AS-interface® modules CESA

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AS-interface® modules CESA

Key features

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Basic principles and features of the bus system

Introduction

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.

The AS-interface gateways from Festo act as a master for the AS-interface network and a slave for the higher-level fieldbus system (PROFIBUS or CANopen).

From the point of view of the higher-level fieldbus, the AS-interface gateways behave like modular I/O modules. This makes commissioning and troubleshooting much easier.

The gateways can be connected to the controllers FED-CEC/-CECCAN (CANopen master), CPX-CEC (CANopen master) and CECX (PROFIBUS DP and CANopen master) from Festo as well as any other controllers with a PROFIBUS or CANopen interface.

For the Festo controllers, the controller functionality is programmed as normal using the CoDeSys programming tool. Larger systems can be easily configured with the help of the AS-interface control software. The data of the connected AS-interface slave devices can be easily diagnosed for servicing.

- Extended AS-interface diagnostic functions that far surpass the standard diagnostic functions according to the AS-interface Specification
- Simple configuration error history enables sporadic configuration errors to be located
- Error counters enable the quality of data communication on the AS-interface cable to be monitored

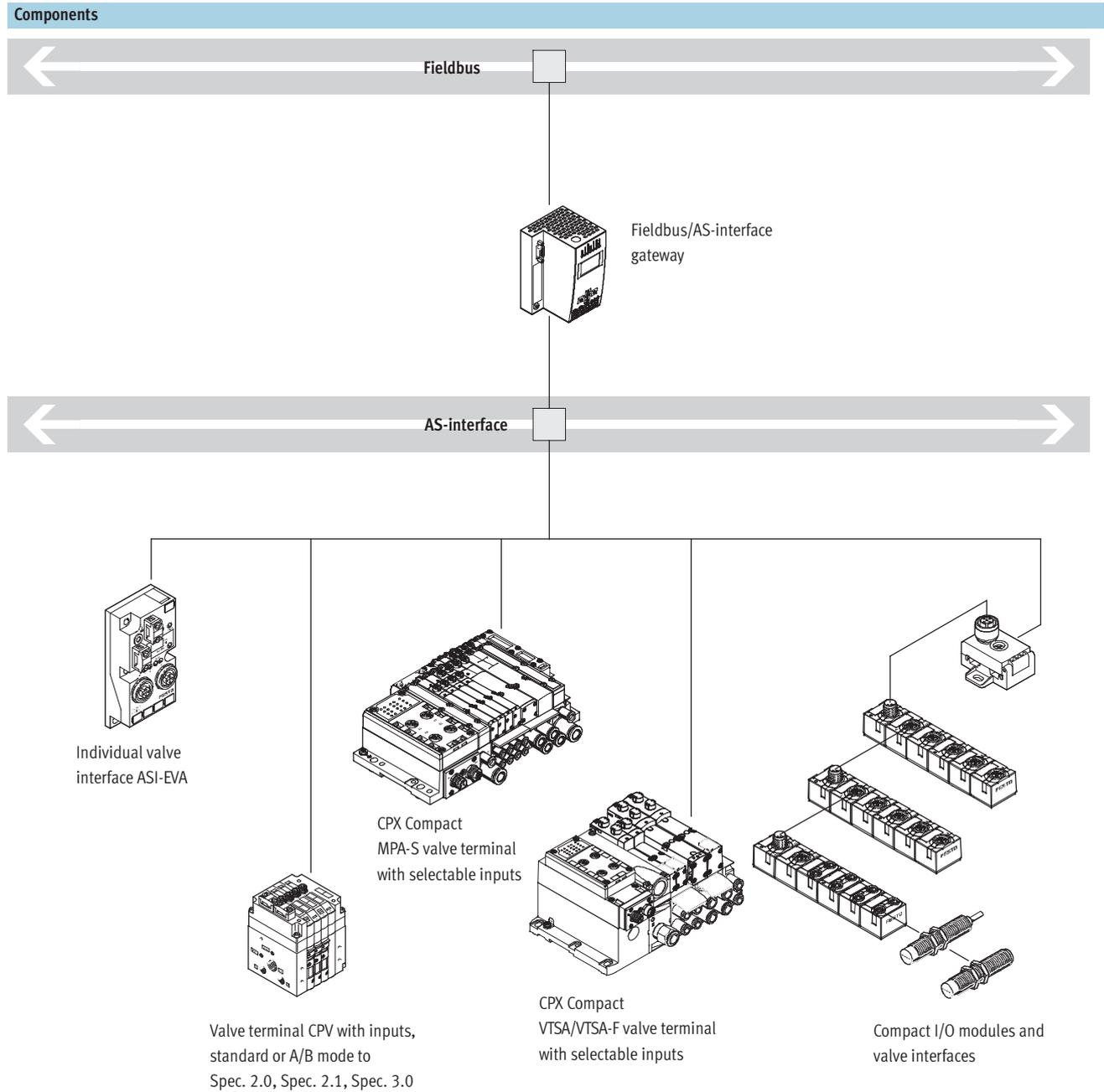| AS-interface Specification version	Inputs	Outputs	Bus cycle (ms)	No. of slaves, digital	No. of slaves, analogue	Σ I/O
2.0	4/4	4	5	31	31	248
2.1	4	3	10	62	31	434
3.0	4/8	4/8	20	62	62	992

Master/slave principle

- 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: unscreened cable 2x 1.5 mm^2
- With 31 slaves, max. 4 inputs and 4 outputs per slave
- 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
- 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)
- Profile 7.A.7 permits 4 bits for digital inputs and 4 bits for digital outputs on just one A/B slave. The 4 outputs are transmitted in two A/B bus cycles of 2 bits each. This extends the cycle time (in the worst-case scenario) to 20 ms.
- Insulation displacement technology

- 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

-◌- Note

Slaves to Specification V3.0 require a master to Specification V3.0.
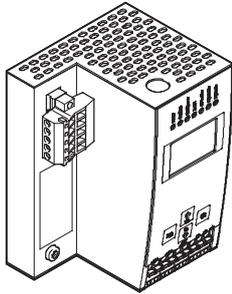
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System overview

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Fieldbus

Fieldbus/AS-interface
gateway

AS-interface

Individual valve
interface ASI-EVA

CPX Compact
MPA-S valve terminal
with selectable inputs

Valve terminal CPV with inputs,
standard or A/B mode to
Spec. 2.0, Spec. 2.1, Spec. 3.0

CPX Compact
VTSA/VTSA-F valve terminal
with selectable inputs

Compact I/O modules and
valve interfaces

→ Internet: www.festo.com/catalogue/...

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System overview

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Master

AS-interface gateways are used to connect the AS-interface network to a higher-level fieldbus.
They behave like a master within the AS-interface network and a slave within the fieldbus network.

The AS-interface gateways from Festo conform to the AS-interface Specification 3.0 and support the extended addressing range with up to 62 AS-interface slaves.

Versions
• CANopen
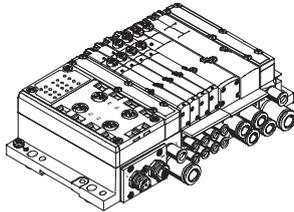• PROFIBUS

Slaves

Actuators
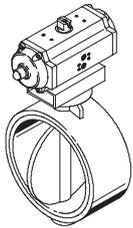
Actuators for the process industry
Quarter turn actuators DRD (Copar)
Linear valve actuators DLP (Copac)

• Local controllers for actuators for the process industry 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 a compact solution with 8 valves

• Integrated inputs on individual valve interfaces and valve terminals CPV, MPA-S and VTSA/VTSA-F

• More inputs thanks to 4-way and 8-way input modules
• On request:
Application-specific valves and integration solutions
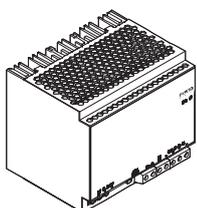
Compact I/O modules, valve interfaces
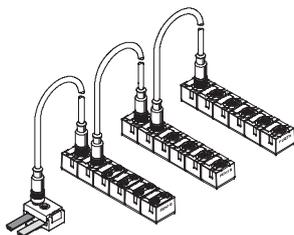
• Highly compact modules
• Sturdy, encapsulated electrics
• Bus and auxiliary power supply 2x M12 looped through

• Inputs 200 mA
• Outputs 1 A

• 8 inputs M8
• 4 inputs and 3 outputs M12

Accessories

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

• Power supply unit for AS-interface
• Primary switched mode modular power supply
• Compact, modular and energy-saving power supply system for AS-interface – with integrated earth-fault monitoring system. AS-interface load: 4.8 A. Optional auxiliary power supply 24 VDC, load: 5 or 10 A
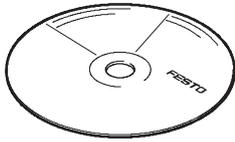
• Installation accessories for installing the flat cable

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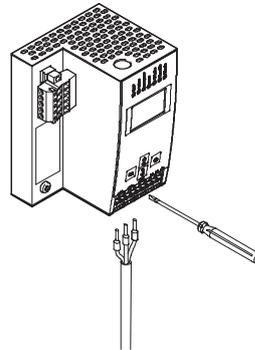
Connection technology and addressing

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Handling

Operation

The AS-interface gateways can be configured and programmed using the GSPF software.

An alternative option for programming, commissioning or troubleshooting is to use the operating buttons on the gateway and the LED and LCD displays on the gateway.

AS-interface connections

The AS-interface network as well as the power supply for the gateway and AS-interface are connected via a terminal strip.

Mounting
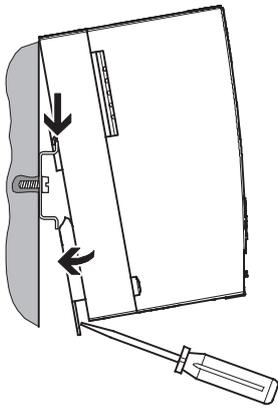
The gateway is mounted using an H-rail.
There are appropriate lugs on the rear of the device.
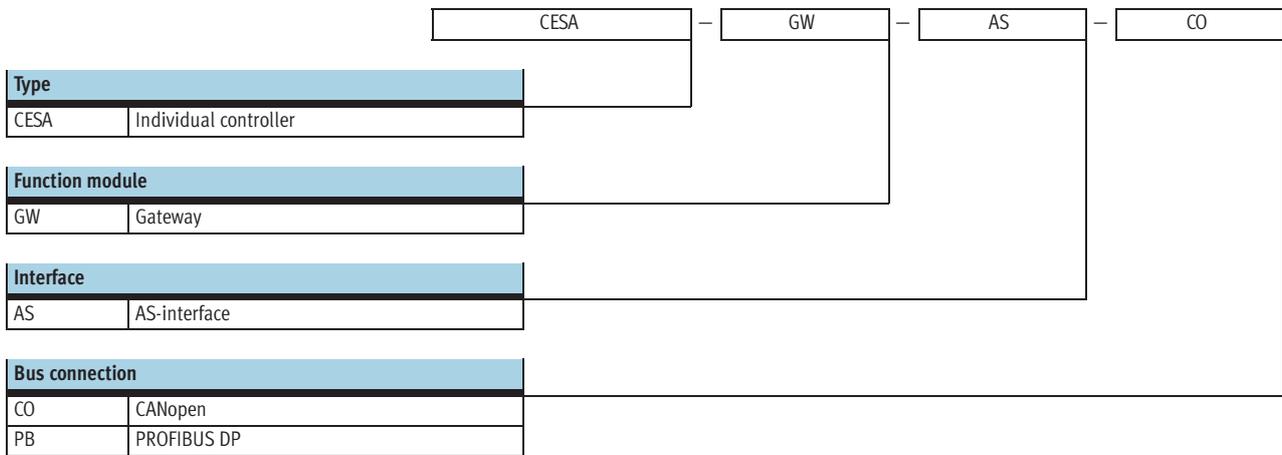
Extended addressing range

The extended addressing range enables a total of 62 slaves to be operated on one AS-interface master. The masters as well as the slaves must be designed for the extended addressing range in order to be able to exploit the full number of slaves.

With the extended addressing range, two slaves share one address. Standard slaves do not have this capability. They can be connected to a master with an extended addressing range, but also occupy a full address. In other words, up to 62 slaves with an extended addressing range but only 31 standard slaves can be connected to a master with an extended addressing range.

Slaves with an extended addressing range can be connected like standard slaves to a standard master, but must be configured as an "A" slave.

AS-interface® modules CESA

Type codes

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CESA	— GW	— AS	— CO

Type	
CESA	Individual controller

Function module	
GW	Gateway

Interface	
AS	AS-interface

Bus connection	
CO	CANopen
PB	PROFIBUS DP

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AS-interface® modules CESA

Technical data

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CESA-GW-AS-PB

AS-interface module with PROFIBUS DP connection

CESA-GW-AS-CO

AS-interface module with CANopen connection

The AS-interface modules are used to couple decentralised AS-interface networks to higher-level controllers via a fieldbus.

The following fieldbus connections are available:
- PROFIBUS DP
- CANopen

CESA-...PB   CESA-...CO

General technical data		CESA-GW-AS-PB	CESA-GW-AS-CO
Operating elements		4 buttons	
Status displays		LCD display	
		Yellow LED: Projection mode	
		Green LED: AS-interface operating normally	
		Green LED: AS-interface voltage OK	
		Green LED: PROFIBUS master detected	
		Green LED: Slave programming	
		Green LED: Voltage ON	
		Red LED: Configuration error	
Operating voltage	[V DC]	30 (AS-interface voltage)	
Current consumption	[mA]	200 (from the AS-interface line)	
Protection class		IP20	
Resistance test		As per EN 61131-2 (resistance to shock, vibration)	
Product weight	[g]	460	520
Dimensions W x L x H	[mm]	75 x 120 x 83	85 x 120 x 83

Materials	
Housing	High-alloy stainless steel
Note on materials	Contains PWIS (paint-wetting impairment substances)
	RoHS-compliant

Technical data – Interfaces	CESA-GW-AS-PB	CESA-GW-AS-CO
Fieldbus interface		
Type	PROFIBUS to DIN 19245 Part 3	CANopen, Device Specification CiA DS-301
Connection technology	Sub-D socket, 9-pin	COMBICON plug, 5-pin
Transmission rate	9.6 kbps … 12 Mbps	10 kbps … 1 Mbps
Programming/diagnostic interface		
Type	RS232 serial interface	

Operating and environmental conditions		CESA-GW-AS-PB	CESA-GW-AS-CO
Ambient temperature	[°C]	0 … +55	
Storage temperature	[°C]	−25 … +85	
Certification		cULus listed (OL)	
		C-Tick	
CE mark (see declaration of conformity)[1]		To EU EMC Directive	

[1] For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com ➔ Support ➔ User documentation.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.
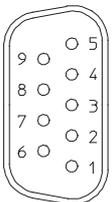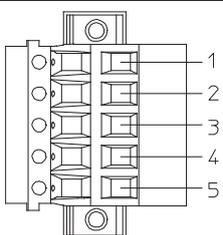
AS-interface® modules CESA

Technical data

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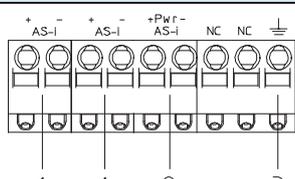

Connection and display components

1. RS232 diagnostic interface
2. Fieldbus connection
3. Earthing screw
4. LEDs for status display
5. LCD display
6. Operating buttons
7. Terminal strip for connecting the power supply and AS-interface network

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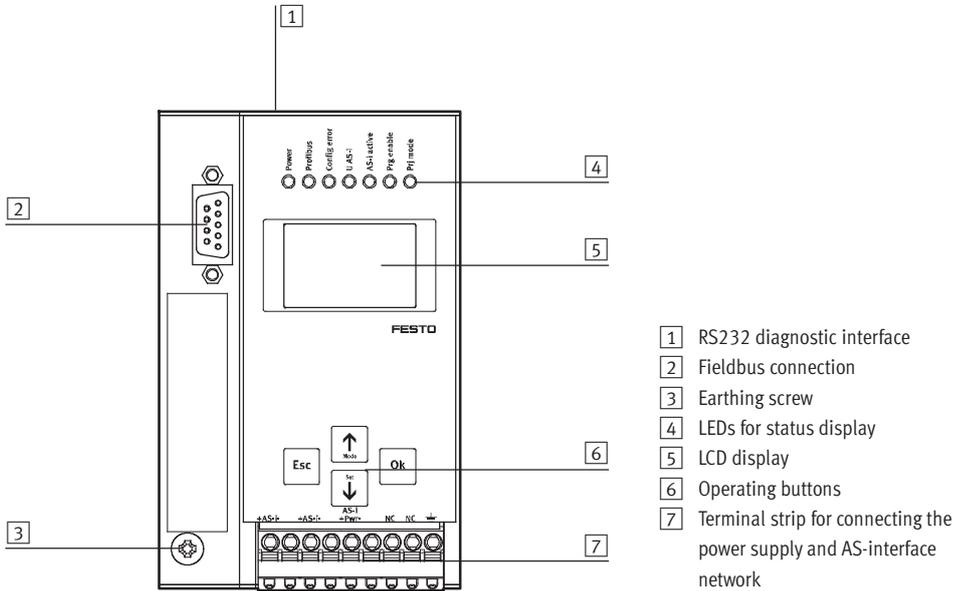
Pin allocation – PROFIBUS			
	Pin	Signal	Meaning
Sub-D socket to DIN 50170			
	1	n.c.	Not connected
	2	n.c.	Not connected
	3	RxD/TxD-P	Data transmission line B
	4	n.c.	Not connected
	5	DGND	Data reference potential (0 V)
	6	VP	Supply voltage (+5 V)
	7	n.c.	Not connected
	8	RxD/TxD-N	Data transmission line A
	9	n.c.	Not connected

Pin allocation – CANopen			
	Pin	Signal	Meaning
Terminal strip, 5-pin[1]			
	1	V+	24 V DC supply CAN interface
	2	CAN_H	Received/transmitted data high
	3	Screened	Connection to FE (functional earth)
	4	CAN_L	Received/transmitted data low
	5	V–	0 V CAN interface

1) The interface is supplied with voltage via the plug.

Pin allocation – AS-interface			
		Signal	Meaning
Screw terminal			
	1	+AS-i–	Connection to AS-interface line
	2	AS-i +PWR–	Power supply for AS-interface line (max. 8 A)
	3	FE	Functional earth

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Technical data

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

CESA-GW-AS-PB
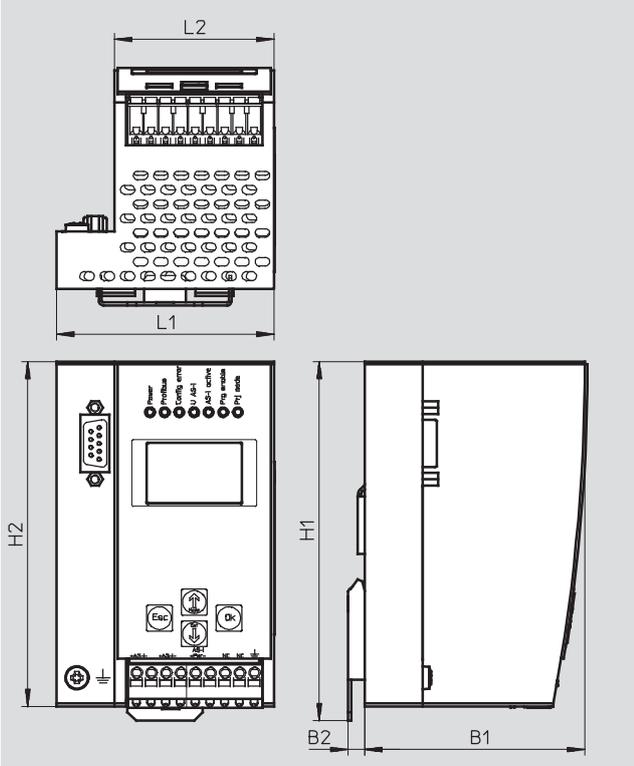
CESA-GW-AS-CO
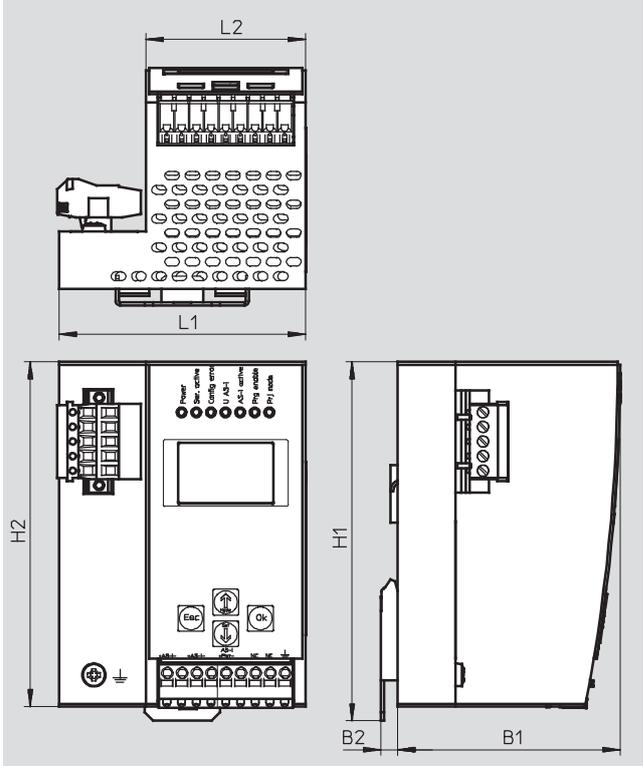
Type	B1	B2	H1	H2	L1	L2
CESA-GW-AS-PB	76	7	125	120	75	55
CESA-GW-AS-CO	76	7	125	120	85	55

AS-interface® modules CESA

Accessories
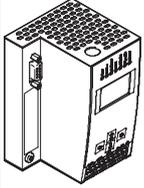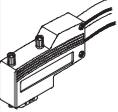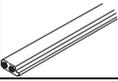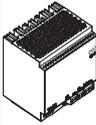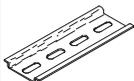
Ordering data			Part No.	Type
AS-interface gateway				
	AS-interface master with PROFIBUS DP fieldbus connection		**567032**	**CESA-GW-AS-PB**
	AS-interface master with CANopen fieldbus connection		**567033**	**CESA-GW-AS-CO**
PROFIBUS bus connection				
	Sub-D plug, angled		**533780**	**FBS-SUB-9-WS-PB-K**
AS-interface				
	AS-interface flat cable, yellow	100 m	**18940**	**KASI-1,5-Y-100**
	AS-interface flat cable, black	100 m	**18941**	**KASI-1,5-Z-100**
	Cable cap for flat cable (pack of 50)		**18787**	**ASI-KK-FK**
	Cable sleeve (pack of 20)		**165593**	**ASI-KT-FK**
	AS-interface module as bus termination		**567035**	**CACF-BT-AS**
	Primary switched mode modular power supply 24 V DC power supply	5 A	**547867**	**SVG-1/230-24VDC-5A**
		10 A	**547868**	**SVG-1/230-24VDC-10A**
	H-rail to EN 60715		**35430**	**NRH-35-2000**
	Software for configuring the system and diagnosing the AS-interface slaves during servicing		**567036**	**GSPF-BS-1-AF-ML**