

Ultra-stable, high precision (ppm class) fluxgate technology DP Series current transducer for isolated DC and AC current measurement on PCB up to 72A



Features

- Linearity error maximum 10 ppm
- Measurement resistor up to 100Ω at full scale
- Fluxgate, closed loop compensated technology with fixed excitation frequency and second harmonic zero flux detection for best in class accuracy and stability
- PCB mount
- Height 32mm - Suitable for 1U power supplies
- Programmable for 12.5A, 25A, or 50A via PCB layout
- 250g weight and compact size - ideal for PCB-mounted applications with space constraints

Applications:

- MPS for particles accelerators
- Stable power supplies
- Precision drives
- Batteries testing and evaluation systems
- Power measurement and power analysis

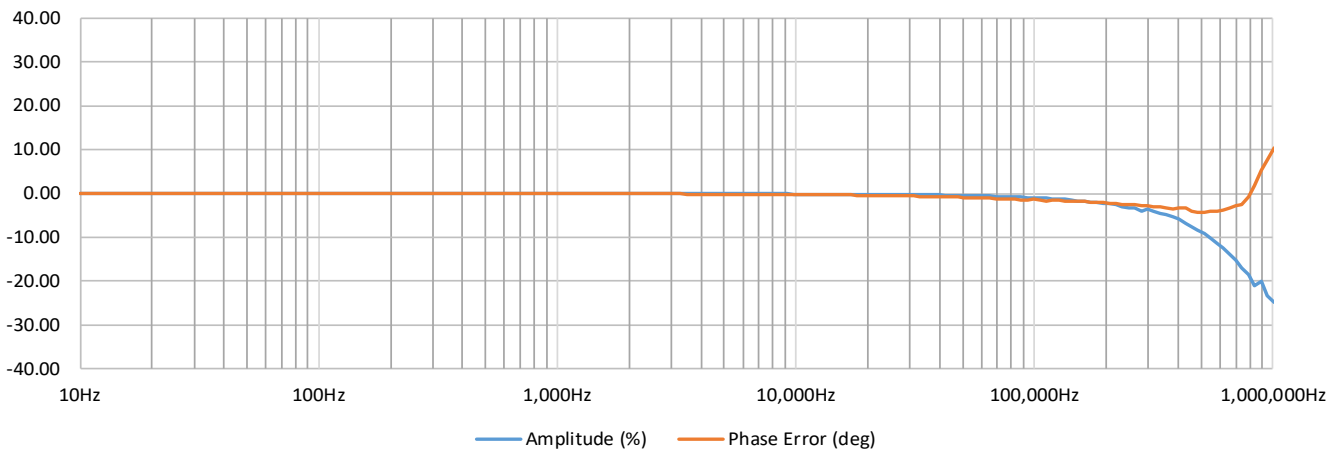
Specification highlights	Symbol	Unit	Min	Typ	Max
Linearity error	ϵ_L	ppm	-10		10
Bandwidth	BW(-0.1dB) BW(-1dB) BW(-3dB)	kHz	50 300 1000		
Ambient operating temperature range	T_a	°C	0		55
Offset current (including earth field)	I_{oE}	ppm			100
Power supply voltages	U_c	V	±14.25		±15.75

Transducer programming options		Unit	4 turns	2 turns	1 turn
Ratio			1:250	1:500	1:1000
Nominal primary AC current	I_{PN} AC	Arms	12.5	25	50
Nominal primary DC current	I_{PN} DC	±A	12.5	25	50

All ppm (or %) values refer to nominal current

Parameter	Symbol	Unit	Min	Typ.	Max	Comment
Measuring resistance	R_M	Ω	0		100	
Linearity error	ϵ_L	ppm	-10		10	ppm refers to nominal current
Offset current (including earth field)	I_{OE}	ppm	-100 -5		100 5	ppm refers to nominal current μA refers to secondary current
DC-10Hz Overall accuracy @25°C (= $\epsilon_L + I_{OE}$)	acc ϵ	ppm	-110		110	ppm refers to nominal DC current
Offset temperature coefficient	TC_{IOE}	ppm/K	-1 -0.05		1 0.05	ppm refers to nominal current μA refers to secondary current
Amplitude error	ϵ_G	%			0.01	% refers to nominal current
DC-1kHz 1kHz-300kHz					12	% refers to nominal current
Phase shift	θ	°			0.02°	
DC-1kHz 1kHz-300kHz					6.0°	
Response time to a step current I_{PN}	tr @ 90%	μs		1		di/dt = 100A/ μs
Noise	noise	ppm peak-peak			4	Measured on secondary current
0 - 100Hz					8	
0 - 1kHz					100	
Noise	noise	ppm rms			0.50	Measured on secondary current
0 - 100Hz					7	
0 - 1kHz					50	
0 - 100kHz						
dV/dt influence	dv/dt	ppm			10	@230V and 50/60Hz
Positive current consumption	I_{ps}	mA			42	Add I_s (if I_s is positive)
Negative current consumption	I_{ns}	mA			28	Add I_s (if I_s is negative)
Operating temperature range	T_a	°C	0		55	
Stability						
Offset stability over time		ppm / 24h	-0.1		0.1	ppm refers to nominal current
Offset stability over time		ppm/month	-1		1	ppm refers to nominal current
Offset stability over time		ppm / year	-2		2	ppm refers to nominal current

Typical Amplitude / Phase



Isolation specifications

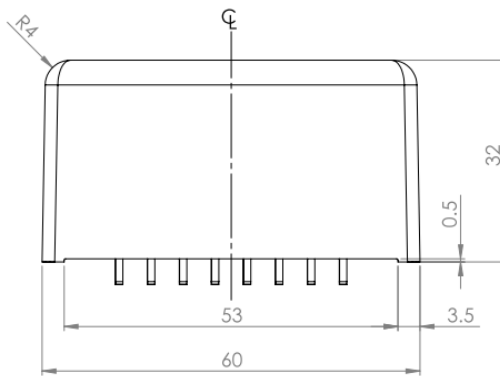
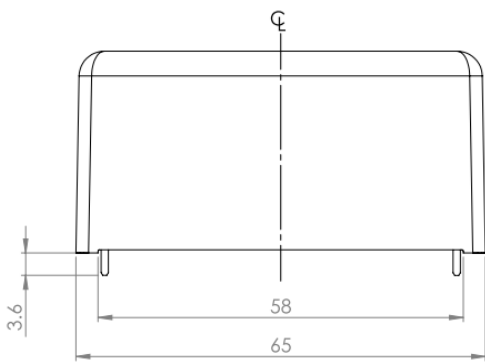
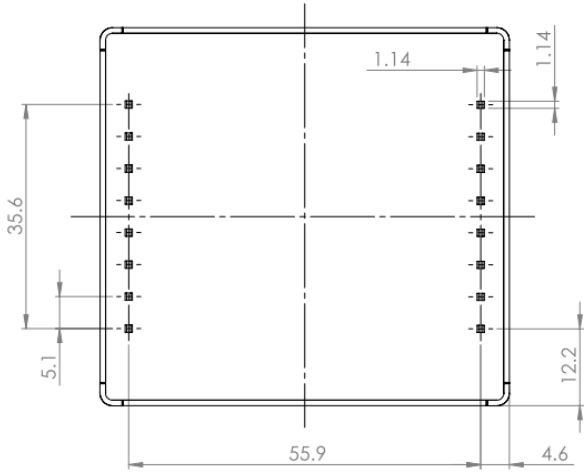
Parameter	Unit	Value
Clearance	mm	3.3
Creepage distance	mm	4.7
CTI		600
Rms voltage for AC isolation test, 50/60 Hz, 1 min - Between primary and (secondary and shield)	kV	2.4
Impulse withstand voltage (1.2/50µs)	kV	4.4
Rated rms isolation voltage reinforced isolation, overvoltage category II, Pollution degree 2 according to IEC61010-1	V	300

Absolute maximum ratings

Parameter	Unit	Max	Comment
Primary	A	200%	Programmed nominal DC. Maximum 100ms
Power supply	V	±16.5	

Environmental and mechanical characteristics

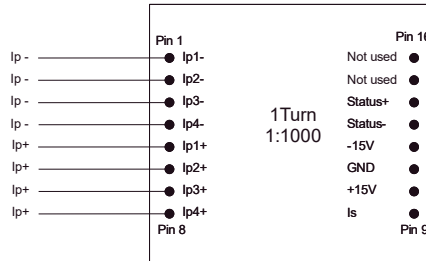
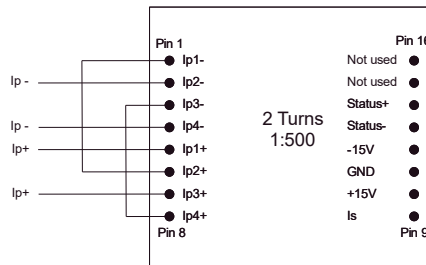
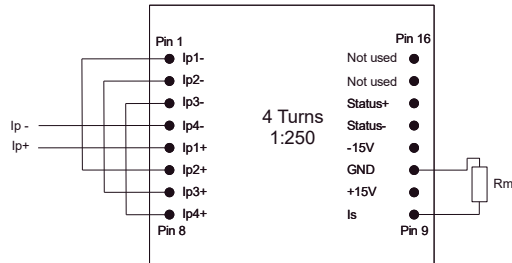
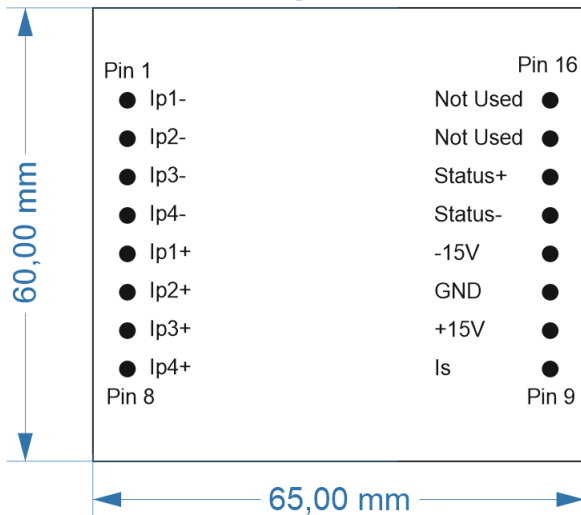
Parameter	Unit	Min	Typ	Max	Comment
Altitude	m			2000	
Usage					Designed for indoor use
Polution Degree				2	
Ambient operating temperature range	°C	0		55	
Storage temperature range	°C	0		85	
Relative humidity	%	20		80	Non-condensing
Mass	kg		0.250		
Connections	16 pin PCB mount				
Standards	IEC61010-2-30 IEC61326-1 EMC IEC61010-1:2010 3rd Edition				



(general tolerance 0.2mm unless otherwise stated)

Pinout and programming

Top view



Status usage:
When sensor is operating in normal condition the status pins are shorted.

Status pin properties.
- Forward direction pin 14 to pin 13
- Maximum forward current 10mA
- Maximum forward voltage 60V
- Maximum reverse voltage 5V

Typical usage: 10kOhm pullup resistor from Status+ to 15V.
Status- to GND
When transducer is operating normally the Status+ will be 0V, else 15V.

