Compensation current transformer CCT, types RMS, U und I

Common characteristics
- Current transformer for measuring direct or alternating current
- Usage for network analysis
- For measuring currents in non-sinusoidal and distorted networks
- Three variants in two different sizes each

Common technical data

- Electric connections:	U_H +, U_H -, 0 (Ground) and I_A with spring terminals
- Connector cross-section:	0.08 to 2.5 mm²
- Operating temperature:	-25°C < T < +60°C, 0…95% RH
- Storage temperature:	-40°C < T < +90°C
- Accuracy class:	0.5
- Maximum operating voltage U_m:	0.72 kV, U_{eff}
- Insulation test voltage:	6.4 kV, U_{eff}, 50 Hz, 5 sec., primary wire to measuring output / housing
- Insulation class:	E
- Protection class:	IP 20
- For use at elevations:	≤ 2000 m above sea level (DIN EN 61010-1)
- Max. temperature of primary wire:	100° C
- Applicable technical standards:	DIN EN 50178, 1997; DIN EN 61010-1, 2002; VDE 0160

Type RMS

Functions:

- The magnetic field surrounding a current-carrying conductor is detected by a measuring core surrounding the conductor. The magnetic flux induced in the core, which is directly proportional to the current intensity in the primary conductor, is detected by means of a semiconductor component. The regulator electronics integrated in the device converts the signal supplied by the semiconductor into a DC output current signal proportional to the real RMS value of the measured variable. The real RMS values are calculated using the Delta-Sigma method.
- By means of the inductive, non-contact detection of the measured variable, a galvanically separated output signal is provided.
- The electrical connection of the secondary circuit of the current transformer is done via a 4-pole spring-loaded terminal. This terminal is suitable for the connection of flexible leads up to 2.5 mm².
- An auxiliary voltage supply of 24 V DC is required to supply the control electronics. The auxiliary voltage inputs must be protected by a quick-acting precision fuse of 250 mA / 250 V.

Key features and benefits:

- Measurement of both direct and alternating currents with only one transducer possible
- Accurate calculation of the real RMS values of almost any time sequence of the measured current
- Wide frequency range from zero Hz (DC) respectively 20 Hz to 6 kHz (AC)
- High electrical safety due to galvanically isolated detection of the measured value
- Low power consumption (≤ 2,5 VA)
- Simple and safe electrical wiring using spring clamp technology
- Direct mounting on bus bars by fastening screws integrated into the device
- Can be mounted on 35mm DIN rails using an optional snap-on mounting
- High climatic and mechanical resistance due to PU-encapsulation of all electrical components

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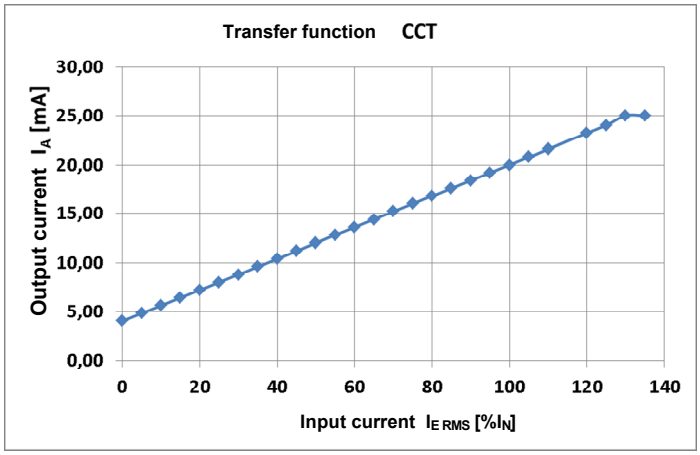
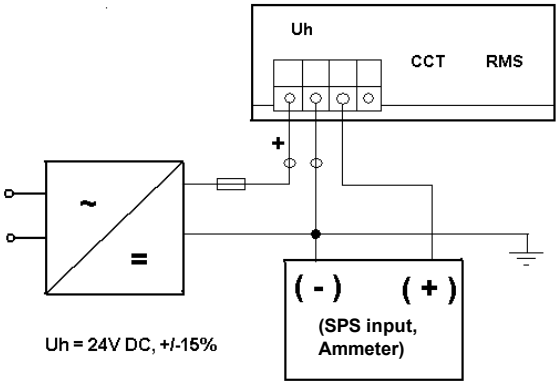
Technical specifications:

Measuring range:	Up to 500 A, depending on variants (see table on page 5)
Frequency range:	DC, respectively AC 20 Hz to 6 kHz, crest-factor ≤ 4
Secondary output:	4…20 mA DC, real RMS values
Maximum load resistance at current output:	R_B ≤ 500 Ω (U_H = 24 V DC)
Output signal limitation for overload:	< 25 mA
Accuracy:	± 1.0 %
Auxiliary voltage:	24 V DC, ± 15 %, < 70 mA, protected by a quick-acting precision fuse of 250 mA / 250 V!
Step response time (90 % I_{PN}, di/dt = 100 A / µs):	≤ 200 ms (typ. 150 ms)
Rate of signal rise di/dt:	< 100 A / µs

Transfer function of the CCT RMS:



Connection schematic of the CCT RMS:



Type U

Functions:

- The magnetic field surrounding a current-carrying conductor is detected by a measuring core surrounding the conductor. The magnetic flux induced in the core, which is directly proportional to the current intensity in the primary conductor, is detected by means of a semiconductor component. The regulator electronics integrated in the device converts the signal supplied by the semiconductor into an output voltage signal, which is directly proportional to the time profile of the measured variable.
- By means of the inductive, non-contact detection of the measured variable, a galvanically separated output signal is provided.
- The electrical connection of the secondary circuit of the current transformer is done via a 4-pole spring-loaded terminal. This terminal is suitable for the connection of flexible leads up to 2.5 mm².
- An auxiliary voltage supply of ±12 V DC is required to supply the control electronics. The auxiliary voltage inputs must be protected by a quick-acting precision fuse of 100 mA / 250 V.

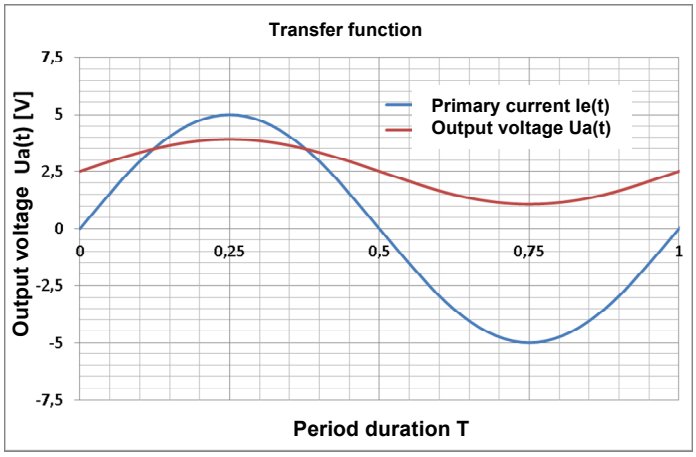
Key features and benefits:

- Measurement of both direct and alternating currents with only one transducer possible
- Wide frequency range from zero Hz (DC) to 100 kHz (AC)
- High electrical safety due to galvanically isolated detection of the measured value
- Low power consumption (≤ 2,5 VA)
- Simple and safe electrical wiring using spring clamp technology
- Direct mounting on bus bars by fastening screws integrated into the device
- Can be mounted on 35mm DIN rails using an optional snap-on mounting
- High climatic and mechanical resistance due to PU-encapsulation of all electrical components

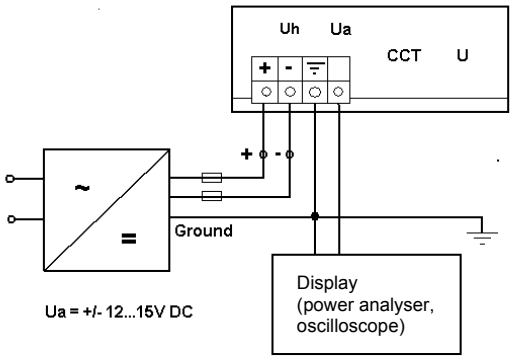
Technical specifications:

Measuring range:	Up to 500 A, depending on variants (see table on page 5)
Frequency range:	0 Hz to 100 kHz, any signal curves
Voltage output for AC input:	2.5 ± 1 V, U_{eff}, AC; 2.5 ± 1,414 V (peak to peak)
Voltage output for DC input:	2.5 ± 1 V, DC
Minimum load resistance at the voltage output:	R_B ≥ 100 kΩ
Output signal limitation for overload:	< 5 V
Accuracy:	± 0.5 %
Auxiliary voltage:	± 12 V DC, ± 15 %, < 70 mA, protected by a quick-acting precision fuse of 100 mA / 250 V!
Step response time (90 % I_{PN}, di/dt = 100 A / µs):	≤ 1 µs (typ. 150 ns)
Rate of signal rise di/dt:	< 100 A / µs

Transfer function of the CCT U:



Connection schematic of the CCT U:



Type I

Functions:

- The magnetic field surrounding a current-carrying conductor is detected by a measuring core surrounding the conductor. The magnetic flux induced in the core, which is directly proportional to the current intensity in the primary conductor, is detected by means of a semiconductor component. The regulator electronics integrated in the device converts the signal supplied by the semiconductor into an output current signal, which is directly proportional to the time profile of the measured variable.
- By means of the inductive, non-contact detection of the measured variable, a galvanically separated output signal is provided.
- The electrical connection of the secondary circuit of the current transformer is done via a 4-pole spring-loaded terminal. This terminal is suitable for the connection of flexible leads up to 2.5 mm².
- An auxiliary voltage supply of ±12 V DC is required to supply the control electronics. The auxiliary voltage inputs must be protected by a quick-acting precision fuse of 100 mA / 250 V.

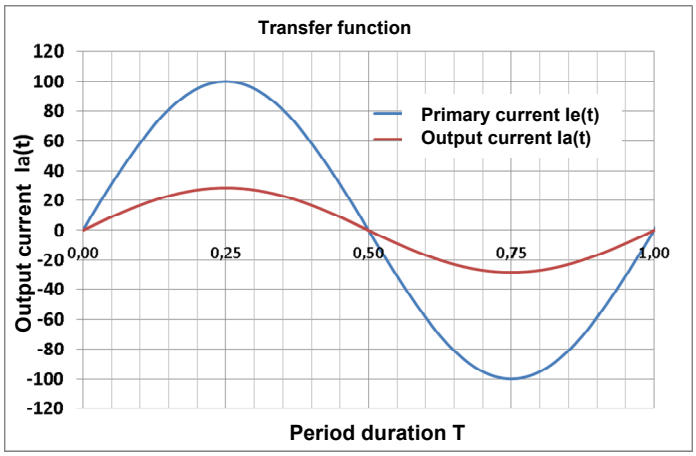
Key features and benefits:

- Measurement of both direct and alternating currents with only one transducer possible
- Wide frequency range from zero Hz (DC) to 100 kHz (AC)
- High electrical safety due to galvanically isolated detection of the measured value
- Low power consumption (≤ 2,5 VA)
- Simple and safe electrical wiring using spring clamp technology
- Direct mounting on bus bars by fastening screws integrated into the device
- Can be mounted on 35mm DIN rails using an optional snap-on mounting
- High climatic and mechanical resistance due to PU-encapsulation of all electrical components

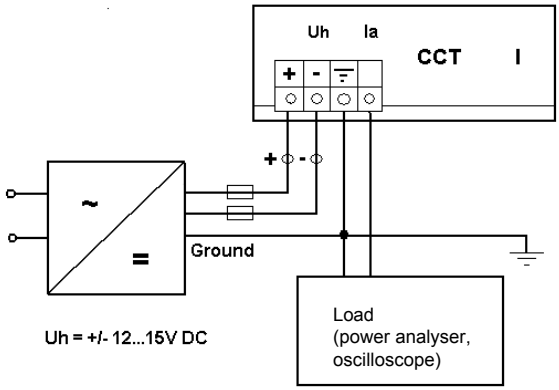
Technical specifications:

Measuring range:	Up to 500 A, depending on variants (see table on page 5)
Frequency range:	0 Hz to 100 kHz, any signal curves
Current output for AC input:	0…20 mA I_{eff}, AC; (± 28,2843 mA peak to peak)
Current output for DC input:	0…± 20 mA, DC
Maximum load resistance at the current output:	R_B ≤ 300 Ω (U_H = 24 V DC)
Output signal limitation for overload:	< 25 mA
Accuracy:	± 0.5 %
Auxiliary voltage:	± 12 V DC, ± 15 %, < 70 mA, protected by a quick-acting precision fuse of 100 mA / 250 V!
Step response time (90 % I_{PN}, di/dt = 100 A / µs):	≤ 1 µs (typ. 150 ns)
Rate of signal rise di/dt:	< 100 A / µs

Transfer function of the CCT I:



Connection schematic of the CCT I:



Variants:

(rated current ranges adjusted to standard values according to IEC)

Type	Primary current I_{RMS} [A]	Output signal
CCT 31.3 RMS	50	4…20 mA DC
	100	
	150	
	200	
	250	
	300	
CCT 41.4 RMS	150	4…20 mA DC
	200	
	250	
	300	
	400	
	500	

Type	Primary current I_{eff} [A] DC / AC (I_{eff})	Output signal
CCT 31.3 U	50	DC: 2.5 ± 1 V AC: 2.5 ± 1.414 V (peak to peak)
	100	
	150	
	200	
	250	
	300	
CCT 41.4 U	150	DC: 2.5 ± 1 V AC: 2.5 ± 1.414 V (peak to peak)
	200	
	250	
	300	
	400	
	500	

Type	Primary current [A] DC / AC (I_{eff})	Output signal
CCT 31.3 I	50	DC: 0…± 20 mA AC: 0…20 mA I_{eff}
	100	
	150	
	200	
	250	
	300	
CCT 31.3 I	150	DC: 0…± 20 mA AC: 0…20 mA I_{eff}
	200	
	250	
	300	
	400	
	500	

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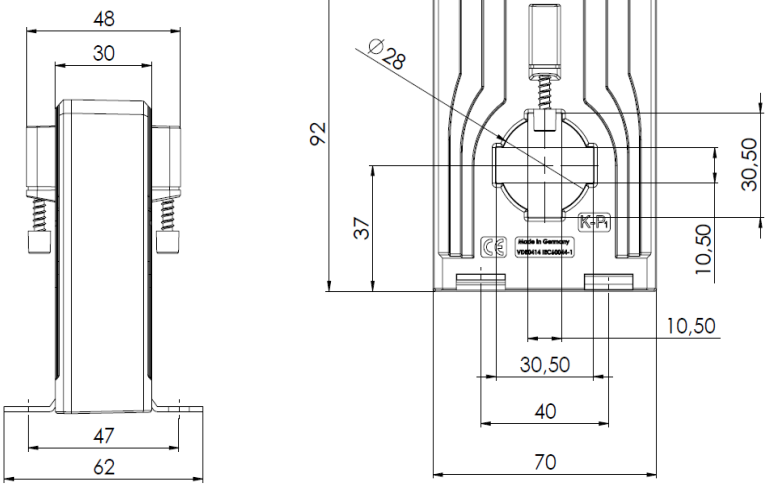
Dimensions:

CCT 31.3

Bus bar: 30x10 mm
Round conductor: 28 mm
Width: 70 mm
Height: 92 mm
Depth: 48 mm



CCT 41.3

Bus bar 1: 40x10 mm
Bus bar 2: 30x15 mm
Round conductor: 31.5 mm
Width: 90 mm
Height: 115 mm
Depth: 58.5 mm