

Highly stabilized and precise fluxgate technology based current transducer, re-engineered for cost sensitive, non-intrusive, isolated DC and AC current measurement applications up to 300A



Features

- Linearity error maximum 6 ppm
- Offset maximum 15 ppm
- Fluxgate, closed loop compensated technology with fixed excitation frequency and second harmonic zero flux detection for enhanced accuracy and stability
- Industry standard 6.3 x 0.8mm faston connection
- Cost focused high performance current transducer
- DC and AC current metering with +/-0.1% absolute accuracy up to 5kHz

Applications:

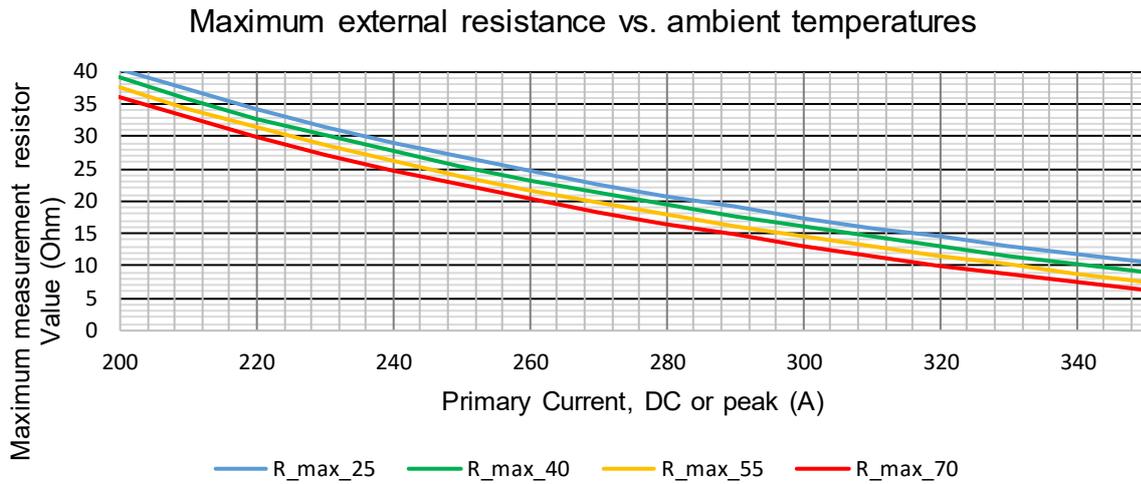
- Gradient amplifiers for MRI devices
- Precision power supplies, drives
- Batteries testing and evaluation systems
- Variable speed motor drives

Specification highlights	Symbol	Unit	Min	Typ.	Max
Nominal primary AC current	IPN AC	Arms			200
Nominal primary DC current	IPN DC	A	-300		300
Measuring range	\hat{I}_{PM}	A	-330		330
Primary / secondary ratio	n1 : n2		1:1000		1:1000
Linearity error	ϵ_L	ppm	-6		6
Offset current (including earth field)	I_{OE}	ppm	-15		15
DC-10Hz Overall accuracy @25°C (= $\epsilon_L + I_{OE}$)	acc ϵ	ppm	-21		21
AC Maximum gain error from 10Hz to 5kHz	ϵ_G	%			± 0.1
Operating temperature range	Ta	°C	-40		+85
Power supply voltages	Uc	V	± 14.25		± 15.75

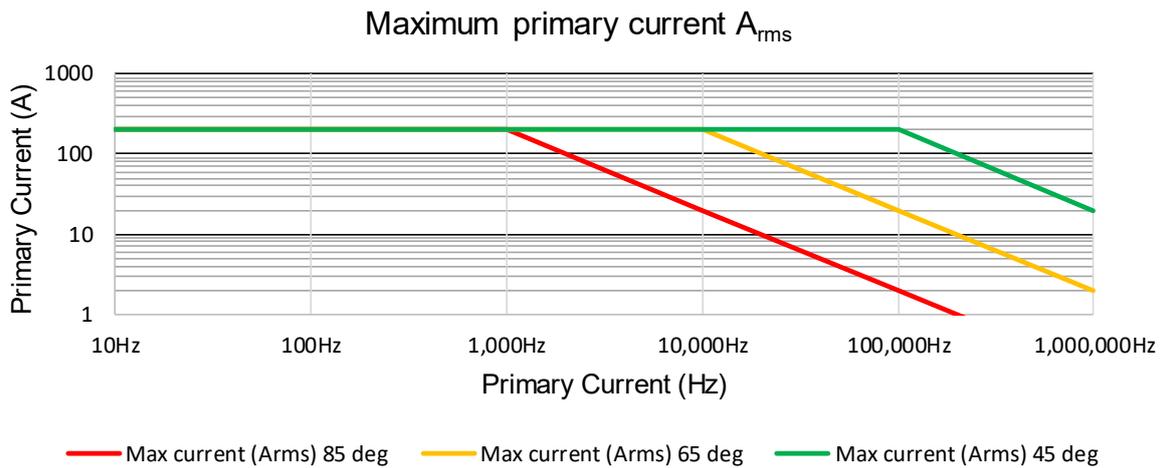
Electrical specifications at Ta=23°C, supply voltage = ± 15V unless otherwise stated

Parameter	Symbol	Unit	Min	Typ.	Max	Comment	
Nominal primary AC current	$I_{PN AC}$	A _{rms}			200	Refer to fig. 1 & 2 for derating	
Nominal primary DC current	$I_{PN DC}$	A	-300		300	Refer to fig. 1 for derating	
Measuring range	I_{PM}	A	-330		330	Refer to fig. 1 & 2 for derating	
Overload capacity	\hat{I}_{OL}	A			1000	Non-measured, 100ms	
Nominal secondary current	I_{SN}	mA	-300		300	At nominal primary DC current	
Primary / secondary ratio			1:1000		1:1000		
Measuring resistance	R_M	Ω	0		12	Refer to fig. 1 for details	
Linearity error	ϵ_L	ppm μA	-6 -1.8		6 1.8	ppm refers to nominal current μA refers to secondary current	
Offset current (including earth field)	I_{OE}	ppm μA	-15 -4.5		15 4.5	ppm refers to nominal current μA refers to secondary current	
DC-10Hz Overall accuracy @25°C (= $\epsilon_L + I_{OE}$)	acc ϵ	ppm	-21		21	ppm refers to nominal DC current	
Offset temperature coefficient	$T_{C_{IOE}}$	ppm/K $\mu A/K$	-2 -0.6		2 0.6	ppm refers to nominal current μA refers to secondary current	
Bandwidth	$f(-3dB)$	kHz	200			Small signal, graphs figure 3	
Amplitude error	ϵ_G	%			10Hz –5kHz	0.10%	% refers to nominal current
					5kHz -100kHz	2.00%	
					100kHz - 200kHz	10.0%	
Phase shift	θ	°			10Hz –5kHz	0.1°	
					5kHz -100kHz	0.5°	
					100kHz - 1000kHz	2.0°	
Response time to a step current I_{PN}	$t_r @ 90\%$	μs		1		$di/dt = 100A/\mu s$	
Noise	noise	ppm rms			0 - 100Hz	0.3	Measured on secondary current
					0 - 1kHz	1.0	
					0 - 10kHz	5.0	
					0 - 100kHz	20.0	
Fluxgate excitation frequency	f_{Exc}	kHz		15.6			
Induced rms voltage on primary conductor		μV rms			5		
Power supply voltages	U_c	V	±14.25		±15.75		
Positive current consumption	I_{ps}	mA			35	Add I_s (if I_s is positive)	
Negative current consumption	I_{ns}	mA			35	Add I_s (if I_s is negative)	
Operating temperature range	T_a	°C	-40		85		
Stability							
Offset stability over time		ppm / month	-10 -3		10 3	ppm refers to nominal current μA refers to secondary current	
Impact of external magnetic field		ppm / mT	-15 -4.5		15 4.5	ppm refers to nominal current μA refers to secondary current	

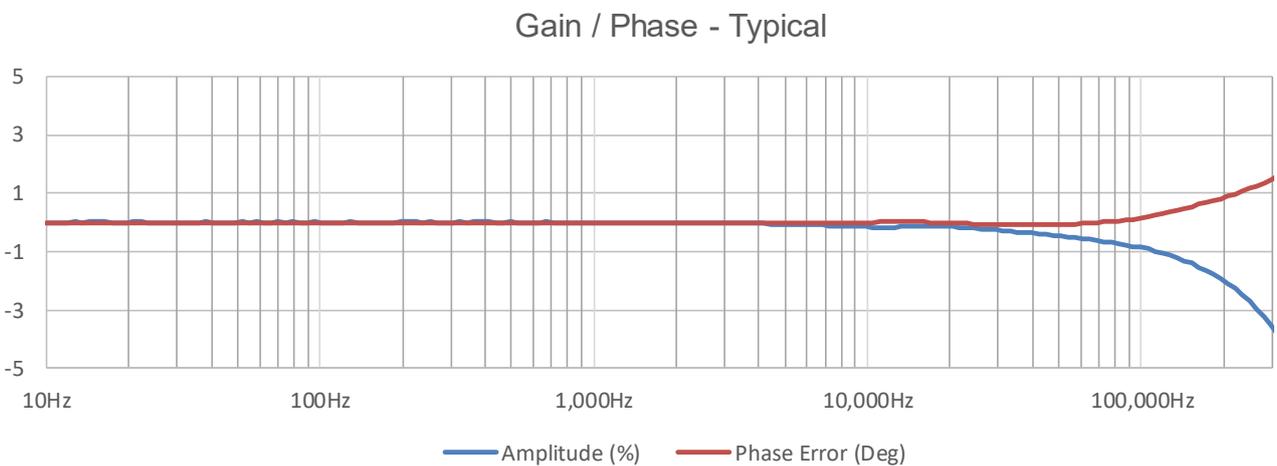
Measurement resistor R_M and ambient temperature derating (Fig. 1)



Frequency and ambient temperature derating (Fig. 2)



Frequency characteristics (Fig. 3)



Isolation specifications

Parameter	Unit	Value
Clearance	mm	9
Creepage distance	mm	10
Comparative tracking index (CTI)	V	> 600
Rms voltage for AC isolation test, 50/60 Hz, 1 min - Between primary and (secondary and shield (GND))	kV	5.7
Impulse withstand voltage (1.2/50 μ s)	kV	10.4
Rated rms isolation voltage reinforced isolation, overvoltage category III, Pollution degree 2 according to IEC 61010-1 and EN50780	V	300 600

Absolute maximum ratings

Parameter	Unit	Max	Comment
Primary	kA	1.0	Maximum 100ms
Power supply	V	\pm 16.5	

Environmental and mechanical characteristics

Parameter	Unit	Min	Typ	Max	Comment
Operating temperature range	°C	-40		85	
Storage temperature range	°C	-40		85	
Relative humidity	%	20		80	Non-condensing
Mass	kg		0.250		
Connections	4 Industrial fastons 6.3 x 0.8mm				
Standards	EN 61326-1 EMC EN 61010-1:2010 Safety				

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

Taastrup, Denmark



Henrik Elbæk

Date

2022-03-15