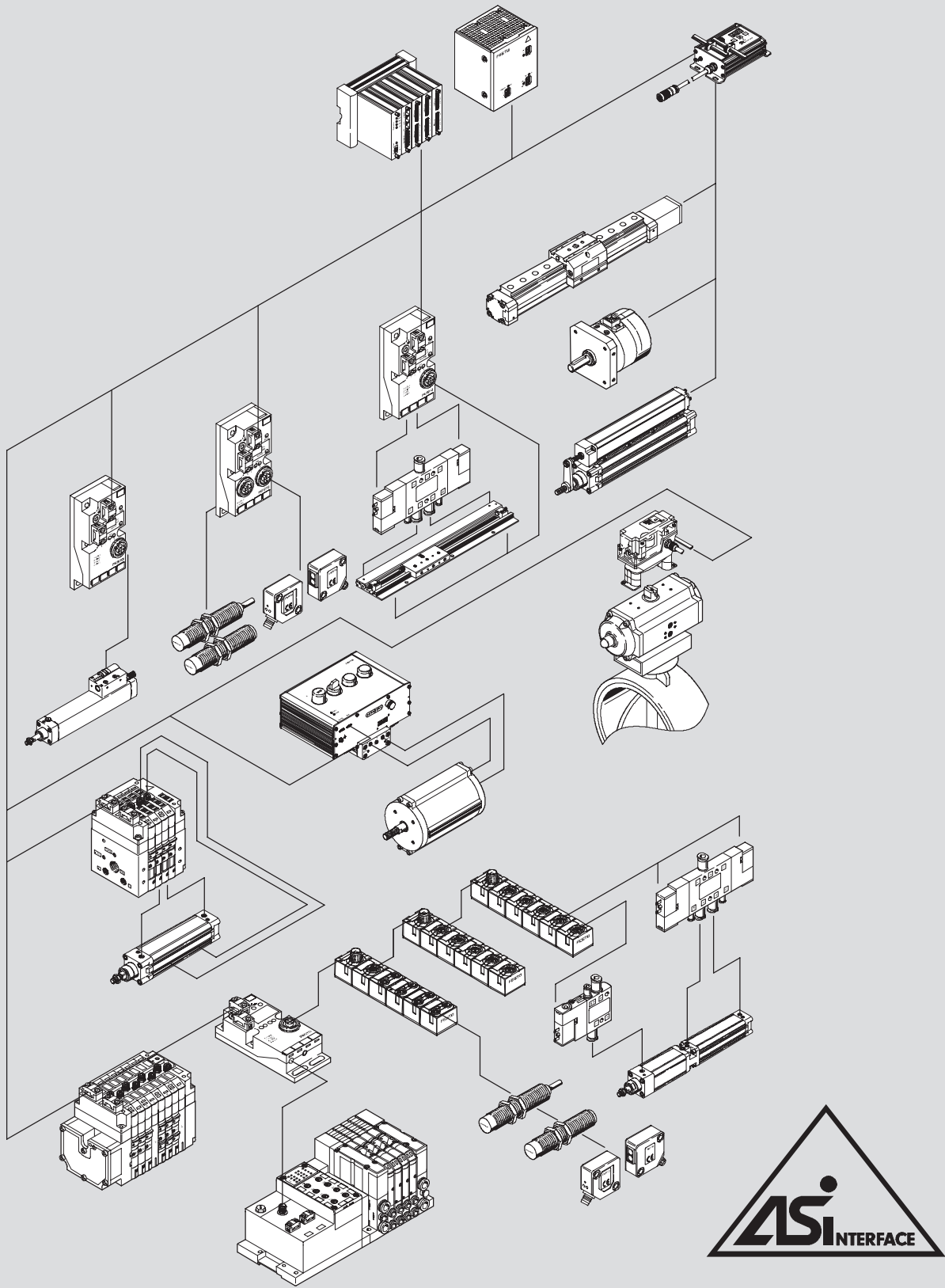


- One cable for power and data
- Polarity-safe connection technology
- Plug and work™ on the AS-interface
- Diagnosis via LEDs and AS-interface
- Connection of 1 to 8 valves
- Flexible individual valve interface
- Valve terminals with integrated inputs
- Twice the number of slaves through A/B operation

AS-interface® components

Overview of AS-interface

FESTO



Fieldbus systems/electrical peripherals
AS-interface components

4.9



Basic principles and features of the bus system

Introduction			
AS-interface is a non-proprietary, open installation system with a large and growing share of the market at the lowest level of the decentralised production and process automation	hierarchy. The non-proprietary and open characteristics of the system are guaranteed by the European standard	EN 50295 and the international standard IEC 62026-2. Certificated products bear the logo of the AS-International Association.	The AS-International Association and its affiliated organisations represent the interests of all manufacturers with an interest in the AS-interface.

Design			
The AS-interface system permits the transfer of power and data using a single cable. The advanced technology used to connect stations to the yellow cable and the low connection costs mean that even stations with a small number of inputs and outputs (max. 8 inputs and 8 outputs per	valve terminal with two chips) can be networked. Reductions in installation costs of 26 ... 40% have been demonstrated depending on the system type. This solution is an ideal low-cost option for connecting individual or small groups of actuators, valves and sensors to a master controller.	New developments as per Specification V2.1 published at the start of 2000 such as the parameterisable profile 7.4 or the AS-interface Safety at Work concept opened the way for new areas of application and facilitated considerably more efficient installation and networking concepts in many instances.	Specification V3.0 published in 2005 represents another giant leap forward, facilitating convenient activation of analogue I/O, complex slaves or serial text and data transfer, for example. Slaves as per Specifications V2.0 and V2.1 will also run under V3.0 – the system is fully upwards compatible.

Master-slave principle			
<ul style="list-style-type: none"> • Non-proprietary • No restrictions in terms of cable layout and/or topology • Data and power via a single two-wire cable • Immune to interference • Medium: unshielded cable 2x 1.5 mm² • With 31 slaves, max. 4 inputs and 4 outputs per slave 	<ul style="list-style-type: none"> • Data and power supply for up to 8 outputs per AS-interface string • With 62 slaves, max. 4 inputs and 3 outputs per slave (A/B operation as per Specification V2.1) • Modules for control cabinets (IP20) and harsh industrial environments (IP65, IP67) • With 31 slaves, 4 analogue inputs or outputs per slave 	<ul style="list-style-type: none"> • Profile 7.3: analogue values (16 bits) per slave (as per Specification V2.1) • Profile 7.4: parameterisable communication profile, e.g. 16x 16 bits per slave (as per Specification V2.1) • Insulation displacement technology 	<ul style="list-style-type: none"> • Cable length 100 m, can be extended to up to 200 m through the use of an extension plug and to up to 500 m through the use of repeaters, etc. • Highly effective error control • Simple commissioning • Electronic address selection via the bus connection

AS-interface® components

Overview of AS-interface



Basic features

Simple connection technology

- One cable for power and data
- Cable profile prevents polarity reversal
- Error control means there is no need for screening
- Insulation displacement connection technology guarantees Festo plug and work™
- Alternative bus connection technology M12, 4-pin (standardised)

Ideal for pneumatic applications

- Local control of small groups of actuators or individual distributed actuators covering an extensive area with
- short tubing lengths,
 - high cycle rates,
 - low air consumption.
- AS-interface components handle installation and communication.

A powerful system component

AS-interface is clearly subordinate to the fieldbuses already in use and is therefore less a competing product and more a technically necessary and economically advisable add-on.

Everything from a single source

- Festo is your single source for the AS-interface. This means
- one contact person,
 - solution competence from the market leader,
 - convenient ordering system,
 - complete delivery service,
 - co-ordinated solutions for motion and control,
 - worldwide service round the clock

Optimised cycle rates

Decentralised solutions at the AS-interface permit optimised control loop systems: valve response times and optimum pairings of cylinder diameter and stroke save up to

- 20% cycle time with standard components
- 30% cycle time with electronic end-position cushioning
- 40% installation costs
- 50% air consumption/flow rate

Overview of range

Drives

Intelligent drives DNCV with integrated valve, sensor and diagnostic module

Highly dynamic drives with Soft Stop SPC11

Drives for the process industry
Quarter turn valve actuators DRD (Copar) and linear valve actuators DLP (Copac)

Local controllers for process valve actuators and outdoor use

Valves

• A universal solution from the individual valve interface up to the compact solution with 8 valves

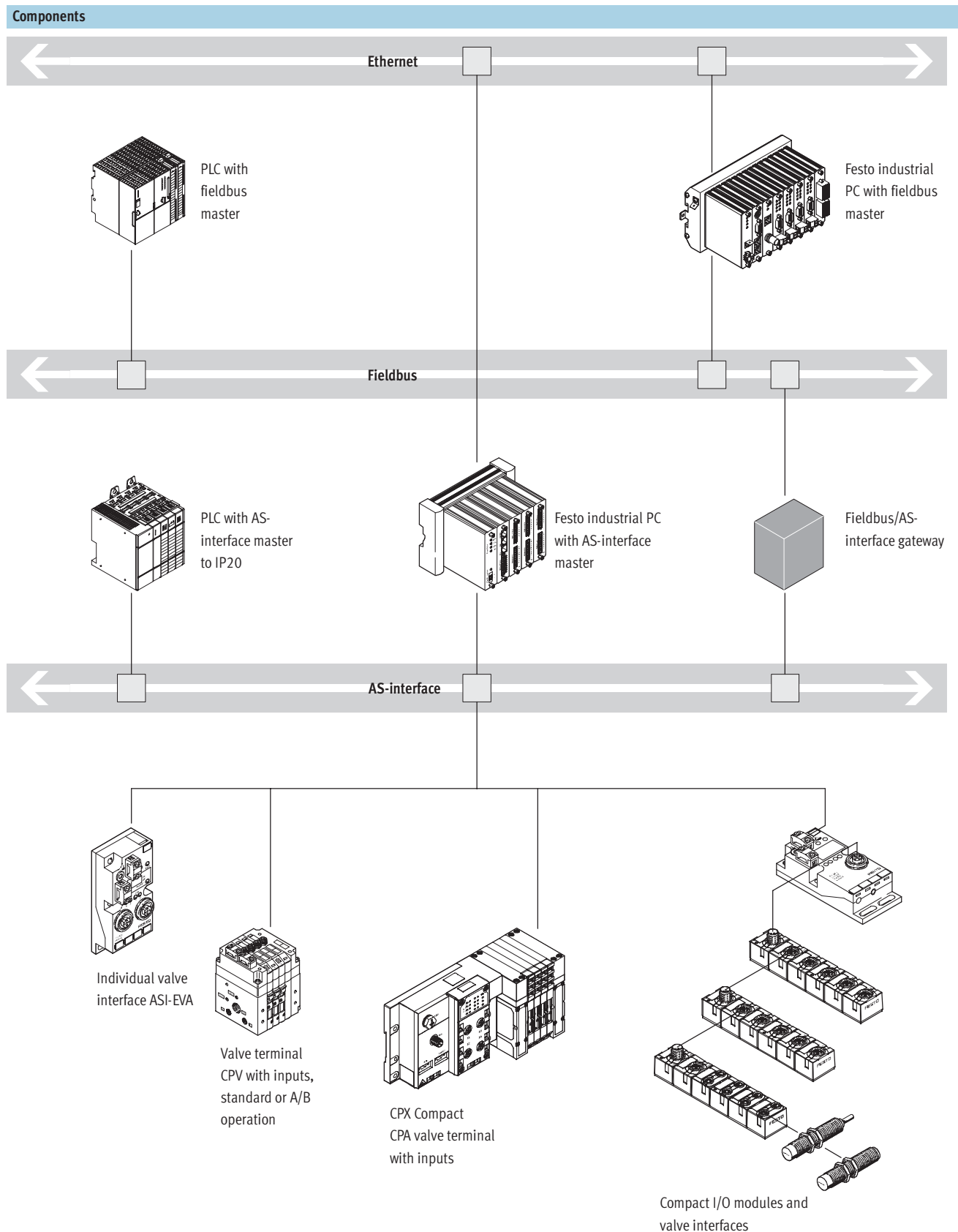
• Integrated inputs on individual valve interfaces and valve terminals CPV/CPA

• More inputs thanks to 4-fold input modules

• On request: Application-specific valves and integration solutions

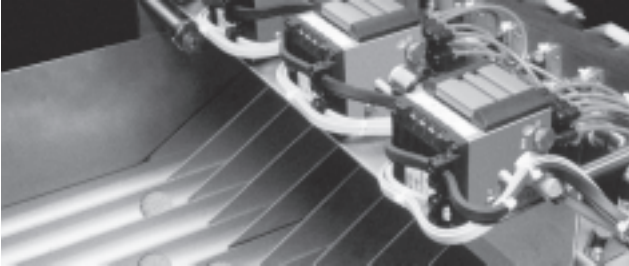
AS-interface® components

System overview



Fieldbus systems/electrical peripherals
AS-interface components
4.9

Typical applications



Sorting

Valve terminals CPV and CPA: Compact Performance is synonymous with high performance and low weight. Mounting close to the drives simplifies installation, saves

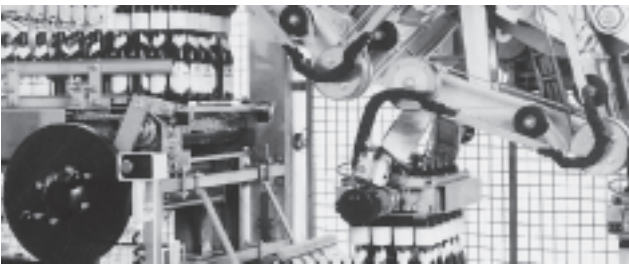
compressed air and increases the cycle rates.



Conveyor technology

Individually distributed drives and sensors covering an extensive area are common features of conveyor systems. The AS-interface is particularly suited to systems of this type.

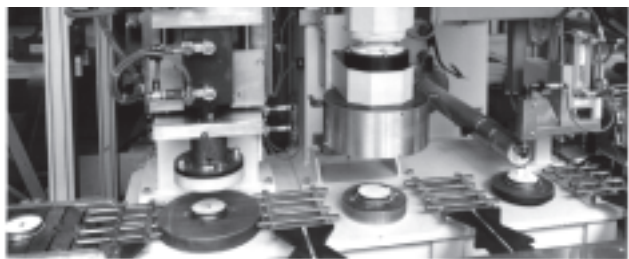
Individual valve interfaces ASI-EVA or compact I/O modules support the direct connection of one or two valves of any size and up to 4 sensors to the AS-interface.



Packaging

More complex machines frequently require decentralised installation concepts within the system in order to achieve an efficient electrical

installation. The AS-interface controls complex modules and upstream functions such as packaging in this instance.



Assembly

Assembly, moving, handling: this often means rapid-fire sequences, tight installation spaces and the need for reduced weight.

Compact I/O modules, valve terminals and matching drives provide the optimum solution here.



Water treatment

Automation and decentralised intelligence are innovative features of newer systems. Festo's drives for the process industry are controlled via the AS-interface in the temperature range from -25 ... +85 °C using the local

valve actuator DLP and the sensor box DAPZ.

The ASI-EVA or a compact I/O module is suitable for all valves with Namur interface.

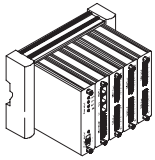
AS-interface® components

System overview

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Masters and accessories

Master to IP20



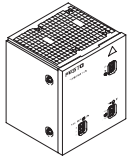
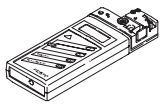
- PS1 industrial PC from Festo to IP20 with up to 4 AS-interface masters CP92, can be mounted on an H-rail
- Standard or A/B operation according to Specification V2.1

- 486 CPU for up to 576 digital inputs/outputs
- Ethernet interface
- Profibus interface
- and many more

Minimum order volume:

- Busboard PS1-BP50-12,5W-5SLOT Part No. 160 817
- AS-interface master PS1-CP92-ASI Part No. 537 231
- Processor PS1-HC20-40-FST Part No. 193 120

Accessories



- Addressing device with user-friendly operating and diagnostic functions for the entire AS-interface, for example to perform the following tasks in the fully installed network:
 - change addresses
 - set outputs
 - read inputs
 - and much more

- Combi power pack for the AS-interface: AS-interface power and auxiliary power supply
- Installation accessories for installing the flat cable

Slaves

Drives

Intelligent drives DNCV:

- Integrated solution with diagnostic module

Highly dynamic drives with Soft Stop SPC11:

- Full speed – gentle braking
- Pneumatic linear drives DGP and DGPL
- Rotary drives DSMI
- Standard cylinders DNC/DNCM
- Comprehensive diagnosis

Drives for the process industry

Quarter turn valve actuators DRD (Copar)

Linear valve actuators DLP (Copar)

- Local controllers for drives in exterior applications in the range –5... +50 °C
- Individual valve interface ASI-EVA for Namur valves
- Sensor box with visual position detection DAPZ

Valves

- A universal solution from the individual valve interface up to the compact solution with 8 valves

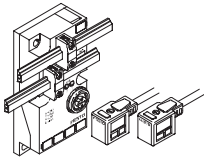
- Integrated inputs on individual valve interfaces and valve terminals CPV/CPA

- More inputs thanks to 4-fold and 8-fold input modules

- On request: Application-specific valves and integration solutions

Valve interface variants

Individual valve interface



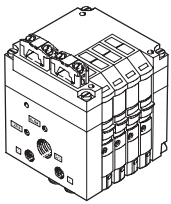
The perfect solution for 1 or 2 distributed valves and sensors

- Optimum pneumatic configuration within the range 10 ... 30,000 l/min

- Find the appropriate individual valve
- Then connect it to the AS-interface using Festo plug and work™

- This solution offers the maximum in mechanical, pneumatic and electrical flexibility

Compact valve terminal



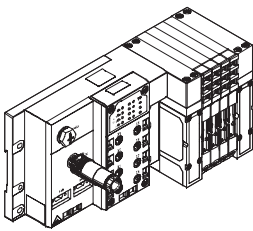
Maximum performance of 400 ... 1,600 l/min with minimal space requirement

- Valve combinations for 2, 4 or 8 valve slices
- Vacuum generation, relays and more in one unit

- Smart tubing system via pneumatic multiple connector plate:
 - Rapid replacement of valve terminals
 - With control cabinet installation: no internal tubing required

- Inputs M8 included for each valve position
- Ex Zone 2, 22

Modular valve terminal

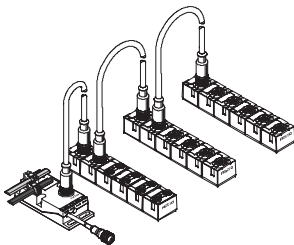


- Valves on a sub-base: individual valves can be easily replaced
- Flexible valve combinations for 2 ... 8 solenoid coils
- Valve terminals can be expanded at a later date

- CPA: compact and modular from 300 ... 650 l/min
- 4 or 8 inputs with selectable connection technology

- Selectable connection technology on the bus: flat cable or M12 round cable
- Addressing socket

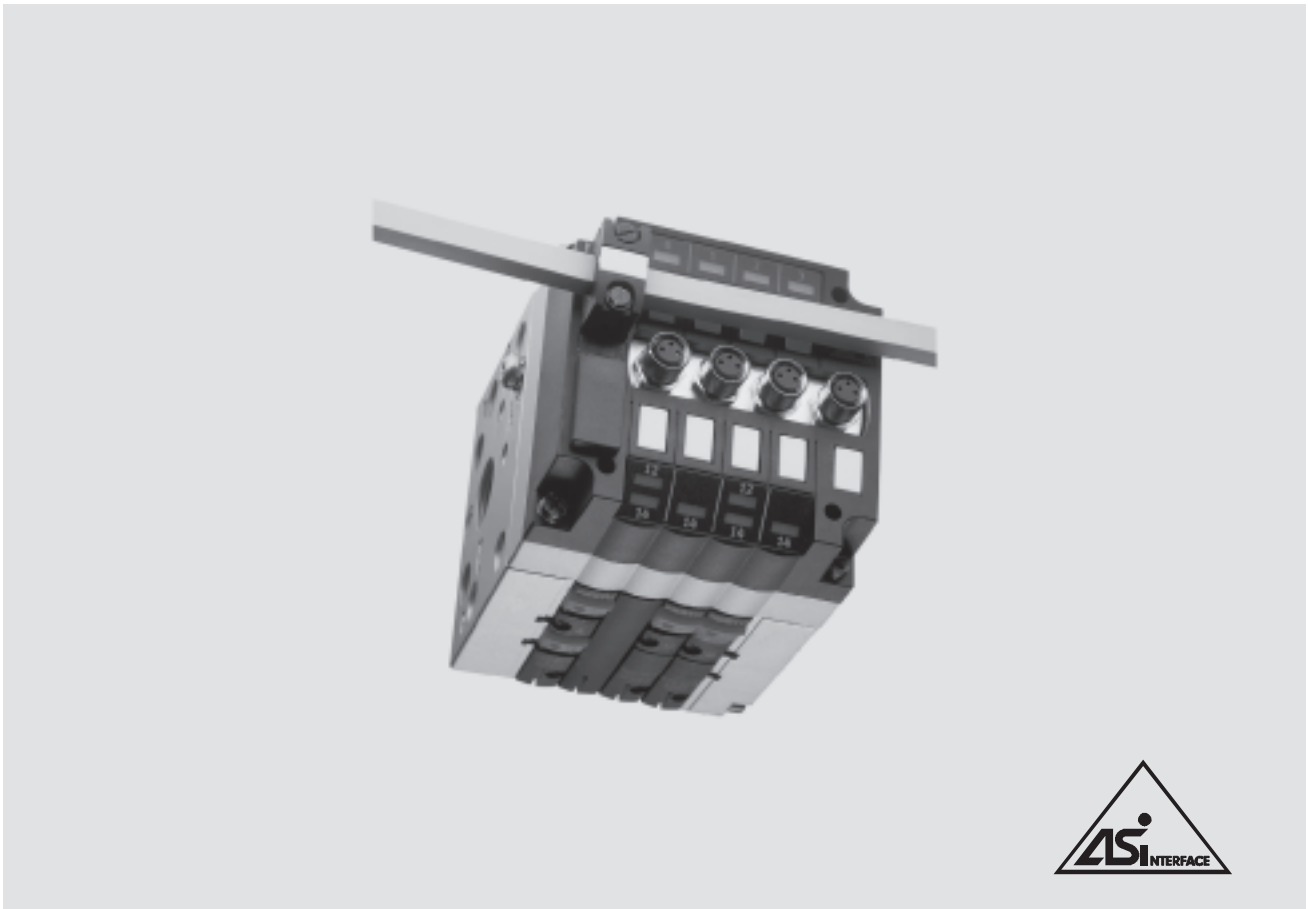
Compact I/O modules, valve interfaces



- Highly compact modules
- Sturdy, encapsulated electrics
- Bus and auxiliary power supply 2x M12 looped through

- Inputs 200 mA
- Outputs 1 A
- 8 inputs M8
- 4 inputs and 3 outputs M12

- 4 inputs and 2 outputs with solenoid coil plug



CPV valve terminals with AS-interface – Valve configuration options

CPV valve terminals with AS-interface can be configured with a wide range of valve slices. The system supports a maximum of 8 outputs and 8 inputs per AS-interface slave. This gives the following basic valve slice configuration options (see tables on following page). Vacant positions can be configured instead of valve slices at any position.

General

- With or without 24 V DC auxiliary power supply for solenoid coils (EMERGENCY-STOP circuitry) depending on bus interface
- Solutions with and without integrated inputs
- Width 10, 14 or 18 mm

Variants

- 2, 4 or 8 valve slices
- With 4 or 8 inputs, either
 - standard operation (SPEC V2.0)
 - A/B operation (SPEC V2.1)
- Optionally with potential-free relay outputs
- Separator plates for the formation of pressure zones
- Suitable for vacuum
- Vacant positions for subsequent extension
- Optionally with pneumatic multiple connector plate

Application

- Cost-effective connection of 2, 4 or 8 valve slices to the AS-interface
- Decentralised machine and system structures, for example
 - in handling technology
 - in conveyor technology
 - in the packaging industry
 - in sorting systems
 - in upstream machine functions



- Note

Please refer to the various pneumatic functions for more information.

➔ 4 / 2.1-2

AS-interface® components



CPV valve terminals – Overview

Types of valve terminal with AS-interface								
Type	Valve slices	Solenoid coils	Inputs (M8 connection)	Auxiliary power supply		Size		
				With	Without	CPV10	CPV14	CPV18
CPV1x-GE-ASI-2-Z	2	4	–	■	–	■	■	■
CPV1x-GE-ASI-4 (-Z) ¹⁾	4	4	–	■	■	■	■	–
CPV18-GE-ASI-4-Z	4	4	–	■	–	–	–	■
CPV1x-GE-ASI-4E4A (-Z)	4	4	4	■	■	■	■	–
CPV1x-GE-ASI-8E8A-Z	8	8	8	■	–	■	■	–
CPV1x-GE-ASI-4E3A (-Z)	4	3	4	■	–	■	■	–
CPV1x-GE-ASI-8E6A-Z	8	6	8	■	–	■	■	–

1) The load voltage (auxiliary power supply via the black cable) can be connected/disconnected separately.

Permissible combinations in valve position allocation								
Type	Slave n				Slave n+1			
	0	1	2	3	4	5	6	7
CPV1x-GE-ASI-2-Z	M	M						
	J	M						
	M	J						
	J	J						
CPV18-GE-ASI-4-Z	M	M	M	M				
CPV1x-GE-ASI-4E4A (-Z)	M	M	M	M				
	J	Vacant position	M	M				
	M	M	J	Vacant position				
	J	Vacant position	J	Vacant position				
CPV1x-GE-ASI-4E3A -Z ¹⁾	M	M	M	Vacant position				
	J	Vacant position	M	Vacant position				
CPV1x-GE-ASI-8E8A-Z ¹⁾	M	M	M	M	M	M	M	M
	J	Vacant position	M	M	M	M	M	M
	M	M	J	Vacant position	M	M	M	M
	J	Vacant position	J	Vacant position	M	M	M	M

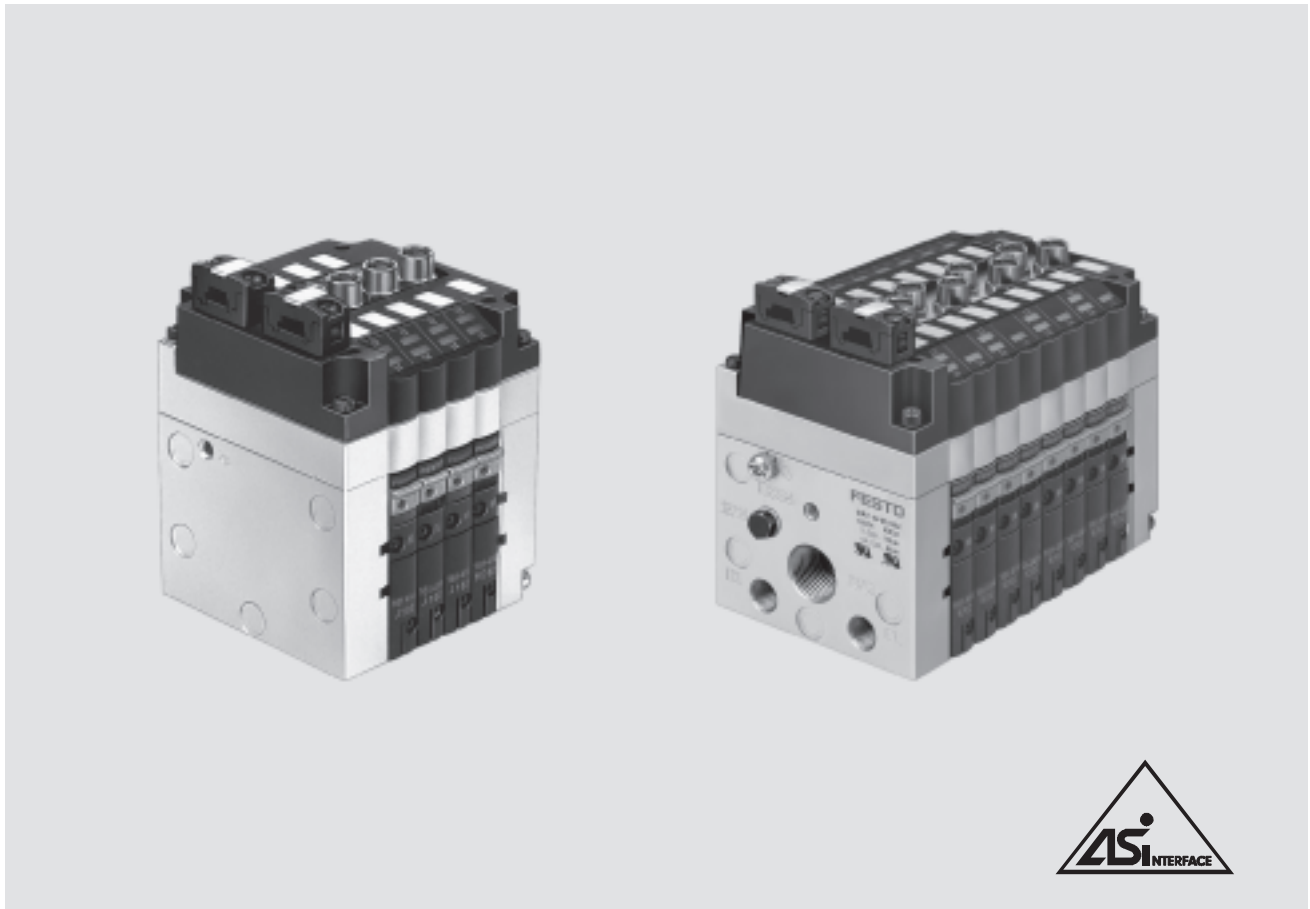
	M	M	M	M	M	M	M	M
	M	M	M	M	J	Vacant position	M	M
	M	M	M	M	M	M	J	Vacant position
CPV1x-GE-ASI-8E6A-Z ¹⁾	M	M	M	Vacant position	M	M	M	Vacant position
	M	M	M	Vacant position	J	Vacant position	M	Vacant position
	J	Vacant position	M	Vacant position	M	M	M	Vacant position
	J	Vacant position	M	Vacant position	J	Vacant position	M	Vacant position

- 1) - Valve slices with 2 outputs must be configured at positions 0, 2, 4, 6 (or positions 0, 4 with A/B operation).
 - Valve slices with 2 outputs always have a vacant position.
 - Slaves n and n+1 can be configured independently of one another. This gives a total of 16 different configuration options.
- M Valve slice with single solenoid valve or a different valve slice with an output.
 J Valve slice with double solenoid valve or a different valve slice with two outputs.

AS-interface® components

CPV valve terminals with integrated inputs, to SPEC V2.0

FESTO



CPV valve terminals with integrated inputs, to Specification V2.0

General

- Cubic design for exceptional performance and low weight
- Highly flexible thanks to various pneumatic functions (valve variants), different pressure ranges, vacuum switches and the option of integrated vacuum generation
- Potential-free relay outputs, optional
- Connection for auxiliary power supply for EMERGENCY-STOP conditions
- Protection class IP65

LED displays for:

- Status display for inputs
- Switching status displays for valves
- PWR-LED (power)
- FAULT-LED (fault)

Variants

- Width 10 and 14 mm
- 4 or 8 inputs
- 4 or 8 valve positions
- Up to four pressure zones
- Suitable for vacuum
- Vacuum generation

- Various valve functions on one valve terminal, for example
 - 2x 3/2-way valve
 - 5/2-way single solenoid valve
 - 5/2-way double solenoid valve
 - 5/3-way valve
 - 2x 2/2-way valve
 - Separator plate
 - Vacant position
- Additional function (screwed onto valve slice)
 - One-way flow control valve
- Various mounting options

Application

- Flexible and cost-effective connection of 4 or 8 valve slices and up to 8 sensors to the M8 inputs
- Decentralised machine and system structures, for example
 - in handling technology
 - in conveyor technology
 - in the packaging industry
 - in sorting systems



Note

Please refer to the various pneumatic functions for more information.

➔ 4 / 2.1-2

AS-interface® components

CPV valve terminals with integrated inputs, to SPEC V2.0

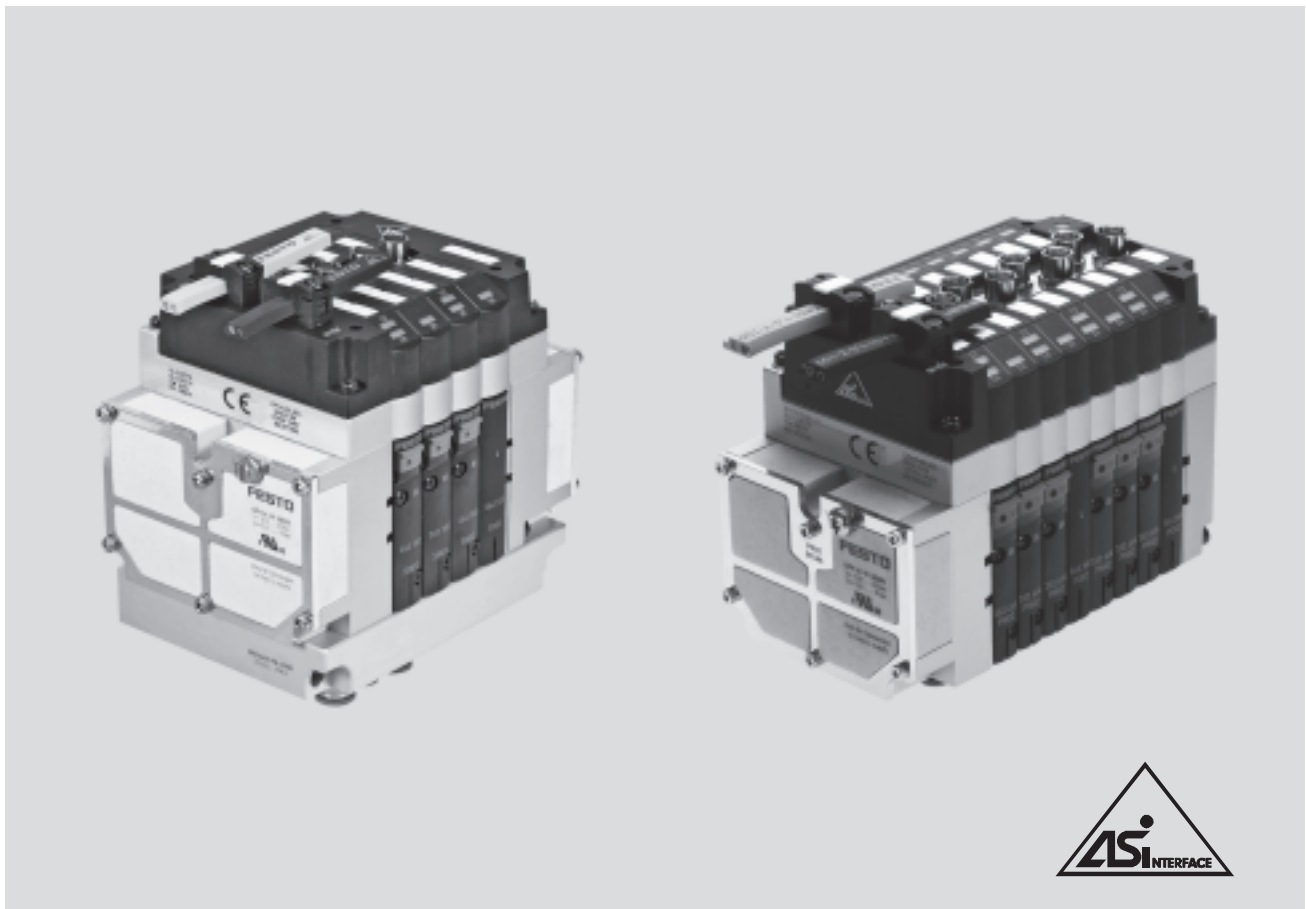
FESTO

Technical data				
Type		CPV-...-GE-ASI-4E4A-Z M8	CPV-...-GE-ASI-4E4A M8	CPV-...-GE-ASI-8E8A-Z M8
Part No.	Order via order code/valve terminal configurator			
Valves	No. of solenoid coils	4	4	8
	Valve width [mm]	10/14		
	Setting of the valve configuration	Integrated DIL switch		
	External power supply 24 V DC	Yes	No	Yes
	Digital inputs	4	4	8
	Connection technology	M8, 3-pin		
	Sensor supply via AS-interface	Short circuit and overload proof		
	Sensor connection	2-wire and 3-wire sensors		
	Version	IEC 1131-2, type 2		
	Input circuitry	PNP (positive-switching)		
AS-interface connection	Connection technology	AS-interface flat cable plug (included in scope of delivery)		
	Voltage range [V DC]	26.5 ... 31.6, reverse polarity protected		
	Residual ripple [mVss]	20		
	Current consumption of inputs		CPV10/14	
	• In 0 status	7	61/95	40
	• In 1 status (no current consumption by sensors)	35	89/123	96
	• In 1 status (max. current consumption by sensors)	240	191/225	278
• Max. per input	200	200	200	
• Max. per valve				
– when switching on		25/38.75		
– following a current reduction		8.75/12.5		
Load voltage connection	Connection technology	AS-interface flat cable plug (version turned through 180° must be ordered separately)		
	Nominal voltage [V DC]	24 ±10%		
	Residual ripple [Vss]	4		
	Current consumption of valves	CPV10/14	No load voltage connection	CPV10/14
	• when switching on [mA]	108/176		200/310
• following a current reduction [mA]	42/72		70/100	
LED displays	ASI-LED	Power/green		
	AUX-PWR-LED	Auxiliary power supply/green	None	Auxiliary power supply/green
	FAULT-LED	Fault LED/red		
	Inputs	Green		
	Valves	Yellow		
General data	Protection class (to EN 60 529)	IP65 (fully assembled)		
	Electromagnetic compatibility	<ul style="list-style-type: none"> Interference emission Interference immunity 		
	CE symbol	Yes, in accordance with EU Directive 89/336/EEC		
	Temperature range [°C]	Operation: -5 ... +50; storage/transport: -20 ... +70		
	Materials	Housing: aluminium; cover: polyamide (PA6-GF25); seal: nitrile rubber (NBR), polychloroprene rubber (CR); PWIS-free		
	Dimensions	➔ 4 / 4.9-249		
	Weight	➔ 4 / 4.9-248		
	Pneumatic data	➔ 4 / 2.1-2		
	AS-interface data	ID code	F _H (ID = F _H ; ID1 = F _H ; ID2 = F _H)	
I/O code		7 _H		
Profile		S-7.F		

AS-interface® components

CPV valve terminals with integrated inputs, for A/B operation to SPEC V2.1

FESTO



CPV valve terminals with integrated inputs, for A/B operation to Specification V2.1¹⁾

General

- A/B operation increases the performance of each master
 - 100% more inputs (248 instead of 124)
 - 50% more outputs (186 instead of 124)
- Cubic design for exceptional performance and low weight
- Highly flexible thanks to various pneumatic functions (valve variants), different pressure ranges, vacuum switches and the option of integrated vacuum generation
- Potential-free relay outputs, optional

- Connection for auxiliary power supply for EMERGENCY-STOP conditions
- Protection class IP65

LED displays for:

- Status display for inputs
- Switching status displays for valves
- PWR-LED (power)
- FAULT-LED (fault)²⁾

Variants

- Width 10 and 14 mm
- 4 or 8 inputs
- 3 or 6 valve positions
- Up to four pressure zones
- Suitable for vacuum
- Vacuum generation

- Various valve functions on one valve terminal, for example
 - 2x 3/2-way valve
 - 5/2-way single solenoid valve
 - 5/2-way double solenoid valve
 - 5/3-way valve
 - 2x 2/2-way valve
 - Separator plate
 - Vacant position
- Additional function (screwed onto valve slice)
 - One-way flow control valve
- Various mounting options

Application

- AS-i networks with A/B operation as per SPEC V2.1 and SPEC V3.0
- Flexible and cost-effective connection of 3 or 6 valve slices and up to 8 sensors to the M8 inputs
- Decentralised machine and system structures, for example
 - in handling technology
 - in conveyor technology
 - in the packaging industry
 - in sorting systems

1) Slave compatible with SPEC V3.0

2) Peripherals faults to SPEC V2.1 not yet implemented

-  - Note

Please refer to the various pneumatic functions for more information.

➔ 4 / 2.1-2

AS-interface® components

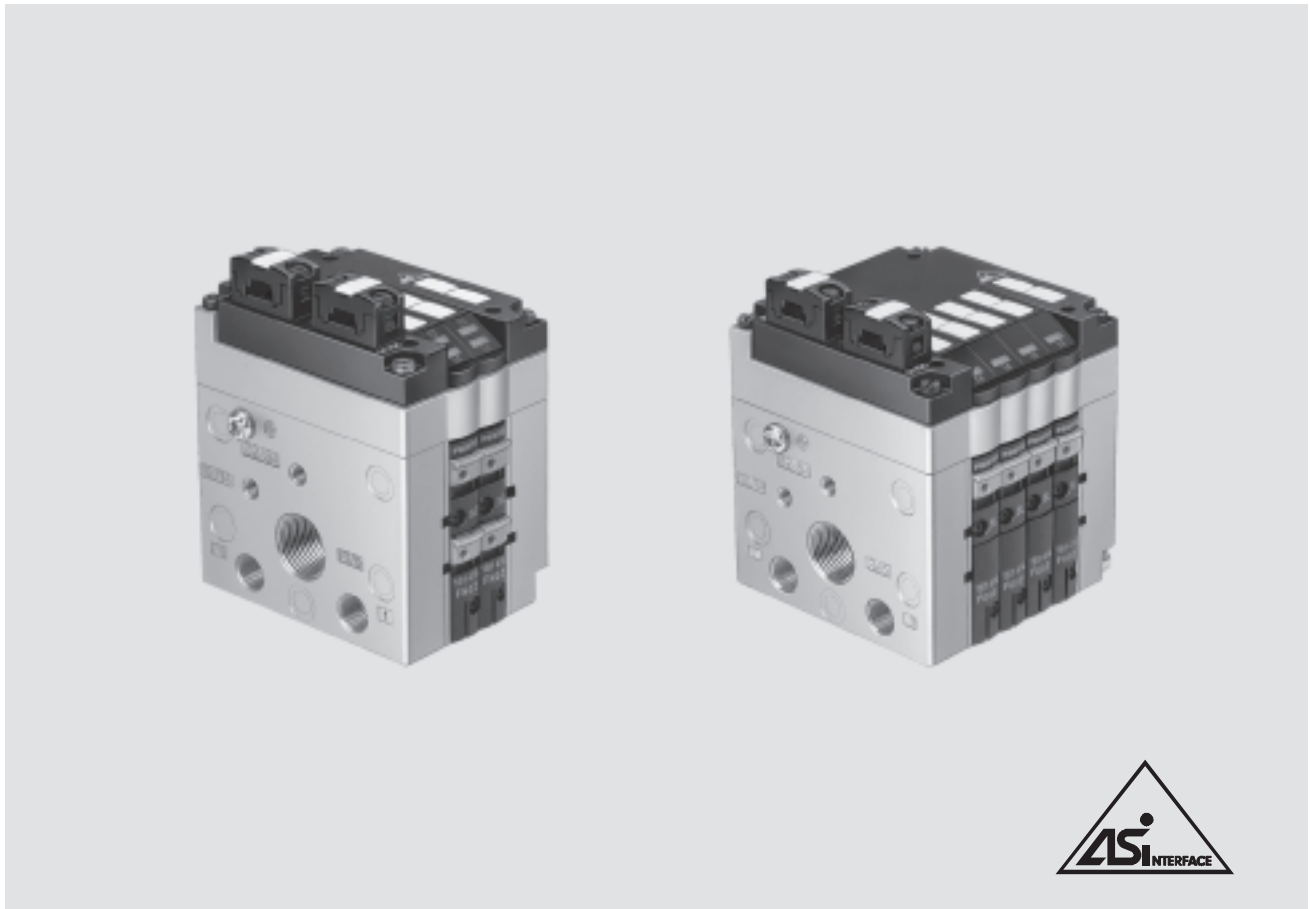
FESTO

CPV valve terminals with integrated inputs, for A/B operation to SPEC V2.1

Technical data			
Type		CPV-...-GE-ASI-4E3A-Z M8	CPV-...-GE-ASI-8E6A-Z M8
Part No.	Order via order code/valve terminal configurator		
Valves	No. of solenoid coils	3	6
	Valve width [mm]	10/14	
	Setting of the valve configuration	Integrated DIL switch	
	External power supply 24 V DC	Yes	
	Digital inputs	4	8
	Connection technology	M8, 3-pin	
	Sensor supply via AS-interface	Short circuit and overload proof	
	Sensor connection	2-wire and 3-wire sensors	
	Version	IEC 1131-2, type 2	
	Input circuitry	PNP (positive-switching)	
AS-interface connection	Connection technology	AS-interface flat cable plug (included in scope of delivery)	
	Voltage range [V DC]	26.5 ... 31.6, reverse polarity protected	
	Residual ripple [mVss]	20	
	Current consumption of inputs		
	• In 0 status	7	40
	• In 1 status (no current consumption by sensors)	35	96
• In 1 status (max. current consumption by sensors)	240	278	
• Max. per input	200	200	
Load voltage connection	Connection technology	AS-interface flat cable plug (version turned through 180° must be ordered separately)	
	Nominal voltage [V DC]	24 ±10%	
	Residual ripple [Vss]	4	
	Current consumption of valves	CPV10/14	CPV10/14
	• when switching on [mA]	108/176	200/310
	• following a current reduction [mA]	42/72	70/100
LED displays	ASI-LED	Power/green	
	AUX-PWR-LED	Auxiliary power supply/green	
	FAULT-LED	Fault LED/red	
	Inputs	Green	
	Valves	Yellow	
General data	Protection class (to EN 60 529)	IP65 (fully assembled)	
	Electromagnetic compatibility	Tested to EN 55011, limit value class B	
	• Interference emission	Tested to DIN EN 61000-4-2, DIN EN 61000-4-4 and EN V 50140	
	• Interference immunity		
	CE symbol	Yes, in accordance with EU Directive 89/336/EEC	
	Temperature range [°C]	Operation: -5 ... +50; storage/transport: -20 ... +70	
	Materials	Housing: aluminium; cover: polyamide (PA6-GF25); seal: nitrile rubber (NBR), polychloroprene rubber (CR); PWIS-free	
	Dimensions	➔ 4 / 4.9-249	
	Weight	➔ 4 / 4.9-248	
Pneumatic data	➔ 4 / 2.1-2		
AS-interface data	ID code	ID = A _H ; ID1 = 7 _H ; ID2 = E _H	
	I/O code	7 _H	
	Profile	S-7.A.E	

AS-interface® components

CPV valve terminals without inputs, to SPEC V2.1



CPV valve terminals without inputs, to Specification V2.1¹⁾

General

- Cubic design for exceptional performance and low weight
 - Highly flexible thanks to various pneumatic functions (valve variants), different pressure ranges, vacuum switches and the option of integrated vacuum generation
 - Potential-free relay outputs, optional
 - Connection for auxiliary power supply for EMERGENCY-STOP conditions
 - Protection class IP65
- LED displays for:
- Switching status displays for valves

- PWR-LED (power)
- FAULT-LED (fault)²⁾
- Valve diagnosis: short circuit or wire break at valve solenoid coil, valve does not respond (no movement of the plunger)

Variants

- Width 10, 14 and 18 mm
- 2 or 4 valve positions
- Up to two pressure zones
- Suitable for vacuum
- Vacuum generation
- Valve terminal with 4 valve positions:


- With or without 24 V DC auxiliary power supply for solenoid coils (EMERGENCY-STOP circuitry)
- The auxiliary power supply is always integrated and can be subsequently switched off using the DIL switch
- Various valve functions on one valve terminal, for example
 - 2x 3/2-way valve
 - 5/2-way single solenoid valve
 - 5/2-way double solenoid valve
 - 5/3-way valve
 - 2x 2/2-way valve
 - Separator plate
 - Vacant position

- Additional function (screwed onto valve slice)
 - One-way flow control valve
- Extensive mounting options

Application

- Flexible and cost-effective connection of 2 or 4 valve slices
- Decentralised machine and system structures, for example
 - in handling technology
 - in conveyor technology
 - in the packaging industry
 - in sorting systems



1) Slave compatible with SPEC V3.0
 2) Valve terminal with 4 valve positions: peripherals faults to SPEC V2.1 implemented
 Valve terminal with 2 valve positions: peripherals faults not implemented

 **Note**
 Please refer to the various pneumatic functions for more information.
 ➔ 4 / 2.1-2

AS-interface® components

CPV valve terminals without inputs, to SPEC V2.0

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Technical data		CPV-...-GE-ASI-2-Z	CPV-...-GE-ASI-4-Z ¹⁾	CPV-...-GE-ASI-4 ¹⁾
Type				
Part No.		Order via order code/valve terminal configurator		
Valves	No. of solenoid coils	2	4	4
	Valve width	10 mm	■	■
		14 mm	■	■
		18 mm	■	■
	Setting of the valve configuration	None (permanently assigned)	Integrated DIL switch	
External power supply 24 V DC		Yes	Yes ²⁾	No ²⁾
			Set using DIL switch	
AS-interface connection	Connection technology	AS-interface flat cable plug (must be ordered separately)		
	Voltage range [V DC]	26.5 ... 31.6, reverse polarity protected		
	Residual ripple [mVss]	20		
	Current consumption of all valves	CPV10/14/18	CPV10/14/18	CPV10/14/18
	• without current reduction [mA]	25/25/25	25/25/25	150/200/235
• with current reduction [mA]	25/25/25	25/25/25	60/70/150	
Load voltage connection	Connection technology	AS-interface flat cable plug (must be ordered separately)		
			Blanking plug for sealing the unused connection enclosed	
	Nominal voltage [V DC]	24 ±10%		
	Residual ripple [Vss]	4		
	Max. starting current	CPV10/14/18	CPV10/14/18	No load voltage connection
• before current reduction [mA]	108/176/320	110/165/246		
• following a current reduction [mA]	48/72/120	35/40/100		
LED displays	PWR-LED	Power/green		
	FAULT-LED	Fault LED/red	Peripherals fault LED/red Valve diagnosis: short circuit or wire break at valve solenoid coil, valve does not respond (no movement of the plunger)	
	Valves	Yellow		
General data	Protection class (to EN 60 529)	IP65 (fully assembled)		
	Electromagnetic compatibility	• Interference emission Tested to EN 55011, limit value class B		
		• Interference immunity Tested to DIN EN 61000-4-2, DIN EN 61000-4-4 and EN V 50140		
	CE symbol	Yes, in accordance with EU Directive 89/336/EEC		
	Temperature range [°C]	Operation: -5 ... +50; storage/transport: -20 ... +70		
	Materials	Housing: aluminium; cover: polyamide (PA6-GF25); seal: nitrile rubber (NBR), polychloroprene rubber (CR); PWIS-free		
	Dimensions	➔ 4 / 4.9-248		
	Weight	➔ 4 / 4.9-248		
Pneumatic data	➔ 4 / 2.1-2			
AS-interface data	ID code	F _H		
	I/O code	8 _H		
	ID2 code	F _H	E _H (F _H with CPV18)	-
	Profile	S-8.F		
	Parameter P3 CPV valve diagnostic function		1 = enable 2 = disable	
	Default	1 for CPV with valve diagnosis		

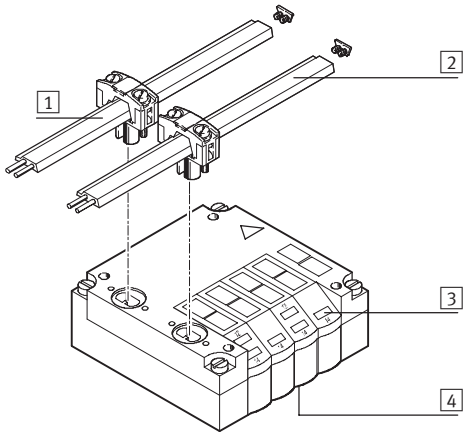
1) New as of hardware status 0105: single or double solenoid valves can be configured by means of a DIL switch.

2) With or without 24 V DC auxiliary power supply for solenoid coils (EMERGENCY-STOP circuitry). The auxiliary power supply is always integrated and can be switched on/off using the DIL switch.

AS-interface® components

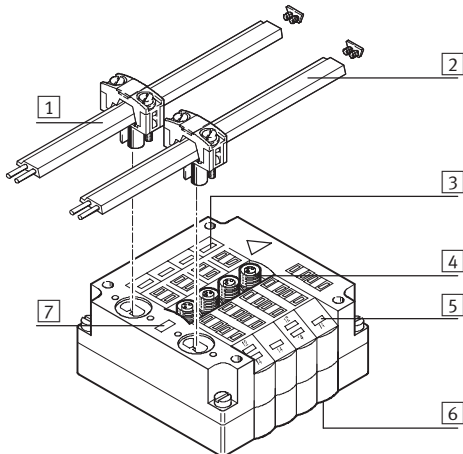
CPV valve terminals – Connections/displays

Overview of connections/displays – CPV with AS-interface



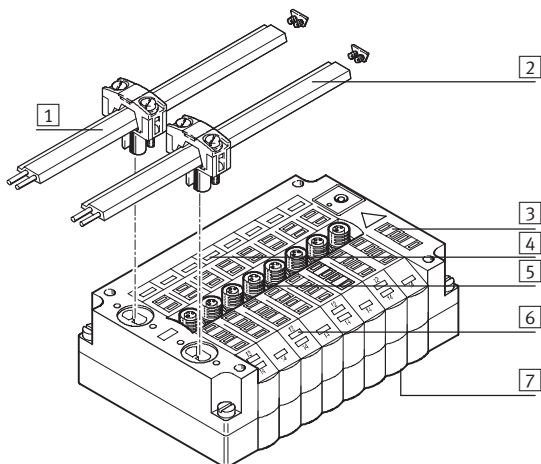
- 1 AS-interface bus connection
- 2 Auxiliary power supply for valves (optional)
- 3 LED display for valves
- 4 Connection of the valves and DIL switch for valve configuration as well as DIL switch for switching on/off the auxiliary power supply

CPV1x-GE-ASI-4E4A(-Z)



- 1 AS-interface bus connection
- 2 Auxiliary power supply for valves (optional)
- 3 LED display for inputs
- 4 Sensor connection
- 5 LED display for valves
- 6 Connection of the valves and DIL switch for valve configuration
- 7 ASI LED, fault LED

CPV1x-GE-ASI-8E8A-Z



- 1 AS-interface bus connection
- 2 Auxiliary power supply for valves
- 3 Address selection key with LED
- 4 LED display for inputs
- 5 Sensor connection
- 6 LED display for valves
- 7 Connection of the valves and DIL switch for valve configuration

Pin allocation		
Inputs CPV	Pin	Allocation
	1	+24 V
	3	0 V
	4	Input

AS-interface® components

CPV valve terminals – Weights/dimensions

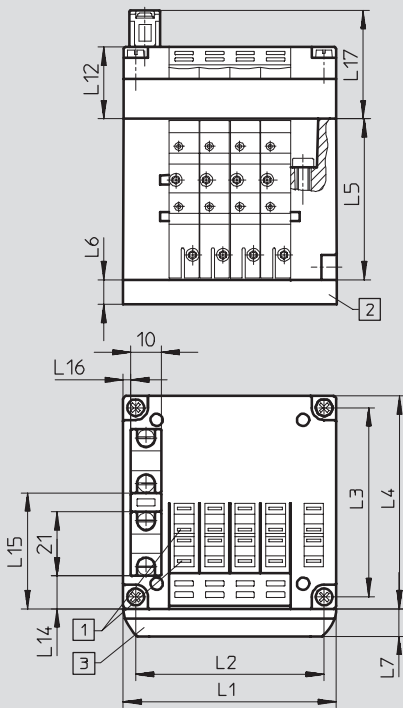


Weights [g] – Valve terminal type 10 with AS-interface			
Type	CPV10	CPV14	CPV18
Electrical connection plate with AS-interface connection			
• with 2 valve positions	85	130	275
• with 4(3) valve positions	110	175	355
• with 8(6) valve positions	200	300	
End plate	160	280	740
Pneumatic multiple connector plate			
• on CP valve terminal with 2 valve positions	120	270	520
• on CP valve terminal with 4 valve positions	165	390	750
• on CP valve terminal with 6 valve positions	225	510	870
• on CP valve terminal with 8 valve positions	270	630	1300
Relay plate	35	55	–
Blanking plate	25	45	90
Separator plate	25	45	90
Valve slice	65	110	260

Dimensions – CPV with AS-interface

Download CAD data → www.festo.com/en/engineering

Without integrated inputs



- 1 Slots for inscription labels
- 2 Pneumatic multiple connector plate
- 3 Inscription label holder

		L1	L2	L3	L4	L5	L6	L7	L12	L14	L15	L16	L17
CPV10	2-fold	50	41.8	62	71	52.8	15	9.5	–	10.9	38.1	2.5	35.5
	4-fold	70	61.8	62	71	52.8	15	9.5	23.5	10.9	38.1	2.5	35.5
CPV14	2-fold	68	58	78	89	58.8	20	9.5	–	14	52	5	35.5
	4-fold	96	86	78	89	58.8	20	9.5	23.5	14	52	5	35.5
CPV18	2-fold	96	85.5	106.5	118	73	20	9.5	–	27.4	68.2	10.4	40
	4-fold	132	121.5	106.5	118	73	20	9.5	28	27.4	68.2	10.4	40

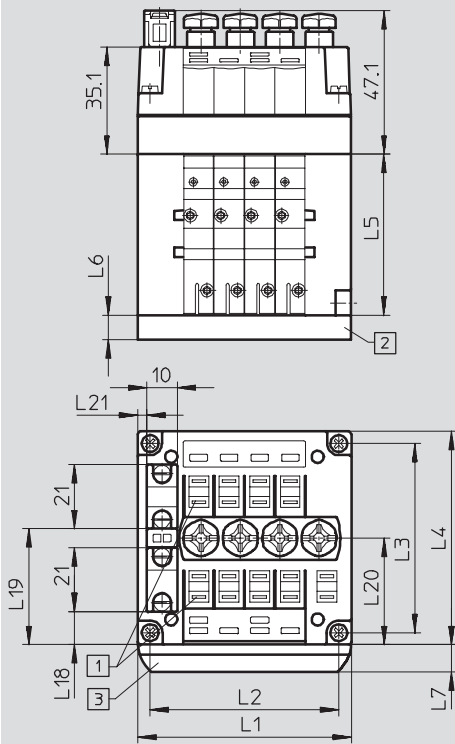
AS-interface® components

CPV valve terminals – Dimensions

Dimensions – CPV with AS-interface

Download CAD data → www.festo.com/en/engineering

With integrated inputs



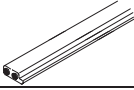
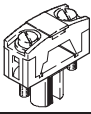
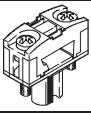
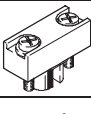
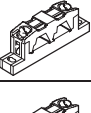
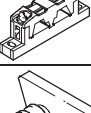
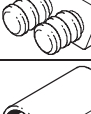
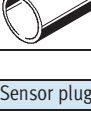

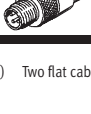
- 1 Slots for inscription labels
- 2 Pneumatic multiple connector plate
- 3 Inscription label holder

		L1	L2	L3	L4	L5	L6	L7	L18	L19	L20	L21
CPV10	4-fold	70	61.8	62	71	52.8	15	9.5	10.9	38.1	35	3
	8-fold	110	101.8	62	71	52.8	15	9.5	10.4	38.6	31.9	3
CPV14	4-fold	96	86	78	89	58.8	20	9.5	18.8	46.8	43.3	5
	8-fold	152	142	78	89	58.8	20	9.5	18.8	46.8	46.3	5

AS-interface[®] components

CPV valve terminals – Accessories





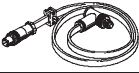
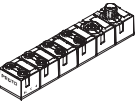
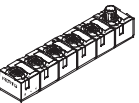
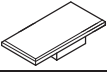
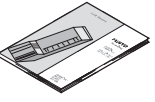
Ordering data				
	Designation		Type	Part No.
Bus connection				
	AS-interface flat cable, yellow	100 m	KASI-1,5-Y-100	18 940
	AS-interface flat cable, black	100 m	KASI-1,5-Z-100	18 941
	Flat cable socket ¹⁾		ASI-SD-FK	18 785
	Flat cable socket ¹⁾	Turned through 180°	ASI-SD-FK180	196 089
	Flat cable blanking plug		ASI-SD-FK-BL	196 090
	AS-interface flat cable distributor	Parallel cable	ASI-KVT-FK	18 786
	AS-interface flat cable distributor	Symmetrical cable	ASI-KVT-FK-S	18 797
	Cable cap for flat cable (scope of delivery 50 pieces)		ASI-KK-FK	18 787
	Cable sleeve (scope of delivery 20 pieces)		ASI-KT-FK	165 593
Sensor plug				
	Straight sensor plug	M8, screw-in	SEA-3GS-M8-S	192 009
	Straight sensor plug	M8, solderable	SEA-GS-M8	18 696

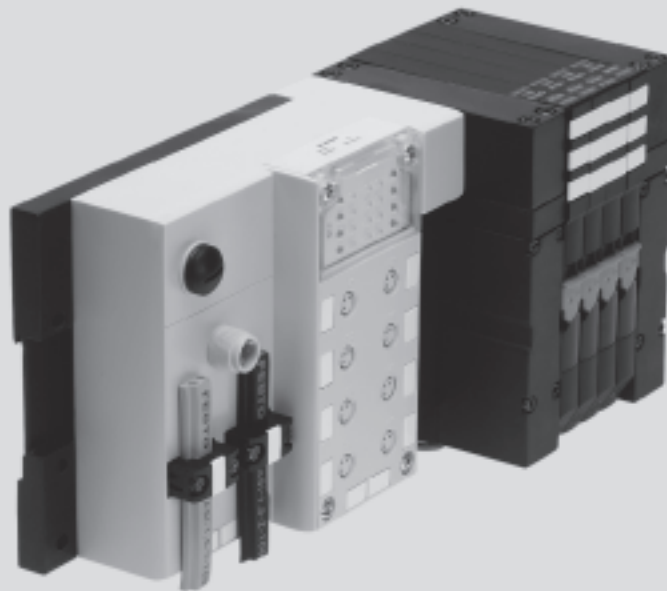
1) Two flat cable connections per ASI-EVA must be connected or covered

AS-interface® components

CPV valve terminals – Accessories

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Ordering data				
	Designation	Type	Part No.	
Other accessories				
	Combi power pack for AS-interface	ASI-CNT-115/230 VAC-B	191 082	
	Addressing device	ASI-PRG-ADR	18 959	
	Addressing cable	KASI-ADR	18 960	
	AS-interface compact input module for 8 inputs M8	ASI-8DI-M8-3POL	542 124	
	AS-interface compact input/output module for 4 inputs/3 outputs M12	ASI-4DI3DO-M12X2-5POL-Z	542 125	
	Inscription labels 6x10 in frames (64 pieces)	IBS 6x10	18 576	
	Inscription labels 9x20 in frames (20 pieces)	IBS 9x20	18 182	
User documentation				
	Manual for CPV Pneumatics	German	P.BE-CPV-DE	165 100
		English	P.BE-CPV-EN	165 200
		French	P.BE-CPV-FR	165 130
		Italian	P.BE-CPV-IT	165 160
		Spanish	P.BE-CPV-ES	165 230
		Swedish	P.BE-CPV-SV	165 260



CPA valve terminals with AS-interface – Valve configuration options

CPA valve terminals with AS-interface can be flexibly configured with a wide range of valve slices. The system supports a maximum of 8 outputs and 8 inputs per valve terminal. This gives the following basic valve configuration options (see tables on following page).

General

- Solutions with and without integrated inputs
- Width 10 or 14 mm

- With or without 24 V DC auxiliary power supply for solenoid coils (EMERGENCY-STOP circuitry). The auxiliary power supply is always integrated in the version with inputs and can be subsequently switched off using the DIL switch
- Selectable bus connection technology
 - Flat cable for AS-interface and auxiliary power supply
 - M12 round plug, 4-pin¹⁾
- Selectable addressing
 - Via bus connection (M12 or flat cable)
 - Via addressing socket

Variants

- 2 to 8 valve slices, freely configurable
- With 4 or 8 inputs
- M12, M8, Harax, CageClamp or Sub-D connection technology
- Separator plates for the formation of pressure zones
- Suitable for vacuum
- Subsequent extensions either
 - via unused valve positions
 - by converting the valve terminal

Application

- Flexible and cost-effective connection of 2 or 8 valve slices with input feedback
- Decentralised machine and system structures, for example
 - in handling technology
 - in conveyor technology
 - in the packaging industry
 - in sorting systems
 - suitable for chain link trunking thanks to connection via round cables

-  - Note

Please refer to the various pneumatic functions for more information.

➔ 4 / 2.1-86

1) Suitable cable distributor from flat cable to M12: ASI-KVT-FKx2-M12

Types of valve terminal with AS-interface							
Type ¹⁾	Valve slices	Solenoid coils	Inputs	Auxiliary power supply		Size	
				With	Without	CPA10	CPA14
CPA1x-GE-ASI-4 (-Z)	4	4	–	■	■	■	■
CPA1x-GE-ASI-4E4A-Z	4	4	4	■	■	■	■
CPA1x-GE-ASI-8E8A-Z	8	8	8	■	–	■	■

Permissible combinations in valve position allocation				
Type	Slave n			
	0	1	2	3
CPA1x-GE-ASI-4 (-Z)	M	M	M	M
	J	M	M	–
	M	J	M	–
	M	M	J	–
	J	M	Vacant position	–
	J	M	–	–
	M	J	–	–
	M	M	–	–
CPA1x-GE-ASI-4E4A (-Z)	M	M	M	M
	J	M	M	–
	M	J	M	–
	M	M	J	–
	J	M	Vacant position	–
	J	M	–	–
	M	J	–	–
	M	M	–	–

Permissible combinations in valve position allocation								
Type ¹⁾	Slave n plus slave n+1							
	0	1	2	3	4	5	6	7
CPA1x-GE-ASI-8E8A-Z	M	M	M	M	M	M	M	M
	J	M	M	M	M	M	M	–
	J	J	M	M	M	M	–	–

	M	M	J	M	M	J	–	–

	M	M	M	M	J	–	–	–
	M	M	M	M	Vacant position	–	–	–

	J	J	J	J	–	–	–	–

	J	M	–	–	–	–	–	–
	M	J	–	–	–	–	–	–
	M	M	–	–	–	–	–	–

1) - All valve slices can be freely configured (up to the maximum number of valve solenoids supported (4 or 8)).
 - A blanking plate can be used instead of the valve slice as a vacant position for one or two solenoid coils.
 M Valve slice with single solenoid valve or a different valve slice with an output.
 J Valve slice with double solenoid valve or a different valve slice with two outputs.

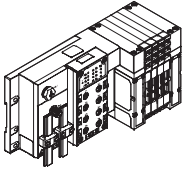
AS-interface® components

CPA valve terminal – Connection technology and addressing



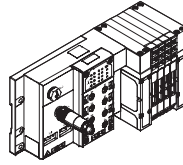
Installation: Selectable connection technology for AS-interface

Support for flat cables



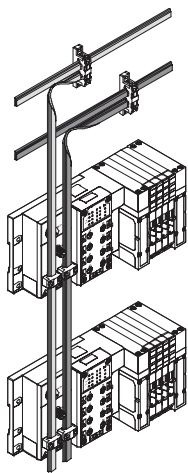
- Straightforward cabling with flat cables in protected areas
- Fast system of installation with standard AS-interface cables

Support for round cables

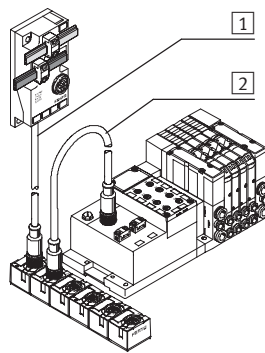


Local round cable wiring system for areas subjected to consistently high loads:

- Permanently elevated humidity
- Requirement for flexible cabling using one cable
- For use in chain link trunking with highly flexible cables



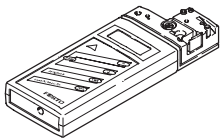
Standard installation at the AS-interface using flat cables



- 1 Pre-assembled M12 round cable, 1 m, polyurethane
- 2 Selectable cable for additional slave, for example highly flexible cable for chain link trunking or PVC cable for applications requiring resistance to detergents

Selectable connection technology for addressing

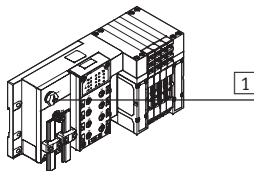
Addressing device



The addressing device to SPEC V2.1 can be used to scan the AS-interface from any point in the network. At all connected stations

- slave addresses can be read/changed
- ID and I/O codes can be read out
- parameters can be read/changed
- input/output data can be read and written (setting outputs)
- error messages can be read out and quickly recognised

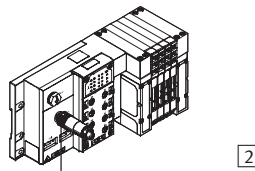
1 Addressing socket



Only the connected chip is visible and addressable here.

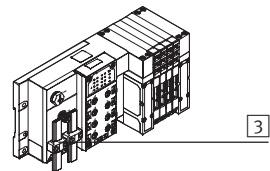
2 pins for chip 1 and 2, top right pin for chip 1.

2 M12 round plug




If the AS-interface is also connected to the flat cable plug, the entire network can be scanned without having to remove the slave from the bus.

3 Flat cable plug



If the AS-interface is also connected to the M12 round cable, the entire network can be scanned without having to remove the slave from the bus.

-  - Note

If the valve terminal is connected using the external flat cable distributor and the M12 round plug, the

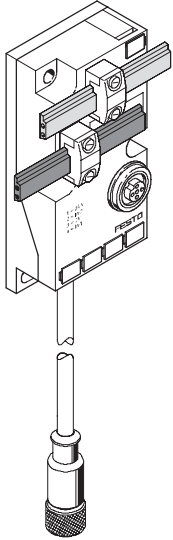
network can also be scanned and the valve terminal addressed via this connection.

AS-interface® components

CPA valve terminal – Connection technology and addressing

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AS-interface flat cable distributor to round cable 2x M12



Alternative connection concepts

- AS-interface connection technology for yellow and optionally for black flat cables
- Passive conversion of the signals to M12 socket and round cable with M12 socket
- Pre-assembled round cable, 1 m, PUR
- Alternatively PVC extension cable, 2.5 and 5 m, via additional M12 socket

Selecting the cable

Optimised connection technologies at the AS-interface can be easily realised by selecting the right cable:

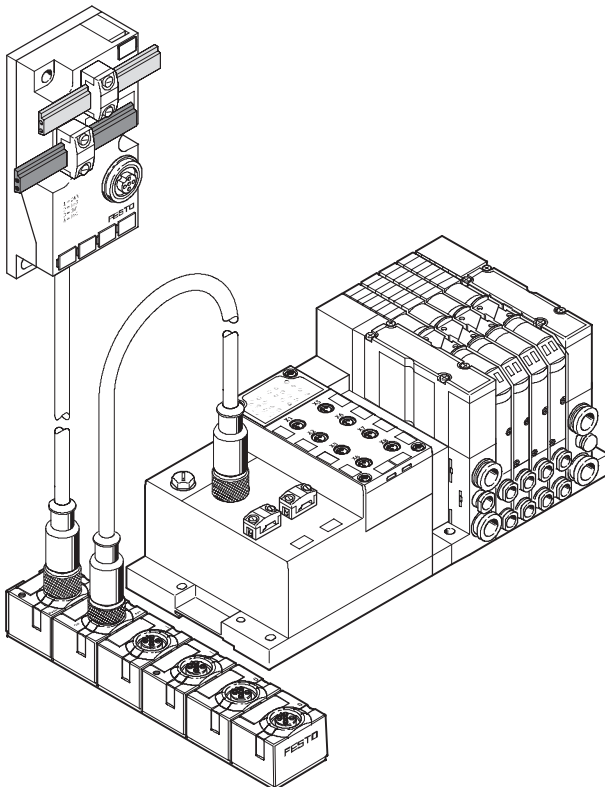
- Flat cables for all standard applications with installation-saving insulation displacement technology
- Round cables for applications with differing requirements, for example:
 - Chain link trunking with small radii and increased requirements for highly flexible cables
 - Applications with consistently high humidity

- Applications involving frequent cleaning and requiring cables resistant to detergents (PUR, PVC or other cables)
- Cabling systems using standard components (M12) preferred

Easy to mount

- Direct mounting on the wall or machine frame
- Direct mounting on the 40 mm ITEM profile
- Mounting on H-rail using adapter CP-TS-HS35

Supplementary compact I/O modules



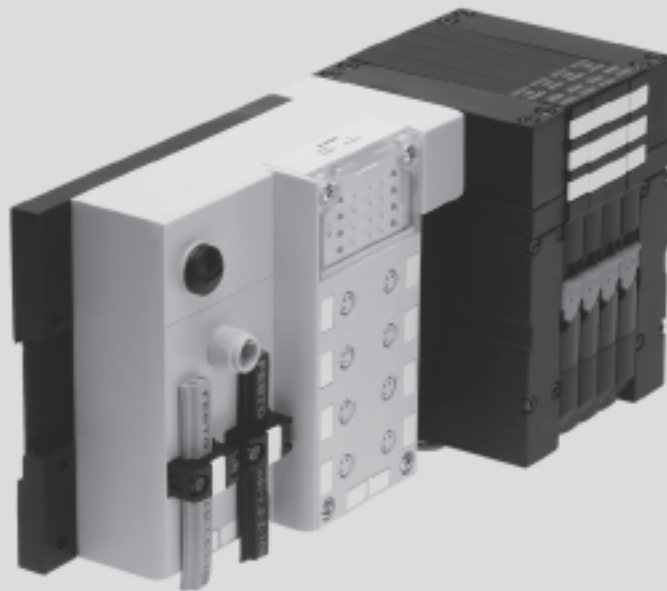
Valve terminals CPA can be supplemented with compact I/O modules and connected entirely using M12 round plugs. The following are available:

- 8 inputs M8
- 4 inputs/3 outputs M12
- 4 inputs/2 valve plugs

AS-interface® components

CPA valve terminal with inputs, to SPEC V2.1

FESTO



CPA valve terminal with inputs, to Specification V2.1¹⁾

General

- Modular design with exceptional performance and low weight
- Highly flexible thanks to various pneumatic functions (valve variants)
- Different pressure ranges
- Vacuum/low pressure operation
- Connection for auxiliary power supply for EMERGENCY-STOP conditions. The auxiliary power supply is always integrated in the version with inputs and can be subsequently switched off using the DIL switch
- Protection class IP65

- Selectable bus connection technology
 - Flat cable for AS-interface and auxiliary power supply
 - M12 round plug, 4-pin²⁾
- Selectable addressing
 - Via bus connection (M12 or flat cable)
 - Via addressing socket

LED displays for:

- Switching status displays of valves and inputs
- 24 V DC (AUX power)
- BUS
- FAULT-LED and enhanced diagnosis to SPEC V2.1¹⁾

Variants

- Width 10 and 14 mm
- 2 to 8 valve positions
- 4 or 8 inputs
- M12, M8, Harax, CageClamp or Sub-D connection technology
- Up to three pressure zones
- Suitable for vacuum/low pressure
- Various valve functions on one valve terminal, for example
 - 2x 3/2-way valve
 - 5/2-way single solenoid valve
 - 5/2-way double solenoid valve
 - 5/3-way valve
 - Separator plate
 - Vacant position

- Extensive mounting options, easy to extend/convert at a later date

Application

- Flexible and cost-effective connection of 2 to 8 valve positions
- Decentralised machine and system structures, for example
 - in handling technology
 - in conveyor technology
 - in the packaging industry
 - in sorting systems
- suitable for chain link trunking thanks to connection via round cables

-  - Note

Please refer to the various pneumatic functions for more information.

➔ 4 / 2.1-86

1) Slave compatible with SPEC V3.0

2) Suitable cable distributor from flat cable to M12: ASI-KVT-FKx2-M12

AS-interface® components

CPA valve terminal with inputs, to SPEC V2.1

FESTO

Technical data				
Type		CPA ...-GE-ASI-4E4A-Z	CPA ...-GE-ASI-8E8A-Z	
Part No.		Order via order code/valve terminal configurator		
Valves	No. of solenoid coils	4		8
	Valve width [mm]	10/14		
	External power supply 24 V DC	Set using DIL switch		Yes
Inputs	No. of digital inputs	4		8
	Connection technology	5-pin M12, 3-pin M8, Harax, CageClamp, Sub-D		
	Sensor supply via AS-interface	Short circuit and overload proof		
	Sensor connection	2-wire and 3-wire sensors		
	Version	IEC 1131-2, type 02		
	Input circuitry	PNP (positive-switching)		
AS-interface connection	Connection technology	<ul style="list-style-type: none"> AS-interface flat cable plug M12 connection²⁾ 		
	Voltage range [V DC]	26.5 ... 31.6, reverse polarity protected		
	Residual ripple [mVss]	20		
	Current consumption of inputs	Without auxiliary power supply	With auxiliary power supply	With auxiliary power supply
	Basic load of electronics	<20	<20	<20
	Total current of inputs	200	200	200
	Total current of valves	≤140 (≤65)	–	–
	Total current consumption	Max. 260	Max. 220	Max. 220
Addressing socket	Connection technology	Industrial standard		
	• Top right pin	Slave 1		Slave 1
	• Bottom left pin	Unused		Slave 2
Load voltage connection	Connection technology	<ul style="list-style-type: none"> AS-interface flat cable plug M12 connection²⁾ 		
	Voltage range [V DC]	20.4 ... 26.4		
	Residual ripple [Vss]	4		
	Current consumption of valves	CPA10/14	CPA10/14	CPA10/14
	• max. starting current (at 24 V)	No load voltage connection	≤140	≤280
	• starting current for 4 valves following current reduction (approx. 25 ms)		≤65	≤130
LED displays	ASI-LED	Green		
	AUX-PWR-LED	Green		
	FAULT-LED	Red		
	Inputs	Green		
	Valves	Yellow		
General data	Protection class (to EN 60 529)	IP65 (fully assembled)		
	Electromagnetic compatibility	Tested to EN 55295:Oct. 1999, low voltage devices		
	CE symbol	Yes, in accordance with EU Directive 89/336/EEC		
	Temperature range [°C]	Operation: -5 ... +50; storage/transport: -20 ... +70		
	Materials	Housing, adapter: polyamide (PA6-GF30); base plate, end plate: polyamide (PA6-GF50)		
	Dimensions	➔ 4 / 4.9-261		
	Weight [g]	240 + valves		
AS-interface data	ID code	ID = F _H ; ID1 = F _H ¹⁾ ; ID2 = E _H		
	I/O code	7 _H		
	Profile	S-7.FE		

1) Factory setting, set to 0_H by some programming devices (Spec. V2.1) when addressing the slave

2) Suitable cable distributor from flat cable to M12 ➔ 4 / 4.9-345

Pin allocation as for NEBU-M12G5-F-0,2-M12G4 ➔ 4 / 4.9-258

AS-interface® components

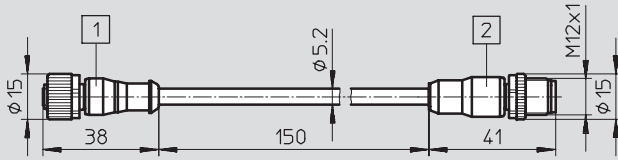
CPA valve terminal – Connection blocks



Dimensions

Download CAD data → www.festo.com/en/engineering

NEBU-M12G5-F-0,2-M12G4



- 1 Straight socket M12
- 2 Straight plug M12

Wiring allocation (socket/plug view)

NEBU-M12G5-F-0,2-M12G4

Plug	Pin	Core colour/wiring allocation	Pin
	1	Brown/ASI +	1
	2	White/0 V load	2
	3	Blue/ASI -	3
	4	Black/24 V load	4

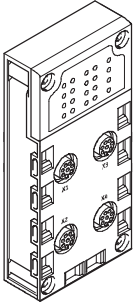




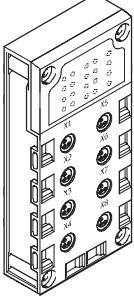








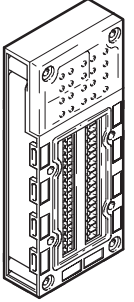








Connection block/digital input module combinations

Connection blocks	Part No.	Digital input modules	
		CPX-8DE	CPX-4DE
CPX-AB-4-M12x2-5POL	195 704	■	■
CPX-AB-8-M8-3POL	195 706	■	■
CPX-AB-8-KL-4POL	195 708	■	■
CPX-AB-1-Sub-BU-25POL	525 676	■	■
CPX-AB-4-HARx2-4POL	525 636	■	■
CPX-AB-4-M12-8POL	525 178	-	-

AS-interface® components

CPA valve terminal – Connection blocks



Pin allocation						
Connection block inputs		CPX-8DE		CPX-4DE		
CPX-AB-4-M12X2-5POL						
	 X1	 X3	X1.1: 24 V _{SEN} X1.2: Input x+1 X1.3: 0 V _{SEN} X1.4: Input x X1.5: FE (earth)	X3.1: 24 V _{SEN} X3.2: Input x+5 X3.3: 0 V _{SEN} X3.4: Input x+4 X3.5: FE (earth)	X1.1: 24 V _{SEN} X1.2: Input x+1 X1.3: 0 V _{SEN} X1.4: Input x X1.5: FE (earth)	X3.1: 24 V _{SEN} X3.2: Input x+3 X3.3: 0 V _{SEN} X3.4: Input x+2 X3.5: FE (earth)
	 X2	 X4	X2.1: 24 V _{SEN} X2.2: Input x+3 X2.3: 0 V _{SEN} X2.4: Input x+2 X2.5: FE (earth)	X4.1: 24 V _{SEN} X4.2: Input x+7 X4.3: 0 V _{SEN} X4.4: Input x+6 X4.5: FE (earth)	X2.1: 24 V _{SEN} X2.2: n.c. X2.3: 0 V _{SEN} X2.4: Input x+1 X2.5: FE (earth)	X4.1: 24 V _{SEN} X4.2: n.c. X4.3: 0 V _{SEN} X4.4: Input x+3 X4.5: FE (earth)
CPX-AB-8-M8-3POL						
	 X1	 X5	X1.1: 24 V _{SEN} X1.3: 0 V _{SEN} X1.4: Input x	X5.1: 24 V _{SEN} X5.3: 0 V _{SEN} X5.4: Input x+4	X1.1: 24 V _{SEN} X1.3: 0 V _{SEN} X1.4: Input x	X5.1: 24 V _{SEN} X5.3: 0 V _{SEN} X5.4: Input x+2
	 X2	 X6	X2.1: 24 V _{SEN} X2.3: 0 V _{SEN} X2.4: Input x+1	X6.1: 24 V _{SEN} X6.3: 0 V _{SEN} X6.4: Input x+5	X2.1: 24 V _{SEN} X2.3: 0 V _{SEN} X2.4: Input x+1	X6.1: 24 V _{SEN} X6.3: 0 V _{SEN} X6.4: Input x+3
 X3	 X7	X3.1: 24 V _{SEN} X3.3: 0 V _{SEN} X3.4: Input x+2	X7.1: 24 V _{SEN} X7.3: 0 V _{SEN} X7.4: Input x+6	X3.1: 24 V _{SEN} X3.3: 0 V _{SEN} X3.4: Input x+1	X7.1: 24 V _{SEN} X7.3: 0 V _{SEN} X7.4: Input x+3	
 X4	 X8	X4.1: 24 V _{SEN} X4.3: 0 V _{SEN} X4.4: Input x+3	X8.1: 24 V _{SEN} X8.3: 0 V _{SEN} X8.4: Input x+7	X4.1: 24 V _{SEN} X4.3: 0 V _{SEN} X4.4: n.c.	X8.1: 24 V _{SEN} X8.3: 0 V _{SEN} X8.4: n.c.	
CPX-AB-8-KL-4POL						
	 X1	 X5	X1.0: 24 V _{SEN} X1.1: 0 V _{SEN} X1.2: Input x X1.3: FE (earth)	X5.0: 24 V _{SEN} X5.1: 0 V _{SEN} X5.2: Input x+4 X5.3: FE (earth)	X1.0: 24 V _{SEN} X1.1: 0 V _{SEN} X1.2: Input x X1.3: FE (earth)	X5.0: 24 V _{SEN} X5.1: 0 V _{SEN} X5.2: Input x+2 X5.3: FE (earth)
	 X2	 X6	X2.0: 24 V _{SEN} X2.1: 0 V _{SEN} X2.2: Input x+1 X2.3: FE (earth)	X6.0: 24 V _{SEN} X6.1: 0 V _{SEN} X6.2: Input x+5 X6.3: FE (earth)	X2.0: 24 V _{SEN} X2.1: 0 V _{SEN} X2.2: Input x+1 X2.3: FE (earth)	X6.0: 24 V _{SEN} X6.1: 0 V _{SEN} X6.2: Input x+3 X6.3: FE (earth)
 X3	 X7	X3.0: 24 V _{SEN} X3.1: 0 V _{SEN} X3.2: Input x+2 X3.3: FE (earth)	X7.0: 24 V _{SEN} X7.1: 0 V _{SEN} X7.2: Input x+6 X7.3: FE (earth)	X3.0: 24 V _{SEN} X3.1: 0 V _{SEN} X3.2: Input x+1 X3.3: FE (earth)	X7.0: 24 V _{SEN} X7.1: 0 V _{SEN} X7.2: Input x+3 X7.3: FE (earth)	
 X4	 X8	X4.0: 24 V _{SEN} X4.1: 0 V _{SEN} X4.2: Input x+3 X4.3: FE (earth)	X8.0: 24 V _{SEN} X8.1: 0 V _{SEN} X8.2: Input x+7 X8.3: FE (earth)	X4.0: 24 V _{SEN} X4.1: 0 V _{SEN} X4.2: n.c. X4.3: FE (earth)	X8.0: 24 V _{SEN} X8.1: 0 V _{SEN} X8.2: n.c. X8.3: FE (earth)	

Fieldbus systems/electrical peripherals
 AS-interface components

AS-interface® components

CPA valve terminal – Connection blocks



Pin allocation		CPX-8DE		CPX-4DE	
Connection block inputs		CPX-8DE		CPX-4DE	
CPX-AB-1-SUB-BU-25POL					
		1: Input x	14: Input x+4	1: Input x	14: Input x+2
		2: Input x+1	15: Input x+5	2: Input x+1	15: Input x+3
		3: Input x+2	16: Input x+6	3: Input x+1	16: Input x+3
		4: Input x+3	17: Input x+7	4: n.c.	17: n.c.
		5: 24 V _{SEN}	18: 24 V _{SEN}	5: 24 V _{SEN}	18: 24 V _{SEN}
		6: 0 V _{SEN}	19: 24 V _{SEN}	6: 0 V _{SEN}	19: 24 V _{SEN}
		7: 24 V _{SEN}	20: 24 V _{SEN}	7: 24 V _{SEN}	20: 24 V _{SEN}
		8: 0 V _{SEN}	21: 24 V _{SEN}	8: 0 V _{SEN}	21: 24 V _{SEN}
		9: 24 V _{SEN}	22: 0 V _{SEN}	9: 24 V _{SEN}	22: 0 V _{SEN}
		10: 24 V _{SEN}	23: 0 V _{SEN}	10: 24 V _{SEN}	23: 0 V _{SEN}
		11: 0 V _{SEN}	24: 0 V _{SEN}	11: 0 V _{SEN}	24: 0 V _{SEN}
		12: 0 V _{SEN}	25: FE (earth)	12: 0 V _{SEN}	25: FE (earth)
		13: FE (earth)	Socket: FE (earth)	13: FE (earth)	Socket: FE (earth)
CPX-AB-4-HAR-4POL					
		X1.1: 24 V _{SEN}	X3.1: 24 V _{SEN}	X1.1: 24 V _{SEN}	X3.1: 24 V _{SEN}
		X1.2: Input x+1	X3.2: Input x+5	X1.2: Input x+1	X3.2: Input x+3
		X1.3: 0 V _{SEN}	X3.3: 0 V _{SEN}	X1.3: 0 V _{SEN}	X3.3: 0 V _{SEN}
		X1.4: Input x	X3.4: Input x+4	X1.4: Input x	X3.4: Input x+2
		X2.1: 24 V _{SEN}	X4.1: 24 V _{SEN}	X2.1: 24 V _{SEN}	X4.1: 24 V _{SEN}
		X2.2: Input x+3	X4.2: Input x+7	X2.2: n.c.	X4.2: n.c.
		X2.3: 0 V _{SEN}	X4.3: 0 V _{SEN}	X2.3: 0 V _{SEN}	X4.3: 0 V _{SEN}
		X2.4: Input x+2	X4.4: Input x+6	X2.4: Input x+1	X4.4: Input x+3

AS-interface® components

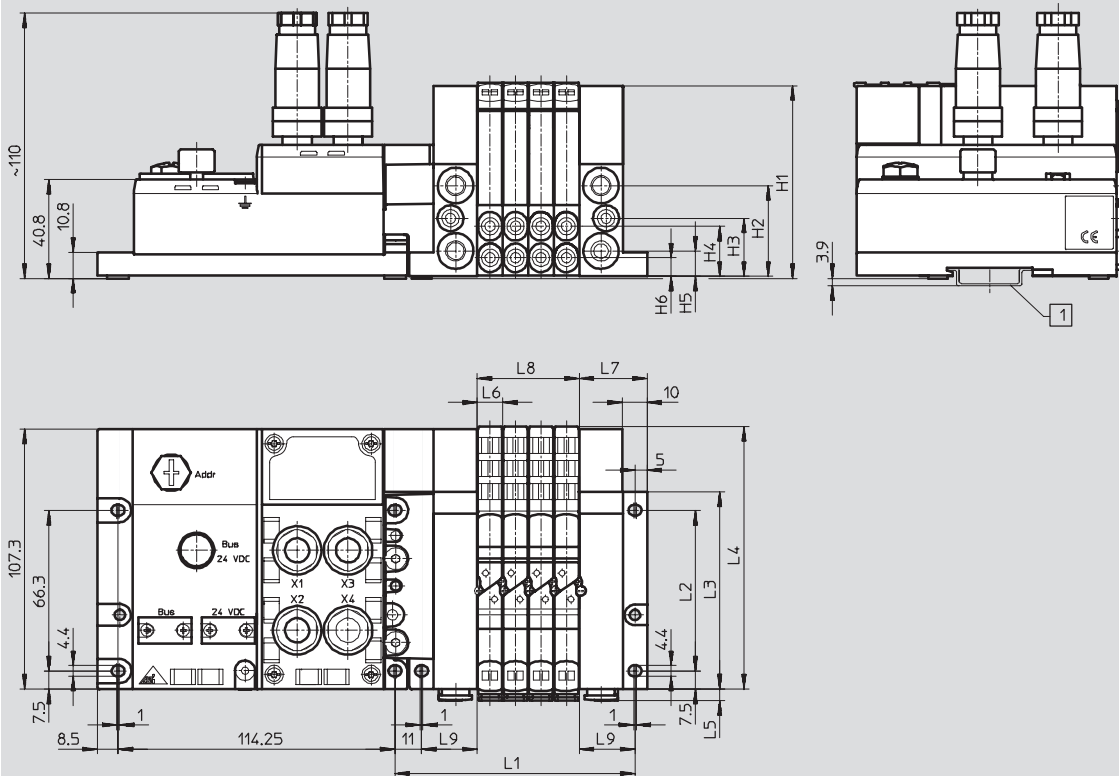
CPA valve terminal – Dimensions



Dimensions – CPA with AS-interface

Download CAD data → www.festo.com/en/engineering

CPA...-GE



1 Retaining rail

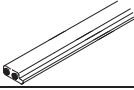
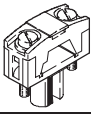
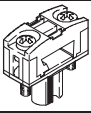
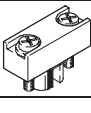
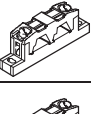
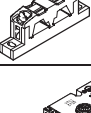
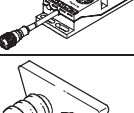
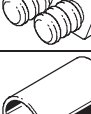
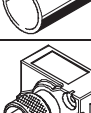
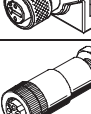

Type	L1 ¹⁾	L2	L3	L4	L5	L6	L7	L8 ¹⁾	L9	H1	H2	H3	H4	H5	H6
CPA10	46 + 11 + (n x 10.6)	66.3	81.3	108.3	5.5	10.6	28	n x 10.6	23	79.5	37.5	24	20.7	10.5	7.7
CPA14	52 + 11 + (n x 14.6)	76.1	91.1	118.1	6.5	14.6	31	n x 14.6	26	92	43	27.5	26.5	12	9.5

1) n = number of valves

AS-interface® components

CPA valve terminal – Accessories






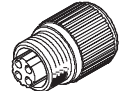
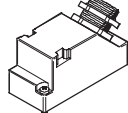




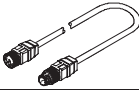
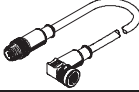
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Ordering data				
	Designation		Type	Part No.
Bus connection				
	AS-interface flat cable, yellow	100 m	KASI-1,5-Y-100	18 940
	AS-interface flat cable, black	100 m	KASI-1,5-Z-100	18 941
	Flat cable socket ¹⁾		ASI-SD-FK	18 785
	Flat cable socket ¹⁾	Turned through 180°	ASI-SD-FK180	196 089
	Flat cable blanking plug		ASI-SD-FK-BL	196 090
	AS-interface flat cable distributor	Parallel cable	ASI-KVT-FK	18 786
	AS-interface flat cable distributor	Symmetrical cable	ASI-KVT-FK-S	18 797
	Cable distributor (yellow and black)	To 2x M12, 4-pin	ASI-KVT-FKx2-M12	527 474
	Cable cap for flat cable (scope of delivery 50 pieces)		ASI-KK-FK	18 787
	Cable sleeve (scope of delivery 20 pieces)		ASI-KT-FK	165 593
	M12 socket for flat cable		ASI-SD-FK-M12	18 788
	M12 socket for flat cable	With PG13.5	ASI-SD-PG-M12	18 789

AS-interface® components

CPA valve terminal – Accessories

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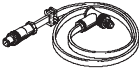
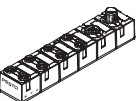
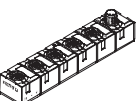
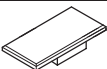

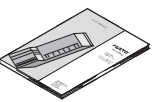
Ordering data				
	Designation		Type	Part No.
Sensor plug				
	Straight sensor plug	M12, 4-pin, PG7	SEA-GS-7	18 666
	Straight sensor plug	M12, 5-pin, PG7	SEA-M12-5GS-PG7	175 487
	Straight sensor plug	M12, PG9	SEA-GS-9	18 778
	Straight sensor plug for cable Ø 2.5 mm	M12, 4-pin	SEA-4GS-7-2,5	192 008
	Straight sensor plug	M8, screw-in	SEA-3GS-M8-S	192 009
	Straight sensor plug	M8, solderable	SEA-GS-M8	18 696
	Harax sensor plug	4-pin	SEA-GS-HAR-4POL	525 928
	Sub-D plug	25-pin	SD-SUB-D-ST25	527 522
	Protective cap	M12	ISK-M12	165 592
	Protective cap	M8	ISK-M8	177 672
DUO plug				
	Plug M12 for 2 sensor cables	4-pin, PG11	SEA-GS-11-DUO	18 779
		5-pin, PG11	SEA-5GS-11-DUO	192 010
T-adapter				
	Push-in T-connector		NEDU-M8D3-M12T4	541 597
			NEDU-M12D5-M12T4	541 596
DUO cable M12 to 2x M8				
	DUO cable M12-2xM8, 4-pin/2x3-pin	2x straight socket	KM12-DUO-M8-GDGD	18 685
		2x straight/angled socket	KM12-DUO-M8-GDWD	18 688
		2x angled socket	KM12-DUO-M8-WDWD	18 687
Connecting cable				
	Connecting cable, straight plug, straight socket	M12, 4-pin/5-pin, 0.2 m	NEBU-M12G5-F-0.2-M12G4	542 129
		M12, 4-pin, 2.5 m	KM12-M12-GSGD-2,5	18 684
		M12, 4-pin, 5.0 m	KM12-M12-GSGD-5	18 686
	Connecting cable, straight plug, angled socket	M12, 4-pin, 1.0 m	KM12 M12-GSWD-1-4	185 499

Fieldbus systems/electrical peripherals
AS-interface components

AS-interface® components

CPA valve terminal – Accessories

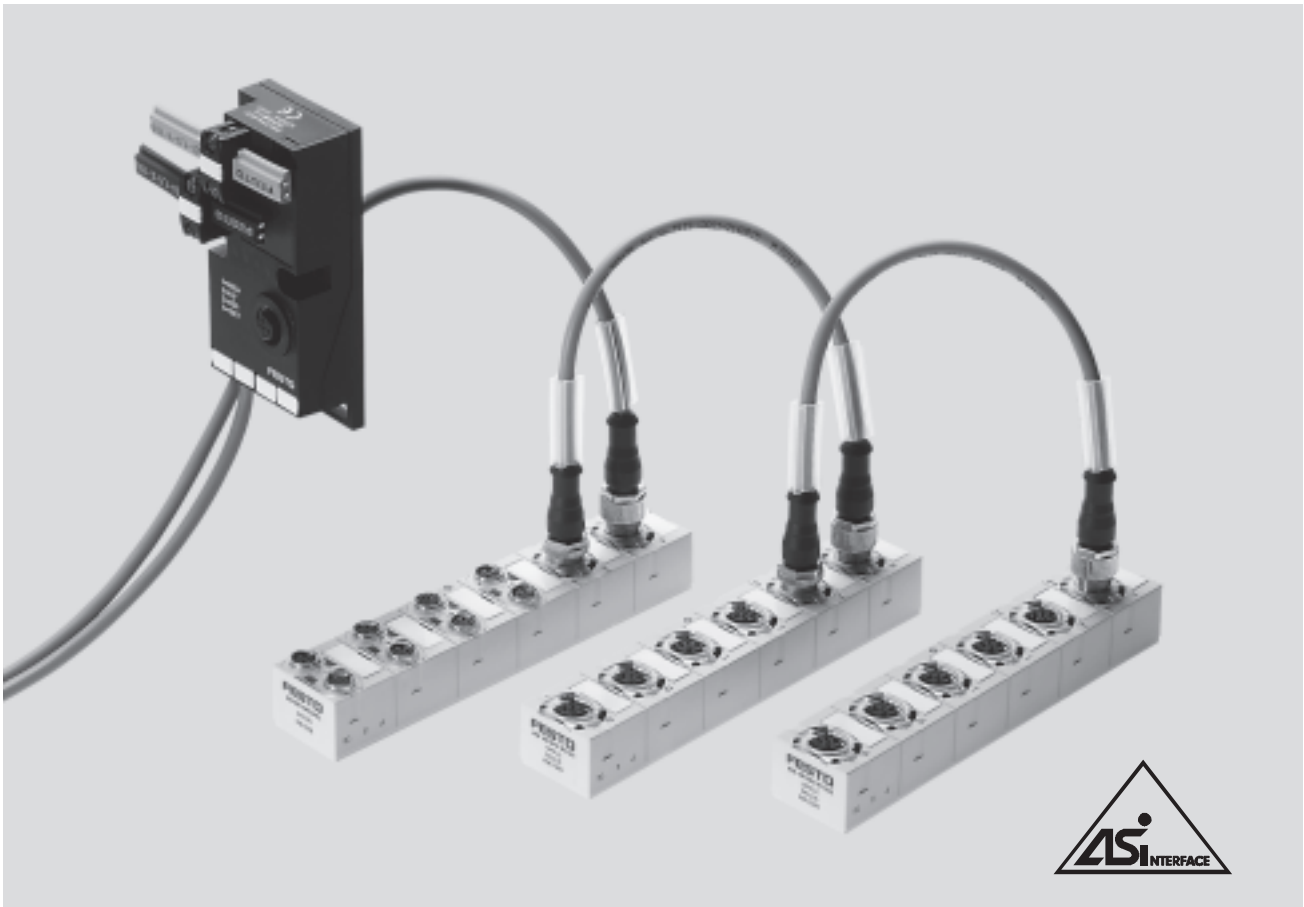
FESTO

Ordering data				
	Designation	Type	Part No.	
Other accessories				
	Combi power pack for AS-interface	ASI-CNT-115/230 VAC-B	191 082	
	Addressing device	ASI-PRG-ADR	18 959	
	Addressing cable	KASI-ADR	18 960	
	AS-interface input module for 8 inputs M8, compact	ASI-8DI-M8-3POL	542 124	
	AS-interface input/output module for 4 inputs/3 outputs M12, compact	ASI-4DI3DO-M12X2-5POL-Z	542 125	
	Inscription labels 6x10 in frames (64 pieces)	IBS 6x10	18 576	
	Inscription labels 9x20 in frames (20 pieces)	IBS 9x20	18 182	
	H-rail mounting	CPA-BG-NRH	173 498	
User documentation				
	Manual for CPA Pneumatics	German	P.BE-CPA-DE	173 514
		English	P.BE-CPA-EN	173 515
		French	P.BE-CPA-FR	173 516
		Italian	P.BE-CPA-IT	173 518
		Spanish	P.BE-CPA-ES	173 517
		Swedish	P.BE-CPA-SV	173 519

AS-interface® components

Compact I/O modules and valve interfaces

FESTO



Compact I/O modules

General description

- Highly compact modules
- Encapsulated, sturdy electronics
- Inputs/outputs to IEC1131, PNP
- Short circuit proof, overload proof
- Inputs suitable for proximity sensors, inductive, capacitive or optical sensors and light barriers
- Ideal for use in decentralised handling and assembly as well as universal applications with increased requirements
- AS-interface Specification V2.11
- A/B operation
- Bus and auxiliary power supply looped through via 2x M12
- Quick installation
- Diagnosis of each module

Module with 8 inputs

- Two slaves in one housing
- 8 inputs M8, 3-pin, 200 mA per input
- Peripherals faults per slave, two fault LEDs
- Status display per input
- Supply exclusively from "yellow" AS-interface cable, the pins for the auxiliary power supply are simply looped through
- This permits cascading of the input/output modules

Module with 4 inputs/3 outputs

- Individual slave
- 4 inputs M12, 5-pin, with double allocation, 200 mA per input
- 3 outputs M12, 5-pin, with double allocation, 1 A per output
- Peripherals fault, fault LED
- Status display for each input and output
- Inputs are supplied exclusively from the "yellow" AS-interface cable
- Outputs are supplied exclusively from the "black" AS-interface cable

Module with 4 inputs/2 valve plugs

- Individual slave
- 4 inputs M12, 5-pin, with double allocation, 200 mA per input
- 2 outputs with pre-assembled plug socket with 0.5 m cable for valves, 1 A per output
- Festo plug and work™ for the following valves:
 - Tiger2000, Tiger Classic
 - CPE18/24, MIDI
 - CPE10/14
 - ISO, VDMA and Namur
 - VB series
 - On-off valves
- Other technical features such as slave with 3 outputs

Individual valve interfaces ASI-EVA, 2I20 and 2I10

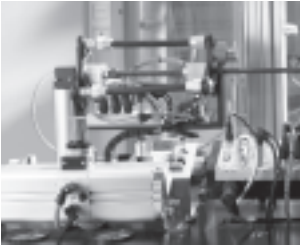
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AS-interface® components

Compact I/O modules and valve interfaces



Applications



The M12 bus connection standardised in the AS-interface specification offers various advantages:

- Use of standardised, pre-assembled M12 connecting cables
- One cable instead of two
- Installation-saving, quick M12 screw-type lock
- Flexible selection and optimisation of the necessary cable qualities in areas with permanently high loads,

- for example for
- chain link trunking
 - robot arms (torsion)
 - environments with increased moisture
 - aggressive media

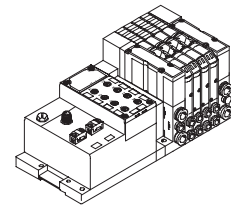
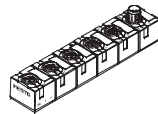
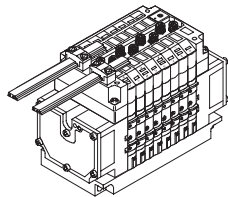
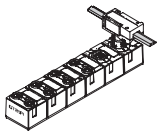
This connection technology makes compact modules ideal for use both in demanding and highly compact environments.

Decentralised machine and system structures, for example

- Handling technology
- Conveyor technology
- Packaging industry
- Sorting systems
- Upstream functions via chain link trunking and robot arms

Tips on use

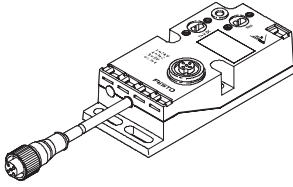
- In addition to valve terminals for optimising the number of inputs.
- Suitable for valve terminals with M12 bus connection for looping through the bus via M12.
- Universal applications for all commonly used sensors and light barriers up to 200 mA per channel.
- Universal outputs 1 A, up to 2 A (approx. 50 W) can be connected by means of parallel connection in the DUO plug.



AS-interface® components

Compact I/O modules and valve interfaces

AS-interface flat cable distributor to round cable 2x M12



Alternative connection concepts

- AS-interface connection technology for yellow and optionally for black flat cables
- Passive conversion of the signals to M12 socket and round cable with M12 socket
- Pre-assembled round cable, 1 m, PUR
- Alternatively PVC extension cable, or another suitable cable of any length, via additional M12 socket

Selecting the cable

Optimised connection technologies at the AS-interface can be easily realised by selecting the right cable.

- Flat cables for all standard applications with installation-saving insulation displacement technology
- Round cables for applications with differing requirements, for example:
 - Chain link trunking with small radii and increased requirements for highly flexible cables
 - Applications with consistently high humidity

- Applications involving frequent cleaning and requiring cables resistant to detergents (PUR, PVC or other cables)
- Cabling systems using standard components (M12) preferred

Easy to mount

- Direct mounting on the wall or machine frame
- Direct mounting on the 40 mm ITEM profile
- Mounting on H-rail using adapter CP-TS-HS35

Tips on use and installation (inputs/outputs)

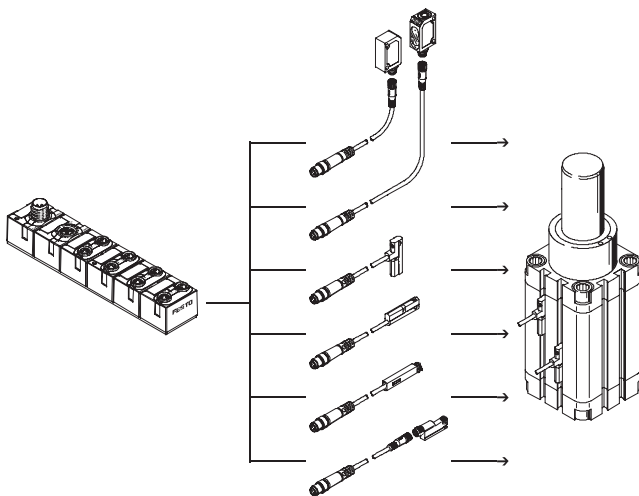
Input module 8DI-M8

Connection technologies based on M8 take account of the increasing trend towards miniaturisation. Sensors with

pre-assembled M8 connecting cables or with M8 plugs can be directly connected in a 1:1 relationship. This

simplifies clear allocation and troubleshooting. Individual sensors or

cables can be easily and quickly replaced in the event of faults.



AS-interface® components

Compact I/O modules and valve interfaces



Tips on use and installation (inputs/outputs)

Input/output module 4DI3DO-M12

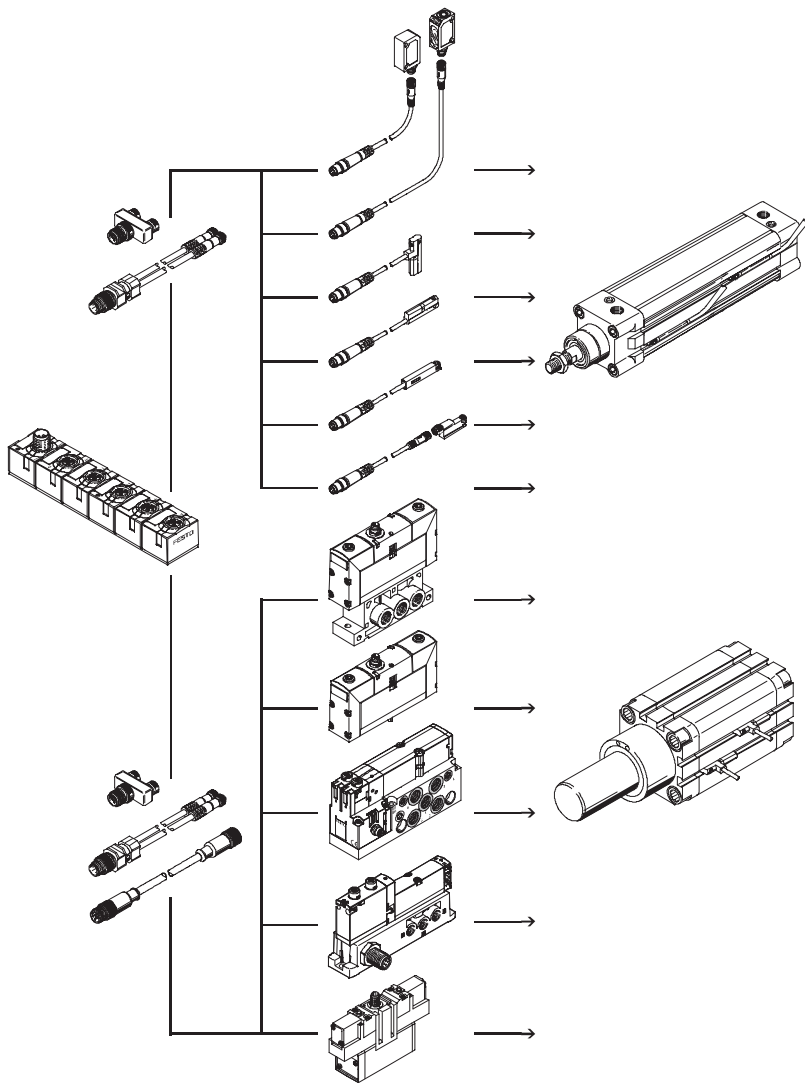
Sturdy M12 connection technology is still an accepted standard for inputs and outputs. Direct connection for sensors with M12 connection. The M12 interfaces with double allocation can be split into 2xM12 or 2xM8 via DUO plugs, DUO cables or T-adapters.

The standard for valves with central plug (EN 60947-5-2 and ISO 20401) defines double allocation for M12 or M8. This means that a double solenoid valve and a single solenoid valve can be directly connected to a compact AS-interface module using a 1:1 connection. This simplifies clear

allocation and troubleshooting. Individual valves or cables can be easily and quickly replaced in the event of faults.

 **Note**

M8 4-pin adapter cables can be configured to M12 5-pin in Festo's modular system for connecting cables (NEBU...) so that even compact valve plugs as in MPA can be directly connected via pre-assembled cables.



AS-interface® components

Compact I/O modules and valve interfaces


Tips on use and installation (inputs/outputs)

Individual valve interfaces 4DI2DO-M12

These modules with 4 inputs and 2 outputs are ideal for two single solenoid valves or one double

solenoid valve. If two drives are activated, all 4 proximity sensors can be traced. The cables are connected

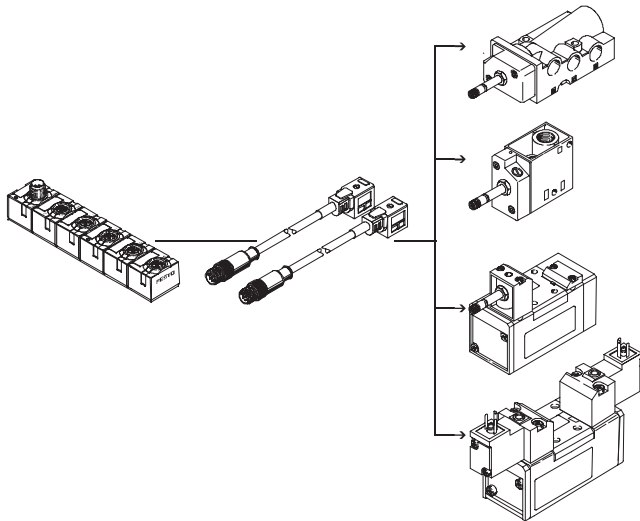
ready for installation and 100% tested ex-works – ideal for Festo plug and work™.

 Note
The electrical outputs correspond to those of the 4DI3DO module, the third output could therefore also be used. Unused valve plugs can be disconnected and the connections sealed with a protective cap.

Version 4DI2DO-2xMF-Z

Suitable for F coils to DIN EN 175301 industrial standard, for example all valves from Festo with the type code

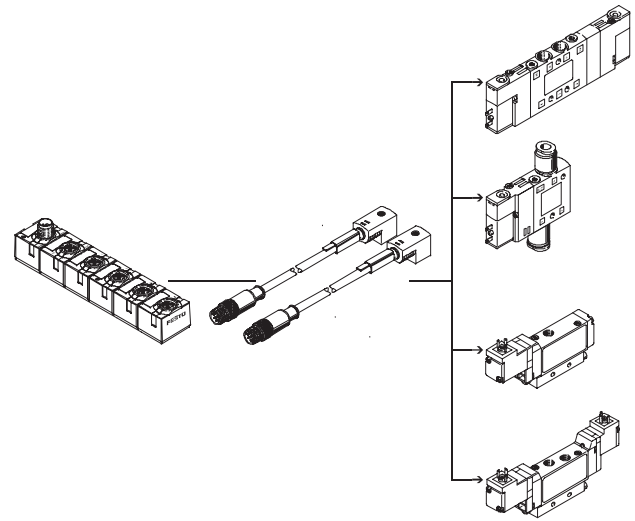
”MFH” such as Tiger2000, Tiger Classic, valves to the ISO and Namur standards as well as on-off valves.



Version 4DI2DO-2xMEB-Z

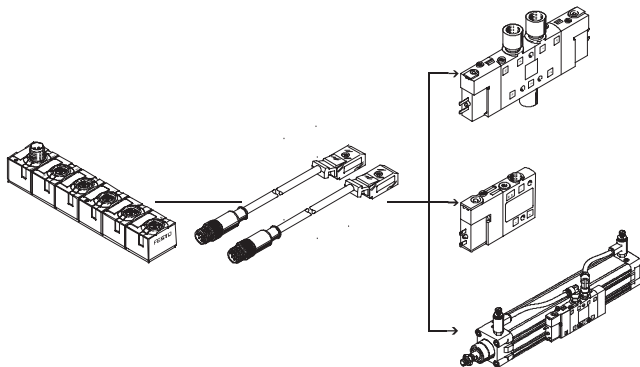
Suitable for EB coils to DIN EN 175301 type C, for example all valves from Festo with the type code

”MEBH” such as the Midi and VB series, CPE18/24 as well as valves to the ISO and Namur standards.



Version 4DI2DO-2xMZB9-Z

Suitable for compact Festo ZC coils with holding current reduction, for example valves CPE10/14-M1BH.



AS-interface® components

Compact I/O modules and valve interfaces



Tips on use and installation (AS-interface)

The compact I/O modules feature 4-pin M12 connections for bus IN and bus OUT. As per the AS-interface

specification, the two signal cables for the bus and the optional 24 V DC auxiliary power supply are accomo-

dated on this one connection. All 4 connections are looped through so that a number of modules and even

subsequent valve terminals can be cascaded.

Input module 8DI-M8

Supply to the inputs is provided exclusively from the "yellow" AS-interface cable at this module, i.e. the pins for the auxiliary power supply are not used. This means that the following connection technologies can be realised in addition to the connections via M12 round plug connectors:

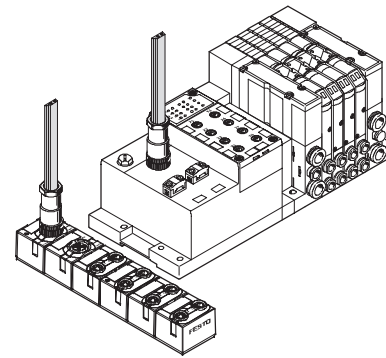
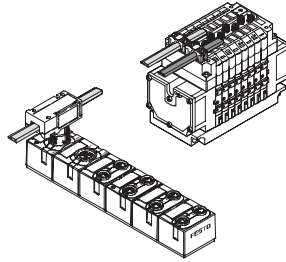
- Flat cable sockets ASI-SD-FK-M12, directly assembled.

If there is an input module at the end of a string, the flat cable can also be routed through a specially sealed connector.

- Connection socket ASI-SD-PG-M12, directly assembled.


- This permits cost-effective and quick connection of a number of directly adjacent modules.
- A transition to valve terminals such as CPV is possible directly and without converters.

- Use at valve terminals with M12 is also possible, provided the auxiliary power supply is not required.

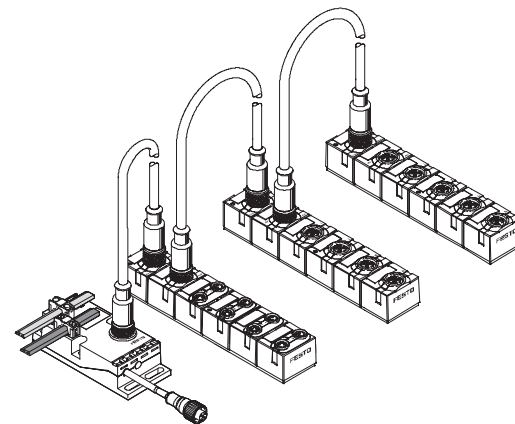


Input/output modules 4DI3DO-M12 and 4DI2DO valves

Supply to the inputs is provided exclusively from the "yellow" AS-interface cable and supply to the outputs is provided exclusively from the "black" AS-interface cable at these modules. Supply is provided either completely by an M12 installation or by means of a suitable converter such as the flat cable distributor ASI-KVT-FKx2-M12.

 **Note**

The contact load capacity of an M12 pin is limited to 4 A. With cascaded modules, ensure that the maximum current load of the first M12 connection in a series will not be exceeded even in a worst case scenario.



Total ≤ 4 A

0 A

2 A

2 A

Load current per module

AS-interface[®] components

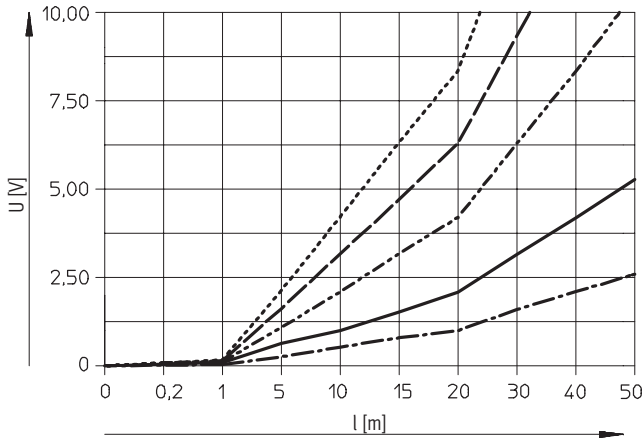
Compact I/O modules and valve interfaces

Voltage drop on cables with M12

Note that the voltage drop on an M12 cross sections. The cable lengths must be sized in accordance with the permissible voltage tolerances for the

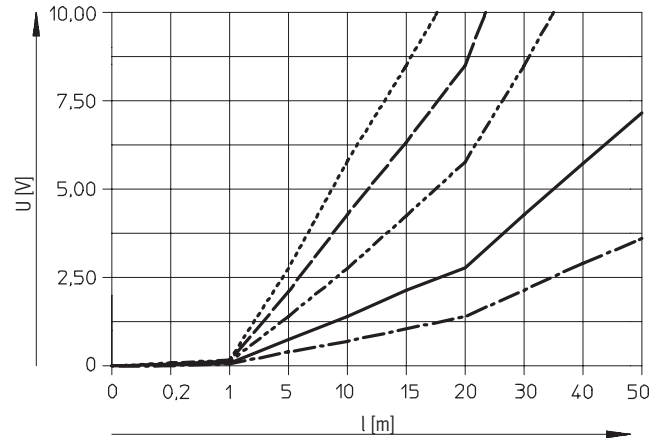
AS-interface signal and the outputs for consuming devices with additional load voltage. The following graphs provide an initial orientation (non-linear scaling of the cable length):

Voltage drop U for cable cross section 0.34 mm² with M12



- 0.5 A
- 1 A
- - - - - 2 A
- · — · — 3 A
- · · · · 4 A

Voltage drop U for cable cross section 0.25 mm² with M12



- 0.5 A
- 1 A
- - - - - 2 A
- · — · — 3 A
- · · · · 4 A

AS-interface[®] components

Compact I/O modules and valve interfaces



Installation

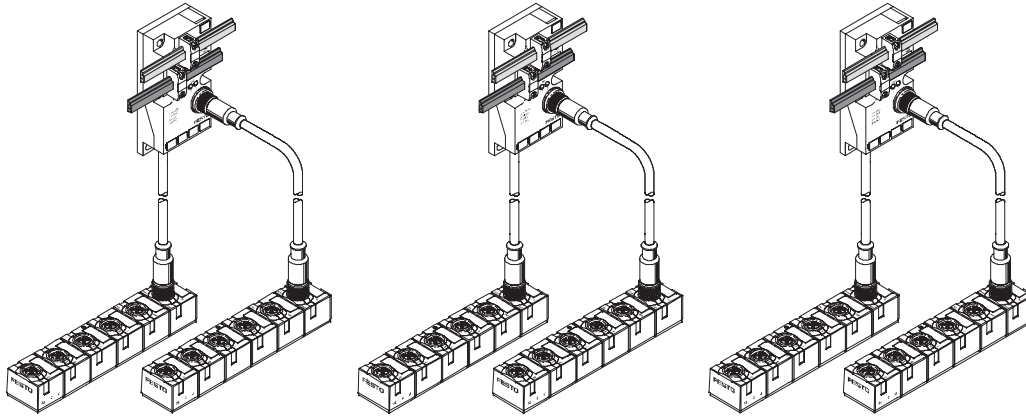
Installation for consuming devices with high current consumption

If a number of amperes are to be tapped per module, a suitable supply must be ensured via a number of dis-

tributors (see the following example). This means that the max. 3 A per

module can be simultaneously switched. Note also that the voltage

drop increases with large currents in the flat cables (2 x 1.5 mm²).

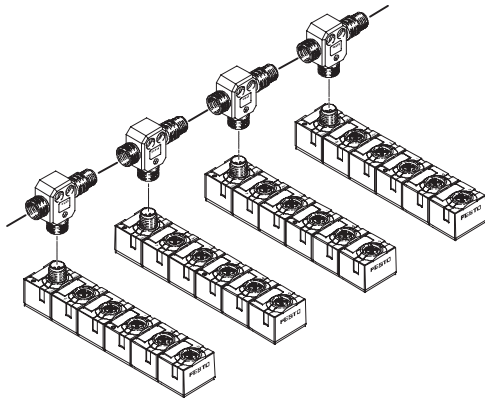


Alternative M12 installation with branch lines

Installation via branch lines can also be selected for straight M12 installa-

tion as an alternative to the looped-through AS-i bus. The T-adapter FB-TA-

M12-5POL is ideal for this (bus IN: socket, bus OUT: plug).



AS-interface[®] components

Compact I/O modules and valve interfaces

Assembly of the compact AS-interface modules

Wall mounting

The AS-interface modules can be mounted on flat surfaces in almost any position using the existing mounting holes and two M4 screws.



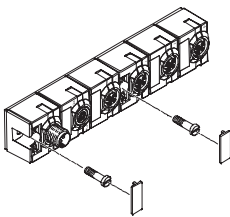
Note

The modules are protected against short circuit using a thermal fuse. This can result in the housing heating up to over 100 °C with short circuits of long duration.

For this reason you should install the

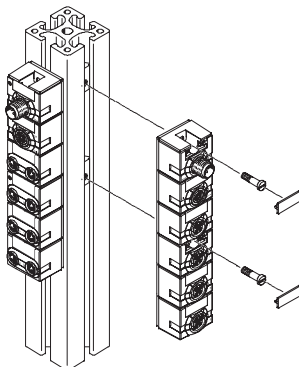
modules on a base and in an environment designed for this temperature and from which there is no risk of fire through ignition (ATEX category T4 – up to 135°).

Wall mounting – Compact I/O modules



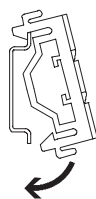
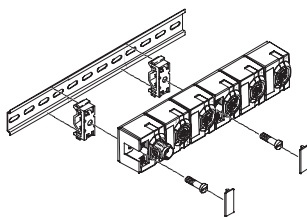
With the compact I/O modules, the mounting holes are covered by inscription labels.

Mounting on profiles (ITEM, etc.)



With slot nuts for M4, otherwise see wall mounting.

H-rail mounting



A mounting kit is available that can be used on an H-rail. With the compact CP modules, the mounting holes are covered by inscription labels.

The following mounting kit is required for H-rail mounting:

- CP-TS-HS35

This permits mounting on H-rails to EN 60715.

AS-interface® components

Compact I/O modules and valve interfaces

Function

Digital input modules facilitate the connection of proximity sensors or other digital 24 V DC sensors (inductive, capacitive, light barriers, etc.), PNP.

Application

- Input module for 24 V DC sensor signals
- Double slave, two slaves in one housing
- M8 plug connection technology, single allocation
- The input statuses are indicated for each input signal on an assigned green LED.
- 24 V DC supply for all connected sensors provided via the ("yellow") AS-interface cable
- Peripherals fault LED for short circuit/undervoltage of sensor supply for each AS-interface slave
- Modules support A/B operation in accordance with Spec. V2.11
- Bus connection 2x M12 for bus in and bus out
- Bus and auxiliary power supply looped through for cascading with output modules



General technical data		
Type	ASI-8DI-M8-3POL	
Part No.	542 124	
Digital inputs	No. of inputs	8
	Power supply 24 V DC	From the AS-interface ("yellow" cable)
	Intrinsic current consumption, electronics [mA]	Typically 35 (inputs not connected)
	Input current at 24 V DC (from sensor) [mA]	Typically 6
	Fuse protection for sensors and electronic module	Internal thermal short circuit protection
	Max. current consumption per sensor [A]	0.24
	Max. current consumption of sensor supply, residual current per slave [A]	0.24
	Nominal operating voltage for sensors [V]	24
	Operating voltage range for sensors [V DC]	18 ... 30
	Protection against polarity reversal	For logic and sensor supply and AS-interface
	Electrical isolation	
	• between the channels	None
	• to the AS-interface system	None
	Logic level	
	• Signal 0 [V]	≤5
	• Signal 1 [V]	≥-11
	Input delay [ms]	Typically 3
	Switching logic	PNP
	Input characteristic curve	To IEC 1131-2

AS-interface® components

Compact I/O modules and valve interfaces

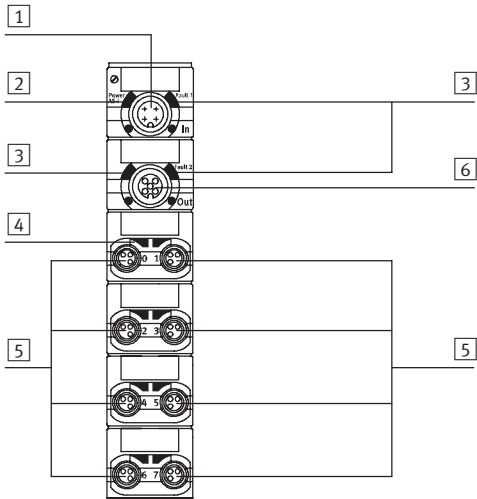
General technical data			
Type	ASI-8DI-M8-3POL		
Part No.	542 124		
General	Protection class to EN 60529	IP65/IP67 (when fully plugged-in or fitted with protective cap)	
	Temperature range		
	• Operation	[°C]	-5 ... +50 (in event of short circuit: heating up to >100 °C possible)
	• Storage	[°C]	-20 ... +70
	Material		Polybutene terephthalate
	Dimensions (LxWxD)	[mm]	151 x 30 x 30
	Weight	[g]	190
LED displays	Inputs	8 green	
	AS-interface LED	Power/green	
	FAULT-LED (fault 1, fault 2)	Fault LED/red per slave	
AS interface connection/load voltage connection	Connection with the AS-interface	Via M12 connecting cables, 4-wire	
	Watchdog function	Active after 50 ms	
	Peripherals fault/diagnosis	Short circuit/overload (thermal fuse on each channel) in accordance with specification c.S.2.1, two red fault LEDs Automatic voltage return	
	AS-interface bus voltage	[V]	26.5 ... 31.6
	AS-interface total current consumption	[mA]	Max. 350
	Current-carrying capacity of M12 pins (AS-i, AUX)	[A]	Max. 4
	AS-interface data		
	• I/O code		0 _n
	• ID code 1		A _n
	• ID code 2		E _n
• Profile		S-0.A.E	
AS-interface address (factory setting)		#1A, #2A	
AS-interface specification		2.11 (compatible with 3.0)	
UL certification		UL listing mark "class 2"	

AS-interface® components

Compact I/O modules and valve interfaces

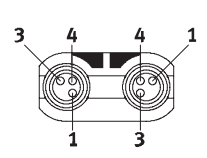
Connection and display components

ASI-8DI-M8-3POL



- 1 AS-interface connection, incoming
- 2 Status LED (green)
- 3 Red LED for short circuit/overload indication
- 4 Green LED for status display (one LED per input)
- 5 Sensor connections
- 6 AS-interface connection, outgoing



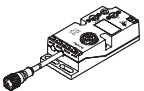


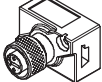
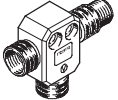
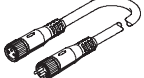
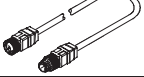
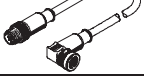
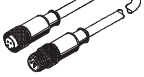
Pin allocation for sensor connections ASI-8DI-M8-3POL

Terminal allocation	Pin	Signal	Designation	Pin	Signal
	1	24 V DC	Operating voltage 24 V DC	1	24 V
	3	0 V	Operating voltage 0 V	3	0 V
	4	Ix*	Sensor signal	4	Ix+1*

* Ix = Input x

AS-interface[®] components

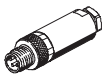






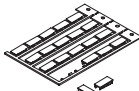
Compact I/O modules and valve interfaces

Ordering data				
	Designation		Type	Part No.
Bus connection				
	AS-interface flat cable, yellow	100 m	KASI-1,5-Y-100	18 940
	AS-interface flat cable, black	100 m	KASI-1,5-Z-100	18 941
	AS-interface flat cable distributor	Parallel cable	ASI-KVT-FK	18 786
	AS-interface flat cable distributor	Symmetrical cable	ASI-KVT-FK-S	18 797
	Cable distributor (yellow and black)	To 2x M12, 4-pin	ASI-KVT-FKx2-M12	527 474
	Cable cap for flat cable (scope of delivery 50 pieces)		ASI-KK-FK	18 787
	Cable sleeve (scope of delivery 20 pieces)		ASI-KT-FK	165 593
	M12 socket for flat cable		ASI-SD-FK-M12	18 788
	M12 socket for flat cable	With PG13.5	ASI-SD-PG-M12	18 789
	T-adapter for DH-485		FB-TA-M12-5POL	171 175
Connecting cable				
	Modular system for connecting cables		NEBU-... → 4 / 8.3-20	-
		Connecting cable, straight plug, straight socket	M12, 4-pin/5-pin, 0.2 m	NEBU-M12G5-F-0.2-M12G4
		M12, 4 pin, 2.5 m	KM12-M12-GSGD-2,5	18 684
		M12, 4 pin, 5.0 m	KM12-M12-GSGD-5	18 686
	Connecting cable, straight plug, angled socket	M12, 4 pin, 1.0 m	KM12 M12-GSWD-1-4	185 499
	Connecting cable, straight plug, straight socket	M8, 0.5 m	KM8-M8-GSGD-0,5	175 488
		M8, 1.0 m	KM8-M8-GSGD-1	175 489
		M8, 2.5 m	KM8-M8-GSGD-2,5	165 610
		M8, 5.0 m	KM8-M8-GSGD-5	165 611

AS-interface® components

Compact I/O modules and valve interfaces




Ordering data				
	Designation		Type	Part No.
Sensor plug				
	Straight sensor plug	M8, screw-in	SEA-3GS-M8-S	192 009
	Straight sensor plug	M8, solderable	SEA-GS-M8	18 696
	Protective cap	M12	ISK-M12	165 592
	Protective cap	M8	ISK-M8	177 672
Other accessories				
	Combi power pack for AS-interface		ASI-CNT-115/230 VAC-B	191 082
	Addressing device		ASI-PRG-ADR	18 959
	Addressing cable		KASI-ADR	18 960
Mounting				
	Mounting for H-rail		CP-TS-HS35	170 169
Inscription labels				
	Inscription labels 8x20 mm in frames (20 pieces)		IBS-8x20	539 388

AS-interface[®] components

Compact I/O modules and valve interfaces

Function

Combined digital input and output modules permit the connection of proximity sensors or other 24 V DC sensors (inductive, capacitive, etc.) as well as up to 3 consuming devices 24 V DC/1 A. The electrical outputs activate actuators such as individual valves, lamps, signal equipment and many more.

 Note
Optimum actuation for valves with M12 central plug.

Plugs with double allocation are separated using a T-adaptor, DUO plug or DUO cable.

Application

- Input/output module for 24 V DC sensor signals and actuators, PNP
- An individual slave, contains an AS-interface chip
- M12 plug connection technology, 5-pin, double allocation
- Peripherals fault LED for short circuit/undervoltage of sensors or actuators

- Modules support A/B operation in accordance with Spec. V2.11
- Bus connection 2x M12 for bus in and bus out
- Bus and auxiliary power supply looped through for cascading with further output modules
- Inputs:
 - The input statuses are indicated for each input signal on an assigned green LED
 - 24 V DC supply for all connected sensors provided via the ("yellow") AS-interface cable
- Outputs:
 - The output statuses are indicated for each output signal on an assigned yellow LED
 - 24 V DC supply for all connected actuators is provided via the ("black") AS-interface cable



General technical data		
Type	ASI-4DI3DO-M12x2-5POL-Z	
Part No.	542 125	
Digital inputs	No. of inputs	4
	Power supply 24 V DC	From the AS-interface ("yellow" cable)
	Intrinsic current consumption, electronics [mA]	Typically 35 (inputs not connected)
	Input current at 24 V DC (from sensor) [mA]	Typically 6
	Fuse protection for sensors	Internal thermal short circuit protection
	Max. current consumption per sensor [A]	0.24
	Max. current consumption of sensor supply, residual current per slave [A]	0.25
	Nominal operating voltage for sensors [V]	24
	Operating voltage range for sensors [V DC]	18 ... 30
	Protection against polarity reversal	For logic and sensor supply and AS-interface
	Electrical isolation	
	• between the channels	None
	• to the AS-interface system	Yes
	Logic level	
• Signal 0 [V]	≤5	
• Signal 1 [V]	≥-11	
Input delay [ms]	Typically 3	
Switching logic	PNP	
Input characteristic curve	To IEC 1131-2	

AS-interface® components

Compact I/O modules and valve interfaces

General technical data		
Type	ASI-4DI3DO-M12x2-5POL-Z	
Part No.	542 125	
Digital outputs	No. of outputs	3
	Allocation of outputs	Socket 3 with double allocation, socket 4 with single allocation
	Version of the actuator connection	4x M12, 5-pin
	Power supply 24 V DC	From the auxiliary power supply, "black" AS-interface cable
	Max. output current per channel [A]	1.0, 2 outputs can be switched together
	Operating voltage [V DC]	24 ±25%
	Fuse protection for power output	Internal thermal short circuit protection per output
	Protection against polarity reversal	For actuator supply 24 V/0 V
	Switching logic	PNP
	Output characteristic curve	To ICE 11 31-2
	Electrical isolation	None
	<ul style="list-style-type: none"> between the channels to the AS-interface system 	Yes
	Voltage drop across the output [V]	<1.5
	Limitation of inductive switch-off voltage [V]	-10 ... -45
	LED displays	
	<ul style="list-style-type: none"> Inputs Outputs AS-interface LED AUX-PWR-LED FAULT-LED 	4 green 3 yellow Power/green Auxiliary power supply/green Fault LED/red
General	Protection class to EN 60 529	IP65/IP67 (when fully plugged-in or fitted with protective cap)
	Temperature range	
	<ul style="list-style-type: none"> Operation [°C] Storage [°C] 	-5 ... +50 (in event of short circuit: heating up to >100 °C possible) -20 ... +70
	Material	Polybutene terephthalate
	Dimensions (LxWxD) [mm]	151 x 30 x 30
	Weight [g]	165
AS interface connection/load voltage connection	Connection with the AS-interface	Via M12 connecting cables, 4-wire
	Watchdog function	Active after 50 ms
	Peripherals fault/diagnosis	Short circuit/overload (thermal fuse on each channel) in accordance with specification C.S.2.1, two red fault LEDs Automatic voltage return
	AS-interface bus voltage [V]	26.5 ... 31.6
	AS-interface total current consumption [mA]	Max. 250
	Current-carrying capacity of M12 pins (AS-interface, AUX) [A]	Max. 4
	AS-interface data	
	<ul style="list-style-type: none"> I/O code ID code 1 ID code 2 Profile 	7 _h A _h 2 _h S-7.A.2
	AS-interface address (factory setting)	#0A
	AS-interface specification	2.11 (compatible with 3.0)
	UL certification	UL listing mark "class 2"

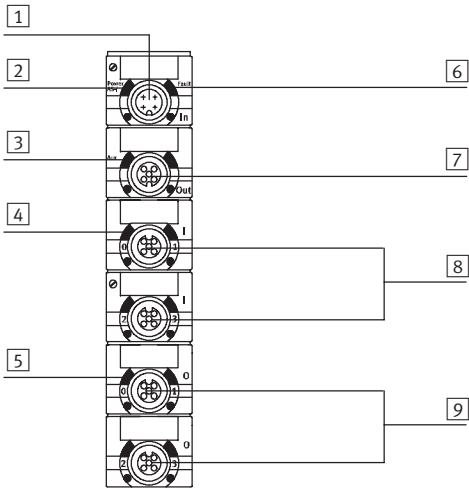
AS-interface[®] components

Compact I/O modules and valve interfaces




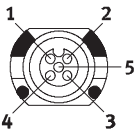
Connection and display components

ASI-4DI3DO-M12x2-5POL-Z



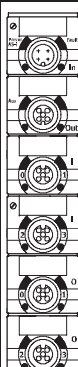
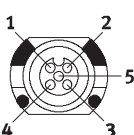
- 1 AS-interface connection, incoming
- 2 Status LED (green)
- 3 Green LED for overload indication
- 4 Green LED for status display (one LED per input)
- 5 Yellow LED for status display (one LED per output)
- 6 Red LED for short circuit/overload indication
- 7 AS-interface connection, outgoing
- 8 Sensor connections
- 9 Outputs

Pin allocation for sensor connections ASI-4DI3DO-M12X2-5POL-Z

Terminal allocation	Pin	Signal	Designation
 	1	24 V DC	Operating voltage 24 V DC
	2	Ix*+1	Sensor signal
	3	0 V	Operating voltage 0 V
	4	Ix*	Sensor signal
	5	Earth	Earth terminal

* Ix = Input x

Pin allocation for outputs ASI-4DI3DO-M12X2-5POL-Z

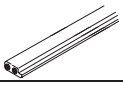


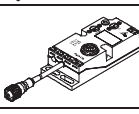


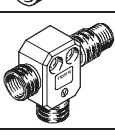
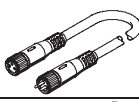
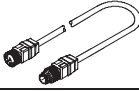
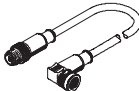

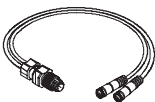
Terminal allocation	Outputs 1 and 2			Output 3		
	Pin	Signal	Designation	Pin	Signal	Designation
 	1	n.c.	Not connected	1	n.c.	Not connected
	2	Ox*+1	Output	2	n.c.	Not connected
	3	0 V	Operating voltage 0 V	3	0 V	Operating voltage 0 V
	4	Ox*	Output	4	Ox*+2	Output
	5	Earth	Earth terminal	5	Earth	Earth terminal

* Ox = Output

AS-interface® components









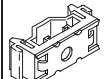
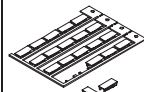
Compact I/O modules and valve interfaces



Ordering data				
	Designation		Type	Part No.
Bus connection				
	AS-interface flat cable, yellow	100 m	KASI-1,5-Y-100	18 940
	AS-interface flat cable, black	100 m	KASI-1,5-Z-100	18 941
	AS-interface flat cable distributor	Parallel cable	ASI-KVT-FK	18 786
	AS-interface flat cable distributor	Symmetrical cable	ASI-KVT-FK-S	18 797
	Cable distributor (yellow and black)	To 2x M12, 4-pin	ASI-KVT-FKx2-M12	527 474
	Cable cap for flat cable (scope of delivery 50 pieces)		ASI-KK-FK	18 787
	Cable sleeve (scope of delivery 20 pieces)		ASI-KT-FK	165 593
	T-adaptor for DH-485		FB-TA-M12-5POL	171 175
Connecting cable				
	Modular system for connecting cables		NEBU-... → 4 / 8.3-20	-
	Connecting cable, straight plug, straight socket	M12, 4-pin/5-pin, 0.2 m	NEBU-M12G5-F-0.2-M12G4	542 129
		M12, 4 pin, 2.5 m	KM12-M12-GSGD-2,5	18 684
		M12, 4 pin, 5.0 m	KM12-M12-GSGD-5	18 686
	Connecting cable, straight plug, angled socket	M12, 4 pin, 1.0 m	KM12 M12-GSWD-1-4	185 499
DUO plug				
	Plug M12 for 2 sensor cables	4-pin, PG11	SEA-GS-11-DUO	18 779
		5-pin, PG11	SEA-5GS-11-DUO	192 010
DUO cable M12 to 2x M8				
	DUO cable M12-2xM8, 4-pin/2x3-pin	2x straight socket	KM12-DUO-M8-GDGD	18 685
		2x straight/angled socket	KM12-DUO-M8-GDWD	18 688
		2x angled socket	KM12-DUO-M8-WDWD	18 687

AS-interface® components

Compact I/O modules and valve interfaces

Ordering data				
	Designation		Type	Part No.
Sensor plug				
	Straight sensor plug	M12, 5-pin, PG7	SEA-M12-5GS-PG7	175 487
	Straight sensor plug	M12, 4-pin, PG7	SEA-GS-7	18 666
	Straight sensor plug	M12, PG9	SEA-GS-9	18 778
	Straight sensor plug for cable Ø 2.5 mm	M12, 4-pin	SEA-4GS-7-2,5	192 008
	Push-in T-connector		NEDU-M8D3-M12T4	541 597
			NEDU-M12D5-M12T4	541 596
	Protective cap	M12	ISK-M12	165 592
Other accessories				
	Combi power pack for AS-interface		ASI-CNT-115/230 VAC-B	191 082
	Addressing device		ASI-PRG-ADR	18 959
	Addressing cable		KASI-ADR	18 960
Mounting				
	Mounting for H-rail		CP-TS-HS35	170 169
Inscription labels				
	Inscription labels 8x20 mm in frames (20 pieces)		IBS-8x20	539 388

AS-interface® components

Compact I/O modules and valve interfaces



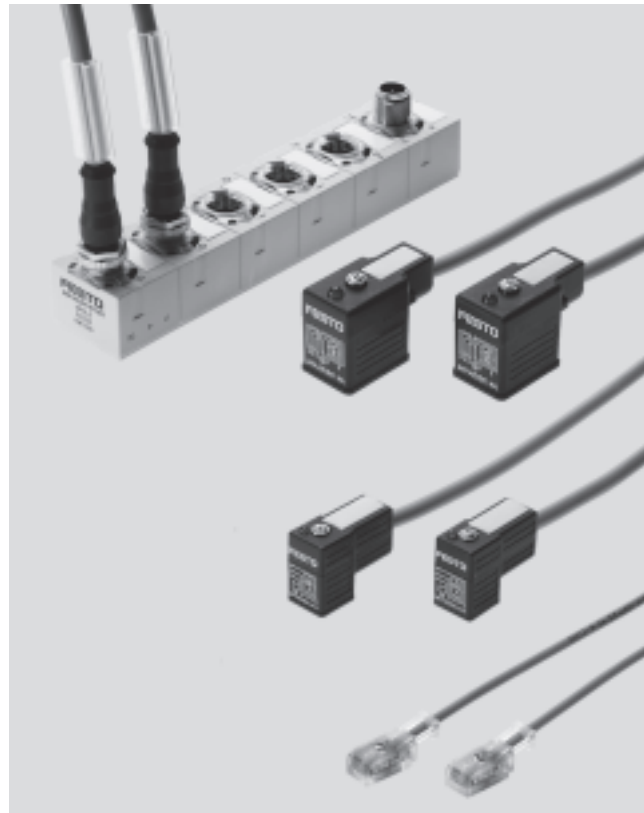
Function

Valve interfaces as combined digital input and output modules permit the connection of proximity sensors or other 24 V DC sensors (inductive, capacitive, etc.) as well as up to 2 consuming devices 24 V DC/1 A. The electrical outputs can be connected via pre-fitted, pre-assembled and tested connecting cables. Input sockets with double allocation are separated using a T-adaptor, DUO plug or DUO cable.

Application

- Input/output module for 24 V DC sensor signals and valves, PNP
- An individual slave, contains an AS-interface chip
- M12 plug connection technology, 5-pin, double allocation
- Pre-assembled cables for valves
- Peripherals fault LED for short circuit/undervoltage of sensors or actuators

- Modules support A/B operation in accordance with Spec. V2.11
- Bus connection 2x M12 for bus in and bus out
- Bus and auxiliary power supply looped through for cascading with further output modules
- Inputs:
 - The input statuses are indicated for each input signal on an assigned green LED
 - 24 V DC supply for all connected sensors provided via the ("yellow") AS-interface cable
- Outputs:
 - The output statuses are indicated for each output signal on an assigned yellow LED on the module and the valve plug.
 - 24 V DC supply for all connected actuators/valves is provided via the ("black") AS-interface cable



General technical data		ASI-4DI2DO-2xMF-Z	ASI-4DI2DO-2xMEB-Z	ASI-4DI2DO-2xMZB9-Z
Type	Part No.	542 126	542 127	542 128
Digital inputs	No. of inputs	4		
	Power supply 24 V DC	From the AS-interface ("yellow" cable)		
	Intrinsic current consumption, electronics [mA]	Typically 35 (inputs not connected)		
	Input current at 24 V DC (from sensor) [mA]	Typically 6		
	Fuse protection for sensors	Internal thermal short circuit protection		
	Max. current consumption per sensor [A]	0.24		
	Max. current consumption of sensor supply, residual current per slave [A]	0.25		
	Nominal operating voltage for sensors [V]	24		
	Operating voltage range for sensors [V DC]	18 ... 30		
	Protection against polarity reversal	For logic and sensor supply and AS-interface		
	Electrical isolation			
	• between the channels	None		
	• to the AS-interface system	Yes		
	Logic level			
	• Signal 0 [V]	≤5		
	• Signal 1 [V]	≥-11		
	Input delay [ms]	Typically 3		
	Switching logic	PNP		
	Input characteristic curve	To IEC 1131-2		

AS-interface® components

Compact I/O modules and valve interfaces

General technical data				
Type	ASI-4DI2DO-2xMF-Z	ASI-4DI2DO-2xMEB-Z	ASI-4DI2DO-2xMZB9-Z	
Part No.	542 126	542 127	542 128	
Digital inputs	Power supply 24 V DC	From the auxiliary power supply, "black" AS-interface cable		
	Max. output current per channel [A]	1.0, 2 outputs can be switched together		
	Operating voltage [V DC]	24 ±25%		
	Switching logic	PNP		
	Output characteristic curve	To ICE 1131-2		
	Electrical isolation	None Yes		
	LED displays	4 green 3 yellow Power/green Auxiliary power supply/green Fault LED/red		
Solenoid coils	No. of connectable solenoid coils	2		
	Valve connection	F coils, DIN 175301, type B industrial standard, with LED	EB coils, DIN 175301, type C, with LED	ZC coils, for example Festo CPE10/14-M1BH, with LED
	Cable length [m]	0.5 m pre-assembled cable per connection		
	Cable type	Round cable 3x 0.75, polyvinyl chloride, colour grey		Round cable 2x 0.25, polyurethane, colour grey
	Valve control design	Short circuit and overload proof, voltage peaks limited		
	General	Protection class to EN 60529	IP65/IP67 (when fully plugged-in or fitted with protective cap)	
	Temperature range	-5 ... +50 (in event of short circuit: heating up to >100 °C possible)		
	• Operation [°C] • Storage [°C]	-20 ... +70		
	Material	Polybutene terephthalate Elastollan/black		
	• Module • M12 plug • Valve plug	Pocan black		Polyvinyl chloride
	Dimensions (LxWxD) [mm]	151 x 30 x 30		
	Weight [g]	395	374	304
AS interface connection/load voltage connection	Connection with the AS-interface	Via M12 connecting cables, 4-wire		
	Watchdog function	Active after 50 ms		
	Peripherals fault/diagnosis	Short circuit/overload (thermal fuse on each channel) in accordance with specification C.S.2.1, two red fault LEDs Automatic voltage return		
	AS-interface bus voltage [V]	26.5 ... 31.6		
	AS-interface total current consumption [mA]	Max. 250		
	Current-carrying capacity of M12 pins (AS-interface, AUX) [A]	Max. 4		
	AS-interface data	• I/O code 7h • ID code 1 Ah • ID code 2 2h • Profile S-7.A.2		
	AS-interface address (factory setting)	#0A		
	AS-interface specification	2.11 (compatible with 3.0)		
	UL certification	UL listing mark "class 2"		

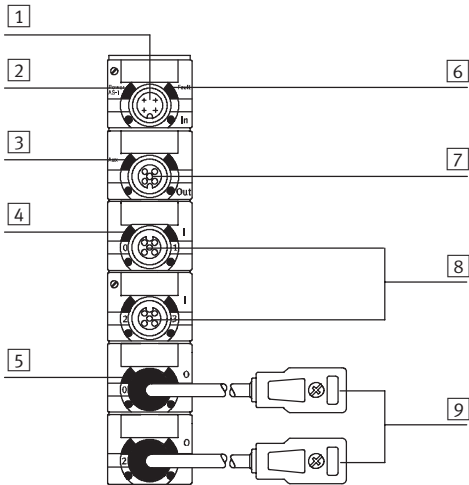
AS-interface® components

Compact I/O modules and valve interfaces








Connection and display components

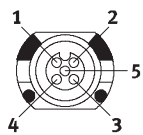
ASI-4DI2DO-2x...-Z



- 1 AS-interface connection, incoming
- 2 Status LED (green)
- 3 Green LED for overload indication
- 4 Green LED for status display (one LED per input)
- 5 Yellow LED for status display (one LED per output)
- 6 Red LED for short circuit/overload indication
- 7 AS-interface connection, outgoing
- 8 Sensor connections
- 9 Outputs

Pin allocation for sensor connections ASI-4DI2DO-2x...-Z

Terminal allocation	Pin	Signal	Designation
	1	24 V DC	Operating voltage 24 V DC
	2	Ix*+1	Sensor signal
	3	0 V	Operating voltage 0 V
	4	Ix*	Sensor signal
	5	Earth	Earth terminal



* Ix = Input x

AS-interface® components

Compact I/O modules and valve interfaces







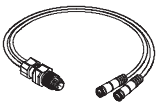







Ordering data				
	Designation		Type	Part No.
Bus connection				
	AS-interface flat cable, yellow	100 m	KASI-1,5-Y-100	18 940
	AS-interface flat cable, black	100 m	KASI-1,5-Z-100	18 941
	AS-interface flat cable distributor	Parallel cable	ASI-KVT-FK	18 786
	AS-interface flat cable distributor	Symmetrical cable	ASI-KVT-FK-S	18 797
	Cable distributor (yellow and black)	To 2x M12, 4-pin	ASI-KVT-FKx2-M12	527 474
	T-adapter for DH-485		FB-TA-M12-5POL	171 175
	Cable cap for flat cable (scope of delivery 50 pieces)		ASI-KK-FK	18 787
	Cable sleeve (scope of delivery 20 pieces)		ASI-KT-FK	165 593
Connecting cable				
	Modular system for connecting cables		NEBU-... → 4 / 8.3-20	–
	Connecting cable, straight plug, angled socket type B for F coil	M12, straight, 5-pin, 0.5 m	NEBV-B2W3P-F-0,5-M12G5	542 130
		M12, straight, 5-pin, 2.5 m	NEBV-B2W3P-F-2,5-M12G5	542 133
	Connecting cable, straight plug, angled socket type C for EB coil	M12, straight, 5-pin, 0.5 m	NEBV-C1W3P-F-0,5-M12G5	542 131
		M12, straight, 5-pin, 2.5 m	NEBV-C1W3P-F-2,5-M12G5	542 134
	Connecting cable, straight plug, angled socket type KMYZ-9 for ZC coil	M12, straight, 5-pin, 0.5 m	NEBV-Z2W2P-0,5-M12G5	542 132
		M12, straight, 5-pin, 2.5 m	NEBV-Z2W2P-2,5-M12G5	542 135
	Connecting cable, straight plug, straight socket	M12, 4-pin/5-pin, 0.2 m	NEBU-M12G5-F-0.2-M12G4	542 129
		M12, 4 pin, 2.5 m	KM12-M12-GSGD-2,5	18 684
		M12, 4 pin, 5.0 m	KM12-M12-GSGD-5	18 686
	Connecting cable, straight plug, angled socket	M12, 4 pin, 1.0 m	KM12 M12-GSWD-1-4	185 499

AS-interface® components

Compact I/O modules and valve interfaces



Ordering data				
	Designation		Type	Part No.
Sensor plug				
	Straight sensor plug	M12, 5-pin, PG7	SEA-M12-5GS-PG7	175 487
	Straight sensor plug	M12, 4-pin, PG7	SEA-GS-7	18 666
	Straight sensor plug	M12, PG9	SEA-GS-9	18 778
	Straight sensor plug for cable \varnothing 2.5 mm	M12, 4-pin	SEA-4GS-7-2,5	192 008
	Push-in T-connector		NEDU-M8D3-M12T4	541 597
			NEDU-M12D5-M12T4	541 596
	Protective cap	M12	ISK-M12	165 592
DUO plug				
	Plug M12 for 2 sensor cables	4-pin, PG11	SEA-GS-11-DUO	18 779
		5-pin, PG11	SEA-5GS-11-DUO	192 010
DUO cable M12 to 2x M8				
	DUO cable M12-2xM8, 4-pin/2x3-pin	2x straight socket	KM12-DUO-M8-GDGD	18 685
		2x straight/angled socket	KM12-DUO-M8-GDWD	18 688
		2x angled socket	KM12-DUO-M8-WDWD	18 687
Other accessories				
	Combi power pack for AS-interface		ASI-CNT-115/230 VAC-B	191 082
	Addressing device		ASI-PRG-ADR	18 959
	Addressing cable		KASI-ADR	18 960
Mounting				
	Mounting for H-rail		CP-TS-HS35	170 169
Inscription labels				
	Inscription labels 8x20 mm in frames (20 pieces)		IBS-8x20	539 388

AS-interface® components

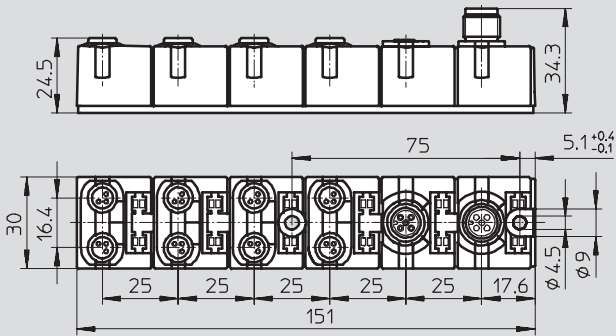
Compact I/O modules and valve interfaces



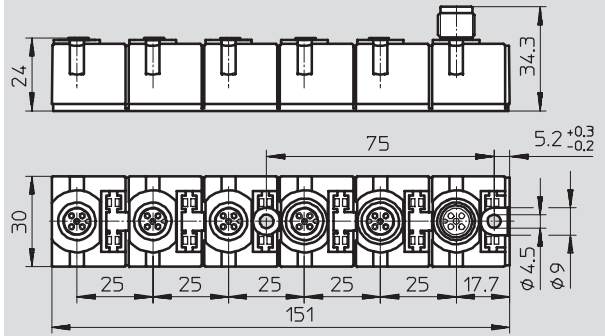
Dimensions

Download CAD data → www.festo.com/en/engineering

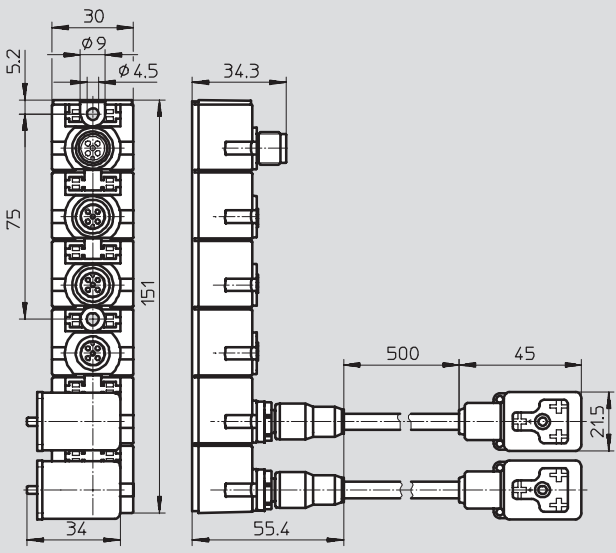
ASI-8DI-M8-3POL



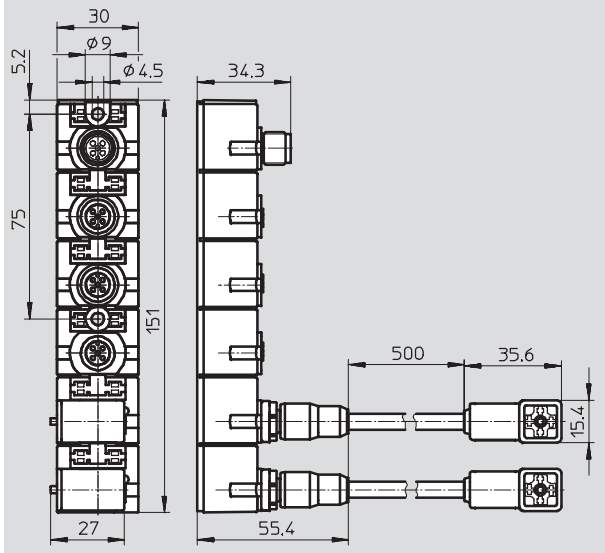
ASI-4DI3DO-M12x2-5POL-Z



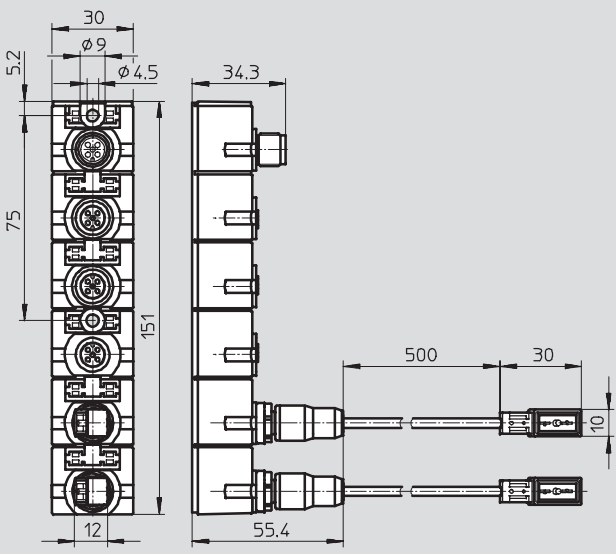
ASI-4DI2DO-2xMF-Z



ASI-4DI2DO-2xMEB-Z



ASI-4DI2DO-2xMZB9-Z



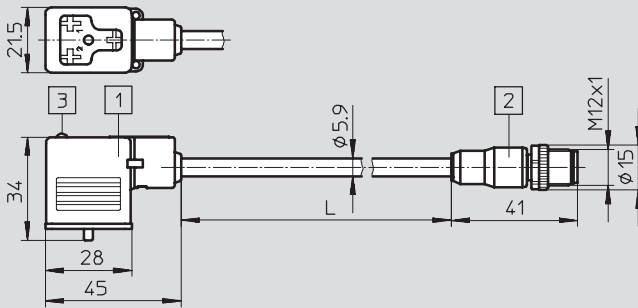
AS-interface® components

Compact I/O modules and valve interfaces

Dimensions

Download CAD data → www.festo.com/en/engineering

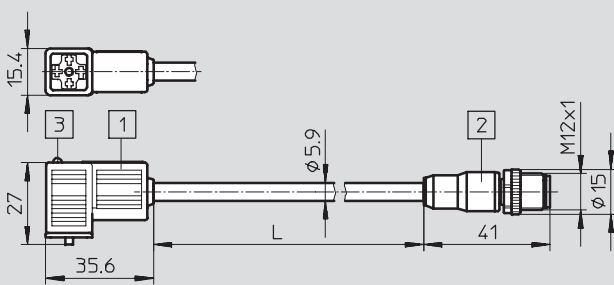
NEBV-B2W3P-F-...-M12G5



- 1 Socket type BI
- 2 Straight plug M12
- 3 LED illuminated area

	L [m]
NEBV-B2W3P-F-0,5-M12G5	0.5
NEBV-B2W3P-F-2,5-M12G5	2.5

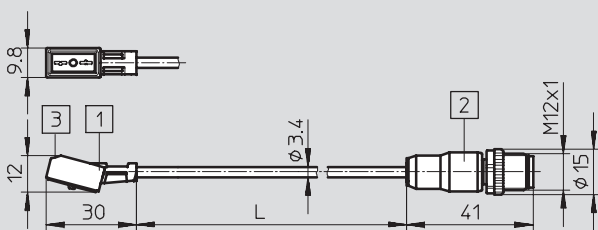
NEBV-C1W3P-F-...-M12G5



- 1 Socket type C
- 2 Straight plug M12
- 3 LED illuminated area

	L [m]
NEBV-C1W3P-F-0,5-M12G5	0.5
NEBV-C1W3P-F-2,5-M12G5	2.5

NEBV-Z2W2P-...-M12G5



- 1 Socket KMYZ-9
- 2 Straight plug M12
- 3 LED illuminated area

	L [m]
NEBV-Z2W2P-F-0,5-M12G5	0.5
NEBV-Z2W2P-F-2,5-M12G5	2.5

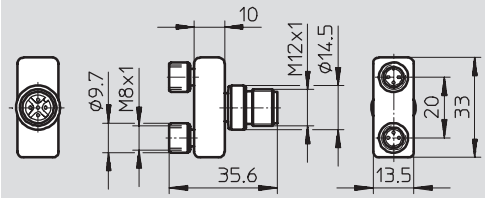
AS-interface[®] components

Compact I/O modules and valve interfaces

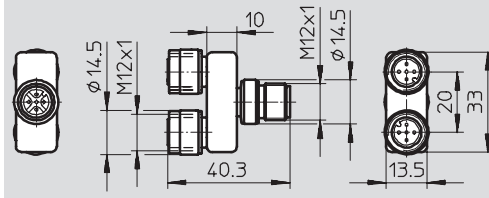
Dimensions

Download CAD data → www.festo.com/en/engineering

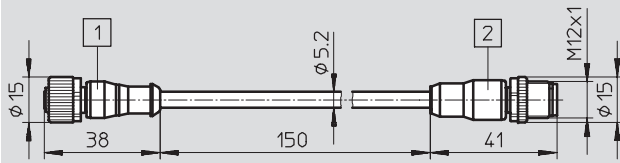
NEDU-M8D3-M12T4



NEDU-M12D5-M12T5



NEBU-M12G5-F-0,2-M12G4

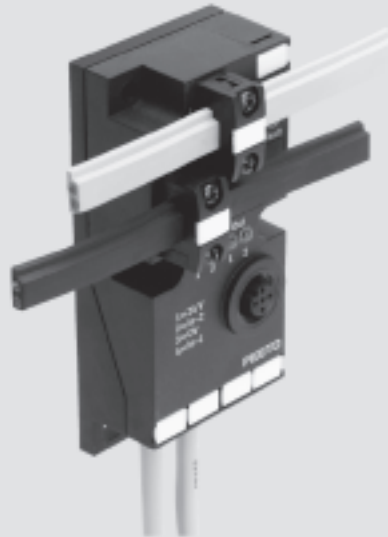


- 1 Straight socket M12
- 2 Straight plug M12

AS-interface® components

Individual valve interface ASI-EVA – Overview

FESTO



Individual valve interface

General description and overview of variants

- With pre-assembled valve connector socket
- With open cable end
- As an input module
- For DNCV actuation (cylinder/valve combination)

Quick connection of valves to the AS-interface by means of Festo plug and work™. All individual valve interfaces have two inputs for recording input signals via cylinder proximity sensors, inductive, capacitive or optical sensors.

Flexible installation

Install ASI-EVA at the front of the machine for easy servicing – the valves must be close to the actuator in the machine.

The load voltage (auxiliary power supply via the black cable) can be connected/disconnected separately.

Optimal cost-effectiveness

The ASI-EVA is a cost-effective way of connecting two valves or solenoid coils to the AS-interface:

- One electronic unit for all
- Reduced logistics
- Quick installation
- Flexible assembly
- A broad range of accessories
- Optimal pneumatic sizing

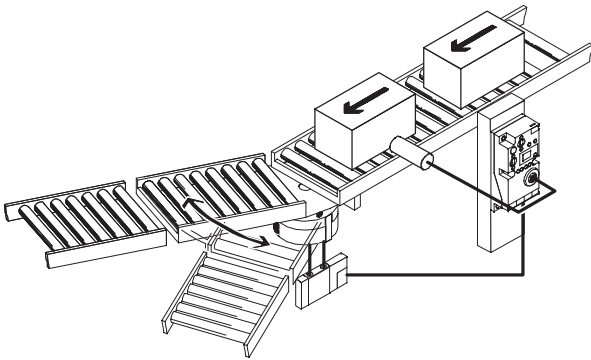
AS-interface® components

Individual valve interface ASI-EVA – Pre-assembled connection sockets

FESTO

Mounting options

Installation



New and easy installation concepts are possible for the AS-interface thanks to the long cable outlets of the individual valve interface ASI-EVA. The electronics are installed at the front of the machine. This ensures that the LEDs and control elements are easy to read and operate. Installation and mounting is very straightforward.

The valve can be mounted close to the cylinder and is easily connected via the pre-fitted cable outlet (0.5 or 1 m). This allows for shorter tubing lengths, quick motion sequences and a reduction in the amount of compressed air used.

Assembly

On an H-rail

You will need an adapter kit type CP-TS-HS35 in order to mount the individual valve interface on an H-rail (DIN mounting rail). This is available as an accessory.

On an ITEM profile

The individual valve interface can be mounted directly on an ITEM profile with a spacing of 40 mm using the two mounting holes on the left-hand side of the ASI-EVA housing.

On a cylinder

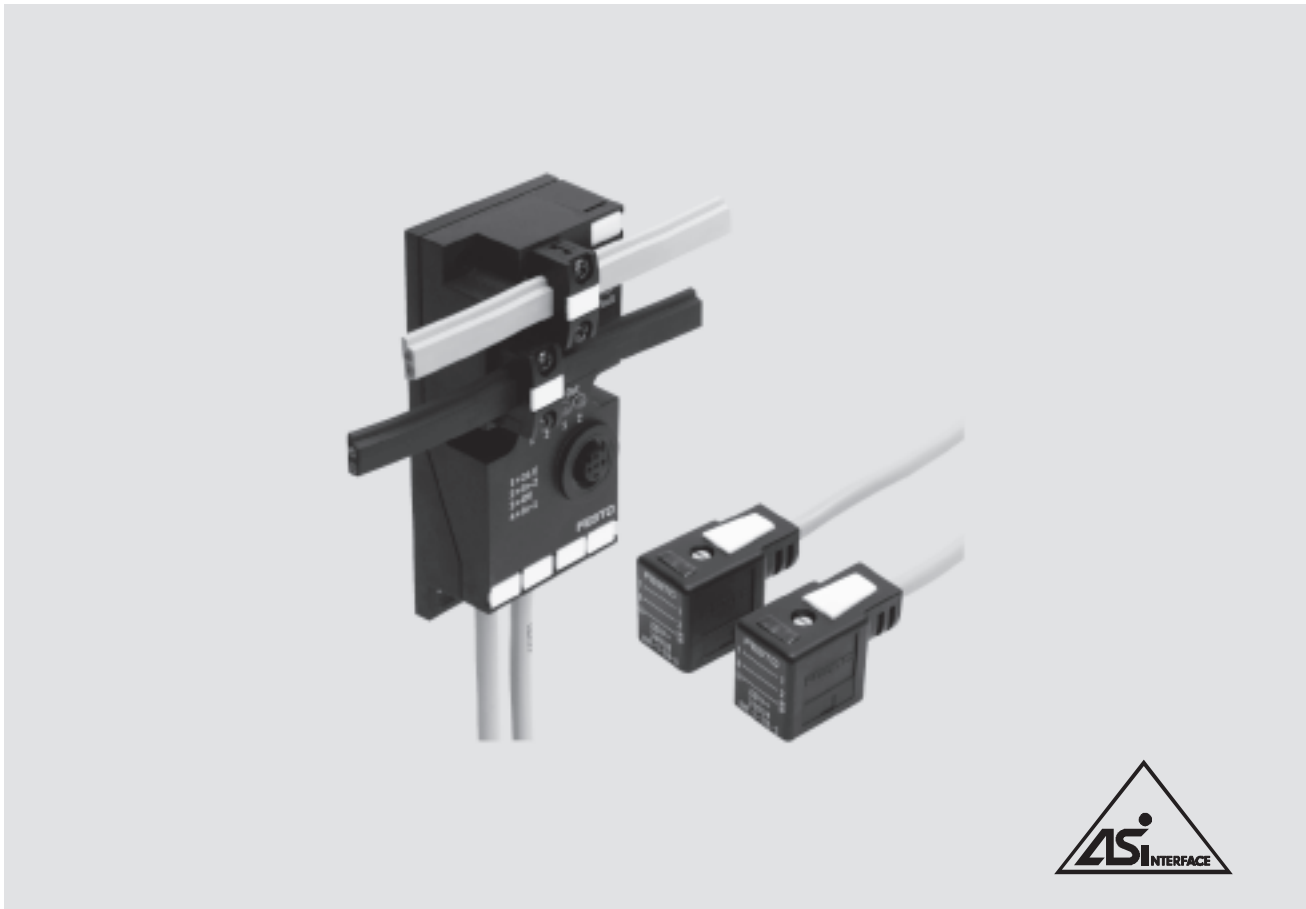
Mounting on a cylinder or stopper cylinder is easily accomplished using slot nuts, for example. The different widths of the cylinders are either compensated using the two elongated

holes on the ASI-EVA or else the ASI-EVA can be mounted laterally via the two holes on the left-hand side of the housing.

AS-interface® components

Individual valve interface ASI-EVA – Pre-assembled connection sockets

FESTO



Individual valve interface to Specification V2.1¹⁾ – With pre-assembled valve plug sockets

General description

- Ideal for Festo plug and work™. Supports the connection of almost all Festo valves
- The load voltage (auxiliary power supply via the black cable) can be connected/disconnected separately
- All individual valve interfaces have two inputs for recording input signals via cylinder proximity sensors, inductive, capacitive or optical sensors

Variants

- Cable length 0.5 m
- Valve connection sockets for Festo MF, MEB and ZC coils
- Modules equipped with one or two outputs can be supplied for optimum configuration of valves with one or two solenoid coils
- Valves with a rating of up to 6 watts (12 watts if only one output is switched in parallel) can be connected
- Inputs based on IEC 1131-2, DC 24 V, PNP
- Up to 200 mA per input
- Two inputs on one M12 socket
- Suitable for Festo M12 DUO plugs, for the DUO cables M12/2x M8 and the push-in T-connectors M12-2x M12 or M12-2x M8
- Status LEDs for each input
- Fault LED and enhanced diagnosis as per C.S.2.1¹⁾
- The auxiliary power supply is always integrated and can be subsequently switched off using the DIL switch
- Flat cable sockets are available (turned through 180° or standard) and must be ordered separately

Application

- Cost-effective connection of two valves to the AS-interface. Fast installation thanks to the Festo plug and work™ design.
- Decentralised machine and system structures, for example
- in conveyor technology
 - in sorting systems
 - in upstream machine functions
 - for individual drives or stopper cylinders
 - for service units and on-off valves
 - for quarter turn valve actuators and linear valve actuators in process engineering or water treatment

1) Slave compatible with SPEC V3.0

AS-interface® components

Individual valve interface ASI-EVA – Pre-assembled connection sockets

FESTO

Technical data							
Type		ASI-EVA-MF-2E1A-Z	ASI-EVA-MF-2E2A-Z	ASI-EVA-MEB-2E1A-Z	ASI-EVA-MEB-2E2A-Z	ASI-EVA-MZB9-2E1A-Z	ASI-EVA-MZB9-2E2A-Z
Part No.		196 081	196 082	196 085	196 086	196 083	196 084
Solenoid coils	No. of connectable solenoid coils	1	2	1	2	1	2
	Cable length [m]	Pre-assembled cable, 0.5 m per connecting cable					
	Cable type	Round cable 3x 0.5 mm ² ; cable Ø 5.8 mm; polyurethane; colour: grey				Round cable 2x 0.25 mm ² ; polyvinyl chloride; colour: grey	
	Valve connection	F coils, DIN EN 175301, type B (industrial standard)		EB coils, DIN EN 175301, type C		ZC coils, e.g. Festo CPE10/14-M1BH	
	Valve control design	Short circuit and overload proof					
	External power supply 24 V DC	Can be selected using the DIL switch					
	Current-carrying capacity [A]	0.5	2x 0.25	0.5	2x 0.25	0.5	2x 0.25
	Watchdog function	Active after 50 ms					
Digital inputs	Number	2					
	Connection technology	M12, 5-pin socket with double allocation					
	Sensor supply via AS-interface	Short circuit and overload proof					
	Sensor connection	2-wire and 3-wire sensors, light barriers, etc.					
	Version	IEC 1131-2, type 02					
	Input circuitry	PNP (positive-switching)					
	Current-carrying capacity [mA]	Max. 200 per input, max. 200 all inputs					
	Logic level [V]	On: 11 ... 30; off: -30 ... 5					
	Reference potential	0 V					
	Delay time [ms]	Typ. 3 (at 24 V DC)					
AS-interface connection	Connection technology	AS-interface flat cable plug (must be ordered separately)					
	Voltage range [V]	DC 26.5 ... 31.6, polarity-safe					
	Residual ripple [mVss]	20					
	Current consumption [mA]	Of the electronics (basic load): max. 12 <ul style="list-style-type: none"> plus the current consumption of the digital inputs plus the current consumption of the outputs if there is no auxiliary power supply Total current consumption of the ASI-EVA: max. 240					
Load voltage connection	Connection technology	AS-interface flat cable plug (must be ordered separately)					
	Nominal voltage [V DC]	24 ±10%					
	Residual ripple [Vss]	4					
	Current consumption [A]	Max. 0.5 (at 24 V)					
	Output voltage [V]	Approx. 1.4 V less than the load or AS-interface voltage					
LED displays	Outputs/inputs	Two each yellow/green					
	ASI-LED	Power/green					
	AUX-PWR-LED	Auxiliary power supply/green					
	FAULT-LED	Fault LED/red					
Diagnosis	Peripherals fault	To specification C.S.2.1, red FAULT-LED					
General	Protection class (to EN 60529)	IP65 (fully assembled)					
	CE symbol	Yes, in accordance with EU Directive 89/336/EEC					
	UL certification	Yes					
	Temperature range [°C]	Operation: -5 ... +50; storage/transport: -20 ... +70					
	Materials	Polyamide (PA6-GF25), Aterul					
	Dimensions [mm]	Approx. 102 x 46 x 28.5					
	Weight [g]	200					
AS-interface data	ID code	ID = F _H ; ID1 = F _H ¹ ; ID2 = E _H					
	I/O code	B _H					
	Profile	S-B.FE					

1) Factory setting, set to 0_H by some programming devices (Spec. V2.1) when addressing the slave

AS-interface® components

Individual valve interface ASI-EVA – With open cable ends

FESTO



Individual valve interface to Specification V2.1¹⁾ – With open cable ends

General

Ideal for the flexible connection of almost all valves and other consuming devices:

- Longer cable outlet of up to 1 m
- Pneumatic valves with special connector sockets
- Hydraulic valves
- Other consuming devices

All individual valve interfaces have two inputs for recording input signals via cylinder proximity sensors, inductive, capacitive or optical sensors.

The load voltage (auxiliary power supply via the black cable) can be connected/disconnected separately.

Variants

- Cable length 1 m
- Can be supplied with one or two outputs
- Ideal for the quick connection of valve connection sockets using insulation displacement technology or conventional connection technology
- Valves and consuming devices with a rating of up to 6 watts (12 watts if only one output is switched in parallel) can be connected
- Inputs based on IEC 1131-2, DC 24 V, PNP
- Up to 200 mA per input
- Two inputs on one M12 socket
- Suitable for Festo M12 DUO plugs, for the DUO cables M12/2x M8 and the push-in T-connectors M12-2x M12 or M12-2x M8
- Status LEDs for each input
- Fault LED and enhanced diagnosis as per C.S.2.1¹⁾
- The auxiliary power supply is always integrated and can be subsequently switched off using the DIL switch
- Flat cable sockets are available (turned through 180° or standard) and must be ordered separately

Application

Flexible and cost-effective connection of one or two valves or other consuming devices to the AS-interface.

Decentralised machine and system structures, for example

- in conveyor technology
- in sorting systems
- in upstream machine functions
- for individual drives or stopper cylinders
- for service units and on-off valves
- for quarter turn valve actuators and linear valve actuators in process engineering or water treatment
- for applications outside of conventional pneumatics

1) Slave compatible with SPEC V3.0

AS-interface® components

Individual valve interface ASI-EVA – With open cable ends

FESTO

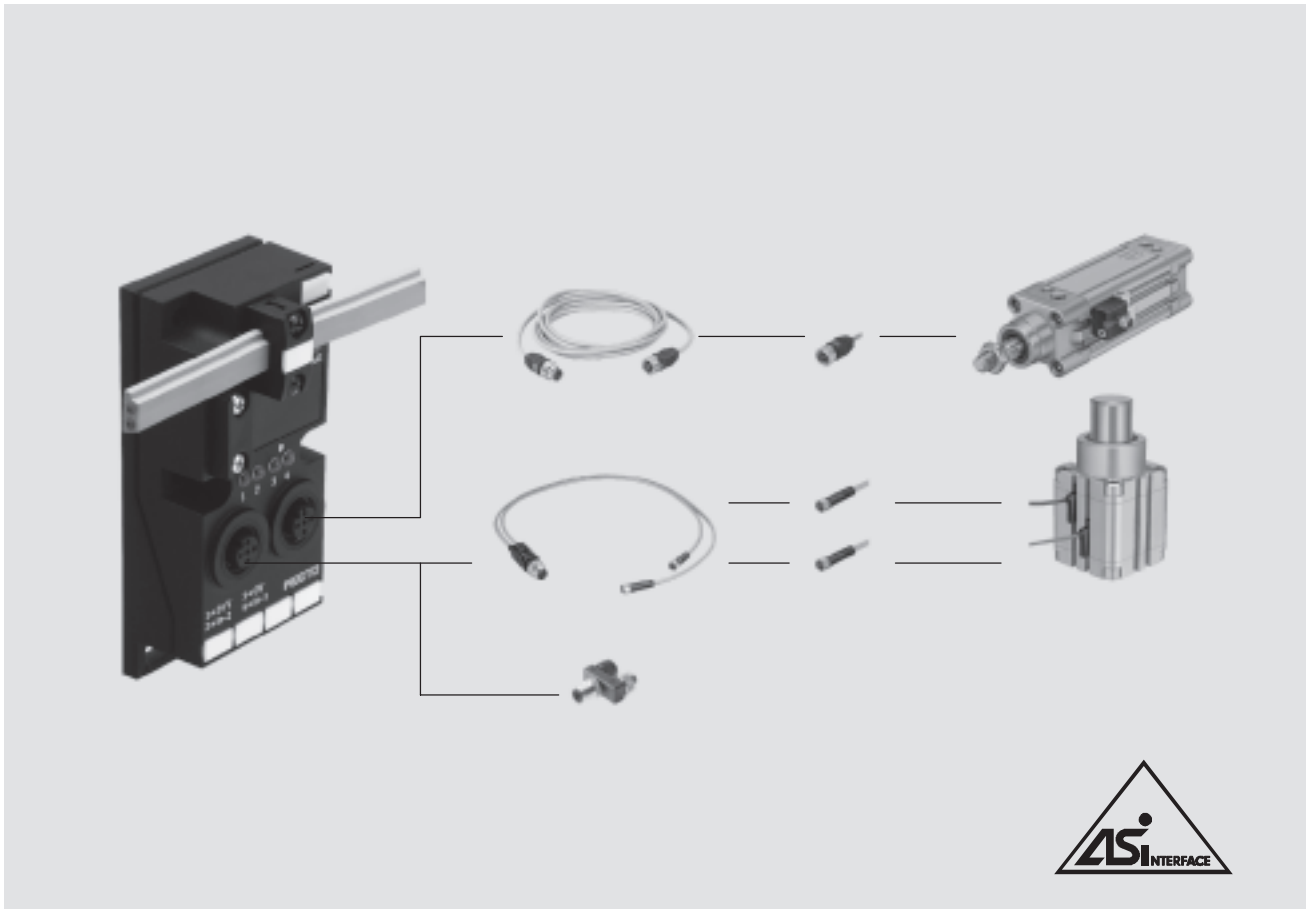
Technical data			
Type		ASI-EVA-K1-2E1A-Z	ASI-EVA-K1-2E2A-Z
Part No.		196 087	196 088
Outputs/valves	No. of outputs/valves	1	2
	Cable length [m]	1 m	
	Cable type	Round cable 3x 0.5 mm ² ; cable Ø 5.8 mm; polyurethane; colour: grey	
	Output/valve connection	Open cable end, 3-wire BL1 = 24 V, BL2 = 0 V, gr/ye = n.c.	Open cable end, 3-wire BL1 = 24 V, BL2 = 0 V, gr/ye = n.c.
	Valve control design	Short circuit and overload proof	
	External voltage supply 24 V DC	Can be selected using the DIL switch	
	Current-carrying capacity [A]	0.5	2x 0.25
	Watchdog function	Active after 50 ms	
Digital inputs	Number	2	
	Connection technology	M12, 5-pin socket with double allocation	
	Sensor supply via AS-interface	Short circuit and overload proof	
	Sensor connection	2-wire and 3-wire sensors, light barriers, etc.	
	Version	IEC 11 31-2, type 02	
	Input circuitry	PNP (positive-switching)	
	Current-carrying capacity [mA]	Max. 200 per input, max. 200 all inputs	
	Logic level [V]	On: 11 ... 30; off: -30 ... 5	
	Reference potential	0 V	
Delay time [ms]	Typ. 3 (at 24 V DC)		
AS-interface connection	Connection technology	AS-interface flat cable plug (must be ordered separately)	
	Voltage range [V DC]	26.5 ... 31.6, reverse polarity protected	
	Residual ripple [mVss]	20	
	Current consumption [mA]	Of the electronics (basic load): max. 12 • plus the current consumption of the digital inputs • plus the current consumption of the outputs if there is no auxiliary power supply Total current consumption of the ASI-EVA: max. 240	
Load voltage connection	Connection technology	AS-interface flat cable plug (must be ordered separately)	
	Nominal voltage [V]	DC 24 ±10%	
	Residual ripple [Vss]	4	
	Current consumption [A]	Max. 0.5 (at 24 V)	
	Output voltage [V]	Approx. 1.4 V less than the load or AS-interface voltage	
LED displays	Outputs/inputs	Two each yellow/green	
	ASI-LED	Power/green	
	AUX-PWR-LED	Auxiliary power supply/green	
	FAULT-LED	Fault LED/red	
Diagnosis	Peripherals fault	To specification C.S.2.1, red FAULT-LED	
General	Protection class (to EN 60529)	IP65 (fully assembled)	
	CE symbol	Yes, in accordance with EU Directive 89/336/EEC	
	UL certification	Yes	
	Temperature range [°C]	Operation: -5 ... +50; storage/transport: -20 ... +70	
	Materials	Polyamide (PA6-GF25), Aterul	
	Dimensions [mm]	Approx. 102 x 46 x 28.5	
	Weight [g]	200	
AS-interface data	ID code	ID = F _H ; ID1 = F _H ¹ ; ID2 = E _H	
	I/O code	B _H	
	Profile	S-B.FE	
	AS-interface certificate	Yes, certificate no. 43301	

1) Factory setting, set to 0_H by some programming devices (Spec. V2.1) when addressing the slave

AS-interface® components

Individual valve interface ASI-EVA – Input module with 4 inputs

FESTO



Individual valve interface to Specification V2.1¹⁾ – Input module with 4 inputs

General

4-fold input module ideal for the connection of additional

- proximity sensors for cylinders
- sensors
- light barriers
- other digital input signals

Suitable for use with the valve terminals

- CPA
- CPV
- or as an input module for any desired inputs

The inputs are short circuit proof and easy to install on the AS-interface. Simply connect to the yellow cable and you're ready to go.

Version

- Inputs based on IEC 1131-2, DC 24 V, PNP
- Up to 200 mA per input
- Two M12 sockets
- Two inputs on each M12 socket
- Suitable for Festo M12 DUO plugs, for the DUO cables M12/2x M8 and the push-in T-connectors M12-2x M12 or M12-2x M8
- Status LEDs for each input
- Fault LED and enhanced diagnosis as per C.S.2.1¹⁾
- Ready-to-connect cable for Festo plug and work™ installation
- Flat cable sockets are available (turned through 180° or standard) and must be ordered separately

Application

Flexible and cost-effective connection of one to four sensors to the AS-interface. Decentralised machine and system structures, for example

- in conveyor technology
- in sorting systems
- in upstream machine functions
- for all types of inputs

1) Slave compatible with SPEC V3.0

AS-interface® components

Individual valve interface ASI-EVA – Input module with 4 inputs

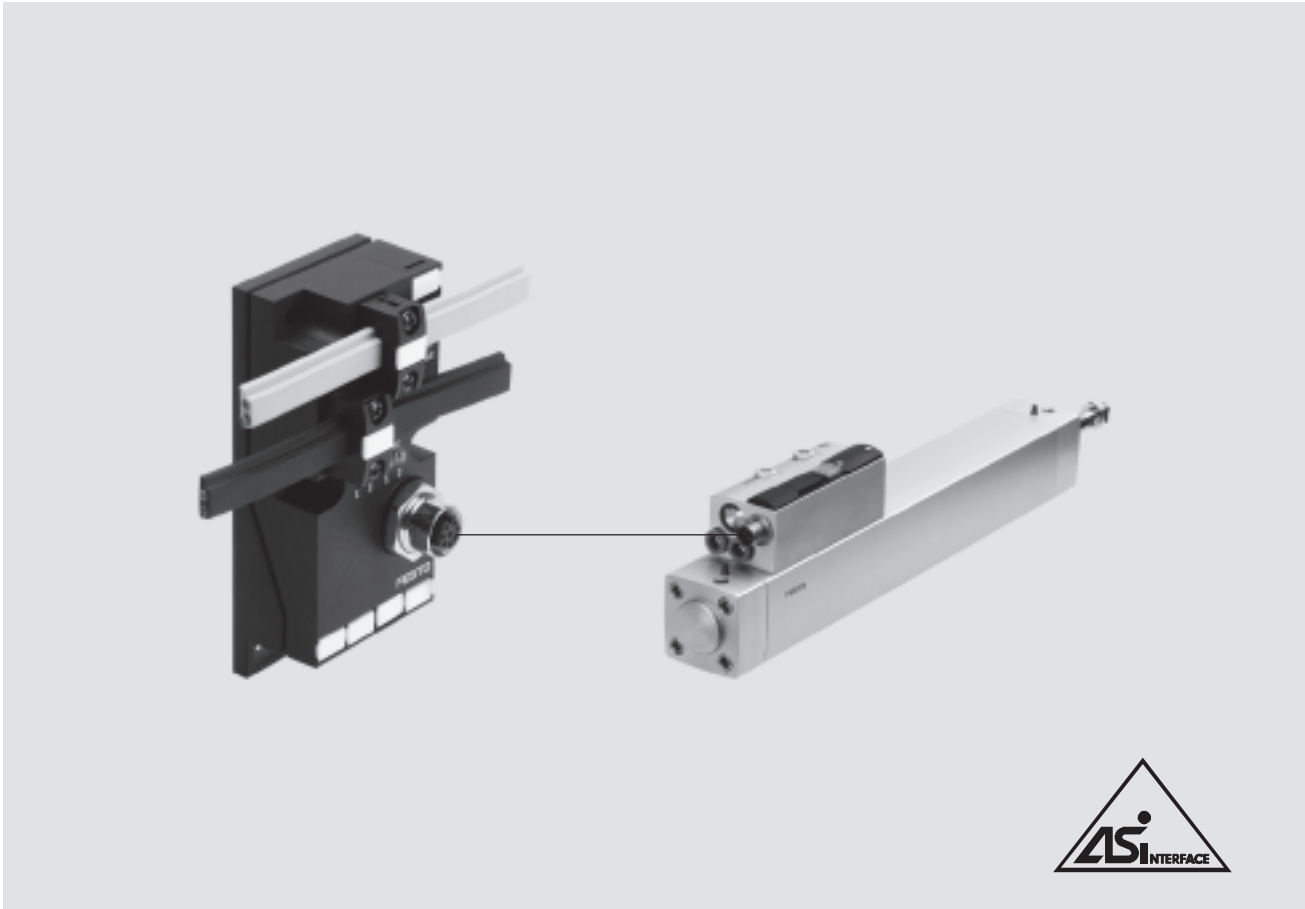
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Technical data		
Type	ASI-EVA-4E-M12-5POL	
Part No.	197 069	
Digital inputs	No. of digital inputs	4
	Connection technology	M12, 5-pin socket with double allocation
	Sensor supply via AS-interface	Short circuit and overload proof
	Sensor connection	2-wire and 3-wire sensors, light barriers, etc.
	Version	IEC 1131-2, type 02
	Input circuitry	[V DC] 24, PNP (positive-switching)
	Current-carrying capacity	[mA] Max. 200 per input, max. 200 all inputs
	Logic level	[V] On: 11 ... 30; off: -30 ... 5
	Reference potential	[V] 0
	Delay time	[ms] Typ. 3 (at 24 V DC)
AS-interface connection	Connection technology	AS-interface flat cable plug (must be ordered separately)
	Voltage range	[V DC] 26.5 ... 31.6, reverse polarity protected
	Residual ripple	[mVss] 20
	Current consumption	[mA] Of the electronics (basic load): max. 12 • plus the current consumption of the digital inputs Total current consumption of the ASI-EVA: max. 240
LED displays	Inputs	In/green
	ASI-LED	Power/green
	FAULT-LED	Fault LED/red
Diagnosis	Peripherals fault	As per specification C.S.2.1, additionally red LED
	Protection class (to EN 60529)	IP65 (fully assembled)
	Electromagnetic compatibility	Tested to EN 50295 (low voltage switchgear)
	CE symbol	Yes, in accordance with EU Directive 89/336/EEC
	UL certification	Yes
	Temperature range	[°C] Operation: -5 ... +50; storage/transport: -20 ... +70
	Materials	Polyamide (PA6-GF25), Aterul
	Dimensions	[mm] Approx. 102 x 46 x 28.5
	Weight	[g] 200
AS-interface data	ID code	1 _H
	I/O code	0 _H
	Profile	S-0.1
	AS-interface certificate	Yes, certificate no. 43302

AS-interface® components

Individual valve interface ASI-EVA – Interface for DNCV

FESTO



Individual valve interface to Specification V2.1¹⁾ – Interface for DNCV

General

Special interface module for DNCV. Designed for an integrated cylinder/valve combination with integrated diagnostic module.

The pneumatic drive conforms as near as possible to the international standard DIN/ISO 6431 as well as the further standards VDMA 24 562, NFE 49 003 and UNI 10 290.

Version

Interface for DNCV

- Two inputs and two outputs as well as a diagnostic input on one 8-pin M12 socket
- Inputs based on IEC 1131-2, DC 24 V, PNP
- Up to 200 mA per input
- Status LEDs for each input
- Fault LED and enhanced diagnosis as per C.S.2.1¹⁾

- Optimised design for Festo DNCV with integrated diagnostic module
- Ready-to-connect cable for Festo plug and work™ installation: KM12-8GD8GS-2-PU
- Flat cable sockets are available (turned through 180° or standard) and must be ordered separately

Application

Easy and flexible connection of special cylinders in upstream applications to the AS-interface.

- Valve and cylinder integrated
- Flow control valves integrated
- Limit switch integrated and adjustable
- Single supply of data and power via a flat cable
- Easy diagnosis and servicing thanks to the separation of the drive and interface

1) Slave compatible with SPEC V3.0

AS-interface® components

Individual valve interface ASI-EVA – Interface for DNCV

FESTO

Technical data		
Type	ASI-EVA-2E2A-M12-8POL-Z	
Part No.	197 070	
Outputs/valves	No. of outputs/valves	2
	Version	Designed for DNCV (cylinder/valve combination)
	Cable length [m]	2
	Cable type	Round cable 8x0.25 mm ² ; cable Ø 5.8 mm; polyurethane; colour: grey
	Valve connection	M12 plug, 8-pin, pins 5, 6 and 8
	Valve control design	Short circuit and overload proof
	External power supply 24 V DC	Can be selected using the DIL switch
	Current-carrying capacity ¹⁾ [A]	2x 0.25
	Watchdog function	Active after 50 ms
Digital inputs	Number	2
	Connection technology	M12 plug, 8-pin; sensors: pins 2, 3 and 4; diagnosis: pins 1 and 7
	Sensor supply via AS-interface	Short circuit and overload proof
	Sensor connection	Designed for DNCV (with integrated limit switches)
	Version	IEC 1131-2, type 02
	Input circuitry [V DC]	24, PNP (positive-switching)
	Current-carrying capacity [mA]	Max. 200 per input, max. 200 all inputs
AS-interface connection	Connection technology	AS-interface flat cable plug (must be ordered separately)
	Voltage range [V DC]	26.5 ... 31.6, reverse polarity protected
	Residual ripple [mVss]	20
	Current consumption [mA]	Of the electronics (basic load): max. 12 <ul style="list-style-type: none"> • DNCV inputs • DNCV valves Total current consumption of the ASI-EVA: max. 240
Load voltage connection	Connection technology	AS-interface flat cable plug (must be ordered separately)
	Nominal voltage [V DC]	24 ±10%
	Residual ripple [Vss]	4
	Current consumption [A]	Max. 0.5 (at 24 V)
	Output voltage [V]	Approx. 1.4 V less than the load or AS-interface voltage
LED displays	Outputs/inputs	Two each yellow/green
	ASI-LED	Power/green
	AUX-PWR-LED	Auxiliary power supply/green
	FAULT-LED	Fault LED/red, also for DNCV diagnosis
Diagnosis	Peripherals fault	To specification C.S.2.1, red FAULT-LED
General	Protection class (to EN 60529)	IP65 (fully assembled)
	Electromagnetic compatibility	Tested to EN 50295 (low voltage directive)
	CE symbol	Yes, in accordance with EU Directive 89/336/EEC
	UL certification	Yes
	Temperature range [°C]	Operation: -5 ... +50; storage/transport: -20 ... +70
	Materials	Polyamide (PA6-GF25), Aterul
	Dimensions [mm]	Approx. 102 x 46 x 28.5
Weight [g]	200	
AS-interface data	ID code	ID = F _H ; ID1 = F _H ³⁾ ; ID2 = E _H
	I/O code	B _H
	Profile	S-B.FE
	AS-interface certificate	Yes, certificate no. 43303
Parameter P3	DNCV diagnostic function	1: enable; 0: disable
	Default	1 for DNCV with diagnostic module ²⁾

1) With an external voltage supply, otherwise the total current consumption is max. 240 mA

2) The diagnostic input must be defined for DNCV without a diagnostic module

3) Factory setting, set to 0_H by some programming devices (Spec. V2.1) when addressing the slave

AS-interface® components

Individual valve interface ASI-EVA – Interface for DNCV

FESTO

Diagnosis and parameterisation

The AS-i individual valve interface type ASI-EVA-2E2A-M12-8POL-Z supports the evaluation of a diagnostic output from drive/valve combinations, for example cylinder/valve combination DNCV.

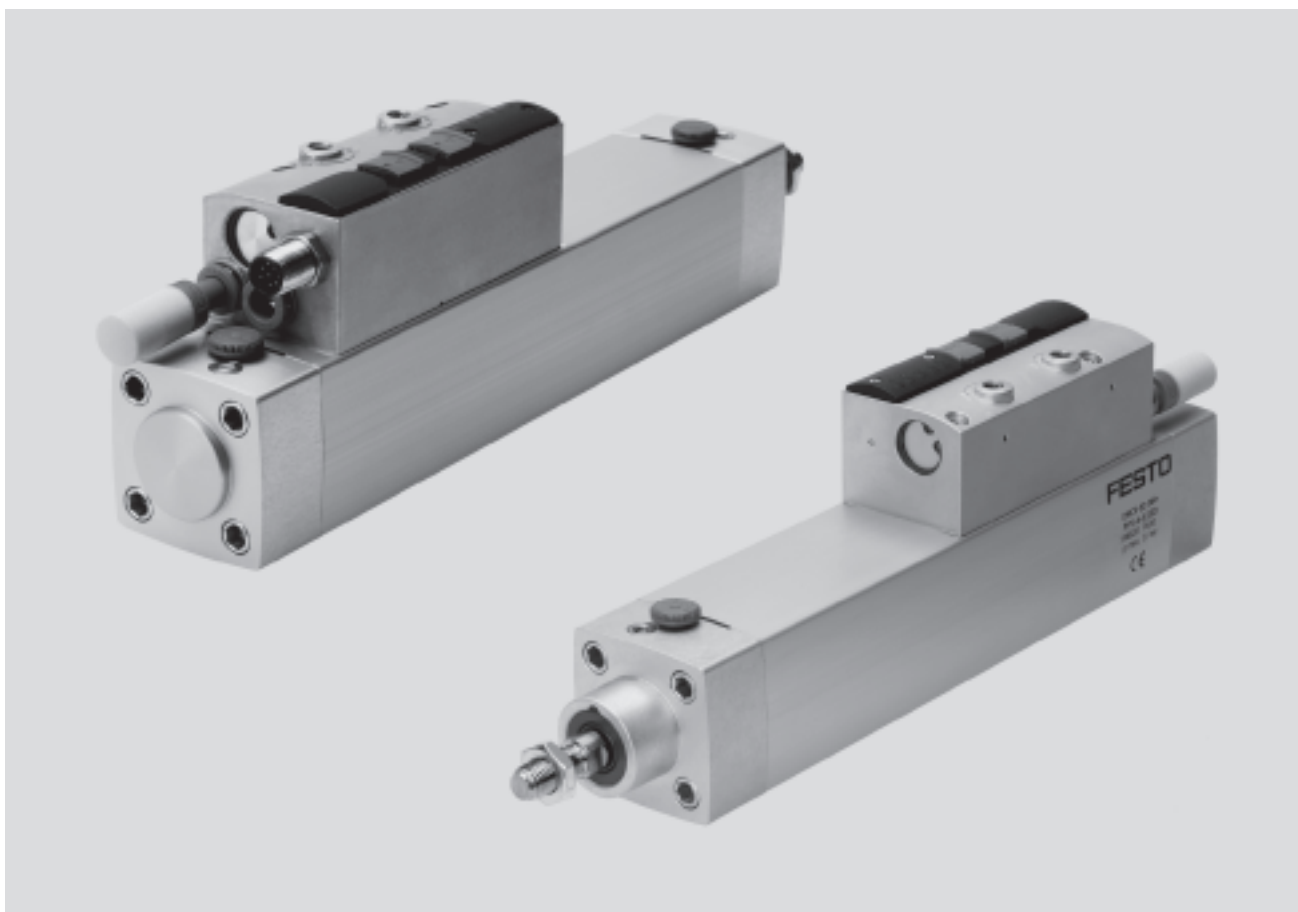
Any faults or malfunctions that occur within a drive/valve combination (0 signal at pin 7) are indicated as peripherals faults of the slave at the AS-interface master.

Diagnosis of the individual valve interface can be deactivated via the AS-interface parameter port P3.

Parameter port settings

Parameter port P3	Description
P3 = 1 (diagnosis active, factory setting)	Faults in the slave as well as a 0 signal ¹⁾ at the diagnostic input (pin 7): <ul style="list-style-type: none">• will be indicated as peripherals faults
P3 = 0 (diagnosis inactive)	Faults in the slave as well as a 0 signal ¹⁾ at the diagnostic input (pin 7): <ul style="list-style-type: none">• will not be indicated as peripherals faults

1) 0 signal = Error message from the drive/valve combination or wire break



Cylinder/valve combination DNCV

Easy to mount

- Fully assembled and tested drive unit
- Minimised expenditure with regard to ordering, installation and commissioning
- Direct mounting
- Integrated proximity sensors for position sensing
- Integrated exhaust air flow control

Compatible

- Comprehensive range of accessories from the standard cylinder modular system
- Multi-pin connection as interface to PLC, AS-i module ASI-EVA or CPX terminal (various bus protocols)
- Dimensions largely compliant with DIN ISO 6431 and VDMA 24 562

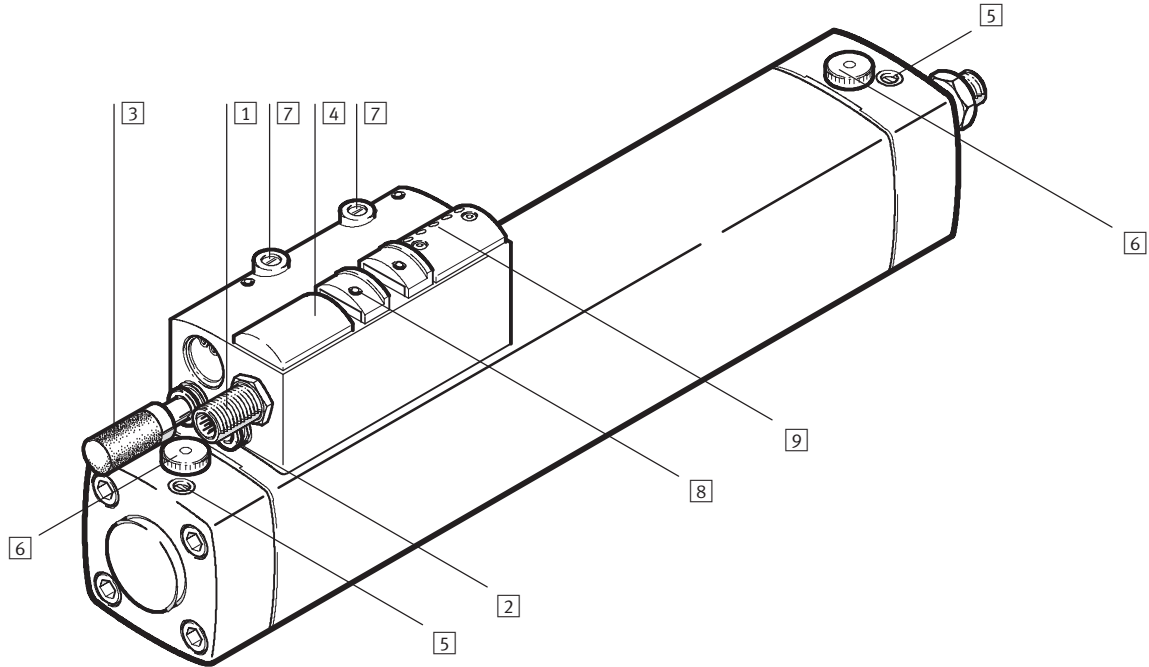
Flexible

- Integrated 5/2-way or 5/3-way valves
- Optional diagnostic module for monitoring of stroke duration and number of strokes

Reliable

- Status displays for piston position and valve actuation
- Rapid response times through direct connection of the valve and drive
- Adjustable pneumatic end-position cushioning
- Manual override

High functionality



- 1 Multi-pin connection, M12 plug, 8-pin
- 2 Compressed air connection (QS push-in fitting)
- 3 Silencer (QS push-in fitting for exhaust air)
- 4 Valve
- 5 Regulating screw for pneumatic end-position cushioning PPV
- 6 Adjusting knob for fine adjustment of the position of the integrated proximity sensors (removable to prevent inadvertent resetting)
- 7 Regulating screws for stroke speed, separated for forward and return stroke
- 8 Manual override, non-detenting or detenting
- 9 Diagnostic module (optional) with LEDs for displaying the piston position, valve switching status and for diagnosis of stroke duration and number of strokes

Basic diagnosis

Proximity switch monitoring:

Display of the piston position (retracted or advanced end position).

The diagnostic LED lights up in the case of double signalling. The error signal is not output to the controller.

Diagnostic module DNCV-...-D (optional, expandable)

Proximity switch monitoring

In the event of a malfunction or double signalling, apart from the diagnostic LED lighting up, the signal level at the diagnostic output also changes from 24 V to 0 V.

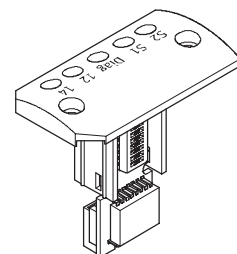
Monitoring of stroke duration

The motion duration for the forward and return stroke is compared with a limit value that is pre-selected using DIP switches. This limit value can be adjusted in increments from 0.1 s to max. 6.3 s. If the limit value is exceeded, the diagnostic LED lights up and the signal level at the diagnostic output changes from 24 V to 0 V.

Monitoring of number of strokes

The number of strokes is compared with a limit value that is pre-selected using DIP switches. This limit value can be adjusted in increments from 10,000 strokes to max. 630,000 strokes. If this limit value is exceeded, the diagnostic LED flashes and the signal level at the diagnostic output changes from 24 V to 0 V. This change in signal level can also be deactivated.

Diagnostic module



Valve		Valve	
Circuit symbol	Description	Circuit symbol	Description
<p>5/2L</p>	<p>5/2-way valve, single solenoid with spring return: The valve is normally closed, the piston rod retracts.</p>	<p>5/2LA</p>	<p>5/2-way valve, single solenoid with spring return: The valve is normally open, the piston rod advances.</p>
<p>5/2J</p>	<p>5/2-way valve, double solenoid (bistable valve): The valve does not have a defined normal position; instead it requires the electrical actuation or manual override for a defined switching status. The piston rod therefore retracts or advances in accordance with the current valve position.</p>	<p>5/3B</p>	<p>5/3-way valve, pressurised in mid-position: The piston rod advances when the valve is in the normal position due to the differential piston areas.</p>
<p>5/3E</p>	<p>5/3-way valve, exhausted in mid-position: In the normal valve position, the piston rod is not subjected to any pressure forces; the piston rod can therefore be moved freely.</p>	<p>5/3G</p>	<p>5/3-way valve, closed in mid-position: The piston rod is subjected to pressure when the valve is in the normal position and therefore remains in the current position. The piston rod may, however, drift when external forces are present; it is particularly important to be aware of this in the case of vertical cylinder configurations.</p>
Manual override		Manual override	
Function diagram	Description	Function diagram	Description
	<p>Non-detenting actuation: The manual override is activated using a pointed object.</p>		<p>Detenting actuation: The manual override is actuated by moving the slide.</p>

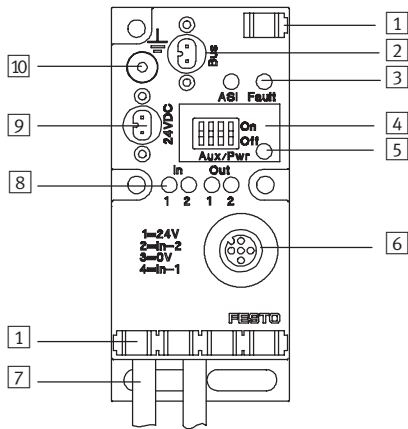
AS-interface® components

Individual valve interface ASI-EVA – Connections/displays



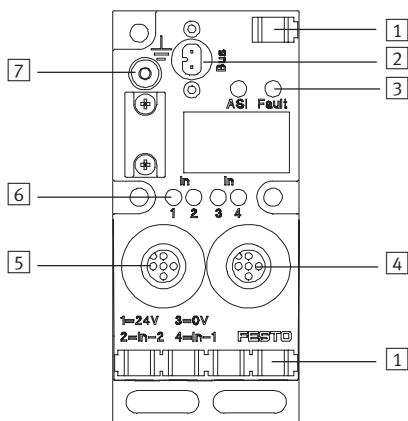
Overview of connections/displays – ASI-EVA

Individual valve interface – 2I20, 2I10



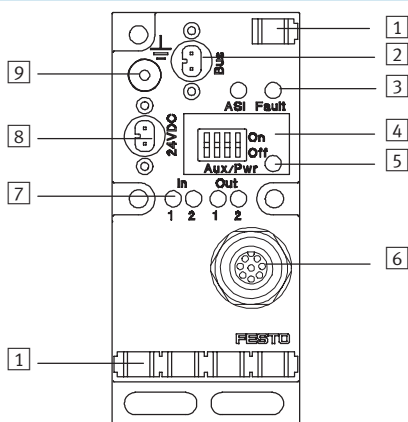
- 1 Inscription labels
- 2 AS-interface bus connection
- 3 ASI-LED (power/green),
FAULT-LED (fault/red)
- 4 DIL switch for load voltage
connection
- 5 AUX-PWR-LED
- 6 Sensor connection
- 7 1 or 2 connecting cables for
outputs (valves)
- 8 LED display for
– outputs
– inputs
- 9 Auxiliary power supply for
outputs/valves
- 10 Functional earthing connection

Input module with 4 inputs



- 1 Inscription labels
- 2 AS-interface bus connection
- 3 ASI-LED (power/green),
FAULT-LED (fault/red)
- 4 Sensor connection 2
(inputs 3 and 4)
- 5 Sensor connection 1
(inputs 1 and 2)
- 6 LED status display for inputs
(In, green)
- 7 Functional earthing connection

Interface for DNCV



- 1 Inscription labels
- 2 AS-interface bus connection
- 3 ASI-LED (power/green),
FAULT-LED (fault/red)
- 4 DIL switch for load voltage
connection
- 5 AUX-PWR-LED
- 6 DNCV sensor/valve connection
- 7 LED display for
– valve
– sensors
- 8 Auxiliary power supply for valve
- 9 Functional earthing connection

AS-interface® components

Individual valve interface ASI-EVA – Connections



Pin allocation			
Inputs	X1	X2	LED
ASI-EVA-...-2E-...-A-Z			
	1: 24 V DC	-	IN-2
	2: Input IN-2		IN-1
	3: 0 V		
	4: Input IN-1		
	5: n.c.		
ASI-EVA-...-4E-M12-5POL			
	1: 24 V DC	-	IN-2
	2: Input IN-2		IN-1
	3: 0 V		
	4: Input IN-1		
	5: n.c.		
	-	1: 24 V DC	IN-4
		2: Input IN-4	IN-3
		3: 0 V	
		4: Input IN-3	
		5: n.c.	

Pin allocation		
Inputs/outputs	X1	LED
ASI-EVA-2E2A-M12-8POL-Z		
	1: 24 V DC	
	2: Sensor IN-2	IN-2
	3: Sensor IN-1	IN-1
	4: 0 V sensors	
	5: Coil 14 OUT-2	OUT-2
	6: Coil 12 OUT-1	OUT-1
	7: Diagnosis	
	8: 0 V sensors	

Pin allocation		
AS-i connection		
	1 AS-interface bus 1: + (light blue) 2: - (brown)	2 Auxiliary power supply 1: + 0 V 2: + 24 V DC

Open cable allocation	
for any inputs/outputs	
black 1/2	24 V DC/0 V
green/yellow	n.c.

Fieldbus systems/electrical peripherals
 AS-interface components

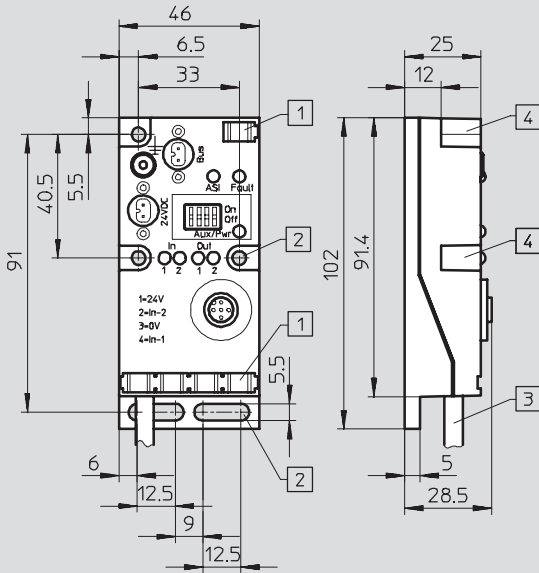
AS-interface[®] components

Individual valve interface ASI-EVA – Dimensions



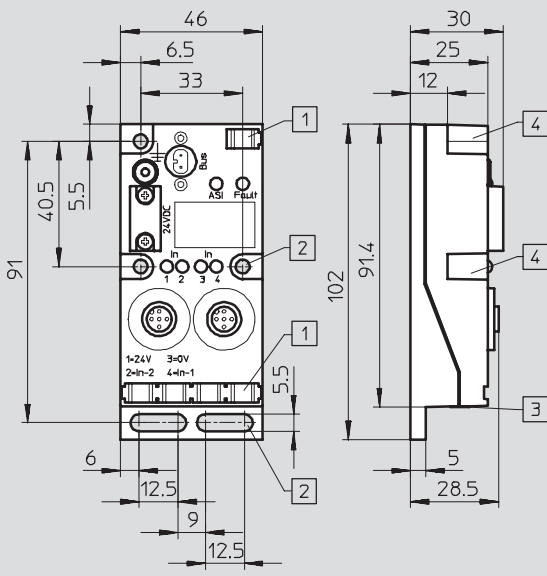
Dimensions – ASI-EVA

Download CAD data → www.festo.com/en/engineering



- 1 Inscription label mounting options
- 2 Mounting hole for surface mounting
- 3 Cable module
- 4 Mounting hole for ITEM profile (40 mm spacing) or other mounting option

Input module with 4 inputs



- 1 Inscription label mounting options
- 2 Mounting hole for surface mounting
- 3 Ring seal
- 4 Mounting hole for ITEM profile (40 mm spacing) or other mounting option

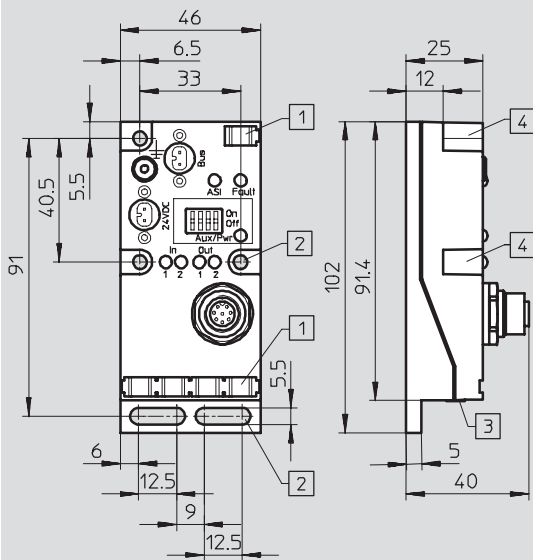
AS-interface® components

Individual valve interface ASI-EVA – Dimensions

Dimensions – ASI-EVA

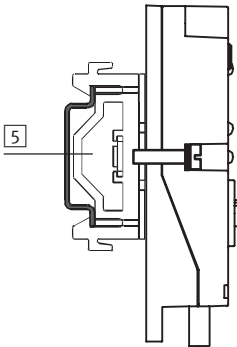
Download CAD data → www.festo.com/en/engineering

Interface for DNCV



- 1 Inscription label mounting options
- 2 Mounting hole for surface mounting
- 3 Ring seal
- 4 Mounting hole for ITEM profile (40 mm spacing) or other mounting option

Example: H-rail mounting



- 5 H-rail attachment on mounting rail EN 60715 35 x 15 using adapter kit CP-TS-HS32

AS-interface® components

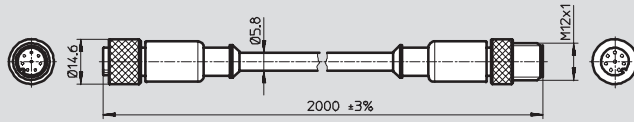
Individual valve interface ASI-EVA – Dimensions

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Dimensions – Connecting cable

Download CAD data → www.festo.com/en/engineering

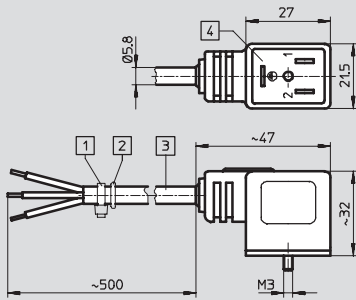
KM12-8GD8GS-2-PU



Dimensions – Pin allocation for solenoid coils

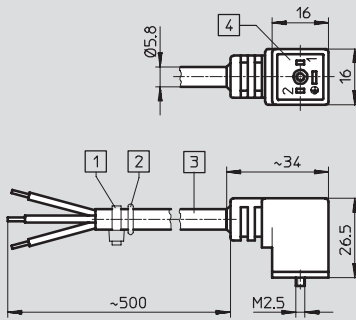
Download CAD data → www.festo.com/en/engineering

ASI-EVA-MF-2E...-A-Z



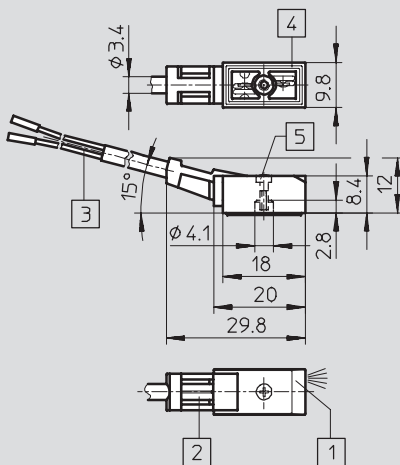
- 1 Cable binder
- 2 O-ring 5x 1.5
- 3 3-wire cable 0.5 m (3x 0.25 mm²)
- 4 Connections for plug to EN 175 301-803 type C

ASI-EVA-MEB-2A...-A-Z



- 1 Cable binder
- 2 O-ring 5x 1.5
- 3 3-wire cable 0.5 m (3x 0.5 mm²)
- 4 Connections for plug to EN 175 301-803 type B

ASI-EVA-MZB9-2E...-A-Z

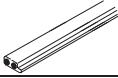











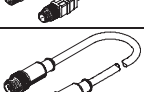
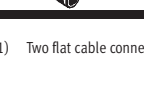


- 1 LED display
- 2 Holder for inscription label
- 3 2-wire cable 0.5 m (2x 0.25 mm²)
- 4 Connections for MZC
- 5 Mounting screw M2 x 8, max. tightening torque 0.35 Nm

AS-interface® components

Individual valve interface ASI-EVA – Accessories

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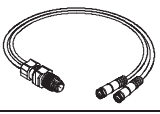
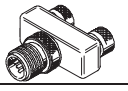
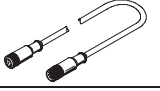




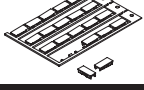
Ordering data				
	Designation		Type	Part No.
Bus connection				
	AS-interface flat cable, yellow	100 m	KASI-1,5-Y-100	18 940
	AS-interface flat cable, black	100 m	KASI-1,5-Z-100	18 941
	Flat cable socket ¹⁾		ASI-SD-FK	18 785
	Flat cable socket ¹⁾	Turned through 180°	ASI-SD-FK180	196 089
	Flat cable blanking plug		ASI-SD-FK-BL	196 090
	AS-interface flat cable distributor	Parallel cable	ASI-KVT-FK	18 786
	AS-interface flat cable distributor	Symmetrical cable	ASI-KVT-FK-S	18 797
	Cable cap for flat cable	Scope of delivery 50 pieces	ASI-KK-FK	18 787
	Cable sleeve	Scope of delivery 20 pieces	ASI-KT-FK	165 593
Sensor plug				
	Straight sensor plug	M12, 5-pin, PG7	SEA-M12-5GS-PG7	175 487
	Straight sensor plug	M12, 4-pin, PG7	SEA-GS-7	18 666
	Angled sensor plug	M12, 4-pin	SEA-M12-4WD-PG7	185 498
	Protective cap	M12	ISK-M12	165 592
Sensor cable				
	Connecting cable, straight plug, straight socket	M12, 4 pin, 2.5 m	KM12-M12-GSGD-2,5	18 684
		M12, 4 pin, 5.0 m	KM12-M12-GSGD-5	18 686
	Connecting cable, straight plug, angled socket	M12, 4 pin, 1.0 m	KM12 M12-GSWD-1-4	185 499

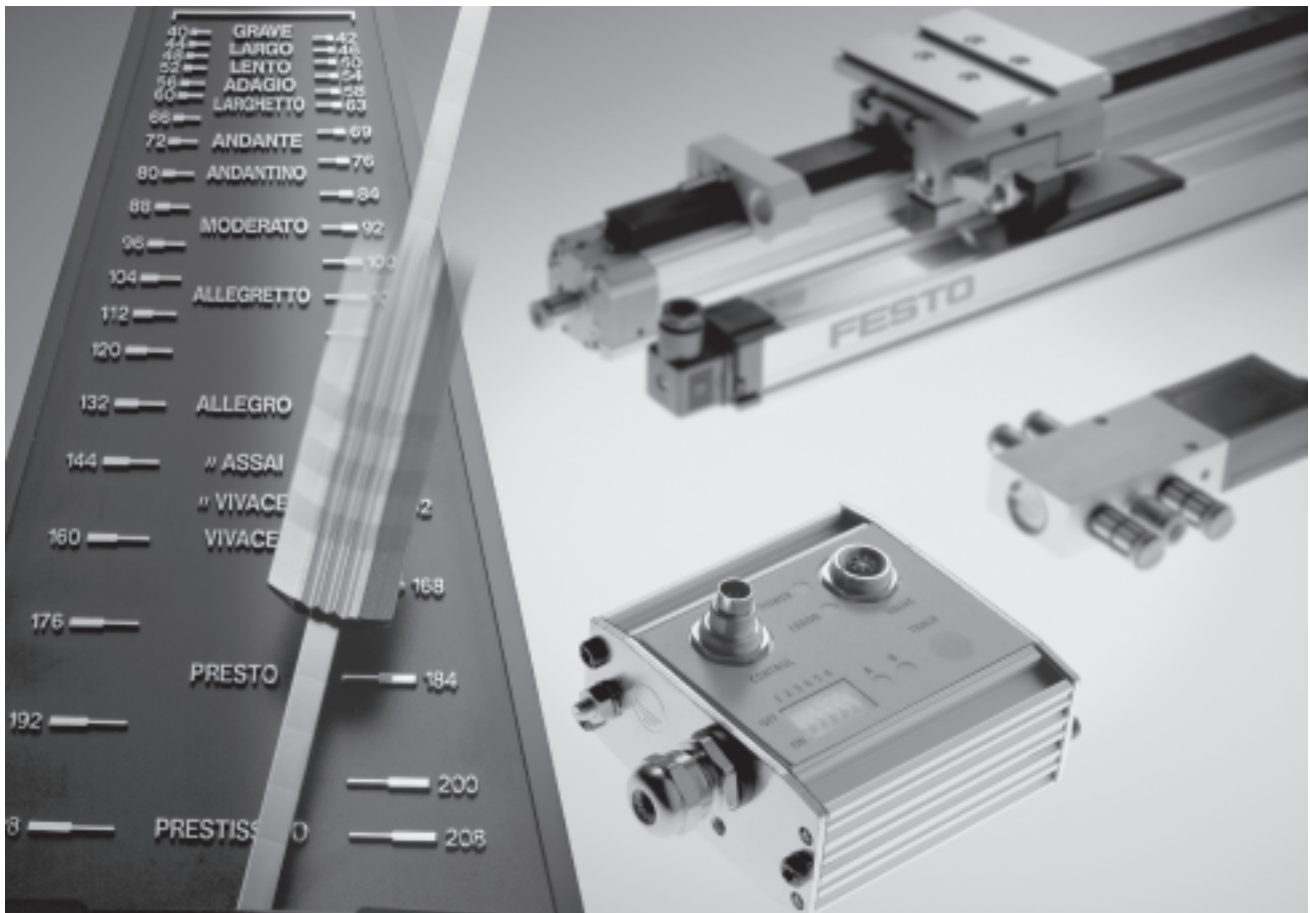
1) Two flat cable connections per ASI-EVA must be connected or covered

AS-interface® components

Individual valve interface ASI-EVA – Accessories

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Ordering data				
	Designation		Type	Part No.
DUO plug				
	Plug M12 for 2 sensor cables	4-pin, PG11	SEA-GS-11-DUO	18 779
		5-pin, PG11	SEA-5GS-11-DUO	192 010
DUO cable M12 to 2x M8				
	DUO cable M12-2xM8, 4-pin/2x3-pin	2x straight socket	KM12-DUO-M8-GDGD	18 685
		2x straight/angled socket	KM12-DUO-M8-GDWD	18 688
		2x angled socket	KM12-DUO-M8-WDWD	18 687
Push-in T-connector				
	Push-in T-connector		NEDU-M8D3-M12T4	541 597
			NEDU-M12D5-M12T4	541 596
Connecting cable for DNCV				
	Connecting cable	M12, 8-pin	KM12-8GD8GS-2-PU	525 617
Other accessories				
	Combi power pack for AS-interface		ASI-CNT-115/230 VAC-B	191 082
	Addressing device		ASI-PRG-ADR	18 959
	Addressing cable		KASI-ADR	18 960
Mounting				
	Mounting for H-rail		CP-TS-HS35	170 169
Inscription labels				
	Inscription labels 6x20 mm in frames (64 pieces)		IBS-6x10	18 576



Applications – Innovative, high-performance and precision-pulsed drive packages

- Drives on the AS-interface
- Intelligent valve/cylinder combinations DNCV with integrated diagnosis
- Pneumatic linear axes, rotary drives and standard cylinders DNC with electronic end-position cushioning by means of Soft Stop SPC11-ASI
- Process drives such as linear valve actuators and quarter turn valve actuators with robust local controller or sensor box on the AS-interface

DNCV

Intelligent drives combine numerous functions in one unit:

- Standard cylinder DNC with a smooth and easy to clean housing surface

- Integrated 5/2-way or 5/3-way valve
- Two integrated flow control valves with speed control
- Integrated proximity sensors
- Integrated diagnostic module for preventative maintenance (optional) → 4 / 4.9-303

DLP and DAPZ for Copac/Copar

Simple, fast installation is preferred in decentralised applications in the process industry and in water treatment systems.

The local controller DLP connects linear valve actuators and quarter turn valve actuators to the AS-interface. The sensor box DAPZ converts mech-

anical end positions from pneumatic actuators into electrical signals and also provides connections for the solenoid valve.

Advantages:

- Namur interface (DIN 19 234)
- Simple and quick assembly and connection
- Integrated solenoid valve actuation
- Fully assembled and tested unit for the AS-interface

Soft Stop SPC11-...-ASI

The Festo innovation: Electronic end-position cushioning for pneumatic drives on the AS-interface with the following advantages:

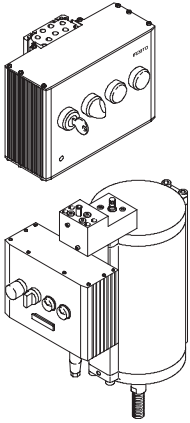
- Full speed – gentle braking
- Closed system with control circuit
- Up to 30% shorter cycle times
- Less wear thanks to minimal vibration
- Simple commissioning
- Parameterisable SPC11-...-ASI as per profile 7.4
- Positioning data can be freely adjusted during operation, thereby permitting the construction of a simple positioning system.
- Comprehensive diagnosis

- - Note

Detailed description

→ Volume 7

Automatic local controller – DLP-VSE-...-ASI



General

- Integrated 5/3-way valve, normally closed, pressure range 2 ... 8 bar
- Integrated LED displays (open/closed)
- Key actuator for selecting the operation mode:
 - Remote control via AS-interface
 - On-site operation
 - Switched off
- The local controller VSE has been optimised for DLP/Copac but can also be used for DRD/Copar

Application

- The unit made up of DLP/Copac and the local controller VSE offers the following advantages:
- Clear structure
 - Process reliability
 - Suitable for exterior use, temperature range –5 ... +50 °C
 - Remote control or on-site operation
 - Remote diagnosis and LED displays on-site
 - No need for control cabinet on-site
 - No further assembly

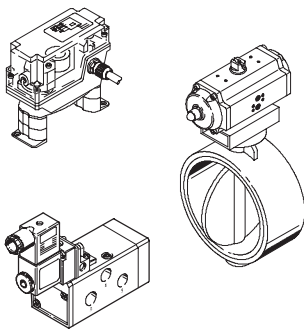
Select the suitable pneumatic drive for your application:

- For linear valve actuators: DLP/Copac
- For quarter turn valve actuators: DRD/Copar

Order the drive ready for installation:

- With local controller DLP-VSE-ASI
- Connect these units with AS-interface – Festo plug and work™

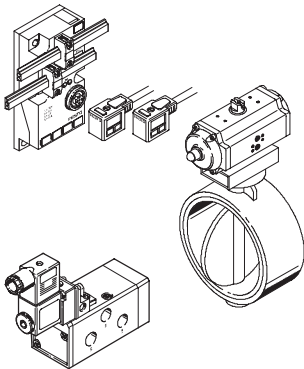
Control by sensor box – DAPZ



- Standard valve with Namur interface
- Sensor box with integrated valve actuator (solenoid coil plug) and limit switches for converting mechanical end-position signals into electrical signals
- Connect to the AS-interface using the yellow cable

- Pre-assembled and tested unit
- Quick and easy installation
- Festo plug and work™ on the AS-interface
- Suitable for exterior use. Temperature range: –25 ... +85 °C

Alternative ways of connecting process drives to the AS-interface



- Standard valve with Namur interface
- Individual valve interface ASI-EVA
- Copac/Copar process drive
- Discrete sensor configuration

Local controllers DLP-VSE – Technical data

This local controller is a convenient manual control unit for actuating process drives. Using a local controller, a pneumatic drive can assume the functionality of an electrical drive.

- Can be mounted directly on the drive or on a wall
- Emergency compressed air connection
- Safe thanks to its key-operated switch with removable key
- Large, long-life fluorescent display for the open/closed position of the process valve
- Operated on site or remote-controlled



General technical data

Operating pressure	[bar]	3 ... 8
Voltage supply without AS-interface	[V DC]	24 -15/+20%
Residual ripple	[Vmss]	4
Current consumption (at 24 V)	[mA]	140
Voltage supply with AS-interface	[V DC]	26.5 ... 31.6
Residual ripple	[Vmss]	≤20
Auxiliary voltage supply with AS-interface	[V DC]	24 -15/+20%
AS-interface profile		ID code = FH; I/O code = 7H S-7.F
Operating voltage at the valve	[V DC]	24 -15/+20%
Duty cycle of solenoid coils	[%]	100
Protection class		IP65 Plug connector when fully plugged-in or fitted with protective cap
Vibration (to IEC68, Transport DIN/EN 60068)		3.5 mm travel at 2 ... 9 Hz 1 g acceleration at 9 ... 200 Hz
	Operation	0.35 mm travel at 10 ... 60 Hz 5 g acceleration at 60 ... 150 Hz
Protection against electric shock (protection against direct and indirect contact to EN 60204-1/ ICE 204)		Via connection to a PELV (Protected Extra-Low Voltage) power supply unit
Electromagnetic compatibility		
Interference emission	– Tested to EN 55011-2 – Tested to DIN EN 61000-6-4	Limit value class A
Interference immunity	– Tested to EN 61000-4-2...6 – Tested to DIN EN 61000-6-2	Passed

Ambient conditions

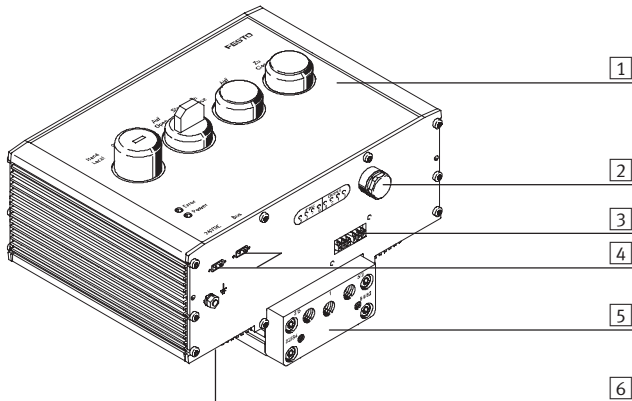
Ambient temperature	[°C]	-5 ... +50 based on EN 60654-1 class C1 (use in weather-protected areas)
Optional ambient temperature	[°C]	-25 ... +55 to EN 60654-1 class C2 (use in weather-protected areas)
Storage temperature	[°C]	-40 ... +80
Relative air humidity	[%]	5 ... 100 condensing
Corrosion resistance class CRC ¹⁾		3

1) Corrosion resistance class 3 according to Festo standard 940 070

Components requiring higher corrosion resistance. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface.

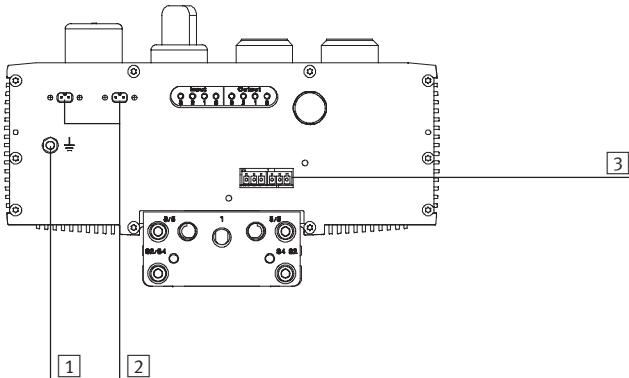
Ordering data			
	Brief description	Type	Part No.
Local controller DLP-VSE			
	Integrated 5/3-way valve, normally closed, fieldbus connection for AS-interface	DLP-VSE-3-5/3-G-ASI	188 473
Assembly			
	Mounting kit for wall mounting in conjunction with the sub-base DLP-VSE-OBEN	DLP-VSE-BP	192 062
	Sub-base in conjunction with mounting kit DLP-VSE-BP for tubing connection in the direction of the drive	DLP-VSE-OBEN	192 061
	Sub-base for mounting on the linear valve actuator DLP	DLP-VSE-OBEN-NAMUR	192 060
Fieldbus connection			
	Cable socket for AS-interface	ASI-SD-FK	18 785
	Cable socket for AS-interface, profile turned 180°	ASI-SD-FK180	196 089
Fittings			
	Push-in fitting, male thread with internal hexagon	QS-1/8-8-1	153 015
	Barbed fitting, high-alloy stainless steel with sealing ring	CRCN-M5-PK-3	13 967
	Barbed fitting, high-alloy stainless steel with sealing ring	CRCN-1/8-PK-4	13 970
	Quick connector, aluminium design with sealing ring for plastic tubing PL, PP, PU (scope of delivery 10 pieces)	CK-M5-PK-3	3 561
	Quick connector, Plastic design with moulded-on sealing ring for plastic tubing PL, PP, PU (scope of delivery 10 pieces)	CK-1/8-PK-6	2 028
Silencer			
	Sintered bronze (scope of delivery 10 pieces)	U-M5	4 645
	Polymer	U-1/8	2 307

Local controllers DLP-VSE – Display and operation



- 1 Display and control panel
- 2 Pressure equalisation component
- 3 Electrical connection
- 4 AS-interface connection
- 5 Housing block with integrated air duct
- 6 Integrated pneumatic valve (not shown)

Electrical connections and bus interface



- 1 Earth terminal
- 2 AS-interface connection
- 3 Limit switch inputs

Recommendation

Use the Festo addressing device ASI-PRG-ADR, Part No. 18 959, with addressing cable KASI-ADR, Part No. 18 960 (or Siemens PSG).

Before connecting AS-interface slaves to the bus: Allocate each AS-interface slave a free AS-interface address. Set the address

you require using the AS-interface addressing device. Permissible operating range: 1 ... 31.

Remarks

- ID code = F_H
- I/O code = 7_H (see rating plate)
- Parameterisation of the AS-interface slave is not necessary.

Connect limit switches (PNP inputs)

The inputs are short circuit proof. The slave is switched off if a short circuit occurs. The AS-interface master then regards this slave as absent. The slave

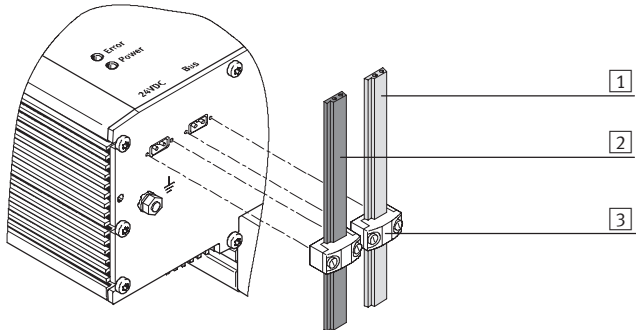
reports back as functioning once the short circuit has been eliminated.

 Note

Use the Festo cable sockets ASI-SD-FK, Part No. 18 785, or ASI-SD-FK180, Part No. 196 089

for connection of the local controller, enabling you to achieve IP65 protection.

Local controllers DLP-VSE – Installation of the AS-interface



- 1 Flat cable, yellow
- 2 Flat cable, black
- 3 Cable socket

Note

The power for the inputs is supplied via the AS-interface bus.

The local controller must always be separately supplied with 24 V via the load voltage connection (black flat cable).

The AS-interface features an integrated watchdog function which resets the outputs if communication with the bus fails.

Commissioning at the AS-interface – Allocation of the data bits

Bit allocation for AS-interface inputs

Data bit	Input	Meaning
D0	input 0	Key actuator set to HAND/LOCAL
D1	input 1	Key actuator set to AUTO/REMOTE
D2	input 2	Limit switch signal "open"
D3	input 3	Limit switch signal "closed"

Bit allocation for AS-interface outputs

Data bit	Output	Meaning
D0	Output 0	Open process valve
D1	Output 1	Close process valve
D2	Output 2	Signal lamp "OPEN"
D3	Output 3	Signal lamp "CLOSE"

Diagnosis with AS-interface

The user interface has two LEDs (POWER and BUS) from which you can read diagnostic messages for the local controller.

POWER-LED (green)	ERROR-LED (red)	Meaning
on	off	AS-interface voltage present, no fault
off	off	No AS-interface voltage present at the bus
flashing	on	AS-interface address not set (= 0)
on	flashing	Short circuit/overload at the inputs
on	on	Bus communication failure (watchdog expired)

AS-interface® components

Sensor box as intelligent signal generator – Overview

FESTO



Innovative

- Integrated AS-interface
- Integrated solenoid valve actuator
- Integrated sensor for mechanical end positions
- Quick and easy connection technology
- "Open" and "Closed" display can be individually set via trip cam
- Trip cam gearing prevents position drift

Reliable

- Pre-assembled and tested unit
- High temperature range –25 ... +85 °C
- Robust materials made from impact resistant Vestamid
- Standardised interfaces to the quarter turn valve actuators
- LED displays for on-the-spot diagnosis
- AS-interface as secure transmission protocol

Easy to mount

- Can be mounted directly on the quarter turn valve actuators (Copar DRD, Sypar DAPS)
- Fully assembled and tested unit
- Lower costs for selection, ordering, assembly and commissioning
- Can be integrated into existing AS-interface networks at any time
- Profile coded flat cable ensures polarity-safe connection to the AS-interface
- Easy adjustment of switching points
- Particularly economical thanks to simplified assembly and commissioning

AS-interface[®] components

Sensor box as intelligent signal generator – Overview



General function

- **Integrated inputs:**

The sensor box converts the mechanical end-position signals from pneumatic actuators into electrical signals and provides them as input signals for the AS-interface.

- **Solenoid valve actuation:**

A solenoid valve can be actuated using one output (24 V DC, 2.6 watts). The output is fitted with a pre-assembled cable for the plug pattern MF (industrial standard to DIN 43 650) – another example of Festo plug and work™.

- **Networking concepts:**

Modern systems and processes communicate using networks. Data from the actuator/sensor level is recorded, compressed and transmitted via the AS-interface flexibly and cost-effectively, and can even be forwarded to higher-order fieldbus systems.

- **Proven components:**

Inside the sensor box are components from leading manufacturers. The advantages lie in the tailored combination and the holistic solution.

Connection to the AS-interface

The yellow flat cable of the AS-interface carries the supply for the electronics, the sensors and the output. The flat cable connection is coded to protect against incorrect polarity.

The sensor box is uniquely described by the ID code F_H and the I/O code D_H . Structure of the I/O code D_H

D3	D2	D1	D0
I	I	I	O

Sensor 1 "Open" is fed back to data bit D2, sensor 2 "Closed" to data bit D3 (example for drives with clockwise rotation). D1 is not used.

Data bit D0 sets the output and switches the connected solenoid valve.

AS-interface® components

Sensor box as intelligent signal generator – Overview

FESTO

Technical data			
Type	DAPZ-SB-I-30DC-DSAM-RO		
Part No.	534 473		
Signal generator	Version	Double initiator with normally-closed function to NAMUR (DIN 19234)	
	Manufacturer	Pepperl & Fuchs	
	Type	NCN3-25F-N4	
	Switching accuracy	Less than 0.5°	
	Service life	Minimum service life of switch: 2x 10 ⁵ cycles	
	Short circuit proof	Yes	
Interface to the drive	NAMUR standard VDI/VDE 3845		
Output	Connection technology	Solenoid plug	
	Nominal voltage [V DC]	24	
	Tolerance	+10/-15 %	
	Residual ripple	As per AS-interface specification, dependent on power pack	
	Current consumption [mA]	Max. 120	
	Short circuit proof	Protected by current limiting	
	Connecting cable	PVC cable, solenoid plug already connected	
	Cable length [cm]	30	
	Cable type	3x 0.5 mm ²	
	Valve connection	F coil to DIN 43650, type: industrial standard	
	Watchdog function	None	
	Supply voltage	Electronics, sensors and output are supplied via the yellow flat cable at the AS-interface connection	
AS-interface connection	Connection technology	AS-interface flat cable plug (included in scope of delivery)	
	Voltage range [V DC]	26.5 ... 31.6, reverse polarity protected	
	Residual ripple [mVss]	20	
	Current consumption [mA]	Max. 12, electronics <ul style="list-style-type: none"> • plus 2-wire sensor 4 • plus connected output (dependent on solenoid valve, max. 120) 	
LED displays	Output	None, illuminating seal possible on solenoid coil (on request)	
	Inputs	2x yellow	
	ASI-LED	Green	
General data	Protection class (to EN 60529)	Sensor IP67, housing IP65	
	Electromagnetic compatibility	AS-interface electronics and initiator: EN 60947-5-2; NE21	
	CE symbol	Yes	
	Temperature range [°C]	Operation: -25 ... +85	
	Materials	<ul style="list-style-type: none"> • Seal: EPDM • Housing socket: Black Vestamid • Housing cover: Transparent Makrolon (black Vestamid or nickel-plated aluminium on request) • Control shaft: Polyacetate (Delrin) • Universal console: Vestamid 	
	Corrosion resistance class CRC ¹⁾	3	
	Dimensions [mm]	approx. 146 x 64 x 74 (without console)	
	Weight [g]	450	
	AS-interface data	ID code	F _H
		I/O code	D _H
Profile		S-D.F	

1) Corrosion resistance class 3 according to Festo standard 940 070
 Components requiring higher corrosion resistance. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface.

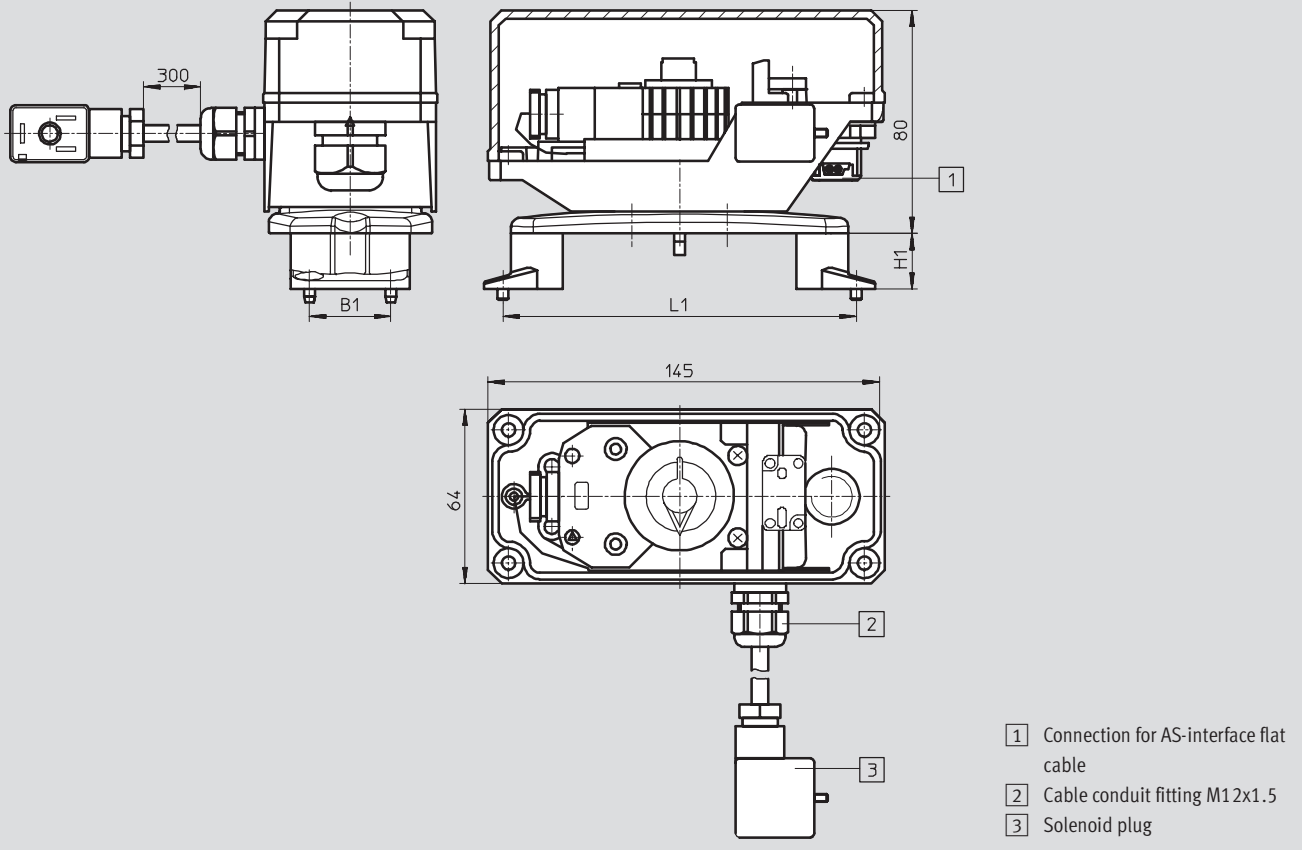
AS-interface[®] components

Sensor box as intelligent signal generator – Overview



Dimensions

Download CAD data → www.festo.com/en/engineering



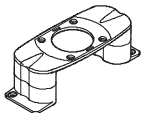
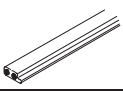







Feet mounted inwards			
	B1	L1	H1
Foot 20	30	80	20
Foot 30	30	80	30

Feet mounted outwards			
	B1	L1	H1
Foot 20	30	130	20
Foot 30	30	130	30

AS-interface® components

Sensor box as intelligent signal generator – Overview

FESTO

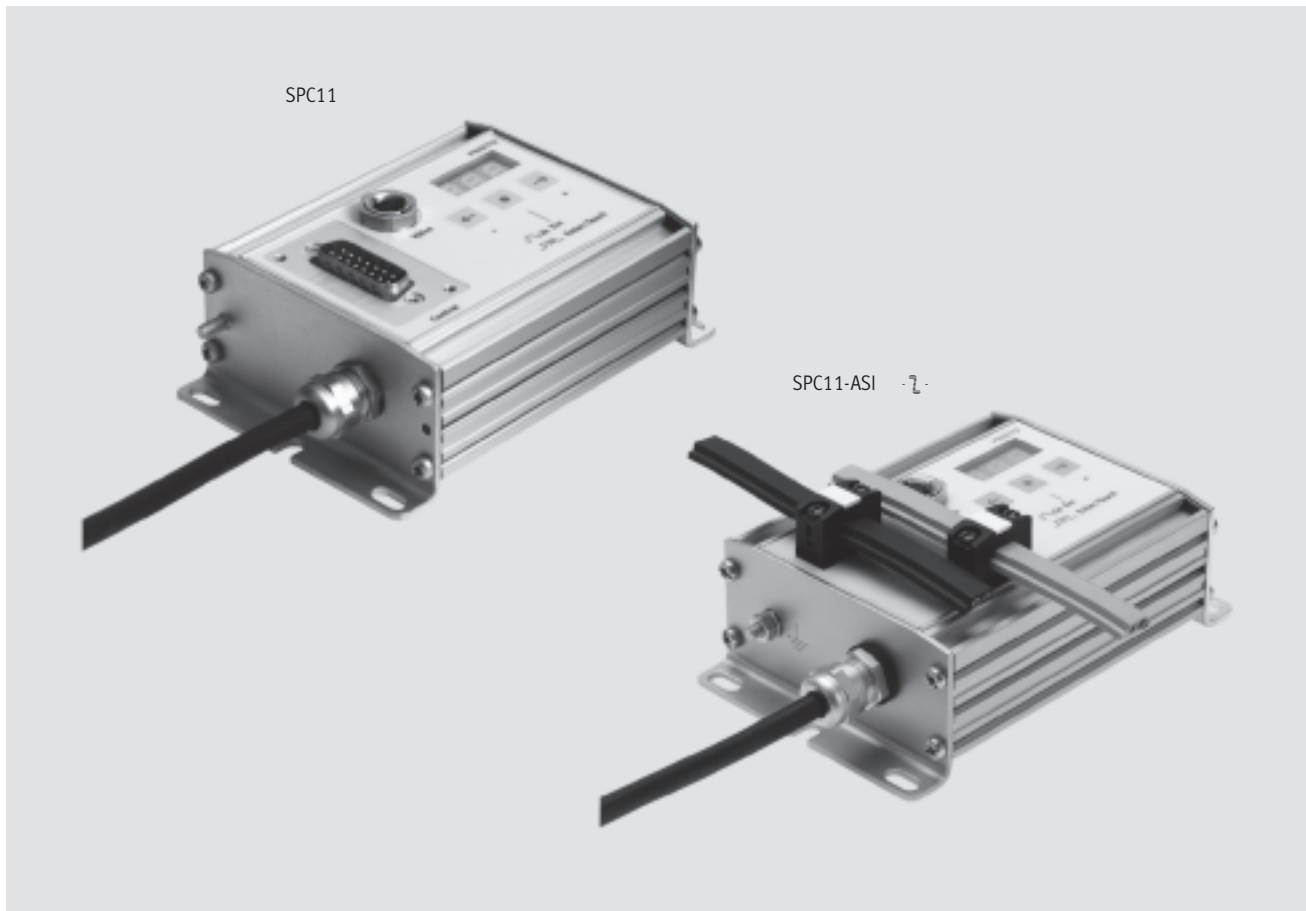
Ordering data				
	Designation		Type	Part No.
DAPZ-... mounting				
	Mounting console	50x25 / WH 20 mm	DAPZ-SBZ-F50-RO	534 477
		130x30 / WH 30 mm	DAPZ-SBZ-K0-RO	534 478
		130x30 / WH 30 mm	DAPZ-SBZ-K3-RO	534 479
Bus connection				
	AS-interface flat cable, yellow	100 m	KASI-1,5-Y-100	18 940
	AS-interface flat cable distributor	Parallel cable	ASI-KVT-FK	18 786
	AS-interface flat cable distributor	Symmetrical cable	ASI-KVT-FK-S	18 797
	Cable cap for flat cable (scope of delivery 50 pieces)		ASI-KK-FK	18 787
	Cable sleeve (scope of delivery 20 pieces)		ASI-KT-FK	165 593
Other accessories				
	Combi power pack for AS-interface		ASI-CNT-115/230 VAC-B	191 082
	Addressing device		ASI-PRG-ADR	18 959
	Addressing cable		KASI-ADR	18 960

- 1 - Type to be discontinued
Available up to 2007

AS-interface® components

Electronic end position controller SPC11 – Overview

FESTO



Electronic end position controller SPC11 to Specification V2.1¹⁾

SPC11

Fast travel between two fixed stops with electronically controlled end-position cushioning and up to two freely selectable intermediate positions.

End position controller SPC11 with AS-interface

Recommended for the drives:

- DGP, DGPL
- DGPI, DGPI L
- DNC, DNCL, DNCLM
- DSMI

Diameter
25 ... 80 mm

Stroke length
up to 2000 mm

Swivel angle
up to 270°

Pneumatic drives with electronic end position controller (Soft Stop system)

- Up to 30% faster cycle rate
- Significantly reduced system vibration
- Optimum operating behaviour is maintained even with weight/load fluctuations of up to 30% of the total moving mass
- Simple conversion of existing systems
- Reduced noise level
- Fast problem-free commissioning, no specialists required
- Less expensive than electromechanical drives



Note

Technical data SPC11-ASI with AS-interface

➔ Volume 5 End position controller SPC11



Selection and ordering aid for Soft Stop and ProDrive
www.festo.com/en/engineering

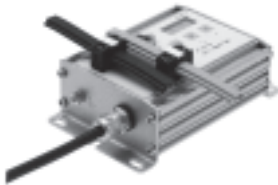
1) Slave compatible with SPEC V3.0

AS-interface® components

Electronic end position controller SPC11 – Overview

SPC11-...-ASI - 2 -

Overview



General

- Highly dynamic drives that travel at maximum speed
- Smooth and automatic braking in the end positions thanks to the electronic control system
- Up to 30% higher cycle rates
- Fewer vibrations in the machine
- Reduced noise level
- More cost-effective in comparison with electromechanical drives

Two intermediate positions can be set without programming

Integrated functions in the SPC11-...-ASI:

- Calculation of the system characteristic values of the connected components
- Storage of the desired intermediate and end positions
- Status control: comparison of set-point and actual position, and position control by appropriate activation of the proportional 5/3-way valve
- Internal or external teach-in function

Two operation modes for the AS-interface:

- Simple I/O control
- Slave profile 7.4 with
 - online diagnosis
 - reading out of the actual position of the drive
 - startup per PLC
 - intermediate positions can be selected and changed via PLC, permitting the construction of a simple positioning system

Available systems SPC11-...-ASI



- SPC11-POT-LWG-ASI
- SPC11-POT-TLF-ASI
- SPC11-MTS-AIF-ASI

The displacement encoders are either integrated or connected externally.

The drive units are delivered pre-assembled and fully tested.

Available drives for the Soft Stop system SPC11-...-ASI



- DGP/DGPL
- DGPI/DGPIL
 - Piston Ø 25 ... 63 mm
 - Stroke lengths 225 ... 2,000 mm
- DNC/DNCM
 - Piston Ø 32 ... 80 mm
 - Stroke lengths 80 ... 650 mm
- DNCI
 - Piston Ø 32 ... 63 mm
 - Stroke lengths 100 ... 500 mm
- DSMI
 - Piston Ø 25, 40 mm
 - Rotation angle 270°

- Note

Detailed description

➔ Volume 1 DNCV

➔ Volume 5 End position controller SPC11

AS-interface® components

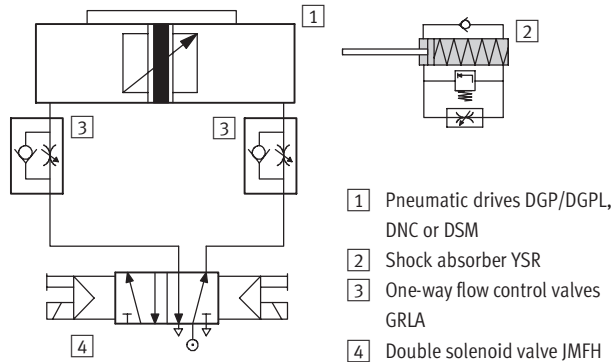
Electronic end position controller SPC11 – Overview



Conventional solution

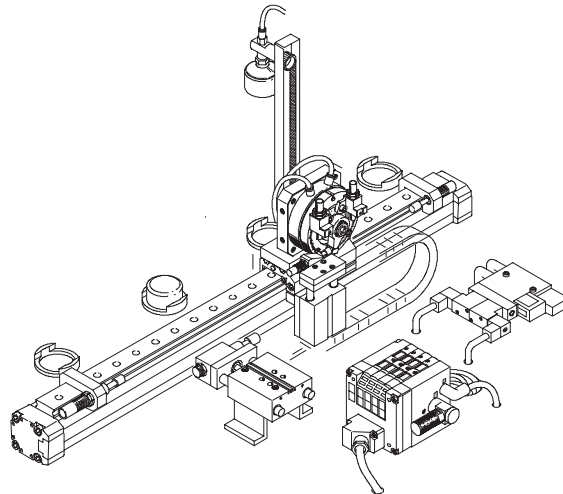
Previously you needed to

- Harmonise individual components
- Install additional shock absorbers and possibly replace/exchange existing shock absorbers
- Fit proximity sensors for position detection
- Adjust the compressed air supply by means of flow control valves in order to optimise the system



Until now, to create intermediate positions you had to

- Construct a complex mechanical solution using stopper cylinders, for example
- Harmonise a large number of individual components
- Perform extensive programming



Solution with electronic end position controller SPC11

Fast travel between two fixed stops with up to two freely selectable intermediate positions

The Soft Stop system with end position controller SPC11 allows travel between two fixed mechanical stops as well as travel to up to two freely selectable intermediate positions. The level of accuracy of the intermediate

positions is $\pm 0.25\%$ of the displacement encoder length, and no less than ± 2 mm. The level of accuracy of the intermediate positions is $\pm 2^\circ$ for the swivel module DSMI. Typical applica-

tions for the intermediate positions are rest or ejector positions, where a low cost solution is more important than achieving high levels of accuracy. The intermediate positions also have

sensor functionality. This means that when the relevant intermediate position is passed, a 1 signal is produced at the corresponding output for 50 ms.

AS-interface[®] components

Electronic end position controller SPC11 – Overview



The Festo package solution

Soft Stop with end position controller SPC11

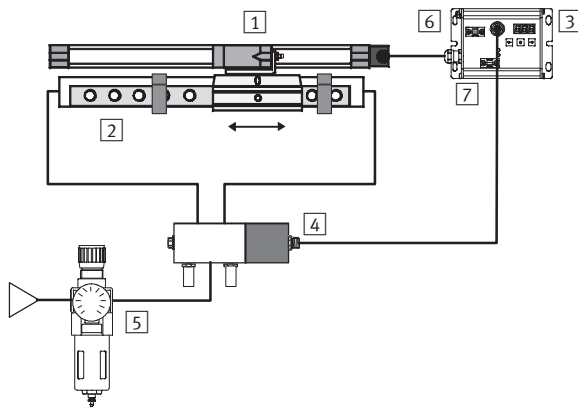
In an application with up to two intermediate positions you can now:

- Use the Festo package solution with a small number of harmonised components.

- Dispense with complex constructions with stopper cylinders.
- Approach the intermediate positions from both sides.
- Let optimisation be carried out by the learning system itself.

The Soft Stop system with SPC11 has a remote input, which allows all three pushbuttons to be allocated to a master controller:

- All system parameters can be defined and changed externally.
- A 1 signal at the remote input locks all pushbuttons on the end position controller SPC11.



- 1** Displacement encoder
Digital:
– MME-MTS-...-TLF-AIF
– integrated in case of DGPI/DGPIL
Analogue:
– MLO-POT-...-TLF
– MLO-POT-...-LWG
– integrated in case of DSMI
- 2** Pneumatic drives
DGP/DGPL, DGPI/DGPIL, DNC, DNCM or DSMI

- 3** End position controller
SPC11-POT-TLF-ASI,
SPC11-POT-LWG-ASI or
SPC11-MTS-AIF-ASI
- 4** Proportional 5/3-way valve
MPYE-5-...-010B
- 5** Service unit (without lubricator,
with 5 µm filter), supply pressure
5 to 7 bar
- 6** Load voltage
(black cable)
- 7** Logic voltage
(yellow cable)

AS-interface® components

Electronic end position controller SPC11 – Overview



The advantages of the package solution

- Up to 30% faster cycle rate
- Significantly reduced system vibration
- Fast problem-free commissioning, no specialists required
- Optimum operating behaviour is maintained even with weight/load fluctuations of up to 30% of the total moving mass
- Simple conversion of existing systems
- Considerably reduced noise level
- Less expensive than electromechanical drives
- A simple positioning system can be constructed at the AS-interface by changing the intermediate positions

Example

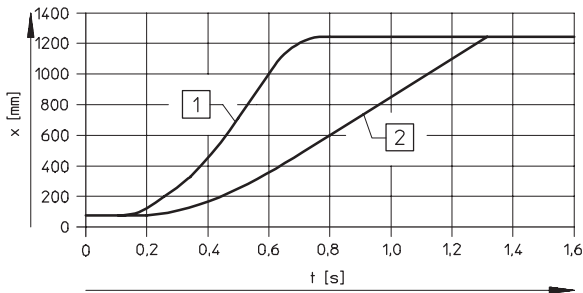
The graphs apply to the following example:

- DGPL-25-1250-PPV-A-KF-B-GK...-D2,

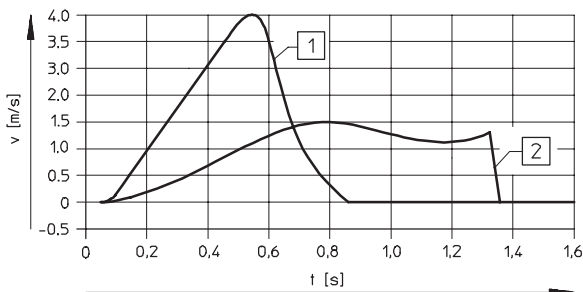
- Moving mass 12 kg
- Horizontal mounting position

 Note

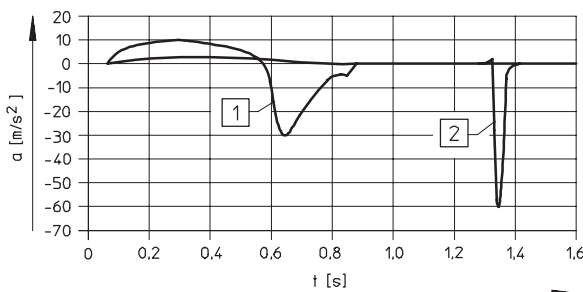
The shape of the curve is identical for the pneumatic drives DNC, DNCI, DNCM, DSMI and DGPII.



- 1 Drive with electronic end position controller SPC11
- 2 Drive with shock absorber
- x Travel distance
- t Time



- 1 Drive with electronic end position controller SPC11
- 2 Drive with shock absorber
- v Velocity
- t Time



- 1 Drive with electronic end position controller SPC11
- 2 Drive with shock absorber
- a Acceleration
- t Time

AS-interface® components

Electronic end position controller SPC11 – Overview

Soft Stop with end position controller SPC11-ASI

SPC11 with AS-interface offers the same drive functionality as the end position controller SPC11 with digital I/O interface.

The AS-interface can be used in two operating modes. These are as follows:

4-bit standard I/O mode:

- The order to advance to the four positions is given by the AS-i master via the four data bits.
- The SPC11-ASI is started up via pushbuttons on the end position controller. Connecting the AS-i cable locks these pushbuttons; the positions can then be approached via AS-i.

Slave 7.4 to

ASI Specification V2.1:

- All startup activities take place via the AS-interface.
- Error numbers are read out and errors are acknowledged via the AS-interface.
- Absolute values are transferred for the intermediate positions.
- The Soft Stop axis can be moved manually via pushbuttons on the console.

- A simple positioning system can be constructed by changing the absolute values for the mid-positions.

SPC11-ASI – Control		
Functions supported via AS-interface	Standard slave with 4-bit I/O data	Slave profile 7.4
Operational functions		
• Advance to the four taught positions	■	■
• Acknowledge when the taught position is reached	■	■
• Load a new mid-position	–	■
• Read out the actual position	–	■
Diagnostic function		
• Read out the error and firmware version number	–	■
• Read out the taught position	–	■
• Read out ID string	–	■
• Check status (parameter OK, position taught)	–	■
• Acknowledge error	–	■
Commissioning function		
• Load and read out parameters	–	■
• Start teaching process	–	■
• Move drive manually (move left/right)	–	■
• Adopt actual position as mid-position	–	■

SPC11-ASI – Diagnosis

The SPC11 reacts as follows if an error occurs:

- LEDs on the SPC11 indicate the cause of the error
- Error number on the SPC11 indicates the operating status


- Diagnosis is performed via the AS-interface bus (depending on the slave profile used)

When the operating voltage supply is switched off, the SPC11 goes into a reset state (AS-interface communication reset). The SPC11 does not then

participate in AS-interface communication until the operating voltage supply is switched back on.

Error diagnosis		
Slave profile	Diagnosis via the AS-interface bus	LED
Standard slave with 4-bit I/O data	<ul style="list-style-type: none"> • If an error occurs on the SPC11, the SPC11 ceases to participate in bus communication and is thus recognised by the master as defective (AS-interface communication reset) • Errors can be reset by switching the operating voltage supply back on 	ASI-LED: on FAULT-LED: flashing
Slave profile 7.4	<ul style="list-style-type: none"> • Errors are reported to the master via the peripherals fault input¹⁾ • The error numbers can be read out via the diagnostic string • Errors can be reset using the "Quit Error" bit in the order byte. If the error is not rectified, the SPC11 goes back into error status. 	ASI-LED: flashing FAULT-LED: flashing

1) The SPC11 must be able to detect that a master that supports the slave profile 7.4 is connected. Before an error is reported to the master via the peripherals fault input, at least one command must be sent as per the slave profile 7.4 (read ID string, read diagnostic string, read/write parameter).

-  - Type to be discontinued
Available up to 2007

AS-interface® components

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Electronic end position controller SPC11 – Overview

SPC11-ASI – Slave profile 7.4

If you would like to use the slave profile 7.4, you will need an AS-interface master which supports slave profile 7.4 (e.g. Siemens AS-interface master

type CP 343-2 or the Festo IPC PS1 with AS-interface master CP92, both to Specification V2.1). All masters to Specification V3.0 support profile 7.4.

Slave profile 7.4 allows complete commissioning of the SPC11 via the AS-interface bus. In addition to the functions as a standard slave with

4-bit I/O data, the commands to slave profile 7.4 listed in the table below are also available:

Commands to slave profile 7.4

Command	Description
Write parameter string (write parameter string)	One order byte, three parameters (amplification level, cushioning level and system parameter) and position values for the mid-position can be sent to the SPC11.
Read parameter string (read parameter string)	Three parameters (amplification level, cushioning level and system parameter), all position values (P0.1 ... P0.4) and the current position (actual position) can be read out from the SPC11.
Read diagnostic string (read diagnosis)	Various pieces of status information, the current error number and the firmware version number can be read out.
Read ID string (read ID string)	An identification string can be read out.

- 2 - Type to be discontinued
Available up to 2007

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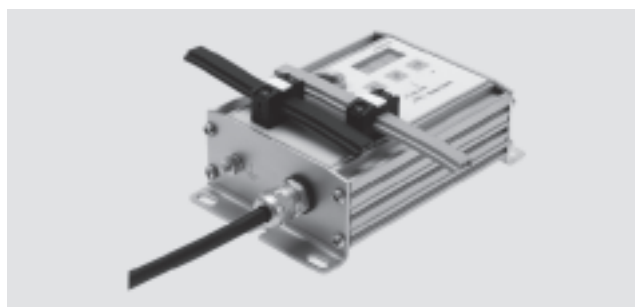
AS-interface® components

Electronic end position controller SPC11 – Technical data


Teach-in function

SPC11-POT-TLF-ASI
SPC11-POT-LWG-ASI
SPC11-MTS-AIF-ASI

The teach-in travel to determine the system data and end positions can be started by means of a button on the end position controller SPC11 or via the AS-interface.



Technical data			
Type		SPC11-POT-TLF-ASI	SPC11-POT-LWG-ASI
Part No.		526 907	526 908
Operating voltage	[V DC]	24 (-25 ... +25%)	
Current consumption	with valve	[A]	1.2
	without valve	[mA]	70
Residual ripple	[%]	Max. 5	
AS-interface	Operating voltage	[V DC]	26.5 ... 31.6
	Input current	[mA]	40
	Residual ripple	[mVss]	≤20
	Watchdog function		Active after 50 ms
Input, displacement encoder	Operating voltage	[V DC]	+10
	Input voltage	[V DC]	0 ... +10
Input, MTS Temposonic	Operating voltage	[V DC]	-
	Communication		CAN fieldbus (1 Mbaud)
Valve output	Operating voltage	[V DC]	24
	Output voltage	[V DC]	0 ... +10
Electromagnetic compatibility	Interference emission		Tested to EN 61000-6-4, limit value class B
	Interference immunity		Tested to EN 61000-6-2
Vibration		Tested to DIN/IEC 68/EN 60068, Parts 2-6 (10-58 Hz: 0.15 mm; 58-150 Hz: a=2 g; severity level 1)	
Shock		Tested to DIN/IEC 68/EN 60068, Parts 2-27 (+/-30 g at 11 ms, 15 cycles; severity level 2)	
Relative air humidity	[%]	95 (non-condensing)	
Temperature range	Operation	[°C]	0 ... +50
	Storage/transport	[°C]	-20 ... +70
Protection class to ICE 60529		IP65	
Protection against electric shock (protection against direct and indirect contact to EN 60204-1/IEC 204)		By means of PELV (Protected Extra-Low Voltage) power supply unit	
CE symbol		To EMC Directive 89/336/EEC	
Weight	[g]	Approx. 400	
AS-interface data	ID code		4
	I/O code		7H

-  - Type to be discontinued
Available up to 2007

AS-interface[®] components

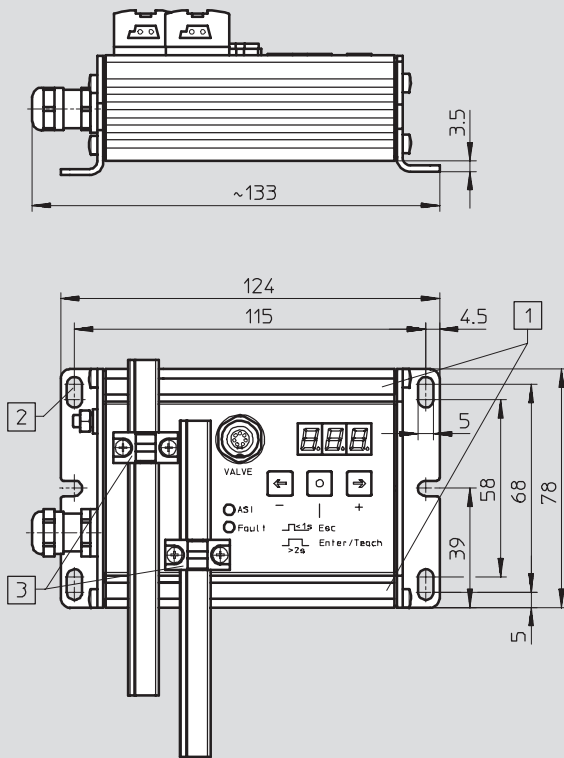
Electronic end position controller SPC11 – Technical data

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Dimensions

Download CAD data → www.festo.com/en/engineering

SPC11-...-...-ASI



- 1 Slot for inscription labels:
18182 IBS-9x20
18576 IBS-6x10
- 2 Mounting options for M4 screws
- 3 Cable socket for AS-interface flat cable:
18785 ASI-SD-FK
(not included in scope of delivery for SPC11-...-ASI)

AS-interface® components

Electronic end position controller SPC11 – Accessories



Ordering data				
	Designation		Type	Part No.
Bus connection				
	AS-interface flat cable, yellow	100 m	KASI-1,5-Y-100	18 940
	AS-interface flat cable, black	100 m	KASI-1,5-Z-100	18 941
	Flat cable socket		ASI-SD-FK	18 785
	Flat cable socket	Turned through 180°	ASI-SD-FK180	196 089
Other accessories				
	Inscription labels 6x10 in frames (64 pieces)		IBS 6x10	18 576
User documentation				
	Manual – System Description SPC11-...-ASI	German	P.BE-SPC11-SYS-ASI-DE	529 064
		English	P.BE-SPC11-SYS-ASI-EN	529 065
		French	P.BE-SPC11-SYS-ASI-FR	529 068
		Italian	P.BE-SPC11-SYS-ASI-IT	529 067
		Spanish	P.BE-SPC11-SYS-ASI-ES	529 066
		Swedish	P.BE-SPC11-SYS-ASI-SV	529 069

AS-interface – Product range overview						
Designation	Type	CPV-ASI	CPA-ASI	ASI-EVA	ASI-EA	→ Page
Bus connection						
AS-interface flat cable, yellow, 100 m	KASI-1,5-Y-100	■	■	■	■	4 / 4.9-340
AS-interface flat cable, black, 100 m	KASI-1,5-Z-100	■	■	■	■	4 / 4.9-340
Flat cable socket ¹⁾	ASI-SD-FK	■	■	■	–	4 / 4.9-343
Flat cable socket, turned through 180° ¹⁾	ASI-SD-FK180	■	■	■	–	4 / 4.9-343
Flat cable blanking plug ¹⁾	ASI-SD-FK-BL	■	■	■	–	4 / 4.9-343
AS-interface flat cable distributor, parallel cable	ASI-KVT-FK	■	■	■	–	4 / 4.9-343
AS-interface flat cable distributor, symmetrical cable	ASI-KVT-FK-S	■	■	■	–	4 / 4.9-343
Cable distributor (yellow and black) to 2x M12, 4-pin	ASI-KVT-FKx2-M12	–	■	–	■	4 / 4.9-345
Cable cap for flat cable (scope of delivery 50 pieces)	ASI-KK-FK	■	■	■	■	4 / 4.9-340
Cable sleeve (scope of delivery 20 pieces)	ASI-KT-FK	■	■	■	■	4 / 4.9-340
M12 socket for flat cable	ASI-SD-FK-M12	–	■	–	■	4 / 4.9-343
M12 socket for flat cable, with PG13.5	ASI-SD-PG-M12	–	■	–	■	4 / 4.9-343
Sensor plug						
Straight sensor plug, M12, 5-pin, PG7	SEA-M12-5GS-PG7	–	■	■	■	4 / 5.1-158
Straight sensor plug, M12, 4-pin, PG7	SEA-GS-7	–	■	■	■	4 / 5.1-154
Straight sensor plug, M12, PG9	SEA-GS-9	–	■	■	■	4 / 5.1-154
Angled sensor plug, M12, 4-pin	SEA-M12-4WD-PG7	–	–	■	■	4 / 5.1-158
Sensor plug, 4-pin, M12 for 2.5 mm cable Ø	SEA-4GS-7-2,5	–	■	■	■	4 / 5.1-156
Straight sensor plug, M8, screw-in	SEA-3GS-M8-S	■	■	–	■	4 / 5.1-152
Straight sensor plug, M8, solderable	SEA-GS-M8	■	■	–	■	4 / 5.1-152
Harax sensor plug, 4-pin	SEA-GS-HAR-4POL	–	■	–	–	4 / 5.1-160
Sub-D plug, 25-pin	SD-SUB-D-ST25	–	■	–	–	4 / 5.1-150
Protective cap M12	ISK-M12	–	■	■	■	4 / 5.2-6
Protective cap M8	ISK-M8	■	■	–	■	4 / 5.2-6
DUO plug						
DUO plug M12, for 2 cables, 5-pin	SEA-5GS-11-DUO	–	■	■	■	4 / 4.9-347
DUO plug M12, for 2 cables, 4-pin	SEA-GS-11-DUO	–	■	■	■	4 / 4.9-347
DUO cable M12 to 2x M8						
DUO cable, 2x straight socket	KM12-DUO-M8-GDGD	–	■	■	■	4 / 4.9-347
DUO cable, 2x straight/angled socket	KM12-DUO-M8-GDWD	–	■	■	■	4 / 4.9-347
DUO cable, 2x angled socket	KM12-DUO-M8-WDWD	–	■	■	■	4 / 4.9-347
Connecting cable						
For AS-interface, 5-pin M12 to 4-pin M12	NEBU-M12G5-F-0.2-M12G4	–	■	■	■	4 / 4.9-347
For AS-interface and sensors	NEBU-...	■	■	■	■	4 / 8.3-20
Push-in T-connector						
M12, 5-pin	NEDU-M12D5-M12T4	–	■	■	■	4 / 4.9-347
M8, 3-pin/M12, 4-pin	NEDU-M8D3-M12T4	–	■	■	■	4 / 4.9-347
Extension cable						
Extension cable, 4-pin, 1 m	KM12-M12-GSWD-1-4	–	■	■	■	4 / 4.9-349
Extension cable, 4-pin, 2.5 m	KM12-M12-GSGD-2,5	–	■	■	■	4 / 4.9-349
Extension cable, 4-pin, 5 m	KM12-M12-GSGD-5	–	■	■	■	4 / 4.9-349
Connecting cable for DNCV						
Connecting cable M12, 8-pin	KM12-8GD8GS-2-PU	–	–	■	–	4 / 5.1-144

1) Two flat cable connections per ASI-EVA must be connected or covered

AS-interface – Product range overview						
Designation	Type	CPV-ASI	CPA-ASI	ASI-EVA	ASI-EA	→ Page
Other accessories						
Combi power pack for AS-interface	ASI-CNT-115/230 VAC-B	■	■	■	■	4 / 4.9-336
Addressing device	ASI-PRG-ADR	■	■	■	■	4 / 4.9-338
Addressing cable	KASI-ADR	■	■	■	■	4 / 4.9-340
Inscription labels 6x10 in frames (64 pieces)	IBS 6x10	■	■	■	–	4 / 4.9-349
Inscription labels 10x17 in frames (30 pieces)	IBS-10x17	–	–	–	–	4 / 4.9-349
Inscription labels 9x20 in frames (20 pieces)	IBS 9x20	■	■	–	–	4 / 4.9-349
Inscription labels 8x20 in frames (20 pieces)	IBS 8x20	–	–	–	■	4 / 4.9-349
H-rail mounting kit	CP-TS-HS35	–	–	■	■	4 / 5.4-1
H-rail mounting	CPA-BG-NRH	–	■	–	–	4 / 5.4-1
H-rail to EN 60715	NRH-35-2000	■	■	■	■	4 / 4.9-349



Combi power pack – ASI-CNT-115/230 V AC-B

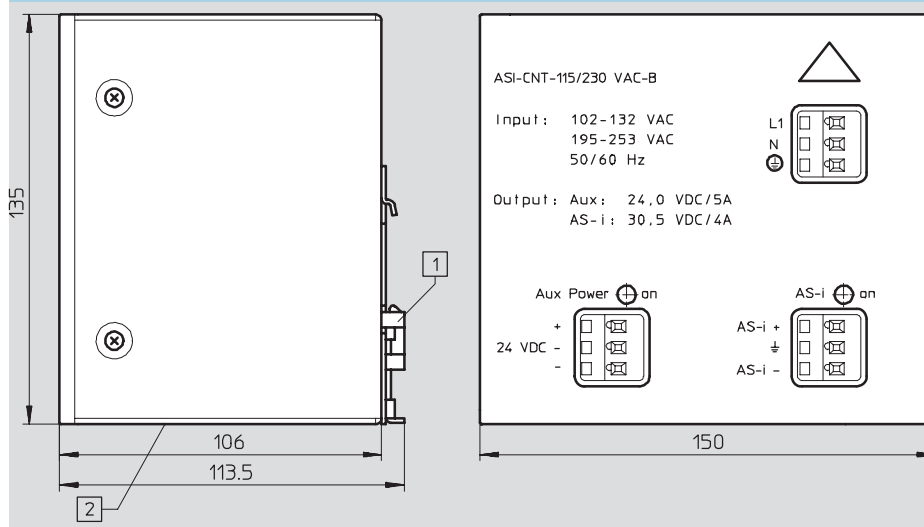
Combi power pack with integrated data disconnection. The pack supplies the operating voltage to AS-i systems. The device creates two direct voltages of 30 V DC and 24 V DC with a high constancy and low residual ripple. The supply outputs are resistant to sustained short circuits.

The device can be set to 230 V AC or 115 V AC mains voltage using a selector switch. The power pack is suitable both for installation in encapsulated control systems and electronic cabinets as well as for wall mounting. Connection is made via cage clamps. The connections are protected against direct contact in conformance with DIN VDE Part 100.

Technical data		
Type	ASI-CNT-115/230 V AC-B	
Part No.	191 082	
	Output section 1 (AS-interface supply)	Output section 2 (load current supply)
Input voltage [V AC]	230 (195 ... 253)	
Primary voltage switchable to	115 (102 ... 132)	
Ambient temperature [°C]	-45 ... +55	
Perm. storage temperature [°C]	-45 ... +80	
Protection class	IP20	
Electrical protection class	Protected to EN 60950/IEC 950	
Climate proofing	For installation in rooms subject to temperature extremes to DIN 50010	
Humidity rating	<ul style="list-style-type: none"> • Average to 80% relative humidity • Maximum value for 30 days per year 95% relative humidity 	
Installation height	Up to 1000 m above sea level	
Interference suppression	Class B to EN 55011	
Load compensation	≤ 1%	
Efficiency	≥ 80% to EN 60950, EN 50178, EN 60742	
Low voltage directive	RL73/23/EEC	
EMC directive	RL89/336/EEC	
Interference emission	DIN EN 61000-6-3 (residential areas)	
Interference sensibility	DIN EN 61000-6-2 (industrial areas)	
Electrical connections	Cage clamps	
Secondary voltage [V DC]	30 (29.5 ... 31.6)	DC 24 ±2%
Power [W]	120	
Residual ripple [mVss]	≤ 50	≤ 50
Output current [A]	4	5
Sustained short circuit and open circuit proof		
Overload proof (regarding thermal overload)		
Function LED		

Dimensions

Download CAD data → www.festo.com/en/engineering



- 1 Snap-locking mechanism for mounting rail DIN TS35
- 2 Housing lid with vents top and bottom for air circulation



Addressing device – ASI-PRG-ADR

Before an AS-interface network is commissioned, addresses must be assigned to the connected slaves. These addresses are stored in an EEPROM chip on each slave. Each slave is connected to the addressing device for the allocation of an address.

Addressing is simple and is carried out using 5 keys.

The main advantages are:

- Compact design
- Can be addressed on-site

- Supports AS-interface specification C.S.2.1

The addressing device to SPEC V2.1 can be used to scan the AS-interface from any point in the network. At all connected stations

- slave addresses can be read/changed
- ID and I/O codes can be read out
- parameters can be read/changed
- input/output data can be read and written (setting outputs)
- error messages can be read out and quickly recognised

Independent of voltage supplies

- Accumulator operation

Simple reading of error codes

- LCD display

Reliable

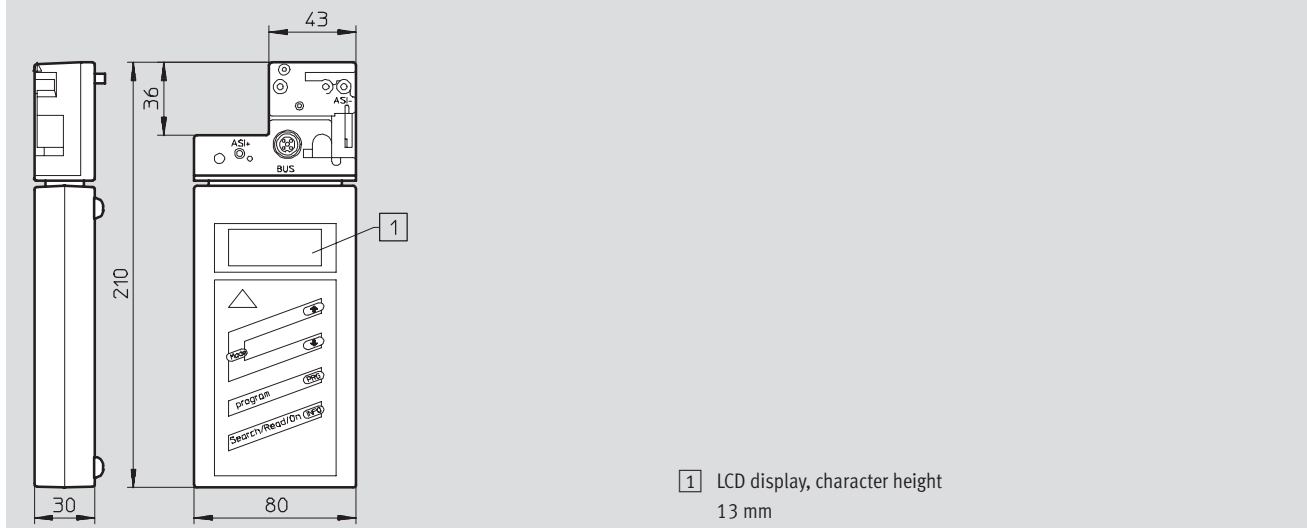
- Short circuit proof
- Overload proof

Universal adapter connection suitable for a large number of AS-interface slaves. Optionally available, additional addressing cable for slaves with M12 round plug or flat cable socket.

Technical data	
Type	ASI-PRG-ADR
Part No.	18 959
Display	LCD display
Keyboard	Touch-sensitive keypad with 5 keys
Power supply	Via battery (charge time 14 hours approx.)
Charging device	[V] 230 AC
Service life	> 250 read/write processes or 8 hours
Operating temperature	[°C] 0 ... +50
Storage temperature	[°C] -20 ... +55
Protection class	IP20
Dimensions	[mm] 80 x 210 x 30
Weight	[g] 275

Dimensions

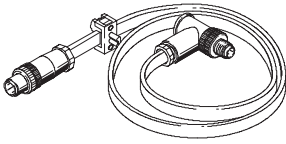
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- - Note
 Information on the addressing cable
 → 4 / 4.9-340

Overview of cables

Addressing cable – KASI-ADR



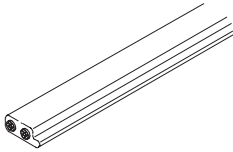
The addressing cable ASI-ADR, available as an accessory, can be used to address any desired slaves either directly via the flat cable connection (FK)

or via the M12 connection (M12):

- Individual valve interface (FK)
- Compact I/O modules (M12)
- CPV valve terminals (FK)

- CPA valve terminals (FK or M12)
- SPC11 Soft Stop (FK)
- DLP-VSE local controller (KF)
- DAPZ sensor box (cable)

Flat cable – KASI-1,5-...-100



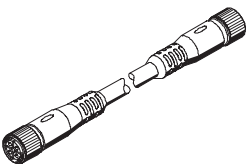
KASI-1,5-Y-100 (yellow)
KASI-1,5-Z-100 (black)

The flat cable is of a 2-wire design. The coding profile prevents polarity reversal of the cable.

AS-interface network users are connected to the flat cable by means of insulation displacement technology which utilises contact pins, thus eliminating the need to strip cable and wire insulation.

The yellow cable is normally used for the AS-interface network and the black cable for the auxiliary power supply.

Connecting cable NEBU-M12...-M12...



The round cables are of a 4-wire design and are protected against polarity reversal. Standardised connection technology replaces the yellow/black AS-interface cable with a common cable.

- Fixed lengths: 0.2 m, 1 m, 2.5 m and 5 m ex-stock
- NEBU modular system for connecting cables

Note

Define your connecting cable yourself. Select M8 (3-pin or 4-pin) or M12 (4-pin or 5-pin) on each side as required and specify the required cable length and quality – Festo will then supply the exact cable you require.

➔ www.festo.com/en/engineering

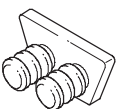
Flat cable sleeve – ASI-KT-FK



For insulating and sealing the AS-interface cable at the end of the string

- Protection class IP65
- Shrinks upon application of heat (hair drier, etc.)

Cable cap – ASI-KK-FK



For insulating and sealing the AS-interface cable at the end of the string

- Protection class IP65

Technical data – Flat cable		
Type	KASI-1,5-Y-100	KASI-1,5-Z-100
Part No.	18 940	18 941
Cable length	[m]	100
Colour	Yellow	Black
Cable dimensions	See dimensional drawings	
Cable composition	[mm ²]	2x 1.5
Wire ends	Open end	
Operating voltage range	[V AC]	0 ... 60
	[V DC]	0 ... 75
Current-carrying capacity	[A]	3
Protection class	IP65 with sealed wire ends	
Ambient temperature	[°C]	
• Fixed cable installation	-40 ... +85	
• Flexible cable installation	-25 ... +85	
Suitable for chain link trunking	No	
Air humidity	95% non-condensing	
Combustibility	Flame resistant UL 94 HB	
Corrosion protection class CRC ¹⁾	3	
Product weight	[g/m]	71
Materials	Sheath: EM3 rubber compound; cable: 3GI3 rubber compound; conductor: tin-coated copper, finely stranded	

1) Corrosion resistance class 3 according to Festo standard 940 070

Components requiring higher corrosion resistance. External visible parts in direct contact with industrial atmospheres or media such as solvents and cleaning agents, with a predominantly functional requirement for the surface.

Technical data – Connecting cable		
Type	NEBU-M12G5-F-0,2-M12G4	
Part No.	542 129	
Cable length	[m]	0.15
Cable sheath colour	Grey	
Housing colour	Black	
Cable dimensions	See dimensional drawings	
Cable composition	[mm ²]	4x 0.34
Type of mounting	Via threaded connector, via union nut	
Tightening torque	[Nm]	Max. 0.6 at M12x1
Electrical connection	5-pin/4-pin; A-coded/A-coded Straight socket/straight plug, M12x1/M12x1	
Nominal operating voltage	[V DC]	24 ... 250
Current-carrying capacity	[A]	Max. 4 per contact
Protection class	[°C]	IP65/67
Ambient temperature		
• Fixed cable installation	-5 ... +70	
• Flexible cable installation	-5 ... +70	
Suitable for chain link trunking	No	
Min. cable bending radius	[mm]	52
Product weight	[g]	26
Materials	Cable sheath	Polyvinyl chloride
	Union nut, screws	Die-cast zinc
	Plug contacts	Copper alloy, gold plated
	Housing	Polyurethane
	Seals	Fluoro rubber

AS-interface® components

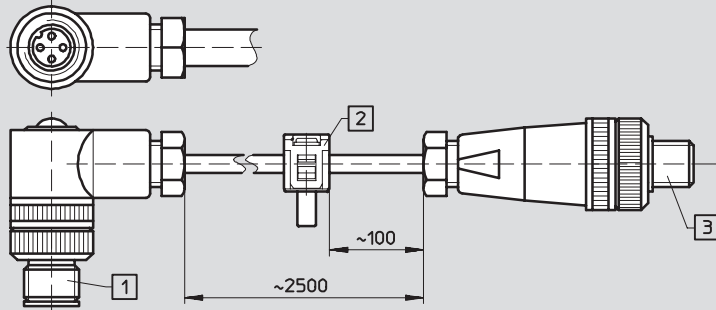
Accessories

FESTO

Dimensions

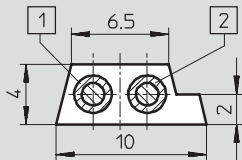
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Addressing cable – KASI-ADR



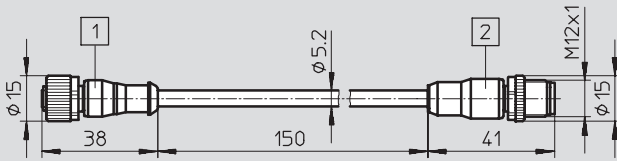
- 1 Round plug connector for connection to addressing device
- 2 Flat cable socket for connecting stations in the AS-interface network with plug-in connection
- 3 Flat cable socket with M12 connection plug for stations in the AS-interface network with M12 interface

Flat cable – KASI-1,5-...-100



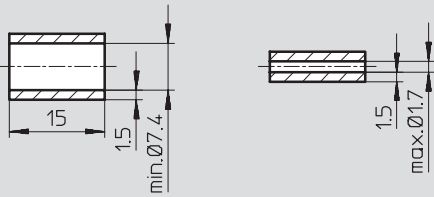
- 1 blue (-)
- 2 brown (+)

Connecting cable – NEBU-M12G5-F-0.2-M12G4

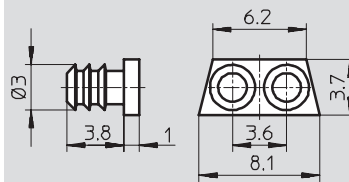


- 1 Straight socket M12
- 2 Straight plug M12

Flat cable sleeve – ASI-KT-FK



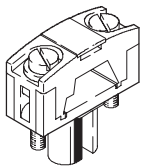
Cable cap – ASI-KK-FK



Overview of connection components

Flat cable socket

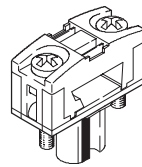
Flat cable socket for connecting AS-interface network stations to the flat cable. The connection is detachable.



The cable socket is designed to prevent connection with incorrect polarity.

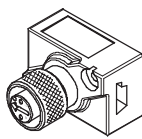
ASI-SD-FK

Flat cable socket for CPV/CPA valve terminals, ASI-EVA.



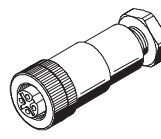
ASI-SD-FK180

Version FK180 turned 180°.



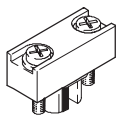
ASI-SD-FK-M12

Flat cable socket with M12 connection for looping through the flat cable. Outlet direction can be turned through 90°. Can be plugged into 4-pin and 5-pin interfaces. Pins 1 and 3 are connected (yellow AS-interface cable). For CPA valve terminal and compact input module (ASI-8DI-M8-3POL).



ASI-SD-PG-M12

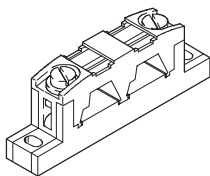
Flat cable socket with M12 connection and special seal for the flat cable in a PG connector. For CPA valve terminal and compact input module (ASI-8DI-M8-3POL).



ASI-SD-FK-BL

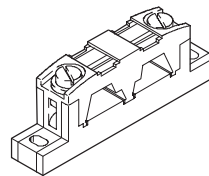
Blanking plug for sealing unused connections for flat cable sockets.

Flat cable distributor



ASI-KVT-FK

Parallel flat cable distributor, allows the flat cable to be branched at any desired point to the AS-interface network stations.



ASI-KVT-FK-S

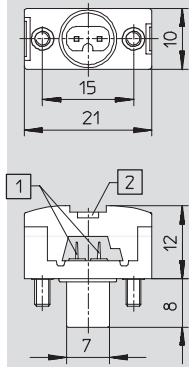
Symmetrical flat cable distributor: these enable the coding profile of the flat cable to be reversed in order to avoid loops. This removes the necessity of installing a loop. Three cable caps are provided in the scope of delivery to seal the cable ends.

Technical data								
Type	ASI-SD-FK	ASI-SD-FK-180	ASI-SD-FK-M12	ASI-SD-PG-M12	ASI-SD-FK-BL	ASI-KVT-FK	ASI-KVT-FK-S	
Part No.	18 785	169 089	18 788	18 789	196 090	18 786	18 797	
Version	-					Parallel cable	Symmetrical cable	
Protection class	IP65		IP65/IP67	IP65				
Operating voltage range	[V AC]	0 ... 60		0 ... 40	0 ... 60			
	[V DC]	0 ... 75		-	0 ... 75			
Current-carrying capacity	[A]	Max. 3		Max. 2	Max. 3			
Temperature range	[°C]	-5 ... +50						
Housing material	Polyamide		Polyamide	Polyamide				
Product weight	[g]	6.2	6.2	16.8	27.6	1	11.7	11.7

Dimensions

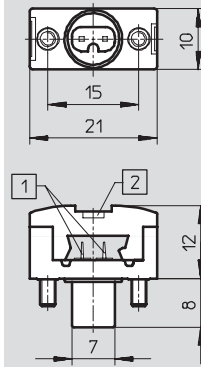
Download CAD data → www.festo.com/en/engineering

Flat cable socket ASI-SD-FK



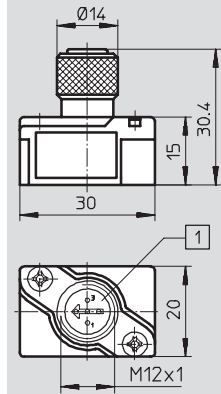
- 1 Contact pins for flat cable contacting
- 2 Inscription label mounting option

Flat cable socket ASI-SD-FK-180



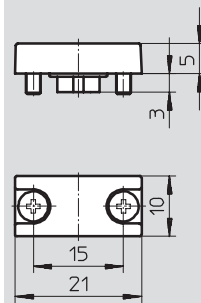
- 1 Contact pins for flat cable contacting
- 2 Inscription label mounting option

Flat cable socket ASI-SD-FK-M12

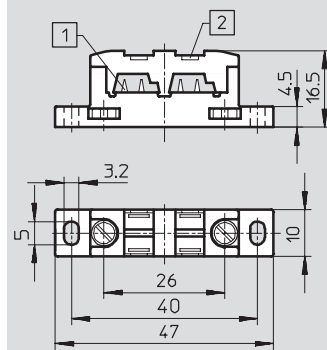


- 1 Coding lug can be turned through 90°
- The socket contains a seal for installation at the end of the string

Blanking plug ASI-SD-FK-BL

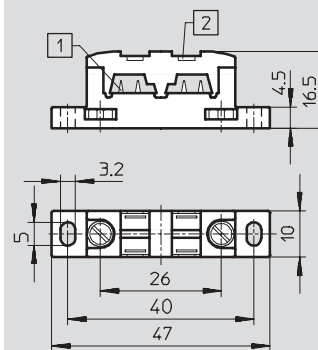


Flat cable distributor ASI-KVT-FK

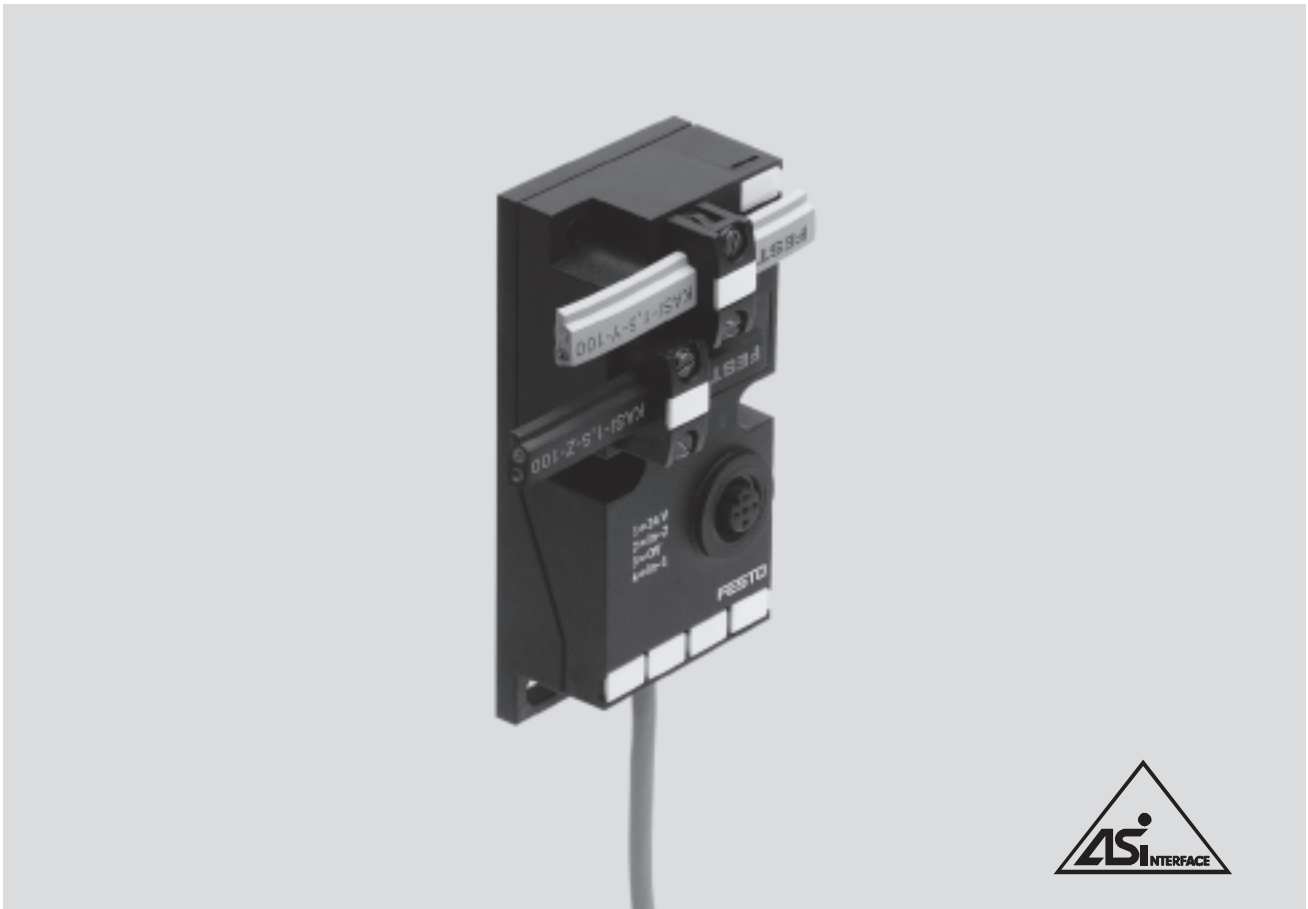


- 1 Contact pins for flat cable contacting
- 2 Inscription label mounting option

Flat cable distributor ASI-KVT-FK-S

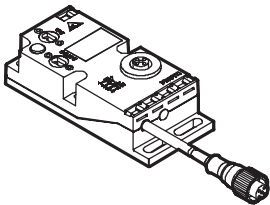


- 1 Contact pins for flat cable contacting
- 2 Inscription label mounting option



Flat cable distributor, yellow/black to 2xM12

ASI-KVT-FKx2-M12



The flat cable distributor is a passive component which recouples flat cables from the AS-interface (yellow and optionally black) to M12 4-pin plug connectors. The flat cable distributor will be introduced as an accessory for the CPA valve terminal and the compact I/O modules, but is

also compatible with other slaves offered on the market with standardised M12 interface. An approx. 1 m polyurethane cable with M12 socket is permanently attached to the housing. Alternatively an extension cable can be connected via an M12 socket

integrated in the housing. The flat cable distributor thus permits new connection technologies on the AS-interface, mainly via round cables in chain link trunking or environments with higher requirements for easy cleaning.

Pin allocation	
AS-interface and auxiliary power supply	5-pin M12-socket and socket at the cable
<p>1 AS-interface bus 1: + (light blue) 2: - (brown)</p> <p>2 Auxiliary power supply 1: 0 V 2: + 24 V DC</p>	<p>Pin 1: AS-interface + Pin 2: 0 V (auxiliary power supply) Pin 3: AS-interface - Pin 4: +24 V (auxiliary power supply) Pin 5: Unused</p>

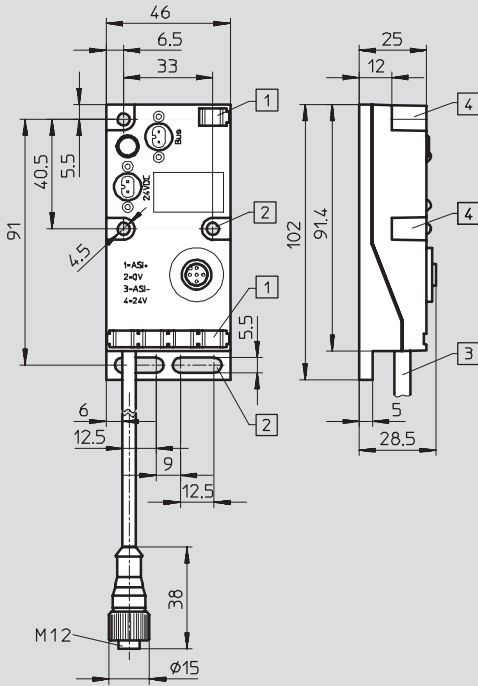
AS-interface® components

Accessories

FESTO

Dimensions

Download CAD data → www.festo.com/en/engineering



- 1 Inscription label mounting option
- 2 Mounting holes for surface mounting
- 3 Cable PUR-OB, 1,000 mm long
- 4 Mounting holes for ITEM profile (40 mm spacing) or other mounting option

Technical data

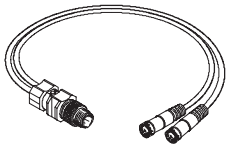
Type		ASI-KVT-FKx2-M12
Part No.		527 474
AS-interface connection	Connection technology	AS-interface flat cable plug (must be ordered separately)
	Nominal voltage [V DC]	26.5 ... 31.6, reverse polarity protected
	Residual ripple [mVss]	20
24 V DC connection	Connection technology	AS-interface flat cable plug (must be ordered separately)
	Nominal voltage [V DC]	24 (tolerance depends on the connected consuming devices)
	Residual ripple [mVss]	4
General data	Protection class (to EN 60529)	IP65 (fully assembled)
	Cable length [mm]	1000
	Cable cross-sectional area	4x 0.34 mm ²
	CE symbol	Yes
	Temperature range [°C]	Operation: -25 ... +85 Storage: -20 ... +70
	Relative air humidity (non-condensing) [%]	5 ... 90
	Materials	<ul style="list-style-type: none"> • Housing: Polyamide (PA6-GF25/sw-P) • Cable: Polyurethane (PUR-OB/grey)
	Corrosion resistance class CRC ¹⁾	2
	Shock test	To DIN IEC 68; +/-30 g at 11 ms, 15 cycles
	Continuous shock test	To DIN IEC 68; +/-15 g at 6 ms, 1,000 cycles
Vibration test	To DIN IEC 68; 0.35 mm at 10 ... 60 Hz, 5 g at 60 ... 150 Hz	
Protection against direct and indirect contact	PELV (Protected Extra-Low Voltage)	
Dimensions [mm]	Approx. 102 x 46 x 28.5	
Weight [g]	Approx. 180	

1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

Overview of DUO components

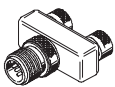
DUO cable – KM12-DUO-M8-...



The DUO cables each combine two sensor signals (2x 3-pin cable) on one 4-pin plug. This is routed to the 4-pin or 5-pin input socket of a valve terminal, the ASI-EVA or the compact I/O module. 3 variants

- 1 straight plug, 2 straight sockets (GDGD)
- 1 straight plug, 1 straight socket, 1 angled socket (GDWD)
- 1 straight plug, 2 angled sockets (WDWD)

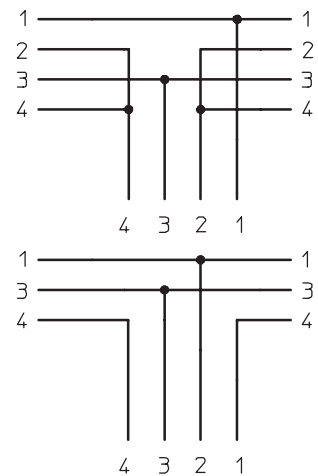
Push-in T-connector NEDU-...-M12T4



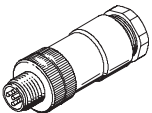
The plug connectors each combine two sensor/actuator signals on one 5-pin plug.

Variants:

- M12 plug, 2x socket M12, 5-pin
- M12 plug, 2x socket M8, 3-pin



DUO plug – SEA-5GS11-DUO



The DUO plug combines two sensor or actuator signals/cables in one housing.

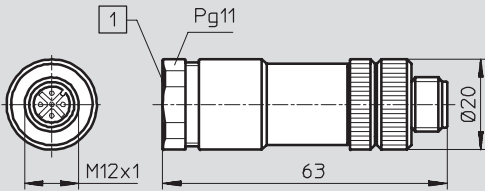
Technical data – DUO cable

Type		KM12-DUO-M8-GDGD	KM12-DUO-M8-GDWD	KM12-DUO-M8-WDWD
Part No.		18 685	18 688	18 687
Cable length	[m]	0.5		
Cable composition	[mm ²]	3x 0.25		
Operating voltage range	[V AC]	0 ... 60		
	[V DC]	0 ... 75		
Current-carrying capacity	[A]	Max. 2.8		
Protection class (plugged and screwed in)		IP67		
Ambient temperature	Fixed cable installation	[°C] -30 ... +70		
	Flexible cable installation	[°C] -5 ... +70		
Connection		M12 → 2x M8		

Dimensions

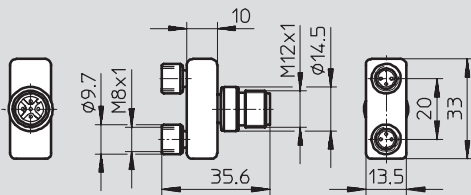
Download CAD data → www.festo.com/en/engineering

SEA-5GS11-DU0

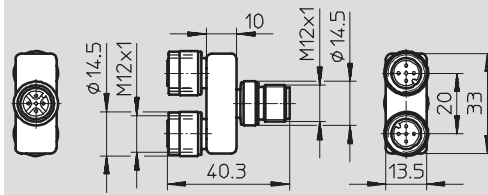


- 1 Included in the scope of delivery:
- 1x seal insert for 2 cables with $\varnothing 2.5 \dots 2.9 \text{ mm}$
 - 1x seal insert for 2 cables with $\varnothing 5 \text{ mm}$
 - 1x cable binder

NEDU-M8D3-M12T4

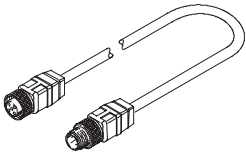


NEDU-M12D5-M12T4



Overview – Other connecting cables

Extension cable – KM-12-M12-GSGD-... etc.



The connecting cables are installed as length compensators between a DUO cable and the inputs of a valve terminal, ASI-EVA or compact I/O

module. They can also be used as AS-interface bus cables for M12 connection technology.

4 variants

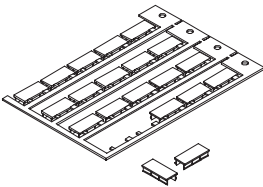
- Length 0.15 m, diameter 0.34 mm²
- Length 1 m, diameter 0.34 mm²
- Length 2.5 m, diameter 0.25 mm²
- Length 5 m, diameter 0.25 mm²

Technical data – Extension cable

Type Part No.	KM12-M12-GSGD-2,5 18 684	KM12-M12-GSGD-5 18 686	KM12-M12-GSWD-1-4 185 499	NEBU-M12G5-F-0,2-M12G4 542 129
Cable length [m]	2.5	5	1	0.15
Cable composition [mm ²]	4x 0.25		4x 0.34	4x 0.34
Operating voltage range	[V AC]	0 ... 60	0 ... 60	–
	[V DC]	0 ... 75	0 ... 75	24
Current-carrying capacity [A]	Max. 3.8			
Protection class (plugged and screwed in)	IP67			
Ambient temperature [°C]	• Fixed cable installation			–5 ... +70
	• Flexible cable installation			–5 ... +70
Connection	M12 → M12			

Overview – Other accessories

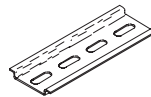
Inscription labels IBS-...



Convenient labelling system for

- flat cable sockets
- flat cable distributors
- individual valve interfaces
- compact I/O modules
- CPV/CPA valve terminals

H-rail NRH-35-2000


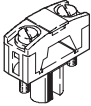
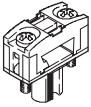



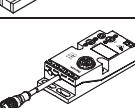
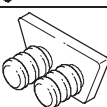

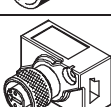
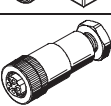
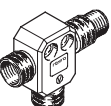
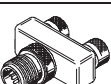


- For compact I/O modules
- CPV/CPA valve terminals
- For individual valve interfaces
- AS-interface power supply units

AS-interface® components

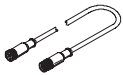

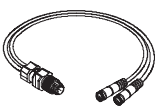


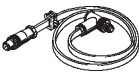

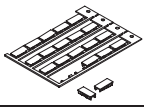
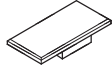

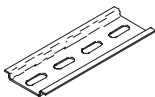
Accessories

FESTO

Ordering data				
	Designation		Type	Part No.
Bus connection				
	AS-interface flat cable, yellow	100 m	KASI-1,5-Y-100	18 940
	AS-interface flat cable, black	100 m	KASI-1,5-Z-100	18 941
	Flat cable socket ¹⁾		ASI-SD-FK	18 785
	Flat cable socket ¹⁾	Turned through 180°	ASI-SD-FK180	196 089
	Flat cable blanking plug		ASI-SD-FK-BL	196 090
	AS-interface flat cable distributor	Parallel cable	ASI-KVT-FK	18 786
	AS-interface flat cable distributor	Symmetrical cable	ASI-KVT-FK-S	18 797
	Cable distributor (yellow and black)	To 2x M12, 4-pin	ASI-KVT-FKx2-M12	527 474
	Cable cap for flat cable (scope of delivery 50 pieces)		ASI-KK-FK	18 787
	Cable sleeve (scope of delivery 20 pieces)		ASI-KT-FK	165 593
	M12 socket for flat cable		ASI-SD-FK-M12	18 788
	M12 socket for flat cable	With PG13.5	ASI-SD-PG-M12	18 789
	T-adapter for DH-485		FB-TA-M12-5POL	171 175
	Push-in T-connector		NEDU-M8D3-M12T4	541 597
			NEDU-M12D5-M12T4	541 596

1) Two flat cable connections per ASI-EVA must be connected or covered

Ordering data				
	Designation		Type	Part No.
Sensor plug				
	Straight sensor plug	M12, 5-pin, PG7	SEA-M12-5GS-PG7	175 487
	Straight sensor plug	M12, 4-pin, PG7	SEA-GS-7	18 666
	Straight sensor plug	M12, PG9	SEA-GS-9	18 778
	Angled sensor plug	M12, 4-pin	SEA-M12-4WD-PG7	185 498
	Straight sensor plug for cable Ø 2.5 mm	M12, 4-pin	SEA-4GS-7-2,5	192 008
	Straight sensor plug	M8, screw-in	SEA-3GS-M8-S	192 009
	Straight sensor plug	M8, solderable	SEA-GS-M8	18 696
	Harax sensor plug	4-pin	SEA-GS-HAR-4POL	525 928
	Sub-D plug	25-pin	SD-SUB-D-ST25	527 522
	Protective cap	M12	ISK-M12	165 592
	Protective cap	M8	ISK-M8	177 672
Connecting cable				
	Modular system for connecting cables		NEBU-... → 4 / 8.3-20	-
	Connecting cable, straight plug, angled socket type B for F coil	M12, straight, 5-pin, 0.5 m	NEBV-B2W3P-F-0,5-M12G5	542 130
		M12, straight, 5-pin, 2.5 m	NEBV-B2W3P-F-2,5-M12G5	542 133
	Connecting cable, straight plug, angled socket type C for EB coil	M12, straight, 5-pin, 0.5 m	NEBV-C1W3P-F-0,5-M12G5	542 131
		M12, straight, 5-pin, 2.5 m	NEBV-C1W3P-F-2,5-M12G5	542 134
	Connecting cable, straight plug, angled socket type KMYZ-9 for ZC coil	M12, straight, 5-pin, 0.5 m	NEBV-Z2W2P-0,5-M12G5	542 132
		M12, straight, 5-pin, 2.5 m	NEBV-Z2W2P-2,5-M12G5	542 135
	Connecting cable, straight plug, straight socket	M12, 4-pin/5-pin, 0.2 m	NEBU-M12G5-F-0.2-M12G4	542 129
		M12, 4 pin, 2.5 m	KM12-M12-GSGD-2,5	18 684
		M12, 4 pin, 5.0 m	KM12-M12-GSGD-5	18 686
	Connecting cable, straight plug, straight socket	M8, 0.5 m	KM8-M8-GSGD-0,5	175 488
		M8, 1.0 m	KM8-M8-GSGD-1	175 489
		M8, 2.5 m	KM8-M8-GSGD-2,5	165 610
		M8, 5.0 m	KM8-M8-GSGD-5	165 611

Ordering data				
	Designation		Type	Part No.
Connecting cable for DNCV				
	Connecting cable	M12, 8-pin	KM12-8GD8GS-2-PU	525 617
DUO plug				
	Plug M12 for 2 sensor cables	4-pin, PG11	SEA-GS-11-DUO	18 779
		5-pin, PG11	SEA-5GS-11-DUO	192 010
DUO cable M12 to 2x M8				
	DUO cable M12-2xM8, 4-pin/2x3-pin	2x straight socket	KM12-DUO-M8-GDGD	18 685
		2x straight/angled socket	KM12-DUO-M8-GDWD	18 688
		2x angled socket	KM12-DUO-M8-WDWD	18 687
Other accessories				
	Combi power pack for AS-interface		ASI-CNT-115/230 VAC-B	191 082
	Addressing device		ASI-PRG-ADR	18 959
	Addressing cable		KASI-ADR	18 960
Mounting				
	Mounting for H-rail		CP-TS-HS35	170 169
Inscription labels				
	Inscription labels 8x20 mm in frames (20 pieces)		IBS-8x20	539 388
	Inscription labels 6x10 in frames (64 pieces)		IBS 6x10	18 576
	Inscription labels 10x17 in frames (30 pieces)		IBS-10x17	160 238
	Inscription labels 9x20 in frames (20 pieces)		IBS 9x20	18 182
Mounting				
	H-rail mounting		CPA-BG-NRH	173 498
	H-rail to EN 60715		NRH-35-2000	35 430