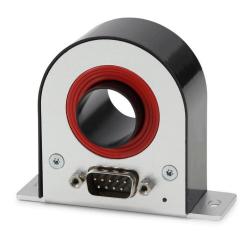


Reduced size, ultra-stable, high precision (ppm class) fluxgate technology DT Series current transducer for isolated DC and AC current measurement up to 50Arms







Features

Fluxgate, closed loop compensated technology with fixed excitation frequency and second harmonic zero flux detection for best in class accuracy and stability

2 MHz high frequency bandwidth

Excellent linearity, better than 1.5 ppm

Industry standard DSUB 9 pin connection

Green diode for normal operation indication

Large aperture Ø20.7mm for cables and bus bars

Weighs only 0.15 kg

Applications

Optimized for space constraint applications

MPS for particles accelerators

Gradient amplifiers for MRI devices

Stable power supplies

Precision drives

Batteries testing and evaluation systems

Power measurement and power analysis

Variable speed drives

Calibration unit

Specification highlights	Symbol	Unit	Min	Тур	Max
Nominal continuous primary AC current	I _{PN} AC	Arms			50
Nominal continuous primary DC current	I _{PN} DC	А	-50		50
Measuring range	Î _{PM}	А	-75		75
Primary / secondary ratio	n1 : n2		1:500		1:500
Linearity error	$\epsilon_{\scriptscriptstyle L}$	ppm	-1.5	0.7	1.5
Offset current (including earth field)	I _{OE}	ppm	-100		100
DC-10Hz Overall accuracy @25°C (= E _L + I _{OE})	acc8	ppm	-101.5		101.5
Bandwidth	f(±3dB)	kHz		2000	
AC typical gain error 10Hz to 5kHz	£G	%		±0.01	
Operating temperature range	Та	°C	-40		85
Power supply voltages	Uc	V	±14.25		±15.75

All ppm (or %) values refer to nominal current



DT50ID

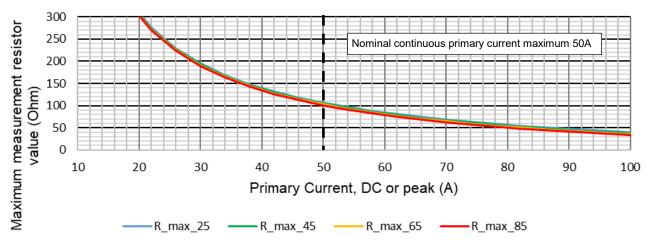
Electrical specifications at Ta=23°C, supply voltage = ± 15V unless otherwise stated

Nominal continuous primary AC current I _{Ph} AC Ams 50 Refer to fig. 1 & 2 for derating	Parameter		Symbol	Unit	Min	Тур.	Max	Comment
Measuring range	Nominal continuous	Nominal continuous primary AC current		Arms			50	Refer to fig. 1 & 2 for derating
Nominal secondary current	· · ·		I _{PN} DC	Α	-50		50	Refer to fig. 1 for derating
Nominal secondary current Ish 1.500 1.500 1.500 1.500 Neasuring resistance R _M 0 0 50 Refer to fig. 1 for details 1.500 1.500 1.500 1.500 Neasuring resistance R _M 0 0 50 Refer to fig. 1 for details 1.500 1.500 Neasuring resistance R _M 0 0 50 Neasuring resistance R _M 0 0 50 Neasuring resistance Refer to fig. 1 for details 1.500 Neasuring resistance Refer to fig. 1 for details 1.500 Neasuring resistance Refer to fig. 1 for details 1.500 Neasuring resistance Neasuring resistanc	Measuring range		I _{PM}	А	-75		75	Refer to fig. 1 & 2 for derating
Primary / secondary ratio R _N	Overload capacity		Î _{OL}	А	-250		250	Non-measured, 100ms
Primary / secondary ratio R _M	Nominal secondary of	urrent	I _{SN}	mA	-100		100	At nominal primary DC current
Linearity error C	Primary / secondary	ratio			1:500		1:500	
DC-10Hz Overall accuracy @25°C (= EL DC-10Hz Overal	Measuring resistance)	R _M	Ω	0	50		Refer to fig. 1 for details
Offset current Ios μα -0.15 0.07 0.15 μA pmm peres to secondary current DC-10Hz Overall accuracy @25°C (= EL IOE) acce ppm -10.5 101.5 ppm refers to nominal current μA refers to secondary current DC-10Hz Overall accuracy @25°C (= EL IOE) acce ppm -0.8 0.4 0.8 ppm refers to nominal current μA refers to secondary current Bandwidth fe3dB) kHz 2000 0.04 0.8 ppm refers to nominal current μA refers to secondary current Amplitude error 10Hz -5kHz kHz 2000 Small signal, graphs figure 3 Amplitude error 10Hz -5kHz SkHz -100kHz 10% See notes in fig. 3 100kHz - 100kHz 0.01Hz -100kHz 0.01Hz 10° See notes in fig. 3 Phase shift 10Hz -5kHz 0.01Hz -100kHz 0.01Hz 10° See notes in fig. 3 Response time to a step current len fr@graph ppm RMS 1 1 ppm RMS See notes in fig. 3 Response time to a step current len fr@graph ppm RMS 0.6 1.2 ppm RMS	Linearity error		C	ppm	-1.5	0.7	1.5	ppm refers to nominal current
DC-10Hz Overall accuracy @25°C (= εL + IOE) DC-10Hz Overall accuracy @25°C (= εL + IOE) DC-10Hz Overall accuracy @25°C (= εL + IOE) DF-10Hz DC-10Hz Overall accuracy @25°C (= εL + IOE) DF-10Hz DC-10Hz DF-10Hz	Lineanty error		O _L	μΑ	-0.15	0.07		-
DC-10Hz Overall accuracy @25°C (= &L + IOE) DC-10Hz Overall accurac	Offset current		I _{OE}					• •
Fig.				μA	-10		10	µA refers to secondary current
Dispet temperature coefficient Fusion Fus		uracy @25°C (= EL	acc8					
Bandwidth	Offset temperature co	pefficient	TC _{IOE}					• •
Amplitude error	Pandwidth		f(+0-ID)		-0.08		0.08	·
SkHz -100kHz		100- 500-	T(±30B)	KHZ				Small signal, graphs ligure 3
100kHz - 1000kHz 1000kHz 1000kHz - 2000kHz 100kHz - 2000kHz 100kHz - 1000kHz 100kHz - 1000kHz 100kHz - 1000kHz 1000kHz - 2000kHz 100kHz 100kHz - 2000kHz 100kHz 100kHz 100kHz 10.14z - 10kHz 1.11 3 1.12 1.11 3 1.12 1.11 3 1.12 1.11 3 1.12 1.11 3 1.12 1.11 3 1.12 1.11 3 1.12 1.11 3 1.12 1.11 3 1.12 1.11 3 1.12 1.12 1.12 1.13	Ampillade error							Con mater in fig. 2
1000kHz - 2000kHz 10Hz - 5kHz 5kHz - 100kHz 100kHz - 1000kHz 1000kHz - 1000kHz 1000kHz - 1000kHz 1000kHz - 2000kHz 1000kHz 1000kHz 1000kHz 1000kHz 1000kHz 1000kHz 100kHz 10			εG	%				See notes in fig. 3 % refers to nominal current
SkHz -100kHz 100kHz - 1000kHz 100kHz - 1000kHz 1000kHz - 2000kHz								
100kHz - 1000kHz 1000	Phase shift	10Hz –5kHz				0.01°		
100kHz - 1000kHz 1000kHz 1000kHz 1000kHz 1000kHz - 2000kHz 1000kHz - 2000kHz 1000kHz - 2000kHz 1000kHz 1000		5kHz -100kHz	0	o		1°		See notes in fig. 2
Response time to a step current IPN tr @ 90% μs 1		100kHz - 1000kHz	Ð	-		10°		See notes in lig. 3
RMS noise						30°		
0.1 Hz - 100 Hz 0.1 Hz - 10 Hz 0.1 Hz 0.1 Hz - 10 Hz 0.1 Hz 0		•	tr @ 90%	μs				
D.1Hz - 1kHz D.1Hz - 10kHz D.1Hz - 100kHz D.1Hz - 100Hz D.1Hz - 100kHz D.1Hz - 10kHz D.1Hz - 10k	RMS noise							
D. ITIZ = 1 TOKHZ D.				D140				ppm RMS refers to nominal cur-
Peak-to-peak noise 0.1Hz - 10Hz 0.1Hz - 10kHz 0.1Hz - 10kHz 0.1Hz - 10kHz 0.1Hz - 100kHz 0.1Hz 0.			noise	ppm KiviS			1.2	F -
Peak-to-peak noise 0.1Hz - 10Hz 0.1Hz - 10Hz 0.1Hz - 100Hz 0.1Hz - 100Hz 0.1Hz - 10kHz 0.1Hz - 10							_	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Peak-to-peak noise							
0.1 Hz - 10kHz 0.1 Hz - 100kHz 0.1 Hz - 100kHz 0.1 Hz - 100kHz Fluxgate excitation frequency Induced rms voltage on primary conductor Induced rms voltage on primary conductor Induced rms voltages Uc V ±14.25 Fositive current consumption Ins MA 40 Add Is (if Is is positive) Negative current consumption Ins MA 35 Add Is (if Is is negative) Operating temperature range Ta C -40 85 Stability Offset stability over time Impact of external magnetic field Impact of external magnetic field Offset change with power supply voltages Ppm/moth µA/moth -1.6 0.0052 Ppm refers to nominal current µA refers to secondary current µA refers to nominal current	·	0.1Hz - 100Hz					4	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		0.1Hz - 1kHz	noise	ppm p-p		3.1	7	
Fluxgate excitation frequency F _{Exc} KHz 31.25 Induced rms voltage on primary conductor μV rms 5 Power supply voltages Uc V ±14.25 ±15.75 Positive current consumption Ips mA 40 Add Is (if Is is positive) Negative current consumption Ins mA 35 Add Is (if Is is negative) Operating temperature range Ta °C -40 85 Stability Stability Offset stability over time ppm/month μA/month -0.1 0.1 μA refers to secondary current Impact of external magnetic field ppm/mT -16 4 16 ppm refers to nominal current μA/mT -1.6 0.4 1.6 μA refers to secondary current Offset change with power supply voltages ppm/mV 0.0052 ppm refers to nominal current								na canone
Induced rms voltage on primary conductor Power supply voltages Uc V ±14.25 ±15.75 Positive current consumption Ips mA 40 Add Is (if Is is positive) Negative current consumption Ins mA 35 Add Is (if Is is negative) Operating temperature range Ta °C -40 85 Stability Stability Offset stability over time ppm/month μA/month -0.1 0.01 ppm refers to nominal current μA/month -0.01 μA refers to secondary current ppm/mT -16 4 16 ppm refers to nominal current μA refers to secondary current Offset change with power supply voltages ppm/mV 0.0052 ppm refers to nominal current ppm refers to nominal current ppm/mV 0.0052 ppm refers to nominal current ppm refers to nominal current ppm/mV ppm/mV ppm refers to nominal current ppm refers to nominal current ppm/mV ppm/mV ppm refers to nominal current ppm refers to nominal current ppm/mV ppm refers to nominal current ppm refers to nominal current ppm/mV ppm refers to nominal current ppm refers to nominal current ppm/mV ppm refers to nominal current ppm refers to nominal current ppm/mV ppm refers to nominal current ppm refers to nominal current ppm/mV ppm refers to nominal current ppm refers to nominal current ppm/mV ppm/mV ppm refers to nominal current ppm/mV pp							150	
Power supply voltages Uc V ±14.25 ±15.75 Positive current consumption Ips mA 40 Add Is (if Is is positive) Negative current consumption Ins mA 35 Add Is (if Is is negative) Operating temperature range Ta °C -40 85 Stability To 0.1 ppm/month ppm/month ppm/month planner 0.1 ppm refers to nominal current ppm/month ppm/month planner 0.01 ppm refers to nominal current ppm/month ppm/month ppm/month planner 0.01 ppm refers to nominal current ppm/month ppm/month planner 0.4 16 ppm refers to secondary current ppm/month ppm refers to nominal current ppm/month planner 0.0052 ppm refers to nominal current ppm refers to nominal current ppm refers to nominal current ppm/month planner	Fluxgate excitation fr	equency	f _{Exc}	kHz		31.25		
Positive current consumption Ips mA 40 Add Is (if Is is positive) Negative current consumption Ins mA 35 Add Is (if Is is negative) Operating temperature range Ta °C -40 85 Stability Description 0.1 ppm/month ppm/month ppm/month ph/month	Induced rms voltage	on primary conductor		μV rms			5	
Negative current consumptionInsmA35Add Is (if Is is negative)Operating temperature rangeTa°C-4085StabilityOffset stability over time $\frac{ppm/month}{\mu A/month} -0.1 \\ \mu A/month -0.010.1 ppm refers to nominal current upA refers to secondary currentImpact of external magnetic field\frac{ppm/mT}{\mu A/mT} -16 -16 -16 -16 -16 -16 -16 -16 -16 -16$	Power supply voltages		Uc	V	±14.25		±15.75	
Operating temperature range Ta °C -40 85 Stability Offset stability over time $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Positive current cons	umption	Ips	mA		40		Add Is (if Is is positive)
Stability ppm/month time -0.1 μ A/month 0.1 μ A/month ppm refers to nominal current μ A refers to secondary current Impact of external magnetic field ppm/mT μ A/mT -16 μ A/mT 4 μ A refers to secondary current Offset change with power supply voltages ppm/mV 0.0052 ppm refers to nominal current	Negative current consumption		Ins	mA		35		Add Is (if Is is negative)
Offset stability over time $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Operating temperatu	Operating temperature range		°C	-40		85	
time $ \frac{\mu \text{A/month}}{\mu \text{A/month}} = -0.01 \qquad 0.01 \qquad \mu \text{A refers to secondary current} $ $ \frac{\text{ppm/mT}}{\mu \text{A/mT}} = -16 \qquad 4 \qquad 16 \qquad \text{ppm refers to nominal current} $ $ \frac{\mu \text{A/mT}}{\mu \text{A/mT}} = -1.6 \qquad 0.4 \qquad 1.6 \qquad \mu \text{A refers to secondary current} $ $ 0.0052 \qquad \text{ppm refers to nominal current} $	Stability							
Impact of external magnetic field $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$								
Offset change with power supply voltages ppm/mV 0.0052 ppm refers to nominal current	Impact of external ma	agnetic field					16	ppm refers to nominal current
				ppm/mV	1.0	0.0052	1.0	ppm refers to nominal current



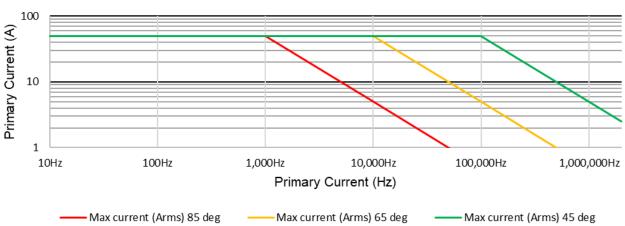
Measurement resistor RM and ambient temperature derating (Fig. 1)

Maximum measurement resistor vs. ambient temperatures



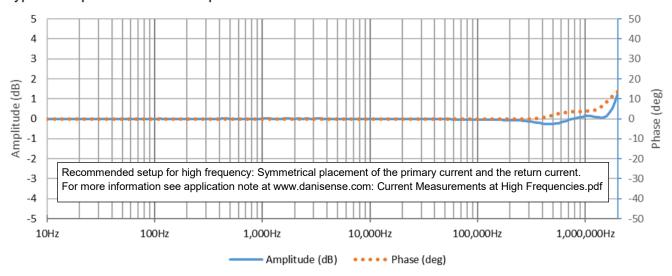
Frequency and ambient temperature derating (Fig. 2)

Maximum primary current A_{rms}



Frequency characteristics (Fig. 3)

Typical Amplitude / Phase response





Isolation specifications

Parameter	Unit	Value
Clearance	mm	11.5
Creepage distance	mm	11.5
Rms voltage for AC isolation test, 50/60 Hz, 1 min - Between primary and (secondary and shield)	kV	5.7
Impulse withstand voltage (1.2/50µs)	kV	10.4
Rated rms isolation voltage		
reinforced isolation, overvoltage category III, Pollution degree 2 according to	V	
- IEC 61010-1		300
- EN50780		600

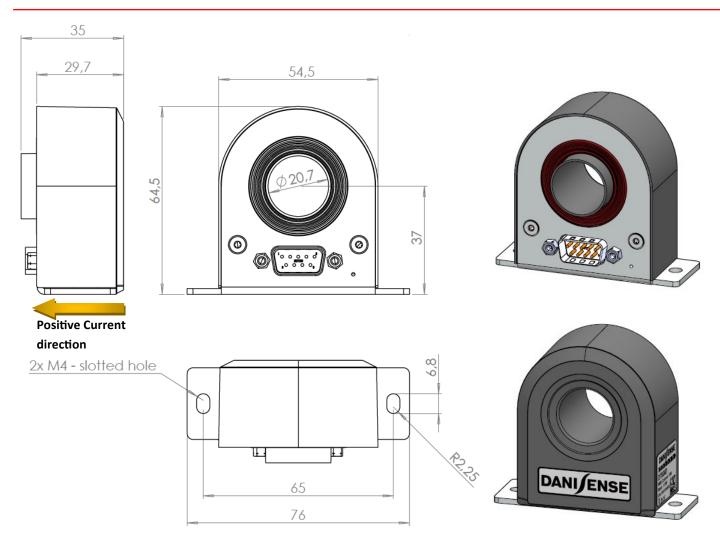
Absolute maximum ratings

Parameter	Unit	Max	Comment
Primary	Α	250	Maximum 100ms
Power supply	V	±16.5	

Environmental and mechanical characteristics

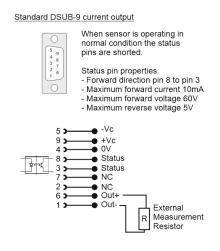
Parameter	Unit	Min	Тур	Max	Comment
Altitude	m			2000	
Usage					Designed for indoor use
Transient voltages					Up to overvoltage category III
Polution Degree				2	
Ambient operating temperature range	°C	-40		85	
Storage temperature range	°C	-40		85	
Relative humidity	%	20		80	Non-condensing
Mass	kg		0.15		
Connections	Power supplies: D-SUB 9 pins male				
	EMC: IEC 61326-1:2013-2021				
	Safety: IEC 61010-2-30 and IEC 61010-1:2010 3rd Edition				
Standards	Random vibration test: IEC 60068-2-64:2008				
	Shock test: IEC 60068-2-27:2009				
	Transport test: IEC 60068-2-64:2008				

DT50ID



(general tolerance 0.3mm unless otherwise stated)

DSUB pin layout



Positive current direction

Mounting instructions

Is identified by an arrow on the transducer body

Base plate mounting:

2 x M4 - slotted holes

Suggested fastening torque: 5.5 Nm



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

Howrl Effe

Date

2022-03-15