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Passive Current Transducers for Sinusoidal Alternate Currents From 0...1 A/0...5 A MCR-SLP-1/5-UI-0(-SW)

- Passive current transducer without power supply
- Measuring range 1 A and 5 A AC, reconnectable
- Available with threshold value switches



1. Description

MCR-SLP-1/5-UI-0(-SW) passive current transducers convert sinusoidal alternate currents from 1 and 5 A into analog standard signals of 0...20 mA or 0...10 V. Modules acquire the necessary power for signal conversion from the measuring circuit so that a separate supply is not required for the transducer.

The MCR-SLP-1/5-UI-0-SW current transducer has an additional limit monitor. The limit value and an alarm suppression time are set using two potentiometers on the front of the housing.

One Form A and one Form B contact are available for the signaling on the output side. The appropriate switching state is displayed using LEDs.

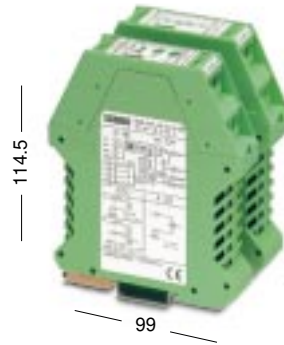
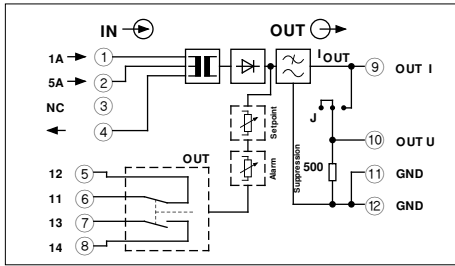
Both module versions are electrically isolated from one another on the input and output side.



Safety Note:

MCR-SLP-1/5-UI-0-SW passive current transducers are **not** suitable for safety circuits because there is no response at the relay output if the input current fails.

2. Technical Data



MCR-SLP-1/5-UI-0(-SW)

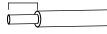
with signal conversion:
0...1 A AC, 0...5 A AC/0...20 mA, 0...10 V
available with relay output

Housing width 22.5 mm (0.886 in.)



M 3

8



	rigid [mm ²]	flexible AWG	I [A]	U [V]
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Connection data 0.2-2.5 0.2-2.5 24-14 * *

* The electrical data is determined by the module.

Description

MCR passive current transducer,
for sinusoidal alternate currents

Without switching output
With switching output

Technical Data

Input

Input current
Frequency range
Curve form
Overcurrent capacity

Surge withstand capability (for 1 second) 1 A input/5 A input
Permissible control range
Power loss at $I_A = 20$ mA 1 A input/5 A input
Connection method

Output

Voltage Output

Maximum output signal
Load
Ripple

Current Output

Maximum output signal
Load
- with simultaneous use of current and voltage output
Ripple

Switching Output

Relay output
Contact material
Maximum switching voltage
Continuous current carrying capacity/maximum inrush current
Cycles at 6 A
Threshold value setting range
Internal hysteresis
Alarm suppression time for threshold of 25%/110%

Type

MCR-SLP-1/5-UI-0
MCR-SLP-1/5-UI-0-SW

Order No.

28 14 35 9
28 14 36 2

Pcs. Pkt.

1
1

MCR-SLP-1/5-UI-0

0...1 A AC and 0...5 A AC
45...50...60 Hz
Sine
2 x I_N for 5 min. at 60°C (140°F)
Ambient temperature
50 A/100 A
1.2 x I_N
1.6 VA/2.2 VA
Screw-clamp terminal block
2.5 mm² (14 AWG)

0...10 V
20 V
> 100 kΩ
< 50 mV_{pp}
0...20 mA
30 mA
< 750 Ω
< 250 Ω
< 0.5%pp of measured value

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MCR-SLP-1/5-UI-0-SW

0...1 A AC and 0...5 A AC
45...50...60 Hz
Sine
2 x I_N for 5 min. at 55°C (131°F)
Ambient temperature
50 A/100 A
1.1 x I_N
1.8 VA/2.4 VA
Screw-clamp terminal block
2.5 mm² (14 AWG)

0...10 V
20 V
> 100 kΩ
< 50 mV_{pp}
0...20 mA
30 mA
< 750 Ω
< 250 Ω
< 0.5%pp of measured value

1 Form A contact, 1 Form B contact
AgSnO
250 V AC/60 V DC
2 A/6 A
> 100 000
25...110% of I_N using potentiometer
Approximately 3% of final value
0.25...10 s/0.15...6.5 s

Passive Current Transducer for Sinusoidal Alternate Currents 0...1 A / 0...5 A – MCR-SLP-1/5-UI-0(-SW)

General Data

Transmission error	< 0.5% of final value	< 2% of final value
Temperature coefficient	< 0.015%/K	< 0.015%/K
Step-response (10-90%)	<200 ms	<200 ms
rated isolation voltage	300 V AC	300 V AC
Test voltage:	4 kV, 50 Hz, 1 minute	4 kV, 50 Hz, 1 minute
	Safe isolation in accordance with EN 50 178/EN 61 010	Safe isolation in accordance with EN 50 178/EN 61 010
Protective circuit	Transient protection using suppressor diodes in the output	Transient protection using suppressor diodes in the output
Ambient temperature range	- 25°C to + 60°C (-13°F to +140°F)	- 25°C to + 55°C (-13°F to +131°F)
Mounting position/mounting	< 50°C (122°F): any	< 45°C (113°F) any
	> 50°C (122°F): perpendicular ¹⁾	> 45°C (113°F): perpendicular ¹⁾

¹⁾ Mounting on a horizontal DIN rail.



Conforms to the EMC Directive 89/336/EEC and the Low Voltage Directive 73/23/EEC

EMC (electromagnetic compatibility)

Noise immunity in accordance with EN 50082-2
 • Electrostatic discharge (ESD)

• Electromagnetic HF field
 Amplitude modulation
 Pulse modulation

• Fast transients (burst)

• Surge current load (surge)

• Conducted interference

Noise emission in accordance with EN 50081-2

EN 61000-4-2	8 kV air discharge ²⁾ 6 kV contact discharge ²⁾
EN 61000-4-3	10 V/m ¹⁾ 10 V/m ¹⁾
EN 61000-4-4	Input/output 2 kV/5 kHz ²⁾
EN 61000-4-5	Input/output: 2 kV/42 Ω ²⁾
EN 61000-4-6	Input/output 10 V ¹⁾
EN 55022	Class B

EN 61000 corresponds to IEC 1000/
 EN 55022 corresponds to CISPR22

These results were achieved using shielded cables.

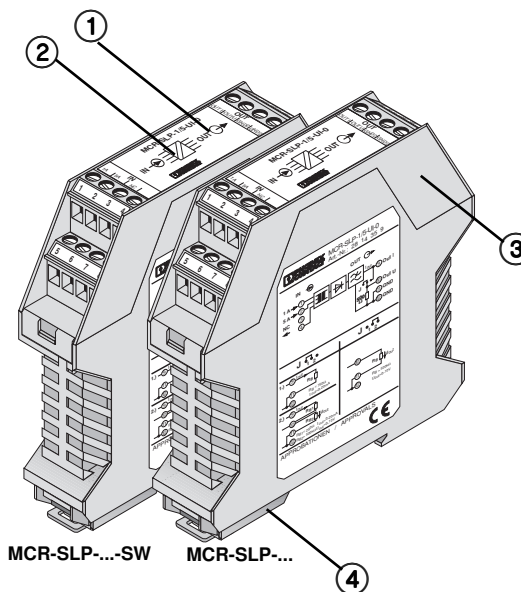
¹⁾Criterion A: Normal operating characteristics within the specified limits.

²⁾Criterion B: Temporary adverse effects on the operating characteristics, which the device corrects itself.

Class B: Industrial and domestic applications

MCR-SLP-1/5-UI-0(-SW) – Passive Current Transducer for Sinusoidal Alternate Currents From 0...1 A/0...5 A

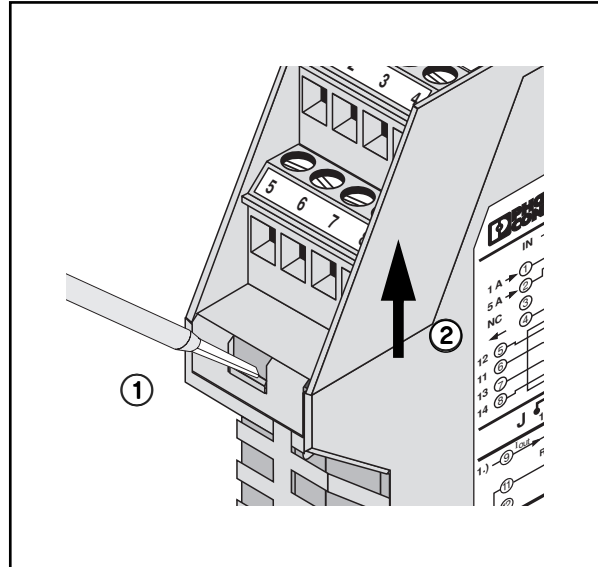
- ① SETPOINT/TIME potentiometer
- ② LED switching state indicator
- ③ Housing cover, can be removed for jumper setting
- ④ Metal lock for fastening on the DIN rail



3. Configuration of the Output

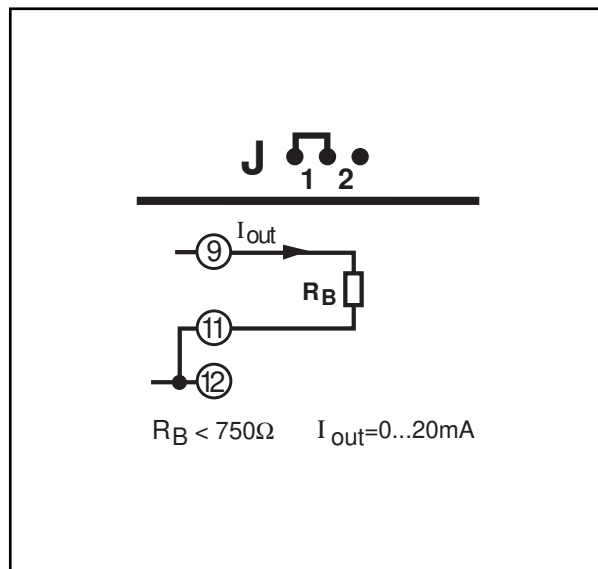
3.1. Opening the Device

The locked housing cover is released on both sides using a screwdriver ①. The housing cover and electronics can only be pulled out about 3 cm (1.181 in.) ②.



3.2. Jumper Position 1 (Current Output/Current and Voltage Output Parallel)

The 0-20 mA output signal is received by connecting terminal points ⑨ and ⑪. The maximum load is 750 Ω.



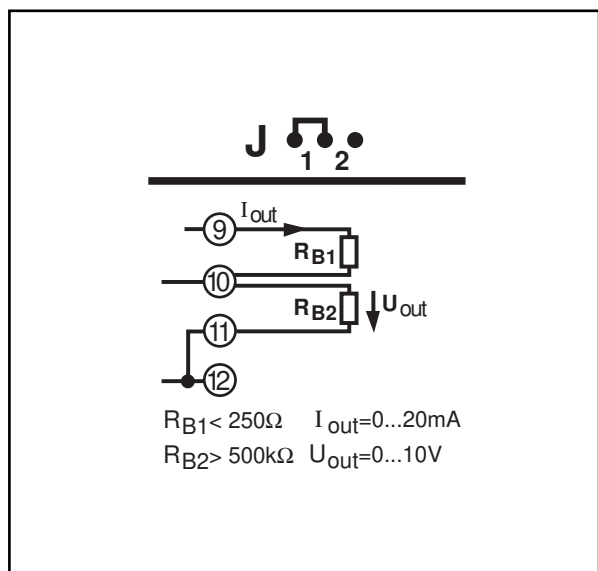
If the 0-20 mA current and the 0-10 V voltage signal are required simultaneously, this can be implemented by connecting the terminal points according to the diagram opposite:

Terminal points ⑨ and ⑩, are used to close the current path.

The voltage signal 0-10 V can be tapped (by leading back the current via the internal 500 Ω resistor) on the output side of connections ⑩ and ⑪.

Since the total of all loads in the current path must not exceed 750 Ω, a maximum external load of 250 Ω is to be maintained for this connection method.

In the voltage path, loads of 500 kΩ must not be exceeded. Additional measuring errors, which must be taken into account, can be found in the Technical Data.

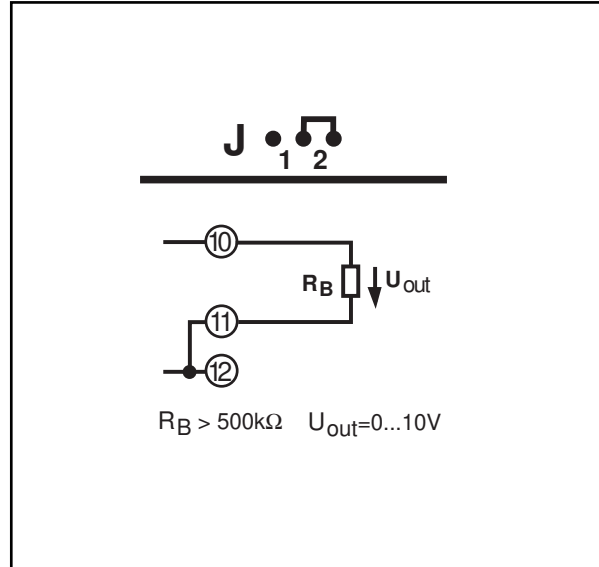


3.3. Jumper Position 2 (Voltage Output/Limit Value Indicator)

The **0-10V signal** is received by connecting terminal points ⑩ and ⑪.

In the voltage path, loads of 500 kΩ must not be exceeded. Additional measuring errors, which must be taken into account, can be found in the Technical Data.

In jumper position 2, there is an option with the **MCR-SLP-1/5-UI-0-SW** module, to use the device without an analog output, i.e., purely as a **limit value indicator**.



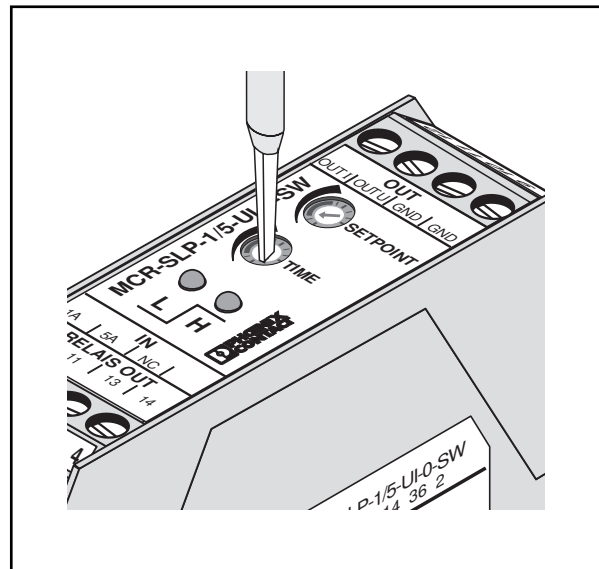
4. Settings (SETPOINT/TIME) for MCR-SLP-1/5-UI-0-SW

The desired current limit value is set for the **MCR-SLP-1/5-UI-0-SW** module using the SETPOINT potentiometer.

The TIME potentiometer enables an additional **alarm suppression time** of 0.2 – 6 seconds.

This means that the relay is only activated if the current limit value is still being exceeded after the alarm suppression time has elapsed.

This function is useful, for example, if on starting AC motors, no alarm is to be triggered due to the high startup current.



5. Default Setting

For the **MCR-SLP-1/5-UI-0** the jumper is in position 1 upon delivery (see Page 4).

For the **MCR-SLP-1/5-UI-0-SW**, the jumper is in position 2 upon delivery 2 (see above).