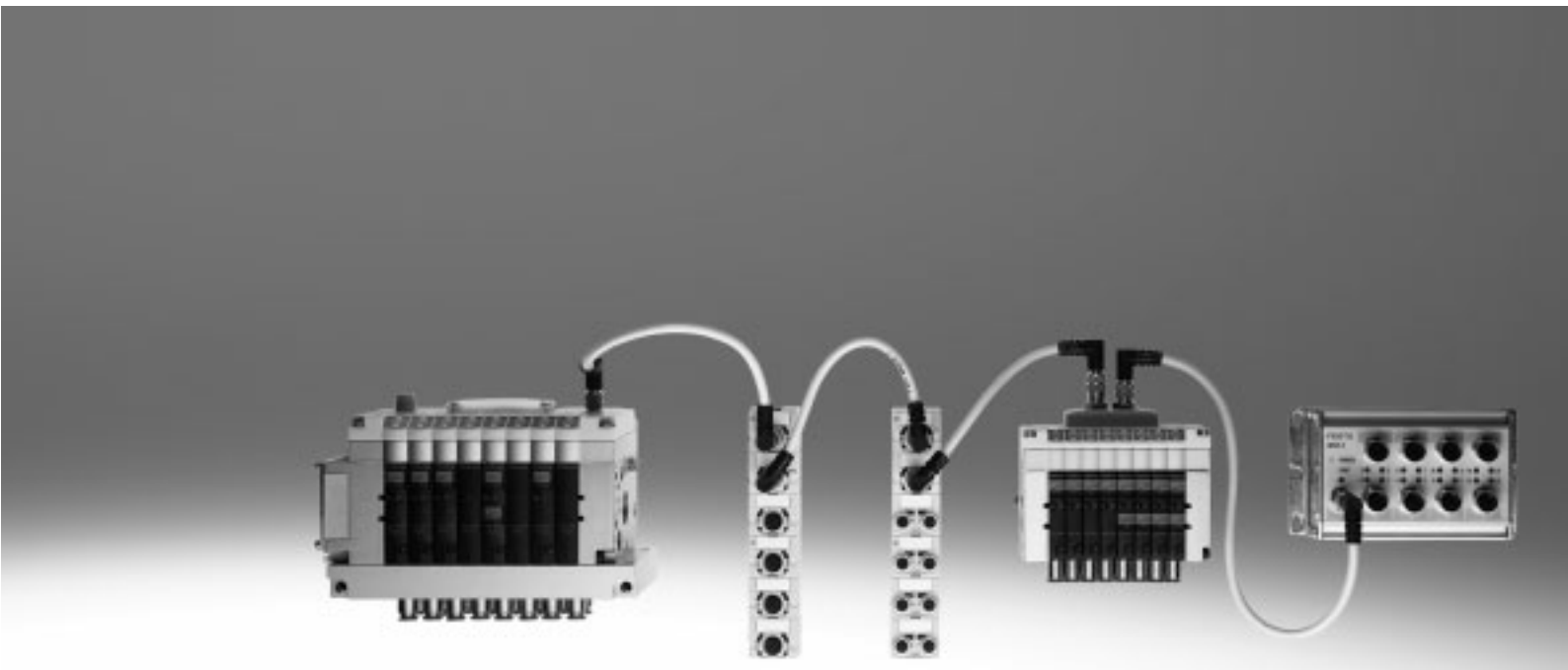
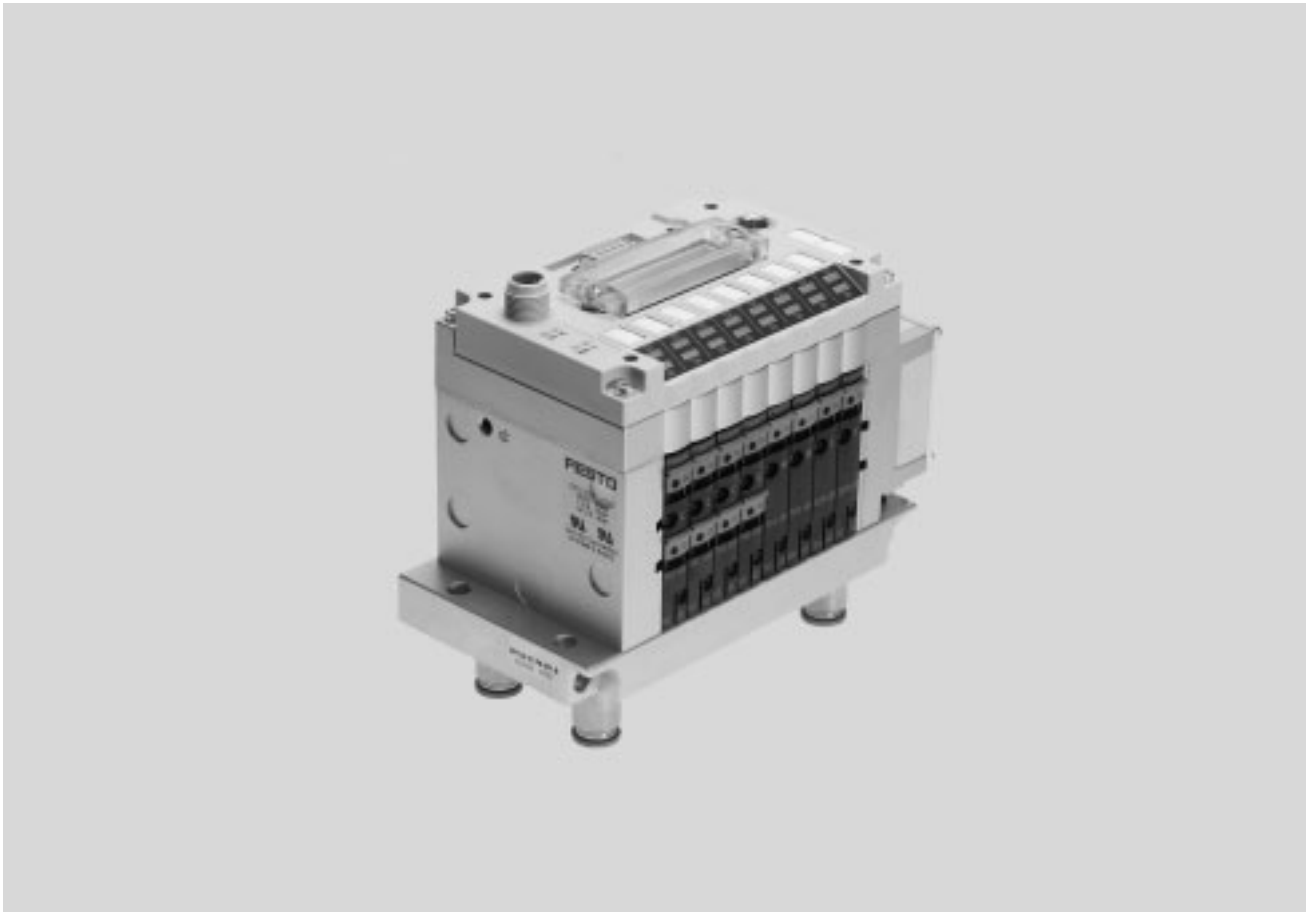
Fieldbus Direct

FESTO



Fieldbus Direct

Key features



The system

- Extremely compact and space-saving design
- Low-cost solution for the connection of a small number of valves to a fieldbus
- Extremely safe, protection class up to IP65 depending on the series

The Fieldbus Direct system comprises the following valve terminal series:

- CPV

The Fieldbus Direct product range is the most compact way of connecting valves to a fieldbus. The fieldbus node is directly integrated in the electrical actuation of the valve terminal and therefore takes up only a minimal amount of space.

Fieldbus Direct is a system for the connection of one valve terminal. The most important systems are supported.

The CP string extension option allows the functions and components of the CPI installation system to be used.

The optional string extension allows additional valve terminals and I/O modules to be connected to the fieldbus node of the Fieldbus Direct system.

The I/O modules and cables for the CP string extension are ordered using the order code for the CPI installation system.

The maximum length of the CP string extension is 10 metres, which means that the extension modules can be mounted directly on-site. All of the required electrical signals are transmitted via the CPI cable, which means that no further installation is needed on the extension module.

Valve terminal configurator

Online via: ➔ www.festo.com

A valve terminal configurator is available online to help you select a suitable Fieldbus Direct valve terminal. Like all valve terminals, Fieldbus Direct is ordered using an ident. code.

This ident. code specifies the valve functions, the number of valves, vacant positions as well as the additional functions and the type of compressed air supply.

As is the case with all Festo products, all Fieldbus Direct valve terminals are supplied:

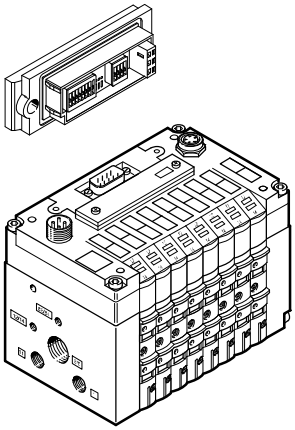
- fully pre-assembled
- fitted with fittings on request

- tested for electrical function
- tested for pneumatic function
- securely packaged
- manuals can be downloaded free of charge

Fieldbus Direct

Key features

Switch module for CPV Direct



The bus parameters and the device configuration of CPV Direct are set using the removable switch module.

The integrated DIL switches are easy to set and check, even if the mounting position is difficult to access.

In the case of the valve terminals with the CP system according to Specification “B”, the DIL switches for parameterisation/configuration are integrated in the basic electrical unit.

CP string extension

The optional string extension allows an additional valve terminal and I/O modules to be connected to the fieldbus nodes of the Fieldbus Direct system. A CP string of the CP installation system is integrated in the fieldbus node as an extension. Different input and output modules as well as CPV, MPA-S and CPV-SC valve terminals can be connected.

The maximum length of the CP string extension is 10 metres, which means that the extension modules can be mounted directly on-site. All of the required electrical signals are transmitted via the CP cable, which in turn means that no further installation is needed on the extension module.

The CP string interface offers:

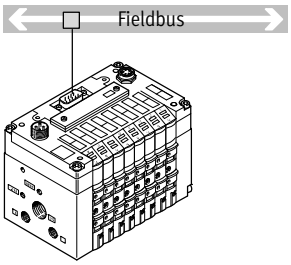
- 16 input signals
- 16 output signals for output modules 24 V DC or solenoid coils
- Logic and sensor supply for the input modules
- Load voltage supply for the valve terminals
- Logic supply for the output modules

The variant according to Specification “B” supports the connection of

- 32 inputs
- 32 outputs 24 V DC or solenoid coils.

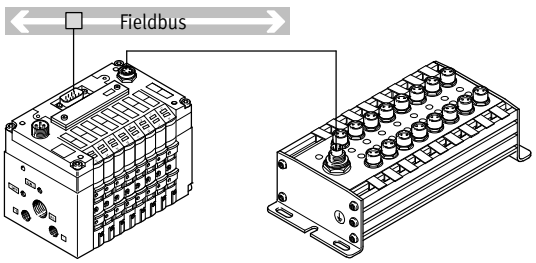
It goes without saying that the CP modules without Specification “B” can also be connected to the CPI string extension of valve terminals.

CPV Direct with fieldbus node



- 8 valve slices
- 16 solenoid coils
- 16 3/2-way valves

CPV Direct with input module 24 V DC for detecting the cylinder end positions



- 8 valve slices with up to 16 solenoid coils
- 16 inputs M8 or M12, each with sensor supply

Variant according to Specification “B”

- 32 input signals
- 32 output signals/solenoid coils

Fieldbus Direct system diagnostics

The fieldbus node together with the modules connected to the CP string offer several diagnostic options.

Diagnostic LEDs on the Fieldbus Direct node

The fieldbus-specific LEDs display the communication status and the fieldbus function.
Further LEDs display the power supply status of all connected modules as a common message.

- Undervoltage
- Short circuit
- Interruption of voltage

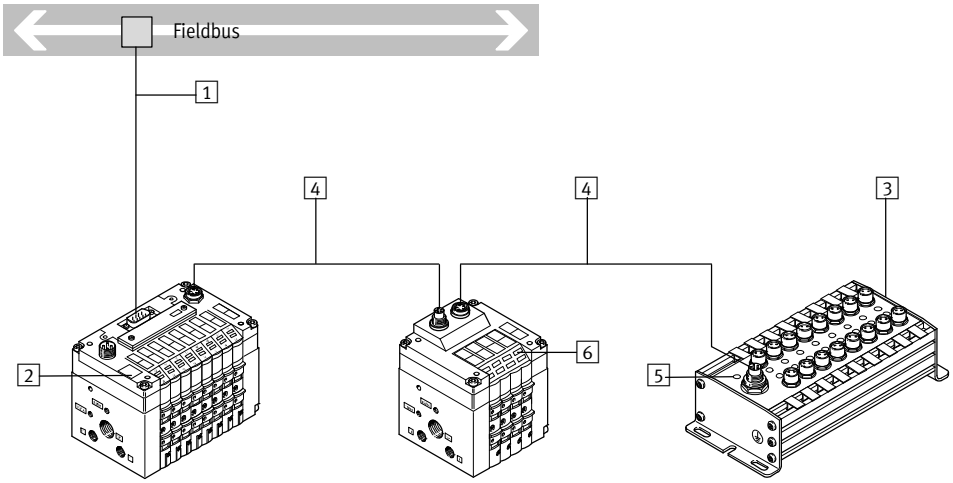
Diagnostic LEDs on the CP extension modules

LEDs on the individual CP/CPI modules display the current status of the switching signals of the inputs or outputs. Additional LEDs display short circuits or overload of the power supply and communication faults on the CP connection.

Diagnostic messages via the fieldbus

All available diagnostic information is transferred to the fieldbus node by means of the CP connection. This means that the diagnostic information for the entire device can be transferred to the fieldbus master.

- Configuration errors
- Short circuit/overload of an output module
- Short circuit/undervoltage of the sensor supply
- Undervoltage/load voltage of the valves
- Interruption of a CP string to one of the CP modules



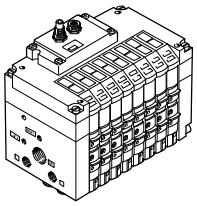
1 Diagnostics via fieldbus
2 Bus-specific LED
3 Diagnostics via LED on the CP/CPI module
4 Diagnostics via CP string
5 Status display on the CP/CPI module
6 Status display on the valve terminal

Fieldbus Direct

Overview of examples

Valve terminals with CP interface

CPV valve terminal

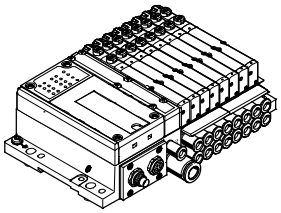


CPV10
CPV14
CPV18

- Max. 16 valves in 8 valve slices
- Highly compact and space-saving
- Width 10, 14, 18 mm
- Nominal flow rate 400/800/1600 l/min
- CPV10, CPV14 and CPV18 with CPI functionality

Further information
➔ Internet: cpv

MPA-S valve terminal

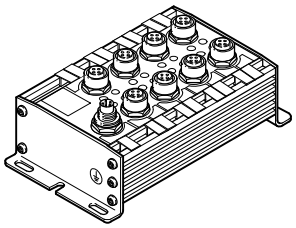


MPA1
MPA2

- Max. 32 valves
- Modular and versatile
- Width 10, 20 mm
- Nominal flow rate 360/700 l/min
- CPI functionality

Further information
➔ Internet: mpa-s

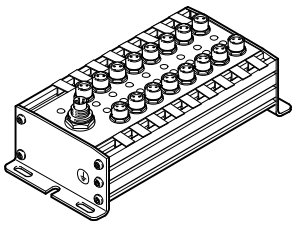
CP/CPI installation system input/output modules



CP-E16-M12x2-5POL

- 16 inputs 24 V DC
- Signal status display via 16 LEDs
- Operating status display

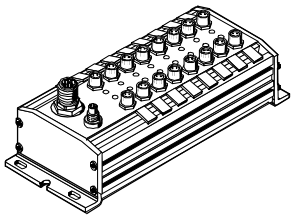
- M12 socket, double allocation
- 1x M9 CP/CPI connection
- PNP/NPN, IP65



CP-E16-M8

- 16 inputs 24 V DC
- Signal status display via 16 LEDs
- Operating status display

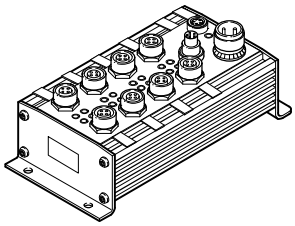
- M8 socket, single allocation
- 1x M9 CP connection
- PNP/NPN, IP65



CP-E16-M8-Z

- 16 inputs 24 V DC
- Signal status display via 16 LEDs
- Operating status display

- Electrical isolation through additional power supply
- M8 socket, single allocation
- 1x M9 CP connection
- Separate sensor supply
- PNP/NPN, IP65



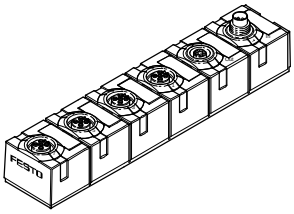
CP-A08-M12-5POL

- 8 outputs 24 V DC
- Output signal display via 8 LEDs
- Operating status display
- M12 socket, single allocation

- 2x M9 CP connection
- Separate load voltage
- Outputs resistant to overloads and short circuits
- PNP/NPN, IP65

Detailed description of input and output modules
➔ Internet: ctec

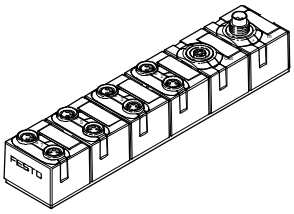
CP/CPI Compact Line input/output modules



CP-E08-M12x2-CL

- 8 inputs 24 V DC
- Signal status display via 8 LEDs
- Operating status display

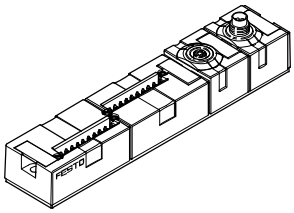
- 4x M12 socket, 5-pin, double allocation
- 2x M9 CP connection
- PNP, IP65/67



CP-E08-M8-CL

- 8 inputs 24 V DC
- Signal status display via 8 LEDs
- Operating status display

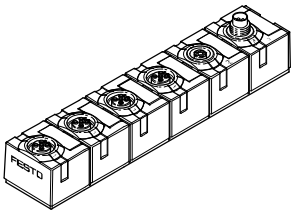
- 8x M8 socket, 3-pin, single allocation
- 2x M9 CP connection
- PNP, IP65/67



CP-E16-KL-CL

- 16 inputs 24 V DC
- Indirect signal status display via LEDs in the connection set of the tension-spring socket
- Operating status display

- Screw terminal or tension-spring sockets
- 2x M9 CP connection
- PNP, IP20



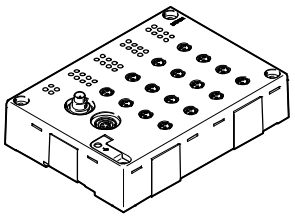
CP-A04-M12x2-CL

- 4 outputs 24 V DC
- Signal status display via 4 LEDs
- Operating status display

- 4x M12 socket, 5-pin, double allocation
- 2x M9 CP connection
- Outputs resistant to overloads and short circuits
- PNP, IP65/67

Detailed description of input and output modules
➔ Internet: ctec

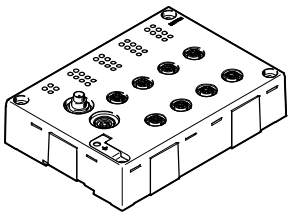
CP/CPI Eco Line input/output modules



CP-E16-M8-EL

- 16 inputs 24 V DC
- Signal status display via LEDs
- Operating status display

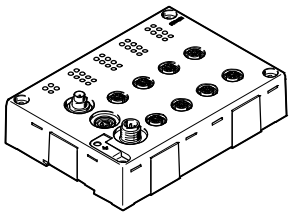
- 16x M8 socket, 3-pin, double allocation
- 2x M9 CP connection
- PNP



CP-E16-M12-EL

- 16 inputs 24 V DC
- Signal status display via LEDs
- Operating status display

- 8x M8 socket, 5-pin, single allocation
- 2x M9 CP connection
- PNP



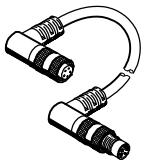
CP-A08-M12-EL-Z

- 8 outputs 24 V DC
- Signal status display via LEDs
- Operating status display

- 4x M12 socket, 5-pin, double allocation
- 2x M9 CP connection
- Outputs resistant to overloads and short circuits
- PNP

Detailed description of input and output modules
➔ Internet: ctec

CP connecting cable



The CP string is connected using pre-assembled CP cables, which are supplied in lengths from 0.5 to 8 metres.

Fieldbus Direct

Peripherals overview

Fieldbus systems for CPV Direct

Fieldbus variants
Of the more than 20 different fieldbus systems (protocols) available on the market, some have emerged as the most important variants. Festo supports these by means of various fieldbus nodes (FBxx) on its valve terminals. Fieldbus systems require a powerful, central PLC and a master interface adapted to that particular fieldbus.
Fieldbus systems are generally used when several devices with many inputs/outputs, complex functions or high communication levels must be controlled. In this case, the advantages of simple cabling, easy diagnostics and maintenance outweigh the extra outlay for a fieldbus master interface and the necessary know-how.

Festo fieldbus
A fieldbus developed by Festo with simple prompting, supported by the controllers of the FPC, SF and IPC series (Festo FB5). A maximum of 98 bus stations can be connected to the Festo fieldbus. The bus can operate with 4 different baud rates (31.25, 62.5, 187.75 and 375 kbps).

PROFIBUS DP
An open fieldbus standard, originally developed by Siemens and in worldwide use. The bus can operate with baud rates from 9.6 kBaud to 12 MBaud.

DeviceNet
An open fieldbus system based on CAN technology originally developed for the automotive sector. DeviceNet was originally developed by Rockwell (Allen Bradley) and is now an open standard.

Moeller SUCONET K
A maximum of 98 bus stations can be connected to the SUCONET K fieldbus. The bus operates with a baud rate of 187.5 or 375 kbps, depending on the design, bus length, etc. The bus interface is based on RS 485 with a master/slave structure.

ABB CS31
The fieldbus from ABB connects a maximum of 63 fieldbus stations to the fieldbus master. The data is transferred at a constant baud rate of 187.5 kbps. The protocol is suitable for use in all areas of automation technology.

Fieldbus Direct

Peripherals overview

Fieldbus systems						
Valve terminal type	Fieldbus protocol	Valve terminal	CP string extension		Plug type, bus connection	➔ Page/ Internet
		Number of solenoid coils	Number of solenoid coils/outputs	Number of inputs		
CPV-...-GE-DI01-8	PROFIBUS DP (12 MBaud) Festo ABB CS31 Moeller SUCONET K	16	16 / 8	16	• Sub-D fieldbus plug • 2xM12, 5-pin, B-coded	12
CPV-...-GE-DI02-8	PROFIBUS DP (12 MBaud)	16	32 / 32	32	• Screw terminal strip, 5-pin • Sub-D socket, 9-pin • Socket and plug, M12x1, 5-pin, B-coded	16

Operating voltage and load current supply

The operating voltages for the Fieldbus Direct valve terminal and for the extension modules are connected centrally via the 4- or 5-pin M12 plug.
It must supply the operating voltages for the electronic unit of the fieldbus node and the modules connected to the CP string.
The load supply for the valves is supplied separately from the supply for the electronic unit.
The valves of the Fieldbus Direct valve terminals and the valves/outputs on the CP string extension are supplied together via pin 2 of the M12 plug.
The power supply for the sensors connected to the input module is normally also supplied by the M12 plug.
Up to 500 mA for the sensor supply is made available to the connected input module via the CP string.

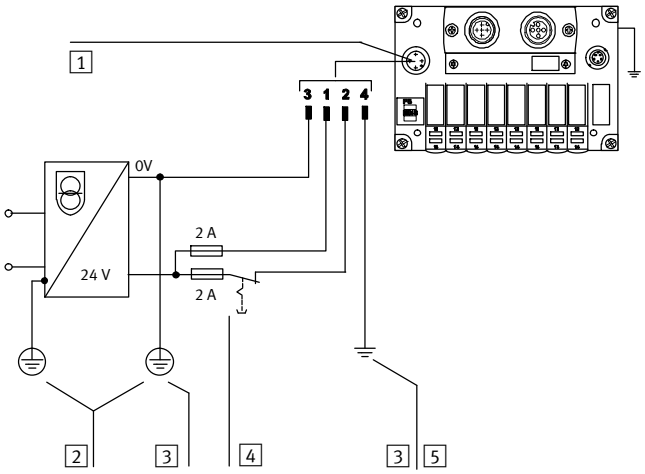
A separate, electrically isolated sensor supply is available with the two input modules CP-E16-KL-IP20-Z and CP-E16-M8-Z. In this case, a max. current of 2 A is available for the sensors.

Since the CP string carries the lines for both communication and the entire power supply for the connected modules, it represents a very easily installed extension option.

The following functions are supported via the CP string:
- Connection for data exchange
- Power supply for the connected modules
- Sensor voltage supply of up to 500 mA
- Load voltage supply for the connected valves

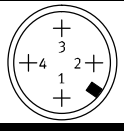
The electrical modules are protected against overload by electronic fuses.
All diagnostic information for the modules is transferred to the fieldbus node via the CP string and from there forwarded to the PLC according to the relevant protocol.

Example of circuitry for CPV Direct – Connection of load voltage



1 Connection for power supply on the CPV Direct valve terminal
2 Protective earth (PE)
3 Equipotential bonding
4 Load voltage (can be disconnected separately) and external fuse
5 Earth terminal on pin 4, configured for 3 A

Pin allocation – Power supply for CPV Direct

	Pin	Description	Notes
	1	24 V DC electronics and sensors	The voltage is supplied via a 4-pin M12 plug (A-coded).
	2	24 V DC valves and outputs	
	3	0 V electronics and sensors	
	4	Earth terminal	

Fieldbus Direct, CPV-DI01

Technical data – Fieldbus node CPV-DI01

CPV fieldbus node for communication between a CPV valve terminal and a fieldbus master. The fieldbus node is used for activation of a CPV valve terminal with 8 valve slices and 16 solenoid coils and for displaying the signal status via LED. The CPV-... valves are activated via automatic current reduction, which results in less power consumption and heat emission. 16 digital inputs and 8 digital outputs or 16 valves can be connected via a serial CP string extension.

DI01 supports 4 different fieldbus protocols, which are selected by means of DIL switches:

- PROFIBUS DP
- Moeller SUCOnet K
- ABB CS31
- Festo fieldbus

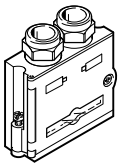
The CPV fieldbus node is available in three sizes, with identical performance characteristics:

- CPV10
- CPV14

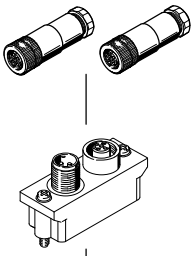
Application

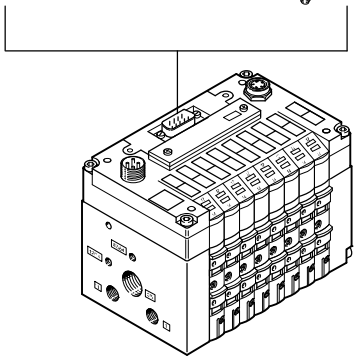
Bus connection

Sub-D socket



M12 adapter





Sub-D socket

- 9-pin Sub-D socket
- Installation with IP65 protection

The bus connection is established via a 9-pin Sub-D socket with a typical PROFIBUS allocation (to EN 50 170). The bus connector plug (with protection class IP65 from Festo or IP20 from other manufacturers) facilitates the connection of an incoming and an outgoing bus cable. An active bus terminal can be connected using the integrated DIL switch. The Sub-D interface is designed for the activation of network components via a fibre optic cable connection.

M12 adapter

- Plug connector 2xM12
- Installation with IP65 protection

Alternatively the bus connection can be established via a 2x M12 adapter (B-coded).

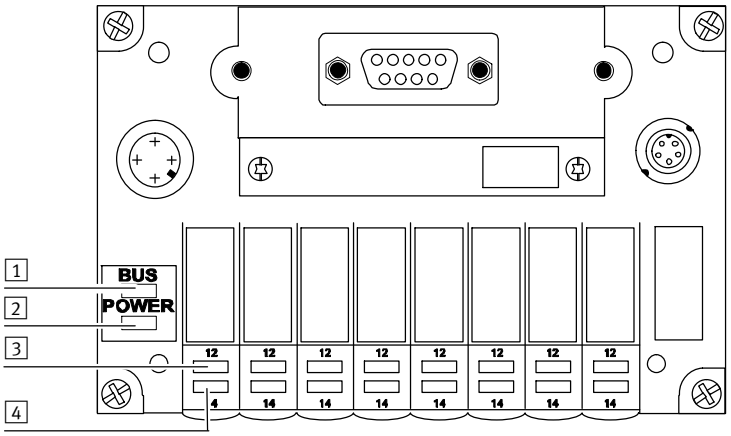
Fieldbus Direct, CPV-DI01

Technical data – Fieldbus node CPV-DI01

General technical data				
Type			CPV10-GE-DI01-8	CPV14-GE-DI01-8
Fieldbus interface			Either • Sub-D socket, 9-pin • Socket and plug, M12x1, 5-pin, B-coded	
Electrical isolation of the fieldbus interface			Via optocoupler	
Baud rates		[kbps]	9.6 ... 12,000; automatic detection	
Addressing range	PROFIBUS DP (12 MBaud) Festo fieldbus ABB CS31 Moeller SUCONET K		1 ... 125; Set using a switch module	
CP/CPI string extension			Yes, 16 inputs and 8 outputs (or 16 valves)	
LED display (bus-specific)	BUS		Communication and configuration errors	
LED display	Product-specific		Valve signal status	
	Power		Operating voltage for electrics and load supply	
Product identification			Product family 4: Valves	
Ident. number			0xC9	
Type of communication			Cyclical communication	
Configuration support			GSD file and bitmaps	
Max. no. of solenoid coils			16	
Max. no. of solenoid coils with string extension			32	
Max. no. of outputs			8 (1x16 solenoid coils omitted)	
Max. no. of inputs			16	
Device-specific diagnostics			• Short circuit/overload of outputs • Undervoltage of valves • Undervoltage of outputs • Undervoltage of sensor supply • Missing module on CP/CPI string extension • Via device-specific diagnostics (DPVO)	
Operating voltage	Nominal value	[V DC]	24, reverse polarity protected	
	Permissible range	[V]	20.4 ... 26.4	
	Residual ripple	[Vss]	4	
	Power failure bridging	[ms]	10	
Current consumption		[mA]	Max. 100 + sensor supply	
Protection class to EN 60529			IP65	
Materials	Housing		Die-cast aluminium	
	Cover		Reinforced polyamide	
	Seal		Nitrile rubber	
Dimensions			➔ Internet: cpv	
Weight				
Technical data on valves				

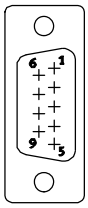
Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Fieldbus certification		PNO
Certification		cULus recognized (OL)
CE symbol (see declaration of conformity)		In accordance with EU EMC directive

Connection and display components

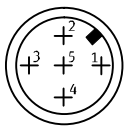


1 Red LED: Bus status/error (BUS)
2 Green LED: Power supply (POWER)
3 Yellow LED row: For pilot solenoid coils 12
4 Yellow LED row: For pilot solenoid coils 14

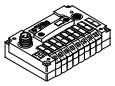
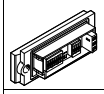
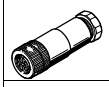
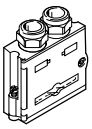
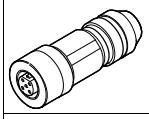
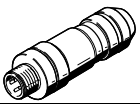
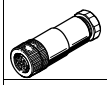
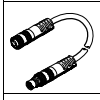
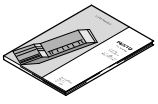
Pin allocation for fieldbus interface (viewed on plug)

	Pin	Festo Sub-D plug (IP65)	Manufacturer-specific signal designation				
			Festo fieldbus interface	ABB CS31	PROFIBUS DP	Moeller SUCONET K	
						Sub-D 9-pin	DIN (round) 5-pin
	1	–	–	–	n.c.	–	–
	2	–	–	–	n.c.	–	–
	3	B	S+	Bus1	RxD/TxD-P	3 (T_A/R_A)	4 (T_A/R_A)
	4	–	–	–	CNTR-P	–	–
	5	–	–	–	DGND	–	–
	6	–	–	–	VP	–	–
	7	–	–	–	n.c.	–	–
	8	A	S-	Bus2	RxD/TxD-N	7 (T_B/R_B)	1 (T_B/R_B)
	9	–	–	–	n.c.	–	–
	Housing	Cable clip	Screened	Screened	Screened	4 (screened)	Housing

Pin allocation for M12 adapter

	Bus In (pin)	Bus Out (socket)	PROFIBUS DP (signal)	Description
	M12 and 5	M12 and 5	Screened	Screened or functional earth
	4	4	RxD / TxD-P	Data B
	–	3	DGND	Reference potential to supply voltage positive (VP)
	–	1	VP (P5V)	Supply voltage positive
	2	2	RxD / TxD-N	Data A

Ordering data

Designation			Part No.	Type
Fieldbus node				
	CPV10		**165809**	**CPV10-GE-DI01-8**
	CPV14		**165811**	**CPV14-GE-DI01-8**
Switch module				
	For setting bus parameters and device configuration in the case of CPV		**165814**	**CPV10/14/18-GE-DI-SM**
Power supply				
	Power supply socket, straight, M12x1, 4-pin	For cable ∅ 4 … 6 mm	**18494**	**SIE-GD**
		For cable ∅ 8 … 9.5 mm	**18495**	**FBSD-GD-9**
	Power supply socket, angled, M12x1, 4-pin	For cable ∅ 4 … 6 mm	**12956**	**SIE-WD-TR**
		For cable ∅ 6 … 8 mm	**18525**	**FBSD-WD-9**
Fieldbus connection				
	Fieldbus socket, Sub-D connection		**532216**	**FBS-SUB-9-GS-DP-B**
Bus connection Micro Style M12				
	Bus connection Micro Style, 2xM12		**533118**	**FBA-2-M12-5POL-RK**
	Socket M12x1, 5-pin, straight, for self-assembly of a connecting cable for FBA-2-M12-5POL-RK		**1067905**	**NECU-M-B12G5-C2-PB**
	Plug M12x1, 5-pin, straight, for self-assembly of a connecting cable for FBA-2-M12-5POL-RK		**1066354**	**NECU-M-S-B12G5-C2-PB**
	Fieldbus socket for Micro Style connection, M12, 5-pin, straight		**18324**	**FBSD-GD-9-5POL**
	Plug for Micro Style connection, M12, 5-pin, straight		**175380**	**FBS-M12-5GS-PG9**
Valve terminal connection				
	Connecting cable, angled plug, angled socket	0.25 m	**540327**	**KVI-CP-3-WS-WD-0,25**
		0.5 m	**540328**	**KVI-CP-3-WS-WD-0,5**
		2 m	**540329**	**KVI-CP-3-WS-WD-2**
		5 m	**540330**	**KVI-CP-3-WS-WD-5**
		8 m	**540331**	**KVI-CP-3-WS-WD-8**
	Connecting cable, straight plug, straight socket	2 m	**540332**	**KVI-CP-3-GS-GD-2**
		5 m	**540333**	**KVI-CP-3-GS-GD-5**
		8 m	**540334**	**KVI-CP-3-GS-GD-8**
User documentation				
	User documentation for CPV Direct, CPV fieldbus node DI01	German	**165816**	**P.BE-CP-DI01-DE**
		English	**165817**	**P.BE-CP-DI01-EN**
		Italian	**165818**	**P.BE-CP-DI01-IT**
		French	**165819**	**P.BE-CP-DI01-FR**
		Spanish	**165820**	**P.BE-CP-DI01-ES**

Fieldbus Direct, CPV-DI02-8

Technical data – Fieldbus node CPV-DI02-8

CPV fieldbus node according to the CP system with Specification “B” for communication between a CPV valve terminal and a fieldbus master. The fieldbus node is used for activation of a CPV valve terminal with 8 valve slices and 16 solenoid coils and for displaying the signal status via LED. The CPV-... valves are activated via automatic current reduction, which results in less power consumption and heat emission. 32 digital inputs and outputs or 32 solenoid coils can be connected via a serial CP string extension.

The CPV fieldbus node is available in three sizes, with identical performance characteristics:

- CPV10
- CPV14

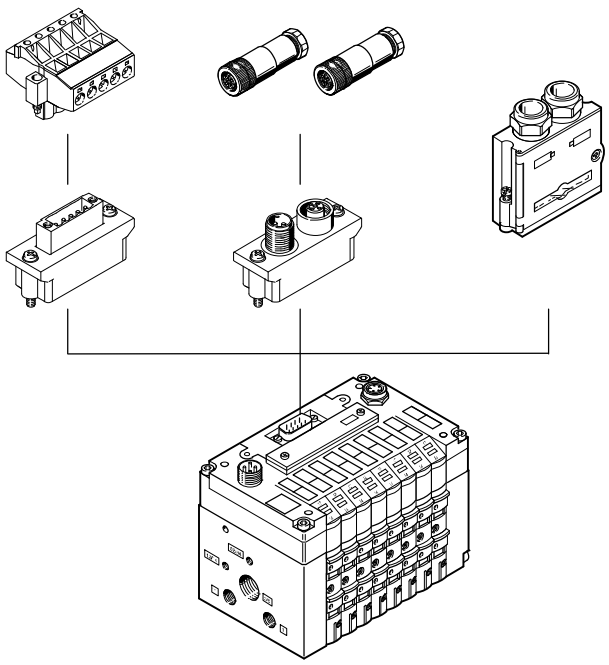
Application

Bus connection

Screw terminals

Plug connector 2xM12

Sub-D fieldbus plug



Sub-D socket

- 9-pin Sub-D socket
- Installation with IP65 protection

The bus connection is established via a 9 pin Sub-D socket with a typical PROFIBUS allocation (to EN 50170). The bus connector plug (with protection class IP65 from Festo or IP20 from other manufacturers) facilitates the connection of an incoming and an outgoing bus cable. An active bus terminal can be connected using the integrated DIL switch. The Sub-D interface is designed for the activation of network components via a fibre optic cable connection.

M12 adapter

- Plug connector 2xM12
- Installation with IP65 protection

Alternatively the bus connection can be established via a 2x M12 adapter (A-coded).

Screw terminals

- 5-pin screw terminal strip

for installation in protected environments (IP20). The bus connection is established via a 5-pin row. If the valve terminal is ordered with this bus connection, the 5-pin screw terminal strip will also be supplied. It is designed with double screw terminals for the incoming and the outgoing bus cable. This connection technology provides a T-distributor function.

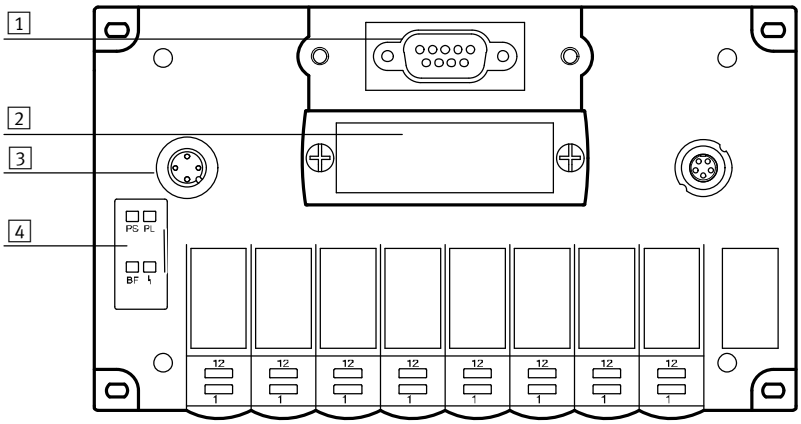
Fieldbus Direct, CPV-DI02-8

Technical data – Fieldbus node CPV-DI02-8

General technical data				
Type			CPV10-GE-DI02-8	CPV14-GE-DI02-8
Fieldbus interface	Either		• Screw terminal strip, 5-pin • Sub-D socket, 9-pin • Socket and plug, M12x1, 5-pin, B-coded	
Electrical isolation of the fieldbus interface			Via optocoupler	
CP string extension			Yes, 32 inputs and 32 outputs	
Baud rates		[kbps]	9.6 ... 12,000; Automatic detection	
Addressing range	PROFIBUS DP (12 MBaud)		1 ... 125; Set using a switch module	
LED display	Bus-specific		Communication and configuration errors	
	Product-specific		Valve signal status	
	Power		Operating voltage for electrics and load supply	
Ident. number			0xC9	
Type of communication			Cyclical communication	
Configuration support			GSD file and bitmaps	
Max. no. of solenoid coils			16	
Max. no. of solenoid coils with string extension			48 with string extension	
Max. no. of outputs			16 solenoid coils and 32 outputs	
Max. no. of inputs			32	
LED diagnostic displays	POWER		Operating voltage for electronics and load supply	
	BUS		Communication and configuration errors	
Device-specific diagnostics			• Short circuit/overload of outputs • Undervoltage of valves • Undervoltage of outputs • Undervoltage of sensor supply • Missing module on CP string extension • Via device-specific diagnostics (DPVO)	
Operating voltage	Nominal value	[V DC]	24, reverse polarity protected	
	Permissible range	[V]	20.4 ... 26.4	
	Residual ripple	[Vss]	4	
	Power failure bridging	[ms]	10	
Current consumption		[mA]	Max. 100 + sensor supply	
Protection class to EN 60529			• IP20 with 5-pin screw terminal strip • IP65 Sub-D, socket/plug M12x1	
Materials	Housing		Die-cast aluminium	
	Cover		Reinforced polyamide	
	Seals		Nitrile rubber, polychloroprene rubber	
Dimensions			➔ Internet: cpv	
Weight				
Technical data on valves				

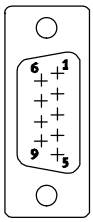
Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Fieldbus certification		PNO
Certification		cULus recognized (OL)
CE symbol (see declaration of conformity)		In accordance with EU EMC directive
Note on materials		RoHS-compliant

Connection and display components



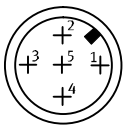
1 Fieldbus connection (9-pin Sub-D socket)
2 Removable switch cover
3 Operating/load voltage connection (4-pin M12 plug)
4 Power LEDs (PS, PL) and bus status LEDs (BF)

Pin allocation for PROFIBUS DP interface (viewed on plug)



Pin	Signal	Description
1	n.c.	Not connected
2	n.c.	Not connected
3	RxD/TxD-P	Received/transmitted data P
4	CNTR-P	Repeater control signal
5	DGND	Data reference potential (M5V)
6	VP	Supply voltage positive (P5V)
7	n.c.	Not connected
8	RxD/TxD-N	Received/transmitted data N
9	n.c.	Not connected
Housing	Screened	Connection to functional earth

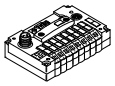
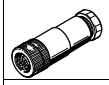
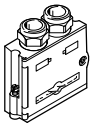
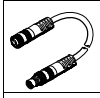
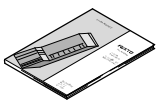
Pin allocation for M12 adapter



Pin	Signal	Description
1	VP	Supply voltage positive (P5V)
2	RxD/TxD-N	Received/transmitted data N
3	DGND	Data reference potential (M5V)
4	RxD/TxD-P	Received/transmitted data P
5	FE	Functional earth

Fieldbus Direct, CPV-DI02-8

Accessories – Fieldbus node CPV-DI02-8

Ordering data				
Designation			Part No.	Type
Fieldbus node				
	CPV10		**546188**	**CPV10-GEDI02-8**
	CPV14		**546190**	**CPV14-GEDI02-8**
Switch module				
	For setting bus parameters and device configuration in the case of CPV		**165814**	**CPV10/14/18-GE-DI-SM**
Power supply				
	Power supply socket, straight, M12x1, 4-pin	For cable ∅ 4 … 6 mm	**18494**	**SIE-GD**
		For cable ∅ 8 … 9.5 mm	**18495**	**FBSD-GD-9**
	Power supply socket, angled, M12x1, 4-pin	For cable ∅ 4 … 6 mm	**12956**	**SIE-WD-TR**
		For cable ∅ 6 … 8 mm	**18525**	**FBSD-WD-9**
Fieldbus connection				
	Fieldbus socket, Sub-D connection		**532216**	**FBS-SUB-9-GS-DP-B**
	M12 adapter		**525632**	**FBA-2-M12-5POL**
Bus connection, 5-pin screw terminal strip				
	Open Style adapter for 5-pin terminal strip		**525634**	**FBA-1-SL-5POL**
	5-pin terminal strip		**525635**	**FBSD-KL-2x5POL**
Valve terminal connection				
	Connecting cable, angled plug, angled socket	0.25 m	**540327**	**KVI-CP-3-WS-WD-0,25**
		0.5 m	**540328**	**KVI-CP-3-WS-WD-0,5**
		2 m	**540329**	**KVI-CP-3-WS-WD-2**
		5 m	**540330**	**KVI-CP-3-WS-WD-5**
		8 m	**540331**	**KVI-CP-3-WS-WD-8**
	Connecting cable, straight plug, straight socket	2 m	**540332**	**KVI-CP-3-GS-GD-2**
		5 m	**540333**	**KVI-CP-3-GS-GD-5**
		8 m	**540334**	**KVI-CP-3-GS-GD-8**
User documentation				
	User documentation for CPV Direct, CPV fieldbus node DI02-8	German	**548731**	**P.BE-CPV-DI02-DE**
		English	**548732**	**P.BE-CPV-DI02-EN**
		Spanish	**548733**	**P.BE-CPV-DI02-ES**
		French	**548734**	**P.BE-CPV-DI02-FR**
		Italian	**548735**	**P.BE-CPV-DI02-IT**