Operator units FED, Front End Display

FESTO

- **Display resolutions from 120 x 32 ... 1024 x 768 pixels**

- **Variants with text-based monochrome display and colour touchscreen**

- **Variants with integrated web browser**

- **Interfaces for PLC, PC, printer and Ethernet**

- **Simple designing with WYSIWYG editors**

- **Mains-independent real-time clock**

Operator units FED, Front End Display
Key features

Electronic control systems
Front End Controllers

7.1

Multifunctional in use

FED human-machine interfaces simplify the control of automation tasks at field level and set new standards in functionality and integration.

Whether for single- or multi-axis control systems in handling technology or process automation, the FED Front End Display is the optimum solution.

FED-40 to FED-90:
The semi-graphical display of process values makes them easier to read. Straightforward designing of human-machine dialogues using the FED Designer programming tool supplied.

FED-300 to FED-5010:
Graphics-capable for maximum flexibility when displaying processes and data. Straightforward designing of human-machine dialogues using the FED Designer programming tool supplied. With integrated web features that support the use of standards. Also with VipWin for convenient visualisation.

Text-based Front End Displays FED-40 to FED-90

The FED-40 and FED-60 versions complement the proven FED-50 and FED-90 for simple dialogues using 4-line text display and operating buttons whether via a serial, fieldbus or Ethernet connection – the text panels of the FED series are 100% compatible with Festo controllers.

The following functionalities are available depending on the variant:
- Serial interface (FED-40 to FED-90), optional Ethernet for use in a network (not with FED-40)
- Battery backup of the alarm and event data (not with FED-40)
- FED Designer graphical design tool included

- No parameterisation required; the software contains the controller data and detects the display
- Simple graphics possible, enabling scalable font size and simple representation of pictograms and bar charts
- Software for uploading projects
- Recipe handling
- Simple data acquisition

- Generous program memory
- Real-time clock (not with FED-40)
- Printer port (FED-90)
- Password protection
- Alarm handling
- Keypad can be easily programmed using macros
- Multilingual projects possible
- Importing and exporting of texts for translation

FED-40: the entry-level model

A serial connection is established with the controller. Operation is by means of four freely programmable function keys and seven system keys.

FED-50: fieldbus-capable

The FED-50 offers the functions of the FED-40 and can additionally be extended with an Ethernet or fieldbus interface. A real-time clock is standard on the FED-50 and higher.

FED-60: 10-key pad included

In addition to the function and system keys, the FED-60 also features a 10-key pad. The real-time clock is standard here also and a fieldbus interface can be optionally retrofitted.

FED-90: all-inclusive

The larger size in comparison with the FED-60 means the FED-90 can offer twelve function keys and 23 system keys. A printer interface permits direct output of the alarm and/or event list.

Operator units FED, Front End Display

Key features

FESTO

Front End Displays with touchscreen FED-300 to FED-5010

The touchscreen displays FED-300 to FED-5010 with graphical user interface extend the proven text-based and key pad-equipped Front End Displays FED-40 to FED-90 to include touch-sensitive displays in sizes from 3.8"

to 15". As alternatives to CPX handhelds and integrated displays, these Front End Displays provide a freely definable user interface.

When used as browser or SCADA terminals, the new large-size touchscreen displays FED-710 to FED-5010 enable several subprocesses to be controlled on one display. VipWin software allows the functionality of the

Front End Displays to even be extended to a control and instrumentation system. Festo software tools such as VipWin or FST significantly reduce the time spent on designing.

Functions

- Can be connected to all FEC® units, serially or via Ethernet
- Trend display
- Recipe handling
- Multilingual projects and language changeover during the runtime
- Software enables uploading of projects
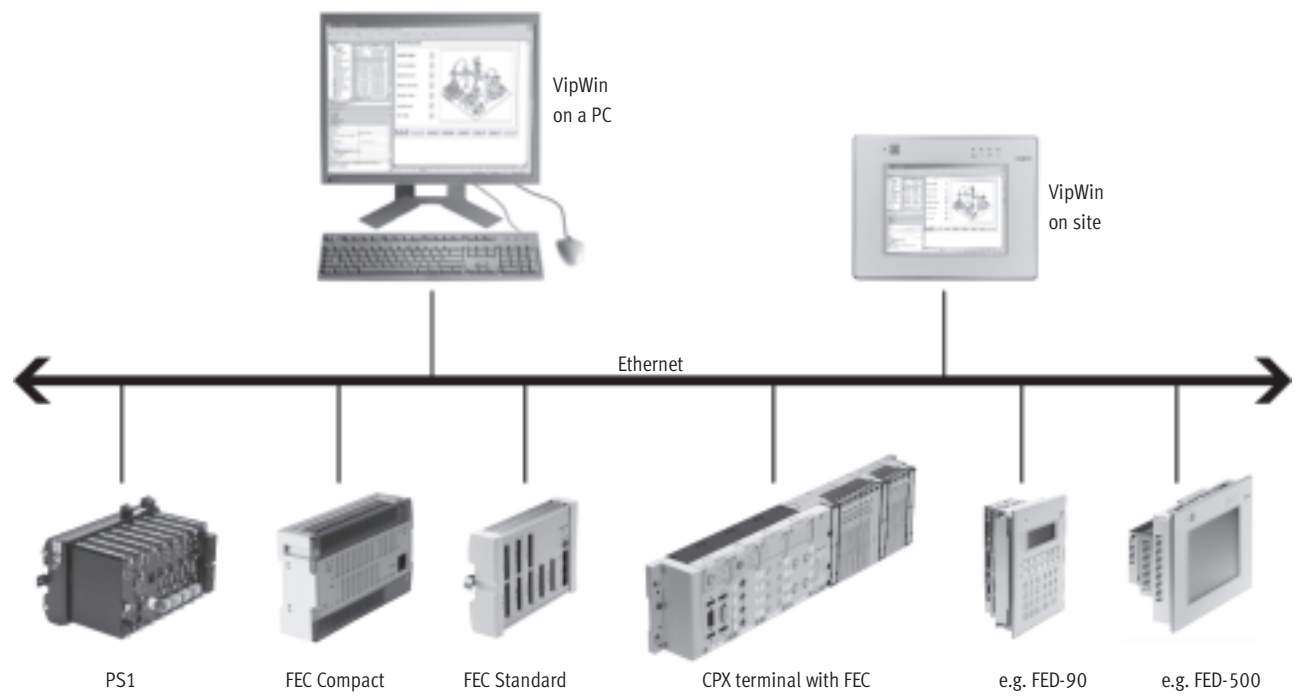- Importing and exporting of texts for translation

Designing

- Via Designer software for simple visualisation tasks
- As a client/server system: terminal receives data from web servers connected to it and displays this data using the integrated browser functionality
- As a VipWin terminal: integrated hardware and software package for a cost-effective solution to more comprehensive visualisation tasks within the system

Key features at a glance

- Quicker and easier commissioning; no programming required in the PLC program
- Convenient FED Designer WYSIWYG design tool
- No duplicate work thanks to importing of variable declarations (allocation list) from the control software
- Can also be used with Festo FEC® units in a network by means of Ethernet
- Graphics capability offers maximum flexibility when displaying processes and data

- Shorter designing periods thanks to reusability of objects (libraries containing graphical elements)
- Thanks to generous memory, almost unlimited number of graphics and texts can be displayed
- Display of complex processes is possible thanks to an unlimited number of variables per page
- Simple logging of all data through integrated printer port
- Extremely sturdy thanks to a metal housing to facilitate use in tough environments

## The Front End Displays in the Festo controller landscape

VipWin
on a PC

VipWin
on site

Ethernet

PS1   FEC Compact   FEC Standard   CPX terminal with FEC   e.g. FED-90   e.g. FED-500

Operator units FED, Front End Display

Product range overview, type codes

FESTO

Type	Display resolution	Number of colours	Display size	Interfaces	➔ Page
Text-based					
FED-40	120x32 pixels	B/W	4x20 characters	PLC, PC	4 / 7.1-29
FED-50				PLC, PC, Ethernet[1]	
FED-60				PLC, PC, Ethernet[1]	
FED-90				PLC, PC, printer, Ethernet[1]	
Touchscreen					
FED-300	1/4 VGA, 320x240 pixels	256	3.5"	PLC, PC, Ethernet[1]	4 / 7.1-31
FED-301		B/W	3.8"		
FED-500		256	5.6"	PLC, PC, printer, Ethernet[1]	
FED-501		8 grey levels	5.6"		
FED-700	VGA, 640x480 pixels	64k	7.5"	PLC, PC, printer, Ethernet[2]	
FED-1000			10.4"		
FED-2000	SVGA, 800x600 pixels	64k	12.1"	PLC, PC, printer, Ethernet[2]	
FED-5000	XGA, 1024x768 pixels	64k	15"		
Touchscreen, with integrated web browser					
FED-710	VGA, 640x480 pixels	64k	7.5"	PLC, USB, printer, Ethernet[2]	4 / 7.1-34
FED-1010			10.4"		
FED-2010	SVGA, 800x600 pixels	64k	12.1"	PLC, USB, printer, Ethernet[2]	
FED-5010	XGA, 1024x768 pixels	64k	15"	PLC, USB, printer, Ethernet[2]	

1) 10 MBd optional
2) 10/100 MBd standard, 2nd 10 MBd interface optional

Type codes

FED	–	2010
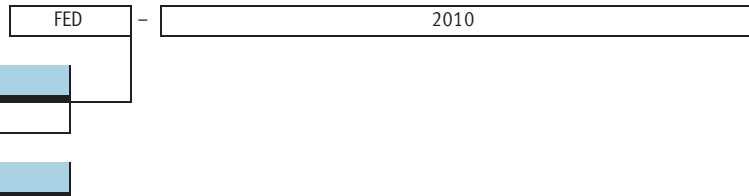
Function	
FED	Operator unit

Display size, equipment	
Text-based	
40	4x20 characters; equipment details ➔ Product range overview
50	and Technical data
60	
90	
Touchscreen	
300	3.5", 256 colours
301	3.8", B/W
500	5.6", 256 colours
501	5.6", 8 grey levels
700	7.5", 64k colours
1000	10.4", 64k colours
2000	12.1", 64k colours
5000	15", 64k colours
Touchscreen, with integrated web browser	
710	7.5", 64k colours
1010	10.4", 64k colours
2010	12.1", 64k colours
5010	15", 64k colours

Operator units FED, Front End Display

Technical data – Text-based

FESTO

Voltage
18 ... 30 V DC

Temperature range
0 ... 50 °C

General technical data		FED-40	FED-50	FED-60	FED-90
Display		Monochrome LCD with backlighting			
Display size		4x20 characters			
Display resolution		120x32 pixels			
Number of colours		–			
Number of function keys		4	4	9	12
Number of system keys		7	7	10	23
Number of user LEDs		5	5	10	13
Number of system LEDs		4	4	4	4
User memory		512 KB			
Recipe memory		–	16 KB	16 KB	16 KB
Event lists		–	256	256	256
Alarms		1,024			
Type of mounting		Front panel mounting			
Installation depth	[mm]	53	53	53	71
Max. front panel thickness	[mm]	5			

| Electrical data		FED-40	FED-50	FED-60	FED-90
Nominal operating voltage	[V DC]	24			
Operating voltage range	[V DC]	18 ... 30			
Current consumption at nominal operating voltage	[A]	0.25			0.3
AUX interface		–	Sub-D socket, 9-pin		
Printer interface		–	–	–	Sub-D socket, 15-pin, RS232
Ethernet interface		–	Optional, 10 MBd		
PC interface		Sub-D plug, 15-pin, RS232			Sub-D socket, 15-pin, RS232
Programming interface		9.6 kBd	9.6 ... 38.4 kBd		
Programming software		FED Designer 6.06 or higher			
PLC interface		Sub-D plug, 15-pin, RS232			
Backup battery		–	3 V / 270 mA lithium		
Real-time clock		–	Yes		
Accuracy of real-time clock		–	130 s/month		
Protection class		IP65 on the front face following installation into control panel, IP20 on the back			

Operating and environmental conditions		
Ambient temperature	[°C]	0 ... 50
Storage temperature	[°C]	−20 ... +70
Relative air humidity	[%]	5 ... 85, non-condensing
CE mark (see declaration of conformity)		In accordance with EU EMC directive
Certification		C-UL-US listed (HL)
		C tick

Operator units FED, Front End Display

Technical data – Text-based

FESTO

Weight [g]		FED-40	FED-50	FED-60	FED-90
Product weight	[g]	1,000	1,000	1,000	1,100

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

FED-40

FED-50/60
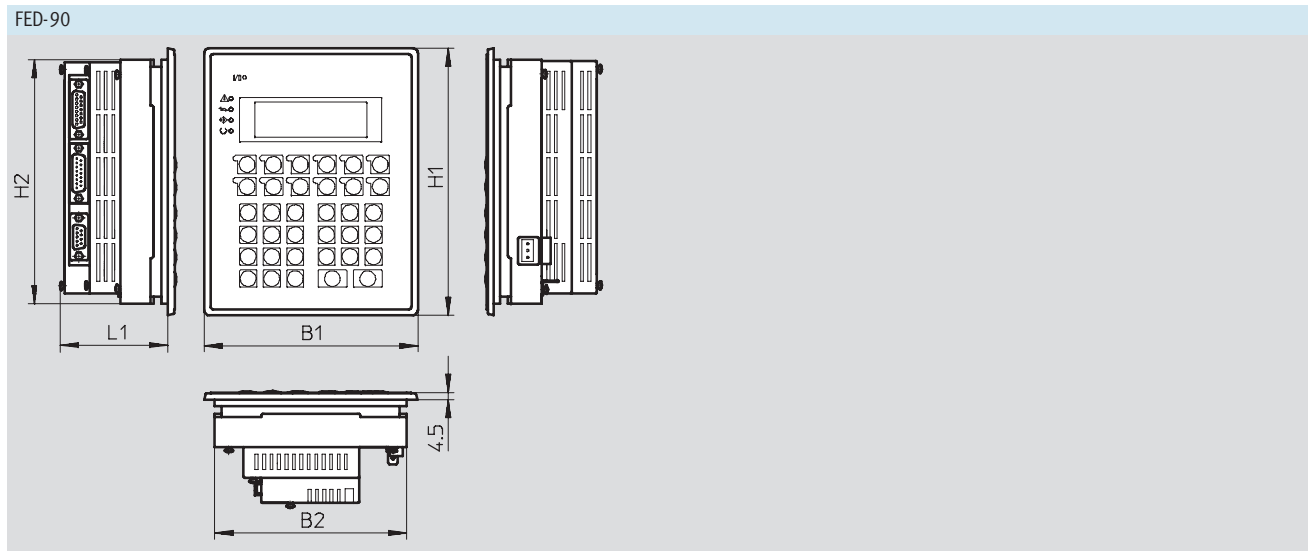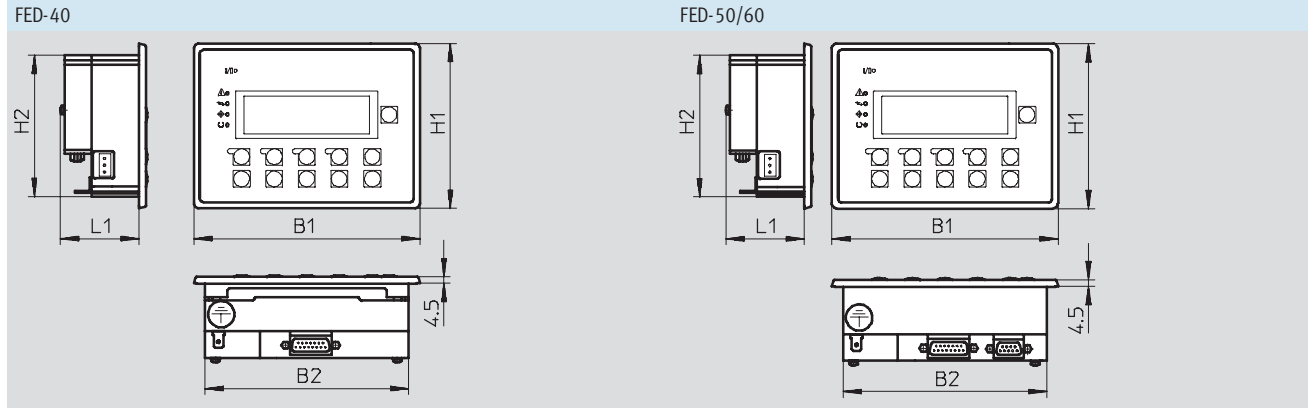
FED-90

Type	B1	B2	H1	H2	L1
FED-40	149	134	108.5	93.5	52.5
FED-50					
FED-60					
FED-90	140.6	126.6	176	161	71

| **Ordering data**						
Display resolution	Number of colours	Display size	Interfaces	Number of function/ system keys	Part No.	Type
120x32 pixels	B/W	4x20 characters	PLC, PC	4/7	**541 998**	**FED-40**
			PLC, PC, Ethernet[1]	4/7	**533 531**	**FED-50**
			PLC, PC, Ethernet[1]	9/10	**541 999**	**FED-60**
			PLC, PC, printer, Ethernet[1]	12/23	**533 532**	**FED-90**

1) 10 MBd optional

Operator units FED, Front End Display

Technical data – Touchscreen

FESTO

- Voltage
  18 … 30 V DC

- Temperature range
  0 … 50 °C
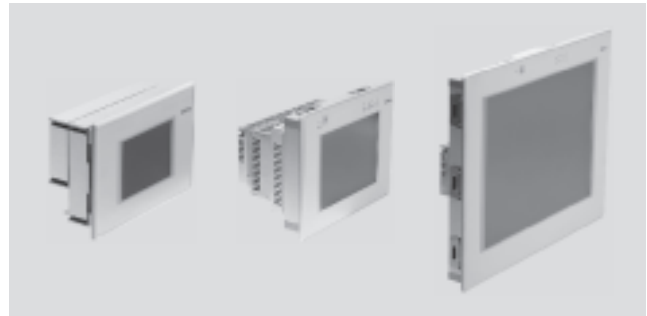
General technical data									
		FED-300	FED-301	FED-500	FED-501	FED-700	FED-1000	FED-2000	FED-5000
Type of display		Touchscreen							
Display		Colour TFT	Monochrome LCD	Colour STN	Monochrome LCD	Colour TFT			
Display size		3.5"	3.8"	5.6"	5.6"	7.5"	10.4"	12.1"	15"
Display resolution		1/4 VGA, 320x240 pixels				VGA, 640x480 pixels		SVGA, 800x600 pixels	XGA, 1024x768 pixels
Number of colours		256	B/W	256	8 grey levels	64k			
Number of function keys		–	1	1	1	1	1	1	1
Number of user LEDs		–	1	1	1	1	1	1	1
Number of system LEDs		4	4	4	4	4	4	4	4
User memory		1 MB	512 KB	32 MB					
Recipe memory		32 KB							
Event lists		256		1,024		1,024	1,024	1,024	1,024
Alarms		1,024							
Type of mounting		Front panel mounting							
Installation depth	[mm]	56	61	91	66	71	91	91	101
Max. front panel thickness	[mm]	5							

Electrical data									
		FED-300	FED-301	FED-500	FED-501	FED-700	FED-1000	FED-2000	FED-5000
Nominal operating voltage	[V DC]	24							
Operating voltage range	[V DC]	18 … 30							
Current consumption at nominal operating voltage	[A]	0.4		0.8	0.6	1.1	1.2	1.3	1.5
AUX interface		Sub-D socket, 9-pin							
Printer interface		–		Sub-D socket, 15-pin, RS232					
Ethernet interface		Optional, 10 MBd				RJ45, 10/100 MBd 2nd Ethernet interface optional, 10 MBd			
PC interface		Sub-D plug, 15-pin, RS232		Sub-D socket, 15-pin, RS232					
Programming interface		9.6 … 38.4 kBd							
Programming software		FED Designer 6.06 or higher							
PLC interface		Sub-D plug, 15-pin, RS232							
Backup battery		3 V / 270 mA lithium							
Real-time clock		Yes							
Accuracy of real-time clock		130 s/month							
Protection class		IP65 on the front face following installation into control panel, IP20 on the back							

Operator units FED, Front End Display

FESTO

Technical data – Touchscreen

Operating and environmental conditions									
		FED-300	FED-301	FED-500	FED-501	FED-700	FED-1000	FED-2000	FED-5000
Ambient temperature	[°C]	0 … 50		0 … 45	0 … 50	0 … 45			
Storage temperature	[°C]	−20 … +70							
Relative air humidity	[%]	5 … 85, non-condensing							
CE mark (see declaration of conformity)		In accordance with EU EMC directive							
Certification		C-UL-US listed (OL)		C-UL-US listed (HL)		C-UL-US listed (OL)	C-UL-US listed (HL)	C-UL-US listed (HL)	C-UL-US listed (OL)
		C tick							

Weight [g]									
		FED-300	FED-301	FED-500	FED-501	FED-700	FED-1000	FED-2000	FED-5000
Product weight	[g]	1,000		1,400		1,600	2,300	2,800	3,800

Dimensions   Download CAD data ➔ **www.festo.com/en/engineering**

FED-300/301
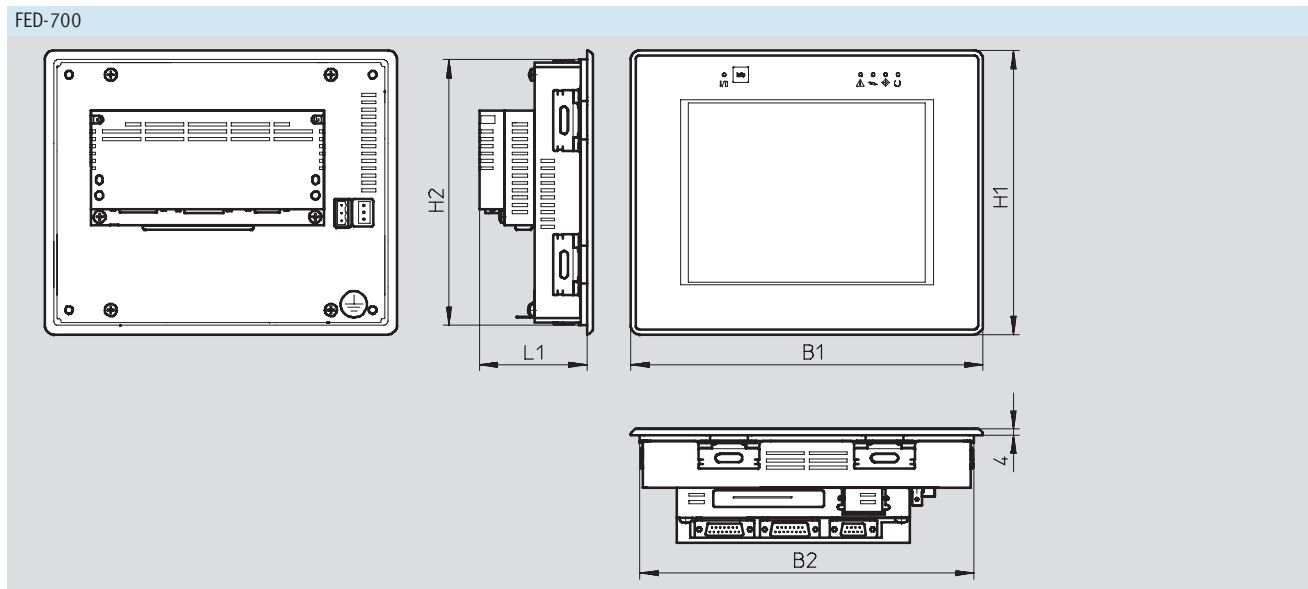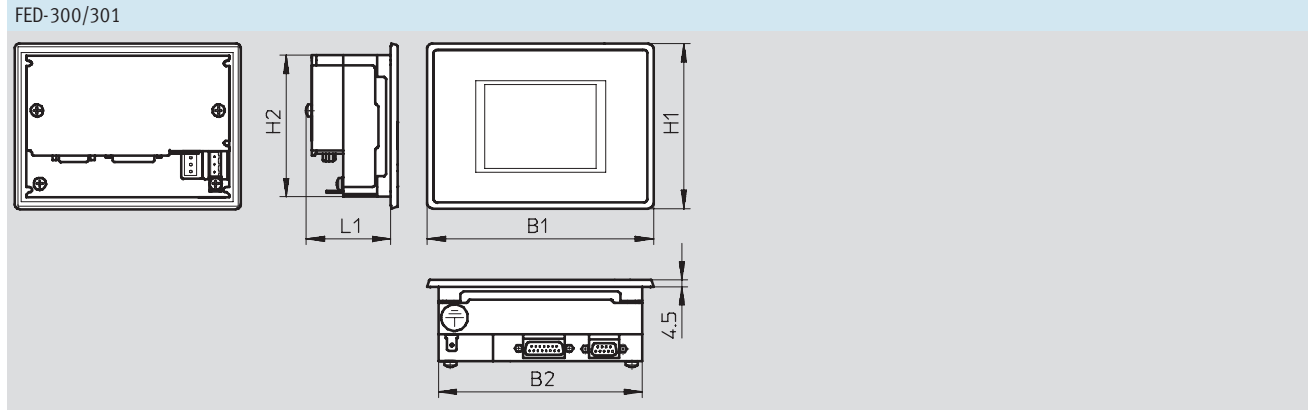
FED-700

Type	B1	B2	H1	H2	L1
FED-300	149	134	108.5	93.5	56
FED-301					60.5
FED-700	232	200	187	175	71

Operator units FED, Front End Display

Technical data – Touchscreen

FESTO

Dimensions   Download CAD data ➔ **www.festo.com/en/engineering**

FED-500/501/1000/2000/5000
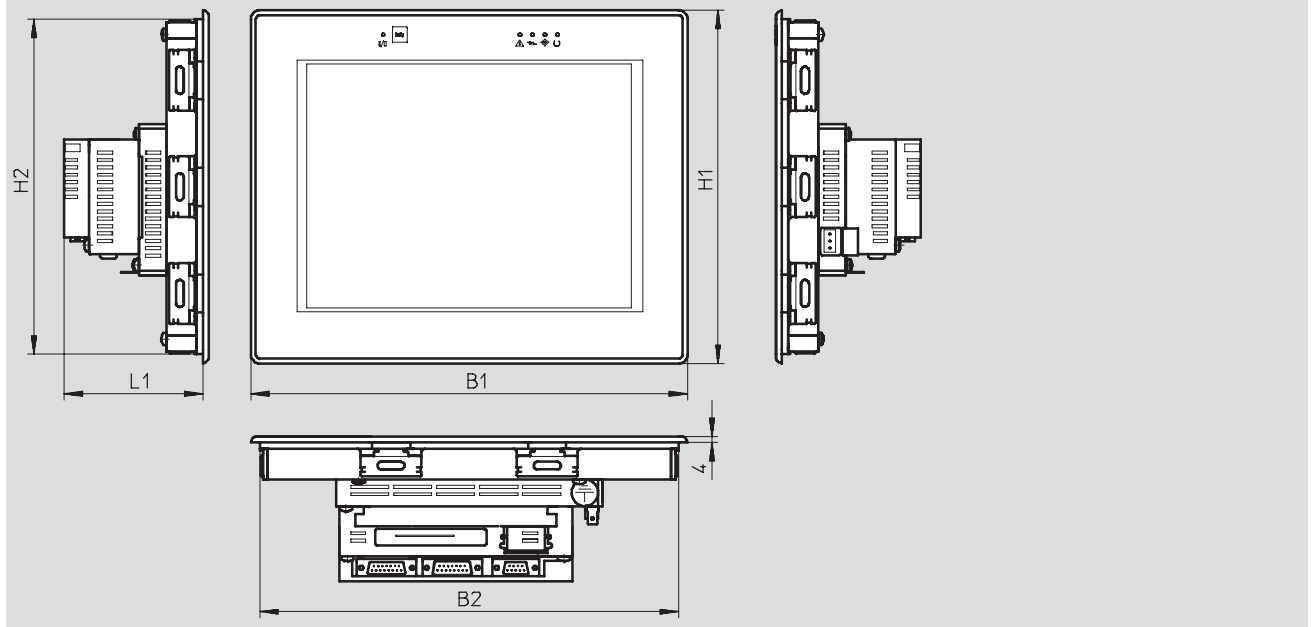
Type	B1	B2	H1	H2	L1
FED-500	187	175	147	135	90.5
FED-501					66
FED-1000	287	275	232	220	91
FED-2000	337	325	267	255	91
FED-5000	392	380	307	295	101

Ordering data						
Display resolution	Number of colours	Display size	Interfaces	Number of function/ system keys	Part No.	Type
1/4 VGA, 320x240 pixels	256	3.5"	PLC, PC, Ethernet[1]	–/–	**543 439**	**FED-300**
	B/W	3.8"		–/–	**543 438**	**FED-301**
	256	5.6"	PLC, PC, printer, Ethernet[1]	1/–	**543 441**	**FED-500**
	8 grey levels	5.6"		1/–	**543 440**	**FED-501**
VGA, 640x480 pixels	64k	7.5"	PLC, PC, printer, Ethernet[2]	1/–	**543 442**	**FED-700**
		10.4"		1/–	**543 515**	**FED-1000**
SVGA, 800x600 pixels	64k	12.1"	PLC, PC, printer, Ethernet[2]	1/–	**543 444**	**FED-2000**
XGA, 1024x768 pixels	64k	15"		1/–	**543 447**	**FED-5000**

1) 10 MBd optional
2) 10/100 MBd standard, 2nd 10 MBd interface optional

Operator units FED, Front End Display

Technical data – Touchscreen, with integrated web browser

FESTO

- ⌐ Voltage
  18 ... 30 V DC

- ⌐ Temperature range
  0 ... 45 °C
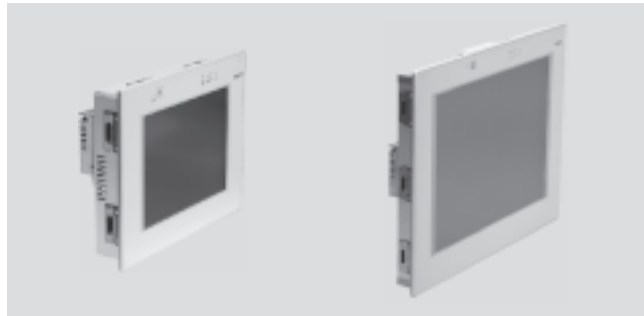
General technical data		FED-710	FED-1010	FED-2010	FED-5010
Type of display		Touchscreen			
Display		Colour TFT			
Display size		7.5"	10.4"	12.1"	15"
Display resolution		VGA, 640x480 pixels		SVGA, 800x600 pixels	XGA, 1024x768 pixels
Number of colours		64k			
User memory		32 MB			
Type of mounting		Front panel mounting			
Installation depth	[mm]	71	91	91	101
Max. front panel thickness	[mm]	5			

| Electrical data		FED-710	FED-1010	FED-2010	FED-5010
Nominal operating voltage	[V DC]	24			
Operating voltage range	[V DC]	18 ... 30			
Current consumption at nominal operating voltage	[A]	1.1	1.2	1.3	1.5
AUX interface		Sub-D socket, 9-pin			
Printer interface		Sub-D socket, 15-pin, RS232			
Ethernet interface		RJ45 10/100 MBd			
		2nd Ethernet interface optional, 10 MBd			
PLC interface		Sub-D plug, 15-pin, RS232			
USB interface		Yes			
Backup battery		3 V / 270 mA lithium			
Real-time clock		Yes			
Accuracy of real-time clock		130 s/month			
Protection class		IP65 on the front face following installation into control panel, IP20 on the back			

Operating and environmental conditions		FED-710	FED-1010	FED-2010	FED-5010
Ambient temperature	[°C]	0 ... 45			
Storage temperature	[°C]	−20 ... +70			
Relative air humidity	[%]	5 ... 85, non-condensing			
CE mark (see declaration of conformity)		In accordance with EU EMC directive			
Certification		C-UL-US listed (OL)	C-UL-US listed (HL)	C-UL-US listed (HL)	C-UL-US listed (OL)
		C tick			

Weight [g]		FED-700	FED-1000	FED-2000	FED-5000
Product weight	[g]	1,600	2,250	2,850	3,800

Operator units FED, Front End Display
Technical data – Touchscreen, with integrated web browser

FESTO

Dimensions Download CAD data ➔ **www.festo.com/en/engineering**

FED-710

FED-1010/2010/5010
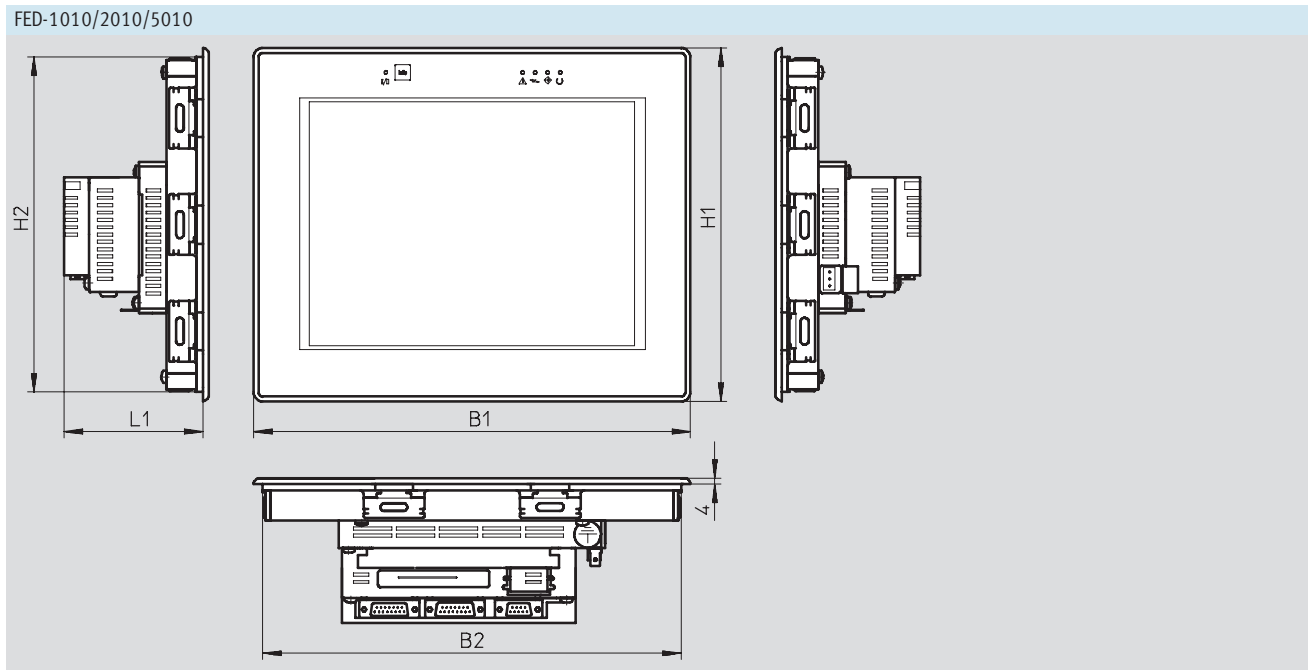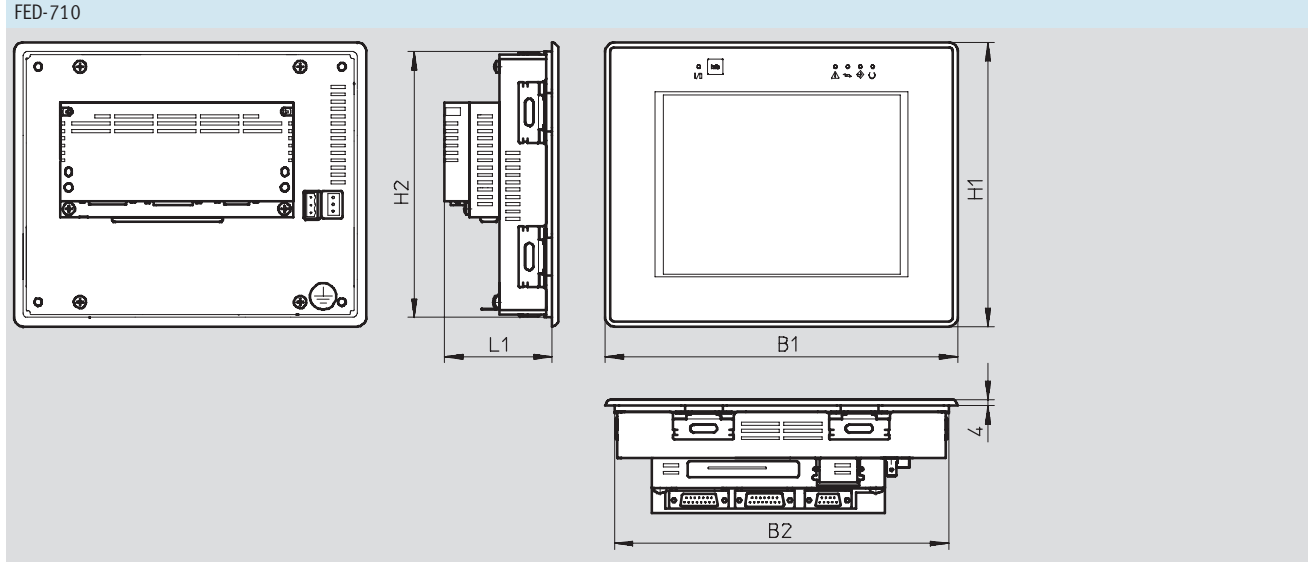
Type	B1	B2	H1	H2	L1
FED-710	232	200	187	175	71
FED-1010	287	275	232	220	91
FED-2010	337	325	267	255	91
FED-5010	392	380	307	295	101

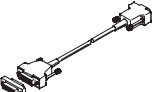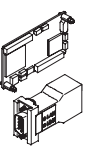# Operator units FED, Front End Display
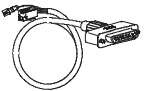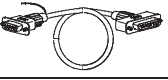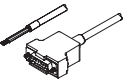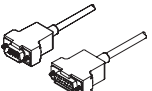
Technical data

FESTO

Ordering data

Display resolution	Number of colours	Display size	Interfaces	Number of function/ system keys	Part No.	Type
VGA, 640x480 pixels	64k	7.5"	PLC, USB, printer, Ethernet[1]	–/–	**543 443**	**FED-710**
		10.4"		–/–	**543 516**	**FED-1010**
SVGA, 800x600 pixels	64k	12.1"	PLC, USB, printer, Ethernet[1]	–/–	**543 445**	**FED-2010**
XGA, 1024x768 pixels	64k	15"	PLC, USB, printer, Ethernet[1]	–/–	**543 448**	**FED-5010**

1) 10/100 MBd standard, 2nd 10 MBd interface optional

Operator units FED, Front End Display

Accessories

FESTO

Ordering data			
	Description	Part No.	Type
	FEC (RJ11, COM) to FED cable	189 429	**FEC-KBG3**
	FEC (RJ12, COM and EXT) to FED cable	189 432	**FEC-KBG6**
	CPX-FEC to FED cable, 5 m long, for pairing with plug FBS-SUB-9-GS-1X9POL-B	539 642	**FEC-KBG7**
	Plug for pairing with cable FEC-KBG7	534 497	**FBS-SUB-9-GS-1X9POL-B**
	CPX-FEC to FED cable, 2.5 m long	539 643	**FEC-KBG8**
	Programming cable	533 534	**FEDZ-PC**
	Fieldbus interface, Ethernet interface module for FED (FST controller software)	533 533	**FEDZ-IET**
	Fieldbus interface, Ethernet TCP interface module for FED (CoDeSys controller software)	543 450	**FEDZ-IET TCP**
	Memory	543 514	**FEDZ-MEM32**