# CPV-SC Valve Manifolds

## Compact and Precise

### CPV-SC Valves

- Valve width of 10 mm
- Flow rate: Up to 0.17 Cv (170 l/min)
- 5/2-way, 3/2-way and 2/2-way valve functions
- Inch and metric connections

### CPV-SC Manifolds with Multi-pin Connection

- Compact Size (40 mm square)
- IP40 rated (in assembled state with detented plug)
- 15 or 26 pin SUB-D connector or flat cable
- 4 to 16 valve positions on a manifold

### CPV-SC Manifolds with Fieldbus Connection

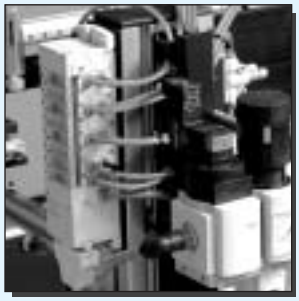
- Complies with ODVA specifications
- IP40 rated (with covered control elements)
- M12 power supply and fieldbus connectors
- CP extension, for an additional 16 I/O signals

**Info 226 US**

# Small and Effective

**Ideally Matched to Festo Miniature Drives**

CPV Smart Cubic Valve Manifolds, or CPV-SC for short, offer up to 16 full-base valves with a slim width of 10 mm. These manifolds are closely oriented to the needs of the electronics and mechatronics industries, as is reflected in their light-colored surface finish, fitting right in with the clean environments of these industries. With a flow rate of up to 0.17 Cv (170 l/min), they can power Festo miniature cylinders, rotary drives, vacuum grippers and slides.



**The CPV-SC at Work**

CPV-SC is not just for the electronics or light assembly industries, i.e. in the production/assembly of small and light components. It is not just for the semiconductor industry either, for example chip manufacturing and processing. CPV-SC valve manifolds are the logical choice for fieldbus users specifying compact handling applications.

**Compact and Precise**

Minimal tolerances in the smallest of spaces: the assembly of small electronic devices takes place on production grids measuring just a few hundredths of a millimeter. These applications call for small or miniature components to be correctly gripped, precisely positioned and mounted on printed circuit boards.

**Festo...Your Automation Partner Worldwide**

As a global leader in industrial automation components and systems, with over $1.6 billion sales worldwide, Festo has the resources and application experience to be your long-term partner for cost-effective automation solutions.

- 55 independent subsidiaries worldwide
- Representation in 180 countries
- Worldwide networking for consistent standards of products, consultancy, sales and services.
- Worldwide support provided by over 10,500 team members

**Festo Quality Assurance, ISO 9001 Certification**

Festo Corporation is committed to provide Festo products and services that will meet or exceed our customers' requirements in product quality, delivery, customer service and satisfaction.

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All Festo locations within the United States are registered to ISO 9001.

**Online Literature**

Literature in PDF format is available for download at:
www.festo-usa.com/pdfindex.html

# Smart Cubic Valve Manifolds, CPV-SC

## Table of Contents



Multi-pin Manifold

Fieldbus Manifold (DeviceNet)

## Features

- Square size of only 1.57 in (40 mm)
- Valve width of 0.39 in (10 mm)
- 24 V DC
- Flow rate up to 0.17 Cv (170 l/min)
- 5/2, 3/2 and 2/2-way valve functions
- IP40 rated
- Multi-pin electrical connection
- DeviceNet electrical connection
- CP extension, for an additional 16 I/O signals

### CPV Smart Cubic Manifolds

With a height and width of only 1.57 inches (40 mm), there is space everywhere for the CPV-SC. Even in cases where other valve manifolds have to be installed away from the action. These space-saving miracles can be installed in many different ways – but still be replaced as required for servicing by undoing just four screws.

Manifolds can be expanded with up to 16 valves without difficulty, since optional blanking plates can be used to reserve valve positions for future needs. There is also great emphasis on safety with the CPV-SC, for example the momentary-contact or detenting manual override. LEDs display the operating status and thus help to minimize machine downtime.

### Variety To Choose

For even greater flexibility, CPV Smart Cubic Manifolds offer a wide choice of valve functions: 5/2-way single solenoid, 5/2-way double solenoid, 3/2-way normally closed or open, and 2/2-way normally closed.

### Open Up New Possibilities

Where space is at a premium, it is vital to have well thought through concepts which open up new possibilities, for example with regard to size and electrical connections. The CPV-SC can fit almost anywhere, and electrical connections can be made using either a SUB-D connector or a 24 V IP40 flat cable.

### Convincing Technology

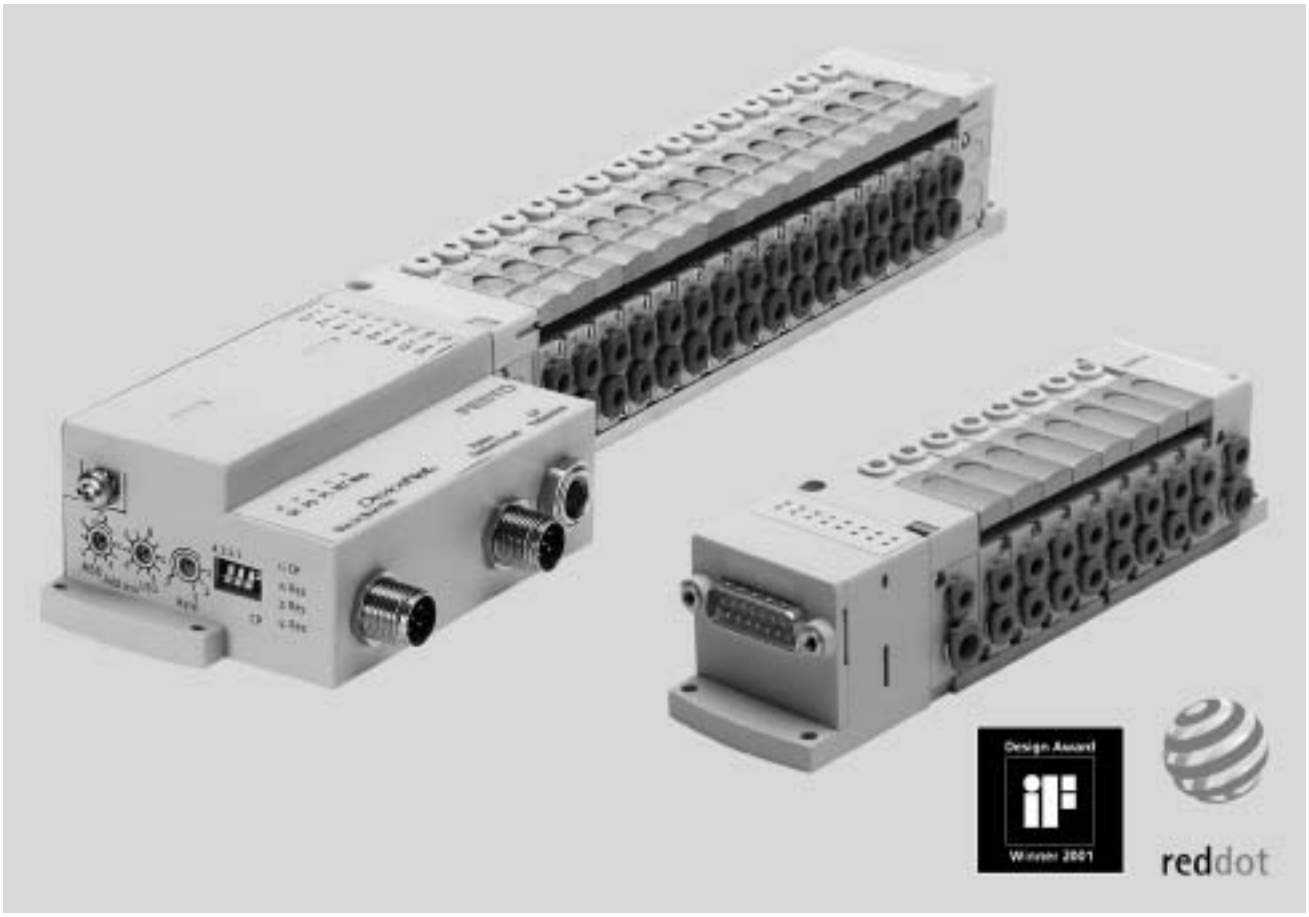
Integrated DeviceNet node for integration into DeviceNet controlled systems is no problem. The CPV-SC valve manifold complies with ODVA specifications for the semiconductor industry:

- Labeling for rotary switches and DIP switches
- Visible identification of baud rate, ID, and address
- M12 connectors for a sturdy connection, and dual-coding so misconnection cannot occur

Moreover, the CPV-SC is an installation-saving solution with reduced wiring expenses, since it just plugs in. The DeviceNet node also allows for further expansion of I/O.

# Key Features

Smart Cubic Valve Manifolds, CPV-SC




**Innovative**

- Small, compact valve manifold for a wide range of pneumatic applications
- Highly flexible in planning, assembly and operational use
- Various selectable valve functions; 3/2-way, 2/2-way and 5/2-way, functions
- With a flow rate of 0.17 Cv [170 l/min], The CPV-SC manifold offers outstanding pneumatic performance for a wide range of applications.
- Low weight

**Versatile**

- Provides 4 ... 16 valve positions on a manifold
- Ideally suited to the operation of small pneumatic drives in confined spaces
- The flexibility of the pneumatic working lines allows individual requirements to be met in a practical way
- Integrated large surface area silencers or ducted exhaust air
- Suitable for vacuum
- Permits multiple pressure ranges on a single valve manifold

**Reliable**

- Manual override
- Durable thanks to reliable piston spool valves
- Sturdy thanks to metal housing and connecting thread
- LED signal status display for each valve position on the manifold

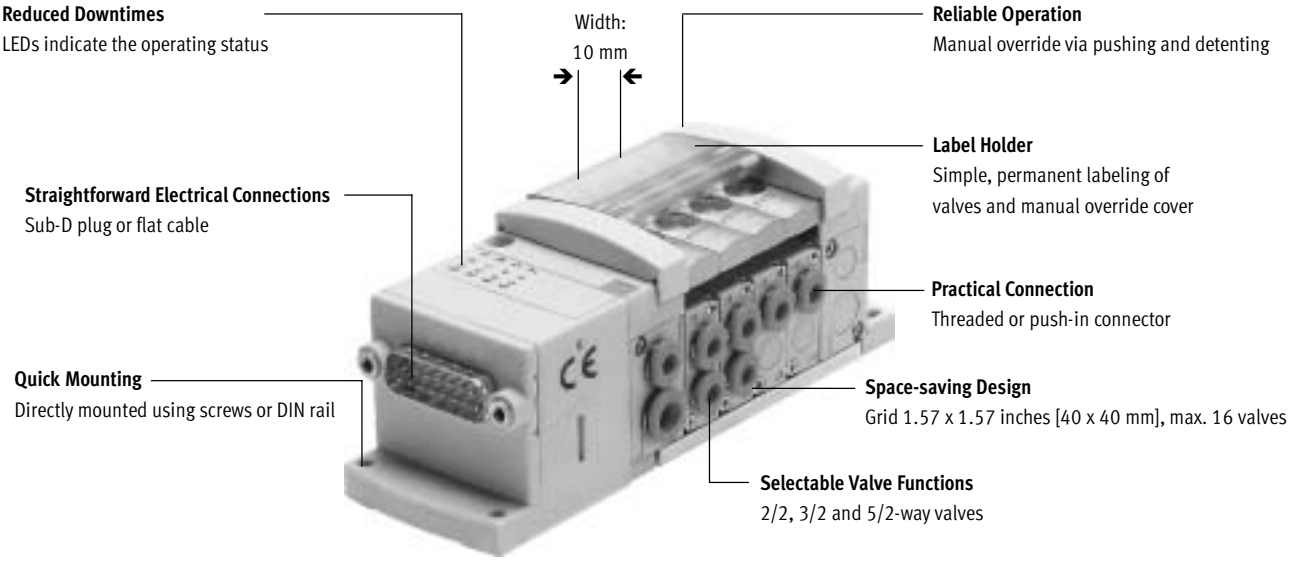
**Easy to Mount**

- Fully assembled and tested valve manifold
- Direct mounting even on moving system components
- Convenient servicing

# Key Features

Smart Cubic Valve Manifolds, CPV-SC

## Overview




## Equipment Options

A CPV-SC valve manifold can be equipped with the following valve functions and electrical connections:

### Valve functions

- 2/2-way valve, normally closed
- 3/2-way valve, normally open
- 3/2-way valve, normally closed
- 5/2-way valve, single solenoid
- 5/2-way valve, double solenoid

### Separator plate with additional compressed air supply

- Compressed air duct (1) closed
- Compressed air duct (1) and exhaust line (3/5) closed

### Blanking plate

- Plate without valve function for reserving a valve position

### Electrical connection options

**Multi-pin**

- 4 ... 16 valve positions/max. 16 solenoid coils
- Sub-D
- Flat cable

**Fieldbus**

- 4 ... 16 valve positions/max. 16 solenoid coils

**CP String Extension**

- Further valve terminals from the CPV/CPA range
- or electrical I/O modules

## FACE Product Configurator [Festo Automation Configuration Engine] → www.festo.com/us

This configurator is available to help you select a CPV-SC Valve Manifold to suit your application.

To use this tool, go to the internet address: www.festo.com/us. Then go to the Industrial Automation section of the website and proceed by using the Catalog link.

Use the **Direct Search** capability and type in the part number for a configurable CPV-SC manifold [525675 for Multi-pin or 538510 for DeviceNet].

Press enter on your keyboard, and a new page will appear. Click on the blue shopping basket (gray is not configurable), then click on the Configurator link.

FACE will open, and then you can configure a manifold easily. After you have configured a manifold, click on the complete button.

Select OK and it moves you into the shopping basket. You can print the manifold configuration by selecting the Copy for printout link next. Fax it to 1-800-96-FESTO for a quote.

# Overview – Multi-pin Manifolds

Smart Cubic Valve Manifolds, CPV-SC

## Valve Manifold with Electrical Multi-pin Plug Connection

■15-pin and 26-pin Sub-D multi-pin plug connection
**Code:** MS, MH

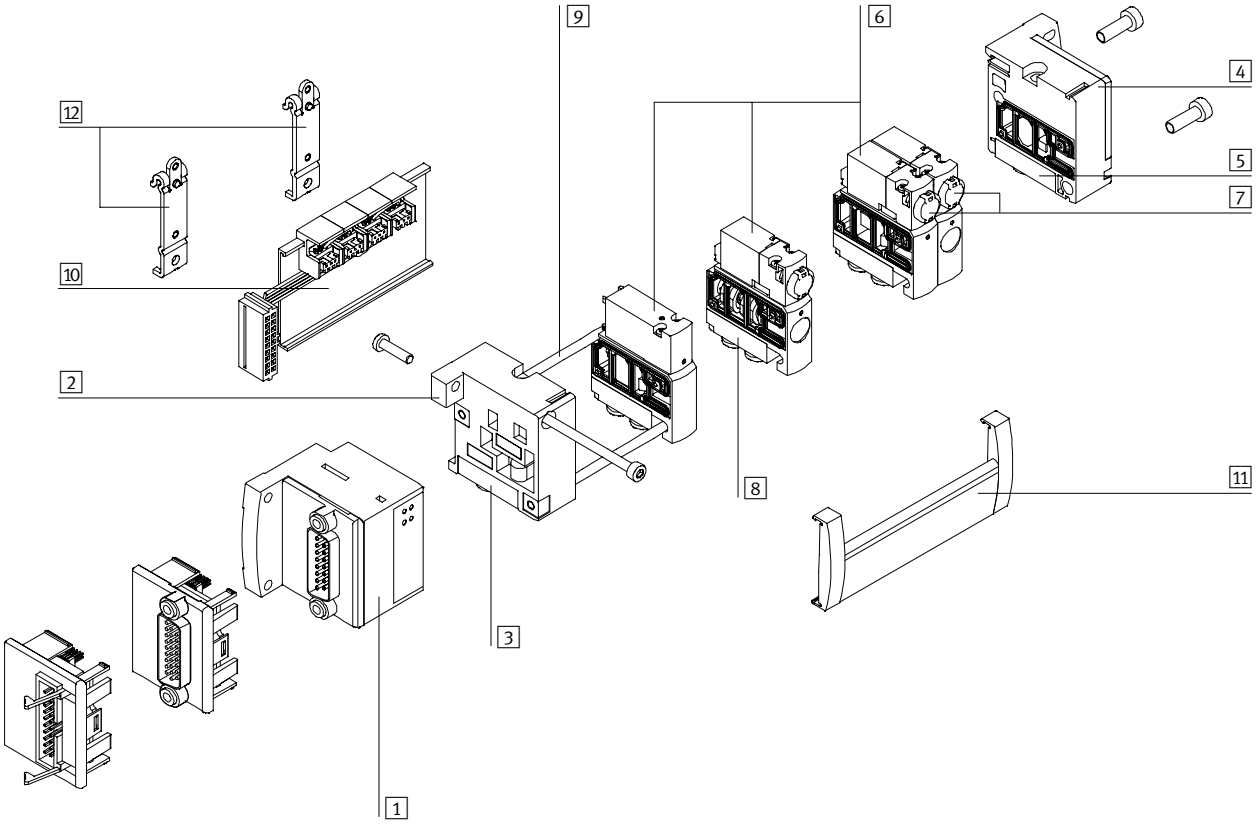
or

■20-pin multi-pin plug connection with connector strip for flat cable
**Code:** MF

Valves and end plates are the basic pneumatic components of the valve manifold. The valves are connected to the end plates using tie rods.

Valve manifolds with electrical multi-pin plug connection are available in sizes from 4 to max. 16 valve positions. A valve position can be equipped with either a valve or a blanking plate.

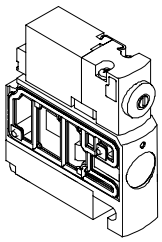
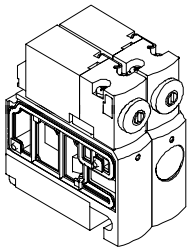
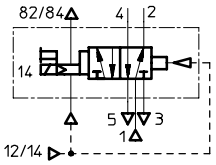
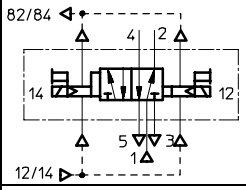
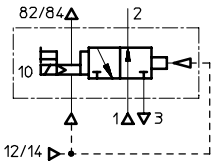
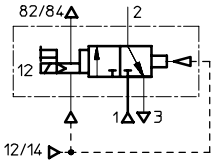
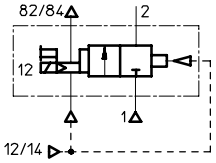
The electrical connection is located on the left-hand side, thereby allowing flush mounting of the system.




1 Electrical triggering unit for Sub-D or flat cable connection and LED switching status display
2 Left-hand end plate for compressed air supply 1 or 12/14
3 Connections (2, 4) underneath
4 Right-hand end plate for ducted exhaust air or silencer (3/5 or 82/84)
5 Sub-base for ducted exhaust air (push-in fitting or thread)
6 Valve
7 Cover for manual override (optional)
8 Sub-base for compressed air supply (push-in fitting or thread)
9 Tie rod
10 Valve electrical linking module
11 Label holder
12 DIN rail mounting

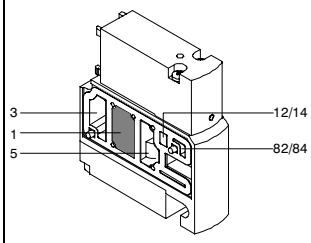
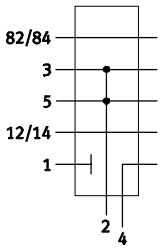
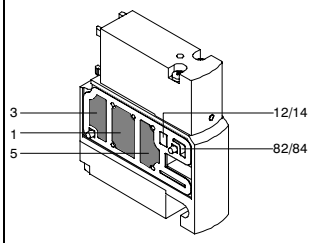
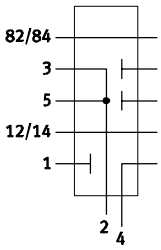
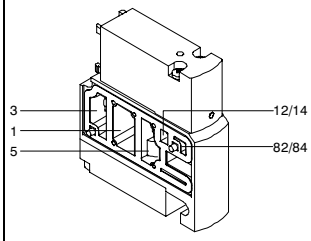
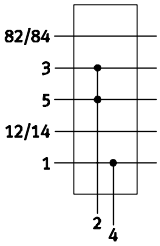
# Overview – Valves

Smart Cubic Valve Manifolds, CPV-SC

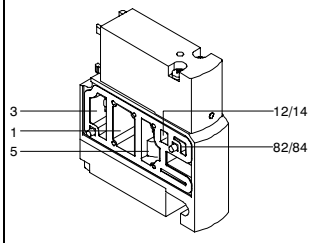
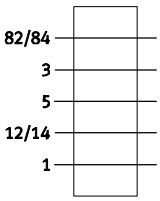
| Valves | | | | |
|---|---|---|---|---|
| | Code | Circuit symbol | Size 10 | Description |
|   | M |   | ■ | 5/2-way valve, single solenoid<br>Pneumatic spring return |
| | J |   | ■ | 5/2-way double-solenoid valve<br>This valve consists of two valve housing units and therefore occupies two valve positions.<br>The pilot control with coil 12 is located on the left and labeled “J12”. |
| | N |   | ■ | 3/2-way valve, single solenoid<br>Normal position open<br>Pneumatic spring return |
| | K |   | ■ | 3/2-way valve, single solenoid<br>Normal position closed<br>Pneumatic spring return |
| | D |   | ■ | 2/2-way valve, single solenoid<br>Normal position closed<br>Pneumatic spring return |

# Overview – Supply Plates for Valve Positions

Smart Cubic Valve Manifolds, CPV-SC

| Supply Plates | | | | |
|---|---|---|---|---|
| | Code | Circuit symbol | Size 10 | Description |
| With Channel Separation (Isolating Disk) | | | | |
|  | T |  | ■ | Compressed air channel (1) closed<br><br>For separating pressure zones with a common exhaust (instructions for use with pressure zones) ➔ See page 9<br><br>Connection: M5, QS-4 or QS-5/32 |
|  | S |  | ■ | Compressed air channel (1) and exhaust line (3/5) closed<br><br>For separating pressure zones with a common exhaust (instructions for use with pressure zones) ➔ See page 9<br><br>Connection: M5, QS-4 or QS-5/32 |
| Without Channel Separation | | | | |
|  | U |  | ■ | Additional compressed air supply (1) and additional exhaust (3/5).<br><br>Connection: M5, QS-4 or QS-5/32 |

In the case of compressed air supply configuration code S or T (exhaust via large surface area silencer), a plug-in silencer UC-QS-4H is included with supply plates.

| Valves | | | | |
|---|---|---|---|---|
| | Code | Circuit symbol | Size 10 | Description |
| Blanking Plate | | | | |
|  | L |  | ■ | A plate without valve function for reserving a valve position.<br><br>No pneumatic connection |

# Overview – Supply Plates for Valve Positions

Smart Cubic Valve Manifolds, CPV-SC

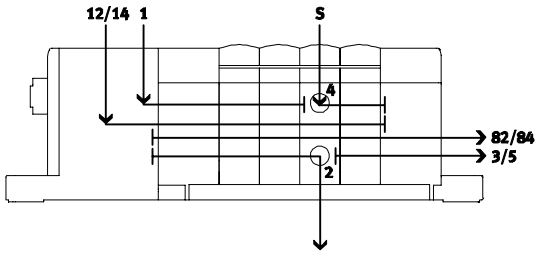
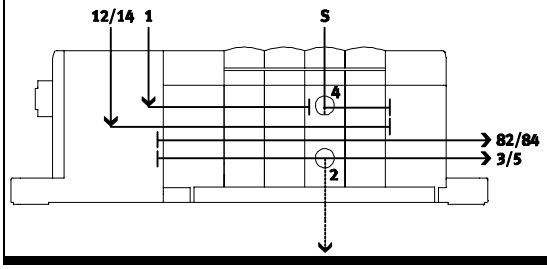
**Instructions For Use With Pressure Zones**

The CPV-SC valve manifold can be operated with multiple pressure zones. After two zones, a supply with channel separation is required for each subsequent pressure zone. It always occupies one valve position. An isolating disc (Code T) separates the compressed air supply of a valve group on the left from the compressed air supply of a valve group on the right. The right-hand pressure zone is supplied at Port 4 of the supply plate. Port 2 also allows the left-hand pressure zone to be exhausted. All of the exhaust channels of the valves are interconnected and are exhausted through the right-hand end plate. An isolating disc (Code S) also separates exhaust lines 3 and 5 in addition to pressure line 1.

**Note:**

Larger or simultaneously operating cylinders generate a back pressure in the exhaust line of the valve manifold, the size of which depends on the exhaust capacity of the silencer. In order to prevent interaction with adjacent valves, valves can be separated by means of channel separation using isolating disc (Code S). The pressure zone located to the left of an isolating disc is exhausted using the supplied plug-in silencer. Where there are more than two valves in such a pressure zone, an additional supply with additional exhaust may be required. It is therefore useful to meet the increased exhaust requirements in the pressure zone that is exhausted by the right-hand end plate.

**Supply Plates**

| | Code | Description |
|---|---|---|
|  | S | Channel 1/3/5 closed |
|  | T | Channel 1 closed |

# Overview – Valves

Smart Cubic Valve Manifolds, CPV-SC

## Manifold Design

**Valve Replacement**

Valves can be replaced quickly and easily in just a few easy steps. Separating seals between the valves are based on a metal support and are secured in place.

**Materials**

The valve housing and thread in the sub-bases are made of metal, while other housing sections are made from durable plastic materials.

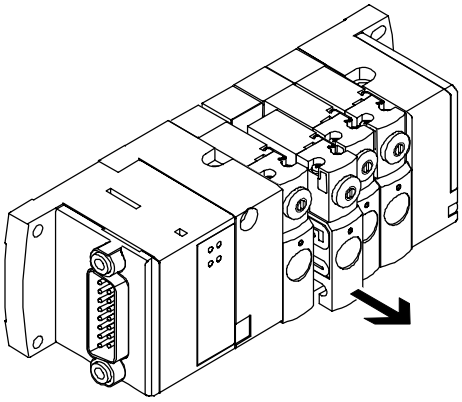
**Note:**

The valve with the working line plate is an inspected unit that has been subjected to a leak test by Festo.

**Expansion**

Valves can be ordered as accessories and are available with fully assembled sub-bases with QS (Quick Star) or threaded connections. The functionality of the valve manifold can therefore be extended by replacing vacant positions.

For ordering purposes, valves have the valve code printed on the front and the product type on the rear.



# Overview – Valves

Smart Cubic Valve Manifolds, CPV-SC

## Display and Operation

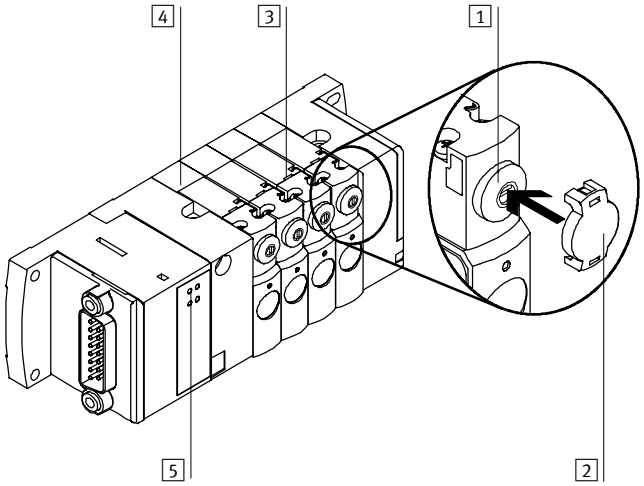
The switching status of every solenoid coil is displayed on the triggering unit LED. Indentification labels (Type MH-BZ-80x) can be applied to each valve for identification purposes.

The manual override (MO) allows the valve to be switched when in the electrically non-activated or de-energized status. The valve is switched by pushing the manual override. The set switching status can also be detented by rotating the manual override.

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

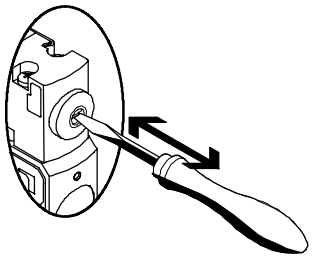
**Note:**
A manually operated valve (manual override) cannot be reset electrically. Conversely, an electrically actuated valve cannot be reset using the mechanical manual override.

## Multi-pin Plug Connection



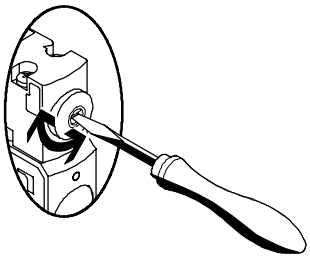

1 Manual override (pushing and detenting via turning using a screwdriver)
2 Cover for manual override (Code V or accessory CPVSC1-HV)
3 Location for valve position label (Type MH-BZ-80x)
4 Numbering of valve positions
5 LED signal status display per valve position

## Manual Override with Automatic Return (Pushing, Non-detenting)



MO is actuated by pushing it with a pin or screwdriver and reset by spring force.

## Manual Override with Lock (Detenting)

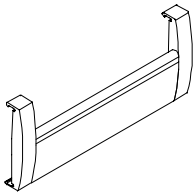


MO remains active until it is reset with a screwdriver.

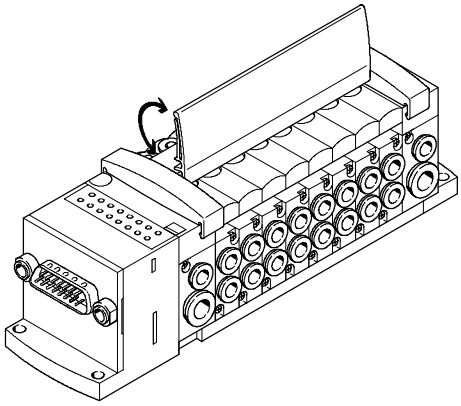
# Overview – Valves

Smart Cubic Valve Manifolds, CPV-SC

## Label Holder

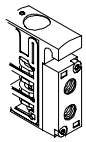
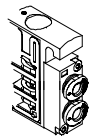
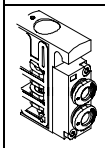
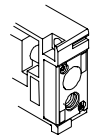
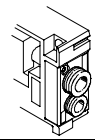
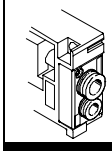


The transparent label holder provides sufficient space for individually created labels on paper, vellum or mylar.



# Overview – Pneumatic Connection

Smart Cubic Valve Manifolds, CPV-SC

| Pneumatic Connection – Working Lines | | |
|---|---|---|
| | Code | Description |
| Working Ports | | |
|  | B | M5 threaded connection |
|  | E | QS-3 push-in connector [For 3 mm tubing] |
| | F | QS-4 push-in connector [For 4 mm tubing] |
|  | I | QS-1/8 push-in connector [For 1/8 inch tubing] |
| | J | QS-5/32 push-in connector [For 5/32 inch tubing] |
| Supply Ports | | |
|  | C | Threaded connection<br>■ M7<br>■ M5 and M7 |
|  | G | Push-in connector<br>■ QS-6 [For 6 mm tubing]<br>■ QS-4 and QS-6 [For 4 and 6 mm tubing] |
|  | N | Push-in connector<br>■ QS-1/4 [For 1/4 inch tubing]<br>■ QS-5/32 [For 5/32 inch tubing] |

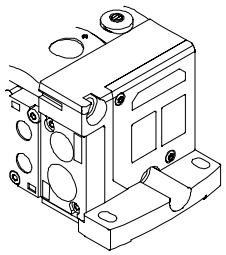
## Pneumatic Connection – Working Lines

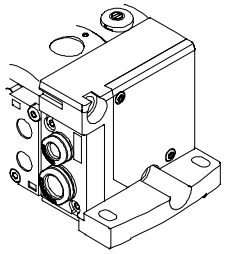
### Supply and Exhaust

A basic feature of a CPV-SC valve manifold are the two end plates.

The left-hand end plate is used for the supply of compressed air, while the right-hand end plate is used to exhaust the valve manifold.

Exhaust air escapes either via an integrated large surface area silencer or via a push-in or threaded connection.





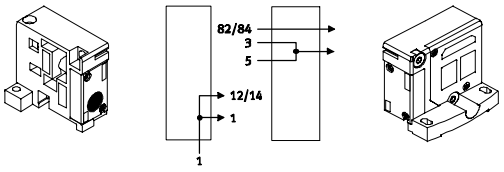
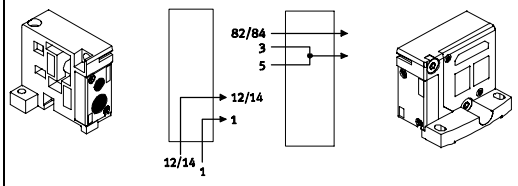
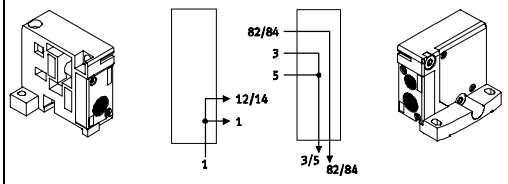
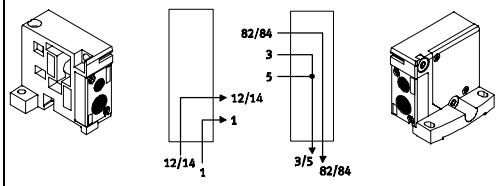
Exhaust of channel 3/5 as well as 82/84 via a large surface area silencer.

Ducted exhaust air from channel 3/5 or 82/84.

**Replacement Part:**
Insert for large surface area silencer, Type CPVSC1-UA.

# Overview – Pneumatic Connection

Smart Cubic Valve Manifolds, CPV-SC

| **Pneumatic Supply** | | |
|---|---|---|
| End Plate Combination | Code | Description |
|  | S | Internal pilot air supply, large surface area silencer<br><br>For operating pressure in the range of 45 ... 105 psi [3 ... 7 bar] |
|  | T | External pilot air supply, large surface area silencer<br><br>For operating pressure in the range of<br>26.6 in Hg ... 105 psi [–0.9 to 7 bar] |
|  | V | Internal pilot air supply, ducted exhaust air<br><br>For operating pressure in the range of 45 ... 105 psi [3 ... 7 bar] |
|  | X | External pilot air supply, ducted exhaust air<br><br>For operating pressure in the range of<br>26.6 in Hg ... 105 psi [–0.9 to 7 bar] |

## Pilot Supply Air

The CPV-SC valve manifold is suitable for internal or external pilot supply air, depending on the mounted end plates

**Internal Pilot Supply Air**

If the supply pressure for your CPV-SC valve manifold is between 45 ... 105 psi [3 to 7 bar[1)]], it can be operated with internally distributed pilot air supply. Pilot air supply is branched at the left-hand end plate of port 1 for this purpose.

1) 8 bar (120 psi) upon request

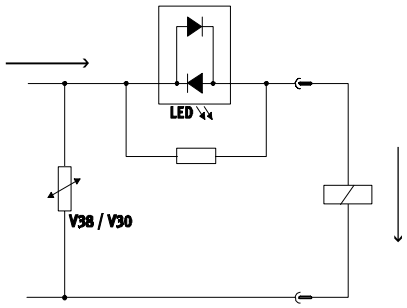
**External Pilot Supply Air**

If the supply pressure for your CPV-SC valve is between 26.6 in Hg ... 45 psi [–0.9 to 3 bar], it must be operated with external pilot air. The pilot air supply is supplied externally via port 12/14 in this case.

# Overview – Multi-pin Electrical Connection

Smart Cubic Valve Manifolds, CPV-SC

## Electrical Power As A Result of Current Reduction




Each valve solenoid coil is protected with a spark arresting protective circuit as well as against polarity reversal.

All valve types are also equipped with integrated current reduction.

## Electrical Multi-pin Plug Connection

There are two multi-pin connection types available for CPV-SC valve manifods:

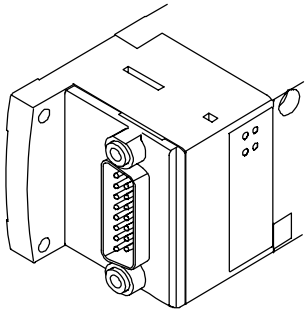
- Sub-D multi-pin connection (15-pin and 26-pin) or
- Multi-pin connection with connector strip for flat cable (20-pin)

CPV-SC is connected via a multi-pin connection with Sub-D or flat cable. A maximum of one valve position – and therefore one coil or one address – is assigned to each pin of the multi-pin plug.

Double solenoid valves "J" occupy two valve positions. The left-hand valve position with pilot control 12 is activated by the less significant of the two addresses.

## Electrical Multi-pin Plug Connection – Sub-D

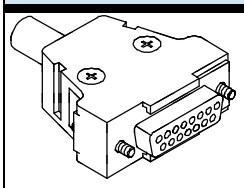
Code MS, MH



With this electrical connection option, all valves are actuated centrally via the 15-pin and 26-pin plug connector.

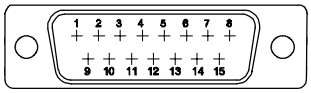
The electrical connection is located on the left-hand side.

**Ordering Data – Sub-D Connecting Cable**

| | Code | Description | Length | Type | Part No. |
|---|---|---|---|---|---|
|  | CP | - 15-pin for 12 coils (Code MS) | 8.2 ft / 2.5 m | KMP6-15P-12-2.5 | 527543 |
| | CQ | - Material: PUR | 16.4 ft / 5 m | KMP6-15P-12-5 | 527544 |
| | CR | - Suitable for chain link trunking | 32.8 ft / 10 m | KMP6-15P-12-10 | 527545 |
| | CP | - 26-pin for 16 coils (Code MH) | 8.2 ft / 2.5 m | KMP6-26P-16-2.5 | 527546 |
| | CQ | - Material: PUR | 16.4 ft / 5 m | KMP6-26P-16-5 | 527547 |
| | CR | - Suitable for chain link trunking | 32.8 ft / 10 m | KMP6-26P-16-10 | 527548 |

# Overview – Multi-pin Electrical Connection

Smart Cubic Valve Manifolds, CPV-SC

| Pin Allocation – Sub-D, 15-pin (Code MS) | | | | |
|---|---|---|---|---|
| KMP6-15P-12-... | Description | Pin | Core Color | Allocation |
|  | CPV-SC valve manifolds with up to 12 valve positions and multi-pin cable with 15-pin Sub-D plug | 1 | White | Coil 0 |
| | | 2 | Brown | Coil 1 |
| | | 3 | Green | Coil 2 |
| | | 4 | Yellow | Coil 3 |
| | | 5 | Grey | Coil 4 |
| | | 6 | Pink | Coil 5 |
| | | 7 | Blue | Coil 6 |
| | | 8 | Red | Coil 7 |
| | | 9 | Black | Coil 8 |
| | | 10 | Purple | Coil 9 |
| | | 11 | Grey-pink | Coil 10 |
| | | 12 | Red-blue | Coil 11 |
| | | 13 | White-green | n.c. |
| | | 14 | Brown-green | 0 V[1)] |
| | | 15 | White-yellow | 0 V[1)] |

1) Pin 14 to Pin 15 are bridged in the valve manifold
0 V for positive switching control signals; connect 24 V for negative switching control signals

| Pin Allocation – Sub-D, 26-pin (Code MH) | | | | |
|---|---|---|---|---|
| KMP6-26P-16-... | Description | Pin | Core Color | Allocation |
|  | CPV-SC valve manifolds with 16 valve positions and multi-pin cable with 26-pin Sub-D plug | 1 | White | Coil 0 |
| | | 2 | Brown | Coil 1 |
| | | 3 | Green | Coil 2 |
| | | 4 | Yellow | Coil 3 |
| | | 5 | Grey | Coil 4 |
| | | 6 | Pink | Coil 5 |
| | | 7 | Blue | Coil 6 |
| | | 8 | Red | Coil 7 |
| | | 9 | Black | Coil 8 |
| | | 10 | Purple | Coil 9 |
| | | 11 | Grey-pink | Coil 10 |
| | | 12 | Red-blue | Coil 11 |
| | | 13 | White-green | Coil 12 |
| | | 14 | Brown-green | Coil 13 |
| | | 15 | White-yellow | Coil 14 |
| | | 16 | – | Coil 15 |
| | | 17 | – | Coil 16 |
| | | 18 | – | n.c. |
| | | 19 | – | n.c. |
| | | 20 | – | 0 V[1)] |
| | | 21 | – | 0 V[1)] |
| | | 22 | – | 0 V[1)] |
| | | 23 | White-grey | 0 V[1)] |
| | | 24 | Grey-brown | 0 V[1)] |
| | | 25 | White-pink | 0 V[1)] |
| | | 26 | Pink-brown | 0 V[1)] |

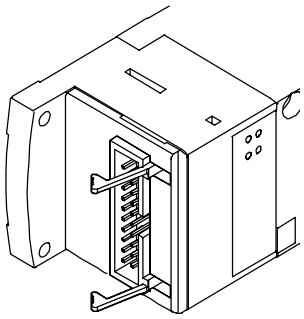
1) Pin 17 to Pin 22 are bridged in the valve manifold
0 V for positive switching control signals; connect 24 V for negative switching control signals

# Overview – Multi-pin Electrical Connection

Smart Cubic Valve Manifolds, CPV-SC

**Electrical Multi-pin Plug Connection – Connector Strip For Flat Cable**

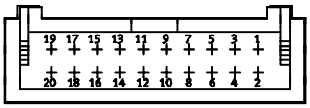
Code MF



With this electrical connection option, all valves are actuated centrally, via the 20-pin plug connector.

The electrical connection is located on the left-hand side.

**Pin Allocation – Connector Strip For Flat Cable (Code MF)**




CPV-SC valve manifolds with up to 16 valve positions and a 20-pin multi-pin socket for flat cables to DIN 41 561-1, -2
or
IEC 60603-13-C020FD-7C1E-2G

- Contact surface gold
- Flat cable in grid 1.27 mm
- Conductor cross-section 0.13 mm$^2$

| Pin | Allocation |
|---|---|
| 1 | Coil 0 |
| 2 | Coil 1 |
| 3 | Coil 2 |
| 4 | Coil 3 |
| 5 | Coil 4 |
| 6 | Coil 5 |
| 7 | Coil 6 |
| 8 | Coil 7 |
| 9 | Coil 8 |
| 10 | Coil 9 |
| 11 | Coil 10 |
| 12 | Coil 11 |
| 13 | Coil 12 |
| 14 | Coil 13 |
| 15 | Coil 14 |
| 16 | Coil 15 |
| 17 | 0 V[1)] |
| 18 | 0 V[1)] |
| 19 | 0 V[1)] |
| 20 | 0 V[1)] |

1) Pin 17 to Pin 20 are bridged in the valve manifold

# Overview – Operating Recommendations

Smart Cubic Valve Manifolds, CPV-SC

## Compressed Air

Operate your equipment with unlubricated compressed air if possible. Festo valves and cylinders are designed for operation under normal use without any additional lubrication, yet still have a long service life. The quality of compressed air downstream of the compressor must correspond to that of unlubrcated compressed air.
If possible, do not operate all of your equipment with lubricated compressed air. The lubricators should, where possible, always be located downstream of the valves, directly upstream of the cylinders used.

Incorrect additional oil and too high an oil content in the compressed air reduces the service life of the valve manifold. Use Festo special oil OFSW-32, P/N 152811 (1 liter) (as specified in DIN 51524-HLP32; basic oil viscosity 32 cSt at 40 °C).

**Biodegradable Oils**
When using bio-oils (oils which are based upon synthetic or native ester, e.g. rapeseed oil methyl ester), the maximum residual oil content of 0.1 mg/m3 must not be exceeded (see ISO 8573-1 Class 4).

**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/m3 must not be exceeded (see ISO 8573-1 Class 4). A higher residual oil content irrespective of the compressor oil cannot be permitted, as the basic lubricant would be washed away over time.

# Overview – Types of Mounting

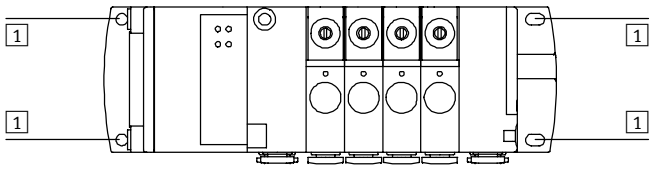
Smart Cubic Valve Manifolds, CPV-SC

## Mounting – Valve Manifold

Sturdy manifold mounting:

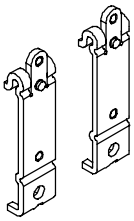
- Four through-holes for wall mounting
- DIN rail mounting

### Wall Mounting

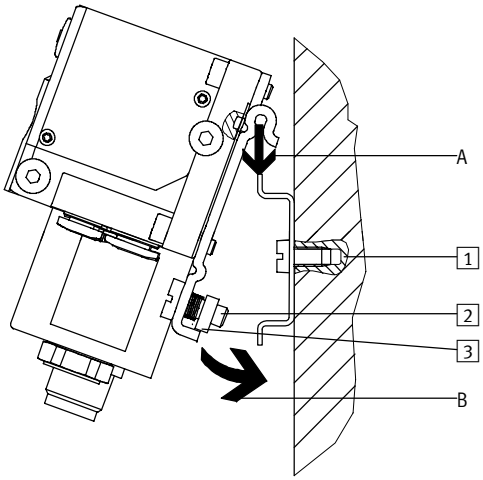



1 Mounting holes for M3 screws

### DIN Rail Mounting



The attachment CPVSC1-HS35 facilitates mounting on an DIN rail to DIN EN 50022.




The CPV-SC valve manifold is attached to the DIN rail (see arrow A). It is then hinged on the DIN rail and secured in place with the clamping component (see arrow B).

1 Holes for wall mounting
2 Self-tapping M4 x 10 screw of the DIN rail clamping unit
3 Clamping component of the DIN rail clamping unit

# Technical Data – Multi-pin Manifolds

Smart Cubic Valve Manifolds, CPV-SC

**Flow Rate:** 0.17 Cv [170 l/min]

**Width:** 10 mm

**Voltage:** 24 V DC

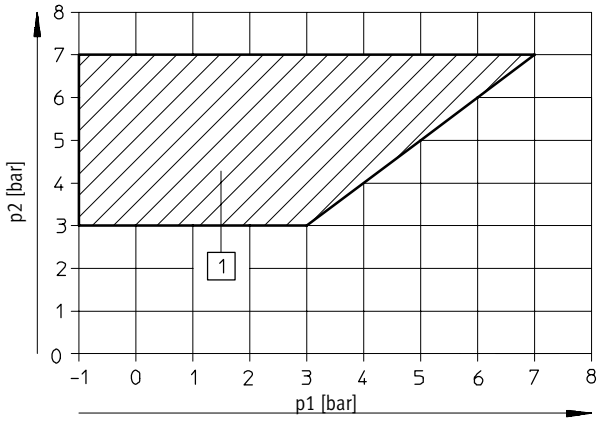
| **General Technical Data** | | | | | | |
|---|---|---|---|---|---|---|
| Valve | | 5/2-way Valve | | 3/2-way Valve | | 2/2-way Valve |
| | | Single Solenoid | Double Solenoid | Normally Open | Normally Closed | Normally Closed |
| Valve Function Ordering Code | | M | J | N | K | D |
| Design | | Electromagnetically actuated piston spool valve | | | | |
| Width | | 10 mm | | 10 mm | | 10 mm |
| Nominal Size | | 2.5 mm | | 2.5 mm | | 2.5 mm |
| Flow Rate | | 0.17 Cv [170 l/min] | | 0.17 Cv [170 l/min] | | 0.15 Cv [150 l/min] |
| Lubrication | | Lubrication for life | | | | |
| Type of Mounting | | Wall mounting, DIN rail mounting | | | | |
| Mounting Position | | Any | | | | |
| Manual Override | | Non-detented / detented / covered | | | | |
| Pneumatic Connections | | | | | | |
| Supply | 1 | M7, QS-6, QS-1/4 | | | | |
| Exhaust Port | 3/5 | M7, QS-6, QS-1/4 or integrated large surface area silencer | | | | |
| Working Ports | 2/4 | Several connection types to choose from:<br>Metric<br>■ M5<br>■ QS-3<br>■ QS-4<br>Inch<br>■ QS-1/8<br>■ QS-5/32 | | | | |
| Pilot Air Port | 12/14 | M5, QS-4, QS-5/32 | | | | |
| Pilot Exhaust Air Port | 82/84 | M5, QS-4, QS-5/32 or integrated large surface area silencer | | | | |

# Technical Data – Multi-pin and Fieldbus Manifolds

Smart Cubic Valve Manifolds, CPV-SC

| Operating Pressure [psi / bar] | | | | | |
|---|---|---|---|---|---|
| Valve Function Ordering Code | M | J | N | K | D |
| Without Pilot Air Supply | 45 ... 105 psi [3 ... 7 bar] | | | | |
| With Pilot Air Supply | 26.6 in Hg ... 105 psi [–0.9 ... +7 bar] | | | | |
| Pilot Pressure | 45 ... 105 psi [3 ... 7 bar] | | | | |

**Pilot Pressure "p2" As A Function of Working Pressure "p1"**




bar ⇢ psi = x 15

1 Operating range for valves with external auxiliary pilot air

| Valve Response Times [ms] | | | | | | |
|---|---|---|---|---|---|---|
| Valve Function Ordering Code | | M | J | N | K | D |
| Response Times | On | 10 ms | 10 ms | 10 ms | 10 ms | 10 ms |
| | Off | 10 ms | – | 10 ms | 10 ms | 10 ms |
| | Changeover | – | 6 ms | – | – | – |

| Operating and Environmental Conditions | | | | | |
|---|---|---|---|---|---|
| Valve Function Ordering Code | M | J | N | K | D |
| Operating Medium | Filtered compressed air, lubricated or unlubricated, inert gases permissible ➔ See page 18 | | | | |
| Grade of Filtration | 40 microns (average pore size) | | | | |
| PWIS-free | Yes, free of paint wetting impairment substances | | | | |
| CE Symbol | Yes, for control unit to EMC regulations | | | | |
| Ambient Temperature | 23 ... 104°F [–5 ... +40 °C] | | | | |
| Temperature of Medium | 0 ... 104°F [–18 ... +40°C] | | | | |
| Storage Temperature | –4 ... 104°F [–20 ... +40°C] | | | | |
| Corrosion Resistance Class CRC[1)] | 1 | | | | |

1) Corrosion resistance class 1 according to Festo standard 940070
Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

# Technical Data – Multi-pin and Fieldbus Manifolds

Smart Cubic Valve Manifolds, CPV-SC

| **Electrical Data** | | | | | |
|---|---|---|---|---|---|
| Valve Function Ordering Code | M | J | N | K | D |
| Electromagnetic Compatibility of CPV-SC Valve Manifold with Sub-D or Flat Cable Connection | Interference emission tested to EN 50081-2, industry | | | | |
| | Interference immunity[1] tested to EN 61000-6-2, industry | | | | |
| Protection Against Electric Shock (protection against direct and indirect contact to EN 60204-1/IEC 204) | Through PELV power supply unit | | | | |
| Operating Voltage | 24 V DC (±10%) | | | | |
| Electrical Power Consumption | 1.0 W | | | | |
| Duty Cycle | 100% at 104 °F [40 °C] ambient temperature | | | | |
| Protection Class to EN 60529 | IP40 (in assembled state and with detented plug) | | | | |
| Relative Air Humidity | 90% at 104 °F [40 °C], non-condensing | | | | |
| Vibration Resistance | To DIN/IEC 68/EN 60068, Parts 2-6 | | | | |
| Continuous Shock Resistance | To DIN/IEC 68/EN 60068, Parts 2-27 | | | | |

1) Maximum signal line length is 32.81 ft / 10 m

| **Materials** | | | | | |
|---|---|---|---|---|---|
| Valve Function Ordering Code | M | J | N | K | D |
| End plate, Electrical Sub-base | PAXMD6-GF50 | | | | |
| Seals | NBR | | | | |
| Valve Sub-base | Die-cast aluminum | | | | |
| Working Line Plates | PA66-GF30 | | | | |

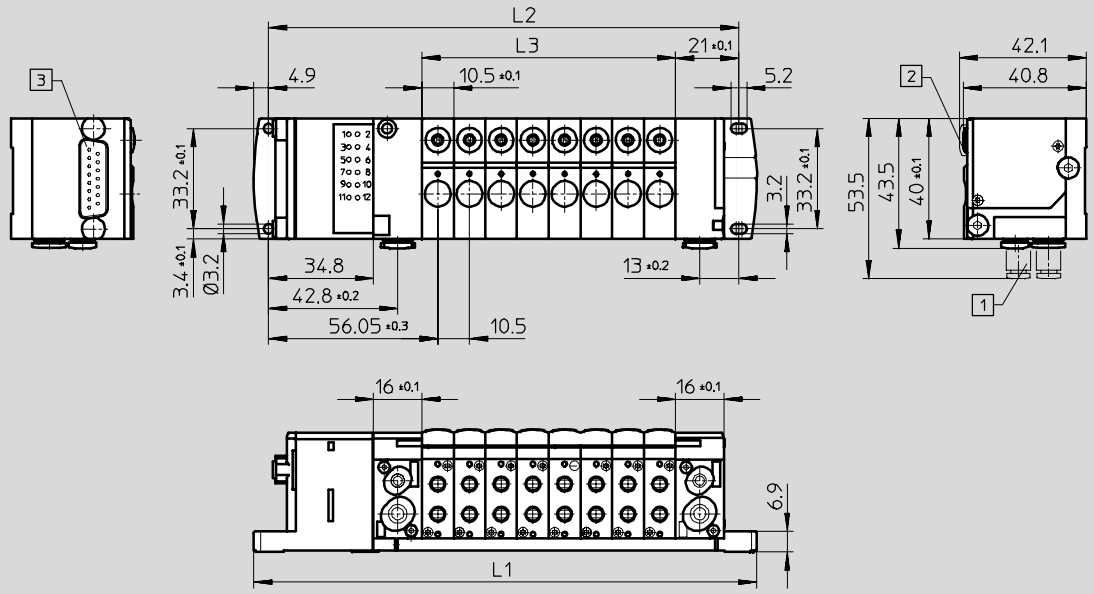
| **Product Weight [lb / g]** | | | | | |
|---|---|---|---|---|---|
| Valve Function Ordering Code | M | J | N | K | D |
| 5/2-way, 3/2-way Valve | 0.061 lb [30.5 g] | | | | |
| 5/2-way Double Solenoid Valve | 0.113 lb [56.5 g] | | | | |
| Vacant Position | 0.045 lb [22.5 g] | | | | |
| Right-hand End Plate | 0.085 lb [42.5 g] | | | | |
| Left-hand End Plate | 0.056 lb [28 g] | | | | |
| Control Housing | 0.086 lb [43 g] | | | | |
| Tie Rod, 16-fold | 0.059 lb [29.6 g] | | | | |
| Electrical Manifold Module, 16-fold | 0.128 lb [64 g] | | | | |

# Dimensions – Multi-pin Manifolds

Smart Cubic Valve Manifolds, CPV-SC

**Valve Manifold** Download CAD data ➔ **www.festo.com/en/engineering**

With Sub-D Multi-pin Plug Connection




1 QS push-in fitting

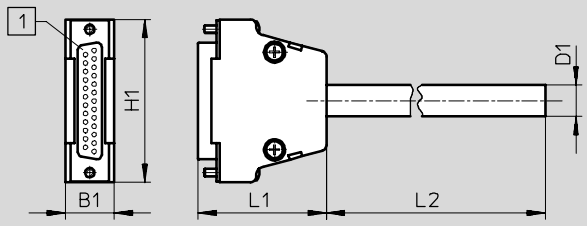
2 Cover cap

3 Multi-pin connection with 20-pin flat cable or 15/26-pin Sub-D multi-pin connection

| Valve Positions "n" | L1 | L2 | L3 |
|---|---|---|---|
| 4 | 125 +0.8/–1.4 | 114 +0.5/–0.5 | 42 +0.4 |
| 8 | 167 +1.2/–1.4 | 156 +0.9/–0.5 | 84 +0.8 |
| 12 | 209 +1.6/–1.4 | 198 +1.3/–0.5 | 126 +1.2 |
| 16 | 251 +2.0/–1.4 | 240 +1.7/–0.5 | 168 +1.6 |

Conversion factors ➔ see page 39

**Sub-D Plug with Cable** Download CAD data ➔ **www.festo.com/en/engineering**




1 15/26-pin plug

| Type | B1 mm | D1 mm | H1 mm | L mm | L2 m | | | Number of pins |
|---|---|---|---|---|---|---|---|---|
| KMP6-15P-12-... | 16 | 8.5 | 40 | 34.5 | 2.5 | 5 | 10 | 15 |
| KMP6-26P-16-... | 16 | 8.6 | 40 | 34.5 | 2.5 | 5 | 10 | 26 |

Conversion factors ➔ see page 39

# Ordering Data – Multi-pin Manifolds

Smart Cubic Valve Manifolds, CPV-SC

[M] **Mandatory Data** →

| Part No. | Valve manifold | Size | Power supply | Electrical connection | Position of working ports | Pneumatic working ports | Manual override | Pneumatic supply | Pneumatic supply connection | Type of connections |
|---|---|---|---|---|---|---|---|---|---|---|
| 525675 | 80P | 10 | 1 | MS<br>MF<br>MH | P | B<br>E<br>F<br>I<br>J | N<br>V | S<br>T<br>V<br>X | L | C<br>G<br>N |
| **Ordering Example** | | | | | | | | | | |
| **529675** | **80P** | **10** | **I** | **MS** | **P** | **F** | **V** | **X** | **L** | **G** |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |

**Ordering Table**

| Size | | | 10 | Conditions | Code | | Enter code |
|---|---|---|---|---|---|---|---|
| [M] | **1** | Part No. | **525675** | | | | |
| | **2** | Valve manifold | Valve terminal type 80, Smart Cubic, CPV-SC | | **80P** | | 80P |
| | **3** | Size | 10 mm | | **-10** | | -10 |
| | **4** | Power supply | Power supply 24 V DC | | **-1** | | |
| | **5** | Electrical connection | Connection for multi-pin cable Sub-D, 15-pin | [1] | **MS** | | |
| | | | Connection for flat cable, 20-pin | | **MF** | | |
| | | | Connection for multi-pin cable Sub-D, 26-pin | | **MH** | | |
| | **6** | Position of working ports | On valve sub-base | | **-P** | | -P |
| | **7** | Pneumatic working ports, per valve position | Threaded connection M5 | [2] | **B** | | |
| | | | Push-in fittings QS-3 [3 mm tubing connection] | [2] | **E** | | |
| | | | Push-in fittings QS-4 [4 mm tubing connection] | [2] | **F** | | |
| | | | Push-in fittings QS-1/8 [1/8 inch tubing connection] | [2] | **I** | | |
| | | | Push-in fittings QS-5/32 [5/32 inch tubing connection] | [2] | **J** | | |
| | **8** | Manual override | Manual override, push-in/detenting | | **-N** | | |
| | | | Manual override blocked | | **-V** | | |
| | **9** | Pneumatic supply | Internal pilot air supply, silencer | | **-S** | | |
| | | | External pilot air supply, silencer | | **-T** | | |
| | | | Internal pilot air supply, ducted exhaust air | | **-V** | | |
| | | | External pilot air supply, ducted exhaust air | | **-X** | | |
| | **10** | Pneumatic supply connection | Supply at left | | **L** | | L |
| | **11** | Type of connections | Threaded connection M7 | | **C** | | |
| | | | Push-in fittings QS-6 [6 mm tubing connection] | [2] | **G** | | |
| ↓ | | | Push-in fittings QS-1/4 [1/4 inch tubing connection] | [2] | **N** | | |

[1] **MS** Max. 12 valve positions possible.

[2] Choose inch or metric configuration only.

**Transfer Order Code**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **529675** | **80P** | **10** | | | **P** | | | | **L** | |
| **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |

# Ordering Data – Multi-pin Manifolds

Smart Cubic Valve Manifolds, CPV-SC

| M Mandatory Data | | O Options |
|---|---|---|
| **Equipment at valve position 0 … 15**<br>– 16 positions total; 12 positions for 15 pin connection | **User documentation** | **Accessories** |
| **12: Valves:** M, N, K, J, D, L, T, S, U | B, D, E, F, I, S, V | CP, CQ, CR, H, T |

Valve Position

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| – | **M** | **N** | **M** | **K** | **M** | **K** | **J** | **J** | | | | | | | | | – | **E** | + **CP** |
| | **12** | | | | | | | | | | | | | | | | | **13** | **14** |

**Ordering Table**

| Size | | | 10 | Conditions | Code | | Enter code |
|---|---|---|---|---|---|---|---|
| ↓ | **12** | Equipment at valve position 0 … 15 | | 3 | **-** | | - |
| M | | Valves | 5/2-way valve, single solenoid | | **M** | | Enter equipment selection for valve positions in order code |
| | | | 3/2-way valve, normally open | | **N** | | |
| | | | 3/2-way valve, normally closed | | **K** | | |
| | | | 5/2-way valve, double solenoid | 4 | **J** | | |
| | | | 2/2-way valve, normally closed | | **D** | | |
| | | | Vacant position | | **L** | | |
| | | | Pneumatic supply plate, duct 1 separate | 5 | **T** | | |
| | | | Pneumatic supply plate, duct 1/3/5 separate | 5 | **S** | | |
| | | | Pneumatic supply plate | | **U** | | |
| | **13** | User documentation | Express waiver - no manual to be included (already available) | | **-B** | | |
| | | | Manuals, English | | **-E** | | |
| | | | Manuals, German | | **-D** | | |
| | | | Manuals, French | | **-F** | | |
| | | | Manuals, Italian | | **-I** | | |
| | | | Manuals, Spanish | | **-S** | | |
| | | | Manuals, Swedish | | **-V** | | |
| O | **14** | Accessories | | | **+** | | + |
| | | Connecting cables | Connecting cable 8.2 ft / 2.5 m, Sub-D | 6 | **CP** | | |
| | | | Connecting cable 16.4 ft / 5 m, Sub-D | 6 | **CQ** | | |
| | | | Connecting cable 32.8 ft / 10 m, Sub-D | 6 | **CR** | | |
| | | DIN rail mounting | 1 | | **H** | | |
| | | Label holder | 1 | | **T** | | |

3 **Equipment at valve position 0 … 15**
Valve manifold must be equipped with exactly 4, 8, 12 or 16 valve positions.
Exception: Electrical connection MS: max. 12 valve positions.
**Note:** Valve positions must always be configured from the left.

4 **J** Double solenoid valve occupies 2 valve positions. Cannot be mounted at the last valve position.

5 **T, S** Can be mounted anywhere, however ensure adequate compressed air supply and exhausting (for more than 2 successive valves).

6 **CP, CQ, CR** Not with electrical connection MF.

**Transfer Order Code**

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| – | | | | | | | | | | | | | | | | | – | | + |
| | **12** | | | | | | | | | | | | | | | | | **13** | **14** |

# Technical Data – Fieldbus Manifolds with DeviceNet

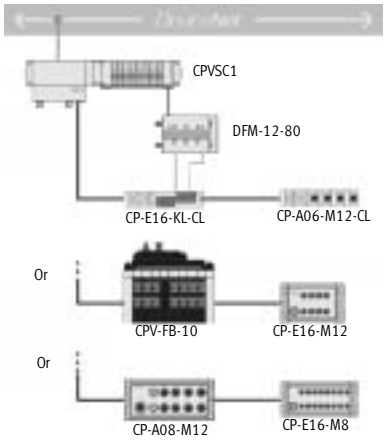
Smart Cubic Valve Manifolds, CPV-SC

**Flow Rate:** 0.17 Cv [170 l/min]

**Width:** 10 mm

**Voltage:** 24 V DC

For general valve manifold data see pages 21-22.

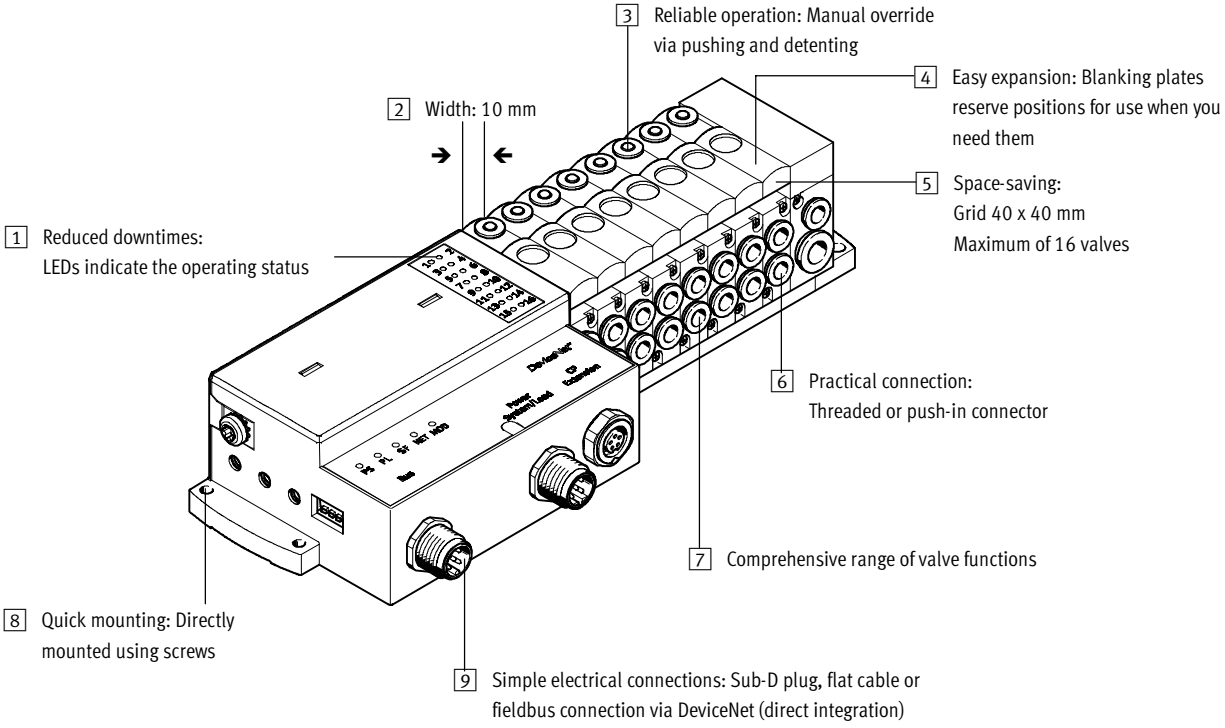



| General Technical Data | | | | | | |
|---|---|---|---|---|---|---|
| Valve | | 5/2-way Valve | | 3/2-way Valve | | 2/2-way Valve |
| | | Single Solenoid | Double Solenoid | Normally Open | Normally Closed | Normally Closed |
| Valve Function Ordering Code | | M | J | N | K | D |
| Width | | 10 mm | | 10 mm | | 10 mm |
| Nominal Size (orifice) | | 2.5 mm | | 2.5 mm | | 2.5 mm |
| Flow Rate | | 0.17 Cv [170 l/min] | | 0.17 Cv [170 l/min] | | 0.15 Cv [150 l/min] |
| Lubrication | | Lubrication for life | | | | |
| Type of Mounting | | Wall mounting, DIN rail mounting | | | | |
| Mounting Position | | Any | | | | |
| Manual Override | | Non-detented / detented / covered | | | | |
| Pneumatic Connections | | | | | | |
| Supply | 1 | M7, QS-6, QS-1/4 | | | | |
| Exhaust Port | 3/5 | M7, QS-6, QS-1/4 or integrated large surface area silencer | | | | |
| Working Ports | 2/4 | Several connection types to choose from:<br>Metric<br>■ M5<br>■ QS-3<br>■ QS-4<br>Inch<br>■ QS-1/8<br>■ QS-5/32 | | | | |
| Pilot Air Port | 12/14 | M5, QS-4 or QS-5/32 | | | | |
| Pilot Exhaust Air Port | 82/84 | M5, QS-4, QS-5/32 or integrated large surface area silencer | | | | |
| Electrical Connections | | | | | | |
| Protection | | IP20 (IP40 with covered control elements) | | | | |
| Display | | 5 LEDs for DeviceNet, supply power and CP I/O system | | | | |
| Control Elements | | ■ DIL switch for operating modes<br>■ Rotary switch for DeviceNet address and baud rate | | | | |
| Interface/Connection | | ■ **DeviceNet:** For bus in/out (M12, A coded)<br>■ **Power:** For system and auxiliary power supply (M12, B coded)<br>■ **CP:** For expansion with CP I/O modules (M9) | | | | |
| System Expansion | | ■ Up to 16 solenoid coils at 16 valve locations<br>■ Expansion possible via CP connection with modules from the CP installation system | | | | |
| Standard(s) | | Complies with DeviceNet SEMI specification (ODVA interface guidelines and E54-0997 sensor/actuator network) | | | | |

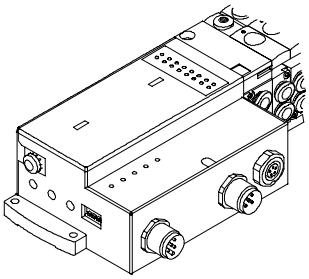
# Overview – Fieldbus Manifolds with DeviceNet

Smart Cubic Valve Manifolds, CPV-SC

## Valve Manifold with Fieldbus




## Fieldbus Terminal



Fieldbus is a system for the compact connection of valve manifolds of various sizes to different fieldbus standards.

The CP string extension option allows the functions and components of the CP installation system to be used.

The I/O modules and cables for the CP string extension are ordered using the order code for the CP installation system.

➔ See the Valve Catalog, P/N 13018473, for the CP installation system.

# Overview – Fieldbus Manifolds with DeviceNet

Smart Cubic Valve Manifolds, CPV-SC

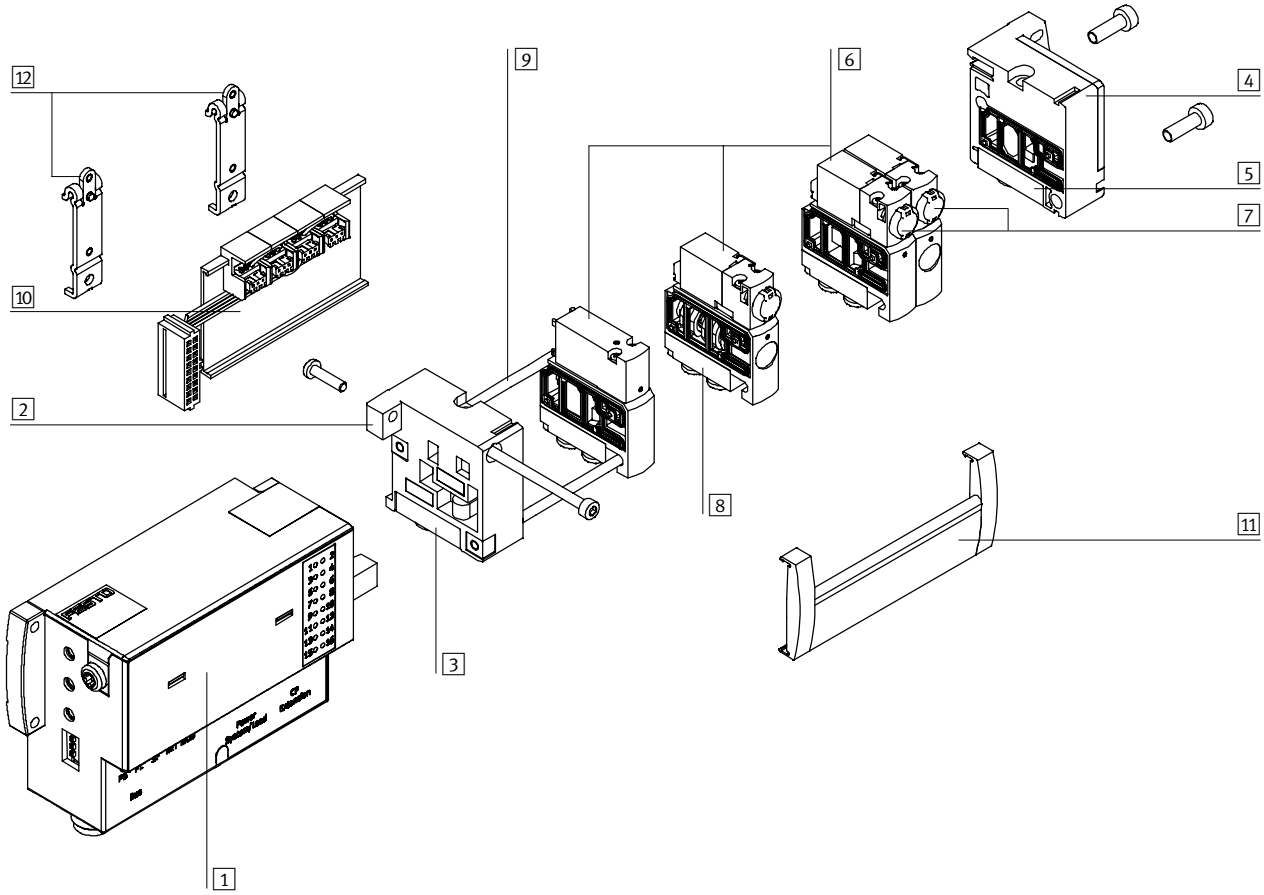
**Valve Manifold with DeviceNet**

■ M12 A-coded DeviceNet connection
Code: DN

Valves and end plates are the basic pneumatic components of the valve manifold. The valve manifolds are connected to the end plates using tie rods.

Valve manifolds with DeviceNet can be equipped with 4 to 16 valve positions. Each valve position can either be equipped with a valve or a blanking plate.

The space-saving electrical connection is optimized for use of a minimum amount of tubing.



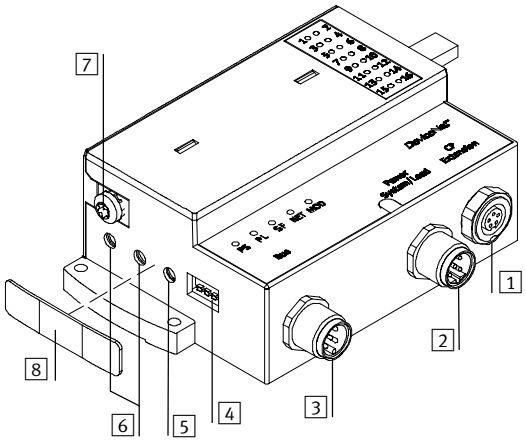

1 Fieldbus Direct
2 Left-hand end plate for compressed air supply 1 or 12/14
3 Connections (2, 4) underneath
4 Right-hand end plate for ducted exhaust air or silencer (3/5 or 82/84)
5 Sub-base for ducted exhaust air (push-in fitting or thread)
6 Valve
7 Cover for manual override (optional)
8 Sub-base for compressed air supply (push-in fitting or thread)
9 Tie rod
10 Valve electrical linking module
11 Label holder
12 DIN rail mounting

# Overview – Fieldbus Manifolds with DeviceNet

Smart Cubic Valve Manifolds, CPV-SC

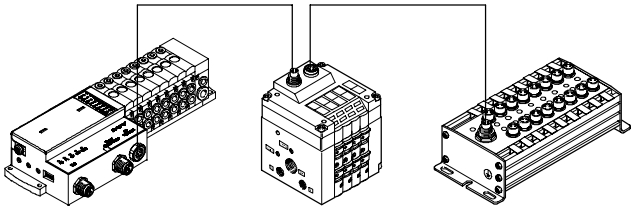
## Display and Operation

DeviceNet Terminal




1 Connection for CP extension
2 Connection for voltage supply
3 Connection for fieldbus
4 DIL switch for CP extension
5 Rotary switch for baud rate
6 Rotary switch for station number
7 Earth terminal
8 Cover (for IP40 rating)

## CP String Extension



➔ See Valve Catalog, P/N 13018473, for the CP installation system.

The optional string extension allows an additional valve manifold and I/O modules to be connected to the CPV Direct fieldbus node. A CP string of the CP installation system is integrated in the fieldbus node as an extension. Different input and output modules as well as CPV and CPA valve manifolds can be connected.

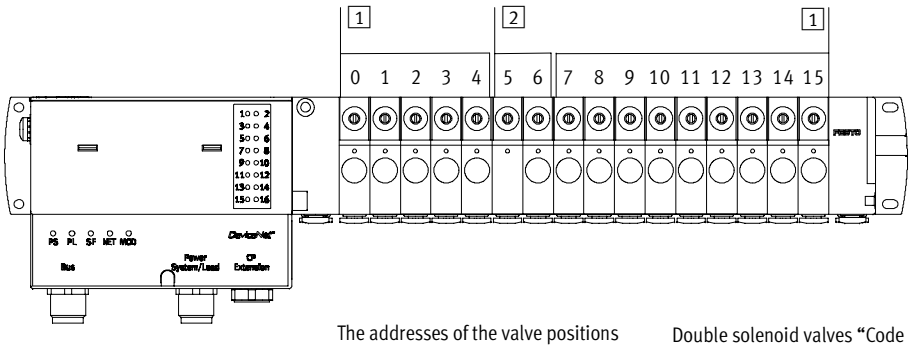
The maximum length of the CP string extends to 32.8 ft / 10 meters, which means that the extension modules can be mounted directly on-site.

All of the required electrical signals are transmitted via the CP cable, which in turn means that no further installation is needed on the extension module.

The CP string interface offers:

- 16 input signals
- 16 output signals (24 V DC) for output modules or solenoid coils
- Logic and sensor supply for the input modules
- Load voltage supply for the valve manifolds
- Logic supply for the output module

## Address Allocation – Solenoid Coils




The addresses of the valve positions on the CPV-SC-DN are assigned from left to right. Each valve position has an address, regardless of whether or not a valve is mounted there.

Double solenoid valves “Code J” occupy two valve positions. The left-hand valve position with pilot control 12 is actuated by the less significant address of the two addresses.

**Example:**

Valve manifold where valve positions 5 and 6 are prepared for 2 solenoids.

1 Single solenoid valves occupy one valve position
2 Double solenoid valves occupy two valve positions

# Ordering Information – Fieldbus Manifolds with DeviceNet

Smart Cubic Valve Manifolds, CPV-SC

M **Mandatory Data** →

| | Part No. | Valve manifold | | Size | | Electrical connection | | Position of working ports | Pneumatic working ports | | Manual override | | Pneumatic supply | Pneumatic supply connection | Type of connections |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 538510 | 80P | | 10 | | DN | | P | B<br>E<br>F<br>I<br>J | | N<br>V | | S<br>T<br>V<br>X | L | C<br>G<br>N |
| **Ordering Example** | **538510** | **80P** | – | **10** | – | **DN** | – | **P** | **B** | – | **N** | – | **S** | **L** | **C** |
| | **1** | **2** | | **3** | | **4** | | **5** | **6** | | **7** | | **8** | **9** | **10** |

**Ordering Table**

| Size | | | 10 | Conditions | Code | | Enter code |
|---|---|---|---|---|---|---|---|
| M | **1** | Part No. | **538510** | | | | |
| | **2** | Valve manifold | Valve manifold type 80, Smart Cubic, CPV-SC | | **80P** | | 80P |
| | **3** | Size | 10 mm | | **-10** | | -10 |
| | **4** | Electrical connection | DeviceNet | | **-DN** | | -DN |
| | **5** | Position of working ports | On valve | | **-P** | | -P |
| | **6** | Pneumatic working ports, per valve position | Threaded connection M5 | 1 | **B** | | |
| | | | Push-in fittings QS-3 [3 mm tubing connection] | 1 | **E** | | |
| | | | Push-in fittings QS-4 [4 mm tubing connection] | 1 | **F** | | |
| | | | Push-in fittings QS-1/8 [1/8 inch tubing connection] | 1 | **I** | | |
| | | | Push-in fittings QS-5/32 [5/32 inch tubing connection] | 1 | **J** | | |
| | **7** | Manual override | Manual override, push-in/detenting | | **-N** | | |
| | | | Manual override blocked | | **-V** | | |
| | **8** | Pneumatic supply | Internal pilot air supply, silencer | | **-S** | | |
| | | | External pilot air supply, silencer | | **-T** | | |
| | | | Internal pilot air supply, ducted exhaust air | | **-V** | | |
| | | | External pilot air supply, ducted exhaust air | | **-X** | | |
| | **9** | Pneumatic supply connection | Supply at left | | **L** | | L |
| | **10** | Type of connections | Threaded connection M7 | | **C** | | |
| | | | Push-in fittings QS-6 [6 mm tubing connection] | 1 | **G** | | |
| ↓ | | | Push-in fittings QS-1/4 [1/4 inch tubing connection] | 1 | **N** | | |

1 Choose inch or metric configuration only.

**Transfer Order Code**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **538510** | **80P** | – | **10** | – | **DN** | – | **P** | | – | | – | | **L** | |
| **1** | **2** | | **3** | | **4** | | **5** | **6** | | **7** | | **8** | **9** | **10** |

# Ordering Information – Fieldbus Manifolds with DeviceNet

Smart Cubic Valve Manifolds, CPV-SC

| M Mandatory Data | O Options | |
|---|---|---|
| Equipment at valve position 0 … 15 (16 positions total) | User documentation | Accessories |
| **11: Valves:** M, N, K, J, D, L, T, S, U | D, E, F, I, S, V | …D, H, T |

Valve Position

| – | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | – | | + | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | N | M | K | M | K | J | J | | | | | | | | | | E | | H T |
| | 11 | | | | | | | | | | | | | | | | | 12 | | 13 |

**Ordering Table**

| Size | | | 10 | Conditions | Code | | Enter code |
|---|---|---|---|---|---|---|---|
| ↓ | **11** | Equipment at valve position 0 … 15 | | 2 | **-** | | - |
| M | | Valves | 5/2-way valve, single solenoid | | **M** | | Enter equipment selection for valve positions in order code |
| | | | 3/2-way valve, normally open | | **N** | | |
| | | | 3/2-way valve, normally closed | | **K** | | |
| | | | 5/2-way valve, double solenoid | 3 | **J** | | |
| | | | 2/2-way valve, normally closed | | **D** | | |
| | | | Vacant position | | **L** | | |
| | | | Pneumatic supply plate, duct 1 separate | 4 | **T** | | |
| | | | Pneumatic supply plate, duct 1/3/5 separate | 4 | **S** | | |
| | | | Pneumatic supply plate | | **U** | | |
| O | **12** | User documentation | Manuals, English | | **-E** | | |
| | | | Manuals, German | | **-D** | | |
| | | | Manuals, French | | **-F** | | |
| | | | Manuals, Italian | | **-I** | | |
| | | | Manuals, Spanish | | **-S** | | |
| | | | Manuals, Swedish | | **-V** | | |
| | **13** | Accessories | | | **+** | | + |
| | | Straight connector plug for DeviceNet | 1 … 99 | | **…D** | | |
| | | DIN rail mounting | 1 | | **H** | | |
| | | Label holder | 1 | | **T** | | |

2 **Equipment at valve position 0 … 15** Number of valve positions: 4, 8, 12, 16. Valve positions must always be configured from the left.

3 **J** Double solenoid valve occupies 2 valve positions. Cannot be mounted at the last valve position.

4 **T, S** Can be mounted anywhere, however ensure adequate compressed air supply and exhausting (for more than 2 successive valves).

**Transfer Order Code**

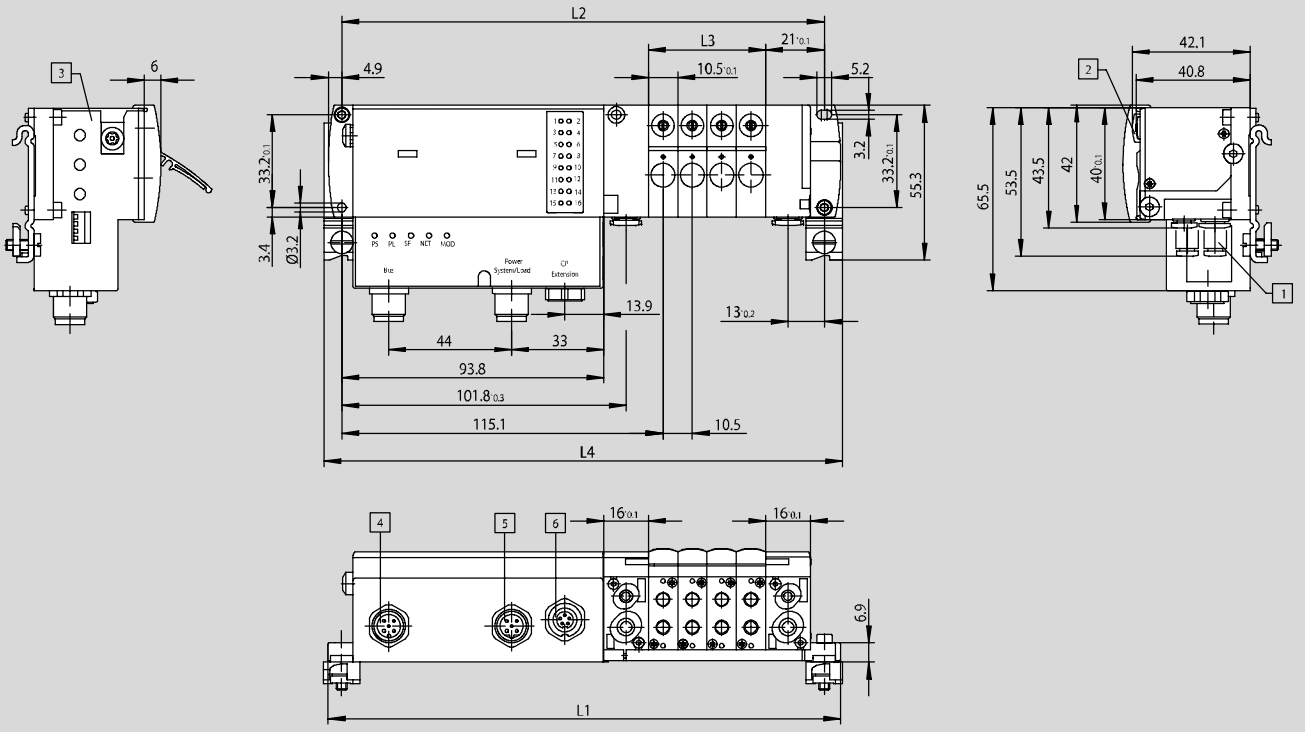
| – | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | – | | + | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | | 12 | | 13 |

# Dimensions – Fieldbus Manifolds with DeviceNet

Smart Cubic Valve Manifolds, CPV-SC

**Valve Manifold**

With DeviceNet Connection



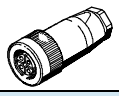
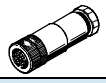
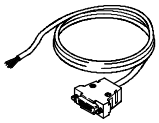

1 QS push-in fittings
2 Manual Override Cover
3 Fieldbus Node
4 Fieldbus Connection (M12, A coded)
5 Power Supply Connection (M12, B coded)
6 CP Connection (M9)

| Valve Positions “n” | L1<br>mm | L2<br>mm | L3<br>mm | L4<br>mm |
|---|---|---|---|---|
| 4 | 183.6 +0.8/–1.4 | 172.8 +0.5/–0.5 | 42 +0.4 | 185.4 |
| 8 | 225.8 +1.2/–1.4 | 214.8 +0.9/–0.5 | 84 +0.8 | 227.4 |
| 12 | 267.6 +1.6/–1.4 | 256.8 +1.3/–0.5 | 126 +1.2 | 269.4 |
| 16 | 309.6 +2.0/–1.4 | 298.8 +1.7/–0.5 | 168 +1.6 | 311.4 |

Conversion factors ➔ see page 39

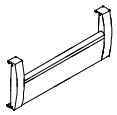
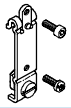
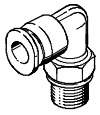
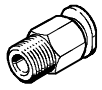
# Accessories – Electrical Connectors

Smart Cubic Valve Manifolds, CPV-SC

| Ordering Data – Accessories | | | | |
|---|---|---|---|---|
| Designation | | | Type | Part No. |
| **Power Supply Connector for DeviceNet Terminal** | | | | |
|  | MicroStyle M12, 5-pin socket (B-coded) | for 0.75 mm$^2$ | NTSD-GD-9-M12-5POL-RK | 538999 |
| **Fieldbus Connection** | | | | |
|  | Fieldbus socket for MicroStyle connection, M12, socket (A-coded) | | FBSD-GD-9-5POL | 18324 |
| **Connecting Cable, IP20 for Multi-pin Plug Connection** | | | | |
|  | Sub-D, 15-pin, up to 12 valve positions<br>For code MS<br>Material: PVC<br>Suitable for chain link trunking | 8.2 ft / 2.5 m | KMP6-15P-12-2.5 | 527543 |
| | | 16.4 ft / 5 m | KMP6-15P-12-5 | 527544 |
| | | 32.8 ft / 10 m | KMP6-15P-12-10 | 527545 |
| | Sub-D, 26-pin, up to 16 valve positions<br>For code MH<br>Material: PVC<br>Suitable for chain link trunking | 8.2 ft / 2.5 m | KMP6-26P-16-2.5 | 527546 |
| | | 16.4 ft / 5 m | KMP6-26P-16-5 | 527547 |
| | | 32.8 ft / 10 m | KMP6-26P-16-10 | 527548 |
| **Valve Manifold Connection** | | | | |
|  | Angled plug – angled socket WS-WD | 1.6 ft / 0.5 m | KVI-CP-1-WS-WD-0.5 | 178564 |
| | | 6.5 ft / 2 m | KVI-CP-1-WS-WD-2 | 163139 |
| | | 16.4 ft / 5 m | KVI-CP-1-WS-WD-5 | 163138 |
|  | Straight plug GS-WD | 16.4 ft / 5 m | KVI-CP-1-GS-WD-5 | 163137 |
| | | 26 ft / 8 m | KVI-CP-1-GS-WD-8 | 163136 |
|  | Straight plug GS-GD | 6.5 ft / 2 m,<br>for chain link trunking | KVI-CP-2-GS-GD-2 | 170234 |
| | | 16.4 ft / 5 m,<br>for chain link trunking | KVI-CP-2-GS-GD-5 | 170235 |
| | | 26 ft / 8 m,<br>for chain link trunking | KVI-CP-2-GS-GD-8 | 165616 |

# Accessories – General

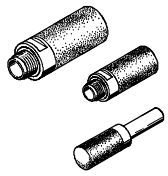
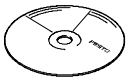
Smart Cubic Valve Manifolds, CPV-SC

| Ordering Data – Accessories | | | | |
|---|---|---|---|---|
| Designation | | | Type | Part No. |
| **Labels for Valve Identification** | | | | |
|  | 80 labels | | MH-BZ-80x | 197259 |
| **Label Holder** | | | | |
|  | 1 piece | for 4 valves | CPVSC1-ST-4 | 527631 |
| | | for 8 valves | CPVSC1-ST-8 | 527633 |
| | | for 12 valves | CPVSC1-ST-12 | 527635 |
| | | for 16 valves | CPVSC1-ST-16 | 527637 |
| **Mounting** | | | | |
|  | Additional screw for manifold mounting | | M3x45 | 527643 |
|  | Mounting | | CPVSC-HS35 | 527639 |
| **Quick Star Push-in Elbow Fittings – For Working / Supply Ports** | | | | |
|  | Connecting thread M5 for tubing O.D. | 3 mm | QSML-M5-3* | 153331 |
| | | 4 mm | QSML-M5-4* | 153333 |
| | | 6 mm | QSML-M5-6* | 153335 |
| | | 4 mm | QSMLL-M5-4* | 153339 |
| | | 6 mm | QSMLL-M5-6* | 153341 |
| | Connecting thread M7 for tubing O.D. | 4 mm | QSML-M7-4* | 186352 |
| | | 6 mm | QSML-M7-6* | 186353 |
| | | 4 mm | QSMLL-M7-4* | 186354 |
| | | 6 mm | QSMLL-M7-6* | 186355 |
| **Quick Star Push-in Straight Fittings – For Working Ports** | | | | |
|  | Connecting thread M5 for tubing O.D. | 5/32 inch | QSM-M5-5/32-I-U-M | 130593 |
| | | 1/4 inch | QSM-M5-1/4-I-U-M | 130591 |
| | | 1/8 inch | QSM-M5-1/8-I-U-M | 183749 |
| | | 3/16 inch | QSM-M5-3/16-I-U-M | 183750 |
| | | 1/4 inch | QS-M5-1/4-I-U-M* | 192808 |
| | | 3 mm | QSM-M5-3* | 153302 |
| | | 4 mm | QSM-M5-4* | 153304 |
| | | 3 mm | QSM-M5-3-I* | 153313 |
| | | 4 mm | QSM-M5-4-I* | 153315 |

* Sold in quantities of 10. Order in multiples of 10.

# Accessories – General

Smart Cubic Valve Manifolds, CPV-SC

| Ordering Data – Accessories | | | |
|---|---|---|---|
| Designation | | Type | Part No. |
| **Silencer** | | | |
|  | Connecting thread M5 | U-M5 | 4645 |
| | Connecting thread M5 | UC-M5 | 165003 |
| | Connecting thread M7 | UC-M7 | 161418 |
| | Connection type push-in sleeve | UC-QS-3H | 165005 |
| | Connection type push-in sleeve | UC-QS-4H | 165006 |
| | Connection type push-in sleeve | UC-QS-6H | 165007 |
| **Blanking Plug** | | | |
|  | M5 thread | B-M5-B | 174308 |
| | M7 thread | B-M7 | 174309 |
| **Blanking Plug** | | | |
|  | Blanking plug for 4 mm tubing O.D. | QSC-4H* | 153267 |
| | Blanking plug for 6 mm tubing O.D. | QSC-6H* | 153268 |
| | Blanking plug for 3 mm tubing O.D. | QSMC-3H* | 153382 |
| | Blanking plug for 5/32 inch tubing O.D. | QSC-5/32H-U* | 153834 |
| | Blanking plug for 1/4 inch tubing O.D. | QSC-1/4H-U* | 153836 |
| | Blanking plug for 1/8 inch tubing O.D. | QSMC-1/8-H-U* | 153924 |
| **User Documentation – Valve Manifolds** | | | |
|  | English | P.BE-CPVSC-EN | 530926 |
| | German | P.BE-CPVSC-DE | 530925 |
| | French | P.BE-CPVSC-FR | 530927 |
| | Spanish | P.BE-CPVSC-ES | 530928 |
| | Italian | P.BE-CPVSC-IT | 530929 |
| | Swedish | P.BE-CPVSC-SV | 530930 |
| **User Documentation – Fieldbus DeviceNet** | | | |
|  | English | P.BE-CPASC-CPVSC-DN-EN | 539009 |
| | German | P.BE-CPASC-CPVSC-DN-DE | 539008 |
| | French | P.BE-CPASC-CPVSC-DN-FR | 539010 |
| | Spanish | P.BE-CPASC-CPVSC-DN-ES | 539011 |
| | Italian | P.BE-CPASC-CPVSC-DN-IT | 539012 |
| | Swedish | P.BE-CPASC-CPVSC-DN-SV | 539013 |
| **CD-ROM – Software** | | | |
|  | Valve manifolds | P.CD-VALVE-T | 183350 |
| | Utilities | P.CD-VI-UTILITIES-2 | 533500 |

* Sold in quantities of 10. Order in multiples of 10.

# Accessories – Inch Series Polyurethane Tubing (50 meter rolls)

Smart Cubic Valve Manifolds, CPV-SC

**Type PUN-...**

Highly Flexible and Kink Resistant

**Ordering Example:** PUN-1/8-SW-U-SA

**Material**
PUN = Polyurethane

**Inch** Series

**Color**
BL = Blue GN = Green SW = Black W = White
GE = Yellow RT = Red TR = Clear

**Outside Diameter**
Inches

| Technical Data | |
|---|---|
| Pressure Range | 28.5 in Hg / –0.95 bar to maximum pressure |
| Temperature Dependent Operating Pressure (Maximum pressure is determined at maximum temperature) | At 68 °F / 20 °C maximum pressure is 150 psi / 10 bar |
| | At 104 °F / 40 °C maximum pressure is 75 psi / 5 bar |
| | At 140 °F / 60 °C maximum pressure is 45 psi / 3 bar |

| Part No. | Type | Tubing Color | Outside ∅ inches | Inside ∅ inches | Min. Bending Radius in / mm | Weight lb/ft / kg/m | Tubing Roll Lengths* |
|---|---|---|---|---|---|---|---|
| 13013791 | PUN-1/8-BL-U-SA | Blue | 1/8 | 1/16 | 0.200 / 5.00 | 0.003 / 0.005 | 164 ft / 50 m |
| 13023159 | PUN-1/8-GE-U-SA | Yellow | | | | | |
| 13023167 | PUN-1/8-GN-U-SA | Green | | | | | |
| 13023152 | PUN-1/8-RT-U-SA | Red | | | | | |
| 13013790 | PUN-1/8-SW-U-SA | Black | | | | | |
| 13023174 | PUN-1/8-TR-U-SA | Clear | | | | | |
| 13016600 | PUN-1/8-W-U-SA | White | | | | | |
| 13013793 | PUN-5/32-BL-U-SA | Blue | 5/32 | 3/32 | 0.202 / 5.13 | – | 164 ft / 50 m |
| 13023160 | PUN-5/32-GE-U-SA | Yellow | | | | | |
| 13023168 | PUN-5/32-GN-U-SA | Green | | | | | |
| 13023153 | PUN-5/32-RT-U-SA | Red | | | | | |
| 13013792 | PUN-5/32-SW-U-SA | Black | | | | | |
| 13023175 | PUN-5/32-TR-U-SA | Clear | | | | | |
| 13016601 | PUN-5/32-W-U-SA | White | | | | | |
| 13013795 | PUN-3/16-BL-U-SA | Blue | 3/16 | 1/8 | 0.339 / 8.61 | 0.009 / 0.013 | 164 ft / 50 m |
| 13023162 | PUN-3/16-GE-U-SA | Yellow | | | | | |
| 13023169 | PUN-3/16-GN-U-SA | Green | | | | | |
| 13023154 | PUN-3/16-RT-U-SA | Red | | | | | |
| 13013794 | PUN-3/16-SW-U-SA | Black | | | | | |
| 13023176 | PUN-3/16-TR-U-SA | Clear | | | | | |
| 13016602 | PUN-3/16-W-U-SA | White | | | | | |
| 13013797 | PUN-1/4-BL-U-SA | Blue | 1/4 | 5/32 | 0.476 / 11.9 | 0.014 / 0.021 | 164 ft / 50 m |
| 13023163 | PUN-1/4-GE-U-SA | Yellow | | | | | |
| 13023170 | PUN-1/4-GN-U-SA | Green | | | | | |
| 13023155 | PUN-1/4-RT-U-SA | Red | | | | | |
| 13013796 | PUN-1/4-SW-U-SA | Black | | | | | |
| 13023177 | PUN-1/4-TR-U-SA | Clear | | | | | |
| 13016516 | PUN-1/4-W-U-SA | White | | | | | |
| 13013799 | PUN-5/16-BL-U-SA | Blue | 5/16 | 3/16 | 0.594 / 15.0 | – | 164 ft / 50 m |
| 13023164 | PUN-5/16-GE-U-SA | Yellow | | | | | |
| 13023171 | PUN-5/16-GN-U-SA | Green | | | | | |
| 13023156 | PUN-5/16-RT-U-SA | Red | | | | | |
| 13013798 | PUN-5/16-SW-U-SA | Black | | | | | |
| 13023178 | PUN-5/16-TR-U-SA | Clear | | | | | |
| 13016603 | PUN-5/16-W-U-SA | White | | | | | |
| 13013801 | PUN-3/8-BL-U-SA | Blue | 3/8 | 1/4 | 1.00 / 25.4 | 0.032 / 0.048 | 164 ft / 50 m |
| 13023165 | PUN-3/8-GE-U-SA | Yellow | | | | | |
| 13023172 | PUN-3/8-GN-U-SA | Green | | | | | |
| 13023157 | PUN-3/8-RT-U-SA | Red | | | | | |
| 13013800 | PUN-3/8-SW-U-SA | Black | | | | | |
| 13023179 | PUN-3/8-TR-U-SA | Clear | | | | | |
| 13016517 | PUN-3/8-W-U-SA | White | | | | | |
| 13013803 | PUN-1/2-BL-U-SA | Blue | 1/2 | 21/64 | 1.10 / 27.9 | – | 164 ft / 50 m |
| 13023166 | PUN-1/2-GE-U-SA | Yellow | | | | | |
| 13023173 | PUN-1/2-GN-U-SA | Green | | | | | |
| 13023158 | PUN-1/2-RT-U-SA | Red | | | | | |
| 13013802 | PUN-1/2-SW-U-SA | Black | | | | | |
| 13023180 | PUN-1/2-TR-U-SA | Clear | | | | | |
| 13016518 | PUN-1/2-W-U-SA | White | | | | | |
| 13023181 | PUN-3/16-DUO-BS-U-SA | Black/Blue | 3/16 | 1/8 | 0.339 / 8.61 | – | 164 ft / 50 m |
| 13023182 | PUN-1/4-DUO-BS-U-SA | Black/Blue | 1/4 | 5/32 | 0.476 / 11.9 | – | |
| 13023183 | PUN-3/8-DUO-BS-U-SA | Black/Blue | 3/8 | 1/4 | 1.00 / 25.4 | – | |

* Sold in full rolls only. Additional lengths on request.

# Accessories – Metric Series Polyurethane Tubing (50 meter rolls)

Smart Cubic Valve Manifolds, CPV-SC

**Type PUN-...**

Highly Flexible and Kink Resistant

**Ordering Example:** PUN-8 x 1.25-DUO-BS

- **Material**: PUN = Polyurethane
- **Outside Diameter**: mm
- Double
- **Color**: BS = Black/Blue

Technical Data

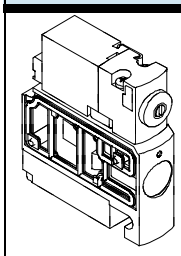
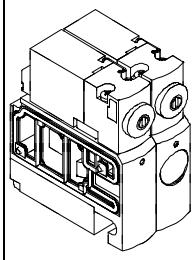
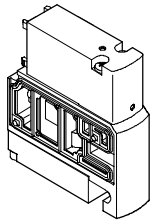
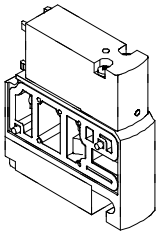
| | |
|---|---|
| Pressure Range | 28.5 in Hg / –0.95 bar to maximum pressure |
| Temperature Dependent Operating Pressure (Maximum pressure is determined at maximum temperature) | At -31 ... +86 °F / -35 ... +30 °C maximum pressure is 150 psi / 10 bar |
| | At +86 ... +104 °F / +30 ... +40 °C maximum pressure is 127 psi / 8.5 bar |
| | At -31 ... +86 °F / -35 ... +30 °C maximum pressure is 97 psi / 6.5 bar |

| Part No. | Type | Tubing Color | Outside ∅ mm | Inside ∅ mm | Min. Bending Radius in / mm | Weight lb/ft / kg/m | Tubing Roll Lengths* |
|---|---|---|---|---|---|---|---|
| 152583 | PUN-3 x 0.5-SI | Silver | 3 | 2.1 | 0.49 / 12.5 | 0.003 / 0.004 | 164 ft / 50 m |
| 159660 | PUN-3 x 0.5-BL | Blue | | | | | |
| 159661 | PUN-3 x 0.5-SW | Black | | | | | |
| 178416 | PUN-3 x 0.5-GE | Yellow | | | | | |
| 178423 | PUN-3 x 0.5-GN | Green | | | | | |
| 178409 | PUN-3 x 0.5-RT | Red | | | | | |
| 152584 | PUN-4 x 0.75-SI | Silver | 4 | 2.6 | 0.67 / 17.0 | 0.006 / 0.009 | 164 ft / 50 m |
| 159662 | PUN-4 x 0.75-BL | Blue | | | | | |
| 159663 | PUN-4 x 0.75-SW | Black | | | | | |
| 178417 | PUN-4 x 0.75-GE | Yellow | | | | | |
| 178424 | PUN-4 x 0.75-GN | Green | | | | | |
| 178410 | PUN-4 x 0.75-RT | Red | | | | | |
| 152586 | PUN-6 x 1-SI | Silver | 6 | 4 | 1.04 / 26.5 | 0.013 / 0.019 | 164 ft / 50 m |
| 159664 | PUN-6 x 1-BL | Blue | | | | | |
| 159665 | PUN-6 x 1-SW | Black | | | | | |
| 178418 | PUN-6 x 1-GE | Yellow | | | | | |
| 178425 | PUN-6 x 1-GN | Green | | | | | |
| 178411 | PUN-6 x 1-RT | Red | | | | | |
| 152587 | PUN-8 x 1.25-SI | Silver | 8 | 5.7 | 1.46 / 37.0 | 0.020 / 0.030 | 164 ft / 50 m |
| 159666 | PUN-8 x 1.25-BL | Blue | | | | | |
| 159667 | PUN-8 x 1.25-SW | Black | | | | | |
| 178419 | PUN-8 x 1.25-GE | Yellow | | | | | |
| 178426 | PUN-8 x 1.25-GN | Green | | | | | |
| 178412 | PUN-8 x 1.25-RT | Red | | | | | |
| 152588 | PUN-10 X 1.5-SI | Silver | 10 | 7 | 2.13 /54.0 | 0.032 / 0.049 | 164 ft / 50 m |
| 159668 | PUN-10 X 1.5-BL | Blue | | | | | |
| 159669 | PUN-10 X 1.5-SW | Black | | | | | |
| 178420 | PUN-10 X 1.5-GE | Yellow | | | | | |
| 178427 | PUN-10 X 1.5-GN | Green | | | | | |
| 178413 | PUN-10 X 1.5-RT | Red | | | | | |
| 152589 | PUN-12 x 2-SI | Silver | 12 | 8 | 2.44 / 62.0 | 0.051 / 0.077 | 164 ft / 50 m |
| 159670 | PUN-12 x 2-BL | Blue | | | | | |
| 159671 | PUN-12 x 2-SW | Black | | | | | |
| 178421 | PUN-12 x 2-GE | Yellow | | | | | |
| 178428 | PUN-12 x 2-GN | Green | | | | | |
| 178414 | PUN-12 x 2-RT | Red | | | | | |
| 152589 | PUN-16 x 2.5-SI | Silver | 16 | 11 | 3.46 / 88.0 | 0.085 / 0.129 | 164 ft / 50 m |
| 159670 | PUN-16 x 2.5-BL | Blue | | | | | |
| 159671 | PUN-16 x 2.5-SW | Black | | | | | |
| 178421 | PUN-16 x 2.5-GE | Yellow | | | | | |
| 178428 | PUN-16 x 2.5-GN | Green | | | | | |
| 178414 | PUN-16 x 2.5-RT | Red | | | | | |
| 152822 | PUN-4 x 0.75-DUO | Silver | 4 | 2.6 | 1.67 / 17.0 | 0.012 / 0.018 | 164 ft / 50 m |
| 159674 | PUN-4 x 0.75-DUO-BS | Blue/Black | | | | | |
| 152823 | PUN-6 x 1-DUO | Silver | 6 | 4 | 0.04 / 26.5 | 0.025 / 0.038 | |
| 159675 | PUN-6 x 1-DUO-BS | Blue/Black | | | | | |
| 152824 | PUN-8 x 1.25-DUO | Silver | 8 | 5.7 | 1.46 / 37.0 | 0.040 / 0.060 | |
| 159676 | PUN-8 x 1.25-DUO-BS | Blue/Black | | | | | |
| 152825 | PUN-10 x 1.5-DUO | Silver | 10 | 7 | 2.13 / 54.0 | 0.065 / 0.098 | |
| 159677 | PUN-10 x 1.5-DUO-BS | Blue/Black | | | | | |

* Sold in full rolls only. Additional lengths on request.

# Accessories – Valves and Supply Plates

Smart Cubic Valve Manifolds, CPV-SC

| Ordering Data – Valves | | | |
|---|---|---|---|
| | Designation | Type | Part No. |
|  | **Solenoid Valve with M5 Threaded Connections** | | |
| | 5/2-way valve, single solenoid | CPVSC1-M1H-M-P-M5 | 527550 |
| | 5/2-way valve, double solenoid | CPVSC1-M1H-J-P-M5 | 527553 |
| | 3/2-way valve, normally open | CPVSC1-M1H-N-P-M5O | 527551 |
| | 3/2-way valve, normally closed | CPVSC1-M1H-K-P-M5C | 527552 |
| | 2/2-way valve, normally closed | CPVSC1-M1H-D-P-M5C | 527554 |
| | **Solenoid Valve with QS-3 Push-in Fittings** | | |
|  | 5/2-way valve, single solenoid | CPVSC1-M1H-M-P-Q3 | 527555 |
| | 5/2-way valve, double solenoid | CPVSC1-M1H-J-P-Q3 | 527558 |
| | 3/2-way valve, normally open | CPVSC1-M1H-N-P-Q3O | 527556 |
| | 3/2-way valve, normally closed | CPVSC1-M1H-K-P-Q3C | 527557 |
| | 2/2-way valve, normally closed | CPVSC1-M1H-D-P-Q3C | 527559 |
| | **Solenoid Valve with QS-4 Push-in Fittings** | | |
| | 5/2-way valve, single solenoid | CPVSC1-M1H-M-P-Q4 | 527560 |
| | 5/2-way valve, double solenoid | CPVSC1-M1H-J-P-Q4 | 527563 |
| | 3/2-way valve, normally open | CPVSC1-M1H-N-P-Q4O | 527561 |
| | 3/2-way valve, normally closed | CPVSC1-M1H-K-P-Q4C | 527562 |
| | 2/2-way valve, normally closed | CPVSC1-M1H-D-P-Q4C | 527564 |
| | **Solenoid Valve with QS-1/8 Push-in Fittings** | | |
| | 5/2-way valve, single solenoid | CPVSC1-M1H-M-P-QA | 530542 |
| | 5/2-way valve, double solenoid | CPVSC1-M1H-J-P-QA | 530545 |
| | 3/2-way valve, normally open | CPVSC1-M1H-N-P-QAO | 530543 |
| | 3/2-way valve, normally closed | CPVSC1-M1H-K-P-QAC | 530544 |
| | 2/2-way valve, normally closed | CPVSC1-M1H-D-P-QAC | 530546 |
| | **Solenoid Valve with QS-5/32 Push-in Fittings** | | |
| | 5/2-way valve, single solenoid | CPVSC1-M1H-M-P-QB | 530547 |
| | 5/2-way valve, double solenoid | CPVSC1-M1H-J-P-QB | 530550 |
| | 3/2-way valve, normally open | CPVSC1-M1H-N-P-QBO | 530548 |
| | 3/2-way valve, normally closed | CPVSC1-M1H-K-P-QBC | 530549 |
| | 2/2-way valve, normally closed | CPVSC1-M1H-D-P-QBC | 530551 |
|  | **Blanking Plate** | | |
| | Vacant position, with blanking plate | CPVSC1-RP-B | 527527 |
|  | **Supply Plate with M5 Threaded Connection** | | |
| | Channel 1 separated | CPVSC1-SP-P-M5 | 527528 |
| | Channel 1/3/5 separated | CPVSC1-SP-PRS-M5 | 527530 |
| | Without channel separation | CPVSC1-SP-M5 | 527532 |
| | **Supply Plate QS-4 with Push-in Fittings** | | |
| | Channel 1 separated | CPVSC1-SP-P-Q4 | 527529 |
| | Channel 1/3/5 separated | CPVSC1-SP-PRS-Q4 | 527531 |
| | Without channel separation | CPVSC1-SP-Q4 | 527533 |
|  | **Cover for Manual Override** | | |
| | 10 pieces | CPVSC1-MO-V | 527393 |
| | 1 piece | CPVSC1-HV | 527642 |

**Conversion Factors**
The conversion table below includes the most commonly used for designing a system. They are given to enable the user to make necessary calculations.

**Length or Distance**

| | | |
|---|---|---|
| m > ft | = | x 3.281 |
| mm > inch | = | ÷ 25.4 |

**Volume**

| | | |
|---|---|---|
| $cm^3$ > $in^3$ | = | x 0.061 |

**Mass**

| | | |
|---|---|---|
| g > lb | = | x 0.002 |
| kg > lb | = | x 2.2046 |

**Pressure**

| | | |
|---|---|---|
| bar > psi | = | x 14.7 |

**Temperature**

| | | |
|---|---|---|
| C° > F° | = | x [1.8] + 32 |

**Flow**

| | | |
|---|---|---|
| l/min > Cv | = | x 0.001 |
| l/min > scfm | = | x 0.0353 |

**Force**

| | | |
|---|---|---|
| N > lbf | = | x 0.2248 |
| kgf > N | = | x 9.80665 |

**Moment**

| | | |
|---|---|---|
| Nm > in-lb | = | x 8.8507 |
| Nm > ft-lb | = | x 0.7376 |

**Moment of Inertia**

| | | |
|---|---|---|
| Kg·$cm^2$ > lb-$in^2$ | = | x 0.3417 |
| Kg·m > lb-ft | = | x 7.233 |
| Kg·$m^2$ > oz-$in^2$ | = | x 5.4675 |



While every effort is made to ensure that all dimensions and specifications are correct, any printing errors not rectified are outside the control of Festo, who cannot be held responsible for the same. For Liability and Warranty conditions, refer to our standard “Conditions of Sale”, available on request from your local Festo office.

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