

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:

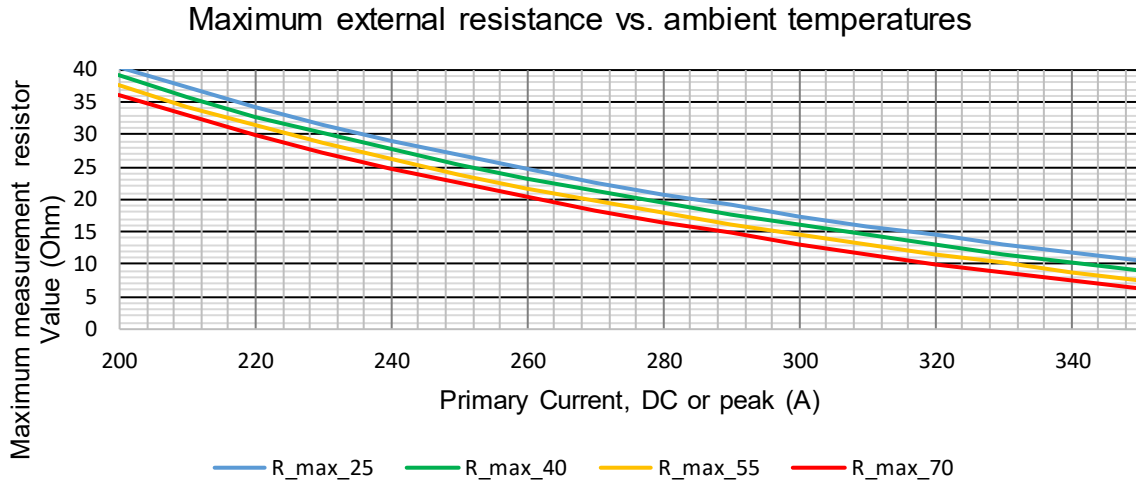
- Gradient amplifiers for MRI devices
- Precision power supplies, drives
- Batteries testing and evaluation systems
- Variable speed motor drives

| 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 |

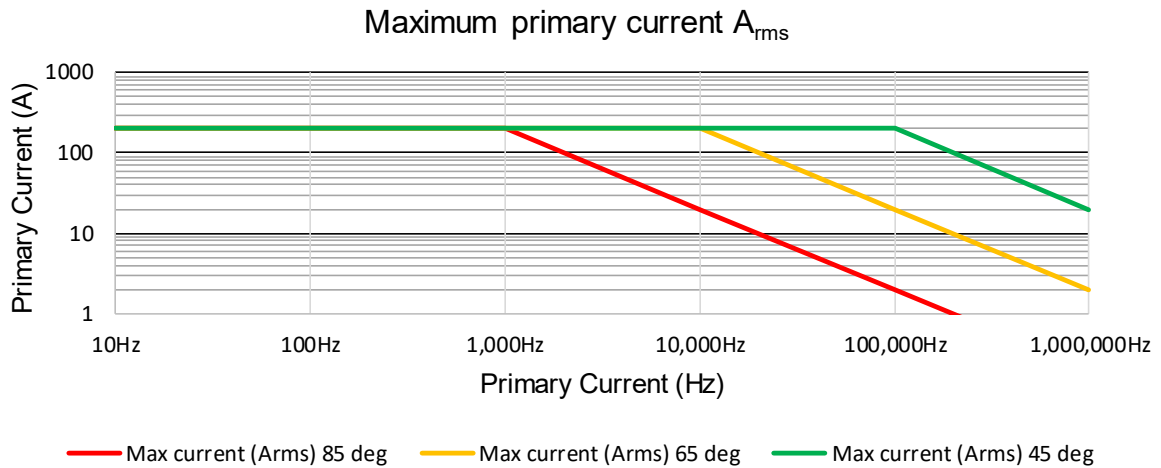
Electrical specifications at Ta=23°C, supply voltage = ± 15V unless otherwise stated

| 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% |
| 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 |
| 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 |

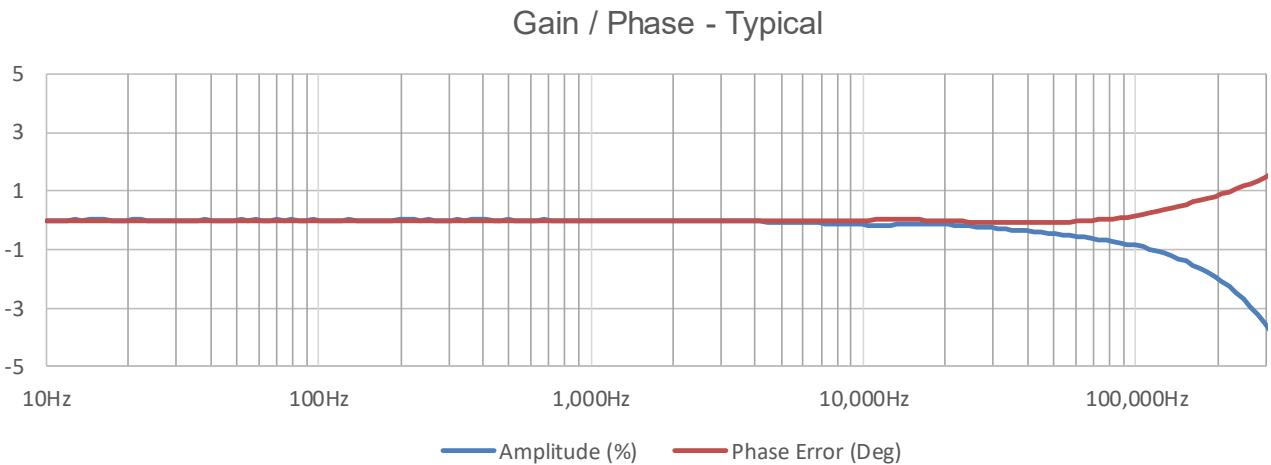
Measurement resistor R_M and ambient temperature derating (Fig. 1)



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