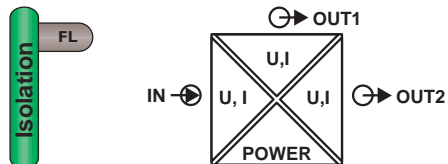


# Signal Multiplier MCR-FL-C-UI-2UI-DCI

## 1. Description

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



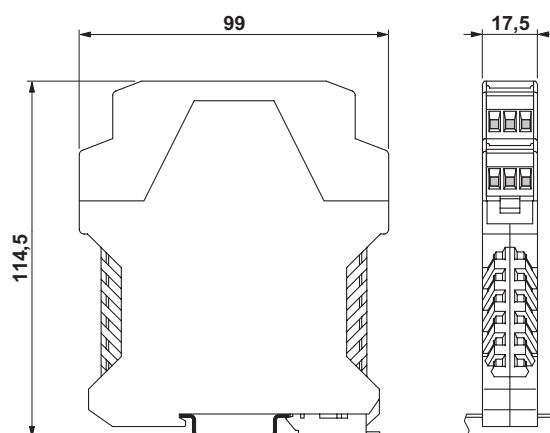
The MCR-FL-C-UI-2UI-DCI signal multiplier is used to multiply and electrically isolate analog signals.

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.

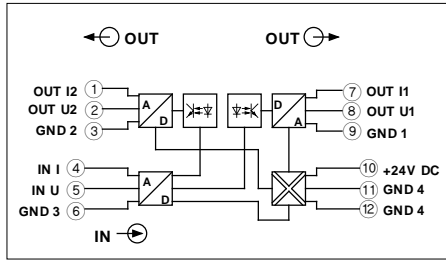
DIP switches can be used to switch between a signal selected within the limits of the order key or for the fixed signal conversions provided in the configuration table.

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.



## 2. Technical Data



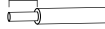
### MCR-FL-C-UI-2UI-DCI

with configurable input and output



M 3

8 mm



Connection data	Solid	Stranded	AWG
	[mm <sup>2</sup> ]		
	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 <sup>2)</sup>
EN 61000-4-3	10 V/m <sup>1)</sup> 10 V/m <sup>1)</sup>
EN 61000-4-4	Input/output/supply 2 kV/5 kHz <sup>2)</sup>
EN 61000-4-5	Input/output: 2 kV/42 Ω <sup>2)</sup> Supply: 0.5 kV/2 Ω/12 Ω <sup>2)</sup>
EN 61000-4-6	Input/output/supply 10 V <sup>1)</sup>
EN 55011	Class A

EN 61000 corresponds to IEC 1000/  
EN 55011 corresponds to CISPR11

- <sup>1)</sup> Criterion A: Normal operating characteristics within the specified limits.  
<sup>2)</sup> Criterion B: Temporary adverse effects on the operating characteristics which the device corrects automatically.

Class A: Industrial application, without special installation measures.

### Approval

	<b>PROCESS CONTROL EQUIPMENT FOR HAZARDOUS LOCATIONS 31ZN</b>
<b>LISTED</b>	
<b>Cl. I, Zn. 2, AEx nC IIC T6 / Ex nC IIC T6</b> <b>Cl. I Div. 2, Groups A, B, C and D</b>	
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

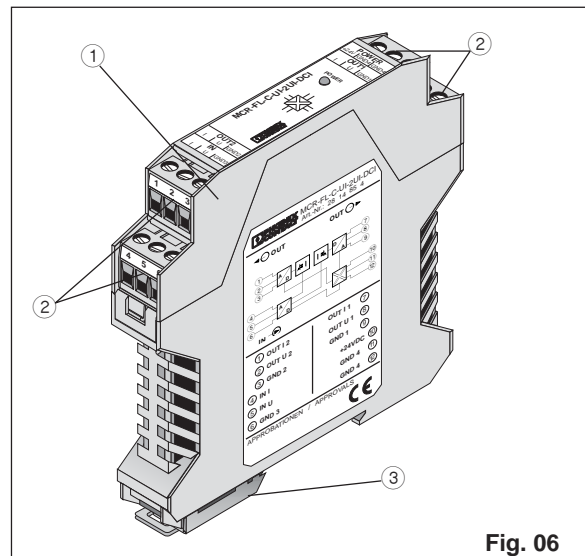



Fig. 06

### 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**

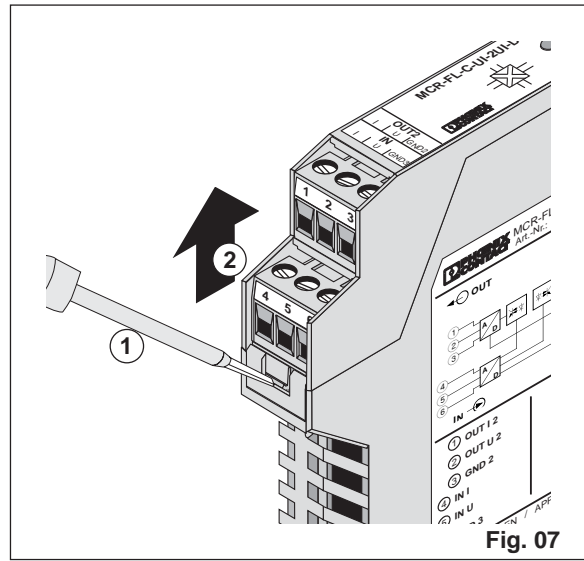


Fig. 07

#### 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

DIP	DIP Switch Function
10	Signal range specification according to the order key or DIP switches
9	Output 2: Setting the output signal ranges
8	
7	Output 1: Setting the output signal ranges
6	
5	
4	Setting the input signal range
3	
2	
1	

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.

### 4. Application Example (Fig. 09)

Level measurement with ultrasound and subsequent signal multiplication

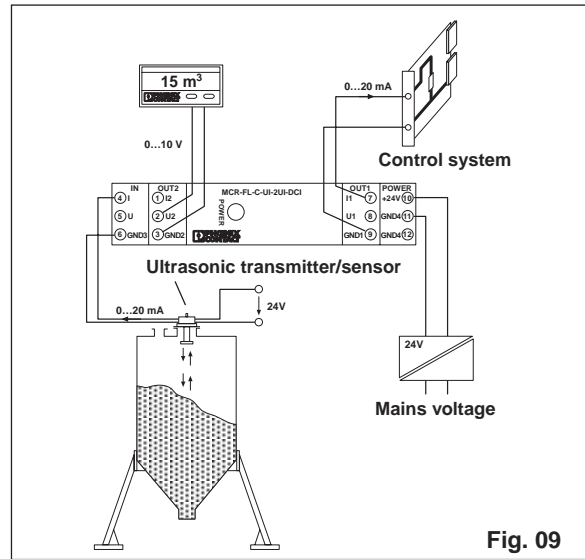


Fig. 09

### 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
<b>28 14 85 4</b>	<b>I</b>	<b>0.0</b>	<b>20.0</b>	<b>OUT01</b>	<b>OUT01</b>
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"> <li>• Minimum measuring range span 8.0 mA/4.0 V <sup>2)</sup></li> <li>• Increment 0.1 mA/0.1 V</li> </ul>					

<sup>2)</sup> Order examples:

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

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

Order No.	Input Signal	Input Signal (Standard and Special Signals)		Output 1	Output 2
		Start Value	Final Value		
<b>28 14 85 4</b>	<b>U</b>	<b>7.8</b>	<b>11.8</b>	<b>OUT01</b>	<b>OUT03</b>
	U ≙ Voltage	I ≙ 7.8 V	I ≙ 11.8 V		

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