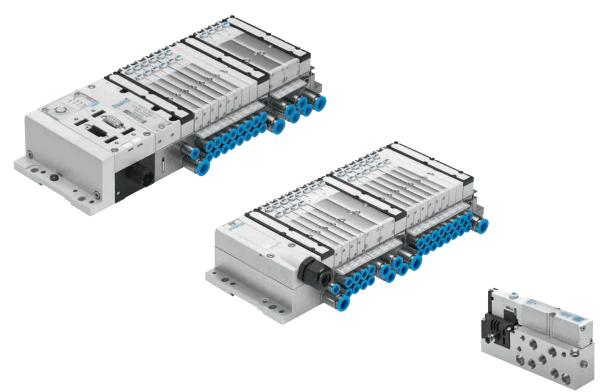


### Key features



#### Innovative

- Compact high-performance valves in sturdy metal housing
- MPA1: flow rates up to 360 l/min
- MPA14: flow rates up to 550 l/min
- MPA2: flow rates up to 700 l/min
- From the individual valve to the valve terminal with multi-pin, 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 actuating the valves and CPX modules
- Diagnostics down to the individual valve
- Valves can be actuated with or without (standard option) separate electrical circuits

### Flexible

- Modular system offering a range of configuration options
- Expandable with up to 128 solenoid coils
- Conversions and extensions possible at a later date
- Further sub-bases can be expanded using just three screws, sturdy separating seals on metal separator plates
- Integration of innovative function modules possible
- Manual regulators, rotatable
   pressure gauge
- Proportional pressure regulator
- Additional air supply via additional pressure zones using supply plates
- Wide range of pressures
- -0.09 ... 1 MPa
- Wide range of valve functions

#### Reliable

- Sturdy and durable metal components
  - Valves
  - Sub-bases
  - Seals
- Fast troubleshooting thanks to LEDs on the valves and diagnostics via fieldbus
- Extensive operating voltage range ±25%
- Easy to service thanks to replaceable valves and electronic modules
- Manual override either non-detenting, detenting or secured against unauthorised activation (concealed)
- Durable thanks to tried-and-tested piston spool valves
- Large and durable labelling system, suitable for barcodes

#### Easy to install

- Ready-to-install and tested unit
- Reduced costs for selection, ordering, assembly and commissioning
- Secure mounting on wall or H-rail

operating voltage connection

Directly using screws or on an

H-rail, automatic earthing

[11] Straightforward electrical

[12] Pneumatic interface to CPX

[10] CPX diagnostic interface for hand-

held devices (channel-oriented

Multi-pin connection, fieldbus

Control block, AS-Interface, CPI

diagnostics down to the individual

disconnected separately

±25%, outputs and valves can be

[8] Reliable:

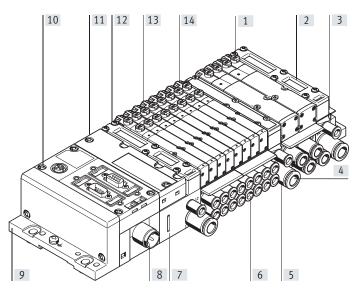
[9] Quick to mount:

valve)

connection

interface

# Key features



# Equipment options

- Valve functions
- 5/2-way valve, single solenoid
- 5/2-way valve, double solenoid
- 2x 3/2-way valve, normally open
- 2x 3/2-way valve, normally closed
- 2x 3/2-way valve, 1x normally open, 1x normally closed
- 5/3-way valve, mid-position pressurised
- 5/3-way valve, mid-position closed
- 5/3-way valve, mid-position exhausted
- 2x 2/2-way valve, 1x normally closed, 1x normally closed, reversible

- Safe operation: Manual override, non-detenting/ detenting or concealed
- [2] Space-saving: Flat valves and flat plate silencer[3] Variable:
- 64 valve positions/128 solenoid coils (FB) 24 valve positions/24 solenoid coils (MP)
- [4] Practical: robust metal thread or pre-assembled QS connections
   [5] Modular:
- [5] Modular: supply plates for pressure zone creation as well as numerous additional exhaust and supply ports
- [6] Wide range of valve functions
- [7] Convenient: large inscription labels
- 2x 2/2-way valve, normally closed
- 1x 3/2-way valve, normally closed, external compressed air supply
- 1x 3/2-way valve, normally open, external compressed air supply
- Manual pressure regulators
- Proportional pressure regulators (for CPI connection, fieldbus)

• Electrical M8 connection, 4-pin with

• Detachable electronics module with

• 2 to 8 valves, freely configurable

(max. 8 solenoid coils) with input

integrated holding current reduction

Pressure sensor

screw connection

Individual valve

AS-Interface

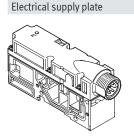
feedback.

[13] Width 10 mm, 14 mm and 20 mm
[14] Reduced downtimes: two-colour local LED diagnostics
All valves have the same compact

All valves have the same compact dimensions with an overall length of 107 mm and a width of 10 mm, 14 mm or 20 mm. A height of 55 mm makes them a perfect match for the electrical peripherals CPX.

### Special features

- Multi-pin terminal
- Max. 24 valve positions/ max. 24 solenoid coils
- Parallel modular valve linking via circuit boards
- Electronics module with integrated holding current reduction
- Any compressed air supply
- Creating pressure zones



- Fieldbus terminal/control block
- Max. 64 valve positions/ max. 128 solenoid coils
- Internal CPX bus system for valve actuation
- Module for electrical valve activation with or without separate electrical circuits
- Any compressed air supply
- Creating pressure zones
- Increases the maximum number of valve positions possible to 64, with max. 128 solenoid coils
- Creation of separate, individually disconnectable circuits (voltage zones)
- Greater economic efficiency thanks to more valves/solenoid coils per valve terminal
- Increased safety as a result of individual disconnection of valve groups, e.g. for emergency-off functions

### CPI interface

- Max. 32 valve positions/ max. 32 solenoid coils
   Combinable
- MPA1: flow rates up to 360 l/min
- MPA14: flow rates up to 550 l/min
- MPA2: flow rates up to 700 l/min
- MPA1, MPA14 and MPA2 can be combined on one valve terminal

### 📲 - Note

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

# Key features

### Ordering data – Product options



### Configurable product

This product and all its product options can be ordered using the configurator. A valve terminal MPA-S can be ordered using the order code.

The configurator can be found under	Part No.
Products on the DVD or at	197330
→ www.festo.com/catalogue/	539641
	546279
	546280
	530411

 Part No.
 Type

 197330
 CPX

 539641
 CTEC

 546279
 MPA-ASI-VI

 546280
 MPA-CPI-VI

 530411
 MPA-FB-VI

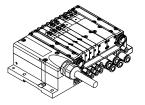
 569926
 MPA-MPM-VI

### Key features

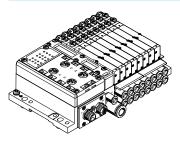
Individual connection



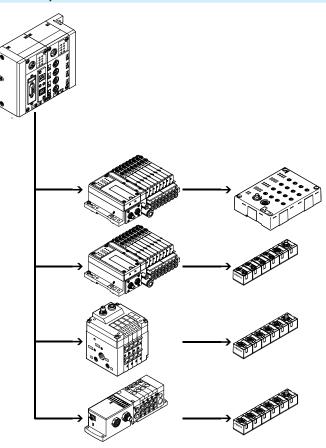
Multi-pin plug connection



**AS-Interface connection** 



#### Installation system CPI



Valves on individual sub-bases can also be used for actuators further away from the valve terminal. The electrical connection is established using a standard 4-pin M8 plug (EN 60947-5-2)., More information → VMPA1

The signals are transmitted from the controller to the valve terminal 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 4 to 24 MPA14 or 2 to 24 MPA2 valves, or a combination of all of these. Versions

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

A special feature of the AS-Interface is the simultaneous transmission of 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, 2 to 8 MPA14 or 2 to 8 MPA2 valves, or a combination of all of these.
- 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).

More information → Internet: as-interface

Valve terminal for installation system CPI:

The valve terminal with CP connection is provided for connection to a higher-level bus node or to control blocks. A bus node or control block additionally enables connection of decentralised input/output units. The following bus protocols are supported:

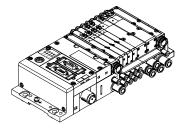
- PROFIBUS DP
- INTERBUS
- DeviceNet
- CANopen
- CC-LINK
- EtherNet/IP
- PROFINET
- POWERLINK
- EtherCAT
- Sercos III

Four strings having up to 32 inputs and outputs can be connected to a bus 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.

More information → Internet: ctec

### Key features

### Fieldbus interface via the CPX system

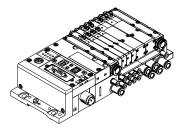


An integrated fieldbus node manages communication with a higher-order PLC. This enables space-saving pneumatic and electronic solutions to be implemented. Valve terminals with fieldbus interfaces can be configured with up to 16 sub-bases. In conjunction with MPA1 or MPA14 and 8 solenoid coils per sub-base, up to 128 solenoid coils can thus be actuated. An MPA2 with 4 solenoid coils per sub-base can actuate 64 solenoid coils.

#### Versions

- PROFIBUS DP
- INTERBUS
- DeviceNet
- CANopen
- CC-LINK
- EtherNet/IP
- PROFINET
- POWERLINK
- EtherCAT
- Sercos III
- Front end controller remote
- Front End Controller
- Remote I/O
- Modbus/TCP
- 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. In the slave operating mode, these valve terminals can be used for intelligent preprocessing and are therefore ideal modules for designing decentralised intelligence. In the master operating mode, terminal groups can be designed with many options and functions that can autonomously control a medium-sized machine/system.

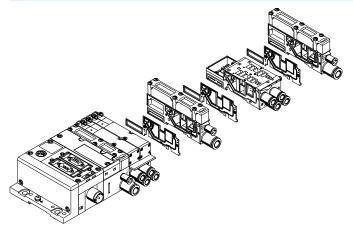
- CPX terminal
- → Internet: cpx

#### 📲 - Note

Note possible restrictions for the IP protection class

→ ATEX declaration of conformity

### Modular pneumatic components



The modular design of the MPA enables maximum flexibility right from the planning stage and offers maximum ease of service in operation. The system consists of sub-bases and valves. The sub-bases are screwed together, thus forming the support system for the valves. They contain the ducts for supplying compressed air to and exhausting from the valve terminal as well as the working ports for the pneumatic drives for each valve. Each subbase is connected to the next using three screws.

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

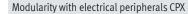
### Modular electrical peripherals

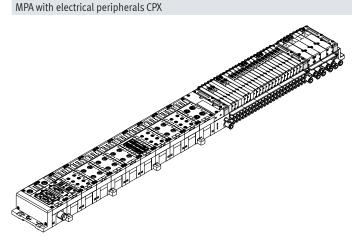
The manner in which the valves are actuated differs according to whether you are using a multi-pin terminal, fieldbus terminal or individual valve. The MPA with CPX interface is based on the internal bus system of the CPX and uses this serial communication system for all solenoid coils and a range of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

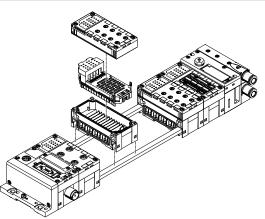
- Transmission of switching information
- High valve density
- Compact design
- Diagnostics related to valve position
- Separate power supply for valves
- Flexible conversion without address shifting
- Transmission of status, parameter and diagnostic data
- → Internet: cpx

• Option of CP interface

 CPX-CEC as stand-alone controller with access via Ethernet and web server





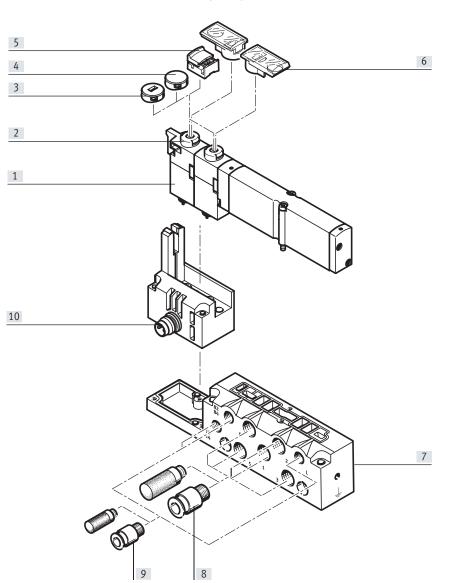


# Peripherals overview

# Individual sub-base Ordering:

Using individual part numbers

Individual sub-bases can be equipped with any valve (VMPA... of the corresponding width). The electrical connection is established using a standard 4-pin M8 plug (EN 60947-5-2).

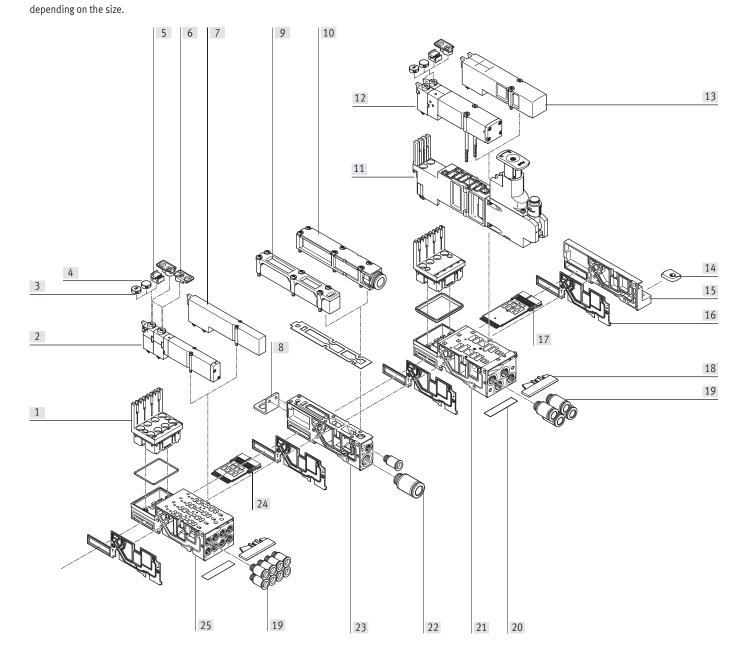


Designation		Description	→ Page/Internet
[1]	Solenoid valve	Width 10 mm, 14 mm, 20 mm	VMPA1
[2]	Manual override (MO)	Non-detenting/detenting by turning, per solenoid coil	VMPA1
[3]	Cover cap, coded	After fitting the cover cap, manual override operation is non-detenting only	VMPA1
[4]	Cover cap, concealed	After fitting the cover cap, manual override is blocked	VMPA1
[5]	Cover cap, manual override detenting	After fitting the cover cap, manual override is detenting and can be operated without tools	VMPA1
[6]	Identification holder	Can be pushed onto manual override	VMPA1
[7]	Sub-base	For individual valve VMPA	VMPA1
[8]	Fittings, silencers or blanking plugs	For working ports (2, 4) and air/exhaust ports (1, 3, 5)	VMPA1
[9]	Fittings and/or silencers	For pilot air supply/pilot exhaust air (12/14, 82/84) and pressure compensation	VMPA1
[10]	Electrical connection M8	4-pin	VMPA1

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

The sub-bases are prepared for either

- 2 or 4 single solenoid valves 2 or 4 double solenoid valves
- Double solenoid valve positions can be equipped with any valve or a cover plate.
- Single solenoid valve positions can only be equipped with single solenoid valves.



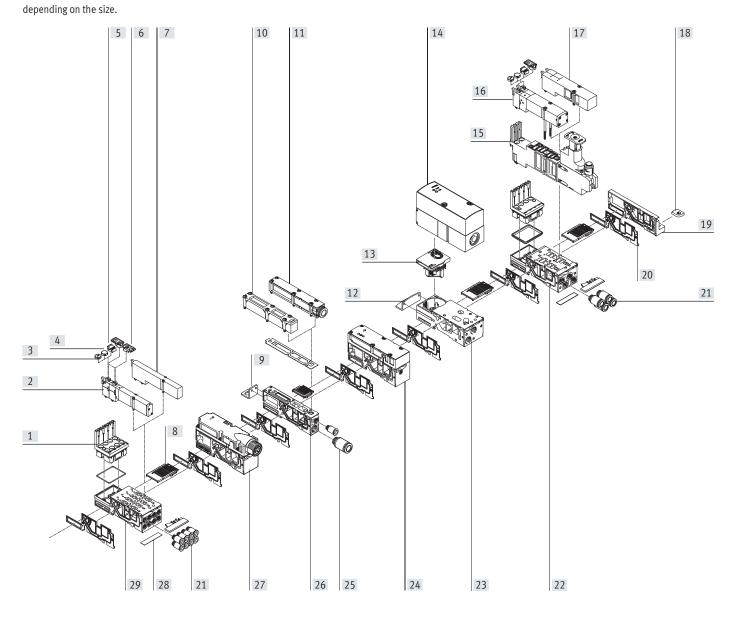
### Pneumatic components of the valve terminal – Multi-pin plug, AS-Interface

Desigr	nation	Description	→ Page/Internet	
[1]	Electronics module	For connecting valves	77,81,85	
[2]	Solenoid valve	Width 10 mm, 14 mm	74,79	
[3]	Cover cap, coded	After fitting the cover cap, manual override operation is non-detenting only	88	
[4]	Cover cap, concealed	After fitting the cover cap, manual override is blocked	88	
[5]	Cover cap, manual override detenting	After fitting the cover cap, manual override is detenting and can be operated without tools	88	
[6]	Identification holder	Can be pushed onto manual override	91	
[7]	Cover plate	For unused valve position (vacant position), width 10 mm, 14 mm	74, 79	
[8]	Mounting	Optional for valve terminal mounting (on supply plate)	91	
[9]	Flat plate silencer	-	-	
[10]	Exhaust plate	For ducted exhaust air	89	
[11]	Regulator plate	Vertical stacking (pressure regulator, vertical pressure shut-off plate, vertical pressure supply plate)	75	
[12]	Solenoid valve	Width 20 mm	82	
[13]	Cover plate	For unused valve position (vacant position), width 20 mm	82	
[14]	H-rail mounting	-	91	
[15]	Right end plate	-	87	
[16]	Separating seal	For sub-base	88	
[17]	Electrical manifold module	For multi-pin plug connection, for AS-Interface, for a sub-base with pneumatic supply plate (on the left next to the sub-base), width 10 mm, 14 mm, 20 mm	78,81,85	
[18]	Inscription label	Inscription label holder for paper foil label	91	
[19]	Fittings	For working lines	91	
[20]	Paper foil label	For inscription label holder	91	
[21]	Sub-base	For two valve positions width 20 mm	84	
[22]	Fittings	For pneumatic supply plate	91	
[23]	Supply plate	-	89	
[24]	Electrical manifold module	For width 10 mm, 14 mm, 20 mm	78,81,85	
[25]	Sub-base	For four valve positions width 10 mm, 14 mm	77,80	

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

The sub-bases are prepared for either

- 2 or 4 single solenoid valves 2 or 4 double solenoid valves
- Double solenoid valve positions can be equipped with any valve or a cover plate.
- Single solenoid valve positions can only be equipped with single solenoid valves.



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

Designation		Description	→ Page/Internet	
[1]	Electronics module	-	77, 81, 85	
[2]	Solenoid valve	Width 10 mm, 14 mm	74,79	
[3]	Cover cap, coded	After fitting the cover cap, manual override operation is non-detenting only	88	
[4]	Cover cap, concealed	After fitting the cover cap, manual override is blocked	88	
[5]	Cover cap, manual override detenting	After fitting the cover cap, manual override is detenting and can be operated without tools	88	
[6]	Identification holder	Can be pushed onto manual override	91	
[7]	Cover plate	For unused valve position (vacant position), width 10 mm, 14 mm	74, 79	
[8]	Electrical manifold module	For fieldbus connection, for proportional pressure regulator, width 10 mm, 14 mm, 20 mm	78,81,85	
[9]	Mounting	Optional for valve terminal mounting (on supply plate)	91	
[10]	Flat plate silencer	-	-	
[11]	Exhaust plate	For ducted exhaust air	89	
[12]	Mounting	Optional for valve terminal mounting	91	
		(on the sub-base of the proportional pressure regulator)		
[13]	Electronics module	For proportional pressure regulator	86	
[14]	Proportional pressure regulator	-	86	
[15]	Regulator plate	Vertical stacking (pressure regulator, vertical pressure shut-off plate, vertical pressure supply plate)	83	
[16]	Solenoid valve	Width 20 mm	82	
[17]	Cover plate	For unused valve position (vacant position), width 20 mm	88	
[18]	H-rail mounting	-	91	
[19]	Right end plate	-	87	
[20]	Separating seal	For sub-base	88	
[21]	Fittings	For working lines	91	
[22]	Sub-base	For two valve positions width 20 mm	84	
[23]	Sub-base	For proportional pressure regulator	86	
[24]	Pressure sensor	-	88	
[25]	Fittings	For pneumatic supply plate	91	
[26]	Supply plate	-	89	
27]	Electrical supply plate	For auxiliary voltage supply for large valve terminals	88	
[28]	Paper foil label	For inscription label holder	91	
[29]	Sub-base	For four valve positions width 10 mm, 14 mm	77,80	

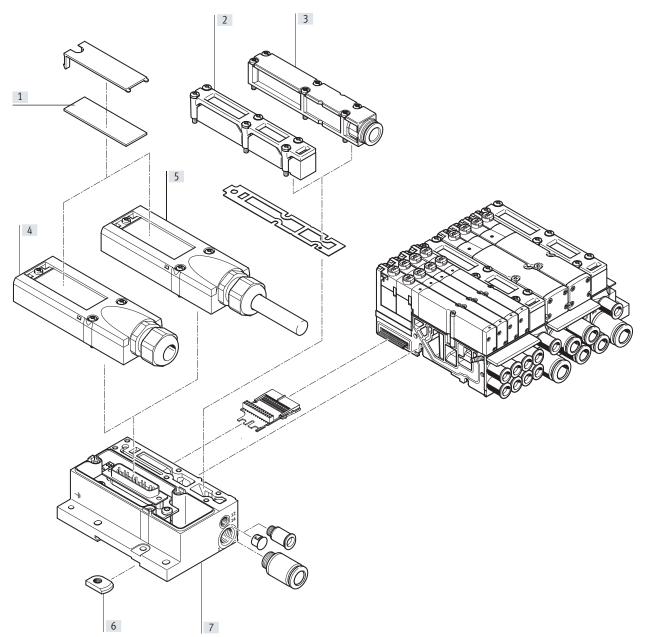
### Valve terminal with multi-pin connection

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
- In each case for max. 8 or 24 valves



Desi	gnation	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	89
[4]	Multi-pin plug connection	Self-assembled	89
[5]	Multi-pin plug connection	With multi-pin cable	89
[6]	H-rail mounting	-	91
[7]	Electrical interface	For multi-pin plug	87

### Valve terminal with AS-Interface connection

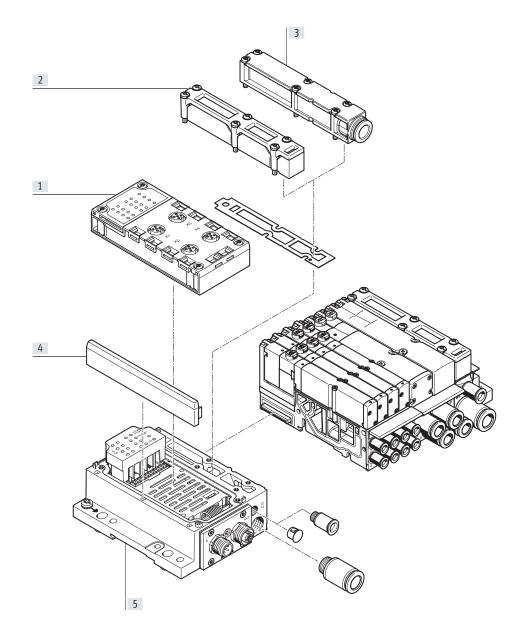
Order code:

MPA valve term

• 32P-... for the pneumatic can be components coils.

MPA valve terminals with AS-Interface can be expanded by up to 8 solenoid

• 52E-... for the electrical components



Design	ation	Description	→ Page/Internet
[1]	Sub-base	-	87
[2]	Flat plate silencer	For pneumatic interface	-
[3]	Exhaust plate	For ducted exhaust air	89
[4]	Aperture	-	-
[5]	Electrical interface	-	87

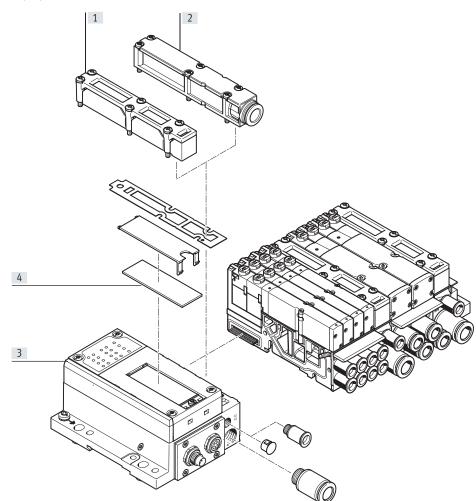
# Peripherals overview

### Valve terminal with CPI connection

#### Order code:

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

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



Desi	gnation	Description	→ Page/Internet
[1]	Flat plate silencer	For pneumatic interface	-
[2]	Exhaust plate	For ducted exhaust air	89
[3]	Electrical interface	-	87
[4]	Inscription label	Large for CPI electrical interface	-

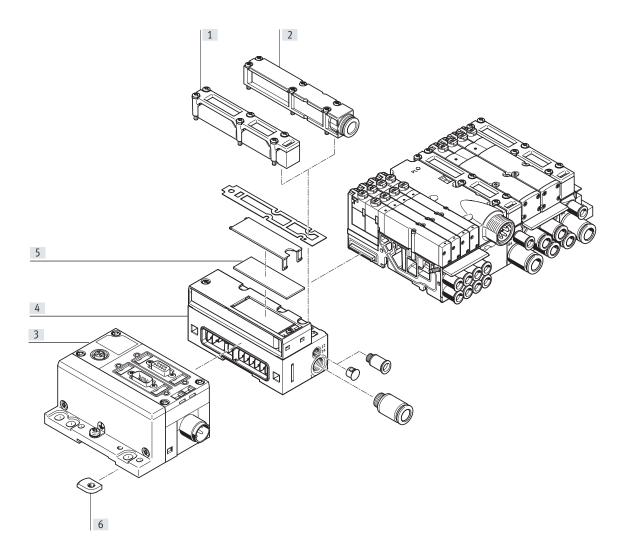
### Valve terminal with fieldbus interface, control block (electrical peripherals CPX)

Order code:

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

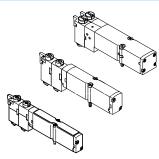
Valve terminals with fieldbus interfaces can be configured with up to 16 sub-bases. In conjunction with MPA1 or MPA14 and 8 solenoid coils per sub-base, up to 128 solenoid coils can thus be equipped. An MPA2 with 4 solenoid coils per sub-base can actuate 64 solenoid coils. Each valve position can be equipped with any valve or a cover plate. The rules for CPX apply to the equipment that can be used with the electrical peripherals CPX. In general:

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



Desigr	ation	Description	→ Page/Internet
[1]	Flat plate silencer	For pneumatic interface	-
[2]	Exhaust plate	For ducted exhaust air	89
[3]	CPX modules	-	-
[4]	Pneumatic interface	For CPX modules	87
[5]	Inscription label	Large, for pneumatic interface CPX	-
[6]	H-rail mounting	-	91

### Sub-base valve



MPA offers a comprehensive range of valve functions. All valves have a patented sealing system, which ensures efficient sealing, a broad pressure range and a long service life. They have a pneumatic pilot control for optimising performance. Compressed air is supplied via a pilot air supply port. Sub-base valves can be replaced quickly since the tubing connections remain on the sub-base. This design is also very flat. Whatever valve function is required, 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).

### Design

Valve replacement The valves are attached to the metal

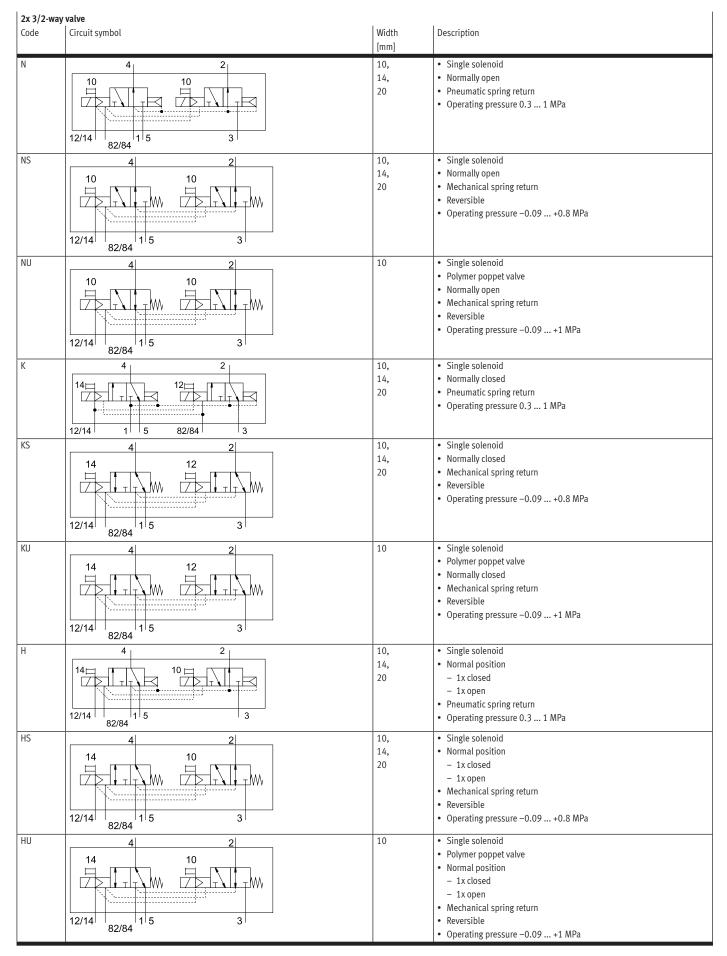
sub-base using two screws,

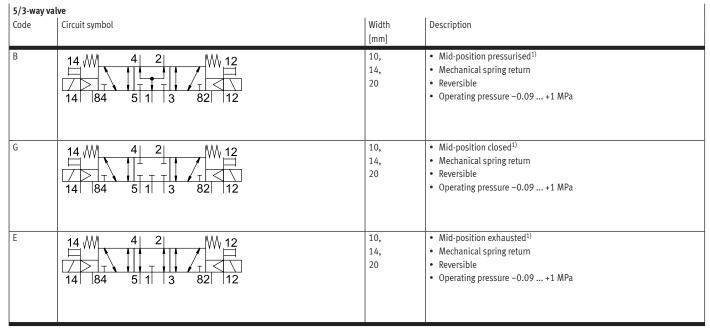
which means that they can be easily replaced. The mechanical sturdiness of the sub-base guarantees good longterm sealing.

#### Extension

Cover 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
М		10, 14, 20	<ul> <li>Single solenoid</li> <li>Pneumatic spring return</li> <li>Reversible</li> <li>Operating pressure -0.09 +1 MPa</li> </ul>
MS		10, 14, 20	<ul> <li>Single solenoid</li> <li>Mechanical spring return</li> <li>Reversible</li> <li>Operating pressure -0.09 +0.8 MPa</li> </ul>
MU		10	<ul> <li>Single solenoid</li> <li>Polymer poppet valve</li> <li>Mechanical spring return</li> <li>Reversible</li> <li>Operating pressure -0.09 +1 MPa</li> <li>5/2-way function is achieved using two mechanically separate switching elements</li> </ul>
J	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	10, 14, 20	<ul> <li>Double solenoid</li> <li>Reversible</li> <li>Operating pressure -0.09 +1 MPa</li> </ul>

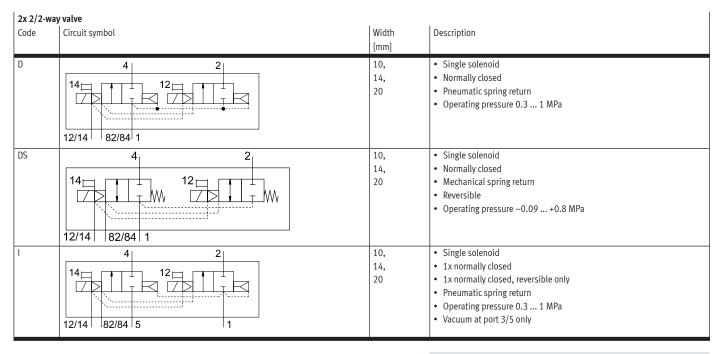




1) If neither solenoid coil is energised, the valve is moved to its mid-position by spring force.

If both coils are energised at the same time, the valve remains in the previously assumed switching position.

<b>3/2-way v</b> Code	alve Circuit symbol	Width [mm]	Description
W	20 (14) 4 20 (14) 84 2 5	10, 14, 20	<ul> <li>Single solenoid</li> <li>Normally open</li> <li>External compressed air supply</li> <li>Pneumatic spring return</li> <li>Reversible</li> <li>Operating pressure -0.09 +1 MPa</li> <li>Compressed air (-0.09 +1 MPa) supplied at working port 2 can be switched with both internal and external pilot air supply.</li> </ul>
X	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	10, 14, 20	<ul> <li>Single solenoid</li> <li>Normally closed</li> <li>External compressed air supply</li> <li>Pneumatic spring return</li> <li>Reversible</li> <li>Operating pressure -0.09 +1 MPa</li> <li>Compressed air (-0.09 +1 MPa) supplied at working port 4 can be switched with both internal and external pilot air supply.</li> </ul>

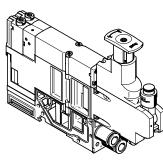


- Note

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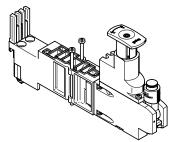
A filter must be installed upstream of valves operated in vacuum mode. This prevents any foreign matter in the intake air getting into the valve (e.g. when operating a suction cup).

### Vertical stacking



Additional functions can be added to each valve position between the subbase and the valve. These functions are known as vertical stacking modules and enable special functions or control of an individual valve position.

Pressure regulator plate



An adjustable pressure regulator can be installed between the base plate and the valve to control the force of the actuator.

This pressure regulator maintains a constant output pressure (secondary side) independent of pressure

fluctuations (primary side) and air consumption.

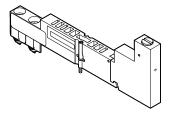
Standard version:

- For pressure regulation 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

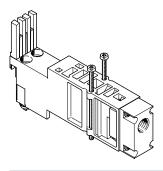
Vertical pressure shut-off plate for MPA1



The vertical pressure shut-off plate can be used to hot swap individual valves without switching off the overall air supply. The working pressure for the individual valve can be switched off manually via the vertical pressure shut-off plate using the actuating element.

### Vertical stacking

Vertical pressure supply plate for MPA2



This vertical pressure supply plate enables an individual valve to be supplied with individual operating pressure independently of the operating pressure of the valve terminal. The exhaust and pilot air supply of the valve are still provided via the central ports of the valve terminal.

#### Check valve



The check valves prevent the air (back pressure) from exhaust ducts 3 and 5 from entering the solenoid valve, preventing the back pressure from having a disruptive effect on other connected actuators.

The check valves are integrated into ducts 3 and 5 of the sub-bases designed specifically for this purpose.

Please see the relevant assembly instructions:

→ www.festo.com/catalogue/mpa → Support/Downloads.

This function makes it possible to effectively protect single-acting process valves from the effects of back pressure.

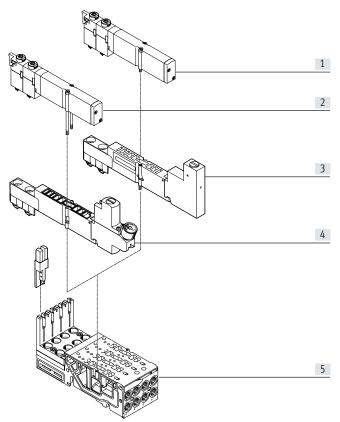
This ensures reliable and feedback-free switching operations, especially in the case of rapid switching operations.

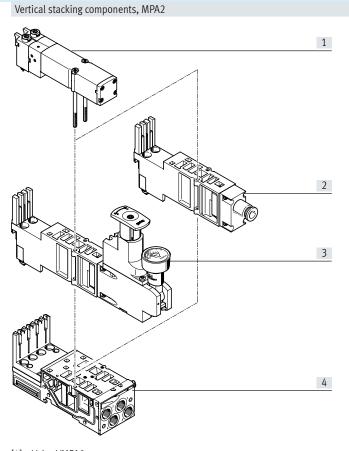
### - Note

- Special sub-bases are available for use with check valves.
- Standard sub-bases cannot be retrofitted with check valves.
- Pre-assembled sub-bases with integrated check valves are available.
- It is not possible to use a check valve and a fixed flow restrictor (in the same duct) at the same time.

### Vertical stacking

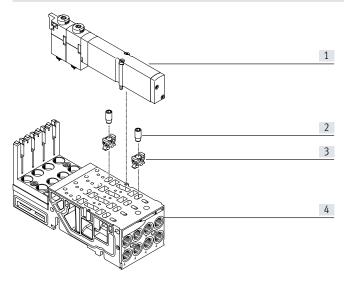
Vertical stacking components, MPA1





- [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] Sub-base

#### Fixed flow restrictor for manifold sub-bases MPA1



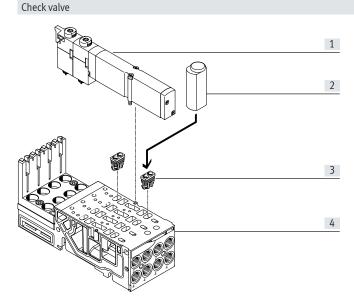
[1] Valve VMPA2

- [2] Vertical pressure supply plate
- [3] Regulator plate VMPA2
- [4] Sub-base

The fixed flow restrictor can be used to permanently set the exhaust flow rate in ducts 3 and 5. To be able to screw the restrictor into the sub-base, the retaining bracket is first pressed into the exhaust openings on the sub-base as far as the stop. The fixed flow restrictor can then be screwed in flush with the top side of the retaining bracket. The restrictor screw cuts a thread into the retaining bracket as it is screwed in. As the restrictor is being screwed in, two hooks on the underside of the retaining bracket also deform to fix it into the sub-base.

- [1] Valve VMPA1
- [2] Fixed flow restrictor
- [3] Retaining bracket
- [4] Sub-base

Vertical stacking



[1] Valve VMPA14

- [2] Assembly tool
- [3] Check valve
- [4] Sub-base

Festo check valves can only be used in combination with the sub-bases designed specifically for this purpose. The check valves should be installed according to the specifications using the enclosed assembly tool. Following assembly, the check valves cannot be removed.

Please see the relevant assembly instructions:

→ www.festo.com/catalogue/mpa → Support/Downloads.

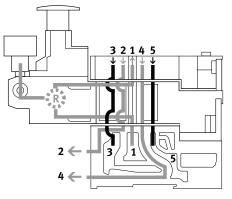
For widths 14 mm and 20 mm there are special sub-bases available that facilitate the installation of check valves.

### - Note

- Special sub-bases are available for use with check valves.
- Standard sub-bases cannot be retrofitted with check valves.
- Pre-assembled sub-bases with integrated check valves are available.
- It is not possible to use a check valve and a fixed flow restrictor (in the same duct) at the same time.

### Vertical stacking

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



Advantages

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

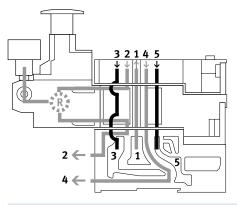
from the valve terminal is always present.

This pressure regulator regulates the pressure upstream of the valve in duct 1. Ducts 2 and 4 thus have the same regulated pressure. During exhausting, the air flow in the valve is exhausted from duct 2 to duct 3 and from duct 4 to duct 5.

#### Application examples

- An equal working pressure is required at working ports 2 and 4.
- A working pressure (e.g. 3 bar) lower than the operating pressure 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 exhausting, the air flow in the valve is exhausted from duct 2 to duct 3 via the pressure regulator.

#### Restrictions

The pressure regulator can only be adjusted in the switched state (e.g. the

valve has switched to 2 and exhausts from 4 to 5).

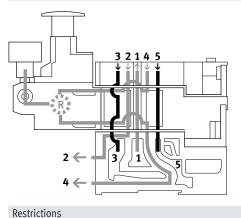
#### Application example

The pressure regulator facilitates the reduction of pressure at port 2 of an

individual valve rather than the operating pressure of the valve terminal

### Vertical stacking

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



The pressure regulator can only be

adjusted in the switched state (e.g. the

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

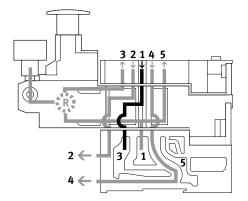
### Application example

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

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

from 2 to 3).

valve has switched to 4 and exhausts



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 regulated to duct 2. The valve is thus operated in reverse mode. During exhausting, the air flow in the valve is exhausted from duct 2 to duct 1 and the air is returned to duct 3 via the intermediate plate.

### Application examples

- If, instead of the operating pressure of the valve terminal, a different pressure is required in duct 2.
- When fast exhausting is required.

#### 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.

• When the pressure regulator must

always be adjustable.

# - Note

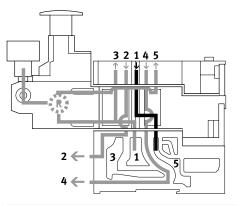
Reversible pressure regulator plates should only be combined with valves that can be operated in reverse mode.

#### Restrictions

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

### Vertical stacking

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



#### Application examples

- If, instead of the operating pressure of the valve terminal, a different pressure is required in duct 4.
- When fast exhausting is required.

#### ٠

### 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.

• When the pressure regulator must

always be adjustable.

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 regulated to duct 4. The valve is thus operated in reversible mode. During exhausting, the air flow in the valve is exhausted from duct 4 to duct 1 and the air is returned to duct 5 via the intermediate plate.

### 📲 - Note

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Reversible pressure regulator plates should only be combined with valves that can be operated in reverse mode.

#### Restrictions

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

Vertical st	acking – Pressure regulator plate					
Code		Туре	Width	Control r	ange	Description
			[mm]	Up to Up to		7
				max.	max.	
				6 bar	10 bar	
Pressure r	egulator plate for port 1 (P regulat	or)				
PA		VMPA1-B8-R1-M5-10	10			Regulates the operating pressure in duct 1 upstream of the
		VMPA1-B8-R1C2-C-10	10	-		directional control valve
		VMPA2-B8-R1C2-C-10	20			
PF	┤╎╷ <del>┑╘<sub>╴╛</sub></del> ┊╋┼┼┼┘╵╎╎╎╵	VMPA1-B8-R1-M5-06	10			
		VMPA1-B8-R1C2-C-06	10	_		
		VMPA2-B8-R1C2-C-06	20	•	-	
	14 5 1 3 12					
Pressure r	egulator plate for port 2 (B regulat	or)				
PC		VMPA1-B8-R2-M5-10	10			Regulates the operating pressure in duct 2 downstream of the
		VMPA1-B8-R2C2-C-10	10	-		directional control valve
		VMPA2-B8-R2C2-C-10	20			
PH	┨ <u>    </u>   └┼┼ <u>┥</u> <u></u> ┥	VMPA1-B8-R2-M5-06	10			7
		VMPA1-B8-R2C2-C-06	10			
		VMPA2-B8-R2C2-C-06	20		-	
	14 5 1 3 12					
Pressure r	egulator plate for port 4 (A regulat	or)				· ·
PB		VMPA1-B8-R3-M5-10	10			Regulates the operating pressure in duct 4 downstream of the
		VMPA1-B8-R3C2-C-10	10	_		directional control valve
		VMPA2-B8-R3C2-C-10	20		-	
PG		VMPA1-B8-R3-M5-06	10			-
		VMPA1-B8-R3C2-C-06	10			
		VMPA2-B8-R3C2-C-06	20	•	-	
	14 5 1 3 12		20			
Drocouro r	agulatar plata far part 2. rayarsibl	(P regulator)				
Pressure r	egulator plate for port 2, reversible	VMPA2-B8-R6C2-C-10	20			Reversible pressure regulator for port 2
PN		VMPA2-B8-R6C2-C-10	20		-	
PN		VINIPA2-B8-R6C2-C-06	20			
					-	
	egulator plate for port 4, reversible					
PK	$\bigcirc \qquad \bigcirc \qquad \qquad$	VMPA2-B8-R7C2-C-10	20	-		Reversible pressure regulator for port 4
PM		VMPA2-B8-R7C2-C-06	20			
	││┌ <b>┑╘</b> ╼┽ <b>┥┼┘</b> ││││││				_	
				_		
	14 5   1   3   12					

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# Key features – Pneumatic components

### Description of proportional pressure regulator

The proportional pressure regulator VPPM-... is used to regulate pressure proportional to a specified setpoint value.

A built-in pressure sensor records the pressure at the working port and compares this value with the setpoint value. In the event of deviations between the setpoint value and actual value,

#### Proportional pressure regulator

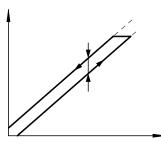
the valve regulates until the output pressure has reached the setpoint value. For a constant pressure supply, which is required for high control quality, the proportional pressure regulator has an additional supply port. The proportional pressure regulator can be configured via the PLC or on site via the interface for CPX-FMT. The proportional pressure regulator can be used for CPI connection and fieldbus.

# - Note

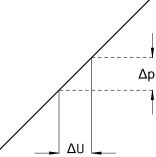
Output pressure remains unregulated if the power supply cable is interrupted.

llustration	Code	Туре	Linearity error full-scale [%]	Input pressure 1 [bar]	Pressure regulation range [bar]
$\wedge$	QA	VPPM-6TA-L-1-F-0L2H	2	04	0.02 2
	QB	VPPM-6TA-L-1-F-0L6H	2	08	0.06 6
	QC	VPPM-6TA-L-1-F-0L10H	2	011	0.1 10
, Q ®		VPPM-6TA-L-1-F-0L2H-S1	1	04	0.02 2
$\setminus$ $\setminus$	QE	VPPM-6TA-L-1-F-0L6H-S1	1	08	0.06 6
Ň	QF	VPPM-6TA-L-1-F-0L10H-S1	1	011	0.1 10
	QG	VPPM-8TA-L-1-F-0L2H-C1	2	04	0.02 2
	QH	VPPM-8TA-L-1-F-0L6H-C1	2	08	0.06 6
	QK	VPPM-8TA-L-1-F-0L10H-C1	2	0 11	0.1 10
$\checkmark$	QL	VPPM-8TA-L-1-F-0L2H-S1C1	1	04	0.02 2
	QM	VPPM-8TA-L-1-F-0L6H-S1C1	1	08	0.06 6
	QN	VPPM-8TA-L-1-F-0L10H-S1C1	1	011	0.1 10

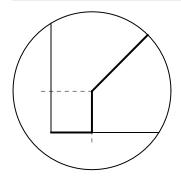
#### Terms related to the proportional pressure regulator Hysteresis



Response sensitivity



Zero point suppression

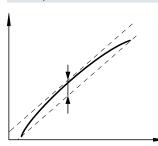


There is always a linear relationship within a certain tolerance between the setpoint value entered and the pressure output. Nevertheless, it makes a difference whether the setpoint value is entered as rising or falling. The difference between the maximum deviations is referred to as hysteresis.

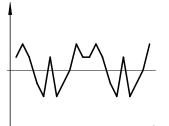
The response sensitivity of the device determines how sensitively one can change, i.e. adjust, a pressure. The smallest setpoint value difference that results in a change in the output pressure is referred to as the response sensitivity. In this case, 0.01 bar.

In real-world applications, it is possible for there to be a 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 exhausted at a setpoint value of zero.

#### Linearity error



Repetition accuracy (reproducibility)



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).

The repetition accuracy is the margin within which the fluidic output variable is 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 fluidic output signal.

### Cover plate

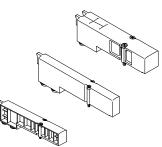


Plate without valve function for reserving valve positions on a valve terminal.

The valve terminal MPA can be sup-

plied with air at one or more points.

This ensures that the valve terminal will always have an adequate air sup-

ply and exhaust, even with large-scale

The main supply to the valve terminal

is located on the pneumatic interface,

When there is a need for an increase in

air supply, multiple supply plates can

additionally be provided.

which links the electrical and pneu-

expansions.

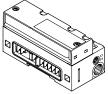
Valve and cover plates are attached to the sub-base using two screws.

### Valve function

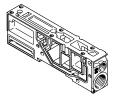
Code	Circuit symbol	Width [mm]	Description
L	-	10, 14, 20	For valve terminal only: cover plate for valve position

#### Compressed air supply and exhaust

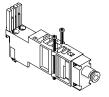
Pneumatic interface



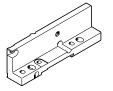
Supply plate



Vertical pressure supply plate



Right end plate (VMPA-ERP-G)



The individual compressed air supply of a single valve with a width of 20 mm can be realised using the vertical pressure supply plate VMPA2-VSP- ....

The air to be exhausted can be ducted using the right end plate with port 82/84 (VMPA-ERP-G). matic parts. Additional provision is made for several supply plates.

Exhausting is either via integrated flat plate silencers or common lines for ducted exhaust air.

These exhausts are located on the pneumatic interface as well as on the

Exhausting is either via integrated flat plate silencers or common lines for ducted exhaust air. In the case of ducted exhaust air, at least one additional supply plate is supply plates and on the right end plate (VMPA-ERP-G).

required, which is used to vent the exhaust air from the pilot air supply (port 82/84) (when using a right end plate, without port 82/84).

### 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

If the required working pressures are between 0.3 and 0.8 MPa, internal pilot air supply can be selected. The pilot air supply is then branched from the working air 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 0.3 MPa or greater than 0.8 MPa, 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 pilot pressure applied during switch-on is already very high.

ode	Illustration Type of compressed air supply a	and pilot air supply		Information		
	Pneumatic interface	Supply plate	Right end plate			
	3/5 82/84 • 12/14 • 1 • 1	3/5 3/5 82/84 82/84 1 1 1 0 1		<ul> <li>Internal pilot air supply, flat plate silencer</li> <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 0.3 0.8 MPa</li> </ul>		
	3/5 82/84 12/14 12/14 12/14 0 1	3/53/5 82/84 11 0 1		<ul> <li>External pilot air supply, flat plate silencer</li> <li>Pilot air supply between 0.3 and 0.8 MPa is connected at 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 -0.09 +1 MPa (suitable for vacuum)</li> </ul>		
	3/5 82/84 • 12/14 • 1 1	3/5 82/84 1 0 0 1 82/84		<ul> <li>Internal pilot air supply, ducted exhaust air</li> <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 0.3 0.8 MPa</li> </ul>		
	3/5 3/5 3/5 12/14 12/14 12/14 0 01	3/5 82/84 1 01 82/84		<ul> <li>External pilot air supply, ducted exhaust air</li> <li>Pilot air supply (0.3 0.8 MPa) 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 -0.09 +1 MPa (suitable for vacuum)</li> </ul>		
	3/5 3/5 82/84 12/14 1	3/5 82/84 1 0 1 0 1 0 1	82/84	<ul> <li>Internal pilot air supply, ducted exhaust air via right end plate</li> <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 air 82/84 ducted via right end plate (VMPA-EPR-G)</li> <li>For operating pressure in the range 0.3 0.8 MPa</li> </ul>		
Ζ	3/5 3/5 3/5 12/14 12/14 12/14 01	3/5 82/84 1 0 1 0 1 0 1	82/84	<ul> <li>External pilot air supply, ducted exhaust air via right end plate</li> <li>Pilot air supply (0.3 0.8 MPa) is connected at port 12/14.</li> <li>Exhaust port 3/5: connection to pneumatic interface and supply plate</li> <li>Pilot exhaust air 82/84 ducted via right end plate (VMPA-EPR-G)</li> <li>For operating pressure in the range -0.09 +1 MPa (suitable for vacuum)</li> </ul>		

### Pneumatic interface

r neumatic interface					
Code	Pneumatic interface design variants		Information		
	Illustration	Туре			
M		VMPAEPL	<ul> <li>Used together with compressed air supply S, T, V, X</li> <li>In combination with V or X, the pilot exhaust air must be exhausted at at least one supply plate. With several supply plates, port 82/84 on the final one is open ex works.</li> </ul>		

### Supply plate

Additional supply plates can be used for larger terminals or to create 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 MPA14), or every 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

When using a right end plate without port 82/84, it is essential that a supply plate for ducted exhaust air is used. Alternatively, an end plate with port 82/84 (VMPA-EPR-G) can be used for ducted exhaust air. In this case, no supply plate is required.

### Supply plates contain the ports:

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

Depending on your order, the exhaust ducts are either ducted or exhausted 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 directly to the right or left of the supply plate, then the code letter V or W identifies the position of the left or right 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).

Code <sup>1)</sup>	Illustration	Туре	Information	
U		VMPA1SP	Supply plate without separating seal (no R, S or T selected)	
V		VMPA1SP	Supply plate with separating seal on left, if R, S or T selected	
W		VMPA1SP	Supply plate with separating seal on right, if R, S or T selected	

1) Depending on the air supply code S, T, V, X, the supply plate is equipped with a silencer or an exhaust plate.

# Key features – Electrical components

### 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 sub-bases. An electrical supply plate is required after 8 valve sub-bases.

- 🕴 - Note

For MPA with CPI connection, a maximum of 24 of the 32 MPA1 or MPA14 coils or 12 of the 16 MPA2 coils can be switched on simultaneously.

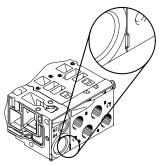
# - Note

Please note that only the electronics modules with a separate circuit are permitted 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...).

Electric	Electrical supply plate						
Code	Illustration	Туре	Information				
L		VMPA-FB-SP-V	Electrical supply plate with M18 plug connection, 3-pin				
		VMPA-FB-SP-7/8-V-5POL	Electrical supply plate with7/8" plug connection, 5-pin				
	i i i i i i i i i i i i i i i i i i i	VMPA-FB-SP-7/8-V-4POL	Electrical supply plate with7/8" 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 3	4	FE			
Pin allocation for 7/8", 5-pin					
2 $1$	1	0 V DC valves			
	2	n.c.			
	3	FE (leading)			
4 5	4	n.c.			
	5	24 V DC valves			
Pin allocation for 7/8", 4-pin					
	A	n.c.			
	В	24 V DC valves			
	С	FE			
	D	0 V DC valves (leading)			

### Creating pressure zones and separating exhaust air



MPA offers a number of options for creating pressure zones if different working pressures are required. 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

sub-bases using an appropriate separating seal or using a separator that is permanently integrated in the subbase (code I or code III). Compressed air is supplied and exhausted 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 exworks 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.

Forming	Forming pressure zones – using a separating seal						
Code	For operation with flat plate silencer		For operation with ducted exhaust air		Information		
	Illustrated examples	Coding	Illustrated examples	Coding			
-	VMPADPU		VMPADP	$\square$	No duct separation		
T	VMPADPU-P		VMPADP-P		Duct 1 separated		
S	VMPADPU-PRS		VMPADP-PRS		Duct 1 and 3/5 separated		
R	VMPADPU-RS		VMPADP-RS		Duct 3/5 separated		

Creating p	Creating pressure zones – via sub-base						
Code	For operation with flat plate silencer or with ducted	Information					
	Illustrated examples	Coding					
1			Duct 1 separated (short marking) Duct 1 and 3/5 separated (long marking)				

## - 🌡 - Note

Duct separation cannot be removed at a later date and takes place in the centre of the sub-base:

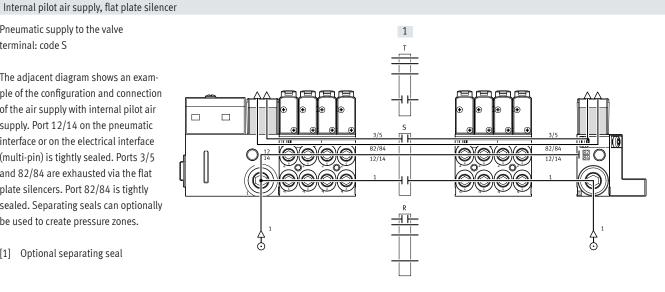
- Between valve 2 and 3 for width 10 mm
- Between valve 2 and 3 for width 14 mm
- Between valve 1 and 2 for width 20 mm

#### Examples: compressed air supply and pilot air supply

Pneumatic supply to the valve terminal: code S

The adjacent diagram shows an example of the configuration and connection of the air supply with internal pilot air supply. Port 12/14 on the pneumatic interface or on the electrical interface (multi-pin) is tightly sealed. Ports 3/5 and 82/84 are exhausted via the flat plate silencers. Port 82/84 is tightly sealed. Separating seals can optionally be used to create pressure zones.

[1] Optional separating seal

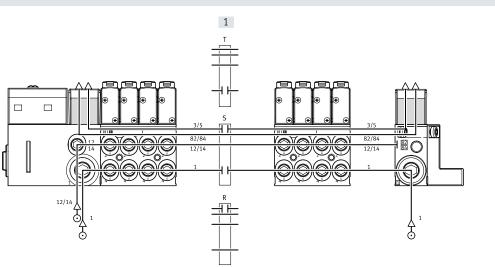


#### External pilot air supply, flat plate silencer

Pneumatic supply to the valve terminal: code T

The adjacent diagram shows an example of the configuration and connection of the compressed air supply in the case of external pilot air supply. Port 12/14 on the pneumatic interface or the electrical interface (multi-pin) is equipped with a fitting for this purpose. Ports 3/5 and 82/84 are exhausted via the flat plate silencers. Port 82/84 is tightly sealed. Separating seals can optionally be used to create pressure zones.

[1] Optional separating seal



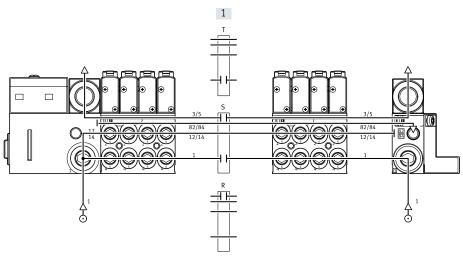
#### Examples: compressed air supply and pilot air supply

Internal pilot air supply, ducted exhaust air

Pneumatic supply to the valve terminal: code V

The adjacent diagram 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 on the electrical interface (multi-pin) is tightly sealed. Exhaust ports 3/5 and 82/84 are exhausted via the appropriate connections. Separating seals can be used optionally to create pressure zones.

[1] Optional separating seal

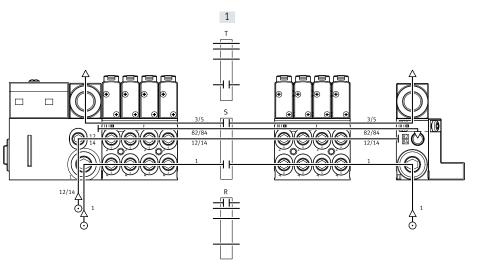


#### External pilot air supply, ducted exhaust air

Pneumatic supply to the valve terminal: code X

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

[1] Optional separating seal

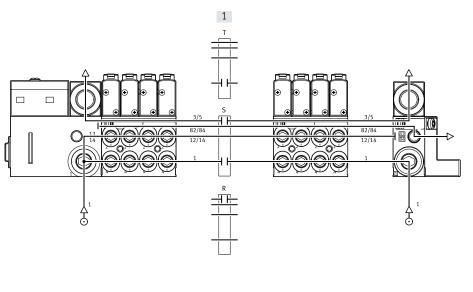


#### Examples: compressed air supply and pilot air supply

Internal pilot air supply, ducted exhaust air 82/84 via right end plate

Pneumatic supply to the valve terminal: code Y

The adjacent diagram 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 on the electrical interface (multi-pin) is tightly sealed. The exhaust port 3/5 is exhausted via the corresponding ports. The exhaust air from port 82/84 is ducted via the right end plate (VMPA-EPR-G). In this case, there is no need for a power supply module for exhausting the ducted exhaust air 82/84. Separating seals can optionally be used to create pressure zones.



[1] Optional separating seal

External pilot air supply, ducted exhaust air 82/84 via right end plate

Pneumatic supply to the valve terminal: code Z

The adjacent diagram shows an example of the configuration and connection of the compressed air supply in the case of external pilot air supply. Port 12/14 on the pneumatic interface or the electrical interface (multi-pin) is equipped with a fitting for this purpose. The exhaust port 3/5 is exhausted via the corresponding ports. The exhaust air from port 82/84 is ducted via the right end plate (VMPA-EPR-G). In this case, there is no need for a power supply module for exhausting the ducted exhaust air 82/84. Separating seals can optionally be used to create pressure zones.

[1] Optional separating seal

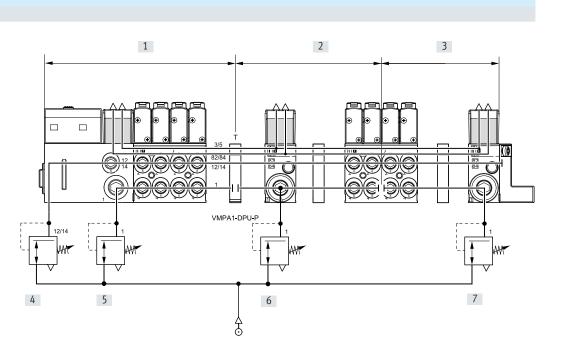
## Examples: Creating pressure zones

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.

[1]	Zone 1
-----	--------

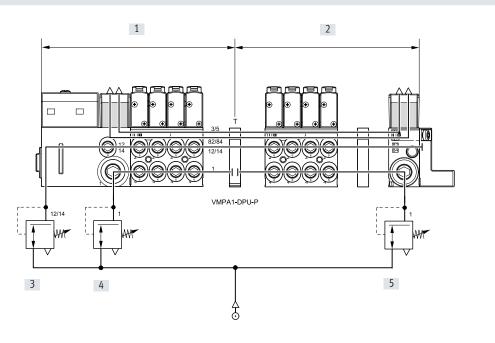
- [2] Zone 2
- [3] Zone 3
- [4] Pilot air supply
- [5] P1
- [6] P2
- [7] P3



#### 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.

- [1] Zone 1
- [2] Zone 2
- [3] Pilot air supply
- [4] P1
- [5] P2

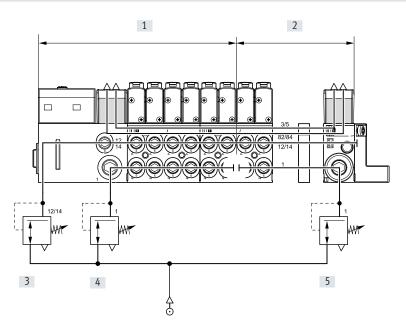


### Examples: Creating pressure zones

Sub-base with pressure zone separation in duct 1

Another option for pressure zone separation can be achieved by using sub-bases with pressure zone separation. The adjacent diagram shows the variant with pressure zone separation in duct 1. Pilot air supply [1] Zone 1

- [2] Zone 2
- [3] Pilot air supply
- [4] P1
- [5] P2

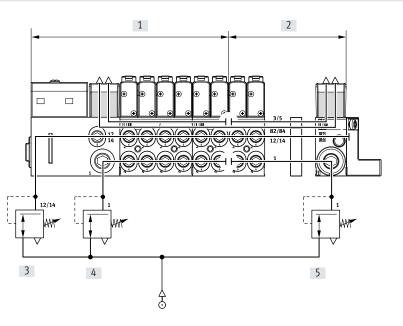


#### Sub-base with pressure zone separation in duct 1 and duct 3/5

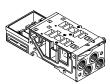
The adjacent diagram shows the variant with pressure zone separation in duct 1 and duct 3/5.

Pilot air supply

- [1] Zone 1
- [2] Zone 2
- [3] Pilot air supply
- [4] P1
- P2 [5]



#### Sub-base



Sub-base variants

MPA is based on a modular system consisting of sub-bases and valves. The sub-bases are screwed together, thus forming the support system for the valves.

They contain the ducts for supplying compressed air to and exhausting the valve terminal as well as the working ports for the pneumatic drives for each valve.

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

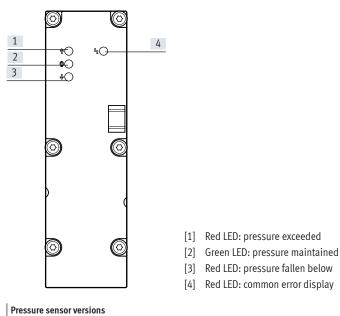
Code	Illustration	Туре	Width	Number of valve positions	Information	
			[mm]	(solenoid coils)		
Sub-base	for multi-pin plug/fieldbus connect	ion				
A, C <sup>1)</sup>		VMPA1-FB-AP-4-1	10	4 (8/41)	Working ports (2, 4) on sub-base • Connection sizes: MPA1: M7, QS4, QS6	
AI, CI <sup>1)</sup>		VMPA1-FB-AP-4-1-T1			<ul> <li>Code I: duct 1 separated in the sub-base</li> <li>Code III: duct 1 and duct 3/5 separated in the sub-base</li> </ul>	
AIII, CIII <sup>1)</sup>		VMPA1-FB-AP-4-1-S1				
E, F <sup>1)</sup>	1979 1979 1979 1979 1979 1979 1979 1979	VMPA14-FB-AP-4-1	14	4 (8/41)	Working ports (2, 4) on sub-base • Connection sizes MPA14: G1/8, QS6, QS8	
EI, FI <sup>1)</sup>		VMPA14-FB-AP-4-1-T1			<ul> <li>Code I: duct 1 separated in the sub-base</li> <li>Code II: duct 1 and duct 3/5 separated in the sub-base</li> </ul>	
EIII, FIII <sup>1)</sup>		VMPA14-FB-AP-4-1-S1			in the sub-base	
B, D <sup>1)</sup>		VMPA2-FB-AP-2-1	20	2 (4/2 <sup>1)</sup> )	Working ports (2, 4) on sub-base • Connection sizes MPA2: G1/8, QS6, QS8	
BI, DI <sup>1)</sup>		VMPA2-FB-AP-2-1-TO			<ul> <li>Code I: duct 1 separated in the sub-base</li> <li>Code III: duct 1 and duct 3/5 separated in the sub-base</li> </ul>	
BIII, DIII <sup>1)</sup>	*	VMPA2-FB-AP-2-1-SO				

1) Only possible with multi-pin plug connection

#### - 📲 - Note

More information about individual sub-bases can be found at: → VMPA1

#### Pressure sensor



The pressure sensor indicates whether the applied pressure exceeds, conforms 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 parameterisation. The pressure sensor plate can be parameterised via the PLC or the interface for CPX-FMT. 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 reverse operation (supply to (3/5).

Code	Illustration	Туре	Use
PE	and the second s	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 exhaust performance or pressure monitoring with reversibly operated valve terminal)
PG		VMPA-FB-PS-P1	Monitoring an external process pressure

Code	l <b>interface versions</b>	Туре	Width	Number of valve positions	Information
			[mm]	(solenoid coils)	
	cs module for multi-pin plu	g (MPM)			
A, C		VMPA1-MPM-EMM-8 VMPA1-MPM-EMM-4	10	4 (8) 4 (4)	Each solenoid coil is assigned to a specific pin of the multi-pin plug for the valves to be actuated. Regard- less of whether valve positions are fitted with cover plates or valves, they are used to control: • One address for a single coil
E, F		VMPA14-MPM-EMM-8 VMPA14-MPM-EMM-4	14	4 (8) 4 (4)	Two addresses for a double coil
B, D		VMPA2-MPM-EMM-4 VMPA2-MPM-EMM-2	20	2 (4) 2 (2)	
Electroni	cs module for fieldbus with	standard diagnostics			
A, H		VMPA10-FB-EMS-8 VMPA10-FB-EMG-8	10	4 (8)	The electronics module includes serial communication and facilitates: • Transmission of switching information • Actuation of up to 8 solenoid coils • Position-based diagnostics
Е, Н	C S S S S S S S S S S S S S S S S S S S	VMPA14-FB-EMS-8 VMPA14-FB-EMG-8	14	4 (8)	<ul> <li>Separate voltage supply for valves</li> <li>Transmission of status, parameter and diagnostic data</li> <li>There are different versions:</li> <li>Without separate circuit</li> </ul>
B, QB, H		VMPA20-FB-EMS-4 VMPA20-FB-EMG-4	20	2 (4)	<ul> <li>WMPAFB-EMS)</li> <li>With separate circuit (VMPAFB-EMG)</li> <li>Diagnostic function:</li> <li>Fault: valve load supply</li> </ul>
Electroni	cs module for fieldbus with	enhanced diagnostic function			
А, Н		VMPA10-FB-EMS-D2-8 VMPA10-FB-EMG-D2-8	10	4 (8)	The electronics module with enhanced diagnostic function includes the same functions as the electronics module with standard diagnostics. The diagnostic function is further enhanced: • Fault: valve load supply
E, H	C C C C C C C C C C C C C C C C C C C	VMPA14-FB-EMS-D2-8 VMPA14-FB-EMG-D2-8	14	4 (8)	<ul> <li>Fault: wire break (open load)</li> <li>Fault: short-circuited valve load supply</li> <li>Message: condition monitoring</li> </ul>
B, QB, H		VMPA20-FB-EMS-D2-4 VMPA20-FB-EMG-D2-4	20	2 (4)	

## - 🖡 - Note

- Multi-pin with modular links
- Sub-bases VMPA1, VMPA14 and VMPA2 can be combined as required
- Positive- or negative-switching control 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

	supply and exhaust			1			1		
Code		Connectio	n	Designation	Code L Push-in connector Large	Code K Push-in connector Small	Code D Thread for supply		
		Internal	pilot air supply, silencer				1		
		1	Working air/vacuum supply	Push-in fitting	QS-G1/4-10-I	QS-G1/4-8-I	G1/4		
		3/5	Exhaust air	Flat plate silencer	-	-	-		
		12/14	Pilot air supply	-	-	-	-		
		82/84	Pilot exhaust air	Flat plate silencer	-	-	-		
		Pressure compensation	Exhausts via silencer to a	atmosphere					
		External	pilot air supply, silencer						
		1	Working air/vacuum supply	Push-in fitting	QS-G1/4-10-I	QS-G1/4-8-I	G1/4		
		3/5	Exhaust air	Flat plate silencer	_	-	-		
		12/14	Pilot air supply	Push-in fitting	QSM-M7-6-I	QSM-M7-6-I	M7		
		82/84	Pilot exhaust air	Flat plate silencer	-	-	-		
			Pressure compensation	Exhausts via silencer to a	atmosphere				
		Internal	pilot air supply, ducted exha	ust air					
V V		1	Working air/vacuum supply	Push-in fitting	QS-G1/4-10-I	QS-G1/4-8-I	G1/4		
		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-I	QSM-M7-6-I	M7		
			Pressure compensation	Exhausts into duct 82/84	4				
		External pilot air supply, ducted exhaust air							
		1	Working air/vacuum supply	Push-in fitting	QS-G1/4-10-I	QS-G1/4-8-I	G1/4		
		3/5	Exhaust air	Push-in fitting	QS-10	QS-10	QS-10		
		12/14	Pilot air supply	Push-in fitting	QSM-M7-6-I	QSM-M7-6-I	M7		
		82/84	Pilot exhaust air	Push-in fitting	QSM-M7-6-I	QSM-M7-6-I	M7		
			Pressure compensation	Exhausts into duct 82/8	4	_			
		Internal	pilot air supply, ducted exha	ust air via right ond plate (	VMPA-FPP-G)				
		1	Working air/vacuum supply	Push-in fitting	QS-G1/4-10-I	QS-G1/4-8-I	G1/4		
		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-M5-3-I	QSM-M5-3-I	M5		
			Pressure compensation	Exhausts into duct 82/8	4				
		Extornal	pilot air supply, ducted exha	ust air via right and plate (					
		1	Working air/vacuum	Push-in fitting	QS-G1/4-10-I	QS-G1/4-8-I	G1/4		
		1	supply		Q3 01/4-10-1	23 01/7-0-1	51/7		
		3/5	Exhaust air	Push-in fitting	QS-10	QS-10	QS-10		
		12/14	Pilot air supply	Push-in fitting	QSM-M7-6-I	QSM-M7-6-I	M7		
		82/84	Pilot exhaust air	Push-in fitting	QSM-M5-3-I	QSM-M5-3-I	M5		
			Pressure compensation	Exhausts into duct 82/8					

## Key features – Mounting

#### Valve terminal mounting

mounting

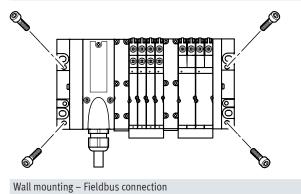
- Sturdy terminal mounting via:
- · Four through-holes for wall
- Additional mounting brackets • H-rail mounting

#### Note

When wall mounting valve terminals MPA with more than 4 sub-bases, use additional mounting brackets of 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

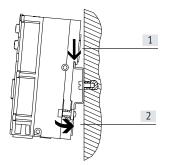
are on the pneumatic interface and on the right end plate. Optional mounting brackets are also available.

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

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

H-rail mounting

6



The valve terminal MPA is attached to the H-rail  $\rightarrow$  arrow [1]. The valve terminal MPA is then swivelled onto the H-rail and secured in place with the clamping component → arrow [2].

For H-rail mounting of the valve terminal you will need the following MPA mounting kit: • CPX-CPA-BG-NRH

This enables the valve terminal to be mounted on an H-rail to EN 60715.

Note

More information about mounting solenoid valves on individual sub-bases can be found at → VMPA1

## Key features - Display and operation

#### **Display and operation**

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

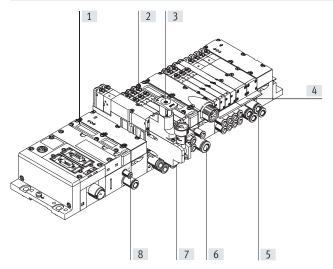
- Indicator 12 shows the signal status of the coil for output 2
- Indicator 14 shows the signal status of the coil for output 4

#### Manual override

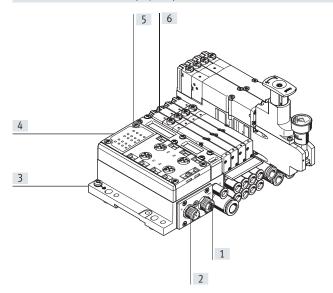
The manual override (MO) enables the valve to be switched when not electrically activated or energised. The valve is switched by pushing the manual override. The set switching status can also be locked by turning the manual override (code R). Alternatives:

- The cover cap (code N or as an accessory) prevents the manual override from being locked. The manual override can then only be activated by pushing it.
- The cover cap (code V or as an accessory) can prevent the manual override from being accidentally activated.
- The cover cap (code Y or as an accessory) can be used to operate the manual override in detenting mode without additional tools.

#### Pneumatic connection and control elements



Electrical connection and display components on the AS-Interface



- [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 for optional pressure regulator plate
- [4] Inscription label holder for sub-base
- [5] Working ports 2 and 4, per valve position
- [6] Supply port 1
- [7] Pressure gauge (optional)
- [8] Ports 12 and 14 for supplying the external pilot air
- [1] M12 socket for AS-Interface bus and additional supply (AS-i Out)
- [2] M12 plug for AS-Interface bus and auxiliary power supply (AS-i In)
- [3] Earth terminal
- [4] Status LEDs for inputs
- [5] Status LEDs for AS-Interface
- [6] Diagnostic LEDs for valves

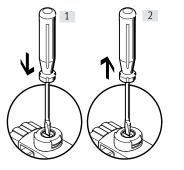
## 🕴 - Note

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

## Key features - Display and operation

#### Manual override (MO)

Manual override with automatic return (non-detenting)



- Press in the stem of the MO with a pointed object or screwdriver. The pilot valve switches and actuates the main valve.
- [2] Remove the pointed object or screwdriver.
  - The spring force pushes the stem of the manual override back. The pilot valve returns to its normal position as does the single solenoid main valve (not the case with double solenoid valve code J).

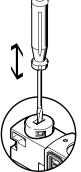
# 

MO with locking (detenting)

- Press in the stem of the MO with a pointed object or screwdriver until the valve switches and then turn the stem clockwise by 90° until the stop is reached. The valve remains actuated
- [2] Turn the plunger anti-clockwise by 90° until the stop is reached and then remove the pointed object or screwdriver. The spring force pushes the stem of the manual override back.
  - The valve returns to its normal position (not the case with double solenoid valve code J).

## M0 is a

Manual override with automatic return (non-detenting)

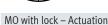


MO is actuated by pushing it with a pointed object or screwdriver and reset by spring force (detenting position prevented by coded cover cap). Valves can be ordered with a fitted cover cap in the valve terminal configurator using the selection menu "Manual override" (code N).





#### Turn MO to clip it onto the pilot valve. The MO cap can then be operated (detenting) without tools. Valves can be ordered with a fitted cover cap in the valve terminal configurator using the selection menu "Manual override" (code N).





Sliding the cap for the MO with lock in the direction of the arrow causes the following to happen:

- Cap locks into the end position
- The pilot valve switches and actuates the main valve.



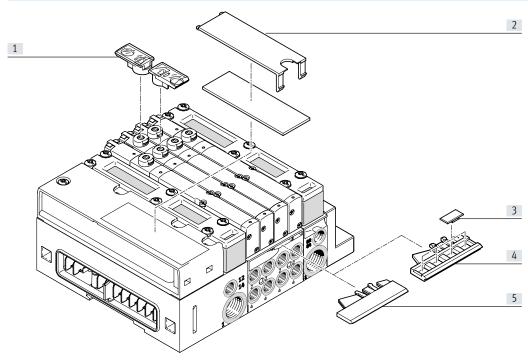
MO with lock - Actuation

## Sliding the cap for the MO with lock in the direction of the arrow causes the following to happen:

- Cap locks into the end position
- The spring force pushes the stem of the manual override back.
- The pilot valve returns to its normal position as does the single solenoid main valve (not the case with double solenoid valve code J).

## Key features – Display and operation

Inscription system



- [1] Inscription label holder ASLR-D-L1
- [2] Inscription label on the flat plate silencer of the pneumatic interface
- [3] Inscription labels IBS-6x10
- [4] Inscription label holder for subbase VMPA...-ST-2-4, 4-part, for IBS-6x10 inscription labels
- [5] Inscription label holder for subbase VMPA...-ST-1-4, transparent, for paper foil labels

To label the valve, an inscription label holder VMPA1-ST-1-4 (for paper foil labels) or VMPA1-ST-2-4 (for inscription labels IBS-6x10) can be mounted on every sub-base size 10 or 20. The sub-base for width 14 is wider. Separate inscription label holders VMPA14-ST-1-4 (for paper foil labels) or VMPA14-ST-2-4 (for inscription labels IBS-6x10) are therefore available for width 14. The inscription label holder ASLR-D-L1 can be pushed onto the manual override.

Inscription label holders/inscription labels that can be ordered individually → page 91. As an alternative or in addition, large inscription labels can be applied to the flat plate silencer on the pneumatic interface:

Labelling templates can be

downloaded from the online portal:

- → Internet: mpa
- In the "Software" area.

## Key features – Electrical components

#### 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 + / - 25%). This high tolerance is made possible by the integrated control electronics and offers additional safety, e.g. in the case of a drop in operating voltage.

#### 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

to 24 are left free. Pin 25 is reserved

The valves are switched by means of

Mixed operation is not permitted.

positive or negative logic (PNP or NPN).

Each pin on the multi-pin plug can ac-

tuate exactly one solenoid coil. When

using the maximum configurable num-

ber of 24 valve positions, 24 valves

solenoid coil.

can be addressed, each with a single

for the neutral conductor.

• Electrical M8 connection, 4-pin with screw connection

With 12 or fewer valve positions,

2 solenoid coils per valve can be ad-

dressed. With 12 or more valve posi-

tions, the number of available valve

coils decreases.

positions for valves with two solenoid



More information about the individual valve interface can be found at → VMPA1

#### 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)

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

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

#### Guidelines on addressing for valves/solenoid coils

- The maximum possible number of addresses for multi-pin plug connection is 24.
- Each sub-base/electronics module occupies a defined number of addresses/pins:
  - Sub-base MPA1 for 4 single solenoid valves: 4
  - Sub-base MPA1 for 4 double solenoid valves: 8
- Sub-base MPA14 for 4 single solenoid valves: 4
- Sub-base MPA14 for 4 double solenoid valves: 8
- Sub-base MPA2 for 2 single solenoid valves: 2
- Sub-base MPA2 for 2 double solenoid valves: 4
- The numbering of the addresses goes from left to right in ascending consecutive order. The following applies at the individual valve positions: address x for coil 14 and address x+1 for coil 12.

#### Note If a single solenoid valve is assem-

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

· If single solenoid valves are mounted on sub-bases for double solenoid valves, the address of coil 12 and the assigned pin will remain unused.

## Key features – Electrical components

#### AS-Interface<sup>®</sup> fieldbus connection

The AS-Interface allows individual components or small component groups to be widely distributed in terms of space.

#### **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. 4 modules, for example one CPV valve terminal and one to three CP

Fieldbus connection CPX

All functions and features of the electrical peripherals CPX are permitted in connection with the CPX interface. This means that: • The valves and electrical outputs are supplied via the operating

voltage connection CPX

The AS-interface connection of valve

up to 8 solenoid coils.

terminal MPA-S can be used to control

The electrical interface of the valve ter-

minal contains the LEDs that indicate

input modules, make up an installa-

tion string that ends at the CP inter-

a maximum of 4 installation strings

face. The installation system supports

• The valves are supplied and disconnected separately via a separate valve connection on the CPX (code V)

the signal status and the protective

that can be connected to a CP bus

circuit for the valves.

node.

Ĵ - Note

More information can be found at

Note

→ Internet: as-interface

Note

→ Internet: ctec

More information can be found at

More information can be found at → Internet: cpx

## Key features - Electrical components

### Pin allocation – Sub-D socket, cable

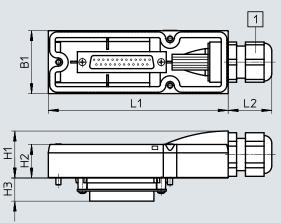
	Pin	Address/coil	Wire colour <sup>2)</sup>		Pin	Address/coil	Wire colour <sup>2)</sup>		
	1	0	WH		17	16	WH PK		
$ \begin{array}{c} 13(0000000000000)1\\ 25(00000000000000)14 \end{array} $	2	1	GN		18	17	PK BN		
25 000000000000000000000000000000000000	3	2	YE		19	18	WH BU		
	4	3	GY		20	19	BN BU		
	5	4	PK		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		- <b>Note</b> The drawing shows a view of the Sub-D socket on the multi-pin plug cable VMPA-KMS1				
	12	11	BN GN						
	13	12	WH YE						
	14	13	YE BN						
	15	14	WH GY						
	16	15	GY BN						

0 V with positive-switching control signals; in the case of negative-switching control signals, connect 24 V; mixed operation is not permitted!
 2) To IEC 757

To IEC 757

#### Dimensions





[1] Cable connector with clamping range 6 ... 12 mm

### Download CAD data → <u>www.festo.com</u>

The wire colours refer to the following pre-assembled multi-pin cables from Festo:

- VMPA-KMS1-8-... Valve terminal for up to 4 valve positions (8 coils)
- VMPA-KMS1-24-... Valve terminal with 8 ... 24 valve positions

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

Туре	Casing	Length [m]	Wire 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	Hood for self-assemb	bly			533198

## Key features – Electrical components

#### Instructions for use Service fluids

Operate your system with unlubricated compressed air if possible. Festo valves and cylinders are designed so that, if used as intended, they will not require additional lubrication and will still achieve a long service life. The quality of compressed air downstream of the compressor must correspond to that of unlubricated compressed air. If possible, do not operate the entire system with lubricated compressed air. The lubricators should, where possible, always be installed directly upstream of the actuator requiring them. Incorrect additional oil and too high an 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).

#### Bio-oils

When using bio-oils (oils which are based on synthetic or native esters, 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).

#### Mineral oils

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 is not permitted, regardless of the compressor oil, because the permanent lubrication would otherwise be flushed out over a period of time.

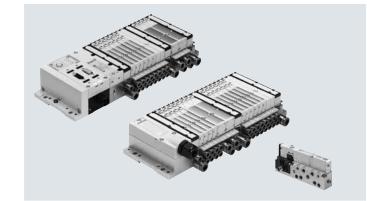
## Technical data – Valve terminal

## - N - Flow rate

MPA1:	up to 360 l/min
MPA14:	up to 550 l/min
MPA2:	up to 700 l/min

## - **[]** - Valve width

MPA1:	10 mm
MPA14:	14 mm
MPA2:	20 mm



## - **L** - Voltage 24 V DC

#### General technical data

Value terminal decign		Modular valve sizes can be wive	1				
Valve terminal design		Modular, valve sizes can be mixed					
Electrical actuation		Fieldbus	Multi-pin plug	AS-i interface	CPI interface		
Actuation type		Electrical					
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, 14, 20					
Pilot air supply		Internal or external					
Lubrication		Life-time lubrication, PWIS-free (fr	ee of paint-wetting impairment sub	stances)			
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					
Degree of protection to EN 60529		IP67 (for all types of signal transm	ission in assembled state)				
Pneumatic connections							
Pneumatic connection		Via sub-base or individual connec	tion				
Supply port	1	G1/4 (M7 with individual sub-bas	e)				
Exhaust port	3/5	QS-10, QS-3/8" (M7 with individu	ial sub-base)				
Working ports	2/4	Depending on the connection type	e selected				
		MPA1: M7, QS4, QS6, 3/16", 1/4					
		MPA14: G1/8, QS6, QS8, 1/4", 5/16"					
	MPA2: G1/8, QS6, QS8, 1/4", 5/16"						
Pilot air connection	12/14	M7 (M5 with individual sub-base)					
Pilot exhaust air port	82/84	M7 (M5 with individual sub-base	and with end plate VMPA-EPR-G)				
Pressure compensation port		With ducted exhaust air: via port 8	32/84 (M5 with individual sub-base	e and with end plate VMPA-EPR-G)			
		With flat plate silencer: exhaustin	g to atmosphere				

## - Note

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

#### Operating and environmental conditions

Operating and environmenta	l conditions	
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/		Lubricated operation possible (in which case lubricated operation will always be required)
pilot medium		
Operating pressure	[MPa]	-0.09 1
	[bar]	-0.9 10
Pilot pressure	[MPa]	0.3 0.8
	[bar]	38
Ambient temperature	[°C]	-5 +50
Temperature of medium	[°C]	-5 +50
Storage temperature <sup>1)</sup>	[°C]	-20 +40
Relative humidity		Max. 90% at 40°C

1) Long-term storage

rtifications<sup>1)</sup> i.

Certifications <sup>1)</sup>				
Туре	MPA-MPM-VI	MPA-FB-VI	MPA-ASI-VI	MPA-CPI-VI
	(multi-pin plug interface)	(fieldbus interface)	(AS-i interface)	(CPI interface)
Part number	539105	530411	546279	546280
ATEX category for gas	II 3 G		II 3 G	
Type of ignition protection for gas	Ex nA IIC T4 X Gc	Ex nA IIC T4 Gc	Ex nA IIC T4 X Gc	
ATEX ambient temperature [°C]	-5 ≤ Ta ≤ +50		-5 ≤ Ta ≤ +50	
Explosion protection certification outside the	-	EPL Gc (BR)	-	-
EU				
Certificate issuing authority	-	DNV 15.0193 X	-	-
CE marking (see declaration of conformity)	To EU EMC Directive <sup>2)</sup>			
	To EU Explosion Protection			
	Directive (ATEX)	Directive (ATEX)	Directive (ATEX)	Directive (ATEX)
KC mark	KC EMC		•	
Certification	c UL us - Recognized (OL)			
	RCM			
Corrosion resistance class CRC <sup>3)</sup>	1	1	0	0

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

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → Support/Downloads.

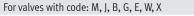
If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary. Corrosion resistance class CRC 1 to Festo standard FN 940070

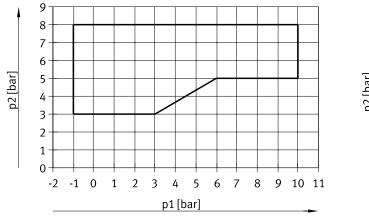
3)

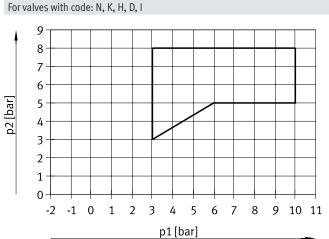
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

ī.

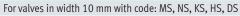


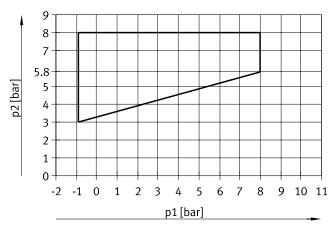




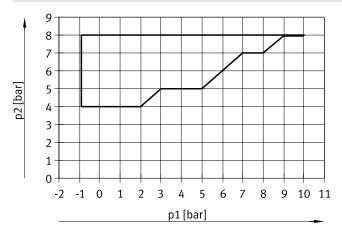


Pilot pressure p2 as a function of working pressure p1 for valves with mechanical spring return

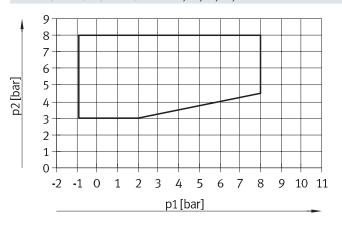




For valves in width 10 mm with code: MU, NU, KU, HU



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

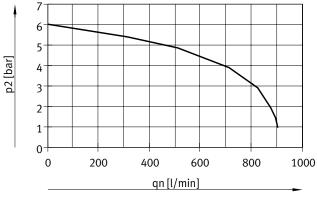


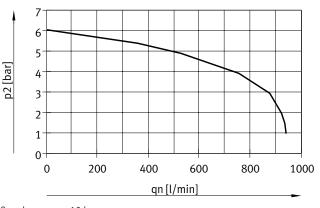
#### Valve terminal MPA-S

## Technical data

#### Flow rate qn as a function of output pressure p2 with pressure regulator plates (width 20 mm)

(B regulator plates) for port 2 (P regulator plate) for port 1



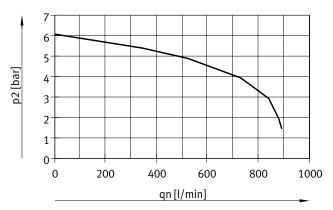


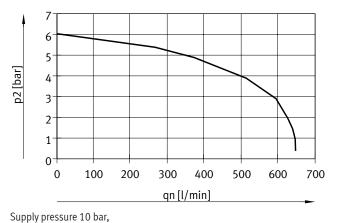
Supply pressure 10 bar, regulated pressure set at 6 bar Supply pressure 10 bar, regulated pressure set at 6 bar

regulated pressure set at 6 bar

#### Flow rate qn as a function of output pressure p2 with pressure regulator plates (width 20 mm) (B regulator plates, rev.) for ports 3, reversible

(A regulator plates) for ports 4



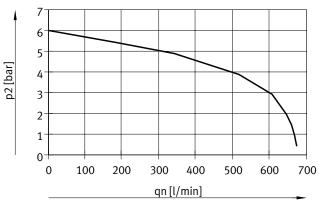


Supply pressure 10 bar,

regulated pressure set at 6 bar

## Flow rate qn as a function of output pressure p2 with pressure regulator plates (width 20 mm)

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



Supply pressure 10 bar, regulated pressure set at 6 bar

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

Technical data – Valve width	10 mm																	
Code			М		J	N		К	Н	В	G	E		Х	W	D		I
Design			Piston s	pool valve	e											_		
Sealing principle			Soft															
Overlap			Positive	overlap														
Reset method			Pneuma	atic spring	; –	Pne	eumati	c spring		Mec	hanical s	oring		Pneuma	tic sprir	ıg		
Switching times	On	[ms]	10		10	10		10	10	10	10	1	0	10	10	10	8	8
	Off	[ms]	20		-	20		20	20	35	35	3	5	20	20	20	1	20
	Change-	[ms]	-		15	-		-	-	15	15	1	5	-	-	-		-
	over																	
Standard nominal flow rate		[l/min]	360		360			230	300	300		) 2	240	255	255	230		260
Operating pressure		[MPa]	-0.09				1				)9 +1			-0.09			1	
		[bar]	-0.9			3	. 10			-0.9	9+10			-0.9	+10	3	. 10	
Pilot pressure		[MPa]	0.3 0	.8														
		[bar]	38															
Max. tightening torque for val	ve	[Nm]	0.25															
mounting																		
Materials				t aluminiu		54		57	54	54	54			10		54		5.4
Product weight		[g]	49		56	56		56	56	56	56	5	6	49	49	56		56
Technical data – Valve width	10 mm																	
Code	·		MS	NS		KS	HS		DS	MU			NU	К		HU		
Design				pool valve							pet valve v	with one				-		_
Sealing principle			Soft							Soft	Jet valve	mun shi	ing retur					
Overlap			Positive	overlan							ative over	lan						
Reset method				ical sprin	σ					_	hanical si							
Switching times	On	[ms]	10	14	-	14	14		14	10	numeur 5	51115	10	8		10		
Switching times	Off	[ms]	27	16		16	16		16	14			8	10		10		
	Change-	[ms]	-	-		-	-		-				-	-		-		
	over	[113]																
Standard nominal flow rate		[l/min]	360	300		230	300	)	230	140	190		190	16	0	140	190	
Note on standard nominal flo	w rate		-							_	2: 190 l	min	-	-	-	1 <b>→</b> 2		/min
											4: 140 l/						: 140 l/	
Operating pressure		[MPa]	-0.09	+0.8						-0.0	9 +1					1		
		[bar]	-0.9	+8						-0.9	9 +10							
Pilot pressure		[MPa]	0.3 0	.8						0.4.	0.8							
		[bar]	38							4	8							
Max. tightening torque for val	ve	[Nm]	0.25							0.25								
mounting																		
Materials			Die-cast	t aluminiu	ım					PPA I	reinforceo	1						
Product weight		[g]	56							35			42	42		42		
<b>Technical data – Valve width</b> Code Design	14 mm			J N		к Н		B	G E	X	W	D	1	MS	NS	KS	HS	DS
Sealing principle			Soft															
Overlap			Positive	overlap														
Reset method			Pneuma	tic spring	5			Mechan	nical sprin	g Pr	neumatic	spring		Me	chanica	l spring		
Switching times	On	[ms]	13	9 1	2	12 1		16	13 1	3 1	2 12	12	2 10		12	12	12	10
	Off	[ms]	30	- 3	8	38 3	8	50	52 5	0 20	0 20	30	) 28	3 30	23	23	23	25
	Change-	[ms]	-	24 -	-	-  -		26	26 2	6 –	-	-	-	-	-	-	-	-
Standard nominal flow rate	over	[l/min]	550	550 5	50	550 5	50	550	550 4	20 3	60 34	0 55	0 55	50 55	0 470	) 470	470	500
Operating pressure		[MPa]	-0.09		).3 1			-0.09.			0.09 +		3 1		.09 +		1470	
e perating pressure		[bar]	-0.9		3 10			-0.9			0.09 +1		10		9 +8			
Pilot pressure		[MPa]	0.3 0								1				0.8			
		[bar]	38											3				
Max. tightening torque for val	ve	[Nm]	0.65												5 0.2	5		
mounting																		
mounting Materials Product weight		[g]	Die-cast 77	t aluminiu	ım													

### Technical data – Valve width 20 mm

Code			M	J	N	К	Н	В	G	E	X	W	D	1	MS	NS	KS	HS	DS
Design		ļ.	Piston	Piston spool valve															
Sealing principle			Soft																
Overlap			Positiv	e overla	p														
Reset method			Pneum	atic spri	ng			Mecha	anical sp	ring	Pneum	natic spr	ing		Mech	anical s	spring		
Switching times	On	[ms]	15	9	8	8	8	11	10	11	13	13	7	7	8	12	12	12	12
	Off	[ms]	28	-	28	28	28	46	40	47	22	22	25	23	36	25	25	25	25
	Change-	[ms]	-	22	-	-	-	23	21	23	-	-	-	-	-	-	-	-	-
	over																		
Standard nominal flow rate	e	[l/min]	670	670	550	550	550	510	610	590	470	470	650	650	670	550	500	550	650
Operating pressure		[MPa]	-0.09	+1	0.3	1		-0.09	+1		-0.09	+1	0.3	. 1	-0.09	9+0.	8		
		[bar]	-0.9	. +10	3 10	)		-0.9.	+10		-0.9 .	+10	3 1	.0	-0.9	+8			
Pilot pressure		[MPa]	0.3	0.8															
		[bar]	3 8																
Max. tightening torque for	valve mounting	[Nm]	0.65																
Materials			Die-cas	st alumiı	nium														
Product weight		[g]	100																

		Valve width 10 mm	Valve width 14 mm	Valve width 20 mm
Max. positive test pulse with 0 signal	[µs]	400	400	400
Max. negative test pulse with 1 signal	[µs]	200	200	900
Shock resistance		Shock test with severity level 2 to FN 942017-	5 and EN 60068-2-27	
Vibration resistance		Transport application test with severity level 2	to FN 942017-4 and EN 60068-2-6	

		MPA1	MPA14	MPA2	
Intrinsic current consumption per electronics module	2				
At 24 V U <sub>EL/SEN</sub> <sup>1)</sup>	[mA]	Typically 8			
(internal electronics, all outputs 0-signal)					
At 24 V Uval <sup>2)</sup>					
(internal electronics, without valves)					
VMPAEMG, separate circuits	[mA]	Typically 23			
VMPAEMS, without separate circuits	[mA]	Typically 3			
Maximum current consumption per solenoid coil at n	ominal voltage				
Nominal pick-up current	[mA]	58	58	99	
Nominal current following current reduction	[mA]	9	9	18	
Time until current reduction	[ms]	24	24	24	
Diagnostic message					
	[V]	17.5 16			
Undervoltage U <sub>OFF</sub> <sup>3)</sup> Electrical data – MPA with electronics module VMPA.	MPM (ASI int	erface, multi-pin) MPA1	MPA14	MPA2	
Undervoltage U <sub>OFF</sub> <sup>3)</sup> Electrical data – MPA with electronics module VMPA. Current consumption at Sub-D multi-pin plug connec	MPM (ASI int tion per solenoid	erface, multi-pin)   MPA1 coil at nominal voltage			
Undervoltage U <sub>OFF</sub> <sup>3)</sup> Electrical data – MPA with electronics module VMPA. Current consumption at Sub-D multi-pin plug connec Nominal pick-up current	MPM (ASI int tion per solenoid [mA]	erface, multi-pin) MPA1 coil at nominal voltage 80	80	100	
Diagnostic message Undervoltage U <sub>OFF</sub> <sup>3)</sup> Electrical data – MPA with electronics module VMPA. Current consumption at Sub-D multi-pin plug connec Nominal pick-up current Nominal current with current reduction Time until current reduction	MPM (ASI int tion per solenoid	erface, multi-pin)   MPA1 coil at nominal voltage			

		LI/JEN -
in parallel and one electronics module VMPAEMS without		
separate circuits		
Nominal pick-up current (duration 24 ms)	[mA]	<sup>1</sup> <sub>VAL =</sub> 3 (intrinsic current consumption of electronics module) + 2 x 99 (MPA2) = 202
Nominal current with current reduction (after 24 ms)	[mA]	<sup>1</sup> <sub>VAL =</sub> 3 (intrinsic current consumption of electronics module) + 2 x 18 (MPA2) = 39

Power supply for electronics and sensors
 Load voltage supply for valves
 Load voltage outside of function range

#### Materials

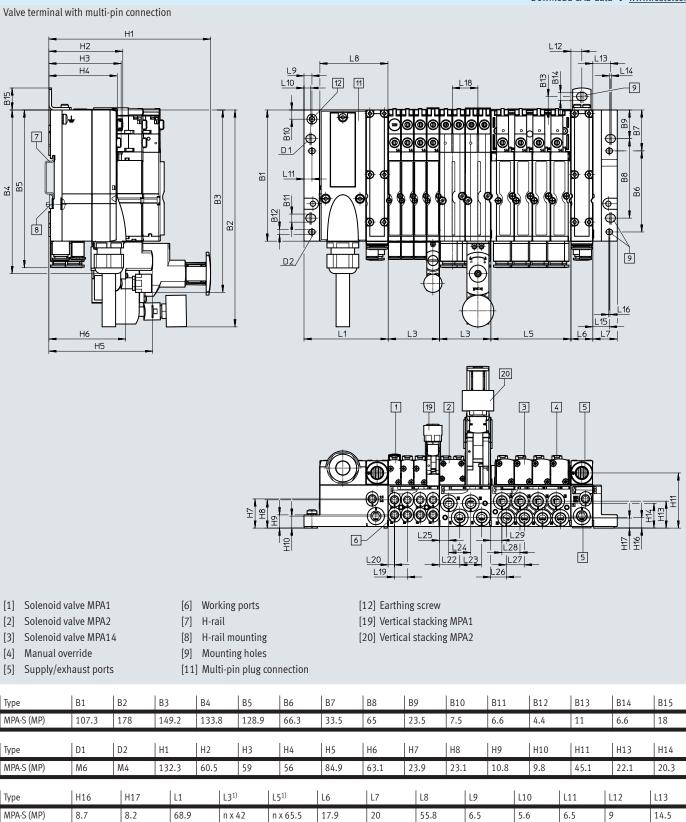
Materials	
Sub-base	Die-cast aluminium
Seals	NBR, elastomer
Supply plate	Die-cast aluminium
Right end plate	Die-cast aluminium
Left pneumatic interface	Die-cast aluminium, PA
Exhaust plate	PA
Flat plate silencer	PE
Electrical supply plate	Housing: Die-cast aluminium
	End cap: PA reinforced
Electronics module	PA
Electrical interlinking module	Bronze/PBT
Regulator plate	Control section, housing: PA; seals: NBR
Note on materials	RoHS-compliant

Product weight	MDA		
Approx. weight [g]	MPA1	MPA14	MPA2
Basic weight of sub-base <sup>1)</sup>	210 (4 valve positions)	252 (4 valve positions)	210 (2 valve positions)
Individual sub-base (VMPA I C)	92	184	233
Per vacant position L	20	40	45
Right end plate	55	· · · ·	
Left pneumatic interface <sup>1)</sup>			
<ul> <li>With flat plate silencer</li> </ul>	315		
<ul> <li>With ducted exhaust air</li> </ul>	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-M5-3-1	3		
QSM-M5-5/32-I-U-M	3		
QSM-M5-4-I	4		
QSM-M5-3/16-I-U-M	4		
QSM-M5-6-I	5		
QSM-M5-1/4-I-U-M	5		
QSM-M7-4-I	4		
QSM-M7-3/16-I-U-M	4		
QSM-M7-6-I	5		
QSM-M7-1/4-I-U-M	5		
QS-G1/8-6-l	11		
QS-1/8-1/4-I-U-M	11		
QS-G1/8-8-l	13		
QS-1/8-5/16-I-U-M	13		
QS-G1/4-8-I	22		
QS-1/4-5/16-I-U-M	22		
QS-G1/4-10-I	22		
QS-1/4-3/8-I-U-M	22		

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

#### Dimensions

Download CAD data → www.festo.com



1) n = number of sub-bases (with MPA1, width 10 mm and MPA14, width 14 mm, max. 4 valve positions on sub-base; with MPA2, width 20 mm, max. 2 valve positions on sub-base)

120

5.3

122

16.7

119

10.5

Type MPA-S (MP) 114

1.5

L15

13.5

L16

1

L18

21

L23

18

L25

7.7

124

18

L26

12.7

L27

14.8

L28

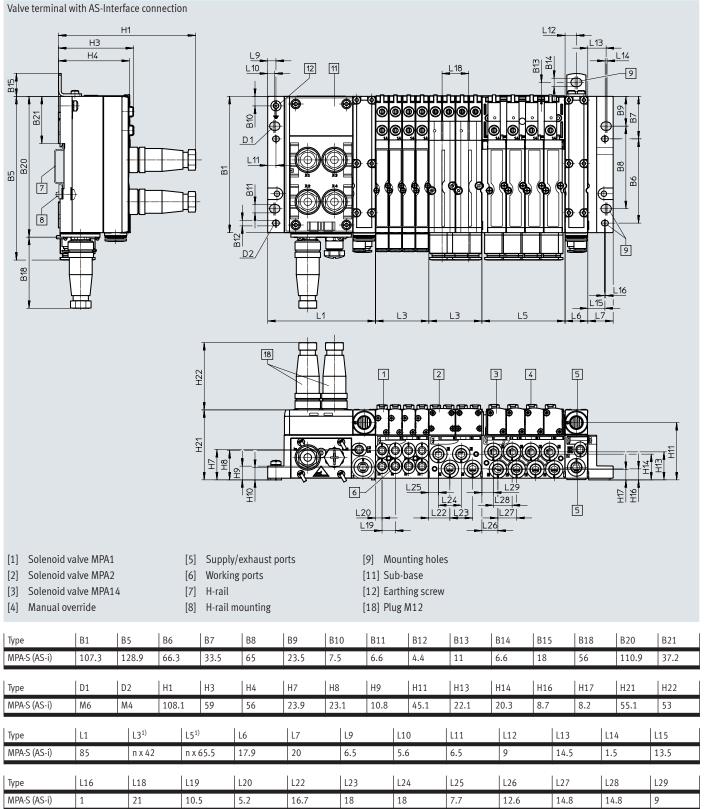
14.8

L29

9.1

#### Dimensions

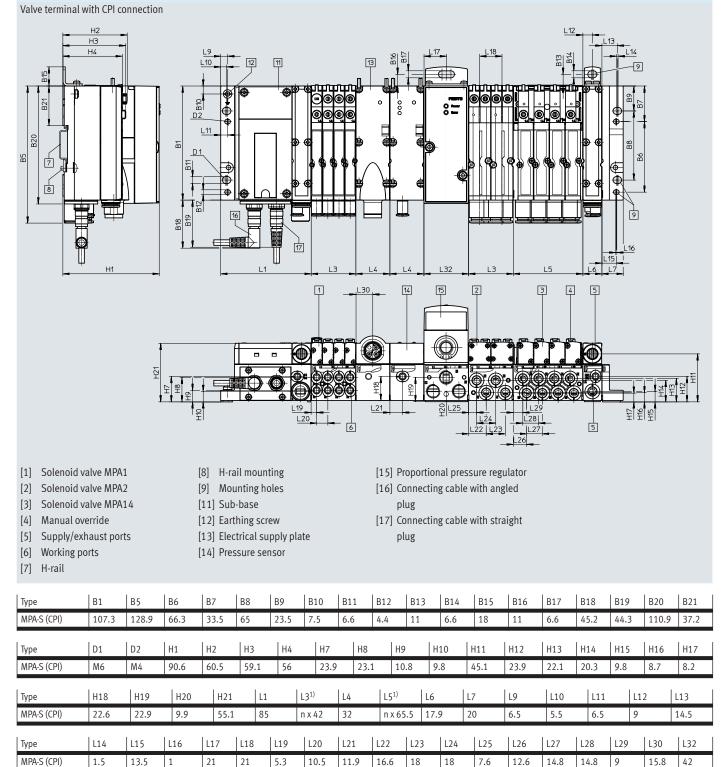
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1) n = number of sub-bases (with MPA1, width 10 mm and MPA14, width 14 mm, max. 4 valve positions on sub-base; with MPA2, width 20 mm, max. 2 valve positions on sub-base)

#### Dimensions

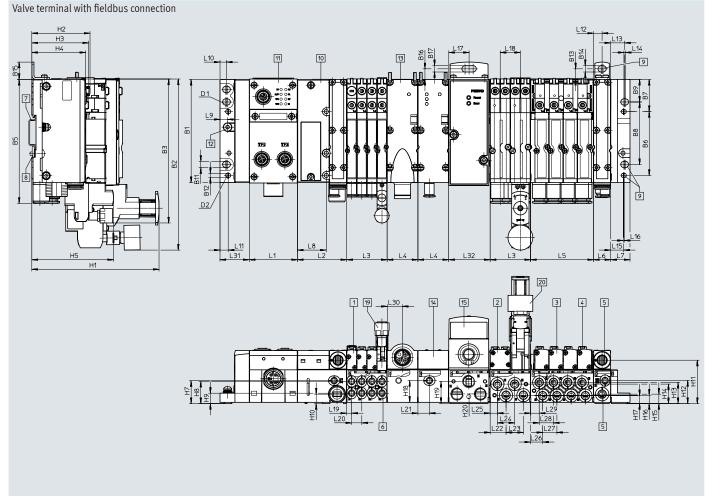
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1) n = number of sub-bases (with MPA1, width 10 mm and MPA14, width 14 mm, max. 4 valve positions on sub-base; with MPA2, width 20 mm, max. 2 valve positions on sub-base)

## Dimensions

Download CAD data → <u>www.festo.com</u>



- [1] Solenoid valve MPA1
- [2] Solenoid valve MPA2
- [3] Solenoid valve MPA14
- [4] Manual override
- [5] Supply/exhaust ports
- [6] Working ports
- [7] H-rail

- [8] H-rail mounting
- [9] Mounting holes
- [10] Pneumatic interface MPA
- [11] CPX module
- [12] Earthing screw
- [13] Electrical supply plate
- [14] Pressure sensor
- [15] Proportional pressure regulator
- [19] Vertical stacking MPA1
- [20] Vertical stacking MPA2

Туре	B1	B2	B3	B5	5 B6	В	7	B8	B9	B11	.   E	812	B13	B14	B1	5 B	816	B17	D1	D2
MPA-S (FB)	107.3	178	149.	2 12	29 66	.4 3	3.5	65	23.5	6.6	4	.4	11	6.6	18	1	1	6.6	M6	M4
Туре	H1	H2	H3	H4	H5	H7	H8	H9	H10	H1	1   F	12	H13	H14	H15	H16	H17	H18	H19	H20
MPA-S (FB)	132.3	60.5	59.1	56	84.9	23.9	23.1	10.8	9.8	45	.1 2	3.9	22.1	20.3	9.8	8.7	8.2	22.6	22.9	9.9
Туре	L1 <sup>1)</sup>	L2	L	.3 <sup>2)</sup>	L4	L5 <sup>2</sup>	)	L6	L7	L8	L	9	L10	L11	L12	2  L	13	L14	L15	L16
MPA-S (FB)	m x 50.	1 51.3	3 n	n x 42	32	n x	65.5	17.9	20	30	7	'.9	6.8	8.5	9	1	4.5	1.5	13.5	1
Туре	L17	L18	L19	9	L20	L21	L22	L2	3  L	24	L25	L2	26   L	.27	L28	L29	L3	0  1	.31	L32
MPA-S (FB)	21	21	5.3	3	10.5	11.9	16.	6 18	1	8	7.6	12	2.6 1	14.8	14.8	9	15	5.8	30.4	42

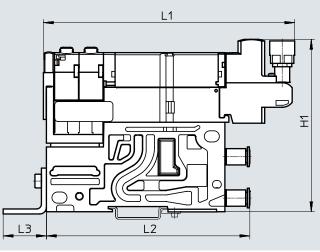
1) m = number of CPX modules

2) n = number of sub-bases (with MPA1, width 10 mm and MPA14, width 14 mm, max. 4 valve positions on sub-base; with MPA2, width 20 mm, max. 2 valve positions on sub-base)

#### Dimensions

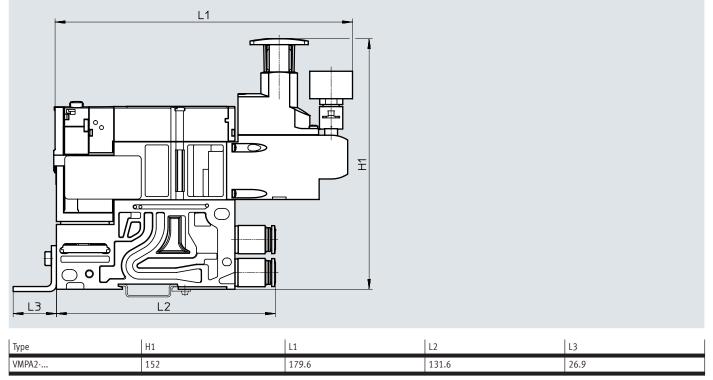
Download CAD data → <u>www.festo.com</u>

Vertical stacking components, regulator plate VMPA1



Туре	H1	L1	L2	L3
VMPA1	105	151.1	122.3	26.9

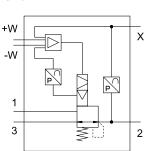
Vertical stacking components, regulator plate VMPA2

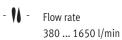


## Valve terminal MPA-S

## Technical data – Proportional pressure regulator VPPM







Pressure regulation ranges 0.02 ... 10 bar

Voltage 21.6 ... 26.4 V DC



#### General technical data

			VPPM-6TA	VPPM-8TA
Valve function			3-way proportional pressure re	gulator
Design			Piloted diaphragm regulator	
Range of application			For CPI connection, for fieldbus	
Type of mounting			Via through-hole or accessories	5
Sealing principle			Soft	
Actuation type			Electrical	
Type of control			Piloted	
Mounting position			Any	
Reset method			Mechanical spring	
Display type			LED	Back-lit LCD
Pneumatic connection	1, 2, 3		Sub-base	
Nominal size	Pressurisation	[mm]	6	8
	Exhaust port	[mm]	4.5	7
Standard nominal flow rate	2 bar type	[l/min]	380	450
	6 bar type	[l/min]	900	1050
	10 bar type	[l/min]	1400	1650
Product weight		[g]	400	500
Material	Housing		Anodised wrought aluminium a	alloy

Electrical uata		Electrical data
-----------------	--	-----------------

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					
Short circuit current rating		For all electrical connections					
Reverse polarity protection		For all electrical connections					
Degree of protection to EN 60529		IP65					

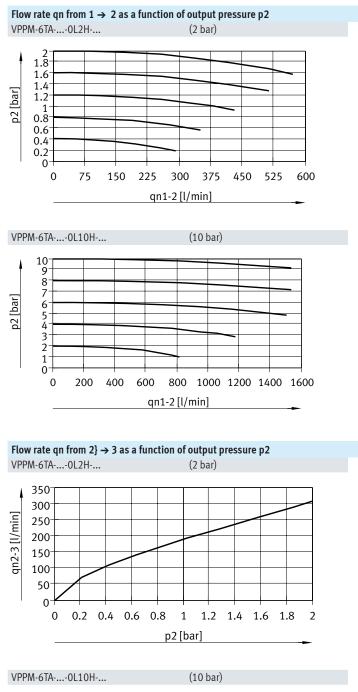
#### -Note

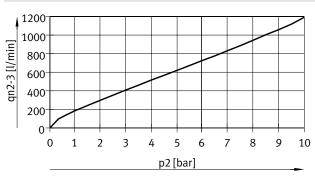
Output pressure remains unregulated if the power supply cable is interrupted.

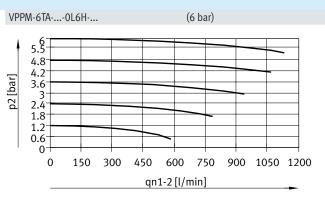
#### Note -

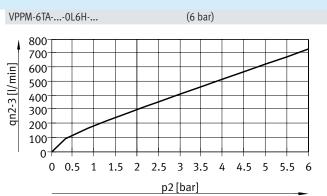
Note possible restrictions for the IP protection class  $\rightarrow$  ATEX declaration of conformity

## Technical data - Proportional pressure regulator VPPM

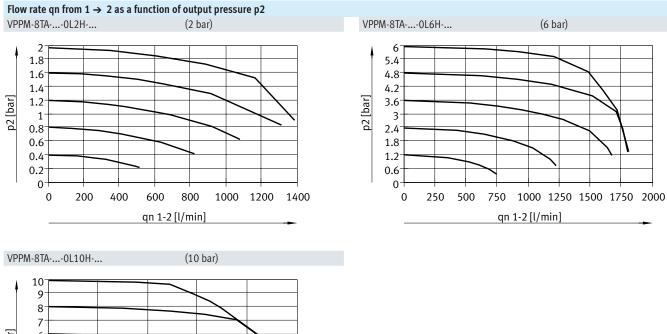


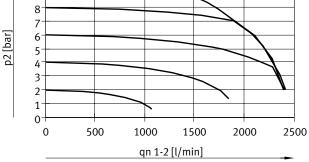




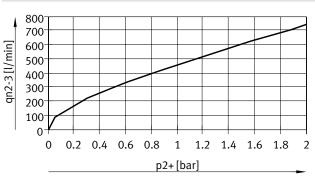


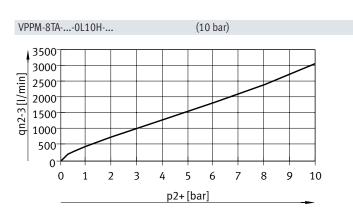
## Technical data – Proportional pressure regulator VPPM

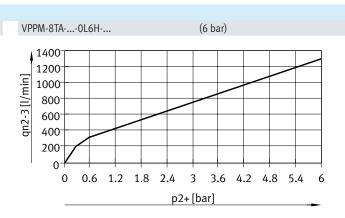


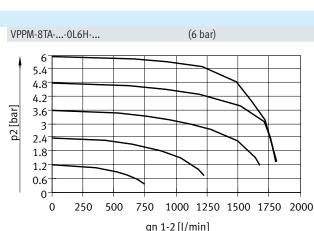












## Technical data – Proportional pressure regulator VPPM

Operating and environmental conditions			VPPM-6TA	VPPM-8TA	
Operating medium			Compressed air to ISO 8573-1:2010 [7:4:4]		
			Inert gases		
Note on operating/pilot medium			Lubricated operation not possible		
Pressure regulation range	VPPM0L2H	[bar]	0.02 2		
	VPPM0L6H	[bar]	0.06 6		
	VPPM0L10H	[bar]	0.1 10		
Input pressure 1 <sup>1)</sup>	VPPM0L2H	[bar]	04		
	VPPM0L6H	[bar]	08		
	VPPM0L10H	[bar]	011		
Max. pressure hysteresis	VPPM0L2H	[bar]	0.01		
	VPPM0L6H	[bar]	0.03		
	VPPM0L10H	[bar]	0.05		
Linearity error FS (full scale)	Standard	[%]	2		
	Type S1	[%]	1		
FS (full scale) repetition accuracy		[%]	0.5		
Temperature coefficient		[%/K]	0.04		
Ambient temperature		[°C]	0 60	0 50	
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			c UL us - Recognized (OL)	-	
			C-Tick		

Supply pressure 1 should always be 1 bar greater than the maximum regulated output pressure. 1)

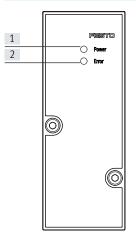
2) Corrosion resistance class CRC 2 to Festo standard FN 940070

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

3) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... -> Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

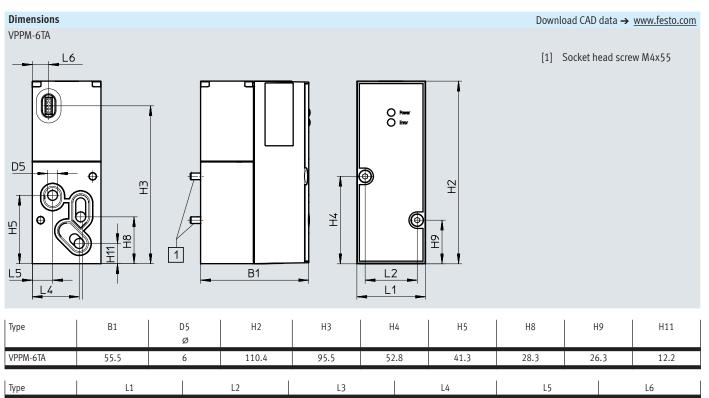
#### LEDs on the proportional pressure regulator VPPM-6TA



[1] Green power LED

[2] Red error LED

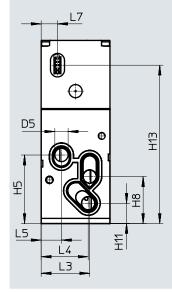
## Technical data – Proportional pressure regulator VPPM



30.3

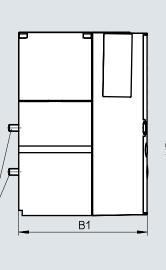
VPPM-8TA with LCD

VPPM-6TA

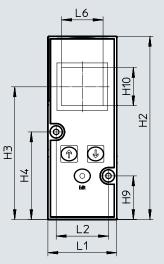


41.5

1



31.5

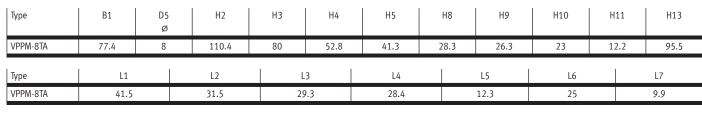


28.4

[1] Socket head screw M4x77

9.9

12.3



# Technical data – Proportional pressure regulator VPPM

#### Ordering data

Ordering data							
Code	Overall accuracy	Input pressure 1	Pressure regulation range	Part No.	Туре		
	[%]	[bar]	[bar]				
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	08	0.06 6	542221	VPPM-6TA-L-1-F-0L6H		
QE	1	08	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	08	0.06 6	572408	VPPM-8TA-L-1-F-0L6H-S1C1		
QH	2	08	0.06 6	572411	VPPM-8TA-L-1-F-0L6H-C1		
QN	1	011	0.1 10	572409	VPPM-8TA-L-1-F-0L10H-S1C1		
QK	2	011	0.1 10	572412	VPPM-8TA-L-1-F-0L10H-C1		

Designation		Part No.	Туре
	Mounting	558844	VMPA-BG
	Sub-base without electrical manifold module and without electronics module	542223	VMPA-FB-AP-P1
	Cover plate	559638	VMPA-P-RP
	Electrical interlinking module for sub-base of the proportional pressure regulator	537998	VMPA1-FB-EV-AB
	Electronics module	542224	VMPA-FB-EMG-P1

Code	Valve function	Part No.	Туре
valve – width 10 mm			
5/2-way valve			
Position function 1-32: M	Single solenoid	533342	VMPA1-M1H-M-PI
Position function 1-32: MS	Single solenoid, mechanical spring return	571334	VMPA1-M1H-MS-PI
Position function 1-32: MU	Polymer poppet valve, single solenoid,	553113	VMPA1-M1H-MU-PI
	Mechanical spring return		
Position function 1-32: J	Double solenoid	533343	VMPA1-M1H-J-PI
2x 3/2-way valve			
Position function 1-32: N	Normally open	533348	VMPA1-M1H-N-PI
Position function 1-32: NS	Normally open,	556839	VMPA1-M1H-NS-PI
	Mechanical spring return		
Position function 1-32: NU	Polymer poppet valve, normally open,	553111	VMPA1-M1H-NU-PI
	Mechanical spring return		
Position function 1-32: K	Normally closed	533347	VMPA1-M1H-K-PI
Position function 1-32: KS	Normally closed,	556838	VMPA1-M1H-KS-PI
	Mechanical spring return		
Position function 1-32: KU	Polymer poppet valve, normally closed,	553110	VMPA1-M1H-KU-PI
	Mechanical spring return		
Position function 1-32: H	1x normally open, 1x normally closed	533349	VMPA1-M1H-H-PI
Position function 1-32: HS	1x normally open, 1x normally closed,	556840	VMPA1-M1H-HS-PI
	Mechanical spring return		
Position function 1-32: HU	Polymer poppet valve,	553112	VMPA1-M1H-HU-PI
	1x normally open, 1x normally closed,		
	Mechanical spring return		
5/3-way valve			
Position function 1-32: B	Mid-position pressurised	533344	VMPA1-M1H-B-PI
Position function 1-32: G	Mid-position closed	533345	VMPA1-M1H-G-PI
Position function 1-32: E	Mid-position exhausted	533346	VMPA1-M1H-E-PI
1x 3/2-way valve			
Position function 1-32: W	Normally open, external compressed air supply	540050	VMPA1-M1H-W-PI
Position function 1-32: X	Normally closed, external compressed air supply	534415	VMPA1-M1H-X-PI
2x 2/2-way valve			
Position function 1-32: D	Normally closed	533350	VMPA1-M1H-D-PI
Position function 1-32: DS	Normally closed,	556841	VMPA1-M1H-DS-PI
	Mechanical spring return		
Position function 1-32: I	1x normally closed,	543605	VMPA1-M1H-I-PI
	1x normally closed, reversible only		
stallation width 10 mm			
Position function 1-32: L	Cover plate for a valve position in width 10 mm	533351	VMPA1-RP
	A self-adhesive label is supplied.	555551	

Ordering data						
	Code	Description			Part No.	Туре
Vertical stacking module	es – width 10 mm					
തീ	Pressure regulator 1-32: PF	Pressure regulator plate	For port 1	0.5 5 bar	564911	VMPA1-B8-R1-M5-06
	Pressure regulator 1-32: PA	with fixed threaded		0.5 8.5 bar	564908	VMPA1-B8-R1-M5-10
	Pressure regulator 1-32: PH	connection M5	For port 2	2 5 bar	564912	VMPA1-B8-R2-M5-06
	Pressure regulator 1-32: PC	]		2 8.5 bar	564909	VMPA1-B8-R2-M5-10
	Pressure regulator 1-32: PG	1	For port 4	2 5 bar	564913	VMPA1-B8-R3-M5-06
<b>U</b>	Pressure regulator 1-32: PB	]		2 8.5 bar	564910	VMPA1-B8-R3-M5-10
	Pressure regulator 1-32: PF	Pressure regulator plate	For port 1	0.5 5 bar	549052	VMPA1-B8-R1C2-C-06
	Pressure regulator 1-32: PA			0.5 8.5 bar	543339	VMPA1-B8-R1C2-C-10
Trans.	Pressure regulator 1-32: PH		For port 2 For port 4	2 5 bar	549053	VMPA1-B8-R2C2-C-06
	Pressure regulator 1-32: PC			2 8.5 bar	543340	VMPA1-B8-R2C2-C-10
	Pressure regulator 1-32: PG			2 5 bar	549054	VMPA1-B8-R3C2-C-06
Ũ	Pressure regulator 1-32: PB	]		2 8.5 bar	543341	VMPA1-B8-R3C2-C-10
	Pressure regulator 1-32: PS	Vertical pressure shut-off plate			567805	VMPA1-HS
		air supply of the valve ter	For manually disconnecting an individual valve from the compressed air supply of the valve terminal (duct 1 and 12/14 pilot air supply), operating pressure 3 8 bar			
	Pressure gauge 1-32: VE	Screw-in pressure gauge pressure regulator plate v		Unit of measure: bar	132340	MA-15-10-M5
	Pressure gauge 1-32: VD	connection		Unit of measure: psi	132341	MA-15-145-M5-PSI
	Pressure gauge 1-32: VC	Locking push-in fitting wit	th thread M5 for pressure i	egulator plate	153291	QSK-M5-4

### Accessories

Ordering data						
	Code	Description		Part No.	Туре	PU <sup>1)</sup>
Fixed flow restrictor – w	idth 10 mm					
	Pneumatic connection 3, 1-40: V03	Hollow bolt, for flow control of the exhaust air	3.5 5.5 l/min	572544	VMPA1-FT-NW0.3-10	10
Y	Pneumatic connection 5, 1-40: Q03					
	Pneumatic connection 3, 1-40: V05		9 12 l/min	572545	VMPA1-FT-NW0.5-10	10
	Pneumatic connection 5, 1-40: Q05					
	Pneumatic connection 3, 1-40: V07		18 22 l/min	572546	VMPA1-FT-NW0.7-10	10
	Pneumatic connection 5, 1-40: Q07					
	Pneumatic connection 3, 1-40: V10		36 41 l/min	572547	VMPA1-FT-NW1.0-10	10
	Pneumatic connection 5, 1-40: Q10					
	Pneumatic connection 3, 1-40: V12		52 58 l/min	572548	VMPA1-FT-NW1.2-10	10
	Pneumatic connection 5, 1-40: Q12					
	Pneumatic connection 3, 1-40: V15		81 89 l/min	572549	VMPA1-FT-NW1.5-10	10
	Pneumatic connection 5, 1-40: Q15					
	Pneumatic connection 3, 1-40: V17		105 115 l/min	572550	VMPA1-FT-NW1.7-10	10
	Pneumatic connection 5, 1-40: Q17					
Flow control set – width	10 mm					
9	-	Fixed flow restrictor, two of each size two retaining brackets and one asse		572543	VMPA1-FT-NW0.3-1.7	14
Holder for fixed flow rest	trictor – width 10 mm					
	-	Retaining bracket for exhaust opening	ng in the sub-base	572542	VMPA1-FTI-10	10

1) Packaging unit.

Ordering data					
	Code	Description		Part No.	Туре
Sub-base – width 10 m	m				
	-	For multi-pin plug/fieldbus, four valve	No duct separation	533352	VMPA1-FB-AP-4-1
		positions, no electrical interlinking module	Duct 1 blocked	538657	VMPA1-FB-AP-4-1-T1
			Duct 1 blocked and duct	555901	VMPA1-FB-AP-4-1-S1
			3/5 blocked		
ub-bases with check y	alve in duct 3 and 5 – v	width 10 mm			
	-	For multi-pin plug/fieldbus, four valve	No duct separation	8034547	VMPA1-FB-AP-4-1-RV
		positions, no electrical interlinking module	Duct 1 blocked	8034549	VMPA1-FB-AP-4-1-T1-RV
		······································	Duct 1 blocked and duct	8034551	VMPA1-FB-AP-4-1-S1-RV
			3/5 blocked	0094991	
ub-base – including e	lectrical interlinking ar	nd electronics modules – width 10 mm			
and including c		For fieldbus	Four valve positions	546802	VMPA1-AP-4-1-EMS-8
MIL		For multi-pin plug	Four solenoid coils	546806	VMPA1-AP-4-1-EMM-4
			Eight solenoid coils	546804	VMPA1-AP-4-1-EMM-4
			Light solenoid cons	540004	VMI A1-AI -4-1-LMIM-0
nscription label holder	for sub-base – width 1	0 mm			
		For foil		533362	VMPA1-ST-1-4
		Inscription label holder for sub-base, transp	arent, for naper foil label	555502	
	-	For IBS		544384	VMPA1-ST-2-4
_\$\\\		Inscription label holder for sub-base, 4-part	Inscription label holder for sub-base, 4-part, for IBS 6x10		
Se la companya da comp					
	-	Inscription labels, 6 x 10 in frames, pack of	64	18576	IBS-6x10
Sub-base – width 10 m	m				
ณ์	-	For individual connection, without ATEX	Internal pilot air	533394	VMPA1-IC-AP-1
		specification	External pilot air	533395	VMPA1-IC-AP-S-1
		For individual connection, with ATEX	Internal pilot air	8005149	VMPA1-IC-AP-1-EX1E
		specification:	External pilot air	8005150	VMPA1-IC-AP-S-1-EX1E
00000		II 3G Ex nA IIC T4 XGc			
lectronics module – w	idth 10 mm	The Columbia of the second sec		F00040	
	-	For fieldbus connection,	8 coils	533360	VMPA1-FB-EMS-8
		without separate circuit		F00044	
		For fieldbus connection,	8 coils	533361	VMPA1-FB-EMG-8
		with separate circuit		F/0004	
		For fieldbus connection, with enhanced diagnostic function,	8 coils	543331	VMPA1-FB-EMS-D2-8
- with		without separate circuit			
		For fieldbus connection, with enhanced	8 coils	5/2222	VMPA1-FB-EMG-D2-8
		diagnostic function, with enhanced		543333	VINITA1-FD-EINIG-DZ-8
		with separate circuit For multi-pin plug connection	4 coils	537987	VMPA1-MPM-EMM-4

Ordering data					
	Code	Description		Part No.	Туре
Electrical manifold modu	ıle – width 10 mm				
A So	-	For a multi-pin connection and AS-Interface	4 coils	537993	VMPA1-MPM-EV-AB-4
		for a sub-base	8 coils	537994	VMPA1-MPM-EV-AB-8
		For multi-pin plug connection and AS-Inter-	4 coils	537995	VMPA1-MPM-EV-ABV-4
		face for a sub-base with pneumatic supply	8 coils	537996	VMPA1-MPM-EV-ABV-8
		plate (on the left next to the sub-base)			
1 Alban	-	For fieldbus connection and CPI, for sub-bases	MPA size 1 and 2 and	537998	VMPA1-FB-EV-AB
		proportional pressure regulator			
		For fieldbus connection and CPI for a pneumat	ic supply plate	537999	VMPA1-FB-EV-V
a contraction of the second se					

lering data	Code	Mahar famation	DeviA	1.7				
	Code	Valve function	Part No.	Туре				
lividual solenoid va	alve – width 14 mm							
	5/2-way valve							
	Position function 1-32: M	Single solenoid	573718	VMPA14-M1H-M-PI				
	Position function 1-32: MS	Single solenoid	573974	VMPA14-M1H-MS-PI				
	Position function 1-32: J	Double solenoid	573717	VMPA14-M1H-J-PI				
	2x 3/2-way valve							
	Position function 1-32: N	Normally open	573725	VMPA14-M1H-N-PI				
	Position function 1-32: NS	Normally open,	575977	VMPA14-M1H-NS-PI				
		Mechanical spring return						
	Position function 1-32: K	Normally closed	573724	VMPA14-M1H-K-PI				
	Position function 1-32: KS	Normally closed,	575976	VMPA14-M1H-KS-PI				
		Mechanical spring return						
	Position function 1-32: H	1x normally open, 1x normally closed	573726	VMPA14-M1H-H-PI				
	Position function 1-32: HS	1x normally open, 1x normally closed,	575979	VMPA14-M1H-HS-PI				
		Mechanical spring return						
	5/3-way valve		I					
	Position function 1-32: B	Mid-position pressurised	573719	VMPA14-M1H-B-PI				
	Position function 1-32: G	Mid-position closed	573721	VMPA14-M1H-G-PI				
	Position function 1-32: E	Mid-position exhausted	573720	VMPA14-M1H-E-PI				
	3/2-way valve			_				
	Position function 1-32: W	Normally open, external compressed air supply	573723	VMPA14-M1H-W-PI				
	Position function 1-32: X	Normally closed, external compressed air supply	573722	VMPA14-M1H-X-PI				
	2x 2/2-way valve							
	Position function 1-32: D	Normally closed	573727	VMPA14-M1H-D-PI				
	Position function 1-32: DS	Normally closed,	575978	VMPA14-M1H-DS-PI				
		Mechanical spring return	575770					
	Position function 1-32:	1x normally closed,	573728	VMPA14-M1H-I-PI				
		1x normally closed,						
		reversible only						
	all at a set late of t							
int position – Inst	tallation width 14 mm	Course whethe for a course of a course of the second secon	570700					
$\sim$	Position function 1-32: L	Cover plate for a valve position in width 14 mm	573729	VMPA14-RP				
		A self-adhesive label is supplied.						
ck valve – width 1	4 mm							
	-	Check valve for installation in duct 3 or 5	8039820	VMPA14-RV				
S A A A A A A A A A A A A A A A A A A A		(scope of delivery: 10 check valves, one assembly tool)	0000020					
aly								

	Code	Description		Part No.	Туре
Sub-base – width 14 i	nm				
	-	For multi-pin plug/fieldbus, four valve	No duct separation	8074666	VMPA14-FB-AP-4-1
		positions, no electrical interlinking module	Duct 1 blocked	8043928	VMPA14-FB-AP-4-1-T1
			Duct 1 blocked and duct	8043929	VMPA14-FB-AP-4-1-S1
			3/5 blocked		
Sub-base – including	electrical interlinking	and electronics modules – width 14 mm	-		
	-	For fieldbus	Four valve positions	8066778	VMPA14-AP-4-1-EMS-8
		For multi-pin plug	Four solenoid coils	8066779	VMPA14-AP-4-1-EMM-4
			Eight solenoid coils	8066780	VMPA14-AP-4-1-EMM-8
Inscription label hold	er for sub-base – widt	For foil		8085996	VMPA14-ST-1-4
	-		For foil Inscription label holder for sub-base, transparent, for paper foil label		
$\nabla$		inscription tabet noticer for sub-base, trainsp	areni, ioi paper ion iabei		
RC X	_	For IBS		8085997	VMPA14-ST-2-4
		Inscription label holder for sub-base, 4-part,	for IBS 6x10		
YSI/					
$\land$	-	Inscription labels, 6 x 10 in frames, pack of 6	54	18576	IBS-6x10
Sub-base – width 14 i	mm				
M	-	For individual connection, without ATEX	Internal pilot air	8023666	VMPA14-IC-AP-1
		specification	External pilot air	8023667	VMPA14-IC-AP-S-1
A Contraction		For individual connection, with ATEX	Internal pilot air	8023668	VMPA14-IC-AP-1-EX1E
WW SOR		specification:	External pilot air	8023669	VMPA14-IC-AP-S1-EX1E
		II 3G Ex nA IIC T4 XGc			

Ordering data					
	Code	Description		Part No.	Туре
Electronics module – w	vidth 14 mm				
	-	For fieldbus connection, without separate circuit	8 coils	8066764	VMPA14-FB-EMS-8
		For fieldbus connection, with separate circuit	8 coils	8066765	VMPA14-FB-EMG-8
		For fieldbus connection, with enhanced diagnostic function, without separate circuit	8 coils	8066766	VMPA14-FB-EMS-D2-8
		For fieldbus connection, with enhanced diagnostic function, with separate circuit	8 coils	8066767	VMPA14-FB-EMG-D2-8
		For multi-pin plug connection	4 coils	8066768	VMPA14-MPM-EMM-4
			8 coils	8066769	VMPA14-MPM-EMM-8
Electrical manifold mo	dule – width 14 mm				
	-	For a multi-pin connection and AS-Interface	4 coils	8066770	VMPA14-MPM-EV-AB-4
		for a sub-base	8 coils	8066771	VMPA14-MPM-EV-AB-8
		For multi-pin plug connection and AS-Inter- face for a sub-base with pneumatic supply	4 coils	8066772	VMPA14-MPM-EV-ABV-4
		plate (on the left next to the sub-base)	8 coils	8066773	VMPA14-MPM-EV-ABV-8
	-	For fieldbus connection and CPI, for sub-base	s MPA size 14	8066774	VMPA14-FB-EV-AB

	Code	Valve function	Part No.	Туре				
ual solenoid va	lve – width 20 mm							
<	5/2-way valve	5/2-way valve						
$\sim$	Position function 1-32: M	Single solenoid	537952	VMPA2-M1H-M-PI				
	Position function 1-32: MS	Single solenoid, mechanical spring return	571333	VMPA2-M1H-MS-PI				
	Position function 1-32: J	Double solenoid	537953	VMPA2-M1H-J-PI				
	2x 3/2-way valve		I.					
	Position function 1-32: N	Normally open	537958	VMPA2-M1H-N-PI				
	Position function 1-32: NS	Normally open,	568655	VMPA2-M1H-NS-PI				
		Mechanical spring return						
	Position function 1-32: K	Normally closed	537957	VMPA2-M1H-K-PI				
	Position function 1-32: KS	Normally closed,	568656	VMPA2-M1H-KS-PI				
		Mechanical spring return						
	Position function 1-32: H	1x normally open, 1x normally closed	537959	VMPA2-M1H-H-PI				
	Position function 1-32: HS	1x normally open, 1x normally closed,	568658	VMPA2-M1H-HS-PI				
	Mechanical spring return							
	5/3-way valve							
	Position function 1-32: B	Mid-position pressurised	537954	VMPA2-M1H-B-PI				
	Position function 1-32: G	Mid-position closed	537955	VMPA2-M1H-G-PI				
	Position function 1-32: E	Mid-position exhausted	537956	VMPA2-M1H-E-PI				
	1x 3/2-way valve							
	Position function 1-32: W	Normally open, external compressed air supply	540051	VMPA2-M1H-W-PI				
	Position function 1-32: X	Normally closed, external compressed air supply	537961	VMPA2-M1H-X-PI				
	2x 2/2-way valve							
	Position function 1-32: D	Normally closed	537960	VMPA2-M1H-D-PI				
	Position function 1-32: DS	Normally closed,	568657	VMPA2-M1H-DS-PI				
		Mechanical spring return						
	Position function 1-32: I	1x normally closed,	543703	VMPA2-M1H-I-PI				
		1x normally closed, reversible only						
nosition – Inst	allation width 20 mm							
Position 1130	Position function 1-32: L	Cover plate for a valve position in width 20 mm	537962	VMPA2-RP				
~		A self-adhesive label is supplied.	557762					
Me								

	Code	Valve function			Part No.	Туре
ertical stacking modu	ıles – width 20 mm					
1	Pressure regulator 1-32: PA	Pressure regulator plate	For port 1	0.5 8.5 bar	543342	VMPA2-B8-R1C2-C-10
	Pressure regulator 1-32: PF	(with 10 mm cartridge		0.5 5 bar	549055	VMPA2-B8-R1C2-C-06
	Pressure regulator 1-32: PC	connection for pressure	For port 2	2 8.5 bar	543343	VMPA2-B8-R2C2-C-10
	Pressure regulator 1-32: PH	gauge)		2 5 bar	549056	VMPA2-B8-R2C2-C-06
	Pressure regulator 1-32: PB		For port 4	2 8.5 bar	543344	VMPA2-B8-R3C2-C-10
	Pressure regulator 1-32: PG			2 5 bar	549057	VMPA2-B8-R3C2-C-06
	Pressure regulator 1-32: PL		For port 2, reversible	0.5 8.5 bar	543347	VMPA2-B8-R6C2-C-10
	Pressure regulator 1-32: PN			0.5 5 bar	549113	VMPA2-B8-R6C2-C-06
	Pressure regulator 1-32: PK		For port 4, reversible	0.5 8.5 bar	543348	VMPA2-B8-R7C2-C-10
	Pressure regulator 1-32: PM			0.5 5 bar	549114	VMPA2-B8-R7C2-C-06
	Pressure regulator 1-32: PV	Vertical pressure supply plate	Connecting thread	G1/8	8029486	VMPA2-VSP-0
÷	_		With fitting for tubing	6 mm	8035441	VMPA2-VSP-QS6
× •			0.D.	8 mm	8029488	VMPA2-VSP-QS8
				10 mm	8029489	VMPA2-VSP-QS10
				1/4"	8035442	VMPA2-VSP-QS1/4
				5/16"	8029491	VMPA2-VSP-QS5/16
$\sim$	Pressure gauge 1-32: T	Pressure gauge, 10 mm	Display unit	0 16 bar	543487	PAGN-26-16-P10
( A)		cartridge connection, for	bar/psi	0 10 bar	543488	PAGN-26-10-P10
	-	pressure regulating valve	Display unit	0 1.0 MPa	563736	PAGN-26-1M-P10
-		plate	MPa	0 1.6 MPa	563735	PAGN-26-1.6M-P10
ð	Pressure gauge 1-32: VF	Threaded adapter for cartr	idge connection 10 mm to	thread G1/8	565811	QSP10-G1/8
eck valve – width 20	0 mm	l				
	-		Check valve for installation in duct 3 or 5 (scope of delivery: 10 check valves, one assembly tool)		8039821	VMPA2-RV

Ordering data					
	Code	Description		Part No.	Туре
Sub-base – width 20 mr	n				
	-	For multi-pin plug/fieldbus, two valve	No duct separation	538000	VMPA2-FB-AP-2-1
		positions, no electrical interlinking module	Duct 1 blocked	538677	VMPA2-FB-AP-2-1-T0
			Duct 1 blocked and duct	555902	VMPA2-FB-AP-2-1-S0
			3/5 blocked		
Sub-bases for check valv	ves – width 20 mm				
	-	For multi-pin plug/fieldbus, two valve	No duct separation	578863	VMPA2-FB-APF-2-1
		positions, no electrical interlinking module	Duct 1 blocked	578864	VMPA2-FB-APF-2-1-T0
			Duct 1 blocked and duct	578865	VMPA2-FB-APF-2-1-S0
			3/5 blocked		
Sub-bases with check va	alve in duct 3 and 5 – width 20	mm			
	-	For multi-pin plug/fieldbus, two valve	No duct separation	8034548	VMPA2-FB-AP-2-1-RV
		positions, no electrical interlinking module	Duct 1 blocked	8034550	VMPA2-FB-AP-2-1-T0-RV
			Duct 1 blocked and duct	8034552	VMPA2-FB-AP-2-1-S0-RV
			3/5 blocked		
Sub-base – including el	ectrical interlinking and electr	onics modules – width 20 mm	•		·
	-	For fieldbus	Two valve positions	546803	VMPA2-AP-2-1-EMS-4
	F	For multi-pin plug	Two solenoid coils	546807	VMPA2-AP-2-1-EMM-2
			Four solenoid coils	546805	VMPA2-AP-2-1-EMM-4
Inscription label holder	for sub-base – width 20 mm				
	-	For foil		533362	VMPA1-ST-1-4
		Inscription label holder for sub-base, transpa	arent, for paper foil label		
&©	-	For IBS		544384	VMPA1-ST-2-4
		Inscription label holder for sub-base, 4-part,	for IBS 6x10		
	-	Inscription labels, 6 x 10 in frames, pack of 6	4	18576	IBS-6x10
<u> </u>					
Sub-base – width 20 mr	n				
n 1	-	For individual connection, without ATEX	Internal pilot air	537981	VMPA2-IC-AP-1
		specification	External pilot air	537982	VMPA2-IC-AP-S-1
		For individual connection, with ATEX	Internal pilot air	8005151	VMPA2-IC-AP-1-EX1E
		specification:	External pilot air	8005152	VMPA2-IC-AP-S-1-EX1E
100000		II 3G Ex nA IIC T4 XGc			
No and					

Ordering data					
	Code	Description		Part No.	Туре
Electronics module – w	idth 20 mm				
	-	For fieldbus connection, without separate circuit	4 coils	537983	VMPA2-FB-EMS-4
		For fieldbus connection, with separate circuit	4 coils	537984	VMPA2-FB-EMG-4
		For fieldbus connection, with enhanced diagnostic function, without separate circuit	4 coils	543332	VMPA2-FB-EMS-D2-4
		For fieldbus connection, with enhanced diagnostic function, with separate circuit	4 coils	543334	VMPA2-FB-EMG-D2-4
		For multi-pin plug connection	2 coils	537985	VMPA2-MPM-EMM-2
			8 coils	537986	VMPA2-MPM-EMM-4
Electrical manifold mod	ule – width 20 mi	m			
	-	For a multi-pin connection and AS-Interface for a sub-base	2 coils	537989	VMPA2-MPM-EV-AB-2
			4 coils	537993	VMPA1-MPM-EV-AB-4
		For multi-pin plug connection and AS-Interface for a sub-base	2 coils	537991	VMPA2-MPM-EV-ABV-2
×××		with pneumatic supply plate (on the left next to the sub-base)	4 coils	537995	VMPA1-MPM-EV-ABV-4
	-	For fieldbus connection and CPI, for sub-bases MPA size 1 and 2 pressure regulator	and proportional	537998	VMPA1-FB-EV-AB
		For fieldbus connection and CPI for a pneumatic supply plate		537999	VMPA1-FB-EV-V

Ordering data						
	Code	Full-scale linearity error	Input pressure 1	Pressure regulation	Part No.	Туре
				range		
Proportional-pressure r	egulator					
	QA	2%	0 4 bar	0.02 2 bar	542220	VPPM-6TA-L-1-F-0L2H
$\searrow$	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
$\searrow \bigcirc [$	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
$\checkmark$	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

Ordering data			
Designation		Part No.	Туре
Sub-base for proportion	al pressure regulator		
	Sub-base without electrical manifold module and without electronics module	542223	VMPA-FB-AP-P1
Electronics module for p	roportional pressure regulator		
	-	542224	VMPA-FB-EMG-P1

nation				Part No.	Туре
ate and fieldbus	pneumatic interface				
	Right end plate with port 82/84 for ducted ex	xhaust air (connecting threa	d M5)	8029133	VMPA-EPR-G
	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				VMPA-FB-EPLM-G
	Pneumatic interface, ducted exhaust air, exte	ernal pilot air		533369	VMPA-FB-EPL-E
No Contraction of the second s	Pneumatic interface, ducted exhaust air, exte	ernal pilot air, for CPX metal	interlinking module	552285	VMPA-FB-EPLM-E
à	Pneumatic interface, flat plate silencer, inter	nal pilot air		533372	VMPA-FB-EPL-GU
Re l	Pneumatic interface, flat plate silencer, inter	nal pilot air, for CPX metal in	terlinking module	552288	VMPA-FB-EPLM-GU
	Pneumatic interface, flat plate silencer, external pilot air			533371	VMPA-FB-EPL-EU
	Pneumatic interface, flat plate silencer, exter	nal pilot air, for CPX metal ir	terlinking module	552287	VMPA-FB-EPLM-EU
cal interface for A	AS-Interface				
	4 inputs/4 outputs,	Internal pilot air	Ducted exhaust air	546989	VMPA-ASI-EPL-G-4E4A-Z
	to spec. 2.1		Silencers	546991	VMPA-ASI-EPL-GU-4E4A-Z
		External pilot air	Ducted exhaust air	546988	VMPA-ASI-EPL-E-4E4A-Z
			Silencers	546990	VMPA-ASI-EPL-EU-4E4A-Z
	8 inputs/8 outputs,	Internal pilot air	Ducted exhaust air	546993	VMPA-ASI-EPL-G-8E8A-Z
	to spec. 2.1		Silencers	546995	VMPA-ASI-EPL-GU-8E8A-Z
		External pilot air	Ducted exhaust air	546992	VMPA-ASI-EPL-E-8E8A-Z
			Silencers	546994	VMPA-ASI-EPL-EU-8E8A-Z
	8 inputs/8 outputs,	Internal pilot air	Ducted exhaust air	573184	VMPA-ASI-EPL-G-8E8A-CE
	to spec. 3.0, expanded addressing range	internat proc an	Silencers	573186	VMPA-ASI-EPL-GU-8E8A-CE
		External pilot air	Ducted exhaust air	573183	VMPA-ASI-EPL-E-8E8A-CE
			Silencers	573185	VMPA-ASI-EPL-EU-8E8A-CE
				5,5105	
ase for AS-Interfa					
	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		
	Socket, Sub-D, 25-pin	525676	CPX-AB-1-SUB-BU-25POL		
<b>N</b>	Dose, Schnellanschluss <sup>,</sup> 4-polig	525636	CPX-AB-4-HAR-4POL		
ical interface for C	Pl				
	External pilot air, ducted exhaust air			546983	VMPA-CPI-EPL-E
- A A	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
ical interface for n	nulti-pin plug connection			5/0000	
	External pilot air, ducted exhaust air			540893	VMPA1-MPM-EPL-E
	Internal pilot air, ducted exhaust air			540894	VMPA1-MPM-EPL-G
<b>N 9</b>	External pilot air, silencer			540895	VMPA1-MPM-EPL-EU
	Internal pilot air, silencer			540896	VMPA1-MPM-EPL-GU

Ordering data				
Designation		Part No.	Туре	
Electrical supply plat	e			
	Plug connection M18, 3-pin			VMPA-FB-SP-V
	Plug connection 7/8", 5-pin			VMPA-FB-SP-7/8-V-5POL
	Plug connection 7/8", 4-pin			VMPA-FB-SP-7/8-V-4POL
Pressure sensor				
( a d	For monitoring the operating pressure in duct 1		541085	VMPA-FB-PS-1
A A A A A A A A A A A A A A A A A A A	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			559638	
	Cover plate			VMPA-P-RP
	Cover cap for manual override with coded cover cap, manual override non-d	Cover cap for manual override with coded cover cap, manual override non-detenting (pack of 10)		
	Cover cap for manual override, concealed, manual override blocked (pack of	10)	540898	VMPA-HBV-B
	Cover cap for manual override, manual override detenting, can be operated manually without accessories (pack of 10)			VAMC-L1-CD
	Inscription label holder for inscription label and cover for signal status indication and manual override (blocked) (pack of 10)			ASLR-D-L1
Seal for sub-base				
		luct separation	533359	VMPA1-DP
J.X.Jr		1 separated	533363	VMPA1-DP-P
	Duct	: 3/5 separated	533364	VMPA1-DP-RS
and the second sec	Duct	1 and 3/5 separated	533365	VMPA1-DP-PRS
7	MPA with flat plate silencer No c	luct 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

		Part No.	Туре
Ducted exhaust air, with 10 mm push-in connector		533375	VMPA-AP
Ducted exhaust air, with connector QS-3/8			VMPA-AP-3/8
Flat plate silencer			VMPA-APU
xhaust plate)		I	
For ducted exhaust air		533354	VMPA1-FB-SP
For flat plate silencer		533353	VMPA1-FB-SPU
on. electrical			
		533198	VMPA-KMS-H
	2.5 m		VMPA-KMS1-8-2.5
			VMPA-KMS1-8-5
			VMPA-KMS1-8-10
PVC interconnecting cable for 24 solenoid coils			VMPA-KMS1-24-2.5
			VMPA-KMS1-24-5
			VMPA-KMS1-24-10
PLIR interconnecting cable for 8 solenoid coils			VMPA-KMS2-8-2.5-PUR
			VMPA-KMS2-8-5-PUR
			VMPA-KMS2-8-10-PUR
PLIP interconnecting cable for 2/ solenoid coils			VMPA-KMS2-24-2.5-PUR
			VMPA-KMS2-24-5-PUR
Suitable for chergy chains			VMPA-KMS2-24-10-PUR
	10 11	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	VMI A-KM32-24-10-10K
iterface connection			
<ul> <li>Straight socket, M12 x 1, 5-pin, A-coded</li> <li>Straight plug, M12 x 1, 4-pin, A-coded</li> </ul>	0.5 m	8000208	NEBU-M12G5-K-0.5-M12G4
Modular system for a choice of connecting cables		-	→ Internet: nebu
• Angled plug, 5-pin	0.25 m	540327	KVI-CP-3-WS-WD-0.25
Angled socket, 5-pin	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
• Straight plug, 5-pin	2 m	540332	KVI-CP-3-GS-GD-2
<ul> <li>Straight socket, 5-pin</li> </ul>	5 m	540333	KVI-CP-3-GS-GD-5
	Ducted exhaust air, with connector QS-3/8         Flat plate silencer         xhaust plate)         For ducted exhaust air         For flat plate silencer         ion, electrical         Cover without connecting cable, for self-assembly         PVC interconnecting cable for 8 solenoid coils         PVC interconnecting cable for 24 solenoid coils         PUR interconnecting cable for 24 solenoid coils, suitable for energy chains         PUR interconnecting cable for 24 solenoid coils, suitable for energy chains         terface connection         • Straight socket, M12 x 1, 5-pin, A-coded         • Straight plug, M12 x 1, 4-pin, A-coded         Modular system for a choice of connecting cables         onnection         • Angled plug, 5-pin         • Angled socket, 5-pin	Ducted exhaust air, with connector QS-3/8         Flat plate silencer         For ducted exhaust air         For flat plate silencer         On, electrical         Cover without connecting cable, for self-assembly         PVC interconnecting cable for 8 solenoid coils         2.5 m         5 m         10 m         PVC interconnecting cable for 24 solenoid coils         2.5 m         5 m         10 m         PUR interconnecting cable for 24 solenoid coils, suitable for energy chains         5 m         10 m         PUR interconnecting cable for 24 solenoid coils, suitable for energy chains         5 m         10 m         PUR interconnecting cable for 24 solenoid coils, suitable for energy chains         5 m         10 m         PUR interconnecting cable for 24 solenoid coils, suitable for energy chains         5 m         10 m         PUR interconnecting         • Straight plug, M12 x 1, 5-pin, A-coded         • Straight plug, M12 x 1, 4-pin, A-coded         • Straight plug, M12 x 1, 4-pin, A-coded         Modular system for a choice of connecting cables         Onnection         • Angled plug, 5-pin         • Angled socket, 5-pin	Ducted exhaust air, with 10 mm push-in connector       533375         Ducted exhaust air, with connector QS-3/8       541629         Flat plate silencer       533374         For ducted exhaust air       533354         For ducted exhaust air       533354         For flat plate silencer       533353         On, electrical       533196         Over without connecting cable, for self-assembly       533196         PVC interconnecting cable for 8 solenoid coils       2.5 m       533197         PVC interconnecting cable for 24 solenoid coils       2.5 m       533192         IO m       533199       10 m       533193         PVC interconnecting cable for 24 solenoid coils,       2.5 m       533360         suitable for energy chains       5 m       533350         IO m       533390       10 m       53350         PUR interconnecting cable for 24 solenoid coils,       2.5 m       53350         suitable for energy chains       5 m       53350       10 m       53350         PUR interconnecting cable for 24 solenoid coils,       2.5 m       53350       10 m       533503         suitable for energy chains       5 m       533503       10 m       533503       10 m       533503         terface connection </td

<b>Ordering data</b> Designation			Part No.	Туре	PU <sup>1</sup>
Push-in connector for s	ub-base, pneumatic interface, supply plate				
	Connecting thread M5 for tubing O.D.	3 mm	153313	QSM-M5-3-I	10
		4 mm	153315	QSM-M5-4-I	10
			578370	NPQH-DK-M5-Q4-P10	10
•		6 mm	153317	QSM-M5-6-I	10
			578371	NPQH-DK-M5-Q6-P10	10
		5/32"	130593	QSM-M5-5/32-I-U-M	1
		3/16"	183750	QSM-M5-3/16-I-U-M	1
		1/4"	130591	QSM-M5-1/4-I-U-M	50
	Connecting thread M7 for tubing O.D.	4 mm	153319	QSM-M7-4-I	10
			578372	NPQH-DK-M7-Q4-P10	10
		6 mm	153321	QSM-M7-6-I	10
			132919	QSM-M7-6-I-R-100	10
			578373	NPQH-DK-M7-Q6-P10	10
		3/16"	183739	QSM-M7-3/16-I-U-M	1
		1/4"	183740	QSM-M7-1/4-I-U-M	50
	Connecting thread G1/8 for tubing O.D.	6 mm	186107	QS-G1/8-6-I	10
			578375	NPQH-DK-G18-Q6-P10	10
		8 mm	186109	QS-G1/8-8-I	10
			578376	NPQH-DK-G18-Q8-P10	10
		1/4"	183741	QS-1/8-1/4-I-U-M	1
		5/16"	183742	QS-1/8-5/16-I-U-M	1
	Connecting thread G1/4 for tubing O.D.	8 mm	186110	QS-G1/4-8-I	10
		-	578377	NPQH-DK-G14-Q8-P10	10
		10 mm	186112	QS-G1/4-10-I	10
		10 1111	578378	NPQH-DK-G14-Q10-P10	10
		5/16"	183743	QS-1/4-5/16-I-U-M	10
		3/8"	183744	QS-1/4-3/8-I-U-M	1
		570	100/11		-
ilencers					
$\sim$	Connecting thread	M5	165003	UC-M5	1
		M7	161418	UC-M7	1
		G1/4	165004	UC-1/4	1
		G1/8	161419	UC-1/8	1
	Push-in sleeve connection	3 mm	165005	UC-QS-3H	1
		4 mm	165006	UC-QS-4H	1
		6 mm	165007	UC-QS-6H	1
		8 mm	175611	UC-QS-8H	1
		10 mm	526475	UC-QS-10H	1
1:					
lindstopfen	M5 thread		3843	B-M5	10
The second s	Mis thread		5645	CM-O	10
J.			578404	NPQH-BK-M5-P10	10
~	M7 thread		174309	B-M7	10
	in thead	578405	NPQH-BK-M7-P10	10	
	G1/8 thread	3568	B-1/8	10	
	G1/6 lileau		578406	NPQH-BK-G18-P10	10
					10
	C1/// thread			B-1/4	
	G1/4 thread		3569		
	G1/4 thread		578407	NPQH-BK-G14-P10	10
				NPQH-BK-G14-P10	10
	G1/4 thread Blanking plug for tubing O.D.	4 mm		NPQH-BK-G14-P10 QSC-4H	
		4 mm 6 mm	578407		10
			578407	QSC-4H	10
		6 mm	578407 153267 153268	QSC-4H QSC-6H	10 10 10
lug		6 mm 8 mm	578407 153267 153268 153269	QSC-4H QSC-6H QSC-8H	10 10 10 10
Plug		6 mm 8 mm 10 mm 3/16"	578407 153267 153268 153269 153270	QSC-4H QSC-6H QSC-8H QSC-10H QBC-3/16H-U	10 10 10 10 10 10 10 10
		6 mm 8 mm 10 mm	578407 153267 153268 153269 153270 564785	QSC-4H QSC-6H QSC-8H QSC-10H	10 10 10 10 10 10

Ordering data				
Designation			Part No.	Туре
Inscription labels				
- ALAR	For foil Inscription label holder for sub-base, transparent, for paper foil label	Can be used for VMPA1, VMPA2	533362	VMPA1-ST-1-4
		Can be used for VMPA14	8085996	VMPA14-ST-1-4
	For IBS Inscription label holder for sub-base, 4-part, for IBS 6x10		544384	VMPA1-ST-2-4
	Can be used for VMPA14	8085997	VMPA14-ST-2-4	
	Inscription labels, 6 x 10 in frames, pack of 64	1	18576	IBS-6x10
	Inscription label holder for an inscription label and a cover for the manual override, pack of 10			ASLR-D-L1
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	
Jser documentation				
	MPA pneumatic components	German	534240	P.BE-MPA-DE
		English	534241	P.BE-MPA-EN
		French	534243	P.BE-MPA-FR
$\checkmark$		Spanish	534242	P.BE-MPA-ES
		Italian	534244	P.BE-MPA-IT
	Manual – MPA electronic components	German	562112	P.BE-MPA-Elektronik-DE
	(pneumatic modules, pressure sensors, proportional pressure	English	562113	P.BE-MPA-Elektronik-EN
	regulators, etc.)	French	562115	P.BE-MPA-Elektronik-FR
		Spanish	562114	P.BE-MPA-Elektronik-ES
		Italian	562116	P.BE-MPA-Elektronik-IT

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