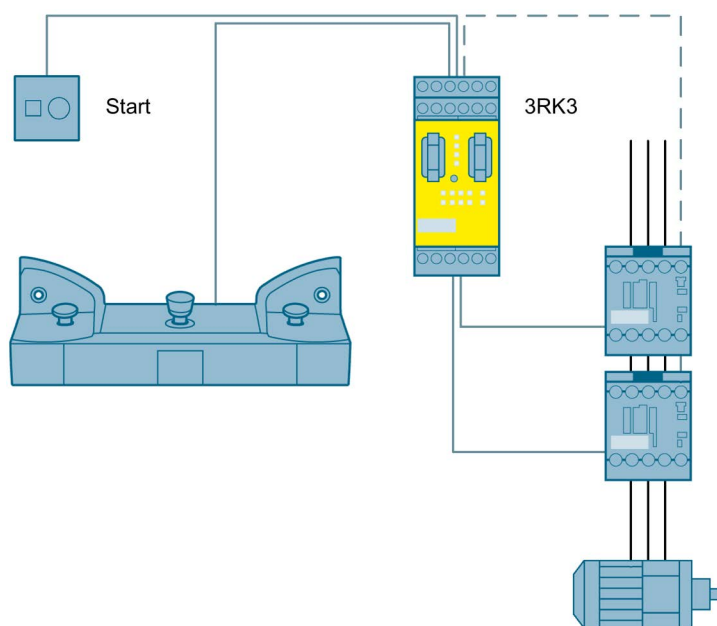


Image 15-4 Two-hand operation to SIL 3 or PL e with a Modular Safety System

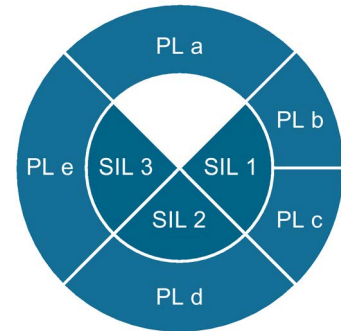
Operating principle

By imposing the condition of simultaneous pressing of both pushbuttons, the operator is restricted to the two-hand operation console and is thus unable to reach into the danger zone. The Modular Safety System only switches the enabling circuits when both signals are active within 500 ms and the feedback circuit is closed.

If one of the two pushbuttons is released, the Modular Safety System immediately switches the machine off in a safety-related manner.

The four-channel design in the two-hand operation console ensures that possible welding of one of the contacts is detected immediately.

After the emergency stop device is actuated, the Start button must be used to restart.



Safety-related components

Two-hand operation console	Modular Safety System	Contactors
		
3SU18	3RK3	2x 3RT20

You will find further information about the use of sensor switches in the two-hand operation console (wiring to Siemens safety relays and safety design) in the following FAQs: Sensor switches in the two-hand operation console

(<https://support.industry.siemens.com/cs/document/109479531/Einsatz>)

15.3 Application examples for ID key-operated switches

Machine tool application

Generally with special-purpose applications on a machine tool

Selection of optional assemblies with 2 differently encoded ID keys / 2 user groups

			
Module 1	Module 2	Module 3	Module 4
- Drill 1 - User authorization	- Drill 1 - User authorization - Drill 1+2	- Drill 1 - Usage authorization - Drill 1+2 - Milling machine 1	- Drill 1 - User authorization - Drill 1+2 - Milling machine 1 - Milling machine 1+2
Added value: Registration of the use of the supplementary devices			

Production line application

Generally with special-purpose applications on a production line, e.g. in automobile manufacture

Mode selector of a measuring machine with 4 differently encoded ID keys / 4 user groups.

			
Automatic mode (operating personnel)	Setting / maintenance mode (setting engineer)	Manual mode (service personnel)	Calibration mode (calibration service)
- Normal process cycle - Manual infeed and removal	- Setting up the machine for manufacturing a new part - Setting - Cleaning	Step-by-step switching of the functions in the machine possible to determine the step where the fault occurs	- A special section in the control program is used to align the machine - The machine is provided with a sample part and carries out calibration with that
Added value:Registration of the time required for production	Added value: Registering the time required for setting	Added value: Registration of the fault times / fault frequency	Added value: Registration of the time required for calibration

Appendix

A.1 Process data and data sets

A.1.1 Electronic module for ID key-operated switches

A.1.1.1 Structure of the data sets

Overview of the data sets

Table A- 1 Data sets - overview

Data set			Name	Access	Value	Length (bytes)
Index (dec)	Index (hex)	Subindex supported				
0	0	Yes	Parameter Page 1	r / w	—	16
2	2	Yes	System Command	w	—	1
3	3	Yes	Data Storage	r / w	—	24
12	0C	No	Device Access locks	r / w	—	2
16	10	No	Vendor Name	r	Siemens AG	10
17	11	No	Vendor Text	r	Internet (http://support.automation.siemens.com/WW/view/en/29801139/130000)	64
18	12	No	Product Name	r	SIRIUS ACT electronic module for ID key-operated switch	55
19	13	No	Product ID	r	3SU1400-1GD10-1AA0	18
23	17	No	Firmware Revision	r	—	5
24	18	No	Application Specific Name	r / w	—	32
69	45	Yes	Process Data In	r	—	6
80	50	Yes	Delete individually codable ID key, data set 80	r / w	—	5
81	51	Yes	Memory for the individually codable ID keys (1-30) data set 81	r	—	180
82	52	Yes	Memory for the individually codable ID keys (31-50) data set 82	r	—	120
92	5C	Yes	Diagnostics - data set 92	r	—	20
94	5E	Yes	Diagnostics - data set 94	r	—	22
131	83	Yes	Parameters - data set 131	r / w	—	20

A.1.1.2 IO-Link communication parameters

Parameter Page 1 - IO-Link communication parameters

Table A- 2 Parameter Page 1

Address	Parameter name	Access	Description
0x00	Master Command	w	—
0x01	Master Cycle Time	r / w	—
0x02	Min. Cycle Time	r	0x6e
0x03	M-Sequence Capability	r	0x11
0x04	IO-Link Revision ID	r / w	0x11
0x05	Process data IN	r	0x50
0x06	Process data OUT	r	0x00
0x07	Vendor ID 1	r	0x00
0x08	Vendor ID 2	r	0x2a
0x09	Device ID 1	r / w	0x0c
0x0A	Device ID 2	r / w	0x03
0x0B	Device ID 3	r / w	0x01
0x0C	Function ID 1	r	0x00
0x0D	Function ID 2	r	0x00
0x0E	Reserved	r	—
0x0F	System Command	w	—

A.1.1.3 Identification data

Identification data

Identification data refers to data stored in a module that supports users in the following areas:

- When checking the system configuration
- When locating modified system hardware
- When troubleshooting a system.

Modules can be uniquely identified using the identification data.

Table A- 3 Identification data of the electronic modules for ID key-operated switches for IO-Link

DPP ¹⁾	Data set	Access	Parameter	Length (bytes)	Default setting
Index (dec)	Index (dec)				
0x07 (7)	—	r	Vendor ID	2	0x00
0x08 (8)	—	r			0x2A
0x09 (9)	—	r	Device ID	3	0x0C
0x0A (10)	—	r			0x03
0x0B (11)	—	r			0x01
—	0x10 (16)	r	Vendor Name	11	SIEMENS AG
—	0x11 (17)	r	Vendor Text	64 max.	Internet (http://support.automation.siemens.com/WW/view/en/29801139/130000)
—	0x12 (18)	r	Product Name	64 max.	SIRIUS ACT electronic module for ID key-operated switch
—	0x13 (19)	r	Product ID	18	3SU1400-1GD10-1AA0
—	0x17 (23)	r	Firmware Revision	7	<i>Firmware version</i>
—	0x18 (24)	r / w	Application Specific Name	32 max.	—

¹⁾ Direct Parameter Page

A.1.1.4 System commands - data set (index) 2

Data set (index) 2 - system commands

Table A- 4 Data set (index) 2 - system commands

Data set	Access	Parameter	Length (bytes)	Default setting
Index (dec)				
0x02 (2)	w	System Command ¹⁾	1	—

- ¹⁾ Permitted vendor-specific system commands:
 0x82 for restore factory settings
 0xA1 for authorization level 1
 0xA2 for authorization level 2
 0xA3 for authorization level 3
 0xA4 for authorization level 4
 0xA5 for delete individually encodable ID key
 0xA6 for delete individually encodable ID key using data set 80
 0xA7 for delete all keys

A.1.1.5 Delete individually encodable ID key - data set (index) 80

Data set (index) 80- delete individually encodable ID key

Table A- 5 Data set (index) 80- delete individually encodable ID key

Data set	Access	Parameter	Length (bytes)	Default setting
Index (dec)				
0x50 (80)	r / w	Identification number of the individually encodable ID key to be deleted	5	—

A.1.1.6 Memory for the individually encodable ID keys (1-30) - data set (index) 81

Data set (index) 81- memory for the individually encodable ID keys

Table A- 6 Data set (index) 81- memory for the individually encodable ID keys

Byte.Bit	Subindex	Description
0.0 ... 4.7	1	Key 1
5.0 ... 5.7	2	Authorization level for key 1
6.0 ... 10.7	3	Key 2
11.0 ... 11.7	4	Authorization level for key 2
12.0 ... 16.7	5	Key 3
17.0 ... 17.7	6	Authorization level for key 3
18.0 ... 22.7	7	Key 4
23.0 ... 23.7	8	Authorization level for key 4
24.0 ... 28.7	9	Key 5
29.0 ... 29.7	10	Authorization level for key 5
30.0 ... 34.7	11	Key 6
35.0 ... 35.7	12	Authorization level for key 6
36.0 ... 40.7	13	Key 7
41.0 ... 41.7	14	Authorization level for key 7
42.0 ... 46.7	15	Key 8
47.0 ... 47.7	16	Authorization level for key 8
48.0 ... 52.7	17	Key 9
53.0 ... 53.7	18	Authorization level for key 9
54.0 ... 58.7	19	Key 10
59.0 ... 59.7	20	Authorization level for key 10
60.0 ... 64.7	21	Key 11
65.0 ... 65.7	22	Authorization level for key 11
66.0 ... 70.7	23	Key 12
71.0 ... 71.7	24	Authorization level for key 12
72.0 ... 76.7	25	Key 13
77.0 ... 77.7	26	Authorization level for key 13
78.0 ... 82.7	27	Key 14
83.0 ... 83.7	28	Authorization level for key 14
84.0 ... 88.7	29	Key 15
89.0 ... 89.7	30	Authorization level for key 15
90.0 ... 94.7	31	Key 16
95.0 ... 95.7	32	Authorization level for key 16
96.0 ... 100.7	33	Key 17
101.0 ... 101.7	34	Authorization level for key 17

Byte.Bit	Subindex	Description
102.0 ... 106.7	35	Key 18
107.0 ... 107.7	36	Authorization level for key 18
108.0 ... 112.7	37	Key 19
113.0 ... 113.7	38	Authorization level for key 19
114.0 ... 118.7	39	Key 20
119.0 ... 119.7	40	Authorization level for key 20
120.0 ... 124.7	41	Key 21
125.0 ... 125.7	42	Authorization level for key 21
126.0 ... 130.7	43	Key 22
131.0 ... 131.7	44	Authorization level for key 22
132.0 ... 136.7	45	Key 23
137.0 ... 137.7	46	Authorization level for key 23
138.0 ... 142.7	47	Key 24
143.0 ... 143.7	48	Authorization level for key 24
144.0 ... 148.7	49	Key 25
149.0 ... 149.7	50	Authorization level for key 25
150.0 ... 154.7	51	Key 26
155.0 ... 155.7	52	Authorization level for key 26
156.0 ... 160.7	53	Key 27
161.0 ... 161.7	54	Authorization level for key 27
162.0 ... 166.7	55	Key 28
167.0 ... 167.7	56	Authorization level for key 28
168.0 ... 172.7	57	Key 29
173.0 ... 173.7	58	Authorization level for key 29
174.0 ... 178.7	59	Key 30
179.0 ... 179.7	60	Authorization level for key 30

A.1.1.7 Memory for the individually encodable ID keys (31-50) - data set (index) 82

Data set (index) 82- memory for the individually encodable ID keys

Table A- 7 Data set (index) 82- memory for the individually encodable ID keys

Byte.Bit	Subindex	Description
0.0 ... 4.7	1	Key 31
5.0 ... 5.7	2	Authorization level for key 31
6.0 ... 10.7	3	Key 32
11.0 ... 11.7	4	Authorization level for key 32
12.0 ... 16.7	5	Key 33
17.0 ... 17.7	6	Authorization level for key 33

Byte.Bit	Subindex	Description
18.0 ... 22.7	7	Key 34
23.0 ... 23.7	8	Authorization level for key 34
24.0 ... 28.7	9	Key 35
29.0 ... 29.7	10	Authorization level for key 35
30.0 ... 34.7	11	Key 36
35.0 ... 35.7	12	Authorization level for key 36
36.0 ... 40.7	13	Key 37
41.0 ... 41.7	14	Authorization level for key 37
42.0 ... 46.7	15	Key 38
47.0 ... 47.7	16	Authorization level for key 38
48.0 ... 52.7	17	Key 39
53.0 ... 53.7	18	Authorization level for key 39
54.0 ... 58.7	19	Key 40
59.0 ... 59.7	20	Authorization level for key 40
60.0 ... 64.7	21	Key 41
65.0 ... 65.7	22	Authorization level for key 41
66.0 ... 70.7	23	Key 42
71.0 ... 71.7	24	Authorization level for key 42
72.0 ... 76.7	25	Key 43
77.0 ... 77.7	26	Authorization level for key 43
78.0 ... 82.7	27	Key 44
83.0 ... 83.7	28	Authorization level for key 44
84.0 ... 88.7	29	Key 45
89.0 ... 89.7	30	Authorization level for key 45
90.0 ... 94.7	31	Key 46
95.0 ... 95.7	32	Authorization level for key 46
96.0 ... 100.7	33	Key 47
101.0 ... 101.7	34	Authorization level for key 47
102.0 ... 106.7	35	Key 48
107.0 ... 107.7	36	Authorization level for key 48
108.0 ... 112.7	37	Key 49
113.0 ... 113.7	38	Authorization level for key 49
114.0 ... 118.7	39	Key 50
119.0 ... 119.7	40	Authorization level for key 50

A.1.1.8 Diagnostics - data set (index) 92

Data set (index) 92 - diagnostics

Note

Bits that are not described in the tables below are reserved and should be ignored.

Table A- 8 Data set (index) 92 - diagnostics

Byte.Bit	Subindex	Description
0.0 ... 15.7	1 ... 3	Reserved
16.0	4	Ready
16.1	5	Group error
16.2	6	Reserved
16.3	7	Reserved
16.4	8	Reserved
16.5	9	Reserved
16.6	10	Reserved
16.7	11	Reserved
17.0	12	Digital output 0
17.1	13	Digital output 1
17.2	14	Digital output 2
17.3	15	Digital output 3
17.4	16	Digital output 4
17.5	17	Reserved
17.6	18	Reserved
17.7	19	Reserved
18.0	20	Detection of the ID key
19.0 ... 19.7	21	Status of the individually encodable ID key

A.1.1.9 Diagnostics - data set (index) 94

Data set (index) 94 (ID keys)

Note

Bits that are not described in the tables below are reserved and should be ignored.

Table A- 9 Data set (index) 94 (ID keys)

Byte.Bit	Subindex	Description
0.0 ... 15.7	1 ... 3	Reserved
16.0 ... 20.7	4	Identification number of the individually codable ID key
21.0 ... 21.2	5	Authorization level
21.3 ... 21.5	6	Key position

A.1.1.10 Parameters - Data set (index) 131

Data set (index) 131 (parameters)

Note

Bits that are not described in the tables below are reserved and should be ignored.

Table A- 10 Data set (index) 131 (parameters)

Byte.Bit	Subindex	Description
Operating system functions		
0.0 ... 15.7	1 ... 3	Reserved
16.0	4	Incremental mode Default: [0] [0] disabled [1] enabled
16.1	5	Switch position memory Default: [0] [0] disabled (key position = 0) [1] enabled (last switch position is retained)
16.2	6	Key memory Default: [0] [0] disabled [1] enabled
16.3	7	Individual keys only Default: [0] [0] disabled [1] enabled
17.0 ... 17.7	8	Switch position delay Type: CHAR Resolution: 0.1 s = 1 Default: 20 Min: 1 or 0 (disabled) Max: 100 * 0.1 s = 10 s
18.0 ... 18.7	9	Select memory range Default [1] Min: 1 Max: 5
19.0 ... 19.7	—	Reserved

A.1.2 Electronic module for IO-Link

A.1.2.1 Structure of the data sets

Overview of the data sets

Table A- 11 Data sets - overview

Data set			Name	Access	Value	Length (bytes)
Index (dec)	Index (hex)	Subindex supported				
0	0	Yes	Parameter Page 1	r/w	—	16
2	2	Yes	System Command	w	—	1
3	3	Yes	Data Storage	r/w	—	18
12	0c	No	Device Access locks	r/w	—	2
16	10	No	Vendor Name	r	Siemens AG	10
17	11	No	Vendor Text	r	Internet (http://support.automation.siemens.com/WW/view/en/29801139/130000)	64
18	12	No	Product Name	r	SIRIUS ACT 8DIQ electronic module for IO-Link	40
19	13	No	Product ID	r	3SU1400-2HL10-6AA0 (example of article number)	18
23	17	No	Firmware Revision	r	—	6
24	18	No	Application specific tag	r/w	—	32
67	43	Yes	Process Data Out	r	—	6
69	45	Yes	Process Data In	r	—	6
92	5c	Yes	Diagnostics - data set 92	r	—	24
94	5e	Yes	Diagnostics - data set 94	r	—	82
131	83	Yes	Parameters - data set 131	r/w	—	126

A.1.2.2 IO-Link communication parameters**Parameter Page 1 - IO-Link communication parameters**

Address	Parameter name	Access	Description
0x00	Master-Command	w	
0x01	MasterCycle-Time	r/w	
0x02	MinCycle-Time	r	0x49
0x03	M-Sequence Capability	r	0x11
0x04	Revision ID	r/w	0x11
0x05	ProcessDataIn	r	0x50
0x06	ProcessDataOut	r	0x10
0x07	Vendor ID1	r	0x00
0x08	Vendor ID2	r	0x2a
0x09	Device ID1	r/w	0x04
0x0a	Device ID2	r/w	0x40
0x0b	Device ID3	r/w	0x01
0x0c	Function ID1	r	0x00
0x0d	Function ID2	r	0x00
0x0e	Reserved	r	
0x0f	System Command	w	

A.1.2.3 Identification data

Identification data

Identification data refers to data stored in a module that supports users in the following areas:

- When checking the system configuration
- When locating modified system hardware
- When troubleshooting a system.

Modules can be uniquely identified using the identification data.

Table A- 12 Identification data of the electronic modules for IO-Link

DPP ¹⁾	Data set	Access	Parameter	Length (bytes)	Default setting
Index (dec)	Index (dec)				
7	—	r	Vendor ID	2	0x00
8	—	r			0x2A
9	—	r	Device ID	3	0x0C
10	—	r			0x03
11	—	r			0x01
—	16	r	Vendor Name	11	SIEMENS AG
—	17	r	Vendor Text	64 max.	Internet (http://support.automation.siemens.com/W/view/en/29801139/130000)
—	18	r	Product Name	64 max.	SIRIUS ACT 8DIQ electronic module for IO-Link
—	19	r	Product ID	18	3SU1400-2HL10-6AA0 (example of article number)
—	21	r	Serial Number	16	
—	22	r	Hardware Revision	6	
—	23	r	Firmware Revision	6	<i>Firmware version</i>
—	24	r/w	Application Specific Name	32 max.	—

¹⁾ Direct Parameter Page

A.1.2.4 System commands - data set (index) 2

Data set (index) 2 - system commands

Table A- 13 Data set (index) 2 - system commands

Data set	Access	Parameter	Length (bytes)	Default setting
Index (dec)				
2	w	System Command ¹⁾	1	—

¹⁾ Permissible vendor-specific system commands:

0x81 for Application Reset

0x82 for Restore Factory Setting

0xA0 for Reset On-Duration Counter Input/Output 0

0xA1 for Reset On-Duration Counter Input/Output 1

0xA2 for Reset On-Duration Counter Input/Output 2

0xA3 for Reset On-Duration Counter Input/Output 3

0xA4 for Reset On-Duration Counter Input/Output 4

0xA5 for Reset On-Duration Counter Input/Output 5

0xA6 for Reset On-Duration Counter Input/Output 6

0xA7 for Reset On-Duration Counter Input/Output 7

0xA8 for Reset Switching Counter Input/Output 0

0xA9 for Reset Switching Counter Input/Output 1

0xAA for Reset Switching Counter Input/Output 2

0xAB for Reset Switching Counter Input/Output 3

0xAC for Reset Switching Counter Input/Output 4

0xAD for Reset Switching Counter Input/Output 5

0xAE for Reset Switching Counter Input/Output 6

0xAF for Reset Switching Counter Input/Output 7

0xB0 for Reset On-Duration Counter Input/Output 0 - 7

0xB1 for Reset Switching Counter Input/Output 0 - 7

A.1.2.5 Process Data Out - data set (index) 67

Data set (index) 67 (parameter)

Note

Bits that are not described in the tables below are reserved and should be ignored.

Table A- 14 Data set (index) 67 (parameter), read access only

Byte.Bit	Subindex	Description	Value
Operating system functions			
0.0 ... 3.7	1	Reserved	
4.0	2	Output 0	[0x00] Output off [0x01] Output on
4.1	3	Output 1	
4.2	4	Output 2	
4.3	5	Output 3	
4.4	6	Output 4	
4.5	7	Output 5	
4.6	8	Output 6	
4.7	9	Output 7	
5.0	10	Reserved	
5.1	11	Reserved	
5.2	12	Reserved	
5.3	13	Reserved	
5.4	14	Reserved	
5.5	15	Reserved	
5.6	16	Reserved	
5.7	17	Reserved	

A.1.2.6 Process Data In - data set (index) 69

Data set (index) 69 (parameter)

Note

Bits that are not described in the tables below are reserved and should be ignored.

Table A- 15 Data set (index) 69 (parameter), read access only

Byte.Bit	Subindex	Description	Value
Operating system functions			
0.0 ... 3.7	1	Reserved	
4.0	2	Ready	
4.1	3	Group error	
4.2	4	Reserved	0x00
4.3	5	Reserved	0x00
4.4	6	Reserved	0x00
4.5	7	Reserved	0x00
4.6	8	Reserved	0x00
4.7	9	Reserved	0x00
5.0	10	Input 0	[0x00] Input off [0x01] Input on
5.1	11	Input 1	
5.2	12	Input 2	
5.3	13	Input 3	
5.4	14	Input 4	
5.5	15	Input 5	
5.6	16	Input 6	
5.7	17	Input 7	

A.1.2.7 Diagnostics - data set (index) 92

Data set (index) 92

Note

Bits that are not described in the tables below are reserved and should be ignored.

Table A- 16 Data set (index) 92, read access only

Byte.Bit	Subindex	Description	Value
0.0-15.7	1 ... 3	Reserved	
16.0	4	Ready	
16.1	5	Group error	
16.2	6	Reserved	0x00
16.3	7	Reserved	0x00
16.4	8	Reserved	0x00
16.5	9	Reserved	0x00
16.6	10	Reserved	0x00
16.7	11	Reserved	0x00
17.0-17.1	12	Switch-on duration status IO0	Switch-on duration status: [0x00] deactivated [0x01] active [0x02] threshold reached [0x03] expired
17.2-17.3	13	Switch-on duration status IO1	
17.4-17.5	14	Switch-on duration status IO2	
17.6-17.7	15	Switch-on duration status IO3	
18.0-18.1	16	Switch-on duration status IO4	
18.2-18.3	17	Switch-on duration status IO5	
18.4-18.5	18	Switch-on duration status IO6	
18.6-18.7	19	Switch-on duration status IO7	

Byte.Bit	Subindex	Description	Value
19.0-19.1	20	Dimming status output 0	Dimming status: [0x00] deactivated [0x01] active [0x03] expired
19.2-19.3	21	Dimming status output 1	
19.4-19.5	22	Dimming status output 2	
19.6-19.7	23	Dimming status output 3	
20.0-20.1	24	Dimming status output 4	
20.2-20.3	25	Dimming status output 5	
20.4-20.5	26	Dimming status output 6	
20.6-20.7	27	Dimming status output 7	
21.0-21.1	28	Switching cycle counter status IO0	Switching cycle counter status: [0x00] deactivated [0x01] active [0x02] threshold reached [0x03] expired
21.2-21.3	29	Switching cycle counter status IO1	
21.4-21.5	30	Switching cycle counter status IO2	
21.6-21.7	31	Switching cycle counter status IO3	
22.0-22.1	32	Switching cycle counter status IO4	
22.2-22.3	33	Switching cycle counter status IO5	
22.4-22.5	34	Switching cycle counter status IO6	
22.6-22.7	35	Switching cycle counter status IO7	

A.1.2.8 Diagnostics - data set (index) 94

Data set (index) 94 (electronic module for IO-Link)

Note

Bits that are not described in the tables below are reserved and should be ignored.

Table A- 17 Data set (index) 94, read access only

Byte.Bit	Subindex	Description	Value
0.0 ... 15.7	1 ... 3	Reserved	
16.0-19.7	4	Switch-on duration IO0	Switch-on duration: Factory setting: 0 seconds Minimum value: 0 seconds Maximum value: 4294967295 seconds Increment: 1 second
20.0-23.7	5	Switch-on duration IO1	
24.0-27.7	6	Switch-on duration IO2	
28.0-31.7	7	Switch-on duration IO3	
32.0-35.7	8	Switch-on duration IO4	
36.0-39.7	9	Switch-on duration IO5	
40.0-43.7	10	Switch-on duration IO6	
44.0-47.7	11	Switch-on duration IO7	

Byte.Bit	Subindex	Description	Value
48.0-51.7	12	Switching cycle counter IO0	Switching cycle counter: Factory setting: 0 Minimum value: 0 Maximum value: 4294967295
52.0-55.7	13	Switching cycle counter IO1	
56.0-59.7	14	Switching cycle counter IO2	
60.0-63.7	15	Switching cycle counter IO3	
64.0-67.7	16	Switching cycle counter IO4	
68.0-71.7	17	Switching cycle counter IO5	
72.0-75.7	18	Switching cycle counter IO6	
76.0-79.7	19	Switching cycle counter IO7	
80.0	20	Input 0	Input: [0x00] activated [0x01] deactivated
80.1	21	Input 1	
80.2	22	Input 2	
80.3	23	Input 3	
80.4	24	Input 4	
80.5	25	Input 5	
80.6	26	Input 6	
80.7	27	Input 7	
81.0	28	Output 0	Output: [0x00] activated [0x01] deactivated
81.1	29	Output 1	
81.2	30	Output 2	
81.3	31	Output 3	
81.4	32	Output 4	
81.5	33	Output 5	
81.6	34	Output 6	
81.7	35	Output 7	

A.1.2.9 Parameters - Data set (index) 131

Data set (index) 131 (parameters)

Note

Bits that are not described in the tables below are reserved and should be ignored.

Table A- 18 Data set (index) 131 (parameters)

Byte.Bit	Subindex	Description	Value
0.0 ... 15.7	1 ... 3	Reserved	
16.0-16.7	4	Functional mode IO0	Functional mode: Factory setting: [0x01] [0x01] Static input [0x02] Static output [0x03] PWM output [0x04] Dimming output [0x05] Switching input [0x06] Switching output [0x07] Switch-on duration input [0x08] Switch-on duration output
17.0-17.7	5	Functional mode IO1	
18.0-18.7	6	Functional mode IO2	
19.0-19.7	7	Functional mode IO3	
20.0-20.7	8	Functional mode IO4	
21.0-21.7	9	Functional mode IO5	
22.0-22.7	10	Functional mode IO6	
23.0-23.7	11	Functional mode IO7	
24.0-24.1	12	Setting range	Factory setting: [0x00] [0x00] Individual: Individual setting of all IOs [0x01] Collective: All IOs according to IO 0 mode [0x02] Groups: Group 1 according to IO 0 mode Group 2 according to IO 4 mode
24.2	13	Reset process data	
25.0-25.7	14	PWM frequency output 0	Frequency: Factory setting: 1 Hz Minimum: 1 Hz Maximum: 255 Hz Increment: 1 Hz
26.0-26.7	15	PWM frequency output 1	
27.0-27.7	16	PWM frequency output 2	
28.0-28.7	17	PWM frequency output 3	
29.0-29.7	18	PWM frequency output 4	
30.0-30.7	19	PWM frequency output 5	
31.0-31.7	20	PWM frequency output 6	
32.0-32.7	21	PWM frequency output 7	

Byte.Bit	Subindex	Description	Value
33.0-33.7	22	PWM duty cycle output 0	Duty cycle: Factory setting: 50 % Minimum: 10 % Maximum: 90 % Increment: 1 %
34.0-34.7	23	PWM duty cycle output 1	
35.0-35.7	24	PWM duty cycle output 2	
36.0-36.7	25	PWM duty cycle output 3	
37.0-37.7	26	PWM duty cycle output 4	
38.0-38.7	27	PWM duty cycle output 5	
39.0-39.7	28	PWM duty cycle output 6	
40.0-40.7	29	PWM duty cycle output 7	
41.0-41.7	30	Dimming time output 0	Dimming time: Factory setting: 1 second Minimum: 0.1 seconds Maximum: 25.5 seconds Increment: 0.1 seconds
42.0-42.7	31	Dimming time output 1	
43.0-43.7	32	Dimming time output 2	
44.0-44.7	33	Dimming time output 3	
45.0-45.7	34	Dimming time output 4	
46.0-46.7	35	Dimming time output 5	
47.0-47.7	36	Dimming time output 6	
48.0-48.7	37	Dimming time output 7	
49.0-49.7	38	Input delay 0	Input delay: Factory setting: 3 milliseconds Minimum: 3 milliseconds Maximum: 255 milliseconds Increment: 1 millisecond
50.0-50.7	39	Input delay 1	
51.0-51.7	40	Input delay 2	
52.0-52.7	41	Input delay 3	
53.0-53.7	42	Input delay 4	
54.0-54.7	43	Input delay 5	
55.0-55.7	44	Input delay 6	
56.0-56.7	45	Input delay 7	
57.0-60.7	46	Threshold I/O 0	Threshold: Factory setting: 0 seconds Minimum: 0 seconds Maximum: 4294967295 seconds Increment: 1 second
61.0-64.7	47	Threshold I/O 1	
65.0-68.7	48	Threshold I/O 2	
69.0-72.7	49	Threshold I/O 3	
73.0-76.7	50	Threshold I/O 4	
77.0-80.7	51	Threshold I/O 5	
81.0-84.7	52	Threshold I/O 6	
85.0-88.7	53	Threshold I/O 7	
89.0-92.7	54	Threshold switching cycle counter I/O 0	Threshold switching cycle counter: Factory setting: 0 Minimum: 0 Maximum: 4294967295
93.0-96.7	55	Threshold switching cycle counter I/O 1	
97.0-100.7	56	Threshold switching cycle counter I/O 2	
101.0-104.7	57	Threshold switching cycle counter I/O 3	
105.0-108.7	58	Threshold switching cycle counter I/O 4	
109.0-112.7	59	Threshold switching cycle counter I/O 5	
113.0-116.7	60	Threshold switching cycle counter I/O 6	
117.0-120.7	61	Threshold switching cycle counter I/O 7	

Byte.Bit	Subindex	Description	Value
121.0-121.1	62	Active edges I/O 0	Active edges: Factory setting: [0x01] [0x00] None [0x01] Rising edge [0x02] Falling edge [0x03] All edges
121.2-121.3	63	Active edges I/O 1	
121.4-121.5	64	Active edges I/O 2	
121.6-121.7	65	Active edges I/O 3	
122.0-122.1	66	Active edges I/O 4	
122.2-122.3	67	Active edges I/O 5	
122.4-122.5	68	Active edges I/O 6	
122.6-122.7	69	Active edges I/O 7	
123.0	70	Inverting input 0	Inverting input: Factory setting: [0x00] [0x00] disable [0x01] enabled
123.1	71	Inverting input 1	
123.2	72	Inverting input 2	
123.3	73	Inverting input 3	
123.4	74	Inverting input 4	
123.5	75	Inverting input 5	
123.6	76	Inverting input 6	
123.7	77	Inverting input 7	
124.0	78	Inverting output 0	Inverting output: Factory setting: [0x00] [0x00] disable [0x01] enabled
124.1	79	Inverting output 1	
124.2	80	Inverting output 2	
124.3	81	Inverting output 3	
124.4	82	Inverting output 4	
124.5	83	Inverting output 5	
124.6	84	Inverting output 6	
124.7	85	Inverting output 7	

A.2 Certifications and approvals

Approval markings



Communautés Européennes

(The CE approval mark is required in order to market your products within Europe. The CE mark indicates to European authorities that your claims of product compliance meet the applicable standards.)



Underwriters Laboratories Inc.

(Product safety certification organization)

(Approval mark for Canada and USA)



Underwriters Laboratories Inc.

(Product safety certification organization)



UL Recognized Component Mark

(Approval mark for recognized components)



Canadian Standards Association

(Zertifizierung für den kanadischen Markt)



China Compulsory Certification

(Certification system in China)



Association of German Electrical Engineers

(The VDE logo for electrical/electronic products including products as defined in the German legislation on equipment and product safety (GPSG), and medical products as defined in the medical products legislation (MPG), designates compliance with the VDE regulations or European or internationally harmonized standards, and confirms that the protection requirements of the relevant directives are met).

Index

3

3D model, 18

A

Application areas

AS-Interface safety module, 199

AS-Interface standard module, 199

F slave, 199

Slave 4I/4O and A/B slave 4I/3O, 199

Two-hand operation console, 192

B

B10 value

Formula, 32

C

CAX data, 18

Certifications and approvals, 471

Configuration

IO-Link function block, 247, 247

D

Data set - delete individually encodable ID key

Electronic module for ID key-operated switches, 452

Data set - diagnostics

Data set(index) 92, 465

Electronic module for ID key-operated switches, 456

Data set - ID keys

Electronic module for ID key-operated switches, 457

Data set - IO-Link parameters

Data set (index) 67 (parameter), 463

Data set (index) 69 (parameter), 464

Electronic module for ID key-operated switches, 458

Electronic module for IO-Link, 468

Data set - memory for the individually encodable ID keys

Electronic module for ID key-operated switches, 453, 454

Data set - system commands

Electronic module for ID key-operated switches, 452, 462

Data set (index) 94

Electronic module for IO-Link, 466

Data sets

Overview, 449, 459

Dimension drawings, 18

Disposal, 20

Documentation

Target group, 15

E

Emergency stop shutdown, 441

EPLAN macros, 18

F

Failure rate, 32

Formula

B10 value, 32

I

Identification data

Electronic module for ID key-operated switches for IO-Link, 451

Electronic module for IO-Link, 461

IO-Link communication parameters, 450, 460

M

Mounting

AS-i F slave, 214, 215, 288

AS-Interface slave, 214, 215, 288

Two-hand operation console, 194

Two-hand operation console on stand, 196

N

Newsletter, 24

O

Operational safety, 24

P

Parameter Page 0, 450

Parameter Page 1, 460

Parameters

- Active edge parameter, 284
- Add new individual ID key parameter, 263
- Data Storage Lock parameter, 266
- Delete individual ID key parameter, 264
- Dimming time parameter, 283
- Incremental switching mode parameter, 260
- Individually codable ID keys only parameter, 261
- Input delay parameter, 280
- Input filter delay parameter, 281, 281
- Inverting input parameter, 281
- Inverting output parameter, 282
- Parameter (write) Access Lock parameter, 266
- Parameter Restore Factory Setting, 262
- Parameter Threshold, 282
- PWM duty cycle parameter, 283
- PWM frequency parameter, 282
- Select memory range parameter, 262
- Switch position delay parameter, 262
- Switch position memory parameter, 260
- Switch position retentive memory parameter, 261
- Switching output parameter, 283

PII

- Electronic module for ID key-operated switches for IO-Link, 267

Process data

- read, 267

Product data sheet, 335

R

Recycling, 20

References, 16

S

Safety of the system, 15

Service&Support, 16

SIRIUS AS-Interface Module (Base Element)

3SU14...-E, 16

SIRIUS AS-Interface Module (Front Plate Mounting)

3SU14.0-1E..0-AA0, 16

SIRIUS Complete Units with EMERGENCY STOP

3SU11...-1., 16

SIRIUS Electronic Module for ID Key-Operated

Switches 3SU14...-G, 16

SIRIUS Enclosures with EMERGENCY STOP

3SU18...-N, 16

SIRIUS Two-Hand Operation Consoles 3SU18...-3, 16

Slave address, 233, 234

Standard

SN 31920, 32

Status information, 267

T

Target group, 15

Technical data, 335

Two-hand operation console, 445, 446