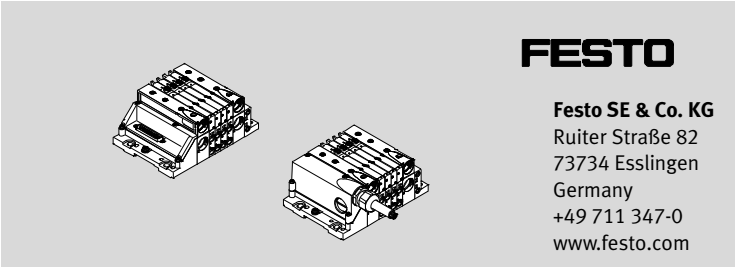


Valve terminal MPAL-VI,
End plate VMPAL-EPL-SD.../-FL.../-KL...



Brief description
(Original instructions)

8068174
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[8068176]

MPAL-VI valve terminal, end plate with multi-pin plug connection English

1 About this document

This document describes the multi-pin plug connection of the valve terminal. Additional aspects of use are described in other documents and must be observed
→ 1.1 Applicable documents.

1.1 Applicable documents

Document	Table of contents
Description MPAL-VI	Detailed description of installation, commissioning, maintenance and conversion of the valve terminal
Assembly instructions MPA	Wall mounting and H-rail mounting of the valve terminal
Additional assembly instructions	Mounting of valve terminal components

Fig. 1

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

2 Safety

2.1 General safety information

- Before work on the product, make sure that the following and been switched off and secured against being switched on again:
 - Compressed air supply
 - Power supply
- Observe the handling specifications for electrostatically sensitive devices.
- Commission a valve terminal only if it has been completely mounted and connected.
- For the electrical power supply, use only PELV circuits in accordance with IEC 60204-1/EN 60204-1 (Protective extra-low voltage, PELV):
 - Observe the general requirements IEC 60204-1/EN 60204-1 of the PELV power circuits.
 - Use only voltage sources that ensure a reliable electric separation from the mains network in accordance with IEC 60204-1/EN 60204-1.

2.2 Use for intended purpose

The valve terminal is intended for installation in machines and automation technology systems and must be used exclusively as follows:

- In perfect technical condition
- In its original state without unauthorised modifications; the conversions or modifications described in the documentation are permitted
- Within the limits of the product defined through the technical data
- Only in combination with approved components (e.g. valves, drive/displacement encoder combinations)
- In an industrial environment

Use for intended purpose is described completely in the documentation. Every other use is considered not intended.

2.3 Training of specialized personnel

The product may be commissioned only by an electrotechnically qualified person, who is familiar with the following topics:

- installation and operation of control and automation systems
- applicable regulations for operating safety-engineering systems
- applicable regulations for accident prevention and occupational safety
- documentation for the product

3 Further information

- Accessories → www.festo.com/catalogue
- Spare parts → www.festo.com/spareparts

4 Service

Contact the regional Festo contact if you have technical questions
→ www.festo.com.

5 Multi-pin plug connection

5.1 Pin allocation of multi-pin plug connection

Dependent on the plug type of the multi-pin plug connection, within the valve terminal a maximum of 32 solenoid coils can be controlled. Each solenoid coil occupies a pin of the multi-pin plug connection. Numbering of the pins on the valve terminal facing the plug connector → Fig. 2

Connecting cables and flat cable plugs from Festo
→ www.festo.com/catalogue.

Plug connector	Activation		Conductor/supply cable ¹⁾	
	Pin	Address	Pin	Voltage
Sub-D 9 pins				
	1 2 : 7 8	0 1 : 6 7	9	0 V/24 V
Sub-D 25 pins				
	1 2 : 23 24	0 1 : 22 23	25	0 V/24 V
Sub-D 44 pins ³⁾				
	1 2 : 31 32 ²⁾	0 2 : 30 31	41 ... 44	0 V/24 V
Flat cable ³⁾				
	1 2 : 31 32	0 1 : 30 31	33 ... 40	0 V/24 V
Terminal strip ⁴⁾				
	1 2 : 31 32	0 1 : 30 31	33	0 V/24 V

- 1) Mixed operation is not permitted!
 - 2) Pin 33 ... 40 unused
 - 3) Use all 0 V/24 V supply cables.
 - 4) Group all cables into a cable harness to guarantee EMC conformity.
- Fig. 2

5.2 Power supply

Power supply to the valves is provided through the multi-pin plug connection.

5.3 Activation

Control of the valves is provided solely through the multi-pin plug connection.

- Use a uniform method of control within a multi-pin plug. Preferably, all control signals should be positive switching (shared supply cable at 0 V); otherwise all control signals are negative-switching (shared supply cable at 24 V). Control in mixed operation is not permissible!
- If flat cables are used:
Use plug connector in accordance with IEC 60603-13 with long interlock. Connect all 0 V-/24 V supply cables. If the technical implementation does not permit use of all 0 V/24 V supply cables, contact a Festo technical consultant.
- If terminal strips are used:
Install all lines/supply cables together, for example as a cable harness or in a cable channel, to prevent malfunctions. Mixed operation is not permissible!

Pin allocation and wire colours of the connecting cables VMPAL-KM....-IP67-...
→ www.festo.com/sp

6 Terminal strip

6.1 Specification of the cables

Specification of the cables	
Conductor cross-section	0.08 ... 0.5 mm² or AWG 28 ... 20
Stripping	5 ... 6 mm
Permitted copper conductors	Single wire, multi-wire, fine wire, also with tin-plated single conductors
	Fine wire, strands compressed
	Fine wire with wire end sleeves (crimped on gas-tight) ¹⁾
	Fine wire with pin terminal (crimped on gas-tight) ¹⁾

1) If necessary, use the next smaller conductor cross section.

Fig. 3

6.2 Mounting/dismounting of the cables

→ **Note**

- To ensure a reliable contact, only connect one conductor per terminal.
- Only insert cables into the terminal opening.
Pushing a screwdriver into the opening may damage the terminal.

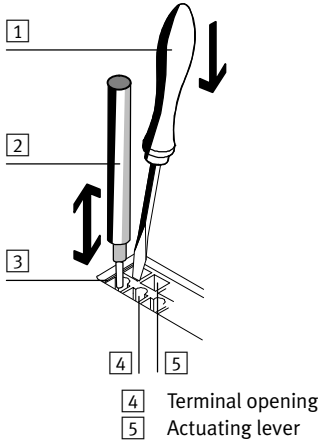


Fig. 4

1. Press the screwdriver **1** against the white actuating lever **5**.
→ The terminal of the terminal strip **3** opens.
2. Insert or pull out the ends of the cable **2** through the opening **4**.
3. Put down the screwdriver **1**.
→ Actuating lever **5** is slack.
→ The terminal of the terminal strip is closed and the cable clamped.

7 Earth valve terminal

→ **Note**

Observe the following points to avoid malfunctions from electromagnetic interference:

- Use a large-cross-section earth conductor that is as short as possible.
The earth conductor should ideally be a braided conductor, alternatively a cable with a cross section of at least 2.5 mm², preferably 4 mm², and a maximum length of 20 cm. A different cable may be required depending on the installation situation.
- Connect the earth terminal with low resistance and low impedance to the earth potential.

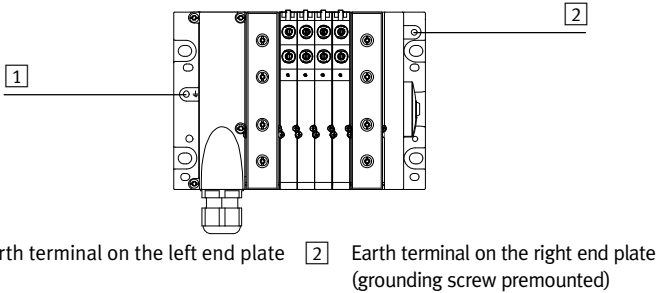


Fig. 5

- Connect one of the earth terminals (→ Fig. 5) to the earth potential.

8 Address assignment of the valves

Addresses are allocated in ascending order without gaps, from left to right. Depending on the integrated electrical interlinking module, a valve position occupies the following number of addresses:

Electrical interlinking module		Number of valve positions	Number of occupied addresses per valve position
Type	Housing colour		
Individual electrical interlinking module			
VMPAL-EVAP-...-1	Grey	1	1
VMPAL-EVAP-...-2	Black	1	2
4-fold electrical interlinking module			
VMPAL-EVAP-...-1-4	Grey	4	1
VMPAL-EVAP-...-2-4	Black	4	2
Electrical interlinking module of the power supply module			
VMPAL-EVAP-20-SP	Black	0	0 (signals are passed through)

Fig. 6

- If one valve occupies both addresses of a valve position:
- Solenoid coil 14 occupies the less significant address.
 - Solenoid coil 12 occupies the higher-value address.

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Address assignment does not depend on it is equipped with blanking plates or valve plates.
Additional information → Description MPAL-VI

9 Technical data

General information	
Dimensions	→ Description MPAL-VI
Ambient temperature (in operation)	–5 ... +50 °C
Storage temperature	–20 ... +40 °C
Degree of protection in accordance with EN 60529 for completely mounted valve terminal	– IP40 (open cover) – IP67 (closed cover)
Protection against electric shock (protection against direct and indirect contact in accordance with IEC/EN 60204-1)	Through the use of PELV circuits (Protected Extra-Low Voltage)
CE marking (see declaration of conformity) → www.festo.com/sp	In accordance with EU EMC Directive ^{1) 2)}
Materials	→ Description MPAL-VI

- 1) The product is intended for use in industrial environments. If the product is used in a low-voltage network that also supplies residential areas, actions against interference may be required.
- 2) The maximum permitted signal cable length for the valve terminal with multi-pin plug connection is 30 m.

Fig. 7

Pneumatics	
Number of valve positions	Max. 32, dependent on the variant of the multi-pin plug connection → Chap. 5
Medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4] lubricated or unlubricated (oil: VG32)
Notes on the operating/pilot medium	Lubricated operation possible (in which case lubricated operation will always be required)
Operating pressure	
With int. pilot air	3 ... 8 bar
With ext. pilot air	Dependent on the valve sub-base types used → Description MPAL-VI

Fig. 8

Electrical data			
Power supply			
Nominal voltage	24 V DC (±25 %)		
Current consumption (per coil, with LED) at 24 V	MPA1	MPA14	MPA20
	Nominal pick-up current	50 mA	50 mA
	Pick-up duration	Approx. 20 ms	
	Nominal current with current reduction	10 mA	10 mA
			23 mA

Fig. 9