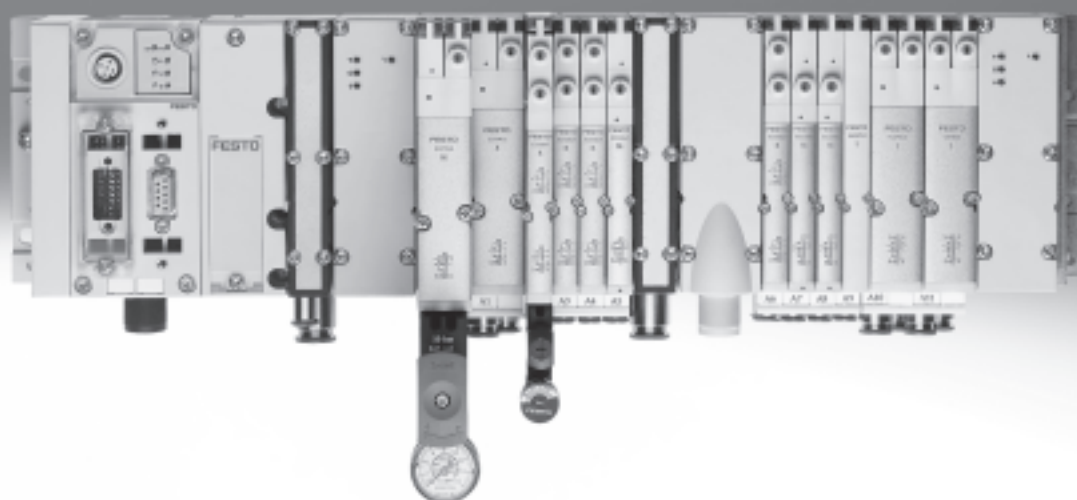


## Valve terminals MPA-S

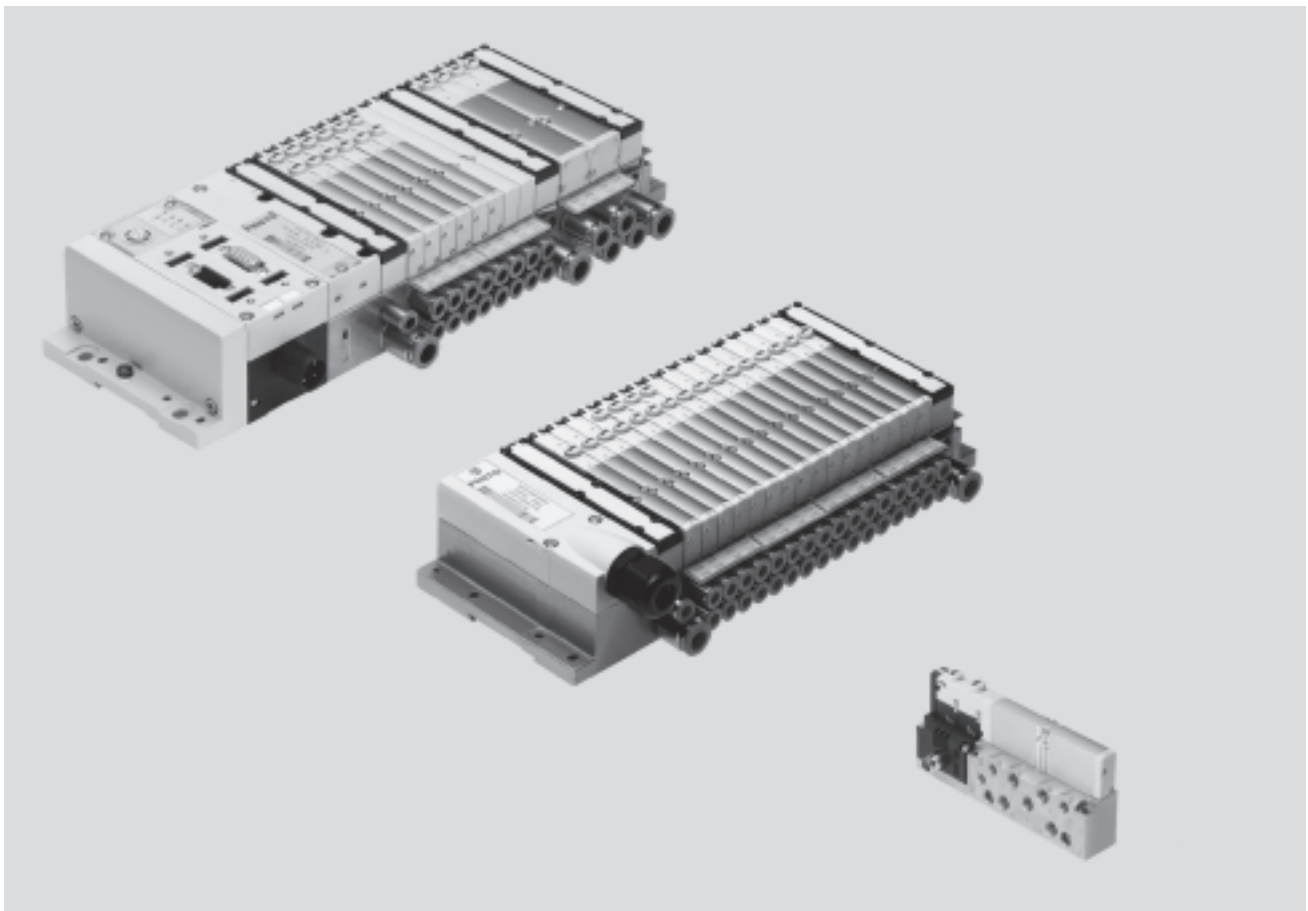
**FESTO**



# Valve terminals MPA-S

Key features

**FESTO**



## Innovative

- Slim high-performance valves in sturdy metal housing
- MPA1 flow rates up to 360 l/min
- MPA2 flow rates up to 700 l/min
- From the individual valve to the valve terminal with multi-pin plug, AS-interface, CPI and fieldbus connections and control block
- Dream team: fieldbus valve terminal suitable for electrical peripherals CPX. This means:
  - Forward-looking internal communication system for actuation of the valves and CPX modules
  - Diagnostics down to the individual valve
  - Valves can be actuated with or without (standard) isolated electrical circuits

## Versatile

- Modular system offering a range of configuration options
- Expandable up to 128 solenoid coils
- Conversion and expansion possible at a later date
- Further manifold blocks can be assembled using just three screws and sturdy separating seals on metal separator plates
- Integration of innovative function modules possible
- Manual regulators, rotatable pressure gauges
- Proportional pressure regulators
- Additional air supply via additional pressure zones using supply plates
- Wide range of pressures  
– 0.9 ... 10 bar
- Wide range of valve functions

## Reliable

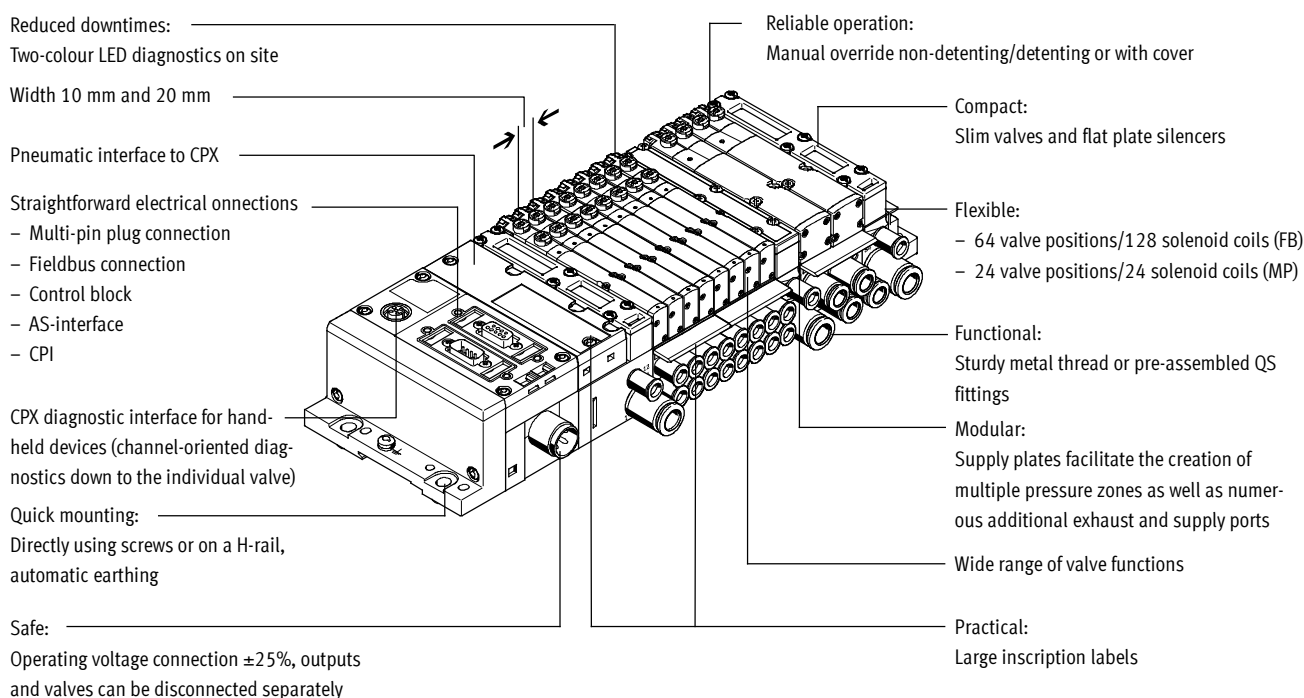
- Sturdy and durable metal components
  - Valves
  - Manifold blocks
  - Seals
- Fast troubleshooting thanks to LEDs on the valves and diagnostics via fieldbus
- Extensive operating voltage range  $\pm 25\%$
- Ease of servicing through replaceable valves and electronics modules
- Manual override either non-detenting, detenting or secured against unauthorised activation (covered)
- Durable, thanks to tried and tested piston spool valves
- Large and durable labelling system, suitable for barcodes

## Easy to mount

- Ready-to-install unit, already assembled and tested
- Lower selection, ordering, installation and commissioning costs
- Secure mounting on wall or H-rail mounting

# Valve terminals MPA-S

## Key features



## Equipment options

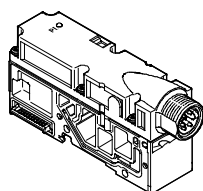
### Valve functions

- |  |  |  |   |
|--|--|--|---|
| <ul style="list-style-type: none"> <li>• 5/2-way valve, single solenoid</li> <li>• 5/2-way valve, double solenoid</li> <li>• 2x 3/2-way valve, normally open</li> <li>• 2x 3/2-way valve, normally closed</li> <li>• 2x 3/2-way valve, 1x normally open, 1x normally closed</li> </ul> | <ul style="list-style-type: none"> <li>• 5/3-way valve, mid-position pressurised</li> <li>• 5/3-way valve, mid-position closed</li> <li>• 5/3-way valve, mid-position exhausted</li> <li>• 2x 2/2-way valve, 1x normally closed, 1x normally closed, reversible</li> </ul> | <ul style="list-style-type: none"> <li>• 2x 2/2-way valve, normally closed</li> <li>• 1x 3/2-way valve, normally closed, external compressed air supply</li> <li>• 1x 3/2-way valve, normally open, external compressed air supply</li> <li>• Manual pressure regulators</li> <li>• Proportional pressure regulators</li> <li>• Pressure sensor</li> </ul> | <p>All valves have the same compact dimensions with an overall length of 107 mm and a width of 10.5 mm or 21 mm. A height of 55 mm makes them a perfect match for the electrical peripherals CPX.</p> |
|--|--|--|---|

### Special features

- |   |   |   |  |
|---|---|---|--|
| <b>Multi-pin terminal</b> <ul style="list-style-type: none"> <li>• Max. 24 valve positions/ max. 24 solenoid coils</li> <li>• Parallel modular valve linking via circuit boards</li> <li>• Electronics module with integrated holding current reduction</li> <li>• Any compressed air supply</li> <li>• Creation of pressure zones</li> </ul> | <b>Fieldbus terminal/control block</b> <ul style="list-style-type: none"> <li>• Max. 64 valve positions/ max. 128 solenoid coils</li> <li>• Internal CPX bus system for valve actuation</li> <li>• Module for electrical valve actuation, via separate voltage supply or without electrical isolation</li> <li>• Any compressed air supply</li> <li>• Creation of pressure zones</li> </ul> | <b>Individual valve</b> <ul style="list-style-type: none"> <li>• Electrical M8 connection, 4-pin with screw connection</li> <li>• Detachable electronics module with integrated holding current reduction</li> </ul> <b>AS-interface</b> <ul style="list-style-type: none"> <li>• 2 to 8 valves, freely configurable (max. 8 solenoid coils) with input feedback</li> </ul> | <b>CPI interface</b> <ul style="list-style-type: none"> <li>• Max. 32 valve positions/ max. 32 solenoid coils</li> </ul> <b>Combinable</b> <ul style="list-style-type: none"> <li>• MPA1 flow rates up to 360 l/min</li> <li>• MPA2 flow rates up to 700 l/min</li> <li>• MPA1 and MPA2 can be combined on one valve terminal</li> </ul> |
|---|---|---|--|

### Electrical supply plate



- Increases the maximum number of valve positions possible to 64, with max. 128 solenoid coils
- Creation of isolated, individually disconnectable electrical circuits (voltage zones)
- Greater economy thanks to the higher number of valves/solenoid coils per valve terminal
- Greater safety through individual disconnection of valve groups, for example for EMERGENCY-STOP functions



Note

The electrical supply plate is available with either an M18 or 7/8" connection.

# Valve terminals MPA-S

Key features

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## Valve terminal configurator

Online via: → [www.festo.com](http://www.festo.com)

Selecting an MPA valve terminal using the online catalogue is quick and easy thanks to the convenient valve terminal configurator provided. This makes it much easier to find the right product.

The valve terminals are fully assembled according to your order specifications and are individually tested. This reduces the assembly and installation time to a minimum.

The valve terminal MPA is ordered using the order code.

Ordering system for MPA

→ Internet: mpa

Ordering system for CPX

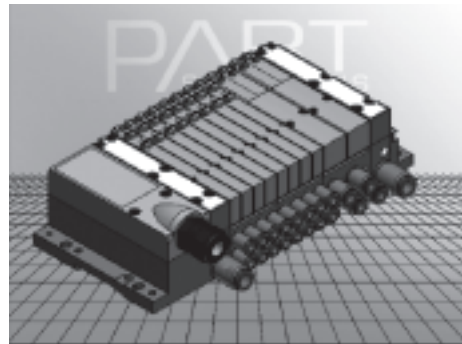
→ Internet: cpx

## 2D/3D CAD data

Online via: → [www.festo.com](http://www.festo.com)

You can request the CAD data for a valve terminal you have configured. To do so, perform the product search as described above. Go to the shopping basket and click on the CAD icon

(compass). On the next page you can generate a 3D preview or request another data format of your choice by e-mail.

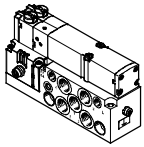


# Valve terminals MPA-S

Key features

**FESTO**

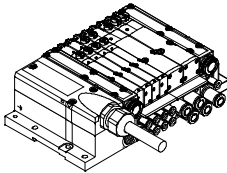
## Individual connection



Valves can also be used on individual sub-bases for actuators further away from the valve terminal.

The electrical connection is established using a standard 4-pin M8 plug (EN 60947-5-2).

## Multi-pin plug connection



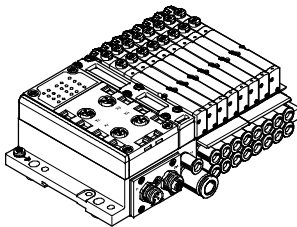
The signal flow from the controller to the valve terminal takes place via a pre-assembled or self-assembled multi-wire cable to the multi-pin plug connection, which substantially reduces installation time.

The valve terminal can be equipped with max. 24 solenoid coils. This corresponds to 4 to 24 MPA1 or 2 to 24 MPA2 valves, or a combination of both.

Versions

- Sub-D connection
- Pre-assembled multi-pin cable
- Multi-pin cable for self-assembly

## AS-interface connection



A special feature of the AS-interface is its ability to simultaneously transmit data and supply power via a two-wire cable. The encoded cable profile prevents connection with incorrect polarity. The valve terminal with AS-interface is available in the following versions:

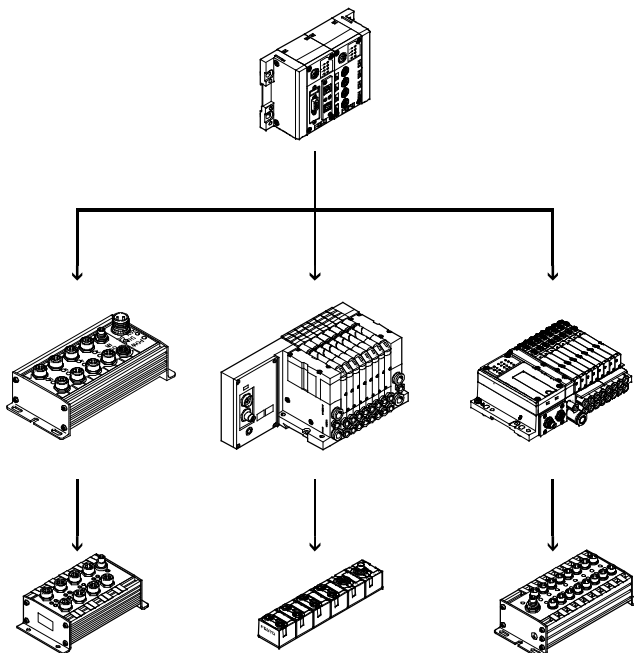
- With two to eight modular valve positions (max. 8 solenoid coils). This corresponds to 2 to 8 MPA1 or 2 to 8 MPA2 valves, or a combination of both.
- With all available valve functions.

The connection technology used for the inputs can be selected as with CPX: M8, M12, Harax, Sub-D, Cage Clamp® (terminals to IP20).

Further information

➔ Internet: as-interface

## CPI installation system



Valve terminal for CPI installation system:

Valve terminals with CP connection are intended for connection to higher-order fieldbus nodes or to control blocks. A fieldbus node or control block also enables the connection of decentralised input/output units. The following fieldbus protocols are supported:

- Festo fieldbus, ABB CS31, Moeller Suconet K
- INTERBUS
- Allen Bradley (1771 RIO)
- DeviceNet
- PROFIBUS DP
- PROFINET IO
- CC-Link
- Modbus/TCP
- Ethernet
- EtherCAT

Four strings with up to 32 inputs and outputs can be connected to a fieldbus node or control block. The connecting cables transmit the power supply for the input modules and the load voltage for the valves as well as control signals.

Further information

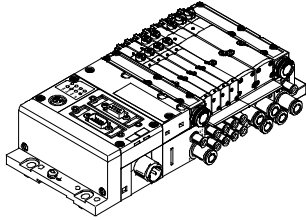
➔ Internet: ctec

# Valve terminals MPA-S

Key features

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## Fieldbus connection via the CPX system



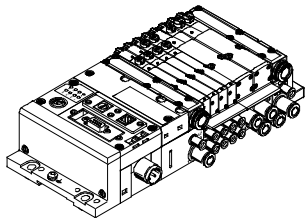
An integrated fieldbus node manages communication with a higher-order PLC. This enables a space-saving pneumatic and electronic solution.

Valve terminals with fieldbus interfaces can be configured with up to 16 manifold blocks. In conjunction with MPA1 and 8 solenoid coils per manifold block, up to 128 solenoid coils can thus be actuated. An MPA2 with 4 solenoid coils per manifold block can actuate 64 solenoid coils.

### Versions

- PROFIBUS DP
- PROFINET
- INTERBUS
- DeviceNet connection
- CANopen
- CC-Link
- EtherNet/IP
- Front End Controller Remote
- Front End Controller Remote I/O
- Modbus/TCP
- PROFINET IO
- EtherCAT
- CPX terminal
  - ➔ Internet: cpx

## Control block connection via the CPX system



Controllers integrated in the Festo valve terminals enable the construction of stand-alone control units to IP65, without control cabinets.

Using the slave operation mode, these valve terminals can be used for intelligent pre-processing and are therefore ideal modules for designing decentralised intelligence.

In the master operation mode, terminal groups can be designed with many options and functions which can autonomously control a medium-sized machine/system.

- CPX terminal
  - ➔ Internet: cpx



### Note

Note possible restrictions for the IP protection class

➔ ATEX conformity declaration

# Valve terminals MPA-S

Peripherals overview

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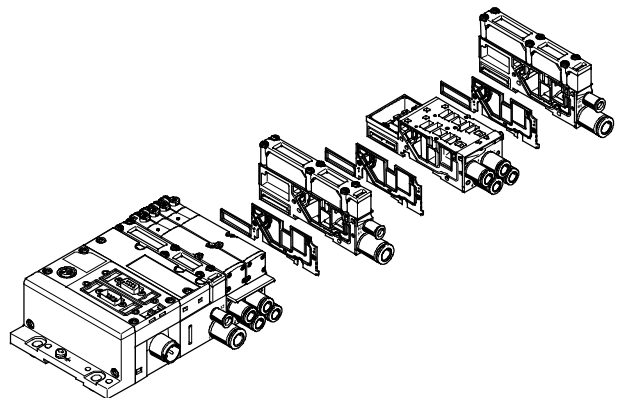
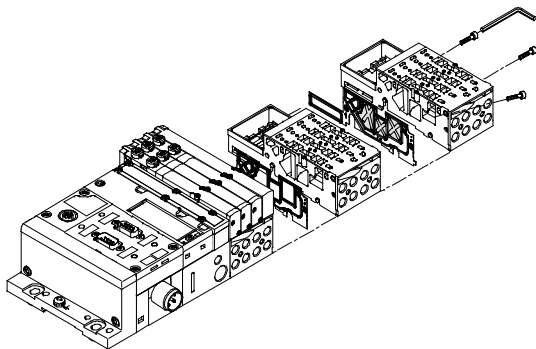
## Modular pneumatic components

The modular design of the MPA facilitates maximum flexibility right from the planning stage and offers maximum ease of service in operation.

The system consists of manifold blocks and valves. The manifold blocks are screwed together and thus form the support system for the valves.

They contain the connection ducts for supplying compressed air to and venting from the valve terminal as well as the working lines for the pneumatic drives for each valve.

Each manifold block is connected to the next using three screws. Individual terminal sections can be isolated and further manifold blocks inserted by loosening these screws. This ensures that the valve terminal can be rapidly and reliably extended.



## Modular electrical peripherals

The manner in which the valves are actuated differs according to whether you are using a multi-pin terminal, fieldbus terminal or individual valve. The MPA with CPX interface is based on the internal bus system of the CPX and uses this serial communication system for all solenoid coils and a range of electrical input and output functions.

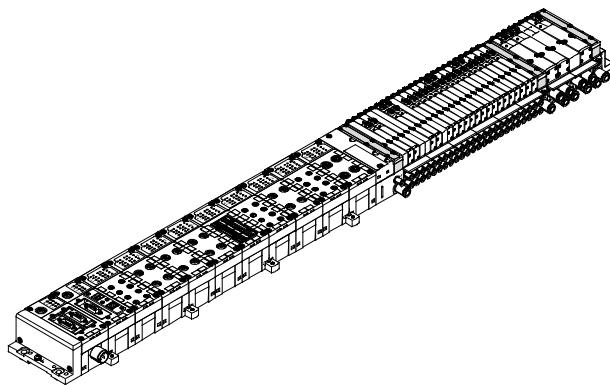
Serial linking facilitates the following:

- Transmission of switching information
- High valve density
- Compact design
- Position-based diagnostics

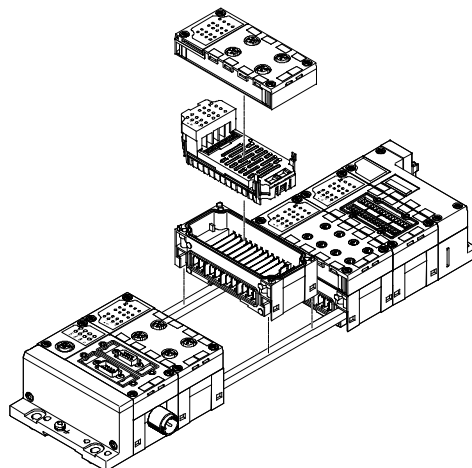
- Separate voltage supply for valves
  - Flexible conversion without address shifting
  - Transmission of status, parameter and diagnostic data
- ➔ Internet: cpx

- Option of CP interface
- CPX-FEC as stand-alone controller with access via Ethernet and web server

## MPA with electrical peripherals CPX



## Modularity with electrical peripherals CPX



# Valve terminals MPA-S

Peripherals overview

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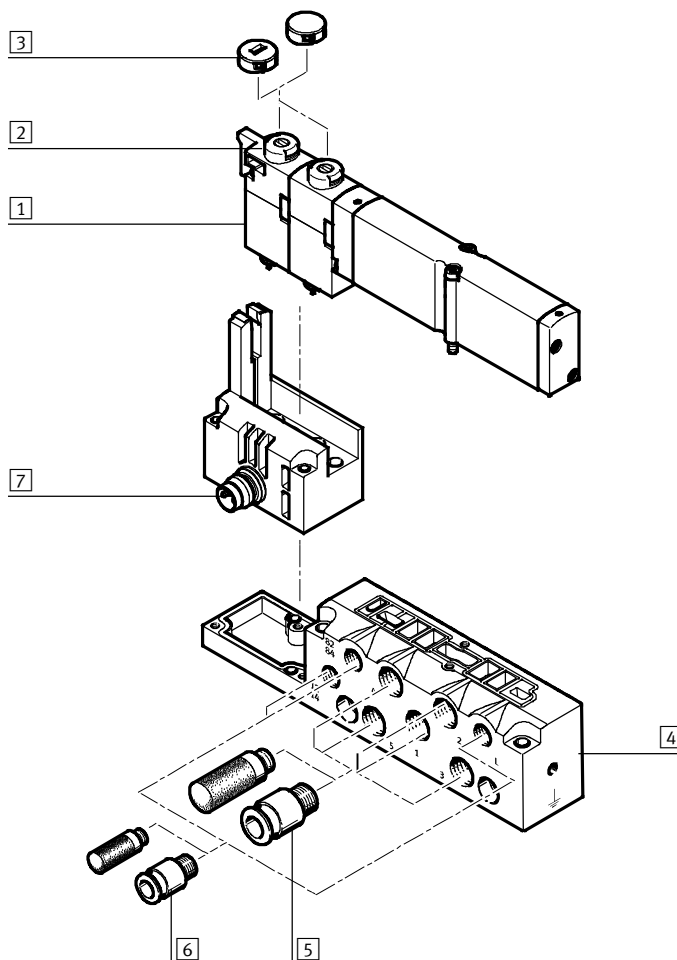
## Individual sub-base width 10 mm

Ordering:

- Using individual part numbers

Individual sub-bases can be equipped with any valve.

The electrical connection is established using a standard 4-pin M8 plug (EN 60947-5-2).



| Designation                             | Brief description  | → Page/Internet |
|---|--|-----------------|
| 1 Solenoid valve                        | MPA1   | 74              |
| 2 Manual override                       | Non-detenting/turning with detent, per solenoid coil                               | –               |
| 3 Cover cap for manual override         | Conversion from detenting/non-detenting to non-detenting or covered                | 80              |
| 4 Sub-base                              | For individual valve MPA1  | 77              |
| 5 Fittings and/or silencers             | M7 for working lines (2, 4) and work air supply/exhaust ports (1, 3, 5)            | 82              |
| 6 Fittings, silencers or blanking plugs | M5 for pilot air supply/pilot exhaust air (12/14, 82/84) and pressure compensation | 82              |
| 7 Electrical connection M8              | 4-pin  | –               |



# Valve terminals MPA-S

Peripherals overview

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## Individual sub-base width 20 mm

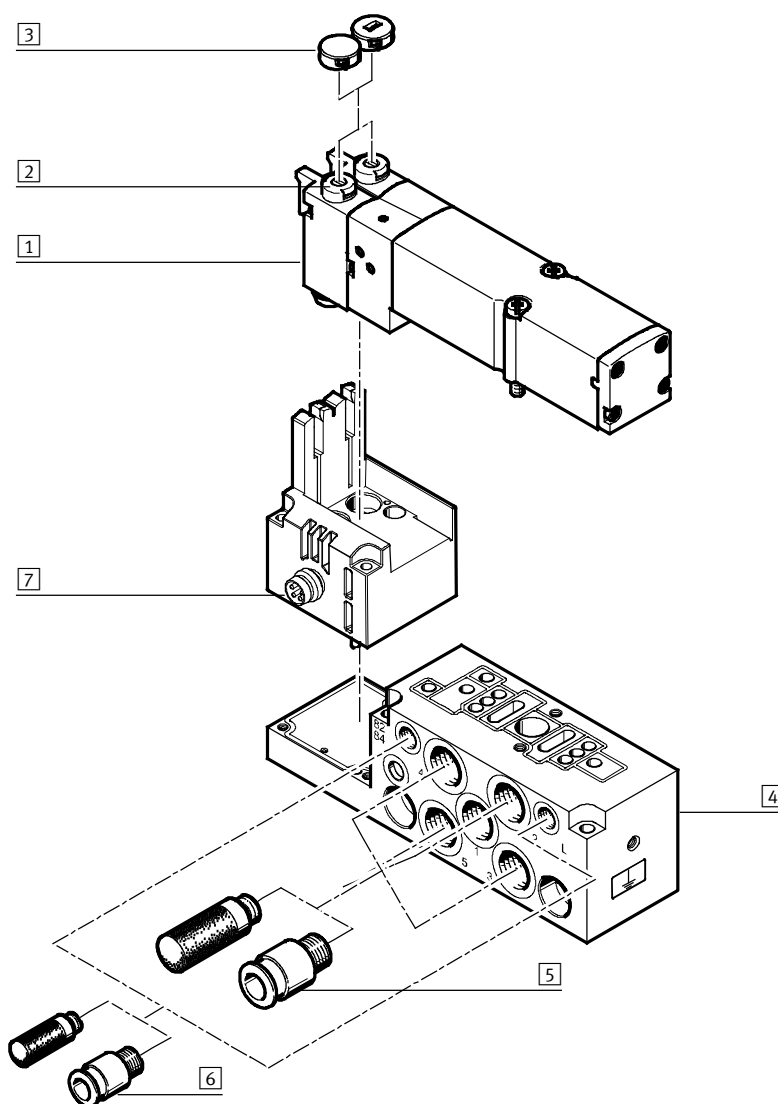
Ordering:

- Using individual part numbers

Individual sub-bases can be equipped with any valve.

The electrical connection is established using a standard 4-pin M8 plug (EN 60947-5-2).

An adjustable pressure regulator can be installed between the manifold block and the valve in order to control the force of the triggered actuator.



| Designation                                 | Brief description   | → Page/Internet |
|---|---|-----------------|
| 1 Solenoid valve                            | MPA2  | 74              |
| 2 Manual override                           | Non-detenting/turning with detent, per solenoid coil                            | –               |
| 3 Cover cap for manual override             | Conversion from detenting/non-detenting to non-detenting or covered             | 80              |
| 4 Sub-base                                  | For individual valve MPA2   | 77              |
| 5 Fittings and/or silencers G $\frac{1}{8}$ | For working lines (2, 4) and work air supply/exhaust ports (1, 3, 5)            | 82              |
| 6 Fittings, silencers or blanking plugs M5  | For pilot air supply/pilot exhaust air (12/14, 82/84) and pressure compensation | 82              |
| 7 Electrical connection M8                  | 4-pin   | –               |

# Valve terminals MPA-S

Peripherals overview

FESTO

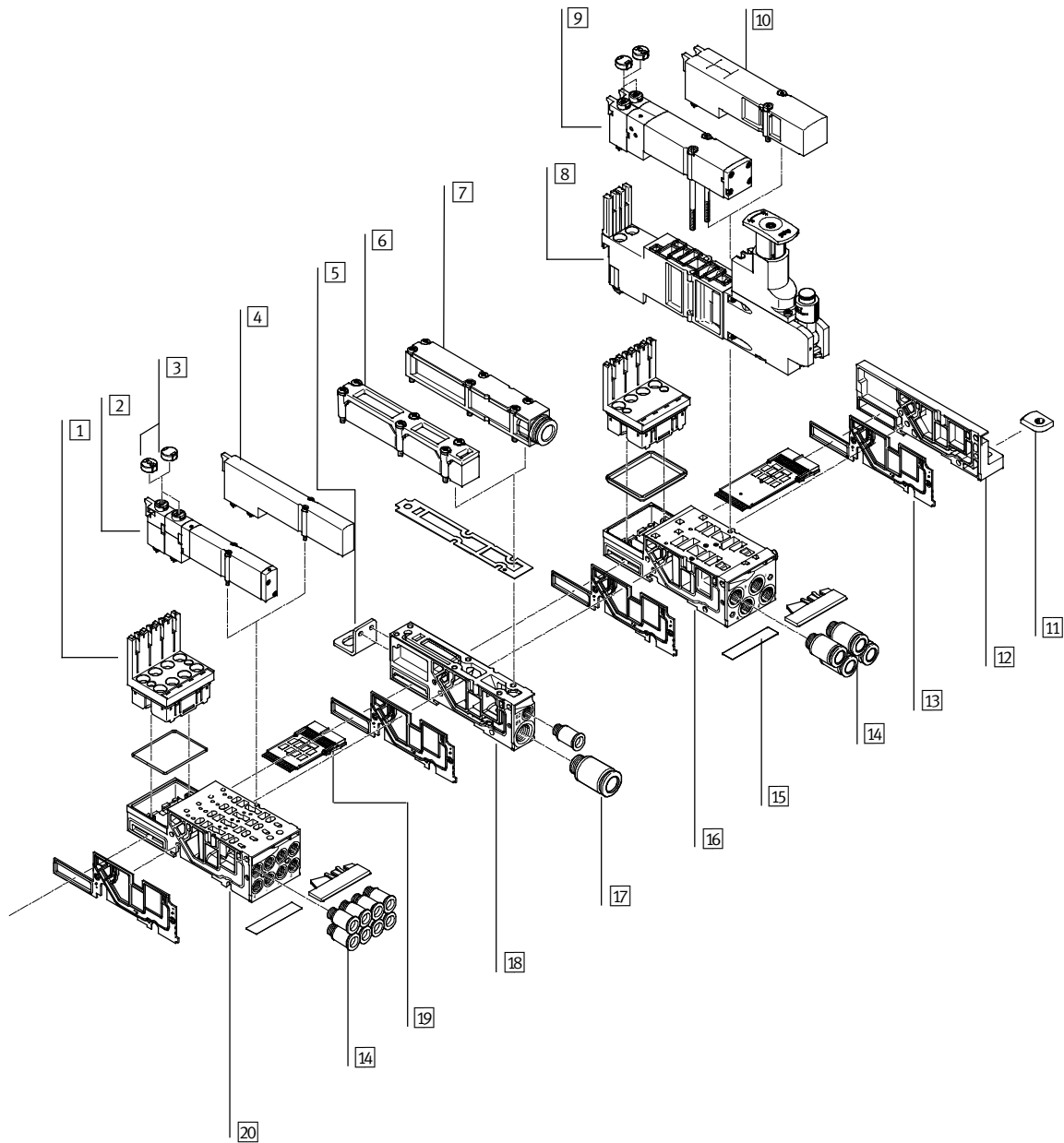
## Pneumatic components of the valve terminal – Multi-pin plug, AS-interface

The manifold blocks are either prepared for:

- 2 or 4 single solenoid valves
  - 2 or 4 double solenoid valves
- depending on the size.

- Double solenoid valve positions can be equipped with any valve or a blanking plate.

- Single solenoid valve positions can only be equipped with single solenoid valves.



## Valve terminals MPA-S

Peripherals overview

| Pneumatic components of the valve terminal – Multi-pin plug, AS-interface |   |                 |
|---|---|-----------------|
| Designation   | Brief description   | → Page/Internet |
| 1 Electronics module  | For connecting MPA1 or MPA2 valves                                  | 79              |
| 2 Solenoid valve  | Width 10 mm   | 74              |
| 3 Cover cap for manual override   | Conversion from detenting/non-detenting to non-detenting or covered | –               |
| 4 Blanking plate  | For unused valve position (vacant position), width 10 mm            | 80              |
| 5 Mounting  | Optional for valve terminal mounting (on supply plate)              | 77              |
| 6 Flat plate silencer   | –   | –               |
| 7 Exhaust plate   | For ducted exhaust air  | 80              |
| 8 Regulator plate   | Width 20 mm   | 75              |
| 9 Solenoid valve  | Width 20 mm   | 74              |
| 10 Blanking plate   | For unused valve position (vacant position), width 20 mm            | 80              |
| 11 H-rail mounting  | –   | 77              |
| 12 Right-hand end plate   | –   | 78              |
| 13 Separating seal  | For manifold block  | 80              |
| 14 Fittings   | For working lines   | 82              |
| 15 Inscription label  | –   | 82              |
| 16 Manifold block   | For two valve locations, width 20 mm                                | 77              |
| 17 Fittings   | For pneumatic supply plate  | 82              |
| 18 Supply plate   | –   | 80              |
| 19 Electrical manifold module   | For multi-pin plug connection, for AS-interface                     | 79              |
| 20 Manifold block   | For four valve locations, width 10 mm                               | 77              |

# Valve terminals MPA-S

Peripherals overview

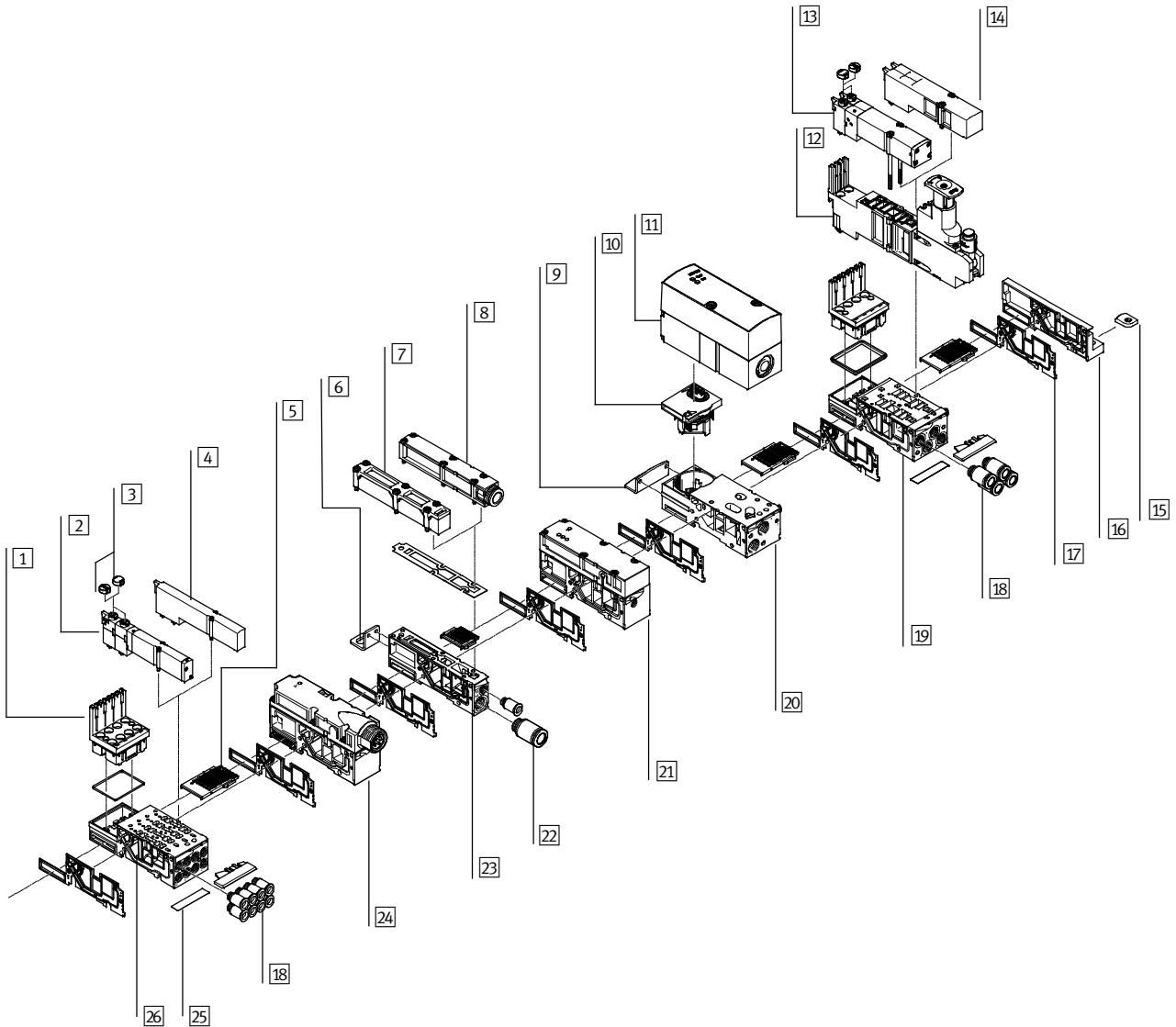
FESTO

## Pneumatic components of the valve terminal – CPI connection, fieldbus

The manifold blocks are either prepared for:

- 2 or 4 single solenoid valves
  - 2 or 4 double solenoid valves
- depending on the size.

- Double solenoid valve positions can be equipped with any valve or a blanking plate.
- Single solenoid valve positions can only be equipped with single solenoid valves.



## Valve terminals MPA-S

Peripherals overview

**FESTO**

| Pneumatic components of the valve terminal – CPI connection, fieldbus |  |                 |
|---|--|-----------------|
| Designation   | Brief description  | → Page/Internet |
| 1 Electronics module  | –  | 79              |
| 2 Solenoid valve  | Width 10 mm  | 74              |
| 3 Cover cap for manual override                                       | Conversion from detenting/non-detenting to non-detenting or covered                                    | –               |
| 4 Blanking plate  | For unused valve position (vacant position), width 10 mm   | 80              |
| 5 Electrical manifold module  | For fieldbus connection, for proportional pressure regulator   | 79              |
| 6 Mounting  | Optional for valve terminal mounting (on supply plate)   | 77              |
| 7 Flat plate silencer   | –  | –               |
| 8 Exhaust plate   | For ducted exhaust air   | 80              |
| 9 Mounting  | Optional for valve terminal mounting<br>(on the manifold block of the proportional pressure regulator) | 77              |
| 10 Electrical module  | For proportional pressure regulator  | 79              |
| 11 Proportional pressure regulator                                    | –  | 76              |
| 12 Regulator plate  | Width 20 mm  | 75              |
| 13 Solenoid valve   | Width 20 mm  | 74              |
| 14 Blanking plate   | For unused valve position (vacant position), width 20 mm   | 80              |
| 15 H-rail mounting  | –  | 77              |
| 16 Right-hand end plate   | –  | 78              |
| 17 Separating seal  | For manifold block   | 80              |
| 18 Fittings   | For working lines  | 82              |
| 19 Manifold block   | For two valve locations, width 20 mm   | 77              |
| 20 Manifold block   | For proportional pressure regulator  | 77              |
| 21 Pressure sensor  | –  | 80              |
| 22 Fittings   | For pneumatic supply plate   | 82              |
| 23 Supply plate   | –  | 80              |
| 24 Electrical supply plate  | For auxiliary voltage supply for large valve terminals   | 79              |
| 25 Inscription label  | –  | 82              |
| 26 Manifold block   | For four valve locations, width 10 mm  | 77              |

# Valve terminals MPA-S

Peripherals overview

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## Valve terminal with multi-pin plug connection

Order code:

- 32P-... for the pneumatic components
- 32E-... for the electrical components

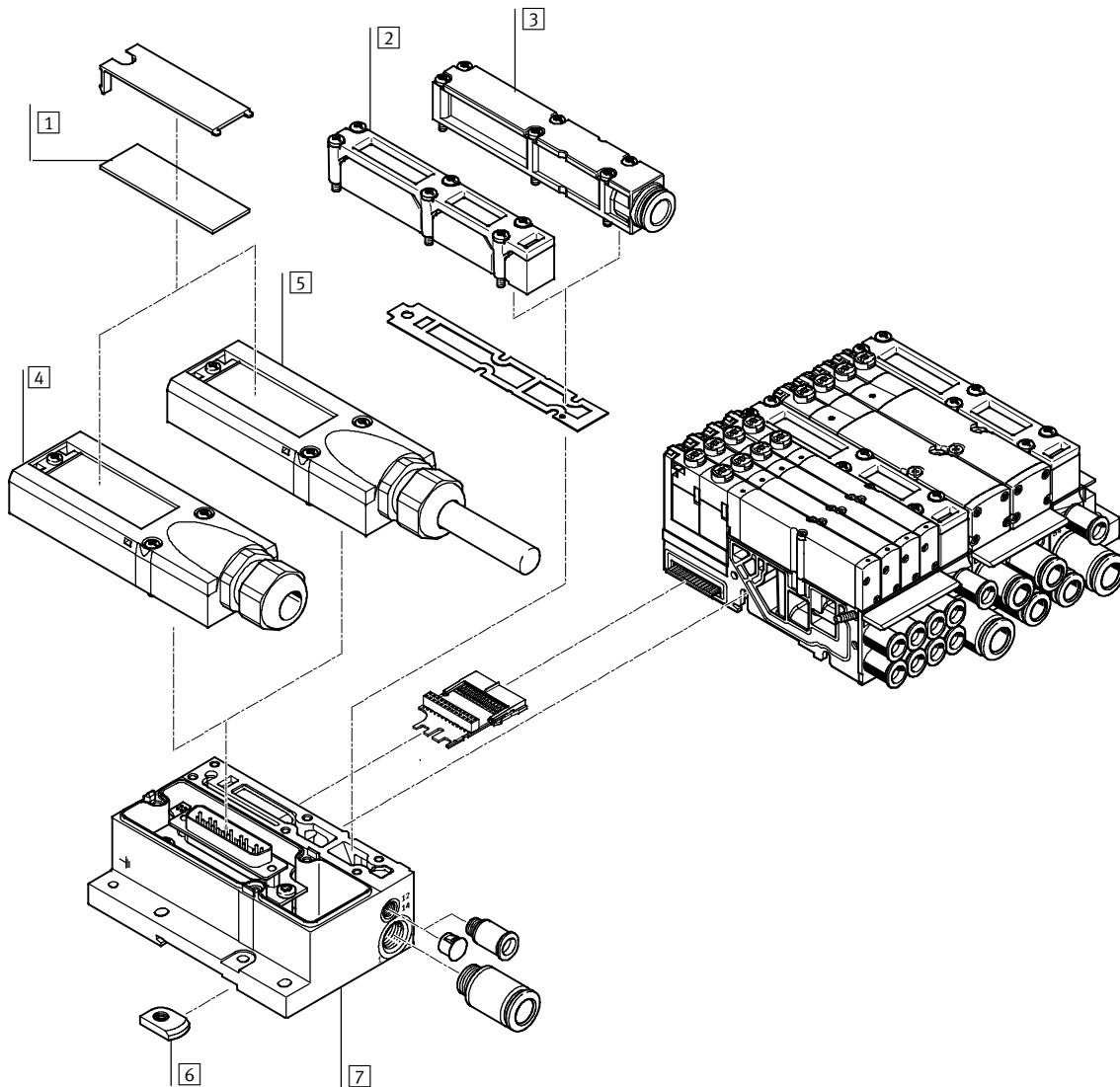
MPA valve terminals with multi-pin plug connection can be expanded by up to 24 solenoid coils.

The multi-pin plug connection is designed as a removable 25-pin Sub-D connection to IP65.

The cable can be selected when ordering:

- 2.5 m
- 5 m
- 10 m

Each can be used for max. 8 or 24 valves.



| Designation                 | Brief description                    | → Page/Internet |
|-----------------------------|--------------------------------------|-----------------|
| 1 Inscription labels        | Large, for multi-pin plug connection | –               |
| 2 Flat plate silencer       | For pneumatic interface              | –               |
| 3 Exhaust plate             | For ducted exhaust air               | 80              |
| 4 Multi-pin plug connection | For self-assembly                    | 81              |
| 5 Multi-pin plug connection | With multi-pin cable                 | 81              |
| 6 H-rail mounting           | –                                    | 77              |
| 7 Electrical interface      | For multi-pin plug                   | 78              |

# Valve terminals MPA-S

Peripherals overview

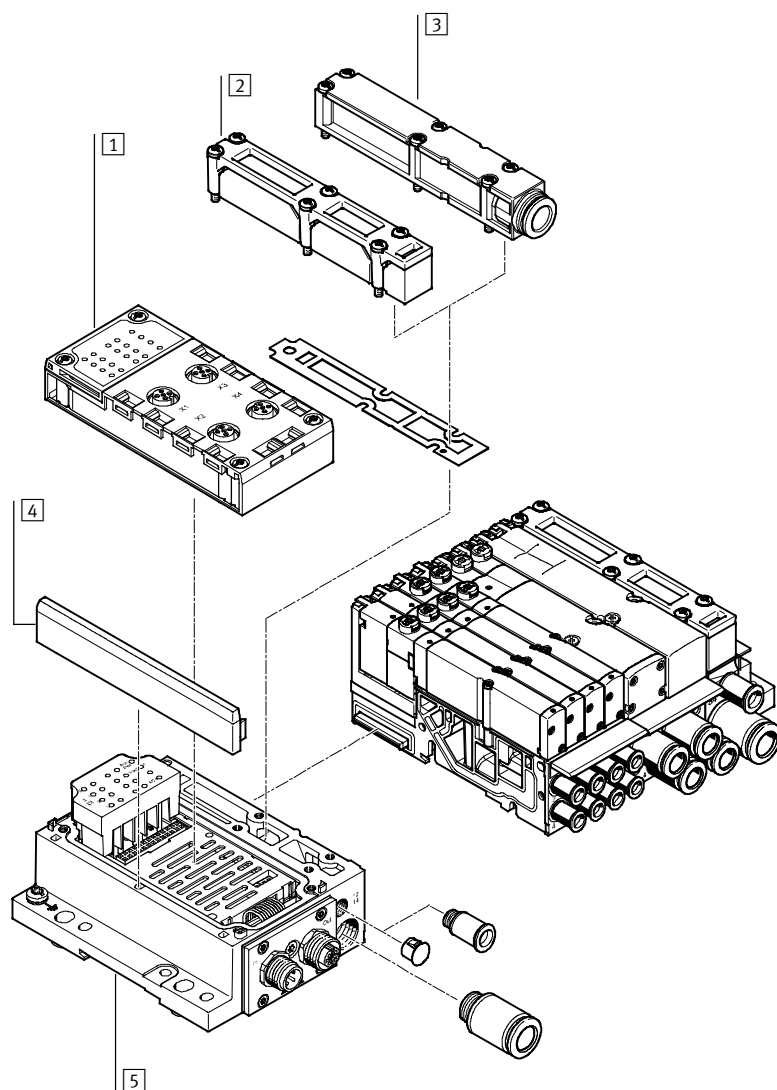
FESTO

## Valve terminal with AS-interface connection

Order code:

- 32P-... for the pneumatic components
- 52E-... for the electrical components

MPA valve terminals with AS-interface connection can be expanded by up to 8 solenoid coils.



| Designation            | Brief description       | → Page/Internet |
|------------------------|-------------------------|-----------------|
| 1 Manifold block       | –                       | 78              |
| 2 Flat plate silencer  | For pneumatic interface | –               |
| 3 Exhaust plate        | For ducted exhaust air  | 80              |
| 4 Cover                | –                       | –               |
| 5 Electrical interface | –                       | 78              |

# Valve terminals MPA-S

Peripherals overview

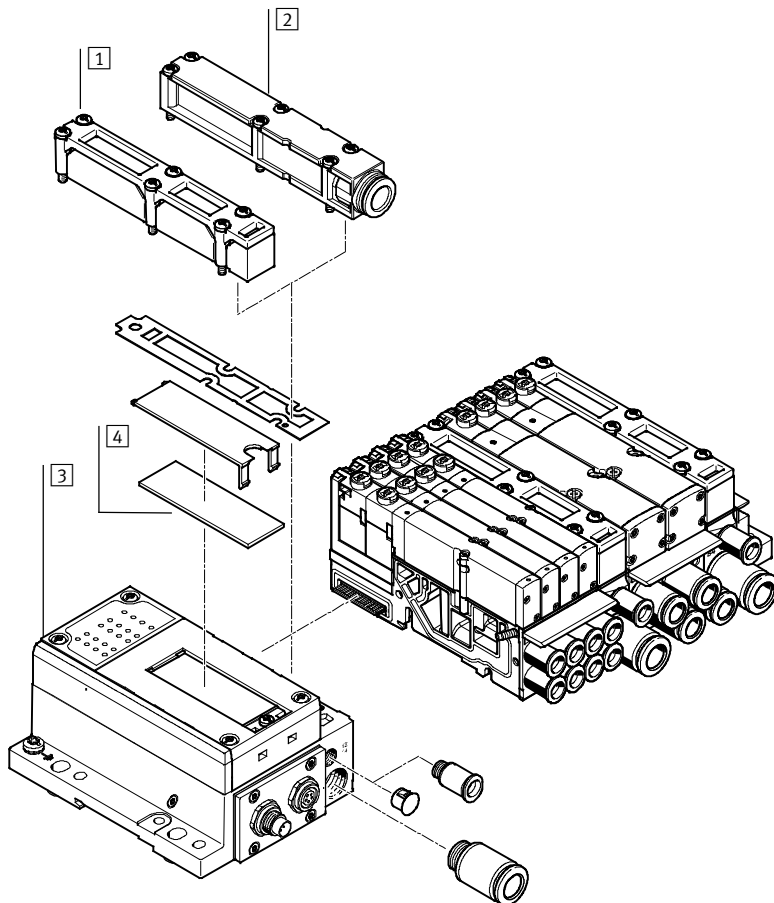
FESTO

## Valve terminal with CPI connection

Order code:

- 32P-... for the pneumatic components
- 56E-... for the electrical components

MPA valve terminals with CPI connection can be expanded by up to 32 solenoid coils.



| Designation            | Brief description                  | → Page/Internet |
|------------------------|------------------------------------|-----------------|
| 1 Flat plate silencer  | For pneumatic interface            | –               |
| 2 Exhaust plate        | For ducted exhaust air             | 80              |
| 3 Electrical interface | –                                  | 78              |
| 4 Inscription label    | Large for CPI electrical interface | –               |



# Valve terminals MPA-S

Peripherals overview

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## Valve terminal with fieldbus connection, control block (electrical peripherals CPX)

Order code:

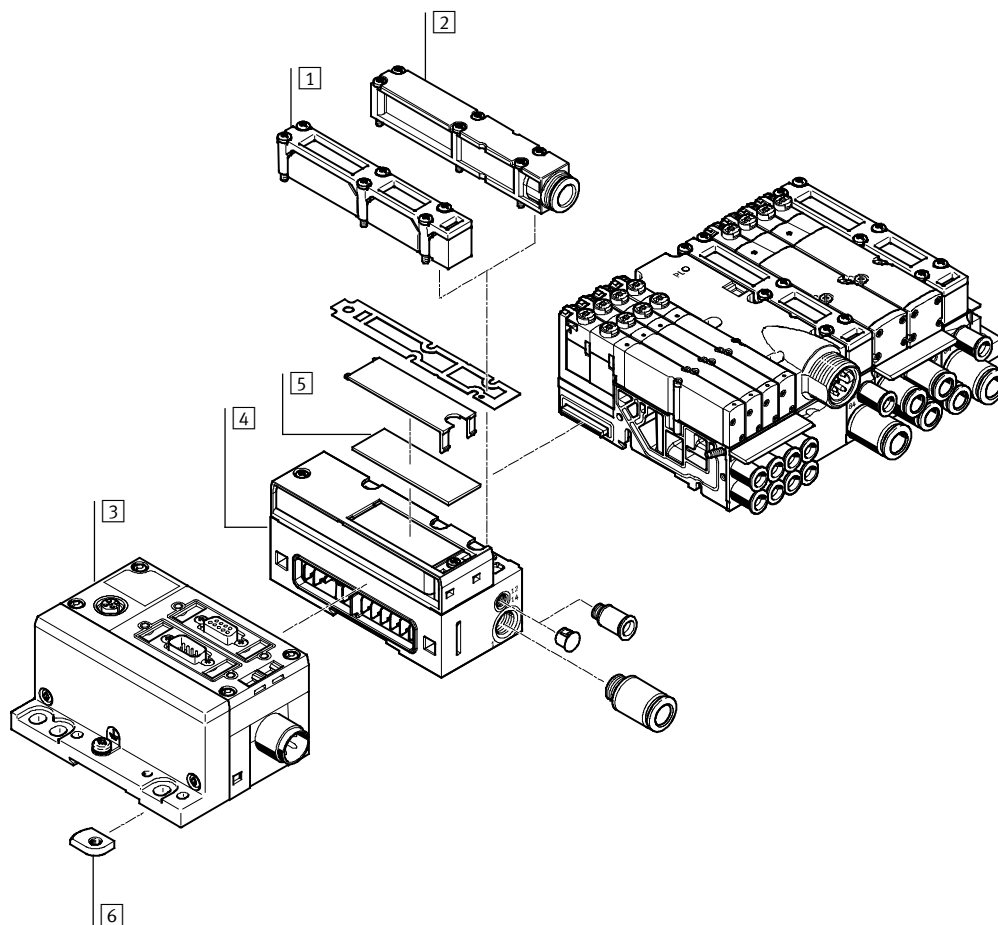
- 32P-... for the pneumatic components
- 50E-... for the electrical components

Valve terminals with fieldbus interfaces can be configured with up to 16 manifold blocks. In conjunction with MPA1 and 8 solenoid coils per manifold block, up to 128 solenoid coils can thus be equipped. An MPA2 with 4 solenoid coils per manifold block can actuate 64 solenoid coils.

Each valve position can be equipped with any valve or a blanking plate. The rules for CPX apply to the equipment that can be used in combination with the electrical peripherals CPX.

In general:

- Digital inputs/outputs
- Analogue inputs/outputs
- Parameterisation of inputs and outputs
- Integrated multi-featured diagnostic system
- Preventive maintenance concepts



| Designation           | Brief description                  | → Page/Internet |
|-----------------------|------------------------------------|-----------------|
| 1 Flat plate silencer | For pneumatic interface            | –               |
| 2 Exhaust plate       | For ducted exhaust air             | 80              |
| 3 CPX modules         | –                                  | –               |
| 4 Pneumatic interface | For CPX modules                    | 78              |
| 5 Inscription label   | Large, for pneumatic interface CPX | –               |
| 6 H-rail mounting     | –                                  | 77              |



**New**

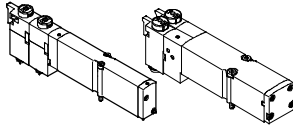
Variants KU, NU, HU, MU, MS

## Valve terminals MPA-S

Key features – Pneumatic components

**FESTO**

### Sub-base valve



MPA offers a comprehensive range of valve functions. All valves are equipped with patented sealing system which facilitates efficient sealing, a broad pressure range and long service life. To increase power they have a pneumatic pilot control supplied by pilot air.

Sub-base valves can be quickly replaced since the tubing connectors remain on the manifold block. This design is also particularly flat.

Irrespective of the valve function there are sub-base valves with one solenoid coil (single solenoid) or with two solenoid coils (double solenoid or two single solenoid valves in one housing).

### Constructional design

#### Valve replacement

The valves are attached to the metal manifold block using two screws, which means that they can be easily

replaced. The mechanical sturdiness of the manifold block guarantees excellent long-term sealing.

#### Extension

Blanking plates can be replaced by valves at a later date. The dimensions, mounting points and existing pneumatic installations remain unchanged during this process.

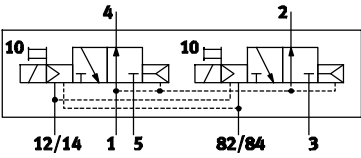
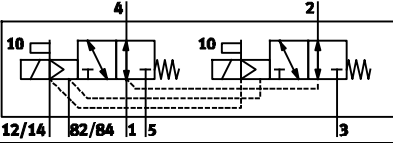
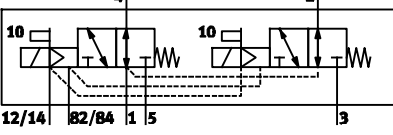
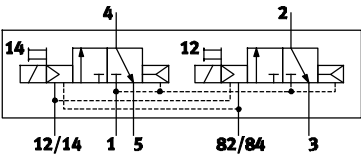
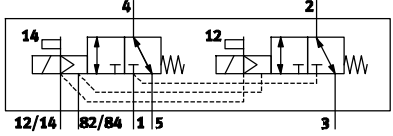
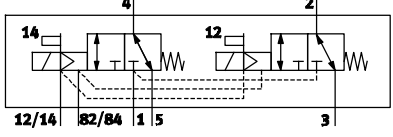
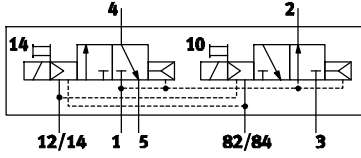
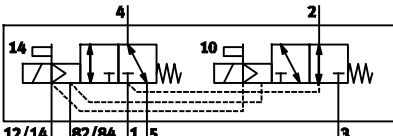
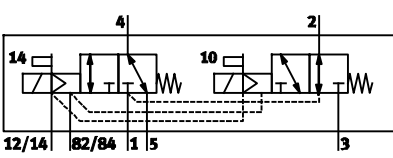
The valve code (M, MS, MU, J, N, NS, NU, K, KS, KU, H, HS, HU, B, G, E, X, W, D, DS, I) is located on the front of the valve beneath the manual override.

### 5/2-way valve

| Code | Circuit symbol | Width [mm] | Description   |
|------|----------------|------------|---|
| M    |                | 10, 20     | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Pneumatic spring return</li> <li>• Reverse operation</li> <li>• Operating pressure –0.9 ... +10 bar</li> </ul>                                  |
| MS   |                | 10, 20     | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Mechanical spring return</li> <li>• Reverse operation</li> <li>• Operating pressure –0.9 ... +8 bar</li> </ul>                                  |
| MU   |                | 10         | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Polymer poppet valve</li> <li>• Mechanical spring return</li> <li>• Reverse operation</li> <li>• Operating pressure –0.9 ... +10 bar</li> </ul> |
| J    |                | 10, 20     | <ul style="list-style-type: none"> <li>• Double solenoid</li> <li>• Reverse operation</li> <li>• Operating pressure –0.9 ... +10 bar</li> </ul>   |

## Valve terminals MPA-S

Key features – Pneumatic components

| 2x 3/2-way valve |   |            |  |
|------------------|---|------------|--|
| Code             | Circuit symbol  | Width [mm] | Description  |
| N                |    | 10,<br>20  | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Normally open</li> <li>• Pneumatic spring return</li> <li>• Operating pressure 3 ... 10 bar</li> </ul>   |
| NS               |    | 10,<br>20  | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Normally open</li> <li>• Mechanical spring return</li> <li>• Reverse operation</li> <li>• Operating pressure -0.9 ... +8 bar</li> </ul>  |
| NU               |    | 10         | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Polymer poppet valve</li> <li>• Normally open</li> <li>• Mechanical spring return</li> <li>• Reverse operation</li> <li>• Operating pressure -0.9 ... +10 bar</li> </ul>   |
| K                |   | 10,<br>20  | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Normally closed</li> <li>• Pneumatic spring return</li> <li>• Operating pressure 3 ... 10 bar</li> </ul>   |
| KS               |  | 10,<br>20  | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Normally closed</li> <li>• Mechanical spring return</li> <li>• Reverse operation</li> <li>• Operating pressure -0.9 ... +8 bar</li> </ul>  |
| KU               |  | 10         | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Polymer poppet valve</li> <li>• Normally closed</li> <li>• Mechanical spring return</li> <li>• Reverse operation</li> <li>• Operating pressure -0.9 ... +10 bar</li> </ul>   |
| H                |  | 10,<br>20  | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Normal position <ul style="list-style-type: none"> <li>– 1x closed</li> <li>– 1x open</li> </ul> </li> <li>• Pneumatic spring return</li> <li>• Operating pressure 3 ... 10 bar</li> </ul>   |
| HS               |  | 10,<br>20  | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Normal position <ul style="list-style-type: none"> <li>– 1x closed</li> <li>– 1x open</li> </ul> </li> <li>• Mechanical spring return</li> <li>• Reverse operation</li> <li>• Operating pressure -0.9 ... +8 bar</li> </ul>                                  |
| HU               |  | 10         | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Polymer poppet valve</li> <li>• Normal position <ul style="list-style-type: none"> <li>– 1x closed</li> <li>– 1x open</li> </ul> </li> <li>• Mechanical spring return</li> <li>• Reverse operation</li> <li>• Operating pressure -0.9 ... +10 bar</li> </ul> |

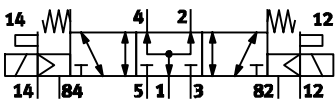
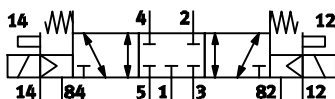
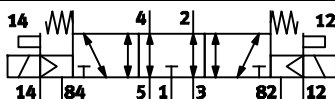
**New**

Variants KU, NU, HU, MU, MS

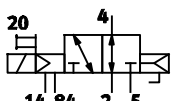
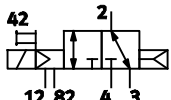
## Valve terminals MPA-S

Key features – Pneumatic components

**FESTO**

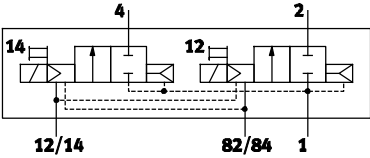
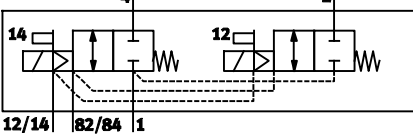
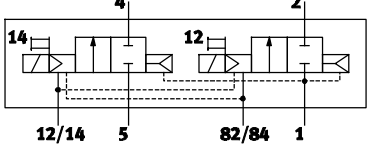
| 5/3-way valve |   |            |   |
|---------------|---|------------|---|
| Code          | Circuit symbol  | Width [mm] | Description   |
| B             |  | 10,<br>20  | <ul style="list-style-type: none"> <li>• Mid-position pressurised<sup>1)</sup></li> <li>• Mechanical spring return</li> <li>• Reverse operation</li> <li>• Operating pressure –0.9 ... +10 bar</li> </ul> |
| G             |  | 10,<br>20  | <ul style="list-style-type: none"> <li>• Mid-position closed<sup>1)</sup></li> <li>• Mechanical spring return</li> <li>• Reverse operation</li> <li>• Operating pressure –0.9 ... +10 bar</li> </ul>      |
| E             |  | 10,<br>20  | <ul style="list-style-type: none"> <li>• Mid-position exhausted<sup>1)</sup></li> <li>• Mechanical spring return</li> <li>• Reverse operation</li> <li>• Operating pressure –0.9 ... +10 bar</li> </ul>   |

- 1) If neither solenoid coil is energised, the valve moves to its mid-position by means of spring force.  
If both coils are energised at the same time, the valve remains in the previously assumed switching position.

| 3/2-way valve |   |            |   |
|---------------|---|------------|---|
| Code          | Circuit symbol  | Width [mm] | Description   |
| W             |  | 10,<br>20  | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Normally open</li> <li>• External compressed air supply</li> <li>• Pneumatic spring return</li> <li>• Reverse operation</li> <li>• Operating pressure –0.9 ... +10 bar</li> </ul> <p>Compressed air (–0.9 ... +10 bar) supplied at working port 2 can be switched with both internal and external pilot air supply.</p>   |
| X             |  | 10,<br>20  | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Normally closed</li> <li>• External compressed air supply</li> <li>• Pneumatic spring return</li> <li>• Reverse operation</li> <li>• Operating pressure –0.9 ... +10 bar</li> </ul> <p>Compressed air (–0.9 ... +10 bar) supplied at working port 4 can be switched with both internal and external pilot air supply.</p> |

## Valve terminals MPA-S

Key features – Pneumatic components

| 2x 2/2-way valve |   |            |   |
|------------------|---|------------|---|
| Code             | Circuit symbol  | Width [mm] | Description   |
| D                |  | 10,<br>20  | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Normally closed</li> <li>• Pneumatic spring return</li> <li>• Operating pressure 3 ... 10 bar</li> </ul>  |
| DS               |  | 10,<br>20  | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• Normally closed</li> <li>• Mechanical spring return</li> <li>• Reverse operation</li> <li>• Operating pressure -0.9 ... +8 bar</li> </ul>   |
| I                |  | 10,<br>20  | <ul style="list-style-type: none"> <li>• Single solenoid</li> <li>• 1x normally closed</li> <li>• 1x normally closed, reverse operation</li> <li>• Pneumatic spring return</li> <li>• Operating pressure 3 ... 10 bar</li> <li>• Vacuum at port 3/5 only</li> </ul> |

-  - Note

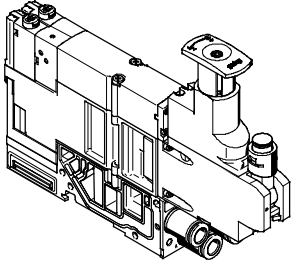
A filter must be installed upstream of valves operated in vacuum mode. This prevents any foreign matter in the intake air getting into the valve (e.g. when operating a suction cup).

# Valve terminals MPA-S

Key features – Pneumatic components

**FESTO**

## Vertical stacking

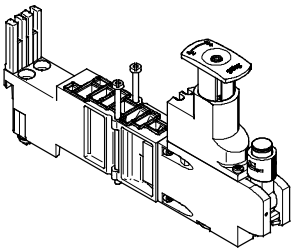


Additional function units can be added to each valve position between the sub-base and the valve.

These functions are known as vertical stacking, and enable special function-

ing or control of an individual valve position.

## Pressure regulator plate



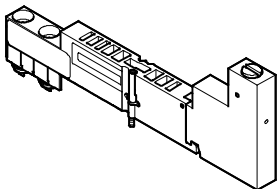
An adjustable pressure regulator can be installed between the sub-base and the valve in order to control the force of the triggered actuator.

This pressure regulator maintains an essentially constant output pressure (secondary side) independent of pressure fluctuations (primary side) and air consumption.

Standard version:

- For supply pressure up to 6 bar or up to 10 bar
- Without pressure gauge (optional, rotatable, M5 connection with MPA1, cartridge connection with MPA2)
- MPA2: Regulator head with 3 positions (locked, reference position, idle running)
- MPA1: Set using screwdriver

## Vertical pressure shut-off plate for MPA1



The vertical pressure shut-off plate can be used to hot swap individual valves without switching off the overall air supply.

It allows the working pressure for the individual valve to be switched off manually via the actuating element.

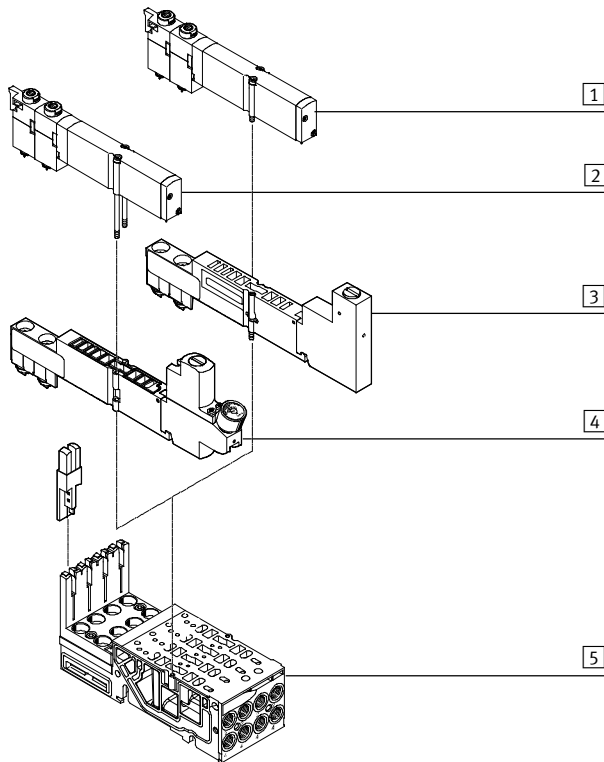
# Valve terminals MPA-S

Key features – Pneumatic components

FESTO

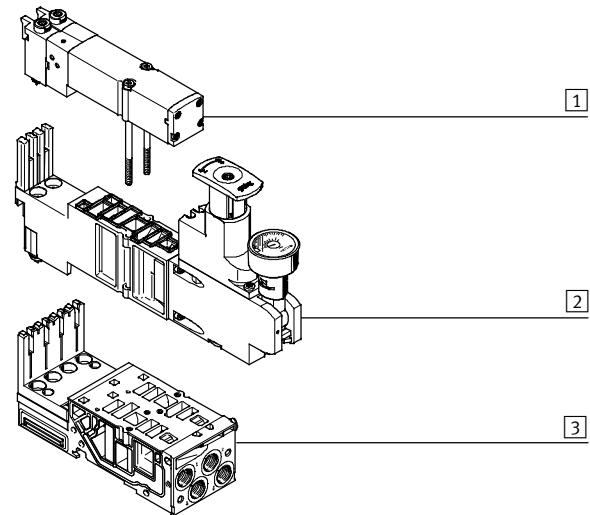
## Vertical stacking

### Vertical stacking components, MPA1



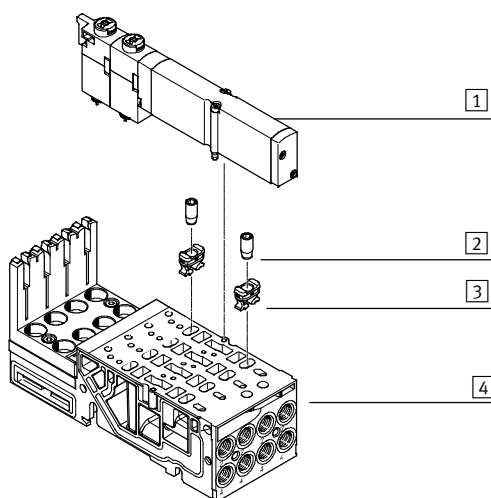
- 1 Valve VMPA1
- 2 Valve VMPA1, mounting screws replaced by long version (included in the scope of delivery of the regulator plate)
- 3 Vertical pressure shut-off plate VMPA1-HS
- 4 Regulator plate VMPA1
- 5 Manifold sub-base

### Vertical stacking components, MPA2



- 1 Valve VMPA2
- 2 Regulator plate VMPA2
- 3 Manifold sub-base

### Fixed restrictor for manifold sub-bases MPA1



- 1 Valve VMPA1
- 2 Fixed restrictor
- 3 Retainer
- 4 Manifold sub-base

The fixed restrictor can be used to permanently set the flow rate in ducts 3 and 5 when exhausting air. To be able to screw the restrictor into the sub-base, the retainer is first pressed as far as it will go into the exhaust openings on the sub-base.

The fixed restrictor can then be screwed in until it is flush with the top of the retainer. The restrictor screw cuts a thread into the retainer as it is screwed in. As the restrictor is being screwed in, two hooks on the underside of the retainer also deform to additionally anchor the retainer in the sub-base.

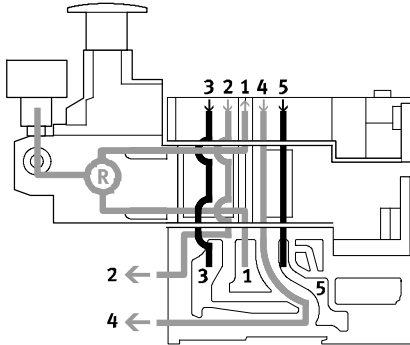
# Valve terminals MPA-S

Key features – Pneumatic components

FESTO

## Vertical stacking

Mode of operation of the pressure regulator plate (P regulator) for port 1; code: PA, PF



This pressure regulator regulates the pressure upstream of the valve in duct 1. Ducts 2 and 4 thus have the same regulated pressure.

During venting, the exhaust flow in the valve is from duct 2 to duct 3 and from duct 4 to duct 5.

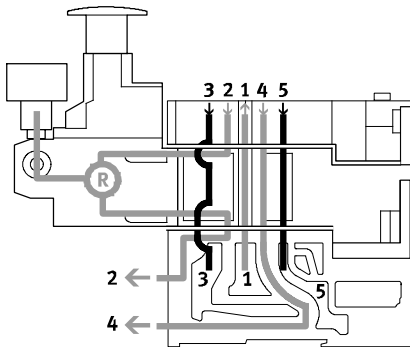
## Advantages

- The pressure regulator is not affected by venting, since the pressure is regulated upstream of the valve.
- The pressure regulator can always be adjusted, since the pressure from the valve terminal is always present.

## Application examples

- An equal working pressure is required at working ports 2 and 4.
- A lower working pressure (e.g. 3 bar) than the operating pressure present at the valve terminal (e.g. 8 bar) is required.

Mode of operation of the pressure regulator plate (B regulator) for port 2; code: PC, PH



This pressure regulator regulates the pressure in duct 2 after the pressure medium flows through the valve. During venting, the exhaust flow in the valve is from duct 2 to duct 3 via the pressure regulator.

## Restrictions

The pressure regulator can only be adjusted in switched state (e.g. the valve is switched to 2 and exhaust flow occurs from 4 to 5).

## Application example

The pressure regulator makes it possible to reduce the pressure at port 2 of an individual valve, in contrast to the operating pressure of the valve terminal.



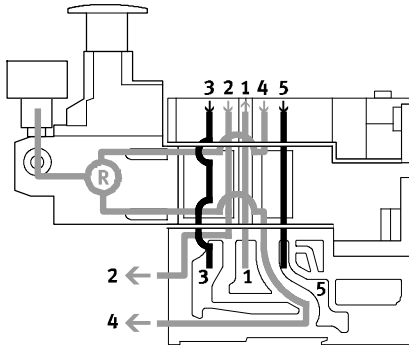
# Valve terminals MPA-S

Key features – Pneumatic components

FESTO

## Vertical stacking

Mode of operation of the pressure regulator plate (A regulator) for port 4; code: PB, PK



This pressure regulator regulates the pressure in duct 4 after the pressure medium flows through the valve. During venting, the exhaust flow in the valve is from duct 4 to duct 5 via the pressure regulator.

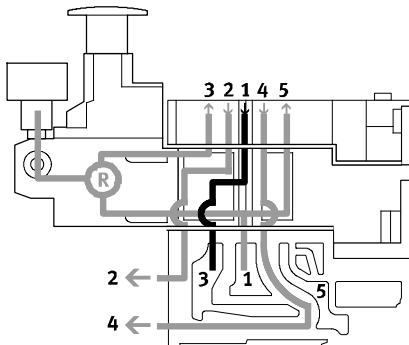
## Restrictions

The pressure regulator can only be adjusted in switched state (e.g. the valve is switched to 4 and exhaust flow occurs from 2 to 3).

## Application example

If different working pressures are required at ports 4 and 2. The pressure present at port 2 is from duct 1.

Mode of operation of the pressure regulator plate (B regulator, reversible) for port 2, reversible; code: PL, PN



The reversible B regulator splits the supply air in duct 1 and regulates the pressure upstream of the valve in duct 3 (the unregulated pressure from duct 1 is in duct 5). The regulated air is then supplied to duct 2. The valve is thus operated in reversible mode.

During venting, the exhaust flow in the valve is from duct 2 to duct 1 and it is reversed into the manifold block via the intermediate plate to duct 3.

## Application examples

- When instead of the operating pressure of the valve terminal, a different pressure is required in duct 2.
- When fast exhaust venting is required.
- When the pressure regulator must always be adjustable.



Note

Reversible pressure regulator plates may only be combined with valves

that can be operated in reversible mode.

## Advantages

- Fast cycle times.
- 50% higher exhaust flow rate, as air is not exhausted via the pressure regulator. The load on the pressure regulator is also reduced.
- No quick exhaust valves are required.
- Operating pressure is always present at the pressure regulator, as the pressure is regulated upstream of the valve, i.e. the regulator can always be adjusted.

## Restrictions

- 2x 3/2-way valves (code N, K, H) are not used, as pressure is present at ports 3 and 5.

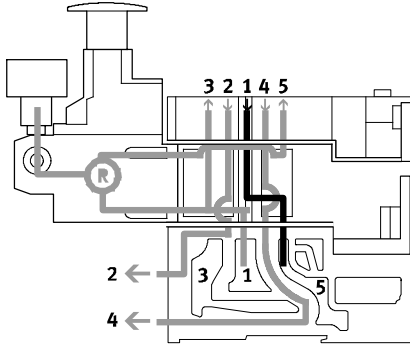
# Valve terminals MPA-S

Key features – Pneumatic components

FESTO

## Vertical stacking

Mode of operation of the pressure regulator plate (A regulator, reversible) for port 4, reversible; code: PK, PM



The reversible A regulator splits the working air in duct 1 and supplies the pressure upstream of the valve into duct 5 (the unregulated pressure from duct 1 is in duct 3). The regulated air is then supplied to duct 4. The valve is thus operated in reversible mode.

During venting, the exhaust flow in the valve is from duct 4 to duct 1 and it is reversed into the manifold block via the intermediate plate to duct 5.

## Application examples

- When instead of the operating pressure of the valve terminal, a different pressure is required in duct 4.
- When fast exhaust venting is required.
- When the pressure regulator must always be adjustable.



Note

Reversible pressure regulator plates may only be combined with valves

that can be operated in reversible mode.

## Advantages

- Fast cycle times.
- 50% higher exhaust flow rate, as air is not exhausted via the pressure regulator. The load on the pressure regulator is also reduced.
- No quick exhaust valves are required.
- Operating pressure is always present at the pressure regulator, as the pressure is regulated upstream of the valve, i.e. the regulator can always be adjusted.

## Restrictions

- 2x 3/2-way valves (code N, K, H) are not used, as pressure is present at ports 3 and 5.

# Valve terminals MPA-S

Key features – Pneumatic components

**FESTO**

| Vertical stacking – Pressure regulator plate                  |  |                    |       |                 |        |  |
|---|--|--------------------|-------|-----------------|--------|--|
| Code  |  | Type               | Width | Supply pressure |        | Description  |
|   |  |                    | [mm]  | 6 bar           | 10 bar |  |
| Pressure regulator plate for port 1 (P regulator)             |  |                    |       |                 |        |  |
| PA  |  | VMPA1-B8-R1-M5-10  | 10    | -               | ■      | Regulates the operating pressure in duct 1 upstream of the directional control valve   |
| PF  |  | VMPA1-B8-R1C2-C-10 | 10    |                 |        |  |
|   |  | VMPA2-B8-R1C2-C-10 | 20    |                 |        |  |
|   |  | VMPA1-B8-R1-M5-06  | 10    | ■               | -      |  |
|   |  | VMPA1-B8-R1C2-C-06 | 10    |                 |        |  |
|   |  | VMPA2-B8-R1C2-C-06 | 20    |                 |        |  |
| Pressure regulator plate for port 2 (B regulator)             |  |                    |       |                 |        |  |
| PC  |  | VMPA1-B8-R2-M5-10  | 10    | -               | ■      | Regulates the operating pressure in duct 2 downstream of the directional control valve |
| PH  |  | VMPA1-B8-R2C2-C-10 | 10    |                 |        |  |
|   |  | VMPA2-B8-R2C2-C-10 | 20    |                 |        |  |
|   |  | VMPA1-B8-R2-M5-06  | 10    | ■               | -      |  |
|   |  | VMPA1-B8-R2C2-C-06 | 10    |                 |        |  |
|   |  | VMPA2-B8-R2C2-C-06 | 20    |                 |        |  |
| Pressure regulator plate for port 4 (A regulator)             |  |                    |       |                 |        |  |
| PB  |  | VMPA1-B8-R3-M5-10  | 10    | -               | ■      | Regulates the operating pressure in duct 4 downstream of the directional control valve |
| PG  |  | VMPA1-B8-R3C2-C-10 | 10    |                 |        |  |
|   |  | VMPA2-B8-R3C2-C-10 | 20    |                 |        |  |
|   |  | VMPA1-B8-R3-M5-06  | 10    | ■               | -      |  |
|   |  | VMPA1-B8-R3C2-C-06 | 10    |                 |        |  |
|   |  | VMPA2-B8-R3C2-C-06 | 20    |                 |        |  |
| Pressure regulator plate for port 2, reversible (B regulator) |  |                    |       |                 |        |  |
| PL  |  | VMPA2-B8-R6C2-C-10 | 20    | -               | ■      | Reversible pressure regulator to port 2  |
| PN  |  | VMPA2-B8-R6C2-C-06 | 20    | ■               | -      |  |
| Pressure regulator plate for port 4, reversible (A regulator) |  |                    |       |                 |        |  |
| PK  |  | VMPA2-B8-R7C2-C-10 | 20    | -               | ■      | Reversible pressure regulator to port 4  |
| PM  |  | VMPA2-B8-R7C2-C-06 | 20    | ■               | -      |  |

# Valve terminals MPA-S

Key features – Pneumatic components

FESTO

## Proportional pressure regulator

The purpose of the proportional pressure regulator VPPM-6TA-... is to regulate a pressure proportionally to a specified setpoint value. To this end, an integrated pressure sensor records the pressure at the working line and compares this value against

the setpoint value. If there is a deviation between the nominal and actual values, the valve regulates the output pressure until it reaches the setpoint value. The proportional pressure regulator has an additional supply connection to achieve the

constant pressure supply required for high control quality.

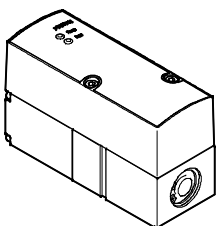
The proportional pressure regulator can be configured via the PLC or on-site via the handheld device (CPX-MMI) from Festo.



Note

Output pressure is maintained unregulated if the power supply cable is interrupted.

## Proportional pressure regulator

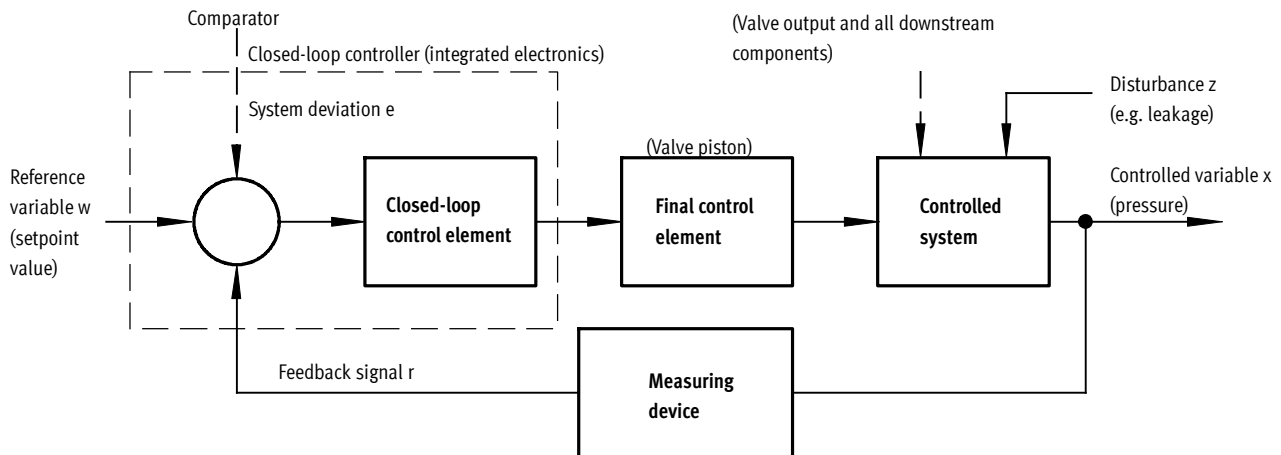
| Graphical symbol  | Code | Type                      | Full-scale linearity error<br>[%] | Supply pressure 1<br>[bar] | Pressure regulation<br>range<br>[bar] |
|---|------|---------------------------|-----------------------------------|----------------------------|---------------------------------------|
|  | QA   | VPPM-6TA-L-1-F-0L2H       | 2                                 | 0 ... 4                    | 0,02 ... 2                            |
|   | QB   | VPPM-6TA-L-1-F-0L6H       | 2                                 | 0 ... 8                    | 0,06 ... 6                            |
|   | QC   | VPPM-6TA-L-1-F-0L10H      | 2                                 | 0 ... 11                   | 0,1 ... 10                            |
|   | QD   | VPPM-6TA-L-1-F-0L2H-S1    | 1                                 | 0 ... 4                    | 0,02 ... 2                            |
|   | QE   | VPPM-6TA-L-1-F-0L6H-S1    | 1                                 | 0 ... 8                    | 0,06 ... 6                            |
|   | QF   | VPPM-6TA-L-1-F-0L10H-S1   | 1                                 | 0 ... 11                   | 0,1 ... 10                            |
|   | QG   | VPPM-8TA-L-1-F-0L2H-C1    | 2                                 | 0 ... 4                    | 0,02 ... 2                            |
|   | QH   | VPPM-8TA-L-1-F-0L6H-C1    | 2                                 | 0 ... 8                    | 0,06 ... 6                            |
|   | QK   | VPPM-8TA-L-1-F-0L10H-C1   | 2                                 | 0 ... 11                   | 0,1 ... 10                            |
|   | QL   | VPPM-8TA-L-1-F-0L2H-S1C1  | 1                                 | 0 ... 4                    | 0,02 ... 2                            |
|   | QM   | VPPM-8TA-L-1-F-0L6H-S1C1  | 1                                 | 0 ... 8                    | 0,06 ... 6                            |
|   | QN   | VPPM-8TA-L-1-F-0L10H-S1C1 | 1                                 | 0 ... 11                   | 0,1 ... 10                            |

# Valve terminals MPA-S

Key features – Pneumatic components

FESTO

## Layout of a control circuit



### Layout

The figure shows a closed-loop control circuit. The reference variable  $w$  initially acts on a comparator. The measuring device sends the value of the controlled variable  $x$  (actual value, e.g. 3 bar) to the comparator as a feedback signal  $r$ . The closed-loop control element detects the system deviation  $e$  and actuates the final control

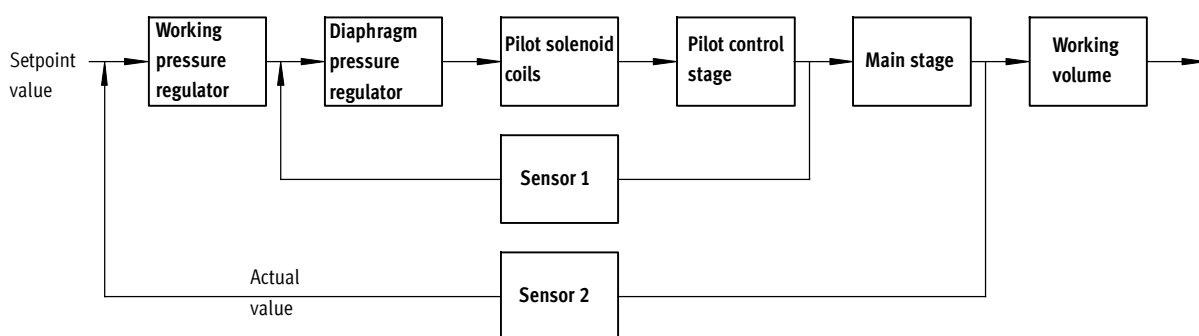
element. The output of the final control element acts on the controlled system. The closed-loop control element thus attempts to compensate for the difference between the reference variable  $w$  and the controlled variable  $x$  by using the final control

### Method of operation

This process runs continuously so changes in the reference variable are always detected. However, a system deviation will also appear if the reference variable is constant but the controlled variable changes. This happens when the flow through the valve changes in response to a switching action, a cylinder movement or a change

in load. The disturbance variable  $z$  will also cause a system deviation. An example of this is when the pressure drops in the air supply. The disturbance variable  $z$  acts on the controlled variable  $x$  unintentionally. In all cases, the regulator attempts to readjust the controlled variable  $x$  to the reference variable  $w$ .

## Multi-sensor control (cascade control) of the VPPM



### Cascade control

Unlike conventional direct-acting regulators, with multi-sensor control several control circuits are nested inside each other. The overall controlled

system is divided into smaller sub-controlled circuits that are easier to control for the specific task.

### Control precision

Multi-sensor control significantly improves control precision and dynamic

response in comparison with single-acting regulators.

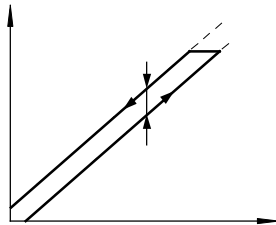
# Valve terminals MPA-S

Key features – Pneumatic components

FESTO

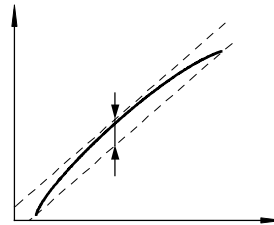
## Terms related to the proportional-pressure regulator

### Hysteresis



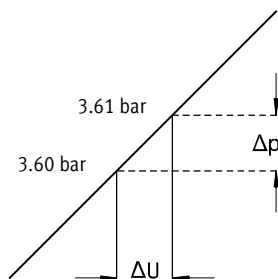
There is always a linear relationship within a certain tolerance between the setpoint value entered and the pressure output. Nevertheless it makes a difference whether the setpoint value is entered as rising or falling. The difference between the maximum deviations is referred to as hysteresis.

### Linearity error



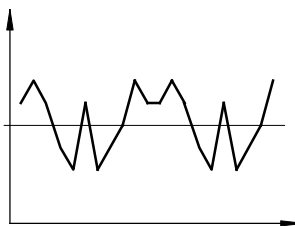
A perfectly linear progression of the control characteristic of the output pressure is theoretical. The maximum percentage deviation from this theoretical control characteristic is referred to as the linearity error. The percentage value refers to the maximum output pressure (full scale).

### Response sensitivity



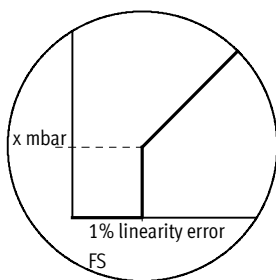
The response sensitivity of the device determines how sensitively one can change, i.e. adjust, a pressure. The smallest setpoint value difference that results in a change in the output pressure is referred to as the response sensitivity. In this case, 0.01 bar.

### Repetition accuracy (reproducibility)



The repetition accuracy is the margin within which the fluid output variables are scattered when the same electrical input signal coming from the same direction is repeatedly adjusted. The repetition accuracy is expressed as a percentage of the maximum fluid output signal.

### Zero point suppression



In practice there exists the possibility of residual voltage or residual current at the setpoint input of the VPPM via the setpoint generator. Zero point suppression is used so that the valve is reliably vented at a setpoint value of zero.

# Valve terminals MPA-S

Key features – Pneumatic components

FESTO

## Blanking plate

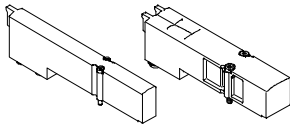


Plate without valve function for reserving valve positions on a valve terminal.

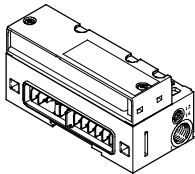
Valves and blanking plates are attached to the manifold block using two screws.

## Valve function

| Code | Circuit symbol | Width | Description                              |
|------|----------------|-------|--|
|      |                | [mm]  |  |
| L    | —              | 10    | For valve terminal only:                 |
|      |                | 20    | Blanking plate for vacant valve position |

## Compressed air supply and venting

### Pneumatic interface

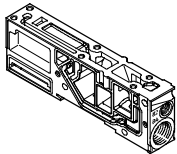


The valve terminal MPA can be supplied with air at one or more points. This ensures that the valve terminal will always have a sufficient supply of air and that this air will be vented, even with large-scale expansions.

The main supply to the valve terminal is located on the pneumatic interface, which links the electrical and the pneumatic parts. Additional provision is made for a number of supply plates. Venting is either via integrated flat plate silencers or common lines for ducted exhaust.

These vents are located on the pneumatic interface as well as on the supply plates. In the case of ducted exhaust, at least one additional supply plate is required that then contains the exhaust port for the pilot air supply (port 82/84).

### Supply plate



## Pilot air supply

The port for the main pneumatic supply is located on the pneumatic interface. The ports differ for the following types of pilot air supply:

- Internal
- External

### Internal pilot air supply

Internal pilot air supply can be selected if the required working pressure is between 3 and 8 bar. The pilot air supply is then branched from the compressed air supply 1 in the pneumatic interface using an internal connection. Port 12/14 is sealed with a blanking plug.

### External pilot air supply

If the supply pressure is less than 3 bar or greater than 8 bar, you must operate your MPA valve terminal with external pilot air supply. In this case the pilot air is additionally supplied via port 12/14 on the pneumatic interface.



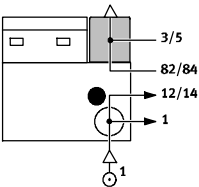
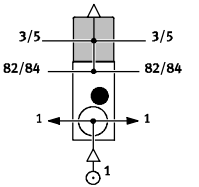
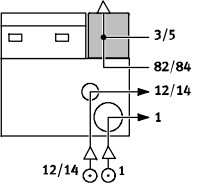
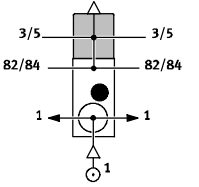
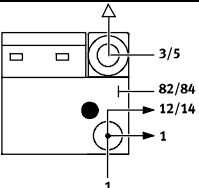
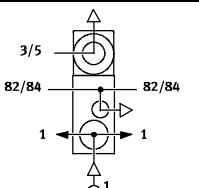
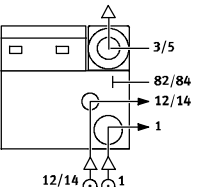
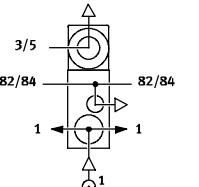
### Note

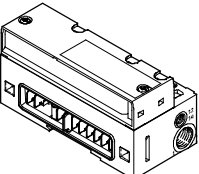
If a gradual pressure build-up in the system using a soft-start valve is chosen, an external pilot air supply should be connected so that the control pressure applied during switch-on is already very high.

## Valve terminals MPA-S

Key features – Pneumatic components

FESTO

| Compressed air supply and pilot air supply |   |   |  |
|--|---|---|--|
| Code                                       | Graphical symbol  |   | Notes  |
|  | Pneumatic interface   | Supply plate  |  |
| S  |    |    | <p>Internal pilot air supply, flat plate silencer</p> <ul style="list-style-type: none"> <li>Pilot air supply is branched internally from port 1 in the pneumatic interface</li> <li>Exhaust port 3/5 and pilot exhaust port 82/84 via flat plate silencer</li> <li>For operating pressure in the range 3 ... 8 bar</li> </ul>   |
| T  |    |    | <p>External pilot air supply, flat plate silencer</p> <ul style="list-style-type: none"> <li>Pilot air supply between 3 and 8 bar is connected to port 12/14</li> <li>Exhaust port 3/5 and pilot exhaust port 82/84 via flat plate silencer</li> <li>For operating pressure in the range -0.9 ... 10 bar (suitable for vacuum)</li> </ul>  |
| V  |   |   | <p>Internal pilot air supply, ducted exhaust air</p> <ul style="list-style-type: none"> <li>Pilot air supply is branched internally from port 1 in the pneumatic interface</li> <li>Exhaust port 3/5: connection to pneumatic interface and supply plate</li> <li>Pilot exhaust port 82/84: connection to supply plate only</li> <li>For operating pressure in the range 3 ... 8 bar</li> </ul>      |
| X  |  |  | <p>External pilot air supply, ducted exhaust air</p> <ul style="list-style-type: none"> <li>Pilot air supply (3 ... 8 bar) is connected at port 12/14</li> <li>Exhaust port 3/5: connection to pneumatic interface and supply plate</li> <li>Pilot exhaust port 82/84: connection to supply plate only</li> <li>For operating pressure in the range -0.9 ... 10 bar (suitable for vacuum)</li> </ul> |

| Pneumatic interface |   |                   |   |
|---------------------|---|-------------------|---|
| Code                | Pneumatic interface design variants   |                   | Notes   |
|                     | Graphical symbol  | Type              |   |
| M                   |  | VMPPA-...-EPL-... | <ul style="list-style-type: none"> <li>Used together with compressed air supply S, T, V, X</li> <li>The pilot exhaust air must be vented at least at one supply plate when using V or X. In the case of multiple supply plates, the port 82/84 is open on the last supply plate ex-works</li> </ul> |



# Valve terminals MPA-S

Key features – Pneumatic components

FESTO

## Supply plate

Additional supply plates can be used for larger terminals or to create additional pressure zones.

If several valves are to be operated simultaneously at full flow rate, it is recommended that a supply plate be positioned after every 8 valves (MPA1), or 4 valves (MPA2).

Supply plates can be configured at any point upstream or downstream of sub-bases. This applies to the following interfaces:

- MPA with CPX
- MPA with multi-pin plug connection
- MPA with AS-interface connection
- MPA with CPI connection

### MPA with ducted exhaust air

At least one supply plate via which the exhaust port 82/84 is vented is required with ducted exhaust air.

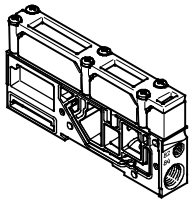
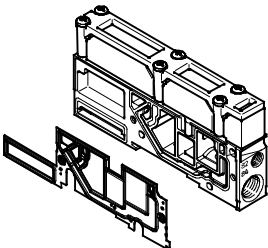
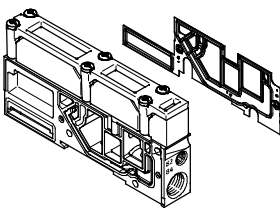
Supply plates contain the following ports:

- Compressed air supply (1)
- Venting of the pilot air supply (82/84) and pressure compensation
- Exhaust air (3/5)

Depending on your order, the exhaust ducts are either ducted or vented via the flat plate silencer.

The supply plate is configured using the code letter U if no directly adjoining separating seal is required.

If a separating seal (S, T or R) is selected to the direct right or left of the supply plate, then the code letter V or W identifies the position of the left-hand or right-hand separating seal. The code for the separating seal (S, T or R) is placed in front of the code for the supply plate (V or W).

| Supply plate       |   |                 |   |
|--------------------|---|-----------------|---|
| Code <sup>1)</sup> | Graphical symbol  | Type            | Notes   |
| U                  |   | VMPA1-...-SP... | Supply plate without separating seal (no R, S or T selected)      |
| V                  |  | VMPA1-...-SP... | Supply plate with separating seal on left, if R, S or T selected  |
| W                  |  | VMPA1-...-SP... | Supply plate with separating seal on right, if R, S or T selected |

1) The supply plate is equipped with silencer or exhaust plate depending on the code for the air supply S, T, V, X.

# Valve terminals MPA-S

Key features – Electrical components

FESTO

## Electrical supply plate

Additional electrical supply plates can be used for larger terminals. This enables up to 64 valve positions/128 solenoid coils to be supplied.

### MPA with CPX

Electrical supply plates can be configured at any point upstream or downstream of sub-bases. An electrical supply plate is required after 8 valve sub-bases.

### MPA with CPI connection

Electrical supply plates can be configured at any point upstream or downstream of manifold blocks. An electrical supply plate is required after 8 valve sub-bases.



Note

Please note that only electrical modules with isolated electrical circuits are permissible to the right of the electrical supply plate.

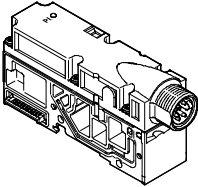
The electrical supply plate must not be installed directly to the left of a pneumatic supply plate (type VMPA1-FB-SP...).



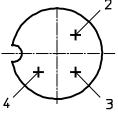
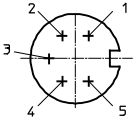
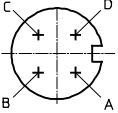
Note

Max. 24 of 32 MPA1 coils or 12 of 16 MPA2 coils can be switched on at the same time in the case of an MPA with CPI connection.

## Electrical supply plate

| Code | Graphical symbol   | Type                  | Notes  |
|------|--|-----------------------|--|
| L    |  | VMPA-FB-SP-V-SP       | Electrical supply plate with M18 plug connection, 3-pin  |
|      |  | VMPA-FB-SP-7/8-V-5POL | Electrical supply plate with 7/8" plug connection, 5-pin |
|      |  | VMPA-FB-SP-7/8-V-4POL | Electrical supply plate with 7/8" plug connection, 4-pin |

## Pin allocation for power supply

|   | Pin | Allocation              |
|---|-----|-------------------------|
| Pin allocation for M18  |     |                         |
|  | 2   | 24 V DC valves          |
|   | 3   | 0 V DC                  |
|   | 4   | FE                      |
| Pin allocation for 7/8", 5-pin  |     |                         |
|  | 1   | 0 V DC valves           |
|   | 2   | n.c.                    |
|   | 3   | FE (leading)            |
|   | 4   | n.c.                    |
|   | 5   | 24 V DC valves          |
| Pin allocation for 7/8", 4-pin  |     |                         |
|  | A   | n.c.                    |
|   | B   | 24 V DC valves          |
|   | C   | FE                      |
|   | D   | 0 V DC valves (leading) |

# Valve terminals MPA-S

Key features – Pneumatic components

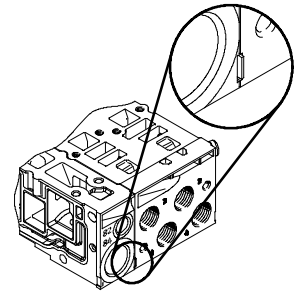
FESTO

## Creation of pressure zones and separation of exhaust air

If different work pressures are required, MPA offers various possibilities for building up pressure zones. Depending on the electrical interface up to 16 pressure zones are possible. A pressure zone is created by isolating the internal supply ducts between the manifold blocks using an appropriate separating seal or using a separator that is permanently integrated in the manifold block (code I or code III).

Compressed air is supplied and vented via a supply plate. The position of the supply plates and separating seals can be freely selected with the valve terminal MPA.

Separating seals are integrated ex-works as per your order. Separating seals can be distinguished through their coding, even when the valve terminal is assembled.



Note

The following must be taken into consideration for subsequent expansion or conversions:

Different separating seals are required for operating with ducted exhaust air and operation with flat plate silencers.

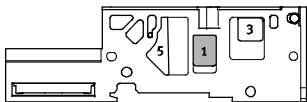
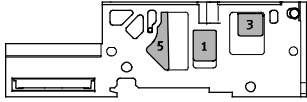
## Creating pressure zones


| Code | Separating seal for operating with flat plate silencer |        | Separating seal for operating with ducted exhaust air |        | Notes                   |
|------|--|--------|---|--------|-------------------------|
|      | Pictorial examples                                     | Coding | Pictorial examples                                    | Coding |                         |
| –    | <br>VMPA...-DPU  |        | <br>VMPA...-DP  |        | No duct separation      |
| T    | <br>VMPA...-DPU-P                                      |        | <br>VMPA...-DP-P                                      |        | Duct 1 separate         |
| S    | <br>VMPA...-DPU-PRS                                    |        | <br>VMPA...-DP-PRS                                    |        | Duct 1 and 3/5 separate |
| R    | <br>VMPA...-DPU-RS                                     |        | <br>VMPA...-DP-RS                                     |        | Duct 3/5 separate       |

# Valve terminals MPA-S

Key features – Pneumatic components



| Creating pressure zones |   |        |                         |
|-------------------------|---|--------|-------------------------|
| Code                    | Manifold block with duct separation for operating with flat plate silencer or with ducted exhaust air |        | Notes                   |
|                         | Pictorial examples  | Coding |                         |
| I                       |                      | –      | Duct 1 separate         |
| III                     |                      | –      | Duct 1 and 3/5 separate |



Note

The duct separation cannot be subsequently removed and is integrated in the centre of the manifold block:

- With width 10 mm between valves 2 and 3
- With width 20 mm between valves 1 and 2

**FESTO**

Internal pilot air supply, flat plate silencer

The diagram illustrates a two-stage refrigeration system with an optional separating seal. The system consists of two identical stages connected in series. Each stage includes a compressor unit on the left, a condenser coil in the middle, and an evaporator coil on the right. The condenser coils are connected to a central vertical pipe labeled 'Optional separating seal'. The evaporator coils are connected to a common return line. The diagram shows the flow of refrigerant through the system, with labels for various components and connections. The refrigerant flow is indicated by arrows and labels: 'T' for the top of the separating seal, 'S' for the separator, and 'R' for the return line. The condenser coils are labeled '82/84' and '12/14'. The evaporator coils are labeled '12/14' and '1'. The separating seal is labeled 'Optional separating seal'.

## Valve terminals MPA-S

Key features – Pneumatic components

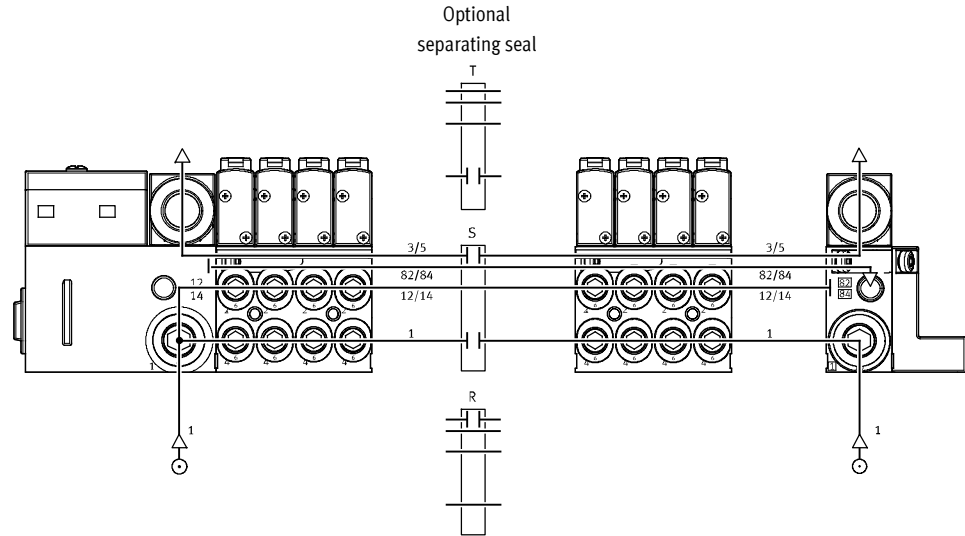
FESTO

### Examples: Compressed air supply and pilot air supply

#### Internal pilot air supply, ducted exhaust air

Pneumatic air supply to the valve terminal: code V

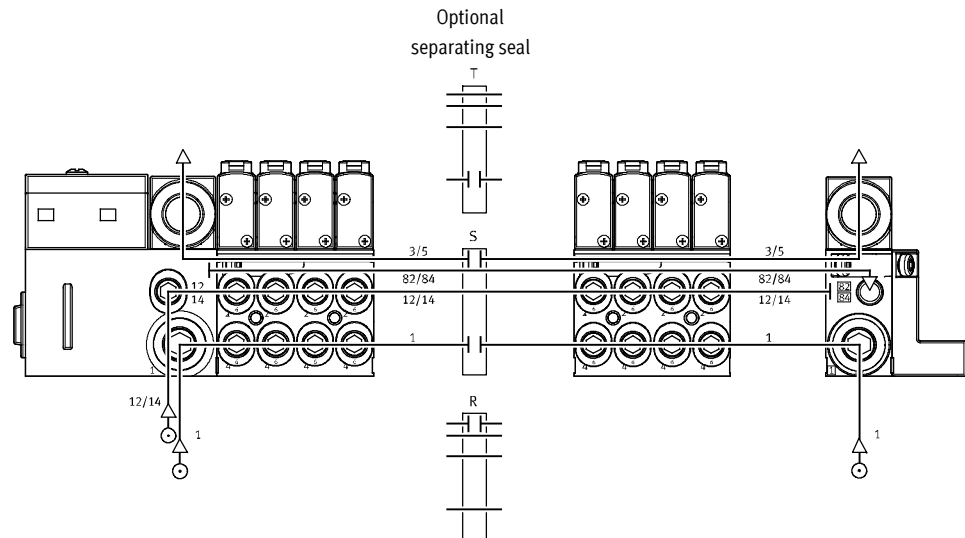
The diagram opposite shows an example of the configuration and connection of the compressed air supply with internal pilot air supply. Port 12/14 on the pneumatic interface or the electrical interface (multi-pin plug) as appropriate is tightly sealed. Exhaust ports 3/5 and 82/84 are vented via the appropriate connections. Separating seals can be used optionally to create pressure zones.



#### External pilot air supply, ducted exhaust air

Pneumatic supply to the valve terminal: code X

The diagram opposite shows an example of the configuration and connection of the compressed air supply with external pilot air supply. Port 12/14 on the pneumatic interface or the electrical interface (multi-pin plug) as appropriate is equipped with a threaded connector for this purpose. Exhaust ports 3/5 and 82/84 are vented via the appropriate connections. Separating seals can be used optionally to create pressure zones.



## Valve terminals MPA-S

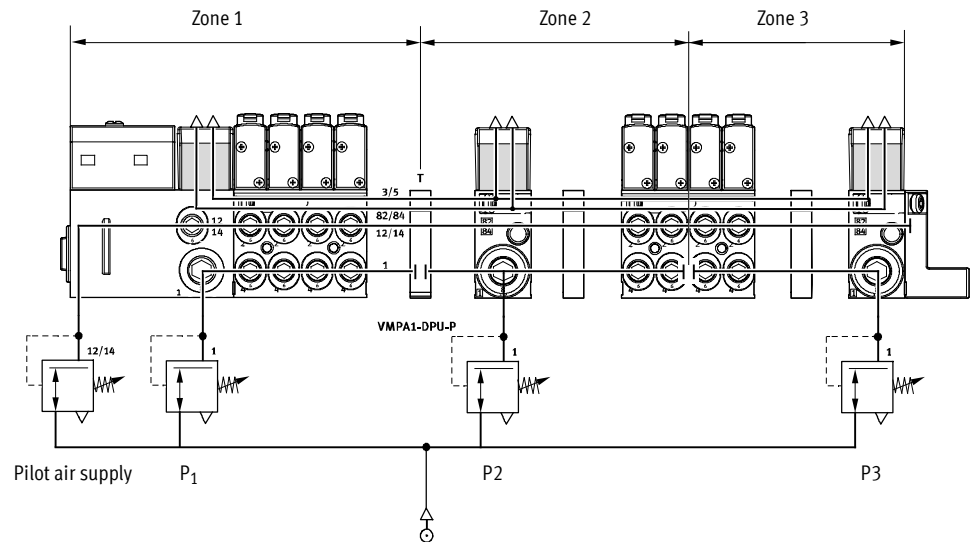
Key features – Pneumatic components

FESTO

### Examples: Creating pressure zones

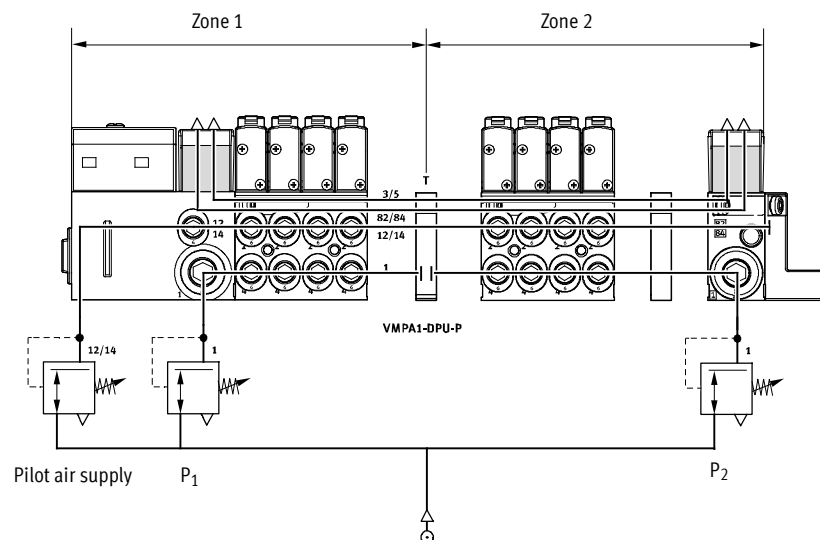
#### MPA with CPX terminal connection

The diagram shows an example of the configuration and connection of three pressure zones using separating seals – with external pilot air supply.



#### MPA with multi-pin plug connection

The diagram shows an example of the configuration and connection of the pressure zones – with external pilot air supply.



## Valve terminals MPA-S

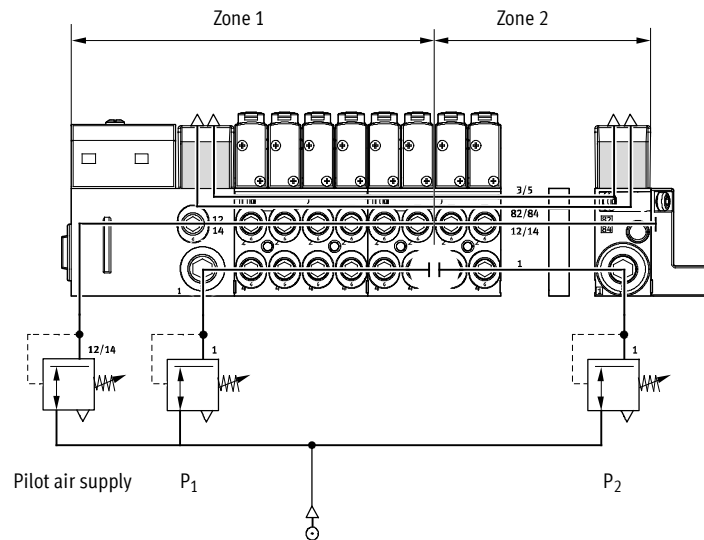
Key features – Pneumatic components

FESTO

### Examples: Creating pressure zones

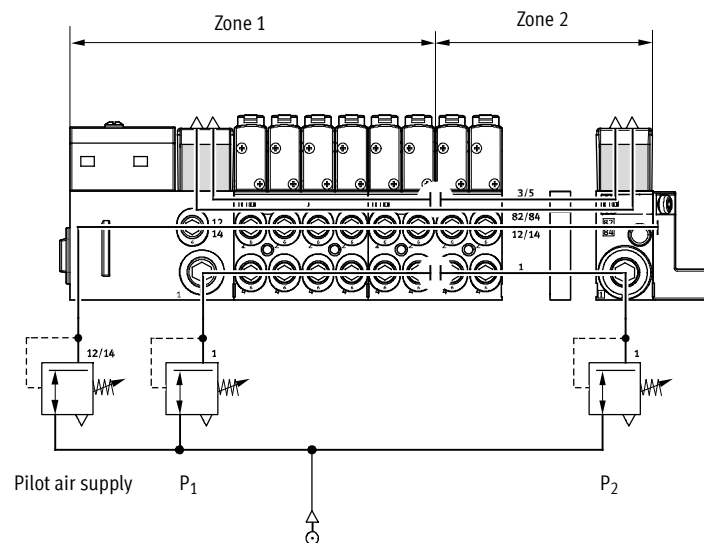
#### Manifold block with pressure zone separation in duct 1

Another way of creating pressure zones is to use manifold blocks with pressure zone separation. The diagram opposite shows the version with pressure zone separation in duct 1.



#### Manifold block with pressure zone separation in duct 1 and duct 3/5

The diagram opposite shows the version with pressure zone separation in duct 1 and duct 3/5.



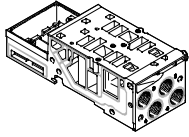


# Valve terminals MPA-S

Key features – Pneumatic components

**FESTO**

## Manifold block



MPA is based on a modular system consisting of manifold blocks and valves. The manifold blocks are screwed together and thus form the support system for the valves. They contain the connection ducts for

supplying compressed air to and venting from the valve terminal as well as the working lines for the pneumatic drives for each valve. Each manifold block is connected to the next using three screws.

Individual terminal sections can be isolated and further manifold blocks inserted by loosening these screws. This ensures that the valve terminal can be rapidly and reliably extended.

| Manifold block versions                               |                  |  |       |   |   |
|---|------------------|--|-------|---|---|
| Code  | Graphical symbol | Type   | Width | Number of valve positions<br>(solenoid coils) | Notes   |
|   |                  |  | [mm]  |   |   |
| Manifold block for multi-pin plug/fieldbus connection |                  |  |       |   |   |
| A, C <sup>1)</sup>                                    |                  | VMPA1-FB-AP-4-1  | 10    | 4 (8/4 <sup>1)</sup> )                        | Working lines (2, 4) on the manifold block <ul style="list-style-type: none"><li>• Connection sizes MPA1: M7, QS4, QS6</li><li>• Code I: Separation in duct 1 in the manifold block</li><li>• Code III: Separation in duct 1 and duct 3/5 in the manifold block</li></ul>   |
| AI, C <sup>1)</sup>                                   |                  | VMPA1-FB-AP-4-1-T1   |       |   |   |
| AIII, CIII <sup>1)</sup>                              |                  | VMPA1-FB-AP-4-1-S1   |       |   |   |
| B, D <sup>1)</sup>                                    |                  | VMPA2-FB-AP-2-1  | 20    | 2 (4/2 <sup>1)</sup> )                        | Working lines (2, 4) on the manifold block <ul style="list-style-type: none"><li>• Connection sizes MPA2: G3/8, QS6, QS8</li><li>• Code I: Separation in duct 1 in the manifold block</li><li>• Code III: Separation in duct 1 and duct 3/5 in the manifold block</li></ul> |
| BI, DI <sup>1)</sup>                                  |                  | VMPA2-FB-AP-2-1-T0   |       |   |   |
| BIII, DIII <sup>1)</sup>                              |                  | VMPA2-FB-AP-2-1-S0   |       |   |   |
|   |                  |  |       |   |   |
| Individual sub-base                                   |                  |  |       |   |   |
| –   |                  | <b>Without ATEX certification:</b><br>VMPA1-1-IC-AP-1 <sup>2)</sup><br>VMPA1-1-IC-AP-S-1 <sup>3)</sup>                     | 10    | 1 (2)   | <ul style="list-style-type: none"><li>• With working lines MPA1: M7, QS4, QS6</li><li>• With ports for supply air (1, 12/14) and exhaust air (3, 5, 82/84)</li><li>• For internal or external pilot air supply</li></ul>  |
|   |                  | <b>With ATEX certification<sup>4)</sup>:</b><br>VMPA1-1-IC-AP-1-EX1E <sup>2)</sup><br>VMPA1-1-IC-AP-S-1-EX1E <sup>3)</sup> |       |   |   |
| –   |                  | <b>Without ATEX certification:</b><br>VMPA2-IC-AP-1 <sup>2)</sup><br>VMPA2-IC-AP-S-1 <sup>3)</sup>                         | 20    | 1 (2)   | <ul style="list-style-type: none"><li>• With working lines MPA2: G3/8, QS6, QS8</li><li>• With ports for supply air (1, 12/14) and exhaust air (3, 5, 82/84)</li><li>• For internal or external pilot air supply</li></ul>  |
|   |                  | <b>With ATEX certification<sup>4)</sup>:</b><br>VMPA2-IC-AP-1-EX1E <sup>2)</sup><br>VMPA2-IC-AP-S-1-EX1E <sup>3)</sup>     |       |   |   |

1) Only possible with multi-pin plug connection

2) Internal pilot air supply

3) External pilot air supply

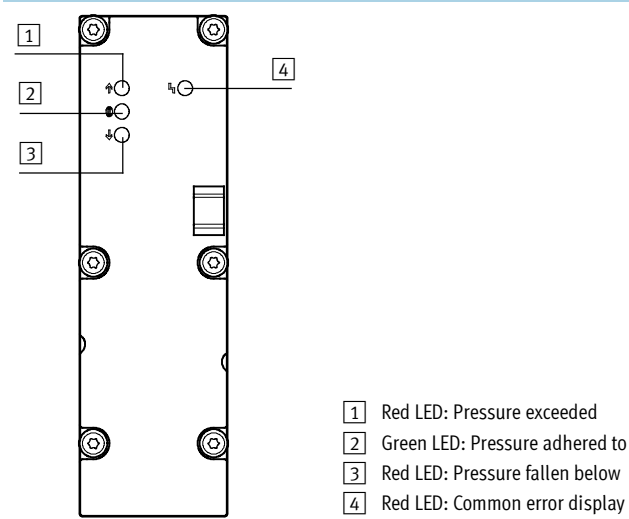
4) For special ATEX applications, please talk to your technical consultant

# Valve terminals MPA-S

Key features – Pneumatic components

FESTO

## Pressure sensor



The pressure sensor indicates whether the applied pressure exceeds, adheres to or falls below the setpoint value using three LEDs. An additional LED indicates common errors (limit exceeded or fallen below).  
 The limits for pressure monitoring are set by means of parameter settings. You can parameterise the pressure sensor plate via the PLC or the handheld device (CPXMMI) from Festo.

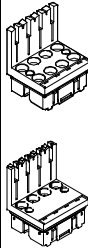
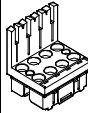
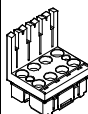
Alternatively the pressure in the exhaust duct (3/5) and the process pressure (external) can be measured. Pressure measurement in the exhaust duct is used for monitoring the operating pressure during reversible operation (supply to (3/5)).


| Pressure sensor versions |                  |                |  |
|--------------------------|------------------|----------------|--|
| Code                     | Graphical symbol | Type           | Application  |
| PE                       |                  | VMPA-FB-PS-1   | Monitoring the operating pressure in duct 1  |
| PF                       |                  | VMPA-FB-PS-3/5 | Monitoring the pressure in exhaust ducts 3 and 5 (monitoring the venting performance or monitoring pressure in the case of reversible valve terminals) |
| PG                       |                  | VMPA-FB-PS-P1  | Monitoring an external process pressure  |

# Valve terminals MPA-S

Key features – Pneumatic components

**FESTO**

| Electrical interface versions                                     |   |  |       |   |  |
|---|---|--|-------|---|--|
| Code  | Graphical symbol  | Type   | Width | Number of valve positions<br>(solenoid coils) | Notes  |
|   |   |  | [mm]  |   |  |
| Electronics module for multi-pin plug (MPM)                       |   |  |       |   |  |
| A, B, C, D  |    | VMPA1-MPM-EMM-8<br>VMPA1-MPM-EMM-4             | 10    | 4 (8)<br>4 (4)                                | Each solenoid coil must be assigned to a specific pin of the multi-pin plug in order for the valve to be actuated. Regardless of the blanking plates or valves used, valve positions occupy <ul style="list-style-type: none"><li>• 1 address for actuation of 1 coil</li><li>• 2 addresses for actuation of 2 coils</li></ul>   |
|   |   | VMPA2-MPM-EMM-4<br>VMPA2-MPM-EMM-2             | 20    | 2 (4)<br>2 (2)                                |  |
| Electronics module for fieldbus with standard diagnostics         |   |  |       |   |  |
| A, B, H   |    | VMPA...-FB-EMS-...<br>VMPA...-FB-EMG-...       | 10    | 4 (8)   | The electronics module contains the serial communication system and facilitates: <ul style="list-style-type: none"><li>• Transmission of switching information</li><li>• Actuation of up to 8 solenoid coils</li><li>• Position-based diagnostics</li><li>• Separate voltage supply for valves</li></ul> There are different versions: <ul style="list-style-type: none"><li>• Without isolated electrical circuit (VMPA...-FB-EMS-...)</li><li>• With isolated electrical circuit (VMPA...-FB-EMG-...)</li></ul> Diagnostic function: <ul style="list-style-type: none"><li>• Error: Load voltage of the valves</li></ul> |
|   |   | VMPA...-FB-EMS-...<br>VMPA...-FB-EMG-...       | 20    | 2 (4)   |  |
| Electronics module for fieldbus with extended diagnostic function |   |  |       |   |  |
| A, B, H   |  | VMPA...-FB-EMS-...-D2<br>VMPA...-FB-EMG-...-D2 | 10    | 4 (8)   | The electronics module with extended diagnostic function contains the same functions as the electronics module with standard diagnostics. The diagnostic function, however, has been extended: <ul style="list-style-type: none"><li>• Error: Load voltage of the valves</li><li>• Error: Wire break (open load)</li><li>• Error: Short circuit in load voltage of valves</li><li>• Message: Condition monitoring</li></ul>  |
|   |   | VMPA...-FB-EMS-...-D2<br>VMPA...-FB-EMG-...-D2 | 20    | 2 (4)   |  |

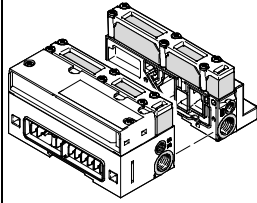



 Note

- Multi-pin plug with modular linking
- Manifold blocks MPA1 and MPA2 can be combined as required
- Positive or negative switching actuation is possible (mixed operation is not permitted)
- Double solenoid valves cannot be mounted on single solenoid electronics modules
- Single solenoid valves can be mounted on double solenoid electronics modules

# Valve terminals MPA-S

Key features – Pneumatic components

**FESTO**

| Ports for supply and exhaust |   |   |                              |  |                                   |                             |                 |
|------------------------------|---|---|------------------------------|--|-----------------------------------|-----------------------------|-----------------|
| Code                         |   | Port  | Designation                  | Code L<br>Large plug<br>connector      | Code K<br>Small plug<br>connector | Code D<br>Thread for supply |                 |
| S                            |    | Internal pilot air supply, silencer           |                              |  |                                   |                             |                 |
|                              |   | 1   | Supply air/<br>vacuum supply | Push-in fitting                        | QS-G $\frac{1}{4}$ -10-l          | QS-G $\frac{1}{4}$ -8-l     | G $\frac{1}{4}$ |
|                              |   | 3/5   | Exhaust air                  | Flat plate silencer                    | –                                 | –                           | –               |
|                              |   | 12/14   | Pilot air supply             | –                                      | –                                 | –                           | –               |
|                              |   | 82/84   | Pilot exhaust air            | Flat plate silencer                    | –                                 | –                           | –               |
|                              |   | Pressure compensation                         |                              | Vents into the atmosphere via silencer |                                   |                             |                 |
|                              |   |   |                              |  |                                   |                             |                 |
| T                            |   | External pilot air supply, silencer           |                              |  |                                   |                             |                 |
|                              |   | 1   | Supply air/<br>vacuum supply | Push-in fitting                        | QS-G $\frac{1}{4}$ -10-l          | QS-G $\frac{1}{4}$ -8-l     | G $\frac{1}{4}$ |
|                              |   | 3/5   | Exhaust air                  | Flat plate silencer                    | –                                 | –                           | –               |
|                              |   | 12/14   | Pilot air supply             | Push-in fitting                        | QSM-M7-6-l                        | QSM-M7-6-l                  | M7              |
|                              |   | 82/84   | Pilot exhaust air            | Flat plate silencer                    | –                                 | –                           | –               |
|                              |   | Pressure compensation                         |                              | Vents into the atmosphere via silencer |                                   |                             |                 |
|                              |   |   |                              |  |                                   |                             |                 |
| V                            |  | Internal pilot air supply, ducted exhaust air |                              |  |                                   |                             |                 |
|                              |   | 1   | Supply air/<br>vacuum supply | Push-in fitting                        | QS-G $\frac{1}{4}$ -10-l          | QS-G $\frac{1}{4}$ -8-l     | G $\frac{1}{4}$ |
|                              |   | 3/5   | Exhaust air                  | Push-in fitting                        | QS-10                             | QS-10                       | QS-10           |
|                              |   | 12/14   | Pilot air supply             | –                                      | –                                 | –                           | –               |
|                              |   | 82/84   | Pilot exhaust air            | Push-in fitting                        | QSM-M7-6-l                        | QSM-M7-6-l                  | M7              |
|                              |   | Pressure compensation                         |                              | Vents into duct 82/84                  |                                   |                             |                 |
|                              |   |   |                              |  |                                   |                             |                 |
| X                            |  | External pilot air supply, ducted exhaust air |                              |  |                                   |                             |                 |
|                              |   | 1   | Supply air/<br>vacuum supply | Push-in fitting                        | QS-G $\frac{1}{4}$ -10-l          | QS-G $\frac{1}{4}$ -8-l     | G $\frac{1}{4}$ |
|                              |   | 3/5   | Exhaust air                  | Push-in fitting                        | QS-10                             | QS-10                       | QS-10           |
|                              |   | 12/14   | Pilot air supply             | Push-in fitting                        | QSM-M7-6-l                        | QSM-M7-6-l                  | M7              |
|                              |   | 82/84   | Pilot exhaust air            | Push-in fitting                        | QSM-M7-6-l                        | QSM-M7-6-l                  | M7              |
|                              |   | Pressure compensation                         |                              | Vents into duct 82/84                  |                                   |                             |                 |
|                              |   |   |                              |  |                                   |                             |                 |

# Valve terminals MPA-S

Key features – Assembly

FESTO

## Valve terminal assembly

Sturdy terminal assembly thanks to:

- Four through-holes for wall mounting
- Additional mounting brackets
- H-rail mounting

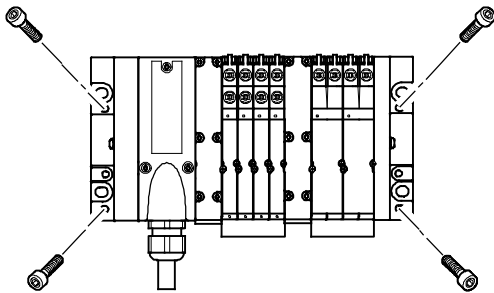


Note

When wall-mounting MPA valve terminals with more than 4 manifold blocks, use additional mounting brackets of the type VMPA-BG-RW to

prevent damage to the valve terminal. The mounting brackets can be mounted on the pneumatic supply plates.

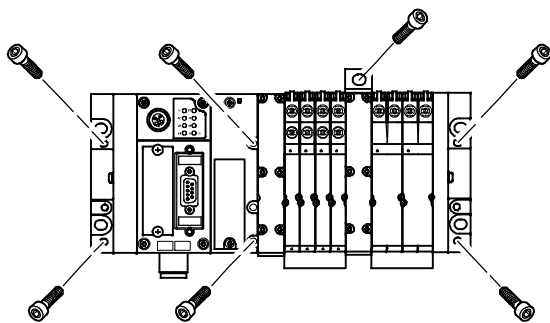
## Wall mounting – Multi-pin plug connection, AS-interface and CPI connection



The MPA valve terminal is screwed onto the mounting surface using four M4 or M6 screws. The mounting holes are on the pneumatic interface

and on the right-hand end plate. There are also optional mounting brackets available.

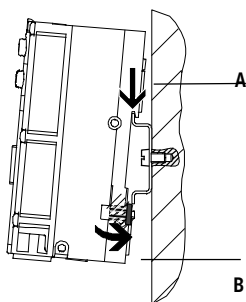
## Wall mounting – Fieldbus connection



The MPA valve terminal is screwed onto the mounting surface using six M4 or M6 screws. The mounting holes are on the left-hand end plate (CPX) and on the right-hand end plate MPA.

The pneumatic interface also provides further mounting holes as well as optional mounting brackets.

## H-rail mounting



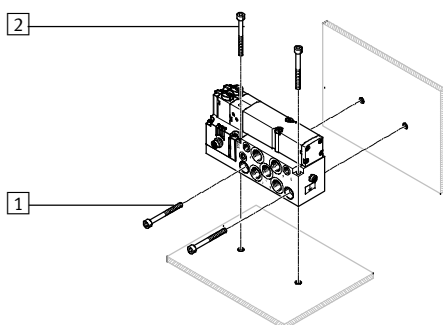
The MPA valve terminal is attached to the H-rail (see arrow A). The terminal is then swivelled around the H-rail and secured in place with the clamping component (see arrow B).

For H-rail mounting of the valve terminal you will need the following MPA mounting kit:

- With multi-pin plug: CPA-BG-NRH
- With fieldbus: CPX-CPA-BG-NRH

This enables mounting of the valve terminal on a H-rail to EN 60715.

## Individual valve assembly



- 1 Horizontal mounting holes
- 2 Vertical mounting holes

The individual sub-base is designed for wall mounting or for integration into a system or machine. It can be mounted horizontally or vertically.

# Valve terminals MPA-S

Key features – Display and operation

FESTO

## Display and operation

Each solenoid coil is allocated an LED that indicates its signal status.

- Indicator 12 shows the switching status of the coil for output 2
- Indicator 14 shows the switching status of the coil for output 4

### Manual override

The manual override (MO) enables the valve to be actuated when not electrically activated or energised. The valve is actuated by pushing the manual override. The set switching

status can also be locked by turning the manual override (code R or as accessory).

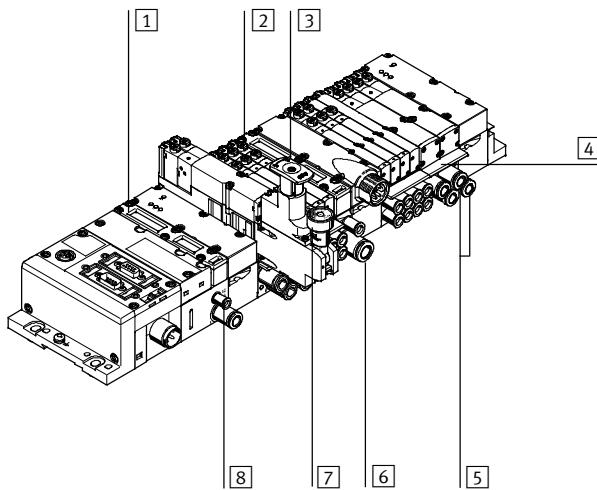
Alternatives:

- A cover (code N or as accessory) can be fitted over the manual override

to prevent it from being locked. The manual override can then only be activated by pushing it.

- A cover (code V) can be fitted over the manual override to prevent it from being accidentally activated.

## Pneumatic connection and control elements

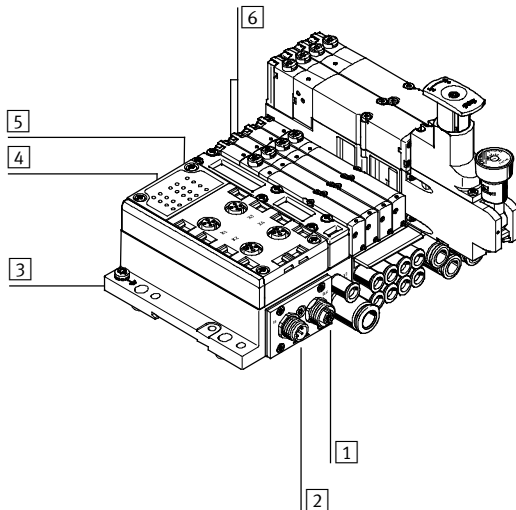


- 1 Flat plate silencer for exhaust port 3/5
- 2 Manual override (for each pilot solenoid coil, non-detenting or non-detenting/detenting)
- 3 Adjusting knob of optional pressure regulator plate
- 4 Inscription label holder for manifold block
- 5 Working lines 2 and 4, for each valve position
- 6 Supply port 1
- 7 Pressure gauge (optional)
- 8 Ports 12 and 14 for supplying the external pilot air

 Note

A manually actuated valve (manual override) cannot be reset electrically. Conversely, an electrically actuated valve cannot be reset using the mechanical manual override.

## Electrical connection and display components on the AS-interface



- 1 M12 socket for AS-interface bus and additional supply (AS-i Out)
- 2 M12 plug for AS-interface bus and additional supply (AS-i In)
- 3 Earth terminal
- 4 Status LEDs for inputs
- 5 Status LEDs for AS-interface
- 6 Diagnostic LEDs for valves

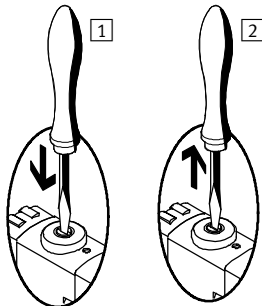
# Valve terminals MPA-S

Key features – Display and operation

FESTO

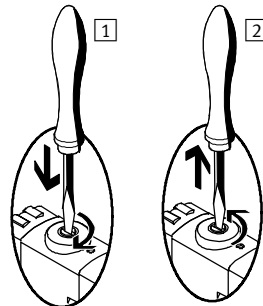
## Manual override (MO)

### MO with automatic return (non-detenting)



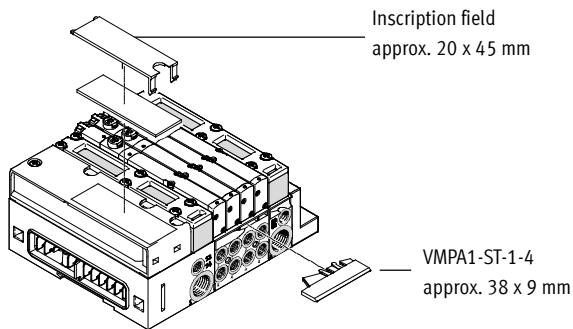
- 1 Press in the stem of the MO with a pin or screwdriver. Pilot valve switches and actuates the main valve.
- 2 Remove the pin or screwdriver. Spring force pushes the stem of the MO back. Pilot valve returns to its initial position and so too the single solenoid main valve (not with double solenoid valve code J).

### MO set via turning (detenting)



- 1 Press in the stem of the MO with a pin or screwdriver until the valve switches and then turn the stem clockwise by 90° until the stop is reached. Valve remains actuated.
- 2 Turn the stem anti-clockwise by 90° until the stop is reached and then remove the pin or screwdriver. Spring force pushes the stem of the MO back. Valve returns to its initial position (not with double solenoid valve code J).

## Inscription system



An inscription label holder VMPA1-ST-1-4 (Part No. 533 362, code T in the order code) or VMPA1-ST-2-4 (Part No. 544 384, for holding IBS-6x10 inscription labels) can be mounted on each manifold block with a width of 42 mm for labelling the valves.

Large inscription labels can be applied to the pneumatic interface as an alternative or complement to the smaller labels.

The following inscription labels can be used as spares:

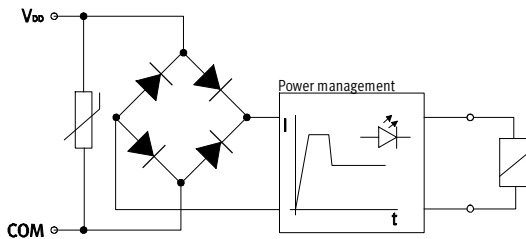
- Inscription label MPA (20 x 45 mm): Part No. 663 010

# Valve terminals MPA-S

Key features – Electrical components

FESTO

## Electrical power as a result of current reduction



Each MPA solenoid coil is protected with a spark arresting protective circuit as well as against polarity reversal. All valve types are additionally equipped with integrated current reduction.

MPA valves are supplied with operating voltage in the range 18 ... 30 V (24 V  $\pm$  25%). This high tolerance is made possible through integrated control electronics and offers additional security, e.g. if the operating voltage drops.

## Individual valve

Valves can also be used on individual sub-bases for actuators further away from the valve terminal.

- Detachable electronics module with integrated holding current reduction
- Electrical M8 connection, 4-pin with screw connection

## Electrical multi-pin plug connection

The following multi-pin plug connection is offered for the valve terminal MPA:

- Sub-D multi-pin plug connection (25-pin)

Pins 1 ... 24 are used for addresses 1 ... 24 in order.

If fewer than 24 addresses are used for the valve terminal, the remaining

pins up to 24 are left free. Pin 25 is reserved for the neutral conductor. The valves are switched by means of positive or negative logic (PNP or NPN). Mixed operation is not permitted.

Each pin on the multi-pin plug can actuate exactly one solenoid coil. If the maximum configurable number

of valve positions is 24, this means that 24 valves can be addressed with one solenoid coil.

With 12 or less valve positions, 2 solenoid coils per valve can be addressed. With 12 or more valve positions, the number of available valve positions for valves with two solenoid coils decreases.



Note

If a single solenoid valve is assembled on a double solenoid valve position, the second address is also occupied and cannot be used.

## Guidelines on addressing for valves/solenoid coils

- The maximum possible number of addresses with a multi-pin plug connection is 24.
  - Manifold block MPA1 for 4 double solenoid valves: 8
  - Manifold block MPA2 for 2 single solenoid valves: 2
  - Manifold block MPA2 for 2 double solenoid valves: 4
- The numbering of the addresses goes from left to right in ascending consecutive order. The following applies to the individual valve positions: address x for coil 14 and address x+1 for coil 12.
- If single solenoid valves are mounted on manifold blocks for double solenoid valves, the address of coil 12 and the assigned pin will remain unused.



## Valve terminals MPA-S

Key features – Electrical components

### AS-interface® fieldbus connection

The AS-interface facilitates the spatial distribution of individual components or small component groups.  
The AS-interface connection of valve

terminal MPA can be used to control up to 8 solenoid coils.  
The electrical connection of the valve

terminal contains the LEDs that indicate the operating status and the protective circuit for the valves.



Note

For further information see  
➔ Internet: as-interface

### CPI fieldbus connection

All CP valve terminals and CP modules are connected using a ready-to-install CP cable, and are attached to the CP interface. Four modules, for example

one CPV valve terminal and one to three CP input modules, make up an installation string that ends at the CP interface. The installation system

supports a maximum of 4 installation strings that can be connected to a CP fieldbus node.



Note

For further information see  
➔ Internet: ctec

### CPX fieldbus connection

All functions and features of the electrical peripherals CPX are supported in connection with the CPX interface. This means:

- The valves and electrical outputs are supplied via the operating voltage connection CPX
- The valves are supplied and disconnected separately via a separate valve connection on the CPX (code V)



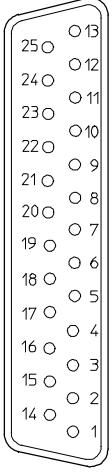

Note

For further information see  
➔ Internet: cpx

# Valve terminals MPA-S

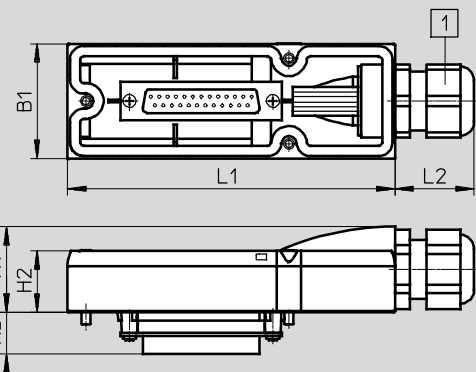
Key features – Electrical components

**FESTO**

| Pin allocation – Sub-D socket, cable   |     |              |                           |  |     |                   |                           |
|--|-----|--------------|---------------------------|--|-----|-------------------|---------------------------|
|  | Pin | Address/coil | Wire colour <sup>2)</sup> |  | Pin | Address/coil      | Wire colour <sup>2)</sup> |
|   | 1   | 0            | WH                        |  | 17  | 16                | WH PK                     |
|  | 2   | 1            | GN                        |  | 18  | 17                | PK BN                     |
|  | 3   | 2            | YE                        |  | 19  | 18                | WH BU                     |
|  | 4   | 3            | GY                        |  | 20  | 19                | BN BU                     |
|  | 5   | 4            | PK                        |  | 21  | 20                | WH RD                     |
|  | 6   | 5            | BU                        |  | 22  | 21                | BN RD                     |
|  | 7   | 6            | RD                        |  | 23  | 22                | WH BK                     |
|  | 8   | 7            | VT                        |  | 24  | 23                | BN                        |
|  | 9   | 8            | GY PK                     |  | 25  | 0 V <sup>1)</sup> | BK                        |
|  | 10  | 9            | RD BU                     |  |     |                   |                           |
|  | 11  | 10           | WH GN                     |  |     |                   |                           |
|  | 12  | 11           | BN GN                     |  |     |                   |                           |
|  | 13  | 12           | WH YE                     |  |     |                   |                           |
|  | 14  | 13           | YE BN                     |  |     |                   |                           |
|  | 15  | 14           | WH GY                     |  |     |                   |                           |
|  | 16  | 15           | GY BN                     |  |     |                   |                           |
|  Note<br>The drawing shows a view on the Sub-D socket on the multi-pin cable VMPA-KMS1-.... |     |              |                           |  |     |                   |                           |

1) 0 V for positive switching control signals; connect 24 V for negative switching control signals; mixed operation is not permitted.

2) To IEC 757.

| Dimensions  |  | Download CAD data → <a href="http://www.festo.com">www.festo.com</a>  |  |
|---|--|---|--|
| Connecting cable  |  |   |  |
|  |  | <p><b>1</b> Cable conduit fitting with clamping range 6 ... 12 mm</p> | <p>The wire colours refer to the following pre-assembled multi-pin cables from Festo:</p> <ul style="list-style-type: none"><li>• VMPA-KMS1-8-... Valve terminal for up to 4 valve positions (8 coils)</li><li>• VMPA-KMS1-24-... Valve terminal with 8 ... 24 valve positions</li></ul> |

| Type       | L1    | L2 | B1   | H1 | H2 | H3   |
|------------|-------|----|------|----|----|------|
| VMPA-KMS-H | 107.3 | 26 | 37.6 | 28 | 20 | 13.8 |

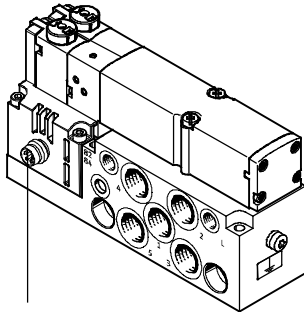
| Type                 | Sheath                  | Length [m] | Core x mm <sup>2</sup> | D [mm] | Part No. |
|----------------------|-------------------------|------------|------------------------|--------|----------|
| VMPA-KMS1-8-2.5      | PVC                     | 2.5        | 10 x 0.34              | 6.9    | 533195   |
| VMPA-KMS2-8-2.5-PUR  | PUR                     | 2.5        | 10 x 0.25              | 8.3    | 533504   |
| VMPA-KMS1-8-5        | PVC                     | 5          | 10 x 0.34              | 6.9    | 533196   |
| VMPA-KMS2-8-5-PUR    | PUR                     | 5          | 10 x 0.25              | 8.3    | 533505   |
| VMPA-KMS1-8-10       | PVC                     | 10         | 10 x 0.34              | 6.9    | 533197   |
| VMPA-KMS2-8-10-PUR   | PUR                     | 10         | 10 x 0.25              | 8.3    | 533506   |
| VMPA-KMS1-24-2.5     | PVC                     | 2.5        | 25 x 0.34              | 11.4   | 533192   |
| VMPA-KMS2-24-2.5-PUR | PUR                     | 2.5        | 25 x 0.25              | 11.2   | 533501   |
| VMPA-KMS1-24-5       | PVC                     | 5          | 25 x 0.34              | 11.4   | 533193   |
| VMPA-KMS2-24-5-PUR   | PUR                     | 5          | 25 x 0.25              | 11.2   | 533502   |
| VMPA-KMS1-24-10      | PVC                     | 10         | 25 x 0.34              | 11.4   | 533194   |
| VMPA-KMS2-24-10-PUR  | PUR                     | 10         | 25 x 0.25              | 11.2   | 533503   |
| VMPA-KMS-H           | Cover for self-assembly |            |                        |        | 533198   |

# Valve terminals MPA-S

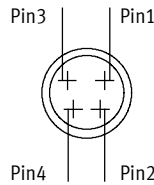
Key features – Electrical components

FESTO

## Electrical connection – Individual valve interface



Connector plug M8 x 1, male, 4-pin to  
EN 60 947-5-2



### Pin allocation on individual valve to VDMA 24571

With positive logic:

Pin1 – Not allocated

Pin2 –  $V_0$  for coil 12

Pin3 – 0 V for coils 12 and 14

Pin4 –  $V_0$  for coil 14

With negative logic:

Pin1 – Not allocated

Pin2 – 0 V for coil 12

Pin3 –  $V_0$  for coils 12 and 14

Pin4 – 0 V for coil 14

### Tightening torque for M8 plug

0.25 ... 0.5 Nm (manual torque)

| Connecting cable    |                        |                 |                  |          |
|---------------------|------------------------|-----------------|------------------|----------|
| Type                | Designation            | Version         | Cable length [m] | Part No. |
| SIM-M8-4GD-2,5-PU   | Plug socket with cable | Straight socket | 2.5              | 158960   |
| SIM-M8-4GD-5-PU     | Plug socket with cable | Straight socket | 5                | 158961   |
| SIM-M8-4WD-2,5-PU   | Plug socket with cable | Angled socket   | 2.5              | 158962   |
| SIM-M8-4WD-5-PU     | Plug socket with cable | Angled socket   | 5                | 158963   |
| NEBU-M8G4-K-2,5-LE4 | Plug socket with cable | Straight socket | 2.5              | 541342   |
| NEBU-M8G4-K-5-LE4   | Plug socket with cable | Straight socket | 5                | 541343   |
| NEBU-M8W4-K-2,5-LE4 | Plug socket with cable | Angled socket   | 2.5              | 541344   |
| NEBU-M8W4-K-5-LE4   | Plug socket with cable | Angled socket   | 5                | 541345   |



Note

Additional variants can be configured and ordered via the NEBU modular product system.

→ Internet: nebu




## Instructions for use

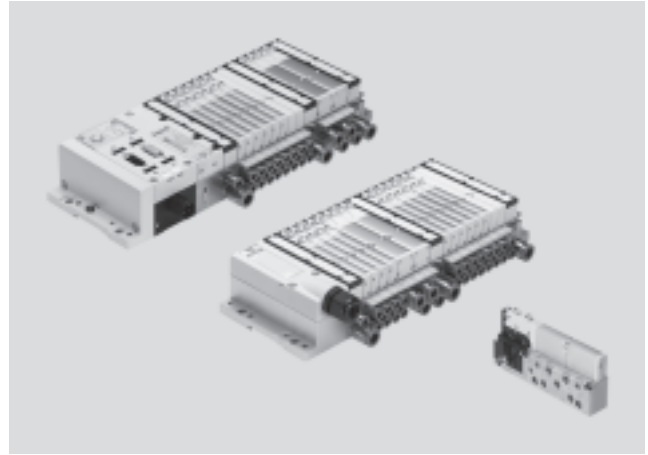
| Equipment   | Bio-oils   | Mineral oils  |
|---|--|---|
| <p>Operate your equipment with unlubricated compressed air if possible. Festo valves and cylinders are designed so that, if used as designated, they will not require additional lubrication and will still achieve a long service life. The quality of compressed air downstream from the compressor must correspond to that of unlubricated compressed air. If possible, do not operate all of your equipment with lubricated compressed air. The lubricators should, where possible, always be installed directly upstream of the actuator used.</p> | <p>Unsuitable additional oil and an excessive oil content in the compressed air reduce the service life of the valve terminal. Use Festo special oil OFSW-32 or the alternatives listed in the Festo catalogue (as specified in DIN 51524 HLP32; basic oil viscosity 32 CST at 40 °C).</p> | <p>When using bio-oils (oils that are based upon synthetic or native ester, e.g. rapeseed oil methyl ester), the maximum residual oil content of 0.1 mg/m<sup>3</sup> must not be exceeded (see ISO 8573-1 Class 2).</p>  |
|   |  | <p>When using mineral oils (e.g. HLP oils to DIN 51524, parts 1 to 3) or similar oils based on poly-alpha-olefins (PAO), the maximum residual oil content of 5 mg/m<sup>3</sup> must not be exceeded (see ISO 8573-1 Class 4). A higher residual oil content irrespective of the compressor oil cannot be permitted, as the basic lubricant would be flushed out over time.</p> |

# Valve terminals MPA-S

FESTO

## Technical data

-  Flow rate  
MPA1: Up to 360 l/min  
MPA2: Up to 700 l/min
-  Valve width  
MPA1: 10 mm  
MPA2: 20 mm
-  Voltage  
24 V DC



| General technical data       |        |  |                |                |
|------------------------------|--------|--|----------------|----------------|
| Valve terminal design        |        | Modular, valve sizes can be mixed  |                |                |
| Electrical actuation         |        | Fieldbus   | Multi-pin plug | AS-i interface |
| CPI interface                |        |  |                |                |
| Actuation type               |        | Electric   |                |                |
| Nominal voltage              | [V DC] | 24   |                |                |
| Operating voltage range      | [V DC] | 18 ... 30  |                |                |
| Residual ripple              | [Vss]  | 4  |                |                |
| Max. no of valve positions   |        | 64 (FB), 24 (MP)   |                |                |
| Valve size                   | [mm]   | 10, 20   |                |                |
| Pilot air supply             |        | Internal or external   |                |                |
| Lubrication                  |        | Life-time lubrication, PWIS-free (free of paint-wetting impairment substances) |                |                |
| Type of mounting             |        | Wall mounting  |                |                |
|                              |        | On H-rail to EN 60715  |                |                |
| Mounting position            |        | Any (wall mounting)  |                |                |
|                              |        | Horizontal only (H-rail)   |                |                |
| Manual override              |        | Non-detenting, detenting, blocked  |                |                |
| Protection class to EN 60529 |        | IP65 (for all types of signal transmission in assembled state)                 |                |                |
|                              |        |  |                |                |
| Pneumatic connections        |        |  |                |                |
| Pneumatic connection         |        | Via manifold block or individual connection                                    |                |                |
| Supply port                  | 1      | G¼ (M7 with individual sub-base)   |                |                |
| Exhaust port                 | 3/5    | QS-10 (M7 with individual sub-base)  |                |                |
| Working ports                | 2/4    | Dependent on the connection type selected                                      |                |                |
|                              |        | MPA1: M7, QS4, QS6   |                |                |
|                              |        | MPA2: G½, QS6, QS8   |                |                |
| Pilot air port               | 12/14  | M7 (M5 with individual sub-base)   |                |                |
| Pilot exhaust air port       | 82/84  | M7 (M5 with individual sub-base)   |                |                |
| Pressure compensation port   |        | With ducted exhaust air: via port 82/84 (M5 with individual sub-base)          |                |                |
|                              |        | With flat plate silencer: venting to atmosphere                                |                |                |



### Note

Note possible restrictions for the IP protection class  
→ ATEX conformity declaration

# Valve terminals MPA-S

Technical data

**FESTO**

| Operating and environmental conditions |  |
|--|--|
| Operating medium                       | Compressed air according to ISO 8573-1:2010 [7:4:4]  |
| Note on operating/pilot medium         | Lubricated operation possible (in which case lubricated operation will always be required) |
| Operating pressure [bar]               | −0.9 ... 10  |
| Pilot pressure [bar]                   | 3 ... 8  |
| Ambient temperature [°C]               | −5 ... +50   |
| Temperature of medium [°C]             | −5 ... +50   |
| Storage temperature <sup>1)</sup> [°C] | −20 ... +40  |
| Relative air humidity at 40 °C [%]     | 90   |

1) Long-term storage

| Certifications <sup>1)</sup>                      |   |   |  |   |   |
|---|---|---|--|---|---|
| Type  | MPA-MPM-VI<br>(multi-pin plug interface)    | MPA-FB-VI<br>(fieldbus interface)           | Valve on individual sub-base <sup>2)</sup> | MPA-ASI-VI<br>(AS-i interface)              | MPA-CPI-VI<br>(CPI interface)               |
| Part number                                       | 539105                                      | 530411                                      | ➔ 73                                       | 546279                                      | 546280                                      |
| ATEX category for gas                             | II 3 G                                      |   | –  | II 3 G                                      |   |
| Explosion ignition protection type for gas        | Ex nA IIC T4 X Gc                           |   | –  | Ex nA IIC T4 X Gc                           |   |
| ATEX temperature rating [°C]                      | −5 ≤ Ta ≤ +50                               |   | –  | −5 ≤ Ta ≤ +50                               |   |
| Explosion protection certification outside the EU | –   | GOST-R EPL Dc<br>GOST-R EPL Gc              | –  | –   | –   |
| CE marking<br>(see declaration of conformity)     | To EU EMC Directive <sup>3)</sup>           | To EU EMC Directive <sup>3)</sup>           | To EU EMC Directive <sup>3)</sup>          | To EU EMC Directive <sup>3)</sup>           | To EU EMC Directive <sup>3)</sup>           |
|   | To EU Explosion Protection Directive (ATEX) | To EU Explosion Protection Directive (ATEX) | –  | To EU Explosion Protection Directive (ATEX) | To EU Explosion Protection Directive (ATEX) |
| Certification                                     | cULus recognized (OL)                       | cULus recognized (OL)                       | cULus recognized (OL)                      | cULus recognized (OL)                       | cULus recognized (OL)                       |
| Corrosion resistance class CRC <sup>4)</sup>      | 1   | 1   | 1  | 0   | 0   |

1) Interface versions not listed do not have any of the listed certifications

2) Only applies to sub-bases VMPA...-EX1 E

3) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: [www.festo.com](http://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.

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

Components subject to low corrosion stress. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

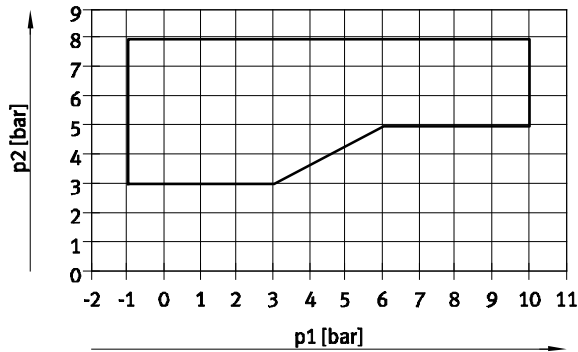
# Valve terminals MPA-S

Technical data

FESTO

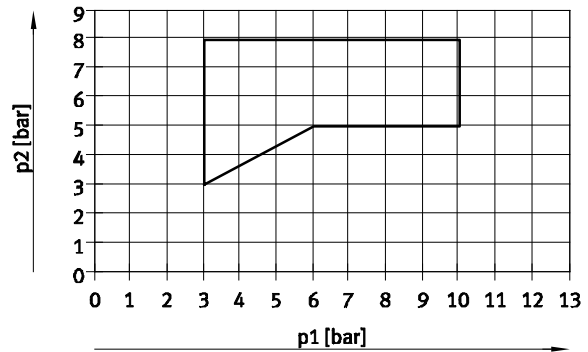
## Pilot pressure $p_2$ as a function of working pressure $p_1$ with external pilot air supply

For valves with code: M, J, B, G, E, W, X



1 Operating range for valves with external pilot air supply

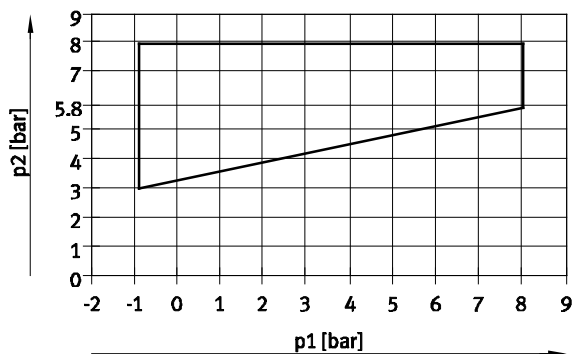
For valves with code: N, K, H, D, I



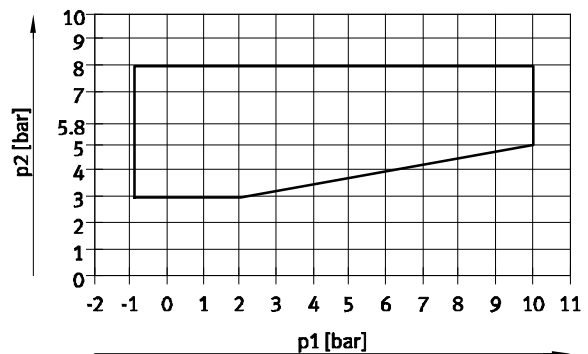
1 Operating range for valves with external pilot air supply

## Pilot pressure $p_2$ as a function of working pressure $p_1$ for valves with mechanical spring return

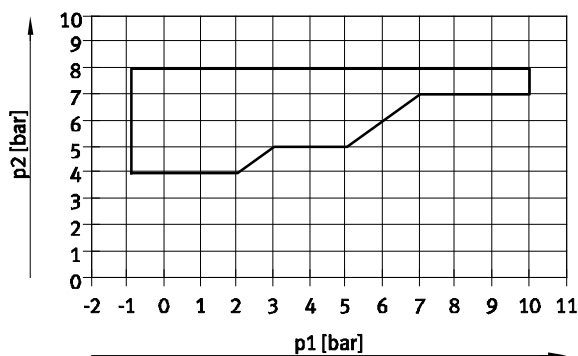
For valves in width 10 mm with code: MS, NS, KS, HS, DS



For valves in width 20 mm with code: MS, NS, KS, HS, DS



For valves in width 10 mm with code: MU, NU, KU, HU



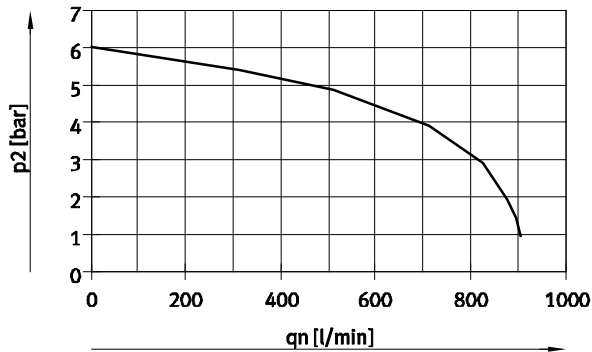
# Valve terminals MPA-S

Technical data

FESTO

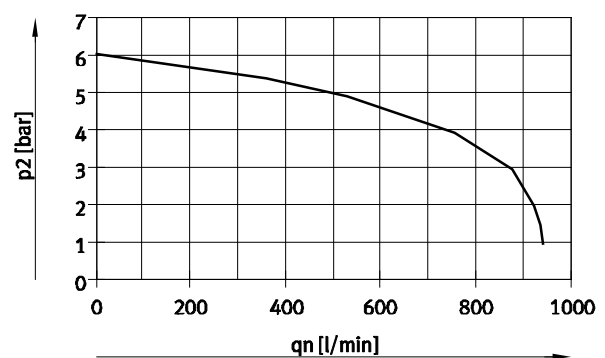
Flow rate  $q_n$  as a function of output pressure  $p_2$  with pressure regulator plates (width 20 mm)

(P regulator plate) for port 1



Supply pressure 10 bar,  
set regulator pressure 6 bar

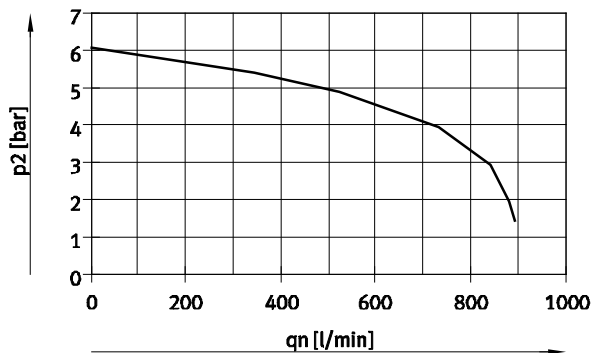
(B regulator plates) for port 2



Supply pressure 10 bar,  
set regulator pressure 6 bar

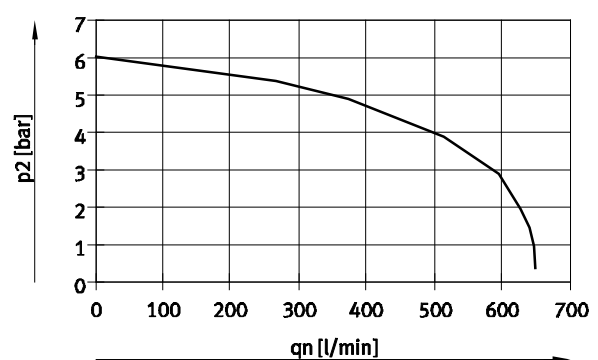
Flow rate  $q_n$  as a function of output pressure  $p_2$  with pressure regulator plates (width 20 mm)

(A regulator plates) for ports 4



Supply pressure 10 bar,  
set regulator pressure 6 bar

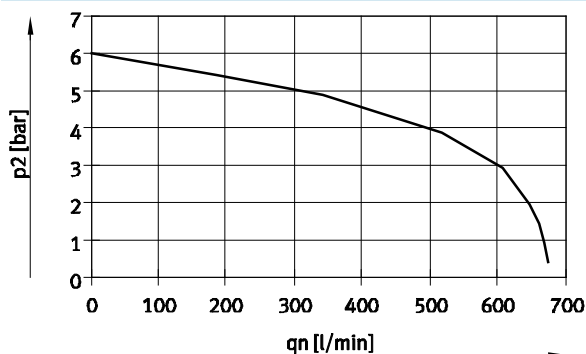
(B regulator plates, rev.) for ports 3, reversible



Supply pressure 10 bar,  
set regulator pressure 6 bar

Flow rate  $q_n$  as a function of output pressure  $p_2$  with pressure regulator plates (width 20 mm)

(A regulator plates, rev.) for ports 5, reversible



Supply pressure 10 bar,  
set regulator pressure 6 bar

# Valve terminals MPA-S

FESTO

Technical data

| Technical data – Valves in width 10 mm   |             |         |                    |     |          |     |     |              |     |     |     |     |          |     |
|--|-------------|---------|--------------------|-----|----------|-----|-----|--------------|-----|-----|-----|-----|----------|-----|
| Code                                     |             |         | M                  | J   | N        | K   | H   | B            | G   | E   | X   | W   | D        | I   |
| Switching times                          | On          | [ms]    | 10                 | 10  | 10       | 10  | 10  | 10           | 10  | 10  | 10  | 10  | 10       | 10  |
|  | Off         | [ms]    | 20                 | –   | 20       | 20  | 20  | 35           | 35  | 35  | 20  | 20  | 20       | 20  |
|  | Change-over | [ms]    | –                  | 15  | –        | –   | –   | 15           | –   | 15  | –   | –   | –        | –   |
| Operating pressure                       |             | [bar]   | –0.9 ... +10       |     | 3 ... 10 |     |     | –0.9 ... +10 |     |     |     |     | 3 ... 10 |     |
| Standard nominal flow rate               |             | [l/min] | 360                | 360 | 300      | 230 | 300 | 300          | 320 | 240 | 255 | 255 | 230      | 260 |
| Design                                   |             |         | Piston spool valve |     |          |     |     |              |     |     |     |     |          |     |
| Max. tightening torque of valve mounting |             | [Nm]    | 0.25               |     |          |     |     |              |     |     |     |     |          |     |
| Materials                                |             |         | Die-cast aluminium |     |          |     |     |              |     |     |     |     |          |     |
| Product weight                           |             | [g]     | 49                 | 56  | 56       | 56  | 56  | 56           | 56  | 56  | 49  | 49  | 56       | 56  |

| Technical data – Valves in width 10 mm   |             |         |                    |     |     |     |     |                                 |     |     |     |    |
|--|-------------|---------|--------------------|-----|-----|-----|-----|---------------------------------|-----|-----|-----|----|
| Code                                     |             |         | MS                 | NS  | KS  | HS  | DS  | MU                              | NU  | KU  | HU  |    |
| Switching times                          | On          | [ms]    | 10                 | 14  | 14  | 14  | 14  | 10                              | 8   | 8   | 8   |    |
|  | Off         | [ms]    | 27                 | 16  | 16  | 16  | 16  | 12                              | 8   | 10  | 10  |    |
|  | Change-over | [ms]    | –                  | –   | –   | –   | –   | –                               | –   | –   | –   |    |
| Operating pressure                       |             | [bar]   | –0.9 ... +8        |     |     |     |     | –0.9 ... +10                    |     |     |     |    |
| Standard nominal flow rate               |             | [l/min] | 360                | 300 | 230 | 300 | 230 | 190                             | 190 | 160 | 190 |    |
| Design                                   |             |         | Piston spool valve |     |     |     |     | Poppet valve with spring return |     |     |     |    |
| Max. tightening torque of valve mounting |             | [Nm]    | 0.25               |     |     |     |     |                                 |     |     |     |    |
| Materials                                |             |         | Die-cast aluminium |     |     |     |     | Reinforced PPA                  |     |     |     |    |
| Product weight                           |             |         | [g]                | 56  | 56  | 56  | 56  | 56                              | 35  | 42  | 42  | 42 |

| Technical data – Valves in width 20 mm   |             |         |                    |     |          |     |     |              |     |     |     |          |     |             |     |     |     |     |
|--|-------------|---------|--------------------|-----|----------|-----|-----|--------------|-----|-----|-----|----------|-----|-------------|-----|-----|-----|-----|
| Code                                     |             | M       | J                  | N   | K        | H   | B   | G            | E   | X   | W   | D        | I   | MS          | NS  | KS  | HS  | DS  |
| Switching times                          | On          | [ms]    | 15                 | 9   | 8        | 8   | 8   | 11           | 10  | 11  | 13  | 13       | 7   | 7           | 8   | 12  | 12  | 12  |
|  | Off         | [ms]    | 28                 | –   | 28       | 28  | 28  | 46           | 40  | 47  | 22  | 22       | 25  | 25          | 36  | 25  | 25  | 25  |
|  | Change-over | [ms]    | –                  | 22  | –        | –   | –   | 23           | 21  | 23  | –   | –        | –   | –           | –   | –   | –   | –   |
| Operating pressure                       |             | [bar]   | –0.9 ... +10       |     | 3 ... 10 |     |     | –0.9 ... +10 |     |     |     | 3 ... 10 |     | –0.9 ... +8 |     |     |     |     |
| Standard nominal flow rate               |             | [l/min] | 670                | 670 | 550      | 500 | 550 | 510          | 610 | 590 | 470 | 470      | 650 | 650         | 670 | 550 | 500 | 550 |
| Design                                   |             |         | Piston spool valve |     |          |     |     |              |     |     |     |          |     |             |     |     |     |     |
| Max. tightening torque of valve mounting |             | [Nm]    | 0.65               |     |          |     |     |              |     |     |     |          |     |             |     |     |     |     |
| Materials                                |             |         | Die-cast aluminium |     |          |     |     |              |     |     |     |          |     |             |     |     |     |     |
| Product weight                           |             | [g]     | 100                |     |          |     |     |              |     |     |     |          |     |             |     |     |     |     |



# Valve terminals MPA-S

Technical data

**FESTO**

| Electrical data – MPA with electronics module VMPA...-FB... (CPX terminal, CPI interface) |      |                 |    |
|---|------|-----------------|----|
| Intrinsic current consumption per electronics module                                      |      |                 |    |
| At 24 V U <sub>EL/SEN</sub> <sup>1)</sup><br>(internal electronics, all outputs 0 signal) | [mA] | Typically 8     |    |
| At 24 V U <sub>val</sub> <sup>2)</sup><br>(internal electronics, without valves)          |      |                 |    |
| VMPA...-EMG..., separate circuits   | [mA] | Typically 23 mA |    |
| VMPA...-EMS..., with separate circuits  | [mA] | Typically 3 mA  |    |
|   |      |                 |    |
| Maximum current consumption per solenoid coil at nominal voltage                          |      |                 |    |
| Nominal pick-up current   | [mA] | 58              | 99 |
| Nominal current following current reduction   | [mA] | 9               | 18 |
| Time until current reduction  | [ms] | 24              | 24 |
|   |      |                 |    |
| Diagnostic message  |      |                 |    |
| Undervoltage U <sub>OFF</sub> <sup>3)</sup>   | [V]  | 17.5 ... 16     |    |

| Electrical data – MPA with electronics module VMPA...-MPM... (AS-i interface, multi-pin plug) |      |    |     |
|---|------|----|-----|
| Current consumption at Sub-D multi-pin plug connection per solenoid coil at nominal voltage   |      |    |     |
| Nominal pick-up current   | [mA] | 80 | 100 |
| Nominal current with current reduction  | [mA] | 25 | 20  |
| Time until current reduction  | [ms] | 25 | 50  |

| Calculation example for current consumption (CPX terminal, CPI interface)   |      |   |  |
|---|------|---|--|
| Current consumption with two solenoid coils MPA2<br>switched in parallel and one electronics module<br>VMPA...-EMS... without separate circuits | [mA] | $I_{EL/SEN} = 8$  |  |
| Nominal pick-up current (duration 24 ms)  | [mA] | $I_{VAL} = 3$ (intrinsic current consumption of electronics module) + 2 x 99 (MPA2) = 202 |  |
| Nominal current with current reduction (after 24 ms)  | [mA] | $I_{VAL} = 3$ (intrinsic current consumption of electronics module) + 2 x 18 (MPA2) = 39  |  |

1) Power supply for electronics and sensors

2) Load voltage supply for valves

3) Load voltage outside of function range

# Valve terminals MPA-S

Technical data

| Data on vibration and shock <sup>1) 2) 4)</sup> to DIN/EC68 |   |
|---|---|
| Vibration   | Tested according to DIN/IEC68 / EN60068 parts 2 ... 6<br>With horizontal H-rail mounting: severity level 1<br>With wall mounting: <sup>2) 3)</sup>                    |
| Shock   | Tested according to DIN/IEC68 / EN60068 parts 2 ... 27<br>With horizontal H-rail mounting: severity level 1<br>With wall mounting: severity level 1 ... <sup>2)</sup> |
| Continuous shock  | Tested according to DIN/IEC68 / EN 60068 parts 2 ... 29<br>With wall and H-rail mounting: severity level 1  |

1) See the CPX System manual for information on vibration and shock for the CPX terminal.

2) Valve terminal MPA-S with CPX terminal:

up to a length of 280 mm between the pneumatic interface and right-hand end plate, without additional fastening: severity level 2

above a length of 280 mm between the pneumatic interface and right-hand end plate, with additional fastening at the pneumatic supply plates: severity level 2

3) Valve terminal MPA-S with CPI, with AS-i or with multi-pin plug connection:

up to a valve terminal length of 280 mm, without additional fastening: severity level 2

above a valve terminal length of 280 mm, with at least one additional fastening in the centre of the valve terminal at the pneumatic supply plate: severity level 2

4) See table below for explanations of the severity levels.

| Test conditions             |  |  |   |
|-----------------------------|--|--|---|
| Severity level              | Vibration  | Shock  | Continuous shock                                      |
| 1                           | 0.15 mm travel at 10 ... 58 Hz,<br>2 g acceleration at 58 ... 150 Hz | ±15 g at 11 ms duration,<br>5 shocks per direction | ±15 g at 6 ms duration,<br>1,000 shocks per direction |
| 2                           | 0.35 mm travel at 10 ... 60 Hz,<br>5 g acceleration at 60 ... 150 Hz | ±30 g at 11 ms duration,<br>5 shocks per direction | –   |
| Continuous shock resistance | To DIN/IEC 68/EN 60068, parts 2-29: +/-15 g at 6 ms, 1,000 cycles    |  |   |

## Valve terminals MPA-S

Technical data

**FESTO**

| Materials                      |  |
|--------------------------------|--|
| Manifold block                 | Die-cast aluminium   |
| Seals                          | Nitrile rubber, elastomer                                    |
| Supply plate                   | Die-cast aluminium   |
| Right-hand end plate           | Die-cast aluminium   |
| Left-hand pneumatic interface  | Die-cast aluminium, polyamide                                |
| Exhaust plate                  | Polyamide  |
| Flat plate silencer            | Polyethylene   |
| Electrical supply plate        | Housing: Die-cast aluminium<br>End cap: Reinforced polyamide |
| Electronics module             | Polycarbonate  |
| Electrical interlinking module | Bronze/polybutylene terephthalate                            |
| Regulator plate                | Control section, housing: Polyamide; Seals: Nitrile rubber   |
| Note on materials              | RoHS-compliant   |

| Product weight                              |                         |                         |
|---|-------------------------|-------------------------|
| Approx. weight [g]                          | MPA1                    | MPA2                    |
| Manifold block basic weight <sup>1)</sup>   | 400 (4 valve positions) | 400 (2 valve positions) |
| Sub-base <sup>1)</sup>                      | 185                     |                         |
| Individual sub-base                         | 45                      |                         |
| Per vacant position L                       | 24                      | 44                      |
| Right-hand end plate                        | 55                      |                         |
| Left-hand pneumatic interface <sup>1)</sup> |                         |                         |
| • With flat plate silencer                  | 315                     |                         |
| • With ducted exhaust air                   | 324                     |                         |
| Supply plate <sup>1)</sup>                  |                         |                         |
| • With flat plate silencer                  | 111                     |                         |
| • With ducted exhaust air                   | 120                     |                         |
| Electrical supply plate                     | 200                     |                         |
| Regulator plate (MPA1)                      | 73.8                    |                         |
| Regulator plate (MPA2)                      | 180                     |                         |
| QSM-M5-3-I                                  | 3                       |                         |
| QSM-M5-4-I                                  | 4                       |                         |
| QSM-M5-6-I                                  | 5                       |                         |
| QSM-M7-4-I                                  | 4                       |                         |
| QSM-M7-6-I                                  | 5                       |                         |
| QS-G <sup>1</sup> / <sub>8</sub> -6-I       | 11                      |                         |
| QS-G <sup>1</sup> / <sub>8</sub> -8-I       | 13                      |                         |
| QS-G <sup>1</sup> / <sub>4</sub> -8-I       | 22                      |                         |
| QS-G <sup>1</sup> / <sub>4</sub> -10-I      | 22                      |                         |

1) With sheet metal seal, inscription label holder, screws

# Valve terminals MPA-S

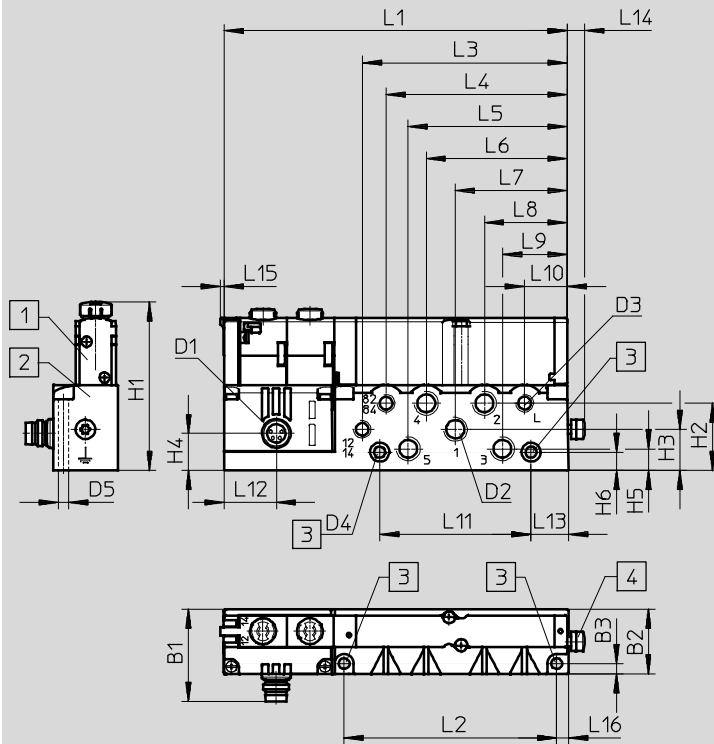
Technical data

FESTO

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Solenoid valve with a width of 10 mm on individual sub-base



- 1 Solenoid valve
- 2 Individual sub-base
- 3 4x mounting holes for screw M3
- 4 Earthing screw

| Type      | B1   | B2   | B3  | D1   | D2 | D3 | D4 Ø | D5 Ø | H1   | H2 | H3   | H4   | H5  | H6  |
|-----------|------|------|-----|------|----|----|------|------|------|----|------|------|-----|-----|
| VMPA1-... | 28.8 | 20.2 | 3.2 | M8x1 | M7 | M5 | 3.4  | 3.4  | 52.2 | 21 | 12.9 | 11.6 | 6.8 | 5.7 |

| Type      | L1    | L2   | L3   | L4   | L5   | L6   | L7 | L8   | L9   | L10  | L11  | L12  | L13  | L14 | L15 | L16 |
|-----------|-------|------|------|------|------|------|----|------|------|------|------|------|------|-----|-----|-----|
| VMPA1-... | 107.3 | 66.6 | 64.2 | 56.7 | 49.8 | 44.1 | 35 | 25.9 | 20.3 | 13.3 | 47.4 | 16.4 | 11.3 | 5.6 | 1.2 | 3.2 |

# Valve terminals MPA-S

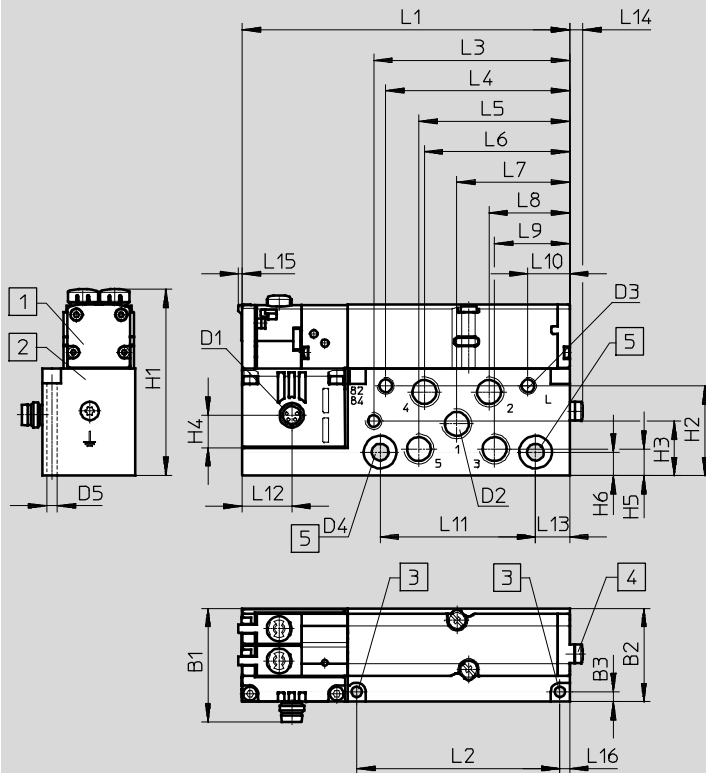
Technical data

**FESTO**

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Solenoid valve with a width of 20 mm on individual sub-base



- 1 Solenoid valve
- 2 Individual sub-base
- 3 2x mounting holes for screw M3
- 4 Earthing screw
- 5 2x mounting holes for screw M5

| Type      | B1   | B2   | B3  | D1   | D2              | D3 | D4 Ø | D5 Ø | H1   | H2   | H3   | H4   | H5  | H6  |
|-----------|------|------|-----|------|-----------------|----|------|------|------|------|------|------|-----|-----|
| VMPA2-... | 37.2 | 30.5 | 3.2 | M8x1 | G $\frac{1}{8}$ | M5 | 5.5  | 3.4  | 60.5 | 29.4 | 17.9 | 10.7 | 8.7 | 7.7 |

| Type      | L1    | L2   | L3   | L4   | L5   | L6   | L7 | L8   | L9   | L10  | L11  | L12  | L13  | L14 | L15 | L16 |
|-----------|-------|------|------|------|------|------|----|------|------|------|------|------|------|-----|-----|-----|
| VMPA2-... | 107.3 | 66.6 | 64.2 | 60.3 | 49.4 | 47.6 | 37 | 26.4 | 24.6 | 13.7 | 50.9 | 16.3 | 11.2 | 4.4 | 1.2 | 3.2 |

# Valve terminals MPA-S

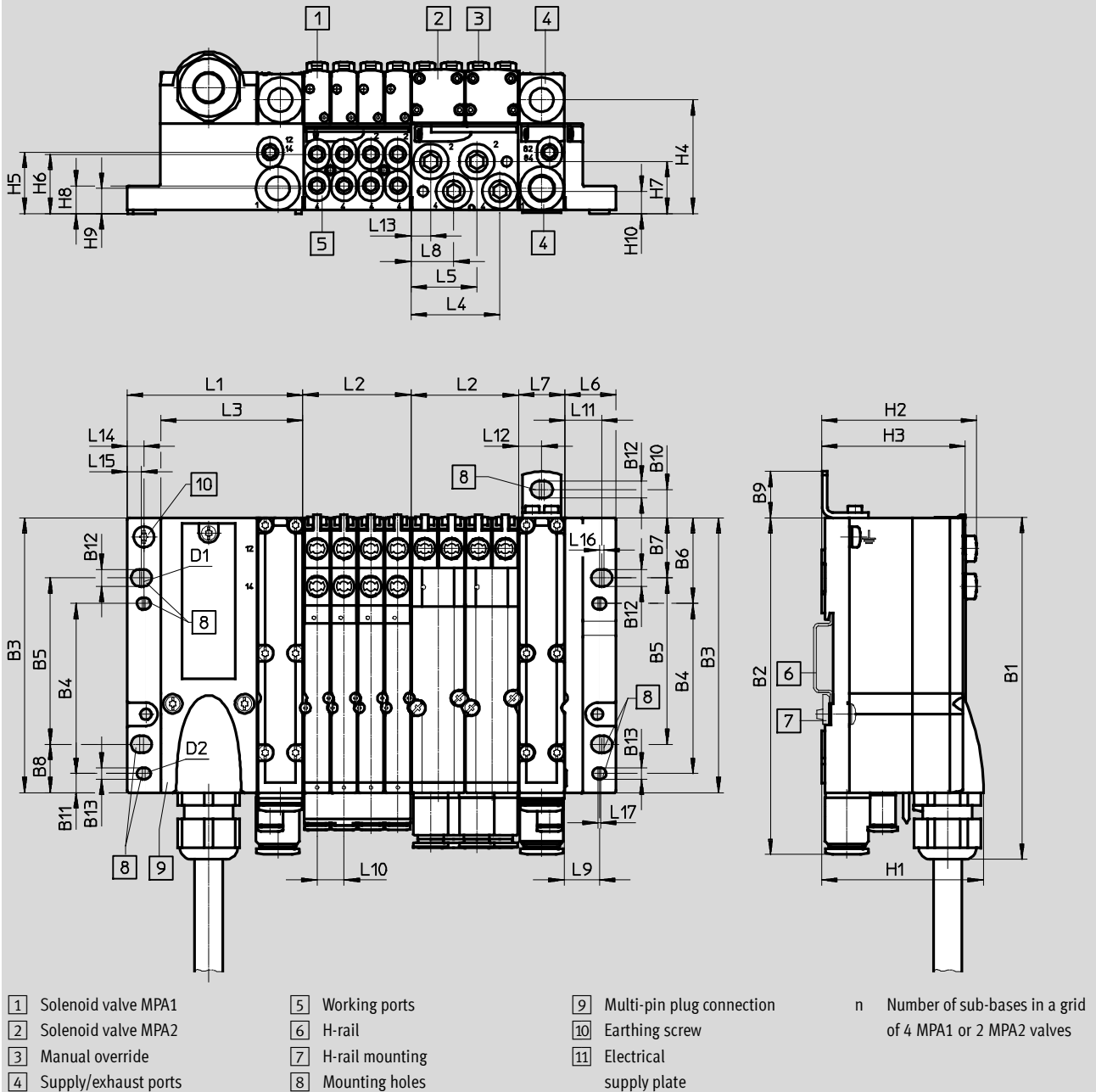
Technical data

FESTO

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Valve terminal with multi-pin plug connection



| Type       | B1    | B2    | B3    | B4   | B5 | B6   | B7   | B8   | B9 | B10 | B11 | B12 | B13 | D1 | D2 |
|------------|-------|-------|-------|------|----|------|------|------|----|-----|-----|-----|-----|----|----|
| MPA-S (MP) | 133.3 | 131.4 | 107.3 | 66.3 | 65 | 33.5 | 23.5 | 18.9 | 18 | 11  | 7.5 | 6.6 | 4.4 | M6 | M4 |

| Type       | L1   | L2 <sup>1)</sup> | L3   | L4   | L5   | L6 | L7 | L8   | L9   | L10  | L11  | L12 | L13 | L14 | L15 | L16 |
|------------|------|------------------|------|------|------|----|----|------|------|------|------|-----|-----|-----|-----|-----|
| MPA-S (MP) | 68.8 | n x 42           | 55.8 | 34.7 | 25.7 | 20 | 18 | 16.7 | 13.5 | 10.5 | 14.5 | 9   | 7.7 | 6.5 | 5.6 | 1.5 |

| Type       | L17 | H1   | H2   | H3 | H4   | H5   | H6   | H7   | H8   | H9  | H10 |
|------------|-----|------|------|----|------|------|------|------|------|-----|-----|
| MPA-S (MP) | 1   | 63.1 | 60.5 | 56 | 44.3 | 23.9 | 23.1 | 20.3 | 10.8 | 9.8 | 8.7 |

1) n = number of sub-bases (with MPA1, width 10 mm, max. 4 valve positions on sub-base; with MPA2, width 20 mm, max. 2 valve positions on sub-base)

# Valve terminals MPA-S

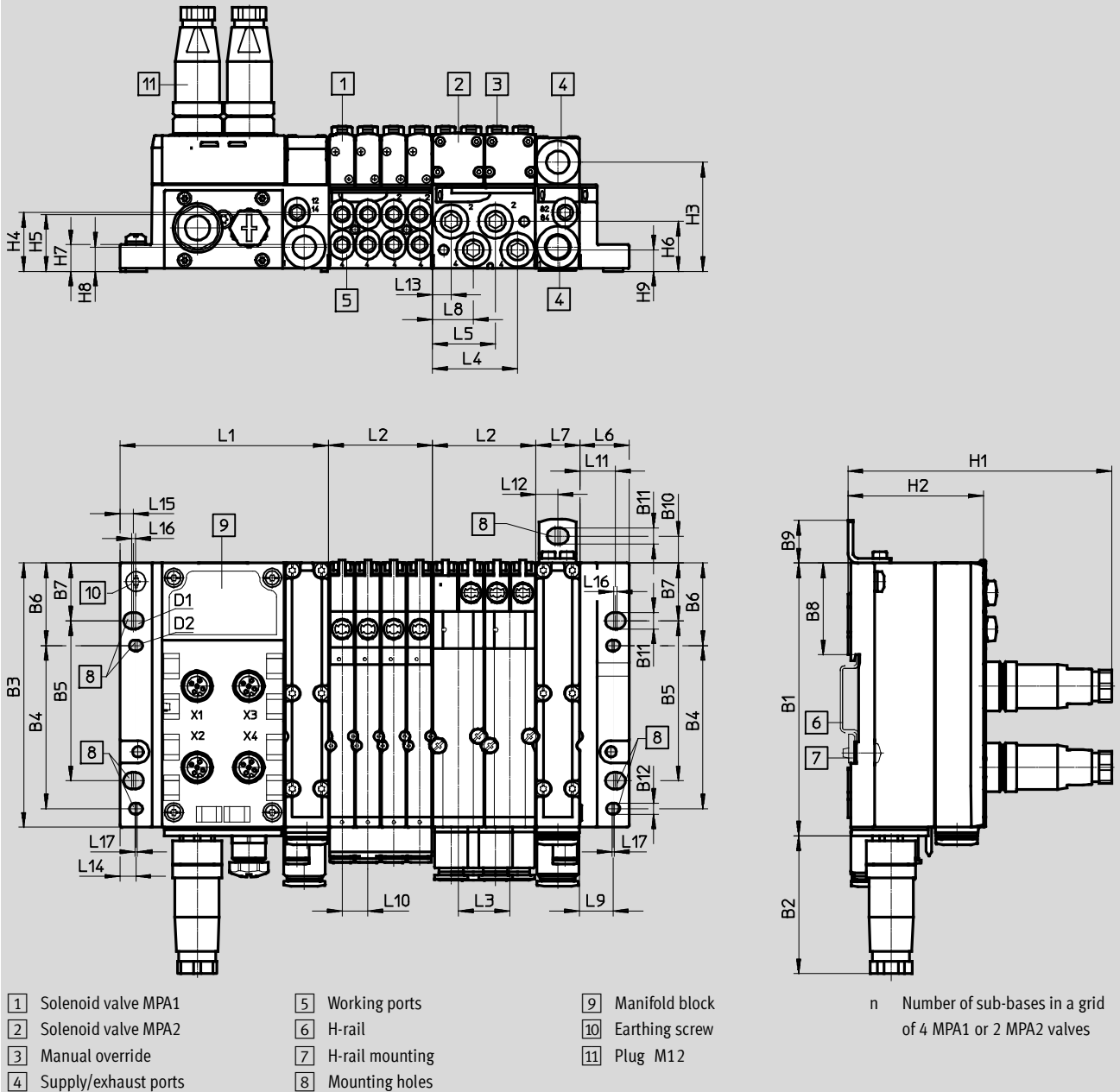
Technical data

FESTO

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Valve terminal with AS-interface connection



| Type         | B1    | B2 | B3    | B4   | B5 | B6   | B7   | B8   | B9 | B10 | B11 | B12 | D1 | D2 |
|--------------|-------|----|-------|------|----|------|------|------|----|-----|-----|-----|----|----|
| MPA-S (AS-i) | 110.9 | 56 | 107.3 | 66.3 | 65 | 33.5 | 23.5 | 37.2 | 18 | 11  | 6.6 | 4.4 | M6 | M4 |

| Type         | L1 | L2 <sup>1)</sup> | L3 | L4   | L5   | L6 | L7 | L8   | L9   | L10  | L11  | L12 | L13 | L14 | L15 | L16 |
|--------------|----|------------------|----|------|------|----|----|------|------|------|------|-----|-----|-----|-----|-----|
| MPA-S (AS-i) | 85 | n x 42           | 21 | 34.7 | 25.7 | 20 | 18 | 16.7 | 13.5 | 10.5 | 14.5 | 9   | 7.7 | 6.5 | 5.6 | 1.5 |

| Type         | L17 | H1    | H2   | H3   | H4   | H5   | H6   | H7   | H8  | H9  |
|--------------|-----|-------|------|------|------|------|------|------|-----|-----|
| MPA-S (AS-i) | 1   | 107.2 | 55.1 | 44.3 | 23.9 | 23.1 | 20.3 | 10.8 | 9.8 | 8.7 |

<sup>1)</sup> n = number of sub-bases (with MPA1, width 10 mm, max. 4 valve positions on sub-base; with MPA2, width 20 mm, max. 2 valve positions on sub-base)

# Valve terminals MPA-S

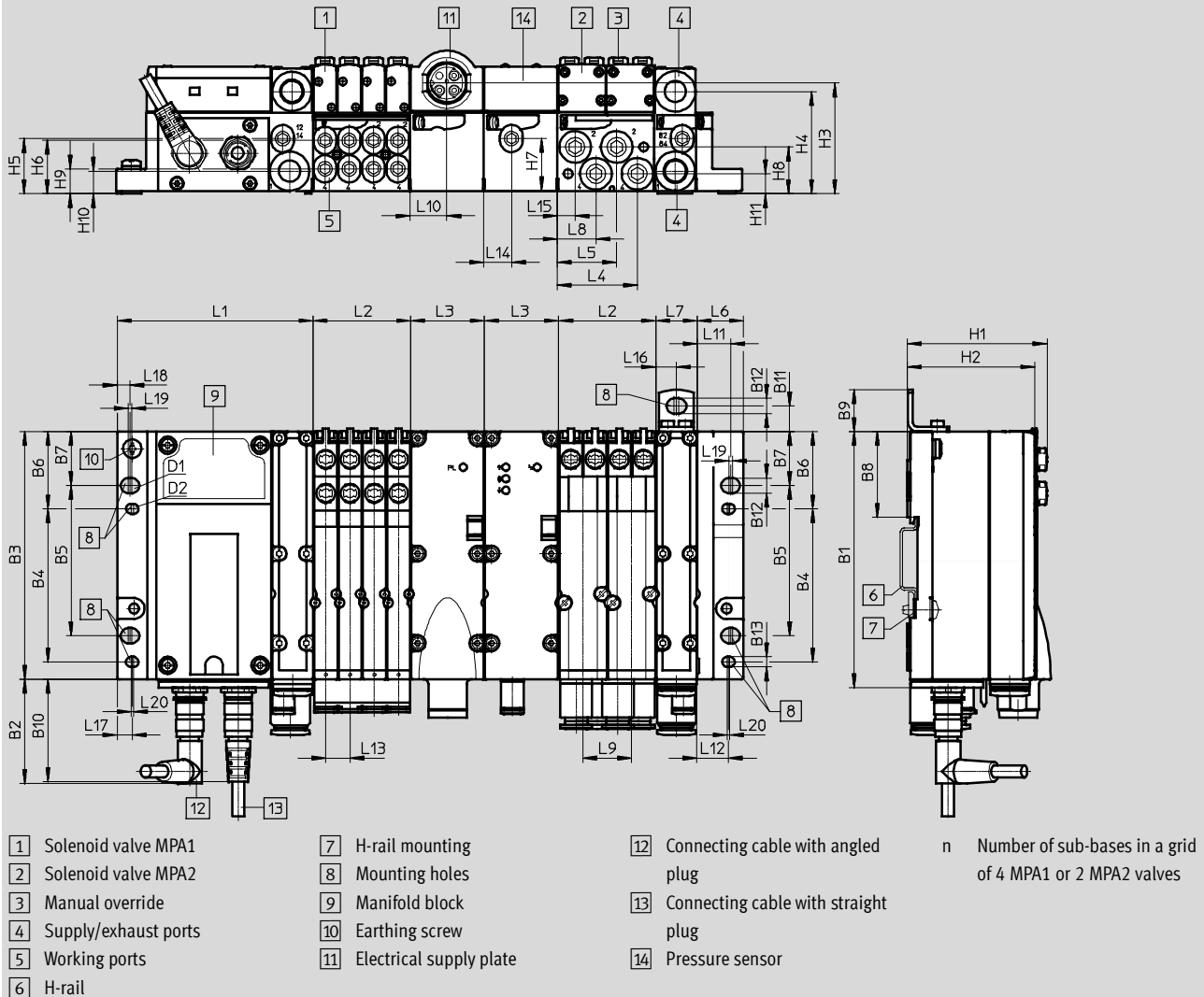
Technical data

FESTO

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Valve terminal with CPI connection



| Type        | B1    | B2   | B3    | B4   | B5 | B6   | B7   | B8   | B9 | B10  | B11 | B12 | B13 | D1 | D2 |
|-------------|-------|------|-------|------|----|------|------|------|----|------|-----|-----|-----|----|----|
| MPA-S (CPI) | 110.9 | 45.2 | 107.3 | 66.3 | 65 | 33.5 | 23.5 | 37.2 | 18 | 44.3 | 11  | 6.6 | 4.4 | M6 | M4 |

| Type        | L1 | L2 <sup>1)</sup> | L3 | L4   | L5   | L6 | L7 | L8   | L9 | L10 | L11  | L12  | L13  | L14 | L15 | L16 |
|-------------|----|------------------|----|------|------|----|----|------|----|-----|------|------|------|-----|-----|-----|
| MPA-S (CPI) | 85 | n x 42           | 32 | 34.7 | 25.7 | 20 | 18 | 16.7 | 21 | 16  | 14.5 | 13.5 | 10.5 | 12  | 7.7 | 9   |

| Type        | L17 | L18 | L19 | L20 | H1   | H2   | H3 | H4   | H5   | H6   | H7   | H8   | H9   | H10 | H11 |
|-------------|-----|-----|-----|-----|------|------|----|------|------|------|------|------|------|-----|-----|
| MPA-S (CPI) | 6.5 | 5.6 | 1.5 | 1   | 60.5 | 55.1 | 48 | 44.3 | 23.9 | 23.1 | 22.6 | 20.3 | 10.8 | 9.8 | 8.7 |

1) n = number of sub-bases (with MPA1, width 10 mm, max. 4 valve positions on sub-base; with MPA2, width 20 mm, max. 2 valve positions on sub-base)



# Valve terminals MPA-S

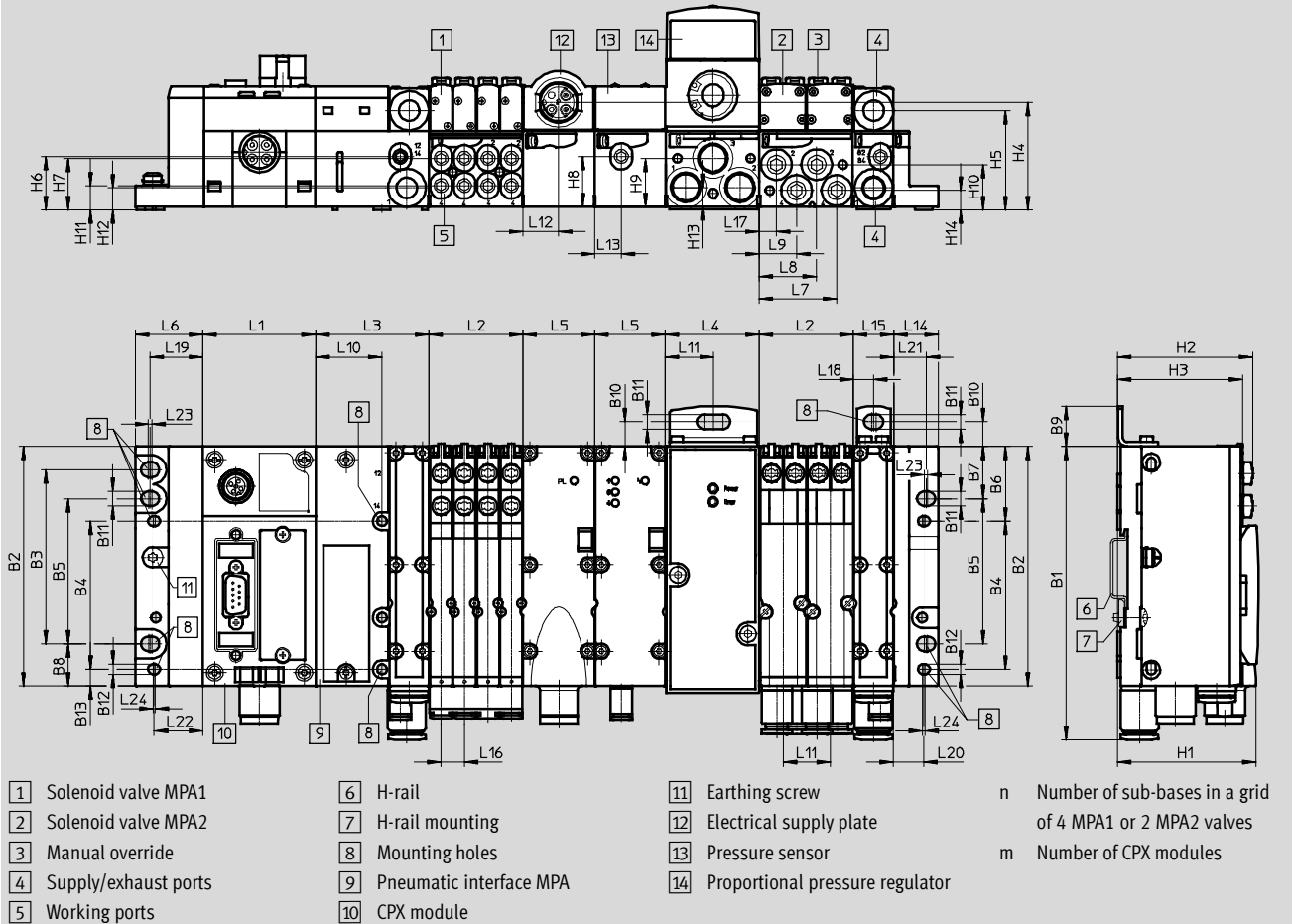
Technical data

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## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

Valve terminal with fieldbus connection



| Type       | B1    | B2    | B3 | B4   | B5 | B6   | B7   | B8   | B9 | B10 | B11 | B12 | B13 | L1 <sup>1)</sup> | L2 <sup>2)</sup> |
|------------|-------|-------|----|------|----|------|------|------|----|-----|-----|-----|-----|------------------|------------------|
| MPA-S (FB) | 131.4 | 107.3 | 78 | 66.3 | 65 | 33.5 | 23.5 | 18.9 | 18 | 11  | 6.6 | 4.4 | 7.5 | m x 50.1         | n x 42           |

| Type       | L3   | L4 | L5 | L6   | L7   | L8   | L9   | L10 | L11 | L12 | L13 | L14 | L15 | L16  | L17 | L18 | L19  | L20  |
|------------|------|----|----|------|------|------|------|-----|-----|-----|-----|-----|-----|------|-----|-----|------|------|
| MPA-S (FB) | 51.2 | 42 | 32 | 30.5 | 34.7 | 25.7 | 16.7 | 30  | 21  | 16  | 12  | 20  | 18  | 10.5 | 7.7 | 9   | 23.7 | 13.5 |

| Type       | L21  | L22 | L23 | L24 | H1 | H2   | H3 | H4 | H5   | H6   | H7   | H8   | H9   | H10  | H11  | H12 | H13 | H14 |
|------------|------|-----|-----|-----|----|------|----|----|------|------|------|------|------|------|------|-----|-----|-----|
| MPA-S (FB) | 14.5 | 22  | 1.5 | 1   | 62 | 60.5 | 56 | 48 | 44.3 | 23.9 | 23.1 | 22.6 | 21.8 | 20.3 | 10.8 | 9.8 | 8.8 | 8.7 |

1) m = number of CPX modules

2) n = number of sub-bases (with MPA1, width 10 mm, max. 4 valve positions on sub-base; with MPA2, width 20 mm, max. 2 valve positions on sub-base)

# Valve terminals MPA-S

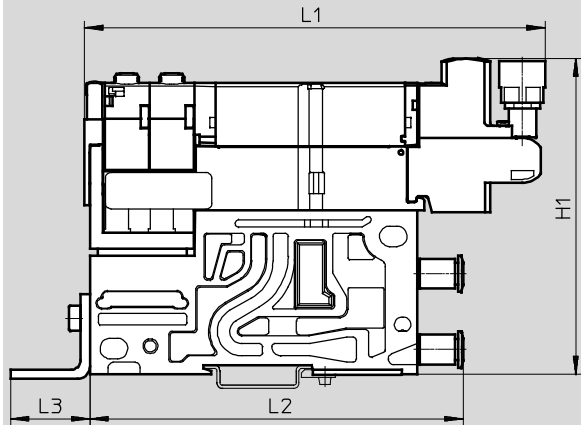
Technical data

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## Dimensions

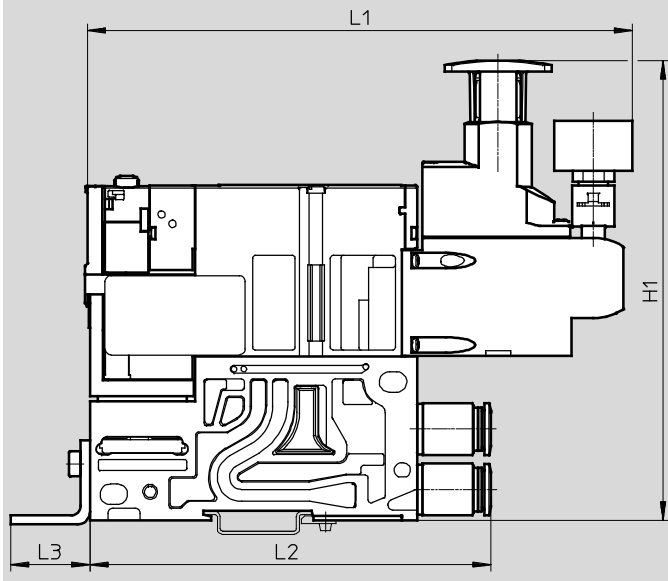
Download CAD data → [www.festo.com](http://www.festo.com)

Vertical stacking components, regulator plate VMPA1



| Type      | H1  | L1    | L2    | L3   |
|-----------|-----|-------|-------|------|
| VMPA1-... | 105 | 151.1 | 122.3 | 26.9 |

Vertical stacking components, regulator plate VMPA2

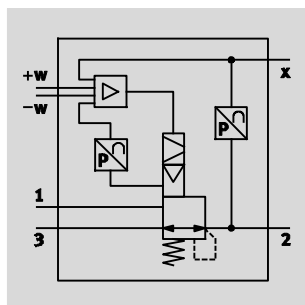





| Type      | H1  | L1    | L2    | L3   |
|-----------|-----|-------|-------|------|
| VMPA2-... | 152 | 179.6 | 131.6 | 26.9 |

## Valve terminals MPA-S

Technical data – Proportional pressure regulator VPPM

Function:



-  Flow rate  
380 ... 1,650 l/min
-  Pressure regulation range  
0.02 ... 10 bar
-  Voltage  
21.6 ... 26.4 V DC



| General technical data     |                |         |                                       |                      |
|----------------------------|----------------|---------|---------------------------------------|----------------------|
|                            |                |         | VPPM-6TA                              | VPPM-8TA             |
| Valve function             |                |         | 3-way proportional pressure regulator |                      |
| Design                     |                |         | Piloted diaphragm regulator           |                      |
| Type of mounting           |                |         | Via through-hole or accessories       |                      |
| Sealing principle          |                |         | Soft                                  |                      |
| Actuation type             |                |         | Electric                              |                      |
| Type of control            |                |         | Piloted                               |                      |
| Mounting position          |                |         | Any                                   |                      |
| Reset method               |                |         | Mechanical spring                     |                      |
| Display type               |                |         | LED                                   | Back illuminated LCD |
| Pneumatic connection       |                | 1, 2, 3 | Sub-base                              |                      |
| Nominal size               | Pressurisation | [mm]    | 6                                     | 8                    |
|                            | Exhaust        | [mm]    | 4.5                                   | 7                    |
| Standard nominal flow rate | 2 bar type     | [l/min] | 380                                   | 450                  |
|                            | 6 bar type     | [l/min] | 900                                   | 1,050                |
|                            | 10 bar type    | [l/min] | 1,400                                 | 1,650                |
| Product weight             |                | [g]     | 400                                   | 500                  |
| Materials                  |                | Housing | Anodised wrought aluminium alloy      |                      |

| Electrical data                   |                                |
|-----------------------------------|--------------------------------|
| Electrical connection             | Via sub-base                   |
| Operating voltage range           | [V DC] 21.6 ... 26.4           |
| Residual ripple                   | [%] 10                         |
| Max. electrical power consumption | [W] 7                          |
| Duty cycle                        | [%] 100                        |
| Protection against short circuit  | For all electrical connections |
| Reverse polarity protection       | For all electrical connections |
| Protection class to EN 60529      | IP65                           |

 Note

Output pressure is maintained unregulated if the power supply cable is interrupted.

 Note

Note possible restrictions for the IP protection class  
→ ATEX conformity declaration

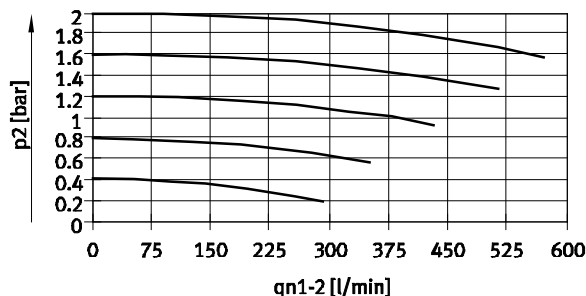
## Valve terminals MPA-S

Technical data – Proportional pressure regulator VPPM

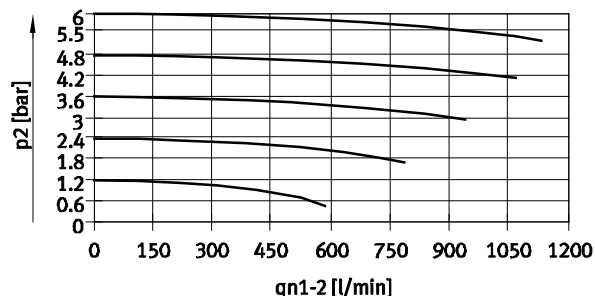
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### Flow rate $q_n$ from 1→2 as a function of output pressure $p_2$

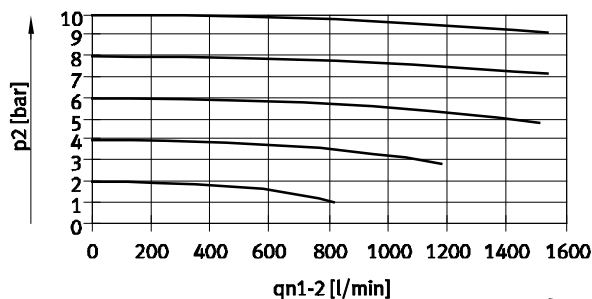
VPPM-6TA-...-0L2H-... (2 bar)



VPPM-6TA-...-0L6H-... (6 bar)

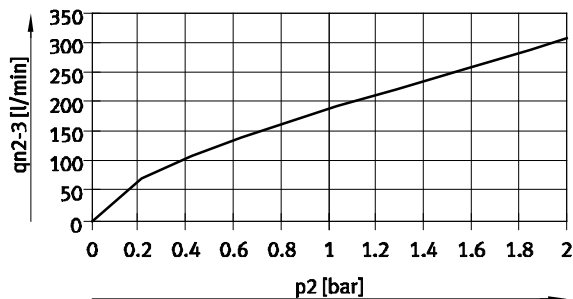


VPPM-6TA-...-0L10H-... (10 bar)

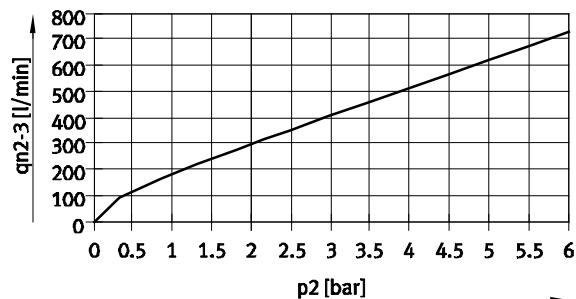


### Flow rate $q_n$ from 2→3 as a function of output pressure $p_2$

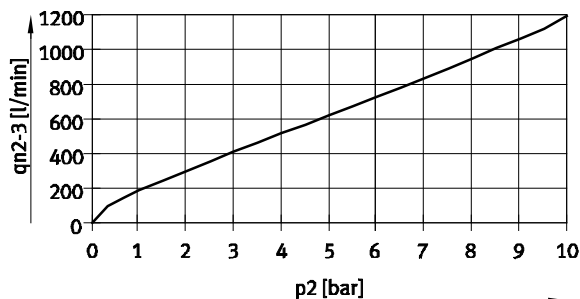
VPPM-6TA-...-0L2H-... (2 bar)



VPPM-6TA-...-0L6H-... (6 bar)



VPPM-6TA-...-0L10H-... (10 bar)

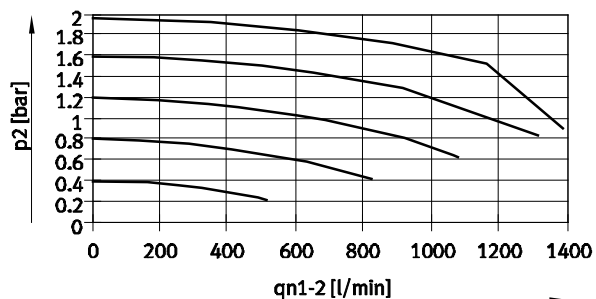


## Valve terminals MPA-S

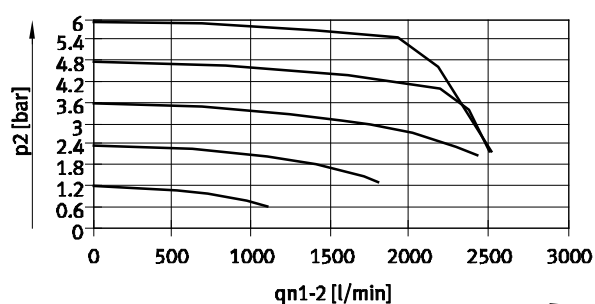
Technical data – Proportional pressure regulator VPPM

Flow rate  $q_n$  from 1→2 as a function of output pressure  $p_2$

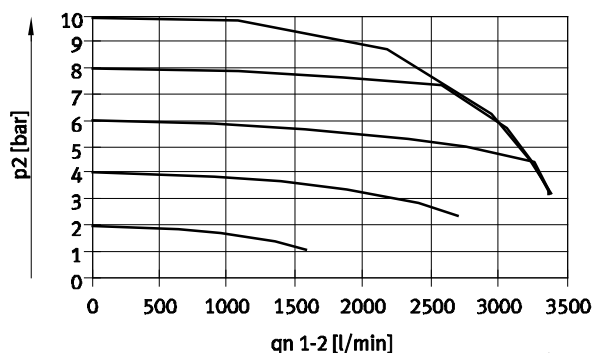
VPPM-8TA-...-0L2H-... (2 bar)



VPPM-8TA-...-0L6H-... (6 bar)

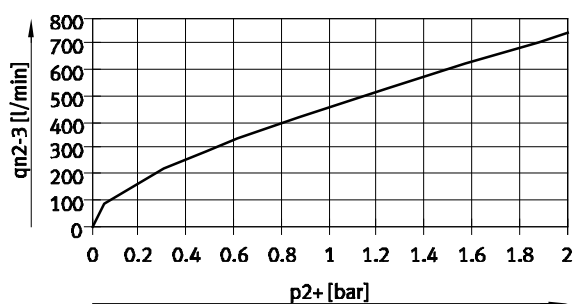


VPPM-8TA-...-0L10H-... (10 bar)



Flow rate  $q_n$  from 2→3 as a function of output pressure  $p_2$

VPPM-8TA-...-0L2H-... (2 bar)



VPPM-8TA-...-0L6H-... (6 bar)



VPPM-8TA-...-0L10H-... (10 bar)



## Valve terminals MPA-S

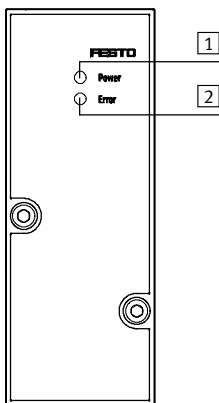
Technical data – Proportional pressure regulator VPPM

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| Operating and environmental conditions       |                    |  |                                   |
|--|--------------------|--|-----------------------------------|
|  |                    | VPPM-6TA   | VPPM-8TA                          |
| Operating medium                             |                    | Compressed air according to ISO 8573-1:2010 [7:4:4]<br>Inert gases |                                   |
| Note on operating/pilot medium               |                    | Lubricated operation not possible                                  |                                   |
| Pressure regulation range                    | VPPM-...-OL2H-...  | [bar]  | 0.02 ... 2                        |
|  | VPPM-...-OL6H-...  | [bar]  | 0.06 ... 6                        |
|  | VPPM-...-OL10H-... | [bar]  | 0.1 ... 10                        |
| Supply pressure 1 <sup>1)</sup>              | VPPM-...-OL2H-...  | [bar]  | 0 ... 4                           |
|  | VPPM-...-OL6H-...  | [bar]  | 0 ... 8                           |
|  | VPPM-...-OL10H-... | [bar]  | 0 ... 11                          |
| Max. pressure hysteresis                     | VPPM-...-OL2H-...  | [bar]  | 0.01                              |
|  | VPPM-...-OL6H-...  | [bar]  | 0.03                              |
|  | VPPM-...-OL10H-... | [bar]  | 0.05                              |
| FS (full scale) linearity error              | Standard           | [%]  | 2                                 |
|  | Type S1            | [%]  | 1                                 |
|  | Type C1            | [%]  | –                                 |
| FS (full scale) repetition accuracy          |                    | [%]  | 0.5                               |
| Temperature coefficient                      |                    | [%/K]  | 0.04                              |
| Ambient temperature                          |                    | [°C]   | 0 ... 60                          |
| Temperature of medium                        |                    | [°C]   | 10 ... 50                         |
| Corrosion resistance class CRC <sup>2)</sup> |                    |  | 2                                 |
| CE marking (see declaration of conformity)   |                    |  | To EU EMC Directive <sup>3)</sup> |
| Certification                                |                    | cULus recognized (OL)  | –                                 |
|  |                    | C-Tick   |                                   |

- Supply pressure 1 should always be 1 bar greater than the maximum regulated output pressure.
- Corrosion resistance class 2 according to Festo standard 940 070  
Components subject to moderate corrosion stress. 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.
- For information about the applicability of the component see the manufacturer's EC declaration of conformity at: [www.festo.com](http://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.

### LEDs on the proportional pressure regulator VPPM-6TA



- Green power LED
- Red error LED

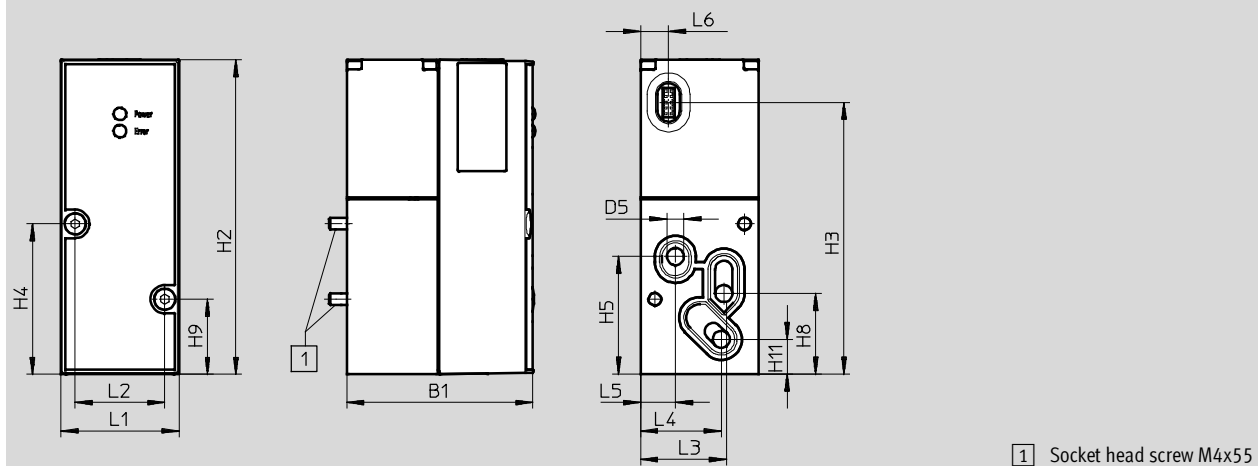
## Valve terminals MPA-S

Technical data – Proportional pressure regulator VPPM

### Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

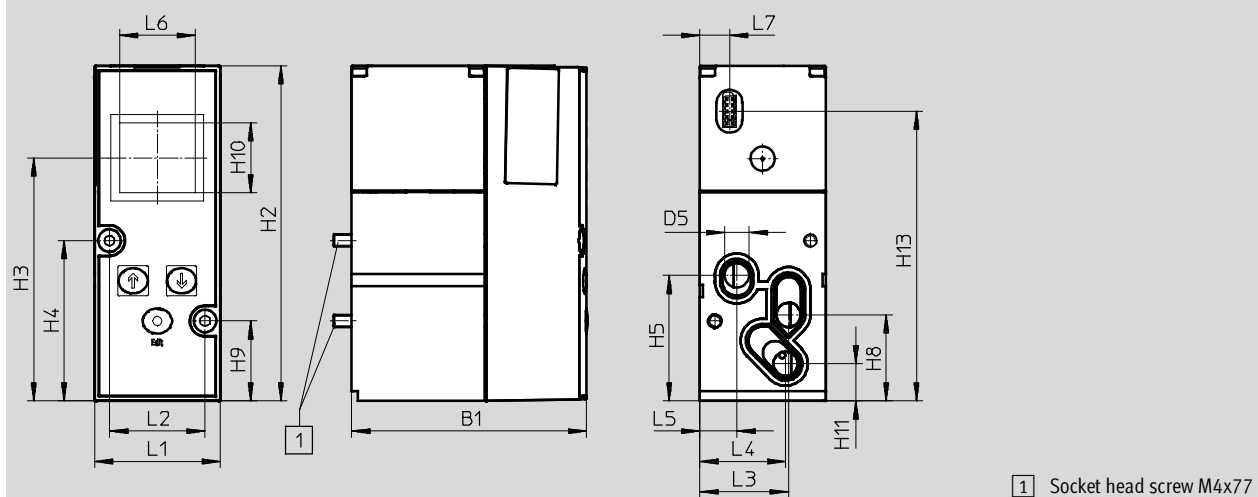
#### VPPM-6TA



| Type     | B1   | D5 Ø | H2    | H3   | H4   | H5   | H8   | H9   | H11  |
|----------|------|------|-------|------|------|------|------|------|------|
| VPPM-6TA | 55.5 | 6    | 110.4 | 95.5 | 52.8 | 41.3 | 28.3 | 26.3 | 12.2 |

| Type     | L1   | L2   | L3   | L4   | L5   | L6  |
|----------|------|------|------|------|------|-----|
| VPPM-6TA | 41.5 | 31.5 | 30.3 | 28.4 | 12.3 | 9.9 |

#### VPPM-8TA with LCD



| Type     | B1   | D5 Ø | H2    | H3 | H4   | H5   | H8   | H9   | H10 | H11  | H13  |
|----------|------|------|-------|----|------|------|------|------|-----|------|------|
| VPPM-8TA | 77.4 | 8    | 110.4 | 80 | 52.8 | 41.3 | 28.3 | 26.3 | 23  | 12.2 | 95.5 |

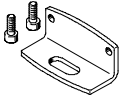
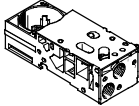
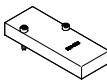
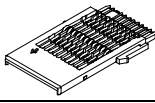
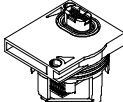
| Type     | L1   | L2   | L3   | L4   | L5   | L6 | L7  |
|----------|------|------|------|------|------|----|-----|
| VPPM-8TA | 41.5 | 31.5 | 29.3 | 28.4 | 12.3 | 25 | 9.9 |

## Valve terminals MPA-S

Technical data – Proportional pressure regulator VPPM

**FESTO**

| Ordering data |                      |                         |                                 |          |                           |
|---------------|----------------------|-------------------------|---------------------------------|----------|---------------------------|
| Code          | Overall accuracy [%] | Supply pressure 1 [bar] | Pressure regulation range [bar] | Part No. | Type                      |
| QA            | 2                    | 0 ... 4                 | 0.02 ... 2                      | 542220   | VPPM-6TA-L-1-F-0L2H       |
| QD            | 1                    | 0 ... 4                 | 0.02 ... 2                      | 542217   | VPPM-6TA-L-1-F-0L2H-S1    |
| QB            | 2                    | 0 ... 8                 | 0.06 ... 6                      | 542221   | VPPM-6TA-L-1-F-0L6H       |
| QE            | 1                    | 0 ... 8                 | 0.06 ... 6                      | 542218   | VPPM-6TA-L-1-F-0L6H-S1    |
| QC            | 2                    | 0 ... 11                | 0.1 ... 10                      | 542222   | VPPM-6TA-L-1-F-0L10H      |
| QF            | 1                    | 0 ... 11                | 0.1 ... 10                      | 542219   | VPPM-6TA-L-1-F-0L10H-S1   |
| QL            | 1                    | 0 ... 4                 | 0.02 ... 2                      | 572407   | VPPM-8TA-L-1-F-0L2H-S1C1  |
| QG            | 2                    | 0 ... 4                 | 0.02 ... 2                      | 572410   | VPPM-8TA-L-1-F-0L2H-C1    |
| QM            | 1                    | 0 ... 8                 | 0.06 ... 6                      | 572408   | VPPM-8TA-L-1-F-0L6H-S1C1  |
| QH            | 2                    | 0 ... 8                 | 0.06 ... 6                      | 572411   | VPPM-8TA-L-1-F-0L6H-C1    |
| QN            | 1                    | 0 ... 11                | 0.1 ... 10                      | 572409   | VPPM-8TA-L-1-F-0L10H-S1C1 |
| QK            | 2                    | 0 ... 11                | 0.1 ... 10                      | 572412   | VPPM-8TA-L-1-F-0L10H-C1   |

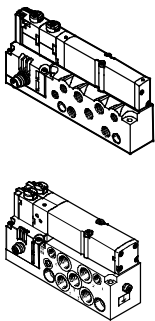
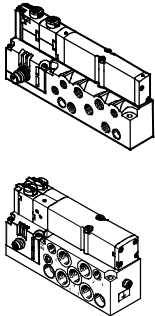
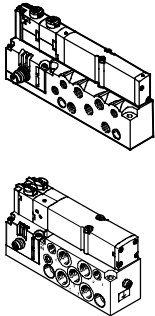
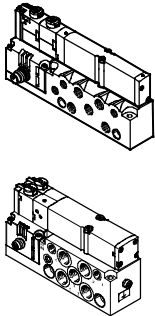
| Ordering data – Accessories  |          |                |
|--|----------|----------------|
| Designation  | Part No. | Type           |
|  Mounting  | 558844   | VMPA-BG        |
|  Sub-base without electrical interlinking module or electrical module               | 542223   | VMPA-FB-AP-P1  |
|  Blanking plate   | 559638   | VMPA-P-RP      |
|  Electrical interlinking module for sub-base of the proportional pressure regulator | 537998   | VMPA1-FB-EV-AB |
|  Electrical module  | 542224   | VMPA-FB-EMG-P1 |



# Valve terminals MPA-S

Ordering data – Individual valve

FESTO

| Ordering data – Set comprising solenoid valve on individual sub-base                |   |               |          |                                   |
|---|---|---------------|----------|-----------------------------------|
|   | Valve function  | Width<br>[mm] | Part No. | Type                              |
| Internal pilot air supply   |   |               |          |                                   |
|    | 5/2-way valve   |               |          |                                   |
|   | Single solenoid                                       | 10            | 533376   | VMPA1-M1H-M-M7-PI                 |
|   |   | 20            | 537963   | VMPA2-M1H-M-G $\frac{1}{8}$ -PI   |
|   | Double solenoid                                       | 10            | 533377   | VMPA1-M1H-J-M7-PI                 |
|   |   | 20            | 537964   | VMPA2-M1H-J-G $\frac{1}{8}$ -PI   |
|   | 2x 3/2-way valve                                      |               |          |                                   |
|   | Normally open   | 10            | 533382   | VMPA1-M1H-N-M7-PI                 |
|   |   | 20            | 537969   | VMPA2-M1H-N-G $\frac{1}{8}$ -PI   |
|   | Normally closed                                       | 10            | 533381   | VMPA1-M1H-K-M7-PI                 |
|   |   | 20            | 537968   | VMPA2-M1H-K-G $\frac{1}{8}$ -PI   |
|   | 1x normally open,<br>1x normally closed               | 10            | 533383   | VMPA1-M1H-H-M7-PI                 |
|   |   | 20            | 537970   | VMPA2-M1H-H-G $\frac{1}{8}$ -PI   |
|   | 5/3-way valve   |               |          |                                   |
|   | Mid-position pressurised                              | 10            | 533378   | VMPA1-M1H-B-M7-PI                 |
|  |   | 20            | 537965   | VMPA2-M1H-B-G $\frac{1}{8}$ -PI   |
|   | Mid-position closed                                   | 10            | 533379   | VMPA1-M1H-G-M7-PI                 |
|   |   | 20            | 537966   | VMPA2-M1H-G-G $\frac{1}{8}$ -PI   |
|   | Mid-position exhausted                                | 10            | 533380   | VMPA1-M1H-E-M7-PI                 |
|   |   | 20            | 537967   | VMPA2-M1H-E-G $\frac{1}{8}$ -PI   |
|   | 2x 2/2-way valve                                      |               |          |                                   |
|   | Normally closed                                       | 10            | 533384   | VMPA1-M1H-D-M7-PI                 |
|   |   | 20            | 537971   | VMPA2-M1H-D-G $\frac{1}{8}$ -PI   |
|   | 1x normally closed,<br>1x normally closed, reversible | 10            | 545230   | VMPA1-M1H-I-M7-PI                 |
|   |   | 20            | 545232   | VMPA2-M1H-I-G $\frac{1}{8}$ -PI   |
| External pilot air supply   |   |               |          |                                   |
|  | 5/2-way valve   |               |          |                                   |
|   | Single solenoid                                       | 10            | 533385   | VMPA1-M1H-M-S-M7-PI               |
|   |   | 20            | 537972   | VMPA2-M1H-M-S-G $\frac{1}{8}$ -PI |
|   | Double solenoid                                       | 10            | 533386   | VMPA1-M1H-J-S-M7-PI               |
|   |   | 20            | 537973   | VMPA2-M1H-J-S-G $\frac{1}{8}$ -PI |
|   | 2x 3/2-way valve                                      |               |          |                                   |
|   | Normally open   | 10            | 533391   | VMPA1-M1H-N-S-M7-PI               |
|   |   | 20            | 537978   | VMPA2-M1H-N-S-G $\frac{1}{8}$ -PI |
|   | Normally closed                                       | 10            | 533390   | VMPA1-M1H-K-S-M7-PI               |
|   |   | 20            | 537977   | VMPA2-M1H-K-S-G $\frac{1}{8}$ -PI |
|   | 1x normally open,<br>1x normally closed               | 10            | 533392   | VMPA1-M1H-H-S-M7-PI               |
|   |   | 20            | 537979   | VMPA2-M1H-H-S-G $\frac{1}{8}$ -PI |
|   | 5/3-way valve   |               |          |                                   |
|   | Mid-position pressurised                              | 10            | 533387   | VMPA1-M1H-B-S-M7-PI               |
|  |   | 20            | 537974   | VMPA2-M1H-B-S-G $\frac{1}{8}$ -PI |
|   | Mid-position closed                                   | 10            | 533388   | VMPA1-M1H-G-S-M7-PI               |
|   |   | 20            | 537975   | VMPA2-M1H-G-S-G $\frac{1}{8}$ -PI |
|   | Mid-position exhausted                                | 10            | 533389   | VMPA1-M1H-E-S-M7-PI               |
|   |   | 20            | 537976   | VMPA2-M1H-E-S-G $\frac{1}{8}$ -PI |
|   | 2x 2/2-way valve                                      |               |          |                                   |
|   | Normally closed                                       | 10            | 533393   | VMPA1-M1H-D-S-M7-PI               |
|   |   | 20            | 537980   | VMPA2-M1H-D-S-G $\frac{1}{8}$ -PI |
|   | 1x normally closed,<br>1x normally closed, reversible | 10            | 545231   | VMPA1-M1H-I-S-M7-PI               |
|   |   | 20            | 545233   | VMPA2-M1H-I-S-G $\frac{1}{8}$ -PI |

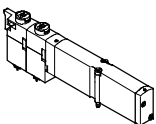
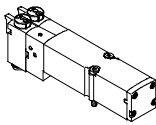






**New**

Variants KU, NU, HU, MU, MS

## Valve terminals MPA-S

**FESTO**

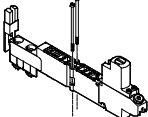
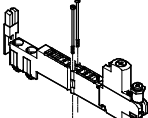
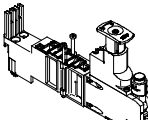
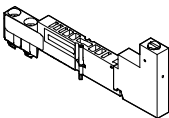




Accessories

| Ordering data – Individual sub-base valve  |   |   |               |                 |   |
|--|---|---|---------------|-----------------|---|
|  | Code  | Valve function  | Width<br>[mm] | Part No.        | Type  |
| <br> | 5/2-way valve   |   |               |                 |   |
|  | M   | Single solenoid   | 10            | 533342          | VMPA1-M1H-M-PI  |
|  |   |   | 20            | 537952          | VMPA2-M1H-M-PI  |
|  | MS  | Single solenoid, mechanical spring return   | 10            | 571334          | VMPA1-M1H-MS-PI    |
|  |   |   | 20            | 571333          | VMPA2-M1H-MS-PI    |
|  | MU  | Polymer poppet valve,<br>single solenoid, mechanical spring return                            | 10            | 553113          | VMPA1-M1H-MU-PI    |
|  | J   | Double solenoid   | 10            | 533343          | VMPA1-M1H-J-PI  |
|  |   |   | 20            | 537953          | VMPA2-M1H-J-PI  |
|  | 2x 3/2-way valve                                      |   |               |                 |   |
|  | N   | Normally open   | 10            | 533348          | VMPA1-M1H-N-PI  |
|  |   |   | 20            | 537958          | VMPA2-M1H-N-PI  |
|  | NS  | Normally open, mechanical spring return   | 10            | 556839          | VMPA1-M1H-NS-PI   |
|  |   |   | 20            | 568655          | VMPA2-M1H-NS-PI   |
|  | NU  | Polymer poppet valve,<br>normally open, mechanical spring return                              | 10            | 553111          | VMPA1-M1H-NU-PI    |
|  | K   | Normally closed   | 10            | 533347          | VMPA1-M1H-K-PI  |
|  |   |   | 20            | 537957          | VMPA2-M1H-K-PI  |
|  | KS  | Normally closed,<br>mechanical spring return  | 10            | 556838          | VMPA1-M1H-KS-PI   |
|  |   |   | 20            | 568656          | VMPA2-M1H-KS-PI   |
|  | KU  | Polymer poppet valve, normally closed,<br>mechanical spring return                            | 10            | 553110          | VMPA1-M1H-KU-PI  |
|  | H   | 1x normally open,<br>1x normally closed   | 10            | 533349          | VMPA1-M1H-H-PI  |
|  |   |   | 20            | 537959          | VMPA2-M1H-H-PI  |
|  | HS  | 1x normally open,<br>1x normally closed,<br>mechanical spring return                          | 10            | 556840          | VMPA1-M1H-HS-PI   |
|  |   |   | 20            | 568658          | VMPA2-M1H-HS-PI   |
|  | HU  | Polymer poppet valve,<br>1x normally open,<br>1x normally closed,<br>mechanical spring return | 10            | 553112          | VMPA1-M1H-HU-PI  |
|  | 5/3-way valve   |   |               |                 |   |
|  | B   | Mid-position pressurised  | 10            | 533344          | VMPA1-M1H-B-PI  |
|  |   |   | 20            | 537954          | VMPA2-M1H-B-PI  |
|  | G   | Mid-position closed   | 10            | 533345          | VMPA1-M1H-G-PI  |
|  |   |   | 20            | 537955          | VMPA2-M1H-G-PI  |
|  | E   | Mid-position exhausted  | 10            | 533346          | VMPA1-M1H-E-PI  |
|  |   |   | 20            | 537956          | VMPA2-M1H-E-PI  |
|  | 3/2-way valve   |   |               |                 |   |
|  | W   | Normally open,<br>external compressed air supply  | 10            | 540050          | VMPA1-M1H-W-PI  |
| 20   |   |   | 540051        | VMPA2-M1H-W-PI  |   |
| X  | Normally closed,<br>external compressed air supply    | 10  | 534415        | VMPA1-M1H-X-PI  |   |
|  |   | 20  | 537961        | VMPA2-M1H-X-PI  |   |
| 2x 2/2-way valve   |   |   |               |                 |   |
| D  | Normally closed                                       | 10  | 533350        | VMPA1-M1H-D-PI  |   |
|  |   | 20  | 537960        | VMPA2-M1H-D-PI  |   |
| DS   | Normally closed,<br>mechanical spring return          | 10  | 556841        | VMPA1-M1H-DS-PI |   |
|  |   | 20  | 568657        | VMPA2-M1H-DS-PI |   |
| I  | 1x normally closed,<br>1x normally closed, reversible | 10  | 543605        | VMPA1-M1H-I-PI  |   |
|  |   | 20  | 543703        | VMPA2-M1H-I-PI  |   |

# Valve terminals MPA-S

Accessories

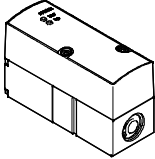
**FESTO**

| Ordering data   |      |   |                      |                                 |          |                    |
|---|------|---|----------------------|---------------------------------|----------|--------------------|
|   | Code | Description   |                      | Pressure regulation range [bar] | Part No. | Type               |
| Regulator plate   |      |   |                      |                                 |          |                    |
|    | PF   | MPA1, M5 interface, fixed   | Port 1               | 0.5 ... 5                       | 564911   | VMPA1-B8-R1-M5-06  |
|   | PA   |   |                      | 0.5 ... 8.5                     | 564908   | VMPA1-B8-R1-M5-10  |
|   | PH   |   | Port 2               | 2 ... 5                         | 564912   | VMPA1-B8-R2-M5-06  |
|   | PC   |   |                      | 2 ... 8.5                       | 564909   | VMPA1-B8-R2-M5-10  |
|   | PG   |   | Port 4               | 2 ... 5                         | 564913   | VMPA1-B8-R3-M5-06  |
|   | PB   |   |                      | 2 ... 8.5                       | 564910   | VMPA1-B8-R3-M5-10  |
|    | PF   | MPA1, M5 interface, rotatable   | Port 1               | 0.5 ... 5                       | 549052   | VMPA1-B8-R1C2-C-06 |
|   | PA   |   |                      | 0.5 ... 8.5                     | 543339   | VMPA1-B8-R1C2-C-10 |
|   | PH   |   | Port 2               | 2 ... 5                         | 549053   | VMPA1-B8-R2C2-C-06 |
|   | PC   |   |                      | 2 ... 8.5                       | 543340   | VMPA1-B8-R2C2-C-10 |
|   | PG   |   | Port 4               | 2 ... 5                         | 549054   | VMPA1-B8-R3C2-C-06 |
|   | PB   |   |                      | 2 ... 8.5                       | 543341   | VMPA1-B8-R3C2-C-10 |
|    | PF   | MPA2, 10 mm cartridge fitting   | Port 1               | 0.5 ... 5                       | 549055   | VMPA2-B8-R1C2-C-06 |
|   | PA   |   |                      | 0.5 ... 8.5                     | 543342   | VMPA2-B8-R1C2-C-10 |
|   | PH   |   | Port 2               | 2 ... 5                         | 549056   | VMPA2-B8-R2C2-C-06 |
|   | PC   |   |                      | 2 ... 8.5                       | 543343   | VMPA2-B8-R2C2-C-10 |
|   | PG   |   | Port 4               | 2 ... 5                         | 549057   | VMPA2-B8-R3C2-C-06 |
|   | PB   |   |                      | 2 ... 8.5                       | 543344   | VMPA2-B8-R3C2-C-10 |
|   | PN   | MPA2, reversible, 10 mm cartridge fitting                             | Port 2               | 0.5 ... 5                       | 549113   | VMPA2-B8-R6C2-C-06 |
|   | PL   |   |                      | 0.5 ... 8.5                     | 543347   | VMPA2-B8-R6C2-C-10 |
|   | PM   |   | Port 4               | 0.5 ... 5                       | 549114   | VMPA2-B8-R7C2-C-06 |
|   | PK   |   |                      | 0.5 ... 8.5                     | 543348   | VMPA2-B8-R7C2-C-10 |
| Vertical pressure shut-off plate  |      |   |                      |                                 |          |                    |
|  | PS   | MPA1, port 1 and 12/14, operating pressure 3.0 ... 8.0 bar            |                      |                                 | 567805   | VMPA1-HS           |
| Pressure gauge for regulator plate  |      |   |                      |                                 |          |                    |
|  | VE   | MPA1, with thread M5, rotatable                                       | Display unit bar     | 0.5 ... 8.5                     | 132340   | MA-15-10-M5        |
|   | VD   |   | Display unit psi     | 0.5 ... 8.5                     | 132341   | MA-15-145-M5-PSI   |
|  | T    | MPA2, 10 mm cartridge fitting connection                              | Display unit bar/psi | 0.5 ... 8.5                     | 543487   | PAGN-26-16-P10     |
|   |      |   |                      | 0.5 ... 5                       | 543488   | PAGN-26-10-P10     |
| Threaded adapter  |      |   |                      |                                 |          |                    |
|  | –    | For MPA2 regulator, 10 mm cartridge fitting connection to thread G1/8 |                      |                                 | 565811   | QSP-10-G1/8        |
| Non-return valve  |      |   |                      |                                 |          |                    |
|  | –    | For MPA1 with thread M5, fixed  |                      |                                 | 153291   | QSK-M5-4           |

## Valve terminals MPA-S

Accessories

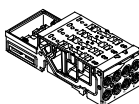
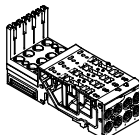
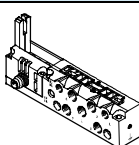
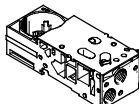

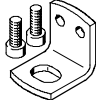
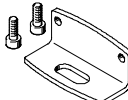
**FESTO**

| Ordering data – Proportional pressure regulator                                   |      |                            |                   |                           |          |                           |
|---|------|----------------------------|-------------------|---------------------------|----------|---------------------------|
|   | Code | Full-scale linearity error | Supply pressure 1 | Pressure regulation range | Part No. | Type                      |
|  | QA   | 2%                         | 0 ... 4 bar       | 0.02 ... 2 bar            | 542220   | VPPM-6TA-L-1-F-0L2H       |
|   | QD   | 1%                         | 0 ... 4 bar       | 0.02 ... 2 bar            | 542217   | VPPM-6TA-L-1-F-0L2H-S1    |
|   | QB   | 2%                         | 0 ... 8 bar       | 0.06 ... 6 bar            | 542221   | VPPM-6TA-L-1-F-0L6H       |
|   | QE   | 1%                         | 0 ... 8 bar       | 0.06 ... 6 bar            | 542218   | VPPM-6TA-L-1-F-0L6H-S1    |
|   | QC   | 2%                         | 0 ... 11 bar      | 0.1 ... 10 bar            | 542222   | VPPM-6TA-L-1-F-0L10H      |
|   | QF   | 1%                         | 0 ... 11 bar      | 0.1 ... 10 bar            | 542219   | VPPM-6TA-L-1-F-0L10H-S1   |
|   | QL   | 1%                         | 0 ... 4 bar       | 0.02 ... 2 bar            | 572407   | VPPM-8TA-L-1-F-0L2H-S1C1  |
|   | QG   | 2%                         | 0 ... 4 bar       | 0.02 ... 2 bar            | 572410   | VPPM-8TA-L-1-F-0L2H-C1    |
|   | QM   | 1%                         | 0 ... 8 bar       | 0.06 ... 6 bar            | 572408   | VPPM-8TA-L-1-F-0L6H-S1C1  |
|   | QH   | 2%                         | 0 ... 8 bar       | 0.06 ... 6 bar            | 572411   | VPPM-8TA-L-1-F-0L6H-C1    |
|   | QN   | 1%                         | 0 ... 11 bar      | 0.1 ... 10 bar            | 572409   | VPPM-8TA-L-1-F-0L10H-S1C1 |
|   | QK   | 2%                         | 0 ... 11 bar      | 0.1 ... 10 bar            | 572412   | VPPM-8TA-L-1-F-0L10H-C1   |

# Valve terminals MPA-S

Accessories

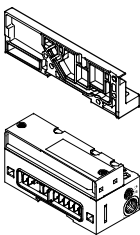
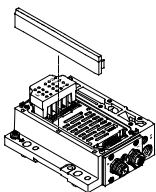
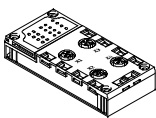
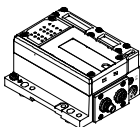
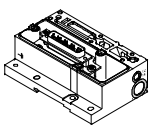
**FESTO**

| Ordering data   |  |                      |               |          |                      |
|---|--|----------------------|---------------|----------|----------------------|
| Designation   |  |                      | Width<br>[mm] | Part No. | Type                 |
| Sub-base – Without electrical interlinking module                                   |  |                      |               |          |                      |
|    | For multi-pin plug/fieldbus                                    | Four valve positions | 10            | 533352   | VMPA1-FB-AP-4-1      |
|   |  | Two valve positions  | 20            | 538000   | VMPA2-FB-AP-2-1      |
|   | For multi-pin plug/fieldbus, duct 1 closed                     | Four valve positions | 10            | 538657   | VMPA1-FB-AP-4-1-T1   |
|   |  | Two valve positions  | 20            | 538677   | VMPA2-FB-AP-2-1-T0   |
|   | For multi-pin plug/fieldbus, duct 1 closed and duct 3/5 closed | Four valve positions | 10            | 555901   | VMPA1-FB-AP-4-1-S1   |
|   |  | Two valve positions  | 20            | 555902   | VMPA2-FB-AP-2-1-S0   |
| Sub-base – Incl. electrical interlinking module and electronics module              |  |                      |               |          |                      |
|    | For fieldbus   | Four valve positions | 10            | 546802   | VMPA1-AP-4-1-EMS-8   |
|   |  | Two valve positions  | 20            | 546803   | VMPA2-AP-2-1-EMS-4   |
|   | For multi-pin plug   | Four solenoid coils  | 10            | 546806   | VMPA1-AP-4-1-EMM-4   |
|   |  | Two solenoid coils   | 20            | 546807   | VMPA2-AP-2-1-EMM-2   |
|   |  | Eight solenoid coils | 10            | 546804   | VMPA1-AP-4-1-EMM-8   |
|   |  | Four solenoid coils  | 20            | 546805   | VMPA2-AP-2-1-EMM-4   |
| Sub-base – For individual connection  |  |                      |               |          |                      |
|   | Without ATEX specification                                     | Internal pilot air   | 10            | 533394   | VMPA1-IC-AP-1        |
|   |  |                      | 20            | 537981   | VMPA2-IC-AP-1        |
|   |  | External pilot air   | 10            | 533395   | VMPA1-IC-AP-S-1      |
|   |  |                      | 20            | 537982   | VMPA2-IC-AP-S-1      |
|   | With ATEX specification:<br>II 3G Ex nA IIC T4 XGc             | Internal pilot air   | 10            | 8005149  | VMPA1-IC-AP-1-EX1E   |
|   |  |                      | 20            | 8005151  | VMPA2-IC-AP-1-EX1E   |
|   |  | External pilot air   | 10            | 8005150  | VMPA1-IC-AP-S-1-EX1E |
|   |  |                      | 20            | 8005152  | VMPA2-IC-AP-S-1-EX1E |
| Sub-base – For proportional pressure regulator                                      |  |                      |               |          |                      |
|  | Without electrical interlinking module or electrical module    | –                    | –             | 542223   | VMPA-FB-AP-P1        |
| Mounting  |  |                      |               |          |                      |
|  | For H-rail   |                      |               | 526032   | CPX-CPA-BG-NRH       |
|  | Mounting (for supply plate)                                    |                      |               | 534416   | VMPA-BG-RW           |
|  | Mounting (for proportional pressure regulator sub-base)        |                      |               | 558844   | VMPA-BG              |

# Valve terminals MPA-S

Accessories

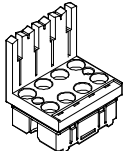
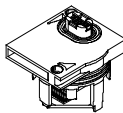
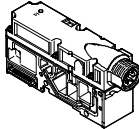
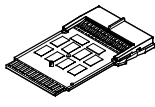
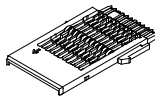
**FESTO**

| Ordering data   |   |                    |                    |          |                         |
|---|---|--------------------|--------------------|----------|-------------------------|
| Designation   |   |                    |                    | Part No. | Type                    |
| End plate and fieldbus pneumatic interface  |   |                    |                    |          |                         |
|    | Right-hand end plate  |                    |                    | 533373   | VMPA-EPR                |
|   | Pneumatic interface, ducted exhaust air, internal pilot air                                     |                    |                    | 533370   | VMPA-FB-EPL-G           |
|   | Pneumatic interface, ducted exhaust air, internal pilot air, for CPX metal interlinking module  |                    |                    | 552286   | VMPA-FB-EPLM-G          |
|   | Pneumatic interface, ducted exhaust air, external pilot air                                     |                    |                    | 533369   | VMPA-FB-EPL-E           |
|   | Pneumatic interface, ducted exhaust air, external pilot air, for CPX metal interlinking module  |                    |                    | 552285   | VMPA-FB-EPLM-E          |
|   | Pneumatic interface, flat plate silencer, internal pilot air                                    |                    |                    | 533372   | VMPA-FB-EPL-GU          |
|   | Pneumatic interface, flat plate silencer, internal pilot air, for CPX metal interlinking module |                    |                    | 552288   | VMPA-FB-EPLM-GU         |
|   | Pneumatic interface, flat plate silencer, external pilot air                                    |                    |                    | 533371   | VMPA-FB-EPL-EU          |
|   | Pneumatic interface, flat plate silencer, external pilot air, for CPX metal interlinking module |                    |                    | 552287   | VMPA-FB-EPLM-EU         |
| Electrical interface for AS-interface   |   |                    |                    |          |                         |
|   | 4 inputs/4 outputs, according to Spec. 2.1  | Internal pilot air | Ducted exhaust air | 546989   | VMPA-ASI-EPL-G-4E4A-Z   |
|   |   |                    | Silencer           | 546991   | VMPA-ASI-EPL-GU-4E4A-Z  |
|   |   | External pilot air | Ducted exhaust air | 546988   | VMPA-ASI-EPL-E-4E4A-Z   |
|   |   |                    | Silencer           | 546990   | VMPA-ASI-EPL-EU-4E4A-Z  |
|   | 8 inputs/8 outputs, according to Spec. 2.1  | Internal pilot air | Ducted exhaust air | 546993   | VMPA-ASI-EPL-G-8E8A-Z   |
|   |   |                    | Silencer           | 546995   | VMPA-ASI-EPL-GU-8E8A-Z  |
|   |   | External pilot air | Ducted exhaust air | 546992   | VMPA-ASI-EPL-E-8E8A-Z   |
|   |   |                    | Silencer           | 546994   | VMPA-ASI-EPL-EU-8E8A-Z  |
|   | 8 inputs/8 outputs, according to Spec. 3.0, extended addressing range                           | Internal pilot air | Ducted exhaust air | 573184   | VMPA-ASI-EPL-G-8E8A-CE  |
|   |   |                    | Silencer           | 573186   | VMPA-ASI-EPL-GU-8E8A-CE |
|   |   | External pilot air | Ducted exhaust air | 573183   | VMPA-ASI-EPL-E-8E8A-CE  |
|   |   |                    | Silencer           | 573185   | VMPA-ASI-EPL-EU-8E8A-CE |
| Manifold block for AS-interface   |   |                    |                    |          |                         |
|  | M12 socket, 5-pin   |                    |                    | 195704   | CPX-AB-4-M12X2-5POL     |
|   | M8 socket, 3-pin  |                    |                    | 195706   | CPX-AB-8-M8-3POL        |
|   | Spring-loaded terminals, 32-pin   |                    |                    | 195708   | CPX-AB-8-KL-4POL        |
|   | Sub-D socket, 25-pin  |                    |                    | 525676   | CPX-AB-1-SUB-BU-25POL   |
|   | Quick connection socket, 4-pin  |                    |                    | 525636   | CPX-AB-4-HAR-4POL       |
| Electrical interface for CPI  |   |                    |                    |          |                         |
|  | External pilot air, ducted exhaust air  |                    |                    | 546983   | VMPA-CPI-EPL-E          |
|   | Internal pilot air, ducted exhaust air  |                    |                    | 546984   | VMPA-CPI-EPL-G          |
|   | External pilot air, silencer  |                    |                    | 546985   | VMPA-CPI-EPL-EU         |
|   | Internal pilot air, silencer  |                    |                    | 546986   | VMPA-CPI-EPL-GU         |
| Electrical interface for multi-pin plug connection                                  |   |                    |                    |          |                         |
|  | External pilot air, ducted exhaust air  |                    |                    | 540893   | VMPA1-MPM-EPL-E         |
|   | Internal pilot air, ducted exhaust air  |                    |                    | 540894   | VMPA1-MPM-EPL-G         |
|   | External pilot air, silencer  |                    |                    | 540895   | VMPA1-MPM-EPL-EU        |
|   | Internal pilot air, silencer  |                    |                    | 540896   | VMPA1-MPM-EPL-GU        |

# Valve terminals MPA-S

Accessories

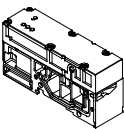
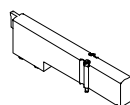
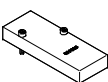


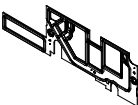
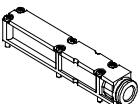
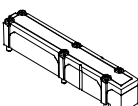
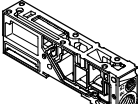
**FESTO**

| Ordering data   |   |  |               |          |                       |                    |
|---|---|--|---------------|----------|-----------------------|--------------------|
| Designation   |   |  | Width<br>[mm] | Part No. | Type                  |                    |
| Electronics module  |   |  |               |          |                       |                    |
|    | For fieldbus connection                                   |  | 4 coils       | 20       | 537983                | VMPA2-FB-EMS-4     |
|   |   |  | 8 coils       | 10       | 533360                | VMPA1-FB-EMS-8     |
|   | With separate circuit                                     |  | 4 coils       | 20       | 537984                | VMPA2-FB-EMG-4     |
|   |   |  | 8 coils       | 10       | 533361                | VMPA1-FB-EMG-8     |
|   | For fieldbus connection with extended diagnostic function |  |               |          |                       |                    |
|   | Without separate circuit                                  |  | 4 coils       | 20       | 543332                | VMPA2-FB-EMS-D2-4  |
|   |   |  | 8 coils       | 10       | 543331                | VMPA1-FB-EMS-D2-8  |
|   | With separate circuit                                     |  | 4 coils       | 20       | 543334                | VMPA2-FB-EMG-D2-4  |
|   |   |  | 8 coils       | 10       | 543333                | VMPA1-FB-EMG-D2-8  |
|   | For multi-pin plug connection                             |  |               |          |                       |                    |
|   | Modular (MPM)   |  | 2 coils       | 20       | 537985                | VMPA2-MPM-EMM-2    |
|   |   |  | 4 coils       | 20       | 537986                | VMPA2-MPM-EMM-4    |
| 4 coils   |   |  | 10            | 537987   | VMPA1-MPM-EMM-4       |                    |
| 8 coils   |   |  | 10            | 537988   | VMPA1-MPM-EMM-8       |                    |
|   |   |  |               |          |                       |                    |
| Electrical module   |   |  |               |          |                       |                    |
|   | For proportional pressure regulator                       |  |               | 542224   | VMPA-FB-EMG-P1        |                    |
|   |   |  |               |          |                       |                    |
| Electrical supply plate   |   |  |               |          |                       |                    |
|  | Plug connection M18, 3-pin                                |  |               | 541082   | VMPA-FB-SP-V          |                    |
|   | Plug connection 7/8", 5-pin                               |  |               | 541083   | VMPA-FB-SP-7/8-V-5POL |                    |
|   | Plug connection 7/8", 4-pin                               |  |               | 541084   | VMPA-FB-SP-7/8-V-4POL |                    |
|   |   |  |               |          |                       |                    |
| Electrical interlinking module for multi-pin plug connection and AS-interface       |   |  |               |          |                       |                    |
|  | For one sub-base  |  | 2 coils       | 20       | 537989                | VMPA2-MPM-EV-AB-2  |
|   |   |  | 4 coils       | 10       | 537993                | VMPA1-MPM-EV-AB-4  |
|   |   |  | 8 coils       | 10       | 537994                | VMPA1-MPM-EV-AB-8  |
|   | For a sub-base with pneumatic supply plate                |  | 2 coils       | 20       | 537991                | VMPA2-MPM-EV-ABV-2 |
|   |   |  | 4 coils       | 10       | 537995                | VMPA1-MPM-EV-ABV-4 |
|   |   |  | 8 coils       | 10       | 537996                | VMPA1-MPM-EV-ABV-8 |
|   |   |  |               |          |                       |                    |
| Electrical manifold module for fieldbus connection and CPI                          |   |  |               |          |                       |                    |
|  | For sub-base of the proportional pressure regulator       |  |               | 10<br>20 | 537998                | VMPA1-FB-EV-AB     |
|   | For a pneumatic supply plate                              |  |               |          | 537999                | VMPA1-FB-EV-V      |

# Valve terminals MPA-S

Accessories

**FESTO**

| Ordering data   |  |                          |          |                |
|---|--|--------------------------|----------|----------------|
| Designation   |  |                          | Part No. | Type           |
| Pressure sensor   |  |                          |          |                |
|    | For monitoring the operating pressure in duct 1      |                          | 541085   | VMPA-FB-PS-1   |
|   | For monitoring the pressure in exhaust ducts 3 and 5 |                          | 541086   | VMPA-FB-PS-3/5 |
|   | For monitoring an external process pressure          |                          | 541087   | VMPA-FB-PS-P1  |
| Cover   |  |                          |          |                |
|    | Blanking plate for valve position <sup>1)</sup>      |                          | 533351   | VMPA1-RP       |
|   |  |                          | 537962   | VMPA2-RP       |
|    | Blanking plate                                       |                          | 559638   | VMPA-P-RP      |
|    | Cover for manual override, non-detenting (10 pieces) |                          | 540897   | VMPA-HBT-B     |
|    | Cover for manual override, covered (10 pieces)       |                          | 540898   | VMPA-HBV-B     |
| Seal for manifold block   |  |                          |          |                |
|  | MPA with ducted exhaust air                          | No duct separation       | 533359   | VMPA1-DP       |
|   |  | Duct 1 separated         | 533363   | VMPA1-DP-P     |
|   |  | Duct 3/5 separated       | 533364   | VMPA1-DP-RS    |
|   |  | Duct 1 and 3/5 separated | 533365   | VMPA1-DP-PRS   |
|   | MPA with flat plate silencer                         | No duct separation       | 533355   | VMPA1-DPU      |
|   |  | Duct 1 separated         | 533356   | VMPA1-DPU-P    |
|   |  | Duct 3/5 separated       | 533357   | VMPA1-DPU-RS   |
|   |  | Duct 1 and 3/5 separated | 533358   | VMPA1-DPU-PRS  |
| Exhaust plate   |  |                          |          |                |
|  | Ducted exhaust air, with 10 mm push-in connector     |                          | 533375   | VMPA-AP        |
|   | Ducted exhaust air, with QS-3/8 connector            |                          | 541629   | VMPA-AP-3/8    |
|  | Flat plate silencer                                  |                          | 533374   | VMPA-APU       |
| Supply plate (without exhaust plate)  |  |                          |          |                |
|  | For ducted exhaust air                               |                          | 533354   | VMPA1-FB-SP    |
|   | For flat plate silencer                              |                          | 533353   | VMPA1-FB-SPU   |

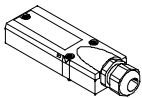
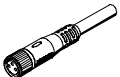
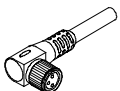
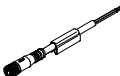
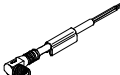
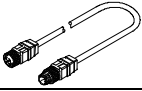
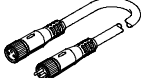


1) A self-adhesive label is supplied.



# Valve terminals MPA-S

Accessories





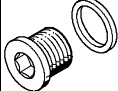

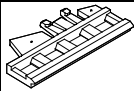

**FESTO**

| Ordering data   |   |        |                     |                        |
|---|---|--------|---------------------|------------------------|
| Designation   |   |        | Part No.            | Type                   |
| Multi-pin plug connection, electrical   |   |        |                     |                        |
|    | Cover without connecting cable for self-assembly  |        | 533198              | VMPA-KMS-H             |
|   | PVC connecting cable for 8 solenoid coils   | 2.5 m  | 533195              | VMPA-KMS1-8-2,5        |
|   |   | 5 m    | 533196              | VMPA-KMS1-8-5          |
|   |   | 10 m   | 533197              | VMPA-KMS1-8-10         |
|   | PVC connecting cable for 24 solenoid coils  | 2.5 m  | 533192              | VMPA-KMS1-24-2,5       |
|   |   | 5 m    | 533193              | VMPA-KMS1-24-5         |
|   |   | 10 m   | 533194              | VMPA-KMS1-24-10        |
|   | PUR connecting cable for 8 solenoid coils, suitable for energy chains   | 2.5 m  | 533504              | VMPA-KMS2-8-2,5-PUR    |
|   |   | 5 m    | 533505              | VMPA-KMS2-8-5-PUR      |
|   |   | 10 m   | 533506              | VMPA-KMS2-8-10-PUR     |
|   | PUR connecting cable for 24 solenoid coils, suitable for energy chains  | 2.5 m  | 533501              | VMPA-KMS2-24-2,5-PUR   |
|   |   | 5 m    | 533502              | VMPA-KMS2-24-5-PUR     |
| 10 m  |   | 533503 | VMPA-KMS2-24-10-PUR |                        |
| Connecting cable, individual connection   |   |        |                     |                        |
|    | <ul style="list-style-type: none"><li>Straight socket, M8x1, 4-pin</li><li>Open end, 4-wire</li></ul>                               | 2.5 m  | 158960              | SIM-M8-4GD-2,5-PU      |
|   |   | 5 m    | 158961              | SIM-M8-4GD-5-PU        |
|   | <ul style="list-style-type: none"><li>Angled socket, M8x1, 4-pin</li><li>Open end, 4-wire</li></ul>                                 | 2.5 m  | 158962              | SIM-M8-4WD-2,5-PU      |
|   |   | 5 m    | 158963              | SIM-M8-4WD-5-PU        |
|  | <ul style="list-style-type: none"><li>Straight socket, M8x1, 4-pin</li><li>Open end, 4-wire</li></ul>                               | 2.5 m  | 541342              | NEBU-M8G4-K-2.5-LE4    |
|   |   | 5 m    | 541343              | NEBU-M8G4-K-5-LE4      |
|  | <ul style="list-style-type: none"><li>Angled socket, M8x1, 4-pin</li><li>Open end, 4-wire</li></ul>                                 | 2.5 m  | 541344              | NEBU-M8W4-K-2.5-LE4    |
|   |   | 5 m    | 541345              | NEBU-M8W4-K-5-LE4      |
| Connecting cable, AS-interface connection   |   |        |                     |                        |
|  | <ul style="list-style-type: none"><li>Straight socket, M12x1, 5-pin, A-coded</li><li>Straight plug, M12x1, 4-pin, A-coded</li></ul> | 0.2 m  | 542129              | NEBU-M12G5-F-0.2-M12G4 |
|   |   |        |                     |                        |
|  | Modular system for connecting cables  |        | –                   | ➔ Internet: nebu       |
| Connecting cable, CPI connection  |   |        |                     |                        |
|  | <ul style="list-style-type: none"><li>Angled plug, 5-pin</li><li>Angled socket, 5-pin</li></ul>                                     | 0.25 m | 540327              | KVI-CP-3-WS-WD-0,25    |
|   |   | 0.5 m  | 540328              | KVI-CP-3-WS-WD-0,5     |
|   |   | 2 m    | 540329              | KVI-CP-3-WS-WD-2       |
|   |   | 5 m    | 540330              | KVI-CP-3-WS-WD-5       |
|   |   | 8 m    | 540331              | KVI-CP-3-WS-WD-8       |
|  | <ul style="list-style-type: none"><li>Straight plug, 5-pin</li><li>Straight socket, 5-pin</li></ul>                                 | 2 m    | 540332              | KVI-CP-3-GS-GD-2       |
|   |   | 5 m    | 540333              | KVI-CP-3-GS-GD-5       |
|   |   | 8 m    | 540334              | KVI-CP-3-GS-GD-8       |

## Valve terminals MPA-S

Accessories





**FESTO**

| Ordering data   |  |                   |          |              |
|---|--|-------------------|----------|--------------|
| Designation   |  |                   | Part No. | Type         |
| Push-in fitting for manifold block, pneumatic interface, supply plate               |  |                   |          |              |
|    | Connecting thread M5 for tubing O.D.   | 3 mm (10 pieces)  | 153313   | QSM-M5-3-I   |
|   |  | 4 mm (10 pieces)  | 153315   | QSM-M5-4-I   |
|   |  | 6 mm (10 pieces)  | 153317   | QSM-M5-6-I   |
|   | Connecting thread M7 for tubing O.D.   | 4 mm (10 pieces)  | 153319   | QSM-M7-4-I   |
|   |  | 6 mm (10 pieces)  | 153321   | QSM-M7-6-I   |
|   | Connecting thread G1/8 for tubing O.D.   | 6 mm (10 pieces)  | 186107   | QS-G1/8-6-I  |
|   |  | 8 mm (10 pieces)  | 186109   | QS-G1/8-8-I  |
|   | Connecting thread G1/4 for tubing O.D.   | 8 mm (10 pieces)  | 186110   | QS-G1/4-8-I  |
|   |  | 10 mm (10 pieces) | 186112   | QS-G1/4-10-I |
|   |  |                   |          |              |
| Silencer  |  |                   |          |              |
|    | Connecting thread  | M5                | 165003   | UC-M5        |
|   |  | M7                | 161418   | UC-M7        |
|   |  | G1/4              | 165004   | UC-1/4       |
|   |  | G1/8              | 161419   | UC-1/8       |
|    | Push-in sleeve connection  | 3 mm              | 165005   | UC-QS-3H     |
|   |  | 4 mm              | 165006   | UC-QS-4H     |
|   |  | 6 mm              | 165007   | UC-QS-6H     |
|   |  | 8 mm              | 175611   | UC-QS-8H     |
|   |  | 10 mm             | 526475   | UC-QS-10H    |
|   |  |                   |          |              |
| Blanking plug   |  |                   |          |              |
|  | Thread M5  |                   | 3843     | B-M5         |
|   |  |                   |          |              |
|  | Thread M7  |                   | 174309   | B-M7         |
|   | Thread G1/8  |                   | 3568     | B-1/8        |
|   | Thread G1/4  |                   | 3569     | B-1/4        |
|   |  |                   |          |              |
| Plug  |  |                   |          |              |
|  | Blanking plug for tubing O.D.  | 4 mm              | 153267   | QSC-4H       |
|   |  | 6 mm              | 153268   | QSC-6H       |
|   |  | 8 mm              | 153269   | QSC-8H       |
|   |  | 10 mm             | 153270   | QSC-10H      |
|   |  |                   |          |              |
| Inscription labels  |  |                   |          |              |
|  | Inscription label holder for manifold block, transparent, for paper foil label |                   | 533362   | VMPA1-ST-1-4 |
|   | Inscription label holder for manifold block, 4-fold, for IBS-6x10              |                   | 544384   | VMPA1-ST-2-4 |
|  | Inscription labels 6 x 10 in frame, 64 pieces                                  |                   | 18576    | IBS-6x10     |

# Valve terminals MPA-S

Accessories

**FESTO**

| Ordering data   |  |                              |          |                        |                  |
|---|--|------------------------------|----------|------------------------|------------------|
| Designation   |  | Nominal flow rate<br>[l/min] | Part No. | Type                   | PU <sup>1)</sup> |
| Fixed restrictor  |  |                              |          |                        |                  |
|    | Hollow bolt, for restricting the exhaust air in duct 3 and 5   | 4.5                          | 572544   | VMPA1-FT-NW0.3-10      | 10               |
|   |  | 10.5                         | 572545   | VMPA1-FT-NW0.5-10      | 10               |
|   |  | 20.0                         | 572546   | VMPA1-FT-NW0.7-10      | 10               |
|   |  | 38.5                         | 572547   | VMPA1-FT-NW1.0-10      | 10               |
|   |  | 55.0                         | 572548   | VMPA1-FT-NW1.2-10      | 10               |
|   |  | 85.0                         | 572549   | VMPA1-FT-NW1.5-10      | 10               |
|   |  | 110.0                        | 572550   | VMPA1-FT-NW1.7-10      | 10               |
| Restrictor set  |  |                              |          |                        |                  |
|    | Fixed restrictors, two retainers, assembly tool  |                              | 572543   | VMPA1-FT-NW0.3-1.7     | 1                |
| Retainer for fixed restrictor   |  |                              |          |                        |                  |
|    | Retainer for exhaust opening in the sub-base   |                              | 572542   | VMPA1-FTI-10           | 10               |
| Manual  |  |                              |          |                        |                  |
|  | MPA pneumatic components   | German                       | 534240   | P.BE-MPA-DE            | 1                |
|   |  | English                      | 534241   | P.BE-MPA-EN            | 1                |
|   |  | French                       | 534243   | P.BE-MPA-FR            | 1                |
|   |  | Spanish                      | 534242   | P.BE-MPA-ES            | 1                |
|   |  | Italian                      | 534244   | P.BE-MPA-IT            | 1                |
|   |  | Swedish                      | 534245   | P.BE-MPA-SV            | 1                |
|   | MPA electronic components<br>(pneumatic modules, pressure sensors, proportional pressure regulators, etc.) | German                       | 562112   | P.BE-MPA-Elektronik-DE | 1                |
|   |  | English                      | 562113   | P.BE-MPA-Elektronik-EN | 1                |
|   |  | French                       | 562115   | P.BE-MPA-Elektronik-FR | 1                |
|   |  | Spanish                      | 562114   | P.BE-MPA-Elektronik-ES | 1                |
|   |  | Italian                      | 562116   | P.BE-MPA-Elektronik-IT | 1                |
|   |  | Swedish                      | 562117   | P.BE-MPA-Elektronik-SV | 1                |

1) Packaging unit