DP50IP-B

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 lay-out
- 250g weight and compact size - ideal for PCB-mounted applications with space constraints

Applications:

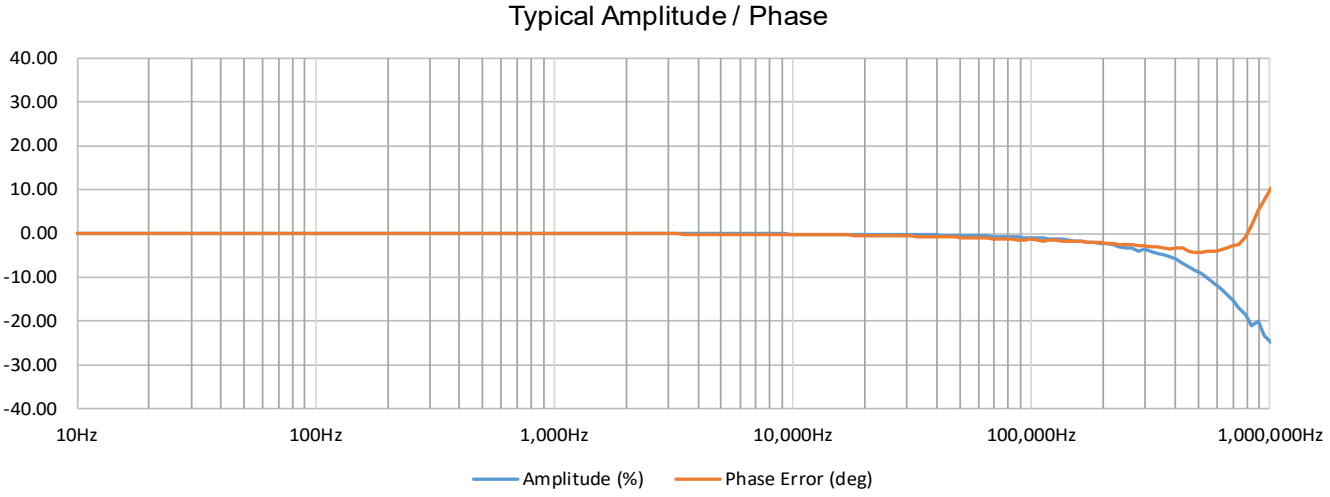
- MPS for particles accelerators
- Stable power supplies
- Precision drives
- Batteries testing and evaluation systems
- Power measurement and power analysis

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	Ta	°C	0		55
Offset current (including earth field)	I_{OE}	ppm			100
Power supply voltages	Uc	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		I_{OE}	ppm	-100		100	ppm refers to nominal current
(including earth field)				-5		5	µA refers to secondary current
DC-10Hz Overall accuracy @25°C (= ε_L + I_{OE})		accε	ppm	-110		110	ppm refers to nominal DC current
Offset temperature coefficient		TC_{IOE}	ppm/K	-1		1	ppm refers to nominal current
				-0.05		0.05	µA refers to secondary current
Amplitude error	DC-1kHz	ε_G	%			0.01	% refers to nominal current
	1kHz-300kHz					12	% refers to nominal current
Phase shift	DC-1kHz	θ	°			0.02°	
	1kHz-300kHz					6.0°	
Response time to a step current I_{PN}		tr @ 90%	µs		1		di/dt = 100A/µs
Noise	0 - 100Hz	noise	ppm peak-peak			4	Measured on secondary current
	0 - 1kHz					8	
	0 - 100kHz					100	
Noise	0 - 100Hz	noise	ppm rms			0.50	Measured on secondary current
	0 - 1kHz					7	
	0 - 100kHz					50	
dV/dt influence		dv/dt	ppm			10	@230V and 50/60Hz
Positive current consumption		Ips	mA			42	Add Is (if Is is positive)
Negative current consumption		Ins	mA			28	Add Is (if Is is negative)
Operating temperature range		Ta	°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



Isolation specifications

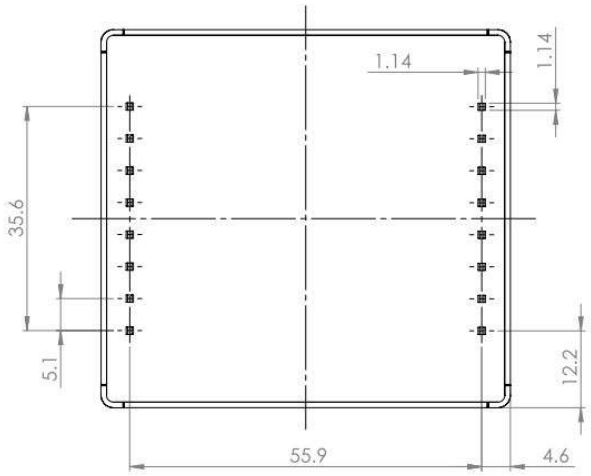
Parameter	Unit	Value
Clearance	mm	3.3
Creepage distance	mm	4.7
CTI		600
Rms voltage for AC isolation test, 50/60 Hz, 1 min - Between primary and (secondary and shield)	kV	2.4
Impulse withstand voltage (1.2/50µs)	kV	4.4
Rated rms isolation voltage reinforced isolation, overvoltage category II, Pollution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

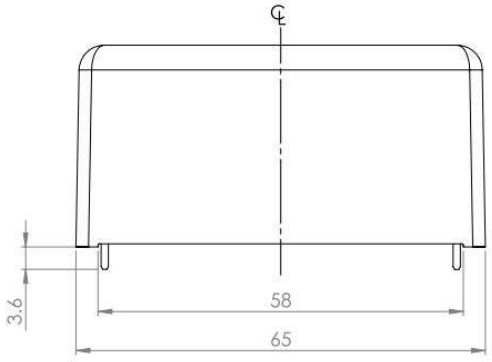
Absolute maximum ratings

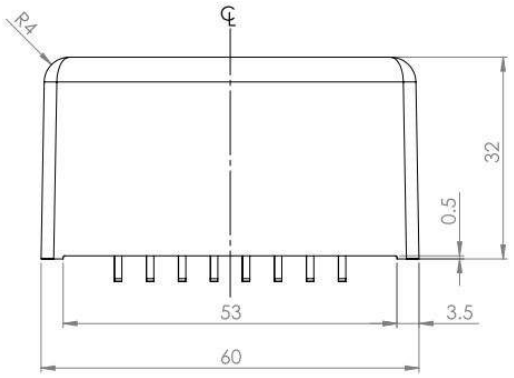
Parameter	Unit	Max	Comment
Primary	A	200%	Programmed nominal DC. Maximum 100ms
Power supply	V	±16.5	

Environmental and mechanical characteristics

Parameter	Unit	Min	Typ	Max	Comment
Altitude	m			2000	
Usage					Designed for indoor use
Polution Degree				2	
Ambient operating tempera-ture 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				

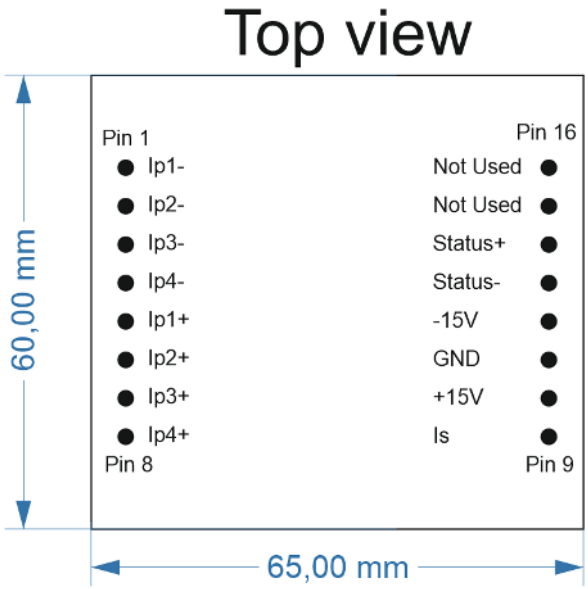


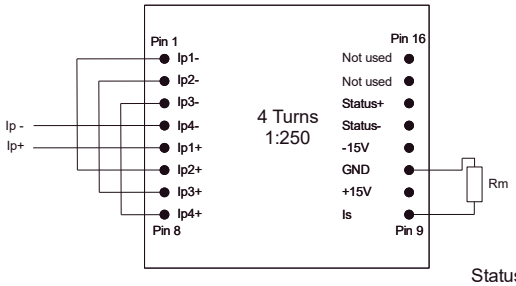


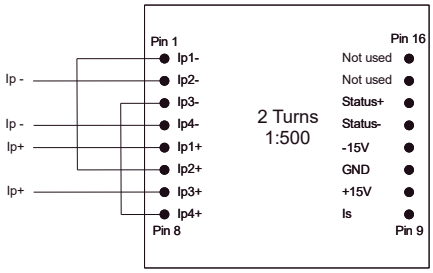


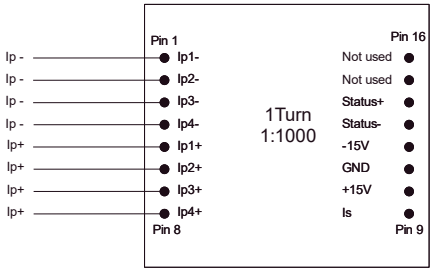
(general tolerance 0.2mm unless otherwise stated)

Pinout and programming





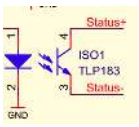




Status usage:
When sensor is operating in normal condition the status pins are shorted.

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.



Declaration of Conformity

Danisense A/S

Malervej 10

DK-2630 Taastrup

Denmark

Declares that under our sole responsibility that this product is in conformity with the provisions of the following EC Directives, including all amendments, and with national legislation implementing these directives:

Directive 2014/30/EU

Directive 2014/35/EU

And that the following harmonized standards have been applied

EN 61010-1 (Third Edition):2010, EN 61010-1:2010/A1:2019

EN 61010-2-030:2021/A11:2021

EN 61326-1:2013

All DANISENSE products are manufactured in accordance with RoHS directive 2011/65/EU. Annex II of the RoHS directive was amended by directive 2015/863 in force since 2015, expanding the list of 6 restricted substances (Lead, Hexavalent Chromium, PBB, PBDE and Cadmium)

Danisense follows the provision in EN 63000:2018

Place		Date
Taastrup, Denmark	Henrik Elbæk	2022-03-15