

Short Instruction Manual

Mini Compact Ejector SCPMi

Note: These brief operating instructions were originally written in German and have been translated into English. The operating instructions describe the basic functions of the device. They are intended to provide a quick start for experienced users. The complete description of the device can be found in the detailed operating instructions at www.schmalz.com or is available on request. These brief operating instructions make no claim to being exhaustive. Store in a safe place for future reference. Subject to technical changes without notice. No responsibility is taken for printing or other types of errors.

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1 Product Description

1.1 Operating Modes

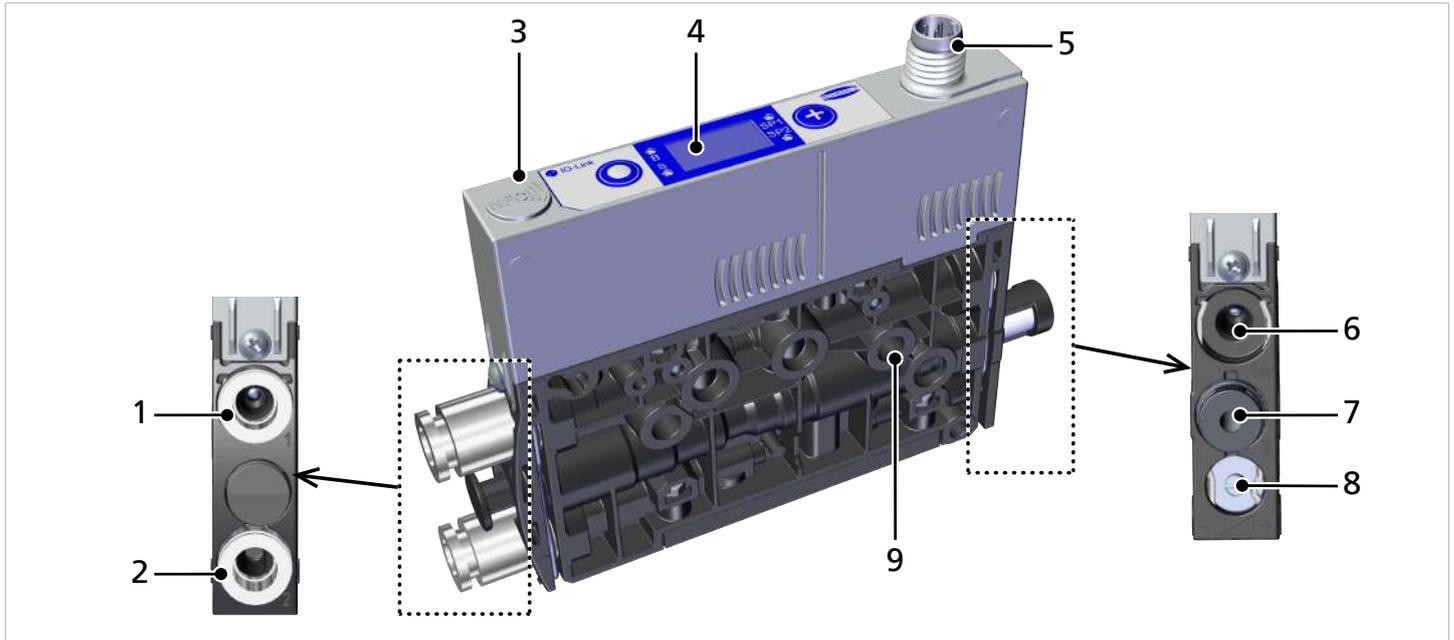
If the ejector is connected to the supply voltage, it is ready for operation. This is the normal operating mode, in which the ejector is operated by the system controller.

The ejector is parameterized via the available menus or via IO-Link.

The following operating modes are available during the setup process:

- Setting mode (only via IO-Link) and
- Manual mode

1.2 Ejector Structure



| | | | |
|---|--|---|--|
| 1 | Compressed air connector (marking 1) | 6 | Optional: Compressed air connector for separate blow-off EB (marking 1A) |
| 2 | Vacuum connection (marking 2) | 7 | Silencer (marking 3) |
| 3 | NFC symbol (product is equipped with an NFC interface) | 8 | Valve screw for blow off flow rate |
| 4 | Operating and display elements | 9 | 2x mounting hole |
| 5 | M8 electrical connection, 6-pole | | |

2 General parameters

| Parameter | Version | Symbol | Limit value | | | Comment |
|------------------------------------|---------|-----------|-------------|---------|----------|------------------------|
| | | | min. | optimal | max. | |
| Working temperature | | T_{amb} | 0° C | — | +50° C | — |
| Storage temperature | | T_{sto} | -10° C | — | 60° C | — |
| Humidity | | H_{rel} | 10% r.h. | — | 85% r.h. | Free from condensation |
| Degree of protection | | — | — | — | IP40 | — |
| Operating pressure (flow pressure) | 03 | P | 2 bar | 4 bar | 6 bar | — |
| | 05 | P | 4 bar | 4 bar | 6 bar | — |
| | 07 | P | 4 bar | 4 bar | 6 bar | — |
| | 10 | P | 4 bar | 4.5 bar | 6 bar | — |

| Parameter | Version | Symbol | Limit value | | | Comment |
|------------------------------------|---|------------------|-------------|---------|----------|------------------------|
| | 12 | P | 4 bar | 4.5 bar | 6 bar | — |
| Operating medium | Air or neutral gas, filtered to 5 µm, without oil, class 3-3-3 compressed air quality in acc. with ISO 8573-1 | | | | | |
| Parameter | Version | Symbol | Limit value | | | Comment |
| | | | min. | optimal | max. | |
| Working temperature | | T _{amb} | 0° C | — | +50° C | — |
| Storage temperature | | T _{sto} | -10° C | — | 60° C | — |
| Humidity | | H _{rel} | 10% r.h. | — | 85% r.h. | Free from condensation |
| Degree of protection | | — | — | — | IP40 | — |
| Operating pressure (flow pressure) | 05 | P | 4 bar | 4 bar | 6 bar | — |
| | 07 | | 4 bar | 4 bar | 6 bar | — |
| | 10 | | 4 bar | 4.5 bar | 6 bar | — |
| Operating medium | Air or neutral gas, filtered to 5 µm, without oil, class 3-3-3 compressed air quality in acc. with ISO 8573-1 | | | | | |

3 Electrical Parameters

| | | | |
|-------------------------------|---|-----------------------------|--------------------------|
| Supply voltage | DC 24 V ± 10% (PELV ¹⁾) | | |
| Polarity reversal protection | Yes | | |
| Current consumption (at 24 V) | — | Typical current consumption | Max. current consumption |
| | SCPMi – xx – NC | 50 mA | 70 mA |
| | SCPMi – xx – NO | 75 mA | 115 mA |
| NFC | NFC Forum Tag type 4 | | |
| IO-Link | IO-Link 1.1 Baud rate COM2 (38.4 Kbits/s) | | |

¹⁾ The power supply must correspond to the regulations in accordance with EN60204 (protected extra-low voltage).

4 Operating and Menu Concepts

The ejector is operated using two buttons on the foil keypad:



MENU BUTTON



PLUS BUTTON

Navigation is divided into three menus:

- The main menu: for standard applications
- The Extended Functions (EF) menu: for applications with special requirements
- The Info menu (INF): for reading out system data such as counters, the software version, etc.

The following information can be shown on the display:

- The current vacuum measurement value
- The selected menu item
- The settings
- Error messages in the form of error codes

The operating menu's home screen shows the currently measured vacuum level in the selected display unit. The measured value is displayed as positive compared to the ambient air pressure.

4.1 Displaying the Basic Settings (Slide Show)

When you press the **MENU** button from the home screen, the following parameters are automatically shown one after the other on the display (slide show):

- The vacuum unit
- The current operating mode (S I0 or I0L)
- The currently activated production setup profile (P-0 to P-3)
- The value of switching point SP1
- The value of reset point rP1
- The value of switching point SP2
- The value of reset point rP2
- The supply voltage US

The display cycle returns to the vacuum display after a complete cycle or can be canceled at any time by pressing any button.

4.2 Functions in the Main Menu

The following table shows an overview of the display codes and parameters in the main menu:

| Display code | Parameter | Explanation |
|--------------|-------------------------------------|---|
| SP1 | Switching point 1 | Value at which the control function deactivates (only active if [cEr] = [on]) |
| rP1 | Reset point 1 | Reset value 1 for the control function |
| SP2 | Switching point 2 | Switching value for the "Parts control" signal |
| rP2 | Reset point 2 | Reset value 2 for the "Parts control" signal |
| EbL | Blow off time | Setting of the blow-off time for time-controlled blow-off |
| cAL | Zero-point adjustment (calibration) | Calibrate vacuum sensor, zero point = ambient pressure |
| EF | Extended functions | Open the "Extended Functions" submenu |
| INF | Information | Open the "Information" submenu |
| INC | Incorrect | The entered value is not within the permissible value range. This is an informational message that appears if incorrect information is entered. |

4.3 Changing the Parameters of the Main menu

If you wish to change values, e.g. the switching points, you have to enter the new value digit by digit.

1. Use the **PLUS** button to select the desired parameter.
2. Confirm using the **MENU** button.
 - ⇒ The value that is currently set is displayed and the first digit flashes.
3. Use the **PLUS** button to change the value. The value increases by 1 each time that the button is pressed. After 9, the counter goes back to 0 when the **PLUS** button is pressed.
4. Press the **MENU** button to save the changed value.
 - ⇒ The first digit is accepted and the second digit flashes.
5. You can use the **PLUS** button to set the second digit.
6. Press the **MENU** button to save the changed value.
 - ⇒ The second digit is accepted and the third digit flashes.
7. You can use the **PLUS** button to set the third digit.
8. Press the **MENU** button to save the changed value.
 - ⇒ If the entered value is within the permissible value range, it is accepted and the modified parameter is displayed.
 - ⇒ If the entered value is not within the permissible value range, this is briefly indicated on the display [INC] and the new value is not accepted.

If input is interrupted for longer than 1 minute or if no input is made, the measurement screen is automatically displayed.

5 Checking the Delivery

The scope of delivery can be found in the order confirmation. The weights and dimensions are listed in the delivery notes.

1. Compare the entire delivery with the supplied delivery notes to make sure nothing is missing.
2. Damage caused by defective packaging or occurring in transit must be reported immediately to the carrier and J. Schmalz GmbH.

6 Installation Instructions



⚠ CAUTION

Improper installation or maintenance

Personal injury or damage to property

- ▶ During installation and maintenance, make sure that the product is disconnected and depressurized and that it cannot be switched on again without authorization.

For safe installation, the following instructions must be observed:

- Use only the connectors, mounting holes and attachment materials that have been provided.
- Mounting and removal must be performed only when the device is unpressurized and disconnected from the mains.
- Pneumatic and electrical line connections must be securely connected and attached to the product.

7 Pneumatic Connection



⚠ CAUTION

Compressed air or vacuum in direct contact with the eye

Severe eye injury

- ▶ Wear eye protection
- ▶ Do not look into compressed air openings
- ▶ Do not look into the silencer air stream
- ▶ Do not look into vacuum openings such as suction cups, suction lines and hoses.



⚠ CAUTION

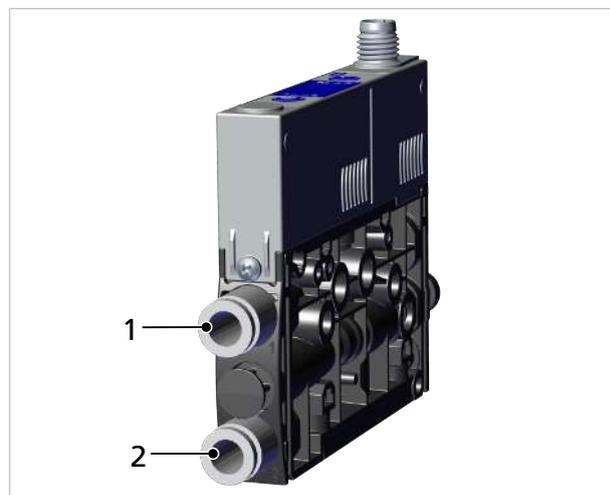
Noise pollution due to incorrect installation of the pressure and vacuum connections

Hearing damage

- ▶ Correct installation.
- ▶ Wear ear protectors.

7.1 Connecting the Compressed Air and Vacuum

- ▶ Connect the compressed air hose to the connection (1).
Connect the vacuum hose to the connection (2).
For threaded connectors, the maximum tightening torque is 1 Nm.



8 Electrical connection



⚠ CAUTION

Changing output signals when the product is switched on or plug is connected

Personal injury or damage to property!

- ▶ The electrical connection must be performed only by specialists who can evaluate the effects of signal changes on the overall system.



NOTE

Incorrect power supply

Destruction of the integrated electronics

- ▶ Operate the product using a power supply unit with protected extra-low voltage (PELV).
- ▶ The system must incorporate safe electrical cut-off of the power supply in compliance with EN60204.
- ▶ Do not connect or disconnect the connector under tension and/or when voltage is applied.

The electrical connection supplies the ejector with power and communicates with the controller of the higher-level machine using defined outputs or via IO-Link.

Establish the ejector's electrical connection using plug connector 1 as shown in the figure.

- ✓ Provide a connection cable with an M8 6-pole socket (customer's responsibility).



- ▶ Attach the connection cable to the electrical connection point (1) on the ejector, max. tightening torque = hand-tight.

Ensure that the electrical cable does not exceed the maximum length of 20 meters.

8.1 Pin Assignments

| M8 plug | PIN | Symbol | Wire color ¹⁾ | Function |
|---------|-----|----------|--------------------------|---|
| | 1 | US | Brown | 24 V power supply |
| | 2 | IN1 | White | "Suction" signal input |
| | 3 | GND | Blue | Ground |
| | 4 | OUT / CQ | Black | "Parts control" output (SP2) or IO-Link |
| | 5 | IN2 | Gray | "Blow off" signal input |
| | 6 | — | Pink | Not used |

¹⁾ When using a Schmalz connection cable, part no. 21.04.05.00488 (see accessories)

¹⁾ When using a Camozzi connection cable, part no. 70-1303-0190 (see accessories)

9 General Preparations



! WARNING

Extraction of hazardous media, liquids or bulk material

Personal injury or damage to property!

- ▶ Do not extract harmful media such as dust, oil mists, vapors, aerosols etc.
- ▶ Do not extract aggressive gases or media such as acids, acid fumes, bases, biocides, disinfectants or detergents.
- ▶ Do not extract liquids or bulk materials, e.g. granulates.

Always carry out the following tasks before activating the system:

1. Before each start of operations, check that the safety features are in perfect condition.
2. Check the product for visible damage and deal with any problems immediately (or notify the supervisor).
3. Ensure that only authorized personnel are present in the working area of the machine or system and that no other personnel are put in danger by switching on the machine.

During automatic operation, there must be no people in the system danger area.

10 IO-Link Data Dictionary

IO-Link implementation

| | |
|---------------------|---------------------------|
| Vendor ID | 234 (0x00EA) |
| Device ID | 100245 (0x018795) |
| SIO mode | Yes |
| IO-Link revision | 1.1 (compatible with 1.0) |
| IO-Link bitrate | 38.4 kBit/sec (COM2) |
| Minimum cycle time | 3.4 ms |
| Process data input | 4 bytes |
| Process data output | 2 bytes |



For all process data and parameters, see the detailed operating instructions