

Equipment for Machine Tools WF 721/WF 723 A Positioning Modules

User Manual

Edition 02.97

Description Standard B-470

WF 721/WF 723 A Positioning Modules

User Manual
Description Standard B-470

Valid for
Standard B-470 V1.0
in connection with Standard A V1.x

Standard B-470 V2.0
in connection with Standard A V2.x

Edition February 1997

Foreword	1
Hardware and Software Overview	2
Data Structure	3
Data Blocks	4
Installation and Operation	5
Operating	6
Program Example	7
Technical Data	8
Command Status and Fault Messages	9
Appendix	10

Note

For the sake of clarity this document does not go into all possible situations which may arise with this product. The document cannot deal with every situation which may arise during commissioning, operation and maintenance.

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Index

1	Foreword	1 - 1
2	Hardware and Software Overview	2 - 1
3	Data Structure	3 - 1
4	Data Blocks	4 - 1
4.1	Assignment Data Block DB-ZU/Bx	4 - 3
4.2	Technology Specific Data Block DB-TECH/Bx,n	4 - 7
4.3	Application Data Block DB-AP/Bx	4 - 7
5	Installation and Operation	5 - 1
5.1	Installation Instructions	5 - 1
5.2	Initialization of the Data Structure	5 - 3
5.3	FB-WF4:BANL	5 - 4
5.4	FB-WF4:BU EB	5 - 5
5.5	FB-WF4:BPOS	5 - 5
5.6	FB-FKTS (from version V1.1)	5 - 5
5.7	Call of the Standard Function Blocks	5 - 6
5.8	Addressing of the Modules	5 - 7
5.9	Multi-Processor Operation	5 - 7
5.10	Interrupt Behavior	5 - 7
6	Operating	6 - 1
6.1	Operator Interface System WS 400	6 - 1
6.2	Configuration of the Screens	6 - 3
6.3	Operator Guiding	6 - 4
6.4	Standard Screens	6 - 5
6.4.1	Base Screen	6 - 5
6.4.2	Base Screen Positioning	6 - 6
6.4.3	Machine Data	6 - 7
6.4.4	Program Input	6 - 8
6.4.5	Directory of Program and Block Numbers	6 - 9
6.4.6	MDI/Setup	6 - 10
6.4.7	Actual Value Display	6 - 11
6.4.8	Startup Screen	6 - 12
6.4.9	Tool Offsets	6 - 13
6.4.10	Configuration	6 - 14
6.4.11	Diagnostic Positioning	6 - 16
7	Program Example	7 - 1
7.1	Program Example 1, one WF 470	7 - 1
7.2	Program Example 2, two WF 470	7 - 3
7.3	Incorporation of User Screens	7 - 6
7.4	Program Example in Connection with a Serial Keyboard	7 - 6
8	Technical Data	8 - 1
8.1	Permitted CPU Types	8 - 1
8.2	FB-WF4:BANL	8 - 2
8.3	FB-WF4:BU EB	8 - 3
8.4	FB-WF4:BPOS	8 - 4
9	Command Status and Fault Messages	9 - 1
9.1	Description of the Status- and Fault messages	9 - 1
9.2	Fault Messages Standard B-470	9 - 2
10	Appendix	10 - 1
10.1	Glossary	10 - 1
10.2	Index	10 - 2

1 Foreword

What information is to be found in this manual?

This description of the Standard B-470 software will familiarize you with the structure of the individual software blocks. Operating is explained by means of masks.

There is a list of the complete WF 721 and WF 723 A documentation at the end of this manual, which shows the appropriate documentation for designers, end users, etc.

For whom is this manual intended?

The booklet is intended for integration engineers, process and maintenance personnel.

Each group, engineers and specialists must be qualified as outlined on page 1-2.

What prior knowledge is of needed?

It is assumed that the user of this manual is familiar with general machine safety guidelines and particular safety requirements of the country where the machine is to be used.

The user of this booklet will also need to have adequate knowledge of: WF 470 display module, STEP 5 programming knowledge S5-115U, 135U or 155U knowledge.

Finding your way about the manual.

The manual is divided up into the sections:

- Overview
- Step 5 software usage
- Installation
- Operation

Each chapter of the manual is a self contained unit.

At the very end of the manual there is an index and a glossary.

Definitions and terminology

Qualified personnel

People who are experienced in setting up, optimizing and operating machines and whose qualifications are commensurate with their activity, for example:

- training and authorization to switch power to electrical circuits and equipment according to the recognized standards, to earth such equipment and to mark up the cables on such equipment.
- training in the maintenance of safety devices according to the recognized standards.
- First aid training.

Note



Whenever you see this type of frame, take careful note of what is written therein.

Cross reference

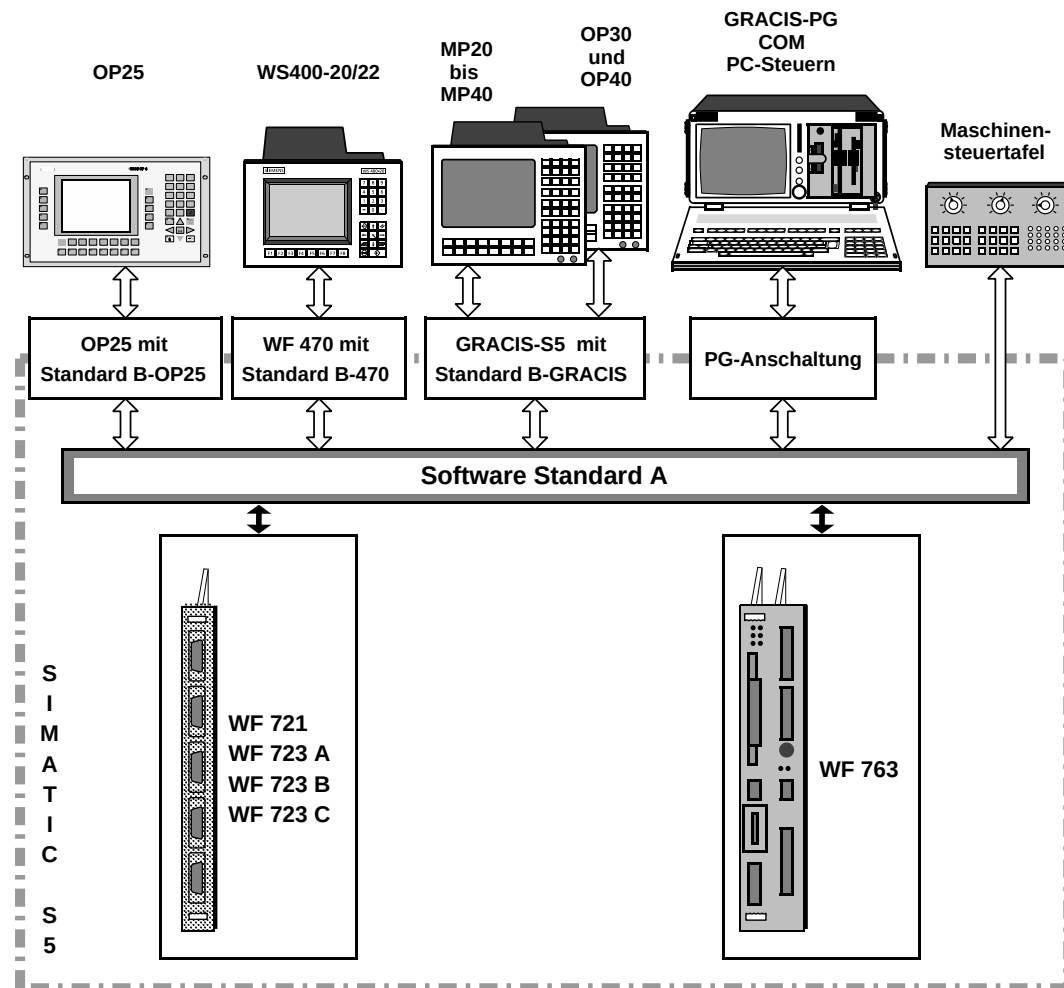


This type of frame contains a reference to another manual

2 Hardware and Software Overview

This manual describes the CRT display module WF 470 and the software Standard B-470. Each type of technology, e.g. positioning or nut tightening, requires its own Standard B-470. It has to be called once for each WF 470 module. Standard B-470 only works in connection with Standard A.

This overview shows the connection between hardware and software:



- 1) for WF 723 B/WF 723 C no operating masks for Standard B-470 are available
- 2) for WF 723 C no operating masks for GRACIS are available



The combination of WF modules with Standard I software and WF modules with Standard A software in a single SIMATIC S5 controller is not cleared for use. Any such application is the user's responsibility.

3 Data structure

With the new WF modules WS 720 B, WF 721 and WF 723 A, the opportunity was also seized to develop a new data transfer structure. Requests by the PLC for data from the WF are made by using the so called "WF commands" or, simply "commands". One such command would be to read the machine data of a WF axis, this particular case would involve the command AK 01. As soon as the WF receives this command it will go about fulfilling the same.

The firmware takes care of chopping large quantities of data into segments. Thus even large blocks of data can comfortably be transferred to and from the WF. The task of coordinating the data exchange is transferred from the user program to the WF firmware. The WF will deposit the data in the location specified in the command.

The new data transfer structure has the following advantages:

- Standard B-470 needs relatively little memory in the PLC since the intelligence is transferred to the WF card
- simple data interface with the WF,
- the new structure means that less user memory is used for the communication with the WF,
- it is easier to commission the machine and also to localize faults, thanks to the simple structure of the software,
- the service specialist has quicker access to the necessary data,
- reliable data transfer with standard routines to check integrity of data.
- communication not bound to technology thanks to command principal.
- standard masks which the user can modify as needed.

Standard B-470 controls the screen selection, the keyboard input and the command execution in the application area. Standard A takes care of the data exchange with the individual WF modules. Standard B-470 transfers the control inputs and data to the WF modules, as well as read the WF outputs and data from the WF.

The software Standard B-470 consists of 3 function blocks, which are either independent or dependent upon a specific technology:



The FB-WF4:BANL generates the data structure required by Standard B-470. It also handles the interface to Standard WF 470. The FB-WF4:BANL does not depend upon the specific technology. In the PLC it is called once for each WF 470, during startup.



The FB-WF4:BU EB is technology independent and administers therefore the technology independent part of the WF 470 screens, like group fault operating status and fault messages affecting the data transfer. The FB-WF4:BU EB has to be called cyclically, once for each WF 470.



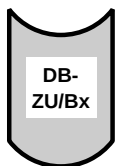
The FB-WF4:BPOS is used for the technology "Positioning", and is always used in connection with the WF 721/723 A modules. The FB-WF4:BPOS has to be called cyclically, once for each WF 470 modules.

The blocks FB-WF4:BANL and FB-WF4:BU EB are used even if another technology then "Positioning" is used. Only FB-WF4:BPOS is replaced or complemented by another block for a different technology.

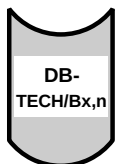


In addition the function blocks FB-S5-470 (FB 254), FB-TAST... (FB 201) and FB-BILDLIST (FB 220) of the WF 470 are required for the data transfer.

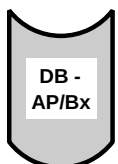
The data interface for the Standard B-470 is formed by three types of data blocks. The number of data blocks required by the system depends on the number of WF modules and technologies:



The DB-ZU/Bx contains a standard configuration of the system and the work data of the technology independent part of the Standard B-470. Further configuration data might be entered into DBZU/Bx by the user if the standard configuration is insufficient. The number of DBZU/Bx used, depends on the number of WF 470 modules (x=1 through 8) in the system.



The DB-TECH/Bx,n contains the technology specific data. The number of DB-TECH/Bx,n used, depends on the number of WF 470 (x=1 through 8) and the number of technologies (n=1 through 12, n=1: technology positioning) used in the system. The DB-TECH/Bx,n are generated automatically by the Standard B-470.



The DB-AP/Bx handles the commands between the Standard B-470 and Standard A. The number of DB-AP/Bx depends on the number of WF 470 modules (x=1 through 8) used in the system. The DB-AP/Bx is generated automatically by the Standard B-470.

The following data blocks are also required: DB-SYS/Bx, DB-BL/x, DB-H/x and DB-TAST. DB-TAST is on diskette WF 470 software for data traffic.

4 Data Blocks

Up to eight WF 470 modules can be used in one PLC. Therefore, the standard diskette contains eight copies of each screen. We will give each WF 470 module a number from 1 through 8.

While the data blocks DB-ZU/Bx and DB-AP/Bx are required once for each WF 470 application, the number of the DB-TECH/Bx,n required depends on the number of technologies used by each WF 470 application. The system data block DB-SYS/Bx is also required by Standard B-470.

The following table shows the use of Standard B-470 for the technology "Positioning" with , WF 721 and WF 723 A and the required data block numbers:

Data Block	DB Name	WF 470 Number x							
		1	2	3	4	5	6	7	8
Assignment - data block	DB-ZU/Bx	218	188	171	154	137	120	103	86
Technology-specific data block	DB-TECH/Bx,1	219	189	172	155	138	121	104	87
Application-data block	DB-AP/Bx	231	201	184	167	150	133	116	99
System-data block	DB-SYS/Bx	232	202	185	168	151	134	117	100
Data block screen list	DB-BL/x	233	203	186	169	152	135	118	101
Aux-data block	DB-H/x	234	204	187	170	153	136	119	102
Keyboard evaluation data block	DB-TAST	235, one DB for all WF 470's							

Table 4.1 List of data block numbers

The numbers for the data blocks DB-ZU/Bx, DB-TECH/Bx,1, DB-AP/Bx and DB-SYS/Bx have to be assigned according to the WF 470 number, as shown in the table. The numbers for the data blocks DB-BL/x, DB-H/x and DB-TAST can be freely assigned.

Example 1: Standard settings for the technology "Positioning" if one WF 470 module with the number 2 is used:

DB-ZU/B ② = DB 188 WF 470 number ②
 DB-TECH/B ②:① = DB 189 Technology ① = Positioning
 DB-AP/B ② = DB 201
 DB-SYS/B ② = DB 202

○ WF470 number
 ○ Technology 1 = Positioning

Example 2: Standard settings for the technology "Positioning" if three WF 470 modules are used with the WF 470 numbers 1, 3 and 5:

DB-ZU/B ① = DB 218
 DB-TECH/B ①:① = DB 219
 DB-AP/B ① = DB 231
 DB-SYS/B ① = DB 232

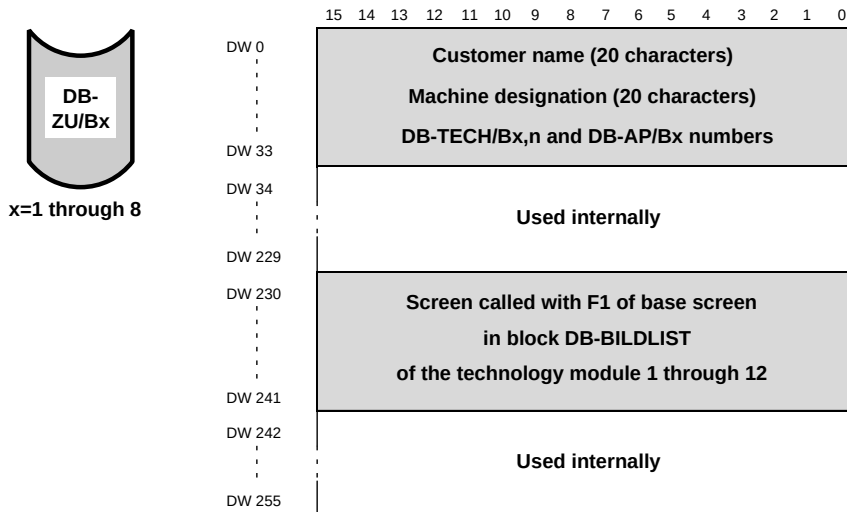
DB-ZU/B ③ = DB 171
 DB-TECH/B ③:① = DB 172
 DB-AP/B ③ = DB 184
 DB-SYS/B ③ = DB 185

DB-ZU/B ⑤ = DB 137
 DB-TECH/B ⑤:① = DB 138
 DB-AP/B ⑤ = DB 150
 DB-SYS/B ⑤ = DB 151

4.1 Assignment Data Block DB-ZU/Bx

The assignment data block DB-ZU/Bx (x=1 through 8) contains:

- the numbers of the DB-TECH/Bx,n, which are assigned to one WF module
- the numbers of the DP-AP/Bx, which are assigned to one WF module
- work- and parameter data of the FB-WF4:BPOS
- application specific data
- data used by more than one module
- softkey assignments



The DB-ZU/Bx is required once for each WF 470 application. It has to be generated by the user. The user can only edit or use the data words 0 through 33 and 230 through 241.



The data words used internally must never be changed!

The DB-ZU/Bx for the WF 470 number 1 is included in the standard diskette as DB 218 in the user example.

DB-ZU/Bx	S5-115U	S5-135U	S5-155U
Length	DW 0 through DW 255	DW 0 through DW 255	DW 0 through DW 255

The easiest way to use Standard B-470 with WF 470 numbers 2 through 8 is, to copy the DB 218 to the number for DB-ZU/B2 through DB-ZU/B8. This maintains the data word formats and the standard settings. Afterwards the standard settings can be edited as required by the new WF 470 number.

The DB-ZU/B1 (DB 218) is preset as follows:

DW No.	Entry	Explanation
0:	KH = 0000;	used internally
1:	KC = * _ _ _ _ S T A N D A R D _ _ B _ _ _ _ _ * _	Customer name 20 characters
11:	C = * _ _ _ _ m i t _ _ W F 4 7 0 _ _ _ _ _ * _	Machine designation 20 characters
21:	KY = 000,219;	Standard setting DB-TECH/B1,1
22:	KY = 000,219;	Standard setting DB-TECH/B1,1
23:	KY = 000,219;	Standard setting DB-TECH/B1,1
24:	KY = 000,219;	Standard setting DB-TECH/B1,1
25:	KY = 000,219;	Standard setting DB-TECH/B1,1
26:	KY = 000,219;	Standard setting DB-TECH/B1,1
27:	KY = 000,219;	Standard setting DB-TECH/B1,1
28:	KY = 000,219;	Standard setting DB-TECH/B1,1
29:	KY = 000,219;	Standard setting DB-TECH/B1,1
30:	KY = 000,219;	Standard setting DB-TECH/B1,1
31:	KY = 000,219;	Standard setting DB-TECH/B1,1
32:	KY = 000,219;	Standard setting DB-TECH/B1,1
33:	KY = 000,231;	Standard setting DB-AP/B
230:	KY = 0,1;	Branching block F1 module BG1
231:	KY = 0,1;	Branching block F1 module BG2
232:	KY = 0,1;	Branching block F1 module BG3
233:	KY = 0,1;	Branching block F1 module BG4
234:	KY = 0,1;	Branching block F1 module BG5
235:	KY = 0,1;	Branching block F1 module BG6
236:	KY = 0,1;	Branching block F1 module BG7
237:	KY = 0,1;	Branching block F1 module BG8
238:	KY = 0,1;	Branching block F1 module BG9
239:	KY = 0,1;	Branching block F1 module BG10
240:	KY = 0,1;	Branching block F1 module BG11
241:	KY = 0,1;	Branching block F1 module BG12

Table 4.2 Preset of DB 218

Customer name The customer name can be up to 20 characters long (DW 1 through 10). All 20 characters have to be entered, if necessary use blanks.

Machine designation The machine designation can be up to 20 characters long (DW1 through 10). All 20 characters have to be entered, if necessary use blanks.

Number of DB-TECH/Bx,n and number DB-AP/Bx Here the numbers for the technology specific DB-TECH/Bx,n are entered, and they are assignment to the individual WF 7-modules.
In addition the number of the DB-AP/Bx has to be entered.

Example 1: one WF 470 as WF number 1
three modules of technology 1 = (positioning) with the module numbers 1, 4, 7

DB-ZU/B1 = DB 218

DB-TECH/B1,1 = DB 219 The number 219 has to be entered into DB-ZU/B1 data words DW 21 (module 1), DW 24 (module 4) and DW 27 (module 7). This information is used to generate the DB-TECH/B1,1 during a system start up.

DB-AP/B1 = DB 231 The number 231 has to be entered into DB-ZU/B1 DW 33.

Using other technologies than "Positioning" results in different numbers for DB-TECH/Bx,n.

Example 2: one WF 470 module as number 2 two modules of technology 1= (positioning) with the module numbers 1 and 2,
one module of technology 2 (nut tightening) with the module number 4.

DB-ZU/B2 = DB 188

DB-TECH/B2,1 = DB 189 The number 189 has to be entered into the data words DW 21 (module 1) and DW 22 (module 2).

DB-TECH/B2,2 = DB 190 The number 190 has to be entered into DW 24 (module 4).

Branching to the technology block

Screen calls are handled with the help of FB-BILDLIST (FB 220).

This function block is part of Standard WF 470.

Since the Standard B-470 can handle several technologies one has to specify with the branching the first block number of the technology in the data block screen-list DB-BL/x.

For the technology "positioning" block number KY0,1 must be stated.

At the moment only the technology "Positioning" has been implemented, therefore the block number KY0,1 has to be entered for the WF modules. The standard setting for all 4 (with SIMATIC S5-115U) or all 12 (with SIMATIC S5-135/155U) possible WF 721/723 A modules is KY0,1.

Example 1: three modules of technology 1 = (positioning) with the module numbers 2, 4 and 7.

The number KY0,1 has to be entered into the data words DW 231 (module 2), DW 233 (module 4) and DW 236 (module 7).

Example 2: one module of the technology 1 = (positioning) with the module number 1 and one module of the technology 2 (nut tightening) with the module number 2.

The number KY0,1 has to be entered into data word DW 230 (module 1).

If the screen administration for technology 2 starts in block 11, then the number KY0,1 has to be entered into data word DW 231 (module 2).

Every S5 newstart/restart resets the branching data for non-existent WF 7.. modules. This can be seen by the entry KY255,255. If one or more WF 7.. modules are later added, then the branching data have to be entered also.

4.2 Technology Specific Data Block DB-TECH/Bx,n

The DB-TECH/Bx,n (x=1 through 8, n=1 through 12) contains module specific data, like messages and operating modes of the WF module. It exists once for each type of technology. Modules with the same type of technology use the same DB-TECH/Bx,n.

The DB-TECH/Bx,n is generated automatically during the S5 start up, according to the data in DB-ZU/Bx.

DB-TECH/Bx	S5-115U	S5-135U	S5-155U
Length	DW 0 through DW 101	DW 0 through DW 101	DW 0 through DW 101

4.3 Application Data Block DB-AP/Bx

The DB-AP/Bx (x=1 through 8) handles the screen specific command administration. The DB-AP/Bx is generated automatically during the S5 start up, according to the data in DB-ZU/Bx.

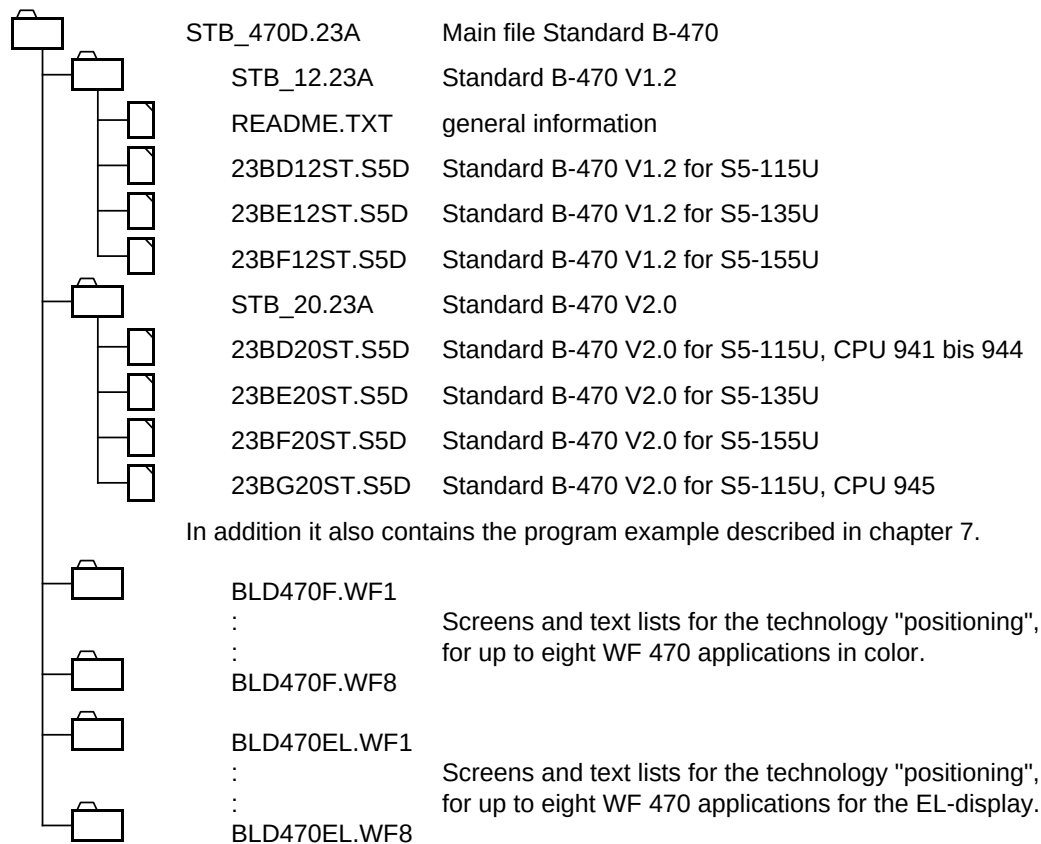
DB-AP/Bx	S5-115U	S5-135U	S5-155U
Length	DW 0 through DW 255	DW 0 through DW 255	DW 0 through DW 255

The content of DB-TECH/Bx,n and DB-AP/Bx is not relevant for the user, since those data blocks are an integral part of Standard B-470.

5 Installation and Operation

5.1 Installation Instructions

The Standard B-470 diskette can be read with the PG 730/PG 750/PG 770 under the operating system MS-DOS (from version 3.3). The diskette contains the following files:



The operation of the Standard B-470 requires the following hardware:

- PLC with a suitable CPU module
- WF 721 or WF 723 A module
- WF 470 module
- Suitable CRT screen and keyboard (see description of the hardware, chapter 7)

Also required:

- Standard A software (see planning instructions, Standard A software)
- Standard function blocks for the module WF 470 (see description)
- WF 470 screen development software V5.0 for MS-DOS



You must use preferably the files 23B□2□ST.S5D (Standard B-470, version 2.0) for new system projection .

The Standard B-470 has to be installed as follows:

1. Switch SIMATIC S5 to STOP
Standard A must be already installed and running
The WF 470 module must be addressed and plugged in.
2. Load screens for WF 470 modules:
Set the path Drive:\STB_470D.23A\BLD470□.WF□ according to the WF 470 number you selected and whether an EL- or color display is used. After the WF 470 screen development software has been started the screens from the load module 2 can be transferred to the WF 470.
3. Load Standard B-470 S5-files:
Set the path to Drive:\STB_470D.23A\STB_□□.23A
Load the contents of the file 23B□□□ST.S5D into the memory of the PLC, according to your type of SIMATIC S5 PLC.
4. Load Standard WF 470:
If the WF 470 files have the PCP/M format, convert them with PCOPY to MS-DOS.

SIMATIC S5-115U: FB 201, FB 220, FB 251, DB 201 **or** DB 202

SIMATIC S5-135U: FB 201, FB 221, FB 249, DB 201 **or** DB 202

SIMATIC S5-155U: FB 201, FB 220, FB 248, DB 201 **or** DB 202



For the programming example the DB-TAST has to be copied to the number DB 235. Only for SIMATIC S5-115U: FB 251 must be copied to the number FB 254 for the programming example.

5. Configuration Standard B-470 (see chapter 5.2):
No other settings have to be done if you use the programming example. If you have a different configuration however, then you have to change or extend the example.
 - Parameter setting for the start up (PB21)
 - Parameter setting for Standard WF 470 (PB2)
 - Assignment of DB-ZU/B (DB 218)
6. Switch SIMATIC to RUN
The data structure is initialized.

Diagnostic of Standard B-470

PLC does not run: Check accumulator 1 in ISTACK. Accumulator 1 contains the command status and the fault number Standard B-470.

PLC does run: Check command status and fault number Standard B-470 in accumulator 1 behind call of FB 213 or FB 214.

Are fault numbers displayed, then proceed according to the description of the fault (see chapter for fault messages).

The assignment of the data blocks depends on the WF numbers. There is a directory for each WF 470 number, containing the screens and text lists.

Directory	Screens and text lists for WF 470-number x	DB-ZU/Bx	DB-TECH/Bx,1	DB-AP/Bx	DB-SYS/Bx
BLD470F.WF1 BLD470EL.WF1	1	DB 218	DB 219	DB 231	DB 232
BLD470F.WF2 BLD470EL.WF2	2	DB 188	DB 189	DB 201	DB 202
BLD470F.WF3 BLD470EL.WF3	3	DB 171	DB 172	DB 184	DB 185
BLD470F.WF4 BLD470EL.WF4	4	DB 154	DB 155	DB 167	DB 168
BLD470F.WF5 BLD470EL.WF5	5	DB 137	DB 138	DB 150	DB 151
BLD470F.WF6 BLD470EL.WF6	6	DB 120	DB 121	DB 133	DB 134
BLD470F.WF7 BLD470EL.WF7	7	DB 103	DB 104	DB 116	DB 117
BLD470F.WF8 BLD470EL.WF8	8	DB 86	DB 87	DB 99	DB 100

Table 5.1 Assignment of directories and data block numbers

5.2 Initialization of the Data Structure

The program example can be used as is, if the screens for WF number 1 (BLD470□.WF1) are used.

If screens from another WF number are used, then copy the DB 218 (DB-ZU/B1) to the DB-ZU/Bx number given by the table. Afterwards configure the DB-ZU/Bx (DW 1 through 33) to the number of DB-TECH/Bx,1 and DB-AP/Bx as given by the table (see also 4.1).

Example: The screens of the WF 470 number 5, from the directory BLD470□.WF5 are used.

Copy the DB 218 to DB 137 and enter into DW 21 through 32 the number 138 for DB-TECH/B5,1. Then in DW 33 enter the value 150 for the DB-AP/B5.

The Standard B-470 generates the data blocks automatically.



The preset of DB-ZU/Bx has to be done before the first start up of the PLC.

5.3 FB-WF4:BANL

The generation of the data blocks, the setting of an initial state and the transfer of the WF 470 parameter are all done by FB-WF4:BANL. This function block has to be called and supplied with parameters in the startup blocks OB20, OB21 and OB22, once for every WF 470 application.

Parameters

Call in startup OB's (OB 20, OB 21, OB 22)		
	:SPA FB 212	
NAME	:WF4:BANL	
DBZB	:DB-ZU/Bx	Number of the assignment data block Standard B-470
DBZU	:DB-ZU	Number of the assignment data block Standard A
DBSY	:DB-SY/Bx	Number of the system data block
DBBL	:DB-BL/x	Number of the data block for the screen-list
DBH	:DB-H/x	Number of the auxiliary data block from Standard WF 470
ADPR	:KH xxxx	Address of the WF 470
APNR	:KF x	Application number x (x=1 through 8)
TKOD	:1, x	Parameter TAST from FB-S5-WF470 and FB-SCREEN LIST (=FYx, in program example FY 23)
	:TMWx	Store command status and fault numbers

DB-ZU/Bx, DB-SYS/Bx Those numbers are determined by the WF 470 number (see table 5.1).

DBZU Those numbers are specified during the installation of Standard A.

DB-BL/x The DB-BL/x has the number DB 233 in the programming example. For an application with several WF 470 modules, the DB 233 has to be copied to other numbers accordingly.

DB-H/x Every WF 470 application requires a DB-H/x with a new number. It is generated automatically.

The parameters DBSY and DBH can also be supplied with DB 0. With this selection the standard settings will be used.

Are faults triggered during the setup of the data structure, then the FB-WF4:BANL produces a Stop of the PLC. The cause of the Stop can be seen in the fault entries of accumulator 1 in the ISTACK.

5.4 FB-WF4:BUEB

The FB-WF4:BUEB administers the technology independent part of the WF 470 screens. It has to be called once for each WF 470 application.

Parameters

	:L KY 0,x	x = Number of the DB-ZU/Bx
	:SPA:FB 213	
NAME	:WF4:BUEB	
	:T MWx	Store command status and fault number
	:=Mx,y	Set error flag when RLO = 1

5.5 FB-WF4:BPOS

The FB-WF4:BPOS administers the technology dependent part of the WF 470 screens. It has to be called once for each WF 470 application.

Parameters

	:L KY 0,x	x = Number of the DB-ZU/Bx
	:SPA:FB 214	
NAME	:WF4:BPOS	
	:T MWx	Store command status and fault number
	:=Mx,y	Set error flag when RLO = 1

5.6 FB-FKTS (from version V1.1)

This function block updates the softkey bits when the screen disable flag is set. It has to be called after the call of the Standard function blocks for the WF 470.

Parameters

	:SPA:FB 221	on diskette: FB 221 for SIMATIC S5-115U/-155U FB 222 for SIMATIC S5-135U
NAME	:FKTS	
DBH	:DB-H/x	Number of the auxiliary data block form Standard same parameters as FB 212
FKTS	:MW n	Softkey same parameters as FB 220 (SIMATIC S5-115U/155U) as FB 221 (SIMATIC S5-135U)

5.7 Call of the Standard Function Blocks



The sequence of calls for the standard function blocks shown here is obligatory.

The sequence of calls from the programming example is valid:

1. Execution of the coupling WF 470
2. Execution of Standard B-470



Valid data from the WF modules are only displayed when both Standard A as well as Standard B-470 are running error free (valid start up codes).



The call of the Standard A block is described in the planning instructions, Standard A software for the WF-technology modules.

PB2 contains the call for the blocks of Standard WF 470. The sequence of calls is mandatory:

PB 2

:SPA	FB-S5-WF470	Coupling to WF 470
:SPA	FB-TAST	Keyboard evaluation
:SPA	FB-BILDLIST	Screen selection
:SPA	FB-FKTS	Update of softkeys



The block call and the parameters are explained in the Description WF 470 CRT Display Module.

PB3 contains the call of Standard B-470. Since FB-WF4:BANL already makes important checks, FB-WF4:BPOS should only be called if FB-WF4: BUEB does not display an error.

PB 3

:SPA	FB-WF4.BUEB
:BEB	
:SPA	FB-WF4.BPOS

PB 21 contains the startup of Standard B-470. It is called in the startup blocks OB 20, OB 21 and OB 22.

5.8 Addressing of the Modules

The possible address settings of the WF modules are shown in the different Planning Instructions of the Hardware. Address information for the WF 470 is shown in it's description manual.

Screen selection and data input is done with the keyboard of the operator panel WS 400-20. It is connected with the PLC by 8 digital inputs. A serial keyboard can be connected directly to the WF 470 module.

5.9 Multi-Processor Operation

In multi-processor operation one or several WF module(s) are assigned to a single central CPU. Accessing a WF 470 from several central CPU's is not permitted. The maximum number of WF modules (12 or 28) in a system is address dependent, therefore it is true for the whole system. This number does not increase when several central processors are used. The WF modules can be freely assigned to the different central processors.

5.10 Interrupt Behavior

The Standard B-470 does not have interrupt processing, and does not influence one.

Are interrupt triggering modules used together with Standard A and Standard B-470, then great care should be taken to save and reload the "scratch pad" flags and the system data area. This is also valid for time interrupts.

Blocks which save and reload the "scratch pad" flags and the system data area are part of the software Standard A.

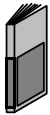
6 Operating

6.1 Operator Interface System WS 400

The WF 721/WF 723 can be operated with the operator interface system WS 400. It makes it possible to have a user friendly operator interface, a save monitoring of the operation and a fast and detailed machine diagnostic system.

The hardware of the operating system WS 400 consists of the following components:

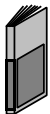
- the CRT display module WF 470 which stores the screens and text lists
- an operator panel WS 400-20/22
or an operator panel WS 400-30/50 for WF 470
or a compact operator panel WS 496
- or the keyboards WS 495/WS 496 for WF 470 and
panel mount monitors WS 496



For details, order numbers and accessories please see catalog AR10.

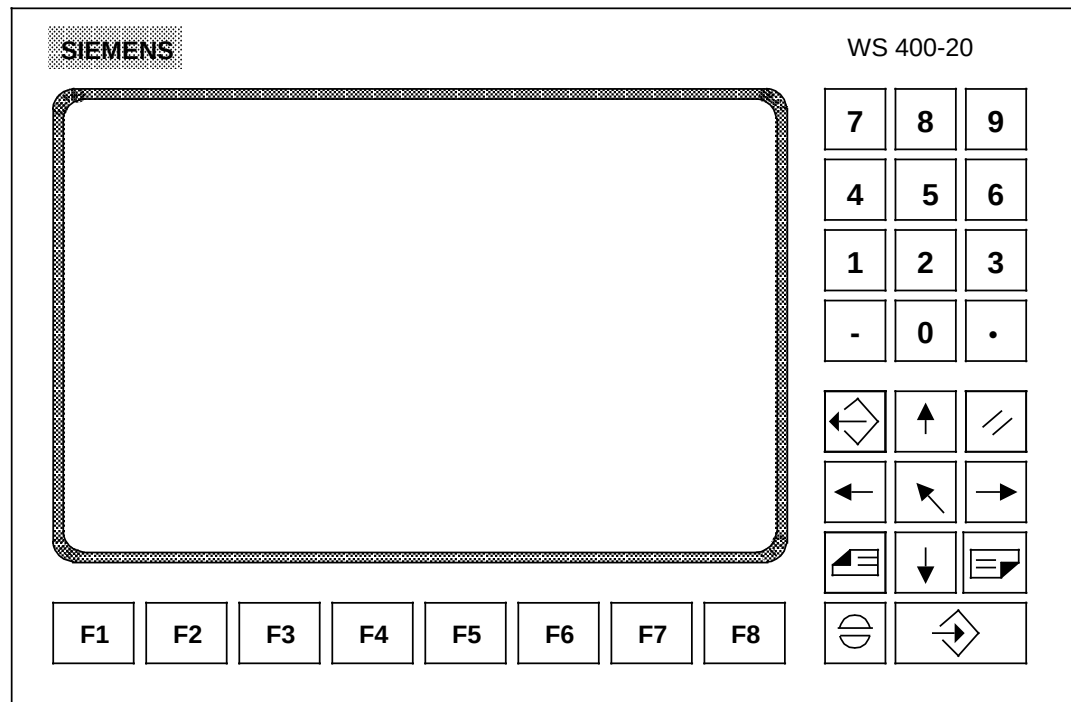
The Standard B-470 can be complemented by additional screens with the screen development software for the WF 470 (see description for WF 470). This makes user friendly data entry into the WF 721/WF723 A possible. In the user programmable screens of the WF 470 it is possible to configure fault messages which, in clear text, can describe the type, cause, and location of malfunctions and can even give indications of required repairs.

You have to supply the control signals to the WF 721/WF 723 A from a machine control panel.



A detailed description of the functions of the WF 721/WF 723 A can be found in the Function Description. It also describes the traversing blocks and the machine data with their units.

The **operator panel WS 400-20** can be equipped with either a 9" monochrome monitor or a 9" color monitor:



The keyboard consists of:

- 8 softkeys (F1 through F8)
- a complete numeric keypad with decimal point and minus sign.
- special keys

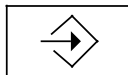
Operation and data entry is done with the softkeys F1 through F8, the number keys and the following special keys:

Position the cursor to the desired field with the cursor keys,



enter the data and

push the enter key.



By overwriting the old value and pushing the enter key you can **correct** a value already entered.

A **traversing block is entered** by entering any character into the last field and pushing the enter key.

The system defaults to axis A if **an invalid axis** has been selected.

6.2 Configuration of the Screens

For easier recognition the different types of information are displayed in different colors:

Blue	Contours and labels of the screens
White	Output fields and their labels
Yellow	Input and output fields and their labels
Red	Fault messages of all types
Green	Notes and descriptive text

The screen MDI/Setup is shown here as an example. For a better overview the following conventions have been adopted in this manual:

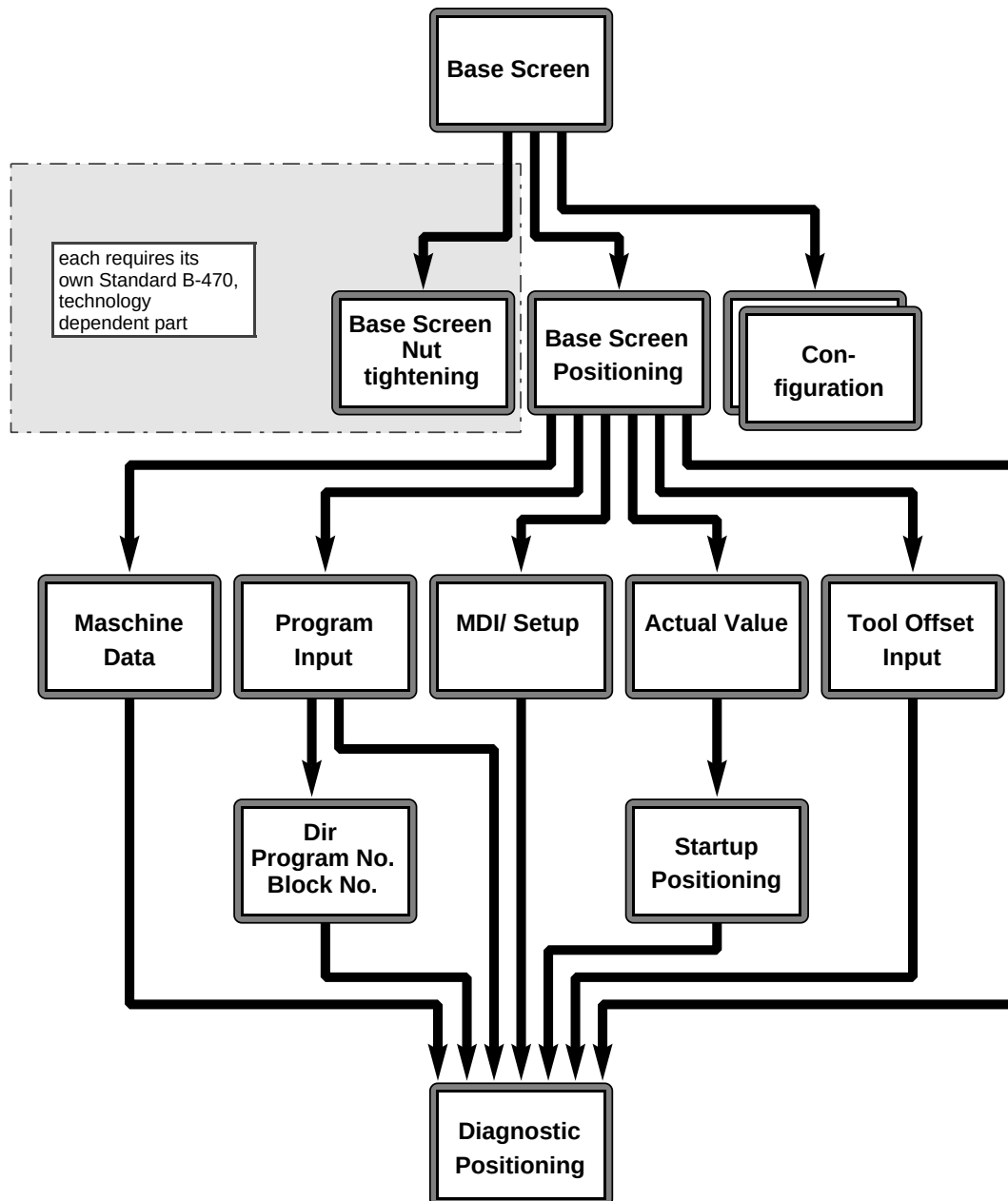
Input field have a gray background

[Text] Represents a note or a feedback message

WF-No.: [WF-No.] Axis-No. A		MDI/Setup									
Operating mode: [Mode feedback]		[Status message Standard A]									
[Fault message Standard A]		[Group fault from the Axes]									
MDI		Setup									
G1-Function :	91	Jog speed 1 [mm/min]:	1000.00								
G2-Function :	30	Jog speed 2 [mm/min]:	10000.00								
Jog speed 1 [mm/min][mm/min]		Teach In									
X [mm]:	20000.000	Prog. No:	0								
F [mm/min]:	1000.00	Block No:	0								
Simulation state ON		Actual Value:	7626.864								
<table border="1"> <tr> <td>F1 SIM ON/OFF</td> <td>F2 MDI TRANSFER</td> <td>F3 SETUP TRANSFER</td> <td>F4 TEACH-IN</td> <td>F5</td> <td>F6</td> <td>F7 DIAGNOSTIC</td> <td>F8 RETURN</td> </tr> </table>				F1 SIM ON/OFF	F2 MDI TRANSFER	F3 SETUP TRANSFER	F4 TEACH-IN	F5	F6	F7 DIAGNOSTIC	F8 RETURN
F1 SIM ON/OFF	F2 MDI TRANSFER	F3 SETUP TRANSFER	F4 TEACH-IN	F5	F6	F7 DIAGNOSTIC	F8 RETURN				

6.3 Operator Guiding

Operator guiding is done in several levels. The desired screen is selected with a softkey. The machine builder can extend the operator guiding with his own screens.



6.4 Standard Screens

6.4.1 Base Screen

Customer name	Base creen
Machine designation	
WF-No. 1 : 723 A	[Group fault of the axes]

1: WF 723 A *	5: WF	9: WF
2: WF	6: WF	10: WF
3: WF	7: WF	11: WF
4: WF	8: WF	12: WF

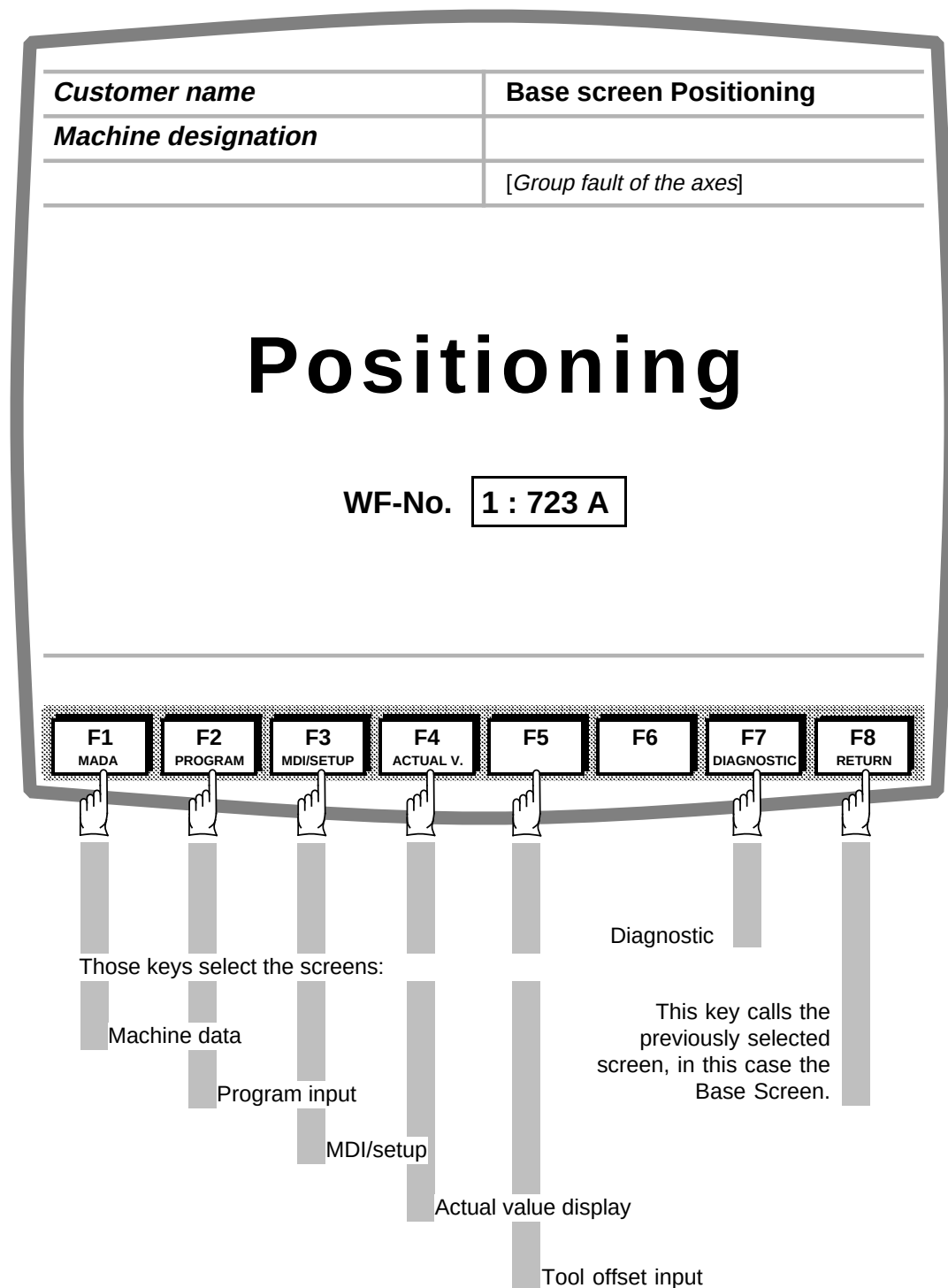
[Note]

F1 SELECTION	F2	F3	F4	F5	F6 CONFIG.	F7	F8
-----------------	----	----	----	----	---------------	----	----

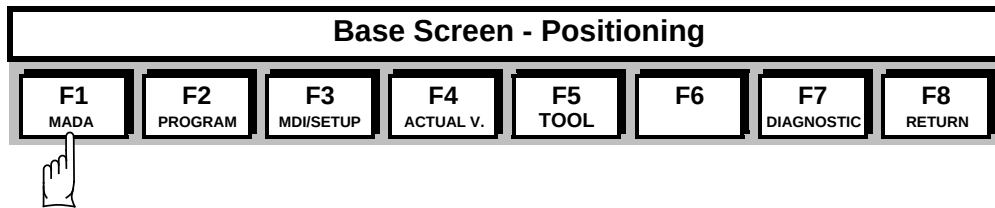
You select the WF module where the "Asterisk" is located. This calls the base screen of that WF module. The "Asterisk" appears by entering any character and pushing the enter key.

This selects the configuration screen

6.4.2 Base Screen Positioning



6.4.3 Machine Data



The last machine data read into the WF 721/WF 723 are displayed. Those are not necessarily the currently active machine data!

WF-No.: [WF-No.]		Axis-No. A	Machine data				
Operating mode: [Mode feedback]		[Status message Standard A]					
[Fault message Standard A]		[Group fault from the axes]					
MD 1	1	MD 17	0.000	MD 33	8000		
MD 2	2500	MD 18	1	MD 34	1		
MD 3	0.000	MD 19	0.000	MD 35	0.500		
MD 4	0.000	MD 20	-99999.999	MD 36	5000		
MD 5	1	MD 21	99999.999	MD 37	0		
MD 6	500	MD 22	0.050	MD 38	0		
MD 7	1	MD 23	1.000	MD 39	0		
MD 8	3	MD 24	1.000	MD 40	0		
MD 9	4096	MD 25	0.010				
MD 10	0.000	MD 26	0				
MD 11	1	MD 27	1000				
MD 12	0	MD 28	1000				
MD 13	1	MD 29	0				
MD 14	0.000	MD 30	0				
MD 15	0	MD 31	20000				
MD 16	0	MD 32	1.000				
[Significance of machine datum]		[Note]					
F1 ACTIVE	F2	F3	F4	F5	F6	F7 DIAGNOSTIC	F8 RETURN

as already described

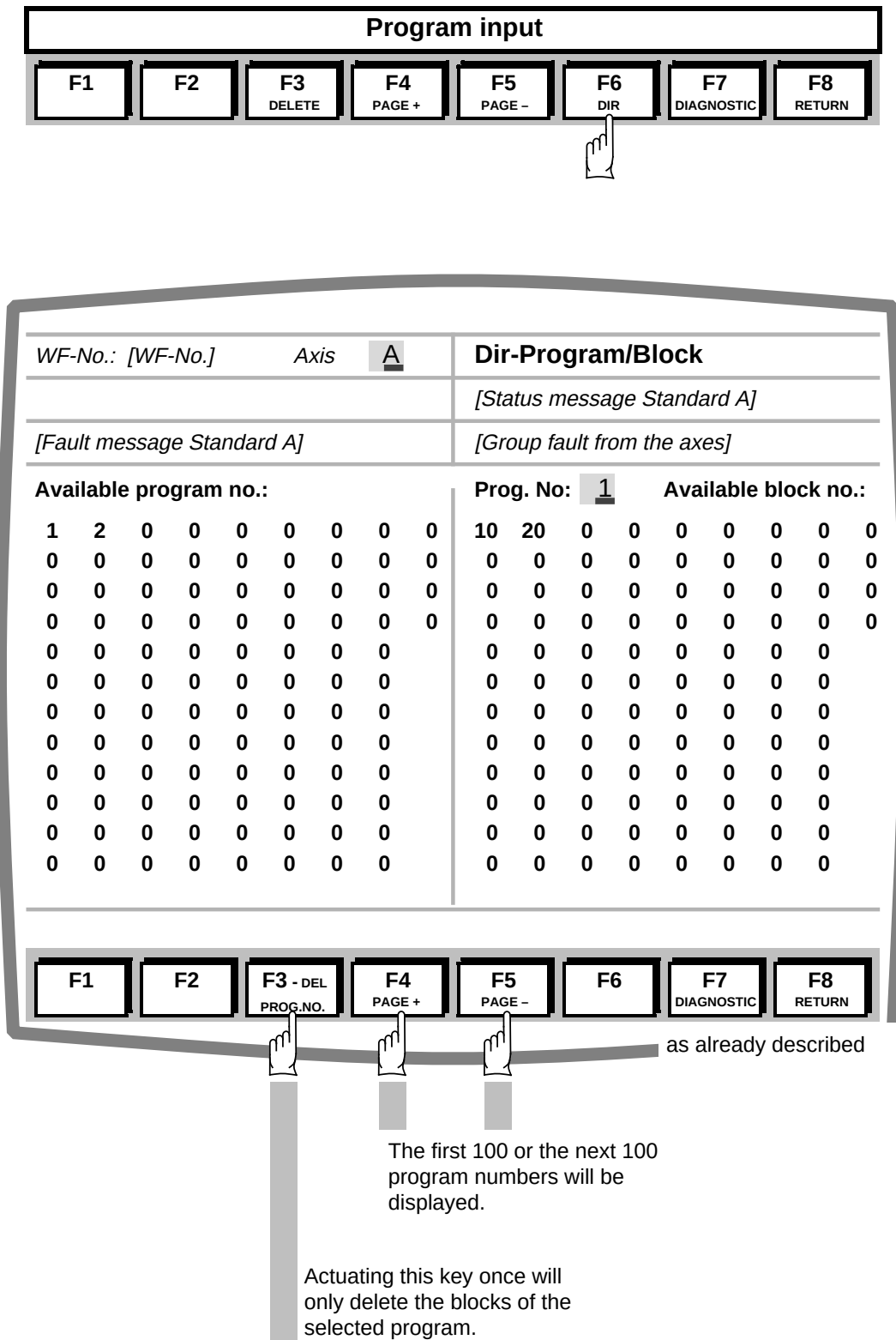
All machine data of the selected axis (A/1, B/2 or C/3) are activated.

If you have entered or edited machine data but not activated them, then pushing F7 or F8 will show a message to this regard. You then have a choice of either activating the new machine data with F1, or to abandon the modifications with F7 or F8.

6.4.4 Program Input

[illegible]

6.4.5 Directory of Program and Block Numbers



6.4.6 MDI/Setup

Base Screen - Positioning

F1 MADA	F2 PROGRAM	F3 MDI/SETUP	F4 ACTUAL V.	F5 TOOL	F6	F7 DIAGNOSTIC	F8 RETURN
------------	---------------	-----------------	-----------------	------------	----	------------------	--------------

WF-No.: [WF-No.] Axis-No. A	MDI/Setup
Operating mode: [Mode feedback]	[Status message Standard A]
[Fault message Standard A]	[Group fault from the Axes]

MDI G1-Function : 91 G2-Function : 30	Setup Jog speed 1 [mm/min]: 1000.00 Jog speed 2 [mm/min]: 10000.00
--	---

X [mm]: 20000.000 F [mm/min]: 1000.00 Simulation state ON	Teach In Prog. No: 0 Block No: 0 Actual Value: 7626.864
--	--

F1 SIM ON/OFF	F2 MDI Transfer	F3 SETUP TRANSFER	F4 TEACH-IN	F5	F6	F7 DIAGNOSTIC	F8 RETURN
------------------	--------------------	----------------------	----------------	----	----	------------------	--------------

Simulation is switched on or off

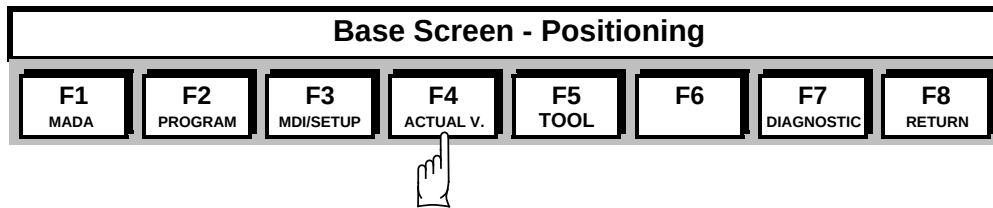
The values are transferred to the WF module.

The actual position is entered as command position into the selected block.

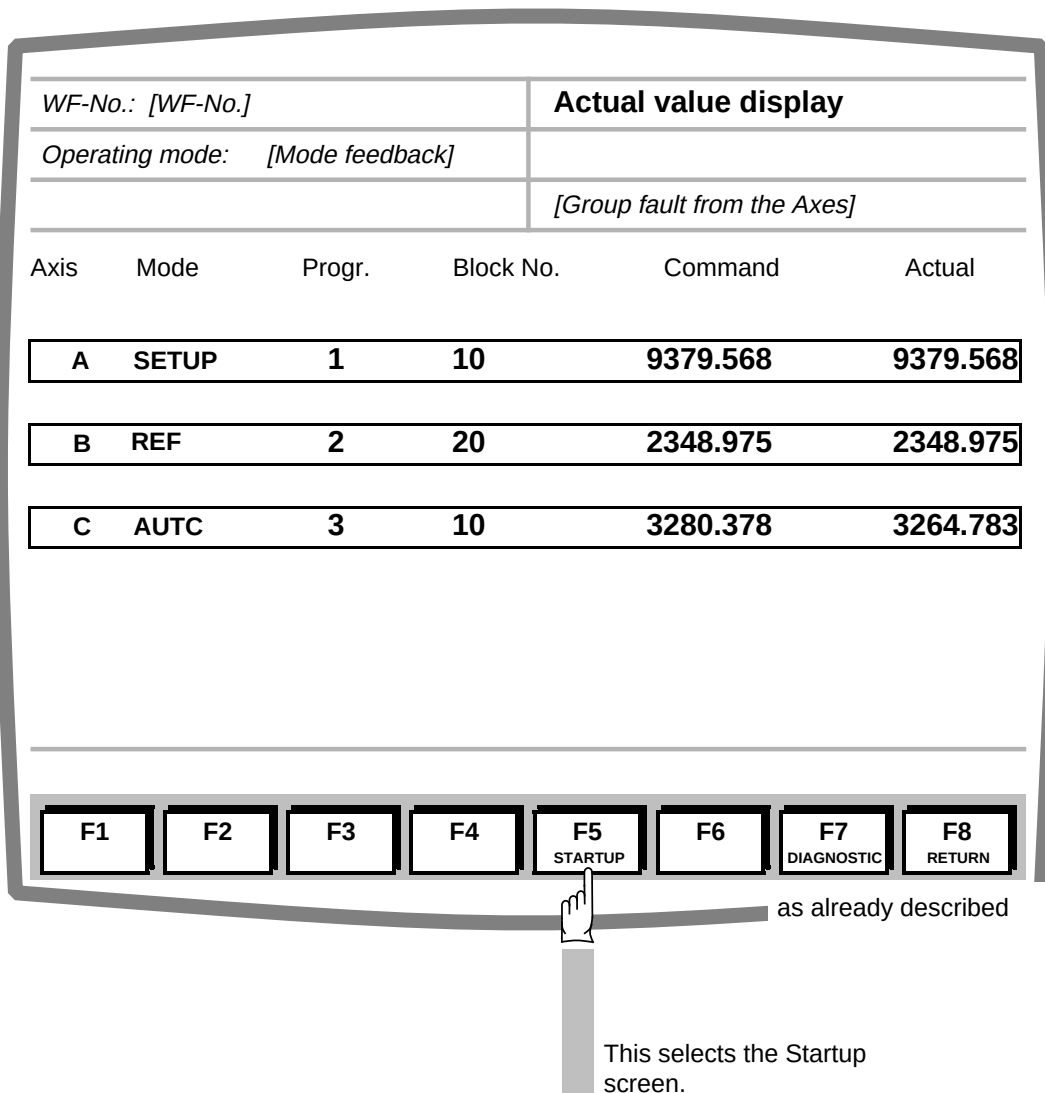
The actual position is entered as command position into the selected block.

as already described

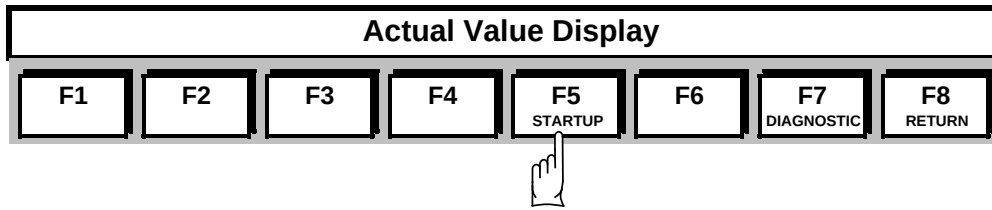
6.4.7 Actual Value Display



The actual position values of all axes on the selected module are displayed.



6.4.8 Startup Screen



Three display values on the selected module are displayed.

WF-No.: [WF-No.]		Startup-Positioning		
		[Group fault from the Axes]		

No.	Command	Axis:	A	B	C
1	Encoder actual value		0	0	0
3	Following error		0	0	0
11	Kv-Factor		1	1	1

Command list:

001	Encoder actual value [mm]	005	–
002	Command position [mm]	006	–
003	Following error [mm]	007	–
004	** NOT ALLOWED **	008	–

F1 LI-START	F2 LI-END	F3	F4 PAGE +	F5 PAGE -	F6	F7 DIAGNOSTIC	F8 RETURN
-----------------------	---------------------	-----------	---------------------	---------------------	-----------	-------------------------	---------------------

as already described

Jump to
command list
start or end.

forward
backward
paging in the
command list

The entry of a command number which because of its format cannot be displayed (** NOT ALLOWED **), deselect the command.

6.4.9 Tool Offsets

Base Screen - Positioning

F1 MADA	F2 PROGRAM	F3 MDI/SETUP	F4 ACTUAL VAL.	F5 WZK	F6	F7 DIAGNOSTIC	F8 RETURN
------------	---------------	-----------------	-------------------	-----------	----	------------------	--------------



WF-No. : [WF-No.]	Axis-No. A	Tool Offset Input
		[Status message Standard A]
[Fault message Standard A]		[Group fault from the Axes]

D-No.: 1

P2 Length

[mm]

0.000

P5 Wear

[mm]

absolute

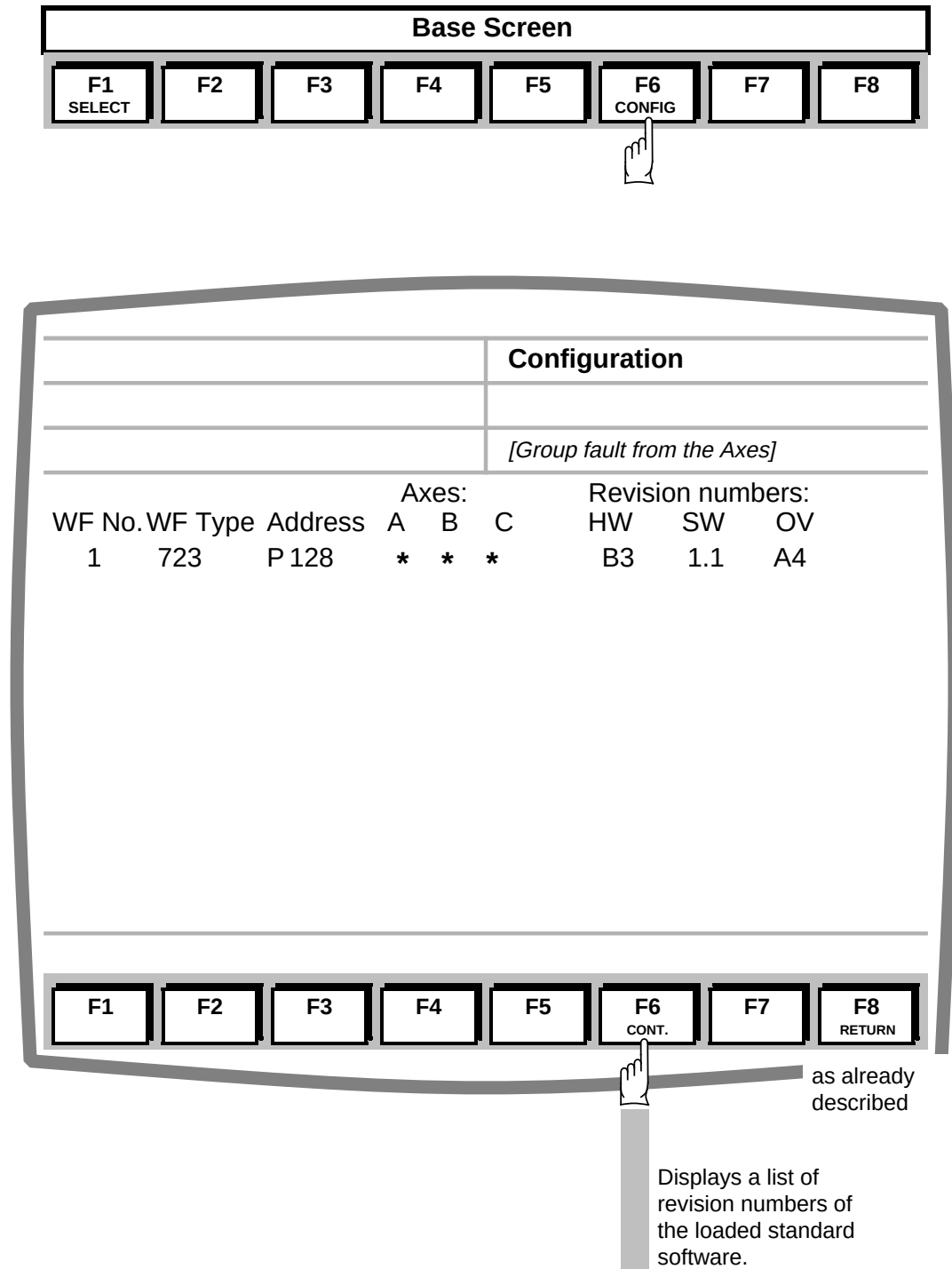
aditiv

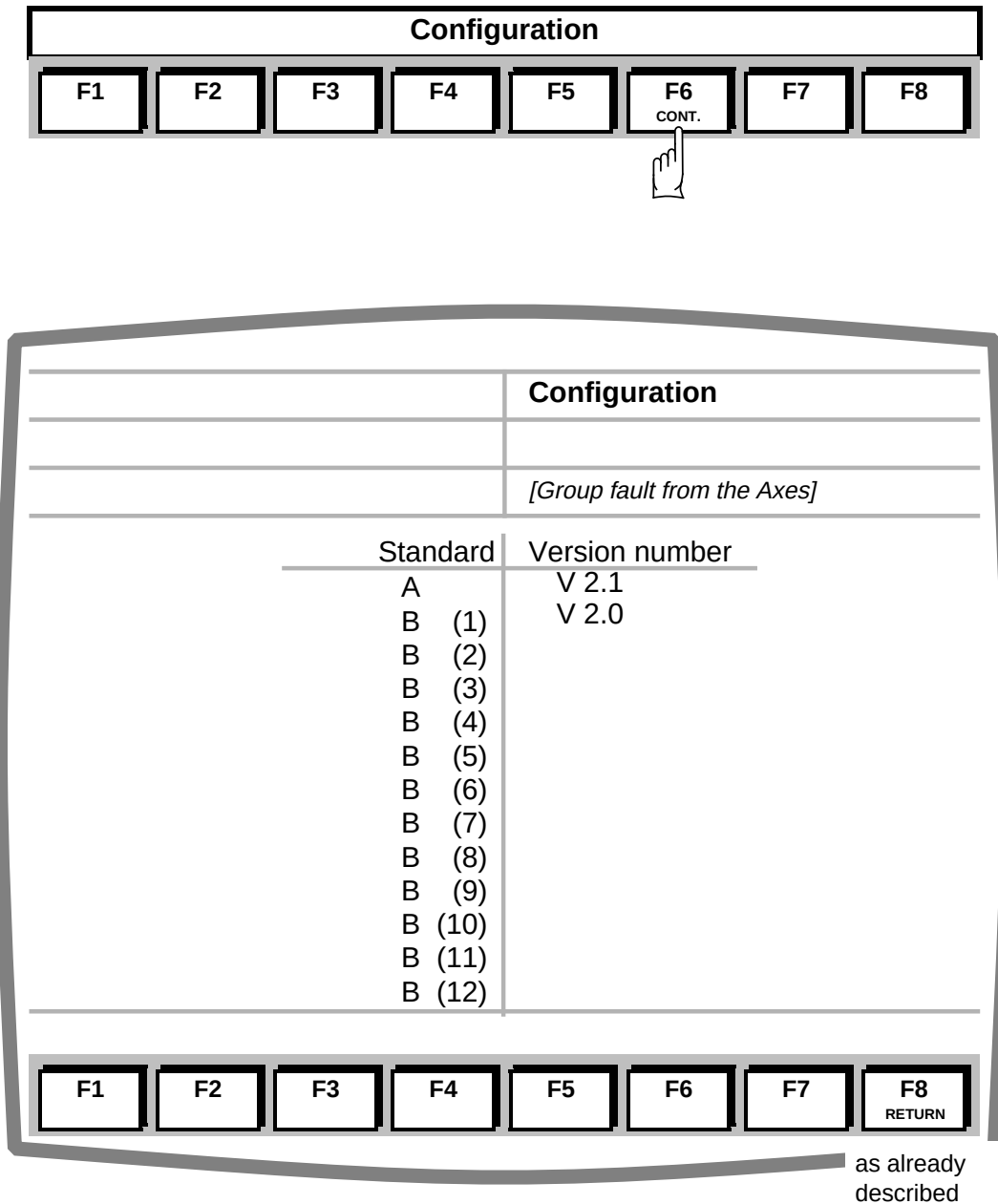
*

F1	F2	F3	F4	F5	F6	F7 DIAGNOSTIC	F8 RETURN
----	----	----	----	----	----	------------------	--------------

as already described

6.4.10 Configuration





6.4.11 Diagnostic Positioning

Standard B-470 Screens: Technology Positioning							
F1	F2	F3	F4	F5	F6	F7 DIAGNOSTIC	F8



Three display values of one module are shown.

WF-No.: [WF-No.]				Diag. Positioning	

Fault	Axes:	A	B	C
*	1 : WF 723		*	*
	2 : WF			
	3 : WF			
	4 : WF			
	5 : WF			
	6 : WF			
	7 : WF			
	8 : WF			
	9 : WF			
	10 : WF			
	11 : WF			
	12 : WF			

Display window for up to 8 fault messages from one axis.

The fault messages from the module and axes which is marked by the cursor are displayed.

[Note]

F1	F2	F3	F4	F5	F6	F7	F8 RETURN
----	----	----	----	----	----	----	--------------

as already described

7 Program Example

7.1 Program Example 1, one WF 470

This program example is fully functional. You can use it and built on it. The function blocks S5-WF 470, BILDLIST and TAST... as well as the keyboard evaluation data block (DB 201), are part of the WF 470 software and have to be loaded separately (see also 5.1).

You need the following hardware:

- one WF 470, addressed to 0_H (SIMATIC S5-115U)
or F800_H (SIMATIC S5-135U/-155U)
- one input module (IB 8)

The program example 1 works with the application 2 in DB-WF and uses the screens and textlists of the WF 470 number 1:

```
DB-ZU/B1      = DB 218
DB-TECH/B1,1  = DB 219
DB-AP/B1      = DB 231
DB-SYS/B1     = DB 232
```

In this case you have to transfer the screens and textlists from the directory BLD470F.WF1 or BLD470EL.WF1 to the WF 470 module with the screen development software.

Note: Use the load module 2. It contains all screens and textlists.

The program example 1 for SIMATIC S5-115U, -135U and -155U is part of diskette "Standard B-470 Technology independent part". The following description uses the SIMATIC S5-115U as an example.

With the SIMATIC S5-135U and -155U the parameter ADPR in FB-WF4:BANL and S5-WF470 have to be supplied with the value KH F800.

For those PLC's

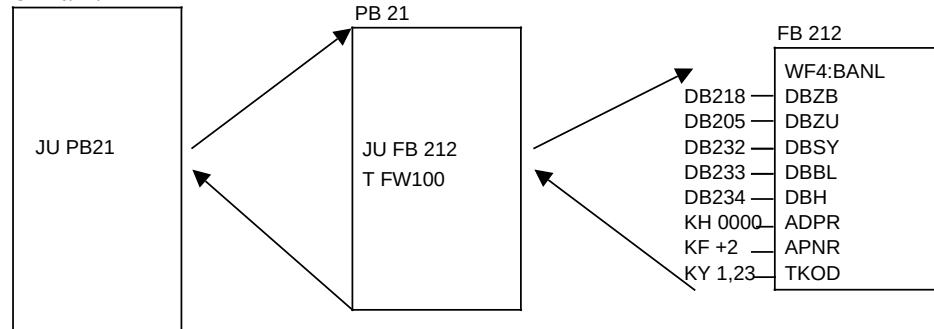
use those function
blocks

and this
data block

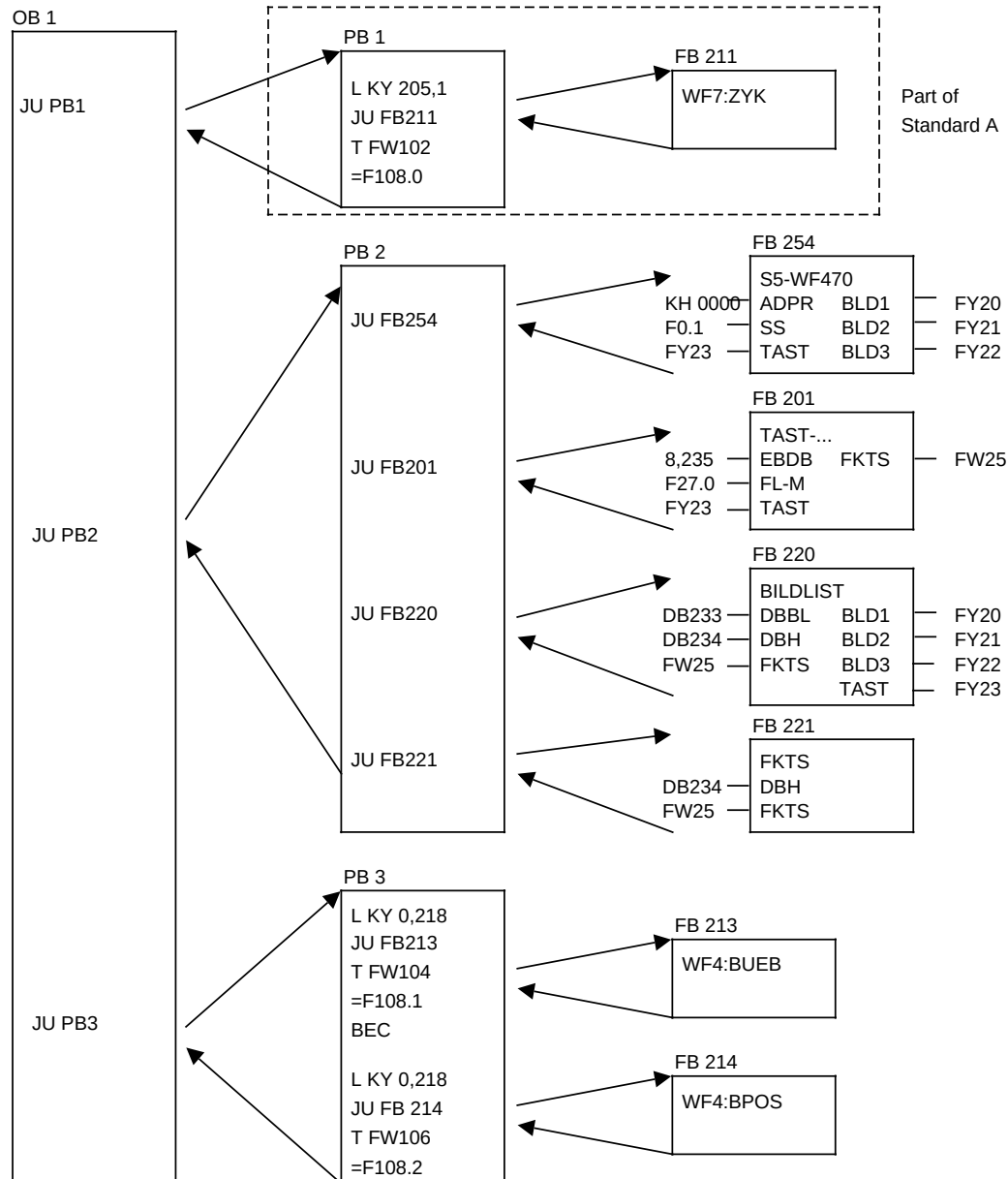
	SIMATIC S5 -115U	SIMATIC S5 -135U	SIMATIC S5 -155U
FB S5-WF470	FB 254	FB 249	FB 248
FB TAST...	FB 201	FB 201	FB 201
FB BILDLIST	FB 220	FB 221	FB 220
DB-TAST	DB 235	DB 235	DB 235

Program example 1, valid for SIMATIC S5-115U:

OB 20/21/22



OB 1



7.2 Program example 2, two WF 470

This program example is not stored on the diskette, but you can extend the program example 1 in this way.

You need the following hardware:

- one WF 470, addressed to 0000_H
one WF 470, addressed to 0100_H
- one input module (IB 8)
one input module (IB 9)

The program example 2 works with the application 3 and 4 in DB-WF and uses the screens and textlists of the WF 470 number 2 and 3:

WF 400 number 2		WF 470 number 3	
DB-ZU/B2	= DB 188	DB-ZU/B3	= DB 171
DB-TECH/B2,1	= DB 189	DB-TECH/B3,1	= DB 172
DB-AP/B2	= DB 201	DB-AP/B3	= DB 184
DB-SYS/B2	= DB 202	DB-SYS/B3	= DB 185

With the screen development software you have to transfer the screens and textlists

- from the directory BLD470F.WF2 or BLD470EL.WF2 to the WF 470 with the address 0000_H and
- from the directory BLD470F.WF3 or BLD470EL.WF3 to the WF 470 with the address 0100_H.

Note: Use the load module 2. It contains all screens and textlists.

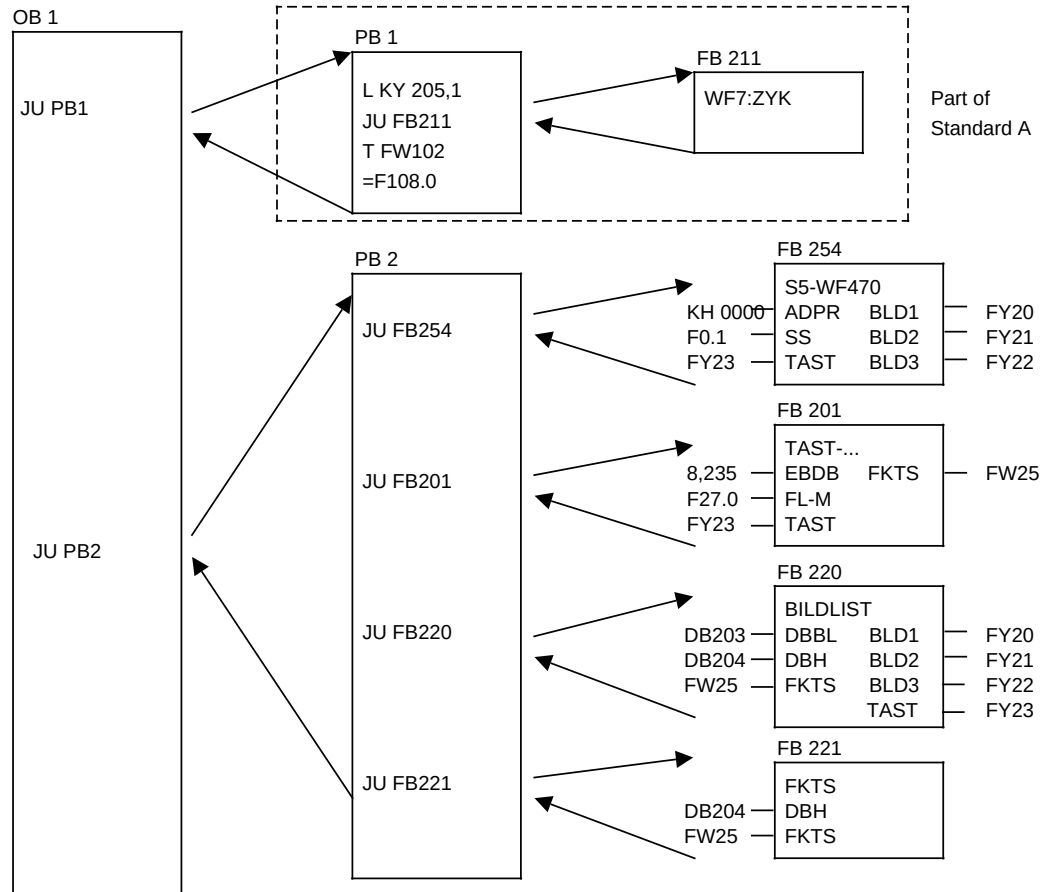
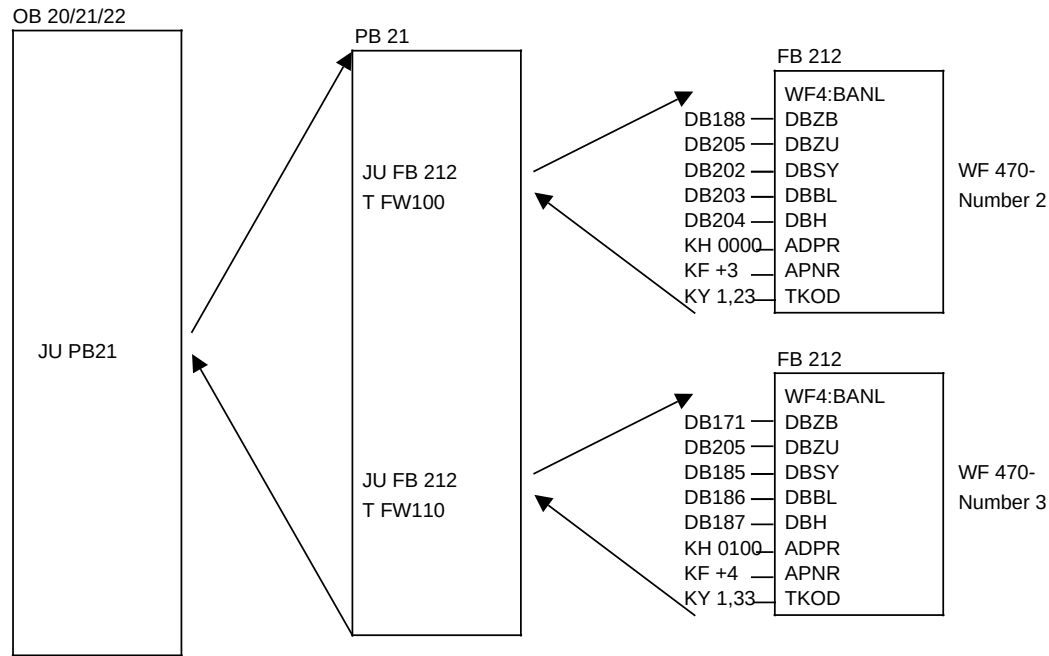
In order to generate DB-ZU/B2 or DB-ZU/B3 you have to copy and rename DB 218 (DB-ZU/B1) to the number DB 188 and DB 171.

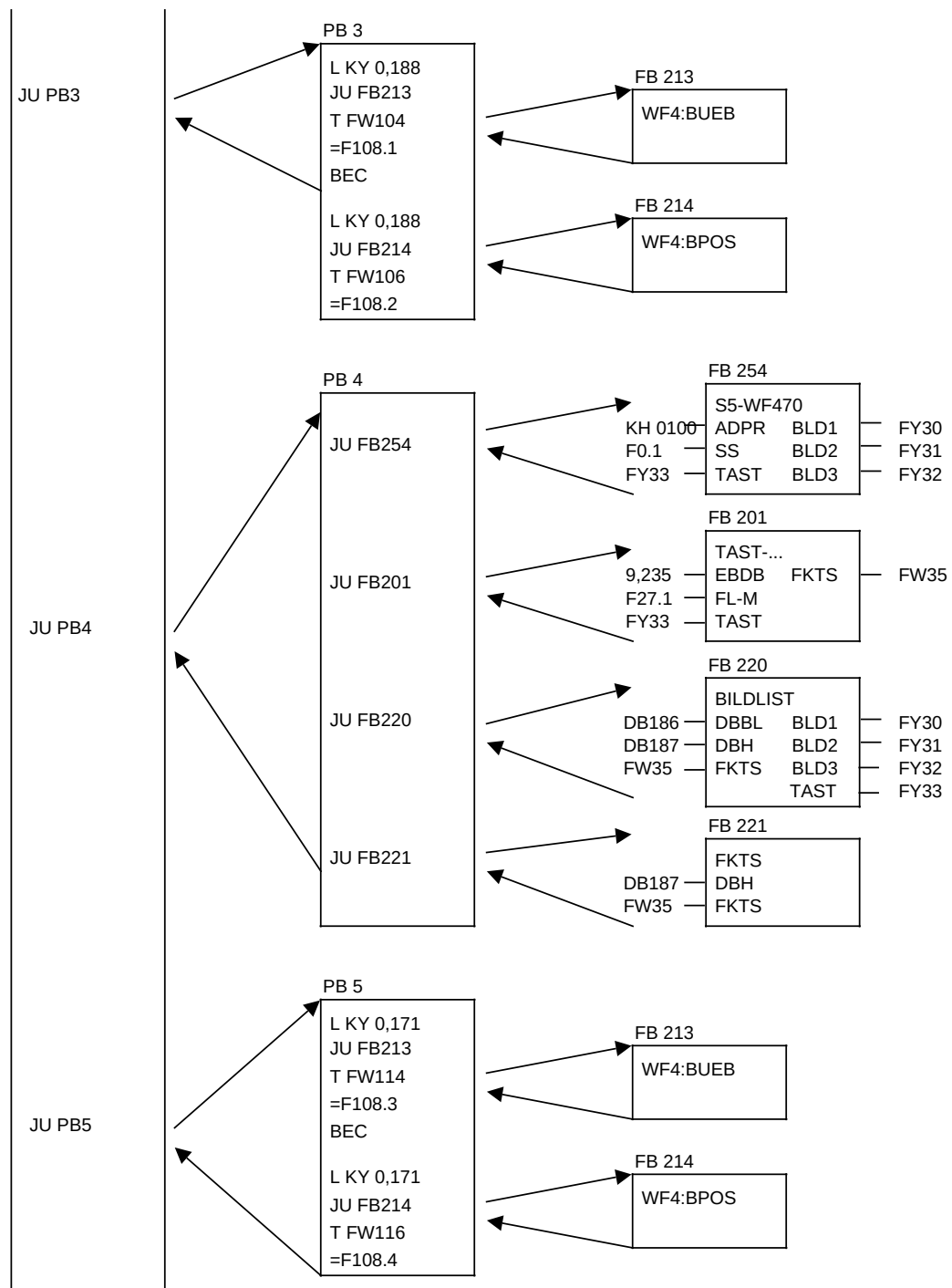
In DB 188 enter the value of 189 into DW 21 through DW 32 and the value 201 into DW 33.

In DB 171 enter the value of 172 into DW 21 through DW 32 and the value of 184 into DW 33.

In addition the DB 233 (DB-BL/1) has to be copied and renamed to DB number 203 (DB-L/2) and 186 (DB-BL/3).

Program example 2, valid for SIMATIC S5-115U:





7.3 Incorporation of User Screens

User specific screens can be incorporated when the following conditions are observed:

The DB-BILDLIST (DB233) contains the branching structure of the WF 470 screens, whereby the part used by Standard B-470 has to be handled in the following way:

- the screen names in the screen-blocks must not be changed
- the screen-blocks can be shifted freely
Exception: - the screen AOB must remain fixed in block 0 (base screen)
- it is possible to branch from a standard screen to a user screen
- it is possible to branch from a user screen to a standard screen
- do you want to select a user screen during start up of the PLC, then you have to insert the following instructions at the end of the start up OB's:

Call in start up (OB 20, OB 21, OB 22)	
:C DBH	Call of the auxiliary data block
:L KBx	x=1st data word of the desired screen block
:T DW5	
:L KB1	
:T DW1	activate block selection

7.4 Program Example in Connection with a Serial Keyboard

When using the program example in connection with a serial keyboard, replace the FB 201 by the following sequence of instructions:

:A DB232
:L DL10
:T MB26
:L DR10
:T MB25
:L KB0
:T DW10

8 Technical Data

The following data are valid for the version 2.0. The times in ms, are approximations.

8.1 Permitted CPU Types

Programmable logic controller (PLC)	CPU type	Order No.
S5-115U	941B	6ES5 941-7UB11
	942B	6ES5 942-7UB11
	943B	6ES5 943-7UB11
	943B	6ES5 943-7UB21
	944B	6ES5 944-7UB11
	944B	6ES5 944-7UB21
	945	6ES5 945-7UA11
	945	6ES5 945-7UA21
S5-135U	928B	6ES5 928-3UB11
S5-155U	928B	6ES5 928-3UB11
S5-155U	948	6ES5 948-3UA11
	948	6ES5 948-3UA21



*Use the software for the S5-135U
if the CPU 928 is used in the S5-155U.*

8.2 FB-WF4:BANL

CPU type	941, 942, 943, 944	945	928B	948
Block number	FB 212	FB 212	FB 212	FB 212
Library no.	B 5212-B-1	B 3212-B-1	B 2212-B-1	B 6212-B-1
Block name	WF4:BANL	WF4:BANL	WF4:BANL	WF4:BANL
Block length	521	484	451	485
Nesting depth	-	-	1 serial function	
Used flags	200 thr. 255	200 thr. 255	200 thr. 255	200 thr. 255
Data range	DB-ZU/Bx	DB-ZU/Bx	DB-ZU/Bx	DB-ZU/Bx
System data range	-	-	-	-

Execution times in ms							
Function \ CPU type	941B	942B	943B	944B	928B	946, 947	948
generate all DB's	87.5	87.5	86.5	9.0	7.0	37.0	7.5
all DB's existing	7.0	7.0	6.5	1.0	1.0	1.0	0.2

8.3 FB-WF4:BU EB

CPU type	941, 942, 943, 944	945	928B	948
Block number	FB 213	FB 213	FB 213	FB 213
Library no. E88530-...	B 5213-B-1	B 3213-B-1	B 2213-B-1	B 6213-B-1
Block name	WF4:BU EB	WF4:BU EB	WF4:BU EB	WF4:BU EB
Block length	1160	1110	1068	1116
Nesting depth	-	-	1 Special funct.	-
Used flags	200 thr. 255	200 thr. 255	200 thr. 255	200 thr. 255
Data range	DB-ZU/Bx DB-AP/Bx	DB-ZU/Bx DB-AP/Bx	DB-ZU/Bx DB-AP/Bx	DB-ZU/Bx DB-AP/Bx
System data range	-	-	-	yes

Execution times in ms							
Function \ CPU type	941B	942B	943B	944B	928B	946, 947	948
Start up	18.0	18.0	17.5	2.0	1.5	2.0	0.5
Screen execution	23.5	23.5	22.5	1.0	1.0	1.0	0.2

8.4 FB-WF4:BPOS

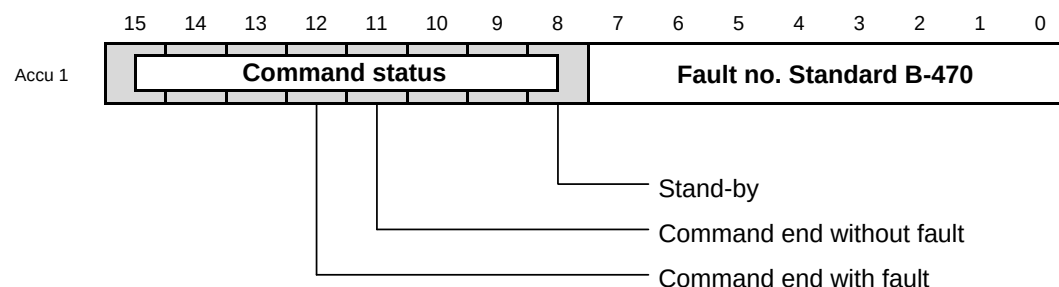
CPU type	941, 942, 943, 944	945	928B	948
Block number	FB 214	FB 214	FB 214	FB 214
Library no. E88530-...	B 5214-B-1	B 3214-B-1	B 2214-B-1	B 6214-B-1
Block name	WF4:BPOS	WF4:BPOS	WF4:BPOS	WF4:BPOS
Block length	2588	2456	2363	2405
Nesting depth	-	-	1 Special funct.	-
Used flags	200 thr. 255	200 thr. 255	200 thr. 255	200 thr. 255
Data range	DB-TECH/Bx DB-AP/Bx	DB-TECH/Bx DB-AP/Bx	DB-TECH/Bx DB-AP/Bx	DB-TECH/Bx DB-AP/Bx
System data range	-	-	BS 60 - 63	yes

Execution times in ms							
Function \ CPU type	941B	942B	943B	944B	928B	946, 947	948
Idle	7.5	7.5	7.0	1.0	1.0	1.5	0.3
Screen execution	24.5	24.5	24.0	1.5	5.5	2.5	0.7

9 Command Status and Fault Messages

9.1 Description of the Status- and Fault messages

The function blocks FB-WF4:BANL, FB-WF4:BU EB or FB-WF4:BPOS load the command status and fault numbers into accumulator 1. Accumulator 1 has the following configuration:



Stand-by FB-WF4:BU EB At the moment a screen is being executed which does not belong to Standard B-470. In this case the FB-WF4:BU EB is in a wait condition.

FB-WF4:BPOS At the moment another technology is being executed. In this case the FB-WF4:BPOS is in a wait condition.

Command end without fault The command has been finished without fault.

Command end with fault The command has been finished with a fault. The fault number Standard B-470 indicates the cause of the fault.



The fault messages Standard B-470 do not have to be acknowledged.

9.2 Fault Messages Standard B-470

1	DB-ZU: Number not allowed	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	Invalid DB-ZU number given at FB-WF4: BANL.			
Effect	SIMATIC S5 does not run.			
Remedy	Specify a valid DB-ZU number. Valid numbers are from 10 through 255. Standard value: DB-ZU = DB 205. The number given in Standard A has to be specified.			

2	DB-ZU: Data block does not exist	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The DB-ZU number specified in FB-WF4: BANL does not exist in the RAM of the PLC.			
Effect	SIMATIC S5 does not run.			
Remedy	DB-ZU has to be generated already in the PLC RAM when Standard A is installed.			

3	DB-ZU: Data block too short	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The DB-ZU number specified in FB-WF4: BANL does not have the required length.			
Effect	SIMATIC does not run.			
Remedy	DB-ZU has to be generated with the right length when Standard A is installed.			

6	DB-ZU/Bx: Invalid number	Issued ACCU 1 FB-WF4:		
		BANL	BUEB	BPOS
Reason	The number specified for DB-ZU/Bx on FB-WF4: BANL is not valid.			
Effect	SIMATIC does not run.			
Remedy	Enter a valid number for DB-ZU/Bx. Valid numbers are those between 10 and 255. Standard setting: DB-ZU/Bx number = WF470 number + 217.			

7	DB-ZU/Bx: Block does not exist	Issued ACCU 1 FB-WF4:		
		BANL	BUEB	BPOS
Reason	The number specified for DB-ZU/Bx on FB-WF4:BANL does not exist in the RAM memory of the PLC.			
Effect	SIMATIC does not run.			
Remedy	The user has to generate the DB-ZU/Bx in the RAM memory of the PLC. The Standard B-470 diskette contains the DB-ZU/B1 with the number DB 218.			

8	DB-ZU/Bx: Block too short	Issued ACCU 1 FB-WF4:		
		BANL	BUEB	BPOS
Reason	The DB-ZU/Bx specified on FB-WF4:BANL does not have the required length.			
Effect	SIMATIC does not run.			
Remedy	Generate DB-ZU/Bx with the required length. The DB-ZU/Bx must be generated with the full length of 255 data words.			

12	DB-BL/x: Invalid number	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The number specified for DB-BL/x at FB-WF4:BANL is not valid.			
Effect	SIMATIC does not run.			
Remedy	Enter a valid number for DB-BL/x. Valid numbers are those between 10 and 255.			

13	DB-BL/x: Block does not exist	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The number specified for DB-BL/x at FB-WF4:BANL does not exist in the RAM of the PLC.			
Effect	SIMATIC does not run.			
Remedy	The user has to generate DB-BL/x in the RAM memory of the PLC. The Standard B-470 diskette contains DB-BL/1 with the number DB 22.			

14	DB-BL/x: Block too short	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The DB-BL/x specified at FB-WF4:BANL does not have the required length.			
Effect	SIMATIC does not run.			
Remedy	Generate DB-BL/x with the required length. The DB-BL/x must have at least a length of 252 data words.			

15	DB-SYS/Bx: Invalid number	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The number specified for DB-SYS/Bx at FB-WF4:BANL is not valid.			
Effect	SIMATIC does not run.			
Remedy	Enter a valid number for DB-SYS/Bx. A valid number is any number between 10 and 255.			

17	DB-SYS/Bx: Block too short	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The DB-SYS/Bx specified at FB-WF4:BANL does not have the required length.			
Effect	SIMATIC does not run.			
Remedy	The DB-SYS/Bx has to be generated with a length of at least 21 data words. To avoid errors at this point, DB-SYS should be generated by Standard B-470.			

18	DB-H/x: Invalid number	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The number specified for DB-H/x at FB-WF4:BANL is not valid.			
Effect	SIMATIC does not run.			
Remedy	Enter a valid number for DB-H/x. Valid numbers are those between 10 and 255.			

20	DB-H/x: Block too short	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The DB-H/x specified at FB-WF4:BANL does not have the required length.			
Effect	SIMATIC does not run.			
Remedy	The DB-H/x has to be generated with a length of atleast 15 data words. In order to avoid errors at this point, the DB-H/x should be generated by Standard B-470.			

21	Start up code not available	Issued ACCU 1 FB-WF4:		
			BUEB	BPOS
Reason	The FB-WF4:BANL is not called during start up and can therefore not display the start up code.			
Effect	The Standard B-470 cannot work properly.			
Remedy	Call FB-WF4:BANL during start up of the PLC.			

22	No Standard B-470 screen selected	Issued ACCU 1 FB-WF4:		
			BUEB	
Reason	This is not a fault, but a status message, which shows, that e.g. a user screen is being displayed.			
Effect	Standard B-470 is not being executed.			
Remedy	This messages disappears when a screen belonging to Standard B-470 is selected.			

23	Invalid type of technology	Issued ACCU 1 FB-WF4:		
			BUEB	
Reason	DB-Zu contains an invalid WF-code.			
Effect	Standard B-470 is not being executed.			
Remedy	Enter the correct WF-code into DB-ZU.			

24	Invalid technology variant	Issued ACCU 1 FB-WF4:		
			BUEB	
Reason	DB-Zu contains an invalid WF-code.			
Effect	Standard B-470 is not being executed.			
Remedy	Enter the correct WF-code into DB-ZU.			

25	Invalid application number	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The application number specified in FB-WF4:BANL is not valid.			
Effect	SIMATIC S5 does not run.			
Remedy	Enter a valid application number. Valid application numbers are between 1 through 8.			

101	DB-WF: Number invalid	Issued ACCU 1 FB-WF4:		
			BUEB	
Reason	The number for the WF data block DB-WF entered into the assignment data block DB-ZU is not valid.			
Effect	Standard B-470 is not being executed.			
Remedy	Enter a valid number for DB-WF. Valid numbers are between 1 and 255.			

102	DB-WF: Block does not exist	Issued ACCU 1 FB-WF4:		
			BUEB	
Reason	The WF data block DB-WF entered into the assignment data block DB-ZU does not exist. This means that Standard A is not working, since DB-WF is generated by Standard A.			
Effect	Standard B-470 is not being executed.			
Remedy	Install Standard A.			

103	DB-WF: Block too short	Issued ACCU 1 FB-WF4:		
			BUEB	
Reason	The WF data block entered into the assignment data block DB-ZU does not have the required length.			
Effect	Standard B-470 is not being executed.			
Remedy	In order to prevent errors at this point the DB-WF should have been generated by Standard A.			

201	DB-AP/Bx: Number invalid	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The number entered into DB-ZU/Bx for the DB-AP/Bx is not valid.			
Effect	SIMATIC S5 does not run.			
Remedy	Valid numbers for DB-AP/Bx are from 10 through 255. Standard setting: WF 470 number + 237.			

203	DB-AP/Bx: Block too short	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The DB-AP/Bx does not have the required length.			
Effect	SIMATIC S5 does not run.			
Remedy	The DB-AP/Bx must be generated with a length of at least 256 data words. In order to prevent errors at this point the DB-AP/Bx should be generated by Standard B-470.			

237	Data block: Faulty block generation	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The Standard B-470 was not able to generate a data block because of insufficient RAM memory in the PLC.			
Effect	SIMATIC S5 does not run.			
Remedy	The RAM memory of the PLC must be big enough to allow the generation of all data blocks. Try to "compress" the PLC memory.			

238	DB-TECH/Bx,n: Invalid number	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The number entered for DB-TECH/Bx into DB-ZU/Bx,n is not valid.			
Effect	SIMATIC S5 does not run.			
Remedy	Valid numbers for DB-TECH/Bx are those between 10 and 255.			

240	DB-TECH/Bx,n: Block too short	Issued ACCU 1 FB-WF4:		
		BANL		
Reason	The DB-TECH/Bx,n does not have the required length.			
Effect	SIMATIC S5 does not run.			
Remedy	The DB-TECH/Bx,n must have a length of at least 101 data words. In order to avoid errors at this point, DB-TECH/Bx,n should be generated by Standard B-470.			

10 Appendix

10.1 Glossary

A	And	KY	Constant 2 bytes
AN	And Not	MDI	Manual Data Input
B/W	Black/White	MD	Machine Data
BEC	Conditional block end	M	M-function
BG	Module	Mode	Operating mode
CPU	Central Processing Unit	N	Block number
DB	Data Block	No.	Number
DW	Data Word	OB	Organization Block
FB	Function Block	OS	Object Version
F	Feed rate	PB	Programming Block
F	Flag bit	PG	Programming unit
FW	Flag Word	PLC	Programmable Logic Controller
FY	Flag byte	PRODOK	PROduct DOCumentation
G	G-code	Q	Output
HW	Hardware	RAM	Random Access Memory
I	Input	RLO	Result of Logic Operation
JC	Jump Conditional	SW	SoftWare
JU	JUmp absolute	T	Transfer
KB	Constant Byte	WF	PCB for machine tools
KF	Constant Fixed point number	WS	Control for machine tools
KH	Constant Hexadecimal number	X	Path distance
KS	Constant Character		

10.2 Index

A

Actual value display 6-11
 Address 6-14
 Addressing of the modules 5-7
 Accumulator 1 5-4, 9-1
 Allowed CPU types 8-1
 Application data block 4-7
 Application range 3-1
 Assignment data block 4-3
 Available block numbers 6-9
 Available program numbers 6-9

B

Base screen 6-5
 Base screen positioning 6-6
 Block, entry 6-8
 Block, delete 6-8
 Block length 8-2, 8-3, 8-4
 Block list, delete 6-9
 Block name 8-2, 8-3, 8-4
 Block number 8-2, 8-3, 8-4
 Blocks, delete 6-9

C

Call sequence 5-6
 Calls of standard function blocks 5-6
 Colors 6-3
 Command concept 3-1
 Command handling 3-2, 4-7
 Command status 9-1
 Compact operator panel WS 496 6-1
 Configuration 6-14, 6-15
 Correction 6-2
 CPU types 8-1
 CRT display module WF 470 6-1
 Cursor 6-2
 Customer name 4-5
 Cyclic call 5-5

D

Data block, generate 8-2
 Data block numbers 4-1
 Data blocks 4-1
 Data exchange 3-1
 Data input 6-2
 Data range 8-2, 8-3, 8-4
 Data structure 3-1
 Data transfer 8-1
 DB-AP/Bx 3-2, 4-1, 4-7
 DB-BL/x 5-4
 DB-H/x 5-4
 DB-SYS/Bx 4-1
 DB-TAST 5-2

DB-TECH/Bx,n 3-2, 4-1, 4-7
 DB-ZU/Bx 3-2, 4-1, 4-3
 Diagnostic-Positioning 6-16
 Directory 5-1, 5-3
 Directory of Progr./Block numbers ... 6-9
 Diskette 4-1, 5-1
 Dummy blocks 5-6, 7-1

E

EL-display 5-1
 Enter key 6-2
 Execution times 8-2, 8-3, 8-4

F

Fault list of Standard B-470 9-2
 Fault messages 6-3, 9-1
 Fault numbers 9-1
 FB-FKTS 5-5
 FB-WF4:BANL 3-2, 5-4, 8-2, 9-1
 FB-WF4:BPOS .. 3-2, 4-3, 5-5, 8-4, 9-1
 FB-WF4:BUER 3-2, 5-4, 8-3, 9-1
 Feedbacks 6-3
 Fields, output 6-3
 File names 5-1
 Firmware 3-1
 Function blocks 3-2

G

Group fault 3-2, 6-3

H

Hardware 5-1
 Hardware and software overview 2-1

I

Idle operation 8-4
 Input and output fields 6-3
 Installation 5-1
 Installation instructions 5-1
 Interrupt behavior 5-7
 Invalid axis selection 6-2
 ISTACK 5-3

J

Jog keys 6-2

K

Keyboard 5-7
 Keyboards WS 495/WS 496 6-1

L

Library numbers 8-2, 8-3, 8-4

M

Machine data 6-7
 Machine data, activate 6-7
 Machine designation 4-5
 MDI 6-10
 Messages 4-7
 Mode selection 6-1
 Module specific data 4-7
 Multi-processor operation 5-7

N

Nesting depth 8-2, 8-3, 8-4
 Notes 6-3

O

OB 1 7-2
 OB 20 5-4, 5-7, 7-2
 OB 21 5-4, 5-7, 7-2
 OB 22 5-4, 5-7, 7-2
 Operating 6-1
 Operating modes 4-7
 Operation 5-1
 Operator guidance 6-4
 Operator interface system WS 400 .. 6-1
 Operator panel WS 400-20/22 .. 6-1, 6-2
 Operator panel WS 400-30/50 6-1

P

Parameter setting 5-4
 PB 2 5-6
 PB 3 5-7
 PB 21 5-7
 Positioning module 2-1
 Program example 5-1, 5-6, 7-1
 Program input 6-8

R

Revision numbers HW, SW, OV 6-13

S

Screen development software 5-1
 Screen handling 8-3, 8-4
 Screens 5-1
 Self acknowledging 9-1
 Serial keyboard 5-7, 7-6
 Setup 6-10
 Setup data blocks 5-3, 5-4
 Setup of the data structure 5-3
 Softkey's 6-2
 Softkey assignment 4-3
 Special keys 6-2
 Standard A 2-1, 3-1, 5-1

Standard configuration 3-2
 Stand-by 9-1
 Start up 4-7, 5-4, 5-7, 6-12, 8-3
 Status message 9-1
 System data block 4-1
 System data range 8-2, 8-3, 8-4

T

Teach in 6-10
 Technology independent 3-2
 Technology "Positioning" 3-2, 4-1
 Technology specific data 3-2
 Technology specific data block 4-7
 Textlists 5-1
 Tool offset 6-6, 6-13
 TOOL 6-7, 6-8, 6-10, 6-11, 6-13
 Traversing block, enter 6-2

U

Units 6-1
 Used flags 8-2, 8-3, 8-4

V

Version number 6-14

W

WF 470 application 4-1
 WF 470 number 4-1, 5-3
 WF 721/WF 723 2-1
 WF 725/WF 726 2-1
 WF module selection 6-5
 WF number 6-14
 WF type 6-14

Siemens AG

AUT V22

Postfach 3180

D-91050 Erlangen

Fed. Rep. of Germany

Suggestions

Corrections

For Publication/Manual:

WS 720 B/WF 721/WF 723 A
Positioning Modules

User Manual – Description Standard B-470

Order No.: 6ZB5 440-0NE02-0BA6

Edition: February 1997

From:

Name _____

Company/Dept. _____

Address _____

Telephone _____

/

If you find any printing errors when reading this publication, please let us know, using this form. We also welcome any suggestions to improve the manual.

Suggestions and/or corrections

Siemens AG
Bereich Automatisierungstechnik
Geschäftsgebiet Automatisierungssysteme für Werkzeugmaschinen,
Roboter und Sondermaschinen
Postfach 3180, D-91050 Erlangen
Federal Republic of Germany

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Subject to change without prior notice

Siemens Aktiengesellschaft

Order No.: 6ZB5 440-0NE02-0BA6
Printed in the Fed. Rep. of Germany
232/720xxx BN 08970.1