CS01-0.3A-P Current Transducers

Feature:

For the electronic measurement of current: DC, AC, pulsed..., with galvanic separation between the primary and the secondary circuit.

- Closed loop (compensated) current transducer
- Voltage output
- Single supply voltage
- PCB mounting
- High accuracy
- Very low offset drift over temperature
- Wide aperture
- High overload capability
- High insulation capability
- Reference pin with two modes, Ref In and Ref Out
- Degauss and test functions

Applications

- Residual current measurement
- Leakage current measurement in transformerless PV inverters
- First human contact protection of PV arrays
- Failure detection in power sources
- Symmetrical fault detection (e.g. after motor inverter)
- Leakage current detection in stacked DC sources
- Single phase or three phase nominal current measurement up to ±30 A per wire (DC or AC).

CS01-0.3A-P Parameter table

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Electrical data (At T_A = 25 °C, U_C = +5 V)						
Primary nominal residual RMS current	I_{PRN}	mA	-	300	-	
Primary residual current, measuring range	I_{PRM}	mA	-500	-	500	
Supply voltage	U_C	V	4.75	5	5.25	
Current consumption	I_C	mA	-	17.5	21.6	$+I_P$ (mA)/N_S With N_S = 1000 turns −40 ... 105 °C
Output voltage referred to GND (during Degauss cycle)	U_{out}	V	-	0.3	0.5	
Output voltage referred to Uref (Test current)	U_{out}	V	-	1.2	1.7	
Reference voltage @ I_P = 0	U_{ref}	V	2.495	2.5	2.505	Internal reference
External reference voltage	U_{ref}	mA	2.3	-	4	Internal reference of U_{ref} input = 499 Ω
Electrical offset current referred to primary	I_{OE}	mA	−24	7	24	
Temperature coefficient of U_{ref} @ I_P = 0	TCU_{ref}	ppm/K	-	-	±50	−40 ... 105 °C
Temperature coefficient of U_{OE} @ I_P = 0	TCU_{OE}	ppm/K	-	-	±570	ppm/K of 2.5 V −40 ... 105 °C
Nominal sensitivity	S_N	V/A	-	4	-	
Sensitivity error [1]	ε_S	%	-1.6	0.5	1.6	RL > 500 kΩ
Temperature coefficient of S	TCS	ppm/K	-	-	±230	−40 ... 85 °C
					±400	−40 ... 105 °C
Linearity error	ε_L	% of I_{PRM}	-	0.5	1	
Magnetic offset current (1000 x I_{PRN}) referred to	I_{OM}	mA	-	17	-	
RMS noise voltage (1 Hz ... 10 kHz)	U_{no}	mV	-	6	-	R_L > 500 kΩ

Delay time to 10 % to the final output value for $I_{P\,N}$ step	$t_{D\,10}$	µs	-	7	-	R_L > 500 kΩ, di/dt > 5 A/µs
Delay time to 90 % to the final output value for $I_{P\,N}$ step	$t_{D\,90}$	µs	-	50	-	R_L > 500 kΩ, di/dt > 5 A/µs
Frequency bandwidth (−1 dB)	BW	kHz	-	3.5	-	R_L > 500 kΩ
Error [2]	ε	%	-	-	1.9	$= (\varepsilon_S{}^2 + \varepsilon_L{}^2)^{1/2}$
Generic data						
Ambient operating temperature	T_A	°C	-40	-	105	
Ambient storage temperature	T_S	°C	-50	-	105	
Mass	m	g	-	28	-	

Notes:
1. Only with a primary nominal residual current, see paragraph “Primary nominal residual current and primary nominal current”.
2. Total error @ T_A and I_P: $\varepsilon_{tot}\,(T_A) = (\varepsilon^2 + (TCS \times 100 \times (T_A - 25))^2 + (TCU_{O\,E} \times 2.5 \times (T_A - 25)/S_N \times 100/I_P)^2)^{1/2}$.

Insulation coordination:

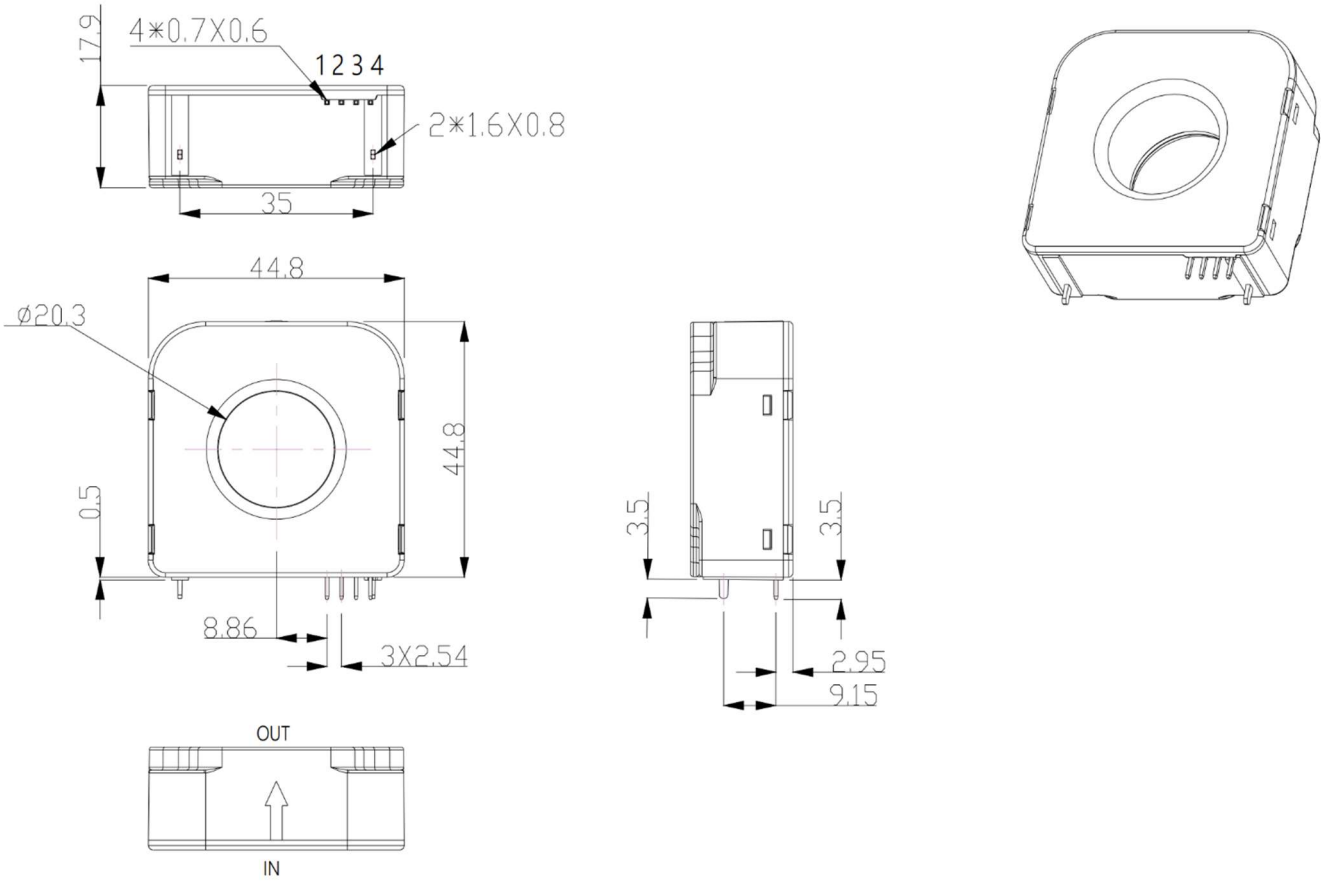
Parameter	Symbol	Unit	Value	Comment
RMS voltage for AC insulation test, 50 Hz, 1 min	Ud	kV	5.4	
Impulse withstand voltage 1.2/50 µs	UNi	kV	10.1	
Partial discharge RMS test voltage (qm < 10 pC)	Ut	kV	1.65	
Clearance (pri. - sec.)	dCl	mm	11	Shortest distance through air
Creepage distance (pri. - sec.)	dCp	mm	11	Shortest path along device body
Comparative tracking index	CTI	-	600	
Application example	-	V	1000	Reinforced insulation, CAT III, PD2 non uniform field according to EN 50178

Application example	–	V	600	Reinforced insulation, CAT III, PD3 non uniform field according to EN 50178, IEC 61010

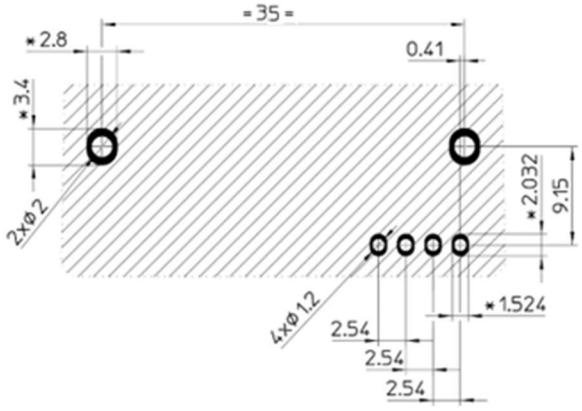
Absolute maximum ratings:

Parameter	Symbol	Unit	Value
Maximum supply voltage	$U_{C\,max}$	V	7
Maximum primary conductor temperature	$T_{B\,max}$	°C	110
Maximum Primary withstand peak current (100 µs, 500 A/µs)	$\hat{I}_{P\,max}$	A	3300

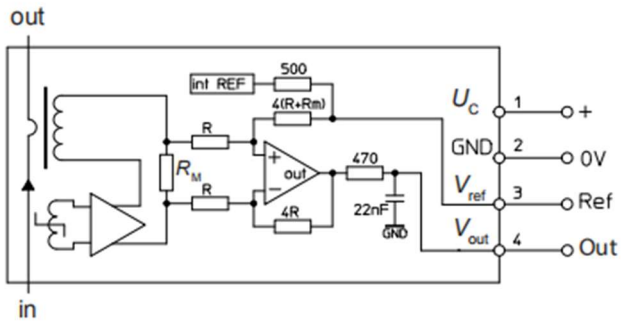
Dimensions (in mm, general tolerance ±0.3 mm):



PCB footprint:



Connection:



Note:

The use of sensors must comply with the IEC61010-1 standard. The sensor must be placed in an electronic or electrical device that meets the application standards and safety requirements in accordance with the instructions for use.

Be careful, beware of electric shocks. 

When the sensor is operating, some parts may be subjected to dangerous voltages (e.g. primary side busbars, power supplies), and ignoring these will lead to damage and serious danger. The sensor is a built-in device, and its conductive part must be protected from the outside world after installation. If necessary, a protective case or shielding case can be installed. The mains power supply must be able to be disconnected.