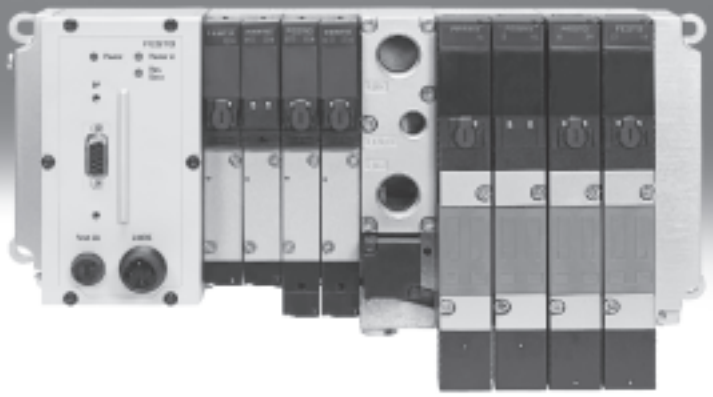
Modular electrical peripherals, for type 03/04

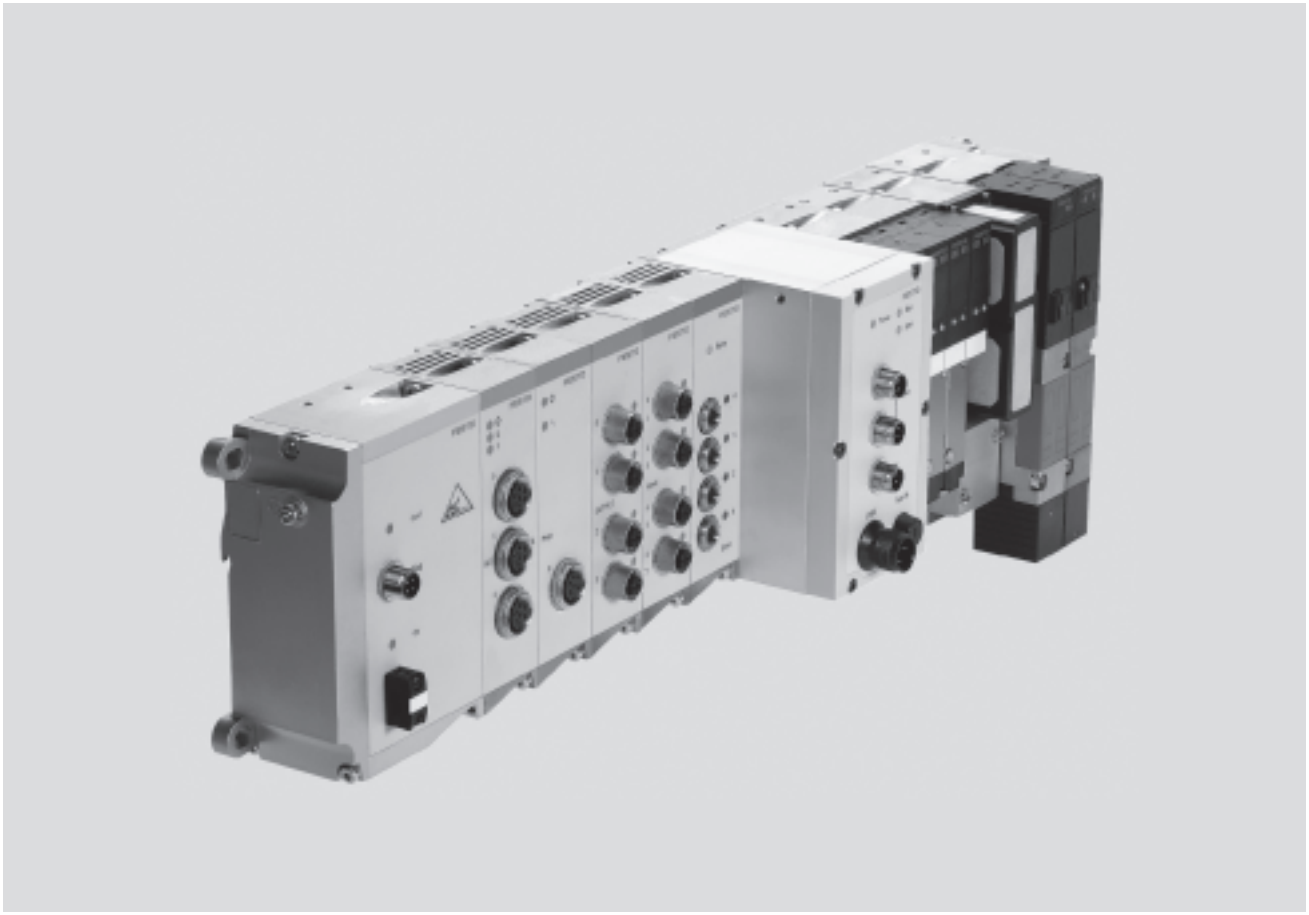
FESTO



- Type discontinued
Available up until 2017

Modular electrical peripherals, for type 03/04

Key features



Innovative

- First modular valve terminal on the market with modular electrical peripherals
- Standardised from the individual midi valve up to multi-pin and fieldbus connections
- First programmable valve terminal with integrated controller
- Digital I/O modules, either PNP switching
- Analogue I/O in the field for short lines
- Special modules for control desks
- Interfaces for subordinate, decentralised installation systems

Modular

- Modular system offering a range of configuration options
- Expandable up to 26 solenoid coils
- Conversions and extensions are possible at any time
- Connection blocks can be extended using 3 screws M4x14
- Modular electrical peripherals with digital and analogue I/Os
- High pressure range

Reliable

- Sturdy and durable metal components
  - I/O modules
  - Connection technology
  - Valves
  - Connection blocks
- Fast troubleshooting thanks to LEDs on the valves and I/O modules
- Diagnosis using fieldbus
- Pre-assembled cables for all I/O modules
- Reliability of service through replaceable valves and modules

Easy to assemble

- Ready to install unit, already assembled and tested
- Lower costs for selection, ordering, assembly and commissioning
- Secure wall mounting or via H-rail

Modular electrical peripherals, for type 03/04

Key features

Modular electrical peripherals for valve terminal type 03/04

Modular electrical peripherals provide the required control technology for type 03 (MIDI/MAXI) valve terminals. Together these components form the most comprehensive system range in intelligent pneumatics and also offer the advantage of a sturdy metal design.

As well as incorporating protection class IP65, the system also provides benefits through the sturdy design of its modules and connections. Individual modules are enclosed in metal housings with push-in fittings, and are made primarily of steel. The connections between the modules are protected by special seals and each connection point is secured using 3 robust M4x14 DIN 912 screws.

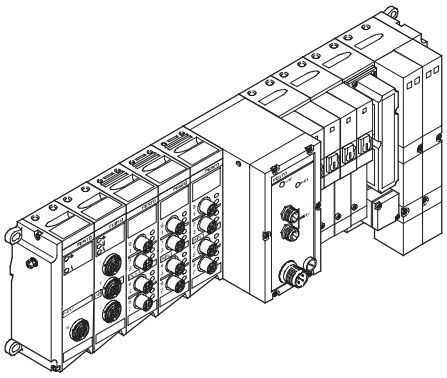
The main industrial fieldbuses are used for networking and control. Directly integrated programmable controllers (PLC) with fieldbus interface from Festo can also be used for actuation.
The module also offers various actuation and connection options for machine control.

Ongoing further development and a worldwide service and consultation network round off the performance spectrum for this system.

Note

Use the menu-driven online configurator for modular electrical peripherals type 03/04 and valve terminal in the electronic catalogue on
➔ www.festo.com.

Type 03 with fieldbus connection



Ordering

Modular electrical peripherals type 03/04 and valve terminal are fully assembled according to your order specifications and individually tested.
The finished valve terminal consists of the electrical peripherals including the required actuator and the selected components of the MIDI/MAXI or ISO modules.

Modular electrical peripherals type 03/04 with valve terminal are ordered using two separate order codes. One order code defines the modular electrical peripherals type 03/04, while the other specifies the pneumatic components of the valve terminal.

Modular electrical peripherals type 03/04 can naturally also be configured without a valve terminal as a remote I/O and can be used on a fieldbus or with an integrated controller. For this order, you only require the order code for the electrical peripherals.

The order lists for the modular electrical peripherals type 03/04 can be found in this chapter. For information on how to order the pneumatic components see:
➔ Internet: midi/maxi

Type discontinued
Available up until 2017

Modular electrical peripherals, for type 03/04

Key features – General

Performance characteristics

Control block, fieldbus connection, multi-pin connection

Optimising and extending applications:
- Modules for installation-saving connection using sturdy Sub-D plugs in IP65
- Low-cost connections to input/output stations and control units
- Extensions and supplements can be added at any time

Easy mounting:
- On H-rail
- On mounting surface
- With covers in welding environments

Simple servicing and maintenance:
- LED display
- Manual override
- Clip-on inscription labels

Input/output modules

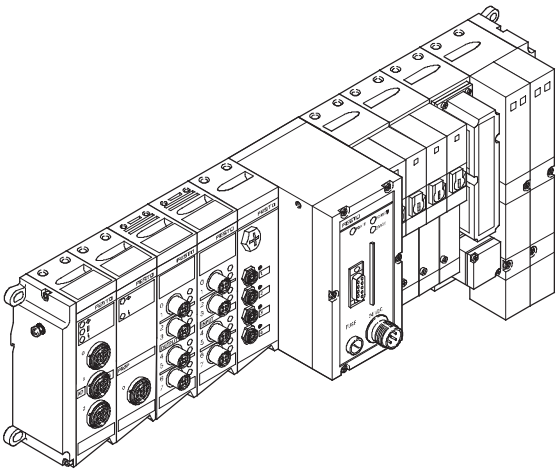
Flexible for control systems thanks to an extensive range of connection nodes:
- Multi-pin connection
- Fieldbus connection

Proportional pneumatics:
- To detect, control/regulate universal variables (4 ... 20 mA or 0 ... 10 V DC) within the process – locally to IP65

Electrical digital inputs/outputs:
- Max. 12 modules in conjunction with suitable nodes
- Inputs for 24 V DC sensors, PNP
- Outputs for small-load power consumers 24 V DC

Types of pneumatic valve terminals supported

Type 03 – MIDI/MAXI valve terminals



General functions of the bus nodes and control blocks

A bus node or control block is at the heart of the modular electrical peripheral system. They manage the communication connection to higher-order controllers and master interfaces and a PLC program with a full range of additional functions is executed directly in the control block. The power supply for the I/O modules and the sensors connected to them is provided by means of the bus node or control block, as is the load supply for the solenoid coils and the electronic outputs.

System monitoring and diagnosis are further important functions of the bus node or control block. The diagnostics are composed of three elements:
- Device-specific information displayed directly on the bus node or control block by means of LEDs.
- Device-specific status bits that are transferred to the control program via the network.
- Protocol-specific diagnoses.

The bus nodes or control blocks collect the most important diagnostic data in the status bits and transfer it to the higher-order controller as logical inputs.

Suitable further processing functions in the control program provide helpful information on the status of the power supply, short circuits and overload (with some of this information relating to specific modules or channels).

Further protocol and node-specific diagnostic services are described in conjunction with the individual I/O modules, bus nodes and control blocks.

Modular electrical peripherals, for type 03/04

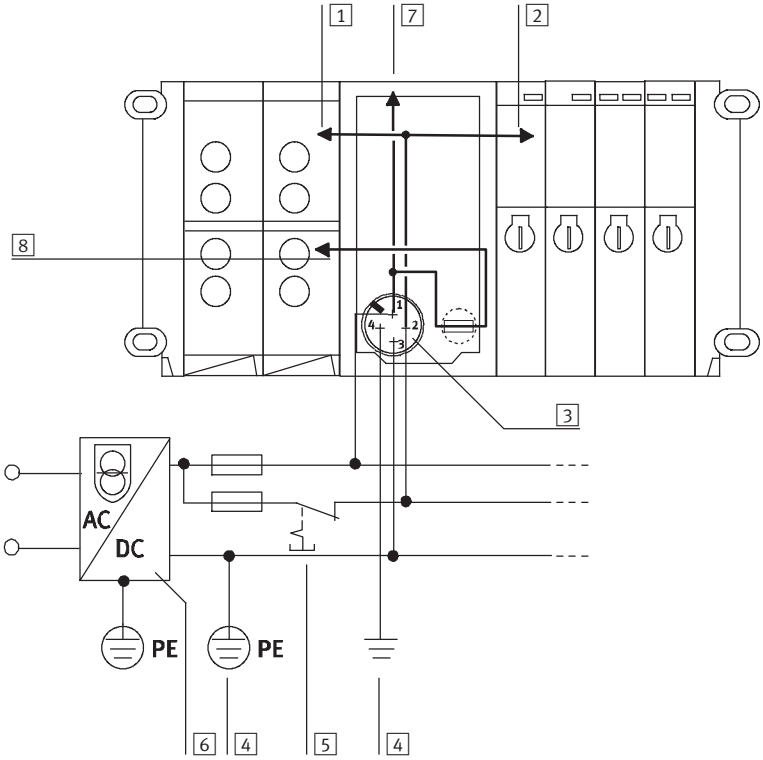
Key features – Electrical components

Supply voltage

The entire power supply for the system and the sensors and actuators connected to it is provided via an M18 mains plug.
The power supply for the electrical peripherals type 03 and 04 is split in two.
Pin 1 of the mains plug provides the sensor supply for the input modules and supplies the internal electronics of the individual modules.
The sensor supply is protected separately from the electronics supply in the node by means of a 2 A fuse. We recommend that pin 1 be additionally protected against short circuit/overload by means of a 3.15 A external fuse.
Pin 2 of the mains plug provides the load supply for solenoid coil actuation and the electrical 24 V DC outputs.
The load supply must be externally protected against short circuit and overload by means of a 10 A strong fuse.
The load voltage of the valves and electrical outputs can be disconnected separately. The common 0 V line is connected to pin 3. Pin 4 serves as an earth terminal.

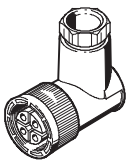
Example of circuit

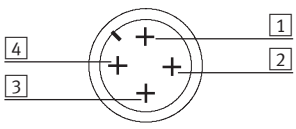
Connection of a common 24 V DC power supply and the protective earth (type 03 used in the example)



1 Electrical outputs (externally fused)
2 Valves
3 Voltage supply connection for node type 03
4 Potential equalisation
5 Load voltage, can be disconnected separately
6 Power supply unit (e.g. central voltage supply)
7 24 V DC electronics
8 Electrical inputs/sensors

Pin allocation





1 24 V DC supply for electronics and inputs
2 24 V DC load supply for valves
3 0 V
4 Earth terminal

Modular electrical peripherals, for type 03/04

Key features – Diagnosis

General system diagnosis		
Diagnostic information	Description	Function
Short circuit/overload at output	Output has short-circuited or become overloaded	Monitors the electrical outputs of the output modules
V_{Valves} < 21.6 V DC	Load voltage at pin 2 (valves and outputs) of the operating voltage connection < 21.6 V DC	Monitors the tolerance of the load voltage for valves and electrical outputs
$V_{Outputs}$ < 10 V DC	Load voltage at pin 2 (valves and outputs) of the operating voltage connection < 10 V DC	Monitors the load voltage for valves and electrical outputs (no voltage, e.g. EMERGENCY-STOP)
V_{Sensor} < 10 V DC	Operating voltage at pin 1 (electronics and inputs) of the operating voltage connection < 10 V DC	Monitors the operating voltage for inputs (sensors). Indicates whether an internal fuse has tripped, either the fuse in the node or at least an electronic fuse in the input module[1].

1) An electronic fuse for input modules has been available since February 1999.

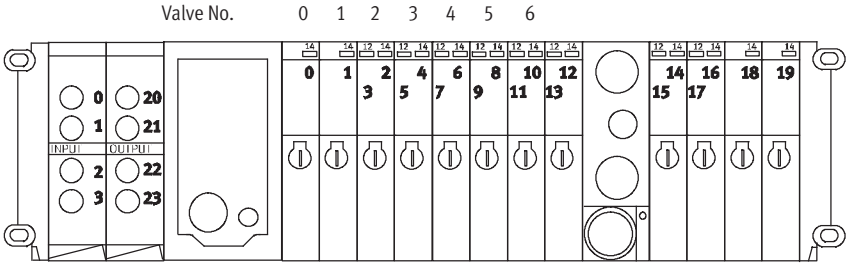
General guidelines on I/O addressing

A maximum of 12 electrical modules can be assembled. Note, however, that some modules occupy 2 or even 3 module positions, in which case the maximum number of modules that can be assembled is reduced.
All 12 module positions can generally be used as inputs or outputs, however there are various fieldbus-specific restrictions that are documented in the node description.

The number and type of inputs/outputs, and hence input/output modules, supported by the network also depends on the fieldbus node used.
The number of solenoid coils is restricted to 26 and is included in the address space of the digital outputs.

Each sub-base for single solenoid valves occupies 2 outputs, and each sub-base for double solenoid valves occupies 4 outputs. Within the output addresses, the valve solenoids are counted in ascending order from left to right starting from the node. In the case of double solenoid valves, coil 14 comes before coil 12 in the counting mode.
The address space of the valves is always rounded up to a value divisible by 4.

The solenoid coils are followed by the general outputs in the address space. The individual outputs in the output modules are listed in the address space in ascending order, from top to bottom and the modules are listed from right to left starting from the node (see diagram).



Test method for activation of the solenoid coils

The fieldbus nodes generally contain two different test sequences that activate the solenoid coils independently of any fieldbus combination or higher-order controller so that the function of the assembled valves can be verified.

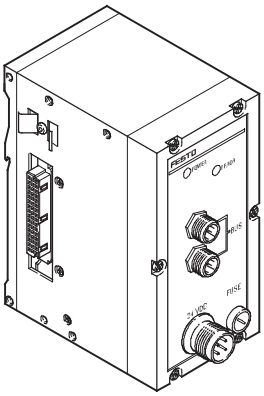
The solenoid coils will be activated in parallel or serial mode depending on the test sequence selected, with each coil individually activated with a constant switching frequency in a predefined order.

Modular electrical peripherals, for type 03/04

Peripherals overview – Fieldbus systems

FESTO

Fieldbus systems, programmable terminal groups



Fieldbus variations:
Of the more than 20 different fieldbus systems (protocols) available in 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 diagnosis and maintenance outweigh the extra outlay for a fieldbus master interface and the necessary know-how.

INTERBUS, INTERBUS-FOC:
An open fieldbus standard, originally developed by Phoenix Contact and now in worldwide use. Important installation accessories such as bus plugs must be obtained from Phoenix or its partners (Festo FB6). Festo FB21 is required for INTERBUS-FOC, the Interbus variant “Rugged Line” with fibre optic cable.

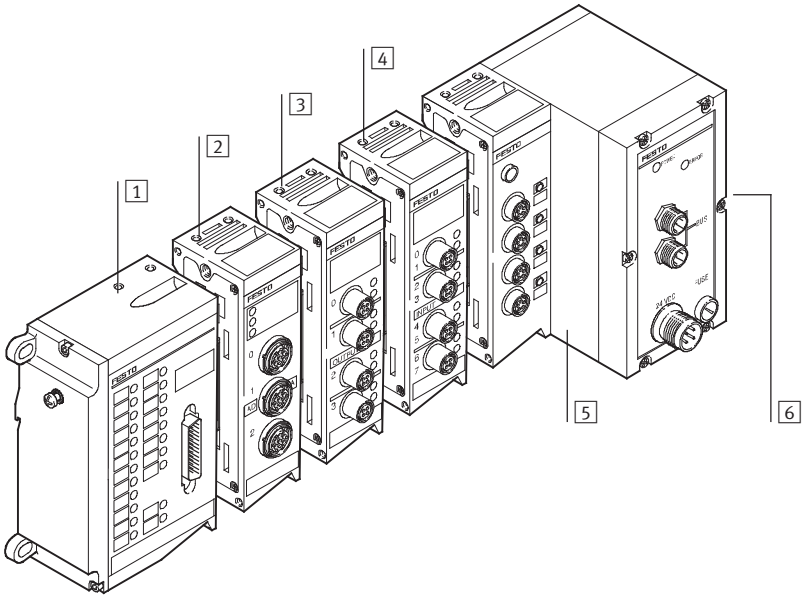
PROFIBUS DP:
An open fieldbus standard, originally developed by Siemens and in world-wide use (Festo FB13 for 12 MBd).

Modular electrical peripherals, for type 03/04

Peripherals overview – Bus nodes

FESTO

Equipping with bus node



1 Input/output module
2 Analogue stage
3 Output module
4 Input module
5 Bus node
6 Connection side for pneumatics

Modular electrical peripherals for type 03/04 can be equipped with bus node. In addition to controlling the valves and electrical outputs, corresponding sensor feedback can be recorded at the electrical peripherals and transmitted via the fieldbus to the control cabinet.

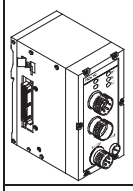
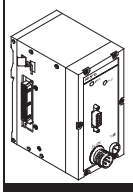
The following applies to bus nodes:

- Max. 26 valve solenoid coils
- Number of inputs dependent on fieldbus type
- Number of electrical outputs dependent on fieldbus type and number of pneumatic valves
- Status bits for program controlled diagnosis occupy 4 input bits
  - Undervoltage of valves
  - Undervoltage of sensors
  - Short circuit at outputs
- I/O allocation, self-configuration
- Subsequent addition of input or output modules moves the addressing (I/O allocation) forwards
- I/O allocation of inputs and outputs independent from each other
- 4-fold and 8-fold input modules connect to the next Half-Byte (nibble)
- Electrical outputs connect to the next Half-Byte (nibble) on the valves.
  Counting mode:
  Valves from left to right, then from the next Nibble electrical outputs from right to left
- Max. 12 modules are permitted on the left (electrical) side

Modular electrical peripherals, for type 03/04

Peripherals overview – Bus nodes

FESTO

Fieldbus node						
View	Code	Type	Fieldbus protocol	Suitable for		➔ Page/Internet
				I/O	Analogue	
	FB6	IFB6-03	INTERBUS	■ 60/64	■	11
	F13	IFB13-03	PROFIBUS DP, 12 MBd	■ 92/74	■	15

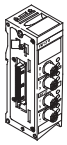
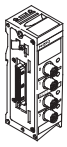
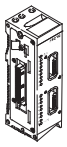
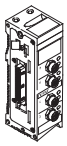
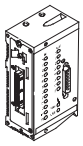
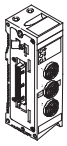
Overview – Address space for bus nodes							
	Bus protocol	Max. total		Max. digital		Max. analogue	
		Inputs	Outputs	Inputs	Outputs	Inputs	Outputs
IFB6-03	INTERBUS	60 bit	64 bit	60 DI	60 DO	8 AI	8 AO
IFB13-03	PROFIBUS DP	92 bit	74 bit	92 DI	74 DO	12 AI/AO	–

DI = Digital inputs (1 bit)
DO = Digital outputs (1 bit)
AI = Analogue inputs (16 bit)
AO = Analogue outputs (16 bit)

- 7 - **Type discontinued**
Available up until 2017

Modular electrical peripherals, for type 03/04

Peripherals overview

Electronics modules with bus node combinations				
Electronics modules	Type	Bus node		➔ Page/Internet
		IFB6-03	IFB13-03	
Input modules				
	**VIGE-03-FB-8-5POL** Input module for standard inputs PNP, 8-fold, 5-pin	■	■	19
	VIGE-03-FB-8,1-5POL Input module for high-speed inputs (1 ms) PNP, 8-fold, 5-pin	■	■	19
	VIGE-03-FB-8-5POL-S Input module for standard inputs PNP, 8-fold, 5-pin, with separate fuse	■	■	19
	**VIGE-03-FB-4-5POL** Input module for standard inputs PNP, 4-fold, 5-pin	■	■	19
	**VIGE-03-FB-16-SUBD-S** Input module with Sub-D plug PNP, 16-fold, 2x 15-pin socket	■	■	23
Output modules				
	**VIGA-03-FB-4-5POL** Output module for standard outputs PNP, 4-fold, 5-pin	■	■	26
Input/output modules				
	**VIEA-03-FB-12E-8A-SUBD** Input/output module PNP, 12I/8O, Sub-D	■	■	28
Analogue stage				
	**VIAU-03-FB-U** Analogue stage 3I/1O, 0 ... 10 V DC	■	■	30
	VIAU-03-FB-I Analogue stage 3I/1O, 4 ... 20 mA	■	■	30

Modular electrical peripherals, for type 03/04

Technical data – Bus node IFB6-03

FESTO

This bus node handles communication between the modular electrical peripherals and a higher-order master.
For the modular electrical peripherals, this module provides the separate electrical system supply for

- the electronics modules and sensor supply, and
- the load current of the electrical outputs and valves.

Application

Bus connection

The bus connection is established via two 9-pin M23 connections with a typical INTERBUS pin allocation.

The plug and socket are labelled with Remote IN and Remote OUT in accordance with the definition for the INTERBUS remote bus.

Both bus cables are always routed to the bus node and looped through in accordance with the ring structure of the INTERBUS.

Implementation

The IFB6-03 supports the digital input and output modules and the solenoid coils. It also supports analogue modules. It can service a total of 64 digital outputs, of which max. 26 can include solenoid coils, and 60 digital inputs.
The FB6 supports max. 8 analogue input channels and 8 analogue output channels.
The analogue channels are operated in multiplex mode and occupy 16 process data bits. The number of possible digital inputs and outputs is reduced by 16 bits when analogue modules are used.

Note

Please observe the general guidelines on I/O addressing when assigning the outputs.

- 1 - Type discontinued
Available up until 2017

Modular electrical peripherals, for type 03/04

Technical data – Bus node IFB6-03

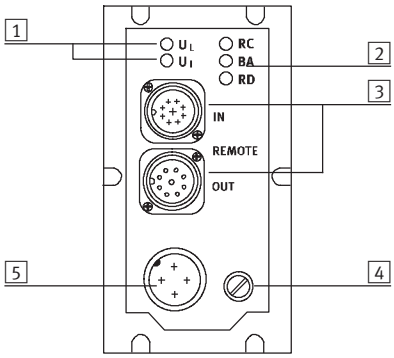
General technical data			
Type			**IFB6-03**
Combination with analogue modules			Yes
Baud rates		[kbps]	500
ID code			1, 2 or 3 depending on expansion
No. of process data bits			16, 32, 48 or 64 depending on expansion
PCP channel			No
Configuration support			• Icon file for CMD software • Station description file with CMD software
Max. no. of solenoid coils			26
Max. no. of outputs incl. solenoid coils			64
Max. no. of inputs			60
LED diagnostic displays	UL		Operating voltage of internal electronics
	UI		Operating voltage of INTERBUS interface
	RC		Remotebus check
	BA		Bus active
	RD		Remotebus disable
Device-specific diagnostics transmitted to the controller			• Short circuit/overload, outputs • Undervoltage of valves • Undervoltage of outputs • Undervoltage of sensor supply • Error during analogue processing
Operating voltage	Nominal value	[V DC]	24 polarity-safe
	Permissible range	[V DC]	18 ... 30
	Power failure buffering	[ms]	20
Current consumption		[mA]	200 + total current consumption of inputs, internal
Protection class to EN 60529			IP65
Temperature range	Operation	[°C]	–5 ... +50
	Storage	[°C]	–20 ... +70
Materials	Housing		Die-cast aluminium
	Cover		Polyamide
Dimensions (HxWxD)		[mm]	132 x 85 x 125
Grid dimension		[mm]	72
Weight		[g]	1000

Modular electrical peripherals, for type 03/04

Technical data – Bus node IFB6-03

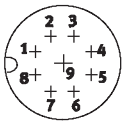
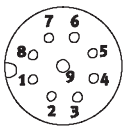
Connection and display components

The following connection and display components can be found on the bus node cover:



1 Power supply indicator
2 Fieldbus status indicator
3 INTERBUS interface
4 Fuse for operating voltage of inputs
5 Operating voltage connection

Pin allocation for the INTERBUS interface, non-floating installation remote bus

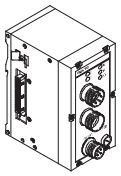
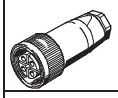
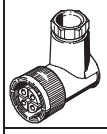
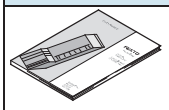
Terminal allocation	Pin[1)]	Signal	Designation
Incoming			
Plug view 	1	DO	Data out
	2	/DO	Data out inverse
	3	DI	Data in
	4	/DI	Data in inverse
	5	Ground	Reference conductor
	6	FE	Functional earthing
	7	+24 V DC	Installation remote bus supply
	8	+0 V	Installation remote bus supply
	Sleeve	Screen	Screening
Outgoing			
Socket view 	1	DO	Data out
	2	/DO	Data out inverse
	3	DI	Data in
	4	/DI	Data in inverse
	5	Ground	Reference conductor
	6	FE	Functional earthing Installation remote bus
	7	+24 V DC	Installation remote bus supply
	8	+0 V	Installation remote bus supply
	9	RBST	Establish bridge to pin 5
	Sleeve	Screen	Screening

1) Pins not listed here must not be connected.

- Type discontinued
Available up until 2017

Modular electrical peripherals, for type 03/04

Accessories – Bus node IFB6-03

Ordering data				
Designation			Part No.	Type
Bus node				
	INTERBUS		**18736**	**IFB6-03**
Power supply				
	Plug socket, straight, M18x1, 4-pin	for 1.5 mm^2	**18493**	**NTSD-GD-9**
		for 2.5 mm^2	**18526**	**NTSD-GD-13,5**
	Plug socket, angled, M18x1, 4-pin	for 1.5 mm^2	**18527**	**NTSD-WD-9**
		for 2.5 mm^2	**533119**	**NTSD-WD-11**
User documentation				
	User documentation – Bus node IFB6-03	German	**152756**	**P.BE-VIFB6-03-DE**
		English	**152766**	**P.BE-VIFB6-03-EN**
		French	**163926**	**P.BE-VIFB6-03-FR**
		Spanish	**163906**	**P.BE-VIFB6-03-ES**
		Italian	**165426**	**P.BE-VIFB6-03-IT**
		Swedish	**165456**	**P.BE-VIFB6-03-SV**

Modular electrical peripherals, for type 03/04

Technical data – Bus node IFB13-03

FESTO

Bus node for handling communication between the modular electrical peripherals and a higher-order master via PROFIBUS DP.
For the modular electrical peripherals, this module provides the separate electrical system supply for

- the electronics modules and sensor supply, and
- the load current of the electrical outputs and valves.

The status of the voltage supplies and the bus communication is indicated via the LEDs Power, Power Valves and Bus Error.

Application

Bus connection

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 control of network components with a fibre optic cable connection.

Note

A “Reverse Key” connection can be established via a 2x M12 adapter plug (B-coded).

Implementation

The IFB13-03 supports digital input and output modules and solenoid coils. Analogue modules can also be used.

- 74 digital outputs in total, of which max. 26 solenoid coils.
- Max. 92digital inputs for recording sensor signals.

The bus node supports max. 12 analogue input/output channels. Analogue modules occupy a discrete address space, separate from the digital inputs and outputs.

Note

Please observe the general guidelines on I/O addressing when assigning the outputs.

Modular electrical peripherals, for type 03/04

Technical data – Bus node IFB13-03

General technical data			
Type			**IFB13-03**
Combination with analogue modules			Yes
Baud rates			Automatic detection 9.6 kBaud ... 12 MBaud
Addressing range			Set using 2 rotary switches and a DIL switch 1 ... 125
Product family			4: Valves
Ident. number			0xFB13
Type of communication			Cyclic communication
Configuration support			GSD file and bitmaps
Max. no. of solenoid coils			26
Max. no. of outputs and solenoid coils			74
Max. no. of inputs			92
Max. no. of analogue channels			12 input/output channels
LED diagnostic displays	Power		Operating voltage of electronics
	Power V		Operating voltage of valves and outputs
	Bus Error		Communication error
Device-specific diagnostics via PROFIBUS DP			• Short circuit/overload, outputs (channel diagnostics) • Undervoltage of valves • Undervoltage of outputs • Undervoltage of sensor supply • Error during analogue processing
Additional functions			• Status/diagnostic bits in the process image of the inputs • Test routine for checking the valves and outputs without bus communication • Indication of the valve terminal configuration via Power V and Bus Error LEDs
Operating voltage	Nominal value	[V DC]	24 polarity-safe
	Permissible range	[V DC]	18 ... 30
	Power failure buffering	[ms]	20
Current consumption		[mA]	200 + total current consumption of inputs, internal
Protection class to EN 60529			IP65
Temperature range	Operation	[°C]	–5 ... +50
	Storage/transport	[°C]	–20 ... +70
Materials	Housing		Die-cast aluminium
	Cover		Polyamide
Dimensions (HxWxD)		[mm]	132 x 85 x 125
Grid dimension		[mm]	72
Weight		[g]	1000

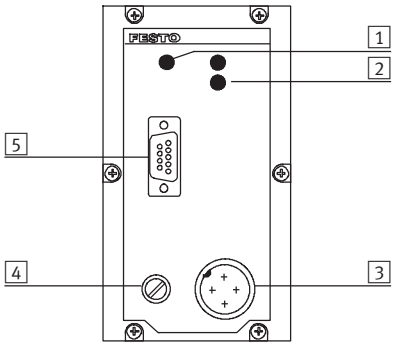
Modular electrical peripherals, for type 03/04

Technical data – Bus node IFB13-03

FESTO

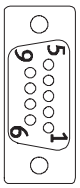
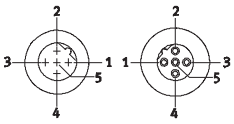
Connection and display components

The following connection and display components can be found on the bus node cover:



1 Green LED / Power
2 Red LED / Bus
3 Operating voltage connection
4 Fuse for operating voltage of inputs
5 Plug for fieldbus cable

Pin allocation for PROFIBUS DP interface

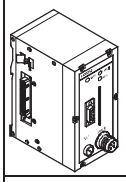
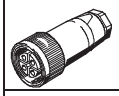
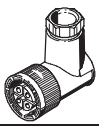
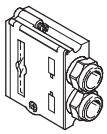
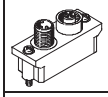
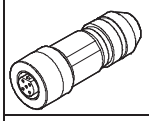
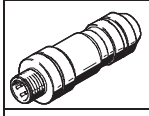
	Terminal allocation		Pin	Signal	Designation
Plug, Sub-D					
	Viewed from the socket side 	Socket	1	n.c.	Not connected
			2	n.c.	Not connected
			3	RxD/TxD-P	Received/transmitted data P
			4	CNTR-P[1)]	Repeater control signal
			5	DGND	Data reference potential (M5V)
			6	VP	Supply voltage (P5V)
			7	n.c.	Not connected
			8	RxD/TxD-N	Received/transmitted data N
			9	n.c.	Not connected
			Housing	Screen	Connection to housing
Bus connection M12 adapter plug (B-coded)					
	Plug and socket 	Plug	1	n.c.	Not connected
			2	RxD/TxD-N	Received/transmitted data N
			3	n.c.	Not connected
			4	RxD/TxD-P	Received/transmitted data P
			5 and M12	Screen	Connection to FE
		Socket	1	VP	Supply voltage (P5V)
			2	RxD/TxD-N	Received/transmitted data N
			3	DGND	Data reference potential (M5V)
			4	RxD/TxD-P	Received/transmitted data P
			5 and M12	Screen	Connection to FE

1) The repeater control signal CNTR-P is realised as a TTL signal.

Modular electrical peripherals, for type 03/04

Accessories – Bus node IFB13-03

Ordering data

Designation			Part No.	Type
Bus node				
	PROFIBUS		**174335**	**IFB13-03**
Power supply				
	Plug socket, straight, M18x1, 4 pin	for 1.5 mm²	**18493**	**NTSD-GD-9**
		for 2.5 mm²	**18526**	**NTSD-GD-13,5**
	Plug socket, angled, M18x1, 4 pin	for 1.5 mm²	**18527**	**NTSD-WD-9**
		for 2.5 mm²	**533119**	**NTSD-WD-11**
Fieldbus connection				
	Plug, Sub-D		**532216**	**FBS-SUB-9-GS-DP-B**
	Bus connection, 2x M12 adapter plug (B-coded)		**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**
User documentation				
	User documentation – Bus node IFB13-03	German	**163953**	**P.BE-VIFB13-03-DE**
		English	**163958**	**P.BE-VIFB13-03-EN**
		French	**163933**	**P.BE-VIFB13-03-FR**
		Spanish	**163913**	**P.BE-VIFB13-03-ES**
		Italian	**165433**	**P.BE-VIFB13-03-IT**
		Swedish	**165463**	**P.BE-VIFB13-03-SV**

Modular electrical peripherals, for type 03/04

Technical data – Input module, digital, 4-/8-fold

Function

Digital input modules facilitate the connection of proximity sensors or other 24 V DC sensors (inductive, capacitive, etc.).
Plugs with double allocation are separated using a DUO plug or DUO cable. These modules cannot be operated on the multi-pin node with inputs.

Applications

- Input modules for 24 V DC sensor signals
- M12 plug, single allocation connection technology in 4-fold modules, double allocation connection technology in 8-fold modules
- M12 plug, 5-pin
- The input statuses are indicated for each input signal at an allocated LED
- 24 V DC supply provided for all connected sensors
- Module width: 36 mm

General technical data					
Type			VIGE-03-FB-8-5POL	VIGE-03-FB-4-5POL	VIGE-03-FB-8,1-5POL
Input type			Standard inputs, PNP	Input plug with single allocation, PNP	High-speed inputs, PNP
No. of inputs			8	4	8
No. of occupied module positions			1		
Sensor connection type			4xM12, 5-pin, socket with double allocation	4xM12, 5-pin, socket with single allocation	4xM12, 5-pin, socket with double allocation
Max. power supply per channel		[A]	2		
Max. sensor supply per module		[A]	2		
Fuse protection for sensor supply			Central fuse 2 A, in system supply		
Current consumption of module		[mA]	Typical 12		
Supply voltage of sensors		[V DC]	24 ±25%, coming from bus node		
Switching level	Signal 0	[V DC]	≤5 DC		
	Signal 1	[V DC]	≥10 DC		
Input delay		[ms]	3		0.6
Switching logic			PNP (for input signals with positive logic)		
Input characteristic curve			To IEC 1131-2		
Protection class to EN 60529			IP65 (when fully plugged-in or fitted with protective cover)		
Temperature range	Operation	[°C]	–5 ... +50		
	Storage	[°C]	–20 ... +70		
Material			Die-cast aluminium		
Dimensions		[mm]	132 x 36 x 70		
Grid dimension		[mm]	36		
Weight		[g]	360		

- Type discontinued
Available up until 2017

Modular electrical peripherals, for type 03/04

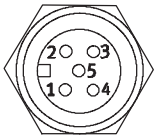
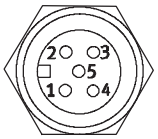
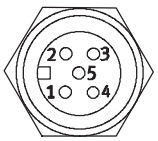
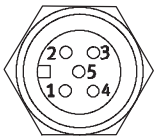
Technical data – Input module, digital, 4-/8-fold

General technical data			
Type			VIGE-03-FB-8-5POL-S
Input type			With separate fuse, PNP
No. of inputs			8
No. of occupied module positions			1
Sensor connection type			4xM12, 5-pin, socket with double allocation
Max. power supply per channel		[A]	2
Max. sensor supply per module		[A]	0.5
Fuse protection for sensor supply			Internal electrical fuse
Current consumption of module		[mA]	Typical 12
Supply voltage of sensors		[V DC]	24 ±25%, coming from bus node
Switching level	Signal 0	[V DC]	≤6
	Signal 1	[V DC]	≤8.6
Input delay		[ms]	3
Switching logic			PNP (for input signals with positive logic)
Input characteristic curve			To IEC 1131-2
Protection class to EN 60529			IP65 (when fully plugged-in or fitted with protective cover)
Temperature range	Operation	[°C]	–5 ... +50
	Storage	[°C]	–20 ... +70
Material			Die-cast aluminium
Dimensions		[mm]	132 x 36 x 70
Grid dimension		[mm]	36
Weight		[g]	360

Modular electrical peripherals, for type 03/04

FESTO

Technical data – Input module, digital, 4-/8-fold

Pin allocation							
Terminal allocation	4-fold				8-fold		
	Pin	Signal	LED		Pin	Signal	LED
5-pin input modules							
	1	+24 V	0		1	+24 V	0
	2	n.c.			2	Ix+1	
	3	0 V			3	0 V	1
	4	Ix			4	Ix	
	5	Earth terminal			5	Earth terminal	
	1	+24 V	1		1	+24 V	2
	2	n.c.			2	Ix+3	
	3	0 V			3	0 V	3
	4	Ix+1			4	Ix+2	
	5	Earth terminal			5	Earth terminal	
	1	+24 V	2		1	+24 V	4
	2	n.c.			2	Ix+5	
	3	0 V			3	0 V	5
	4	Ix+2			4	Ix+4	
	5	Earth terminal			5	Earth terminal	
	1	+24 V	3		1	+24 V	6
	2	n.c.			2	Ix+7	
	3	0 V			3	0 V	7
	4	Ix+3			4	Ix+6	
	5	Earth terminal			5	Earth terminal	

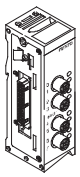
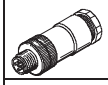
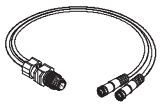
Ix Input x

- Type discontinued
Available up until 2017

Modular electrical peripherals, for type 03/04

Accessories – Input module, digital, 4-/8-fold

Ordering data

Designation			Part No.	Type
Input module, digital				
	8 digital inputs, positive logic (PNP), standard inputs		**175555**	**VIGE-03-FB-8-5POL**
	4 digital inputs, positive logic (PNP), input plug with single allocation		**175557**	**VIGE-03-FB-4-5POL**
	8 digital inputs, positive logic (PNP), high-speed inputs		**175559**	**VIGE-03-FB-8,1-5POL**
	8 digital inputs, positive logic (PNP), with separate fuse		**188521**	**VIGE-03-FB-8-5POL-S**
Sensor plug				
	Plug, straight socket, M12	5-pin, PG7	**175487**	**SEA-M12-5GS-PG7**
		4-pin, PG7	**18666**	**SEA-GS-7**
		4-pin, 2.5 mm^2 OD	**192008**	**SEA-4GS-7-2,5**
	Plug for 2 sensor cables, M12, PG11	4-pin	**18779**	**SEA-GS-11-DUO**
		5-pin	**192010**	**SEA-5GS-11-DUO**
DUO cable				
	DUO cable	2x straight socket	**18685**	**KM12-DUO-M8-GDGD**
		2x straight/angled socket	**18688**	**KM12-DUO-M8-GDWD**
		2x angled socket	**18687**	**KM12-DUO-M8-WDWD**

Modular electrical peripherals, for type 03/04

Technical data – Input module, digital, 16-fold

FESTO

Function

Sensor signals in groups of up to 8 or 12 are recorded by multi-pin distributors and forwarded to the module via a multi-pin cable.

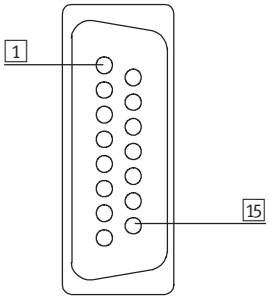
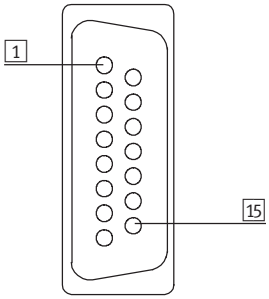
Applications

- Input modules for 24 V DC sensor signals
- 2 connector plugs, Sub-D 15-pin socket
- Ready for installation for multi-pin distributors with up to 8 or 12 inputs
- Allocation of the plug variables
  - 8 inputs on top and 8 inputs on bottom
  - 12 inputs on top and 4 inputs on bottom
- The input statuses are indicated for each input signal at an assigned LED
- 24 V DC voltage supplied separately for both plugs, with separate electronic fuse
- Module width: 36 mm

General technical data			
Type			VIGE-03-FB-16-SUBD-S
No. of inputs			16
No. of occupied module positions			2
Sensor connection type			2x Sub-D, 15-pin socket
Max. sensor supply per connection		[A]	0.5
Max. sensor supply per module		[A]	1
Fuse protection for sensor supply			Separate electronic fuse for each connection
Current consumption of module		[mA]	12
Supply voltage of sensors		[V DC]	24 ±25%, coming from bus node
Switching level	Signal 0	[V DC]	≤6
	Signal 1	[V DC]	≥8.6
Input delay		[ms]	3
Switching logic			PNP (for input signals with positive logic)
Input characteristic curve			To IEC 1131-2
Protection class to EN 60529			IP65 (when fully plugged-in or fitted with protective cover)
Temperature range	Operation	[°C]	–5 ... +50
	Storage	[°C]	–20 ... +70
Material			Die-cast aluminium
Dimensions (HxWxD)		[mm]	132 x 36 x 56
Grid dimension		[mm]	36
Weight		[g]	360

Modular electrical peripherals, for type 03/04

Technical data – Input module, digital, 16-fold

Pin allocation		
Terminal allocation	Pin	Signal
	1	Ix
	2	Ix+1
	3	Ix+2
	4	Ix+3
	5	Ix+4
	6	Ix+5
	7	Ix+6
	8	Ix+7
	9	Ix+8 1)
	10	Ix+9 1)
	11	Ix+10 1)
	12	Ix+11 1)
	13	24 V DC sensor supply
	14	0 V
	15	PE housing
	1	Ix+8 1)
	2	Ix+9 1)
	3	Ix+10 1)
	4	Ix+11 1)
	5	Ix+12
	6	Ix+13
	7	Ix+14
	8	Ix+15
	9	Free
	10	Free
	11	Free
	12	Free
	13	24 V DC sensor supply
	14	0 V
	15	PE housing

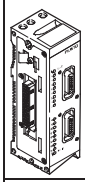
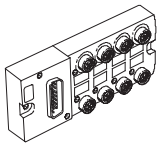
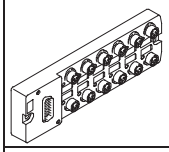
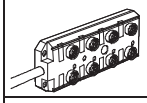
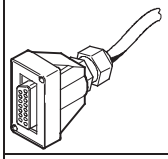
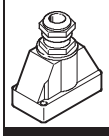
Ix Input x

1) Two sets of inputs signals, connect to either of the two plugs.

Modular electrical peripherals, for type 03/04

FESTO

Accessories – Input module, digital, 16-fold

Ordering data				
Designation			Part No.	Type
Input module, digital				
	16 digital inputs, positive logic (PNP), 2x Sub-D, 15-pin socket		**192549**	**VIGE-03-FB-16-SUBD-S**
Multi-pin distributors				Technical data → 34
	15-pin socket Sub-D / 8x 3-pin M8 plugs	8 I/Os	**177669**	**MPV-E/A08-M8**
	15-pin socket Sub-D / 12x 3-pin M8 plugs	12 I/Os	**177670**	**MPV-E/A12-M8**
	15-pin connecting cable / 8x 5-pin M12 plugs	8 I/Os	**177671**	**MPV-E/A08-M12**
Cables and plugs				
	Plug socket with cable, open at one end	5 m	**177673**	**KMPV-SUB-D-15-5**
		10 m	**177674**	**KMPV-SUB-D-15-10**
	Plug socket Sub-D, plug		**192768**	**SD-SUB-D-ST15**

Type discontinued
Available up until 2017

Modular electri peripherals, for type 03/04

Technical data – Output module, digital

FESTO

Function

The electrical outputs control actuators such as individual valves, hydraulic valves, heating controllers and many more.

Note

Valves with M12 central plug, optimum control.

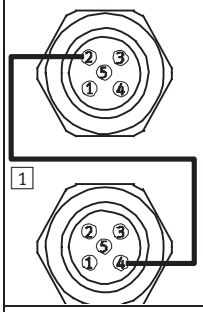
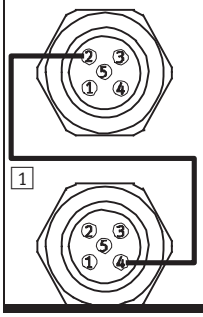
Applications

- Output module with 4 outputs 24 V DC
- M12 connection technology, with 5-pin sockets
- LED display of the switching status per channel
- Short circuit and overload detection per output
  - Separate malfunction display for each channel by means of red LED
  - Diagnostic message about system status to controller

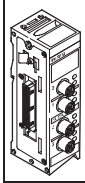
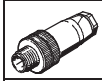
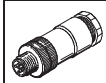
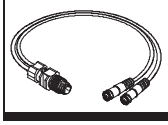
General technical data			
Type			VIGA-03-FB-4-5POL
Output type			Standard outputs, PNP
No. of outputs			4
No. of occupied module positions			1
Output connection type			4xM12, 5-pin, socket with double allocation
Max. output current	per channel	[A]	0.5
	per module	[A]	2.0
Operating voltage		[V DC]	24 ±25%
Load voltage connection		[V DC]	24 ±10%
Parallel connection possible			Yes, within the module only
Fuse protection for output line			Electronic fuse per channel 0.5 A
Current consumption of module		[mA]	9
Overload/short circuit protection			Per channel
Switching logic			To IEC 1131-2
Protection class to EN 60529			IP65 (when fully plugged-in or fitted with protective cover)
Temperature range	Operation	[°C]	–5 ... +50
	Storage	[°C]	–20 ... +70
Material			Die-cast aluminium
Dimensions (HxWxD)		[mm]	132 x 36 x 69
Grid dimension		[mm]	36
Weight		[g]	360

Modular electrical peripherals, for type 03/04

Accessories – Output module, digital

Pin allocation – Standard			
Terminal allocation	LED	Pin	Signal
	0	1	n.c.
		2	Ox+1
		3	0 V
		4	Ox
		5	Earth terminal
	1	1	n.c.
		2	n.c.
		3	0 V
		4	Ox+1
		5	Earth terminal
	2	1	n.c.
		2	Ox+3
		3	0 V
		4	Ox+2
		5	Earth terminal
	3	1	n.c.
		2	n.c.
		3	0 V
		4	Ox+3
		5	Earth terminal

[1] Internal connection in module
Ox Output x

Ordering data				
Designation			Part No.	Type
Output module, digital				
	4 digital outputs, positive logic (PNP), standard outputs		**175641**	**VIGA-03-FB-4-5POL**
Sensor plug				
	Plug, straight socket, M12	5-pin, Pg7	**175487**	**SEA-M12-5GS-PG7**
	Plug for 2 sensor cables, M12, PG11	5-pin	**192010**	**SEA-5GS-11-DUO**
DUO cable				
	DUO cable	2x straight socket	**18685**	**KM12-DUO-M8-GDGD**
		2x straight/angled socket	**18688**	**KM12-DUO-M8-GDWD**
		2x angled socket	**18687**	**KM12-DUO-M8-WDWD**

- 1 - Type discontinued
Available up until 2017

Modular electrical peripherals, for type 03/04

Technical data – Input/output module

FESTO

Function

Digital input modules facilitate the connection of proximity sensors or other 24 V DC sensors (inductive, capacitive, etc.).
The electrical outputs control actuators such as individual valves, lamps and a host of other devices.
The I/O module occupies 3 module positions.
Its electrical isolation makes it suitable as a coupling connection to external circuits.

Applications

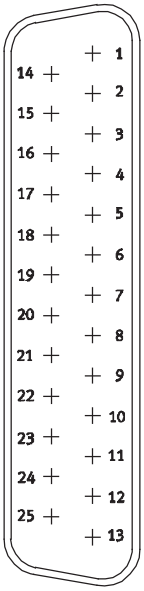
The I/O module combines 12 inputs and 8 outputs in one module with a width of 72 mm. The connection is established via a pre-assembled 25-pin Sub-D plug with multi-pin cable. 24 V DC internal supply to the sensor connections. The switching status displays for the inputs/outputs are shown on assigned LEDs.
4 outputs are combined into a group and supplied externally with 24 V DC.
The inputs and outputs are electrically isolated from the node.

General technical data			
Type			VIEA-03-FB-12E-8A-SUBD
Number	Inputs		12
	Outputs		8
No. of occupied module positions			3
Sensor connection and output type			25-pin multi-pin cable and Sub-D plug connector
Max. power supply per channel		[A]	2
Max. sensor supply per module		[A]	2
Fuse protection for sensor supply			Central fuse 2 A, in system supply
Current consumption of module			Typically 8 mA (inputs) 5 mA (outputs) per group of four
Capacity per digital output		[A]	0.5 internal electronic fuse
Supply voltage of sensors		[V DC]	24 ±25%, coming from bus node
Switching level	Signal 0	[V DC]	≤ 5
	Signal 1	[V DC]	≥ 11
Input delay		[ms]	5
Switching logic			PNP (for input signals with positive logic)
Input characteristic curve			To IEC 1131-2
Protection class to EN 60529			IP65 (when fully plugged-in or fitted with protective cover)
Temperature range	Operation	[°C]	–5 ... +50
	Storage	[°C]	–20 ... +70
Material			Die-cast aluminium
Dimensions (HxWxD)		[mm]	132 x 78 x 78
Grid dimension		[mm]	72
Weight		[g]	700

Modular electrical peripherals, for type 03/04

Accessories – Input/output module

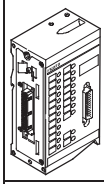
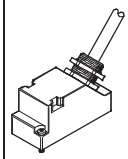
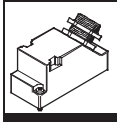
Pin allocation



Pin	Signal	Core colour of data cable KEA-1-25P-...
1	Ix	white
2	Ix+1	green
3	Ix+2	yellow
4	Ix+3	grey
5	Ix+4	pink
6	Ix+5	blue
7	Ix+6	red
8	Ix+7	magenta
9	Ix+8	grey-pink
10	Ix+9	red-blue
11	Ix+10	white-green
12	Ix+11	brown-green
13	0 V of inputs	white-yellow
14	Ox	yellow-brown
15	Ox+1	white-grey
16	Ox+2	grey-brown
17	Ox+3	white-pink
18	Ox+4	pink-brown
19	Ox+5	white-blue
20	Ox+6	brown-blue
21	Ox+7	white-red
22	24 V DC (for the outputs Ox ... Ox+3)	brown-red
23	24 V DC (for the outputs Ox+4 ... Ox+7)	white-black
24	0 V (for the outputs Ox ... Ox+3)	brown
25	0 V (for the outputs Ox+4 ... Ox+7)	black

Ix Input x
Ox Output x

Ordering data

Designation		Part No.	Type
Input/output module, digital			
	12 digital inputs, 8 digital outputs	**174483**	**VIEA-03-FB-12E-8A-SUBD**
Cables and plugs			
	Connecting cable, 5 m	**177413**	**KEA-1-25P-5**
	Connecting cable, 10 m	**177414**	**KEA-1-25P-10**
	Connecting cable, x length	**177415**	**KEA-1-25P-X**
	Plug socket Sub-D, socket	**18709**	**SD-SUB-D-BU25**

- Type discontinued
Available up until 2017

Modular electrical peripherals, for type 03/04

Technical data – Analogue stage

Function

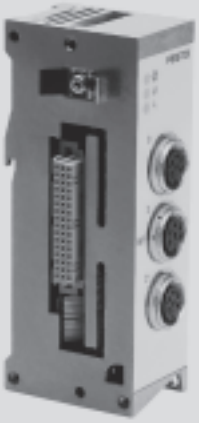
Analogue signals, as well as digital inputs and outputs, are required in many areas of automation. Special analogue stages are provided for these tasks which are capable of processing both analogue input signals, e.g. setpoint specifications and feedback on actual values (temperature, pressure, flow rate, fill-level, etc.), as well as analogue outputs for controlling actuators. The analogue stages are specially prepared for the connection of proportional valves[1].

Applications

- 6-pin push-in connectors to DIN 45 332
- Diagnostic LED to indicate readiness for service and overload
- Voltage supplied for all connected sensors

Two analogue stages are available for different fields of application:

- VIAU-03-FB-I, universal module for current signals
  - 3 analogue inputs (4 ... 20 mA)
  - 1 analogue output (4 ... 20 mA)
- VIAU-03-FB-U, universal module for voltage signals
  - 3 analogue inputs (0 ... 10 V)
  - 1 analogue output (0 ... 10 V)



VIAU-03-FB-...

1) Not suited for MPPES

General technical data				
Type			VIAU-03-FB-I[1]	VIAU-03-FB-U[1]
Number	Inputs		3	3
	Outputs		1	1
Sensor connection type			3x 6-pin socket, DIN 45322	
Max. sensor supply per module		[A]	2	0.5
Fuse protection for sensor supply			Central fuse 2 A, in system supply	
Current consumption of module		[mA]	64	
Supply voltage of sensors		[V DC]	24 ±25%, coming from bus node	
Actuator supply voltage		[V DC]	24 ±10%, external	
Actuator supply, average continuous loading capability		[A]	Max. 1	
Analogue current inputs	Signal range		4 ... 20 mA	0 ... 10 V DC
	Resolution	[bit]	11	12
	No. of units		2 048	4 096
	Absolute precision	[%]	0.45	0.4
	Input resistance	[kΩ]	0.050	≥ 20
	Max. permissible input current	[mA]	65	
	Input voltage	[V DC]	–	30
Input signal cut-off frequency		[Hz]	116	
Linearity	Differential non-linearity		2 LSB	
	Integral non-linearity		3 LSB	

1) Not suited for MPPES

Modular electrical peripherals, for type 03/04

FESTO

Technical data – Analogue stage

General technical data				
Type			VIAU-03-FB-I[1)]	VIAU-03-FB-U[1)]
Analogue current inputs/outputs	Signal range		4 … 20 mA	0 … 10 V DC
	Resolution	[bit]	12	
	No. of units		4 096	
	Absolute precision	[%]	0.5	0.45
	Load resistance (load)	[kΩ]	≤ 0.250	≥ 3.3
Linearity	Differential non-linearity		2 LSB	
	Integral non-linearity		4 LSB	
Protection class to EN 60529			IP65 (when fully plugged-in or fitted with protective cover)	
Temperature range	Operation	[°C]	–5 … +50	
	Storage	[°C]	–20 … +70	
Material			Die-cast aluminium	
Dimensions (HxWxD)		[mm]	132 x 42 x 70	
Grid dimension		[mm]	36	
Weight		[g]	360	

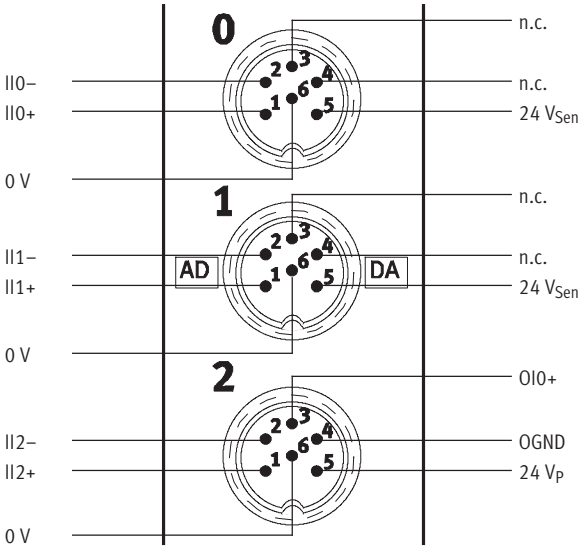
1) Not suited for MPPES

Modular electrical peripherals, for type 03/04

Technical data – Analogue stage

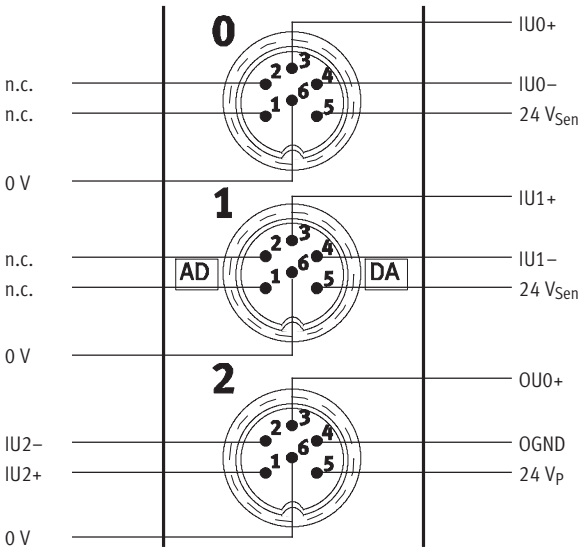
Pin allocation

Analogue stage VIAU-03-FB-I (current signals)



Signal	Signal designation
IIx+	Positive current, input signal
IIx–	Negative current, input signal
OI0+	Positive current, output signal
OGND	Current output signal
24 V_{Sen}	24 V DC sensor supply voltage
24 V_p	24 V DC actuator supply voltage
0 V	0 V actuator/sensor supply voltage
Housing	Cable screening connection

Analogue stage VIAU-03-FB-U (voltage signals)

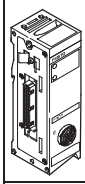
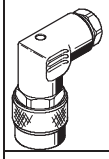
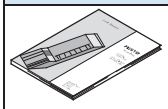


Signal	Signal designation
IUx+	Positive voltage, input signal
IUx–	Negative voltage, input signal
OU0+	Positive voltage, output signal
OGND	Voltage output signal
24 V_{Sen}	24 V DC sensor supply voltage
24 V_p	24 V DC actuator supply voltage
0 V	0 V actuator/sensor supply voltage
Housing	Cable screening connection

Modular electrical peripherals, for type 03/04

Accessories – Analogue stage

FESTO

Ordering data				
Designation			Part No.	Type
Input module, analogue				
	3 analogue inputs and 1 analogue output, universal module for current signals		**164239**	**VIAU-03-FB-I**
	3 analogue inputs and 1 analogue output, universal module for voltage signals		**18692**	**VIAU-03-FB-U**
Connecting cables				
	Connecting cable for Festo proportional pressure regulator, plug/socket pre-assembled at both ends	5 m	**163882**	**KVIA-MPPE-5**
		10 m	**163883**	**KVIA-MPPE-10**
	Connecting cable for Festo proportional directional control valve, plug/socket pre-assembled at both ends	5 m	**161984**	**KVIA-MPYE-5**
		10 m	**161985**	**KVIA-MPYE-10**
	Connecting cable for other signal modules, open cable end	5 m	**163960**	**KVIA-5**
		10 m	**163961**	**KVIA-10**
User documentation				
	User documentation – Analogue stage	German	**163946**	**P.BE-VIAX-03/05-DE**
		English	**163947**	**P.BE-VIAX-03/05-EN**
		French	**163948**	**P.BE-VIAX-03/05-FR**
		Spanish	**163949**	**P.BE-VIAX-03/05-ES**
		Italian	**165379**	**P.BE-VIAX-03/05-IT**
		Swedish	**165539**	**P.BE-VIAX-03/05-SV**

Modular electrical peripherals, for type 03/04

Technical data – Multi-pin distributor

Function

MPV multi-pin distributors are suitable for the distribution of input and output signals to PNP sensors and solenoid valves via the M12/M8 plugs. The multi-pin distributors, in conjunction with the input module VIGE-03-FB-16-SUBD-S (➔ 23), collect the sensor signals directly in the machine and forward them to the input module on the 15-pin Sub-D sockets via a multi-pin cable.

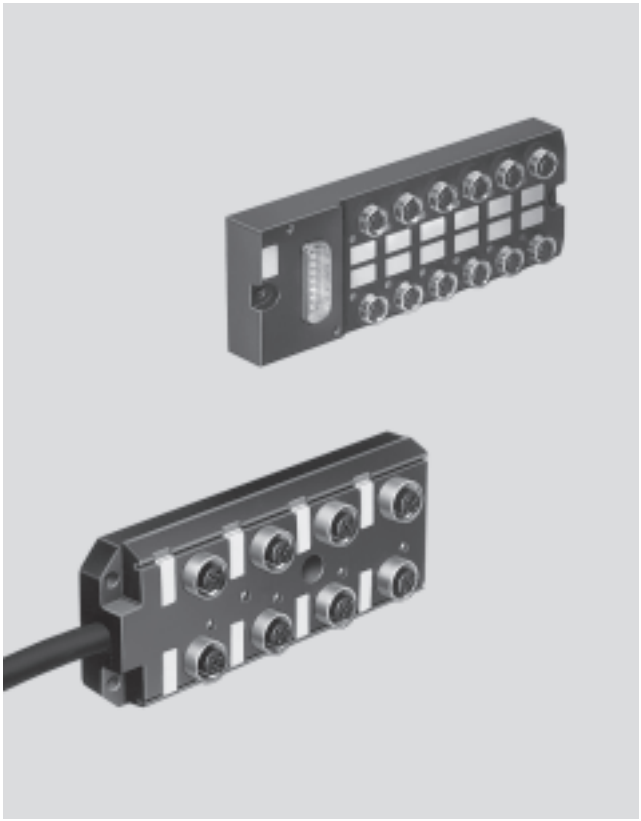
- LED for signal status display
- Only one cable to installation location
- A broad range of accessories

Type MPV-E/A...-M8

The multi-pin distributor facilitates the connection of max. 8 or 12 input signals to 3-pin M8x1 plugs.
The connecting cable KMPV-SUB-D-15-..., pre-assembled at one end, with the 15-pin Sub-D socket is connected to the multi-pin distributor. The open end of the cable is fitted with the plug socket SD-SUB-D-ST15 and connected to the input module.

Type MPV-E/A08-M12

Connection of max. 8 input signals to 5-pin M12 plug.
The connecting cable is permanently attached to the multi-pin distributor. The open end of the cable is fitted with the plug socket SD-SUB-D-ST15 and connected to the input module. Switching status display via yellow LED. Sensor voltage display via green LED.

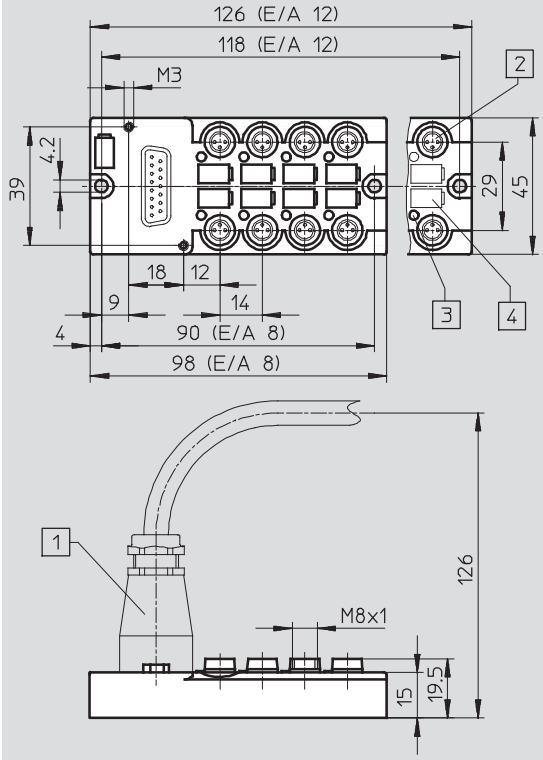


General technical data					
Type			MPV-E/A08-M8	MPV-E/A12-M8	MPV-E/A08-M12
No. of inputs/outputs			8	12	8
Type of mounting			2 through-holes or on H-rail[1)]		3 through-holes
Connection			M8x1, 3-pin		M12x1, 5-pin
Permissible voltage		[V DC]	10 ... 30		10 ... 30
Current-carrying capacity		[A]	Max. 1 per module slot Total current: max. 4		Max. 4 per module slot Total current: max. 12
Protection class to EN 60529			IP65 (fully assembled)		IP67 (fully assembled)
Temperature range	Operation	[°C]	–20 ... +80		–20 ... +80
	Storage	[°C]	–20 ... +80		–20 ... +80
Materials	Housing		Polyamide		Polyurethane
	Sockets		Brass, gold plated		Galvanised brass
	Cable		–		Polyurethane, polyvinyl chloride
Weight		[g]	100[2)]	120[2)]	200[2)]

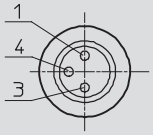
1) With adapter CP-TS-HS-35
2) Without cable

Dimensions Download CAD Data ➔ **www.festo.com/us/cad**

MPV-E/A...-M8

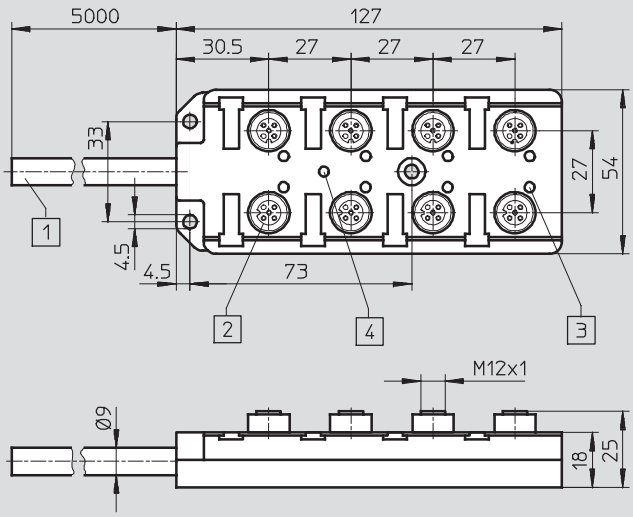


1 Multi-pin connection
2 3-pin socket, M8x1
3 Switching status display, yellow
4 Inscription label (type IBS-6x10)

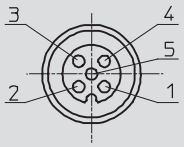


1 24 V DC
3 0 V
4 Signal line (1 ... 8) or (1 ... 12)

MPV-E/A08-M12

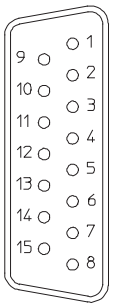


1 Connecting cable, 5 m
2 5-pin socket, M12 x 1
3 Switching status display, yellow
4 Voltage display, green

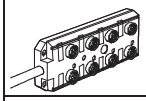
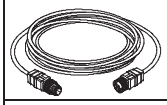
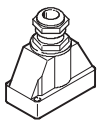
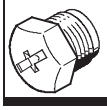


1 24 V DC
2 n.c.
3 0 V
4 Signal line (1 ... 8)
5 Earth

Pin allocation

	MPV-E/A...-M8 Cable with 15-pin Sub-D plug			MPV-E/A08-M12 Signal line pins 1 through 12	
	Pin	M8 socket location	Core colour	M12 socket location	Core colour
	1	0/4	white	1/4	white
	2	1/4	brown	2/4	green
	3	2/4	green	3/4	yellow
	4	3/4	yellow	4/4	grey
	5	4/4	grey	5/4	pink
	6	5/4	pink	6/4	red
	7	6/4	blue	7/4	black
	8	7/4	red	8/4	magenta
	9	8/4	black	24 V DC	brown
	10	9/4	magenta	0 V	blue
	11	10/4	grey-pink	PE	green-yellow
	12	11/4	red-blue		
	13	24 V DC	white-green		
	14	0 V	brown-green		
	15	0 V	white-yellow		

Ordering data for MPV-E/A08-M12

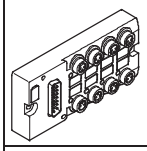
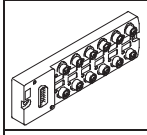
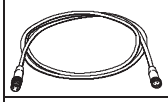
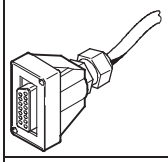
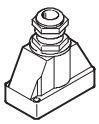
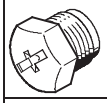
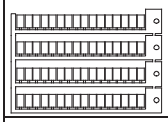
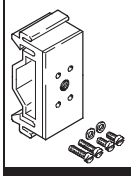
Designation			Part No.	Type
Multi-pin distributors				
	15-pin connecting cable / 8x 5-pin M12 plugs		**177671**	**MPV-E/A08-M12**
Plugs and cables				
	Connecting cable for sensors, M12-M12	2.5 m	**18684**	**KM12-M12-GSGD-2,5**
		5 m	**18686**	**KM12-M12-GSGD-5**
	Plug socket[1)]		**192768**	**SD-SUB-D-ST15**
Protective cover				
	Cover caps (10 pieces) for unused terminals		**165592**	**ISK-M12**

1) A Sub-D plug socket is required to establish a connection between the multi-pin distributor and input module VIGE-03-FB-16-SUBD-S.

Modular electrical peripherals, for type 03/04

Accessories – Multi-pin distributor

Ordering data for MPV-E/A...-M8

	Designation		Part No.	Type
Multi-pin distributors				
	15-pin socket Sub-D / 8x 3-pin M8 plugs		**177669**	**MPV-E/A08-M8**
	15-pin socket Sub-D / 12x 3-pin M8 plugs		**177670**	**MPV-E/A12-M8**
Plugs and cables				
	Connecting cable for sensors, M8-M8	2.5 m	**165610**	**KM8-M8-GSGD-2,5**
		5 m	**165611**	**KM8-M8-GSGD-5**
	Plug socket with cable, open at one end[1]	5 m	**177673**	**KMPV-SUB-D-15-5**
		10 m	**177674**	**KMPV-SUB-D-15-10**
	Plug socket[1]		**192768**	**SD-SUB-D-ST15**
Protective cover				
	Cover caps (10 pieces) for unused terminals		**177672**	**ISK-M8**
Designation				
	Inscription labels, pack of 64		**18576**	**IBS-6x10**
Mounting				
	Attachment for H-rail mounting, 2 pieces		**170169**	**CP-TS-HS-35**

1) A plug socket with cable and a Sub-D plug socket are required to establish a connection between the multi-pin distributor and input module VIGE-03-FB-16-SUBD-S.

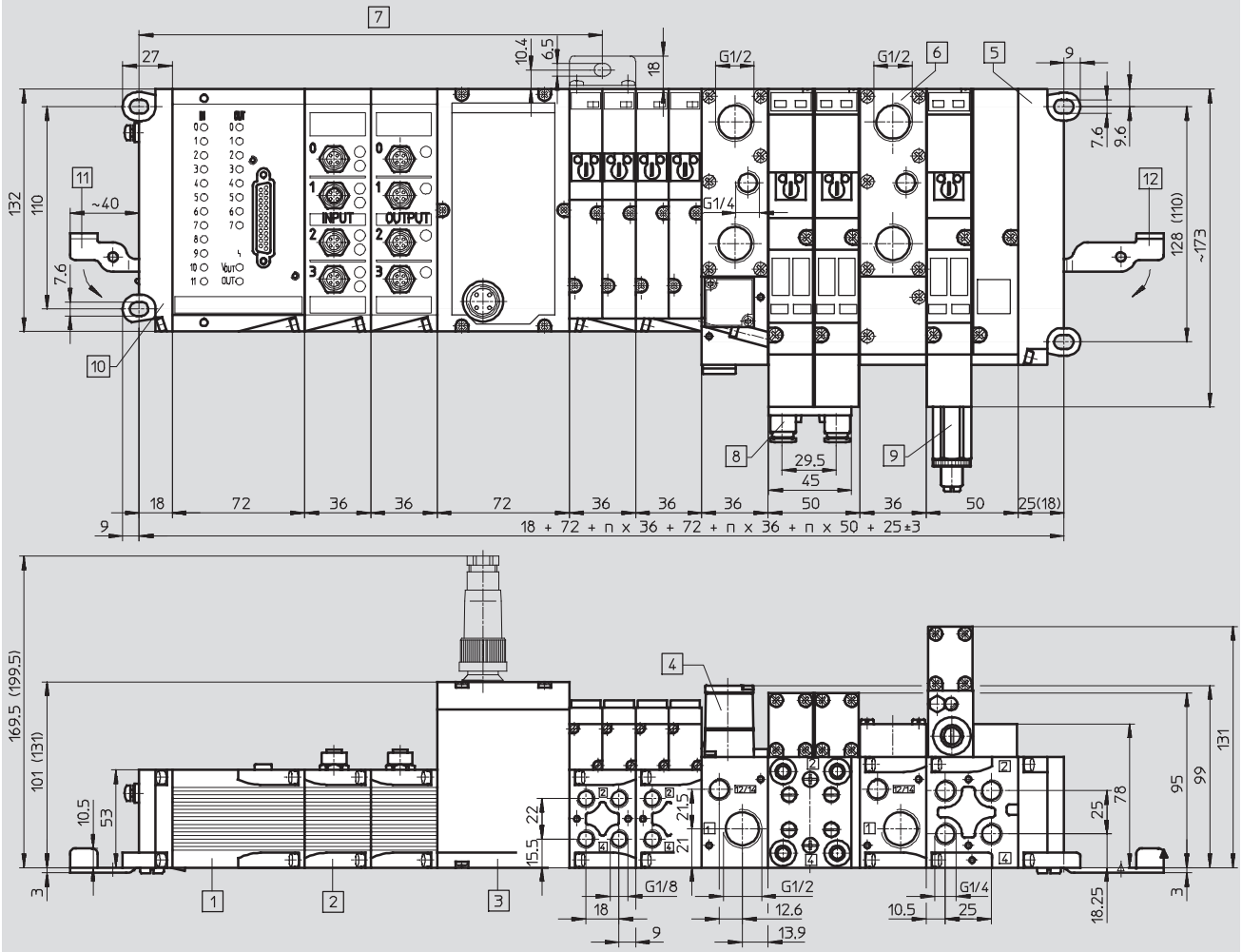
Modular electrical peripherals, for type 03/04

Technical data

FESTO

Dimensions – Electrical peripherals with valve terminal type 03 Download CAD Data ➔ **www.festo.com/us/cad**

with bus node/control block



1 Input/output module
2 Input module
3 Fieldbus/control block
4 Adapter plate MIDI/MAXI with pressure regulating valve for pilot pressure
5 End plate, right-hand (dimensions for MIDI valves in brackets)
6 Compressed-air supply plate
7 Mounting bracket for wall mounting required approx. every 200 mm
8 One-way flow control valve
9 Pressure regulating valve
10 End plate, left-hand
11 Swivel lever IBGH-03-4.0 (opened out) for connection to mounting rail
12 Swivel lever IBGH-03-7.0 (opened out) for connection to mounting rail

Modular electrical peripherals, for type 03/04

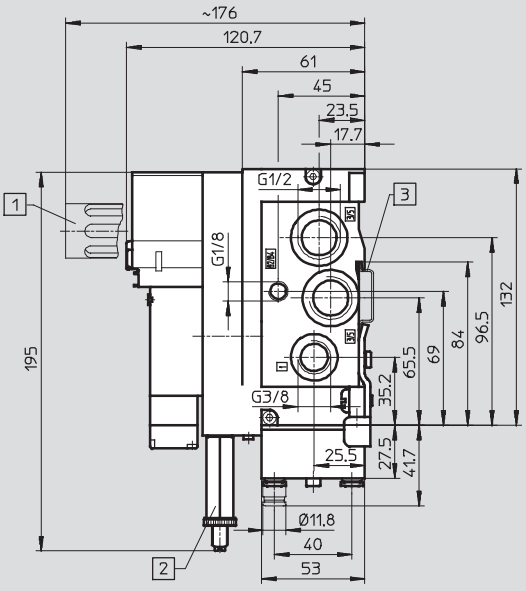
Technical data

FESTO

Dimensions – End plates for valve terminal 03

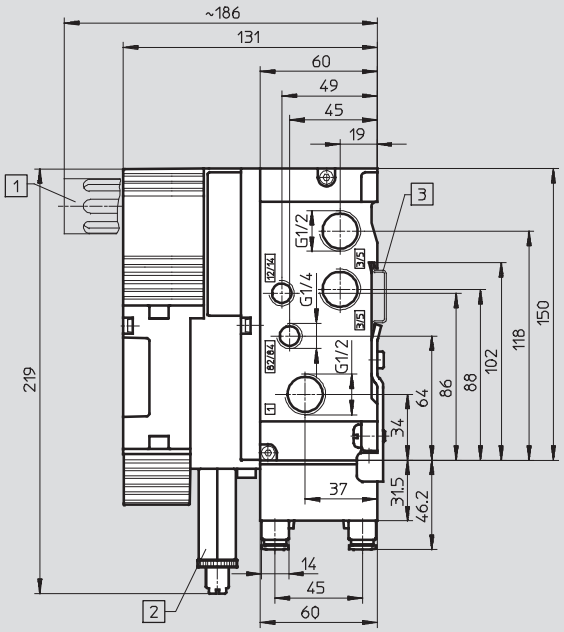
Download CAD Data ➔ **www.festo.com/us/cad**

MIDI valves



1 Silencer
2 Pressure regulating valve
3 H-rail

MAXI valves



1 Silencer
2 Pressure regulating valve
3 H-rail

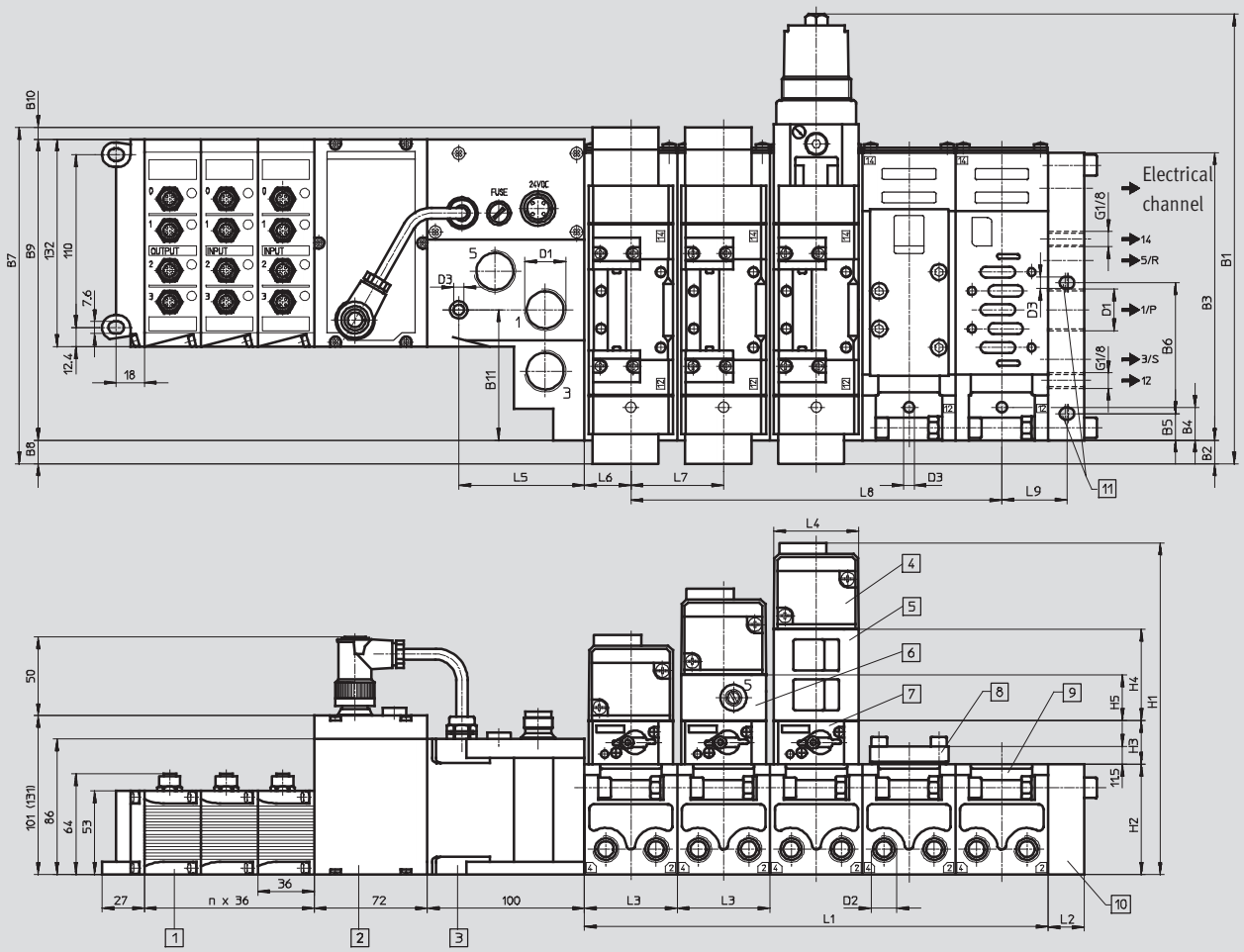
Modular electrical peripherals, for type 03/04

Technical data

FESTO

Dimensions – Electrical peripherals with valve terminal type 04 Download CAD Data ➔ **www.festo.com/us/cad**

with bus node/control block



1 Output module
2 Fieldbus node/control block
3 Adapter plate
4 ISO valve
5 Intermediate pressure regulator plate
6 Throttle plate
7 Intermediate solenoid plate
8 Blanking plate
9 Manifold sub-base
10 End plate
11 Mounting hole (only with VIFB-04-D-1)

Type	~B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	D1	D2	D3 ∅
VIFB-04-D-1-B	251	33	149	7	17	80	198.5	33	153	12.4	56.9	G½	G¼	6.6
VIFB-04-D-2-B	287	15	183	21	–	–	214	15	191.5	7.5	83	G¾	G⅜	6.6
VIFB-04-D-3-B	315	6	230	27	–	–	241.5	6	231.6	3.9	79.5	G1	G½	9

Type	H1	H2	H3	H4	H5	L1[1)]	L2	L3	L4	L5	L6	L7	L8[1)]	L9
VIFB-04-D-1-B	181.7	64	27	45	25.5	m x 43	22	43	42	80	9.5	43	(m–1) x 43	44.5
VIFB-04-D-2-B	210.8	70	27.8	58	29	m x 59	23	59	54	80	29.5	59	(m–1) x 59	–
VIFB-04-D-3-B	235	82	28	63	40	m x 72	28	72	70	52	36	72	(m–1) x 72	–

1) m = Number of valves

Modular electrical peripherals, for type 03/04

FESTO

Accessories

Product range overview – Connections for bus nodes and control blocks				
Designation	Type	FB6 -	FB13 -	FB21 -
Fieldbus connection				
Plug, Sub-D	**FBS-SUB-9-GS-DP-B**	–	■	–
Bus connection, 2x M12 adapter plug (B-coded)	**FBA-2-M12-5POL-RK**	–	■	–
INTERBUS standard round plug[1]		■	–	–
INTERBUS "Rugged Line" FOC plug[1]		–	–	■
Power supply				
Plug socket, straight, for 1.5 mm^2	**NTSD-GD-9**	■	■	–
Plug socket, straight, for 2.5 mm^2	**NTSD-GD-13,5**	■	■	–
Plug socket, angled, for 1.5 mm^2	**NTSD-WD-9**	■	■	–
Plug socket, angled, for 2.5 mm^2	**NTSD-WD-11**	■	■	–

1) Not a Festo product, order from Phoenix Contact

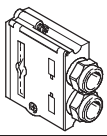
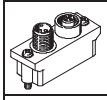
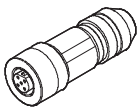
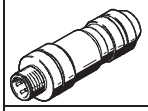
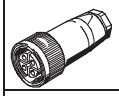
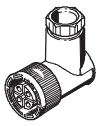
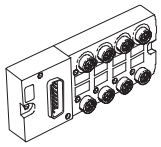
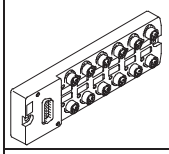
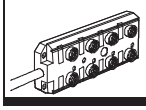
Product range overview – Electrical connection technology for modules					
Designation	Type	Input module		Output module	Input/output module
		4-/8-fold VIGE-... -	16-fold VIGE-... -	VIGA-... -	VIEA-... -
Plugs and sockets					
Plug, straight socket, M12, 4-pin, Pg7	**SEA-GS-7**	■	–	■	–
Plug, straight socket, M12, 4-pin, 2.5 mm^2 OD	**SEA-4GS-7-2,5**	■	–	■	–
Plug, straight socket, M12, 5-pin, Pg7	**SEA-M12-5GS-PG7**[1]	■	–	■	–
Plug for 2 sensor cables, M12, Pg11, 4-pin	**SEA-GS-11-DUO**	■	–	■	–
Plug for 2 sensor cables, M12, Pg11, 5-pin	**SEA-5GS-11-DUO**[1]	■	–	■	–
Plug socket Sub-D, plug	**SD-SUB-D-ST15**	–	■	–	–
Plug socket Sub-D, socket	**SD-SUB-D-BU25**	–	–	–	■
Cables					
Connecting cable, 5 m	**KEA-1-25P-5**	–	–	–	■
Connecting cable, 10 m	**KEA-1-25P-10**	–	–	–	■
Connecting cable, x length	**KEA-1-25P-X**	–	–	–	■
DUO cable, 2x straight socket	**KM12-DUO-M8-GDGD**	■	–	■	–
DUO cable, 2x straight/angled socket	**KM12-DUO-M8-GDWD**	■	–	■	–
DUO cable, 2x angled socket	**KM12-DUO-M8-WDWD**	■	–	■	–
Plug socket with cable, open at one end, 5 m	**KMPV-SUB-D-15-5**	–	■	–	–
Plug socket with cable, open at one end, 10 m	**KMPV-SUB-D-15-10**	–	■	–	–

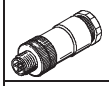
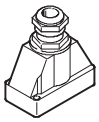
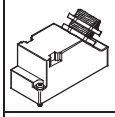
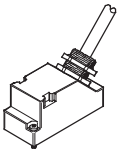
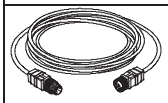
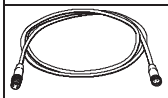
1) 5-pin cable, cannot be used with 4-pin connectors

Product range overview – Electrical connection technology for modules		
Designation	Type	Analogue stage
		VIAU-... -
Cables		
Connecting cable for Festo proportional pressure regulator, 5 m	**KVIA-MPPE-5**	■
Connecting cable for Festo proportional pressure regulator, 10 m	**KVIA-MPPE-10**	■
Connecting cable for Festo proportional directional control valve, 5 m	**KVIA-MPYE-5**	■
Connecting cable for Festo proportional directional control valve, 10 m	**KVIA-MPYE-10**	■
Connecting cable for other signal modules, open cable end, 5 m	**KVIA-5**	■
Connecting cable for other signal modules, open cable end, 10 m	**KVIA-10**	■

Modular electrical peripherals, for type 03/04

Accessories

Ordering data				
Designation			Part No.	Type
Fieldbus connection				
	Plug socket Sub-D, IP65, 9-pin	for PROFIBUS DP	**532216**	**FBS-SUB-9-GS-DP-B**
	Bus connection socket, straight, Sub-D, 9-pin (B-coded, ReverseKey)	2xM12 adapter 5-pin for PROFIBUS DP	**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**
Power supply				
	Plug socket, straight, M18x1	4-pin for 1.5 mm^2	**18493**	**NTSD-GD-9**
		4-pin for 2.5 mm^2	**18526**	**NTSD-GD-13,5**
	Plug socket, angled, M18x1	4-pin for 1.5 mm^2	**18527**	**NTSD-WD-9**
		4-pin for 2.5 mm^2	**533119**	**NTSD-WD-11**
Multi-pin distributors				
	15-pin socket Sub-D / 8x 3-pin M8 plugs	8 I/Os	**177669**	**MPV-E/A08-M8**
	15-pin socket Sub-D / 12x 3-pin M8 plugs	12 I/Os	**177670**	**MPV-E/A12-M8**
	15-pin connecting cable / 8x 5-pin M12 plugs	8 I/Os	**177671**	**MPV-E/A08-M12**

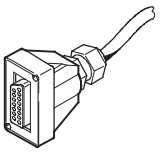
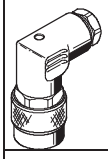
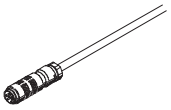
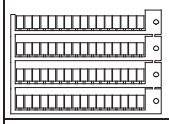
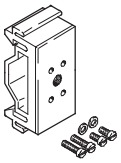
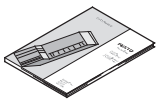
Ordering data				
Designation			Part No.	Type
Plugs and sockets				
	Plug, straight socket, M12, 5-pin	5-pin, Pg7	**175487**	**SEA-M12-5GS-PG7**[1]
	Plug, straight socket, M12, 4-pin	4-pin, Pg7	**18666**	**SEA-GS-7**
		4-pin, Pg9	**18778**	**SEA-GS-9**
		2.5 mm^2 OD	**192008**	**SEA-4GS-7-2,5**
	Plug for 2 sensor cables, M12	4-pin, Pg11	**18779**	**SEA-GS-11-DUO**
		5-pin, Pg11	**192010**	**SEA-5GS-11-DUO**[1]
	Plug socket Sub-D, plug, 15-pin		**192768**	**SD-SUB-D-ST15**
	Plug socket Sub-D, socket, 25-pin		**18709**	**SD-SUB-D-BU25**
Cables				
	Connecting cable, 25-wire	5 m	**177413**	**KEA-1-25P-5**
		10 m	**177414**	**KEA-1-25P-10**
		x length	**177415**	**KEA-1-25P-X**
	DUO cable, straight plug, M12, 4-pin, 2xM12, 3-pin	2x straight socket	**18685**	**KM12-DUO-M8-GDGD**
		2x straight/angled socket	**18688**	**KM12-DUO-M8-GDWD**
		2x angled socket	**18687**	**KM12-DUO-M8-WDWD**
	Connecting cable for sensores, M12, 4-pin	1 m, straight plug, angled socket	**185499**	**KM12-M12-GSWD-1-4**
		2.5 m, straight plug, straight socket	**18684**	**KM12-M12-GSGD-2,5**
		5 mstraight plug, straight socket	**18686**	**KM12-M12-GSGD-5**
	Connecting cable for sensores, M8, 3-pin	1 m, straight plug, straight socket	**175489**	**KM8-M8-GSGD-1**
		2.5 m, straight plug, straight socket	**165610**	**KM8-M8-GSGD-2,5**
		5 m, straight plug, straight socket	**165611**	**KM8-M8-GSGD-5**

1) 5-pin cable, cannot be used with 4-pin connectors

- Type discontinued
Available up until 2017

Modular electrical peripherals, for type 03/04

Accessories

Ordering data				
Designation			Part No.	Type
Cables				
	Plug socket with cable, open at one end, 15-wire	5 m	**177673**	**KMPV-SUB-D-15-5**
		10 m	**177674**	**KMPV-SUB-D-15-10**
	Connecting cable for Festo proportional pressure regulator	5 m	**163882**	**KVIA-MPPE-5**
		10 m	**163883**	**KVIA-MPPE-10**
	Connecting cable for Festo proportional directional control valve	5 m	**161984**	**KVIA-MPYE-5**
		10 m	**161985**	**KVIA-MPYE-10**
	Connecting cable for other signal modules, open cable end	5 m	**163960**	**KVIA-5**
		10 m	**163961**	**KVIA-10**
Inscription labels and label holders				
	Inscription labels, 6x10, 64 pieces in frames		**18576**	**IBS-6x10**
General accessories				
	Tamper proof cap (10 pieces) for unassigned connections	for MPV-E/A08-M12	**165592**	**ISK-M12**
		for MPV-E/A...-M8	**177672**	**ISK-M8**
	Mounting for H-rail, 2 pieces	for MPV-E/A...-M8	**170169**	**CP-TS-HS-35**
Programming software				
	Programming software FST200 with manual for control block ISF3-03	German	**165484**	**P.BE-FST200-AWL/KOP-DE**
		English	**165489**	**P.BE-FST200-AWL/KOP-EN**
	User documentation – Bus node IFB8-03	German	**152758**	**P.BE-VIFB8-03-DE**
		English	**152768**	**P.BE-VIFB8-03/05-EN**
	User documentation – Bus node IFB11-03	German	**163951**	**P.BE-VIFB11-03-DE**
		English	**163956**	**P.BE-VIFB11-03-EN**
		French	**163931**	**P.BE-VIFB11-03-FR**
		Italian	**165431**	**P.BE-VIFB11-03-IT**
		Swedish	**165461**	**P.BE-VIFB11-03-SV**
	User documentation – Bus node IFB16-03	German	**164221**	**P.BE-VIFB16-03/05-DE**
		English	**164222**	**P.BE-VIFB16-03/05-EN**
		Spanish	**164223**	**P.BE-VIFB16-03/05-ES**
		French	**164224**	**P.BE-VIFB16-03/05-FR**

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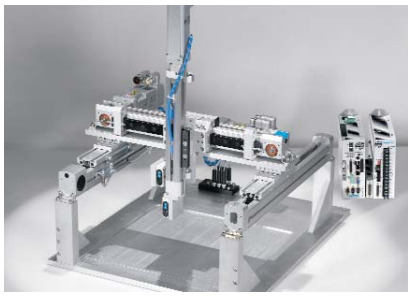

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