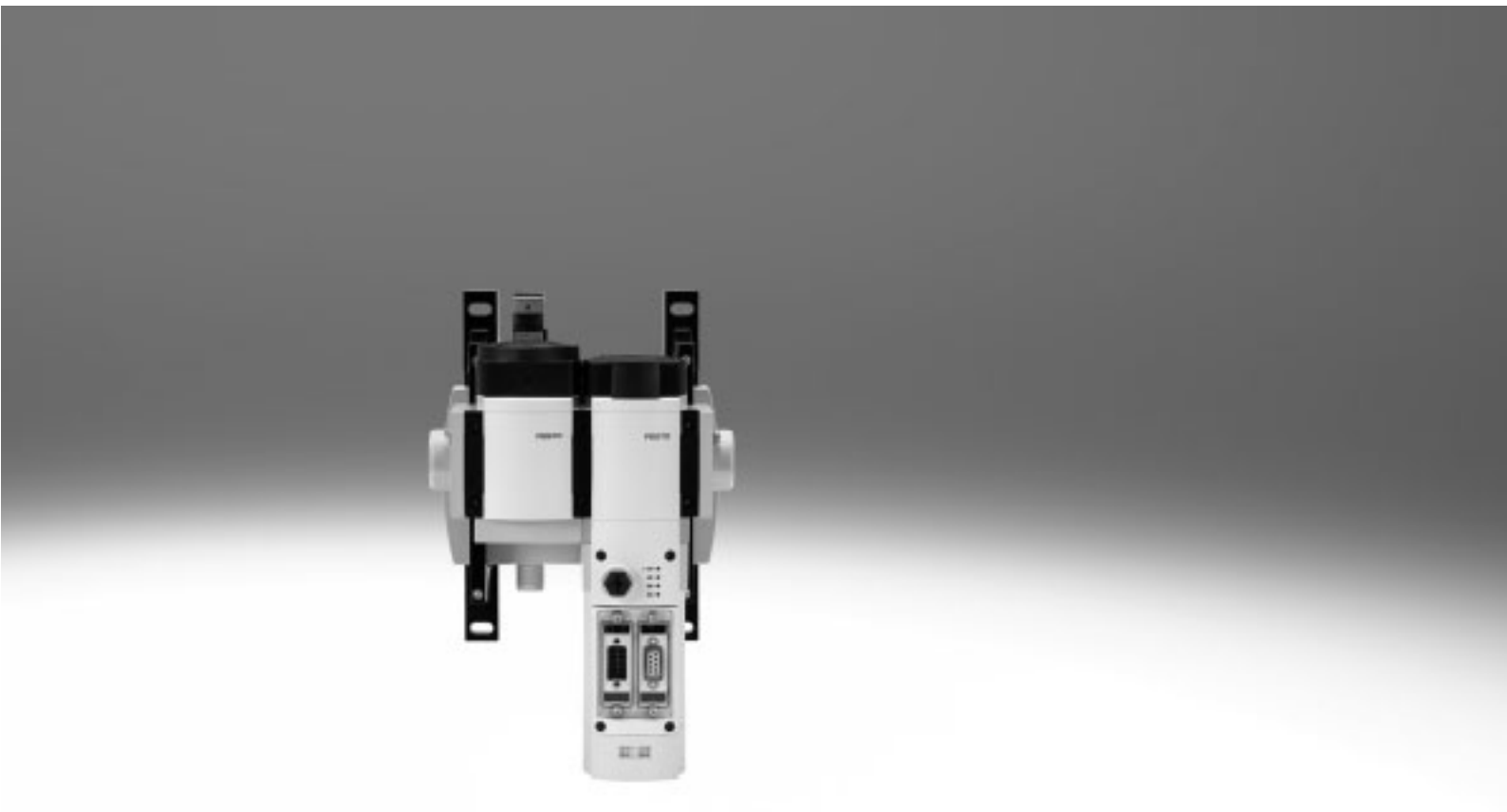
Service unit combinations MSE6, MSE series



New

Service unit combinations MSE6, MSE series

Key features

Overview

Product description

The MSE6-E2M is an intelligent pneumatic service unit for optimising the use of compressed air as an energy medium in industrial automation technology.
Equipped with measurement, control and diagnostic functions, the MSE6-E2M supports energy-efficient operation of pneumatic systems. The MSE6-E2M detects increased compressed air consumption in the standard production cycle which may be caused by leakages, for example, and enables targeted system maintenance. Furthermore, the MSE6-E2M detects when the production plant is in a standby state and stops the supply of compressed air in order to prevent unnecessary compressed air consumption.
The MSE6-E2M can also be used as a process monitoring module by enabling flow and pressure values to be transferred directly to the machine controller via a fieldbus connection, where they can be analysed.

Product features

Control function (energy efficiency function)
- Automatic shut-off when flow rate is not achieved
- User-controlled shut-off and pressurising

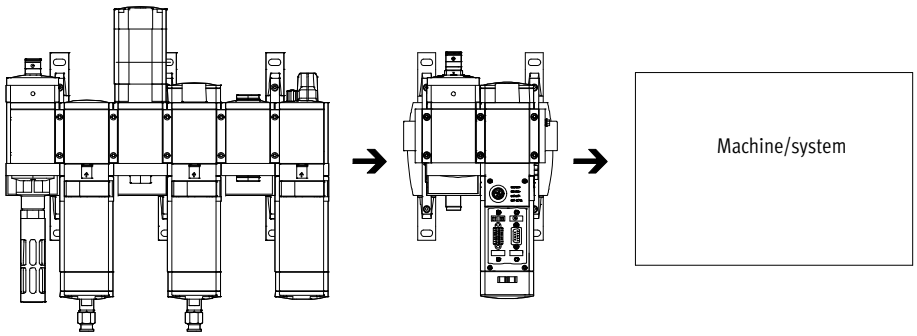
Recording and provision of measurement data
- Output pressure
- Pressure change (for pressure tightness testing)
- Flow
- Air consumption

Limit monitoring
- Pressure, upper limit value
- Pressure change, upper limit value
- Flow, upper limit value

Fieldbus connection
- PROFIBUS

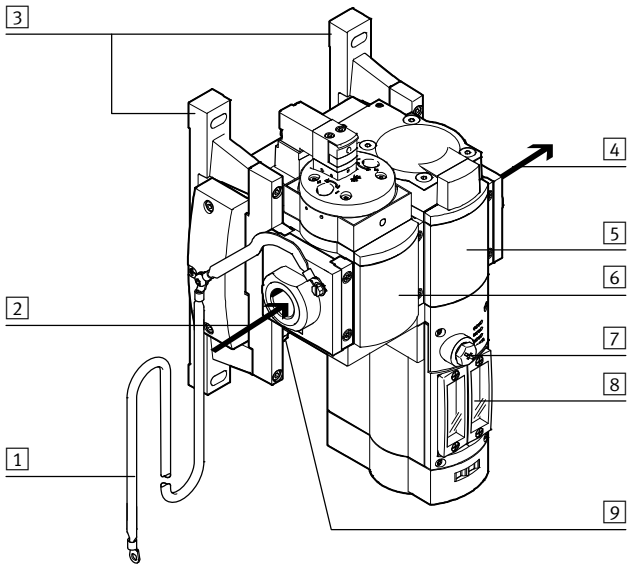
Installation

The module is typically assembled behind a service unit combination.



Structure

The main components of the MSE6-E2M are: shut-off valve, flow sensor, pressure sensor and bus node. The fieldbus interface allows complete integration into a machine controller. As an alternative to networked communication, the MSE6-E2M can also be operated using an external operator unit or a PC.



1 Earth terminal
2 Pneumatic port 1: compressed air inlet
3 Wall bracket
4 Pneumatic port 2: compressed air outlet
5 Sensor module for measuring pressure, flow and consumption as well as activation of the shut-off valve
6 Shut-off valve for enabling and shutting off the system supply air
7 Service interface for external operator unit
8 Fieldbus interface
9 System supply

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Key features

Functions

Standby detection and automatic shut-off of the compressed air supply

The MSE6-E2M uses settable parameters to detect when the production system is down. The system is separated from the compressed air supply using a 2/2-way shut-off valve, without exhausting the downstream system. This avoids additional air consumption through leakages. If production is to continue on the system, then this must be signalled to the MSE6-E2M. The shut-off valve opens and the system is again supplied with compressed air. Automatic shut-off of the compressed air supply can be activated and deactivated by the user. In the deactivated state, the shut-off valve can be controlled directly by the PLC.

Pressure tightness testing

When in the shut-off state, the MSE6-E2M measures the pressure curve over time.
Even in well-maintained systems, the pressure falls continuously due to leakages. The fewer leakages the system has, the slower the pressure drop will be. The measured pressure change serves as a measure of the leakage existing in the system. If the parameterised limit value is exceeded, then the device will output a diagnostic message.

Pressure recording

The MSE6-E2M continuously measures the output pressure, prepares the data and makes it available cyclically.
To detect high operating pressures, the MSE6-E2M offers the option of parameterising limit values for pressure. If the parameterised limit value is exceeded, then the device will output a diagnostic message.

Flow recording

The MSE6-E2M continuously records the flow, prepares the data and makes it available cyclically.
To detect high flow rates, the MSE6-E2M offers the option of parameterising limit values for the flow. If the parameterised limit value is exceeded, then the device will output a diagnostic message.

Consumption recording

The MSE6-E2M determines the compressed air consumption by recording the system flow rate. The user has the option of using appropriate signalling to record the compressed air consumption over a specific period of time.

Note

If there is an error (e.g. fieldbus interruption, PLC failure, no voltage) on the MSE6-E2M, then the 2/2-way shut-off valve switches to the initial position (pressurise). If there is a shut-off valve upstream, the system is pressurised suddenly.
Use suitable counter measures to prevent unintentional pressurisation of the system in the event of an error.

New

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Peripherals overview and type codes

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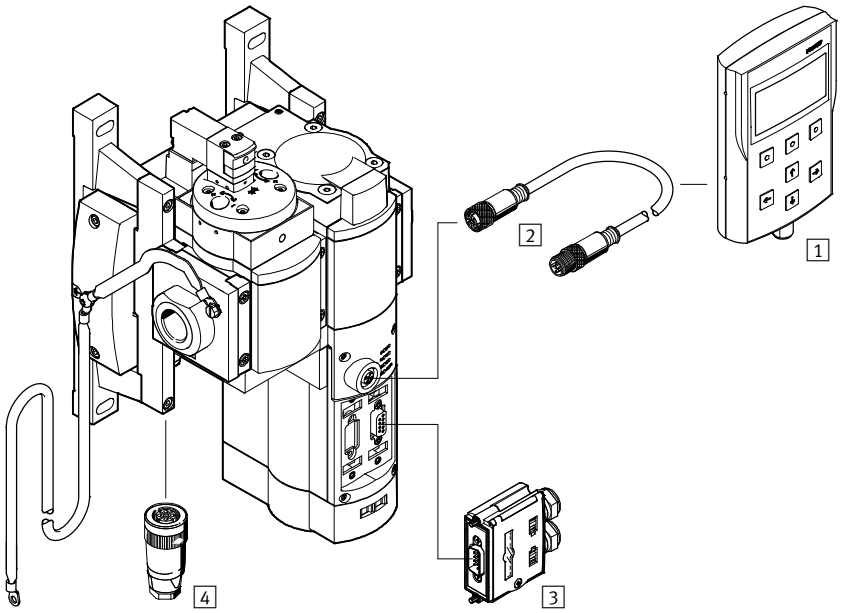
Peripherals overview



Accessories		→ Page/Internet
1	Operator unit CPX-MMI-1	8
2	Connecting cable KV-M12-M12	8
3	Plug FBS-SUB-9	8
4	Plug socket NTSD	8

Type codes

MSE	6	–	E2M	–	5000	–	FB13	–	AGD

Series	
MSE	Modular standard, electric

Size	
6	Grid dimension 62 mm

Function	
E2M	Energy saving (2/2-way function DE, V24)

Flow measuring range	
5000	5000 l/min

Electrical actuation/inputs and outputs	
FB13	Bus node for PROFIBUS DP

Pneumatic connection	
AGD	Connecting plate G1½

Service unit combinations MSE6, MSE series

Technical data

MSE6-E2M
consisting of
- Energy efficiency module
  - 2/2-way shut-off valve, open, single-solenoid
  - Flow sensor
  - Pressure sensor for output pressure
  - Control unit for processing measuring data, activating valves and controlling energy efficiency functions
- Fieldbus node

Operating pressure
4 ... 10 bar

Temperature range
0 ... +50 °C

General technical data	
Pneumatic connection 1, 2	G½ (connecting plate)
Mounting position	Horizontal ±5°
Flow direction	Unidirectional P1 → P2
Valve function	2/2-way shut-off valve, open, single-solenoid
Reset method	Mechanical

Electrical data		
System supply		
Electrical connection		Plug M18x1, 4-pin
Operating voltage range for actuator technology	[V DC]	18 ... 26.4
Operating voltage range for electronics/sensors	[V DC]	18 ... 30
Current consumption for actuator technology	[mA]	Max. 100 when valve is fed with current
Current consumption for electronics/sensors at 24 V	[mA]	Max. 300
Protection against incorrect polarity		For operating voltage connection
Degree of protection		IP65 with plug socket
Duty cycle	[%]	100
Fieldbus connection		
Fieldbus interface		Sub-D socket, 9-pin

Standard nominal flow rate qnN1)[1]		
Pneumatic port		G½
In main flow direction 1 → 2	[l/min.]	4500

1) Measured at p1 = 6 bar and p2 = 5 bar, Δp = 1 bar

Service unit combinations MSE6, MSE series

Technical data

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Operating and environmental conditions		
Operating pressure	[bar]	4 ... 10
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Lubricated operation not possible
Ambient temperature	[°C]	0 ... +50
Temperature of medium	[°C]	0 ... +50
Storage temperature	[°C]	–10 ... +60
Corrosion resistance class CRC[1)]		2
CE marking (see declaration of conformity)		To EU EMC Directive[2)]
		To EU Low Voltage Directive

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp ➔ User documentation.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Display/operation		
Flow measurement		
Flow measurement range initial value	[l/min.]	50
Flow measurement range final value	[l/min.]	5000
Accuracy of flow rate		+/– (3% o.m.v. + 0.3% FS)[1)]
Displayable unit(s)		l/min (presetting)
		scfm
Pressure measurement		
Pressure measuring range starting value	[bar]	0
Pressure measuring range final value	[bar]	14
Accuracy FS1[1)]	[%]	3
Displayable unit(s)		mbar (presetting)
		kPa
		psi
Consumption measurement		
Displayable unit(s)		l (presetting)
		m^3
		scf

1) % FS = % of measuring range final value (full scale)

Weight [g]	
MSE6	3300

Materials	
Housing	Die-cast aluminium
Cap	Reinforced PA
Cover	Reinforced PA
Seals	Nitrile rubber
Note on materials	Contains PWIS (paint-wetting impairment substances)

Service unit combinations MSE6, MSE series

Technical data

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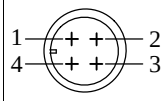
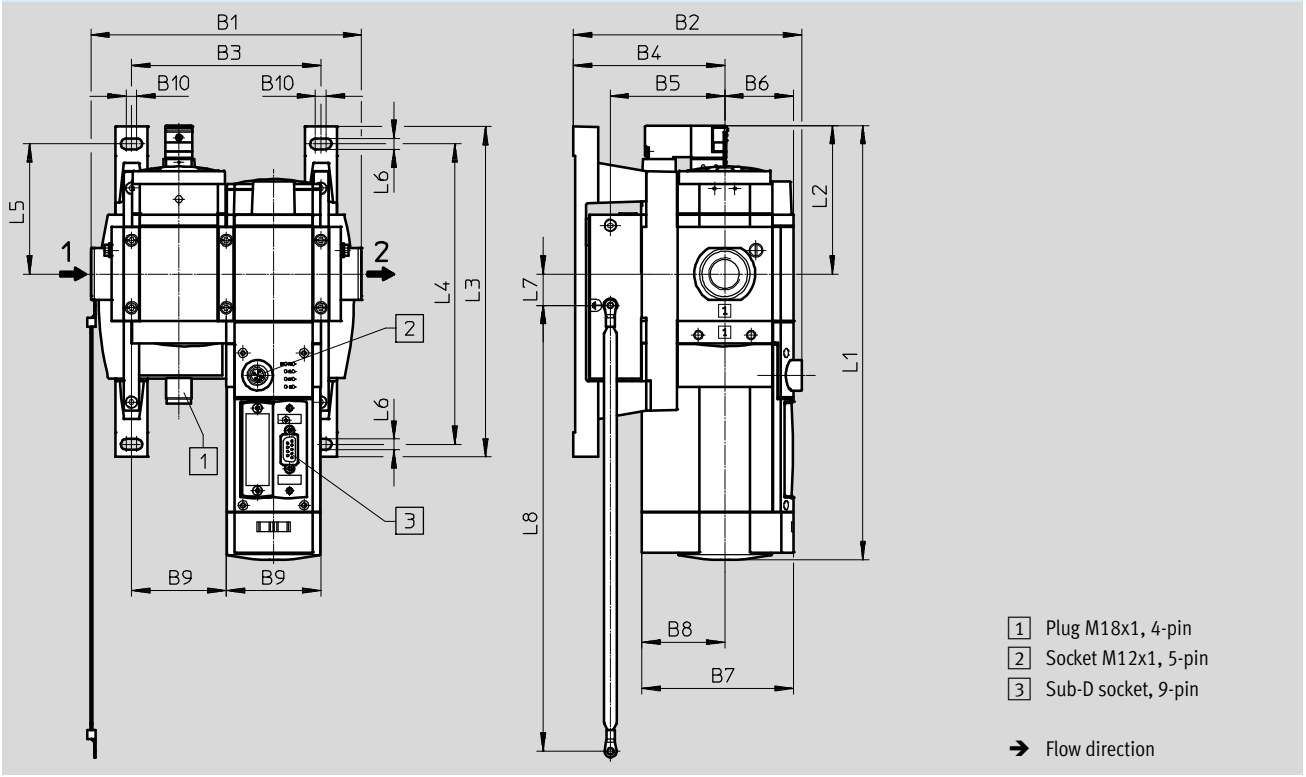
Pin allocation, system supply		
Plug M18x1, 4-pin	Pin	Meaning
	1	Operating voltage for electronics/sensors +24 V DC
	2	Operating voltage for actuator technology +24 V DC
	3	0 V
	4	Functional earth

Dimensions Download CAD data ➔ **www.festo.com**



B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	L1	L2	L3	L4	L5	L6	L7	L8
177.2	149.5	124	99	74.9	45	99.3	54.3	62	7	284.6	97.3	216.6	196.9	85.3	7	20.7	292

Ordering data			
Size	Pneumatic port	Part No.	Type
MSE6	G½	**2465321**	**MSE6-E2M-5000-FB13-AGD**

Service unit combinations MSE6, MSE series

Accessories

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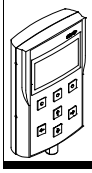
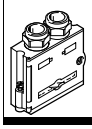
Ordering data – Operator unit CPX-MMI-1 — Technical data ➔ Internet: cpx-mmi-1

Description		Part No.	Type
	Provides data polling, configuration and diagnostic functions	**529043**	**CPX-MMI-1**

Ordering data – Connecting cable KV-M12-M12 — Technical data ➔ Internet: kv-m12-m12

Description		Cable length [m]	Part No.	Type
	Connecting cable for operator unit CPX-MMI-1	1.5	**529044**	**KV-M12-M12-1,5**
		3.5	**530901**	**KV-M12-M12-3,5**

Ordering data – Plug FBS-SUB-9 — Technical data ➔ Internet: fbs-sub-9

Description		Part No.	Type
	For PROFIBUS, Sub-D plug, straight	**532216**	**FBS-SUB-9-GS-DP-B**

Ordering data – Plug socket NTSD — Technical data ➔ Internet: ntsd

Description		Cable gland fitting	Terminal cross-section [mm²]	Part No.	Type
	Socket, straight, 4-pin, screw terminal	Pg9	1.5	**18493**	**NTSD-GD-9**
		Pg13	2.5	**18526**	**NTSD-GD-13,5**
	Socket, angled, 4-pin, screw terminal	Pg9	1.5	**18527**	**NTSD-WD-9**