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.

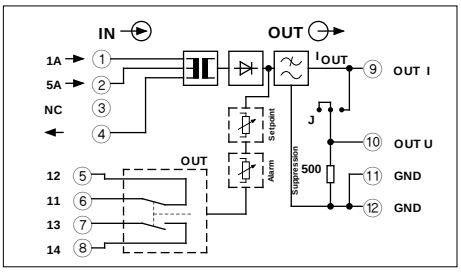
Both module versions are electrically isolated from one another on the input and output side.

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.

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2. Technical Data

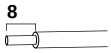




MCR-SLP-1/5-UI-0(-SW)

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





	rigid [mm²]	flexible	AWG	I [A]	U [V]
Connection data	0.2-2.5	0.2-2.5	24-14	*	*

* The electrical data is determined by the module.

Housing width 22.5 mm (0.886 in.)

Description		Type	Order No.	Pcs. Pkt.
MCR passive current transducer, for sinusoidal alternate currents	Without switching output	**MCR-SLP-1/5-UI-0**	**28 14 35 9**	1
	With switching output	**MCR-SLP-1/5-UI-0-SW**	**28 14 36 2**	1

Technical Data		MCR-SLP-1/5-UI-0	MCR-SLP-1/5-UI-0-SW
Input			
Input current		0…1 A AC and 0…5 A AC	0…1 A AC and 0…5 A AC
Frequency range		45…50…60 Hz	45…50…60 Hz
Curve form		Sine	Sine
Overcurrent capacity		2 x I_N for 5 min. at 60°C (140°F) Ambient temperature	2 x I_N for 5 min. at 55°C (131°F) Ambient temperature
Surge withstand capability (for 1 second)	1 A input/5 A input	50 A/100 A	50 A/100 A
Permissible control range		1.2 x I_N	1.1 x I_N
Power loss at I_A = 20 mA	1 A input/5 A input	1.6 VA/2.2 VA	1.8 VA/2.4 VA
Connection method		Screw-clamp terminal block 2.5 mm² (14 AWG)	Screw-clamp terminal block 2.5 mm² (14 AWG)
Output			
Voltage Output		0…10 V	0…10 V
Maximum output signal		20 V	20 V
Load		> 100 kΩ	> 100 kΩ
Ripple		< 50 mV_{pp}	< 50 mV_{pp}
Current Output		0…20 mA	0…20 mA
Maximum output signal		30 mA	30 mA
Load		< 750 Ω	< 750 Ω
- with simultaneous use of current and voltage output		< 250 Ω	< 250 Ω
Ripple		< 0.5%pp of measured value	< 0.5%pp of measured value
Switching Output			
Relay output		–	1 Form A contact, 1 Form B contact
Contact material			AgSnO
Maximum switching voltage			250 V AC/60 V DC
Continuous current carrying capacity/maximum inrush current			2 A/6 A
Cycles at 6 A			> 100 000
Threshold value setting range			25…110% of I_N using potentiometer
Internal hysteresis			Approximately 3% of final value
Alarm suppression time for threshold of 25%/110%			0.25…10 s/0.15…6.5 s

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:	Input/output/power supply	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 > 50°C (122˚F): perpendicular [1])	< 45 °C (113˚F) any > 45°C (113˚F): perpendicular [1])

[1]) **Mounting on a horizontal DIN rail.**

CE

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)	EN 61000-4-2	8 kV air discharge**2)** 6 kV contact discharge**2)**
• Electromagnetic HF field Amplitude modulation Pulse modulation	EN 61000-4-3	10 V/m**1)** 10 V/m**1)**
• Fast transients (burst)	EN 61000-4-4	Input/output 2 kV/5 kHz**2)**
• Surge current load (surge)	EN 61000-4-5	Input/output: 2 kV/42 Ω**2)**
• Conducted interference	EN 61000-4-6	Input/output 10 V**1)**
Noise emission in accordance with EN 50081-2	EN 55022	Class B

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

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

These results were achieved using shielded cables.

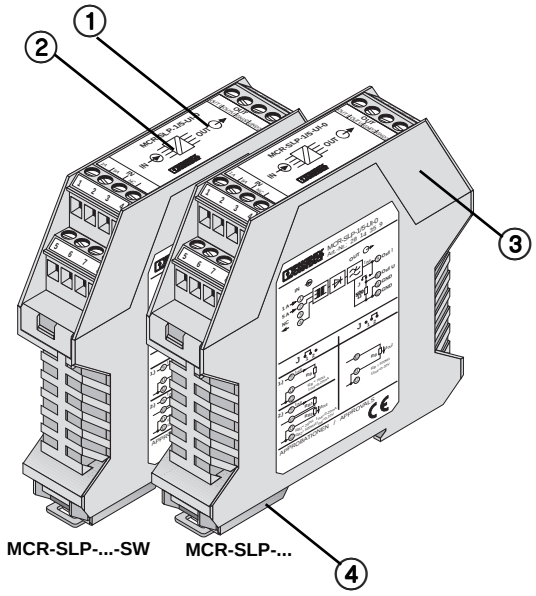
MCR-SLP-1/5-UI-0(-SW) – Passive Current Transducer for Sinusoidal Alternate Currents From 0...1 A/0...5 A

① SETPOINT/TIME potentiometer

② LED switching state indicator

③ Housing cover, can be removed for jumper setting

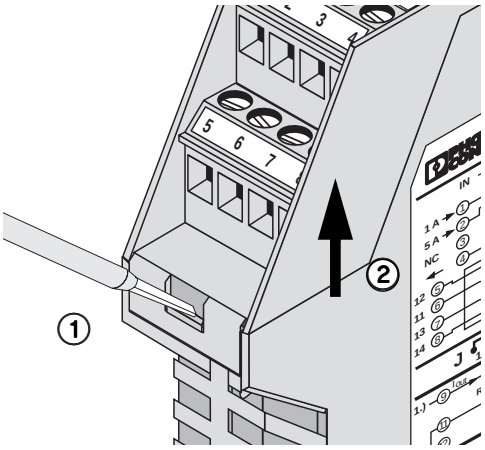
④ Metal lock for fastening on the DIN rail



3. Configuration of the Output

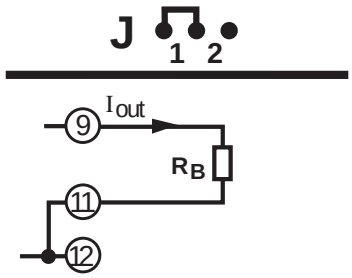
3.1. Opening the Device

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.



R_B < 750Ω I_{out}=0...20mA

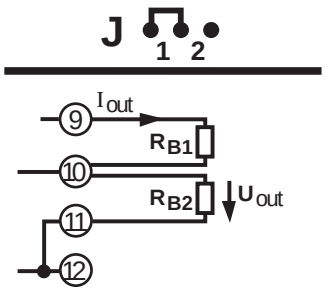
If the **0-20 mA current and the 0-10 V voltage signal are required simultaneously**, this can be implemented by connecting the terminal points according to the diagram opposite:

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.



R_{B1}< 250Ω I_{out}=0...20mA

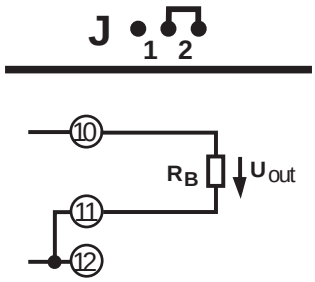
R_{B2}> 500kΩ U_{out}=0...10V

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

The **0-10 V 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**.



R_B > 500kΩ U_{out}=0...10V

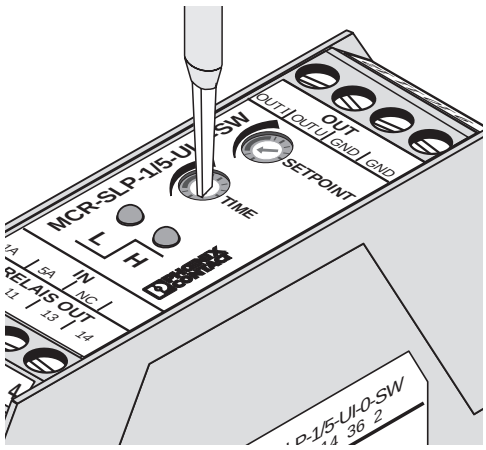
4. Settings (SETPOINT/TIME) for MCR-SLP-1/5-UI-0-SW

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).

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