

Compact performance

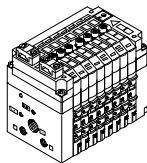


FESTO

Brief description

CPV valve terminal
with AS-Interface
type
CPV10/14-ASI-8
E6A

– English



8101710
2018-11b
[8101712]

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-8E6A-Z has been designed exclusively for controlling pneumatic actuators and is intended for use in bus systems in accordance with the AS-Interface specification 2.1. If additional commercially-available components such as sensors and actuators are connected, the specified limits for pressures, temperatures, electrical data, torques, etc. must not be exceeded.

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

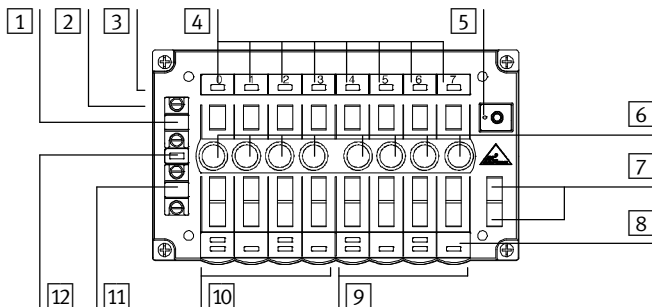
Information on the pneumatic components of the valve terminal can be found in the Pneumatics manual P.BE-CPV-... .



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 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/ground connection | 9 Valve plates slave 2 |
| 3 Type plate | 10 Valve plates slave 1 |
| 4 LED status display for inputs (green) | 11 Load voltage connection for valves |
| 5 Address 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	off	AS-Interface voltage applied, no fault
off	off	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 switch 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.



Please note

- The valve terminal type CPV...GE-ASI-8E8A-Z contains 2 AS-Interface slaves. The valve terminal behaves on the AS-Interface bus like two individual valve terminals each with 4 inputs and 3 outputs (valve solenoid coils).

Assignment of the inputs and outputs (valves):

- Slave 1: Inputs I0...I3; outputs O0...O2
- Slave 2: Inputs I4...I7; outputs O4...O6.
- Automatic addressing with the function “Automatic address assignment” of the master is not possible.
- It is not necessary to parametrize the AS-Interface slave.

Address assignment

The assignment of the data bits to the inputs and outputs of the slave shows the following figure:

	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	–	O4	O5	O6	–

E/A = **bi** directional (B)

The address mapping depends on the configuration of the master.

3.2 Assigning the AS-Interface addresses



Please note

Addressing valve terminal type CPV..-GE-ASI-8E6A-Z is only permitted with addressers as per specification 2.1. Other addressers do not permit clear access to the slaves and in some cases overwrite the ID1 codes.

Recommendation: Use the Festo addresser type ASI-PRG-ADR with adapter cable type KASI-ADR.

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 < Spec. 2.1

Operation with AS-Interface masters < Spec. 2.1 is possible but both slaves must be programmed as A slave.

Recommendation: For operation with AS-Interface masters < Spec. 2.1 use valve terminal type CPV..-GE-ASI-8E8A-Z instead of CPV..-GE-ASI-8E6A-Z.

Address selector button

If the same address is assigned to both slaves, no clear access to the slaves is possible.

In this case slave 1 can be disconnected from the AS-Interface bus with the aid the address selector button. You can unlock the pushbutton by pressing it. Slave 1 will then be disconnected from the AS-Interface bus. If the AS-Interface bus voltage is applied, the address selector LED will light up to indicate that slave 1 has been disconnected from the AS-Interface.



Please note

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

If the address selector button has been unlocked:
Before connecting the valve terminal to the AS-Interface bus, therefore always lock the address selector button by pressing it again.

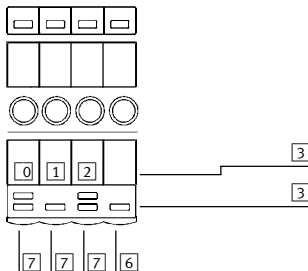
3.3 Address assignment of the valves

During addressing, valve terminal CPV..-GE-ASI-8E6A-... behaves like two individual slaves each with 4 inputs and 3 outputs (see sections 3.1 and 2).

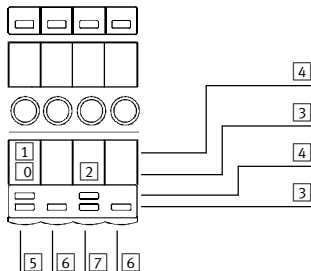
The following fittings are possible for the two valve terminal halves:

Fitting valve locations 1 to 4 or 5 to 8

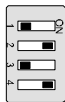
3 single-solenoid valves



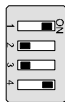
1 double-solenoid valve,
1 single-solenoid valve



Permitted DIP switch setting (see 3.7)



1: OFF
2: ON
3: OFF
4: ON



1: ON
2: OFF
3: OFF
4: ON

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

*) or blanking or separator plate

3.4 Connecting sensors (PNP inputs)

For connecting sensors use cable type KM8-M8-GSGD-... and plugs with union nut, M8x1 thread.

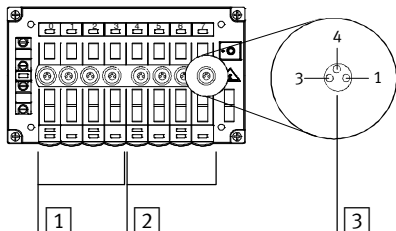
Fasten the plugs with the aid of the union nut in order to prevent unintentional loosening, e.g. due to shock. Seal unused sensor connections with the protective caps type ISK-M8. Only in this way can you comply with protection class IP65.



Please note

The inputs are resistant to short circuits. If a short circuit occurs, the slave will be switched off. The AS-Interface master regards this slave as missing. When the short circuit is eliminated, the slave registers immediately as capable of functioning.

- 1 Inputs of the first slave
- 2 Inputs of the second slave
- 3 Pin assignment:
1: 24 V
3: 0 V
4: Input Ix



3.5 Connecting the AS-interface bus and the load voltage



Please note

The sensor power supply for the inputs is provided via the AS-Interface bus.

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 there is a bus communication failure.



Warning

Use power supplies which guarantee reliable electrical isolation of the operating voltage as per IEC/DIN EN 60204-1. Consider also the general requirements for PELV circuits in accordance with IEC/DIN EN 60204-1.

By the use of PELV circuits, protection against electric shock (protection against direct and indirect contact) is guaranteed in accordance with IEC/EN 60204-1 (Electrical equipment for machines, General requirements).

Please note with branch lines:

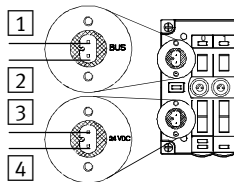
- the total maximum length of the AS-Interface bus: 100 m (without repeater/extender).
- the cable length of the load voltage connection (depends on the current consumption of the valve terminal and the fluctuations in the load voltage).

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)



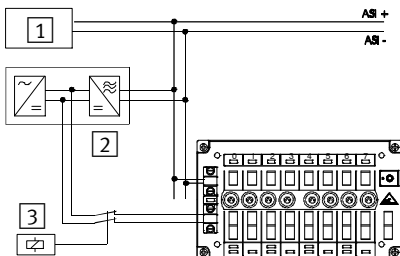
For connecting the valve terminal use the Festo cable sockets type ASI-SD-FK... . You will then comply with protection class IP65. Proceed as follows:

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. Place the cable socket in position and screw it tight (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

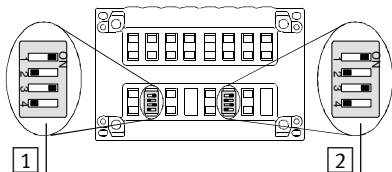
- 1 AS-Interface master
- 2 Combination power supply from Festo (electronically safeguarded/short-circuit proof)
- 3 Load voltage can be switched off



3.7 Converting the valve terminal

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

- 1 DIP switch 1:
Valve locations
1 to 4 (slave 1)
- 2 DIP switch 2:
Valve locations
5 to 8 (slave 2)



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-8E6A-Z M8	
General technical specifications	See Pneumatics manual P.BE-CPV-...
Protection class according to EN 60529 plug connector inserted or provided with protective cap	IP65
Relative humidity	95 %, non-condensing
Electromagnetic compatibility – EMC interference emission – EMC resistance to interference	See declaration of conformity ➔ www.festo.com
AS-Interface data – ID code – ID1 code ¹⁾ – ID2 code – IO code – Profile	ID = A _H ID1 (A slave) = 7 _H ID1 (B slave) = F _H ID2 = E _H IO = 7 _H S-7.A.E
¹⁾ Factory setting: Slave 1 = address #1, A slave (ID1 = 7 _H) Slave 2 = address #1, B slave (ID1 = F _H)	

Type CPV...-GE-ASI-8E6A-Z M8

<p>AS-Interface bus connection</p> <ul style="list-style-type: none"> - Voltage range (protected against incorrect polarity) - Residual ripple - Max. current consumption <ul style="list-style-type: none"> - all inputs 0-status - all inputs 1-status, no current consumption by sensors (e.g. switches) - all inputs in 1-status, max. current consumption by sensors ¹⁾ 	<p>26.5 ... 31.6 V DC</p> <p>≤ 20 mVpp</p> <p><u>CPV10-... CPV14-...</u></p> <p>40 mA 40 mA</p> <p>96 mA 96 mA</p> <p>278 mA 278 mA</p>
<p>Load voltage connection</p> <ul style="list-style-type: none"> - Rated value (protected against incorrect polarity) - Residual ripple - Current consumption for 8 valves <ul style="list-style-type: none"> - when switched on (26.4 V) ²⁾ - when switched on (20.4 V) ²⁾ - after current reduction (stationary; 26.4 V) - after current reduction (stationary; 20.4 V) 	<p>21.6 ... 26.4 V DC</p> <p>4 Vpp</p> <p><u>CPV10-... CPV14-...</u></p> <p>150 mA 233 mA</p> <p>120 mA 158 mA</p> <p>53 mA 75 mA</p> <p>68 mA 90 mA</p>
<p>Valves (see Pneumatics manual)</p>	<p>Watchdog function active after approx. 40 ... 100 ms (see 3.5)</p>
<p>Digital inputs</p> <ul style="list-style-type: none"> - Design - Logic level - Reference potential - Response delay 	<p>8 digital inputs based on IEC 1131-2 type 2</p> <p>24 V DC, PNP, Status display (LED)</p> <p>ON: 11 ... 30 V</p> <p>OFF: -30 ... 5 V</p> <p>0 V</p> <p>typ. 3 ms (at 24 V)</p>
<p>¹⁾ e.g. per input 30 mA, incl. 7 mA for input circuit</p> <p>²⁾ for max. 30 ms all valve coils switched simultaneously</p>	