

Compact performance

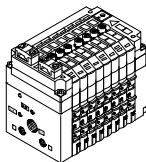


FESTO

Brief description

CPV valve
terminal with
AS-Interface
Type
CPV-ASI-8E8A-Z-
CE

– English



8101727
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[8101729]

Translation of the original instructions

Documentation on the product



For all available product documentation
→ www.festo.com/pk

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English 3

1 User instructions

Valve terminal type CPV...-GE-ASI-8E8A-Z-M8-CE has been designed exclusively for controlling pneumatic actuators and for use in bus systems in accordance with AS-Interface specification 3.0. If used together with additional commercially available components, such as sensors and actuators, the specified limits for pressures, temperatures, electrical data, torques etc. must be observed.

AS-Interface bus systems and valve terminals may only be installed by personnel especially trained for this purpose. Specifications on the design and addressing of your bus system can be found in the manual for the AS-Interface master.

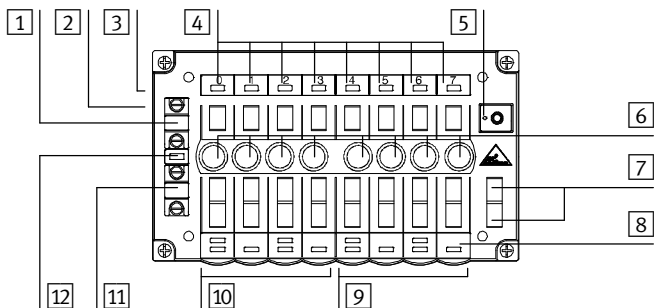
Detailed information on the pneumatics of the valve terminal can be found in the pneumatics manual P.BE-CPV-...



Warning

- Switch off the power supply before connecting or disconnecting plugs (otherwise this could lead to functional damage).
- Connect the earth connection on the left-hand end plate with low impedance (short cable with large cross-sectional area) to the earth potential.
- Commission only a valve terminal which has been fitted and wired completely.

2 Connecting and display elements



- | | |
|---|---|
| 1 AS-Interface bus connection | 8 LED status display for valves (yellow) |
| 2 Earth connection | 9 Valve plates slave 2 |
| 3 Name plate | 10 Valve plates slave 1 |
| 4 LED status display for inputs (green) | 11 Load voltage connection for valves |
| 5 Addr. selector button with LED (red) | 12 PWR LED (power, green), Fault LED (fault, red) |
| 6 Sensor connections (PNP) | |
| 7 Inscription fields for addresses | |

PWR LED	Fault LED	Meaning
on	out	AS-Interface voltage applied, no fault
out	out	No AS-Interface voltage on the bus
flashes	on	AS-Interface address not set (= 0)
on	flashes	Short circuit/overload at the inputs or address selector button actuated
on	on	Bus communication failed (watchdog expired)

3 Installation instructions

3.1 AS-Interface addresses

Before connecting to the AS-Interface bus: assign an unused address to each slave.



Note

- Valve terminal type CPV...-GE-ASI-8E8A-Z-M8-CE contains 2 AS-Interface slaves. The valve terminal behaves on the AS-Interface bus like two individual valve terminals each with 4 inputs and 4 outputs (valve solenoid coils).

Assignment of the inputs and outputs (valves):

- slave 1: inputs I0 ... I3; outputs O0 ... O3
- slave 2: inputs I4 ... I7; outputs O4 ... O7.
- Automatic addressing with the function “Automatic address assignment” of the master is not possible.
- It is not necessary to parametrize the AS-Interface slaves.

Address assignment

The assignment of the data bits to the inputs and outputs of both independent slaves is shown in the following diagram.

	Slave 1: IO code 7 _H				Slave 2: IO code 7 _H			
Data bits:	D0	D1	D2	D3	D0	D1	D2	D3
	I/O	I/O	I/O	I/O	I/O	I/O	I/O	I/O
Inputs:	I0	I1	I2	I3	I4	I5	I6	I7
Outputs:	O0	O1	O2	O3	O4	O5	O6	O7

I/O = Bidirectional (B)

The address mapping depends on the configuration of the master.

3.2 Assigning the AS-Interface addresses



Note

Addressing of valve terminal type CPV...-GE-ASI-8E8A-Z-M8-CE is only permitted with addressing devices acc. to specification 2.1 or higher.

Other addressing devices do not allow unique access to the slaves, among other things, and may overwrite the ID1 codes.

Recommendation:

For addressing use addressing device type ASI-PRG-ADR with adapter cable type KASI-ADR from Festo.

Factory setting: slave 1: address #1, A-slave
 slave 2: address #1, B-slave

The addressing device scans the existing slaves in the AS-Interface network.

- Assign the desired addresses to the two slaves one after the other.

Operation with AS-Interface masters < specification 3.0

Operation with AS-Interface masters less than specification 3.0 is fundamentally **not** possible.

Address selector button

If by mistake, the same address is assigned to both slaves, unique access to the slaves is no longer possible.

In this case you can use the address selector button to decouple slave 1 from the AS-Interface bus. Press on the button to unlock it and decouple slave 1. After this is done, only slave 2 is visible, and the address of slave 2 can be changed. If the AS-Interface bus voltage is connected, this status will be indicated by the address selector LED which will light up.



Note

The red address selector LED must not light up when the valve terminal is operating.

If the address selector button has been unlocked:

Lock the address selector button by pressing it again before the valve terminal is connected to the AS-Interface bus.

3.3 Address assignment of the valves

When addressed, the valve terminal type CPV...-GE-ASI-8E8A-Z-M8-CE behaves like two individual slaves each with 4 inputs and 4 outputs (see section 3.1).

Both valve terminal halves can be fitted with equipment as follows:

Equipment fitted in valve positions 1 to 4 or 5 to 8

2 double-solenoid valves	4 single-solenoid valves	1 double-solenoid valve, 2 single-solenoid valves	

DIP switch setting (see section 3.7)

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- 0 ... 3 addr. of the solenoid coils for the AS-Interface addr. n/m
 4 addresses or LEDs of solenoid coils 14
 5 addresses or LEDs of solenoid coils 12
 6 valve plates with 2 valve solenoid coils, such as 2 single-solenoid valves, 5/2-way double-solenoid valve or 5/3-way valve (e.g. code J, N, C, H, G, D, I, E) *)
 7 blanking plate or separator plate (e.g. code L, S, T)
 8 valve plates with 1 valve solenoid coil (e.g. code M, F, A) *)

*) or blanking plate or separator plate

3.4 Connecting sensors (PNP inputs)

Use cable type NEBU-... or KM8-M8-GSGD-... and plug with union nut and M8x1 thread for connecting sensors.

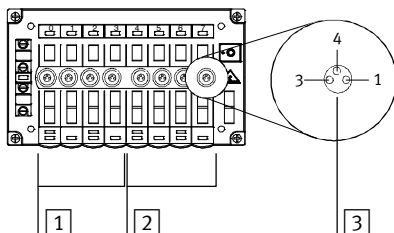
Fasten the plugs/sockets with the aid of the union nut in order to prevent unintentional loosening, e.g. due to shock. Seal unused sensor connections with the protective caps type ISK-M8. Only in this way can you comply with protection class IP65.



Note

- The inputs have been designed in accordance with IEC 1131-2 type 02.
- The inputs are short-circuit proof. In the event of a short circuit the slave will be switched off. The AS-Interface master then regards this slave as missing. The slave reports back as functioning once the short circuit has been eliminated.

- 1 Inputs of the first slave
- 2 Inputs of the second slave
- 3 Pin allocation:
1: US+
3: US-
4: Input Ix



3.5 Connect the AS-Interface bus and the load voltage



Note

The sensor supply derived from the AS-Interface-power supply is protected against short circuits and overload. It must **not** be connected to other voltages (for example common ground).

The power supply for the valves (outputs) is provided by the additional supply: The valves must be supplied separately with 24 V via the load voltage connection. The AS-interface has an integrated watchdog function which resets the outputs if the bus communication fails.



Warning

- Use only PELV (protective extra-low voltage) circuits as per EN 60204-1 for the electric power supply.
- Also observe the general requirements for PELV power circuits as per EN 60204-1.
- Only use power sources which guarantee reliable electrical isolation of the operating voltage as per EN 60204-1.

By the use of PELV power units, protection against electric shock (protection against direct and indirect contact) is guaranteed in accordance with EN 60204-1.

Please note with branch lines:

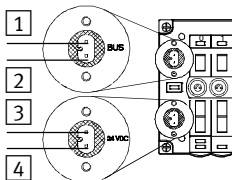
- the maximum total length of the AS-Interface bus: 100 m (without repeater/extender).
- the cable length of the load voltage connection (depends on the current consumption of the valve terminal and fluctuations in load voltage).

Pin assignment “Bus” (yellow cable):

- 1 Pin 2: AS-Interface + (brown)
- 2 Pin 1: AS-Interface - (light blue)

Pin assignment “24 V DC” (black cable):

- 3 Pin 2: +24 V (brown)
- 4 Pin 1: 0 V (blue)

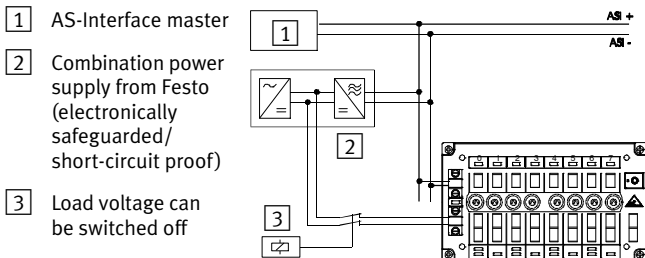


For connecting the valve terminal use the Festo cable sockets type ASI-SD-FK... You will then comply with protection class IP65. Proceed as follows:

1. Press the AS-Interface cable into the upper part of the cable socket.
2. Make sure that the cable is free of tension.
3. Replace and screw tight the cable socket (max. 0.3 Nm).

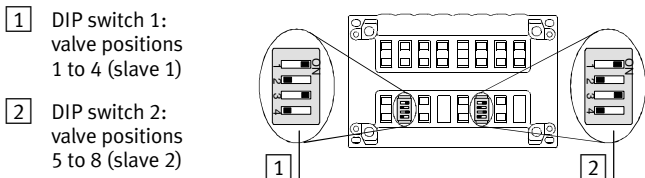
Seal open flat cable ends with the Festo cable cap type ASI-KK-FK or the cable sleeve type ASI-KT-FK. In this way you will avoid leakage currents and comply with protection class IP65.

3.6 Connection example – valve terminal type 10



3.7 Converting the valve terminal

The CPV valve terminal can be fitted with single-solenoid valves and/or double-solenoid valves. For conversion, the new valve terminal configuration must be set on DIP switches on the bottom of the electrical sub-base.



Instructions on removing the electric sub-base can be found in the pneumatics manual. The permitted valve combinations as well as the relevant DIP switch settings can be found in the table in section 3.3.

4 Technical specifications

Type CPV...-GE-ASI-8E8A-Z-M8-CE	
General technical specifications	see pneumatics manual P.BE-CPV-...
Protection class as per EN 60529	IP65 (all unused sensor connections sealed with protective caps type ISK-M8)
Electromagnetic compatibility – EMC emitted interference ¹⁾ – EMC resistance to interference	See declaration of conformity ➔ www.festo.com
Protection against electric shock	Through use of PELV current circuits (protection against direct and indirect contact as per EN 60204-1)
AS-Interface specifications – ID code – ID1 code ²⁾ – ID2 code – IO code – Profile	ID = A _H ID1 (A-slave) = 7 _H ID1 (B-slave) = F _H ID2 = 7 _H IO = 7 _H S-7.A.7
¹⁾ The device is intended for use in industrial environments. Measures may need to be implemented in residential areas for interference suppression. ²⁾ Factory setting: slave 1 = address #1, A-slave (ID1 = 7_H) slave 2 = address #1, B-slave (ID1 = F_H)	

Type CPV...-GE-ASI-8E8A-Z-M8-CE

AS-Interface bus connection – Voltage range (protected against incorrect polarity) – Residual ripple – Max. current consumption – all inputs in 0-status – all inputs in 1-status, max. current consumption by sensors	DC 26.5 ... 31.6 V ≤ 20 mVpp <u>CPV10-... CPV14-...</u> 40 mA 40 mA 200 mA 200 mA
Load voltage connection – Rated value (protected against incorrect polarity) – Residual ripple – Current consumption for 8 valves (at 24 V) – switching on ¹⁾ – after current reduction (stationary)	DC 21.6 ... 26.4 V 4 Vpp <u>CPV10-... CPV14-...</u> 240 mA 460 mA 95 mA 120 mA
Valves (see pneumatics manual)	watchdog function active after approx. 40 ... 100 ms (see section 3.5)
Digital inputs – Design – Max. current consumption – per input – sum currents (all inputs connected) – Logic level – Sensor supply (US+/US-) – Response delay	8 digital inputs based on IEC 1131-2 type 2 24 V DC, PNP, status display (LED) 200 mA 200 mA ON: 11 ... 30 V OFF: -30 ... 5 V ≥ AS-Interface Bus voltage - 2.5 V typically 3 ms (at 24 V)
¹⁾ for max. 30 ms, all solenoid coils switched simultaneously	