Valve terminal MPA – 3 variants, 3 x excellent

Highly communicative!

Maximum function integration, many electrical connection options, multi-pin plug, Festo I-Port, fieldbus and a comprehensive diagnostics concept: that is the MPA. And it is extremely compact and has the latest valve technology.

**New: MPA-C – hygienic**
Tough, even when it comes to cleaning. Degree of protection IP69K and the highest Festo corrosion resistance class, CRC4.

**MPA-L + CTEU = basic fieldbus communication**
A simple solution for quickly and directly connecting valve terminals with all common fieldbus technologies. Can be expanded into a small installation system.

**MPA-S – communicative**
Has all the advantages even in complex installation situations, with reduced total costs, e.g. thanks to multiplexing (see page 9).

**MPA + CPX = even more options**
The perfect combination for an even larger range of applications for MPA-L and -S. Ideal as the standard in factory automation or the process industry. Maximum process safety and minimal installation effort mean outstanding economic efficiency.

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**Highlights**

**MPA-C**
- Clean Design valve terminal to IP69K
- FDA-compliant materials, NSF-H1 lubrication
- Valves on individual sub-bases

**MPA-L**
- Valves on individual or 4-valve sub-bases
- Inexpensive tamper-proof fixed flow restrictor
- Self-configuring Festo I-Port connection

**MPA-S**
- 128 valve functions/64 valve positions
- Multiplexing with proportional pressure regulators
- Comprehensive diagnostics management
MPA-S – communicative and with many functions

Valve terminal variant MPA-S/CPX

MPA is the right solution for every situation thanks to its design. With identical valves but different layouts, each variant has its own particular strengths.

MPA-S, for example, is highly communicative and can be equipped with many additional functions. For the MPA-S/CPX, the integrated serial communication system enables up to 128 solenoid coils, the function integration of proportional pressure regulators and pressure sensors, parameterisation and diagnostics. In combination with CPX, the MPA-S is a communication all-rounder.

Advantages
• Function integration and diagnostics management for up to 128 solenoid coils/64 valve positions
• Integrated pressure sensors and proportional pressure regulators with multiplexing option
• Broad range of operating voltage connections 24 V +/− 25%
• Electropneumatic installation concept: centralised, decentralised, hybrid

Versatile: electrical supply plates, serial valve actuation and large number of valves

It is possible to create voltage zones on a single valve terminal and to expand the system for the greatest number of valves and valve functions. Several valve terminals can thus be combined into a single valve terminal with common bus nodes.

Advantages
• Voltage zones and targeted voltage-free switching
• Greater safety with the PROFIsafe module CPX-FVDA-P2 (only with CPX metal)
• Individual power supply to individual components
• M18 or 7/8" (4- or 5-pin) electrical connection
Valve terminal variant MPA-S/CPX

Convenient:
- large inscription labels
- modular supply plates facilitate the creation of multiple pressure zones as well as numerous additional exhaust and supply ports

Safe operation:
- manual override, non-detent/ detenting or covered
- two-colour on-the-spot diagnostics via LEDs

Reduce standstills:
- two-colour on-the-spot diagnostics via LEDs

Quick to mount:
- directly using screws or on H-rail

Simple electrical connections:
- Multi-pin plug connection
- Fieldbus connection
- Integrated controller (front-end controller)
- AS-Interface
- CPI system

Practical:
- robust metal threads in the sub-base.
- Optional: pre-installed QS connections

All thanks to serial communication:
- MPA-S with up to 128 solenoid coils/64 valve positions

Width 10 mm and 20 mm
MPA-L – highly modular

Maximum modularity together with top pneumatic performance
Interesting wherever maximum modularity and top pneumatic performance have to be combined at an attractive price: MPA-L. The flexible system with individual sub-bases is modular in single steps. The pneumatic performance can thus be perfectly adapted to any application while saving space and money.

Advantages
• Flexible thanks to a modular tie rod system, which makes it possible to quickly expand the valves in single steps
• Inexpensive 4-valve sub-bases for additional cost advantages
• Fieldbus terminal or multi-pin terminal to IP40 and IP65
• Pneumatic supply from the front or side
• Extremely easy to configure with the product configurator; no special orders required

Sturdy and reliable
Very high quality lightweight plastic housing, indispensable in tough everyday operation with corrosive media or dynamic movements. In addition, it has high flow rates and can be equipped with up to 32 valves in single steps. The bus connection via the Festo I-Port is amazingly flexible. All in all, it is extremely adaptable, particularly if future changes need to be reacted to quickly.

New
The fixed flow restrictor, which is tamper-proof and more economical than conventional flow control valves, means fewer time-consuming adjustments for series machines.

Advantages
• Lightweight materials with improved corrosion resistance
• Inexpensive and tamper-proof fixed flow restrictor for series machines
Modularity in single steps using the MPA-L as an example

Tip
Use the MPA-L with its single-step modularity to optimally utilise the space in your control cabinet. Place additional CPX modules, with the linking end plates CPX-EP...EV-X, in the second row without the additional costs of another fieldbus module.

Modular electrical terminal CPX-L
Control cabinet solutions are now becoming even more inexpensive thanks to the high number of channels to IP20 on our input/output modules CPX-L...3POL and the wide variety of fieldbus modules. Take advantage of the function integration possibilities and the high diagnostic coverage of our CPX in combination with MPA-S and MPA-L.

Advantages
- Very low-cost, space-optimised solution
- Electrical system, pneumatics and drives from a single source
- Complete diagnostics and remote maintenance with CPX on-site
Perfect Clean Design

The MPA-C meets the strictest cleaning requirements. With its degree of protection IP69K and CRC4, the highest corrosion resistance class at Festo, it optimally withstands cleaning with high pressure and foam cleaning – and it can be placed in extremely harsh environments without any problems. Other global standards for the MPA-C: FDA-compliant lubricant NSF-H1.

Configuration options
The MPA-C features electrical interfaces on the front or back, with multi-pin plug, fieldbus or Ethernet via CTEU/CTEL. Manual override can be selected as an option and up to 32 pressure zones can be set up. The working port is freely configurable.

Advantages
• Perfect for the food industry: FDA-compliant lubricant NSF-H1
• Extremely corrosion and media resistant for all environments requiring intensive cleaning
• Cleaning-optimised design and matching Clean Design accessories
• Fieldbus/Ethernet thanks to CTEU with Festo I-Port
• Extremely safe: degree of protection IP69K and redundant sealing system
• Easy to expand thanks to individual sub-bases

Cleanly combined: everything in Clean Design
Perfectly harmonised with each other, because all components are in the Clean Design: the Clean Design valve terminal MPA-C, the FDA-compliant tubing/fitting combination NPCK with PFAN, the electrical connecting cables NEBV and standard drives such as CRDSNU or DSBF.
## Technical data

<table>
<thead>
<tr>
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<th>MPA-S</th>
<th>MPA-L</th>
<th>MPA-C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical connection</strong></td>
<td>PROFIBUS DP, PROFIsafe, DeviceNet, CANopen, INTERBUS, SERCOS III*, POWERLINK*, CC-Link, Ethernet/IP, PROFINET, EtherCAT, front-end controller and others</td>
<td>PROFIBUS, DeviceNet, CANopen, CC-Link, EtherCAT</td>
<td>–</td>
</tr>
<tr>
<td>Bus node CTEU</td>
<td>–</td>
<td>–</td>
<td>PROFIBUS, DeviceNet, CANopen, CC-Link, EtherCAT</td>
</tr>
<tr>
<td>Multi-pin plug</td>
<td>Sub-D, 25-pin</td>
<td>Sub-D, 9-pin</td>
<td>Sub-D, 25-pin</td>
</tr>
<tr>
<td></td>
<td>Sub-D, 25-pin</td>
<td>Sub-D, 44-pin Cable terminal, 34-pin Flat cable, 34-pin</td>
<td>Sub-D, 44-pin</td>
</tr>
<tr>
<td>Others</td>
<td>AS-Interface</td>
<td>AS-Interface (bus node CTEU)</td>
<td>IO-Link (MPA-C via 9-pin Sub-D)</td>
</tr>
<tr>
<td><strong>Valve functions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal housing, piston spool valve</td>
<td>5/2, 5/3, 2x 3/2, 2x 2/2 special functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Polymer housing, poppet valves</td>
<td>5/2, 3/2 special functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Valve size/flow rate (max.)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MPA1 (10 mm)</td>
<td>360 l/min</td>
<td>360 l/min</td>
<td>–</td>
</tr>
<tr>
<td>MPA14 (14 mm)</td>
<td>–</td>
<td>650 l/min</td>
<td>670 l/min</td>
</tr>
<tr>
<td>MPA2 (20 mm)</td>
<td>670 l/min</td>
<td>850 l/min</td>
<td>–</td>
</tr>
<tr>
<td><strong>Solenoid coils/valve positions (max.)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fieldbus</td>
<td>128/64</td>
<td>32/32</td>
<td>32/32</td>
</tr>
<tr>
<td>Electrical multi-pin plug</td>
<td>24/24</td>
<td>32/32</td>
<td>32/32</td>
</tr>
<tr>
<td>CP installation system</td>
<td>32/16</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>AS-Interface</td>
<td>8/8</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Sub-base material</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal</td>
<td></td>
<td></td>
<td>Polymer</td>
</tr>
<tr>
<td><strong>Pressure range (max.)</strong></td>
<td>–1 … 10 bar</td>
<td>(Pressure ranges can be restricted in dependence on the configuration)</td>
<td></td>
</tr>
<tr>
<td><strong>Supply port 1</strong></td>
<td>10 mm, 3/8&quot;</td>
<td>12 mm, 1/2&quot;</td>
<td>16 mm</td>
</tr>
<tr>
<td><strong>Working port 2, 4</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tubing diameter (max.)</td>
<td>4, 6 mm, 3/16&quot;, 1/4&quot;</td>
<td>4, 6 mm, 5/32&quot;, 1/4&quot;</td>
<td>–</td>
</tr>
<tr>
<td>MPA1</td>
<td>4, 6 mm, 3/16&quot;, 1/4&quot;</td>
<td>4, 6 mm, 5/32&quot;, 1/4&quot;</td>
<td>–</td>
</tr>
<tr>
<td>MPA14</td>
<td>–</td>
<td>6, 8 mm / 1/4&quot;, 5/16&quot;</td>
<td>6, 8, 10, 12 mm</td>
</tr>
<tr>
<td>MPA2</td>
<td>6, 8 mm, 1/4&quot;, 5/16&quot;</td>
<td>8, 10 mm, 5/16&quot;, 3/8&quot;</td>
<td>–</td>
</tr>
<tr>
<td><strong>Additional pneumatic functions</strong></td>
<td>• Integrated proportional pressure regulators, pressure sensors</td>
<td></td>
<td>Fixed flow restrictor</td>
</tr>
<tr>
<td></td>
<td>• Manually adjustable pressure regulators, pressure shut-off plate, vertical supply plate</td>
<td></td>
<td>–</td>
</tr>
<tr>
<td><strong>Additional electrical functions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fieldbus</td>
<td>• Potential-isolated valves (CPI, CPX)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Integrated pressure sensor module (CPX)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Enhanced diagnostic function (CPX)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Condition monitoring (CPX)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Operating voltage</strong></td>
<td>24 V DC ± 25%</td>
<td>24 V DC ± 10%</td>
<td>24 V ± 25%</td>
</tr>
<tr>
<td><strong>Ambient temperature</strong></td>
<td>–5 … 50 °C</td>
<td>–5 … 60 °C</td>
<td>–5 … 60 °C</td>
</tr>
<tr>
<td><strong>Degree of protection</strong></td>
<td>IP40, IP65/67**</td>
<td>IP40, IP65/67**</td>
<td>IP69K (CRC4)**</td>
</tr>
</tbody>
</table>

* Available soon  ** Please note possible restrictions of the IP protection class → ATEX declaration of conformity  
*** CRC4: highest corrosion resistance class to Festo standard
**Electrical and pneumatic functionality**

### MPA with fieldbus connection and terminal CPX

For both small and large solutions for pneumatics and electronics: the integrated bus node facilitates all options.

**Advantages**
- Serial internal communication and linking of fieldbus interfaces with up to 16 sub-bases (128 valves, up to 512 I/Os)
- Module for electrical valve activation with or without galvanic isolation
- Any compressed air supply and creation of pressure zones
- Digital and analogue I/Os
- Control of electric and pneumatic drives
- Diagnostics and condition monitoring

**Available for:**
- MPA-S
- MPA-L

### MPA with bus node CTEU

Simply connect and get started: for quickly and directly connecting valve terminals with all common fieldbus technologies.

**Advantages**
- Intelligent and low-cost alternatives to multi-pin solutions
- Connect to the control environment easily and quickly
- Basic diagnostics and basic parameters

**Expansion into a small installation system**
- With adapter CAPC, connection of 2 MPA-L or 2 input modules with only 1 bus node
- CPX – CTEL can be expanded into a small installation system: up to 4 MPA-L or 4 input modules

**Available for:**
- MPA-L
- MPA-C

### MPA with AS-Interface

For the simultaneous transmission of data and power. The coded cable shape prevents polarity reversal; electrical supply plates are not required. Ideal for installations that are spread out over a large area.

**MPA-S versions**
- With 2 to 8 modular valve positions. For 2 to 8 valves MPA1 or 2 to 8 valves MPA2 (can be mixed)
- 4 or 8 inputs integrated

**MPA-C/-L versions**
- Bus node CTEU-ASI
- 2 to 16 valves with ASI profile 7.A.7

**Available for:**
- MPA-S
- MPA-L
- MPA-C

### MPA with multi-pin plug connection

For 24 valves/solenoid coils with MPA-S. Even up to 32 valves/ solenoid coils (can be mixed) for MPA-L and MPA-C.

**Advantages**
- Control via 24 V DC
- Cable for energy chains and corresponding IP class
- Any compressed air supply and creation of pressure zones

**Available for:**
- MPA-S
- MPA-L
- MPA-C

### MPA with individual connection

Valves on individual sub-bases can also be used for actuators which are further away from the valve terminal. A 4-pin, threaded M8 electrical connection is required in this case.
Installation system CPI (MPA-S) and CTEL/Festo I-Port

For connection to a higher-level bus node or as an integrated controller (front-end control), e.g. for the connection of decentralised I/O modules.

Ingenious: the power supply is integrated in the communication cable, and hybrid installation systems (centralised and decentralised) with various valve series, e.g. as a subsystem on a CPX-MPA, are also possible.

Advantages of installation system CTEL (I-Port)
- Reasonably priced basic functions
- Self-configuring

Advantages of installation system CPI
- More participants thanks to up to four modules per string
- Various voltage zones possible by means of an additional power supply

Centralised installation
- Large number of valves reduces costs
- Function integration saves time and money
- High-performance CPX installation system ensures maximum modularity and flexibility

Decentralised installation
- Short tubes make the pneumatics faster: 30% shorter cycle times and 50% lower air consumption
- Direct connection of compact I/Os possible

Available for:
- MPA-L
- MPA-S

Unique worldwide. Combined pressure detection and pressure control with the proportional pressure regulator VPPM-MPA

Unique worldwide! Extremely accurate cascade control allows pressure changes during operation within a range of 0 ... 2/0 ... 6/0 ... 10 bar and with flow rates of 1400 l/min at the valve.

Advantages
- One valve, variable pressure ranges
- Digitised analogue values enable individual pressure and force control within processes
- 3 presets selectable via CPX: fast, universal, precise
- Commissioning via handheld terminal
- Integrated diagnostic functions, including remote maintenance, e-mail/SMS alarm, handheld terminal CPX-MMI or CPX maintenance tool

Multiplexing – same functionality with fewer proportional valves
Multiplexing saves up to 8 proportional valves per pressure zone on a valve terminal. The process is simple: with multiplexing, multiple pressures are sequentially transferred to various actuators through downstream directional valves. The sequential switching is performed with pressure control or time control. This makes it possible to control up to eight downstream directional control valves on the valve terminal MPA-S with one proportional valve, depending on the application and connection frequency.

Advantages
- Significantly reduced system costs
- Less installation effort
- Tested and preassembled module

Available for:
- MPA-S
- MPA-L

VPPM ensures a precise contact pressure that takes into account the material, machining method and tool.
Ready to install directly on the fieldbus: MPA pressure sensor
Pressure information via fieldbus communication, via handheld terminal or on-site via LED.
Pressure range 0 ... 10 bar.

Advantages
- Usable for ducts 1, 3, 5 and external pressure without any assembly and installation effort
- Parameterisation of the switching points in the central control system
- Excellent process safety thanks to accurate and reliable pressure information
- Static and dynamic process control
- System diagnostics
- Tamper-proof

MPA pressure regulator
The force of the controlled actuator can be influenced via a pressure regulator.

Advantages
- Pressure control can be adjusted on-site
- Minor readjustments possible within the process at any time
- Rotatable, easily readable pressure gauge (optional) for monitoring purposes
- Ready to install, no assembly and installation effort required

MPA valve technology
In certain applications, the valve technology can be vital for a long service life and fault-free functioning. That is why the MPA valve family consists of piston spool valves with the patented cartridge principle as well as poppet valves. Here is a brief overview:

MPA piston spool valve
Advantages
- Smaller valves with higher flow rates for reduced costs
- Minimal leakage
- Reversible – two pressures at a single valve at the same time
- Non-overlapping – totally reliable separation of the air ducts during dual pressure operation
- Higher pressures of up to 10 bar for maximum energy density and increased power

MPA poppet valve
Advantages
- Self-cleaning effect, very robust with respect to poor compressed air quality
- High chemical compatibility, because no lubricants are needed
- Faster switching times thanks to shorter actuation strokes

Available for:
MPA-S
MPA-L
Perfect networking on MPA with CPX terminal

The digital and analogue I/O modules enable the simple, flexible and individual connection of pneumatic and electrical control chains to an automation system. Available in all common types of connectors and with a further 10 connection technologies for sensors and actuators as well as controllers for electric drives with protection class IP20/IP65/IP67.

Extended range of applications

The CPX terminal supports communication with all common fieldbus systems and via Ethernet. Available in full-metal version and control cabinet version.

More information available in the download area at www.festo.de/supportportal. There you will find the brochure: Terminal CPX.

Identification of faults up to 16 times faster

Independent studies show that between 15 and 40% of all indirect costs of a system are maintenance costs. With the CPX terminal, fault sources can be found 8 times or even 16 times more quickly. Even better: with the consistent use of the Condition Monitoring System CMS 35% of all unplanned standstills can be avoided. And when they do happen, it reduces them in 65% of all cases.

Services

- Monitoring of specific limit values for each module and valve block
- ePLAN: CPX macro library for quick and reliable planning and design with CPX modules
- Service Energy Monitoring System (GFDM) for
  - Compressed air quality analysis
  - Compressed air consumption analysis
  - Leakage and consumption measurements at the machine level
  - Energy-efficient design of the complete electropneumatic system for a further reduction of the total cost of ownership (TCO)

Comprehensive diagnostics for maximum process safety

The combination of the valve terminal MPA with the modular electrical terminal CPX opens up completely new perspectives:

- Condition monitoring
- Pressure monitoring with integrated pressure sensors
- Seamless integration into available control systems
- Device and system diagnostics (FDT/DTM, OPC server)
- Module-/channel-oriented valve diagnostics
- Numerous IT services:
  - Error memory for the last 40 messages
  - E-mail/SMS alarm
  - CPX Web Monitor
  - Festo Maintenance Tool
  - Handheld terminal
- Pre-processing with integrated controllers for customer-specific diagnostics programming (CODESYS)
3 x MPA – for virtually every application

MPA-L – highly modular
Recommended when cost pressures are high and the demand for function integration is low.

The extremely robust and price-optimised polymer valves in three valve widths, the sub-base system that can be extended in single steps and the tamper-proof fixed flow restrictor that is particularly useful for series machines help you save money. With MPA-L, you avoid costly oversizing or unnecessary unused valve positions.

Advantages
- Optimum design: 3 valve sizes with 1x grid for the sub-bases
- Alternative polymer material: inexpensive, lightweight and sturdy
- Extremely flexible thanks to connection via I-Port or CPX

MPA-C – hygienic
Ideal if you are looking for a valve terminal for extremely tough ambient conditions.

With protection class IP69K and CRC4, high pressure cleaning and foam cleaning are possible without any problems. MPA-C fulfils many global standards (FDA-compliant materials, NSF-H1 lubrication) and has been submitted for certification to EHEDG.

Advantages
- IP69K for tough environmental influences
- NSF-H1 lubrication, FDA-compliant materials
- Meets CRC4, the highest corrosion resistance class at Festo

MPA-S – communicative
The MPA-S with the automation platform CPX is the best solution for complex tasks in process or factory automation, with all common fieldbus and Industrial Ethernet nodes, many electronic and technology modules, serial linking for multiplexing and a maximum of diagnostic functions.

Integrate functions to optimise the costs along your entire value chain thanks to less design and procurement effort, shorter installation and commissioning and more economical total solution packages.

Advantages
- Function integration greatly reduces the total cost of ownership.
- Comprehensive communication and diagnostics for up to 128 solenoid coils/64 valve positions
- Multiplexing with proportional valves on MPA-S/CPX

Maximum productivity is a question of ambition
If this is your goal, we have the right solutions for you – such as MPA. Whether you are looking for a technically sophisticated system solution or a very economical alternative for components, we are here to support you on your path to success. Ambitious and goal-oriented, with vision and awareness of our responsibilities – everything you expect from Festo and everything we are.

www.festo.com