



## Analog signal converters

CC range

## Serial data converters

ILPH range

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#### Analogue Signal Converters CC-range

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#### Serial data converters ILPH range

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# Analog signal converters

## CC range

### Benefits and advantages



2CDC 283 016 F0b05

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#### Product range for analog signal processing

##### CC-U range

- 8 different standard signal outputs on one device
- Input and output side universally configurable
- Also available with 2 threshold relay outputs
- Adjustment and operating elements on the front side
- Safe operation by electrical 3-way isolation
- Plug-in connecting terminals, unambiguously and clearly marked

##### Conversion, measurement and separation of

- standard signals
- signals of RTD sensors (PT10, PT100, PT1000)
- thermocouple signals
- RMS values of currents and voltages

##### Characteristics

- The required input and output ranges can be configured for all devices by means of directly accessible DIP switches positioned on the side.
- Due to the wide input range of the gain and offset stages all input signals between the minimum and the maximum input value can be universally converted to all common output signals.
- Devices for DC or AC (50/60 Hz) supply available.

##### CC-E range

- Universally configurable devices and single-function devices
- Adjustment and operating elements on the front side
- Safe operation by electrical 3-way isolation
- Unambiguous and clear connecting terminal markings

##### Conversion, measurement and separation of

- standard signals (0-5 V, 0-10 V, 0-20 mA, 4-20 mA)
- temperature signals of RTD sensors (PT 100)
- thermocouple signals (types J and K)
- current measurement signals (0-5 A, 0-20 A AC/DC)

##### Characteristics of single-function devices

- No adjustment or balancing necessary.

##### Characteristics of universal devices

- The required input and output ranges can be configured by means of directly accessible DIP switches positioned on the side
- Gain adjustment of  $\pm 5\%$  by means of an adjustment potentiometer on the front-side
- Offset adjustment of  $\pm 5\%$  by means of adjustment potentiometers on the front-side



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# Analog signal converters

## CC range

### Application, Approvals and marks

#### Applications for analog signal processing and correct solution using CC-E and CC-U converters

Nearly every process includes a control system that receives data by means of analog signals and then evaluates the data and sets the respective parameters correspondingly.

When transmitting analog signals numerous problems may arise which can disturb or even block an ideal behavior of the process.

Below we have listed some processing problems together with the respective solutions to solve these problems:

#### Signal conversion

Sometimes the available signals cannot be processed by the controller or the actuator. In this case, signal converters are required to convert the input signal (or different input signals) to the desired output signal.

#### Signal amplification

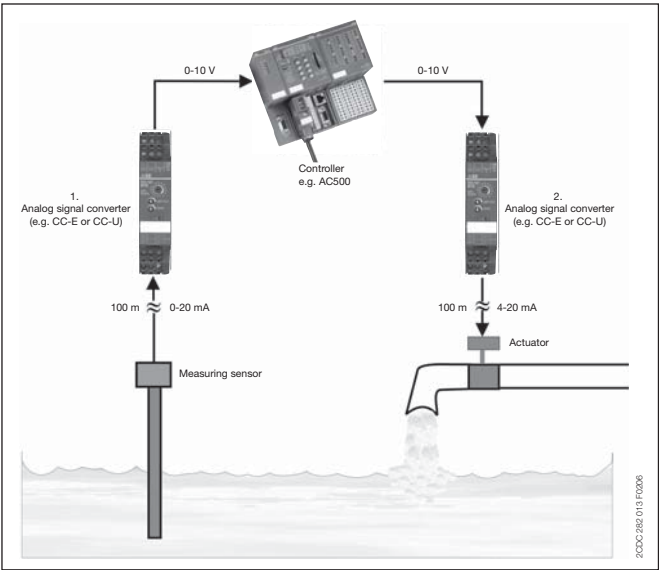
If long lines or high burdens have to be operated, it may be necessary to amplify the signal. CC analog signal converters require only low input power and provide high output power.

Thus, there are no restrictions for the converter's position on the line, i.e. it can be used

- for signal refreshing ① at the end of the line (low input power)
- or for signal amplification ② at the beginning of the line (high output power).

#### Signal filtering

Particularly on long lines or in rough industrial environments the signals are exposed to high electromagnetic interferences. The frequency of the coupled interference signals may be in the range of the common mains frequency (50 Hz) or even much higher (in case of frequency converters). According to the specific requirements, analog signal converters are available which provide reliable suppression of those interferences by means of an input low-pass filter.



#### Signal separation

##### ■ Protection against overvoltage

The increased use of micro-electronics make controls much more sensitive against overvoltages, resulting from lightning discharges or switching processes. Suppression diodes are incorporated in the input of the CC analog signal converters which enable the converters to arrest overvoltages with low energy level (resulting from switching processes) by themselves. The products furthermore provide electrical isolation between input, output and supply circuit for protection of the controller connected to the output.

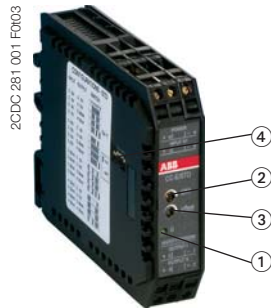
##### ■ Protection against ground loops

If components are used which refer to ground, the measuring signals can be falsified by a so-called ground loop. In this case, certain parts of the signal are transmitted via earth and not via the analog transmission line, thus causing incorrect evaluation of the signal. The electrical isolation between the input and the output disconnects these ground loops and thus enables correct signal transmission.

- existing
- ▲ existing for some devices
- pending

|                                                                                     |                                                                     | CC-E/STD | CC-E/I | CC-U/STD | CC-U/STDR | CC-E/RTD | CC-U/RTD | CC-U/RTDR | CC-E/TC | CC-U/TC | CC-U/TCR | CC-E/I | CC-E I <sub>AC</sub> /LPO | CC-U/I | CC-U/V |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|----------|--------|----------|-----------|----------|----------|-----------|---------|---------|----------|--------|---------------------------|--------|--------|
| Approvals                                                                           |                                                                     |          |        |          |           |          |          |           |         |         |          |        |                           |        |        |
|  | UL 508, CAN/CSA C22.2 No.14                                         | ■        | ■      | ■        | ■         | ■        | ■        | ■         | ■       | ■       | ■        | ■      | ■                         | ■      | ■      |
|  | UL 1604 (Class I, Div 2, hazardous locations), CAN/CSA C22.2 No.213 | ▲        |        | ■        |           | ▲        | ■        |           | ▲       | ■       |          | ▲      |                           | ■      | ■      |
|  | CB scheme                                                           |          |        |          | ■         |          |          | ■         |         |         | ■        |        |                           |        |        |
|  | CCC                                                                 |          |        |          | ■         |          |          | ■         |         |         | ■        |        |                           |        |        |
| Marks                                                                               |                                                                     |          |        |          |           |          |          |           |         |         |          |        |                           |        |        |
|  | CE                                                                  | ■        | ■      | ■        | ■         | ■        | ■        | ■         | ■       | ■       | ■        | ■      | ■                         | ■      | ■      |
|  | C-Tick                                                              | ■        | ■      | ■        | ■         | ■        | ■        | ■         | ■       | ■       | ■        | ■      | ■                         | ■      | ■      |

# Analog standard signal converters CC-E/STD, CC-E x/x Ordering details



CC-E/STD



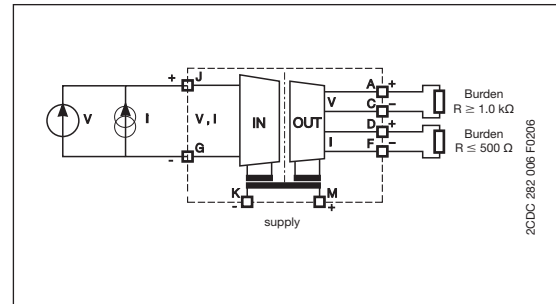
CC-E V/V

- ① U: green LED - supply voltage
- ② Gain adjustment
- ③ Offset adjustment
- ④ DIP switch for input and output configuration (only available on universal devices)

## CC-E/STD analog signal converter with 3-way electrical isolation

- 2 universally configurable devices (type CC-E/STD)
- 2x10 single-function devices
- "Plug and Work", no adjustment of single-function devices required

### Wiring instruction



### DIP switch settings (universal devices)

| Input     | Output    | Switch |   |   |   |   |   |   |   |
|-----------|-----------|--------|---|---|---|---|---|---|---|
|           |           | 1      | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 0...5 V   | 0...5 V   |        |   |   |   |   |   |   |   |
|           | 0...10 V  |        |   |   |   |   |   |   |   |
|           | 0...20 mA |        |   |   |   |   |   |   |   |
|           | 4...20 mA |        |   |   |   |   |   |   |   |
| 0...10 V  | 0...5 V   |        |   |   |   |   |   |   |   |
|           | 0...10 V  |        |   |   |   |   |   |   |   |
|           | 0...20 mA |        |   |   |   |   |   |   |   |
|           | 4...20 mA |        |   |   |   |   |   |   |   |
| 0...20 mA | 0...5 V   |        |   |   |   |   |   |   |   |
|           | 0...10 V  |        |   |   |   |   |   |   |   |
|           | 0...20 mA |        |   |   |   |   |   |   |   |
|           | 4...20 mA |        |   |   |   |   |   |   |   |
| 4...20 mA | 0...5 V   |        |   |   |   |   |   |   |   |
|           | 0...10 V  |        |   |   |   |   |   |   |   |
|           | 0...20 mA |        |   |   |   |   |   |   |   |
|           | 4...20 mA |        |   |   |   |   |   |   |   |

| Type | Input signal | Output signal | Order code | Pack. unit piece | Price 1 piece |
|------|--------------|---------------|------------|------------------|---------------|
|------|--------------|---------------|------------|------------------|---------------|

### Supply voltage: 24 V DC universal

|          |                                   |                                   |                                  |   |  |
|----------|-----------------------------------|-----------------------------------|----------------------------------|---|--|
| CC-E/STD | 0-5 V, 0-10 V<br>0-20 mA, 4-20 mA | 0-5 V, 0-10 V<br>0-20 mA, 4-20 mA | 1SVR 011 700 R0000 <sup>1)</sup> | 1 |  |
|----------|-----------------------------------|-----------------------------------|----------------------------------|---|--|

### single-function

|          |        |         |                    |   |  |
|----------|--------|---------|--------------------|---|--|
| CC-E V/V |        | 0-10 V  | 1SVR 011 710 R2100 | 1 |  |
| CC-E V/I | 0-10 V | 0-20 mA | 1SVR 011 711 R1600 | 1 |  |
| CC-E V/I |        | 4-20 mA | 1SVR 011 712 R1700 | 1 |  |

|          |         |         |                    |   |  |
|----------|---------|---------|--------------------|---|--|
| CC-E I/V |         | 0-10 V  | 1SVR 011 713 R1000 | 1 |  |
| CC-E I/I | 0-20 mA | 0-20 mA | 1SVR 011 714 R1100 | 1 |  |
| CC-E I/I |         | 4-20 mA | 1SVR 011 715 R1200 | 1 |  |

|          |         |         |                    |   |  |
|----------|---------|---------|--------------------|---|--|
| CC-E I/V |         | 0-10 V  | 1SVR 011 716 R1300 | 1 |  |
| CC-E I/I | 4-20 mA | 0-20 mA | 1SVR 011 717 R1400 | 1 |  |
| CC-E I/I |         | 4-20 mA | 1SVR 011 718 R2500 | 1 |  |

|          |             |             |                    |   |  |
|----------|-------------|-------------|--------------------|---|--|
| CC-E V/V | -10...+10 V | -10...+10 V | 1SVR 011 719 R2600 | 1 |  |
|----------|-------------|-------------|--------------------|---|--|

### Supply voltage: 110-240 V AC universal

|          |                                   |                                   |                    |   |  |
|----------|-----------------------------------|-----------------------------------|--------------------|---|--|
| CC-E/STD | 0-5 V, 0-10 V<br>0-20 mA, 4-20 mA | 0-5 V, 0-10 V<br>0-20 mA, 4-20 mA | 1SVR 011 705 R2100 | 1 |  |
|----------|-----------------------------------|-----------------------------------|--------------------|---|--|

### single-function

|          |        |         |                    |   |  |
|----------|--------|---------|--------------------|---|--|
| CC-E V/V |        | 0-10 V  | 1SVR 011 720 R2300 | 1 |  |
| CC-E V/I | 0-10 V | 0-20 mA | 1SVR 011 721 R1000 | 1 |  |
| CC-E V/I |        | 4-20 mA | 1SVR 011 722 R1100 | 1 |  |

|          |         |         |                    |   |  |
|----------|---------|---------|--------------------|---|--|
| CC-E I/V |         | 0-10 V  | 1SVR 011 723 R1200 | 1 |  |
| CC-E I/I | 0-20 mA | 0-20 mA | 1SVR 011 724 R1300 | 1 |  |
| CC-E I/I |         | 4-20 mA | 1SVR 011 725 R1400 | 1 |  |

|          |         |         |                    |   |  |
|----------|---------|---------|--------------------|---|--|
| CC-E I/V |         | 0-10 V  | 1SVR 011 726 R1500 | 1 |  |
| CC-E I/I | 4-20 mA | 0-20 mA | 1SVR 011 727 R1600 | 1 |  |
| CC-E I/I |         | 4-20 mA | 1SVR 011 728 R2700 | 1 |  |

|          |             |             |                    |   |  |
|----------|-------------|-------------|--------------------|---|--|
| CC-E V/V | -10...+10 V | -10...+10 V | 1SVR 011 729 R2000 | 1 |  |
|----------|-------------|-------------|--------------------|---|--|

<sup>1)</sup> 1604 Class I, Div.2  
(universal device)

# Current/current isolator CC-E I/I-1 and CC-E I/I-2

## Ordering details



CC-E I/I-1



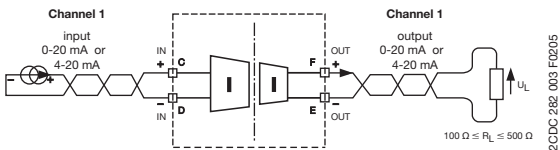
CC-E I/I-2

Loop-powered current/current isolator without external power supply for analog current signals of 0-20 mA and 4-20 mA

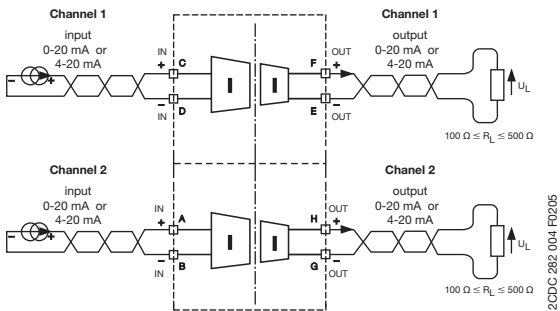
- Electrical isolation between input and output
- Very low internal voltage drop  $\leq 2.5$  V
- Available with one or two independent channels
- Width only 18 mm (1 and 2 channels)

### Wiring instructions

#### CC-E I/I-1



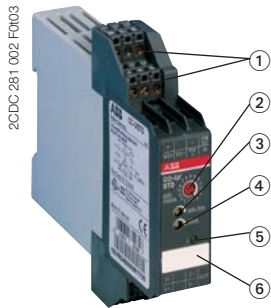
#### CC-E I/I-2



| Type             | Input signal     | Output signal    | Order code         | Pack. unit piece | Price 1 piece |
|------------------|------------------|------------------|--------------------|------------------|---------------|
| <b>1 channel</b> |                  |                  |                    |                  |               |
| CC-E I/I-1       | 0-20 mA, 4-20 mA | 0-20 mA, 4-20 mA | 1SVR 010 200 R1600 | 1                |               |
| <b>2 channel</b> |                  |                  |                    |                  |               |
| CC-E I/I-2       | 0-20 mA, 4-20 mA | 0-20 mA, 4-20 mA | 1SVR 010 201 R0300 | 1                |               |

# Analog standard signal converter CC-U/STD

## Ordering details



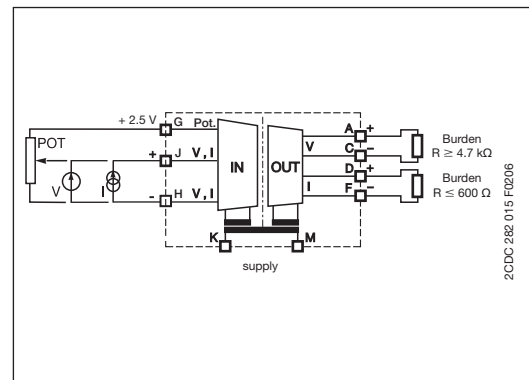
CC-U/STD

- ① Plug-in terminals
- ② Gain: Coarse adjustment
- ③ Gain: Fine adjustment
- ④ Offset adjustment
- ⑤ U: green LED - supply voltage
- ⑥ Marker label

### CC-U/STD universal signal converter with 3-way electrical isolation

- More than 120 configurations possible
- Configurable output signal response on input voltage signal interruption (low fail safe / high fail safe)
- Adjustment and operating elements on the front
- Short-circuit proof signal outputs
- Plug-in connecting terminals for inputs, outputs and supply
- Very fast signal transmission enables use in control systems

### Wiring instruction



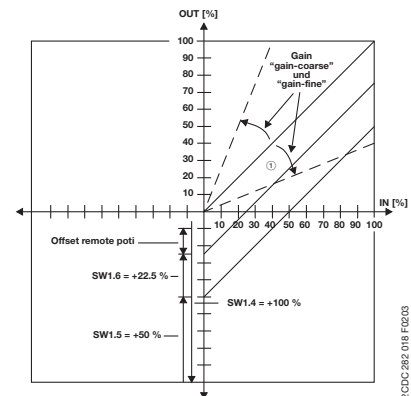
### Adjustment range

Continuously variable adjustment range:

Example ①:

Input configuration: 0...10 V

Output configuration: -5...5 V



### DIP switch settings

| Input             | Switch 1        | Gain  | Coarse type |
|-------------------|-----------------|-------|-------------|
| Potentiometer     | 1 2 3 4 5 6 7 8 | 0     | 0           |
| 0...50 mV         |                 | A...D | C           |
| 0...100 mV        |                 | 4...5 | 5           |
| 0...250 mV        |                 | 0...1 | 1           |
| 0...500 mV        |                 | 7...9 | 8           |
| 0...1 V           |                 | 3...4 | 3           |
| 0...2.5 V         |                 | 0     | 0           |
| 0...5 V           |                 | 5...7 | 6           |
| 0...10 V          |                 | 2     | 2           |
| 1...5 V           |                 | 7...9 | 8           |
| 2...10 V          |                 | 2...4 | 3           |
| -10...+10 V       |                 | 0     | 0           |
| 0...125 mV        |                 | 3...4 | 3           |
| 0...8 V           |                 | 3...4 | 3           |
| -22.5...+22.5 mV  |                 | B...F | D           |
| -11...+11 V       |                 | 0     | 0           |
| 2.5...7.5 V       |                 | 5...7 | 6           |
| 3.33...9.99 V     |                 | 3...4 | 4           |
| 10...0 V          |                 | 2     | 2           |
| 100...0 mV        |                 | 4...5 | 5           |
| 0...1 mA          |                 | A...D | B           |
| 0...20 mA         |                 | 2...4 | 3           |
| 4...20 mA         |                 | 4...5 | 4           |
| 10...50 mA        |                 | 0...1 | 1           |
| 20...4 mA         |                 | 4...5 | 4           |
| 20...0 mA         |                 | 4...2 | 4           |
| -0.45...+0.45 mA  |                 | B...F | D           |
| -55...+55 mA      |                 | 4...6 | 5           |
| High fail safe *) |                 | -     | -           |
| Low fail safe *)  |                 | -     | -           |
| No fail safe *)   |                 | -     | -           |

| Output          | Switch 2    |
|-----------------|-------------|
| 0...5 V         | 1 2 3 4 5 6 |
| 0...10 V        |             |
| 1...5 V         |             |
| 2...10 V        |             |
| -10...+10 V     |             |
| -5...+5 V       |             |
| -10...0 V       |             |
| -5...0 V        |             |
| 0...6.66 V      |             |
| -10...+3.33 V   |             |
| -5...+1.66 V    |             |
| 0...8 V         |             |
| 0...4 V         |             |
| -10...-2 V      |             |
| -5...-1 V       |             |
| 1.25...6.25 V   |             |
| -7.5...+2.5 V   |             |
| -3.75...+1.25 V |             |
| 1.66...8.33 V   |             |
| -6.66...+6.66 V |             |
| -3.33...+3.33 V |             |
| -8...0 V        |             |
| -4...0 V        |             |
| 0...1 mA        |             |
| 0...20 mA       |             |
| 4...20 mA       |             |
| 0...10 mA       |             |
| 0...0.5 mA      |             |
| 0...13.33 mA    |             |
| 0...666 µA      |             |
| 0...16 mA       |             |
| 0...800 µA      |             |
| 0...8 mA        |             |
| 0...400 µA      |             |
| 2.5...12.5 mA   |             |
| 125...625 µA    |             |
| 3.33...16.66 mA |             |
| 166...833 µA    |             |
| 0.2...1 mA      |             |
| 2...10 mA       |             |
| 100...500 µA    |             |

\*) Detection of input voltage signal interruptions:  
If the input signal circuit is interrupted, the output signal changes to the adjusted minimum value (low fail safe) or maximum value (high fail safe).  
If "No fail safe" is configured, input signal interruptions are not detected.

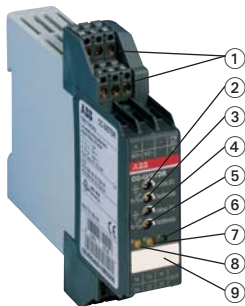
| Type     | Rated supply voltage       | Order code                               | Pack. unit pieces | Price 1 piece |
|----------|----------------------------|------------------------------------------|-------------------|---------------|
| CC-U/STD | 24-48 V DC<br>110-240 V AC | 1SVR 040 000 R1700<br>1SVR 040 001 R0400 | 1<br>1            |               |

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# Analog standard signal converter CC-U/STDR with relay output

## Ordering details

2CDC 281 003 F0103



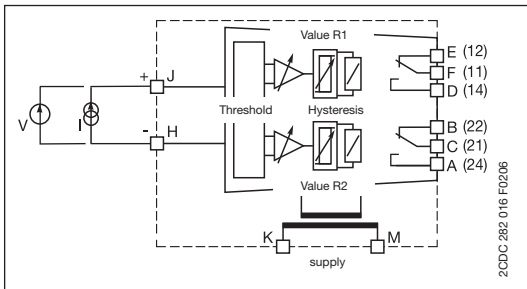
### CC-U/STDR

- 1 Plug-in connecting terminals
- 2 Threshold value for R1
- 3 Hysteresis for R1
- 4 Threshold value for R2
- 5 Hysteresis for R2
- 6 U: green LED - supply voltage
- 7 R2: yellow LED - Relay 2 energized
- 8 R1: yellow LED - Relay 1 energized
- 9 Marker label

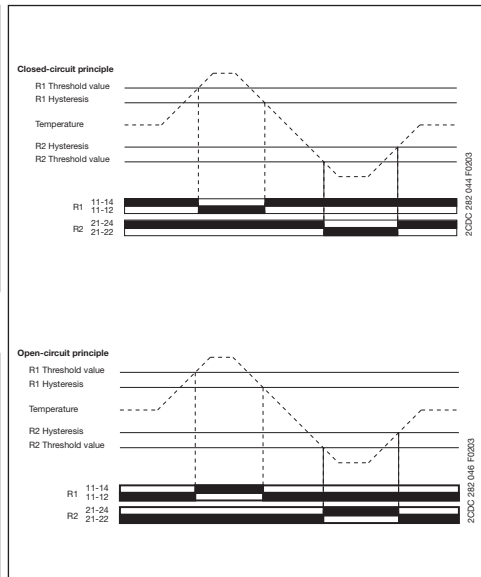
CC-U/STDR universal signal converter for standard signals, with 2 threshold relay outputs and with 3-way electrical isolation

- Standard signal converter with 7 setting ranges
- 2 threshold relay outputs with one c/o contact each (threshold and respective hysteresis can be adjusted independently from each other)
- Open-circuit or closed-circuit principle configurable by means of a DIP switch
- 2 yellow LEDs for clear status indication of the output relays
- Plug-in connecting terminals for inputs, outputs and supply

### Wiring instruction



### Function diagrams



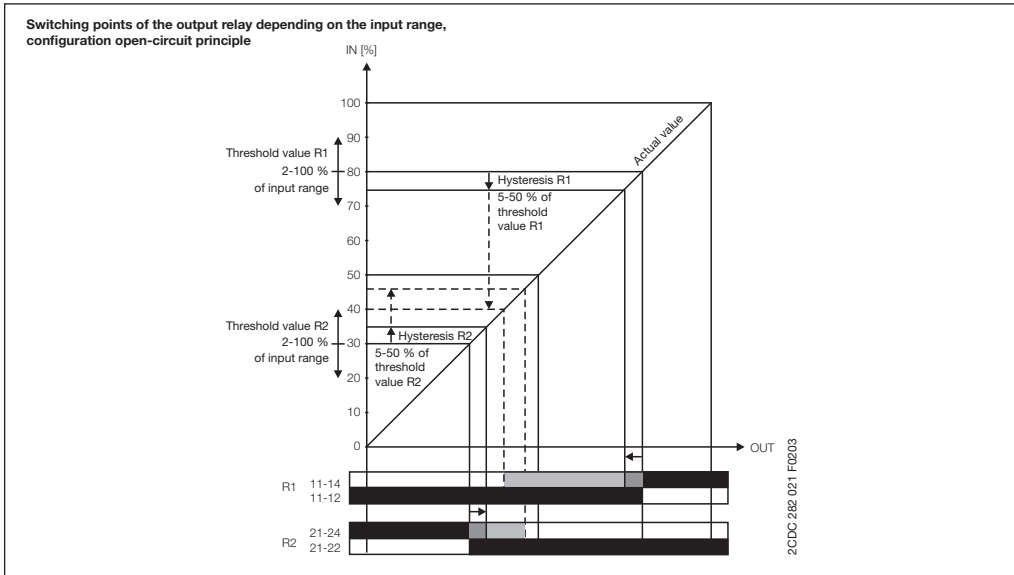
### DIP switch settings

| Input                    | Switch | 1 | 2 | 3 | 4 | 5 | 6 |
|--------------------------|--------|---|---|---|---|---|---|
| 0...0 V                  |        |   |   |   |   |   |   |
| 0...5 V                  |        |   |   |   |   |   |   |
| 0...1 V                  |        |   |   |   |   |   |   |
| -10...+10 V              |        |   |   |   |   |   |   |
| 1...5 V                  |        |   |   |   |   |   |   |
| 0...20 mA                |        |   |   |   |   |   |   |
| 4...20 mA                |        |   |   |   |   |   |   |
| Output                   |        |   |   |   |   |   |   |
| Closed-circuit principle |        |   |   |   |   |   |   |
| Open-circuit principle   |        |   |   |   |   |   |   |

Legend

- ON
- OFF
- no influence

### Switching points

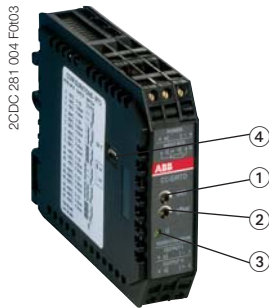


| Type      | Rated supply voltage       | Order code                               | Pack. unit pieces | Price 1 piece |
|-----------|----------------------------|------------------------------------------|-------------------|---------------|
| CC-U/STDR | 24-48 V DC<br>110-240 V AC | 1SVR 040 010 R0000<br>1SVR 040 011 R2500 | 1<br>1            |               |

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# Temperature signal converter for RTD sensors CC-E/RTD

## Ordering details



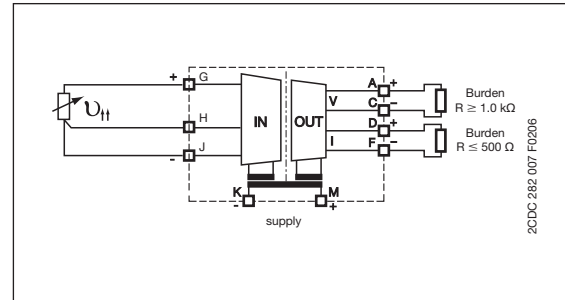
CC-E/RTD

- ① Gain adjustment
- ② Offset adjustment
- ③ U: green LED - supply voltage
- ④ DIP switch for input and output configuration (only available on universal devices)

CC-E/RTD temperature signal converter for RTD sensors, linearized with 3-way electrical isolation

- 2 universally configurable devices (type CC-E/RTD)
- 2x12 single-function devices
- "Plug and Work", no adjustment of single-function devices required
- Temperature signal converter for PT100 sensors
- 2- or 3-wire connection

### Wiring instruction



### DIP switch settings (universal devices)

| Input          | Output   | Switch |   |   |   |   |   |
|----------------|----------|--------|---|---|---|---|---|
|                |          | 1      | 2 | 3 | 4 | 5 | 6 |
| 0...100 °C     | 0...10 V |        |   |   |   |   |   |
|                | 0-20 mA  |        |   |   |   |   |   |
|                | 4-20 mA  |        |   |   |   |   |   |
| 0...300 °C     | 0-10 V   |        |   |   |   |   |   |
|                | 0-20 mA  |        |   |   |   |   |   |
|                | 4-20 mA  |        |   |   |   |   |   |
| 0...500 °C     | 0-10 V   |        |   |   |   |   |   |
|                | 0-20 mA  |        |   |   |   |   |   |
|                | 4-20 mA  |        |   |   |   |   |   |
| -50...+50 °C   | 0-10 V   |        |   |   |   |   |   |
|                | 0-20 mA  |        |   |   |   |   |   |
|                | 4-20 mA  |        |   |   |   |   |   |
| -50...+250 °C  | 0-10 V   |        |   |   |   |   |   |
|                | 0-20 mA  |        |   |   |   |   |   |
|                | 4-20 mA  |        |   |   |   |   |   |
| -50...+450 °C  | 0-10 V   |        |   |   |   |   |   |
|                | 0-20 mA  |        |   |   |   |   |   |
|                | 4-20 mA  |        |   |   |   |   |   |
| High fail safe |          |        |   |   |   |   |   |
| Low fail safe  |          |        |   |   |   |   |   |

Legend  
ON  
OFF  
no influence

| Type | Input signal | Output signal | Order code | Pack. unit piece | Price 1 piece |
|------|--------------|---------------|------------|------------------|---------------|
|------|--------------|---------------|------------|------------------|---------------|

Supply voltage: 24 V DC  
universal

|          |                |                          |                                  |   |  |
|----------|----------------|--------------------------|----------------------------------|---|--|
| CC-E/RTD | refer to table | 0-10 V, 0-20 mA, 4-20 mA | 1SVR 011 701 R2500 <sup>1)</sup> | 1 |  |
|----------|----------------|--------------------------|----------------------------------|---|--|

### single-function

|            |               |         |                    |   |  |
|------------|---------------|---------|--------------------|---|--|
| CC-E RTD/V | PT100         | 0-10 V  | 1SVR 011 730 R2500 | 1 |  |
| CC-E RTD/I | 0...100 °C    | 0-20 mA | 1SVR 011 731 R1200 | 1 |  |
| CC-E RTD/I |               | 4-20 mA | 1SVR 011 732 R1300 | 1 |  |
| CC-E RTD/V | PT100         | 0-10 V  | 1SVR 011 733 R1400 | 1 |  |
| CC-E RTD/I | -50...+50 °C  | 0-20 mA | 1SVR 011 734 R1500 | 1 |  |
| CC-E RTD/I |               | 4-20 mA | 1SVR 011 735 R1600 | 1 |  |
| CC-E RTD/V | PT100         | 0-10 V  | 1SVR 011 736 R1700 | 1 |  |
| CC-E RTD/I | 0...300 °C    | 0-20 mA | 1SVR 011 737 R1000 | 1 |  |
| CC-E RTD/I |               | 4-20 mA | 1SVR 011 738 R2100 | 1 |  |
| CC-E RTD/V | PT100         | 0-10 V  | 1SVR 011 739 R2200 | 1 |  |
| CC-E RTD/I | -50...+250 °C | 0-20 mA | 1SVR 011 740 R0700 | 1 |  |
| CC-E RTD/I |               | 4-20 mA | 1SVR 011 741 R2400 | 1 |  |

Supply voltage: 110-240 V AC  
universal

|          |                |                          |                    |   |  |
|----------|----------------|--------------------------|--------------------|---|--|
| CC-E/RTD | refer to table | 0-10 V, 0-20 mA, 4-20 mA | 1SVR 011 706 R2200 | 1 |  |
|----------|----------------|--------------------------|--------------------|---|--|

### single-function

|            |               |         |                    |   |  |
|------------|---------------|---------|--------------------|---|--|
| CC-E RTD/V | PT100         | 0-10 V  | 1SVR 011 788 R2400 | 1 |  |
| CC-E RTD/I | 0...100 °C    | 0-20 mA | 1SVR 011 789 R2500 | 1 |  |
| CC-E RTD/I |               | 4-20 mA | 1SVR 011 790 R2200 | 1 |  |
| CC-E RTD/V | PT100         | 0-10 V  | 1SVR 011 791 R1700 | 1 |  |
| CC-E RTD/I | -50...+50 °C  | 0-20 mA | 1SVR 011 792 R1000 | 1 |  |
| CC-E RTD/I |               | 4-20 mA | 1SVR 011 793 R1100 | 1 |  |
| CC-E RTD/V | PT100         | 0-10 V  | 1SVR 011 794 R1200 | 1 |  |
| CC-E RTD/I | 0...300 °C    | 0-20 mA | 1SVR 011 795 R1300 | 1 |  |
| CC-E RTD/I |               | 4-20 mA | 1SVR 011 796 R1400 | 1 |  |
| CC-E RTD/V | PT100         | 0-10 V  | 1SVR 011 797 R1500 | 1 |  |
| CC-E RTD/I | -50...+250 °C | 0-20 mA | 1SVR 011 798 R2600 | 1 |  |
| CC-E RTD/I |               | 4-20 mA | 1SVR 011 799 R2700 | 1 |  |

<sup>1)</sup> 1604 Class I, Div.2  
(universal device)

# Temperature signal converter for RTD sensors

## CC-U/RTD

### Ordering details

2CDC 281 005 F003



#### CC-U/RTD

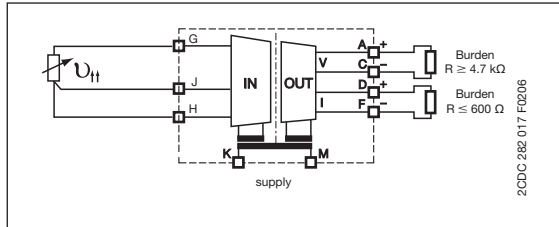
- ① Plug-in connecting terminals
- ② Gain: Coarse adjustment
- ③ Gain: Fine adjustment
- ④ Offset adjustment
- ⑤ U: green LED - supply voltage
- ⑥ Marker label

CC-U/RTD universal signal converter for PT10, PT100, PT1000 temperature sensors (acc. to IEC 751 and JIS C 1604<sup>1)</sup>, linearized with 3-way electrical isolation

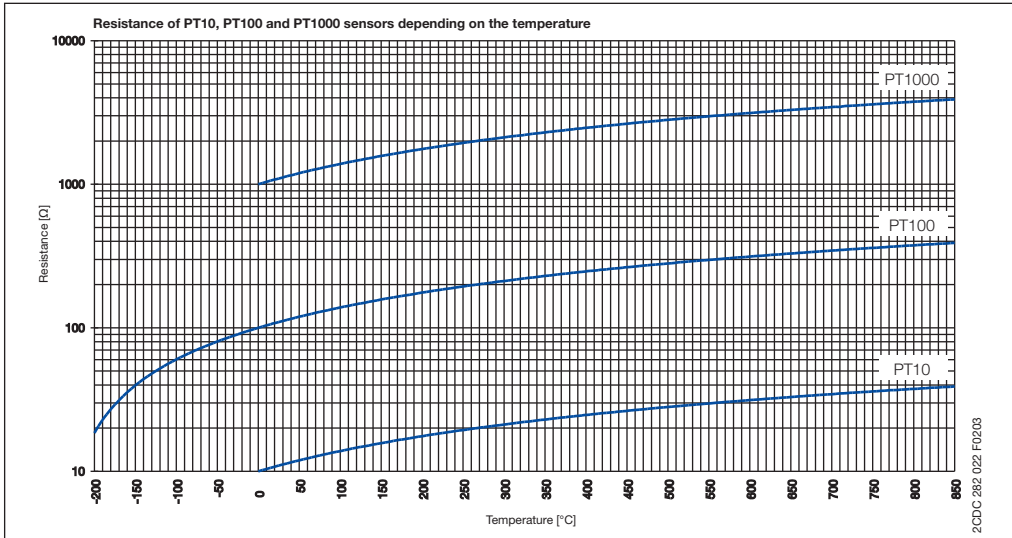
- Configurable output signal response on input signal interruption (low / high fail safe)
- Adjustment and operating elements on the front-side
- Short-circuit proof signal outputs
- Plug-in connecting terminals for inputs, outputs and supply
- 2- or 3-wire connection

<sup>1)</sup> Japanese standard

#### Wiring instruction



#### Characteristic curves



#### DIP switch settings

| Input  | Switch 1          |       |   |   |   |   | Switch 2 |   |   |   |   |   | Gain Coarse |   |   |
|--------|-------------------|-------|---|---|---|---|----------|---|---|---|---|---|-------------|---|---|
|        | Type              | Range | 1 | 2 | 3 | 4 | 5        | 6 | 1 | 2 | 3 | 4 |             | 5 | 6 |
| PT10   | 0...500 °C        |       |   |   |   |   |          |   |   |   |   |   |             |   | F |
|        | 0...550 °C        |       |   |   |   |   |          |   |   |   |   |   |             |   | E |
|        | 0...600 °C        |       |   |   |   |   |          |   |   |   |   |   |             |   | D |
|        | 0...650 °C        |       |   |   |   |   |          |   |   |   |   |   |             |   | C |
|        | 0...700 °C        |       |   |   |   |   |          |   |   |   |   |   |             |   | B |
|        | 0...750 °C        |       |   |   |   |   |          |   |   |   |   |   |             |   | A |
|        | 0...800 °C        |       |   |   |   |   |          |   |   |   |   |   |             |   | 9 |
|        | 0...850 °C        |       |   |   |   |   |          |   |   |   |   |   |             |   | 8 |
|        | 0...900 °C        |       |   |   |   |   |          |   |   |   |   |   |             |   | F |
| PT100  | 0...50 °C         |       |   |   |   |   |          |   |   |   |   |   |             |   | F |
|        | 0...60 °C         |       |   |   |   |   |          |   |   |   |   |   |             |   | E |
|        | 0...70 °C         |       |   |   |   |   |          |   |   |   |   |   |             |   | B |
|        | 0...80 °C         |       |   |   |   |   |          |   |   |   |   |   |             |   | A |
|        | 0...90 °C         |       |   |   |   |   |          |   |   |   |   |   |             |   | 9 |
|        | 0...100 °C        |       |   |   |   |   |          |   |   |   |   |   |             |   | 8 |
|        | 0...200 °C        |       |   |   |   |   |          |   |   |   |   |   |             |   | 3 |
|        | 0...300 °C        |       |   |   |   |   |          |   |   |   |   |   |             |   | 2 |
|        | 0...400 °C        |       |   |   |   |   |          |   |   |   |   |   |             |   | 1 |
| PT1000 | 0...500 °C        |       |   |   |   |   |          |   |   |   |   |   |             |   | 0 |
|        | 0...10 °C         |       |   |   |   |   |          |   |   |   |   |   |             |   | 8 |
|        | 0...20 °C         |       |   |   |   |   |          |   |   |   |   |   |             |   | 3 |
|        | 0...30 °C         |       |   |   |   |   |          |   |   |   |   |   |             |   | 2 |
|        | 0...40 °C         |       |   |   |   |   |          |   |   |   |   |   |             |   | 1 |
|        | 0...50 °C         |       |   |   |   |   |          |   |   |   |   |   |             |   | 0 |
|        | 0...60 °C         |       |   |   |   |   |          |   |   |   |   |   |             |   | 0 |
|        | Low fail safe *)  |       |   |   |   |   |          |   |   |   |   |   |             |   | - |
|        | High fail safe *) |       |   |   |   |   |          |   |   |   |   |   |             |   | - |

\*) Detection of input signal interruptions:  
If the input signal circuit is interrupted, the output signal changes to the adjusted minimum value (low fail safe) or maximum value (high fail safe).

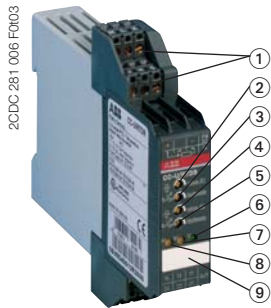
| Output          | Switch 3 |   |   |   |   |   |
|-----------------|----------|---|---|---|---|---|
|                 | 1        | 2 | 3 | 4 | 5 | 6 |
| 0...5 V         |          |   |   |   |   |   |
| 0...10 V        |          |   |   |   |   |   |
| 1...5 V         |          |   |   |   |   |   |
| 2...10 V        |          |   |   |   |   |   |
| -10...+10 V     |          |   |   |   |   |   |
| -5...+5 V       |          |   |   |   |   |   |
| -10...0 V       |          |   |   |   |   |   |
| -5...0 V        |          |   |   |   |   |   |
| 0...6.66 V      |          |   |   |   |   |   |
| -10...+3.33 V   |          |   |   |   |   |   |
| -5...+1.66 V    |          |   |   |   |   |   |
| 0...8 V         |          |   |   |   |   |   |
| 0...4 V         |          |   |   |   |   |   |
| -10...-2 V      |          |   |   |   |   |   |
| -5...-1 V       |          |   |   |   |   |   |
| 1.25...6.25 V   |          |   |   |   |   |   |
| -7.5...+2.5 V   |          |   |   |   |   |   |
| -3.75...+1.25 V |          |   |   |   |   |   |
| 1.66...8.33 V   |          |   |   |   |   |   |
| -6.66...+6.66 V |          |   |   |   |   |   |
| -3.33...+3.33 V |          |   |   |   |   |   |
| -8...0 V        |          |   |   |   |   |   |
| -4...0 V        |          |   |   |   |   |   |
| 0...1 mA        |          |   |   |   |   |   |
| 0...20 mA       |          |   |   |   |   |   |
| 4...20 mA       |          |   |   |   |   |   |
| 0...10 mA       |          |   |   |   |   |   |
| 0...0.5 mA      |          |   |   |   |   |   |
| 0...13.33 mA    |          |   |   |   |   |   |
| 0...666 μA      |          |   |   |   |   |   |
| 0...16 mA       |          |   |   |   |   |   |
| 0...800 μA      |          |   |   |   |   |   |
| 0...8 mA        |          |   |   |   |   |   |
| 0...400 μA      |          |   |   |   |   |   |
| 2.5...12.5 mA   |          |   |   |   |   |   |
| 125...625 μA    |          |   |   |   |   |   |
| 3.33...16.66 mA |          |   |   |   |   |   |
| 166...833 μA    |          |   |   |   |   |   |
| 0.2...1 mA      |          |   |   |   |   |   |
| 2...10 mA       |          |   |   |   |   |   |
| 100...500 μA    |          |   |   |   |   |   |

Legend:  
■ ON  
□ OFF  
□ no influence

| Type     | Rated supply voltage | Order code         | Pack. unit pieces | Price 1 piece |
|----------|----------------------|--------------------|-------------------|---------------|
| CC-U/RTD | 24-48 V DC           | 1SVR 040 002 R0500 | 1                 |               |
|          | 110-240 V AC         | 1SVR 040 003 R0600 | 1                 |               |

- Accessories ..... 5/20
- Technical data ..... 5/21
- Dimensional drawings ..... 5/27

# Temperature signal converter for RTD sensors CC-U/RTDR with relay output Ordering details



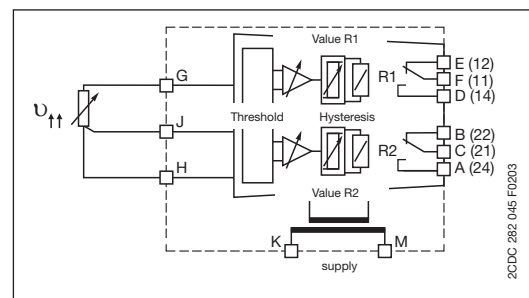
## CC-U/RTDR

- ① Plug-in connecting terminals
- ② Threshold value for R1
- ③ Hysteresis for R1
- ④ Threshold value for R2
- ⑤ Hysteresis for R2
- ⑥ U: green LED - supply voltage
- ⑦ R2: yellow LED - Relay 2 energized
- ⑧ R1: yellow LED - Relay 1 energized
- ⑨ Marker label

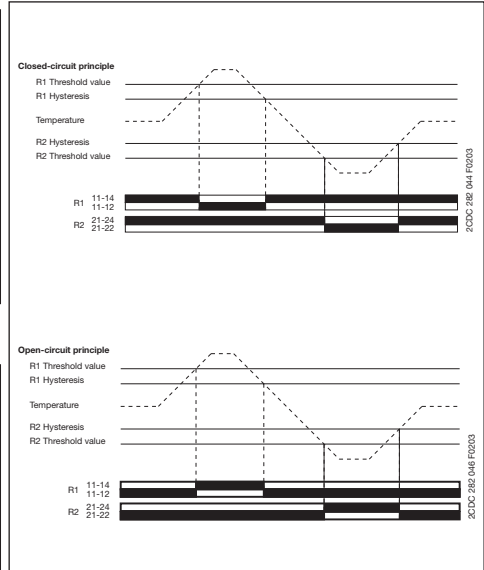
## CC-U/RTDR universal signal converter for temperature and resistance signals, with 2 threshold relay outputs and 3-way electrical isolation

- Temperature signal converter for PT100 signals (5 ranges up to 800 °C) and variable resistances from 0-380 Ω
- 2 threshold relay outputs with one c/o contact each (threshold and respective hysteresis can be adjusted independently from each other)
- Open-circuit or closed-circuit principle configurable by means of a DIP switch
- 2 yellow LEDs for clear status indication of the output relays
- Plug-in connecting terminals for inputs, outputs and supply
- 2- or 3-wire connection

### Wiring instruction



### Function diagrams

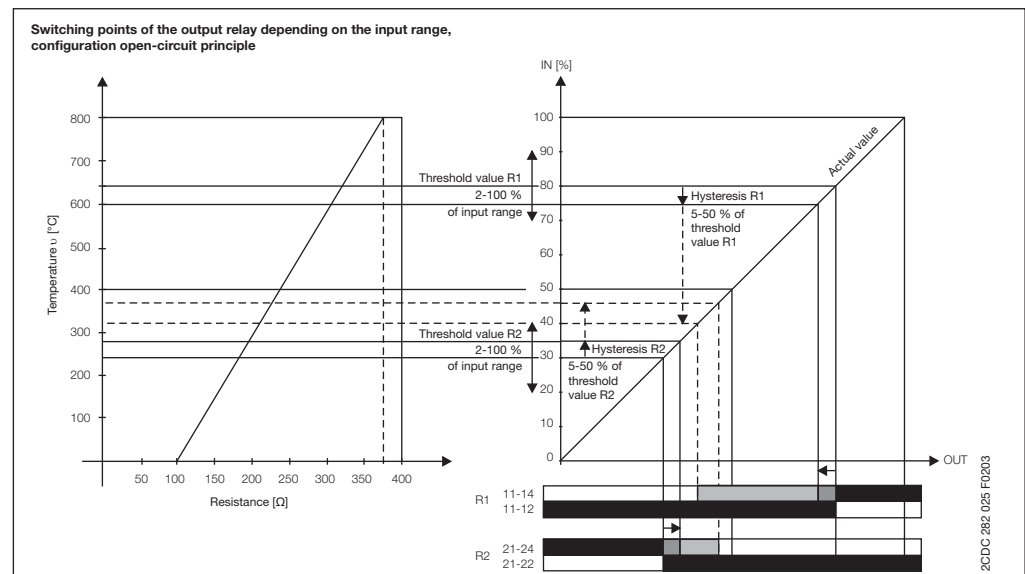


### DIP switch settings

| Input PT100              | 1 | 2 | 3 | 4 | 5 | 6 |
|--------------------------|---|---|---|---|---|---|
| 0...100 °C               |   |   |   |   |   |   |
| 0...200 °C               |   |   |   |   |   |   |
| 0...400 °C               |   |   |   |   |   |   |
| 0...600 °C               |   |   |   |   |   |   |
| 0...800 °C               |   |   |   |   |   |   |
| Output                   |   |   |   |   |   |   |
| Closed-circuit principle |   |   |   |   |   |   |
| Open-circuit principle   |   |   |   |   |   |   |

Legend  
 ON  
 OFF  
 no influence

### Switching points



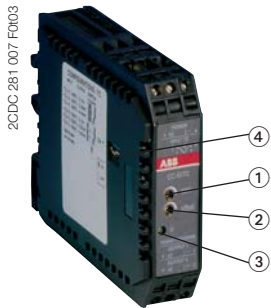
| Type      | Rated supply voltage       | Order code                               | Pack. unit pieces | Price 1 piece |
|-----------|----------------------------|------------------------------------------|-------------------|---------------|
| CC-U/RTDR | 24-48 V DC<br>110-240 V AC | 1SVR 040 012 R2600<br>1SVR 040 013 R2700 | 1<br>1            |               |

- Accessories ..... 5/20
- Technical data ..... 5/21
- Technical diagrams ..... 5/27
- Dimensional drawings ..... 5/27

# Temperature signal converter for thermocouples

## CC-E/TC

### Ordering details



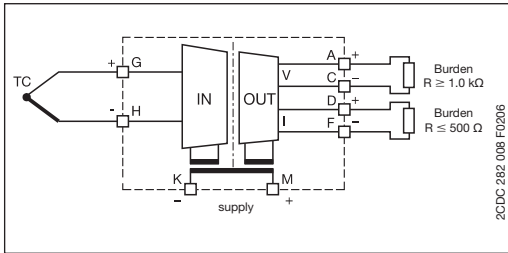
CC-E/TC

- 1 Gain adjustment
- 2 Offset adjustment
- 3 U: green LED - supply voltage
- 4 DIP switch for input and output configuration (only available on universal devices)

CC-E/TC analog signal converter for thermocouple signals of the types J and K with 3-way electrical isolation

- 2 universally configurable devices (type CC-E/TC)
- 2x6 single-function devices
- "Plug and Work", no adjustment of single-function devices required

#### Wiring instruction



#### DIP switch settings (universal devices)

| Input                | Output    | Switch |   |   |   |   |   |
|----------------------|-----------|--------|---|---|---|---|---|
|                      |           | 1      | 2 | 3 | 4 | 5 | 6 |
| TC-J:<br>0...600 °C  | 0...10 V  |        |   |   |   |   |   |
|                      | 0...20 mA |        |   |   |   |   |   |
|                      | 4...20 mA |        |   |   |   |   |   |
| TC-K:<br>0...1000 °C | 0...10 V  |        |   |   |   |   |   |
|                      | 0...20 mA |        |   |   |   |   |   |
|                      | 4...20 mA |        |   |   |   |   |   |
| High fail safe       |           |        |   |   |   |   |   |
| Low fail safe        |           |        |   |   |   |   |   |

Legend:  
ON: ☒  
OFF: ☐  
no influence: ☐

2CDC 282 007 F0208

| Type | Input signal | Output signal | Order code | Pack. unit piece | Price 1 piece |
|------|--------------|---------------|------------|------------------|---------------|
|------|--------------|---------------|------------|------------------|---------------|

#### Supply voltage: 24 V DC universal

|         |                            |                          |                                  |   |  |
|---------|----------------------------|--------------------------|----------------------------------|---|--|
| CC-E/TC | thermocouple types J and K | 0-10 V, 0-20 mA, 4-20 mA | 1SVR 011 702 R2600 <sup>1)</sup> | 1 |  |
|---------|----------------------------|--------------------------|----------------------------------|---|--|

#### single-function

|           |                      |         |                    |   |  |
|-----------|----------------------|---------|--------------------|---|--|
| CC-E TC/V | type J<br>0...600 °C | 0-10 V  | 1SVR 011 750 R0100 | 1 |  |
| CC-E TC/I |                      | 0-20 mA | 1SVR 011 751 R2600 | 1 |  |
| CC-E TC/I |                      | 4-20 mA | 1SVR 011 752 R2700 | 1 |  |

|           |                       |         |                    |   |  |
|-----------|-----------------------|---------|--------------------|---|--|
| CC-E TC/V | type K<br>0...1000 °C | 0-10 V  | 1SVR 011 753 R2000 | 1 |  |
| CC-E TC/I |                       | 0-20 mA | 1SVR 011 754 R2100 | 1 |  |
| CC-E TC/I |                       | 4-20 mA | 1SVR 011 755 R2200 | 1 |  |

#### Supply voltage: 110-240 V AC universal

|         |                            |                          |                    |   |  |
|---------|----------------------------|--------------------------|--------------------|---|--|
| CC-E/TC | thermocouple types J and K | 0-10 V, 0-20 mA, 4-20 mA | 1SVR 011 707 R2300 | 1 |  |
|---------|----------------------------|--------------------------|--------------------|---|--|

#### single-function

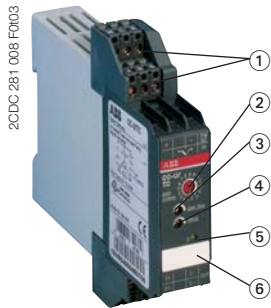
|           |                      |         |                    |   |  |
|-----------|----------------------|---------|--------------------|---|--|
| CC-E TC/V | type J<br>0...600 °C | 0-10 V  | 1SVR 011 760 R0300 | 1 |  |
| CC-E TC/I |                      | 0-20 mA | 1SVR 011 761 R2000 | 1 |  |
| CC-E TC/I |                      | 4-20 mA | 1SVR 011 762 R2100 | 1 |  |

|           |                       |         |                    |   |  |
|-----------|-----------------------|---------|--------------------|---|--|
| CC-E TC/V | type K<br>0...1000 °C | 0-10 V  | 1SVR 011 763 R2200 | 1 |  |
| CC-E TC/I |                       | 0-20 mA | 1SVR 011 764 R2300 | 1 |  |
| CC-E TC/I |                       | 4-20 mA | 1SVR 011 765 R2400 | 1 |  |

<sup>1)</sup> 1604 Class I, Div.2 (universal device)

# Temperature signal converter for thermocouples CC-U/TC

## Ordering details



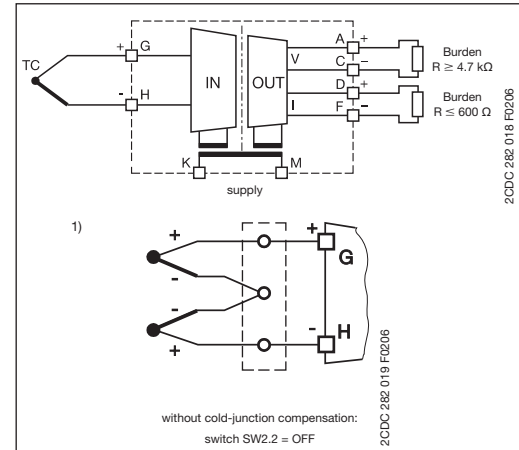
CC-U/TC

- ① Plug-in connecting terminals
- ② Gain: Coarse adjustment
- ③ Gain: Fine adjustment
- ④ Offset adjustment
- ⑤ U: green LED - supply voltage
- ⑥ Marker label

### CC-U/TC universal signal converter for thermocouples with 3-way electrical isolation

- Temperature signal converter for thermocouples of the types K, J, T, S, E, N, R, B
- Continuously adjustable voltage signal input 0-10 mV and 0-50 mV
- Differential temperature meas. possible <sup>1)</sup>
- Configurable output signal response on input signal interruption (low fail safe / high fail safe)
- Adjustment and operating elements on the front-side
- Short-circuit proof signal outputs
- Plug-in connecting terminals for inputs, outputs and supply

#### Wiring instruction



#### DIP switch settings

| Output        |  | Switch 3 |   |   |   |   |   |
|---------------|--|----------|---|---|---|---|---|
|               |  | 1        | 2 | 3 | 4 | 5 | 6 |
| 0...5 V       |  |          |   |   |   |   |   |
| 0...10 V      |  |          |   |   |   |   |   |
| 1...5 V       |  |          |   |   |   |   |   |
| 2...10 V      |  |          |   |   |   |   |   |
| -10...+10 V   |  |          |   |   |   |   |   |
| -5...+5 V     |  |          |   |   |   |   |   |
| -10...0 V     |  |          |   |   |   |   |   |
| -5...0 V      |  |          |   |   |   |   |   |
| 0...6.66 V    |  |          |   |   |   |   |   |
| -10...+3.33 V |  |          |   |   |   |   |   |
| -5...+1.66 V  |  |          |   |   |   |   |   |
| 0...8 V       |  |          |   |   |   |   |   |
| 0...4 V       |  |          |   |   |   |   |   |

| Input             |                 | Switch 1 |   |   |   |   |   | Switch 2 |   |   |   |   |   |
|-------------------|-----------------|----------|---|---|---|---|---|----------|---|---|---|---|---|
| Type              | Range           | 1        | 2 | 3 | 4 | 5 | 6 | 1        | 2 | 3 | 4 | 5 | 6 |
| K                 | 0-100...900 °C  |          |   |   |   |   |   |          |   |   |   |   |   |
|                   | 0-250...1350 °C |          |   |   |   |   |   |          |   |   |   |   |   |
| J                 | 0-100...750 °C  |          |   |   |   |   |   |          |   |   |   |   |   |
|                   | 0-100...400 °C  |          |   |   |   |   |   |          |   |   |   |   |   |
| T                 | -150-0...400 °C |          |   |   |   |   |   |          |   |   |   |   |   |
| S                 | 0-250...1550 °C |          |   |   |   |   |   |          |   |   |   |   |   |
| E                 | 0-100...700 °C  |          |   |   |   |   |   |          |   |   |   |   |   |
|                   | 0-200...1000 °C |          |   |   |   |   |   |          |   |   |   |   |   |
| N                 | 0-100...650 °C  |          |   |   |   |   |   |          |   |   |   |   |   |
|                   | 0-200...1300 °C |          |   |   |   |   |   |          |   |   |   |   |   |
| R                 | 0-250...1350 °C |          |   |   |   |   |   |          |   |   |   |   |   |
|                   | 0-450...1700 °C |          |   |   |   |   |   |          |   |   |   |   |   |
| B                 | 0-700...1750 °C |          |   |   |   |   |   |          |   |   |   |   |   |
| mV                | 0-2...10 mV     |          |   |   |   |   |   |          |   |   |   |   |   |
|                   | 0-10...50 mV    |          |   |   |   |   |   |          |   |   |   |   |   |
| Low fail safe *)  |                 |          |   |   |   |   |   |          |   |   |   |   |   |
| High fail safe *) |                 |          |   |   |   |   |   |          |   |   |   |   |   |

\*) Detection of input signal interruptions:

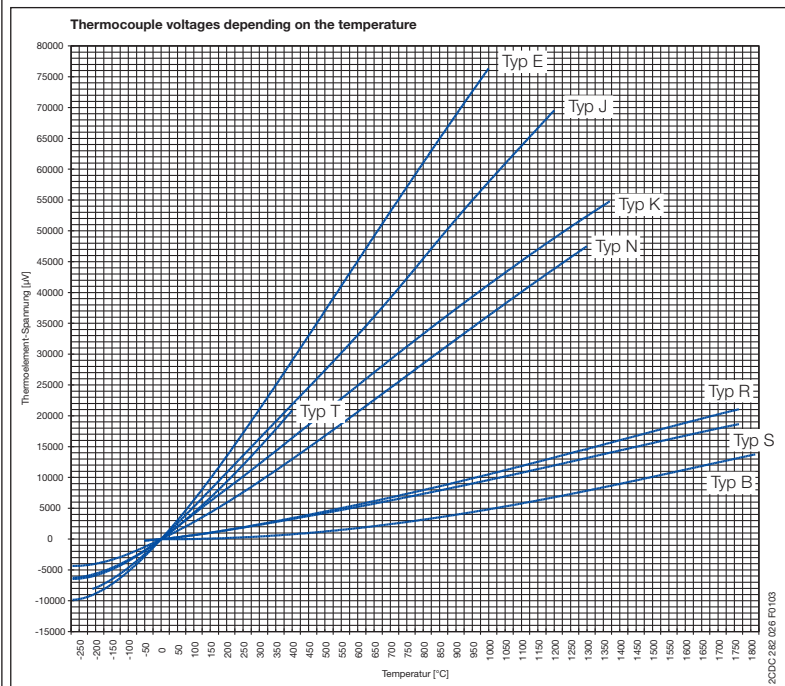
If the input signal circuit is interrupted, the output signal changes to the adjusted minimum value (low fail safe) or maximum value (high fail safe).

2CDC 382 010 F0204

<sup>\*)</sup> Detection of input signal interruptions:  
If the input signal circuit is interrupted, the output signal changes to the adjusted minimum value (low fail safe) or maximum value (high fail safe).

#### Characteristic curves



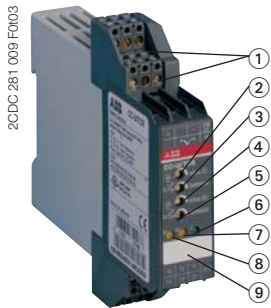
| Type    | Rated supply voltage       | Order code                               | Pack. unit pieces | Price 1 piece |
|---------|----------------------------|------------------------------------------|-------------------|---------------|
| CC-U/TC | 24-48 V DC<br>110-240 V AC | 1SVR 040 004 R0700<br>1SVR 040 005 R0000 | 1<br>1            |               |

- Accessories ..... 5/20
- Technical data ..... 5/21
- Dimensional drawings ..... 5/27

# Temperature signal converter for thermocouples

## CC-U/TCR with relay output

### Ordering details



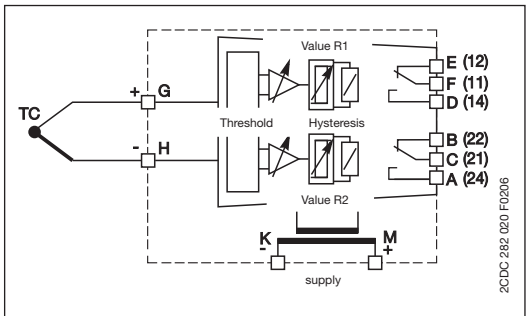
CC-U/TCR

- 1 Plug-in connecting terminals
- 2 Threshold value for R1
- 3 Hysteresis for R1
- 4 Threshold value for R2
- 5 Hysteresis for R2
- 6 U: green LED - supply voltage
- 7 R2: yellow LED - Relay 2 energized
- 8 R1: yellow LED - Relay 1 energized
- 9 Marker label

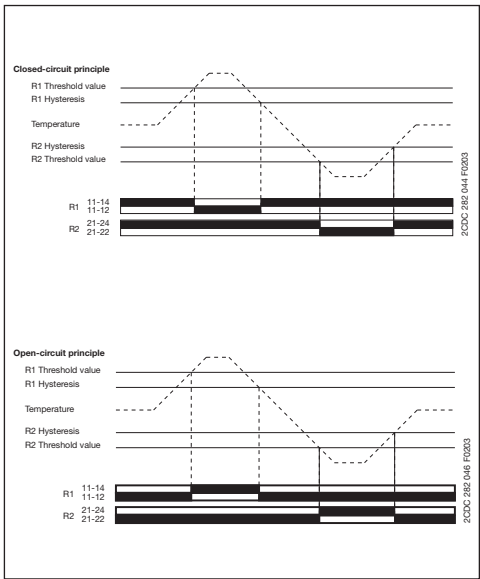
### CC-U/TCR universal signal converter for thermocouples, with 2 threshold relay outputs and 3-way electrical isolation

- Temperature signal converter for thermocouples of the types K, J, T, S
- 2 threshold relay outputs with one change-over contact each (threshold and respective hysteresis can be adjusted independently from each other)
- Open-circuit or closed-circuit principle configurable by means of a DIP switch
- 2 yellow LEDs for clear status indication of the output relays
- Plug-in connecting terminals for inputs, outputs and supply

### Wiring instruction



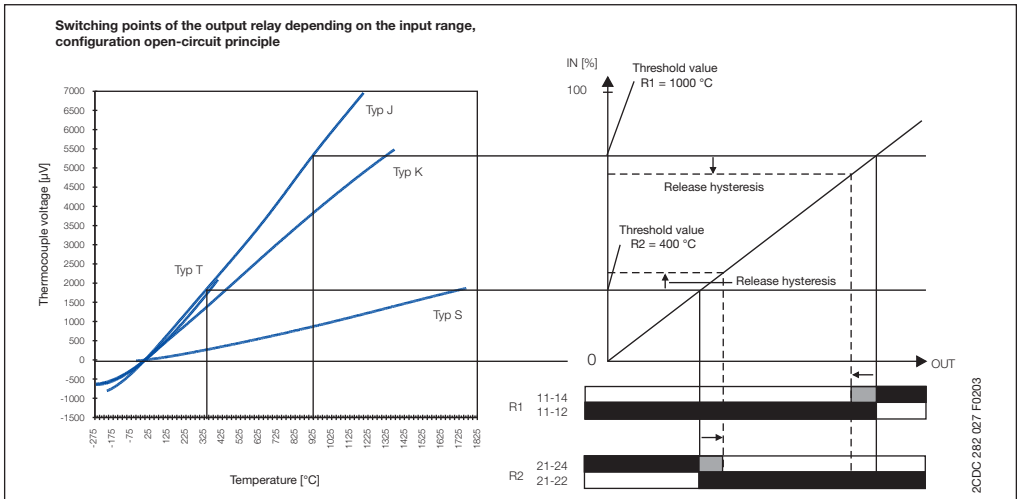
### Function diagrams



### DIP switch settings

| Type                     | Input Range    | Switch |   |   |   |   |   |
|--------------------------|----------------|--------|---|---|---|---|---|
|                          |                | 1      | 2 | 3 | 4 | 5 | 6 |
| J                        | 0...240 °C     |        |   |   |   |   |   |
|                          | 0...480 °C     |        |   |   |   |   |   |
|                          | 0...1200 °C    |        |   |   |   |   |   |
| K                        | 0...250 °C     |        |   |   |   |   |   |
|                          | 0...500 °C     |        |   |   |   |   |   |
|                          | 0...1350 °C    |        |   |   |   |   |   |
| T                        | -150...+120 °C |        |   |   |   |   |   |
|                          | 0...220 °C     |        |   |   |   |   |   |
|                          | 0...400 °C     |        |   |   |   |   |   |
| S                        | 0...210 °C     |        |   |   |   |   |   |
|                          | 0...380 °C     |        |   |   |   |   |   |
|                          | 0...860 °C     |        |   |   |   |   |   |
|                          | 0...1550 °C    |        |   |   |   |   |   |
| Output                   |                |        |   |   |   |   |   |
| Closed-circuit principle |                |        |   |   |   |   |   |
| Open-circuit principle   |                |        |   |   |   |   |   |

### Switching points



| Type     | Rated supply voltage | Order code         | Pack. unit pieces | Price 1 piece |
|----------|----------------------|--------------------|-------------------|---------------|
| CC-U/TCR | 24-48 V DC           | 1SVR 040 014 R2000 | 1                 |               |
|          | 110-240 V AC         | 1SVR 040 015 R2100 | 1                 |               |

- Accessories ..... 5/20
- Technical data ..... 5/21
- Technical diagrams ..... 5/27
- Dimensional drawings ..... 5/27

# Measuring converter for sinusoidal and DC currents CC-E/I

## Ordering details

2CDC 281 010 F003



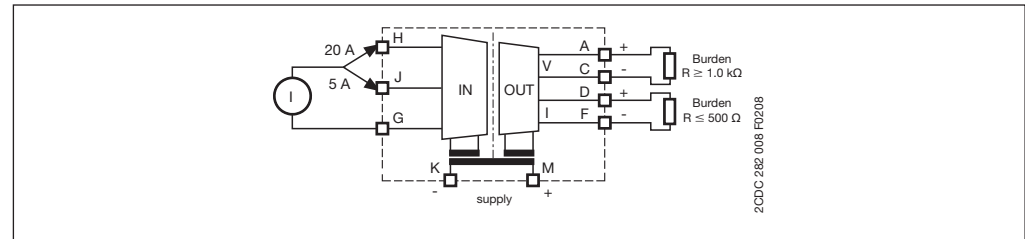
CC-E/I

- ① Gain adjustment
- ② Offset adjustment
- ③ U: green LED - supply voltage
- ④ DIP switch for input and output configuration (only available on universal devices)

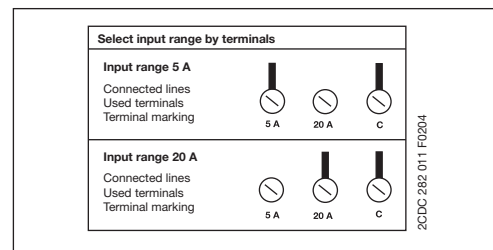
CC-E/I measuring converter for current signals 0-5 A, 0-20 A, AC/DC with 3-way electrical isolation

- 2 universally configurable devices (type CC-E/I)
- 2x6 single-function devices
- "Plug and Work", no adjustment of single-function devices required

### Wiring instruction



### Input range selection



### DIP switch settings (universal devices)

| Input  | Output    | Switch |   |   |   |   |   |
|--------|-----------|--------|---|---|---|---|---|
|        |           | 1      | 2 | 3 | 4 | 5 | 6 |
| I - DC | 0...10 V  |        |   |   |   |   |   |
| I - AC | 0...10 V  |        |   |   |   |   |   |
| I - DC | 0...20 mA |        |   |   |   |   |   |
| I - AC | 0...20 mA |        |   |   |   |   |   |
| I - DC | 4...20 mA |        |   |   |   |   |   |
| I - AC | 4...20 mA |        |   |   |   |   |   |

Legend  
☒ ON  
☐ OFF

| Type | Input signal | Output signal | Order code | Pack. unit pieces | Price 1 piece |
|------|--------------|---------------|------------|-------------------|---------------|
|------|--------------|---------------|------------|-------------------|---------------|

### Supply voltage: 24 V DC universal

|        |                      |                          |                                  |   |  |
|--------|----------------------|--------------------------|----------------------------------|---|--|
| CC-E/I | 0-5 A, 0-20 A, AC/DC | 0-10 V, 0-20 mA, 4-20 mA | 1SVR 011 703 R2700 <sup>1)</sup> | 1 |  |
|--------|----------------------|--------------------------|----------------------------------|---|--|

### single-function

|                 |                   |         |                    |   |  |
|-----------------|-------------------|---------|--------------------|---|--|
| CC-E $I_{AC}/V$ | 0-5 A, 0-20 A, AC | 0-10 V  | 1SVR 011 770 R0500 | 1 |  |
| CC-E $I_{AC}/I$ |                   | 0-20 mA | 1SVR 011 771 R2200 | 1 |  |
| CC-E $I_{AC}/I$ |                   | 4-20 mA | 1SVR 011 772 R2300 | 1 |  |
| CC-E $I_{DC}/V$ | 0-5 A, 0-20 A, DC | 0-10 V  | 1SVR 011 773 R2400 | 1 |  |
| CC-E $I_{DC}/I$ |                   | 0-20 mA | 1SVR 011 774 R2500 | 1 |  |
| CC-E $I_{DC}/I$ |                   | 4-20 mA | 1SVR 011 775 R2600 | 1 |  |

### Supply voltage: 110-240 V AC universal

|        |                      |                          |                    |   |  |
|--------|----------------------|--------------------------|--------------------|---|--|
| CC-E/I | 0-5 A, 0-20 A, AC/DC | 0-10 V, 0-20 mA, 4-20 mA | 1SVR 011 708 R0400 | 1 |  |
|--------|----------------------|--------------------------|--------------------|---|--|

### single-function

|                 |                   |         |                    |   |  |
|-----------------|-------------------|---------|--------------------|---|--|
| CC-E $I_{AC}/V$ | 0-5 A, 0-20 A, AC | 0-10 V  | 1SVR 011 780 R1100 | 1 |  |
| CC-E $I_{AC}/I$ |                   | 0-20 mA | 1SVR 011 781 R0600 | 1 |  |
| CC-E $I_{AC}/I$ |                   | 4-20 mA | 1SVR 011 782 R0700 | 1 |  |
| CC-E $I_{DC}/V$ | 0-5 A, 0-20 A, DC | 0-10 V  | 1SVR 011 783 R0000 | 1 |  |
| CC-E $I_{DC}/I$ |                   | 0-20 mA | 1SVR 011 784 R0100 | 1 |  |
| CC-E $I_{DC}/I$ |                   | 4-20 mA | 1SVR 011 785 R1100 | 1 |  |

<sup>1)</sup> 1604 Class I, Div.2 (universal device)

# Measuring converter for sinusoidal currents

## CC-E I<sub>AC</sub>/ILPO

### Ordering details

2CDC 281 018 F004



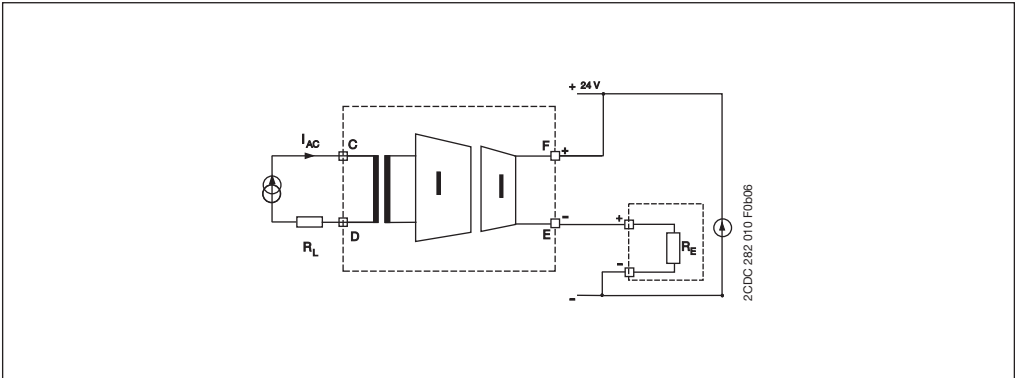
CC-E I<sub>AC</sub>/ILPO

- ① Gain adjustment
- ② Offset adjustment
- ③ Selection of measuring range

CC-E I<sub>AC</sub>/ILPO measuring converter without auxiliary power for sinusoidal currents  
0-1 A, 0-5 A, output 4-20 mA

- Measuring converter for sinusoidal currents (0-1 A, 0-5 A)
- Measuring range selection by front-face sliding switch
- 4-20 mA output current in proportion to input current
- no additional power supply required

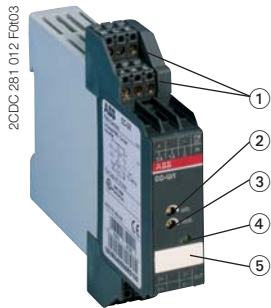
#### Wiring instruction



| Type                       | Input signal     | Order code         | Pack. unit pieces | Price 1 piece |
|----------------------------|------------------|--------------------|-------------------|---------------|
| CC-E I <sub>AC</sub> /ILPO | 0-1 A, 0-5 A, AC | 1SVR 010 203 R0500 | 1                 |               |

# Measuring converter for current RMS values CC-U/I

## Ordering details



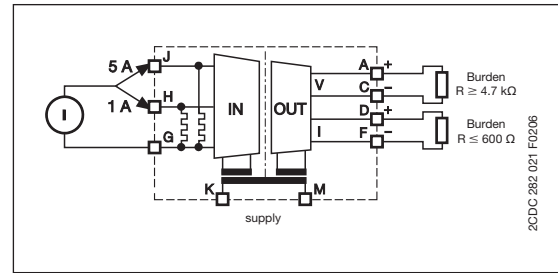
CC-U/I

- ① Plug-in connecting terminals
- ② Gain adjustment
- ③ Offset adjustment
- ④ U: green LED - supply voltage
- ⑤ Marker label

CC-U/I universal measuring converter for RMS values of 0-1 A and 0-5 A, with 3-way electrical isolation

- RMS converter for current signals up to 1 A and up to 5 A of any wave form (DC, DC with superimposed AC components, pure sinusoidal, triangular, phase-angle controlled, etc. in a measuring range of 0-600 Hz)
- Adjustment and operating elements on the front
- Short-circuit proof signal outputs
- Plug-in connecting terminals for inputs, outputs and supply

### Wiring instruction

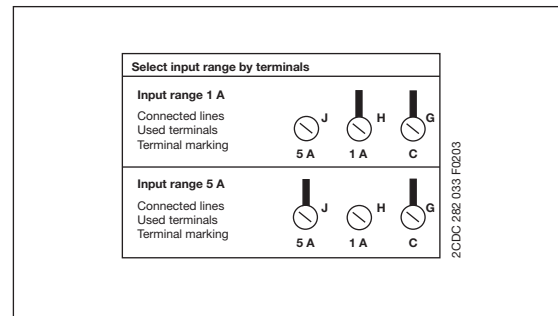


### DIP switch settings

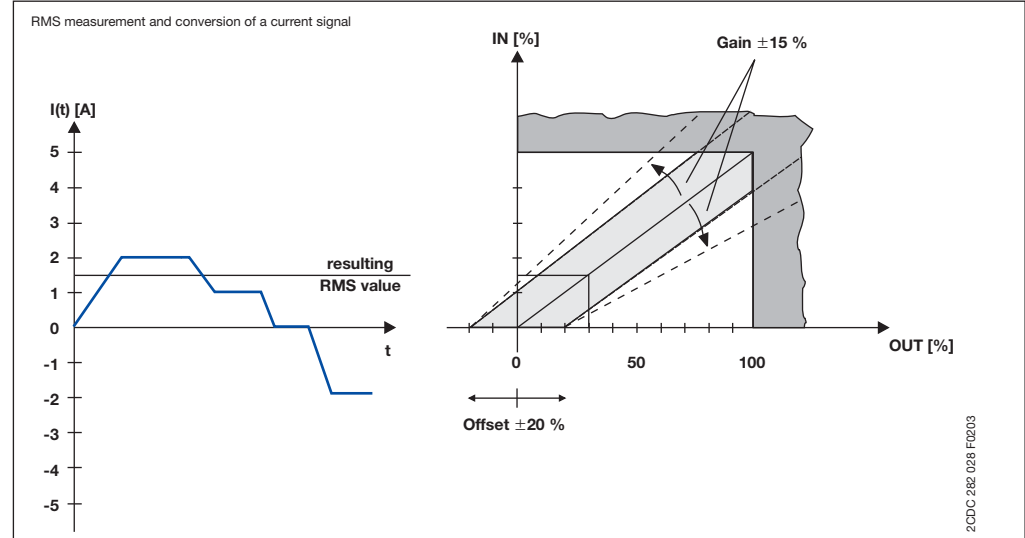
| Output          | Switch | 1 | 2 | 3 | 4 | 5 | 6 |
|-----------------|--------|---|---|---|---|---|---|
| 0...5 V         |        |   |   |   |   |   |   |
| 0...10 V        |        |   |   |   |   |   |   |
| 1...5 V         |        |   |   |   |   |   |   |
| 2...10 V        |        |   |   |   |   |   |   |
| -10...+10 V     |        |   |   |   |   |   |   |
| -5...+5 V       |        |   |   |   |   |   |   |
| -10...0 V       |        |   |   |   |   |   |   |
| -5...0 V        |        |   |   |   |   |   |   |
| 0...6.66 V      |        |   |   |   |   |   |   |
| -10...+3.33 V   |        |   |   |   |   |   |   |
| -5...+1.66 V    |        |   |   |   |   |   |   |
| 0...8 V         |        |   |   |   |   |   |   |
| 0...4 V         |        |   |   |   |   |   |   |
| -10...-2 V      |        |   |   |   |   |   |   |
| -5...-1 V       |        |   |   |   |   |   |   |
| 1.25...6.25 V   |        |   |   |   |   |   |   |
| -7.5...+2.5 V   |        |   |   |   |   |   |   |
| -3.75...+1.25 V |        |   |   |   |   |   |   |
| 1.66...8.33 V   |        |   |   |   |   |   |   |
| -6.66...+6.66 V |        |   |   |   |   |   |   |
| -3.33...+3.33 V |        |   |   |   |   |   |   |
| -8...0 V        |        |   |   |   |   |   |   |
| -4...0 V        |        |   |   |   |   |   |   |
| 0...1 mA        |        |   |   |   |   |   |   |
| 0...20 mA       |        |   |   |   |   |   |   |
| 4...20 mA       |        |   |   |   |   |   |   |
| 0...10 mA       |        |   |   |   |   |   |   |
| 0...0.5 mA      |        |   |   |   |   |   |   |
| 0...13.33 mA    |        |   |   |   |   |   |   |
| 0...666 µA      |        |   |   |   |   |   |   |
| 0...16 mA       |        |   |   |   |   |   |   |
| 0...800 µA      |        |   |   |   |   |   |   |
| 0...8 mA        |        |   |   |   |   |   |   |
| 0...400 µA      |        |   |   |   |   |   |   |
| 2.5...12.5 mA   |        |   |   |   |   |   |   |
| 125...625 µA    |        |   |   |   |   |   |   |
| 3.33...16.66 mA |        |   |   |   |   |   |   |
| 166...833 µA    |        |   |   |   |   |   |   |
| 0.2...1 mA      |        |   |   |   |   |   |   |
| 2...10 mA       |        |   |   |   |   |   |   |
| 100...500 µA    |        |   |   |   |   |   |   |

| Legend |              |  |
|--------|--------------|--|
| ■      | ON           |  |
| □      | OFF          |  |
| □      | no influence |  |

### Input range selection



### Example of application

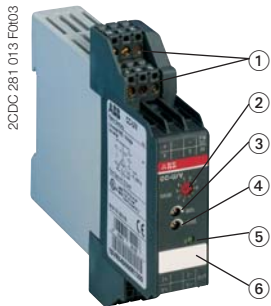


| Type   | Rated supply voltage       | Order code                               | Pack. unit pieces | Price 1 piece |
|--------|----------------------------|------------------------------------------|-------------------|---------------|
| CC-U/I | 24-48 V DC<br>110-240 V AC | 1SVR 040 006 R0100<br>1SVR 040 007 R0200 | 1<br>1            |               |

- Accessories ..... 5/20
- Technical data ..... 5/21
- Dimensional drawings ..... 5/27

# Measuring converter for voltage RMS values CC-U/V

## Ordering details



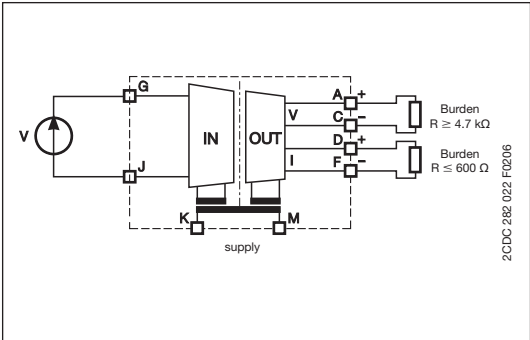
CC-U/V

- 1 Plug-in connecting terminals
- 2 Input voltage range selection
- 3 Gain adjustment
- 4 Offset adjustment
- 5 U: green LED - supply voltage
- 6 Marker label

CC-U/V universal measuring converter for RMS values of 0-600 V, with 3-way electrical isolation

- RMS converter for voltage signals up to 600 V of any wave form (DC, DC with superimposed AC components, pure sinusoidal, triangular, phase-angle controlled, etc. in a measuring range of 0-600 Hz)
- Adjustment and operating elements on the front
- Short-circuit proof signal outputs
- Plug-in connecting terminals for inputs, outputs and supply

### Wiring instruction



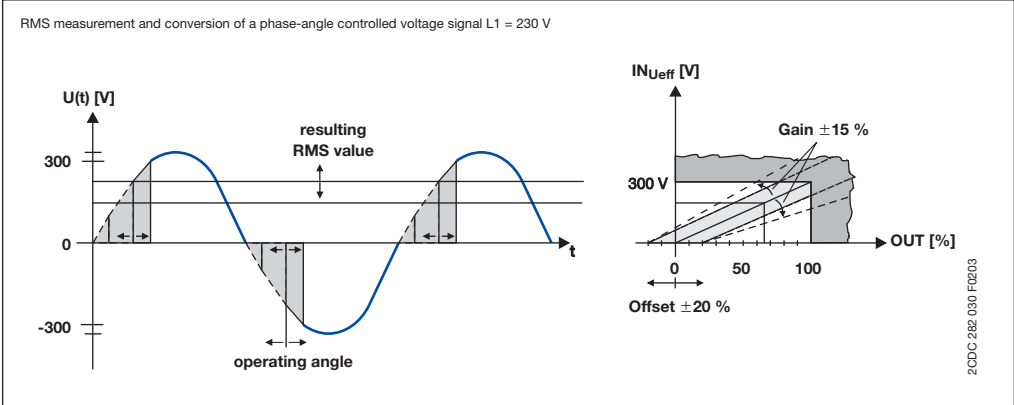
### DIP switch settings

| Output          | Switch |   |   |   |   |   |
|-----------------|--------|---|---|---|---|---|
|                 | 1      | 2 | 3 | 4 | 5 | 6 |
| 0...5 V         |        |   |   |   |   |   |
| 0...10 V        |        |   |   |   |   |   |
| 1...5 V         |        |   |   |   |   |   |
| 2...10 V        |        |   |   |   |   |   |
| -10...+10 V     |        |   |   |   |   |   |
| -5...+5 V       |        |   |   |   |   |   |
| -10...0 V       |        |   |   |   |   |   |
| -5...0 V        |        |   |   |   |   |   |
| 0...6.66 V      |        |   |   |   |   |   |
| -10...+3.33 V   |        |   |   |   |   |   |
| -5...+1.66 V    |        |   |   |   |   |   |
| 0...8 V         |        |   |   |   |   |   |
| 0...4 V         |        |   |   |   |   |   |
| -10...-2 V      |        |   |   |   |   |   |
| -5...-1 V       |        |   |   |   |   |   |
| 1.25...6.25 V   |        |   |   |   |   |   |
| -7.5...+2.5 V   |        |   |   |   |   |   |
| -3.75...+1.25 V |        |   |   |   |   |   |
| 1.66...8.33 V   |        |   |   |   |   |   |
| -6.66...+6.66 V |        |   |   |   |   |   |
| -3.33...+3.33 V |        |   |   |   |   |   |
| -8...0 V        |        |   |   |   |   |   |
| -4...0 V        |        |   |   |   |   |   |
| 0...1 mA        |        |   |   |   |   |   |
| 0...20 mA       |        |   |   |   |   |   |
| 4...20 mA       |        |   |   |   |   |   |
| 0...10 mA       |        |   |   |   |   |   |
| 0...0.5 mA      |        |   |   |   |   |   |
| 0...13.33 mA    |        |   |   |   |   |   |
| 0...666 µA      |        |   |   |   |   |   |
| 0...16 mA       |        |   |   |   |   |   |
| 0...800 µA      |        |   |   |   |   |   |
| 0...8 mA        |        |   |   |   |   |   |
| 0...400 µA      |        |   |   |   |   |   |
| 2.5...12.5 mA   |        |   |   |   |   |   |
| 125...625 µA    |        |   |   |   |   |   |
| 3.33...16.66 mA |        |   |   |   |   |   |
| 166...833 µA    |        |   |   |   |   |   |
| 0.2...1 mA      |        |   |   |   |   |   |
| 2...10 mA       |        |   |   |   |   |   |
| 100...500 µA    |        |   |   |   |   |   |

### Input range selection

| Selecting input range by front-face rotary switch | Switch position |
|---------------------------------------------------|-----------------|
| 0...100 V                                         | 1               |
| 0...150 V                                         | 2               |
| 0...250 V                                         | 3               |
| 0...300 V                                         | 4               |
| 0...400 V                                         | 5               |
| 0...450 V                                         | 6               |
| 0...550 V                                         | 7               |
| 0...600 V                                         | 8               |

### Example of application



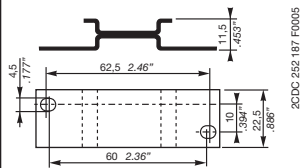
| Type   | Rated supply voltage       | Order code                               | Pack. unit pieces | Price 1 piece |
|--------|----------------------------|------------------------------------------|-------------------|---------------|
| CC-U/V | 24-48 V DC<br>110-240 V AC | 1SVR 040 008 R1300<br>1SVR 040 009 R1400 | 1<br>1            |               |

- Accessories ..... 5/20
- Technical data ..... 5/21
- Dimensional drawings ..... 5/27

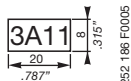
# Analog signal converters

## Accessories for CC-U range

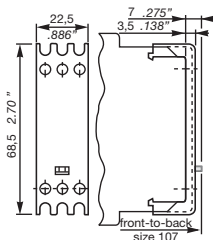
### Ordering details



**ADP.01**



**MAR.01**



**Sealable cover**  
**COV.01**

### Accessories

#### Adapter for screw mounting

| Type          | for type | Width in mm | Order code                | Pack. unit pieces | Price 1 piece | Weight 1 piece g / oz |
|---------------|----------|-------------|---------------------------|-------------------|---------------|-----------------------|
| <b>ADP.01</b> | CC-U     | 22.5        | <b>1SVR 430 029 R0100</b> | 1                 |               | 18.4/0.65             |

#### Marker label

| Type          | for type | Width in mm | Order code                | Pack. unit pieces | Price 1 piece | Weight 1 piece g / oz |
|---------------|----------|-------------|---------------------------|-------------------|---------------|-----------------------|
| <b>MAR.01</b> | CC-U     |             | <b>1SVR 366 017 R0100</b> | 10                |               | 0.19/0.007            |

#### Sealable transparent cover

| Type          | for type | Width in mm | Order code                | Pack. unit pieces | Price 1 piece | Weight 1 piece g / oz |
|---------------|----------|-------------|---------------------------|-------------------|---------------|-----------------------|
| <b>COV.01</b> | CC-U     | 22.5        | <b>1SVR 430 005 R0100</b> | 1                 |               | 5.2/0.18              |

# Analog signal converters

## CC-E/STD, CC-E x/x, CC-E/RTD, CC-E/TC

### Technical data

| Type                                            |                                        | CC-E/STD                                  |                                  | CC-E/RTD <sup>3)</sup>                                                                                                                   | CC-E/TC                             |
|-------------------------------------------------|----------------------------------------|-------------------------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Input circuits - Analog inputs                  | J-G-H                                  | Current                                   | Voltage                          | Temperature sensors                                                                                                                      | Thermocouples (IEC 584-1 and 2)     |
| Input signal                                    |                                        | Standard signals                          |                                  | PT100                                                                                                                                    | TC.K, TC.J                          |
| Rated input range                               |                                        | 0...20 mA / 4...20 mA                     | 0...5 V / 0...10 V / -10...+10 V | -50...+500 °C                                                                                                                            | TC.K: 0...1000 °C, TC.J: 0...600 °C |
| Limitation of input signals                     |                                        | +55 mA                                    | ± 11 V                           |                                                                                                                                          |                                     |
| Influence of line resistance                    |                                        | -                                         |                                  | < 0.01 %/Ω                                                                                                                               | < 0.5 % / 100 Ω                     |
| Gain adjustment range                           |                                        | ± 5 % (universal devices)                 |                                  |                                                                                                                                          |                                     |
| Offset adjustment range                         |                                        | ± 5 % (universal devices)                 |                                  |                                                                                                                                          |                                     |
| Input impedance                                 |                                        | 50 Ω                                      | 1 MΩ                             | -                                                                                                                                        | -                                   |
| Suppression at 50 Hz                            |                                        | -                                         |                                  | -                                                                                                                                        | > 35 dB                             |
| Common-mode rejection                           |                                        | -                                         |                                  | 100 dB                                                                                                                                   |                                     |
| Output circuits - Analog outputs                | D-F, A-C                               | Current                                   |                                  | Voltage                                                                                                                                  |                                     |
| Output signal                                   |                                        | 0-20 mA, 4-20 mA                          |                                  | 0-5 V, 0-10 V                                                                                                                            |                                     |
| Output burden                                   |                                        | ≤ 500 Ω                                   |                                  | ≥ 1.0 KΩ                                                                                                                                 |                                     |
| Accuracy <sup>1)</sup>                          |                                        | ± 0.5 % of full-scale                     |                                  |                                                                                                                                          |                                     |
| Residual ripple                                 |                                        | < 0.5 %                                   |                                  |                                                                                                                                          |                                     |
| Response time                                   |                                        | 200 μs                                    |                                  | 10 ms                                                                                                                                    |                                     |
| Transmission frequency                          |                                        | 2 kHz                                     |                                  | 80 Hz                                                                                                                                    | 2 Hz (up to -3 dB)                  |
| Reaction to input circuit interruption          |                                        |                                           |                                  | High fail safe: Output voltage > 115 % of measuring range <sup>2)</sup><br>Low fail safe: Output voltage < -0.6 V, output current = 0 mA |                                     |
| Supply circuits                                 | K-M                                    | DC versions                               |                                  | AC versions                                                                                                                              |                                     |
| Supply voltage                                  |                                        | 24 V DC                                   |                                  | 110-240 V AC - 50/60 Hz                                                                                                                  |                                     |
| Supply voltage tolerance                        |                                        | -15...+15 %                               |                                  | -15...+10 %                                                                                                                              |                                     |
| Power consumption                               |                                        | 1.5 W typ.                                |                                  | 1.5 VA typ.                                                                                                                              |                                     |
| Indication of operational states                |                                        |                                           |                                  |                                                                                                                                          |                                     |
| Rated control supply voltage U <sub>s</sub>     |                                        | U: green LED                              |                                  |                                                                                                                                          |                                     |
| General data                                    |                                        |                                           |                                  |                                                                                                                                          |                                     |
| Ambient temperature range                       | operation / storage                    | 0...+60 °C / -20...+80 °C                 |                                  |                                                                                                                                          |                                     |
| Temperature coefficient                         |                                        | ± 500 ppm/°C                              |                                  |                                                                                                                                          |                                     |
| Degree of protection (DIN 40050)                |                                        | IP20                                      |                                  |                                                                                                                                          |                                     |
| Mounting position                               |                                        | ventilation slots on top and bottom       |                                  |                                                                                                                                          |                                     |
| Mounting                                        |                                        | DIN rail (IEC/EN 60715), snap-on mounting |                                  |                                                                                                                                          |                                     |
| Electrical connection                           |                                        |                                           |                                  |                                                                                                                                          |                                     |
| Wire size                                       | rigid                                  | 0.2-4 mm <sup>2</sup> (24-12 AWG)         |                                  |                                                                                                                                          |                                     |
|                                                 | fine-strand with(out) wire end ferrule | 0.2-2.5 mm <sup>2</sup> (24-14 AWG)       |                                  |                                                                                                                                          |                                     |
| Stripping length                                |                                        | 7 mm (0.28 inch)                          |                                  |                                                                                                                                          |                                     |
| Tightening torque                               |                                        | 0.5 Nm (4.4 lb.in)                        |                                  |                                                                                                                                          |                                     |
| Electromagnetic compatibility                   |                                        |                                           |                                  |                                                                                                                                          |                                     |
| Interference immunity                           |                                        | EN 61000-6-2                              |                                  |                                                                                                                                          |                                     |
| electrostatic discharge (ESD)                   | IEC/EN 61000-4-2                       | Level 3 (±6 kV / ±8 kV)                   |                                  |                                                                                                                                          |                                     |
| electromagnetic field (HF radiation resistance) | IEC/EN 61000-4-3                       | 10 V/m                                    |                                  |                                                                                                                                          |                                     |
| fast transients (Burst)                         | IEC/EN 61000-4-4                       | Level 3 (±2 kV / 5 kHz)                   |                                  |                                                                                                                                          |                                     |
| powerful impulses (Surge)                       | IEC/EN 61000-4-5                       | ±2 kV / ±1 kV                             |                                  |                                                                                                                                          |                                     |
| HF line emission                                | IEC/EN 61000-4-6                       | 10 V                                      |                                  |                                                                                                                                          |                                     |
| Interference emission                           | EN 61000-6-4                           | Class B                                   |                                  |                                                                                                                                          |                                     |
| Isolation data                                  |                                        |                                           |                                  |                                                                                                                                          |                                     |
| Test voltage between all isolated circuits      |                                        | 2.5 kV AC                                 |                                  |                                                                                                                                          |                                     |
| Rated insulation voltage                        |                                        | -                                         |                                  | -                                                                                                                                        | -                                   |

<sup>1)</sup> includes: non-linearity, factory setting, drift of temperature, supply voltage and output load

<sup>2)</sup> Only -/RTD and -/TC: Single-function devices respond with Low fail safe to input signal interruptions

<sup>3)</sup> When connecting a 2-wire sensor, the terminals J and H have to be jumpered.

# Analog signal converter CC-E I/I-1, CC-E I/I-2 Technical data

| Type                                            |                                        | CC-E I/I                                                                   |
|-------------------------------------------------|----------------------------------------|----------------------------------------------------------------------------|
| Input circuits - Analog inputs                  |                                        | Current                                                                    |
| Input current $I_{IN}$                          |                                        | 0-20 mA, 4-20 mA                                                           |
| Min. input current                              |                                        | < 100 $\mu$ A                                                              |
| Max. input current                              |                                        | 50 mA <sup>1)</sup> ( $V_{IN} < 18$ V)                                     |
| Input voltage $U_{IN}$                          |                                        | < 2.5 V + ( $I_{IN} \times R_L$ )                                          |
| Input voltage drop $U_i$                        |                                        | < 2.5 V (20 mA, $R_L = 0 \Omega$ )                                         |
| Max. input voltage                              |                                        | 18 V <sup>1)</sup> ( $I_{IN} < 50$ mA)                                     |
| Output circuits                                 |                                        |                                                                            |
| Output current $I_{OUT}$                        |                                        | 0-20 mA, 4-20 mA                                                           |
| Output load $R_L$                               |                                        | 0-500 $\Omega$                                                             |
| Output voltage $U_{OUT}$                        |                                        | $I_{OUT} \times R_L$                                                       |
| Residual ripple                                 |                                        | < 20 mV <sub>pp</sub> (500 $\Omega$ , 20 mA)                               |
| Response time (0-100 %)                         |                                        | < 15 ms (0-500 $\Omega$ , 20 mA),<br>< 5 ms (500 $\Omega$ , 20 mA, 25 °C)  |
| Accuracy                                        |                                        | $\leq 0.1$ % of full-scale (20 mA)                                         |
| Load influence (0-500 $\Omega$ )                |                                        | $\leq \pm 0.05$ % / 100 $\Omega$ ,<br>$\leq -0.1$ % / 100 $\Omega$ (25 °C) |
| General data                                    |                                        |                                                                            |
| Width of the enclosure                          |                                        | 18 mm                                                                      |
| Weight                                          | 1 channel                              | approx. 0.037 kg (0.082 lb)                                                |
|                                                 | 2 channel                              | approx. 0.044 kg (0.097 lb)                                                |
| Mounting position                               |                                        | any                                                                        |
| Degree of protection                            | enclosure / terminals                  | IP20 / IP20                                                                |
| Ambient temperature range                       | operation / storage                    | -25...+60 °C / -40...+85 °C                                                |
| Temperature coefficient                         |                                        | < $\pm 50$ ppm / °C                                                        |
| Mounting                                        |                                        | DIN rail (IEC/EN 60715)                                                    |
| Electrical connection                           |                                        |                                                                            |
| Wire size                                       | rigid                                  | 0.2-4 mm <sup>2</sup> (24-12 AWG)                                          |
|                                                 | fine-strand with(out) wire end ferrule | 0.2-2.5 mm <sup>2</sup> (24-14 AWG)                                        |
| Stripping length                                |                                        | 7 mm (0.28 inch)                                                           |
| Tightening torque                               |                                        | 0.5 Nm (4.4 lb.in)                                                         |
| Standards                                       |                                        |                                                                            |
| Product standard                                |                                        | EN 50178                                                                   |
| Low Voltage Directive                           |                                        | 2006/95/EC                                                                 |
| EMC Directive                                   |                                        | 2004/108/EC                                                                |
| Electromagnetic compatibility                   |                                        |                                                                            |
| Interference immunity                           |                                        | EN 61000-6-2                                                               |
| electrostatic discharge (ESD)                   | EN 61000-4-2                           | Level 3 ( $\pm 6$ kV / $\pm 8$ kV)                                         |
| electromagnetic field (HF radiation resistance) | EN 61000-4-3                           | 10 V/m                                                                     |
| fast transients (Burst)                         | EN 61000-4-4                           | Level 3 ( $\pm 2$ kV / 5 kHz)                                              |
| powerful impulses (Surge)                       | EN 61000-4-5                           | $\pm 2$ kV / $\pm 1$ kV                                                    |
| HF line emission                                | EN 61000-4-6                           | 10 V                                                                       |
| magnetisches Feld                               | EN 61000-4-8                           | 30 A/m                                                                     |
| Interference emission                           |                                        | EN 61000-6-4                                                               |
| Radiated noise                                  | EN 55011                               | Class B                                                                    |
| Operational reliability (EN 68-2-6)             |                                        | 4 g                                                                        |
| Mechanical resistance (EN 68-2-6)               |                                        | 10 g                                                                       |
| Environmental testing (IEC 68-2-30 Db)          |                                        | 24 h cycle, 55 °C, 93 % rel., 96 h                                         |
| Isolation data                                  |                                        |                                                                            |
| Insulation voltage input / output               |                                        | 500 V <sub>eff</sub> / 50 Hz                                               |
| Insulation voltage between channels             |                                        | 5 kV <sub>eff</sub> / 50 Hz (device with 2 channels)                       |
| Pollution category                              |                                        | 2                                                                          |
| Overvoltage category                            |                                        | II                                                                         |

<sup>1)</sup> The input parameters have to be limited to the indicated maximum values.

# Analog signal converters

## CC-U/STD, CC-U/RTD, CC-U/TC

### Technical data

| Type                                               |                                        | CC-U/STD                                                                |                                                                   |                               | CC-U/RTD <sup>3)</sup>                                                                           | CC-U/TC                                                    |                                                          |
|----------------------------------------------------|----------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------|
| Input circuits - Analog inputs                     | J-G-H                                  | Current                                                                 | Voltage                                                           | Potentio-<br>meter            | Temperature sensors                                                                              | Thermocouples<br>(IEC 584-1 and 2)                         |                                                          |
| Input signal                                       |                                        | 0-20 mA<br>4-20 mA<br>10-50 mA<br>0-1 mA                                | 0-100 mV<br>0-1 V<br>0-5 V<br>1-5 V<br>0-10 V<br>2-10 V<br>± 10 V | 470 Ω -<br>1 MΩ <sup>2)</sup> | PT10, PT100, PT1000<br>(IEL 751 and JICC 1604)                                                   | TC.K<br>TC.T<br>TC.E<br>TC.R                               | TC.J<br>TC.S<br>TC.N<br>TC.B                             |
| Limitation of input signals                        |                                        | ± 55 mA                                                                 | ± 11 V                                                            |                               | -                                                                                                | -                                                          |                                                          |
| Rated input range                                  |                                        | -                                                                       | -                                                                 | -                             | Max. temperature adjustable:<br>6-60 °C for PT1000<br>50-500 °C for PT100<br>500-850 °C for PT10 | refer to temperature specs.<br>of individual thermocouples |                                                          |
| Influence of line resistance                       |                                        | -                                                                       | -                                                                 | -                             | 0.015 °C/Ω                                                                                       | < 0.01 % / 100 Ω                                           |                                                          |
| Gain adjustment range<br>(universal devices)       |                                        | 0.9-<br>110 mA                                                          | 45 mV -<br>22 V                                                   | -                             | see DIP switch settings                                                                          |                                                            |                                                          |
| Offset adjustment range (universal devices)        |                                        | -137.5...+62.5 %                                                        |                                                                   |                               | ± 5 %                                                                                            | ± 10 %                                                     |                                                          |
| Input impedance                                    |                                        | for different ranges                                                    |                                                                   |                               | -                                                                                                | -                                                          |                                                          |
| without detection of input signal interruption     |                                        | 51 Ω                                                                    | 6 MΩ                                                              | 3 GΩ                          | -                                                                                                | -                                                          |                                                          |
| with detection of input signal interruption        |                                        | 51 Ω                                                                    | 3.5 MΩ                                                            | 9.5 GΩ                        | -                                                                                                | -                                                          |                                                          |
| Suppression at 50 Hz                               |                                        | -                                                                       | -                                                                 | -                             | -                                                                                                | > 40 dB                                                    |                                                          |
| Common-mode rejection                              |                                        | -                                                                       | -                                                                 | -                             | 120 dB                                                                                           | 105 dB                                                     |                                                          |
| Output circuits - Analog outputs                   | D-F, A-C                               | Current                                                                 |                                                                   |                               | Voltage                                                                                          |                                                            |                                                          |
| Output signal                                      |                                        | 0-20 mA, 4-20 mA                                                        |                                                                   |                               | 0-5 V, 1-5 V, 0-10 V, 2-10 V, ± 10 V                                                             |                                                            |                                                          |
| Output burden                                      |                                        | ≤ 600 Ω                                                                 |                                                                   |                               | ≥ 4.7 KΩ                                                                                         |                                                            |                                                          |
| Accuracy <sup>1)</sup>                             |                                        | ±0.1 % of full-scale                                                    |                                                                   |                               | ±0.2 % of full-scale                                                                             |                                                            | ±0.1 % of full-scale                                     |
| Residual ripple                                    |                                        | -                                                                       |                                                                   |                               | < 0.15 %                                                                                         |                                                            | -                                                        |
| Response time                                      |                                        | 200 μs                                                                  |                                                                   |                               | 10 ms                                                                                            |                                                            | 200 ms                                                   |
| Transmission frequency                             |                                        | 1 kHz                                                                   |                                                                   |                               | 80 Hz                                                                                            |                                                            | 2 Hz (to -3 dB)                                          |
| Supply circuits                                    | K-M                                    |                                                                         |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Rated supply voltage                               |                                        | 24-48 V DC                                                              |                                                                   |                               | 110-240 V AC                                                                                     |                                                            |                                                          |
| Supply voltage range                               |                                        | 24-48 V DC / 24 V AC                                                    |                                                                   |                               | 110-240 V AC / 100-300 V DC                                                                      |                                                            |                                                          |
| Supply voltage tolerance                           |                                        | DC: -15...+15 %                                                         |                                                                   |                               | AC: -15...+10 %                                                                                  |                                                            |                                                          |
| Rated frequency                                    |                                        | 0 Hz or 50/60 Hz                                                        |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Power consumption                                  |                                        | 2 W at 24 V DC                                                          |                                                                   |                               | 4.5 VA at 230 V AC                                                                               |                                                            |                                                          |
| Indication of operational states                   |                                        |                                                                         |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Supply voltage                                     |                                        | U: green LED                                                            |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| General data                                       |                                        |                                                                         |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Ambient temperature range                          | operation / storage                    | -20...+60 °C / -40...+80 °C                                             |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Temperature coefficient                            |                                        | ±150 ppm/°C                                                             |                                                                   |                               | ±250 ppm/°C                                                                                      |                                                            | ±200 ppm/°C at min. offset<br>±400 ppm/°C at max. offset |
| Mounting position                                  |                                        | any                                                                     |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Mounting                                           |                                        | DIN rail (IEC/EN 60715), snap-on mounting / screw mounting with adapter |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Electrical connection                              |                                        |                                                                         |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Wire size                                          | rigid                                  | plug-connector with screw terminals 0.2-2.5 mm² (24-12 AWG)             |                                                                   |                               |                                                                                                  |                                                            |                                                          |
|                                                    | fine-strand with(out) wire end ferrule | plug-connector with screw terminals 0.2-2.5 mm² (24-12 AWG)             |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Stripping length                                   |                                        | 7 mm (0.28 inch)                                                        |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Tightening torque                                  |                                        | 0.4 Nm (3.5 lb.in)                                                      |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Electromagnetic compatibility                      |                                        |                                                                         |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Interference immunity                              |                                        | EN 61000-6-2                                                            |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| electrostatic discharge (ESD)                      | IEC/EN 61000-4-2                       | Level 3 (±6 kV / ±8 kV)                                                 |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| electromagnetic field<br>(HF radiation resistance) | IEC/EN 61000-4-3                       | 10 V/m                                                                  |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| fast transients (Burst)                            | IEC/EN 61000-4-4                       | Level 3 (±2 kV / 5 kHz)                                                 |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| powerful impulses (Surge)                          | IEC/EN 61000-4-5                       | ±2 kV / ±1 kV                                                           |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| HF line emission                                   | IEC/EN 61000-4-6                       | 10 V                                                                    |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Interference emission                              | EN 61000-6-4                           | Class B                                                                 |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Isolation data                                     |                                        |                                                                         |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Isolation test (between all isolated circuits)     |                                        | 1.5 kV                                                                  |                                                                   |                               |                                                                                                  |                                                            |                                                          |
| Test voltage (between all isolated circuits)       |                                        | 1.5 kV / 50 Hz                                                          |                                                                   |                               |                                                                                                  |                                                            |                                                          |

<sup>1)</sup> includes: non-linearity, factory setting, drift of temperature, supply voltage and output load

<sup>2)</sup> Detection of an input signal break (fail safe) and resistance > 10 kΩ results in a linearity of ±0,2 %.

<sup>3)</sup> When connecting a 2-wire sensor, the terminals J and H have to be jumpered.

• Approvals ..... 5/3

# Analog signal converters with relay output

## CC-U/STDR, CC-U/RTDR, CC-U/TCR

### Technical data

| Type                                                             | CC-U/STDR                                                               |                               | CC-U/RTDR <sup>1)</sup> | CC-U/TCR                        |
|------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------|-------------------------|---------------------------------|
| Input circuits - Analog inputs J-H                               | Current                                                                 | Voltage                       | Temperature sensors     | Thermocouples (IEC 584-1 and 2) |
| Measuring signal / input range                                   | 0-20 mA<br>4-20 mA                                                      | 0-1 V / 1-5 V<br>0-10 / ±10 V | PT100                   | TC.K, TC.J<br>TC.T, TC.S        |
| Input resistance                                                 | approx. 50 Ω                                                            | approx. 1,5 MΩ                |                         |                                 |
| Adjustable threshold                                             | 2-100 % of selected input range                                         |                               |                         |                                 |
| Adjustable hysteresis                                            | 5-50 % of threshold                                                     |                               |                         |                                 |
| Repeat accuracy (constant parameters)                            | ±0.5 % of full-scale                                                    |                               |                         |                                 |
| Output circuits - Relay outputs E-D-F, B-C-A                     | Relay, 2 c/o contacts                                                   |                               |                         |                                 |
| Rated switching voltage                                          | 250 V AC                                                                |                               |                         |                                 |
| Rated switching current                                          | 4 A                                                                     |                               |                         |                                 |
| AC12 (resistive) 230 V                                           | 3 A                                                                     |                               |                         |                                 |
| DC12 (resistive) 24 V                                            | 4 A                                                                     |                               |                         |                                 |
| DC13 (inductive) 24 V                                            | 2 A                                                                     |                               |                         |                                 |
| AC rating (UL 508)                                               | B 300                                                                   |                               |                         |                                 |
| Utilization category (Control Circuit Rating Code)               | 300 V AC                                                                |                               |                         |                                 |
| max. rated operational voltage                                   | 5 A                                                                     |                               |                         |                                 |
| max. continuous thermal current at B 300                         | 3600/360 VA                                                             |                               |                         |                                 |
| max. making/breaking apparent power at B 300                     | 12 V                                                                    |                               |                         |                                 |
| Minimum switching voltage                                        | 10 mA / 0.6 VA (W)                                                      |                               |                         |                                 |
| Minimum switching current / power                                | 10 ms                                                                   |                               |                         |                                 |
| Response time                                                    | 30 x 10 <sup>6</sup> switching cycles                                   |                               |                         |                                 |
| Mechanical lifetime                                              | 0.1 Mio. switching cycles                                               |                               |                         |                                 |
| Electrical lifetime at AC12, 230 V, 4 A                          |                                                                         |                               |                         |                                 |
| Supply circuits K-M                                              |                                                                         |                               |                         |                                 |
| Rated supply voltage                                             | 24-48 V DC 110-240 V AC                                                 |                               |                         |                                 |
| Supply voltage range                                             | 24-48 V DC / 24 V AC 110-240 V AC / 100-300 V DC                        |                               |                         |                                 |
| Supply voltage tolerance                                         | DC: -15...+15 % AC: -15...+10 %                                         |                               |                         |                                 |
| Rated frequency                                                  | 0 Hz or 50/60 Hz                                                        |                               |                         |                                 |
| Power consumption                                                | 2 W at 24 V DC 4.5 VA at 230 V AC                                       |                               |                         |                                 |
| Indication of operational states                                 |                                                                         |                               |                         |                                 |
| Supply voltage                                                   | U: green LED                                                            |                               |                         |                                 |
| 1st / 2nd output relay energized                                 | R1: yellow LED / R2: yellow LED                                         |                               |                         |                                 |
| General data                                                     |                                                                         |                               |                         |                                 |
| Ambient temperature range operation / storage                    | -20...+60 °C / -40...+80 °C                                             |                               |                         |                                 |
| Temperature coefficient                                          | ±300 ppm/°C                                                             |                               |                         |                                 |
| Mounting position                                                | any                                                                     |                               |                         |                                 |
| Mounting                                                         | DIN rail (IEC/EN 60715), snap-on mounting / screw mounting with adapter |                               |                         |                                 |
| Electrical connection                                            |                                                                         |                               |                         |                                 |
| Wire size rigid                                                  | plug-connector with screw terminals 0.2-2.5 mm <sup>2</sup> (24-12 AWG) |                               |                         |                                 |
| fine-strand with(out) wire end ferrule                           | plug-connector with screw terminals 0.2-2.5 mm <sup>2</sup> (24-12 AWG) |                               |                         |                                 |
| Stripping length                                                 | 7 mm (0.28 inch)                                                        |                               |                         |                                 |
| Tightening torque                                                | 0.4 Nm (3.5 lb.in)                                                      |                               |                         |                                 |
| Electromagnetic compatibility                                    |                                                                         |                               |                         |                                 |
| Interference immunity                                            | EN 61000-6-2                                                            |                               |                         |                                 |
| electrostatic discharge (ESD) IEC/EN 61000-4-2                   | Level 3 (±6 kV / ±8 kV)                                                 |                               |                         |                                 |
| electromagnetic field (HF radiation resistance) IEC/EN 61000-4-3 | 10 V/m                                                                  |                               |                         |                                 |
| fast transients (Burst) IEC/EN 61000-4-4                         | Level 3 (±2 kV / 5 kHz)                                                 |                               |                         |                                 |
| powerful impulses (Surge) IEC/EN 61000-4-5                       | ±2 kV / ±1 kV                                                           |                               |                         |                                 |
| HF line emission IEC/EN 61000-4-6                                | 10 V                                                                    |                               |                         |                                 |
| Interference emission EN 61000-6-4                               | Class B                                                                 |                               |                         |                                 |
| Isolation data                                                   |                                                                         |                               |                         |                                 |
| Insulation voltage (between all isolated circuits)               | 2.5 kV                                                                  |                               |                         |                                 |
| Test voltage (between all isolated circuits)                     | 2.5 kV                                                                  |                               |                         |                                 |

<sup>1)</sup> When connecting a 2-wire sensor, the terminals J and H have to be jumpered.

• Approvals ..... 5/3

# Analog signal converters

## CC-E/I, CC-E I<sub>AC</sub>/ILPO

### Technical data

| Type                                            | CC-E/I<br>J-G-H                                                    |                                            | CC-E I <sub>AC</sub> /ILPO<br>C-D                            |
|-------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------|--------------------------------------------------------------|
| Input circuits - Analog inputs                  | AC current                                                         | DC current                                 | 2 meas. ranges selectable                                    |
| Rated input range                               | 0-5 A / 0-20 A                                                     | 0-5 A / 0-20 A                             | 0-1 A / 0-5 A / sinusoidal                                   |
| Measuring frequency                             |                                                                    |                                            | 50/60 Hz                                                     |
| Overload capacity of inputs                     | input range 1                                                      | 10 x I <sub>Nom</sub> (50 A) for max. 1 s  | 10 x I <sub>Nom</sub> (50 A) for max. 2 s                    |
|                                                 | input range 2                                                      | 10 x I <sub>Nom</sub> (200 A) for max. 1 s | 10 x I <sub>Nom</sub> (200 A) for max. 2 s                   |
| Gain adjustment range                           | ±5 % (universal devices)                                           |                                            | -                                                            |
| Offset adjustment range                         | ±5 % (universal devices)                                           |                                            | -                                                            |
| Input impedance / resistance                    | 5A : 65 mΩ                                                         | 20 A : 2.5 mΩ                              | 5 mΩ                                                         |
| Output circuits - Analog outputs                | D-F<br>Current                                                     | A-C<br>Voltage                             | F-E<br>passive current output in proportion to input current |
| Output signal                                   | 0-20 mA / 4-20 mA                                                  | 0-10 V                                     | 4-20 mA                                                      |
| Output burden / load                            | ≤ 500 Ω                                                            | ≥ 1.0 Ω                                    | 12 V DC: 150 Ω,<br>24 V DC: 750 Ω<br>30 V DC: 1050 Ω         |
| Accuracy <sup>1)</sup>                          | ± 2 % of full-scale                                                |                                            |                                                              |
| Offset adjustment range                         | ±5 % (universal device)                                            |                                            | ± 5 %                                                        |
| Gain adjustment range                           | ±5 % (universal device)                                            |                                            | ± 20 %                                                       |
| Residual ripple                                 | < 0.5 %                                                            |                                            |                                                              |
| Response time                                   | 0.5 s                                                              |                                            | 0.6 s                                                        |
| Transmission frequency                          | DC or 50/60 Hz                                                     |                                            | AC: 50/60 Hz                                                 |
| Reaction to input circuit interruption          | Low fail safe: output voltage < 200 mA,<br>output current < 400 µA |                                            | -                                                            |
| Supply circuits                                 | K-M                                                                | DC versions                                | AC versions                                                  |
| Supply voltage                                  |                                                                    | 24 V DC                                    | 110-240 V AC 50/60 Hz                                        |
| Supply voltage tolerance                        |                                                                    | -15...+15 %                                | -15...+10 %                                                  |
| Power consumption                               |                                                                    | typ 1.5 W                                  | typ 1.5 VA                                                   |
| Indication of operational states                |                                                                    |                                            |                                                              |
| Supply voltage                                  | U: green LED                                                       |                                            | -                                                            |
| General data                                    |                                                                    |                                            |                                                              |
| Ambient temperature range                       | operation / storage                                                | 0...+60 °C / -20...+80 °C                  |                                                              |
| Temperature coefficient                         |                                                                    | ± 500 ppm/°C                               |                                                              |
| Degree of protection (DIN 40050)                |                                                                    | IP20                                       |                                                              |
| Mounting position                               |                                                                    | ventilation slots on top and bottom        |                                                              |
| Mounting                                        |                                                                    | DIN rail (IEC/EN 60715), snap-on mounting  |                                                              |
| Electrical connection                           |                                                                    |                                            |                                                              |
| Wire size                                       | rigid                                                              | 0.2-4 mm² (24-12 AWG)                      |                                                              |
|                                                 | fine-strand with(out) wire end ferrule                             | 0.2-2.5 mm² (24-14 AWG)                    |                                                              |
| Stripping length                                |                                                                    | 7 mm (0.28 inch)                           |                                                              |
| Tightening torque                               |                                                                    | 0.5 Nm (4.4 lb.in)                         |                                                              |
| Electromagnetic compatibility                   |                                                                    |                                            |                                                              |
| Interference immunity                           |                                                                    | EN 61000-6-2                               |                                                              |
| electrostatic discharge (ESD)                   | IEC/EN 61000-4-2                                                   | Level 3 (±6 kV / ±8 kV)                    |                                                              |
| electromagnetic field (HF radiation resistance) | IEC/EN 61000-4-3                                                   | 10 V/m                                     |                                                              |
| fast transients (Burst)                         | IEC/EN 61000-4-4                                                   | Level 3 (±2 kV / 5 kHz)                    |                                                              |
| powerful impulses (Surge)                       | IEC/EN 61000-4-5                                                   | ±2 kV / ±1 kV                              |                                                              |
| HF line emission                                | IEC/EN 61000-4-6                                                   | 10 V                                       |                                                              |
| Interference emission                           | EN 61000-6-4                                                       | Class B                                    |                                                              |
| Isolation data                                  |                                                                    |                                            |                                                              |
| Test voltage (between all isolated circuits)    |                                                                    | 2.5 kV AC                                  |                                                              |
| Rated insulation voltage                        |                                                                    | -                                          | 250 V AC                                                     |

<sup>1)</sup> includes: non-linearity, factory setting, drift of temperature, supply voltage and output load

# Analog signal converters

## CC-U/I, CC-U/V

### Technical data

| Type                                               |                                        | CC-U/I                                                                  | CC-U/V                                                   |
|----------------------------------------------------|----------------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------|
| <b>Input circuits - Analog inputs</b>              | <b>J-G-H</b>                           | <b>any current signals,<br/>RMS measurement</b>                         | <b>any voltage signals,<br/>RMS measurement</b>          |
| Rated input range                                  |                                        | 0-1 A<br>0-5 A                                                          | 0-100 V, 0-200 V<br>0-300 V, 0-400 V<br>0-500 V, 0-600 V |
| Measuring frequency                                |                                        | 0-600 Hz                                                                |                                                          |
| Overload capacity of inputs                        | input range 1                          | $10 \times I_{\text{Nom}}$ (10 A) for max. 2 s                          | -                                                        |
|                                                    | input range 2                          | $10 \times I_{\text{Nom}}$ (50 A) for max. 2 s                          | -                                                        |
| Gain adjustment range                              |                                        | ±15 %                                                                   |                                                          |
| Offset adjustment range                            |                                        | ±20 %                                                                   |                                                          |
| Input impedance / resistance                       |                                        | 1A: 60 mΩ,<br>5 A: 12 mΩ                                                | > 800 kΩ                                                 |
| <b>Output circuits - Analog outputs</b>            | <b>D-F, A-C</b>                        | <b>Current</b>                                                          | <b>Voltage</b>                                           |
| Output signal                                      |                                        | 0-20 mA, 4-20 mA                                                        | 0-5 V, 1-5 V, 0-10 V, 2-10 V, ± 10 V                     |
| Output load                                        |                                        | ≤ 600 Ω                                                                 | ≥ 4.7 kΩ                                                 |
| Accuracy <sup>1)</sup>                             |                                        | ±0.5 % of full-scale                                                    |                                                          |
| Temperature coefficient                            |                                        | ±250 ppm/°C max.                                                        | ±300 ppm/°C max.                                         |
| Residual ripple                                    |                                        | < 0.15 %                                                                |                                                          |
| Response time                                      |                                        | 150 ms                                                                  |                                                          |
| <b>Supply circuits</b>                             | <b>K-M</b>                             |                                                                         |                                                          |
| Rated supply voltage                               |                                        | 24-48 V DC                                                              | 110-240 V AC                                             |
| Supply voltage range                               |                                        | 24-48 V DC, 24 V AC                                                     | 110-240 V AC, 100-300 V DC                               |
| Supply voltage tolerance                           |                                        | DC: -15...+15 %                                                         | AC: -15...+10 %                                          |
| Rated frequency                                    |                                        | 0 Hz or 50/60 Hz                                                        |                                                          |
| Power consumption                                  |                                        | 2 W at 24 V DC                                                          | 4.5 VA at 230 V AC                                       |
| <b>Indication of operational states</b>            |                                        |                                                                         |                                                          |
| Supply voltage                                     |                                        | U: green LED                                                            |                                                          |
| <b>General data</b>                                |                                        |                                                                         |                                                          |
| Ambient temperature range                          | operation / storage                    | -20...+60 °C / -40...+80 °C                                             |                                                          |
| Mounting position                                  |                                        | any                                                                     |                                                          |
| Mounting                                           |                                        | DIN rail (IEC/EN 60715), snap-on mounting / screw mounting with adapter |                                                          |
| <b>Electrical connection</b>                       |                                        |                                                                         |                                                          |
| Wire size                                          | rigid                                  | plug-connector with screw terminals 0.2-2.5 mm <sup>2</sup> (24-12 AWG) |                                                          |
|                                                    | fine-strand with(out) wire end ferrule | plug-connector with screw terminals 0.2-2.5 mm <sup>2</sup> (24-12 AWG) |                                                          |
| Stripping length                                   |                                        | 7 mm (0.28 inch)                                                        |                                                          |
| Tightening torque                                  |                                        | 0.4 Nm (3.5 lb.in)                                                      |                                                          |
| <b>Standards</b>                                   |                                        |                                                                         |                                                          |
| Product standard                                   |                                        | -                                                                       |                                                          |
| Low Voltage directive                              |                                        | 2006/95/EG                                                              |                                                          |
| EMC directive                                      |                                        | 2004/108/EG                                                             |                                                          |
| RoHS directive                                     |                                        | 2002/95/EG                                                              |                                                          |
| <b>Electromagnetic compatibility</b>               |                                        |                                                                         |                                                          |
| Interference immunity                              |                                        | EN 61000-6-2                                                            |                                                          |
| electrostatic discharge (ESD)                      | IEC/EN 61000-4-2                       | Level 3 (±6 kV / ±8 kV)                                                 |                                                          |
| electromagnetic field (HF radiation resistance)    | IEC/EN 61000-4-3                       | 10 V/m                                                                  |                                                          |
| fast transients (Burst)                            | IEC/EN 61000-4-4                       | Level 3 (±2 kV / 5 kHz)                                                 |                                                          |
| powerful impulses (Surge)                          | IEC/EN 61000-4-5                       | ±2 kV / ±1 kV                                                           |                                                          |
| HF line emission                                   | IEC/EN 61000-4-6                       | 10 V                                                                    |                                                          |
| Interference emission                              | EN 61000-6-4                           | Class B                                                                 |                                                          |
| <b>Isolation data</b>                              |                                        |                                                                         |                                                          |
| Insulation voltage (between all isolated circuits) |                                        | 1.5 kV                                                                  |                                                          |
| Test voltage (between all isolated circuits)       |                                        | 1.5 kV / 50 Hz                                                          |                                                          |

<sup>1)</sup> includes: non-linearity, factory setting, drift of temperature, supply voltage and output load

# Analog signal converters

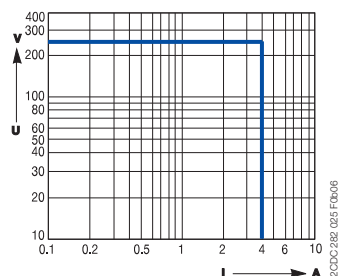
## CC-E, CC-U

Technical diagr., Connection diagr., Dimensional drawings

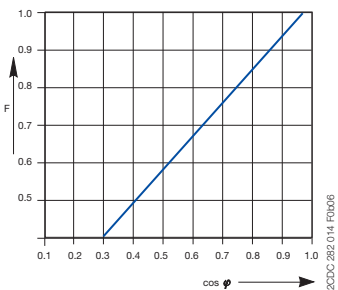
### Technical diagrams

#### Load limit curves CC-U/xxR

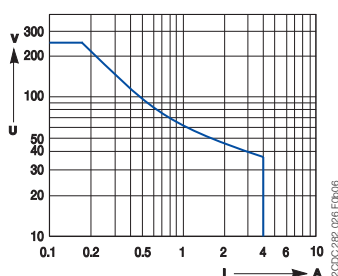
Resistive AC load



Derating curve



Resistive DC load



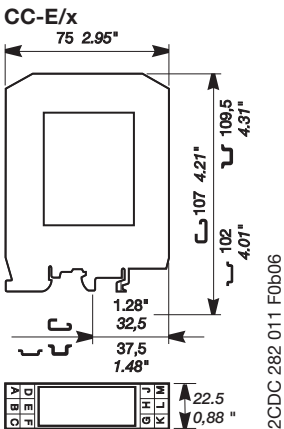
### Connection diagram CC-U/x

Width 22.5 mm (0.89 in)

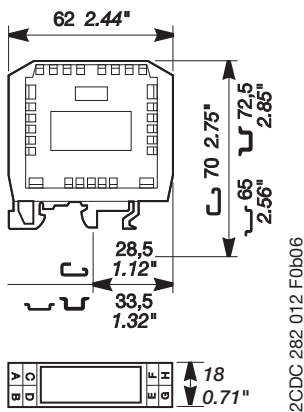


### Dimensional drawings

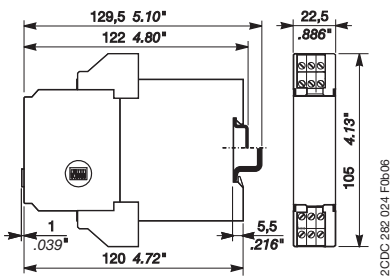
Dimensions in mm



#### CC-E I<sub>AC</sub>/ILPO, CC-E I/I



#### CC-U/x , CC-U/xR



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## Notes

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