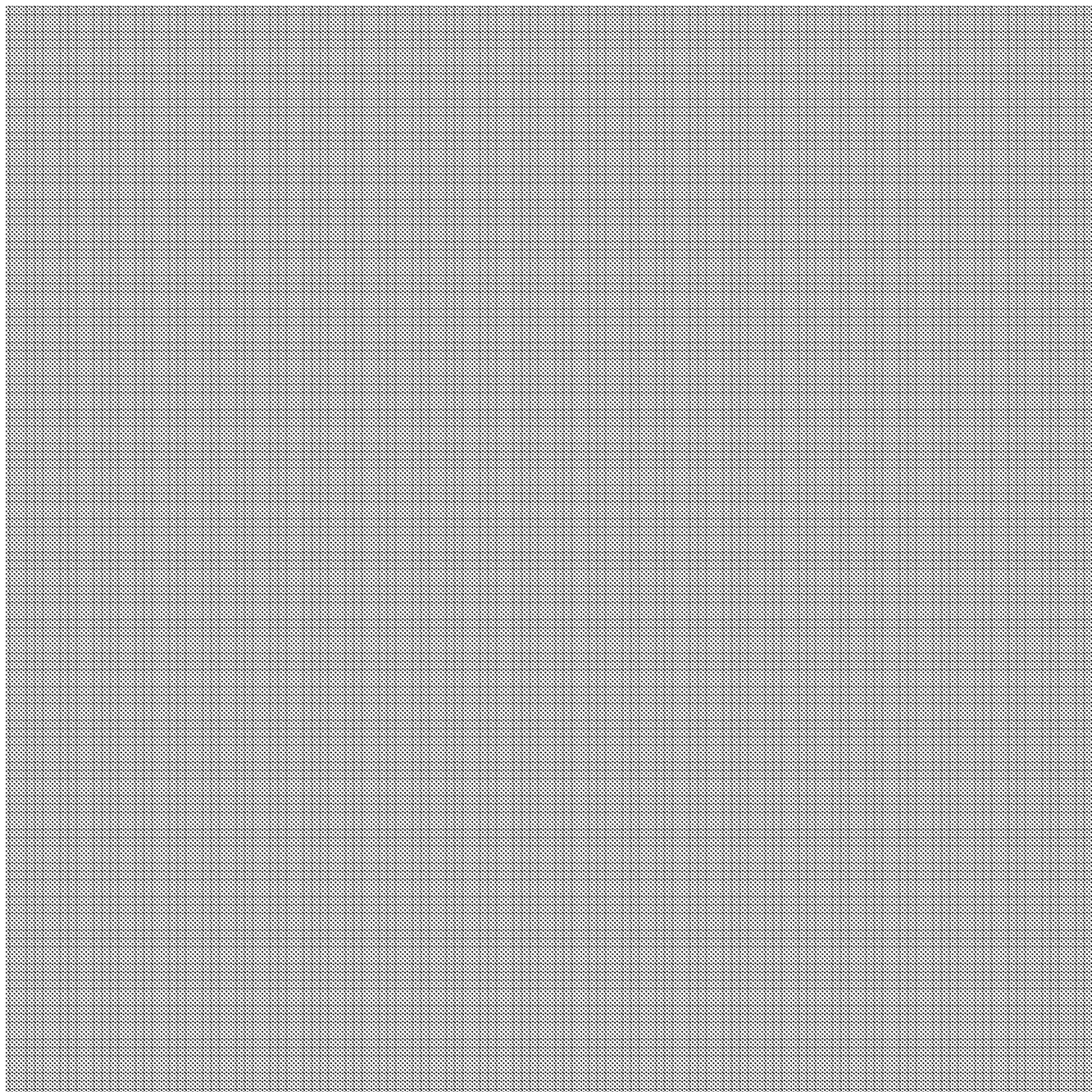


Equipment for Machine Tools
WS 495/WS 496
Operator Interface System

Description		Edition 10.92
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Equipment for Machine Tools

WS 495/WS 496
Operator Interface System

Description

Application 1

Design 2

Operation 3

Cables, connections and
connection diagrams 4

Technical data 5

Ordering data 6

Note

Because of clear arrangement, this documentation does not inform about all details of all types of the product. Therefore, it cannot take into account all possible cases of installations, operation and maintenance.

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1 Application

As the automation of machine tools continues to increase, comfortable operator-interface and monitoring systems for recognition and evaluation of processes become ever more important.

These systems

- guarantee rapid input of data and texts and
- enable fast and exact error detection.

The compact operator panel and the elements of the operator interface systems WS 495/WS 496 offer you the possibility to achieve

- individual,
- flexible, and
- economic

solutions in this field.

The following devices are available:

- Compact operator panel
 - with colour monitor
 - with monochrome monitor
- Auxiliary keyboards for the compact operator panel
 - with alpha keyboard
 - with function keyboard
- Keyboard WS 495
 - desk-mounted
 - panel-mounted
- Keyboard WS 496
 - desk-mounted
 - panel-mounted
- Desk-mounted monitors
- Distribution unit for
 - 4-wire switching
 - RGB/BAS video switching

2 Design

2.1 Components of the system

2.1.1 Common features of the components

The WS 400 operator interface system has been designed for use in automation systems, particularly those using SIMATIC S5 programmable controllers with the WF 470 video display system. All components within the system have been specially designed for service in industrial environment and therefore have:

- Robust, mechanical keyboard design
- Hard-wearing plastic membrane keypad unaffected by dust and contaminants
- Sculptured keytop design

The keyboards and the operator panel with the auxiliary keyboards utilize a standard key coding system and the same interfaces. Interchangeability between the components within the system is therefore assured.

The units are supplied with a **parallel** or a **serial** interface.

Parallel interface

Connection is effected via 8 digital inputs.

In the SIMATIC S5, the function block FB 201 and the data block DB 201 are required for decoding (see section 3).

Serial interface

Keyboards and operator panels are directly connected to the following video display systems:

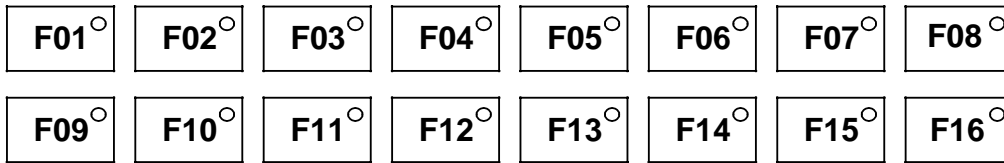
- **WF 470**,
- **CP 526** and
- **GAV 1** (SICOMP MMC 216).

The serial interface protocol to be used is selected via bridging links on the connection plug.

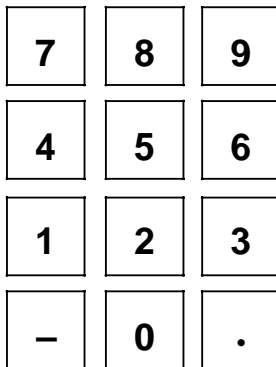
The parallel and serial interfaces can be used simultaneously.

All units have the following keys:

- 2x8 function keys
- Each function key incorporates an LED which can be controlled via outputs in the SIMATIC S5

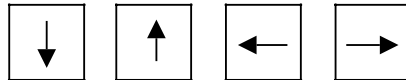


- A complete numerical entry pad with decimal point and minus sign



- Special keys for

– Cursor positioning



– Date entry



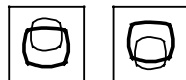
– Output of overview mask



– Delete function



– Screen scrolling



2.1.2 Special features of the WS 495 keyboard

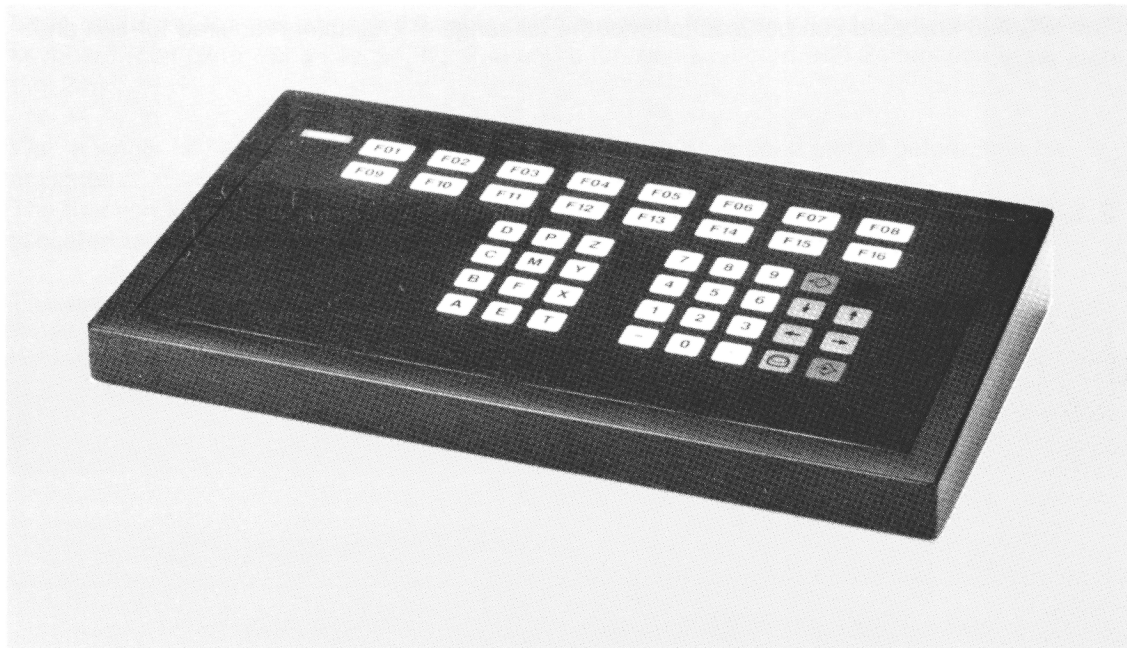


Fig. 2.1 WS 495 keyboard (desktop version)

The WS 495 keyboard is provided with a limited alpha character set for use with WF 470 specific functions. The keyboard has the keys listed in section 2.1 (page 2-2) and the following additional keys: A ... F, M, P, T, K, Y, Z.

2.1.3 Special features of the WS 496 keyboard

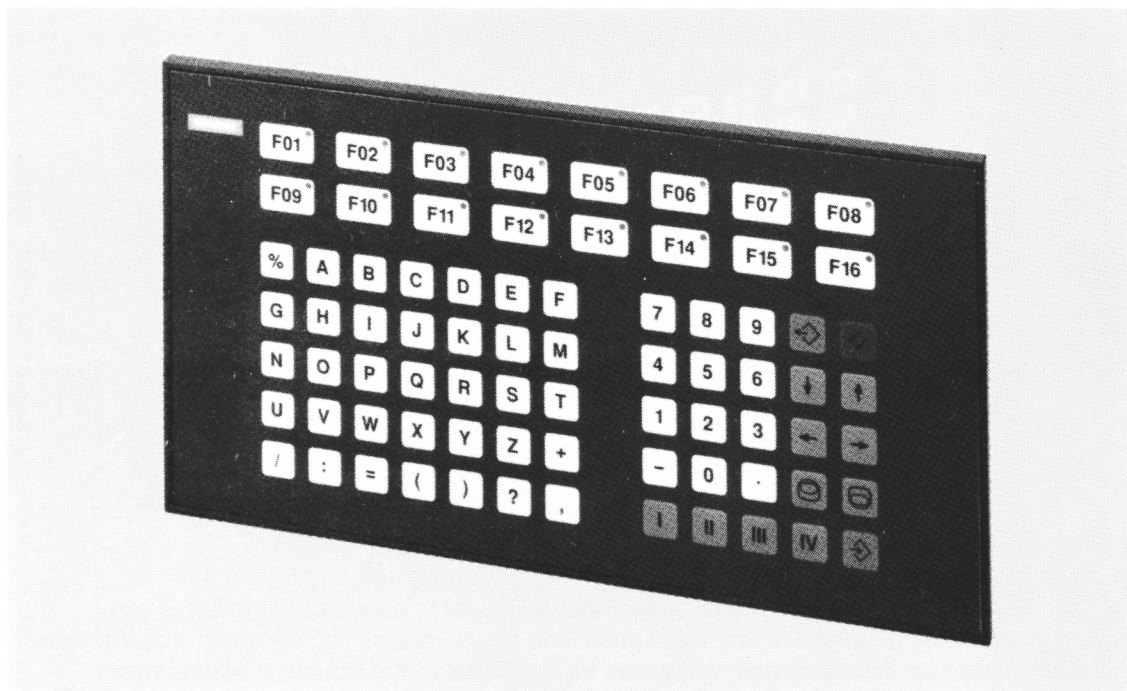


Fig. 2.2 WS 496 keyboard (panel-mounted version)

The WS 496 has the keys described in section 2.1 (page 2-2), a full set of alpha keys and four programmable keys I, II, III, IV.

The WS 496 keyboard can be used to enter the full range of characters required for text and data entry.

2.1.4 Special features of the compact operator panel and auxiliary keyboards

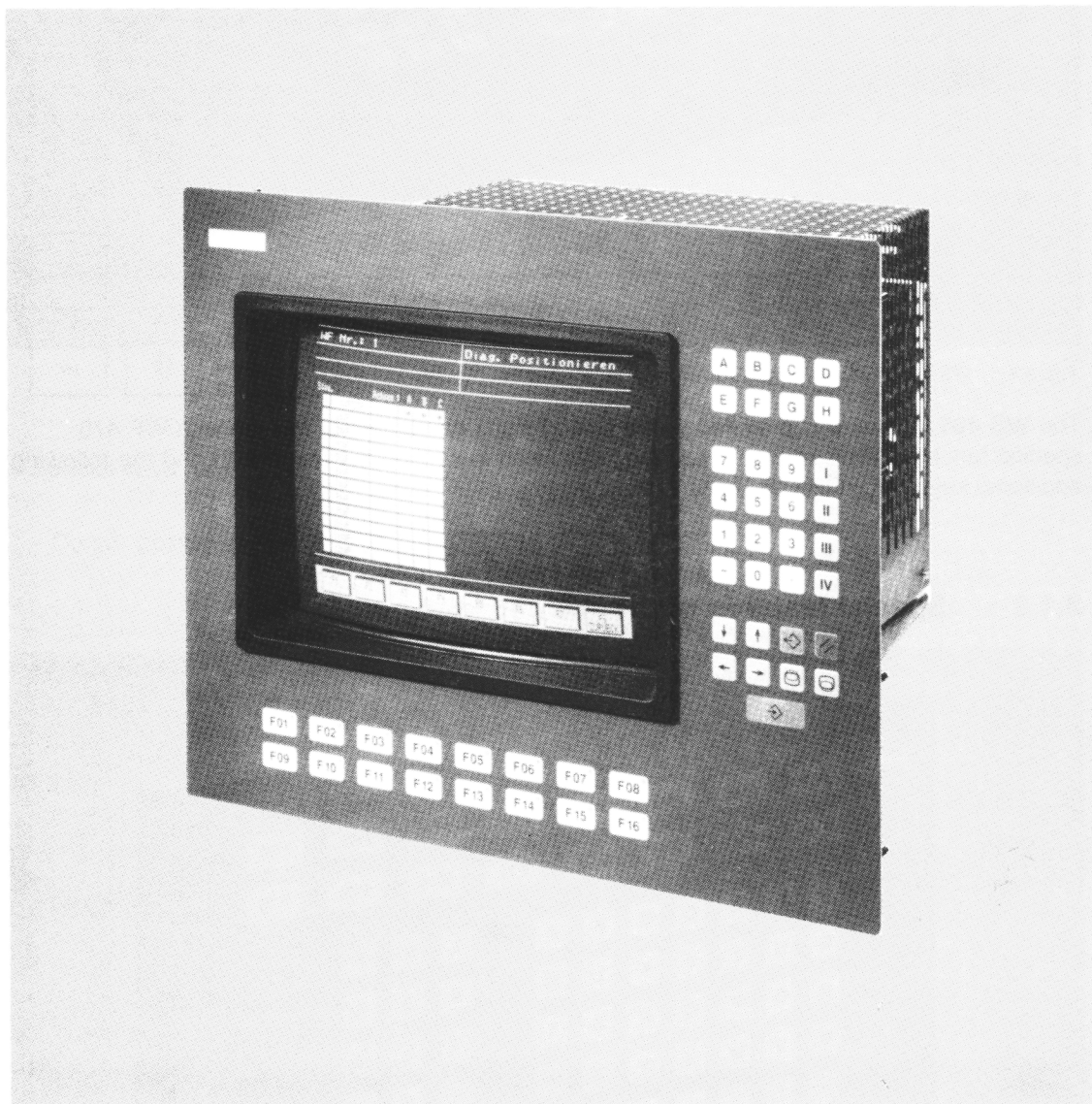


Fig. 2.3 Compact operator panel

In the majority of applications where an operator keyboard is required, a monitor is also needed to display data, status messages, machine functions etc. The compact operator panel is a universally applicable device, which can be expanded to the individual requirements.

The basic unit can be expanded by adding the auxiliary keyboard. The latter is linked to the basic unit using the pre-fabricated flexible cable supplied. You can choose between an alpha keyboard (complete alpha keypad, fig. 2.4) and a function keyboard with 24 function keys (fig. 2.5).

With a single key stroke, often recurring functions, which have been stored before, can be activated.

The function keys can be marked and evaluated individually. A freely programmable LED is allocated to each function key.

The mechanical separation of basic device and expansion module enables an ergonomic arrangement (e.g. basic device in vertical position, expansion module in horizontal position). On the expansion unit, there is room for various additional switches, e.g. emergency OFF, control ON/OFF. The design of the modules matches with the design of the basic unit.

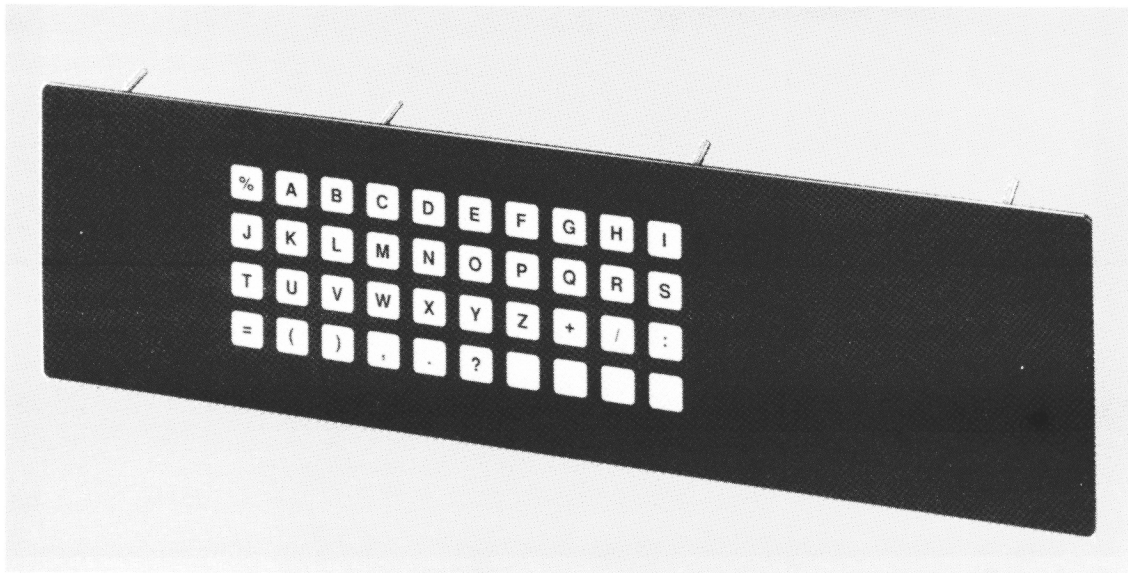


Fig. 2.4 Alpha keyboard for compact operator panel

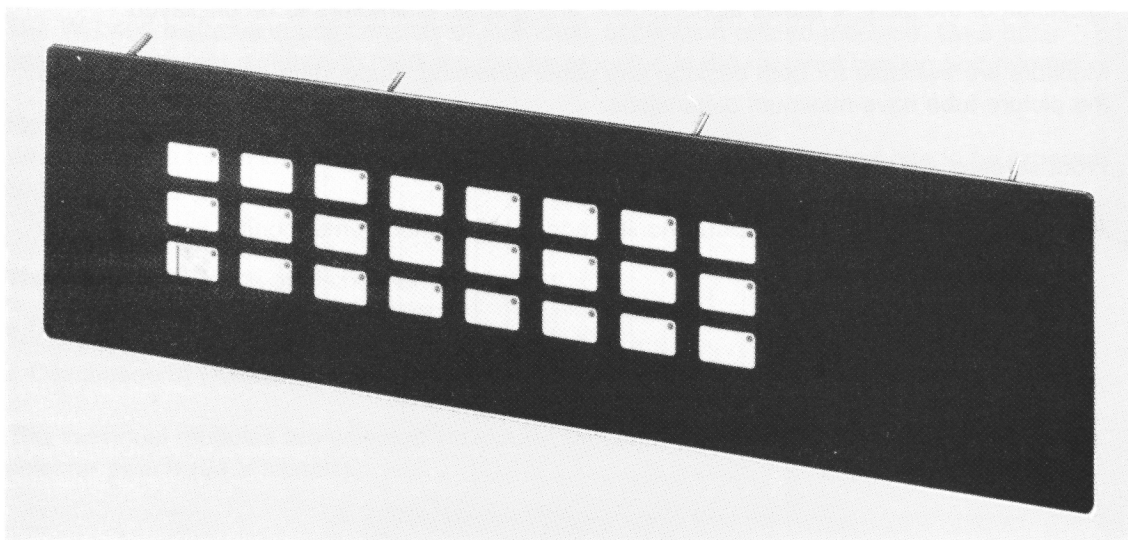


Fig. 2.5 Function keyboard for compact operator panel

2.1.5 Monitors

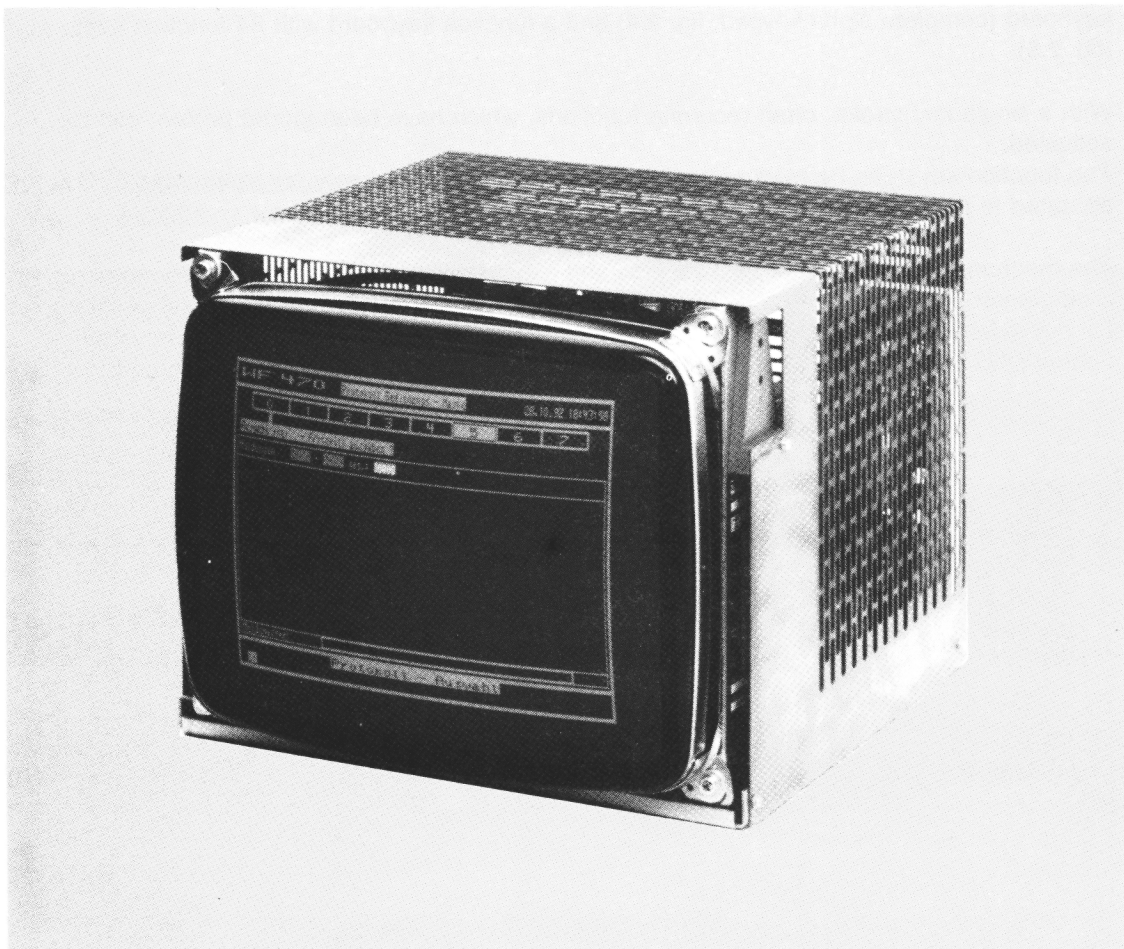


Fig. 2.6 14" colour monitor

A monitor is used to display information to allow the operator to control and monitor the operation of the plant. It allows alphanumeric and graphic characters to be displayed.

Monitors are available for both desktop and panel mounting. Supporting components around the picture tube have minimum dimensions.

Front screens are available for protecting the panel cutout.

At choice, a 12" or 14" RGB colour monitor and a 12" monochrome monitor are available.

2.2 WS 495 distribution unit

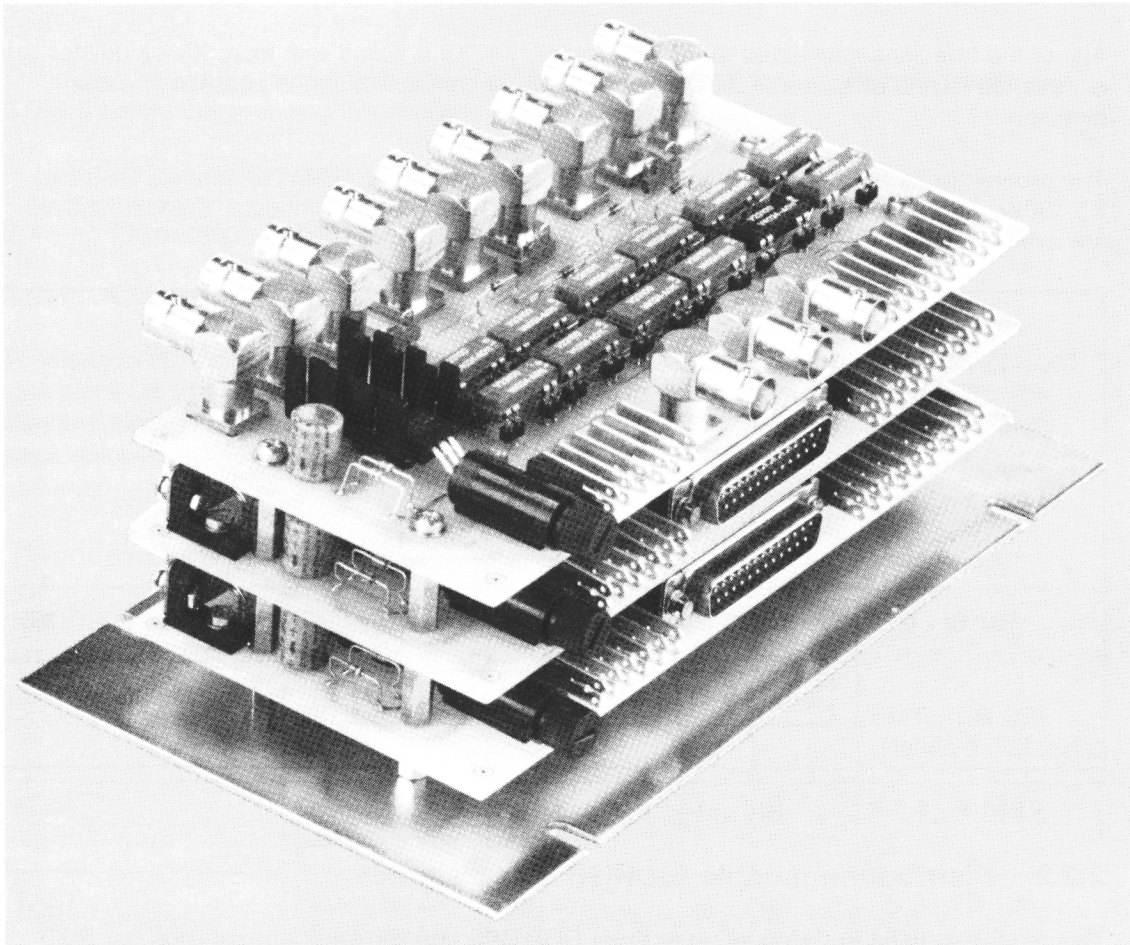


Fig. 2.7 Distribution unit with module for RGB/BAS video signal distribution on top and 4-wire switching below

The WS 495 distribution unit consists of individual, application-related modules. On a base board, the different distribution modules can be mounted in the required version and number.

Note:

When ordering the distribution modules, the base board is not included and has to be ordered separately.

There are two version of distribution modules:

- Distribution of 4-wire lines
- Distribution of RGB/BAS video signals

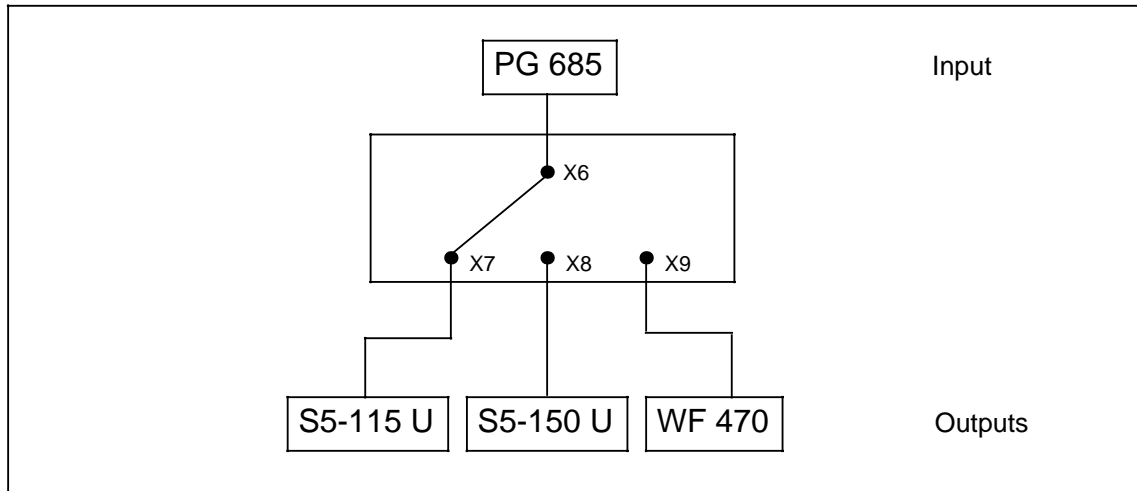
The individual modules are selected via inputs/outputs of the SIMATIC S5 and or directly via a selector switch (24 V signals).

2.2.1 Distribution module for 4-wire line

This module permits switching among up to three 4-wire lines.

Any of the three lines connected to the outputs X7, X8, X9 is linked with input X6 - a master line is switched to one of the three distribution lines. Data communication is possible in either direction.

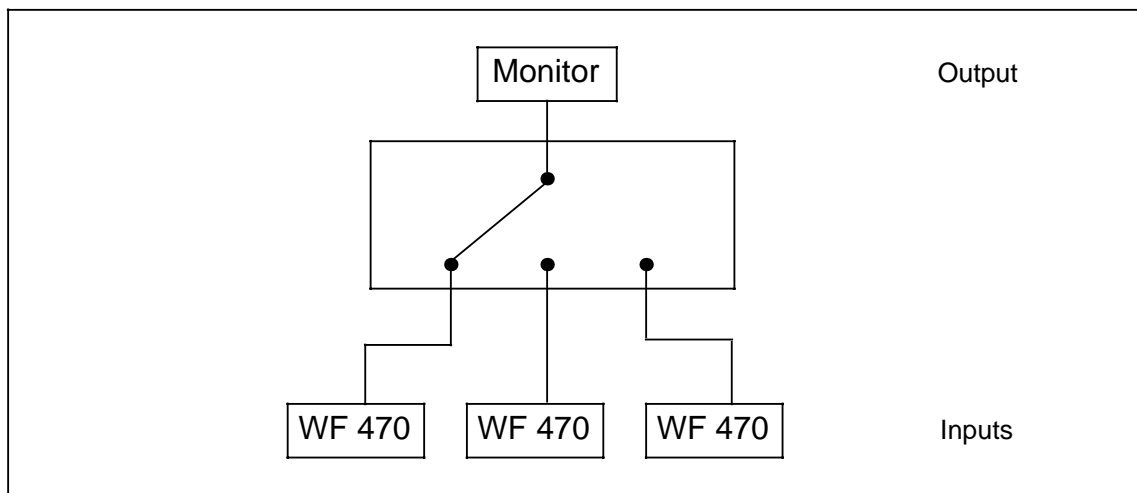
The programmers PG 675 and PG 685 can be connected to the SIMATIC controls S5-115U, S5-130W, S5-135U, S5-150U, S5-155U, or a WF 470 video display module. Standard cables are available for connection to the distribution module.



2.2.2 Distribution module for RGB video signals

This module is used to distribute up to three RGB/BAS connections (3 coaxial lines per RGB connection).

Any of the three sources can be allocated to the output. Data communication is possible in either direction.



3 Operation

The reader should be familiar with SIMATIC S5 terminology and the programming language STEP 5 before commencing this section.

3.1 Operation when using the keyboards (parallel interface)

3.1.1 Connecting the parallel interface to SIMATIC S5

To interface the WS 400 system keyboards into the SIMATIC S5, function block FB 201 and data block DB 201 are required. These are contained in the link software S5-WF 470. The standard blocks FB 201 and DB 201 can also be loaded in the SIMATIC S5 under different block numbers.

FB 201 parameter	Designation	Note	Type	Format	Valid values
EBDB	EB: keyboard input byte DB: data block number		D	KY	IB 0 - IB 127 DB 0 - DB 255 (standard: DB 201)
FL-M	Edge evaluation flag	Free flag or output	E	BI	F 0.0 - F 199.7
TAST	Parameter for FB S5-WF470	Flag byte	A	BY	FB 0 - FB 199
FKTS	Function keys	Flag word	A	W	FW 0 - FW 198

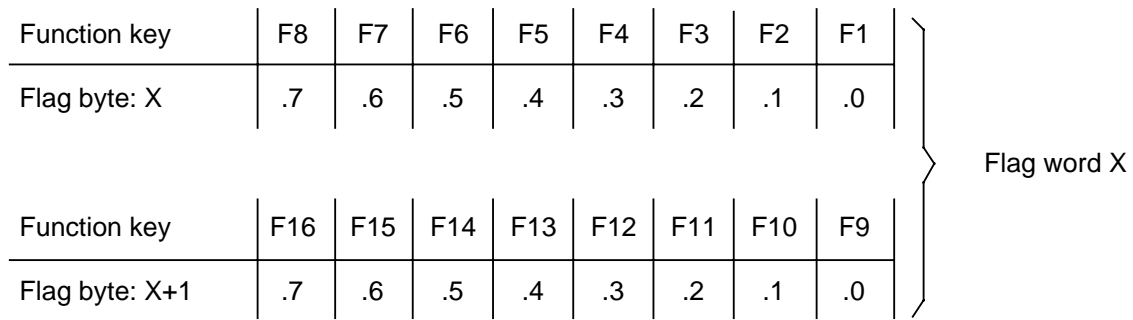
Input byte EB contains the key code in bits 0 to 6 and the strobe signal "key depressed" (TG) in bit 7.

Data block DB (standard: DB 201) contains the allocation of key code to ASCII code.

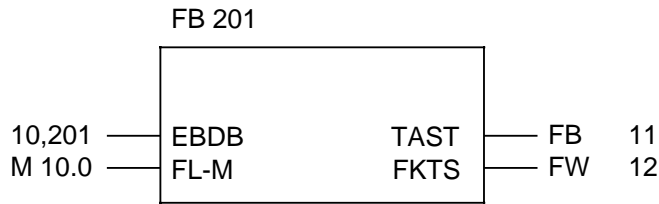
In output byte "TAST", ASCII code is output. The byte "TAST" is used as an input byte for the function block FB "S5-WF 470".

The edge evaluation flag FL-M has a 1 signal as long as a key is depressed.

When a function key (F1 to F16) is pressed, the standard FB will automatically set a bit in the output parameter "FKTS", and each function key is assigned a flag. The following table shows this allocation.



Example of a call:



The following table shows how the keyboards are connected to the SIMATIC S5 when using the standard function block 201.

Connector X1	Connection to S5 (when using FB 201)	Function
PIN 1	I X.7	Key depressed
PIN 2	I X.0	Key code of the keyboard
PIN 3	I X.1	
PIN 4	I X.2	
PIN 5	I X.3	
PIN 6	I X.4	
PIN 7	I X.5	
PIN 8	I X.6	
PIN 9		Serial interface
PIN 10		
PIN 11		
PIN 12		
PIN 13		
PIN 14		
PIN 15		

(X=input byte number)

3.1.2 WS 495 key code - parallel interface

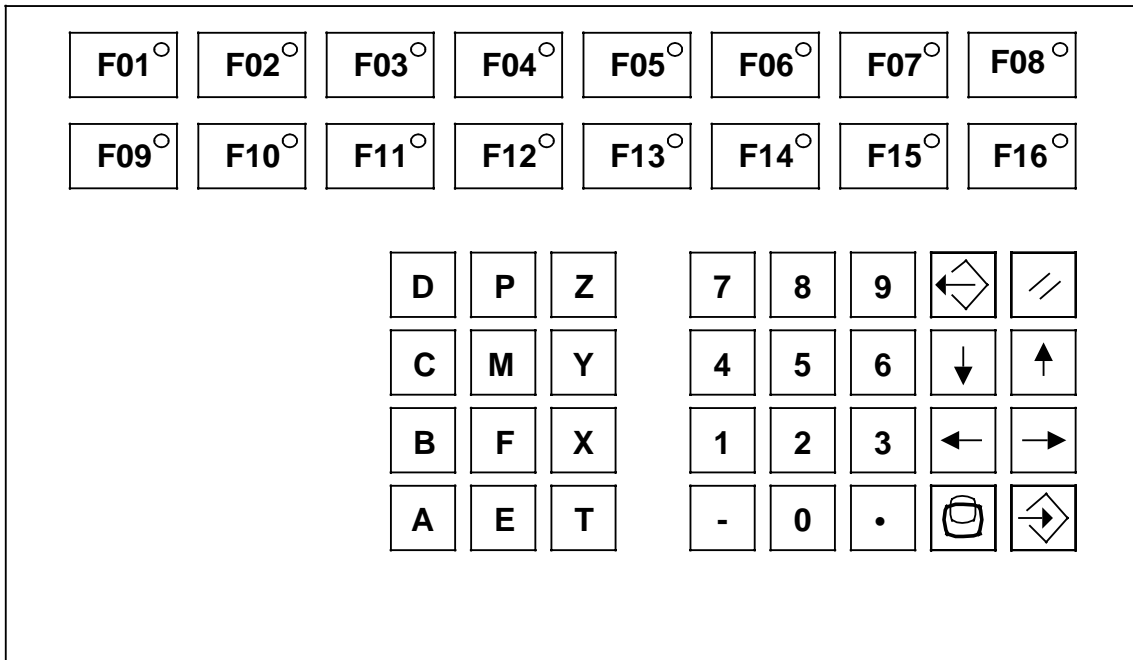


Fig. 3.1 WS 495 keyboard

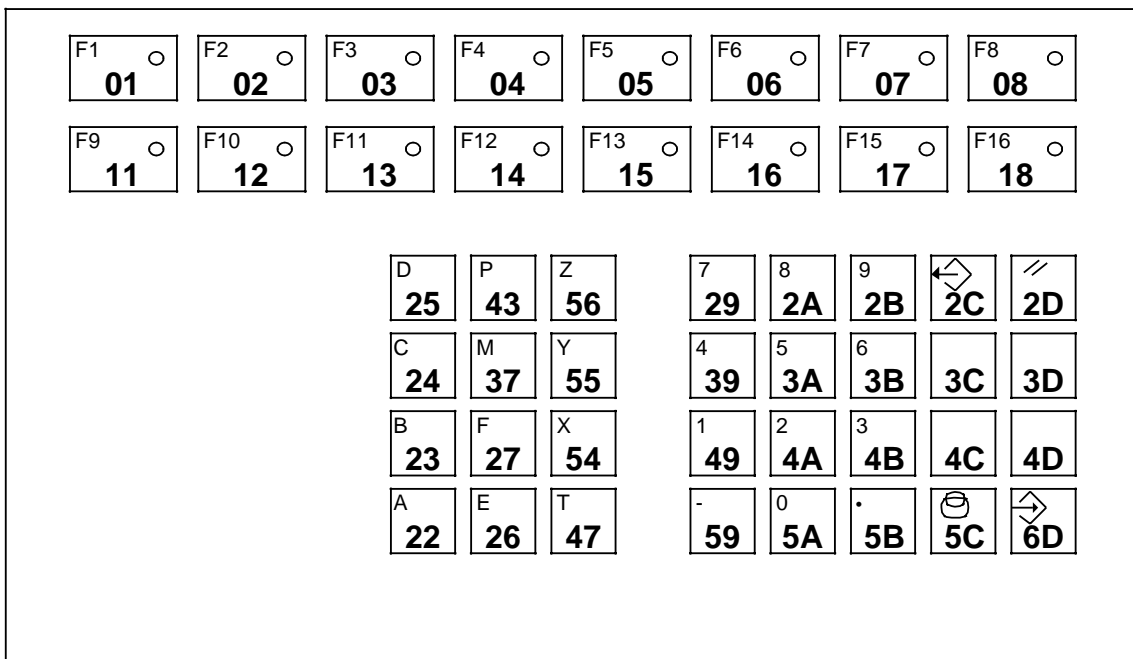


Fig. 3.2 WS 495 keyboard code - parallel interface

3.1.3 WS 496 key code - parallel interface

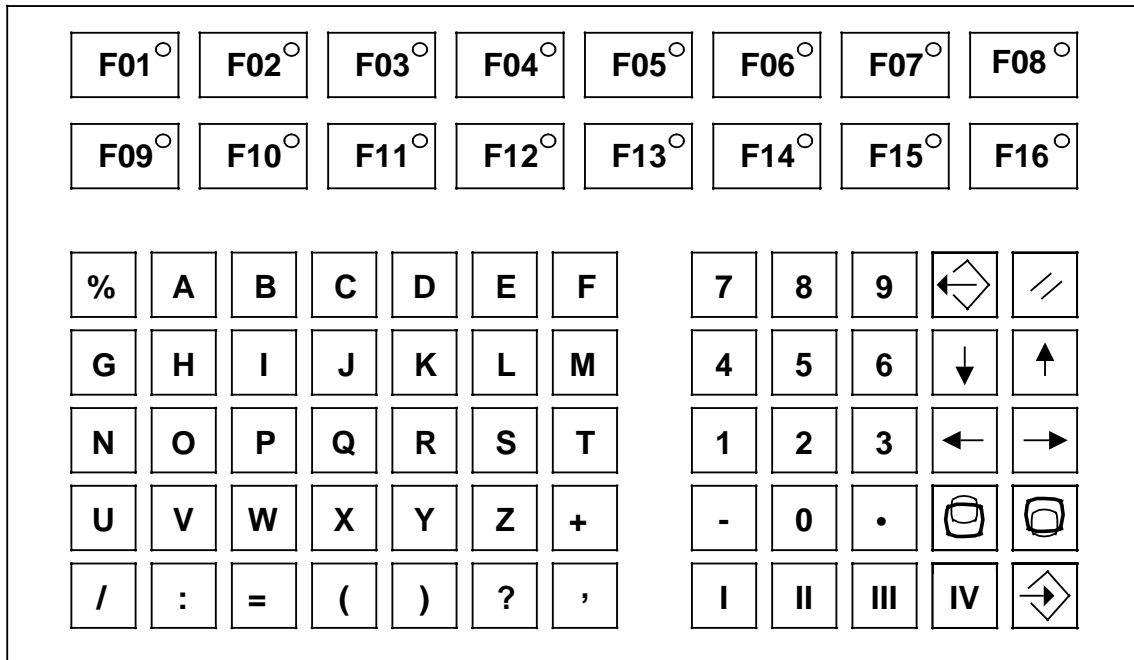


Fig. 3.3 WS 496 keyboard

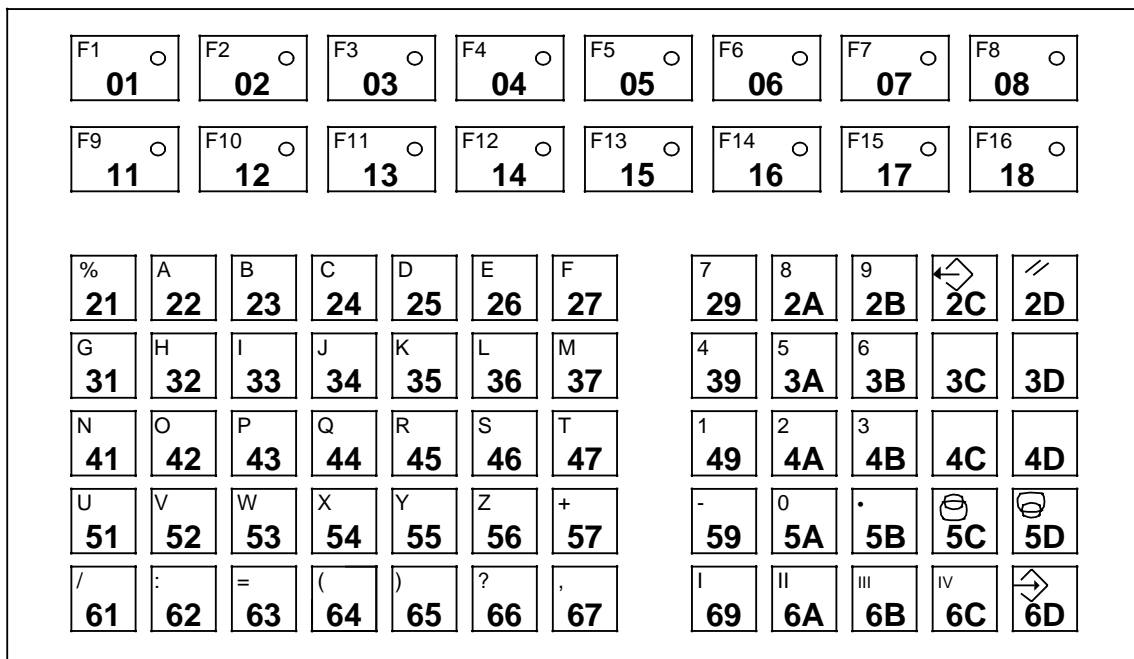


Fig. 3.4 WS 496 key code -parallel interface

3.1.4 Compact operator panel key code - parallel interface

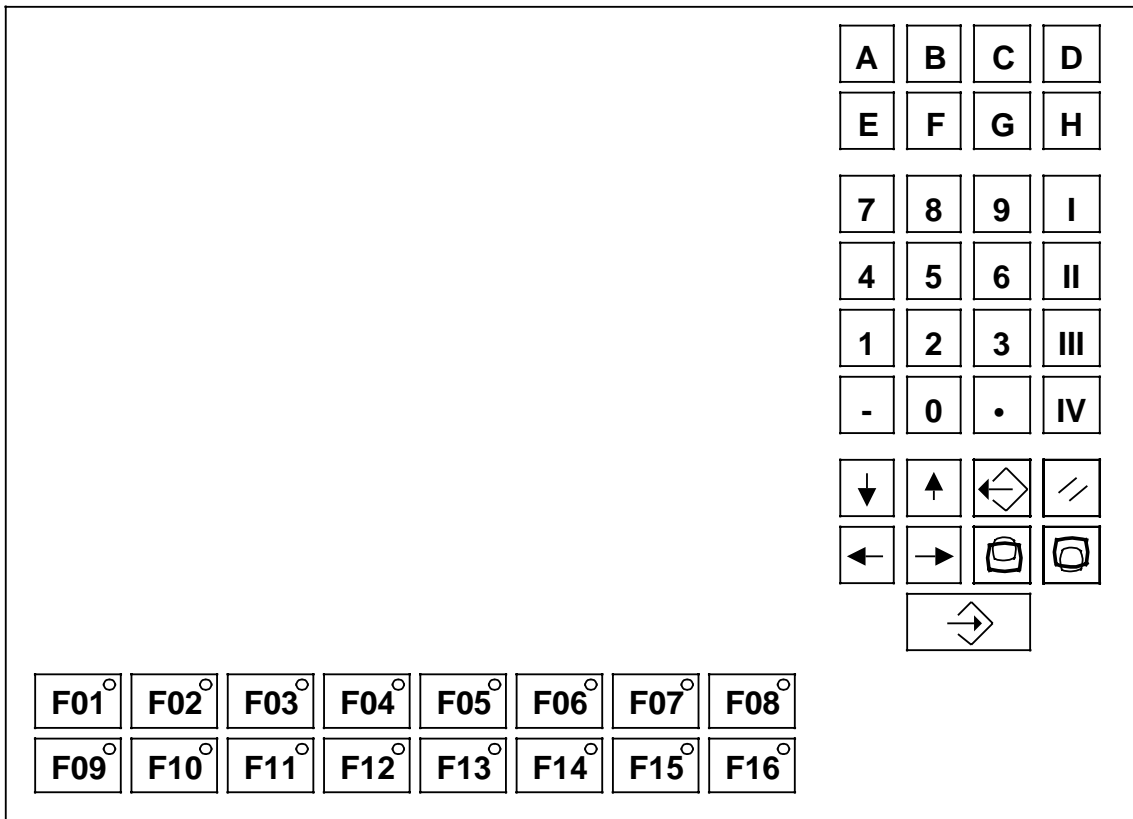


Fig. 3.5 Compact operator panel keyboard

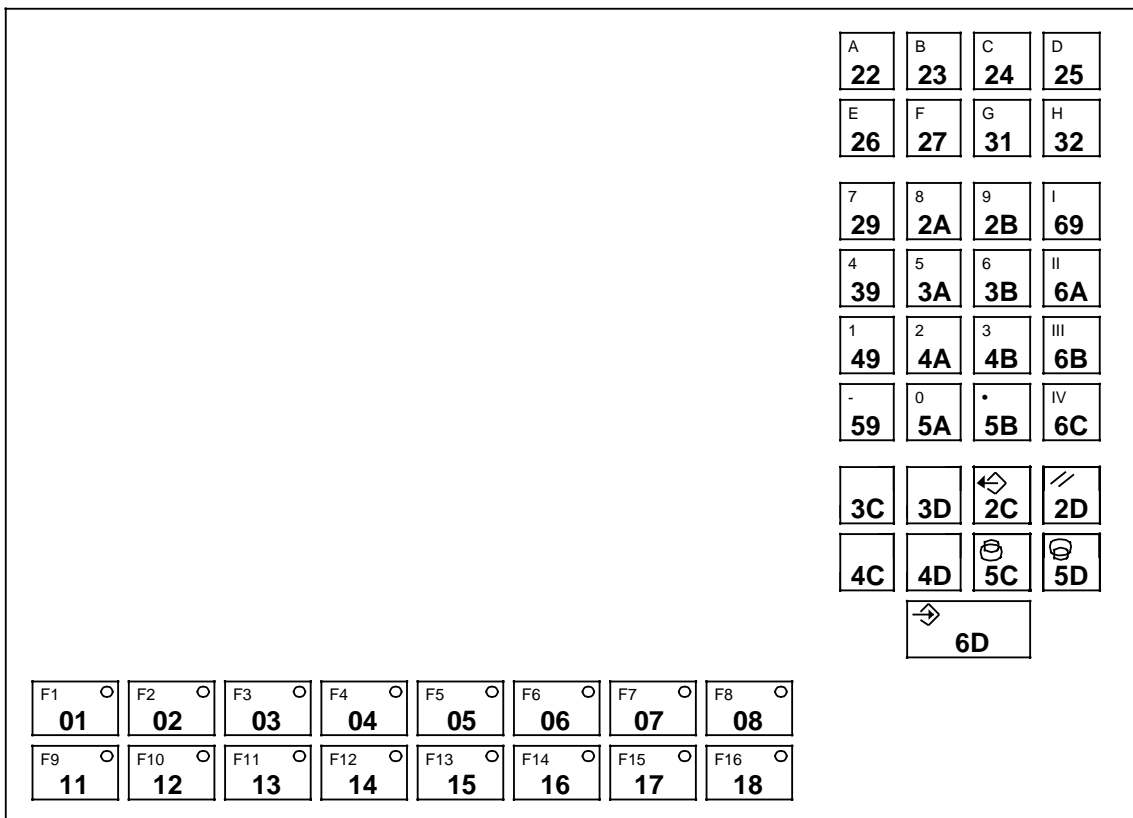


Fig. 3.6 Compact operator panel key code - parallel interface

3.1.5 Alpha keyboard key code - parallel interface

%	A	B	C	D	E	F	G	H	I
J	K	L	M	N	O	P	Q	R	S
T	U	V	W	X	Y	Z	+	/	:
=	()	,	.	?				

Fig. 3.7 Alpha keyboard

%	A	B	C	D	E	F	G	H	I
21	22	23	24	25	26	27	31	32	33
J	K	L	M	N	O	P	Q	R	S
34	35	36	37	41	42	43	44	45	46
T	U	V	W	X	Y	Z	+	/	:
47	51	52	53	54	55	56	57	61	62
=	()	,	.	?				
63	64	65	67	5B	66	1A	1B	1C	1D

Fig. 3.8 Alpha keyboard key code - parallel interface

3.1.6 Function keyboard key code - parallel interface

Fig. 3.9 Function keyboard

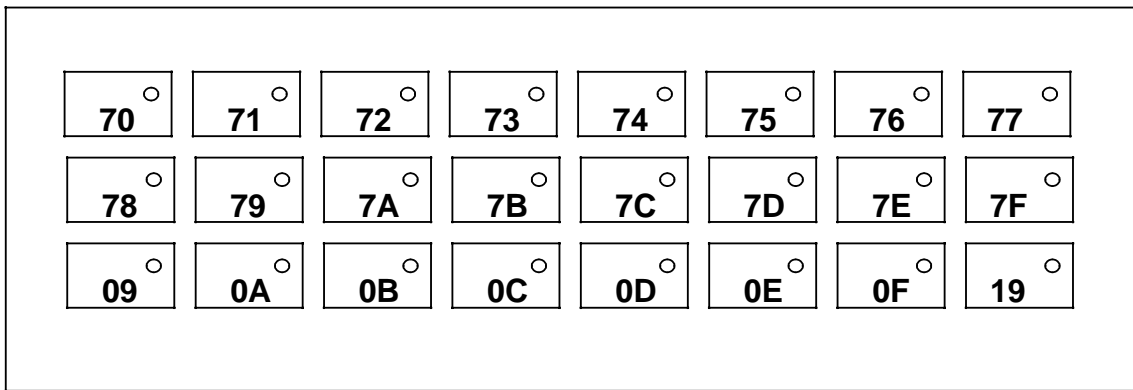


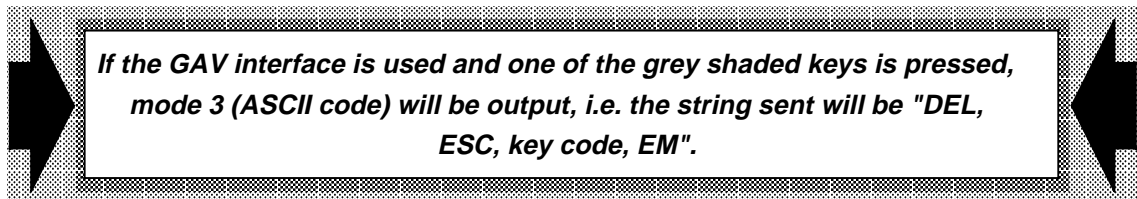
Fig. 3.10 Function keyboard code - parallel interface

3.2 Operation when using the keyboard (serial interfaces)

3.2.1 Connecting the serial interfaces

If a keyboard is connected to a WF 470 module, the key code is directly processed on the display module via the serial interface.

When a function key is pressed (F1 to F16), the WF 470 sets a corresponding bit in the SIMATIC S5 in data word 10 of the data transfer DB for further evaluation. If an auxiliary function keyboard with additional function keys is connected, bits are reserved in data words 11 and 12.



3.2.2 WS 495 key code - serial interfaces

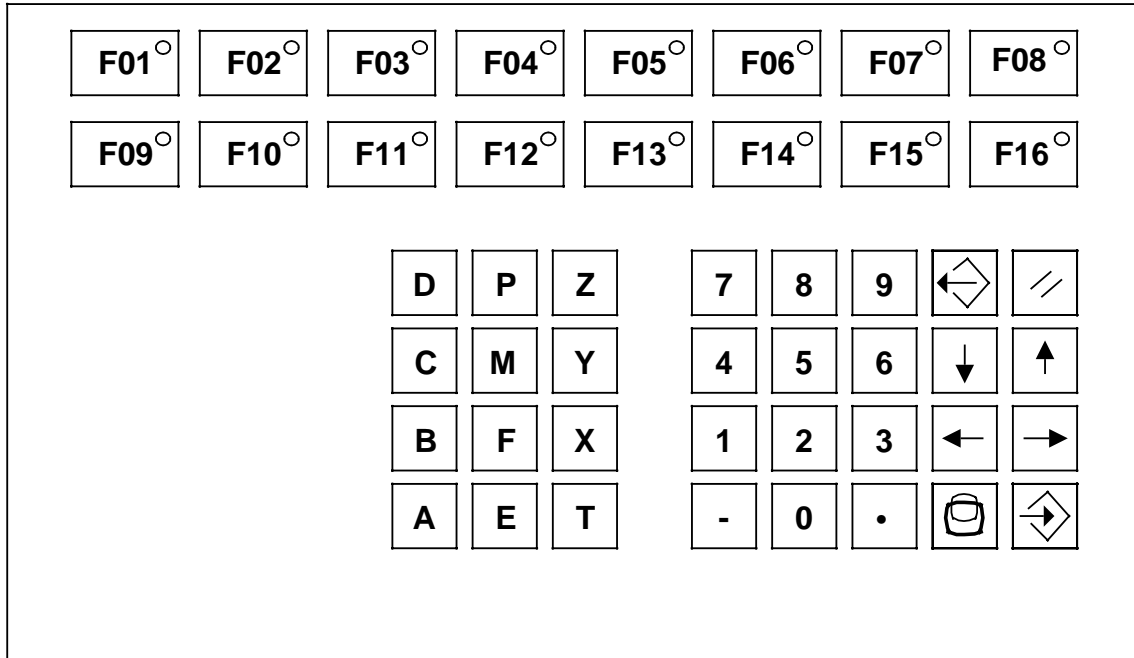


Fig. 3.11 WS 495 keyboard

3.2.2.1 WF 470 serial interface

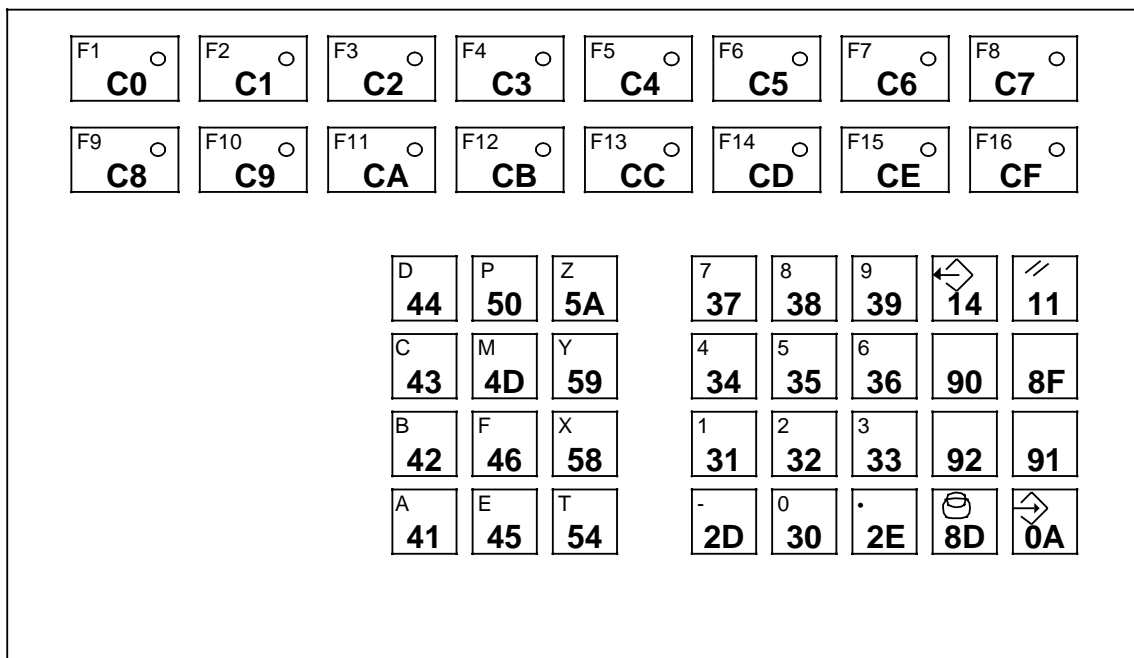


Fig. 3.12 WS 495 key code - WF 470 serial interface

3.2.2.2 GAV 1 serial interface

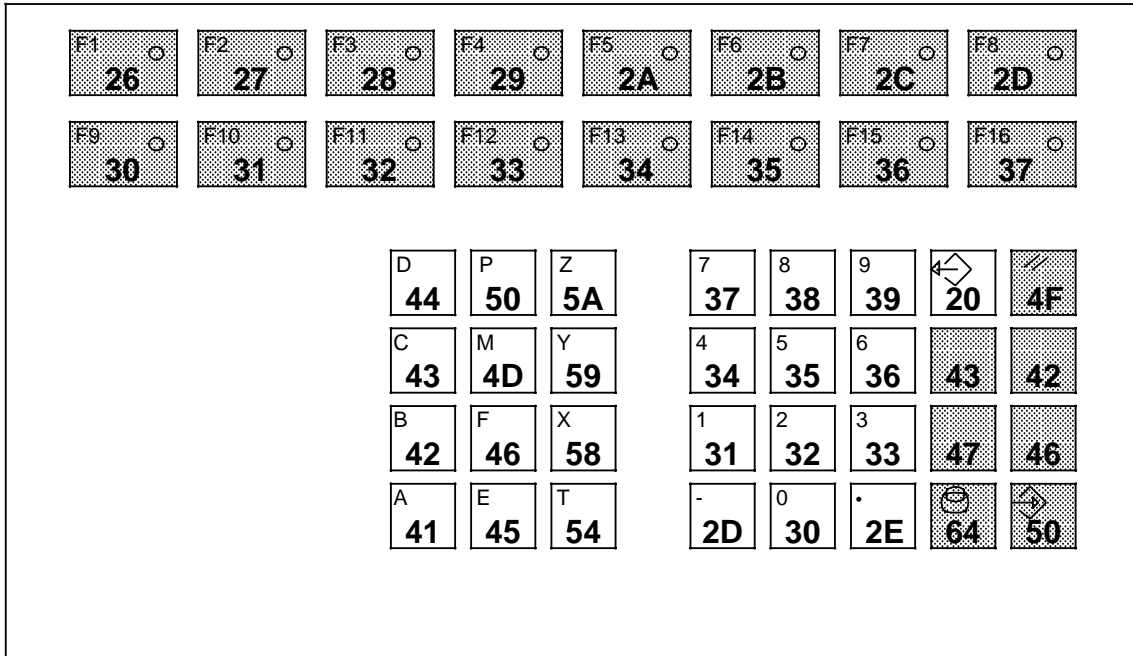


Fig. 3.13 WS 495 key code - GAV 1 serial interface

Grey shaded = mode 3

3.2.2.3 CP 526 serial interface

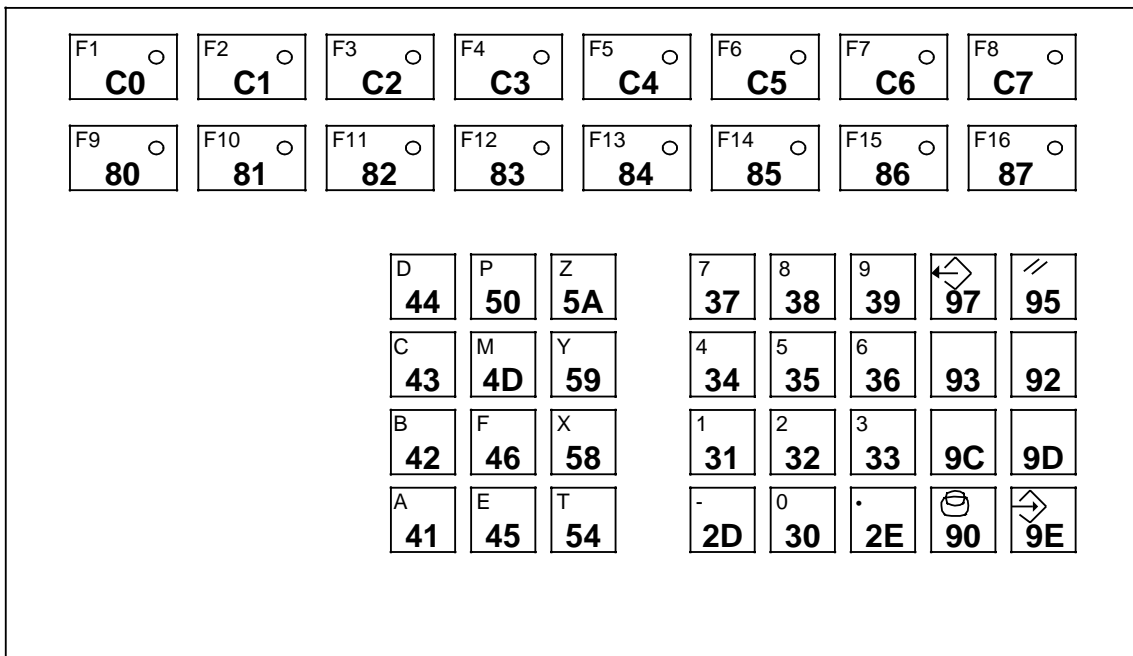


Fig. 3.14 WS 495 key code - CP 526 serial interface

3.2.3 WS 496 key code, serial interfaces

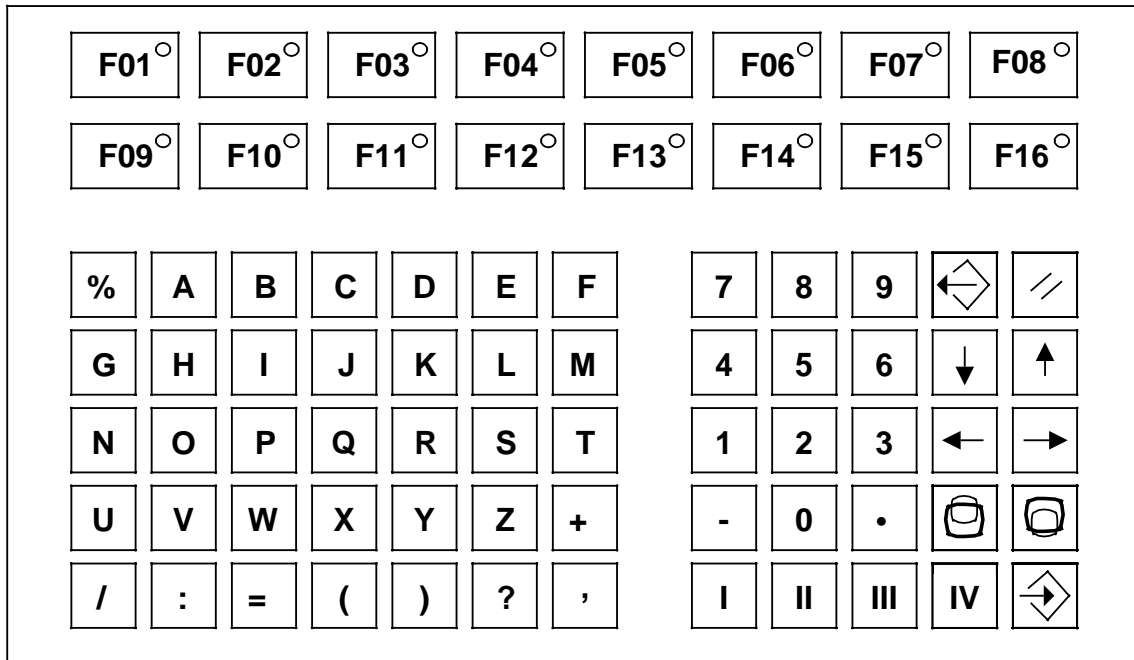


Fig. 3.15 WS 496 keyboard

3.2.3.1 WF 470 serial interface

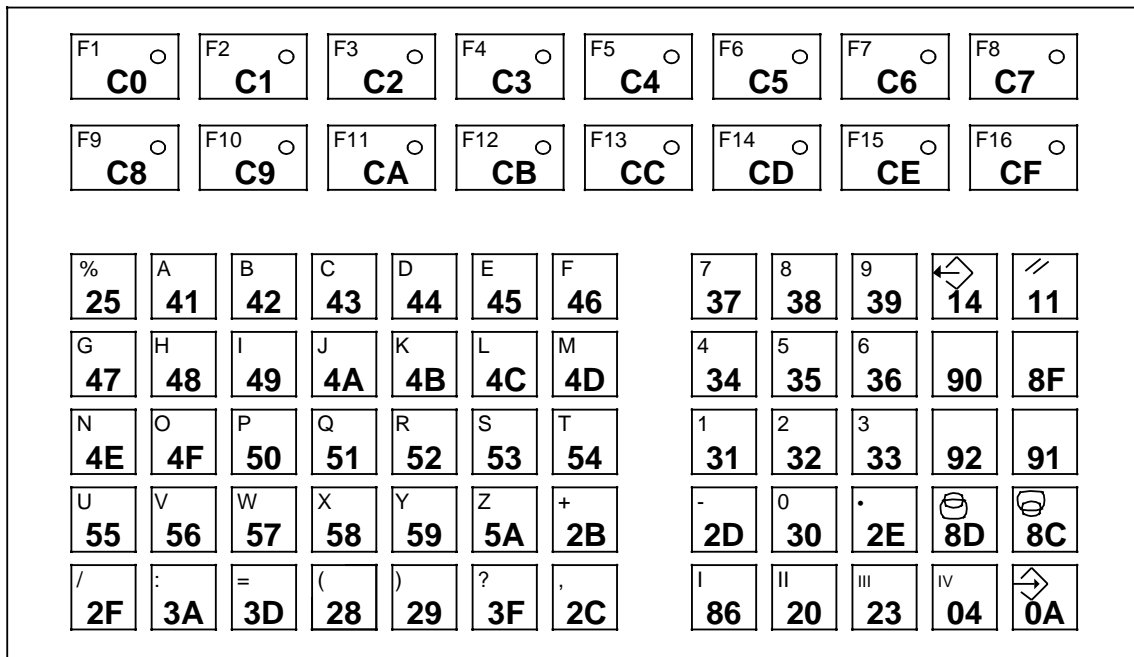


Fig. 3.16 WS 496 key code - WF 470 serial interface

3.2.3.2 GAV 1 serial interface

F1 26	F2 27	F3 28	F4 29	F5 2A	F6 2B	F7 2C	F8 2D				
F9 30	F10 31	F11 32	F12 33	F13 34	F14 35	F15 36	F16 37				
% 25	A 41	B 42	C 43	D 44	E 45	F 46	7 37	8 38	9 39	↩ 20	↗ 4F
G 47	H 48	I 49	J 4A	K 4B	L 4C	M 4D	4 34	5 35	6 36	43	42
N 4E	O 4F	P 50	Q 51	R 52	S 53	T 54	1 31	2 32	3 33	47	46
U 55	V 56	W 57	X 58	Y 59	Z 5A	+ 2B	- 2D	0 30	· 2E	⊖ 64	⊕ 63
/ 2F	: 3A	= 3D	(28	) 29	? 3F	, 2C	Ⓛ 7C	Ⓜ 44	Ⓝ 41	Ⓟ 40	↩ 50

Fig. 3.17 WS 496 key code - GAV 1 serial interface

Grey shaded = mode 3

3.2.3.3 CP 526 serial interface

F1 C0	F2 C1	F3 C2	F4 C3	F5 C4	F6 C5	F7 C6	F8 C7				
F9 80	F10 81	F11 82	F12 83	F13 84	F14 85	F15 86	F16 87				
% 25	A 41	B 42	C 43	D 44	E 45	F 46	7 37	8 38	9 39	↩ 97	↗ 95
G 47	H 48	I 49	J 4A	K 4B	L 4C	M 4D	4 34	5 35	6 36	93	92
N 4E	O 4F	P 50	Q 51	R 52	S 53	T 54	1 31	2 32	3 33	9C	9D
U 55	V 56	W 57	X 58	Y 59	Z 5A	+ 2B	- 2D	0 30	· 2E	⊖ 90	⊕ 91
/ 2F	: 3A	= 3D	(28	) 29	? 3F	, 2C	Ⓛ 94	Ⓜ A7	Ⓝ 20	Ⓟ 0D	↩ 9E

Fig. 3.18 WS 496 key code - CP 526 serial interface

3.2.4 Compact operator panel key code - serial interfaces

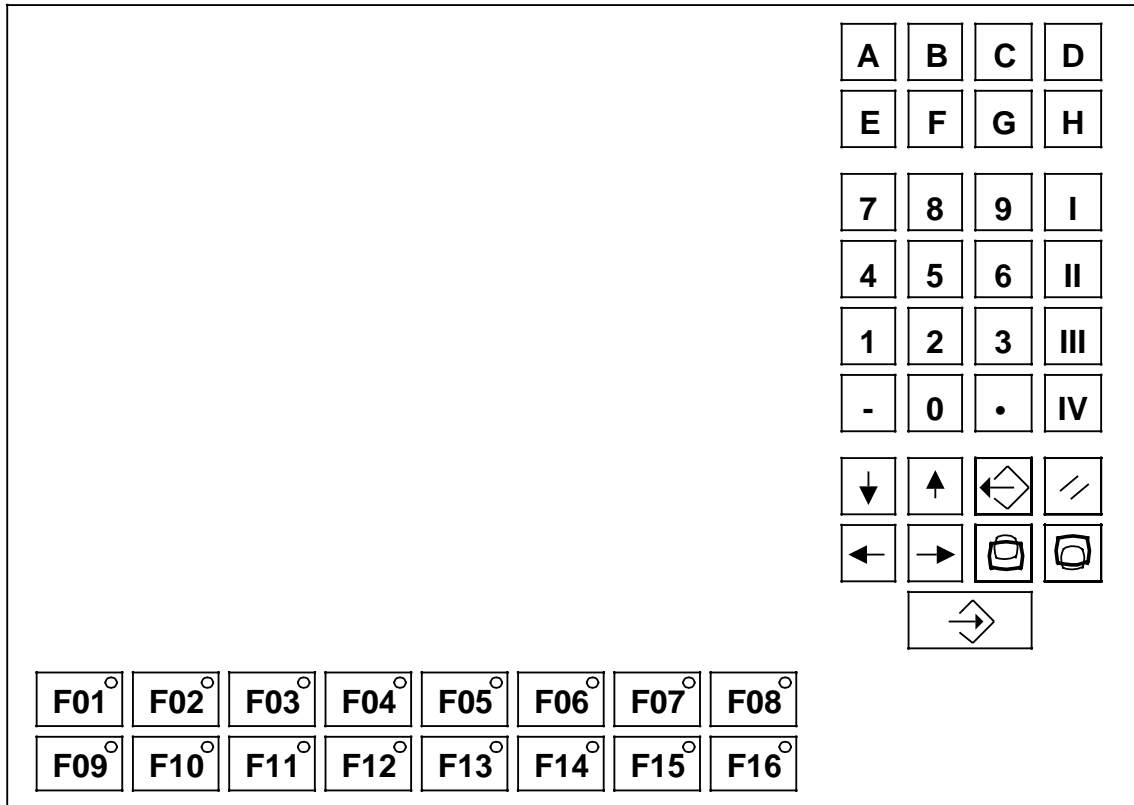


Fig. 3.19 Compact operator panel keyboard

3.2.4.1 WF 470 serial interface

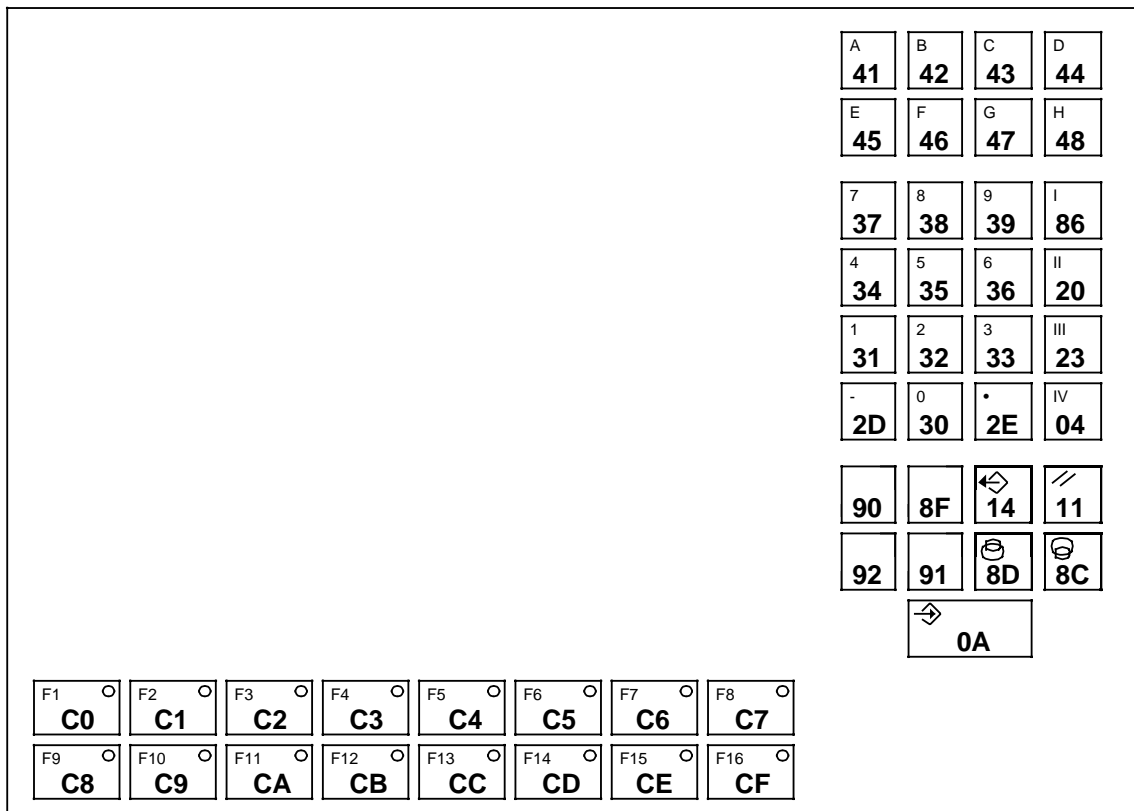


Fig. 3.20 Compact operator panel key code - WF 470 serial interface

3.2.4.2 CP 526 serial interface

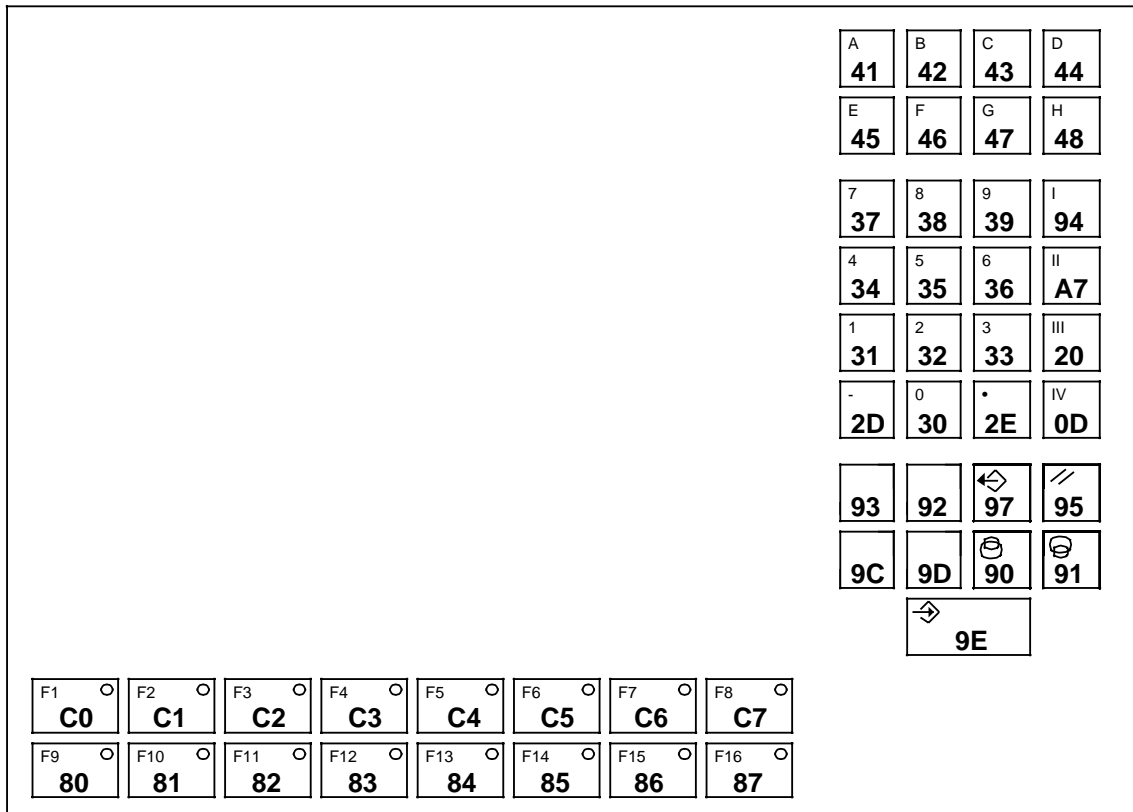


Fig. 3.21 Compact operator panel key code - CP 526 serial interface

3.2.5 Alpha keyboard key code - serial interfaces

%	A	B	C	D	E	F	G	H	I
J	K	L	M	N	O	P	Q	R	S
T	U	V	W	X	Y	Z	+	/	:
=	()	,	.	?				

Fig. 3.22 Text module

3.2.5.1 WF 470 and GAV 1 serial interfaces

%	A	B	C	D	E	F	G	H	I
25	41	42	43	44	45	46	47	48	49
J	K	L	M	N	O	P	Q	R	S
4A	4B	4C	4D	4E	4F	50	51	52	53
T	U	V	W	X	Y	Z	+	/	:
54	55	56	57	58	59	5A	2B	2F	3A
=	()	,	.	?				
3D	28	29	2C	2E	3F	22	23	40	20

Fig. 3.23 Key code of the alpha keyboard - WF 470 and GAV 1 serial interface

3.2.5.2 CP 526 serial interface

%	A	B	C	D	E	F	G	H	I
25	41	42	43	44	45	46	47	48	49
J	K	L	M	N	O	P	Q	R	S
4A	4B	4C	4D	4E	4F	50	51	52	53
T	U	V	W	X	Y	Z	+	/	:
54	55	56	57	58	59	5A	2B	2F	3A
=	()	,	.	?				
3D	28	29	2C	2E	3F	22	23	40	20

Fig. 3.24 Key code of the alpha keyboard - CP 526 serial interface

3.2.6 Function keyboard key code - serial interfaces

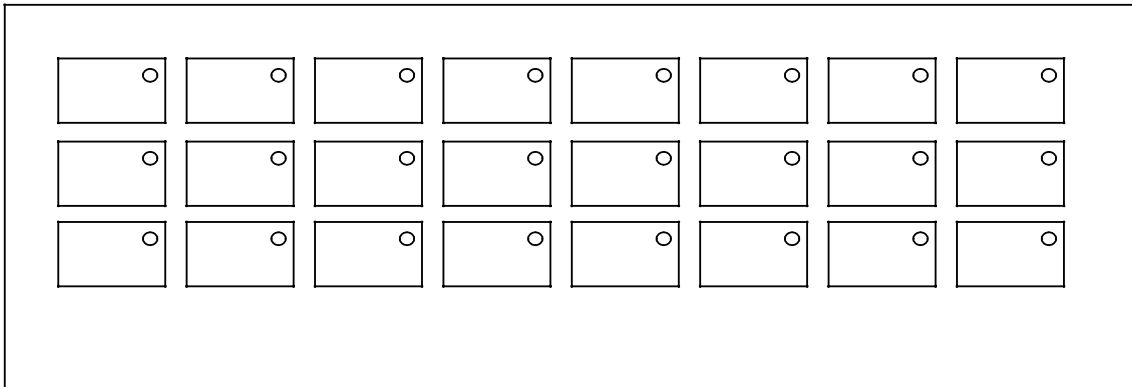


Fig. 3.25 Function keyboard

3.2.6.1 WF 470 and GAV 1 serial interfaces

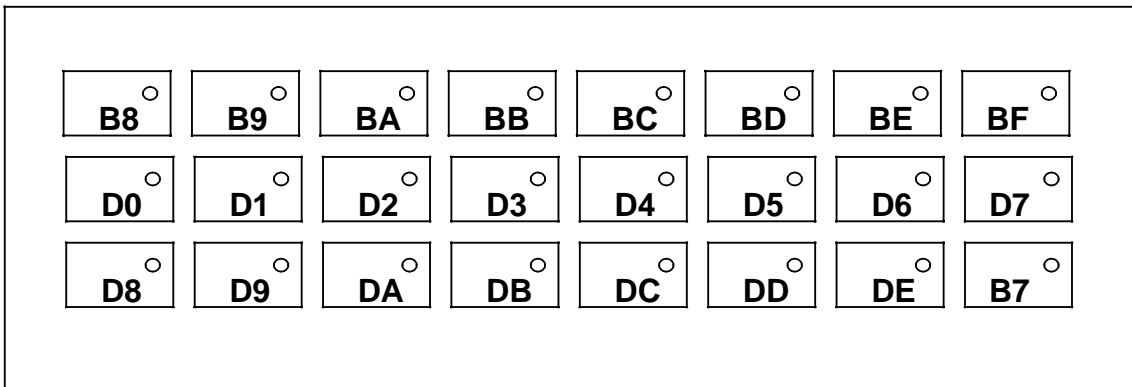


Fig. 3.26 Function keyboard key code - WF 470 and GAV 1 serial interface

3.2.6.2 CP 526 serial interface

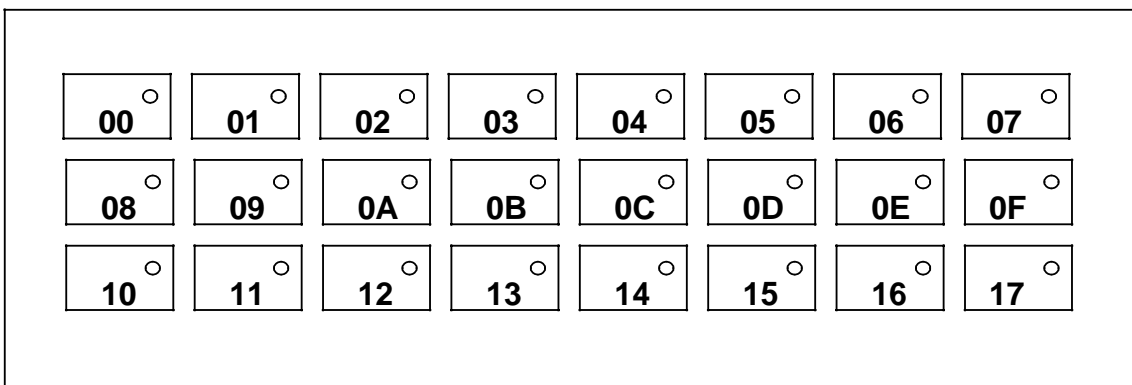


Fig. 3.27 Function keyboard key code - CP 526 serial interface

3.3 Operation when using the distribution unit

3.3.1 Selection of the distribution unit

The distribution unit can be selected from:

- either the SIMATIC S5
- or a selector switch

In case of selection via the SIMATIC S5, the locking program is fixedly stored. Every distribution module has then its own distribution logic.

The wiring of the distribution logic is shown in fig. 3.29. An external voltage supply is connected to X1 pin 1 (24 V) and X2 pin 3 (0 V). A stabilized 24 V voltage is available from X1 pins 2 and 3, which may be used to supply the digital outputs of the SIMATIC S5 or the input of a selector switch.

When a 24 V signal is applied to input pins X3.1 to X3.3 or X4.1 to X4.3, the respective inputs 1 to 3 will be connected to the output of the distribution module. The output pins X5.1 to X5.3 may be used for feedback signals to the SIMATIC S5 or for parallel connection of additional distribution modules.

The selector switch shown as an example in fig. 3.29 switches the stabilized 24 V signal either to an enable input of the SIMATIC S5 or to the respective switch relay of the distribution unit.

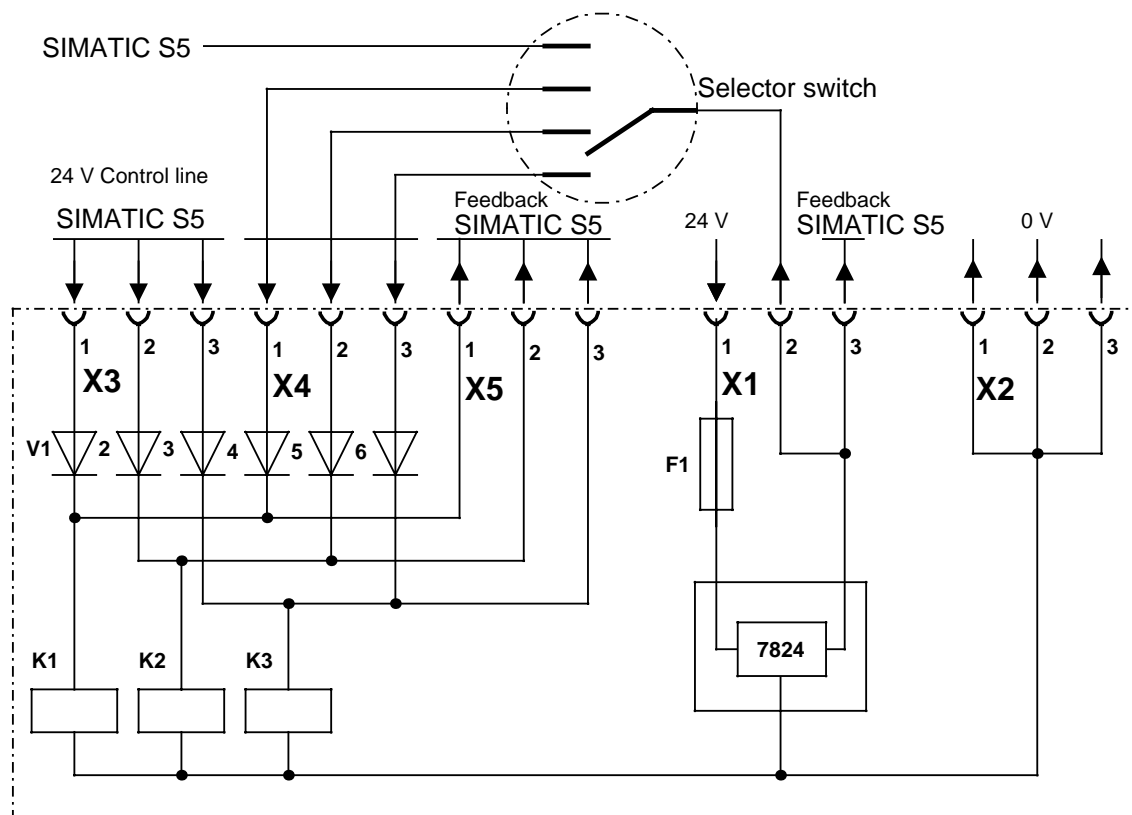


Fig. 3.28 Wiring diagram if the distribution logic

Connectors X1 to X3: Faston connectors

3.3.2 Distribution module for 4-wire lines

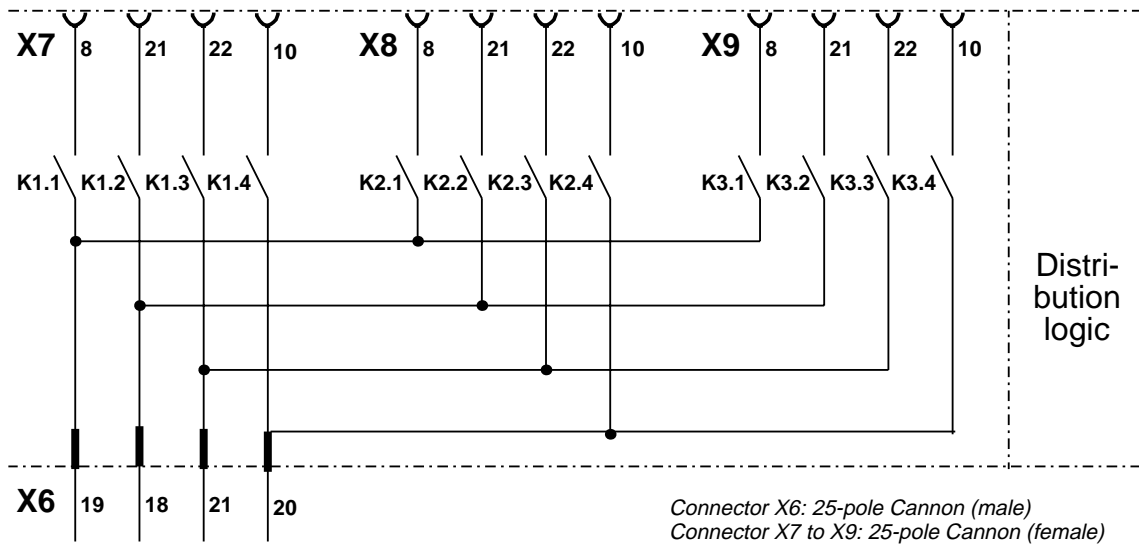


Fig. 3.29 Distribution module for 4-wire lines

3.3.3 Distribution module for RGB-BAS video signal

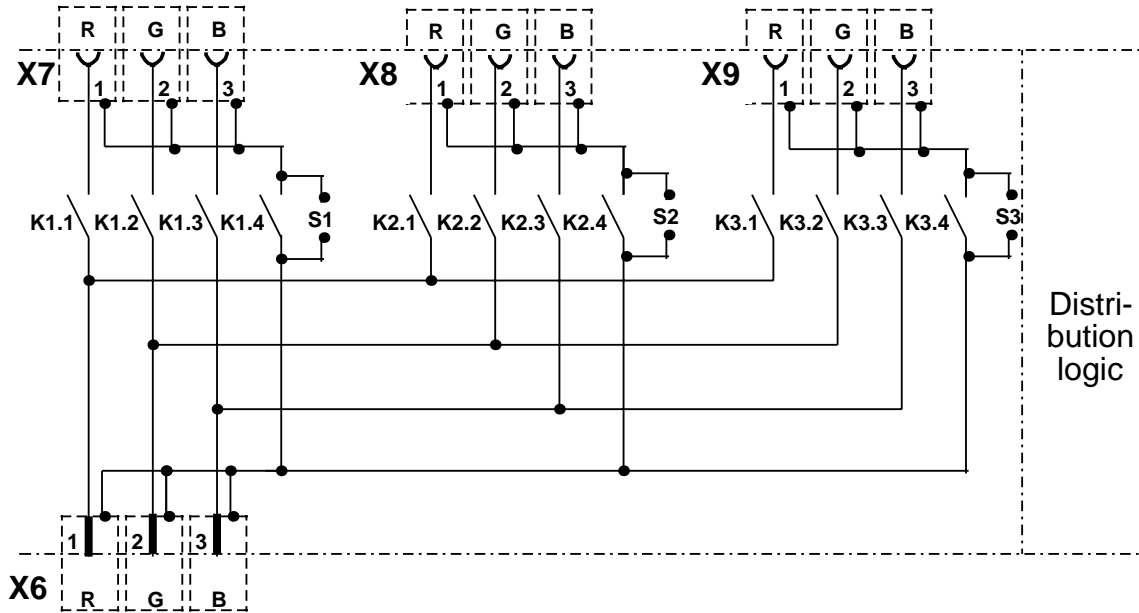


Fig. 3.30 Distribution module for RGB-BAS video signal

S1 to S3 are soldered links which can be inserted if required.

4 Cables, connections and connection diagrams

4.1 Connection diagram for the parallel interface

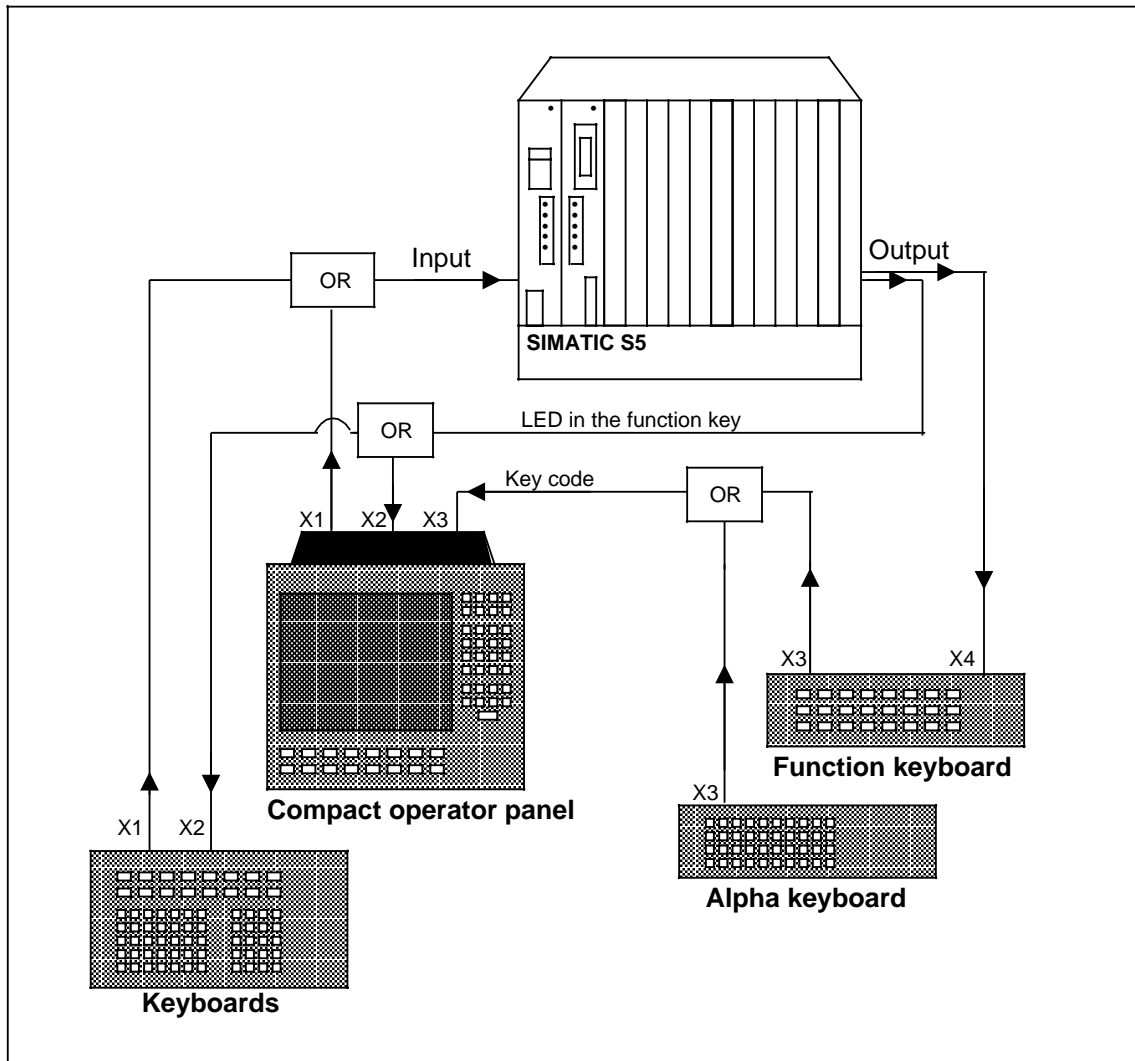


Fig. 4.1 Connection diagram

Mating plugs are supplied for use with connectors X1 and X2 on the WS 495/496 keyboards or on the compact operator panel, and for connector X4 on the function keyboard.

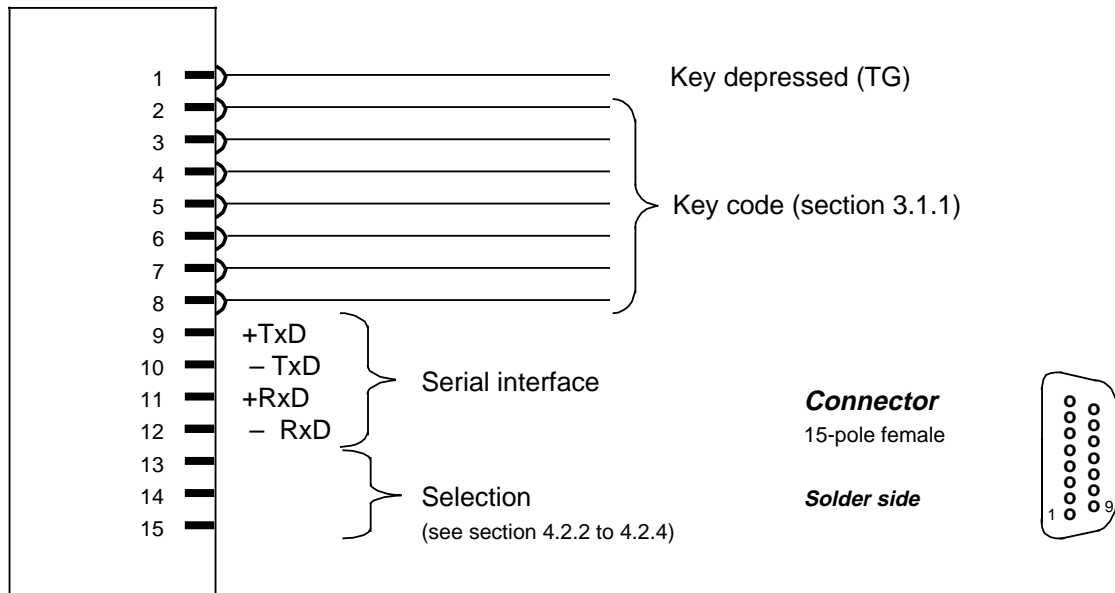
The user has to supply the cable between the SIMATIC S5 input/output module and the keyboards.

The connection between the compact operator panel (X3) and the alpha/function keyboard (X3) is made via pre-fabricated cable supplied with the units.

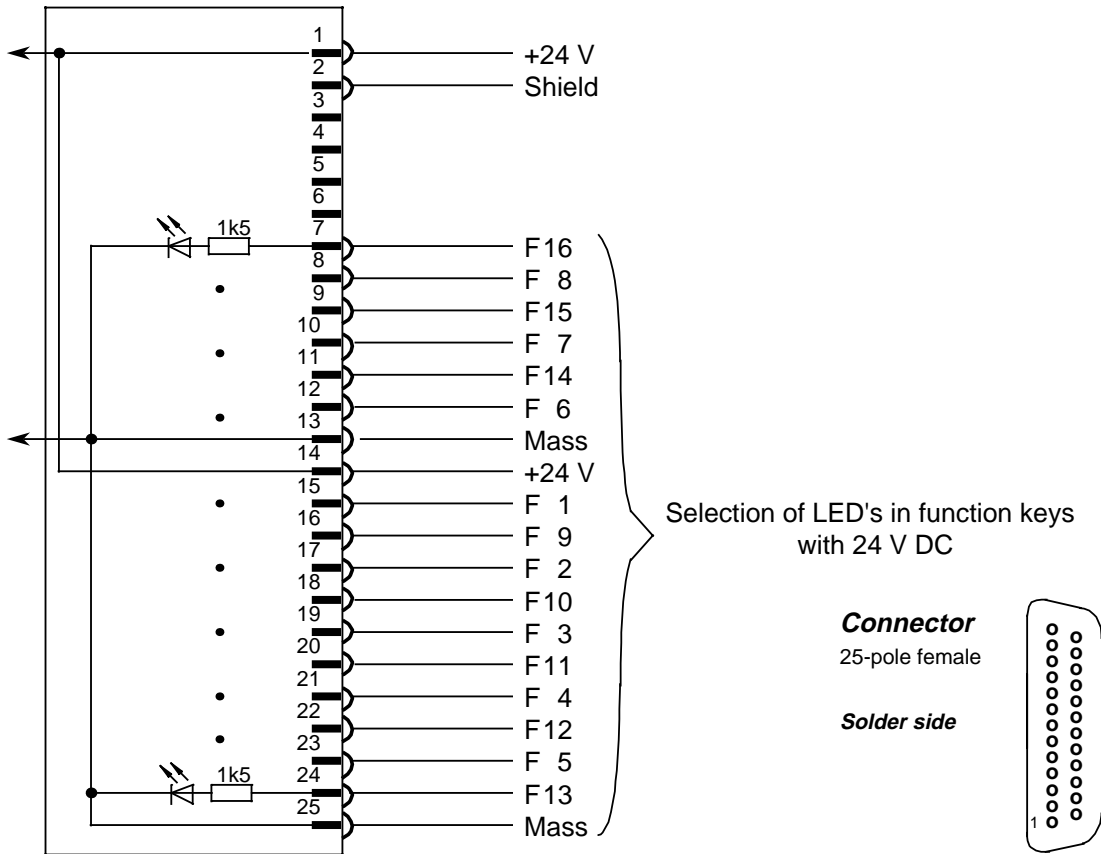
Summary of the connectors:

	Connector X1 Key code 15-pole sub-D (female)	Connector X2 LED's, power supply 25-pole sub-D (female)	Connector X3 Connection from compact operator panel to auxiliary keyboard 25-pole sub-D (male/female)	Connector X4 LED's function keyboard 25-pole sub-D (female)
Compact- oper. panel	X	X	X	
Alpha modul			X	
Function modul			X	X
WS 495 keyboard	X	X		
WS 496 keyboard	X	X		

Connections and functions on X1:



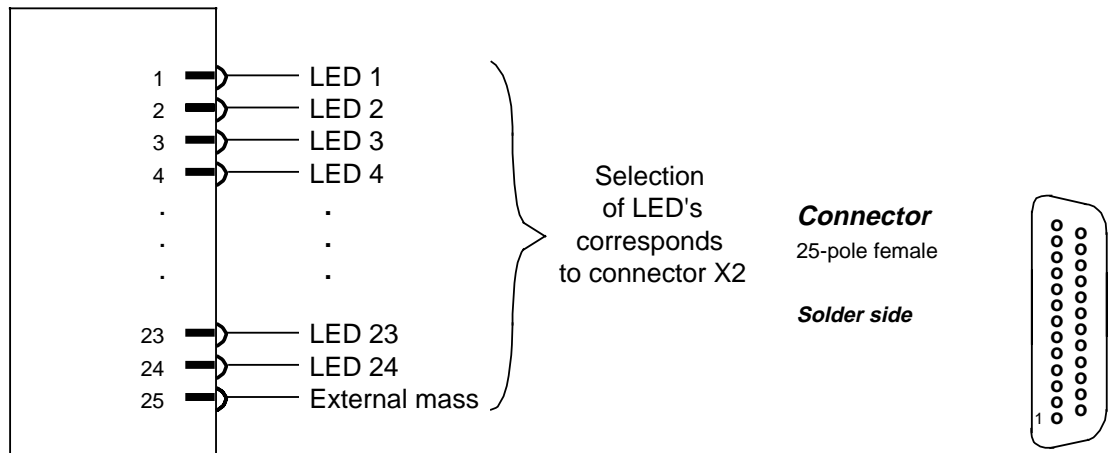
Connections and functions on X2:



Connections for X3:

The connection between the compact operator panel and the alpha/function keyboard is made using SIEMENS ribbon cables (ordering data see section 6.3).
The connection points are to be wired "1 : 1" (pin 1 on connector 1 to pin 1 on connector 2 etc.)

Connections and functions of X4:



4.2 Connection diagram for the serial interfaces

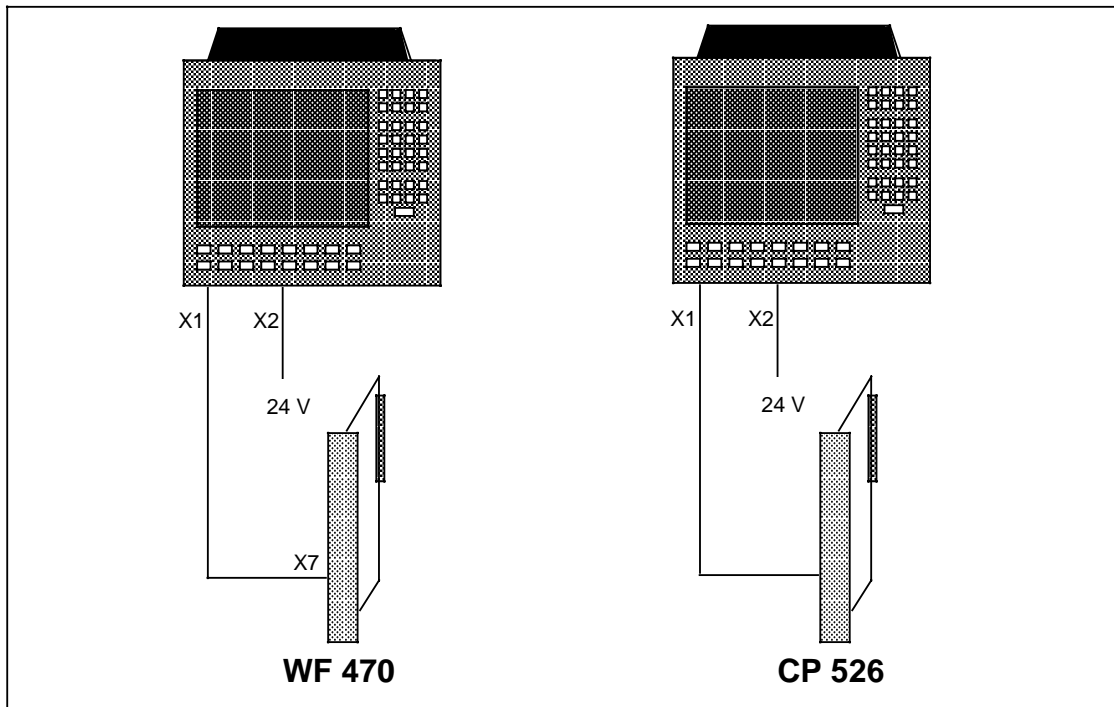


Fig. 4.2 Connection diagram for compact operator panel

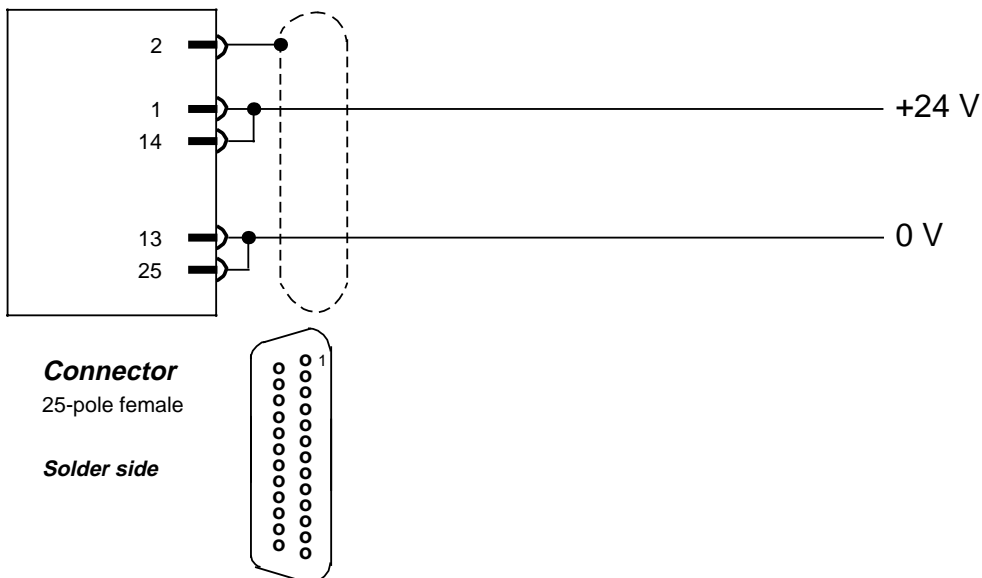
The active WF 470 TTY serial interface must be supplied with 24 V via the WF 470 connectors S24 and XME.

4.2.1 Voltage supply connection

Connector X2

Compact operating panel / keyboards

+24 V

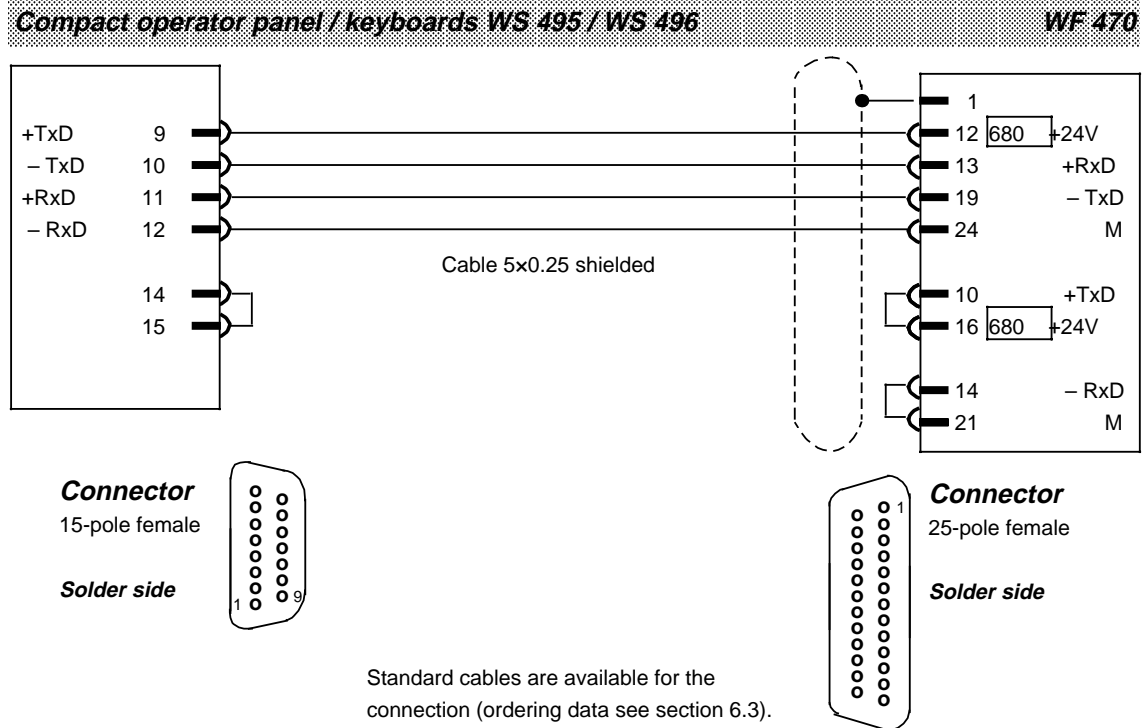


Connector
25-pole female

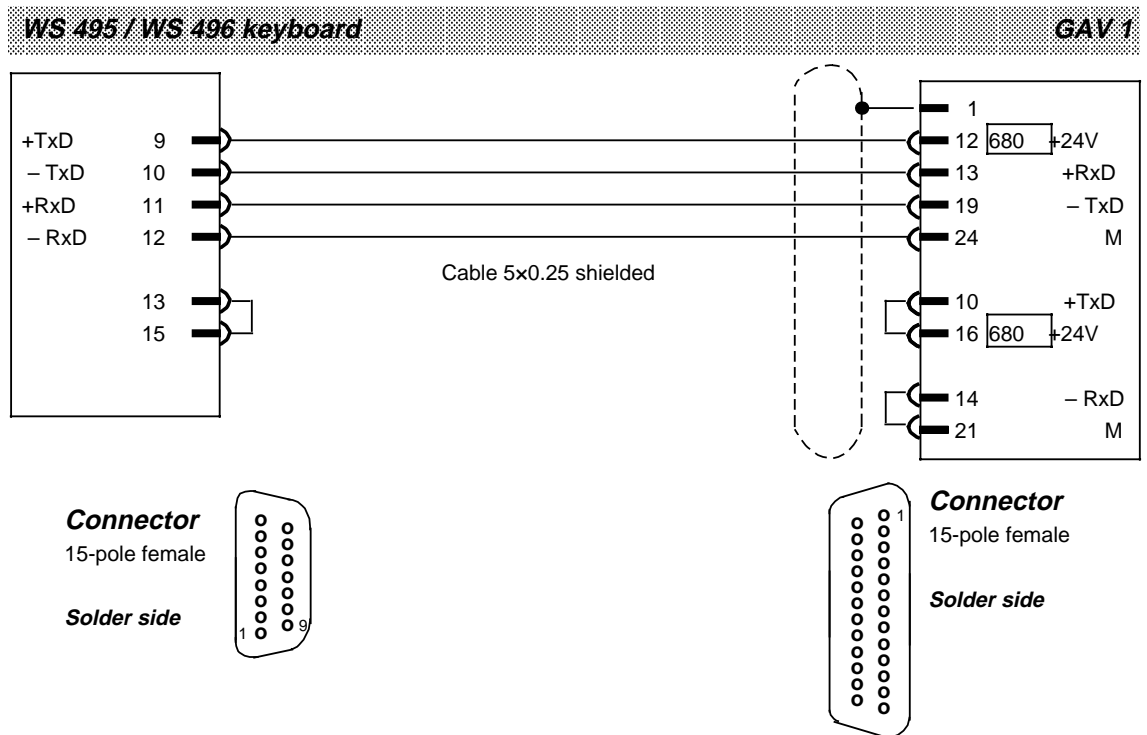
Solder side

4.2.2 Connection to the WF 470 display module

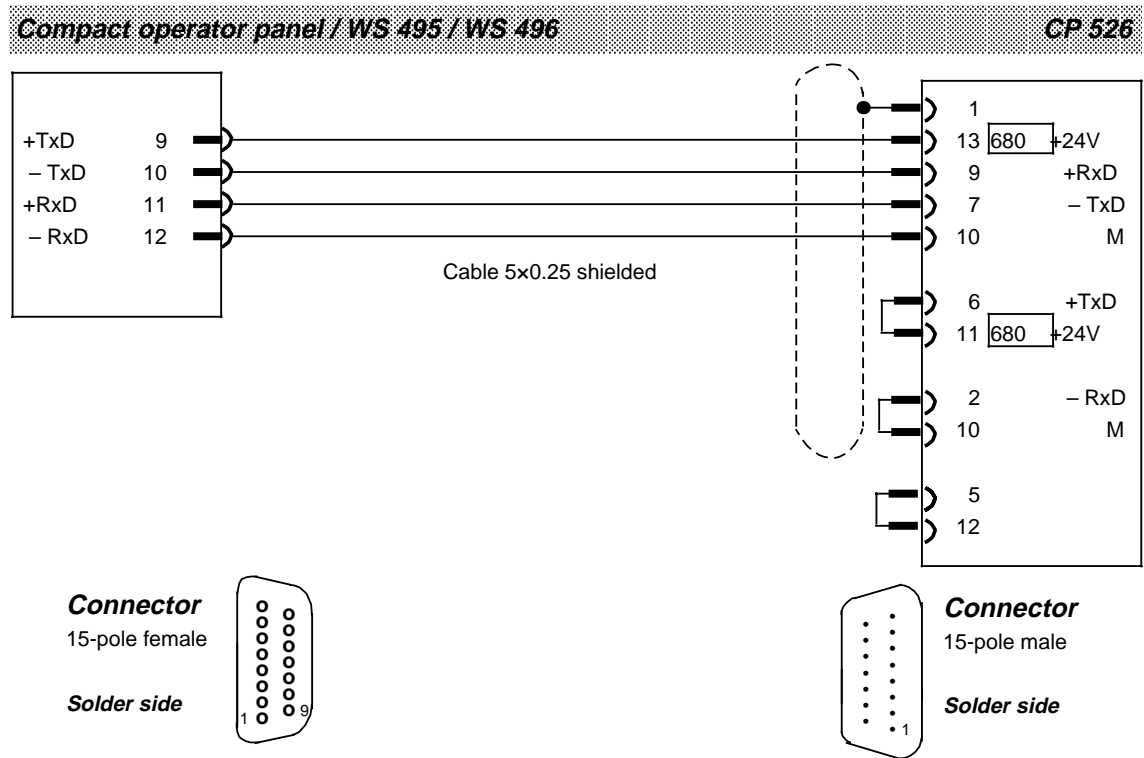
Connector X1



4.2.3 Connection to the CP 526 communication processor Connector X1



4.2.4 Connection to the CP 526 communication processor Connector X1



4.3 Video interface connection

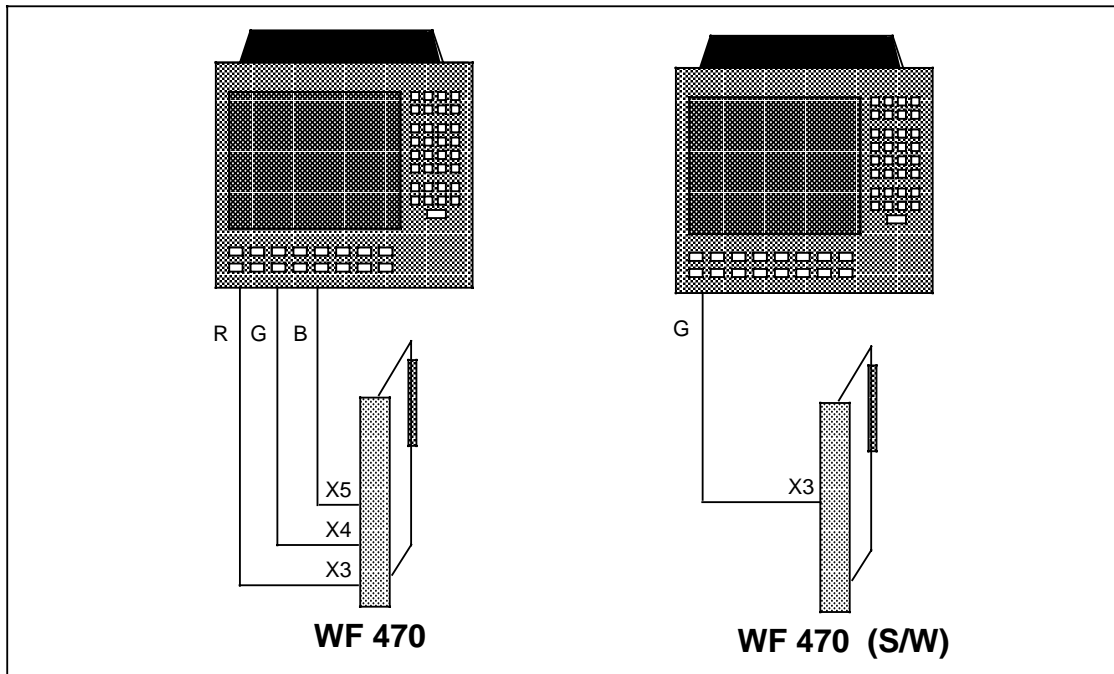
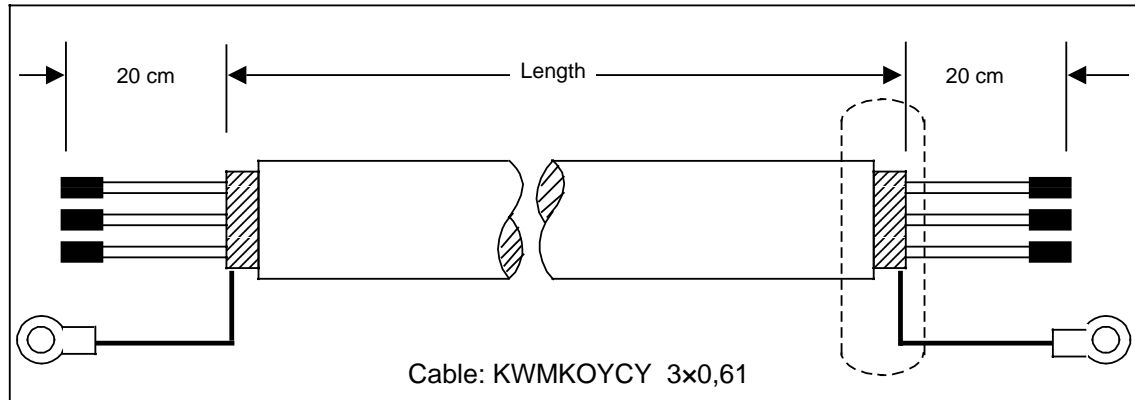
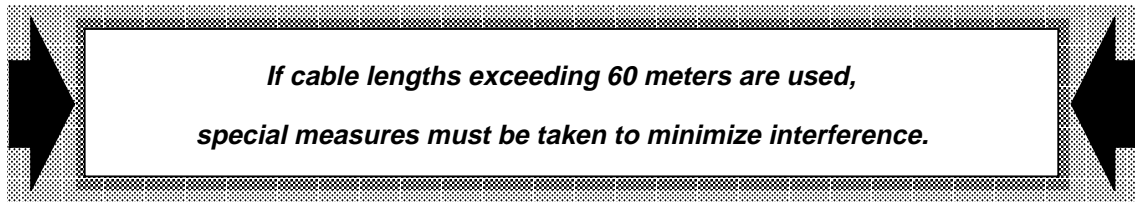


Fig. 4.3 Connection diagram

4.3.1 Connection cable for colour monitors



Cable specification:

3x individual coaxial cable with PVC sheath, polyurethane sheath and additional overall shield

Connectors: Either coaxial or BNC

Temperature range: - 40 °C to 90 °C

Resistant against: Oil and coolant to VDE 472/804

Minimum bending radius: 150mm

Impedance:	20 MHz	6.1 dB/100m
	100 MHz	10.8 dB/100m
	200 MHz	21 dB/100m
	500 MHz	34.2 dB/100m
	1 GHz	48.1 dB/100m

Available standard cables

WF 470	Colour monitor
---------------	-----------------------

3x coaxial connectors (female)	3x BNC connectors (male)
--------------------------------	--------------------------

Colour monitor	Distribution unit
-----------------------	--------------------------

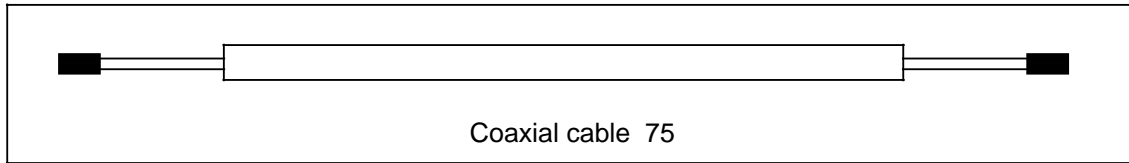
3x BNC connectors (male)	3x BNC connectors (male)
--------------------------	--------------------------

CP 526	Colour monitor
---------------	-----------------------

3x BNC (screw-type locking)	3x BNC connectors (male)
-----------------------------	--------------------------

Ordering data see section 6.3

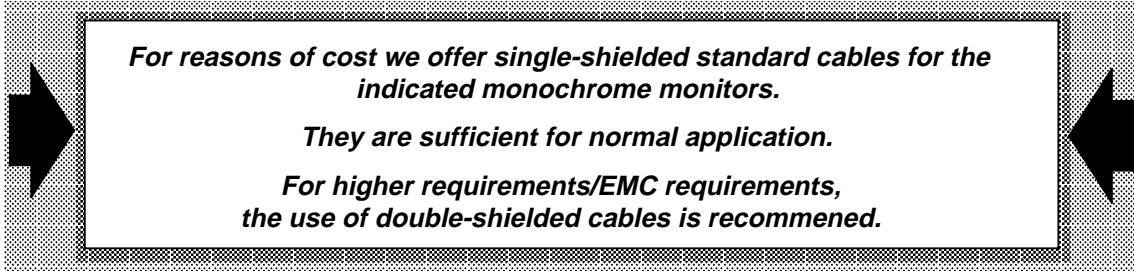
4.3.2 Connection cable for monochrome monitors



Available standard cables

WF 470	Monochrom monitor
1xcoaxial connector (female)	1xBNC connector (male)
WF 470	Desk-mounted monitor (C 79 145-A3033-A3)
1xcoaxial connector (female)	1xH connector (male)
CP 526	Monochrom monitor
1xBNC (screw-type locking)	1xBNC connector (male)

Ordering data see section 6.3



4.4 Connection diagram for the distribution unit

4.4.1 Distribution module for 4-wire lines

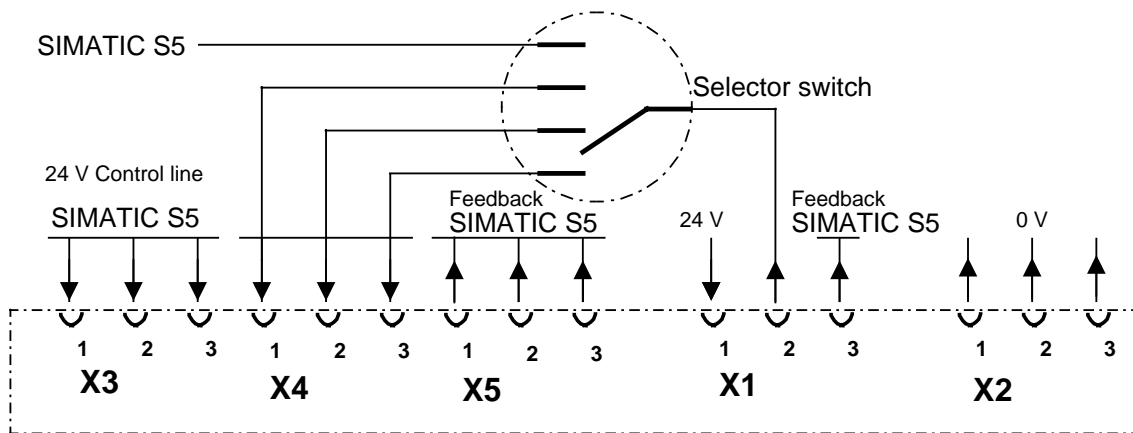


Fig. 4.4 Wiring diagram for the distribution logic

X1 to X3: Faston connectors

Input and output pins are connected on a 1 : 1 basis. A detailed connection diagram for the distribution unit is shown in section 3.3.1.

Standard cables are available for connection (ordering data see section 6.3).

4.4.2 Distribution module for RGB-BAS video signals

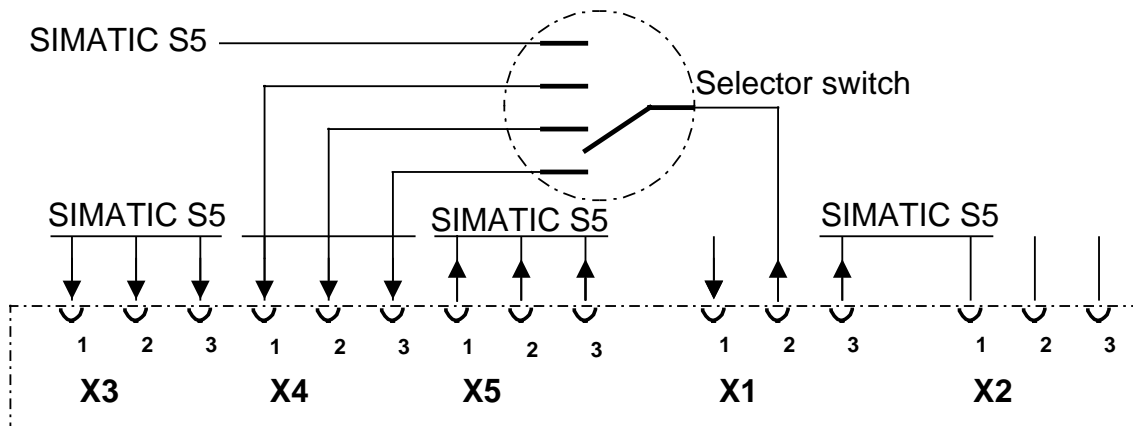


Fig. 4.5 Wiring diagram for the distribution logic

X1 to X3: Faston connectors

Input and output pins are connected on a 1 : 1 basis. A detailed connection diagram for the distribution unit is shown in section 3.3.2.

The connections to X6, X7, X8, and X9 are made by BNC connectors.

Standard cables are available for connection (ordering data see section 6.3).

5 Technical data

5.1 Technical data of the individual components

5.1.1 WS 495 and WS 496 keyboards

Voltage supply	24 V
Current requirement	approx. 155 mA
Parallel interface: Output signals (key code)	8-bit parallel, 24 V (maximum 100 mA/bit) 0 signal 2 V 1 signal 23 V
Input signals (LED's)	24 V selection signals
Serial interface: Interface: Protocols for connection to:	TTY (passive) WF 470 9600 bauds GAV 1 2400 bauds CP 526 2400 bauds
Dimensions: Keyboard (desk-mounted version) (wxdxh) Keyboard (panel-mounted version) (BxTxH)	 400 mmx220 mmx55 mm 360 mmx190 mmx25 mm
Weight: panel-mounted version desk-mounted version	1.0 kg 3.5 kg
Protection (front side)	IP 54

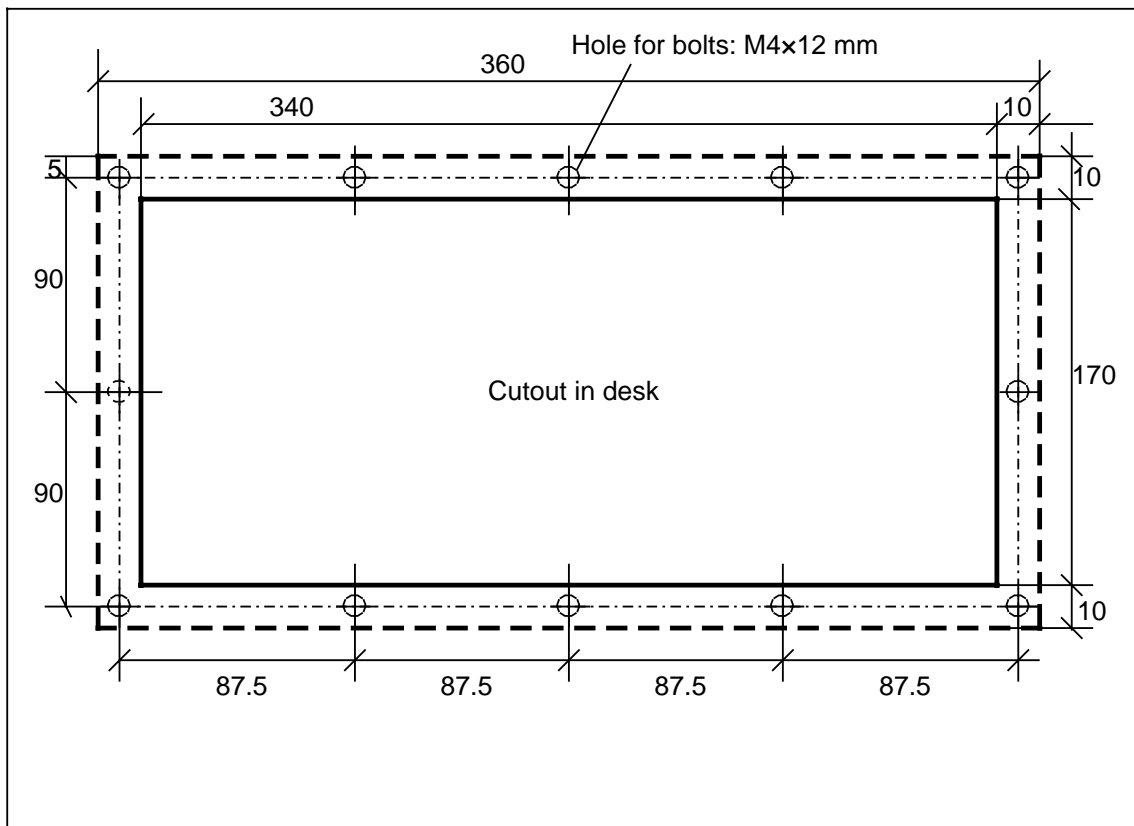


Fig. 5.1a Dimensions for panel mounting of WS 495/WS 496

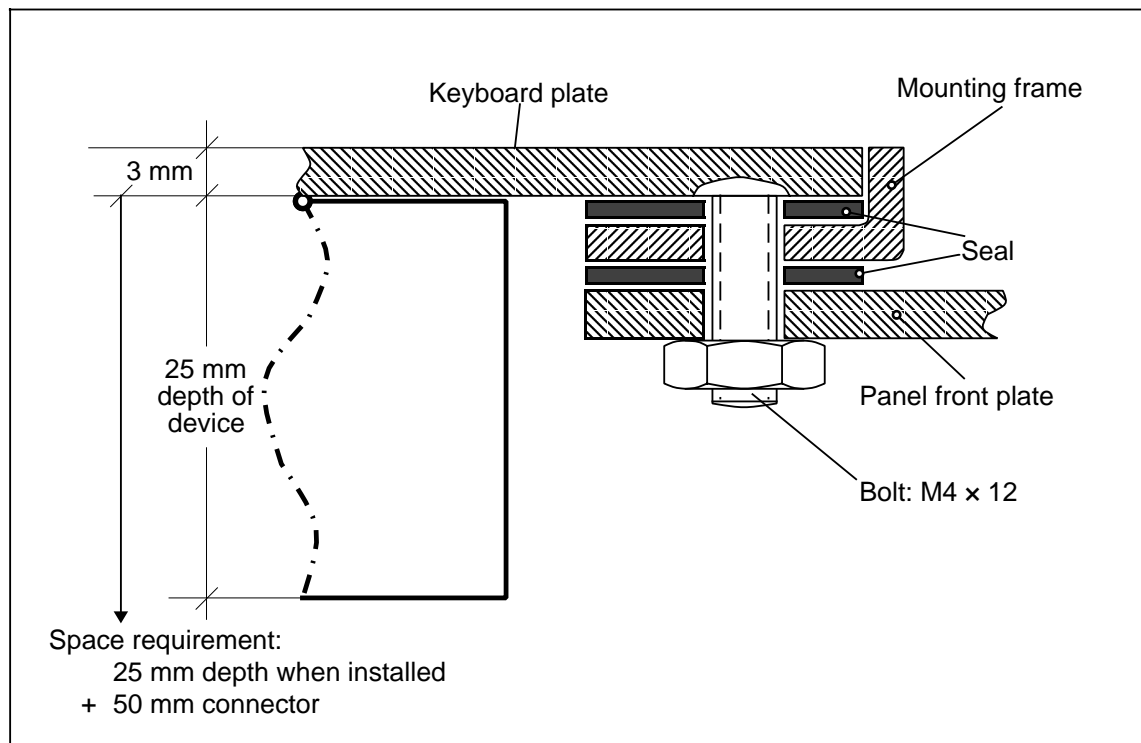


Fig. 5.1b Schematic diagram of panel mounting of WS 495/WS 496 (not to scale)

5.1.2 Compact operator panel and auxiliary keyboards

Voltage supply	24 V
Current requirement	approx. 155 mA
Parallel interface: Output signals (key code)	8-bit parallel 0 signal 2 V 1 signal 23 V
Input signals (LED's)	24 V selection signals
Serial interface: Interface:	TTY (passive)
Protocols for connection to:	WF 470 9600 bauds GAV 1 2400 bauds CP 526 2400 bauds
12" monochrome monitor Voltage supply Power consumption Connection (BAS) Input Output	110/220 V 50 Hz selectable approx. 25 W 1×BNC 1×BNC
14" colour monitor Voltage supply Supply frequency Power consumption Connection (RGB/BAS): Input Output	110/220 V selectable 50/60 Hz approx. 90 W 3×BNC 3×BNC
Dimensions: Basic unit (w×h×d) with 12" monochrome monitor with 12" colour monitor with 14" colour monitor Auxiliary keyboards (w×d×h)	 482.6 mm×399.2 mm×338 mm 482.6 mm×399.2 mm×350 mm 482.6 mm×399.2 mm×405 mm 482.6 mm×133.35 mm×25 mm
Weigth: Basic unit with 12" monochrome monitor with 12" colour monitor with 14" colour monitor Auxiliary keyboards: Alpha keyboard Function keyboard	 14.7 kg 19.5 kg 21.5 kg 1.45 kg 1.55 kg
Protection (front side)	IP 54

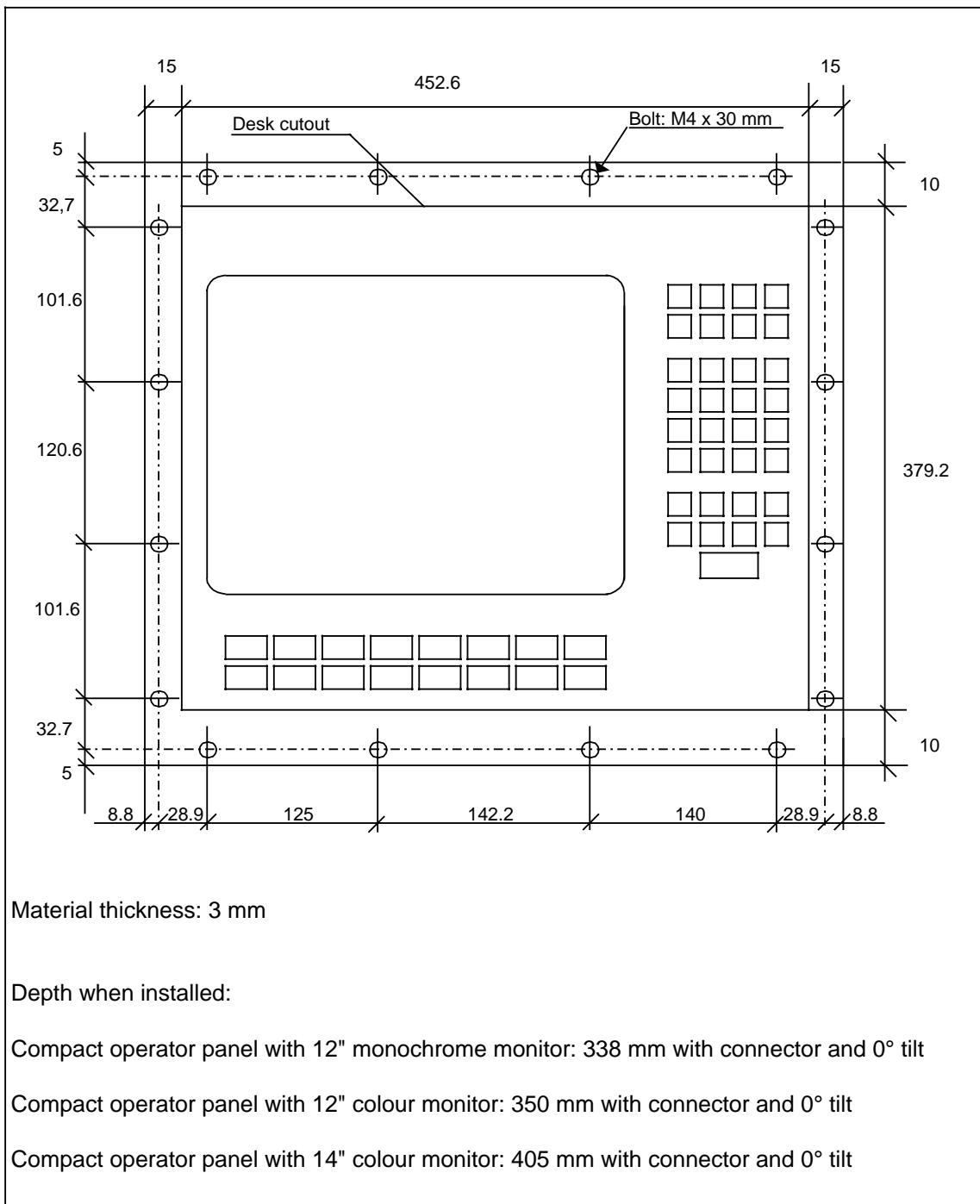


Fig. 5.2 Mounting dimensions of 19" rack mounted compact operator panel with monitor

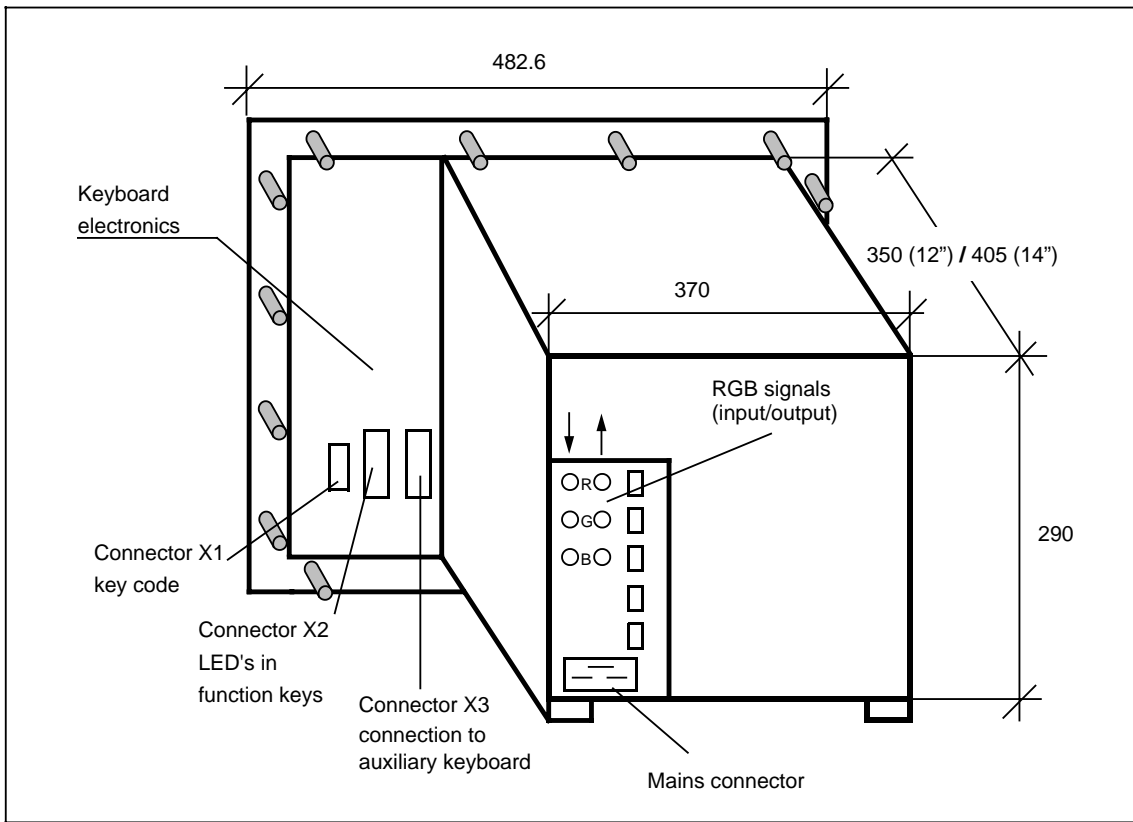


Fig. 5.3 Rear view of compact operator panel with 12"/14" colour monitor

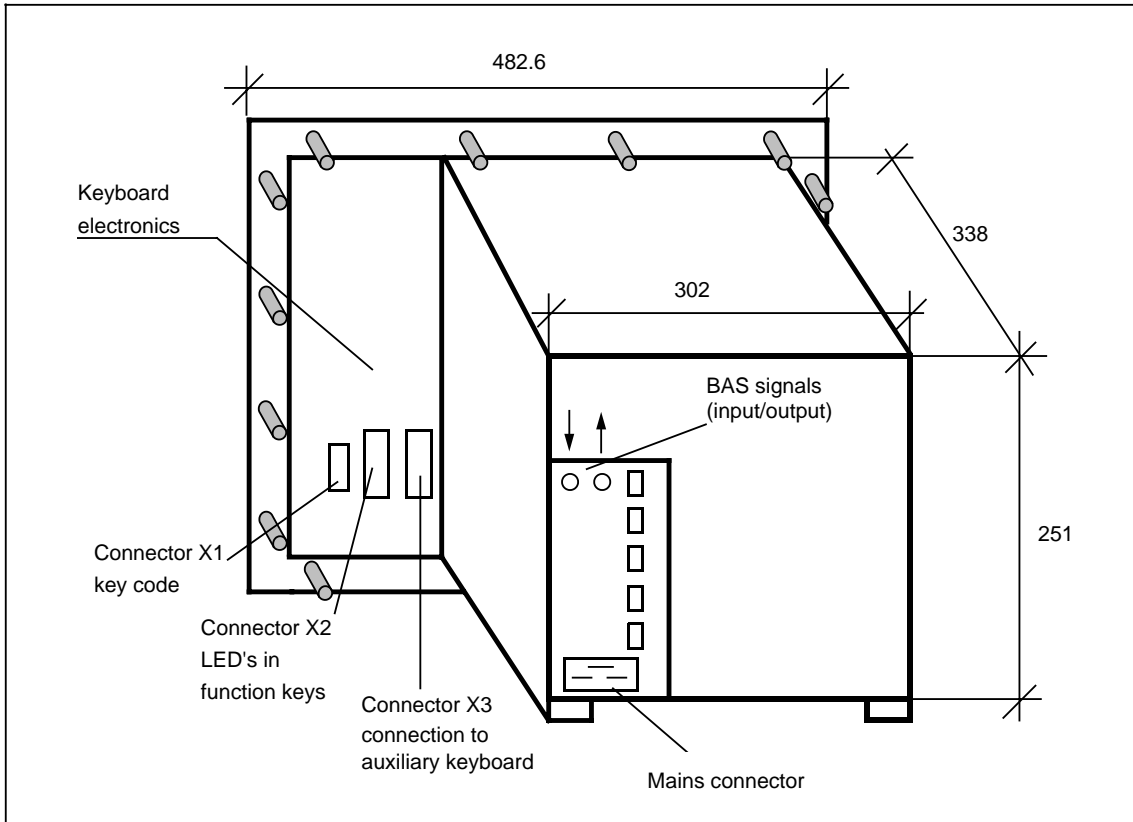


Fig. 5.4 Rear view of compact operator panel with 12" monochrome monitor

5.1.3 Monitors

5.1.3.1 14" (36 cm) and 12" (31 cm) colour monitor

Colour monitor	14"	12"
Voltage supply Tolerance	115/230 V ±10%	115/230 V ±10%
Mains frequency	50 Hz / 60 Hz	50 Hz
Power consumption	ca. 90 W	ca. 90 W
Colour monitor:		
Screen size	36 cm	31 cm
Line frequency Frame frequency	15.6 kHz 50 Hz	15.6 kHz 50 Hz
Connectors (RGB/BAS) Input Output	3×BNC 3×BNC	3×BNC 3×BNC
Dimensions	see drawing	see drawing
Weight	approx. 16.5 kg	approx. 11.5 kg
Ambient temperature range	0 to + 50 °C	0 to + 50 °C

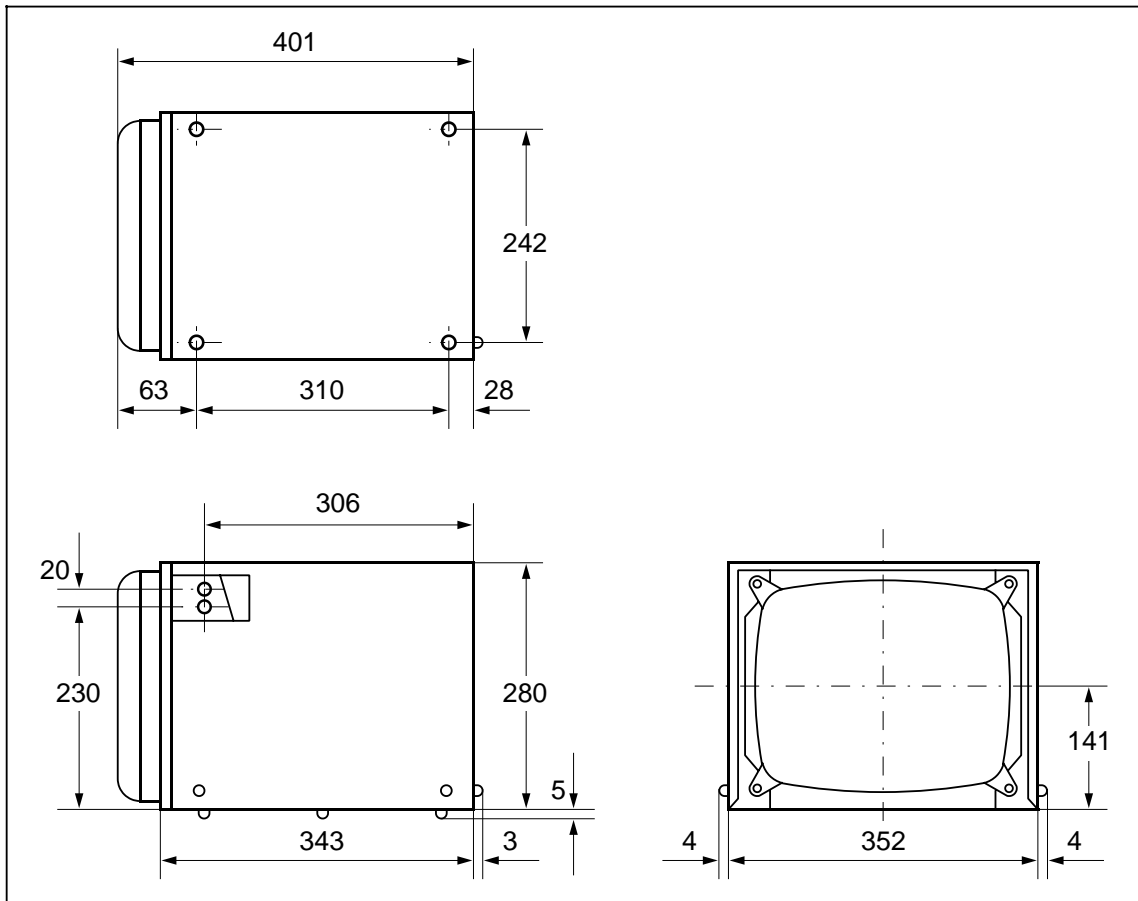


Fig. 5.7 14" panel-mounted colour monitor

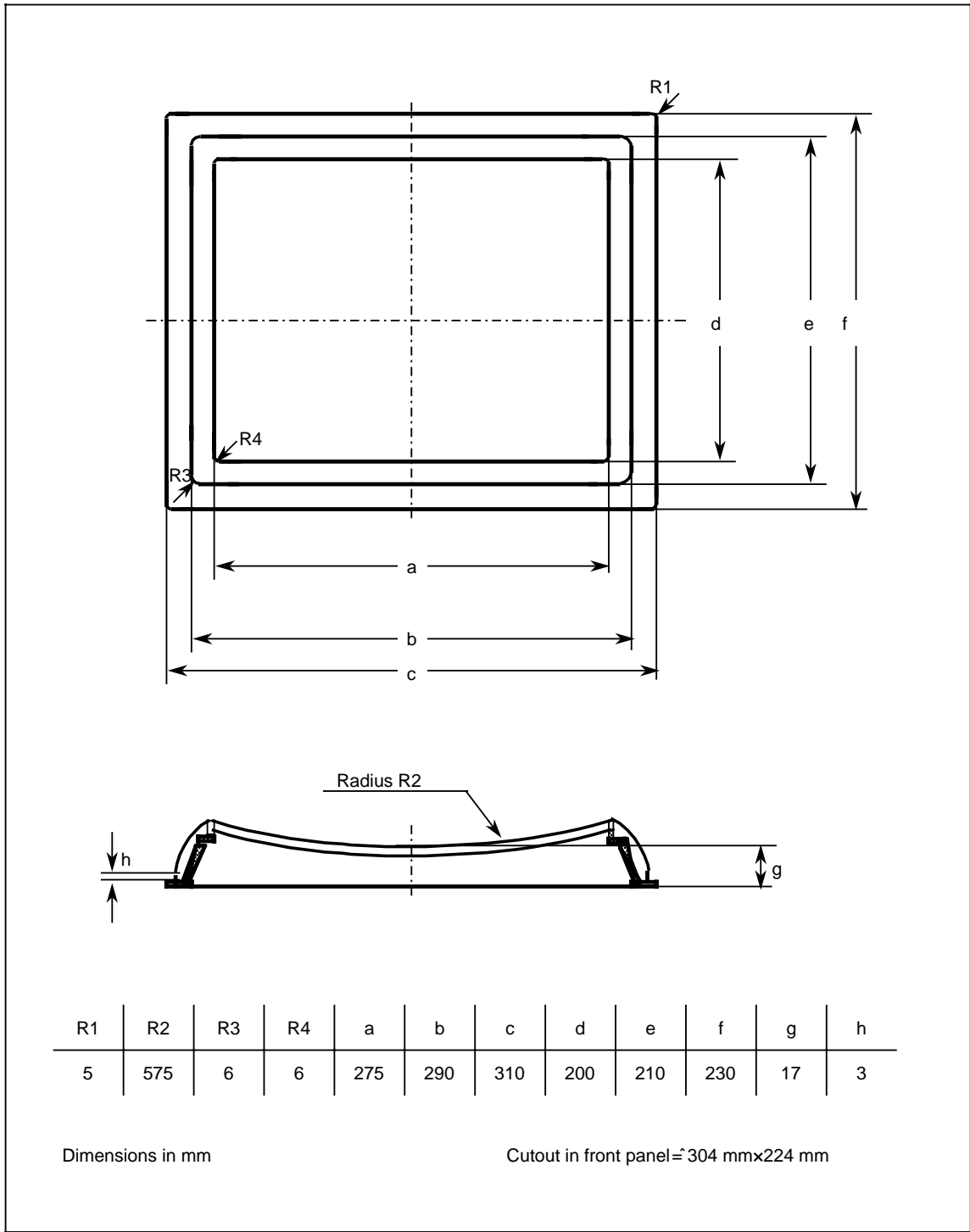


Fig. 5.8 14" screen of panel-mounted colour monitor

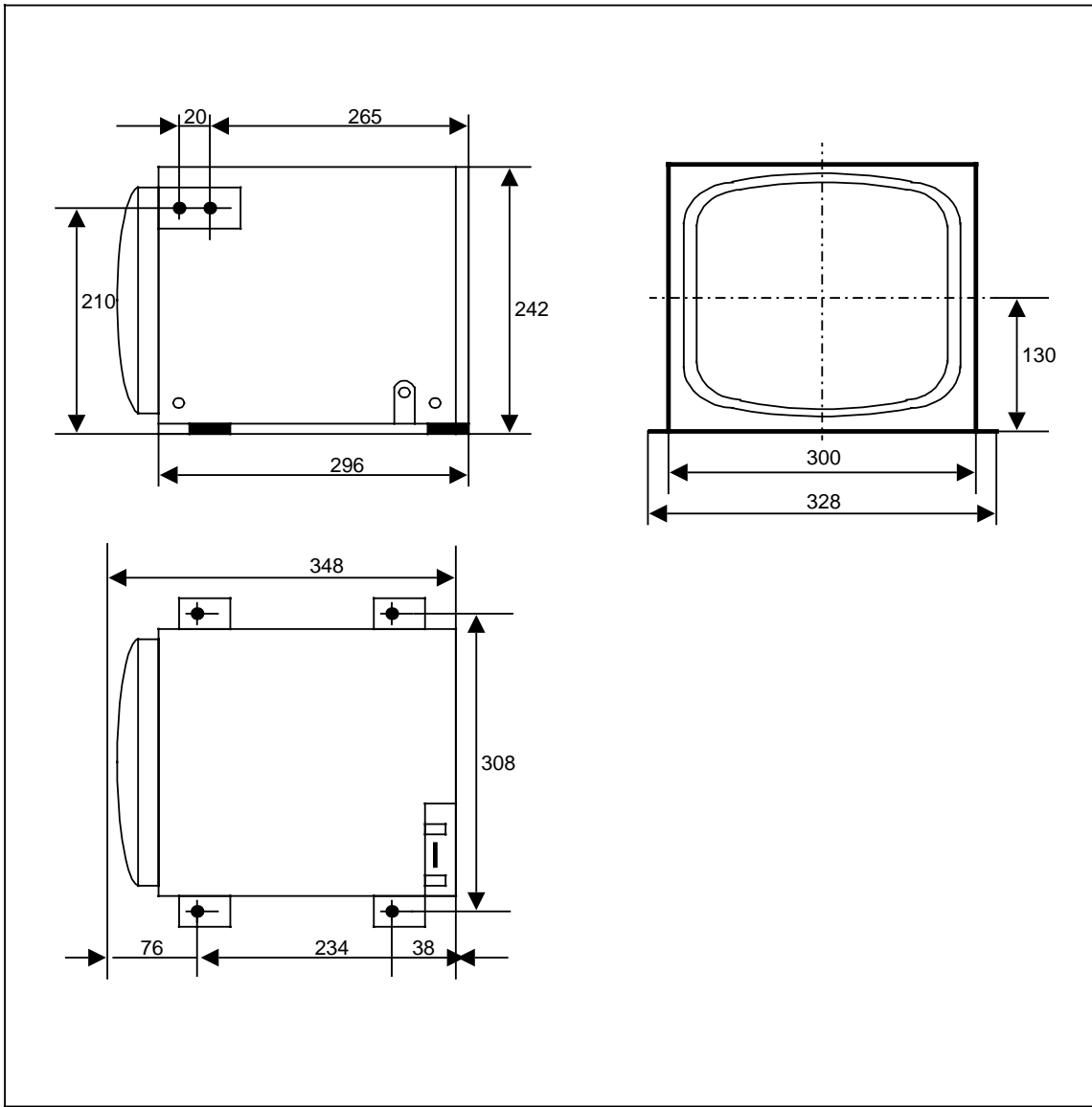


Fig. 5.9 12" panel-mounted colour monitor

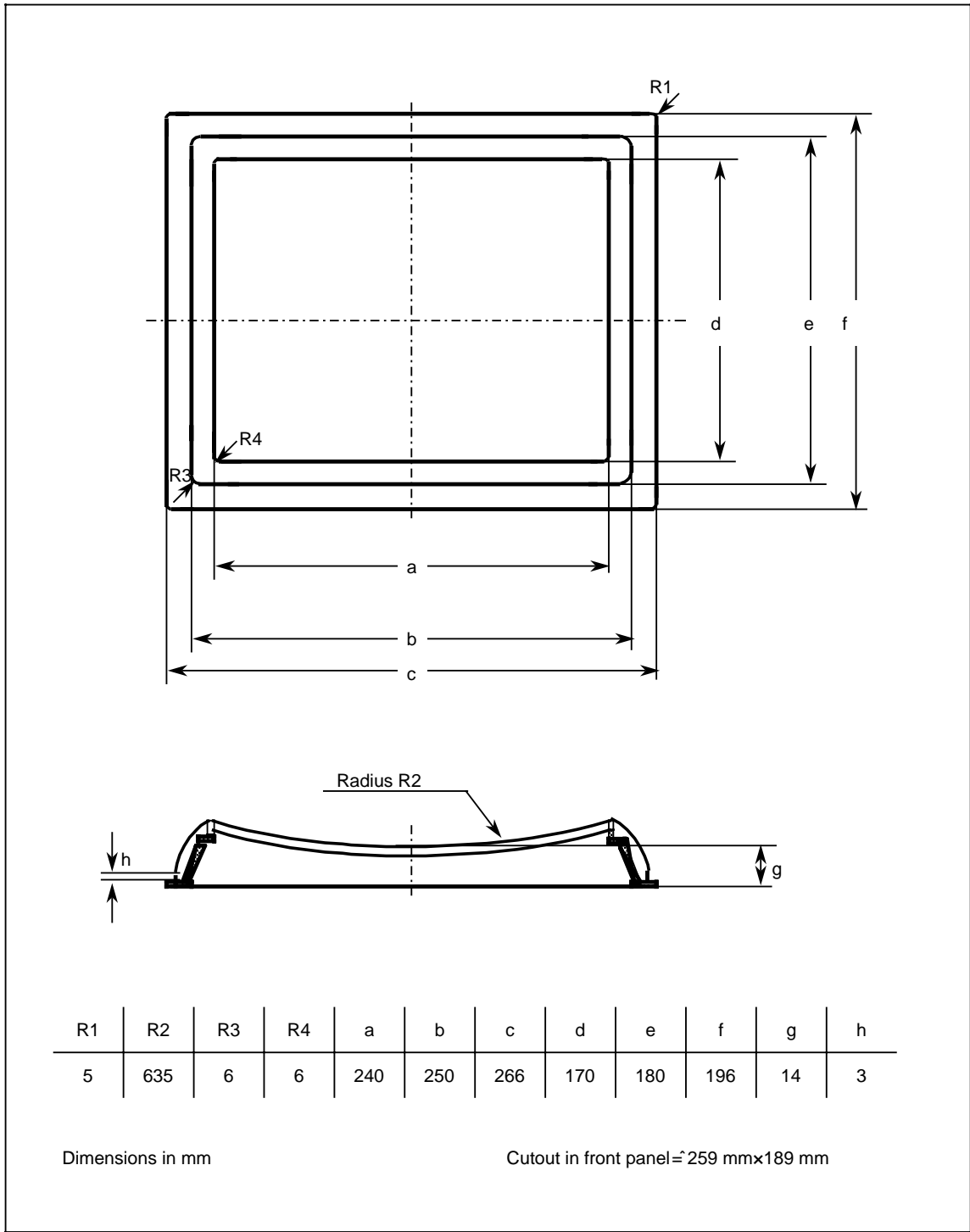


Fig. 5.10 12" panel-mounted colour monitor

5.1.3.2 12" (31 cm) monochrome monitor

Voltage supply Tolerance	115/230 V ±10%
Mains frequency	50 Hz / 60 Hz
Power consumption	ca. 25 W
Monochrom monitor:	
Screen size	31 cm
Line frequency	15.6 kHz
Frame frequency	50 Hz
Connection (RGB)	
Input	BNC
Output	BNC
Dimensions	see drawing
Weight	approx. 7.5 kg
Ambient temperature range	0 °C to 50 °C

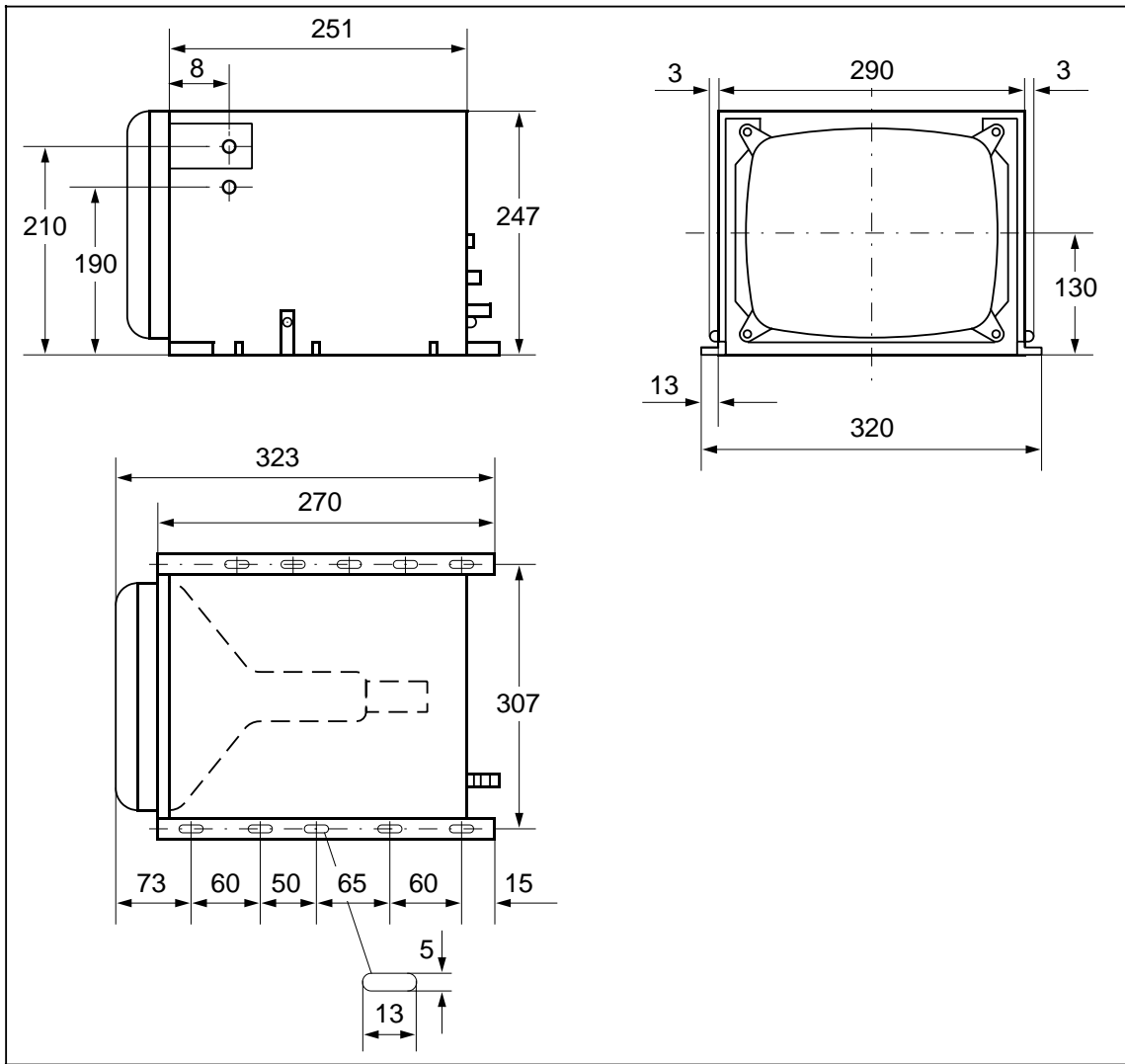


Fig. 5.11 12" panel-mounted monochrome monitor

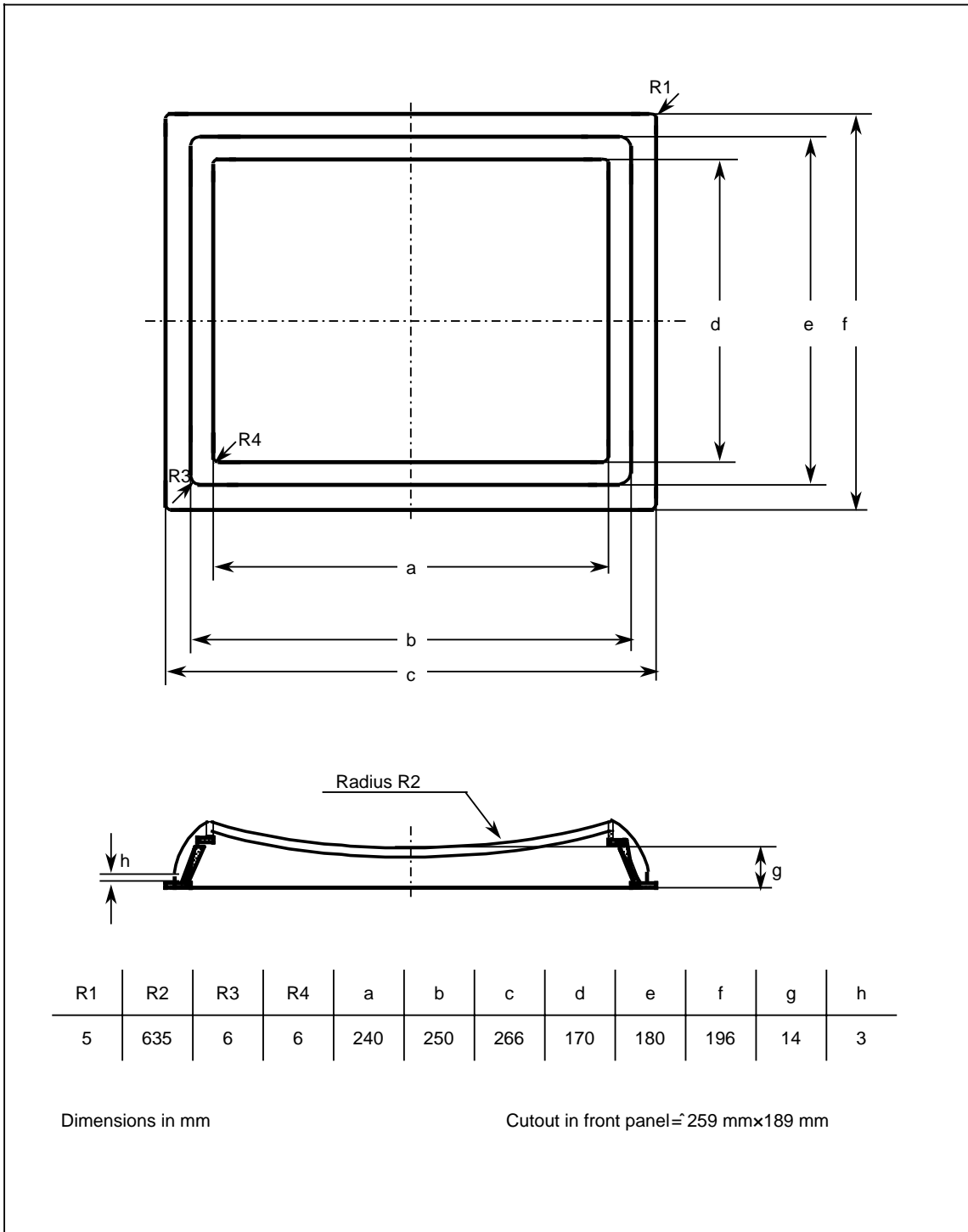


Fig. 5.12 12" screen of panel-mounted colour monitor

5.2 Technical data of the distribution unit

Voltage supply	24 V
Current requirement	approx. 400 mA
Contact loading:	Switching voltage max. 100 V Switching current max. 0.5 A Switch load max. 10 W
Connection: Distribution module 4-wire lines:	Subminiature connectore 25-pole (female)
Distr. module for RGB-BAS video signal:	BNC connector (female)
Dimensions: Base board with spacer bolts (w×h×d):	213 mm×17 mm ×116.5 mm
Each distribution module requires an extra height of:	22 mm

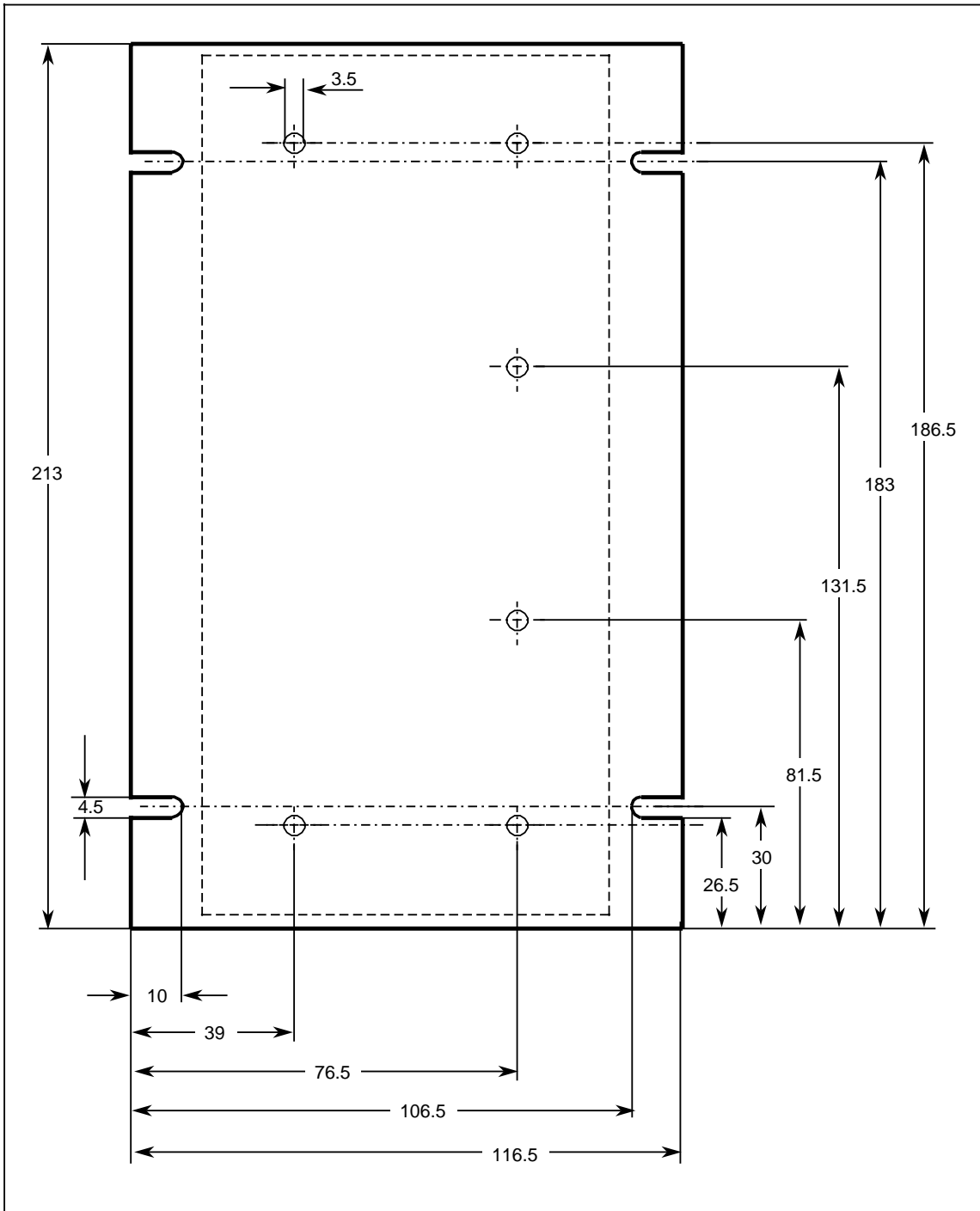


Fig. 5.13 Base board with spacer bolts

6 Ordering data

6.1 Operator interface system

Unit	Order No.
WS 495 keyboard (with mating connectors for connectors X1 and X2)	
Desk-mounted version	6FM1 495-1AB20
Panel-mounted version (including mounting frame)	6FM1 495-1BB20
WS 496 keyboard (with mating connectors for connectors X1 and X2)	
Desk-mounted version	6FM1 496-1AB20
Panel-mounted version (including mounting frame)	6FM1 496-1BB20
Mounting frame (spare part) for WS 495/WS 496	6FM1 496-3AA20
Compact operator panel (with mating connectors for connectors X1 and X2)	
12" monochrom monitor	6FM1 496-4CA20
12" colour monitor	6FM1 496-4BA20
14" colour monitor	6FM1 496-4DA20
Function keyboard for compact operator panel with connection cable	6FM1 496-4KA20
Alpha keyboard for compact operator panel with connection cable	6FM1 496-4KB20
Monitors	
Monochrom monitor 31cm (12")	6FM1 496-2CA21
Colour monitor 31cm (12")	6FM1 496-2BA20
Colour monitor 36cm (14")	6FM1 496-2DA20

The keyboards and compact operator panels with the old order numbers (ending in -1AB00, -BB00, -4CA00 and -4DA00) are only fitted with parallel interfaces.

The basic design in brown (ending in ...00, ...10 and ...11) was replaced by the colour anthracite (ending in ...20).

Accessories	Order No.
Set of legends for function keyboard (25 pieces)	6FM1 496-4EA00
Set of connectors for operator interface system, consisting of: 1 sub. D connector 15-pole (female) 1 sub. D connector 25-pole (female)	6FM1 490-8AA00
Panel screen for 12" monitor	
for colour monitor	6FM1 496-3BA20
for monochrome monitor	6FM1 496-3BA20
Panel screen for 14" colour monitor	6FM1 496-3DA20

6.2 Distribution unit

Unit	Order No.
Basic unit with mounting kit (always required)	6FM1 495-5AA00
Distribution module for 4-wire lines	6FM1 495-5AB00
Distribution module for RGB/BAS video signals	6FM1 495-5AC00

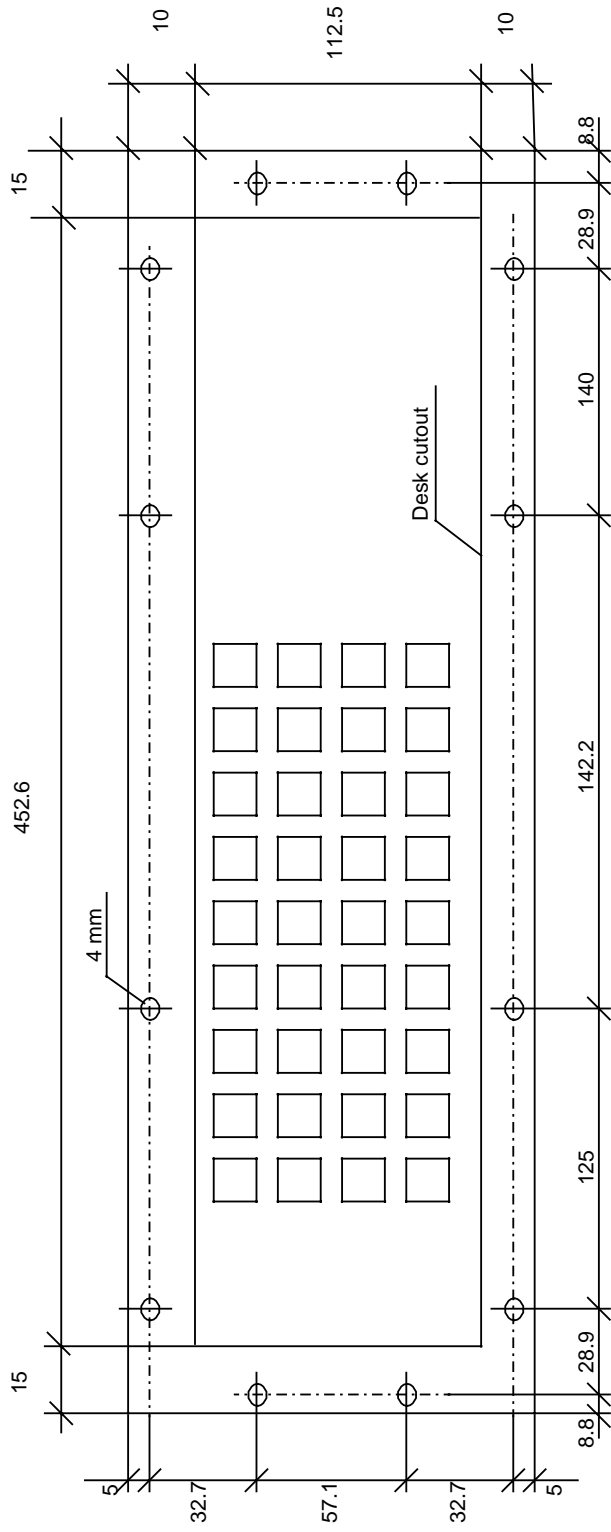
6.3 Cables

Connection cable	Max. standard length	Order No.
From WS 495/WS 496 / operator panel to WF 470 (serial interface) Length 2 m Length 5 m Length 10 m Length 18 m Length 25 m Length 35 m Length 50 m Length 60 m Special lengths	60 m	6FM1 490-1DA00 6FM1 490-1DB00 6FM1 490-1DC00 6FM1 490-1DD00 6FM1 490-1DE00 6FM1 490-1DF00 6FM1 490-1DG00 6FM1 490-1DH00 6FM1 490-1DZ00
From function/alpha keyboard to compact operator panel Length 0.5 m Length 1.0 m	1 m	6FM1 490-4AS00 6FM1 490-4AT00
From WF 470 to distribution unit X7 to X9 to PG 675/PG 685 Length 2 m Length 5 m Length 10 m Length 18 m Length 35 m Sonderlänge	35 m	6FM1 490-1BA00 6FM1 490-1BB00 6FM1 490-1BC00 6FM1 490-1BD00 6FM1 490-1BF00 6FM1 490-1BZ00
From PG-Anschaltung AS 511 to distribution X6 Length 3.2 m Length 5.0 m Length 10.0 m	100 m	6ES5 731-0BD20 6ES5 731-0BF20 6ES5 731-0CB20 <i>see catalog ST 54.1</i>
From SIMATIC S5-115U /135U/155U to distribution X7 bis X9	35 m	<i>see catalog ST 54.1</i>

The user has to provide the cables from the operator panel (connector X1 or X2) to the SIMATIC S5 I/O modules.

Monitor cable	Max. standard length	Order No.
From WF 470 (colour version) to compact operator panel (12" or 14") or 12" or 14" monitor or distribution unit Length 2 m Length 5 m Length 10 m Length 18 m Length 25 m Length 35 m Length 50 m Length 60 m Special lengths	60 m	6FM1 490-3BA00 6FM1 490-3BB00 6FM1 490-3BC00 6FM1 490-3BD00 6FM1 490-3BE00 6FM1 490-3BF00 6FM1 490-3BG00 6FM1 490-3BH00 6FM1 490-3BZ00
From 14" compact operator panel or 14" monitor or distribution unit to 14" compact operator panel or 14" monitor or distribution unit Length 2 m Length 5 m Length 10 m Length 18 m Length 35 m Special lengths	35 m	6FM1 490-3CA00 6FM1 490-3CB00 6FM1 490-3CC00 6FM1 490-3CD00 6FM1 490-3CF00 6FM1 490-3CZ00
From WF 470 (monochrome) to 12" compact operator panel or 12" monochrome monitor Length 2 m Length 5 m Length 10 m Length 18 m Length 25 m Length 35 m Length 50 m Length 60 m Special lengths	60 m	6FM1 490-3DA00 6FM1 490-3DB00 6FM1 490-3DC00 6FM1 490-3DD00 6FM1 490-3DE00 6FM1 490-3DF00 6FM1 490-3DG00 6FM1 490-3DH00 6FM1 490-3DZ00
From WF 470 (monochrome) to 12" monitor (C 79 145-A3033-A3) Length 2 m Length 5 m Length 10 m Length 18 m Length 25 m Length 35 m Length 50 m Length 60 m Special lengths	60 m	6FM1 490-3EA00 6FM1 490-3EB00 6FM1 490-3EC00 6FM1 490-3ED00 6FM1 490-3EE00 6FM1 490-3EF00 6FM1 490-3EG00 6FM1 490-3EH00 6FM1 490-3EZ00

Monitor cable	Max. standard length	Order No.
From WF 470 to TTL-Monitor Length 2 m	2 m	6FM1 490-3AA00
Printer cable	Max. standard length	Order No.
TTY SST Length 2 m Length 5 m Length 10 m Length 18 m Length 25 m Length 35 m Special lengths	35 m	6FM1 490-1CA00 6FM1 490-1CB00 6FM1 490-1CC00 6FM1 490-1CD00 6FM1 490-1CE00 6FM1 490-1CF00 6FM1 490-1CZ00
V.24 Length 5 m	5 m	6FM1 490-2CB00



Material thickness: 3 mm

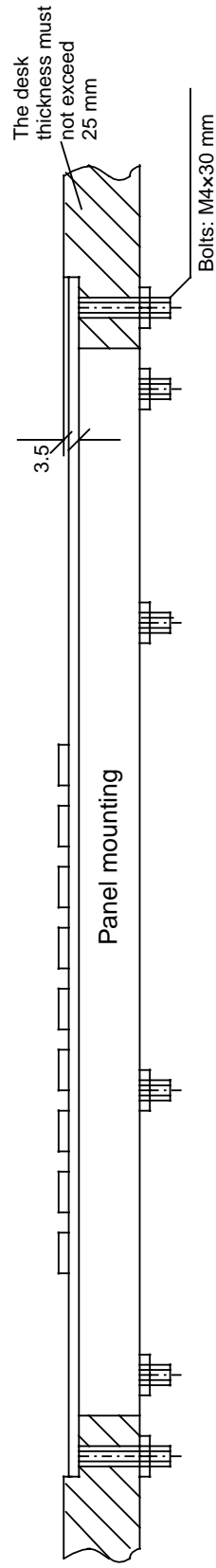
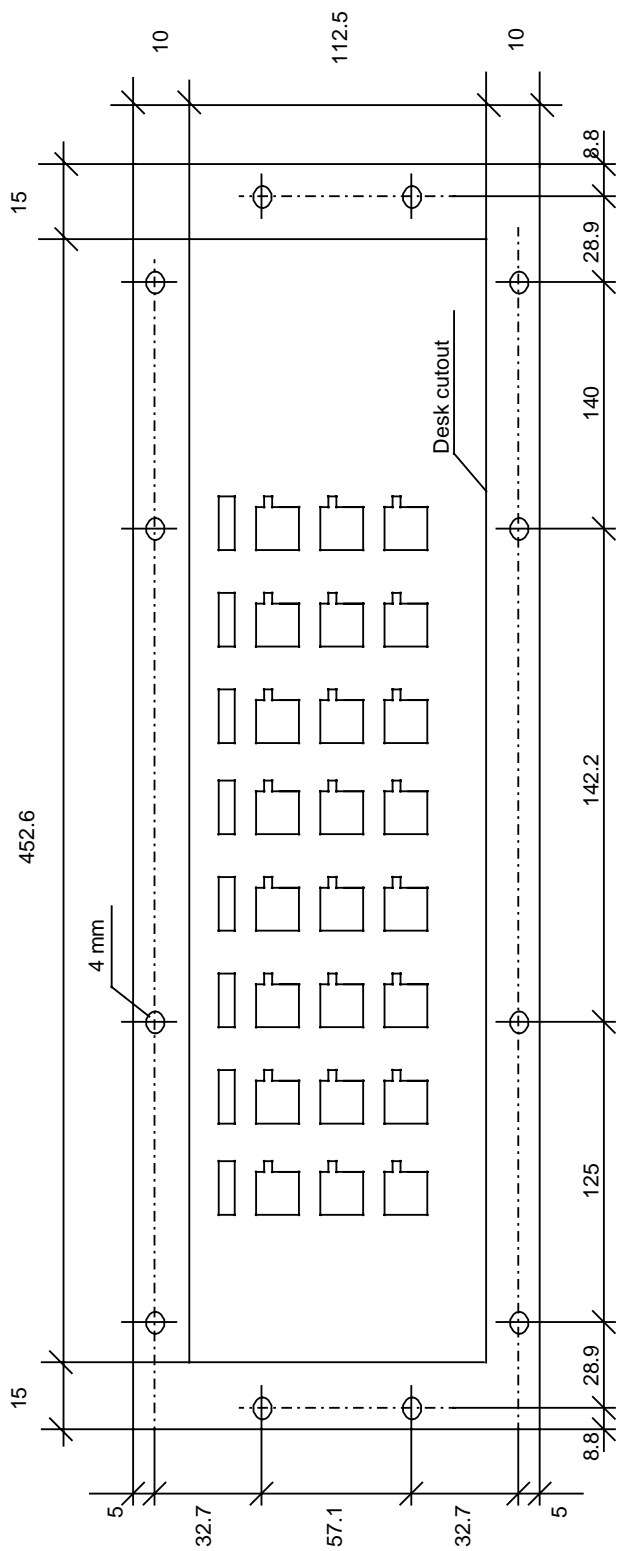


Fig. 5.5 Mounting dimensions of alpha keyboard



Material thickness: 3 mm

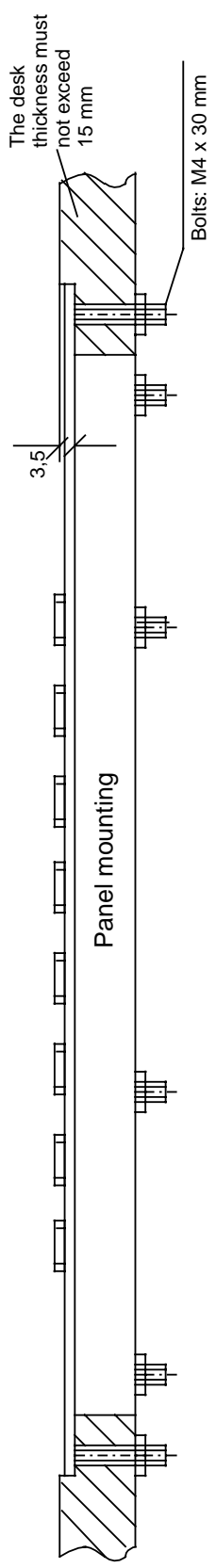


Fig. 5.6 Mounting dimensions of function keyboard

Siemens AG

AUT V260
Postfach 4848
D-90327 Nürnberg
Fed. Rep. of Germany

Suggestions/Corrections

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Operator Interface System

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