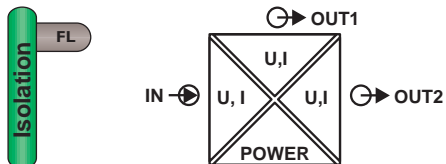


Signal Multiplier

MCR-FL-C-UI-2UI-DCI

1. Description

- 4-way isolation
- Configurable inputs and outputs
Signal conversion and amplification
- Adjustable signal combinations
- 17.5 mm ME housing



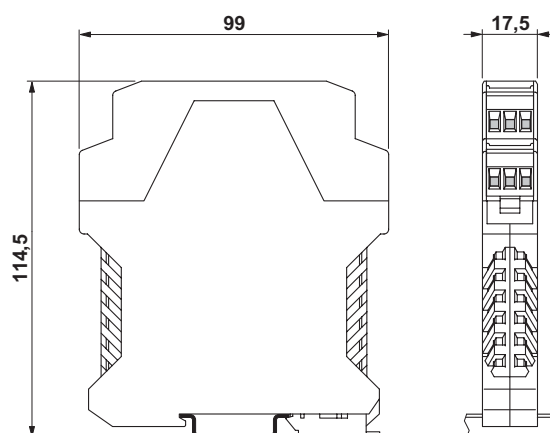
The MCR-FL-C-UI-2UI-DCI signal multiplier is used to multiply and electrically isolate analog signals.

The module inputs, outputs, and the power supply are electrically isolated from one another (4-way isolation). In this way, the modules can be used for electrical isolation, signal conversion, and amplification both locally and close to the control system. The auxiliary voltage required is indicated by a green power LED.

DIP switches can be used to switch between a signal selected within the limits of the order key or for the fixed signal conversions provided in the configuration table.

If no entry is made in the specified order key, the devices are supplied with the default configuration (input signal 0...20 mA, output signals 0...20 mA/0...10 V).

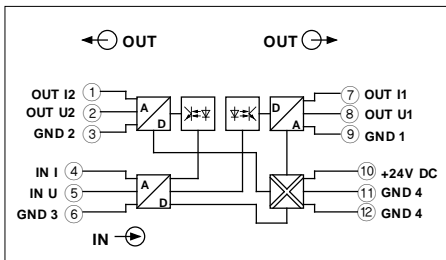
Adjustment following configuration is not necessary, as each transmission variant is calibrated and stored in the device.



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Signal Multiplier – MCR-FL-C-UI-2UI-DCI

2. Technical Data



MCR-FL-C-UI-2UI-DCI

with configurable input and output



M 3

8 mm



| | Solid [mm ²] | Stranded AWG |
|-----------------|-----------------------------|-------------------|
| Connection data | 0.2 - 2.5 | 0.2 - 2.5 25 - 14 |



Description

MCR signal multiplier,
for doubling and electrical
isolation of analog signals

Preconfigured
Not configured

Type

MCR-FL-C-UI-2UI-DCI
MCR-FL-C-UI-2UI-DCI-NC

Order No.

28 14 85 4
28 14 86 7

Pcs.
Pkt.

1
1

Technical Data

Input

Input signal range
Measuring range span
Maximum input signal
Input resistance

0...24 mA/0...12 V, freely selectable in increments of 0.1 (mA/V)
8 mA/4 V, minimum
50 mA or 30 V
50 Ω at I input/200 kΩ at U input

Output

Output signal per channel
Maximum output signal per channel
Load per channel

See order key/configuration table
35 mA or 15 V
≤ 600 Ω at I output/≥ 10 kΩ at U output

General Data

Supply voltage
Current consumption (without load)
Transmission error
Temperature coefficient
Limit frequency (3 dB)
Step response (10 - 90%)
Test voltage
Protective circuit
Ambient operating temperature range
Degree of protection
Connection method
Mounting position/mounting
Electromagnetic compatibility:
• Noise emission
• Noise immunity

20...30 V DC
< 25 mA
< 0.15% of the final value; 0.05% of the final value, typical
< 0.015%/K, 0.0075%/K, typical
30 Hz
12 ms
1.5 kV AC, 50 Hz, 1 minute
Transient protection
-20°C to +55°C
IP20
Plug-in COMBICON screw terminal block
Any
CE Conformance with EMC Directive 89/336/EEC
EN 50 081-2
EN 50 082-2

Signal Multiplier – MCR-FL-C-UI-2UI-DCI



Conformance With EMC Directive 89/336/EEC and the Low Voltage Directive 73/23/EEC

EMC (Electromagnetic Compatibility)

Noise Immunity According to EN 50082-2
 • Electrostatic discharge (ESD)

• Electromagnetic HF field
 Amplitude modulation
 Pulse modulation

• Fast transients (burst)

• Surge current loads (surge)

• Conducted interference

Noise Emission According to EN 50081-2

| | |
|--------------|--|
| EN 61000-4-2 | 8 kV air discharge ²⁾ |
| EN 61000-4-3 | 10 V/m ¹⁾ 10 V/m ¹⁾ |
| EN 61000-4-4 | Input/output/supply 2 kV/5 kHz ²⁾ |
| EN 61000-4-5 | Input/output: 2 kV/42 Ω ²⁾ Supply: 0.5 kV/2 Ω/12 Ω ²⁾ |
| EN 61000-4-6 | Input/output/supply 10 V ¹⁾ |
| EN 55011 | Class A |

EN 61000 corresponds to IEC 1000/
 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 automatically.

Class A: Industrial application, without special installation measures.

Approval

| | |
|---|---|
| | PROCESS CONTROL EQUIPMENT FOR HAZARDOUS LOCATIONS 31ZN |
| LISTED | |
| Cl. I, Zn. 2, AEx nC IIC T6 / Ex nC IIC T6 Cl. I Div. 2, Groups A, B, C and D | |
| A) This equipment is suitable for use in Class I, Division 2, Groups A, B, C and D or non-hazardous locations only. B) Warning - explosion hazard - substitution of components may impair suitability for Class 1, Division 2. C) Warning - explosion hazard - do not disconnect equipment unless power has been switched off or the area is known to be non-hazardous. | |

MCR-FL-C-UI-2UI-DCI – Signal Multiplier

- ① Upper housing part, can be removed to set DIP switches
- ② Plug-in screw terminal blocks
- ③ Metal lock for fastening on the DIN rail

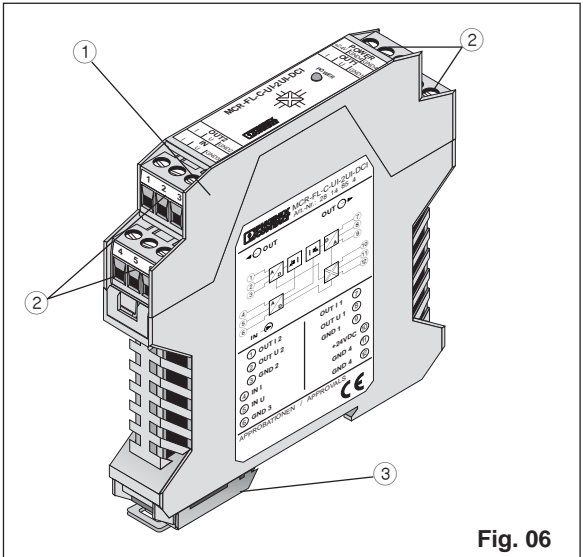



Fig. 06

Signal Multiplier – MCR-FL-C-UI-2UI-DCI

3. Configuration

3.1. Opening the Device (Fig. 07)

The fastenings on both sides of the upper housing part can be released using a screwdriver (1). The upper housing part and the electronics can now be pulled out about 3 cm (2).

 **Ensure you take sufficient measures against electrostatic discharge**

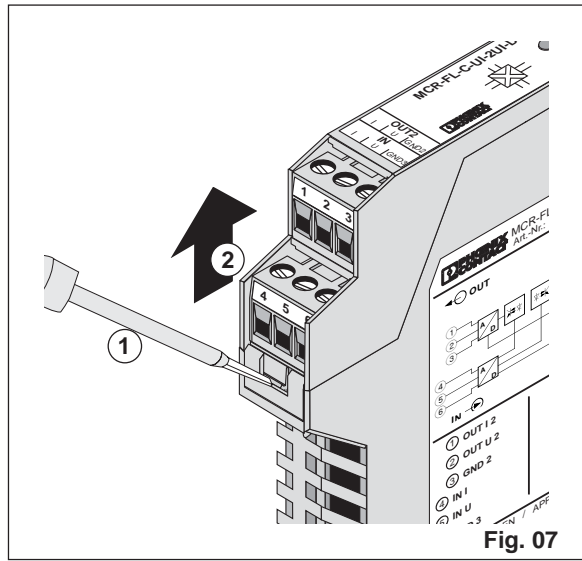


Fig. 07

3.2. Setting (Fig. 08)

Changes to the ordered connection method settings are made via DIP switches S1 to S10.

In addition to the preconfigured signal, which is preset by the order key, the remaining 9 DIP switches and their signal behavior can be enabled using DIP switch 10.

| Configuration | S10 |
|---|-----|
| Signal range specification via DIP switches | OFF |
| Signal ranges preset by order key | ON |

| Input (IN) | S1 | S2 | S3 |
|------------|-----|-----|-----|
| 0...20 mA | OFF | OFF | OFF |
| 0...10 mA | OFF | OFF | ON |
| 4...20 mA | OFF | ON | OFF |
| 2...10 mA | OFF | ON | ON |
| 0...10 V | ON | OFF | OFF |
| 1...5 V | ON | OFF | ON |
| 0...5 V | ON | ON | OFF |
| 2...10 V | ON | ON | ON |

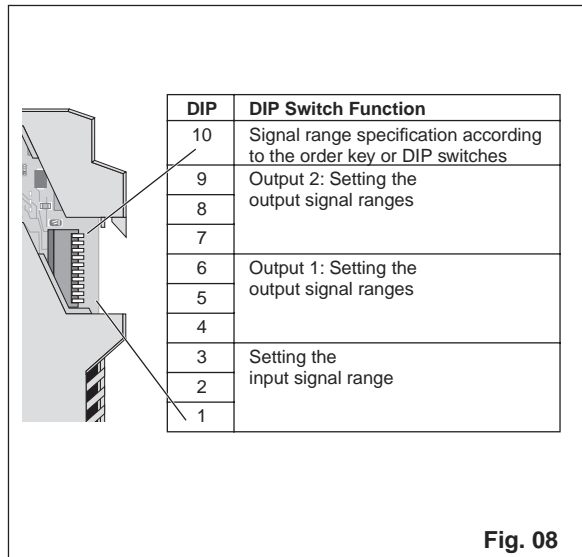


Fig. 08

The current and voltage channel can be used in parallel at each output so that up to four signal outputs with full load capability are provided.

Please note: Where possible, output 1 should be used as a current output.

| Output: Current/Voltage Signal | Output 1 (OUT 1) | | | Output 2 (OUT 2) | | |
|--------------------------------------|---------------------|-----|-----|---------------------|-----|-----|
| | S4 | S5 | S6 | S7 | S8 | S9 |
| 0...20 mA / 0...10 V | OFF | OFF | OFF | OFF | OFF | OFF |
| 0...20 mA / 1...5 V | OFF | OFF | ON | OFF | OFF | ON |
| 0...20 mA / 0...5 V | OFF | ON | OFF | OFF | ON | OFF |
| 0...10 mA / 0...5 V | OFF | ON | ON | OFF | ON | ON |
| 4...20 mA / 0...10 V | ON | OFF | OFF | ON | OFF | OFF |
| 4...20 mA / 1...5 V | ON | OFF | ON | ON | OFF | ON |
| 4...20 mA / 0...5 V | ON | ON | OFF | ON | ON | OFF |
| 4...20 mA / 2...10 V | ON | ON | ON | ON | ON | ON |

If the value is outside the measuring range, a linear transmission response is triggered.

Signal Multiplier – MCR-FL-C-UI-2UI-DCI

4. Application Example (Fig. 09)

Level measurement with ultrasound and subsequent signal multiplication

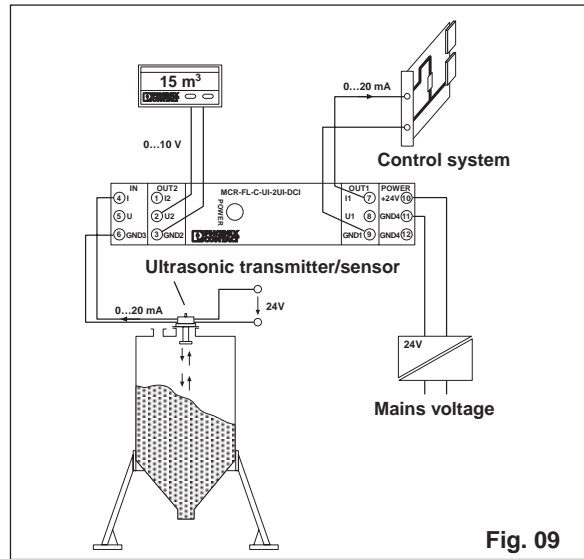


Fig. 09

5. Order Key

MCR-FL-C-UI-2UI-DCI

The standard configuration will be supplied if customer order details are incorrect or not provided (provided in the order key as an example).

| Order No. | Input Signal | Input Signal (Standard and Special Signals) | | Output Signal (Standard Signals) | |
|--|----------------------------|--|---|---|---|
| | | Start Value | Final Value | Output 1 | Output 2 |
| 28 14 85 4 | I | 0.0 | 20.0 | OUT01 | OUT01 |
| Standard configuration | I ≙ Current U ≙ Voltage | I ≙ 0.0 mA I: Freely selectable between U: Freely selectable between | I ≙ 20.0 mA I: Freely selectable between U: Freely selectable between | OUT01 ≙ 0...20 mA OUT02 ≙ 4...20 mA OUT03 ≙ 0...10 V OUT04 ≙ 2...10 V OUT05 ≙ 0...5 V OUT06 ≙ 1...5 V OUT16 ≙ 0...10 mA | OUT01 ≙ 0...20 mA OUT02 ≙ 4...20 mA OUT03 ≙ 0...10 V OUT04 ≙ 2...10 V OUT05 ≙ 0...5 V OUT06 ≙ 1...5 V OUT16 ≙ 0...10 mA |
| <ul style="list-style-type: none"> • Minimum measuring range span 8.0 mA/4.0 V²⁾ • Increment 0.1 mA/0.1 V | | | | | |

²⁾ Order examples:

| Order No. | Input Signal | Input Signal (Standard and Special Signals) | | Output Signal Output 1 | Output 2 |
|-------------------|--------------|---|-------------|------------------------|--------------|
| | | Start Value | Final Value | | |
| 28 14 85 4 | I | 5.3 | 13.3 | OUT01 | OUT01 |
| | I ≙ Current | I ≙ 5.3 mA | I ≙ 13.3 mA | | |

Measuring range span 8.0 mA, i.e., can be ordered.

| | | | | | |
|-------------------|-------------|------------|-------------|--------------|--------------|
| 28 14 85 4 | U | 7.8 | 11.8 | OUT01 | OUT03 |
| | U ≙ Voltage | I ≙ 7.8 V | I ≙ 11.8 V | | |

Measuring range span 4.0 V, i.e., can be ordered.

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TNR: 5106352-01

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