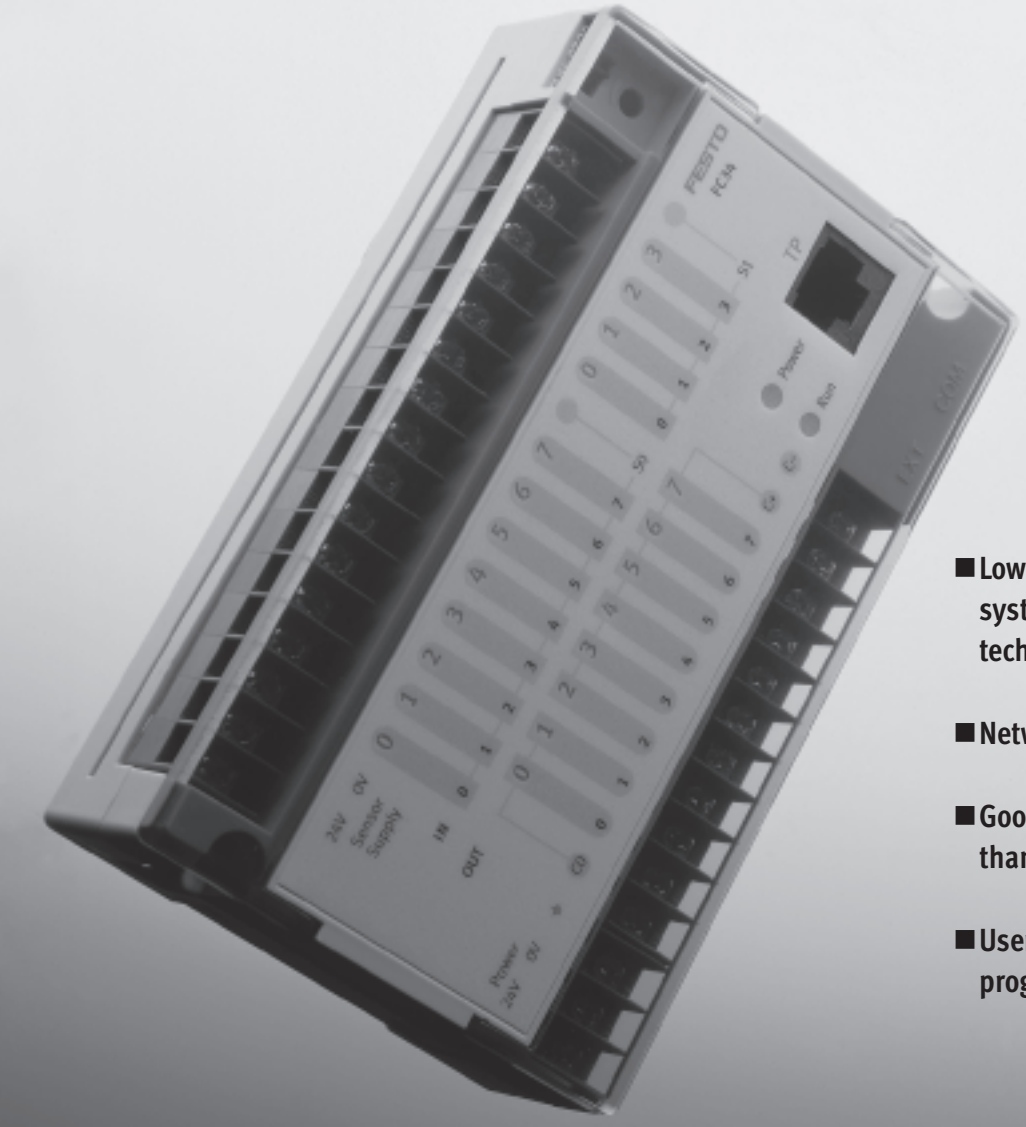


- Low-cost compact control system using the latest technology
- Network connection optional
- Good communication capability thanks to 2 serial interfaces
- User-oriented software – programming the way you think

Controllers FEC, Compact

Key features

The networkable compact control system

The FEC Compact is more than just a small, low cost control system. The FEC Compact proves that low cost can be combined with the latest technology and an extensive range of functions.

The basic equipment of the FEC Compact is typical of that used in any small, basic control system:

- 20 digital inputs/outputs for 24 V DC.
- 2 serial interfaces in every FEC Compact variant ensure good communication ability.
- The fast counter means it can be used for simple positioning tasks.
- The 110/230 V AC versions offer the flexibility for working without 24 V power supply. The inputs can be used with positive or negative switching, while the outputs can, of course, operate with AC or DC.

A mini control system does not just need to be small; it has to be able to function as part of an integrated system. This is effected in the FEC Compact with a network connection. This solution gives you all of the advantages of distributed automation technology at low cost. This is what we mean by flexibility in a low cost control system.

Controllers FEC, Compact

Key features

Hardware

The FEC Compact has a clip for a top-hat rail and corner holes for bolt-mounting using a mounting plate.

Power supply

The FEC Compact is flexible; you can choose from 24 V DC versions or 110/230 V AC versions. The input signals always use 24 V DC. In the AC versions, the power supply for the sensors is integrated in the controller.

Inputs

The inputs of the FEC Compact can be used as PNP and NPN inputs. The input selection is made by setting the connection to 0 V (positive switching signal) or +24 V DC (negative switching signal).

Outputs

Every FEC Compact has relay outputs, which can operate up to 230 V AC. The FEC-FC2... modules have 8 relay outputs. The FEC-FC3... modules have 2 relay outputs and 6 transistor outputs. The FEC Compact therefore offers excellent flexibility for output selection.

Serial interfaces

Every FEC Compact is equipped with two serial interfaces – COM and EXT. The COM interface is generally used for programming, while the EXT interface can be used for an MMI device, an extension, a modem or other devices with a serial interface.

Ethernet interface

The FEC Compact versions with an Ethernet interface incorporate an Ethernet 10 BaseT interface with an RJ45 connection and a data transmission rate of 10 Mbits/s. A combined “Link/Active” LED indicates the connection status. The FEC Compact supports data communication and programming/ troubleshooting via the Ethernet interface.

Programming

The FEC Compact is programmed using FST.
FST is a unique programming language which is rich in tradition and very easy to use, allowing “programming the way you think”:
IF ... THEN ... OTHERWISE
FST also supports STEP operation for sequence programming. FST can be used for programming via Ethernet; a web server is also available.

Programming with FST

Programming the way you think

How do we describe a machine?
"When a workpiece reaches here, this cylinder should advance."
How does the software interpret this?

```
IF                  I0.0
THEN  SET           Q0.0
```

Or does your machine work through a sequence step by step?
"First, this cylinder must advance and stop the workpiece, and then the workpiece must be clamped, and then finally..."

```
STEP Aplus
 IF                 I0.0
 THEN  SET          Q0.0

STEP Close
 IF                 I0.2
 THEN  RESET        Q0.2
       SET          Q0.3
STEP More
```

Programming just couldn't be easier.

How, for example, can we sub-divide a task?

Program 0:	Organisation
Program 1:	Set-up program
Program 2:	Automation program
Program 3:	Fault monitoring
Program 4:	Manual operation
.	
.	
.	
Program 63:	Troubleshooting program

Timers and counters?
Each CPU has 256 timers and 256 counters.

How does one controller communicate with another?
Every controller with Ethernet can send and receive data from every other controller within a network – no matter whether this data relates to inputs, outputs, flags or registers.

Central programming of distributed controllers
Every controller within a network can be programmed from any desired network interface.

A controller on the World Wide Web
FST incorporates a web server – the Internet and the world of automation meet.

Controllers FEC, Compact

Product range overview

The FEC Compact

FEC Compact
Low cost control system with
12 digital inputs
and 8 digital outputs with
2 serial interfaces
Programming with FST

FEC-FC3...
12 inputs
2 relay and 6 transistor outputs
2x serial TTL

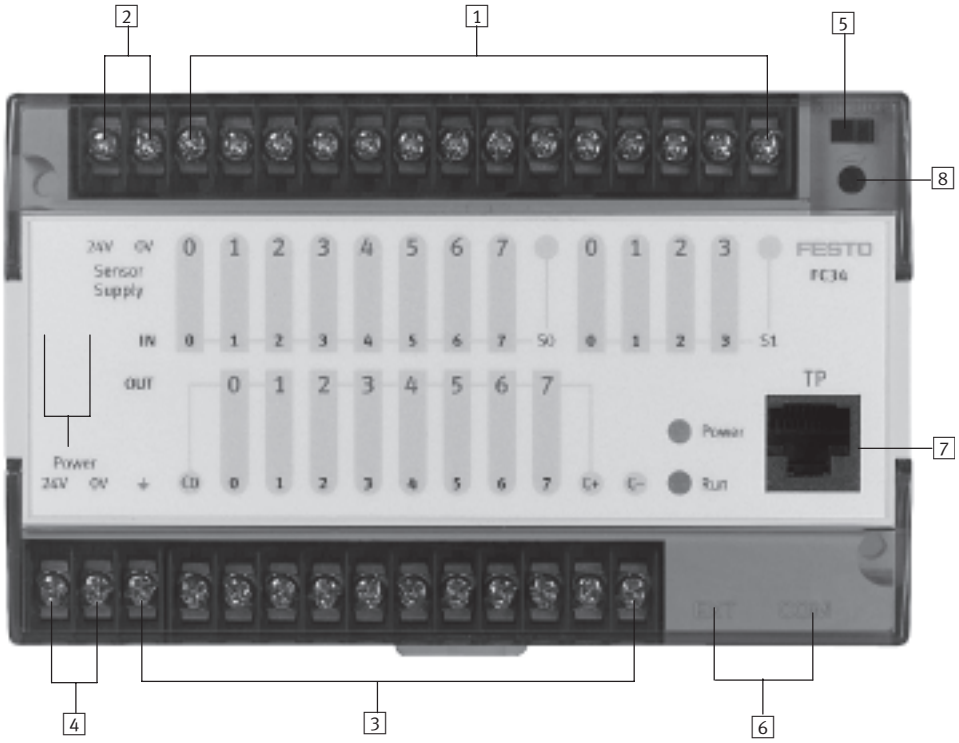
FEC-FC30-FST
12 digital inputs

FEC-FC34-FST
12 digital inputs
Ethernet 10BaseT

Controllers FEC, Compact

Product range overview

The principle of the FEC Compact



1 12 digital inputs
2 Separate power supply to sensors
3 8 digital outputs
4 Power supply
5 RUN/STOP switch
6 2 serial interfaces
7 Optional Ethernet
8 Trimmer, resolution 0 ... 63

General technical data		
	FEC-FC30-FST	FEC-FC34-FST
Weight approx.	230 g	230 g
Max. operating temperature (IEC 68-2-1/2)	0 ...55°C	
Max. transport and storage temperature (IEC 68-2-1/2)	–25 ...+75°C	
Rel. humidity (IEC 68-2-1/2)	0 ... 95% (non condensing)	
Protection class (IEC 60529)	IP20	
Degree of protection	Degree of protection III. Power pack in accordance with IEC 742 / EN60742 / VDE0551 / PELV with at least 4 kV insulation resistance or switched-mode power supplies with safety isolation as defined by EN 60950/VDE 0805 are required	
Certification	C-Tick	
Supply voltage	24 V DC	24 V DC

Digital inputs		
	FEC-FC30-FST	FEC-FC34-FST
Number	12	
Number of above usable as high-speed inputs (max. 2 kHz)	2	
Number of above usable as incremental encoders	2	
Input voltage/current	24 V DC, typical 7 mA	
Connection type	Positive or negative switching (PNP or NPN)	
Nominal value for TRUE	15 V DC min. (for positive switching)	
Nominal value for FALSE	5 V DC max. (for positive switching)	
Input signal delay	Typical 5 ms	
Electrical isolation	Yes, via optocoupler	
Perm. length of connecting cable	Max. 30 m	
Status display via LED	Yes, green (via electrical isolation)	

Digital outputs		
	FEC-FC30-FST	FEC-FC34-FST
Number	8	
Contacts	2 x relay 6 x transistor	
Relay features		
Maximum voltage	250 V AC, 30 V DC	
Maximum peak current	5 A for 100,000 switching cycles	
Maximum switching frequency	25 Hz	
Solid state relay features		
Maximum voltage	250 V AC, 125 V DC	
Maximum peak current	600 mA	
Service life	100,000 hours	
Maximum switching frequency	10 Hz	
Transistor features		
Voltage	24 V DC	
Current	600 mA	
Short circuit proof	Yes	
Overload-proof	Yes	
Proof against lamp resistances	Yes	
Service life	100,000 hours	
Maximum switching frequency	1 kHz	

Control options		
	FEC-FC30-FST	FEC-FC34-FST
RUN/STOP switch	1	
Trimmer	1, resolution 0 ... 63	
RUN LED	Three colours: green, orange, red	
Power LED	Green	

Serial interfaces		
	FEC-FC30-FST	FEC-FC34-FST
Number	2	
Connection	RJ12	
Designation	EXT and COM	
EXT interface		
Features	Serial, asynchronous, TTL level, no electrical isolation, RJ12 connector	
Use as RS232C	SM14 or SM15 required	
Terminal assignment SM14/15	Transmit, receive, RTS, CTS	
Use as RS485	SM35 required	
Use as universal interface: EXT	300 ... 115,000 bits/s, 7N1, 7E1, 7O1, 8N1, 8E1, 8O1	
COM interface		
Features	Serial, asynchronous, TTL level, no electrical isolation, RJ12 connector	
Use as RS232C	SM14 or SM15 required	
Terminal assignment	Transmit, receive, RTS, CTS	
Use as RS485	SM35 required	
Use as programming interface	9600 bits/s, 8/N/1	
Use as universal interface: COM	300 ... 9600 bits/s, 7N1, 7E1, 7O1, 8N1, 8E1, 8O1	

Ethernet		
	FEC-FC30-FST	FEC-FC34-FST
Number	0	1
Bus interface	–	IEEE802.3 (10BaseT)
Data transmission speed	–	10 Mbits/s
Connector	–	RJ45
Supported protocols	–	TCP/IP, EasyIP, http and ftp (FST only)
OPC server	–	On request
DDE server	–	Yes for EasyIP, also for RS232 with FST

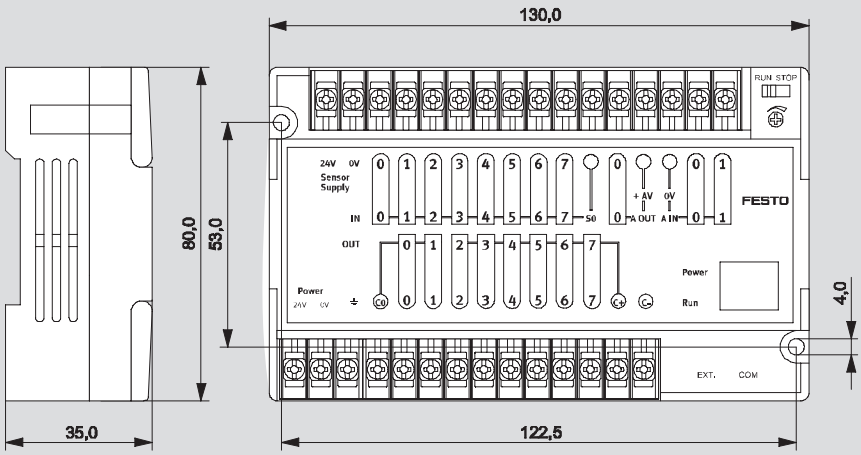
Note

The programming cable must always be ordered separately. For all FEC-FC3...-FSTs, please order PS1-SM14.

Programming	
Programming languages	FST Version 4.10
Working language	English and German
Number of programs and tasks per project	64 (0 ... 63)
Permissible input addresses	0 ... 255 (addressable as bits or words)
Permissible output addresses	0 ... 255 (addressable as bits or words)
Number of flags	10,000 words (0 ... 9999) (addressable as bits or words)
Number of timers and counters	256 (0 ... 255) in each case, with 1 status bit, 1 setpoint and 1 actual value
Number of registers (words)	0 ... 255 (addressable as words)
Programming interface	RS232C or Ethernet
Number of different operations	> 28
Subroutine	Up to 200 different subroutines per project
C/C++	Yes, for modules and drivers
File handling	Yes
RS232C	Yes
ABG	Yes
FED	Yes
Web server	Yes
Remanence	Flag words 0 ... 255 Register 0 ... 126 Timer and counter preselects and counter words 0 ... 127 Password
Performance	1.6 ms/1k instructions approx.

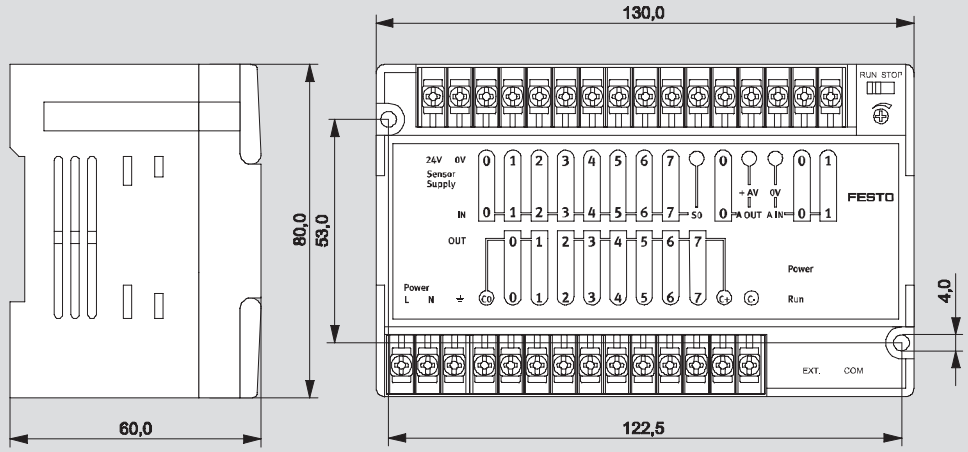
Dimensions Download CAD data ➔ **www.festo.com**

Power supply 24 V DC



Direct mounting or mounting on top-hat-rail in accordance with DIN EN 50022 using integrated clip

Power supply 110/230 V AC



Direct mounting or mounting on top-hat-rail in accordance with DIN EN 50022 using integrated clip

Ordering data – The FEC Compact with FST programming			
Designation	Features	Part No.	Type
IPC controller	12 in/2 relay out/6 transistor out, 24 V DC, COM as TTL, 512 KB RAM, 256 KB Flash	**183 861**	**FEC-FC30-FST**
	12 in/2 relay out/6 transistor out, 24 V DC, COM as TTL, 512 KB RAM, 512 KB Flash, Ethernet	**190 587**	**FEC-FC34-FST**

Ordering data – Cables for the FEC Compact			
Designation	Features	Part No.	Type
Programming cable	RS232C adapter for programming FEC-FC3...-FST from the PC, complete with neutral modem cable	**188 935**	**PS1-SM14-RS232**
Converter	RS232C adapter for connection of any desired devices with a serial interface to FEC-FC3...-FST, with top-hat-rail clip, no neutral modem or RS232 cable	**192 681**	**PS1-SM15-RS232**
Converter	RS485 adapter for FEC-FC3...-FST, including top-hat rail bracket	**193 390**	**PS1-SM35-RS485**
Cable	Networking cable for connecting a second FEC Compact as an I/O module, 30 cm long, assigned EXT interface	**183 635**	**FEC-KSD4**

Ordering data – Display and operating units			
Designation	Features	Part No.	Type
Operator unit	Display and operating unit, LCD with 4 lines, 20 characters each, illuminated background, 4 function keys, real-time clock and expansion interface, e.g. Ethernet	**533 531**	**FED-50**
Operator unit	Display and operating unit, LCD with 4 lines, 20 characters each, illuminated background, 12 function keys, numeric keypad, real-time clock and expansion interface, e.g. Ethernet	**533 532**	**FED-90**
Fieldbus interface	Ethernet interface module for FED	**533 533**	**FEDZ-IET**
Programming cable	Programming cable for FED	**533 534**	**FEDZ-PC**
Cable	Connecting cable FEC (RJ11, COM) to FED	**189 429**	**FEC-KBG3**
Cable	Connecting cable FEC (RJ12, COM and EXT) to FED	**189 432**	**FEC-KBG6**

Ordering data – Software and manuals for the FEC Compact			
Designation	Features	Part No.	Type
Programming software	FST software version 4.1 on CD with manual DIN A5 in German	**537 927**	**P.SW-FST4-CD-DE**
	FST software version 4.1 on CD with manual DIN A5 in English	**537 928**	**P.SW-FST4-CD-EN**
Manual	System manual FEC Compact German	**527 482**	**P.BE-FEC-C-SYS-DE**
	System manual FEC Compact English	**527 483**	**P.BE-FEC-C-SYS-EN**

Product Range and Company Overview

A Complete Suite of Automation Services

Our experienced engineers provide complete support at every stage of your development process, including: conceptualization, analysis, engineering, design, assembly, documentation, validation, and production.

Custom Automation Components
Complete custom engineered solutions

Custom Control Cabinets
Comprehensive engineering support and on-site services

Complete Systems
Shipment, stocking and storage services

The Broadest Range of Automation Components

With a comprehensive line of more than 30,000 automation components, Festo is capable of solving the most complex automation requirements.

Electromechanical
Electromechanical actuators, motors, controllers & drives

Pneumatics
Pneumatic linear and rotary actuators, valves, and air supply

PLCs and I/O Devices
PLC's, operator interfaces, sensors and I/O devices

Supporting Advanced Automation... As No One Else Can!
Festo is a leading global manufacturer of pneumatic and electromechanical systems, components and controls for industrial automation, with more than 12,000 employees in 56 national headquarters serving more than 180 countries. For more than 80 years, Festo has continuously elevated the state of manufacturing with innovations and optimized motion control solutions that deliver higher performing, more profitable automated manufacturing and processing equipment. Our dedication to the advancement of automation extends beyond technology to the education and development of current and future automation and robotics designers with simulation tools, teaching programs, and on-site services.

Quality Assurance, ISO 9001 and ISO 14001 Certifications

Festo Corporation is committed to supply all Festo products and services that will meet or exceed our customers' requirements in product quality, delivery, customer service and satisfaction.

To meet this commitment, we strive to ensure a consistent, integrated, and systematic approach to management that will meet or exceed the requirements of the ISO 9001 standard for Quality Management and the ISO 14001 standard for Environmental Management.

9001: CERTCC5-16248-2006-AQ-ESN-TGA
ISO 9001
ISO 14001
DNV
Certified Company
14001: CERTCC5-16248A-2006-AQ-ESN-TGA

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