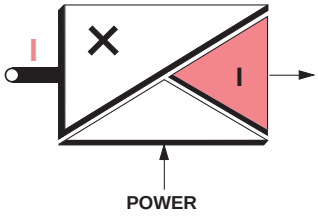
Active Current Transducer for Sinusoidal Alternate Currents From 0...1 A / 0...5 A MCR-SL-S-1/5-I-DCI-...

- **Safe isolation in accordance with EN 61 010**
- **Measuring range 1 A and 5 A AC, reconnectable**
- **0...20 mA- and 4...20 mA output, repluggable**
- **Available with 24 V AC/DC or 85...230 V AC/DC power supply**
- **22.5 mm (0.492 in.) ME housing**



1. Description

MCR-SL-S-1/5-I-DCI-24 and -230 active current transducers convert sinusoidal 50 Hz/ 60 Hz alternate currents from 1 A and 5 A into standard analog signals of 0…20 mA and 4…20 mA. The accuracy class rating is 0.5. A typical application for this device is transformer current detection.

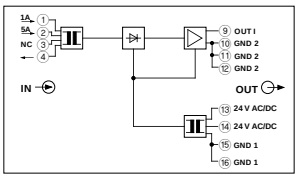
The 3-way isolation is set up as "safe isolation" between the signal input and signal output or supply.

An 85…230 V AC/DC supply is available in addition to a 24 V AC/DC supply.

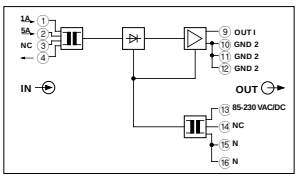
Headquarters: © Phoenix Contact GmbH & Co. KG • Flachsmarktstraße 8 • 32825 Blomberg • Germany
Phone +49 - 52 35 - 3 00 • Fax +49 - 52 35 - 34 12 • www.phoenixcontact.com

2. Technical Data

MCR-SL-S-1/5-I-DCI-24

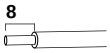


MCR-SL-S-1/5-I-DCI-230



MCR-SL-S-1/5-I-DCI-…

with signal conversion:
0…1 A AC, 0…5 A AC/0…20 mA, 4…20 mA



	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.)

(planned)

Description	Supply voltage	Type	Order No.	Pcs. Pkt.
MCR current transducer, for sinusoidal alternate currents 0...1 A AC / 0...5 A C	24 V AC/DC	**MCR-SL-S-1/5-I-DCI-24**	**28 14 81 2**	1
	85...230 V AC/DC	**MCR-SL-S-1/5-I-DCI-230**	**28 14 82 5**	1

Technical Data		**MCR-SL-S-1/5-I-DCI-24**	**MCR-SL-S-1/5-I-DCI-230**
Input			
Input current		0…1 A AC and 0…5 A AC	
Nominal frequency		50 Hz / 60 Hz	
Waveform		Sine	
Overcurrent capacity, continuous		1.2 x I_N	
Surge withstand capacity (for 1 second)		20 x I_N	
Connection method		Screw-clamp terminal block 2.5 mm², maximum (14 AWG)	
Output			
Output current		0…20 mA / 4…20 mA	
Maximum output current		30 mA, approximately	
Load		< 750 Ω	
General Data			
Supply voltage		24 V AC/DC	85...230 V AC/DC
Tolerance		DC -15% / +33% AC ±15%	DC -15% / +33% AC ±15%
Power requirement		≤ 1.5 W / ≤ 3 VA	≤ 1.5 W / ≤ 3 VA
Transmission error		Class 0.5	Class 0.5
Response time (10-90%)		< 300 ms	< 300 ms
Housing material		Polyamide PA unarmored	Polyamide PA unarmored
Protection class (protective isolation in accordance with EN 61 010)		II	II
Degree of protection (shock protection)	Housing/connection terminals	IP 40 / IP 20	IP 40 / IP 20
Degree of pollution		2	2
Rated isolation voltage		300 V AC	300 V AC
Surge voltage category	Input/output/auxiliary energy	III	III
Test voltage:		4 kV, 50 Hz, 1 minute	4 kV, 50 Hz, 1 minute
Ambient temperature range		-10°C (14°F) to 55°C (131°F)	-10°C (14°F) to 55°C (131°F)
Mounting position/mounting		Any	Any

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 50082-1/EN 50082-2		
• Electrostatic discharge (ESD)	EN 61000-4-2	8 kV air discharge[2)]
• Electromagnetic HF field Amplitude modulation Pulsed 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)] Supply voltage: 4 kV/5 kHz[2)]
• Surge current load (surge)	EN 61000-4-5	Supply voltage: 2 kV/42 Ω[2)]
• Conducted interference	EN 61000-4-6	Input/output/supply voltage 10 V [1)]
• Network frequency magnetic field		30 V/m[1)]
Noise emission in accordance with EN 50081-1/EN 50081-2	EN 55011	Class B

EN 61000 corresponds to IEC 61000/
EN 55011 corresponds to CISPR11

[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 A: Industrial and domestic applications

MCR-SL-S-1/5-I-DCI-...
Active Current Transducer for Sinusoidal Alternate Currents From 0...1 A / 0...5 A (Figure 06)

① Housing cover, can be removed for jumper setting

② Metal lock for fastening on the DIN rail

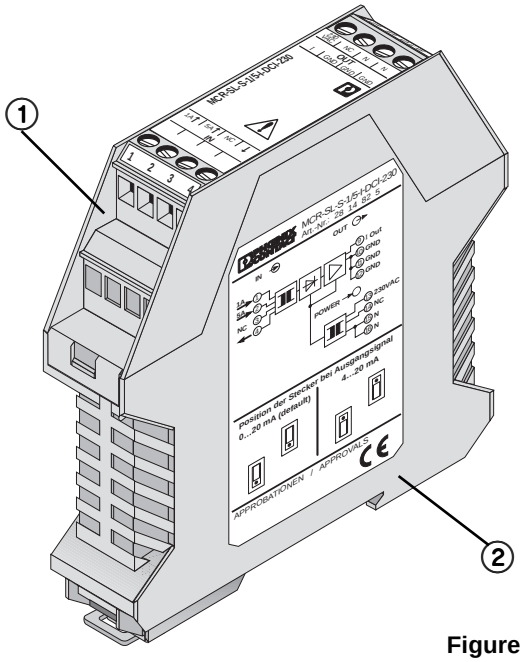


Figure 06

3. Prior to Startup

During operation, certain parts of this electric measurement converter may carry hazardous voltages.
Disregarding this warning may result in serious damage to persons or property.
MCR-SL-S-1/5-I-DCI-…- modules should only be mounted and started up by qualified personnel. The personnel must fully familiarize themselves with the warning instructions carried in this data sheet.
For its intended and safe operation, this device requires correct transport, storage and mounting as well as careful operation and maintenance.
The measurement converter must not be started up when the housing is open.
In this data sheet, the phrase "qualified personnel" applies to persons qualified as electricians or electrical engineers in accordance with VDE 0105 Part 1/DIN EN 50110-1.

4. Method of Operation

When the connection is made to the input terminals, the measuring current is made available via a transformer to a subsequent effective value converter. This enables the measurement converter to measure sinusoidal alternate currents (50 Hz/60 Hz). The signal is then amplified and sent to the output as an analog signal.

5. Electrical Connection (Figure 07)

When operating this electrical measurement converter, the guidelines relevant to the country of use must be adhered to (e.g., in Germany, VDE 0100 "Bedingung über das Errichten von Starkstromanlagen mit Nennspannungen unter 1000 Volt" [Conditions governing the installation of high voltage installations with a voltage of over 1000 V]) and appropriate electrical cables selected.

6. Configuration

6.1. Opening the Device (Figure 08)

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.

6.2. Jumper Setting (Figure 09)

Position of the connector (Jumper)
Fig. 9a: At output signal 0-20 mA (default)
Fig. 9a: At output signal 4-20 mA

Connection Assignment Table

Connection Terminal	Description	
①	1 A input	
②	5 A input	
③		
④	Reference ground for 1 and 5 A inputs	
⑨	Current output	
⑩	Reference ground for current output	
⑪	Reference ground for current output	
⑫	Reference ground for current output	
	MCR-SL-S-…-24	**MCR-SL-S-…-230**
⑬	Operating voltage 24 V AC/DC	Operating voltage 85-230 V AC/DC
⑭	Operating voltage 24 V AC/DC	
⑮	Reference ground for operating voltage	
⑯	Reference ground for operating voltage	

Figure 07

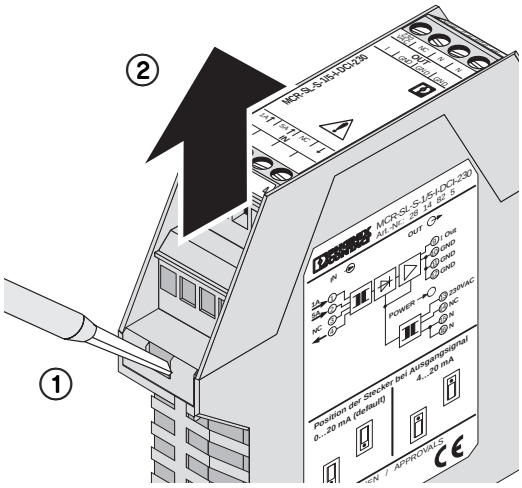


Figure 08

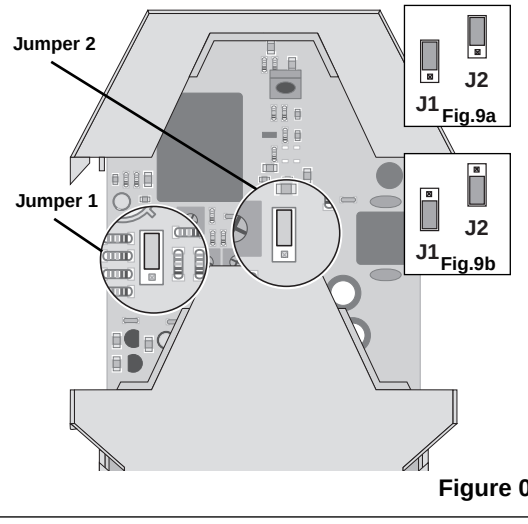


Figure 09