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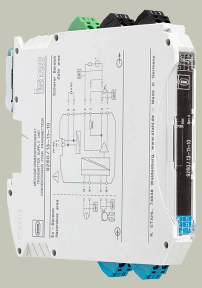
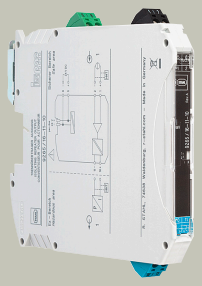
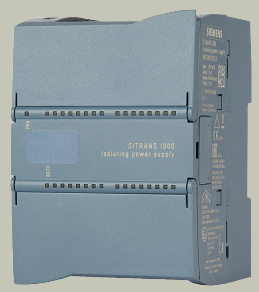
Overview

Power supply units and isolation amplifiers			
Type	**Area of application**	**Device description**	**Programming software**
SITRANS I100 	Isolating power supply for 2-wire transmitter, 4-wire transmitter with intrinsically safe input (mA sources) and analog output module (AOM) for SIPART PS2.	Single-channel version, output 0/4 ... 20 mA, intrinsically safe Ex i, approved to SIL 2 (IEC/EN 61508), width 12.5 mm, DIN rail-mounting.	–
SITRANS I200 	Compact single-channel output isolation amplifier for HART output signals 0/4 ... 20 mA. For the intrinsically safe operation of positioners such as SIPART PS2, I/P converters or indicators.	HART output isolation amplifier for DIN rail mounting, with intrinsically safe output. Approved up to SIL 2 (IEC/EN 61508), width 12.5 mm.	–
SITRANS I300 	Isolating power supply for 4-wire devices in hazardous areas	Isolating power supply with intrinsically safe EIA-485 interface for DIN rail mounting, for 4-wire devices.	–

Display devices			
Type	**Area of application**	**Device description**	**Programming software**
SITRANS RD100 	Remote digital display in 2-wire system, power supply via the current loop, NEMA 4X enclosure, for process measuring equipment	• Versatile 2-wire measuring instrument that displays process tags in level, flow, pressure, temperature and weighing applications • FM-approved, CSA-approved and CE-approved device that can be installed in a range of environments, including hazardous areas • Large, easy-to-read local display • Easy to install and set up using a quick 2-step process	–

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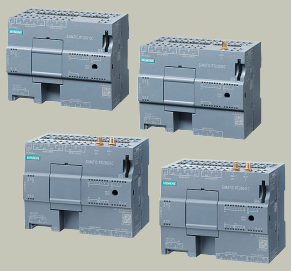
Overview (continued)

Display devices			
SITRANS RD150 	Remote digital display for 4 to 20 mA and HART devices	• Easy operation via local display with 4-button menu control • Background illuminated local display • HART communication • Flexible mounting options • Plastic, stainless steel or aluminum enclosures up to IP68 • Complete configuration of the connected sensors with optional USB Communicator and PC • Supports multiple HART sensors with HART Multidrop	–
SITRANS RD200 	Remote digital display with universal input for control panel mounting for process measuring equipment. Supports RTD, thermocouple, current and voltage inputs. Supporting software enables remote configuration and data logging.	• Universal remote digital display for various inputs; ideal for use with most field devices • Standard local display for control panel mounting with optional enclosures • Two optional relays for alarm display or process control applications • Special copy function of the measuring instrument reduces setup time, costs and errors • RD software supports remote configuration, monitoring and logging for up to 100 displays	–
SITRANS RD300 	Universal, easy-to-operate, remote digital display for control panel mounting for process instruments. Delivers flow rate/total values in various applications (pumped flow rate, summation and control).	• Remote digital display for level, flow, pressure, weighing and other process instruments. • The universal, easy-to-operate display device for flow rate/total values is ideal for flow rate, summation and control applications. • Using the RD software, which is available for download free of charge, you can record and display the data on your PC. • It is designed for one or two current and voltage inputs and supports mathematical functions such as averaging.	–

Remote Terminal Unit			
Type	**Area of application**	**Device description**	**Programming software**
SIMATIC RTU3000C 	The devices of the RTU3000C family are compact telecontrol stations (RTU: Remote Terminal Unit) for applications with their own power supply. They are particularly suited for monitoring and control of remote stations that are not connected to a power supply network. The RTUs can independently collect data from connected sensors with timestamps, pre-process the data, and transfer it to a control center. The RTU3000C is supplied with energy by a battery, rechargeable battery or solar panel or a 12 ... 24 V DC power supply unit.	• Flexible location of use - Energy-optimized operation and flexible power supply concept • Rugged hardware - Reliable operation, even in tough environments with increased temperature range (-40 °C to +70 °C) • Flexible connection to control centers - Thanks to swappable telecontrol protocols • Fast and flexible data communication • Simple and cost-effective engineering - Easy configuration with standard web browser without additional engineering tool.	–

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Overview (continued)

Remote Terminal Unit			
		• Remote access - To HART or Modbus devices on the Extension Board HART/RS485 via SIMATIC PDM. • Fully automatic timestamp • Automatic temporary storage of process values • Secure data transfer - Use of OpenVPN VPN technology and encrypted email connections • Time of day is retained in case of power failure • Saves travel and maintenance costs - Thanks to web-based management	

Network gateways			
Type	**Area of application**	**Device description**	**Programming software**
IE/PB LINK 	IE/PB LINKs are gateways for connecting the two network types, Industrial Ethernet and PROFIBUS, i.e. they enable access to all PROFIBUS nodes connected to the lower-level PROFIBUS network. The variants IE/PB LINK HA and IE/PB LINK PN IO are offered as gateways from Industrial Ethernet and PROFIBUS. **IE/PB LINK IO** Gateway with PROFINET IO functionality, S7 routing and data record routing for standard ambient conditions **IE/PB LINK HA** Gateway optimized for use in the process industry through the possibility of deployment in harsh ambient conditions and the connection of PROFIBUS field devices to a redundant AS as PROFINET IO controllers	Both product variants can be used in 2 operation modes: Standard mode enables, for example, loading of programs and configuration data via PG/OP communication, data record routing for configuration and diagnostics of field devices with the SIMATIC PDM tool, S7 routing e.g. for cross-network loading of SIMATIC controllers on PROFIBUS. When operated as a PROFINET IO proxy, from the perspective of the PN IO controller, all PROFIBUS DP slaves connected after the IE/PB LINK are treated as PN IO devices according to the PROFINET standard. The IE/PB LINK is the proxy of the connected PROFIBUS DP slaves. Both IE/PB LINK variants offer the possibility to use different transmission media by employing BusAdapters.	–

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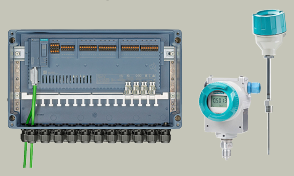
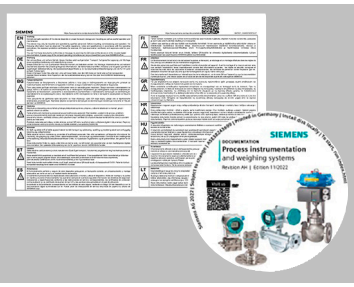
Overview (continued)

Network gateways			
SIMATIC Compact Field Unit (CFU) 	Smart field distributors installed at process level and directly connected to the automation system via PROFINET. Two versions are available: • SIMATIC CFU PA edition • SIMATIC CFU DIQ edition **SIMATIC CFU PA edition** • PROFIBUS PA already integrated into SIMATIC FCU • Robust and really easy to use • Automatic addressing of connected devices • Device integration via standardized communication profiles **SIMATIC CFU DIQ edition** • Individual, customized solutions • Flexible system expansion • 16 freely configurable, digital IO channels • Expansion functions can be configured if desired • "Counter" and "Frequency measurement" operation modes with a limit frequency of 1 kHz can be activated as additional operation modes.	• High overheads for device integration and replacement • Complicated, error-prone wiring and routing over several levels, making the hardware FAT very complex • Very long copper cables and numerous terminal points in the field • Multiple individual control cabinets • Large numbers of different components and protocols necessitate costly spare parts inventories and training sessions • High planning and documentation costs • Flexible connection options via PROFINET • Ready for Process Automation (PA Ready)	–

Supplied product documentation on DVD and safety notes



The scope of delivery of the Siemens products for process instrumentation includes a multilingual instruction sheet with **safety notes** as well as a uniform **mini DVD – Process Instrumentation and Weighing Systems**.

This DVD contains the most important manuals and certificates for the Siemens process instrumentation and weight measurement portfolio. The delivery may also contain product-specific or order-specific printed materials.

For more information, refer to the Appendix on page 10/3.

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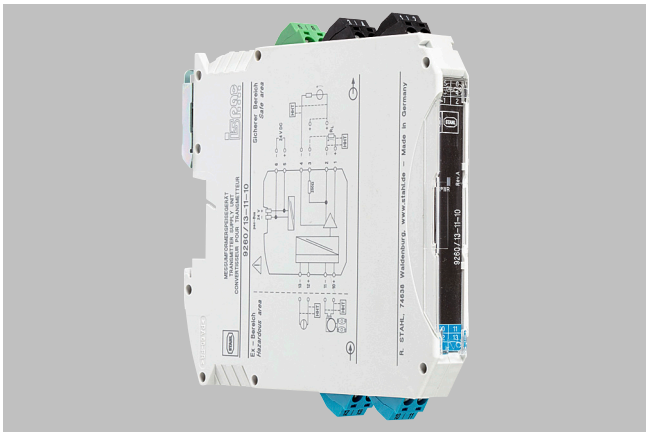
Overview



Analog input 0/4 to 20 mA

The isolating power supplies are used for the intrinsically safe operation of transmitters or for connecting to intrinsically safe mA sources and the analog output module (AOM) for SIPART PS2.

The transmitters are supplied with auxiliary power from the isolating power supplies.

HART communication signals are transmitted bidirectionally by the isolating power supplies.

Benefits

- Active and passive output 0/4 to 20 mA
- Universally applicable for transmitters and mA sources (4-wire transmitters)
- Narrow design – 12.5 mm (0.49 inch) width – for one and two-channel version
- Intrinsically safe input [Ex ia] IIC
- Galvanic isolation between input, output and auxiliary power
- Installation permissible in Zones 2, 22 and Div. 2
- Can be used up to SIL 2 (IEC/EN 61508)

	Zones					
	0	1	2	20	21	22
Ex i interfaces	X	X	X	X	X	X
Installation in			X			X

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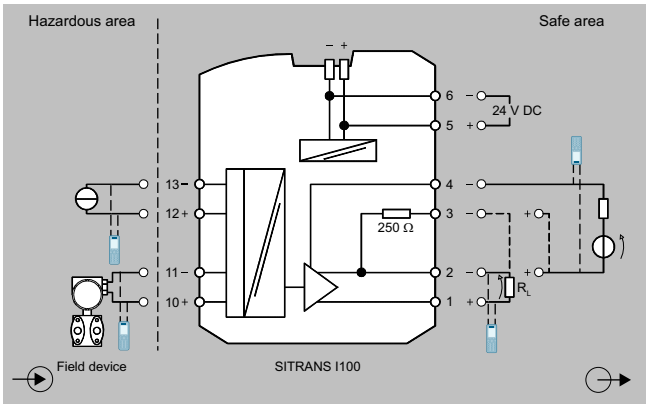
Design

The SITRANS I100 HART isolating power supply is comprised of a compact plastic enclosure (IP30) and is equipped with push-in screw terminals.

On the front are a green LED for indicating the power supply status and a red LED for signaling errors.



SITRANS I100 isolating power supply HART, function block diagram

Selection and ordering data

	Article No.
SITRANS I100 isolating power supply • DIN rail mounting • For 2-wire transmitters • For 4-wire transmitter with intrinsically safe input (mA sources) • For analog output module (AOM) for SIPART PS2 • Single-channel version with output 0/4 ... 20 mA, intrinsically safe Ex i • 12.5 mm wide • Approved up to SIL 2 (IEC/EN 61508)	**7NG4124-1AA00**

Technical specifications

SITRANS I100	
General	
Number of channels	1
Transmitter infeed operation	Yes
Isolation amplifier operation	Yes
Input	0/4 ... 20 mA
Output	0/4 ... 20 mA with HART
Output adjustment time	< 0.2 ms
Output A	0/4 ... 20 mA active (source)
Output B	0/4 ... 20 mA active (sink)
Ex i input	
Input signal	0/4 ... 20 mA with HART
Input functional range	0 ... 24 mA
Communication signal	HART
Transmitter supply voltage	≥ 16 V at 20 mA
Voltage drop	< 3.5 V
Short-circuit current	≥ 22.5 mA
Output	
Output signal	0/4 ... 20 mA with HART (active/passive)
Output functional range	0 ... 24 mA
Communication signal	HART
Output characteristics	= Input signal
Output current at $I_E = 0$	$I_A = 0$ mA
Max. load resistance R_L	1 000 Ω
Residual ripple	≤ 20 mV_{eff}
Settling time (10 ... 90%)	< 200 µs (isolating transformers: < 600 µs)
Galvanic isolation	
• Test voltage according to EN 60079-11	
- Ex i-input to output	375 V peak value
- Ex i-input to auxiliary power	375 V peak value
• Test voltage according to EN 61010/EN 50178	
- Output to auxiliary power	300 V_{eff}
- Output to output	300 V_{eff}
Measuring accuracy	
Error limits temperature influence	≤ 0.1%/10 K
Deviation	≤ 0.1%
Deviation typical	0.05%
Operating conditions	
Degree of protection	
• Enclosure	IP30
• Terminals	IP20
Ambient temperature	-20 ... +60 °C (-4 ... +140 °F)
Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
Relative humidity	≤ 95%, (no condensation)
Usage in height	< 2 000 m (6 562 ft)
Electromagnetic compatibility	Tested acc. to the following standards and regulations: • EN 61326-1 Use in the industrial environment • Interference immunity in accordance with EN 61000-6-2 • Noise radiation according to EN 61000-6-4
Structural design	
Weight	185 g (0.41 lb)
Enclosure material	Polyamide
Grid size	12.5 mm (0.49 inch)
Fire resistance (UL-94)	V0
Mounting type	DIN rail NS35/15; NS35/7.5

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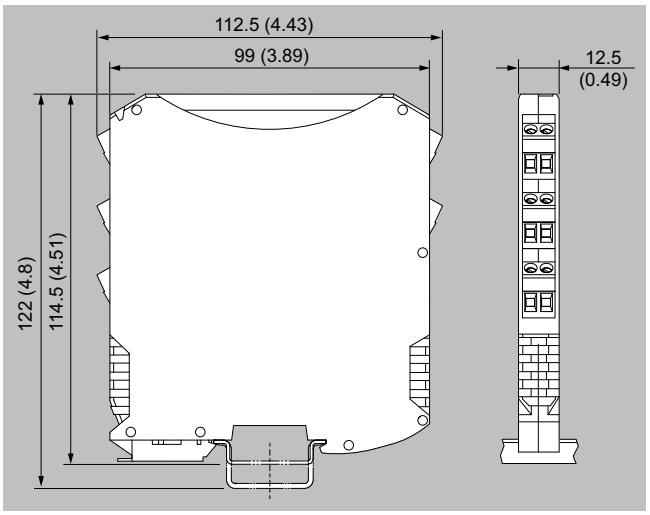
Technical specifications (continued)

SITRANS I100	
Mounting position	Vertical or horizontal
Connection type	Screw terminals
• One-wire core cross-section	
- Rigid	0.2 ... 2.5 mm² (0.00031 ... 0.0039 inch²)
- Flexible	0.2 ... 2.5 mm² (0.00031 ... 0.0039 inch²)
Auxiliary power	
Nominal voltage U_N	24 V DC
Voltage range	19.2 ... 30 V
Residual ripple within voltage range	≤ 3.6 V_{SS}
Rated current	76 mA
Power consumption	1.8 W
Max. power loss:	1.2 W
Status indicator	Green "PWR" LED
Reverse polarity protection	Yes
Safety specifications	
• Max. voltage U_o	25.2 V
• Max. current I_o	93 mA
• Max. power P_o	587 mW
• Max. permissible external capacitance C_o for IIC/IIB	107 nF/820 nF
• Max. permissible external inductance L_o for IIC/IIB	2 mH/4 mH
• Internal capacitance C_i and inductance L_i	Negligible
• Max. safety-technical voltage	AC 253 V
• SIL	2
• Isolation amplifier, input:	
- Max. output voltage U_o	-[1]
- Max. connectable voltage U_i	30 V
- Max. connectable current I_i	150 mA
- Internal capacitance Ci and inductance L_i of the isolation amplifier	Negligible
Certificates and approvals	
ATEX/IECEx explosion protection	
Certificates	• BVS 17 ATEX E 087 X • IECEx BVS 17.0079X
Gas/dust explosion protection, firedamp protection for Zones 2 and 22	
• ATEX	• II 3 (1) G Ex nA [ia Ga] IIC T4 Gc • II (1) D [Ex ia Da] IIIC • I (M1) [Ex ia Ma] I
• IECEx	• Ex nA [ia Ga] IIC T4 Gc • [Ex ia Da] IIIC • [Ex ia Ma] I
Installation	In Zones 2 and 22, Div. 2 and in safe areas
Other approvals	• USA/Canada (UL): NEC certification (Class I, II, III) 1, 2 • DNV marine approval • Other approvals for India and Korea

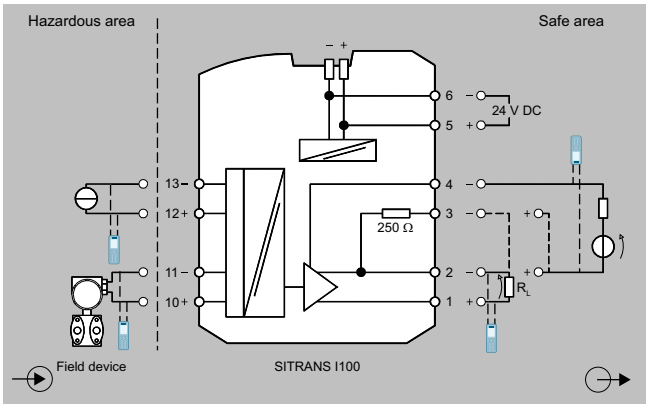
[1] U_o does not have to be taken into account in 4-wire operation.

Dimensional drawings

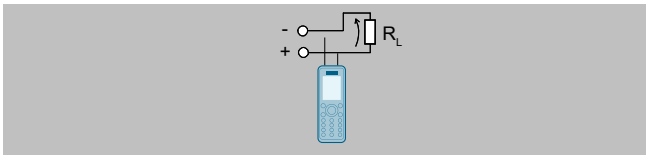


SITRANS I100 isolating power supply HART, dimensions in mm (inch)

Circuit diagrams



SITRANS I100 isolating power supply HART, connection diagram



SITRANS I100 isolating power supply HART, output configuration

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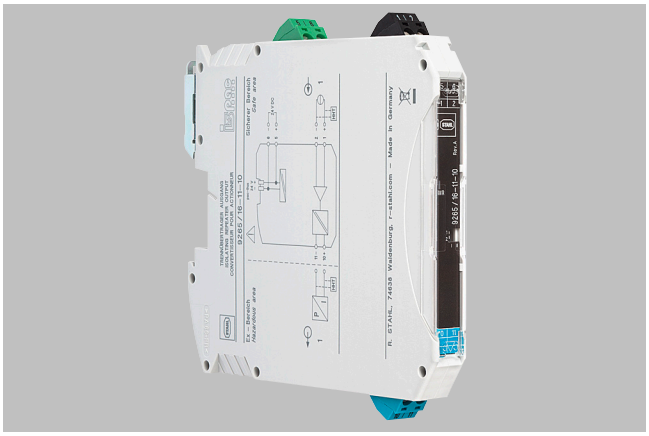
Overview



Analog output 0/4 to 20 mA for HART

The single-channel Ex i output isolation amplifiers are used for intrinsically safe operation of valve positioners, i/p converters or indicators.

Operation of intrinsically safe HART valve positioners (e.g. SIPART PS2) is also possible. The devices transfer a superimposed HART communication signal bidirectionally.

The SITRANS I200 is used for intrinsically safe operation of regulating valves, I/P converters or indicators.

- Superimposed HART communication signals are transmitted bidirectionally by the output isolator.
- Input, output and auxiliary power are electrically isolated from each other.

Benefits

- Compact single-channel Ex i output isolation amplifiers
- Narrow design – 12.5 mm (0.49 inch) width – for single-channel version
- For HART output signals 0/4 to 20 mA
- Output intrinsically safe [Ex ia] IIC
- Galvanic isolation between input, output and auxiliary power
- Wire break and short-circuit monitoring and messaging (can be switched off)
- Installation permissible in Zone 2 and Div. 2
- Can be used up to SIL 2 (IEC/EN 61508)

	Zones					
	0	1	2	20	21	22
Ex intrinsically safe interface	X	X	X	X	X	X
Installation in			X			X

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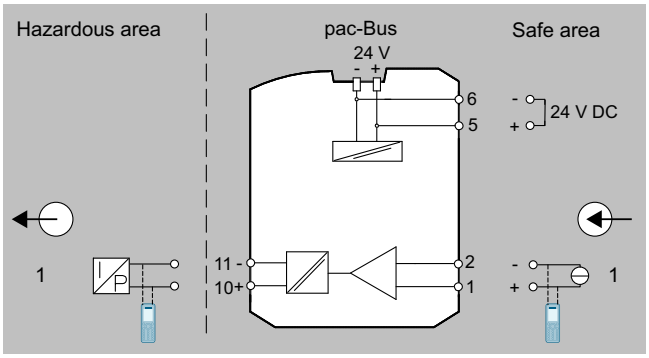
Design

The SITRANS I200-Ex i output isolation amplifier is comprised of a compact plastic enclosure (IP30) and is equipped with push-in screw terminals.

On the front are a green LED for indicating the power supply status and a red LED for signaling errors.

The auxiliary power supply can be individually connected using push-in screw terminals.



SITRANS I200 output isolation amplifier, function block diagram

Selection and ordering data

	Article No.
SITRANS I200 Ex i output isolation amplifier, Ex • Single channel • DIN rail mounting • For HART output signals 0/4 ... 20 mA • Intrinsically safe operation of positioners, e.g. SIPART PS2, I/P converters or indicators • 12.5 mm wide • Approved up to SIL 2 (IEC/EN 61508)	**7NG4131-1AA00**

Technical specifications

SITRANS I200	
General	
Number of channels	1
LFD relay (LFD = Line fault detection)	No
Electrical specifications	
Input	
Input signal	0/4 ... 20 mA with HART
Functional range	0 ... 24 mA
Response threshold line fault (L_F)	I_E > 3.6 mA
Response of the input to line fault (L_F)	R_E ≥ 1 MΩ
Output	
Output signal	0/4 ... 20 mA with HART
Functional range	0.0 ... 24.0 mA
Communication signal	HART
Max. load resistance R_L	700 Ω
Residual ripple	≤ 20 mV
Settling time (10 ... 90%) (valid for 4 ... 20 mA)	≤ 140 µs
No-load voltage U_a	27.00 V
Average measuring error	0.10%
Line fault	
• Setting switch	Enabled/disabled for short circuit
• Response threshold	I_E > 3.6 mA
• Display	Red "ERR" LED
Error detection	
• Wire break	R_L > 10 kΩ
• Short circuit	R_L < 50 Ω
Error limits temperature influence	≤ 0.1% / 10 K
Galvanic isolation	
Test voltage according to IEC EN 60079-11	
• Ex i output to auxiliary power	375 V AC peak value
• Ex i output to input	375 V AC peak value
Test voltage according to EN 61010/EN 50178	
• Input to auxiliary power	300 V_{eff}
Auxiliary power	
Nominal voltage U_N	24 V DC
Voltage range	19.2 ... 30 V
Rated current	45 mA
Power consumption	1.1 W
Max. power loss:	1.1 W
Status indicator	Green "PWR" LED
Reverse polarity protection	Yes
Safety specifications	
• Max. voltage U_o	25.2 V
• Max. current I_o	93 mA
• Max. power P_o	587 mW
• Max. permissible external capacitance C_o for IIC/IIB	0.107 µF/0.817 µF
• Max. permissible external inductance L_o for IIC/IIB	2 mH/4 mH
• Internal capacitance C_i / internal inductance L_i	Negligible
• Max. safety-technical voltage	253 V
• SIL	2
Operating conditions	
Degree of protection	
• Enclosure	IP30

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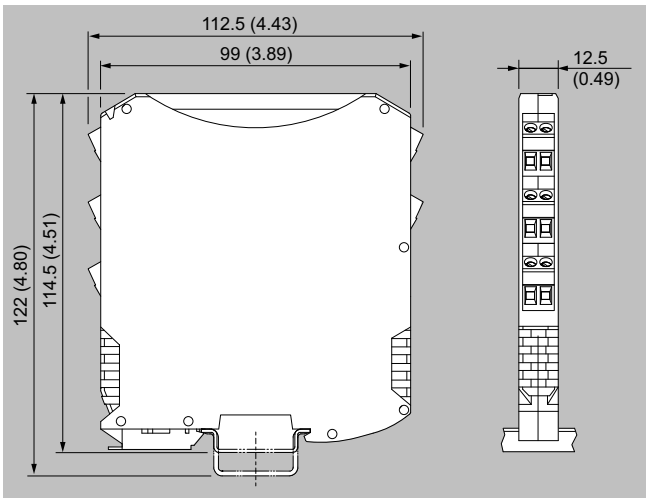
Technical specifications (continued)

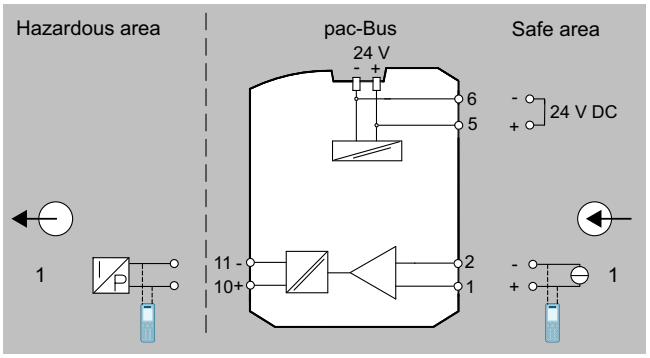
SITRANS I200	
• Terminals	IP20
Ambient temperature	-40 °C ... +70 °C (-40 °F ... +158 °F)
Storage temperature	-40 °C ... +85 °C (-40 °F ... +185 °F)
Relative humidity	≤ 95%
Usage in height	< 2 000 m (6 562 ft)
Electromagnetic compatibility (EMC)	• EN 61326-1 Use in the industrial environment • Namur NE 21
Structural design	
Weight	0.170 kg (0.38 lb)
Enclosure material	Polyamide
Grid size	12.5 mm (0.49 inch)
Width	12.5 mm (0.49 inch)
Height	114.5 mm (4.51 inches)
Length	116 mm (4.57 inches)
Fire resistance (UL-94)	V0
Mounting type	DIN rail NS35/15. NS35/7.5
Mounting position	Any (vertical or horizontal)
Connection type	Screw terminal
Screw terminals	
Core cross-section	
• Rigid	0.2 mm² ... 2.5 mm² (0.00031 ... 0.0039 inch²)
• Flexible min.	0.2 mm² ... 2.5 mm² (0.00031 ... 0.0039 inch²)
Conductor cross-section AWG	16 ... 12
Certificates and approvals	
ATEX/IECEx explosion protection	
Operating range (zones)	2
Ex interface zone	0, 20
Gas/dust explosion protection, firedamp protection for Zones 2 and 22	
Certificates	• BVS 20 ATEX E 045 X • IECEx BVS 20.0035X
• ATEX	• Ex II 3 (1) G Ex ec [ia Ga] IIC T4 Gc • Ex II (1) D [Ex ia Da] IIIC • Ex I (M1) Ex [Ex ia Ma] I
• IECEx	• Ex ec [ia Ga] IIC T4 Gc • [Ex ia Da] IIIC • Ex [Ex ia Ma] I
Installation	In Zone 2, Div. 2 and in the safe area
Certificates	• ATEX (BVS), IECEx (BVS), SIL (BVS) • cULus • PESO • KTL
Marine approval	DNV

Dimensional drawings



SITRANS I200 output isolation amplifier HART, dimensions in mm (inch)

Circuit diagrams



SITRANS I200 output isolation amplifier HART, connection diagram

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Overview

EIA-485 interface for Modbus RTU, PROFIBUS RS 485-IS and BACnet MS/TP communication.

- The isolating power supplies are used for the intrinsically safe operation of 4-wire devices.
- The isolating power supply supplies the 4-wire devices with power.

Benefits

- Suitable for 4-wire devices
- Galvanic isolation between EIA-485 and EIA-485-IS, between the power supply and EIA-485-IS, and between the power supply on the input side and the intrinsically safe power supply on the output side.
- Intrinsically safe power supply and communication [Ex ia] IIC
- Installation permissible in Zone 2 and Div. 2
- Diagnostics via LEDs
- Integrated, connectable bus termination on the non-hazardous side and the hazardous side
- Transmission rates of 1 200 bps to 1.5 Mbps

Application

Isolating power supply for 4-wire devices in hazardous areas

Design

The EIA-485 transmitter isolating power supply consists of a compact plastic enclosure (IP20) in the SIMATIC S7-1200 design, and is equipped with plug-in screw terminals. On the front are a green LED for indicating the auxiliary power supply status and a yellow LED for signaling communication. The push-in screw terminals are jumpered on the EIA-485 transmitter isolating power supply, allowing the power supply and primary-side communication to further SITRANS I300 devices to be looped through.

Selection and ordering data

	Article No.
SITRANS I300 isolating power supply Isolating power supply with intrinsically safe EIA-485 interface, DIN rail mounting, for 4-wire devices	**A5E39832532**

Technical specifications

SITRANS I300	
Power supply	
Input	
• Nominal voltage U_N	24 V DC
• Voltage range	19.2 ... 28.8 V
• Residual ripple within voltage range	≤ 3.6 V_{SS}
• SITRANS I300 current consumption (24 V DC)	≤ 210 mA
• Power loss for a load of 1.5 W	3.3 W at 24 V DC
• Reverse polarity protection	Yes
Output	
• Nominal voltage	15.6 V
• Max. current	459 mA
• Max. power	1.5 W
Galvanic isolation	Test voltage according to EN 60079-11
• EIA-485 to EIA-485-IS	1 500 V AC
• Power supply to EIA-485-IS	1 500 V AC
Operating conditions	
Degree of protection of enclosure	IP20
Degree of protection of terminals	IP20
Ambient conditions	
• Ambient temperature	-40 ... +60 °C (-40 ... +140 °F)
• Storage temperature	-40 ... +70 °C (-40 ... +158 °F)
• Relative humidity (no condensation)	≤ 95%
Electromagnetic compatibility	Tested acc. to the following standards and regulations: EN 61326-1 Use in the industrial environment
Structural design	
Dimensions in mm (width x height x depth)	70 x 100 x 75
Weight	Approx. 250 g (0.55 lbs)
Screw terminals	
• One-wire connection	
- Rigid	0.34 ... 2.5 mm² (AWG 22 ... 14)
- Flexible	0.34 ... 2.5 mm² (AWG 22 ... 14)
- Flexible with end ferrules	0.34 ... 2.5 mm² (AWG 22 ... 14)
Mounting type	• On DIN rail acc. to EN 50022 (NS35/15; NS35/7.5) • Wall
Mounting position	Vertical or horizontal

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Technical specifications (continued)

SITRANS I300	
Communication	
EIA-485 segment (primary side)	
• Supported transmission rates	• 1 200 bps • 2 400 bps • 4 800 bps • 9 600 bps • 19.2 kbps (factory setting) • 38.4 kbps • 45.45 kbps • 57.6 kbps • 76.8 kbps • 93.75 kbps • 115.2 kbps • 187.5 kbps • 460.8 kbps • 500 kbps • 1.5 Mbps
• Terminating resistor	Integrated, connectable
EIA-485-IS segment (secondary side)	
• Permissible cable lengths	
- 1 200 ... 187 500 bps	≤ 1 000 m
- 500 kbps	≤ 400 m
- 1.5 Mbps	≤ 200 m
• Terminating resistor	Integrated, connectable
Diagnostic functions	
• Monitoring, 24 V power supply	Green "PWR" LED
• Bus monitoring	Yellow "RX/TX" LED
Certificates and approvals	
ATEX explosion protection	
• EC type-examination certificate	ATEX LVD EMC RoHs
• Degree of protection	CAT 3[1] G
Installation	In Zone 2, Div. 2 and in safe areas
Safety specifications (acc. to IEC 60079-11)	
• Max. voltage U_0	17.42 V
• Max. current I_0	459 mA
• Max. power P_0	2 000 mW
• Max. connectable capacitance C_0 for IIC/IIB	327 nF/1 958 nF
• Max. connectable inductance L_0 for IIC/IIB	134 µH/675 µH
• Internal capacitance C_i	Negligible
• Internal inductance L_i	Negligible
• Maximum insulation voltage U_m	See certificate
Explosion protection acc. to EAC Ex	Available soon
Marine approvals	• DNV-GL (Det Norske Veritas/Germanischer Lloyd) • LR (Lloyds Register) • BV (Bureau Veritas) • ABS (American Bureau of Shipping) • RINA (Registro Italiano Navale)

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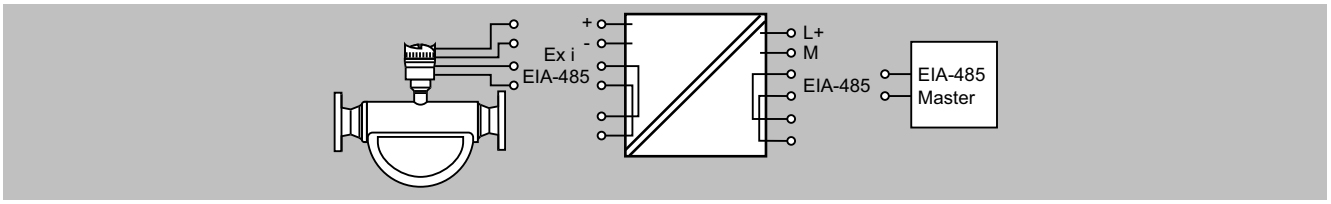
Circuit diagrams



SITRANS I300 isolating power supply, connection diagram

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Overview

The SITRANS RD100 is a 2-wire loop powered, NEMA 4X enclosed remote digital display for process instrumentation.

Benefits

- Easy setup
- Approved for hazardous locations
- NEMA 4X, IP67 impact-resistant enclosure
- Simple two-step calibration
- Two modes of input allow for easy servicing, with no interruption of loop required

Application

The RD100 is very versatile. It can be installed indoors or outdoors, in hot or cold environments, and in safe or hazardous areas.
It has been approved by FM and CSA as Intrinsically Safe and non-incendive, and operates from -40 to +85 °C
(-40 to +185 °F), adding only 1 V to the loop.

Calibration consists of a quick two-step process involving the adjustment of only two non-interacting potentiometers.

- Key Applications: remotely displays process variables in level, flow, pressure, temperature, and weighing applications, in a 4 to 20 mA loop.

Selection and ordering data

SITRANS RD100 Display Remote digital display for process instruments. 2-wire, loop powered, NEMA 4X enclosure.	Article No. 7ML5741-	●	●	A	0	0	-	0
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.								
Conduit hole location (½ inch)								
None		1						
Bottom		2						
Rear		3						
Top		4						
Approvals								
FM/CSA			A					
CE			B					

Selection and Ordering data	Article No.
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	
Panel mount kit	**7ML1930-1BN**
2 inch (5.08 cm) pipe mounting kit (zinc plated seal)	**7ML1930-1BP**
2 inch (5.08 cm) pipe mounting kit (stainless steel, Type 304, EN 1.4301)	**7ML1930-1BQ**

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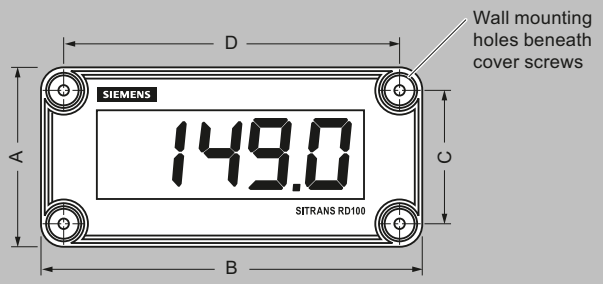
Technical specifications

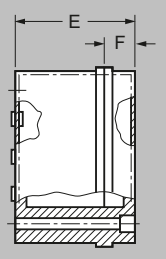
SITRANS RD100	
Mode of operation	
Measuring principle	Analog to digital conversion
Measuring range	4 ... 20 mA
Measuring points	1 instrument only
Accuracy	± 0.1 % of span ± 1 count
Rated operating conditions	
Ambient conditions	
• Operating temperature range	-40 ... +85 °C (-40 ... +185 °F)
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)
Design	
Weight	340 g (12 oz)
Material (enclosure)	Impact-resistant glass filled polycarbonate body and clear polycarbonate cover
Degree of protection	NEMA 4X, IP67
Power supply	
External loop power supply	30 V DC max.
Display	• 1.0 inch (2.54 cm) high LCD • Numeric range from -1 000 ... +1 999
Certificates and approvals	
Non-hazardous	CE
Hazardous	
• Intrinsically Safe	• CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G T4 • CSA/FM Class I, Zone 0, Group IIC
• Non-incendive	• CSA/FM Class I, Div. 2, Groups A, B, C, D • CSA/FM Class II and III, Div. 2, Groups F and G
Options	
Mounting	• 2 inch (5.08 cm) pipe mounting kit (zinc plated or stainless steel) • Panel mounting kit

Dimensional drawings

RD100 - front view



RD100 - side view



A: 80 (3.15)
B: 140 (5.51)
C: 60 (2.36)
D: 120 (4.72)
E: 65 (2.56)
F: 20 (0.79)

SITRANS RD100, dimensions in mm (inch)

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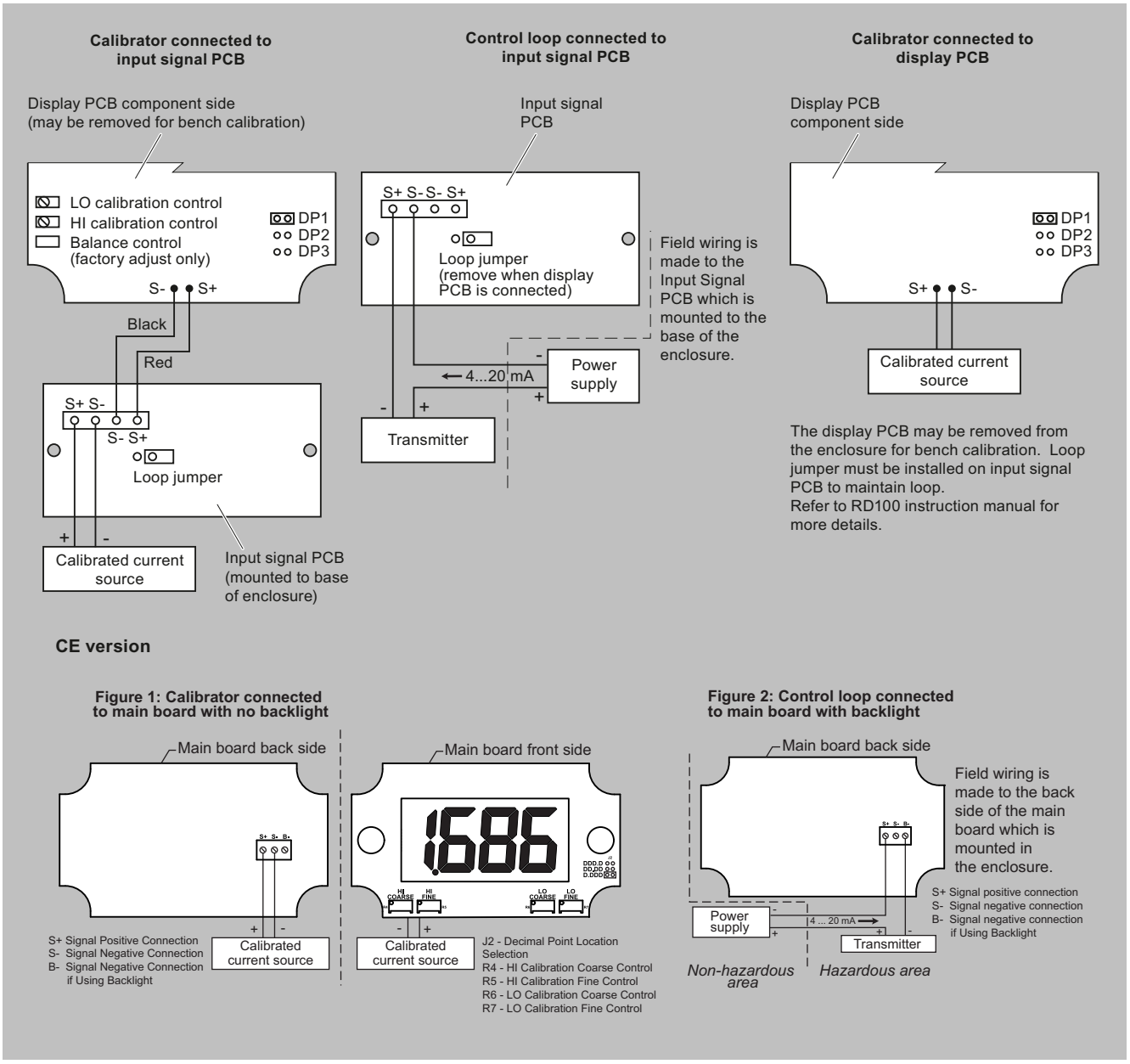
Circuit diagrams



SITRANS RD100 connections

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SITRANS RD150

Overview

The SITRANS RD150 is a remote display for 4 to 20 mA and HART devices.

Benefits

- Ease of use through 4 button menu driven display
- Backlit display
- HART communications
- Flexible mounting options
- Plastic, stainless steel or aluminum housings up to IP68
- Full configuration of connected sensors with optional USB Communicator and PC
- Support for multiple HART sensors with HART Multi-drop

Application

The versatile SITRANS RD150 can be installed remotely from your instrument, providing 4/20 mA or multiple HART variable readings in a safe and convenient location.

Easy to use, 4 button, menu driven, display for configuration of HART instruments via standard HART commands and full configuration of connected instruments via USB and computer.

- Key Applications: remotely displays process variables in level, flow, pressure, temperature, and weighing applications, in a 4 to 20 mA HART loop.

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Selection and ordering data

SITRANS RD150 Display Remote digital display with configuration for process instruments. HART or 4 to 20 mA loop display, metal and plastic field mount enclosures.	Article No. 7ML5742-	●	●	●	●	●	-	●	●	●	●
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.											
Approvals											
Ordinary Locations/General Purpose (Non-Ex), CE, UKCA		0	A								
ATEX II 1G, Ex ia IIC T6...T1 Ga[4] UKEX II 1G, Ex ia IIC T6...T1 Ga[4]		0	C								
ATEX II 2G Ex db IIC T6 Gb[9][10] UKEX II 2G Ex db IIC T6 Gb[9][10]		0	F								
IECEx Ex ia IIC T6...T1 Ga, Gb[4]		0	J								
IECEx Ex db IIC T6 Gb[9][10]		0	M								
$_{C}CSA_{US}$ (IS) Class I, Div. 1, Groups A, B,C, D[12]		0	N								
$_{C}CSA_{US}$ (XP) Class I, Div. 1, Groups A, B, C, D[9][11]		0	R								
Electronics											
Two-wire 4 ... 20 mA/HART				A							
Two-wire 4 ... 20 mA without HART				B							
Housing											
Plastic[1][4][6]					0						
Aluminum[2][4][7]					1						
Stainless steel (precision casting)[2][4][7]					2						
For panel mounting (72 x 72 mm)[3][5][8]					3						
Housing protection											
IP66/IP67 NEMA 4X						0					
IP66/IP68 NEMA 6P (0.2 bar)						1					
IP40 NEMA 2						2					
IP40 Type 1						3					
Cable entry											
M20 x 1.5/Cable gland PA black (ø5 ... 9 mm), standard								0			
M20 x 1.5/Cable gland brass nickel plated (ø6 ... 12 mm)								1			
M20 x 1.5/Blind plug								2			
M20 x 1.5/Threaded fitting brass nickel-plated; for shielded cable (ø9 ... 13 mm)								3			
½" NPT/Blind plug								4			
½" NPT/Cable gland PA black (ø5 ... 9 mm)								5			
½" NPT/Threaded fitting brass nickel plated (ø6 ... 12 mm)								6			
½" NPT/Threaded fitting brass nickel plated; for shielded cable (ø9 ... 13 mm)								7			
Without								8			
Display											
Without									A		
Mounted									B		
Mounting											
For wall mounting with aluminum or stainless steel housing										A	
For carrier rail and wall mounting with plastic housing										B	
For carrier rail with aluminum or stainless steel housing										C	
For tube mounting (29 ... 60 mm) incl. mounting material										D	
For panel mounting										E	
Certificates											
None											0
3.1 Certificate/Instrument with test data											1
Quality and Test plan											2

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Selection and ordering data (continued)

Selection and ordering data	Article No.
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	
USB communicator	**A5E35192015**
SITRANS LG/SITRANS RD150 sensor display module	**A5E34143449**

1) Available only with Housing protection option 0.
2) Available only with Housing protection option 1.
3) Available only with Housing protection option 2.
4) Available only with Cable entry options 0, 2, 4, and 5.
5) Available only without Cable entry option 8.
6) Available only with Carrier rail and Tube mount Mounting options.
7) Available only with Wall mount, Carrier rail with aluminum or stainless steel housing, and Tube mount Mounting options.
8) Available only with Panel mounting option.
9) Available only with Housing options 1 and 2.
10) Available only with Cable entry options 2, 3, 4, and 7.
11) Available only with Cable entry options 2, 3, 4, 6, and 7.
12) Not available with Cable entry option 1.

Technical specifications

SITRANS RD150	
Mode of operation	
Measuring principle	Analog to digital conversion
Measuring range	3.5 ... 22.5 mA
Measuring points	HART multi-drop support
Accuracy	± 0.1 % of 20 mA
Rated operating conditions	
Without display and adjustment module	-40 ... +80 °C (-40 ... +176 °F)
With display and adjustment module	-20 ... +70 °C (-4 ... +158 °F)
Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
Design	
Weight	
• Plastic housing	0.35 kg (0.772 lb)
• Aluminum housing	0.7 kg (1.543 lb)
• Stainless steel housing	2.0 kg (4.409 lb)
Material (enclosure)	
• Plastic housing	Plastic PBT (Polyester)
• Aluminum housing	Aluminum die-casting AlSi10Mg, powder-coated (basis: Polyester)
• Stainless steel housing	316L precision casting, blasted
Degree of protection	
• Plastic housing	IEC 60529 IP66/IP 67, NEMA Type 4X
• Housing for panel mounting (mounted)	IEC 60529 IP40, NEMA Type 1
• Aluminum/stainless steel housing	IEC 60529 IP66/IP68 (0.2 bar), NEMA Type 6P
Power supply	
External loop power supply	35 V DC max.
Display	
Number of digits	5
Digit size	7 x 13 mm (0.28 x 0.51 inch)
Certificates and approvals	See the online PIA configuration tool for details.
Options	
Mounting	• Panel Mounting • Carrier rail mounting • Pipe mounting

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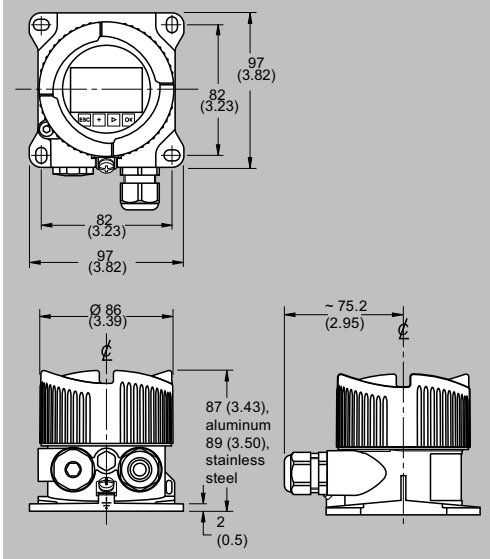
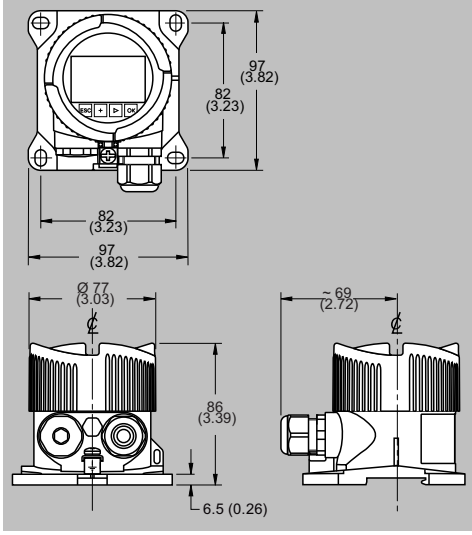
Dimensional drawings

SITRANS RD150, aluminum/stainless steel housing

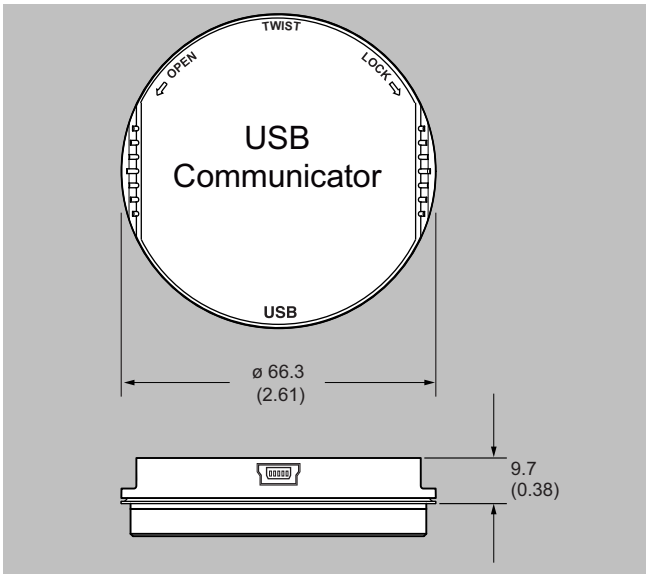


SITRANS RD150, plastic housing



SITRANS RD150, dimensions in mm (inch)

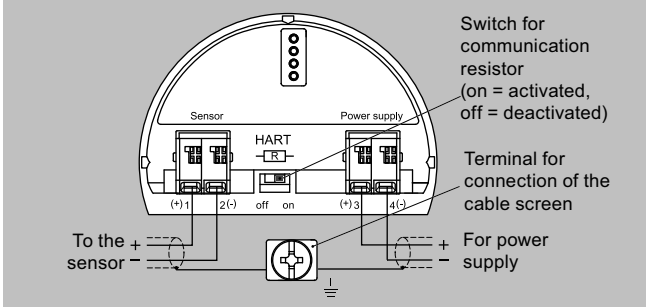
Dimensional drawings (continued)



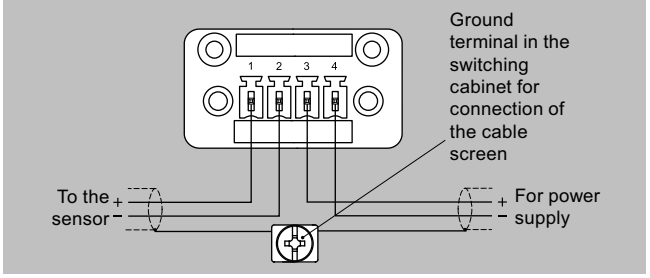
USB Communicator, dimensions in mm (inch)

Circuit diagrams

Standard housing with 2 wire device



Panel mount



SITRANS RD150 connections

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SITRANS RD200

Overview

The SITRANS RD200 is a universal input, panel mount remote digital display for process instrumentation.

Benefits

- Easy setup and programming via front panel buttons or remotely using RD software
- Display readable in sunlight
- Universal input: accepts current, voltage, thermocouple, and RTD signals
- Single or dual 24 V DC transmitter power supply
- Serial communication using built in protocol or Modbus RTU
- Two optional relays for alarm indication or process control applications
- Linear or square root function supported
- Meter Copy feature to reduce setup time, cost, and errors
- RD software supports remote configuration, monitoring, and logging for up to 100 displays
- Other features include: 4 to 20 mA analog output option, pump alternation control, and optional NEMA 4 and 4X field enclosures
- 2X option for 30.5 mm (1.2 inch) high, red LED display

Application

The RD200 is a universal remote display for level, flow, pressure, temperature, weighing, and other process instruments.

Data can be remotely collected, logged and presented from as many as 100 displays on your local computer using the free downloadable RD Software.

The display accepts a single input of current, voltage, thermocouple, and RTD. This makes the RD200 an ideal fit for use with most field instruments.

The RD200 can be set up as a standard panel mount, or combined with optional enclosures to allow it to house up to 6 displays.

- Key Applications: tank farms, pump alternation control, local or remote display of level, temperature, flow, pressure and weighing instrument values, PC monitoring, and data logging with RD Software.

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Selection and ordering data

SITRANS RD200 Display Remote digital display for process instruments. With 4 to 20 mA, 0 to 10 V, RTD, and TC inputs and pump control. Panel mount with field mount enclosure options.	Article No. 7ML5740- ●	●	●	●	●	-	●	A
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.								
Input voltage								
85 ... 265 V AC, 50/60 Hz; 90 ... 265 V DC, 20 W max.	1							
12 ... 36 V DC; 12 ... 24 V AC, 6 W max.	2							
Transmitter supply								
None		A						
Single 24 V DC transmitter supply[1]		B						
Dual 24 V DC transmitter supply[1][2]		C						
Output								
None			A					
2 relays			B					
4 ... 20 mA output			C					
Communication								
Modbus RTU				0				
Approvals								
Ordinary Locations/General Purpose (Non-Ex), CE, UKCA, UL, ¿UL					1			
Display Size								
Standard							0	
2X option for 30.5 mm (1.2 inch) high, red LED							1	

1) Available with input voltage option 1 only.
2) Available with output option C only.

Selection and Ordering data	Article No
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	
SITRANS RD200 copy cable 2.1 m (7 ft)	**7ML1930-1BR**
SITRANS RD200 RS 232 serial adapter (copy cable included)	**7ML1930-1BS**
SITRANS RD200 RS 422/485 serial adapter (copy cable included)	**7ML1930-1BT**
RS 232 to RS 422/485 isolated converter	**7ML1930-1BU**
RS 232 to RS 422/485 non-isolated converter	**7ML1930-1BV**
USB to RS 422/485 isolated converter	**7ML1930-1BX**
USB to RS 422/485 non-isolated converter	**7ML1930-1BY**
RD200 USB serial adapter	**7ML1930-6AH**
USB to RS 232 converter	**7ML1930-6AK**
RD Software CD for 1 ... 100 displays	**7ML1930-1CC**
Low cost polycarbonate plastic enclosure for 1 display	**7ML1930-1CF**
2 inch (5.08 cm) pipe mounting kit (zinc plated seal) only available with 7ML1930-1CF	**7ML1930-1BP**
2 inch (5.08 cm) pipe mounting kit (stainless steel, Type 304, EN 1.4301) only available with 7ML1930-1CF	**7ML1930-1BQ**
Thermoplastic enclosure	
For use with 1 display	**7ML1930-1CG**
For use with 2 displays	**7ML1930-1CH**
For use with 3 displays	**7ML1930-1CJ**
For use with 4 displays	**7ML1930-1CK**
For use with 5 displays	**7ML1930-1CL**
For use with 6 displays	**7ML1930-1CM**
Stainless steel enclosure (Type 304, EN 1.4301)	
For use with 1 display	**7ML1930-1CN**
For use with 2 displays	**7ML1930-1CP**
For use with 3 displays	**7ML1930-1CQ**
For use with 4 displays	**7ML1930-1CR**
For use with 5 displays	**7ML1930-1CS**
For use with 6 displays	**7ML1930-1CT**
Steel enclosure	
For use with 1 display	**7ML1930-1CU**
For use with 2 displays	**7ML1930-1CV**
For use with 3 displays	**7ML1930-1CW**
For use with 4 displays	**7ML1930-1CX**
For use with 5 displays	**7ML1930-1CY**
For use with 6 displays	**7ML1930-1DA**

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Technical specifications

SITRANS RD200	
Mode of operation	
Measuring principle	Analog to digital conversion
Measuring points	• 1 instrument • Remote monitoring of 100 instruments with PC and RD software
Input	
Measuring range	
• Current	• 4 ... 20 mA, 0 ... 20 mA
• Voltage	• 0 V DC ... 10 V DC, 1 ... 5 V, 0 ... 5 V
• Thermocouple temperature	• Type J: -50 ... +750 °C (-58 ... +1 382 °F) • Type K: -50 ... +1 260 °C (-58 ... +2 300 °F) • Type E: -50 ... +870 °C (-58 ... +1 578 °F) • Type T: -180 ... +371 °C (-292 ... +700 °F) • Type T, 0.1° resolution: -180.0 ... +371 °C (-199.9 ... +700 °F)
• RTD temperature	• 100 Ω RTD: -200 ... +750 °C (-328 ... +1 382 °F)
Output signal	
Output	• 4 ... 20 mA (optional) • Modbus RTU
Relays	2 SPDT Form C relays, rated 3 A at 30 V DC or 3 A at 250 V AC, non-inductive, auto-initializing (optional)
Communications	• RS 232 with PDC or Modbus RTU • RS 422/485 with PDC or Modbus RTU
Accuracy	
4 ... 20 mA optional output	± 0.1 % FS ± 0.004 mA
Process input	± 0.05 % of span ± 1 count, square root: 10 ... 100 % FS
Thermocouple temperature input	• Type J: ± 1 °C (± 2 °F) • Type K: ± 1 °C (± 2 °F) • Type E: ± 1 °C (± 2 °F) • Type T: ± 1 °C (± 2 °F) • Type T, 0.1° resolution: ± 1 °C (± 1.8 °F)
RTD temperature input	• 100 Ω RTD: ± 1 °C (± 1 °F)
Rated operating conditions	
Ambient conditions	
• Storage temperature range	-40 ... +85 °C (-40 ... +185 °F)
• Operating temperature range	-40 ... +65 °C (-40 ... +149 °F)
Design	
Weight	269 g (9.5 oz) (including options)
Material (enclosure)	• 1/8 DIN, high impact plastic, UL94V-0, color: gray • Optional plastic, steel and stainless steel (Type 304, EN 1.4301) NEMA 4 enclosures
Degree of protection	Type 4X, NEMA 4X, IP65 (front cover); panel gasket provided
Electrical connection	
mA output signal	2-core copper conductor, twisted, shielded, 0.82 ... 3.30 mm² (18 ... 12 AWG), Belden 8 760 or equivalent is acceptable
Electrical connection and relay connection	Copper conductor according to local requirements, rated 3 A at 250 V AC
Power supply	
Input voltage option 1	85 ... 265 V AC, 50/60 Hz; 90 ... 265 V DC, 20 W max.
Input voltage option 2	12 ... 36 V DC; 12 ... 24 V AC, 6 W max.
Transmitter power supply	One or two isolated transmitter power supplies (optional)
• Single power supply	One 24 V DC ± 10 % at 200 mA max.
• Dual power supplies	Two 24 V DC ± 10 % at 200 mA and 40 mA max.

Technical specifications (continued)

SITRANS RD200	
External loop power supply	35 V DC max.
Output loop resistance	• 24 V DC, 10 ... 700 Ω max. • 35 V DC (external), 100 ... 1 200 Ω max.
Displays and controls	
Display	• 14 mm (0.56 inch) high LED • 2X option for 30.5 mm (1.2 inch) high, red LED • Numeric range from -1 999 ... +9 999 • Four digits, automatic lead zero blanking • Eight intensity levels
Memory	• Non-volatile • Stores settings for minimum of 10 years if power is lost
Programming	• Primary: front panel • Secondary: meter copy or PC with SITRANS RD software
Certificates and approvals	CE, UKCA, UL, cUL
Options	
Enclosures	Plastic, steel, and stainless steel (Type 304, EN 1.4301) NEMA 4 and 4X enclosures
Mounting	• 2 inch (5.08 cm) pipe mounting kit (zinc plated seal) • 2 inch (5.08 cm) pipe mounting kit (stainless steel, Type 304, EN 1.4301)

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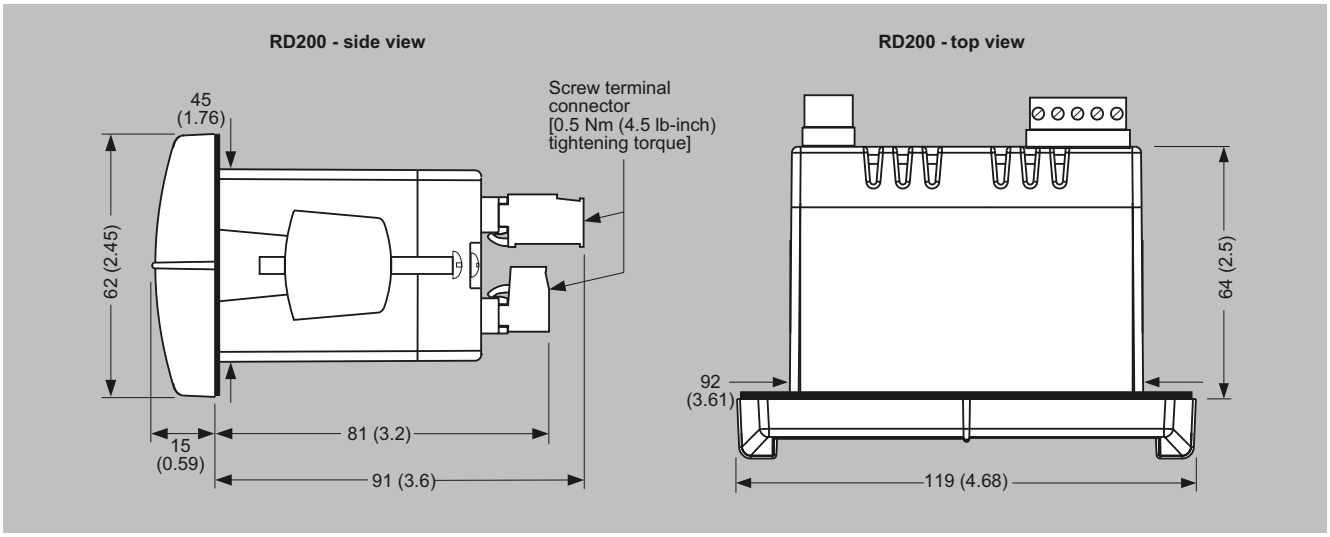
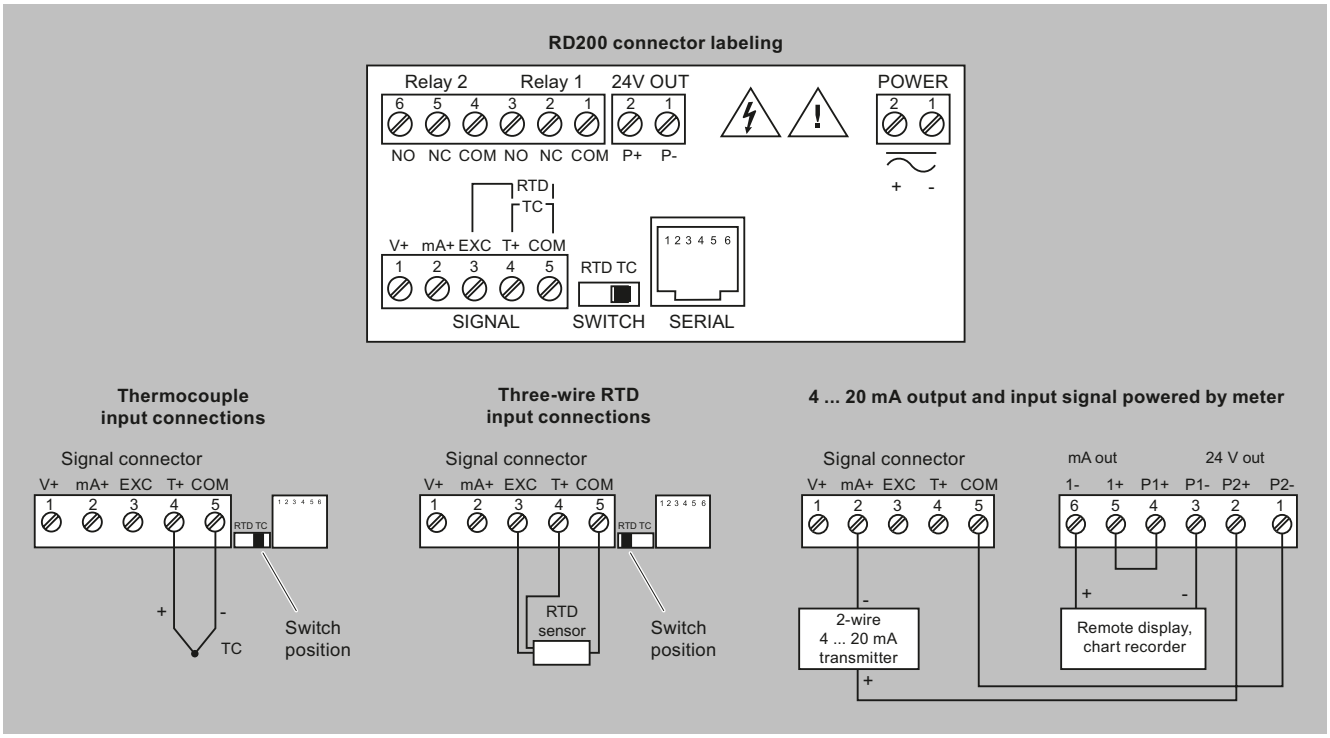
Dimensional drawings



SITRANS RD200, dimensions in mm (inch)

Circuit diagrams



SITRANS RD200 connections

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SITRANS RD300

Overview

The SITRANS RD300 is a panel mount remote digital display for process instrumentation and acts as a multi-purpose, easy to use, rate/totalizer ideal for flow rate, total, and control applications.

Benefits

- Easy setup and programming via front panel buttons or using free RD software available via USB drive
- Display readable in sunlight
- Input: accepts current and voltage
- Single or dual 24 V DC transmitter power supply
- Serial communication using built in protocol or Modbus RTU
- Supports up to 8 relays and 8 digital I/O for process control and alarming
- 32-Point linearization, square root or exponential linearization
- Multi-pump alternation control
- Supports total, grand total or non-resettable grand total
- 9-digit totalizer with total overflow feature
- Large dual-line, 6-digit display
- Configure, monitor, and datalog from a PC
- Dual-input option with math functions: addition, difference, average, multiplication, division, minimum, maximum, weighted average, ratio, concentration

Application

The RD300 is a remote display for level, flow, pressure, weighing, and other process instruments. This display also acts as a multi-purpose, easy to use rate/totalizer ideal for flow rate, total, and control applications.

Data can be remotely collected, logged and presented on your local computer using the free RD software available via USB drive.

The display accepts a single or dual input of current and voltage. This makes the RD300 an ideal fit for use with most field instruments.

The RD300 can be set up as a standard panel mount, or combined with optional enclosures to allow it to house up to 6 displays.

- Key Applications: tank farms, pump alternation control, local or remote display of level, flow, pressure and weighing instrument values, PC monitoring and data logging with RD Software.

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Selection and ordering data

SITRANS RD300 Display Remote digital panel mount process display with current or voltage inputs. Two input, multi-line display, totalizer and pump control.	Article No. 7ML5744-	●	●	●	●	●	-	0	A
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.									
Input voltage									
85 ... 265 V AC, 50/60 Hz; 90 ... 265 V DC, 20 W max.		1							
12 ... 36 V DC; 12 ... 24 V AC, 6 W max.		2							
Output									
None			A						
2 Relays			B						
4 Relays			C						
4 ... 20 mA output			D						
2 Relays and 4 ... 20 mA output			E						
4 Relays and 4 ... 20 mA output			F						
Type									
Single input process and flow rate/totalizer Mtr				A					
Dual input process Mtr				B					
Display									
Standard					0				
SunBright					1				
Approvals									
UL, cUL, and CE						0			

Selection and Ordering data	Article No.
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/ processinstrumentation/documentation	
Accessories	
DIN-Rail Mounting Kit	**7ML1930-6AB**
4 Relays Expansion Module	**7ML1930-6AC**
4 Digital I/O Module	**7ML1930-6AD**
Dual output 4 ... 20 mA expansion module for dual input meter	**7ML1930-6AP**
Meter Copy Cable	**7ML1930-6AE**
RD300 RS 232 Serial Adapter	**7ML1930-6AF**
RD300 RS 422/485 Serial Adapter	**7ML1930-6AG**
RD300 USB Serial Adapter	**7ML1930-6AJ**

Selection and Ordering data	Article No.
USB to RS 232 Converter	**7ML1930-6AK**
RS 232 to RS 422/485 isolated converter	**7ML1930-1BU**
RS 232 to RS 422/485 non-isolated converter	**7ML1930-1BV**
USB to RS 422/485 isolated converter	**7ML1930-1BX**
USB to RS 422/485 non-isolated converter	**7ML1930-1BY**
Snubber	**7ML1930-6AL**
Plastic enclosure	
For 1 meter	**7ML1930-6AM**
For 2 meters	**7ML1930-6AN**
For 4 meters	**7ML1930-1CK**
For 5 meters	**7ML1930-1CL**
For 6 meters	**7ML1930-1CM**

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Technical specifications

SITRANS RD300	
Mode of operation	
Measuring principle	Analog to digital conversion
Measuring points	1 or 2 instruments
Input	
Measuring range	
• Current	4 ... 20 mA, 0 ... 20 mA
• Voltage	0 V DC ... +10 V DC, 1 ... 5 V, 0 ... 5 V
Output signal	
Output	• 4 ... 20 mA (optional) • Modbus RTU
Relays	2 or 4 SPDT (Form C) internal and/or 4 SPST (Form A) external; rated 3 A at 30 V DC and 125/250 V AC resistive load; 1/14 HP (50 W) at 125/250 V AC for inductive loads (optional)
Communications	• RS 232 with Modbus RTU • RS 422/485 with Modbus RTU • USB configuration and monitoring port
Accuracy	
4 ... 20 mA optional output	± 0.1 % FS ± 0.004 mA
Process input	± 0.05 % of span ± 1 count, square root: 10 ... 100 % FS
Rated operating conditions	
Ambient conditions	
• Storage temperature range	-40 ... +85 °C (-40 ... +185 °F)
• Operating temperature range	-40 ... +65 °C (-40 ... +149 °F)
Design	
Weight	269 g (9.5 oz) (including options)
Material (enclosure)	• 1/8 DIN, high impact plastic, UL94V-0, color: gray • Optional plastic, steel and stainless steel (Type 304, EN 1.4301)NEMA 4 enclosures
Degree of protection	Type 4X, NEMA 4X, IP65 (front cover); panel gasket provided
Electrical connection	
mA output signal	2-core copper conductor, twisted, shielded, 0.82 ... 3.30 mm² (18 ... 12 AWG), Belden 8 760 or equivalent is acceptable
Electrical connection and relay connection	Copper conductor according to local requirements, rated 3 A at 250 V AC
Power supply	
Input voltage option	85 ... 265 V AC, 50/60 Hz; 90 ... 265 V DC, 20 W max. or jumper selectable 12/24 V DC ± 10 %, 15 W max.
Transmitter power supply	Terminals P+ & P-: 24 V DC ± 10 %, 12/24 V DC powered models selectable for 24, 10, or 5 V DC supply (internal jumper J4), 85 ... 265 V AC models rated at 200 mA max, 12/24 V DC powered models rated at 100 mA max., at 50 mA max. for 5 or 10 V DC supply.
External loop power supply	35 V DC max.
Output loop resistance	• 24 V DC, 10 ... 700 Ω max. • 35 V DC (external), 100 ... 1 200 Ω max.
Displays and controls	
Main display	0.6 inch (15 mm) high, red LEDs
Second display	0.46 inch (12 mm) high, red LEDs, 6-digits: each (-99 999 ... 999 999)
Memory	• Non-volatile • Stores settings for minimum of 10 years if power is lost
Programming	• Primary: front panel • Secondary: Meter Copy or PC with SITRANS RD Software

Technical specifications (continued)

SITRANS RD300	
Certificates and approvals	CE, UL, cUL
Options	
Enclosures	Plastic, steel and stainless steel (Type 304, EN 1.4301) NEMA 4 and 4X enclosures

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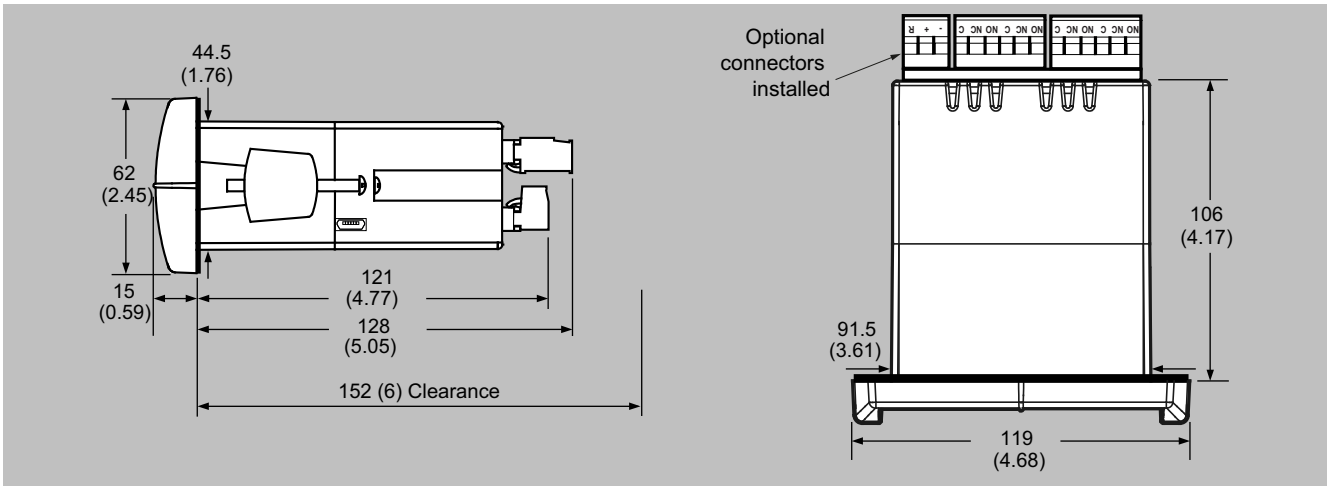
Dimensional drawings



SITRANS RD300, dimensions in mm (inch)

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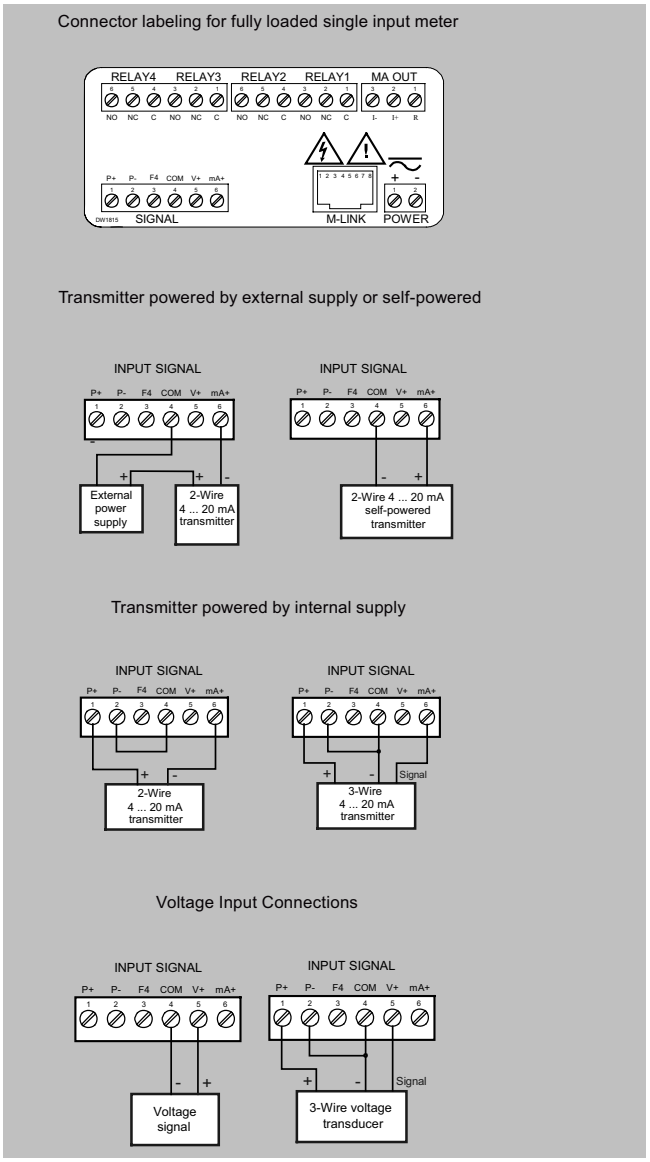
Circuit diagrams



SITRANS RD300 connections

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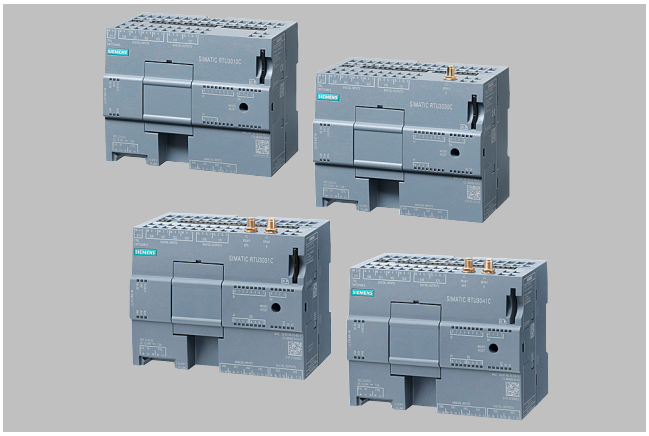
Overview



The devices of the RTU3000C family are compact RTUs (Remote Terminal Units) for applications with their own power supply. They are particularly suited for monitoring and control of external stations that are not connected to an energy supply network. The RTUs can independently collect data from connected sensors with time stamps, preprocess the data, and transfer it to a control center. The RTU3000C is supplied with power by a battery, an accumulator or a solar panel or by a 12 ... 24 V DC power supply unit.

The devices of the RTU3000C series are characterized by the following properties:

- Worldwide data exchange between a remote measuring point and a control center via public or private networks (WAN), e.g. mobile networks, internet
- Communication with a control center (telecontrol center) with the help of the DNP3, IEC 60870-5-104 or SINAUT ST7 telecontrol protocols
- Connection to a control center with TeleControl Server Basic
- Connection to a cloud system via MQTT
- Acquisition of process signals, alarms, count pulses, measured values or output of switching commands by means of integrated inputs as well as digital inputs and outputs
- Preprocessing of the acquired signals by a variety of function/program blocks
- FTP client functionality for transmitting data to an FTP server
- Time synchronization
  - On the basis of NTP (**N**etwork **T**ime **P**rotocol)
  - By means of the partner in the control center
  - Via the mobile radio network (RTU3030C, RTU3031C and RTU3041C)
  - Via GPS (RTU3031C and RTU3041C)
- Automatic alarm transmission per email or text message
- Use as data logger by saving the process values to SD card
- Data buffering in the substations in the event of connection failures
- LED signaling for fast diagnostics
- Compact industrial enclosure in S7-1200 design for mounting on a standard DIN rail

Overview (continued)

- Use in harsh environment thanks to extended temperature range from -40 to +70 °C and IP68 protection thanks to optional protective enclosure
- Fast commissioning thanks to easy configuration using the integrated web server

Additional RTU3030C and RTU3031C features:

- Integrated UMTS modem for global wireless data exchange between a remote measuring point and a control center based on the mobile wireless standard UMTS (**U**niversal **M**obile **T**elecommunications System) with data transfer rates of up to 21 Mbps in the downlink (HSDPA) and 5.76 Mbps in the uplink (HSUPA)
- UMTS operation with fixed or dynamic IP addresses, depending on telecommunication contract
- Time synchronization over the mobile network
- Wake-up of station from hibernation mode by means of text message or call

Additional RTU3031C features as compared to RTU3030C:

- Support for 4 additional digital outputs designed as solid-state relays
- GPS antenna connection option for localization and time synchronization
- Function block for comparison of the setpoint/actual position

For RTU3041C:

- Integrated modem for global wireless data exchange between a remote measuring point and a control center on the basis of the LTE-M and NB-IoT mobile wireless standards.
- With the sole exception of the mobile radio interface, the further functional scope corresponds with that of the RTU3031C.

Note that not all network operators for LTE-M and NB-IoT support the text messaging (SMS) function.

Additional functions with firmware V5.0

- Connection to cloud systems via MQTT, for example to MindSphere, MS Azure, AWS (Amazon) or IBM Cloud
- Support for MQTT publish/subscribe mechanisms for sending topics from the RTU3000C to the cloud (publish) and receiving topics from the cloud (subscribe).
- To facilitate commissioning, RTU3000C supports DCP (Discovery and Configuration Protocol).
- To accelerate firmware updates, the firmware can be upgraded directly via the SD card without using the WBM as of installed V5.0.

Additional functions with firmware V4.0

- Only for RTU3041C: Power saving function eDRX (Extended Discontinuous Reception) for LTE-M and NB-IoT mobile networks, in order to reduce power consumption.
- Function block "Formula": The function block calculates the result of the specified mathematical or Boolean expression, depending on as many as four input variables.

Additional functions with firmware V3.1

- Connection of sensors via Modbus RTU (as of firmware V3.0) or HART Multidrop (as of V3.1) via the optional Extension Board HART/RS485
- Remote access to HART devices on the Extension Board HART/RS485 via SIMATIC PDM

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Overview (continued)

- Remote access to Modbus devices on the Extension Board HART/RS485 via SIMATIC PDM
- Connection of the RTU3000C to a redundant DNP3 Master
- Local logging of Security and Audit events
- Central logging of Security and Audit events using syslog
- Increase the quantity structure of the function blocks and flags
- More efficient encryption mechanisms with TLS connections for HTTPS, Mail, FTP, DynDNS and VPN product versions

Product versions

Different product versions are offered for the various applications:

- **SIMATIC RTU3010C**

  Compact RTU for variable power supply using batteries, rechargeable batteries, solar or 10.8 V DC to 28.8 V DC for connection to external industry routers; connection via TeleControl Basic, DNP3, IEC60870-5-104 or SINAUT ST7 as well as MQTT protocols, on-board I/O (8 DI, 4 DQ, 4 AI), configuration and diagnostics via web interface

- **SIMATIC RTU3030C**

  Compact RTU for variable power supply using batteries, rechargeable batteries, solar or 10.8 V DC to 28.8 V DC with integrated UMTS modem; connection via TeleControl Basic, DNP3, IEC60870-5-104 or SINAUT ST7 as well as MQTT protocols, on-board I/O (8 DI, 4 DQ, 4 AI), configuration and diagnostics via web interface; note country approvals.

- **SIMATIC RTU3031C**

  Compact RTU for variable power supply using batteries, rechargeable batteries, solar or 10.8 V DC to 28.8 V DC with integrated UMTS modem; GPS functionality; connection via TeleControl Basic, DNP3, IEC60870-5-104 or SINAUT ST7 as well as MQTT protocols, on-board I/O (8 DI, 8 DQ, 4 AI), configuration and diagnostics via web interface; note country approvals.

- **SIMATIC RTU3041C**

  Compact RTU for variable power supply using batteries, rechargeable batteries, solar or 10.8 V DC to 28.8 V DC with integrated modem for LTE-M/NB-IoT; GPS functionality; connection via TeleControl Basic, DNP3, IEC60870-5-104 or SINAUT ST7 as well as MQTT protocols, on-board I/O (8 DI, 8 DQ, 4 AI), configuration and diagnostics via web interface; note country approvals.

In conjunction with the "TeleControl Server Basic" control center software, the RTU3000C forms a telecontrol system with additional properties:

- Connection of up to 5000 remote terminal units to the control center via OPC UA
- Central status monitoring of the substations
- No special provider services required for fixed IP addresses
- Wireless teleservice access to the substations
- Wake-up of substations by calling or text message

Together with MQTT, the application possibilities are expanded to include cloud applications. In addition to monitoring process data and visualization of process states of the RTUs in a telecontrol system, all the advantages of cloud systems are made available in this way:

- Improvement of process quality and detection of malfunctions through (big) data analysis of all relevant parameters, predictive maintenance

Overview (continued)

- Automatic process optimization by combining with data from other data sources, e.g. weather data for a preventive adaptation of the process to avoid critical conditions

Benefits

get Designed for Industry

- **Flexible location of use**

  A flexible power supply concept allows for use of the RTU3000C at different measuring points in a widely distributed network, independent of an existing power supply network.

- **Rugged hardware**

  The rugged hardware enables reliable operation even in harsh environments with an increased temperature range (-40 °C to +70 °C).

- **Flexible connection to control centers or cloud systems**

  Thanks to reloadable telecontrol protocols, various applications and connection options to different control centers or cloud systems are supported in one device.

- **Fast and flexible data communication**

  Time- and event-driven communication ensures that the operating personnel is informed immediately and reliably about process alarms, statuses and values.

- **Simple and cost-efficient engineering**

  The integrated web server enables easy configuration using the standard web browser without additional engineering tools.

- **Remote access** to HART or Modbus devices on the Extension Board HART/RS485 via SIMATIC PDM.

- **Fully automatic time stamp**

  To enable subsequent and correct archiving of process data in the control system, all data frames are time-stamped at their place of origin.

- **Automatic buffering of process values**

  Data is buffered in the substations to prevent it getting lost in case of connection failures.

- **Secure data transmission**

  Use of OpenVPN technology and encrypted email connections ensures secure data transmission.

  The RTUs also support secure HTTPS access to the web server both over the local Ethernet interface and remotely, e.g. via mobile wireless. In addition, the FTP file transfer can also be carried out with encryption.

- **Time not lost in case of a power outage**

  A buffered real-time clock ensures that the correct time is available even after a power outage.

- **Savings on travel and maintenance costs**

  Thanks to web-based management, configuration, diagnostics, control and monitoring can easily be performed remotely.

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Application

The telecontrol stations of the RTU3000C family can be used as a substation (Remote Terminal Unit) in telecontrol applications. Typical application examples include the acquisition of measured values in plants that are spread over large geographical areas (e.g. level monitoring of water tanks in the water/wastewater industry). In addition to these applications, MQTT enables additional uses in the cloud environment.

- Data exchange and centralized data monitoring for automation systems spread over large geographical areas, including integrated GPS positioning functionality for RTU30x1C
- Connection of difficult-to-access external stations without network infrastructure
- Connection of measuring points at locations without power supply infrastructure

These applications can be found in the most diverse industries:

- Water/wastewater treatment plants
  - Detection of leaks or water loss
  - Monitoring of pumping stations, water towers/reservoirs
  - Acquisition and monitoring of level / pressure / flow / temperature
  - Flood protection
- Inventory management – monitoring of levels in tanks and silos
- Agriculture – monitoring of irrigation systems or greenhouses
- Wind power – wind measurement for designing wind turbines
- Control and localization of mobile stations, such as monitoring of navigation buoys

Design

The SIMATIC RTU3000C is a compact module in SIMATIC S7-1200 format:

- Rugged, compact plastic enclosure for the temperature range -40 °C to +70 °C
- Easily accessible connection and diagnostics elements
- Easy mounting on a standard DIN rail
- Four plug-in screw-type terminals for eight digital inputs (pushbutton/switch/relay contacts) of which the first two inputs can be configured as counter inputs.
- Four plug-in screw-type terminals for four analog inputs: Current / voltage (0/4 ... 20 mA, 0 ... 10 V, 0 ... 5 V) or temperature measurement (Pt1000)
- Two plug-in screw-type terminals for four digital outputs designed as relay contacts
- RTU30x1C: two additional plug-in screw terminals for four additional digital outputs, designed as solid-state relays
- The close-loop (12 V or 24 V can be selected) and switchable controller outputs X10/X11 can be used for the supply of sensors and actuators
- 5-pin, plug-in terminal strip for connection of an 12 ... 24 V DC external supply voltage; connection protected against polarity reversal
- Connection socket for battery module (up to six battery modules can be connected)
- RJ45 socket for connection to Industrial Ethernet at 10/100 Mbps
- Pushbutton for the functions wake-up, shutdown, warm restart or reset to factory settings
- Slot for an SD card (Siemens SMC, SD or SDHC)
- Installed temperature sensor for monitoring of temperature inside enclosure

RTU3030C and RTU30x1C additions:

- SMA antenna port for mobile network antenna
- Slot for a mini SIM card

RTU30x1C additions:

- Antenna port for GPS antenna
- Support for 4 additional digital outputs designed as solid-state relays

The remote terminal units of the RTU3000C family can be used in stand-alone operation. The power supply can take place in independent operation by means of battery / accumulator /solar panel. The optional batteries are connected directly on the left side of the device without additional wiring. The power can also be supplied by a 5-pin terminal strip on the bottom of the module, even in combination with battery modules. The SD card tray is located on the front of the module. Removable screw-type terminals make for quick module replacement because the connected sensors must not be wired again.

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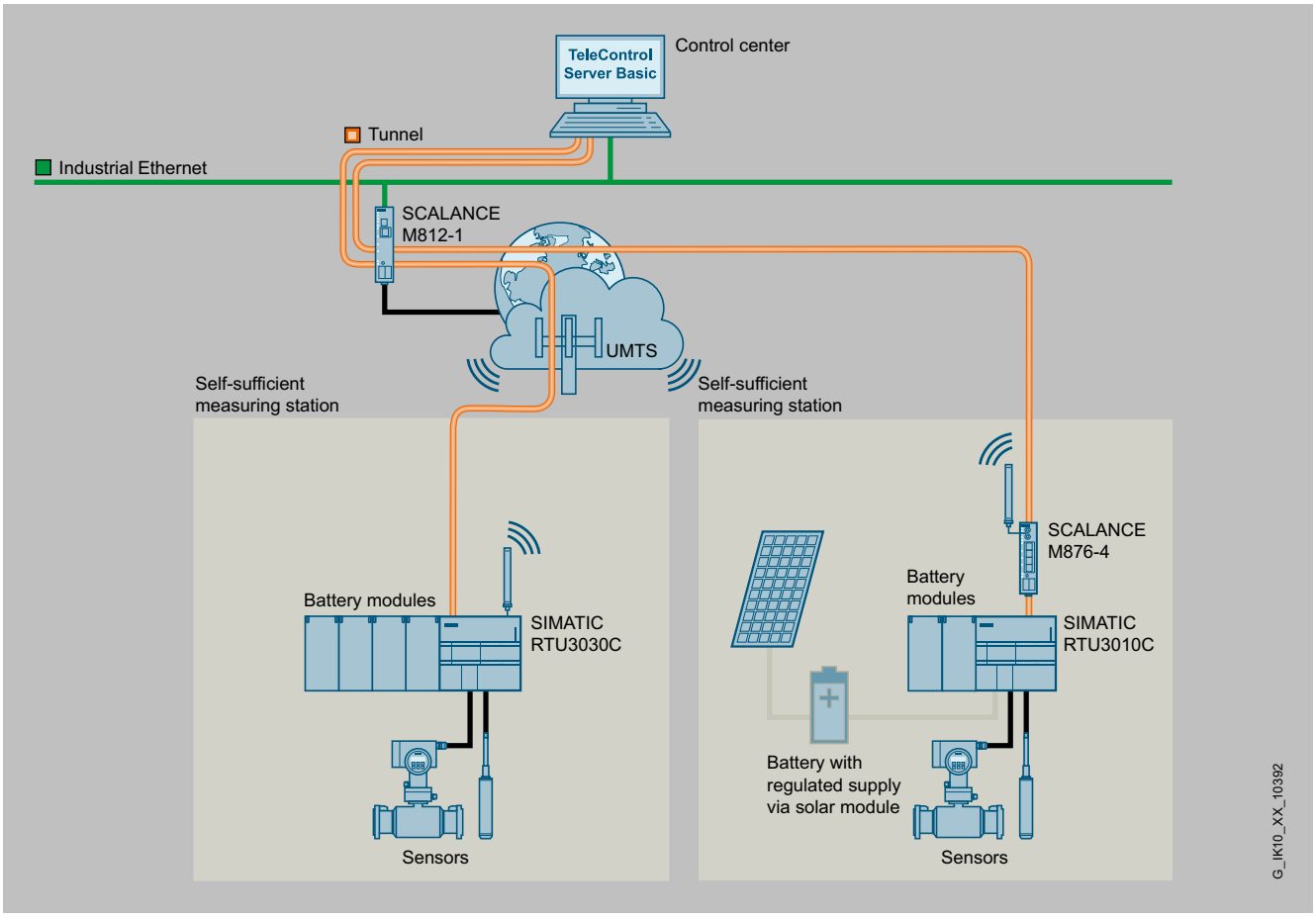
Function

The devices of the RTU3000C family are compact telecontrol stations. They enable connection of remote measuring points to TeleControl Server Basic or another control center as well as a cloud system and monitoring of these measuring points. To ensure autonomous operation, the devices can also switch between four different operating modes:

- **Hibernation mode**
  All inputs and communication functions are turned off so that power consumption is minimal. Outputs can retain their last value.
- **Update mode**
  Used to query the inputs and outputs. The query cycle can be configured individually.
- **Communication mode**
  Mobile wireless connection or connection via LAN interface and external router and communication to the central office are active.
- **Service mode**
  Maintenance work can take place without loss of data.



Connection of the SIMATIC RTU3030C to TeleControl Server Basic

Energy-independent mode

The RTU3000C stations can be operated in energy saving mode. Depending on the communication requirements and the connected type of power supply (e.g. battery, solar accumulator), independent operation can thus be guaranteed for many years to come. Power consumption can be determined by the RTU (from hardware level V2) for the diagnostics and prognosis of the battery life. The determined value can be logged and transferred to the control center.

Data backup

Data losses are prevented by the data buffering mechanisms integrated in the product. In the event of a connection failure, time-stamped frames are buffered in the device. When the connection returns, the buffered values are automatically transferred to the control center in the right order.

Data logging

The RTU3000C stations support the backup of process data on SD card. The retentively saved data can be sent cyclically by email and/or FTP or, if necessary, be downloaded directly using web-based management (WBM).

Data point configuration

For data point configuration, the RTUs supports a series of data point types: Digital input, digital output, analog input, counter input. The data points can be configured with little effort using the web pages of the RTU3000C stations. A cyclic and/or event-control-

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Function (continued)

ler transfer of measured values, setpoints or alarms can thus be implemented in just a few steps.

Data preprocessing

Ready-to-use function and program blocks enable data preprocessing directly in the RTU. The process data can be linked by means of process blocks for basic control jobs.

Up to 44 different types are supported in the following groups:

- Blocks for logical functions (e.g. AND, OR)
- Blocks for time functions (e.g. ON and OFF delay, astronomical clock)
- Blocks for analog value functions (e.g. threshold value monitoring)
- Counter blocks: Featuring the retentivity option, which saves the current count value during restarting and reconfiguration so that it is not lost.
- Analog and digital bit memories for buffering calculation results
- Blocks for messages (text messages, email)
- Block for FTP file transfer
- Relay blocks (latching relay, pulse relay)
- Blocks for silo volume calculation
- Block for rectangular weir overflow calculation
- "Formula" function block for evaluation of mathematical and Boolean expressions of up to four input variables.

Time synchronization

The RTUs support time synchronization and therefore ensure that historical data is given the correct time stamp. The following synchronization mechanisms are available: via NTP, the remote control center, mobile radio and GPS, depending on type of RTU.

Alarms sent by email or text message

Alarm emails or, in the case of RTU3030C and RTU3031C, alarm text messages can be configured for timely communication of station statuses to service and maintenance personnel. If previously defined events (such as threshold violation) should occur, application-specific information is sent automatically by email or SMS (directly or via the connected router).
Note that not all network operators for LTE-M and NB-IoT (RTU3041C) support the text messaging (SMS) function.

GPS position (RTU30x1C)

The function block checks whether a predefined setpoint position has been reached.

The actual position can also be transferred to the control center as a tag.

Telecontrol communication using standard protocols

For communication with the control center, the RTUs support the DNP3, IEC 60870-5-104 and SINAUT ST7 telecontrol protocols. The RTUs act as a DNP3 station, as an IEC slave or, in the case of SINAUT ST7, as a station connected to an ST7 node station, e.g. TIM 1531 IRC. The RTUs can also be connected to the TeleControl Server Basic (TCSB). TCSB enables a connection to any control center software, e.g. WinCC V7 or via any OPC UA-capable client. With MQTT, all the advantages of cloud systems can be used.

Remote maintenance

The RTU3000C stations provide remote maintenance access via WBM for access from the control center. The RTU3030C or RTU3031C can be woken from hibernation mode via text message or a call. When using the "TeleControl Basic" communication protocol, the wake-up text message can be generated in the CMT of TCSB.

Security mechanisms

Access to the RTU3000C stations requires an authorization. Up to 20 authorized email addresses or phone numbers can be defined in the WBM for e-mail and SMS messages. Data is sent through an OpenVPN tunnel or a secure tunnel of the TeleControl Server Basic. Email messages can be encrypted (support of STARTTLS). FTP uploads can be performed encrypted via SSL with FTPS.

Diagnostics

The RTU3000C provides comprehensive diagnostic options for a quick and informative analysis of the station status. Basic diagnostic information, such as the status of the power supply, the communication connection and the inputs and outputs are signaled directly to the RTU by LEDs. The current status of the LEDs can also be retrieved through WBM.

Using the web server, comprehensive information can be retrieved, such as facts about the connection history, buffer status, and the transferred measured values.

Furthermore, up to four new, freely definable tag tables are available in which an independent overview of all required tags can be composed to provide a display of all significant process values at a glance. The categorized user administration (Admin and User) ensures that only authorized persons are given access.

Configuration over web server

The integrated web server is accessed locally for diagnostics from a PC or remotely via the mobile wireless interface or Ethernet interface with upstream industrial router. Configuration, firmware update or configuration changes can therefore be performed remotely without additional software thereby saving time and money.

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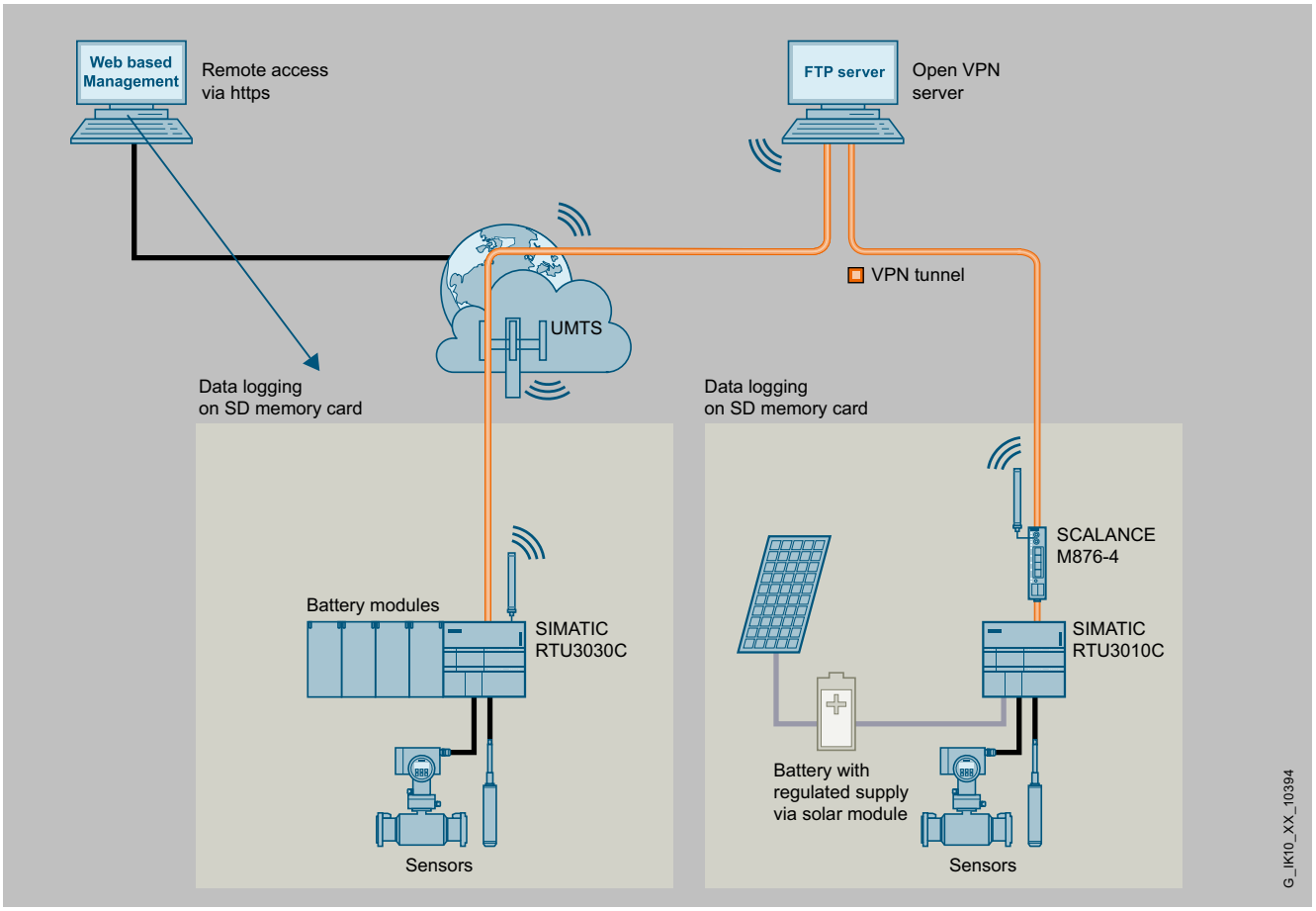
Integration



Example of configuration for data logging with RTU3000C

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Selection and ordering data

	Article No.
SIMATIC RTU3010C [1]	6NH3112-0BA00-0XX0
Compact low-power RTU; battery or solar-powered; connection of external power supply 10.8 V DC to 28.8 V DC; connection of external modems; connection to TeleControl Server Basic, DNP3, IEC 60870-5-104 or SINAUT ST7 as well as MQTT; on-board I/Os: 8 DI, 4 DQ, 4 AI; FTP client; configuration/diagnostics via web server; time synchronization; email; SD card slot.	
SIMATIC RTU3030C [1]	6NH3112-3BA00-0XX0
Compact low-power RTU; battery or solar-powered; connection of external power supply 10.8 V DC to 28.8 V DC; integrated UMTS modem; connection to TeleControl Server Basic, DNP3, IEC 60870-5-104 or SINAUT ST7 as well as MQTT, on-board I/Os: 8 DI, 4 DQ, 4 AI; FTP client; Ethernet port; configuration / diagnostics via web server, time synchronization, text message, email, SD card slot, note country approvals.	
SIMATIC RTU3031C [1]	6NH3112-3BB00-0XX0
Compact low-power RTU; battery or solar-powered; connection of external power supply 10.8 V DC to 28.8 V DC; integrated UMTS modem; GPS; connection to TeleControl Server Basic, DNP3, IEC 60870-5-104 or SINAUT ST7 as well as MQTT, on-board I/Os: 8 DI, 8 DQ, 4 AI; FTP client; Ethernet port, configuration / diagnostics via web server, time synchronization, text message, email, SD card slot, note country approvals.	
SIMATIC RTU3041C [1]	6NH3112-4BB00-0XX0
Compact low-power RTU; battery or solar-powered; connection of external power supply 10.8 V DC to 28.8 V DC; integrated modem for LTE-M/NB-IoT; GPS; connection to TeleControl Server Basic, DNP3, IEC 60870-5-104 or SINAUT ST7 as well as MQTT, on-board I/Os: 8 DI, 8 DQ, 4 AI; FTP client; Ethernet port, configuration / diagnostics via web server, time synchronization, text message, email, SD card slot, note country approvals.	
HART/RS485 extension board	6NH3112-3BA00-6XX1
Extension card for low-power RTU3000C family; connection of 8 Modbus RTU slaves or of 8 HART devices in multidrop mode.	

[1] Please note country approvals under www.siemens.com/mobilenetwork-approvals

Accessories

	Article No.
Battery case for SIMATIC RTU3000C	6NH3112-3BA00-1XX2
Battery case for mounting of two D cell batteries; suitable for SIMATIC RTU3000C; batteries must be procured externally and are not included in the scope of delivery! Please observe information on the battery type in the Equipment Manual!	
Battery expansion case for SIMATIC RTU3000C	6NH3112-3BA00- 1XX6
Battery expansion case for accommodating two D cell batteries; suitable for SIMATIC RTU3000C; batteries must be procured externally and are not included in the scope of delivery. Please observe information on the battery type in the Equipment Manual!	
Enclosure in IP68 degree of protection	
For SIMATIC RTU3000C; Note: Cable glands and sealing plugs must be ordered separately in the necessary quantity	
• **Aluminum enclosure**; Temperature range -40 to +80 °C	6NH3112-3BA00-1XX3
• **Stainless steel enclosure** Temperature range -60 to +135 °C	6NH3112-3BA00-1XX1
M16 cable gland	6NH3112-3BA00-1XX4
For IP68 enclosure, temperature range -40 to +100 °C, nickel-plated brass	
Blanking plugs M16	6NH3112-3BA00-1XX5
For IP68 enclosure, temperature range -40 to +100 °C, nickel-plated brass	
SIMATIC Memory Card	
4 MB	6ES7954-8LC03-0AA0
12 MB	6ES7954-8LE03-0AA0
24 MB	6ES7954-8LF03-0AA0
256 MB	6ES7954-8LL03-0AA0
ANT896-4MA 2G/3G/4G antenna	6GK5896-4MA00-0AA3
Omnidirectional antenna for GSM (2G), UMTS (3G) and LTE (4G) networks; omnidirectional characteristic; can be rotated radially with additional joint; with SMA plug for direct mounting on the device; antenna gain 2dBi; IP54	
ANT896-4ME 2G/3G/4G antenna	6GK5896-4ME00-0AA0
Omnidirectional antenna for GSM (2G), UMTS (3G) and LTE (4G) networks; omnidirectional characteristic; with N-female connector for remote installation indoors and outdoors; antenna gain 3dBi; IP66	
ANT794-4MR antenna	6NH9860-1AA00
Omnidirectional antenna for GSM (2G), UMTS (3G) and LTE (4G) networks; omnidirectional; weatherproof for indoor and outdoor use; 5 m connecting cable with fixed connection to antenna; SMA plug; including mounting bracket, screws, wall plugs	

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Accessories (continued)

	Article No.
ANT895-6ML GPS antenna ANT895-6ML GPS antenna with integrated signal amplifier, including 0.3 m connecting cable and N-female connector; 3 dBi IP67 (-40 ... +85 °C) mounting with magnet or screw mounting; note country approvals; compact instructions on paper in English/German; scope of delivery: 1x ANT 895-6ML	6GK5895-6ML00-0AA0
SIMATIC NET antenna connection cable N/SMA male/male Flexible antenna connecting cable for connection of antenna and SCALANCE M	
• 0.3 m	6XV1875-5LE30
• 1 m	6XV1875-5LH10
• 2 m	6XV1875-5LH20
• 5 m	6XV1875-5LH50
SIMATIC NET antenna N-Connect male/male flexible connection cable Flexible cable for connecting an RCoax cable or antenna to a SCALANCE W-700 access point with N-Connect connections; pre-assembled with two N-Connect male connections	
• 1 m	6XV1875-5AH10
• 2 m	6XV1875-5AH20
• 5 m	6XV1875-5AH50
• 10 m	6XV1875-5AN10
SIMATIC NET N-Connect/ N-Connect female/female panel feedthrough Cabinet bushing for wall thicknesses up to 4.5 mm, two N-Connect female connectors	6GK5798-2PP00-2AA6
LP798-1N lightning protector Lightning protector with N/N female/female connector, IP67 (-40 to +85 °C), frequency range: 0 ... 6 GHz	6GK5798-2LP00-2AA6
SITOP PSU100C 1-phase, 12 V DC/2 A Stabilized power supply Input: 100 ... 230 V AC Output: 12 V DC/2 A	6EP1321-5BA00
SITOP PSU100C 1-phase, 12 V DC/6.5 A Stabilized power supply Input: 100 ... 230 V AC Output: 12 V DC/6.5 A	6EP1322-5BA10
SITOP PSU100C 1-phase, 24 V DC/1.3 A Stabilized power supply Input: 120 ... 230 V AC Output: 24 V DC/1.3 A	6EP1331-5BA10
SITOP PSU100C 1-phase, 24 V DC/2.5 A Stabilized power supply Input: 100 ... 230 V AC Output: 24 V DC/2.5 A	6EP1332-5BA00
SITOP PSU100C 1-phase, 24 V DC/3.7 A Stabilized power supply Input: 100 ... 230 V AC (110 ... 300 V AC) Output: 24 V DC/3.7 A Limited output power NEC class 2	6EP1332-5BA20

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Technical specifications

Article number product type designation	6NH3112-0BA00-0XX0 RTU3010C	6NH3112-4BB00-0XX0 RTU3041C
operating mode	Standby mode (Sleep mode), Actualization mode, Communication mode	Standby mode (Sleep mode), Actualization mode, Communication mode
transfer rate		
transfer rate		
• for Industrial Ethernet	10 ... 100 Mbit/s	10 ... 100 Mbit/s
• for GPRS transmission		
• with downlink maximum		85.6 kbit/s
• with uplink maximum		107 kbit/s
• for LTE-M transmission		
• with downlink maximum		300 kbit/s
• with uplink maximum		375 kbit/s
• for NB-IoT transmission		
• with downlink maximum		21 kbit/s
• with uplink maximum		62.5 kbit/s
interfaces		
number of interfaces according to Industrial Ethernet	1	1
number of electrical connections		
• at the 1st interface according to Industrial Ethernet	1	1
• for external antenna(s)		2
• for power supply	1	1
number of slots		
• for SIM cards		1
• for memory cards	1	1
type of electrical connection		
• at the 1st interface according to Industrial Ethernet	RJ45 port	RJ45 port
type of electrical connection		
• for external antenna(s)		SMA socket (50 ohms)
• for power supply	5-pole plugable terminal block	5-pole plugable terminal block
type of antenna		
• at connection 1 connectable		mobile wireless antenna
• at connection 2 connectable		Active GPS antenna
slot version		
• for SIM card		Mini SIM card, with adapter Micro SIM card also
• of the memory card	SD 1.0, SD 1.1, SDHC, Siemens SMC	SD 1.0, SD 1.1, SDHC, Siemens SMC
storage capacity of the memory card maximum	32 Gibyte	32 Gibyte
design of the removable storage		
• C-PLUG	No	No
signal inputs/outputs		
number of electrical connections for digital input signals	8	8
type of electrical connection for digital input signals	pluggable screw terminal block	pluggable screw terminal block
digital input version	Suitable for open-drain transistor or switch, 2-wire-technique	Suitable for open-drain transistor or switch, 2-wire-technique
number of electrical connections as counter inputs for digital input signals	2	2
pulse duration at counter input minimum	0.1 ms	0.1 ms
pulse frequency at counter input maximum	5 000 Hz	5 000 Hz
number of electrical connections for digital output signals	4	8
type of electrical connection for digital output signals	pluggable screw terminal block	pluggable screw terminal block

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Technical specifications (continued)

Article number product type designation	6NH3112-0BA00-0XX0 RTU3010C	6NH3112-4BB00-0XX0 RTU3041C
digital output version	bistable relay, 2-wire-technique	4DO bistable relay, 2-wire technology 4DO solid-state relay
output current at digital output	300 mA; Limiting continuous current	300 mA; Limiting continuous current, with solid-state relays 60 mA
number of analog inputs integrated	4	4
connector type at the analog input	pluggable screw terminal block	pluggable screw terminal block
type of analog input	2-/3-/4-wire-technique	2-/3-/4-wire-technique
product function parameterizable analog inputs	Yes; Current 0/4..20mA, Voltage 0..5/10V, Temperature (Pt1000) -80..+140°C	Yes; Current 0/4..20mA, Voltage 0..5/10V, Temperature (Pt1000) -80..+140°C
A/D resolution at the analog input	12 bit	12 bit
wireless technology		
type of mobile wireless service is supported		
• SMS	No	Yes
• GPRS		Yes
•	over external, IP-based router	GPRS (Multislot Class 10)
• LTE-M		Yes
• NB-IoT		Yes
type of wireless network is supported		
• GSM		Yes
operating frequency for GSM transmission		operating frequency for GSM transmission 850 MHz, operating frequency for GSM transmission 900 MHz, operating frequency for GSM transmission 1800 MHz, operating frequency for GSM transmission 1900 MHz
operating frequency for LTE-M transmission		operating frequency for LTE-M transmission band 1 (2100 MHz), operating frequency for LTE-M transmission band 2 (1900 MHz), operating frequency for LTE-M transmission band 3 (1800 MHz), operating frequency for LTE-M transmission band 4 (1700 MHz), operating frequency for LTE-M transmission band 5 (850 MHz), operating frequency for LTE-M transmission band 8 (900 MHz), operating frequency for LTE-M transmission band 12 (700 MHz), operating frequency for LTE-M transmission band 13 (700 MHz), operating frequency for LTE-M transmission band 18 (850 MHz), operating frequency for LTE-M transmission band 19 (850 MHz), operating frequency for LTE-M transmission band 20 (800 MHz), operating frequency for LTE-M transmission band 26 (850 MHz), operating frequency for LTE-M transmission band 28 (700 MHz)
operating frequency for NB-IoT transmission		operating frequency for NB-IoT transmission band 1 (2100 MHz), operating frequency for NB-IoT transmission band 2 (1900 MHz), operating frequency for NB-IoT transmission band 3 (1800 MHz), operating frequency for NB-IoT transmission band 5 (850 MHz), operating frequency for NB-IoT transmission band 8 (900 MHz), operating frequency for NB-IoT transmission band 12 (700 MHz), operating frequency for NB-IoT transmission band 13 (700 MHz), operating frequency for NB-IoT transmission band 18 (850 MHz), operating frequency for NB-IoT transmission band 19 (850 MHz), operating frequency for NB-IoT transmission band 20 (800 MHz), operating frequency for NB-IoT transmission band 26 (800 MHz), operating frequency for NB-IoT transmission band 28 (700 MHz)
supply voltage, current consumption, power loss		
type of voltage of the supply voltage	DC	DC
supply voltage external at DC	12 ... 24 V	12 ... 24 V

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Technical specifications (continued)

Article number product type designation	6NH3112-0BA00-0XX0 RTU3010C	6NH3112-4BB00-0XX0 RTU3041C
supply voltage external at DC rated value	10.8 ... 28.8 V	10.8 ... 28.8 V
type of output voltage for the supply of external devices	DC 12 V or 24 V	DC 12 V or 24 V
supply voltage for GPS antenna maximum		3.8 V; Nominal 3.8 V (3.575 V @5 mA, 3.35 V @ 10 mA, 3.125 V @ 15 mA)
consumed current note	without connected consumers	without connected consumers
consumed current		
• from external supply voltage at 24 V DC		
• in standby mode typical	14 mA	14 mA
• in update mode typical	35 mA	35 mA
• in communication mode typical	55 mA	83 mA
• with battery operation at 7.2 V DC		
• in standby mode typical	0.28 mA	0.28 mA
• in update mode typical	71 mA	71 mA
• in communication mode typical	125 mA	208 mA
output current for GPS antenna maximum		15 mA
power loss [W]	without connected consumers	without connected consumers
power loss [W] with external supply voltage at 24 V DC		
• in standby mode typical	0.34 W	0.34 W
• in update mode typical	0.85 W	0.85 W
• in communication mode typical	1.25 W	2 W
power loss [W] with battery operation at 7.2 V DC		
• in standby mode typical	0.002 W	0.002 W
• in update mode typical	0.51 W	0.51 W
• in communication mode typical	0.9 W	1.5 W
ambient conditions		
ambient temperature		
• for vertical installation during operation	-40 ... +60 °C	-40 ... +60 °C
• for horizontally arranged busbars during operation	-40 ... +70 °C	-40 ... +70 °C
• during storage	-40 ... +70 °C	-40 ... +70 °C
• during transport	-40 ... +70 °C	-40 ... +70 °C
relative humidity		
• at 30 °C without condensation during operation maximum	95 %	95 %
protection class IP	IP20; IP68 with protective housing (see accessories)	IP20; IP68 with protective housing (see accessories)
design, dimensions and weights		
module format	Compact module	Compact module
width	130 mm	130 mm
height	100 mm	100 mm
depth	75 mm	75 mm
net weight	0.34 kg	0.37 kg
fastening method		
• 35 mm top hat DIN rail mounting	Yes	Yes
• wall mounting	Yes	Yes
product features, product functions, product components general		
product function		
• DynDNS client		Yes
• no-ip.com client		Yes
product functions cloud connectivity		
protocol is supported		
• Message Queuing Telemetry Transport (MQTT)	Yes	Yes

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Technical specifications (continued)

Article number product type designation	6NH3112-0BA00-0XX0 RTU3010C	6NH3112-4BB00-0XX0 RTU3041C
• HTTP	Yes	Yes
product function for cloud connectivity		
• trigger management	Yes	Yes
• time stamping	Yes	Yes
product feature for cloud connectivity buffered message frame memory	Yes	Yes
performance data		
number of users email addresses definable maximum	20	
number of users/telephone numbers/email addresses definable maximum		20
number of user groups definable maximum	10	10
number of program block types	44	46
number of configurable program blocks	48	48
number of digital bit memories maximum	48	48
number of analog bit memories maximum	24	24
performance data IT functions		
number of possible connections		
• as client by means of FTP maximum	1	1
number of entries in the FTP buffer maximum	12	12
number of possible connections		
• as server by means of HTTP maximum	2	2
• as server by means of HTTPS maximum	2; http and https can be combined (max. number of 2 connections cannot be exceeded).	2; http and https can be combined (max. number of 2 connections cannot be exceeded). Max. one connection via https is possible on the mobile wireless interface.
• as email client maximum	1	1
number of free texts for emails and SMS maximum	20	20
number of characters per free text for emails or SMS maximum	160	160
number of entries in the email buffer maximum	12	12
performance data telecontrol		
suitability for use		
• node station	No	No
• substation	Yes	Yes
• TIM control center	No	No
control center connection	IEC 60870-5-104, DNP3-capable control stations, SINAUT ST7cc/sc, TeleControl Server Basic	
• by means of a permanent connection	supported	supported
• by means of demand-oriented connection	supported	supported
protocol is supported		
• DNP3	Yes	Yes
• IEC 60870-5	Yes	Yes
• SINAUT ST1 protocol		No
• SINAUT ST7 protocol	Yes	Yes
product function data buffering if connection is aborted	Yes; number of telegrams for: IEC 60870: approx. 5,000, DNP3: approx. 10,900, SINAUT ST7: approx. 7,700, TeleControl Server Basic: approx. 10.900	Yes; number of telegrams for: IEC 60870: approx. 5,000, DNP3: approx. 10,900, SINAUT ST7: approx. 7,700, TeleControl Server Basic: approx. 10.900
data volume as user data per station in telecontrol mode maximum	256 Kibyte	256 Kibyte
product feature buffered message frame memory	Yes	Yes
performance data teleservice		
diagnostics function online diagnostics with SIMATIC STEP 7 product function	No	No

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Technical specifications (continued)

Article number product type designation	6NH3112-0BA00-0XX0 RTU3010C	6NH3112-4BB00-0XX0 RTU3041C
• program download with SIMATIC STEP 7	No	No
• remote firmware update	Yes	Yes
• remote configuration	Yes	Yes
product functions management, configuration, engineering		
configuration software		
• required	No, configuration by using the integrated webserver	No, configuration by using the integrated webserver
product function gateway for SIMATIC PDM		
• with Modbus TCP	Yes	Yes
• with HART-IP protocol	Yes	Yes
product functions diagnostics		
product function web-based diagnostics	Yes	Yes
product functions security		
operating mode Virtual Private Network (VPN)	Yes; OpenVPN client	Yes; OpenVPN client
product function with VPN connection	OpenVPN	OpenVPN
type of encryption algorithms with VPN connection	AES-128, AES-256	AES-128, AES-256
type of authentication procedure with VPN connection	certificate based	certificate based
type of authentication with Virtual Private Network PSK	No	No
type of hashing algorithms with VPN connection	SHA-256	SHA-256
number of possible connections with VPN connection	2; one simultaneous productive connection only	2; one simultaneous productive connection only
product function		
• password protection for Web applications	Yes	Yes
• password protection for teleservice access	Yes	Yes
• password protection for VPN	Yes	Yes
• encrypted data transmission	Yes	Yes
• switch-off of non-required services	Yes	Yes
• SysLog	Yes	Yes
product functions time		
protocol is supported		
• NTP	Yes	Yes
product component hardware real time clock	Yes	Yes
product feature hardware real time clock w. battery backup	Yes	Yes
accuracy of the hardware real time clock per day maximum	1.8 s	1.8 s
time synchronization		
• from NTP-server	Yes	Yes
• from GPS-signal		Yes
• from control center	Yes	Yes
• from mobile network provider		Yes
• PC	Yes	Yes
• manual setting	Yes	Yes
product functions position detection		
product function		
• position detection with GPS		Yes
• pass on position data		Yes
standards, specifications, approvals hazardous environments		
certificate of suitability CCC for hazardous zone according to GB standard	Yes; GB3836.1, GB3836.8	Yes; GB3836.1, GB3836.8
certificate of suitability CCC for hazardous zone according to GB standard as marking	Ex nA IIC T4 Gc	Ex nA IIC T4 Gc

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Technical specifications (continued)

Article number product type designation	6NH3112-0BA00-0XX0 RTU3010C	6NH3112-4BB00-0XX0 RTU3041C
further information internet links		
internet link		
• to website: Industrial communication	http://www.siemens.com/simatic-net	http://www.siemens.com/simatic-net
• to website: Image database	http://automation.siemens.com/bilddb	http://automation.siemens.com/bilddb
• to website: CAx-Download-Manager	http://www.siemens.com/cax	http://www.siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com	https://support.industry.siemens.com

More information

Technical requirements/compatibility

Corresponding suitable industrial routers (e.g. SCALANCE M) for the connection to the control center via the Ethernet interface of the RTU3000C can be found under Remote Networks - IP-based modems and routers.

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Overview

IE/PB Link HA and IE/PB Link PN IO

IE/PB LINKs are gateways for connecting the two network types, Industrial Ethernet and PROFIBUS, i.e. they enable access to all PROFIBUS stations connected to the lower-level PROFIBUS network.

Product variants

Two variants are offered as gateways for Industrial Ethernet and PROFIBUS:

- **IE/PB LINK PN IO**

  Gateway with PROFINET IO functionality, S7 routing and data record routing for standard ambient conditions

- **IE/PB LINK HA**

  Gateway optimized for use in the process industry due to the possibility of deployment in harsh ambient conditions and the connection of PROFIBUS field devices to a redundant AS as PROFINET IO controller

Both product variants can be used in two operating modes:

Standard mode enables, for example, loading of programs and configuration data via PG/OP communication, data record routing for configuration and diagnostics of field devices with the SIMATIC PDM tool, S7 routing e.g. for cross-network loading of SIMATIC PLCs on PROFIBUS.

When operated as a PROFINET IO proxy, from the perspective of the PN IO controller, all PROFIBUS DP slaves connected after the IE/PB LINK are treated as PN IO devices according to the PROFINET standard, i.e. the IE/PB LINK is the proxy of the connected PROFIBUS DP slaves.

Both IE/PB LINK versions offer the possibility to use different transmission media by employing BusAdapters.

Benefits

get Designed for Industry

- Protection of investment due to simple connection of PROFIBUS DP slaves to PROFINET IO controller. This enables a step-by-step transition to modern PROFINET networks
- Independence from individual vendors through support of the PROFINET standard for distributed field devices
- Flexible use due to different connection system and hardware; copper (RJ45, FC) and fiber-optic cables (SCRJ for POF/PCF, LC for glass fiber-optic)
- Also enables use in plants with PROFIsafe applications
- Worldwide access to data of the PROFIBUS stations via Industrial Ethernet and Internet for vertical integration
- Access to process data from all enterprise levels
- Loading of STEP 7 programs from a central location
- Easy engineering and extensive diagnostics options due to optimum TIA integration

IE/PB LINK HA also offers:

- High availability through redundancy mechanisms in PROFINET IO through use as S2 device
- Interruption-free plant operation in the redundant system, even when configuration changes are required during operation, through support for Configuration in Run (H-CiR)
- Easy migration of large PROFIBUS networks to PROFINET by supporting up to 125 PROFIBUS DP slaves
- Reliable operation even in harsh ambient conditions

Application

As an autonomous component, both IE/PB LINK versions provide a seamless transition between Industrial Ethernet and PROFIBUS.

Using the IE/PB LINK as a proxy, you can continue to use existing PROFIBUS nodes (even with PROFIsafe functionality V2.0 or higher) and integrate them into a PROFINET application.

IE/PB LINK HA additionally offers connection to a redundant PROFINET IO automation system and the functionality Configuration in Run (H-CIR).

Both IE/PB LINK versions also offers cross-network PG/OP communication by means of S7 routing. Cross-network access to data of S7 stations for visualization with S7 OPC server and S7 routing; via the IE/PB LINK, access is possible from the Industrial Ethernet (for example for HMI applications with OPC client interface) to data of the S7 stations on the PROFIBUS using the S7 OPC server.

In addition, data record routing (PROFIBUS DP) is supported. This means it is possible, for example, to use SIMATIC PDM (on the PC) on Industrial Ethernet to configure and perform diagnostics for a PROFIBUS field device via the IE/PB LINK. IE/PB LINK HA also designed for use in harsh ambient conditions.

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Design

Both IE/PB LINK versions provide all the advantages of the SIMATIC ET 200SP design:

- Compact design;
  the front of the rugged plastic enclosure features:
  - Two RJ45 ports for connecting to Industrial Ethernet; the connection is made via the IE FC RJ45 plug 90 with 90° cable outlet or via a standard patch cable
  - A 9-pin sub-D socket for connection to PROFIBUS
  - A 4-pin terminal strip for connecting the external redundant supply voltage of 24 V DC (two infeeds)
  - Diagnostics LEDs
- Optional connection possibility for Industrial Ethernet via BusAdapter (BA) of the SIMATIC ET 200SP system at the front
- Easy installation on standard mounting rails
- Can be operated without a fan
- Fast device replacement in the event of a fault by using the optional C-PLUG removable data storage medium (not included in scope of supply)

Function

Compact gateway between PROFINET and PROFIBUS

- Connection to Industrial Ethernet via integrated 2-port real-time switch with 100 Mbps full duplex connection with autosensing for automatic switchover
- In case of replacement part: Connection to Industrial Ethernet also with 10 Mbps half duplex
- Connection to PROFIBUS with 9.6 Kbps to 12 Mbps
- Support for MRP (Media Redundancy Protocol) using integrated Real Time Switch
- SIMATIC ET 200SP design: Use of the BusAdapter (BA) of the SIMATIC ET 200SP system for freely selecting the connection system and physical characteristics on the PROFINET side

IE/PB LINK HA also offers

- Use in ambient temperatures from -40 °C to +70 °C
- Conformal coating
- Support for enhanced interference immunity according to NAMUR recommendation NE21

Operation as PROFINET IO proxy

- Connection of PROFIBUS DP slaves to PROFINET IO controller with real-time property, according to PROFINET standard. From the viewpoint of the controller, all DP slaves are treated like devices with PROFINET interface, i.e. the IE/PB LINK PN IO is their proxy

IE/PB LINK HA also offers

- Connection of PROFIBUS DP slaves to a redundant SIMATIC S7 controller (S7-400H) as PROFINET S2 device including support for Configuration in Run (H-CiR)
- Connection of up to 125 PROFIBUS DP slaves on the single controller and up to 64 PROFIBUS DP slaves in operation as S2 device on the redundant controller

Additional functionality for vertical integration (standard operation or operation as PROFINET IO proxy)

- S7 routing
  - Permits cross-network PG communication, in other words, all S7 stations on Industrial Ethernet or PROFIBUS can be programmed remotely using the programming device.
  - Access can take place to visualization data of S7 stations on the PROFIBUS from HMI stations on Industrial Ethernet.
- Data record routing (PROFIBUS DP)
  - Using this option, the IE/PB LINK PN IO can be used as a router for data records that are forwarded to field devices (DP slaves). SIMATIC PDM (Process Device Manager) is a tool that creates data records of this type for parameterization and diagnostics of field devices.
  - The configuration of the IE/PB LINK PN IO for standard mode is possible via SINEC PNI (Primary Setup Tool Network Initialization) as well as STEP 7 / TIA Portal

The supplementary functions for vertical integration can also be used in an existing PROFIBUS application without PROFINET IO for connection to a higher-level Industrial Ethernet.

In this case, the IE/PB Link PN IO is used as an additional DP master Class 2 on a PROFIBUS segment for coupling to Industrial Ethernet and offers the above functions.

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Function (continued)

Media redundancy (MRP):

- IE/PB LINK supports the media redundancy protocol MRP as an MRP client within a PROFINET network with a ring topology

Diagnostics

Extensive diagnostic options are available via STEP 7 or SNMP, including:

- Diagnostics of the assigned PROFIBUS field devices;
  using the IE/PB LINK as a proxy, the connected DP slaves can be diagnosed in the same manner as PROFINET IO devices (even in the user program of the PROFINET IO controller)
- General diagnostics and statistics functions
- Connection diagnostics
- Diagnostic buffer
- Integration into network management systems through the support of SNMP V1 MIB-II

Configuration

- With STEP 7 V5.x or STEP 7 Professional in the TIA Portal, all the necessary parameters for IE/PB Link, e.g. the addresses and all necessary routing information, are generated automatically
- The configuration data for PROFINET IO created with STEP 7 is saved on the IO controller. Attention must however be paid to the memory capacity.
- IE/PB LINK can be swapped in the event of failure without a programming device because the relevant configuration data is saved on the PN IO controller or on the C-PLUG.
- If the IE/PB LINK PN IO is only to be used as a gateway and not as a PROFINET IO device, the IE/PB LINK behaves like a simple network component. Accordingly, the IP and PROFIBUS parameters and the network settings can also be assigned with a STEP 7 Professional (TIA Portal) without a license
- The IP and PROFIBUS parameters as well as the network settings can also be assigned using SINEC PNI
- The initialization data for the Industrial Ethernet interface is backed up on the C-PLUG (configuration plug) removable data storage medium
- Use in networks that support an exchange of devices without programming devices on the basis of the Link Layer Discovery Protocol (LLDP)

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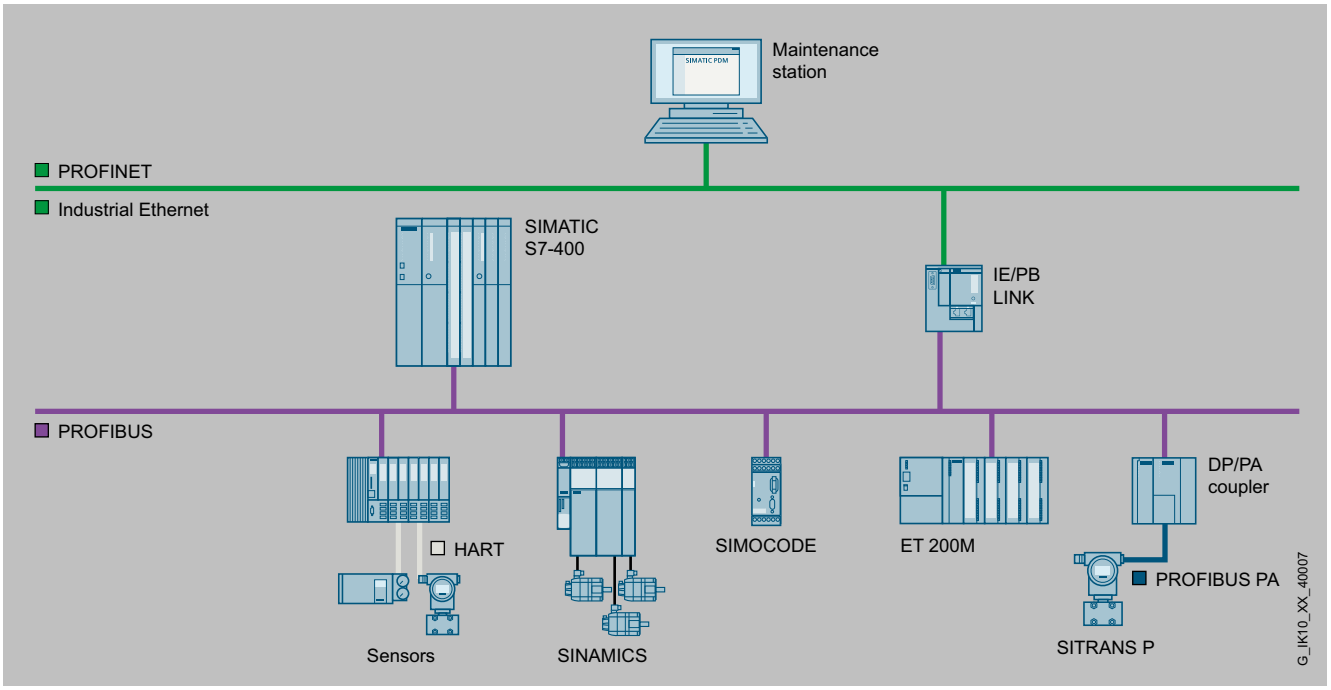
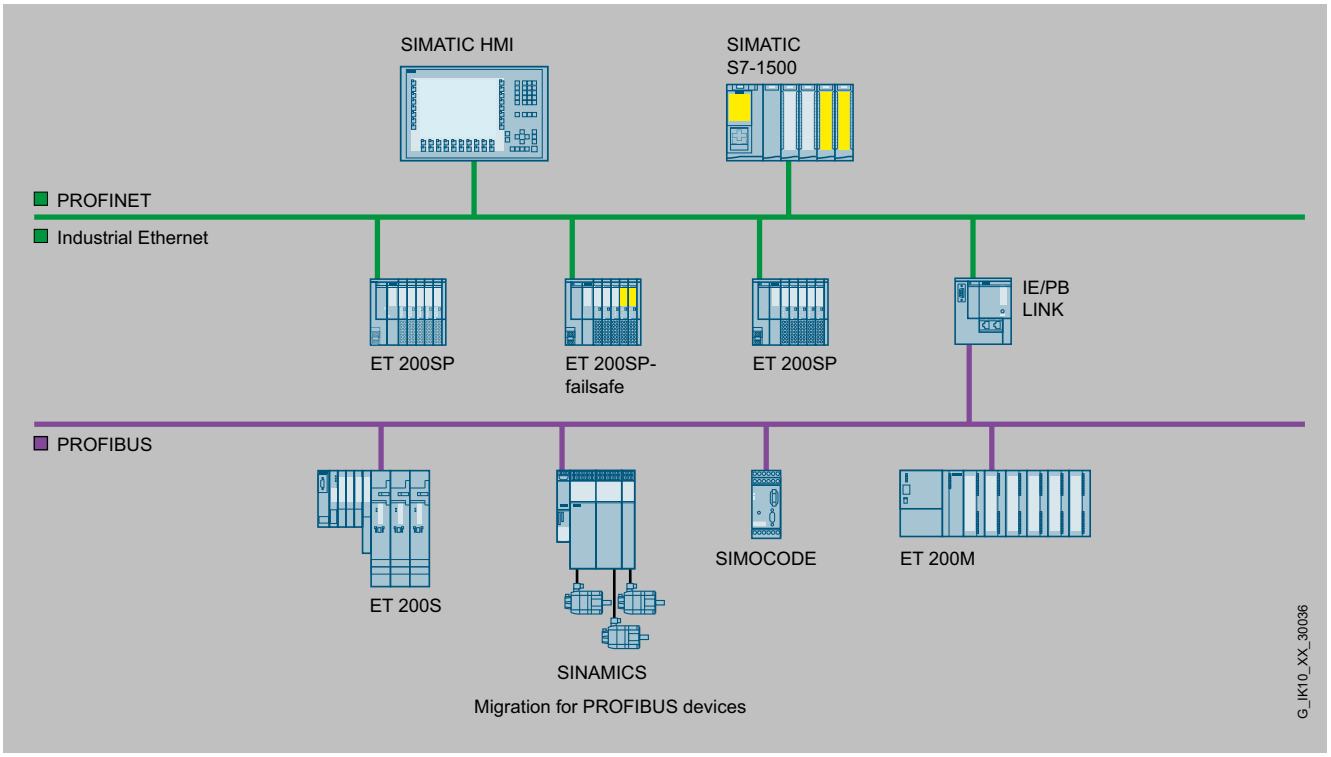
Integration



IE/PB LINK: Gateway in standard mode



IE/PB LINK: PROFINET IO proxy

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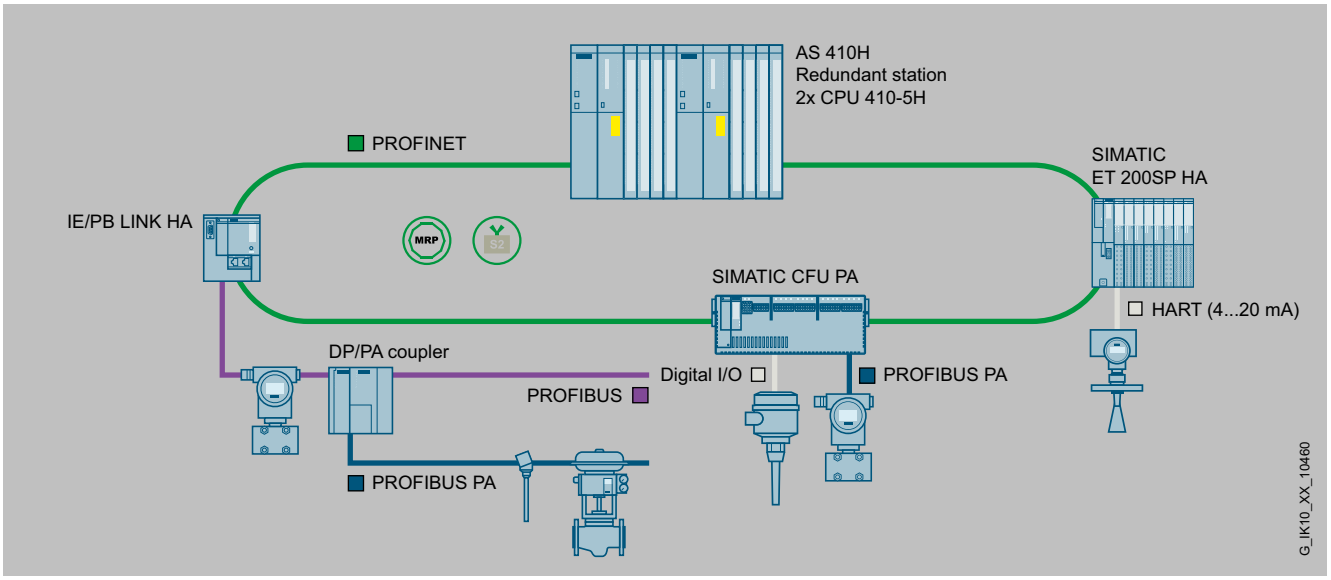
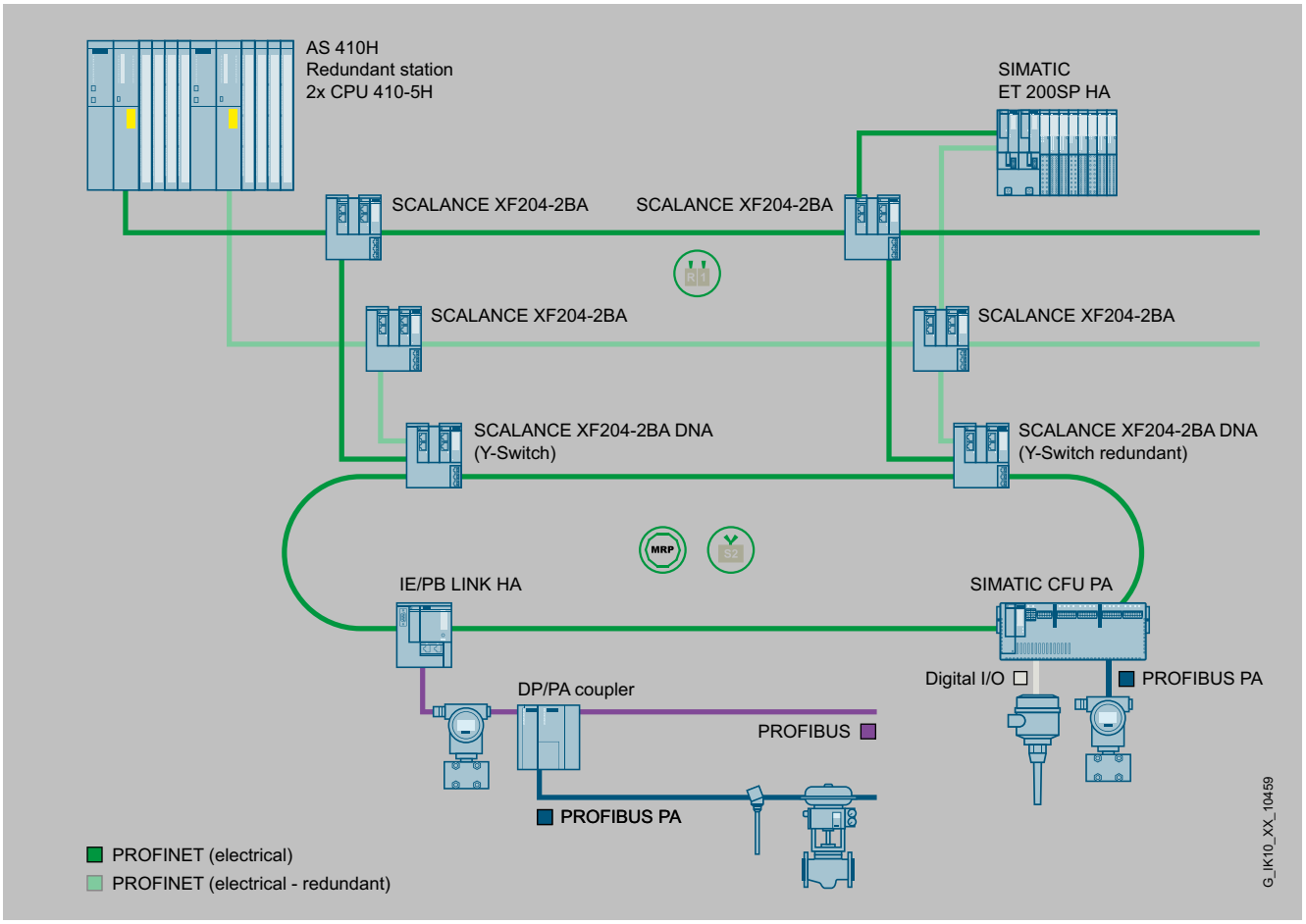
Integration (continued)



IE/PB LINK HA: System redundancy as S2 device in the MRP ring



IE/PB LINK HA: PROFINET system redundancy on R1 system

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Selection and ordering data

	Article No.
IE/PB Link PN IO Gateway between Industrial Ethernet and PROFIBUS, PROFINET IO proxy with real-time communication, time synchronization via SIMATIC protocol, NTP, SNMP V1, LLDP, S7 routing, data record routing, connection of up to 64 S7/DPV0/DPV1 slaves, support for DP/PA LINK and DP/FF LINK, 10/100 Mbps Fast Ethernet, MRP, 9.6 kbps up to 12 Mbps PROFIBUS, firmware download via configuration tool, redundant power supply, firmware version V4.0 Gateway	**6GK1411-5AB10**
IE/PB LINK HA Gateway between Industrial Ethernet and PROFIBUS, PROFINET IO proxy with real-time communication, system redundancy S2, H-CiR, time synchronization via SIMATIC protocol, NTP, SNMP V1, LLDP, S7 routing, data record routing, connection of up to 125 S7/DPV0/DPV1 slaves, support for DP/PA LINK and DP/FF LINK, 10/100 Mbps Fast Ethernet, MRP, 9.6 kbps up to 12 Mbps PROFIBUS, firmware download via configuration tool, redundant power supply, conformal coating, extended temperature range -40 °C to 70 °C	**6GK1411-5BB00**
Accessories	
C-PLUG Removable data storage medium for easy device replacement if a fault occurs. For storing configuration and application data. Can be used in the following SIMATIC NET products with C-PLUG slot: SCALANCE XC-200, XP-200, XM-400, XR-500, M-800, W-700, SC-600 and S615	**6GK1900-0AB10**
BusAdapter BusAdapters offer a free selection of connection system and hardware for the PROFINET interface. Alternatively, they can be used for the Industrial Ethernet interface on the device. The following BusAdapter versions are supported by the IE/PB LINK PN IO: ***Variants with copper connection (RJ45, FastConnect (FC))***	
• BA 2xRJ45 with 2 RJ45 connections	**6ES7193-6AR00-0AA0**
• BA 2xFC with 2 FastConnect connections	**6ES7193-6AF00-0AA0**
• BA 2xRJ45 HA with 2 RJ45 sockets	**6DL1193-6AR00-0AA0**
• BA 2xFC HA with 2x FastConnect connection	**6DL1193-6AF00-0AA0**
• SIPLUS BusAdapter BA 2xRJ45 with 2 RJ45 connections	**6AG1193-6AR00-7AA0**
• SIPLUS BusAdapter BA 2xFC with 2 FastConnect connections	**6AG1193-6AF00-7AA0**

Selection and ordering data (continued)

	Article No.
• BA 2xRJ45 VD HA BusAdapter VD (variable distance), for Ethernet communication via 2-, 4- or 8-wire copper cables, 2xRJ45 sockets	**6GK5991-2VA00-8AA2**
Variants with fiber-optic connection (FOC)	
• BA 2xLC with LC glass fiber-optic connection	**6ES7193-6AG00-0AA0**
• BA 2xSCRJ with 2 x SCRJ FO connection	**6ES7193-6AP00-0AA0**
• BA 2xLC HA with 2 x LC glass fiber-optic connections	**6DL1193-6AG00-0AA0**
• SIPLUS BusAdapter BA 2xLC with LC glass fiber-optic connection	**6AG1193-6AG00-2AA0**
• SIPLUS BusAdapter BA2SCRJ with 2 x SCRJ FO connection	**6AG1193-6AP00-2AA0**
Media converter versions	
• BA LC/RJ45 Media converter glass fiber-optic cable/CU for 1 x LC FO connection and 1 x RJ45 connection	**6ES7193-6AG20-0AA0**
• BA LC/FC Media converter glass fiber-optic cable/CU 1 x LC FO connection and 1 x RJ45 connection	**6ES7193-6AG40-0AA0**
• BA SCRJ/RJ45 Media converter fiber-optic cable/CU 1 x SCRJ FO connection and 1 x RJ45 connection	**6ES7193-6AP20-0AA0**
• BA SCRJ/FC Media converter fiber-optic cable/CU 1 x SCRJ FO connection and 1 x FastConnect connection	**6ES7193-6AP40-0AA0**
• BA LC/RJ45 HA Media converter glass fiber-optic cable/CU, 1 x LC FO connection and 1 x RJ45 connection	**6DL1193-6AG20-0AA0**
• BA LC/FC HA Media converter glass fiber-optic cable/CU, 1 x LC FO connection and 1 x FastConnect connection	**6DL1193-6AG40-0AA0**

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Accessories

C-PLUG

BusAdapters

BusAdapters offer a free selection of connection system and hardware for the PROFINET interface. **Alternatively,** they can be used for the Industrial Ethernet interface on the device.

The following BusAdapter versions are supported by the IE/PB LINK PN IO:

Versions PN copper interfaces (RJ45 or FastConnect (FC))

- **BA 2xRJ45** with 2 RJ45 connections
- **BA 2xFC** with 2 FastConnect connections
- **BA 2xRJ45 HA** with 2 RJ45 sockets
- **BA 2xFC HA** with 2x FastConnect connection
- **BA 2xRJ45 VD HA** with 2 RJ45 connections for variable distance
- **SIPLUS BusAdapter BA 2xRJ45** with 2 RJ45 connections
- **SIPLUS BusAdapter BA 2xFC** with 2 FastConnect connections

Versions with PN fiber-optic connections (FO)

- **BA 2xLC** with two glass fiber-optic connections (Lucent Connector) with increased potential difference
- **BA 2xSCRJ** with 2 SCRJ FO connections with increased potential difference
- **BA 2xLC HA** with LC glass fiber-optic connection
- **SIPLUS BusAdapter BA 2xLC** with LC glass fiber-optic connection
- **SIPLUS BusAdapter BA2SCRJ** with 2 x SCRJ FO connection

Media converter versions:

- **BA SCRJ / RJ45**, with one glass fiber-optic and one RJ45 connection (media converter)
- **BA LC / FC** with one glass fiber-optic and one FastConnect connection (media converter)
- **BA SCRJ / RJ45**, with one SCRJ FO and one RJ45 connection (media converter)
- **BA SCRJ / FC**, with one SCRJ FO and one FastConnect connection (media converter)
- **BA LC/RJ45 HA** with one LC FO connection and one RJ45 connection
- **BA LC/FC HA** with one LC FO connection and one FastConnect connection

The version for connecting IP67 modules of the SIMATIC ET 200AL (BA-SEND, BA 1xFC) is not supported.

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Technical specifications

Article number product type designation	6GK1411-5AB10 IE/PB LINK PN IO	6GK1411-5BB00 IE/PB LINK HA
suitability for operation	Gateway between Industrial Ethernet and PROFIBUS	Gateway between Industrial Ethernet and PROFIBUS
transfer rate		
transfer rate		
• at the 1st interface	10 ... 100 Mbit/s	10 ... 100 Mbit/s
• at the 2nd interface	9.6 kbit/s ... 12 Mbit/s	9.6 kbit/s ... 12 Mbit/s
interfaces		
number of electrical connections		
• at the 1st interface according to Industrial Ethernet	2	2
• at the 2nd interface according to PROFIBUS	1	1
• for power supply	2	2
type of electrical connection		
• at the 1st interface according to Industrial Ethernet	RJ45 port onboard or bus adapter	RJ45 port onboard or bus adapter
type of electrical connection		
• at the 2nd interface according to PROFIBUS	9-pin Sub-D socket (RS 485)	9-pin Sub-D socket (RS 485)
• for power supply	4-pole terminal block	4-pole terminal block
design of the removable storage		
• C-PLUG	Yes	Yes
supply voltage, current consumption, power loss		
type of voltage of the supply voltage	DC	DC
supply voltage external at DC rated value	24 V	24 V
relative positive tolerance at DC at 24 V	20 %	20 %
relative negative tolerance at DC at 24 V	15 %	15 %
consumed current		
• from external supply voltage at DC at 24 V typical	0.2 A	0.2 A
• from external supply voltage at DC at 24 V maximum	0.3 A	0.3 A
power loss [W]	4.8 W; Typical	4.8 W; Typical
ambient conditions		
ambient temperature		
• for vertical installation during operation	0 ... 40 °C	-40 ... +50 °C
• for horizontally arranged busbars during operation	0 ... 60 °C	-40 ... +70 °C
• during storage	-40 ... +70 °C	-40 ... +70 °C
• during transport	-40 ... +70 °C	-40 ... +70 °C
relative humidity		
• at 25 °C without condensation during operation maximum	95 %	95 %
protection class IP	IP20	IP20
design, dimensions and weights		
module format	ET 200SP design	ET 200SP design
width	100 mm	100 mm
height	117 mm	117 mm
depth	74 mm	74 mm
net weight	0.6 kg	0.6 kg
product feature conformal coating		Yes
fastening method		
• 35 mm top hat DIN rail mounting	Yes	Yes
performance data PROFIBUS DP		
service as DP master		
• DPV0	Yes	Yes
• DPV1	Yes	Yes
number of DP slaves		
• at the 2nd interface as DP master maximum	64	125

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Technical specifications (continued)

Article number product type designation	6GK1411-5AB10 IE/PB LINK PN IO	6GK1411-5BB00 IE/PB LINK HA
data volume		
• of the address range of the inputs as DP master total	2 048 byte	4 096 byte
• of the address range of the outputs as DP master total	2 048 byte	4 096 byte
• of the address range of the inputs per DP slave	244 byte	244 byte
• of the address range of the outputs per DP slave	244 byte	244 byte
performance data S7 communication		
number of possible connections for S7 communication		
• maximum	32	32
performance data multi-protocol mode		
number of active connections with multi-protocol mode	48	48
performance data PROFINET communication as PN IO device		
product function PROFINET IO device	Yes	Yes
product functions management, configuration, engineering		
product function MIB support	Yes	Yes
protocol is supported		
• SNMP v1	Yes	Yes
• DCP	Yes	Yes
• LLDP	Yes	Yes
configuration software		
• required	STEP 7 as of V5.5 SP4 HF11 and HSP, STEP 7 Professional as of V15, PCS7 V9.0, PCS neo as of V3.0, PNI as of V1.0	STEP 7 as of V5.6 SP2 HF3 and HSP, STEP 7 Professional probably as of V17, PCS7 as of V9.0 SP3, PNI as of V1.0.
identification & maintenance function		
• I&M0 - device-specific information	Yes	Yes
• I&M1 - higher level designation/location designation	Yes	Yes
• I&M2 - installation date	Yes	Yes
• I&M3 - comment	Yes	Yes
product function is supported identification link	Yes	Yes
product functions routing		
service as PROFIBUS data set routing	Yes	Yes
number of possible connections with data set routing maximum	32	32
product functions redundancy		
product function		
• ring redundancy	Yes	Yes
product function of the PROFINET IO device is supported		
• PROFINET system redundancy	No	Yes; as S2-Device at CPU 410-5 H and S7 400H
protocol is supported Media Redundancy Protocol (MRP)	Yes	Yes
product functions time		
product function pass on time synchronization	Yes	Yes
protocol is supported		
• NTP	Yes	Yes
• SIMATIC time synchronization (SIMATIC Time)	Yes	Yes
standards, specifications, approvals hazardous environments		
certificate of suitability CCC for hazardous zone according to GB standard	Yes; GB3836.1, GB3836.8	Yes; GB3836.1, GB3836.8
certificate of suitability CCC for hazardous zone according to GB standard as marking	Ex nA IIC T4 Gc	Ex nA IIC T4 Gc
accessories		
accessories	Optional: C-PLUG, BusAdapter of the ET 200SP system	Optional: C-PLUG, BusAdapter of the ET 200SP system

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Technical specifications (continued)

Article number product type designation	6GK1411-5AB10 IE/PB LINK PN IO	6GK1411-5BB00 IE/PB LINK HA
further information internet links		
internet link		
• to web page: selection aid TIA Selection Tool	http://www.siemens.com/tia-selection-tool	http://www.siemens.com/tia-selection-tool
• to website: Industrial communication	http://www.siemens.com/simatic-net	http://www.siemens.com/simatic-net
• to website: Image database	http://automation.siemens.com/bilddb	http://automation.siemens.com/bilddb
• to website: CAx-Download-Manager	http://www.siemens.com/cax	http://www.siemens.com/cax
• to website: Industry Online Support	https://support.industry.siemens.com	https://support.industry.siemens.com

More information

http://www.siemens.com/profinet

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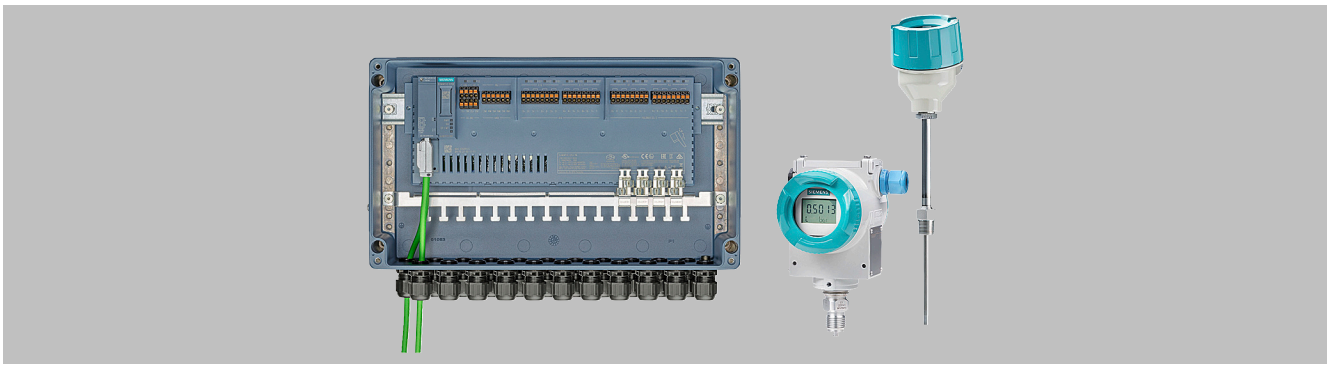
Overview



Smart Field Distributor – SIMATIC Compact Field Unit

With the new SIMATIC Compact Field Unit (CFU), we are re-interpreting the conventional approach to field device connection. The smart field distributor is installed at the process level and is connected via PROFINET, the world's leading Industrial Ethernet standard, directly to the automation system to form the foundation for digitalization in the field.

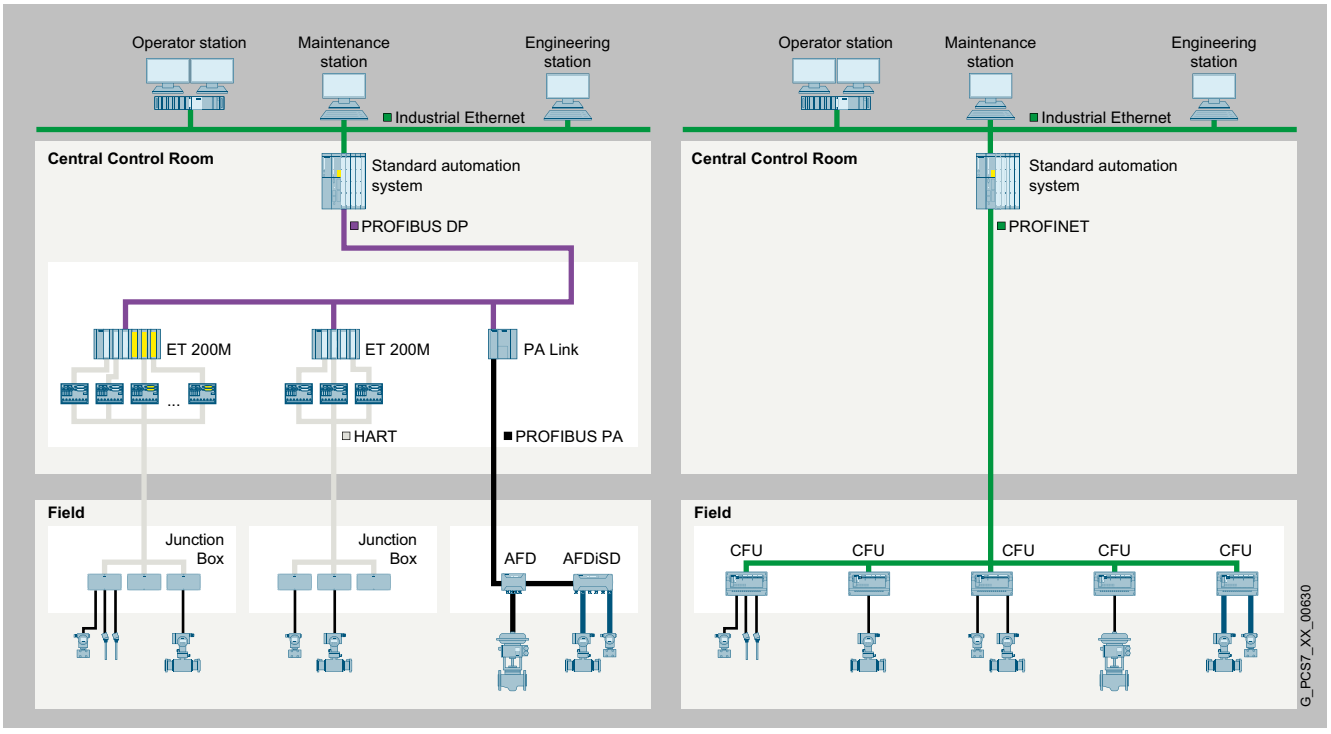
You benefit from greater flexibility and very simple handling coupled with maximum availability. This allows you to efficiently transfer your familiar system concept to the digital world.

Today's challenges for field device connection:

- High overhead for device integration and replacement
- Complicated, error-prone wiring and routing over multiple levels, making the hardware FAT very complex
- Extremely long copper cables and numerous terminal points in the field
- Multiple individual control cabinets
- Large numbers of different components and protocols necessitate costly spare parts inventories and training sessions
- High planning and documentation costs

SIMATIC CFU – The answer to these challenges

Mode of operation



Field device connection with previous technology (left) and with SIMATIC CFU (right)

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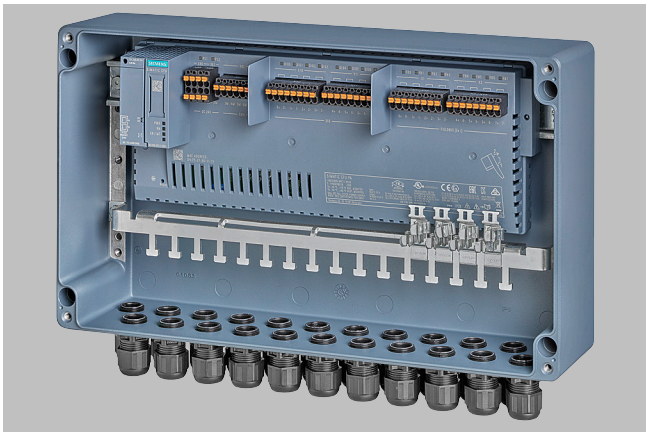
Overview (continued)

The SIMATIC Compact Field Unit (CFU) is a real game-changer in field device connection and offers you entirely new prospects regarding simplicity, flexibility and standardization. The smart field distributor is installed at the process level and is connected via PROFINET directly to the automation system to form the foundation for digitalization in the field. Utilization of digital fieldbus communication considerably simplifies device interfacing compared to conventional 4 ... 20 mA engineering.

Greater flexibility thanks to consistent decentralization

Distributed installation of the SIMATIC CFU means that classic control cabinets are no longer required and you can make considerable savings in cabling and the number of terminal points, as well as reducing planning and documentation overheads. The high granularity (16 I/O per SIMATIC CFU) enables flexible assignment to the higher-level controllers.

Function



The SIMATIC CFU was specifically designed to meet the requirements of the process industry in the Industry 4.0 environment (application example: SIMATIC CFU in a standard cast aluminum housing).

System integration via Industrial Ethernet standard

- Flexible connection options via PROFINET
- Ready for Process Automation (PA Ready):
  - Redundant PROFINET connection (S2) for maximum availability
  - Media redundancy (MRP)
  - Configuration in RUN (CiR)
- BusAdapter (electrical, optical or combination)

Ready for distributed use

- Installation up to hazardous zone 2/22 (with conformal housing)
- Extended temperature range from -40 to +70 °C
- Conformal coating use up to 4000 meters altitude
- Implementation of increased interference immunity according to NAMUR NE 21
- Optional: Aluminum enclosure for direct field deployment in zone 2/22

More information

You can find more information on the CFU and its variants, as well as an overview of all ordering data here:
https://support.industry.siemens.com/cs/ww/en/view/109749357

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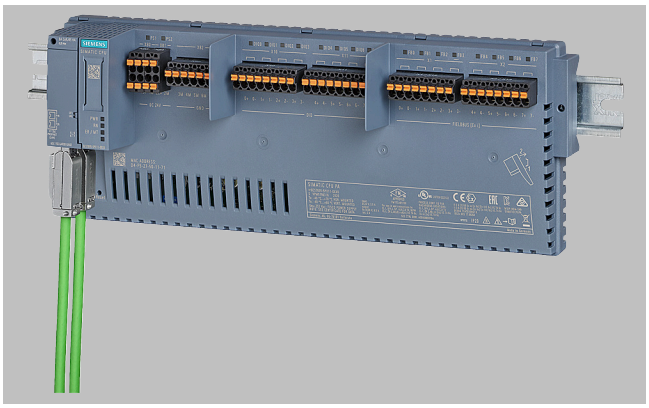
Overview



SIMATIC CFU here with BusAdapter, PROFINET bus cable and push-in terminals

SIMATIC CFU PA edition

Plug-and-produce simplicity

Digitalization requires a digital infrastructure facilitating integrated digital communication right down to the sensors and actuators. You can use the established and proven PROFIBUS PA standard to achieve this. It is integrated into the PA edition of the SIMATIC CFU, thus combining ruggedness and easy handling with all the advantages of the PROFINET standard based on Industrial Ethernet. Connected devices are automatically addressed. The device is integrated via standardized communication profiles.

This innovative new implementation of the PROFIBUS PA concept makes it possible to combine the simplicity of a point-to-point wiring system with the scalability of digital PROFIBUS PA fieldbus communication. As with digital field devices, it is not necessary to know prior to connection whether the discrete field device is a sensor or actuator – This can be easily configured afterwards via software.

Combination of digital fieldbus and discrete I/Os

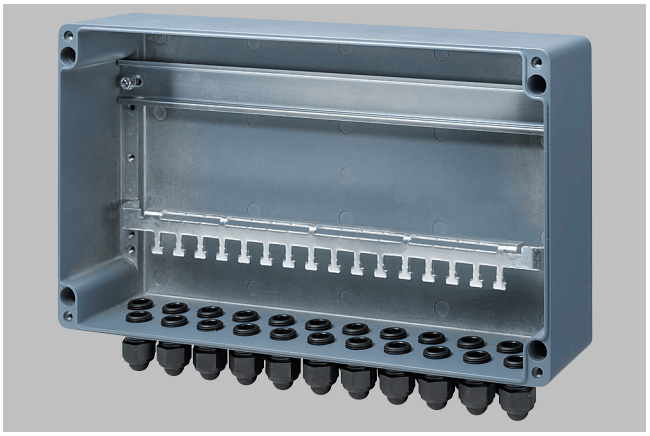
- 8 × digital fieldbus (PROFIBUS PA)
- 8 × digital inputs/outputs, freely configurable (1 x counter functionality / frequency measurement)

Easy to use

- Automatic addressing of PROFIBUS PA field devices
- System-supported detection and integration of PROFIBUS PA field devices into the process control system
  - Utilization of standardized PA profiles
  - Commissioning, device replacement and maintenance wizards
- Implementation of diagnostic messages according to NAMUR NE 107
- Installation on a 35 mm DIN rail

Overview (continued)

Aluminum field housing



SIMATIC CFU aluminum field housing, open

SIMATIC CFU aluminum field housing, closed

The die-cast aluminum housing is suitable for use in zone 2/22 hazardous areas. The following are included in the housing scope of delivery:

- 22 × M20 plastic cable glands (incl. blanking plugs)
- 35 mm DIN rail
- Rail for strain relief and shield support

The enclosure has a display window for LED diagnostics.

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Selection and ordering data

SIMATIC CFU PA bundle with push-in terminals Comprising: • SIMATIC CFU PA, Article No. 6ES7655-5PX11-0XX0 • SIMATIC CFU push-in terminals, Article No. 6ES7655-5PX00-1XX0 pre-assembled and tested	**6ES7655-5PX11-1XX0**
SIMATIC CFU PA bundle with aluminum enclosure Comprising: • SIMATIC CFU PA, Article No. 6ES7655-5PX11-0XX0 • SIMATIC CFU push-in terminals, Article No. 6ES7655-5PX00-1XX0 • Aluminum enclosure with cable glands, shield busbar, shield connection clamps pre-assembled and tested	**6ES7655-5PX11-1AX0**

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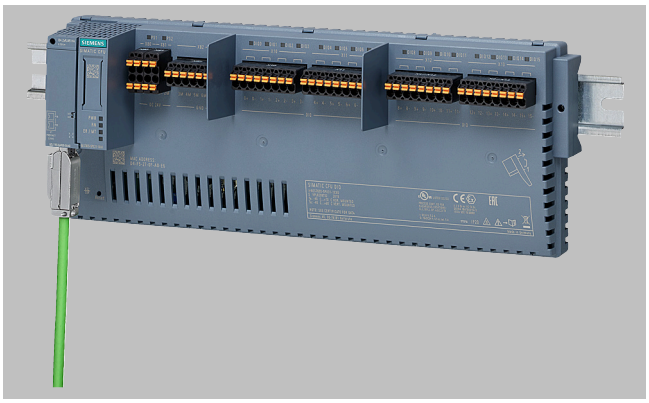
Overview



SIMATIC CFU DIQ edition

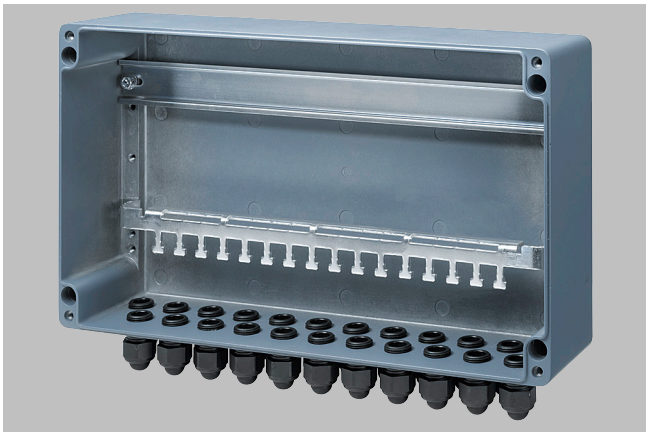
Individual, customer-specific solutions and flexible system/plant extensions are requirements that are becoming increasingly important in the process industry due to digitalization. SIMATIC CFU DIQ edition with 16 freely configurable digital IO channels offers a solution for the growing demands of distributed I/O.

SIMATIC CFU also has expansion functions for optional configuration. Two additional operating modes can be activated for selected digital inputs. "Counter" operating mode and "Frequency measurement" operating mode with a cut-off frequency of 1 kHz.

Actuator shutdown can be set for the digital outputs. The actuator shutdown of the SIMATIC CFU uses a monitoring channel (DI channel) to quickly set all digital outputs to a low digital level.

- 16 × digital inputs/outputs, freely configurable (2 x counter functionality / frequency measurement)

Aluminum field housing



SIMATIC CFU aluminum field housing, open

Overview (continued)

SIMATIC CFU aluminum field housing, closed

The die-cast aluminum housing is suitable for use in zone 2/22 hazardous areas. The following are included in the housing scope of delivery:

- 22 × M20 plastic cable glands (incl. blanking plugs)
- 35 mm DIN rail
- Rail for strain relief and shield support

The enclosure has a display window for LED diagnostics.

Selection and ordering data

SIMATIC CFU DIQ with aluminum housing Comprising: • SIMATIC CFU DIQ, Article No. 6ES7655-5PX31-0XX0 • SIMATIC CFU push-in terminals, Article No. 6ES7655-5PX00-1XX0 • Aluminum housing with cable glands, shield busbar, shield connection clamp pre-assembled and tested	**6ES7655-5PX31-1AX0**
SIMATIC CFU DIQ Comprising: • SIMATIC CFU DIQ, Article No. 6ES7655-5PX31-0XX0 • SIMATIC CFU push-in terminals, Article No. 6ES7655-5PX31-1XX0 pre-assembled and tested	**6ES7655-5PX31-1XX0**