

Assembly and Operating Manual

APS-M1E

Electronic processor



Superior Clamping and Gripping



Imprint

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Technical changes:

We reserve the right to make alterations for the purpose of technical improvement.

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Dear Customer,

thank you for trusting our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. Ask us questions and challenge us. We will find a solution!

Best regards,

Your SCHUNK team

Customer Management

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Please read the operating manual in full and keep it close to the product.

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1 General

1.1 About this manual

This manual contains important information for a safe and appropriate use of the product.

This manual is an integral part of the product and must be kept accessible for the personnel at all times.

Before starting work, the personnel must have read and understood this operating manual. Prerequisite for safe working is the observance of all safety instructions in this manual.

1.1.1 Applicable documents

- General terms of business
- Catalog data sheet of the purchased product
- Assembly and Operating Manual of the sensors

The documents listed up here, can be download on our homepage schunk.com

1.2 Scope of delivery

The scope of delivery includes

- Electronic processor APS-M1E
- Accessory pack

1.3 Warranty

If the product is used as intended, the warranty is valid for 24 months from the ex-works delivery date under the following conditions:

- Observe the applicable documents, ▶ [1.1.1 \[4\]](#)
- Observe the ambient conditions and operating conditions, ▶ [2.3 \[5\]](#)

2 Basic safety notes

2.1 Appropriate use

The complete APS-M1 system, consisting of electronic processor and sensor, is intended for displacement measurements, e.g.

- for attachment to grippers for measuring and control tasks,
- for installation in measuring stands and measuring devices,
- for testing and gauging workpieces and production processes in a clean environment.

Since the system is not calibrated or gauged, the user must calibrate the system or have it gauged for corresponding applications at regular intervals.

- The electronic processor is intended for installation in a switch cabinet. The applicable guidelines must be observed and complied with.
- The product may only be used within the scope of its technical data, ▶ 3 [□ 7].

2.2 Inappropriate use

The product is not a safety component in accordance with the EC Machine Directive 2006/42/EC and must not be used in safety-relevant parts of machine control units.

2.3 Environmental and operating conditions

Required ambient conditions and operating conditions

Incorrect ambient and operating conditions can make the product unsafe, leading to the risk of serious injuries, considerable material damage and/or a significant reduction to the product's life span.

- Make sure that the product is used only in the context of its defined application parameters, ▶ 3 [□ 7].
- Make sure that the environment is free from splash water and vapors as well as from abrasion or processing dust. Exceptions are products that are designed especially for contaminated environments.

2.4 Constructional changes

Implementation of structural changes

By conversions, changes, and reworking, e.g. additional threads, holes, or safety devices can impair the functioning or safety of the product or damage it.

- Structural changes should only be made with the written approval of SCHUNK.

2.5 Personnel qualification

Inadequate qualifications of the personnel

If the personnel working with the product is not sufficiently qualified, the result may be serious injuries and significant property damage.

- All work may only be performed by qualified personnel.
- Before working with the product, the personnel must have read and understood the complete assembly and operating manual.
- Observe the national safety regulations and rules and general safety instructions.

3 Technical Data APS-M1E

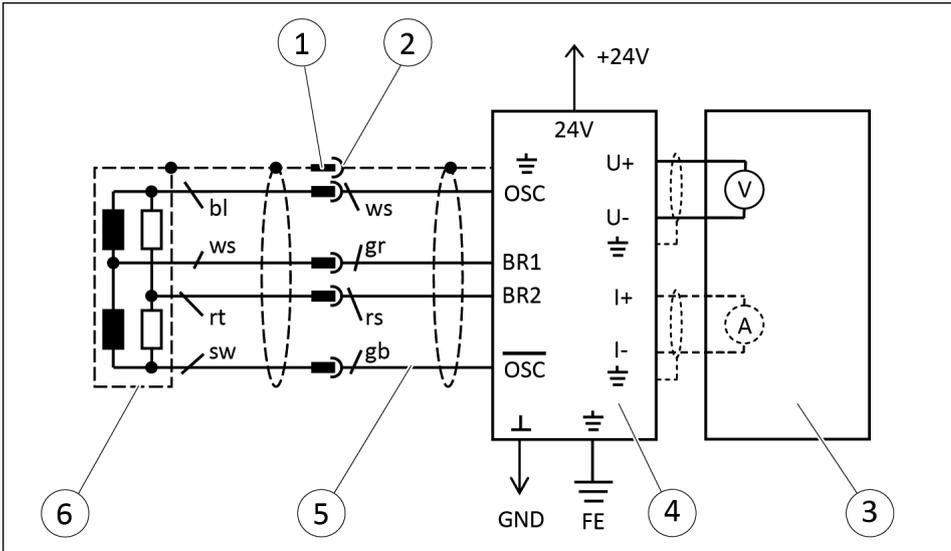
Designation	APS-M1E
Ambient temperature [°C]	
Min.	0
Max.	+ 60
Temperature drift [%/°C]	0.05
Nominal voltage [VDC]	24
Min.	21
Max.	27
Max. power consumption [W]	2.5
Oscillator voltage [VSS Sine]	7
Oscillator Frequency [Hz]	4800 ±8%
Output 1 [V]	0...10
permissible load RL [kOhm]	≥ 2
Output 2 [mA]	4...20
Load resistance [Ohm]	0...250
IP rating	20

4 Assembly and settings

4.1 Mounting and connecting the electronic processor

1. Mount the electronic processor in the control cabinet.
2. If the length of the sensor cable is not sufficient, use a cable extension (see operating manual of the sensor).
 - ✓ Maximum permissible cable length between sensor and electronic processor: 10 m.
3. Connect the sensor or extension cable to the terminals of the electronic processor, ▶ 4.1.1 [9].
4. Connect the shield of the sensor cable to the ground terminal.
5. Connect the power supply to the evaluation electronics.
6. Connect the multimeter or automation device to the standard signal output (0-10 V or 4-20 mA) used.
7. Adjust the standard signal output to the gripper stroke, ▶ 4.2 [10].
8. Connect the cable shield to the functional earth (FE) of the electronic processor.
9. Connect shielded cable between electronic processor and automation device, ▶ 4.1.1 [9].
 - ✓ Maximum permissible cable length: 3 m.
10. Fine-tune the standard signal.

4.1.1 Connection diagram



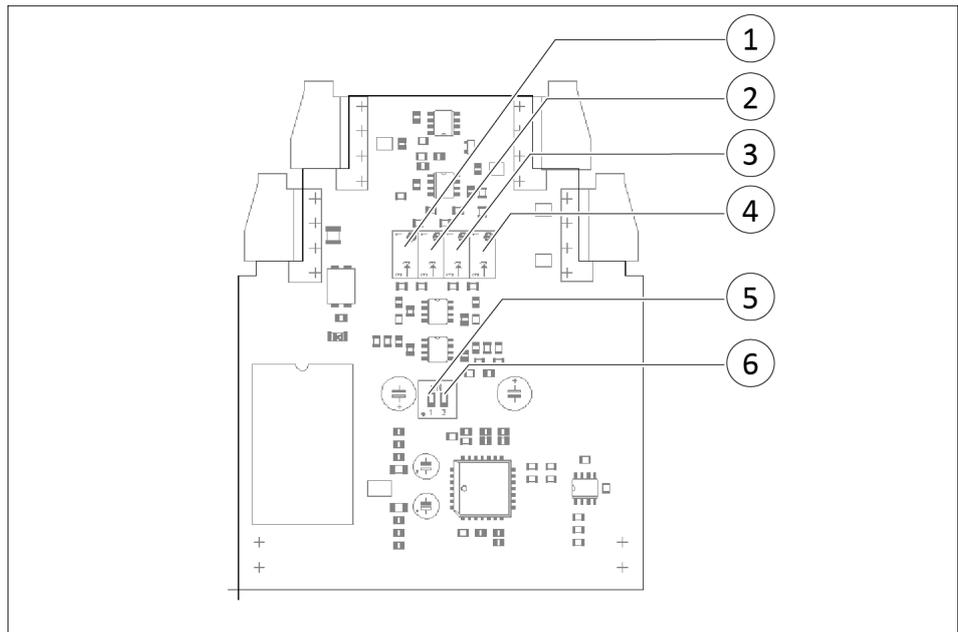
Connection diagram

1	Connector housing	4	Electronic processor
2	Socket housing	5	Cable extension
3	Automation device	6	Sensor

Wire colors:

bl	Blue	gr	Grey
ws	White	rs	Pink
rt	Red	gb	Yellow
sw	Black		

4.2 Calibrating the electronic processor



Electronic processor

1	0-point Voltage output	4	Amplification Current output
2	Amplification Voltage output	5	Activate voltage output
3	0-point Current output	6	Activate current output

- Gripper is mounted and connected.
 - Sensor is mounted and connected.
 - Electronic processor is mounted and connected.
 - Electronic processor is at operating temperature.
1. Set the standard signal output (0-10 V or 4-20 mA) at the DIP switches. Make sure that the unused standard signal output is deactivated.
 2. Open the gripper. Insert the gauge block corresponding to the minimum gripper stroke. Close the gripper.
 3. Set the standard signal value corresponding to the inserted gauge block at the 0-point potentiometer.
 4. Open the gripper. Insert the gauge block corresponding to the maximum gripper stroke. Close the gripper.
 5. Set the standard signal value corresponding to the inserted gauge block on the gain potentiometer.

Example for adjusting the electronic processor

- Gripper overall stroke: 0 ... 33 mm
 - Standard signal output: 0 ... 10 V
 - Voltage / mm: 0.303030303 V/mm
1. Open the gripper. Insert gauge block with 1 mm thickness.
Close the gripper.
 2. Set 0.303 V on the 0-point potentiometer.
 3. Open the gripper. Insert gauge block with 33 mm thickness.
Close the gripper.
 4. Set 10 V on the gain potentiometer.

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