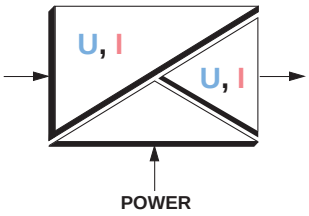
Configurable 3-Way Isolation Amplifier With Long-Range Supply MCR-FL-C-UI-UI-DCI-24/230

- **3-way isolation**
- **Safe isolation in accordance with EN 61 010**
- **Configurable inputs and outputs**
- **Adjustable cut-off frequency <10 Hz / 10 kHz, approximately**
- **Operating voltage 20...253 V AC/DC**
- **12.5 mm (0.492 in.) ME Housing**



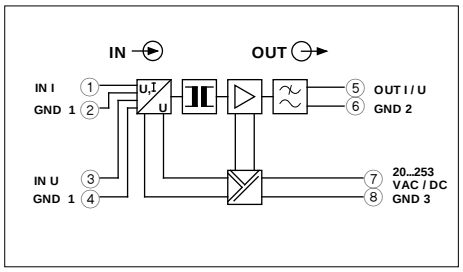
1. Description

The configurable MCR-FL-C-UI-UI-DCI-24/230 3-way standard signal isolation amplifier can process 0…20 mA, 4…20 mA and 0…10 V standard signals on the input side.

The 3-way isolation between signal input, output and supply is set up as "safe isolation" with a test voltage of 4 kV ~. Depending on the application, the signal transmission cut-off frequency can be set as either 10 kHz (approximately) or as a< 10 Hz filter. On the output side, any of the three standard signals are available. Adjustment after configuration is not necessary, as each transmission variant is calibrated and stored in the device. The transmission error is always < 0.1%.

The 3-way standard signal isolation amplifier has a long-range supply of 20…253 V AC/DC and is available in 12.5 mm (0.492 in.) narrow housing with pluggable screw connection.

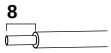
2. Technical Data



MCR-FL-C-UI-UI-DCI-24/230

with configurable inputs and outputs, safe isolation and long-range supply

M 3



	fixed [mm²]	flexible	AWG
Connection data	0.2-2.5	0.2-2.5	24-14

Housing width 12.5 mm (0.492 in.)

(planned)

Description	Type	Order No.	Pcs. Pkt.
MCR 3-Way isolation amplifier, for electrical isolation of analog signals	**MCR-FL-C-UI-UI-DCI-24/230**	**28 14 83 8**	1

Technical Data

Input		
Input signal		0…20 mA, 4…20 mA, 0…10 V reconnectable, switchable / default: 0…20 mA
Maximum input signal	Current/voltage	22 mA / 11 V, approximately
Input resistor	Current input	Voltage drop 250 mV, approximately, at 20 mA
	Voltage input	1 MΩ, approximately
Overload capability	Current input	< 300 mA
	Voltage input	Voltage limitation via suppressor diode at 30 V, maximum permissible continuous current 30 mA
Output		
Output signal		0…20 mA, 4…20 mA, 0…10 V switchable, default: 0…20 mA
Maximum output signal	Current/voltage	22 mA / 11 V, approximately
Load	At output current	600 Ω at 20 mA
	At output voltage	1 kΩ at 10 V
Ripple		< 10 mV_{eff}
General Data		
Supply voltage		20…253 V AC/DC
Current consumption		AC (48…62 Hz): 2 VA / DC, approximately: 1 W, approximately
Transmission error		0.1% of the final value
Temperature coefficient		0.005%/K
Cut-off frequency (3 dB)		< 10 Hz / 10 kHz, approximately, switchable, default: 10 kHz
Response time (10-90%)		35 ms / 35 µs
Test voltage:	Input/output/power supply	4 kV ~
Operational voltage (basic isolation)		1 kV AC/DC at surge voltage category II and degree of pollution 2 in accordance with DIN EN 61 010 Part 1
Protection against dangerous shock currents		Increased isolation in accordance with DIN EN 61 010 section 1 and safe isolation in accordance with VDE 0100 section 410 in the sense of VDE 0106 section 101 to 300 V AC/DC at overvoltage category II and degree of pollution 2 between input, output and power supply
Degree of protection		IP 20
Ambient temperature range		-10°C (14°F) to +70°C (158°F)
Connection method		Plug-in COMBICON screw-clamp terminal block
Mounting position/mounting		Any
Housing material		Polyamide PA, unarmored

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)]
• 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)]
• Network frequency magnetic field		30 V/m[1)]
Noise emission in accordance with EN 50081-1/EN 50081-2	EN 55022	Class A

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 A: Industrial application, without special installation measures

MCR-FL-C-UI-UI-DCI-24/230
Configurable 3-Way Isolation Amplifier
With Long-Range Supply (Figure 05)

① Plug-in COMBICON screw-clamp terminal block

② Plug-in COMBICON screw-clamp terminal block

③ Housing cover, can be removed for DIP switch setting

④ Metal lock for fastening on the DIN rail

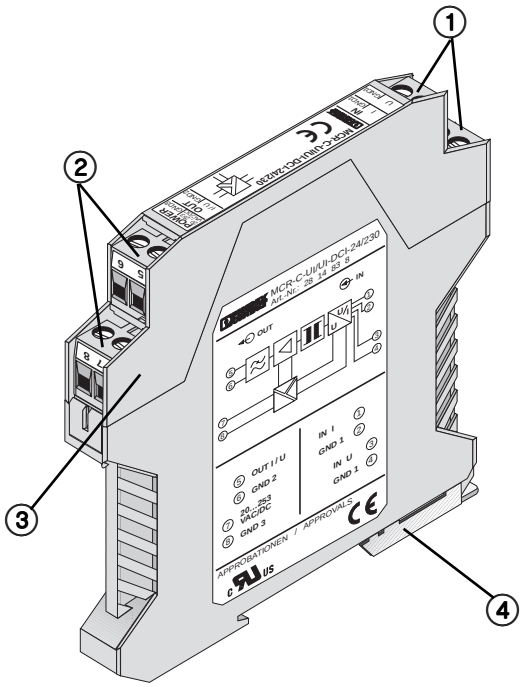


Figure 05

3. Configuration

3.1. Opening the Device (Figure 06)

The locked housing cover is released on both sides using a screwdriver ①. The housing cover and electronics can now be pulled out ②.

Ensure you take sufficient measures against electrostatic discharge

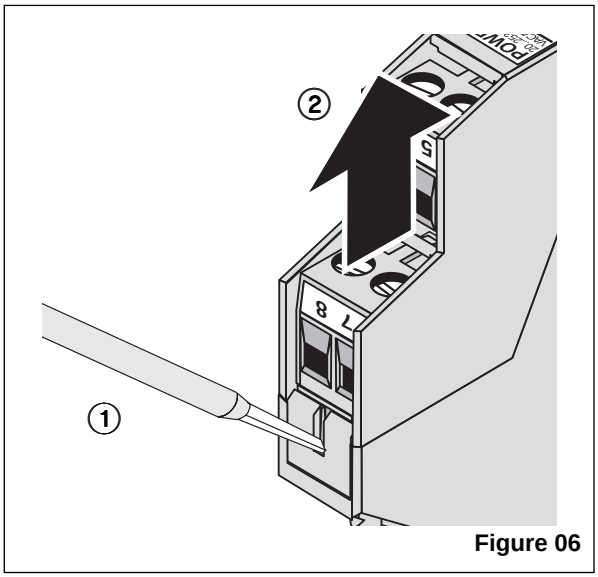


Figure 06

3.2. Setting (Figure 07)

Setting the required input and output areas with the DIP switches S1 and S2 using the table.

Configuration Table: Input and Output Signals

Input	Output	S1			S2		
		1	2	3	1	2	3
1) **0 - 20 mA**	**0 - 20 mA**						**x**
0 - 20 mA	4 - 20 mA	ON					x
0 - 20 mA	0 -10 V		ON		ON	ON	x
4 - 20 mA	0 - 20 mA	ON	ON				x
4 - 20 mA	4 - 20 mA						x
4 - 20 mA	0 -10 V			ON	ON	ON	x
0 -10 V	0 - 20 mA	ON		ON			x
0 -10 V	4 - 20 mA		ON	ON			x
0 -10 V	0 -10 V	ON	ON	ON	ON	ON	x
Bandwidth 10 Hz		x	x	x	x	x	ON
1) **Bandwidth 10 kHz**		**x**	**x**	**x**	**x**	**x**	

1) Factory setting
x ≙ Not relevant for this setting

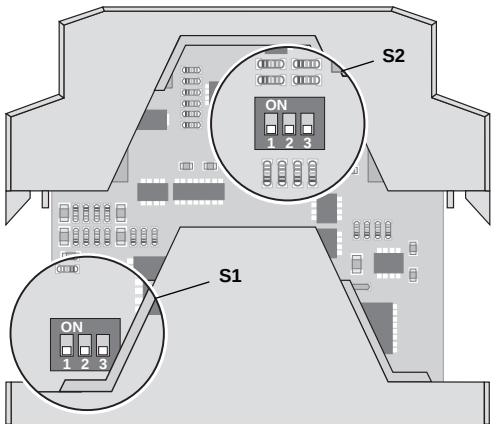


Figure 07

3.3. Paper Machine Application Example (Figure 08):

Drum speed synchronization

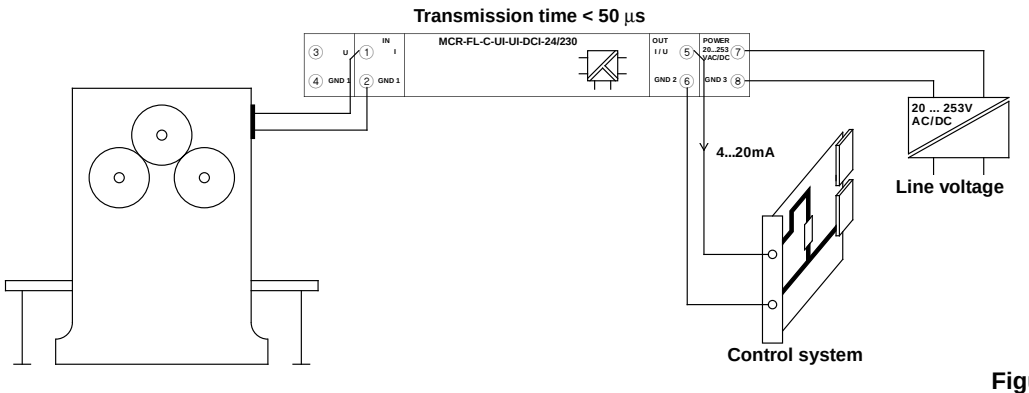


Figure 08