Current Transducers CT 0.1 .. 0.4-P

I_{PN} = ± 100..400 mA

V_{OUT} = ± 5 V

For the electronic measurement of small currents: AC,DC, mixed, with a galvanic isolation between the primary circuit and the secondary circuit.

Electrical data

Primary nominal current rms I_{PN} (mA)	Primary current, measuring range I_{PM} (mA)	Type	RoHS since date code
100	± 180	**CT 0.1-P**	46129
200	± 360	**CT 0.2-P**	46054
400	± 720	**CT 0.4-P**	46234

V_C	Supply voltage (± 5 %)	± 15	V
I_C	Current consumption	± 35	mA
R_{IS}	Isolation resistance @ 500 VDC	> 500	MΩ
V_{OUT}	Output voltage (Analog) @ ± I_{PN}, R_L = 10kΩ, T_A=25°C	± 5	V
R_{OUT}	Output internal resistance	< 51	Ω
R_L	Load resistance	≥ 10	kΩ
C_L	Capacitive loading	≤ 5	nF

Accuracy-Dynamic performance data

X	Accuracy (excluding offset) @ I_{PN}, T_A = 25°C, R_L = 10kΩ		< ± 1	%of I_{PN}
ε_L	Linearity error (0 .. ± I_{PN})		< ± 0.5	%of I_{PN}
TCV_{OUT}	Temperature coefficient of V_{OUT} (of reading)		< ± 0.05	%/K
V_{OE}	Eletrical offset voltage @ I_P = 0, T_A = 25°C		< ± 50	mV
V_{OH}	Hysteresis offset voltage			
	@ I_P = 0; after an excursion of 1 x I_{PN}		< ± 2	mV
	@ I_P = 0; after an excursion of 100 x I_{PN}		< ± 20	mV
TCV_{OE}	Temperature coefficient of V_{OE} @ -20..+85°C	CT 0.1-P	< ± 4	mV/K
		CT 0.2-P	< ± 3	mV/K
		CT 0.4-P	< ± 2	mV/K
t_r	Response time to 80% of I_{PN} step		≤ 20	ms
	90% of I_{PN} step		≤ 60	ms
BW	Frequency bandwidth (- 3 dB)	CT 0.1-P	DC .. 7000	Hz
		CT 0.2-P	DC .. 11000	Hz
		CT 0.4-P	DC .. 18000	Hz

General data

T_A	Ambient operating temperature	- 20 .. + 85	°C
T_S	Ambient storage temperature	- 25 .. + 85	°C
dCp	Creepage distance	> 5.5	mm
dCl	Clearance distance	> 5.5	mm
CTI	Comparative tracking index (Group IIIa)	> 220	
m	Mass	25	g
	Standards	EN 50178: 1997	

Features

- DC & AC earth leakage current transducer using a flux-gate principle
- PCB mounting
- ±15V power supply
- ±5V output @ I_{PN}
- Insulated plastic case recognized according to UL94-V0.

Advantages

- Small size
- Bandwidth : DC .. up to 18kHz
- Response time better than 60 ms
- Cost effective, compact alternative to classical RCDs (Residual Current Device)

Applications

- Earth leakage detection in transformerless solar inverters
- 1st human contact protection of PV arrays
- Failure detection in power sources
- Symmetrical fault detection (e.g. after motor inverter)
- Current leakage detection in stacked DC sources
- Single phase or three phase differential current measurement up to ±30A per wire (DC or AC)

Application Domain

- Industrial

Current Transducer CT 0.1 .. 0.4-P

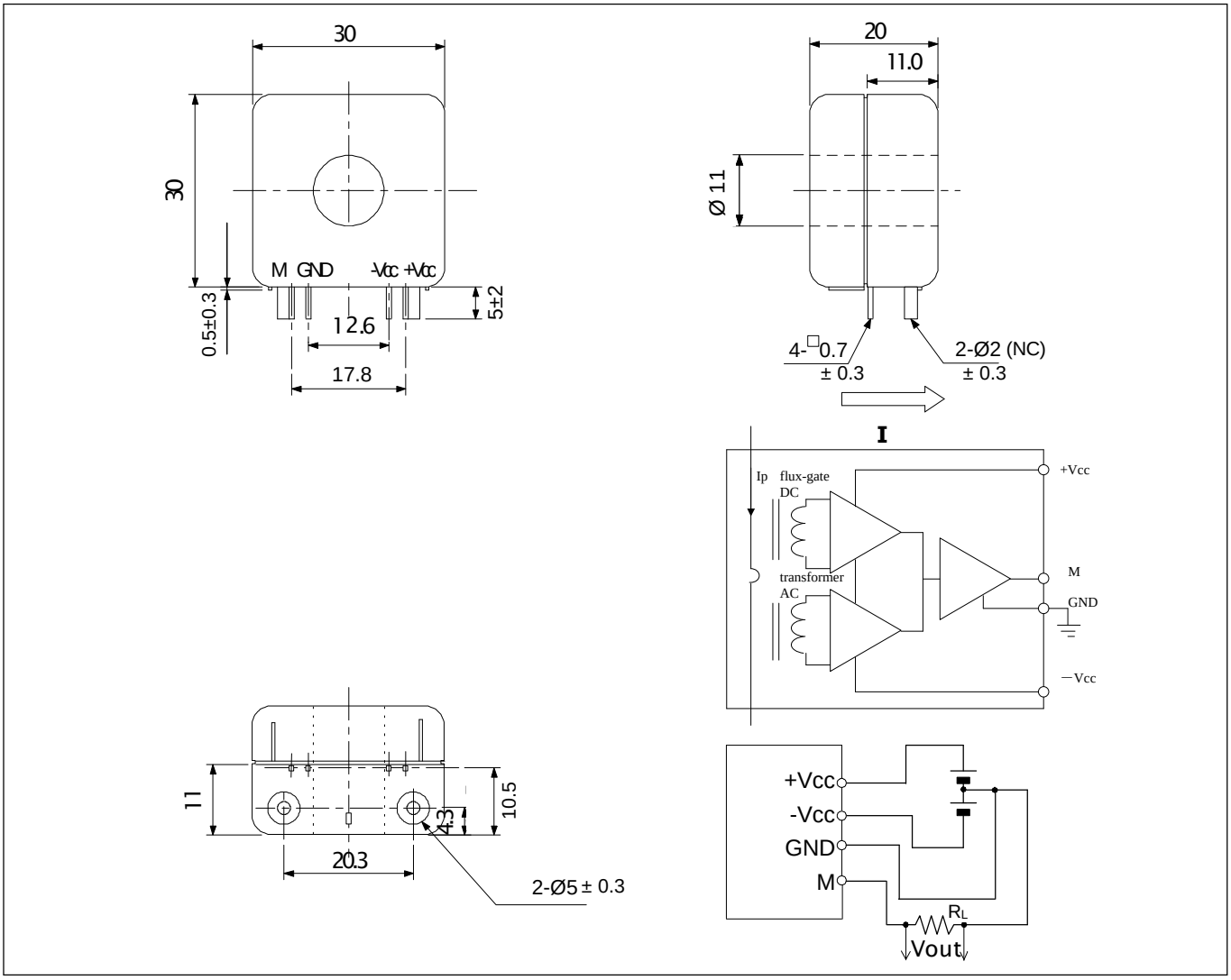
Isolation characteristics

V_b	Rated isolation voltage rms	150	V rms
	with IEC 61010-1 standard and following conditions		
	- Single insulation		
	- Over voltage category III		
	- Pollution degree 2		
	- Heterogeneous field		
V_b	Rated isolation voltage rms	250	V rms
	with EN 50178 standard and following conditions		
	- Reinforced insulation		
	- Over voltage category III		
	- Pollution degree 2		
	- Heterogeneous field		
V_d	Rms voltage for AC isolation test, 50 Hz, 1 min	2.5	kV
V_e	Partial discharge extinction voltage rms @ 10pC	> 1.2	kV
$\hat{V}_w$	Impulse withstand voltage 1.2/50µs	6	kV

If insulated cable is used for the primary circuit, the voltage category could be improved with the following table :

Cable insulation (primary)	Category
HAR 03	300V CAT III
HAR 05	400V CAT III
HAR 07	500V CAT III

Dimensions CT 0.1 .. 0.4-P (in mm. 1 mm = 0.0394 inch)



Mechanical characteristics

- General tolerance ± 1 mm
  (Unless otherwise specified in the above drawings.)
- Aperture for primary conductor Ø11 mm
- Connection of secondary 4 pins 0.7 x 0.7 mm²
  Recommended PCB hole 1.2 mm
- PCB fixation 2 pins Ø2 mm
  Recommended PCB hole 2.2 mm

Remarks

- $\mathbf{V}_{OUT}$ is positive when $\mathbf{I}_P$ flows in the direction of the arrow.
- This transducer induces into the primary circuit a square wave of 500Hz. This voltage can induce an AC current in the primary if the primary impedance is low.
- Primary impedance ≥10Ω CT0.1-P CT0.2-P CT0.4-P
  $\mathbf{V}_{OUT}$ by induced current ≤±0.5% ≤±0.4% ≤±0.2% of $\mathbf{I}_{PN}$
- Temperature of the primary conductor should not exceed 100°C.

Safety

This transducer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the following manufacturer's operating instructions.

Caution, risk of electrical shock

When operating the transducer, certain parts of the module can carry hazardous voltage (eg. primary busbar, power supply). Ignoring this warning can lead to injury and/or cause serious damage.
This transducer is a built-in device, whose conducting parts must be inaccessible after installation.
A protective housing or additional shield could be used.
Main supply must be able to be disconnected.