# Current Transducer CAS series
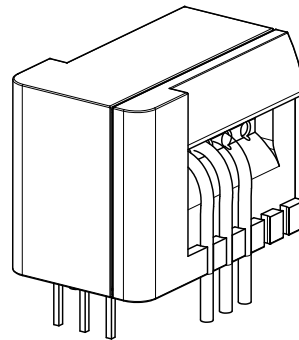
## $I_{PN}$ = 6, 15, 25, 50 A

### Ref: CAS 6-NP, CAS 15-NP, CAS 25-NP, CAS 50-NP

For the electronic measurement of current: DC, AC, pulsed..., with galvanic isolation between the primary and the secondary circuit.

## Features

- Closed loop (compensated) multi-range current transducer
- Voltage output
- Single supply
- Isolated plastic case material recognized according to UL 94-V0
- Compact design for PCB mounting.

## Advantages

- Very low temperature coefficient of offset
- Very good dv/dt immunity
- LTS compatible footprint
- Reduced height.

## Applications

- AC variable speed and servo motor drives
- Static converters for DC motor drives
- Battery supplied applications
- Uninterruptible Power Supplies (UPS)
- Switched Mode Power Supplies (SMPS)
- Power supplies for welding applications.

## Standards

- EN 50178
- UL 508
- IEC 61010-1 (safety).

## Application Domain

- Industrial.

## Absolute maximum ratings

| Parameter | Symbol | Unit | Value |
|---|---|---|---|
| Supply voltage | $V_C$ | V | 7 |
| Primary conductor temperature | | °C | 110 |
| Non repetitive primary current pulse (20 µs), in powered or unpowered state | $\hat{I}_P$ | A | 20 x $I_{PN}$ |
| ESD rating, Human Body Model (HBM) | | kV | 4 |

Stresses above these ratings may cause permanent damage. Exposure to absolute maximum ratings for extended periods may degrade reliability.

## Isolation characteristics

| Parameter | Symbol | Unit | Value | Comment |
|---|---|---|---|---|
| RMS voltage for AC isolation test 50/60Hz/1 min | $V_d$ | kV | 4.2 | |
| Impulse withstand voltage 1.2/50 µs | $\hat{V}_w$ | kV | 7.6 | |
| Partial discharge extinction voltage @ 10 pC (rms) | $V_e$ | V | 1000 | |
| Clearance distance (pri. - sec.) | dCl | mm | 7.7 | Shortest distance through air |
| Creepage distance (pri. - sec.) | dCp | mm | 7.7 | Shortest path along device body |
| Creepage distance (pri. .- sec.) | - | mm | 6.3 | When mounted on PCB with recommended layout |
| Case material | - | - | V0 according to UL 94 | |
| Comparative tracking index | CTI | V | 600 | |
| Application example | - | - | 300 V CAT III PD2 | Reinforced isolation, non uniform field according to EN 50178, EN 61010 |
| Application example | - | - | 600 V CAT III PD2 | Simple isolation, non uniform field according to EN 50178, EN 61010 |
| According to UL 508: primary potential involved in Volts RMS AC or DC | - | V | 600 | For use in a pollution degree 2 environment |

## Environmental and mechanical characteristics

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Ambient operating temperature | $T_A$ | °C | -40 | | 85 | |
| Ambient storage temperature | $T_S$ | °C | -55 | | 105 | |
| Mass | *m* | g | | 9 | | |
| Standards | EN 50178, IEC 60950-1, IEC 61010-1, IEC 61326-1, UL 508 | | | | | |

## Electrical data CAS 6-NP

At $T_A$ = 25°C, $V_C$ = + 5 V, $N_P$ = 1 turn, $R_L$ = 10 kΩ, unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal current rms | $I_{PN}$ | A | | 6 | | |
| Primary current, measuring range | $I_{PM}$ | A | -20 | | 20 | |
| Number of primary turns | $N_P$ | - | | 1,2,3 | | |
| Supply voltage | $V_C$ | V | 4.75 | 5 | 5.25 | |
| Current consumption | $I_C$ | mA | | $15 + \dfrac{I_P \,(mA)}{N_S}$ | $20 + \dfrac{I_P \,(mA)}{N_S}$ | $N_S$ = 1731 turns |
| Output voltage | $V_{OUT}$ | V | 0.375 | | 4.625 | |
| Output voltage @ $I_P$ = 0 A | $V_{OUT}$ | V | | 2.5 | | |
| Electrical offset voltage | $V_{OE}$ | mV | -10.4 | | 10.4 | 100% tested $V_{OUT}$ - 2.5 V |
| Electrical offset current referred to primary | $I_{OE}$ | A | -0.1 | | 0.1 | 100% tested |
| Temperature coefficient of $V_{OUT}$ @ $I_P$ = 0 A | $TCV_{OUT}$ | ppm/K | | ±10 | ±80 | ppm/K of 2.5 V - 40°C .. 85°C |
| Theoretical sensitivity | Gth | mV/A | | 104.2 | | 625 mV/ $I_{PN}$ |
| Sensitivity error | $\varepsilon_G$ | % | -0.7 | | 0.7 | 100% tested |
| Temperature coefficient of G | TCG | ppm/K | | | ±40 | - 40°C .. 85°C |
| Linearity error | $\varepsilon_L$ | % of $I_{PN}$ | -0.1 | | 0.1 | |
| Magnetic offset current (10 x $I_{PN}$) referred to primary | $I_{OM}$ | A | -0.1 | | 0.1 | |
| Output current noise (spectral density) rms 100 .. 100 kHz referred to primary | $i_{no}$ | µA/Hz$^{½}$ | | 36 | | $R_L$ = 1 kΩ |
| Peak-peak output ripple at oscillator frequency f = 450 kHz (typ.) | - | mV | | 40 | 160 | $R_L$ = 1 kΩ |
| Reaction time @ 10 % of $I_{PN}$ | $t_{ra}$ | µs | | | 0.3 | $R_L$ = 1 kΩ di/dt = 18 A/µs |
| Response time @ 90 % of $I_{PN}$ | $t_r$ | µs | | | 0.3 | $R_L$ = 1 kΩ di/dt = 18 A/µs |
| Frequency bandwidth (± 1 dB) | BW | kHz | 200 | | | $R_L$ = 1 kΩ |
| Frequency bandwidth (± 3 dB) | BW | kHz | 300 | | | $R_L$ = 1 kΩ |
| Overall accuracy | $X_G$ | % of $I_{PN}$ | | | 2.5 | |
| Overall accuracy @ $T_A$ = 85°C | $X_G$ | % of $I_{PN}$ | | | 4.6 | |
| Accuracy | X | % of $I_{PN}$ | | | 0.8 | |
| Accuracy @ $T_A$ = 85°C | X | % of $I_{PN}$ | | | 3.0 | |

## Electrical data CAS 15-NP

At $T_A$ = 25°C, $V_C$ = + 5 V, $N_P$ = 1 turn, $R_L$ = 10 kΩ, unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal current rms | $I_{PN}$ | A | | 15 | | |
| Primary current, measuring range | $I_{PM}$ | A | -51 | | 51 | |
| Number of primary turns | $N_P$ | - | | 1,2,3 | | |
| Supply voltage | $V_C$ | V | 4.75 | 5 | 5.25 | |
| Current consumption | $I_C$ | mA | | $15 + \dfrac{I_P \, (mA)}{N_S}$ | $20 + \dfrac{I_P \, (mA)}{N_S}$ | $N_S$ = 1731 turns |
| Output voltage | $V_{OUT}$ | V | 0.375 | | 4.625 | |
| Output voltage @ $I_P$ = 0 A | $V_{OUT}$ | V | | 2.5 | | |
| Electrical offset voltage | $V_{OE}$ | mV | -7.1 | | 7.1 | 100% tested $V_{OUT}$ - 2.5 V |
| Electrical offset current referred to primary | $I_{OE}$ | A | -0.17 | | 0.17 | 100% tested |
| Temperature coefficient of $V_{OUT}$ @ $I_P$ = 0 A | $TCV_{OUT}$ | ppm/K | | ±7.5 | ±70 | ppm/K of 2.5 V - 40°C .. 85°C |
| Theoretical sensitivity | Gth | mV/A | | 41.67 | | 625 mV/ $I_{PN}$ |
| Sensitivity error | $\varepsilon_G$ | % | -0.7 | | 0.7 | 100% tested |
| Temperature coefficient of G | TCG | ppm/K | | | ±40 | - 40°C .. 85°C |
| Linearity error | $\varepsilon_L$ | % of $I_{PN}$ | -0.1 | | 0.1 | |
| Magnetic offset current (10 x $I_{PN}$) referred to primary | $I_{OM}$ | A | -0.1 | | 0.1 | |
| Output current noise (spectral density) rms 100 Hz .. 100 kHz referred to primary | $i_{no}$ | µA/Hz$^{½}$ | | 90 | | $R_L$ = 1 kΩ |
| Peak-peak output ripple at oscillator frequency f = 450 kHz (typ.) | - | mV | | 15 | 60 | $R_L$ = 1 kΩ |
| Reaction time @ 10 % of $I_{PN}$ | $t_{ra}$ | µs | | | 0.3 | $R_L$ = 1 kΩ di/dt = 44 A/µs |
| Response time @ 90 % of $I_{PN}$ | $t_r$ | µs | | | 0.3 | $R_L$ = 1 kΩ di/dt = 44 A/µs |
| Frequency bandwidth (± 1 dB) | BW | kHz | 200 | | | $R_L$ = 1 kΩ |
| Frequency bandwidth (± 3 dB) | BW | kHz | 300 | | | $R_L$ = 1 kΩ |
| Overall accuracy | $X_G$ | % of $I_{PN}$ | | | 1.9 | |
| Overall accuracy @ $T_A$ = 85°C | $X_G$ | % of $I_{PN}$ | | | 3.9 | |
| Accuracy | X | % of $I_{PN}$ | | | 0.8 | |
| Accuracy @ $T_A$ = 85°C | X | % of $I_{PN}$ | | | 2.7 | |

## Electrical data CAS 25-NP

At $T_A$ = 25°C, $V_C$ = + 5 V, $N_P$ = 1 turn, $R_L$ = 10 kΩ, unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal current rms | $I_{PN}$ | A | | 25 | | |
| Primary current, measuring range | $I_{PM}$ | A | -85 | | 85 | |
| Number of primary turns | $N_P$ | - | | 1,2,3 | | |
| Supply voltage | $V_C$ | V | 4.75 | 5 | 5.25 | |
| Current consumption | $I_C$ | mA | | $15 + \dfrac{I_P \, (mA)}{N_S}$ | $20 + \dfrac{I_P \, (mA)}{N_S}$ | $N_S$ = 1731 turns |
| Output voltage | $V_{OUT}$ | V | 0.375 | | 4.625 | |
| Output voltage @ $I_P$ = 0 A | $V_{OUT}$ | V | | 2.5 | | |
| Electrical offset voltage | $V_{OE}$ | mV | -6.25 | | 6.25 | 100% tested $V_{OUT}$ - 2.5 V |
| Electrical offset current referred to primary | $I_{OE}$ | A | -0.25 | | 0.25 | 100% tested |
| Temperature coefficient of $V_{OUT}$ @ $I_P$ = 0 A | $TCV_{OUT}$ | ppm/K | | ±6.5 | ±60 | ppm/K of 2.5 V - 40°C .. 85°C |
| Theoretical sensitivity | Gth | mV/A | | 25 | | 625 mV/ $I_{PN}$ |
| Sensitivity error | $\varepsilon_G$ | % | -0.7 | | 0.7 | 100% tested |
| Temperature coefficient of **G** | TCG | ppm/K | | | ±40 | - 40°C .. 85°C |
| Linearity error | $\varepsilon_L$ | % of $I_{PN}$ | -0.1 | | 0.1 | |
| Magnetic offset current (10 x $I_{PN}$) referred to primary | $I_{OM}$ | A | -0.1 | | 0.1 | |
| Output current noise (spectral density) rms 100 Hz .. 100 kHz referred to primary | $i_{no}$ | µA/Hz$^{½}$ | | 150 | | $R_L$ = 1 kΩ |
| Peak-peak output ripple at oscillator frequency **f** = 450 kHz (typ.) | - | mV | | 10 | 40 | $R_L$ = 1 kΩ |
| Reaction time @ 10 % of $I_{PN}$ | $t_{ra}$ | µs | | | 0.3 | $R_L$ = 1 kΩ di/dt = 68 A/µs |
| Response time @ 90 % of $I_{PN}$ | $t_r$ | µs | | | 0.3 | $R_L$ = 1 kΩ di/dt = 68 A/µs |
| Frequency bandwidth (± 1 dB) | BW | kHz | 200 | | | $R_L$ = 1 kΩ |
| Frequency bandwidth (± 3 dB) | BW | kHz | 300 | | | $R_L$ = 1 kΩ |
| Overall accuracy | $X_G$ | % of $I_{PN}$ | | | 1.8 | |
| Overall accuracy @ $T_A$ = 85°C | $X_G$ | % of $I_{PN}$ | | | 3.5 | |
| Accuracy | X | % of $I_{PN}$ | | | 0.8 | |
| Accuracy @ $T_A$ = 85°C | X | % of $I_{PN}$ | | | 2.5 | |

## Electrical data CAS 50-NP

At $T_A$ = 25°C, $V_C$ = + 5 V, $N_P$ = 1 turn, $R_L$ = 10 kΩ, unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal current rms | $I_{PN}$ | A | | 50 | | |
| Primary current, measuring range | $I_{PM}$ | A | -150 | | 150 | |
| Number of primary turns | $N_P$ | - | | 1,2,3 | | |
| Supply voltage | $V_C$ | V | 4.75 | 5 | 5.25 | |
| Current consumption | $I_C$ | mA | | $15 + \dfrac{I_P \, (mA)}{N_S}$ | $20 + \dfrac{I_P \, (mA)}{N_S}$ | $N_S$ = 966 turns |
| Output voltage | $V_{OUT}$ | V | 0.375 | | 4.625 | |
| Output voltage @ $I_P$ = 0 A | $V_{OUT}$ | V | | 2.5 | | |
| Electrical offset voltage | $V_{OE}$ | mV | -5.8 | | 5.8 | 100% tested $V_{OUT}$ - 2.5 V |
| Electrical offset current referred to primary | $I_{OE}$ | A | -0.46 | | 0.46 | 100% tested |
| Temperature coefficient of $V_{OUT}$ @ $I_P$ = 0 A | $TCV_{OUT}$ | ppm/K | | ±6 | ±60 | ppm/K of 2.5 V - 40°C .. 85°C |
| Theoretical sensitivity | Gth | mV/A | | 12.5 | | 625 mV/ $I_{PN}$ |
| Sensitivity error | $\varepsilon_G$ | % | -0.7 | | 0.7 | 100% tested |
| Temperature coefficient of G | TCG | ppm/K | | | ±40 | - 40°C .. 85°C |
| Linearity error | $\varepsilon_L$ | % of $I_{PN}$ | -0.1 | | 0.1 | |
| Magnetic offset current (10 x $I_{PN}$) referred to primary | $I_{OM}$ | A | -0.1 | | 0.1 | |
| Output current noise (spectral density) rms 100 Hz .. 100 kHz referred to primary | $i_{no}$ | µA/Hz$^{½}$ | | 300 | | $R_L$ = 1 kΩ |
| Peak-peak output ripple at oscillator frequency f = 450 kHz (typ.) | - | mV | | 5 | 20 | $R_L$ = 1 kΩ |
| Reaction time @ 10 % of $I_{PN}$ | $t_{ra}$ | µs | | | 0.3 | $R_L$ = 1 kΩ di/dt = 100 A/µs |
| Response time @ 90 % of $I_{PN}$ | $t_r$ | µs | | | 0.3 | $R_L$ = 1 kΩ di/dt = 100 A/µs |
| Frequency bandwidth (± 1 dB) | BW | kHz | 200 | | | $R_L$ = 1 kΩ |
| Frequency bandwidth (± 3 dB) | BW | kHz | 300 | | | $R_L$ = 1 kΩ |
| Overall accuracy | $X_G$ | % of $I_{PN}$ | | | 1.7 | |
| Overall accuracy @ $T_A$ = 85°C | $X_G$ | % of $I_{PN}$ | | | 3.4 | |
| Accuracy | X | % of $I_{PN}$ | | | 0.8 | |
| Accuracy @ $T_A$ = 85°C | X | % of $I_{PN}$ | | | 2.5 | |

# Typical performance characteristics CAS 6-NP
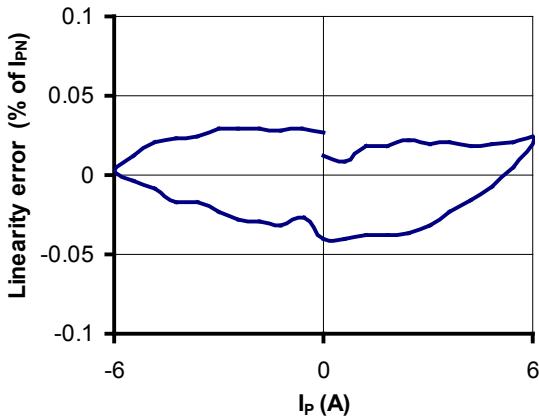


*Figure 1: Linearity error*
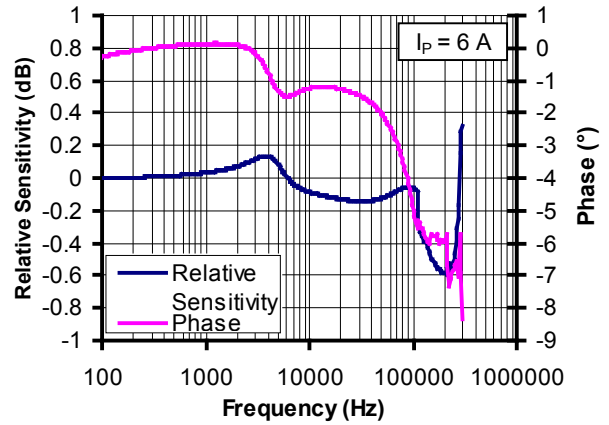


*Figure 2: Frequency response*
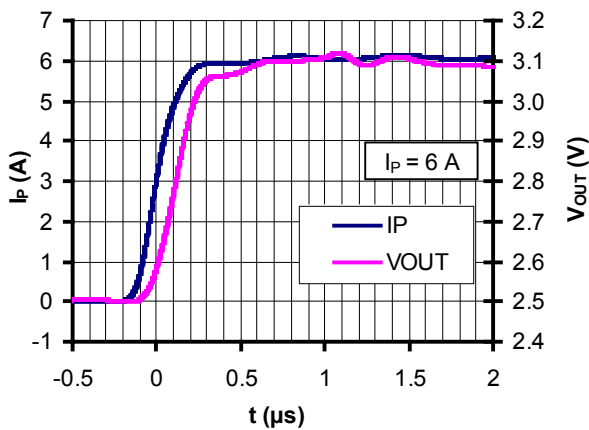


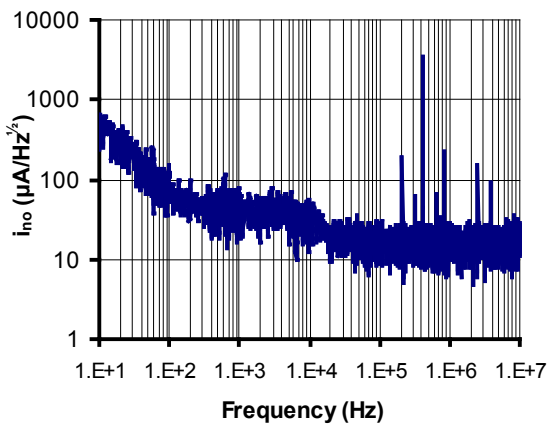*Figure 3: Step response*
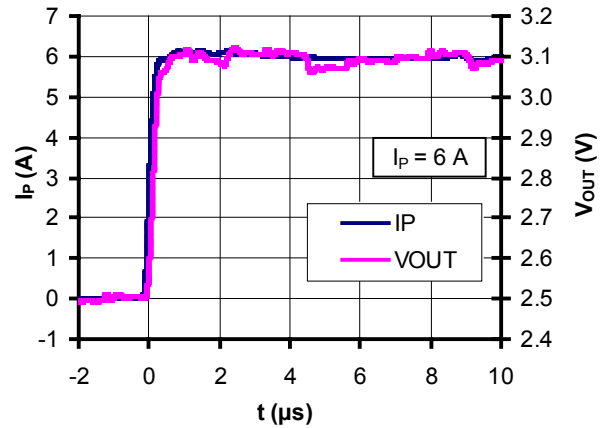


*Figure 4: Step response*



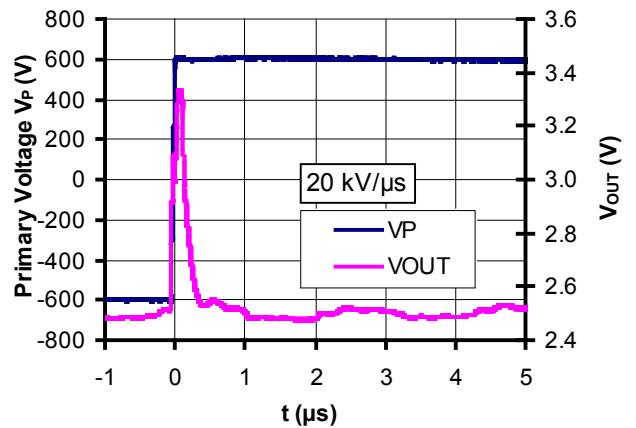*Figure 5: Input referred noise*



*Figure 6: dv/dt*

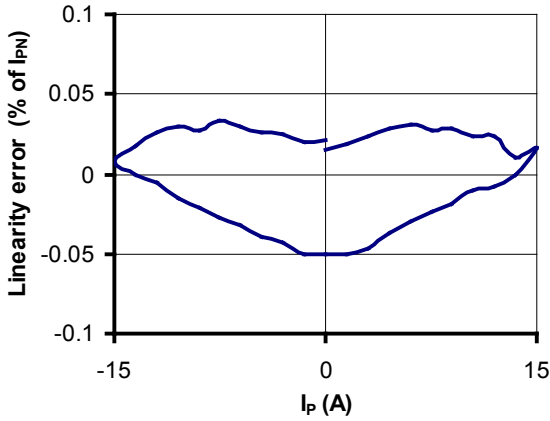## Typical performance characteristics CAS 15-NP
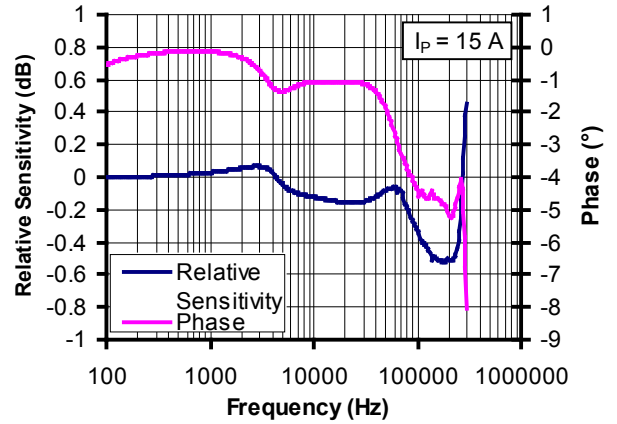
Figure 7: Linearity error
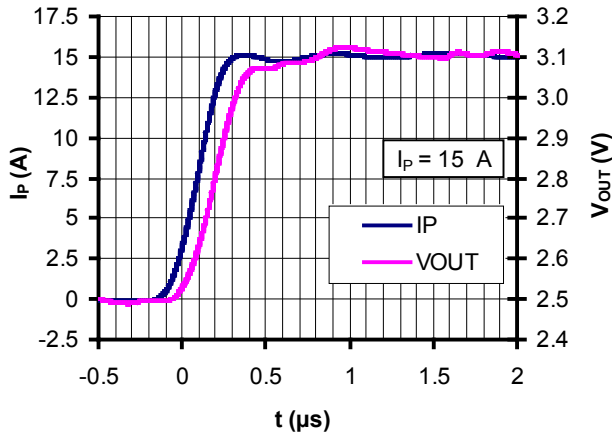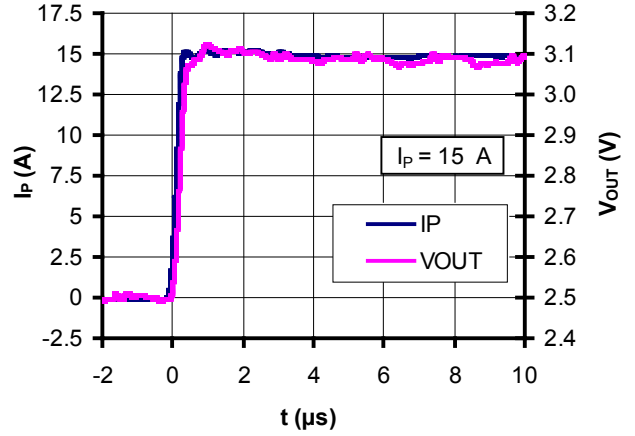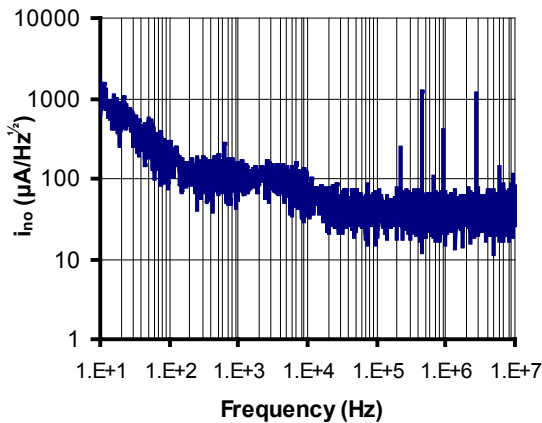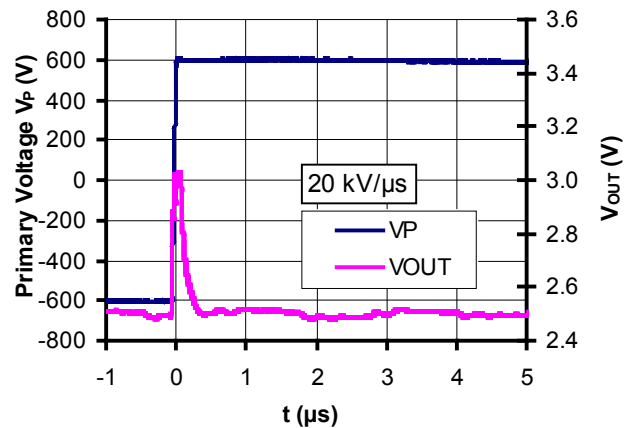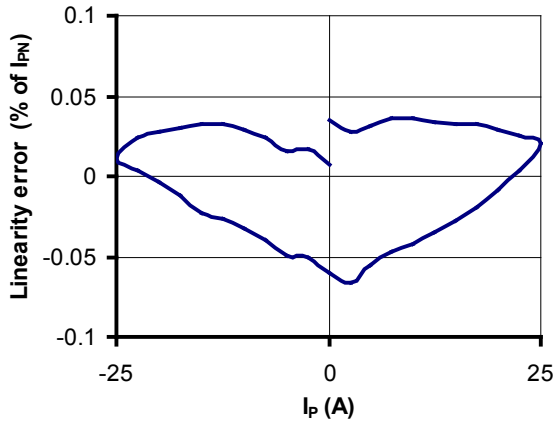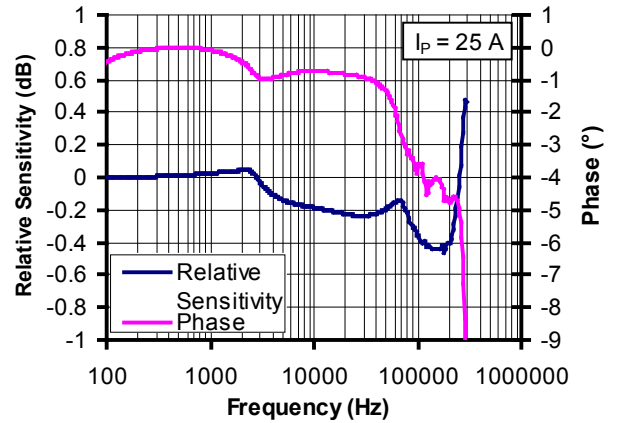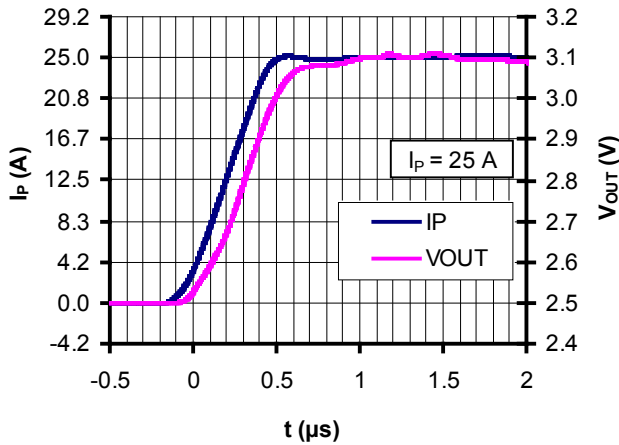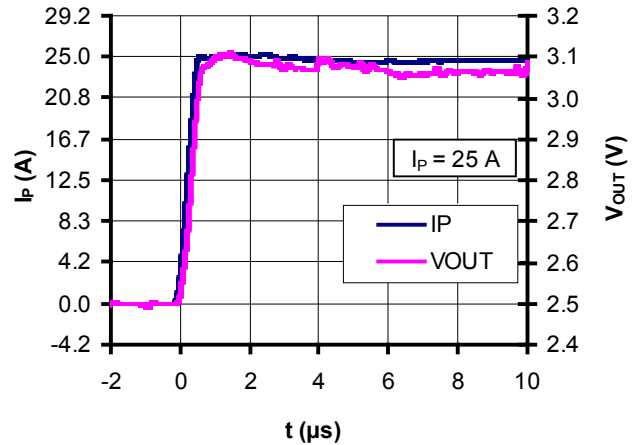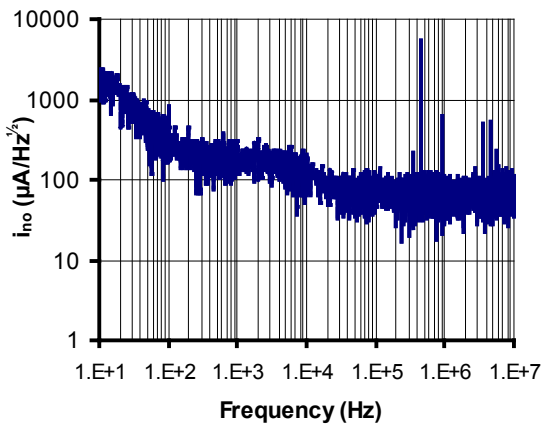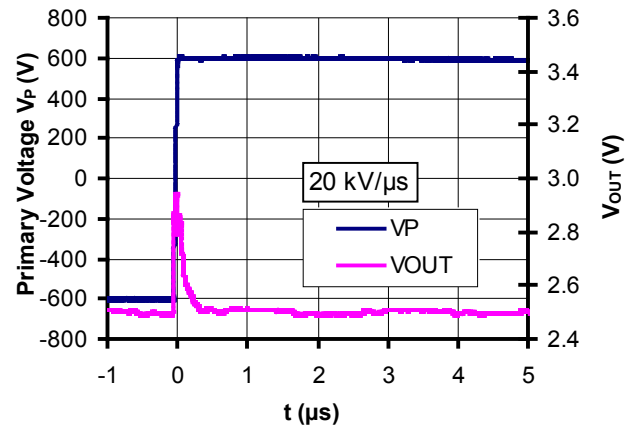
Figure 8: Frequency response

Figure 9: Step response

Figure 10: Step response

Figure 11: Input referred noise

Figure 12: dv/dt

# Typical performance characteristics CAS 25-NP



Figure 13: Linearity error



Figure 14: Frequency response



Figure 15: Step response



Figure 16: Step response



Figure 17: Input referred noise



Figure 18: dv/dt

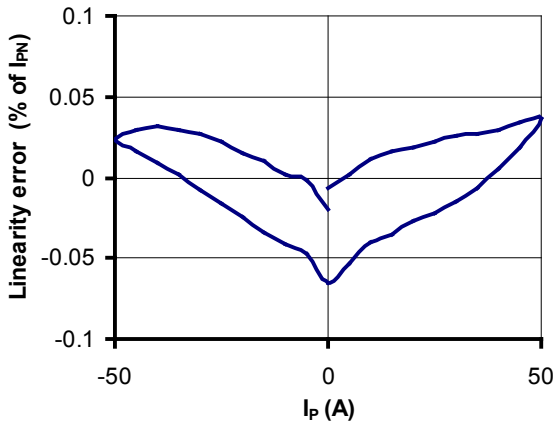# Typical performance characteristics CAS 50-NP
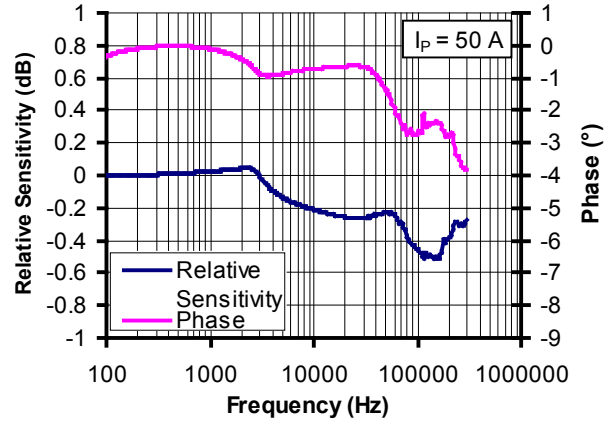


Figure 19: Linearity error



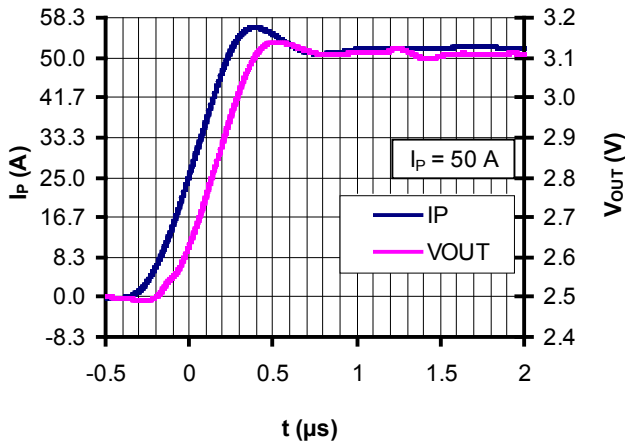Figure 20: Frequency response



Figure 21: Step response
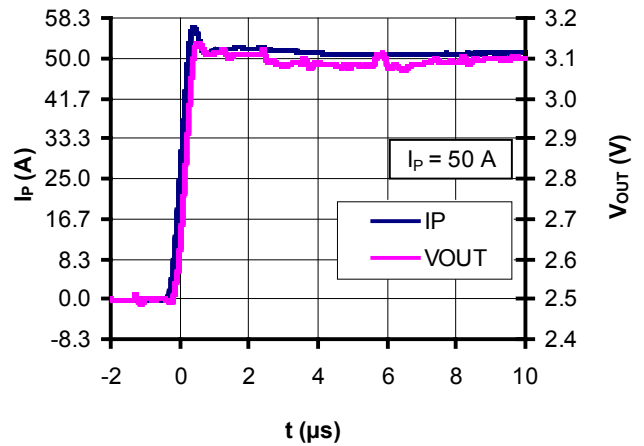


Figure 22: Step response
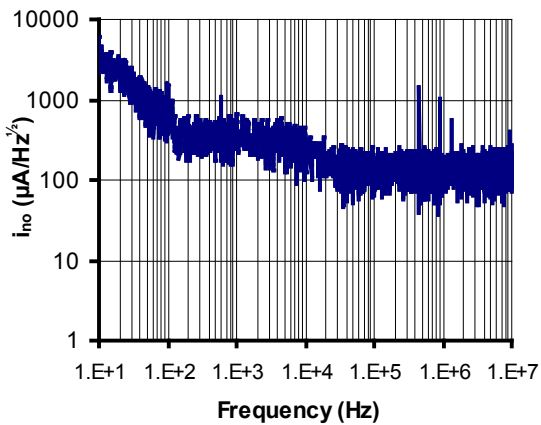


Figure 23: Input referred noise



Figure 24: dv/dt

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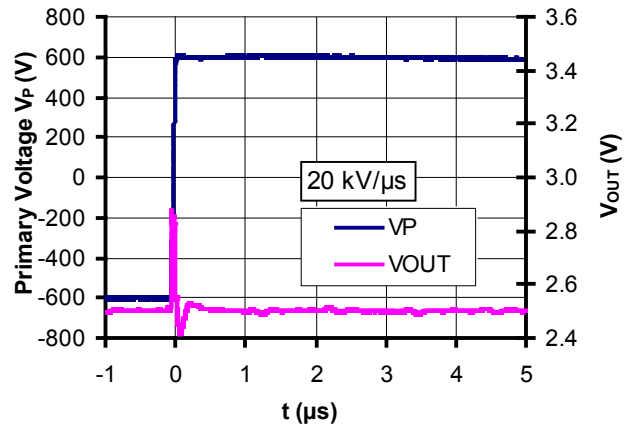
## Maximum continuous DC primary current
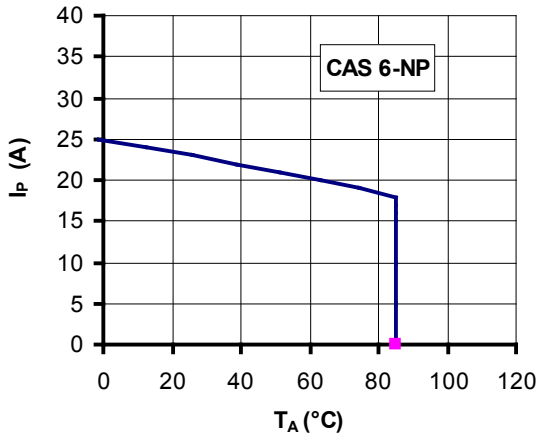


*Figure 25: $I_P$ vs $T_A$ for CAS 6-NP*
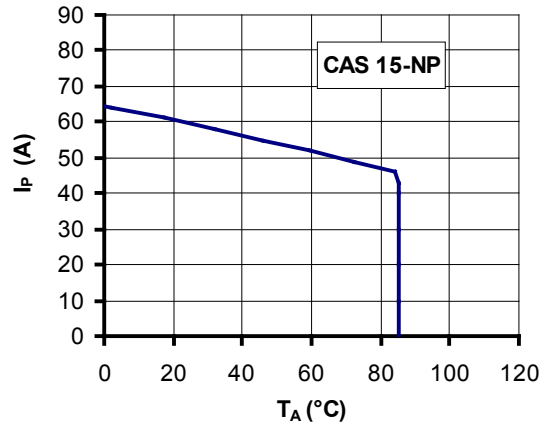


*Figure 26: $I_P$ vs $T_A$ for CAS 15-NP*
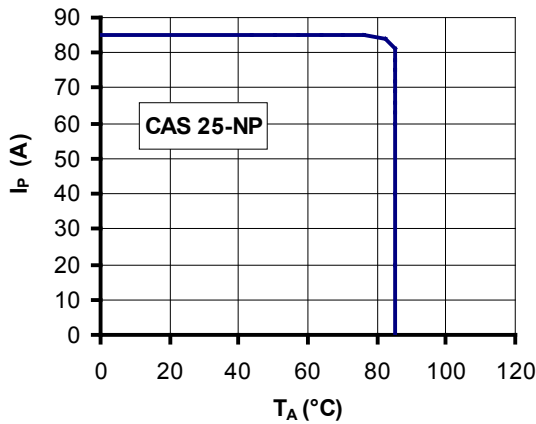


*Figure 27: $I_P$ vs $T_A$ for CAS 25-NP*
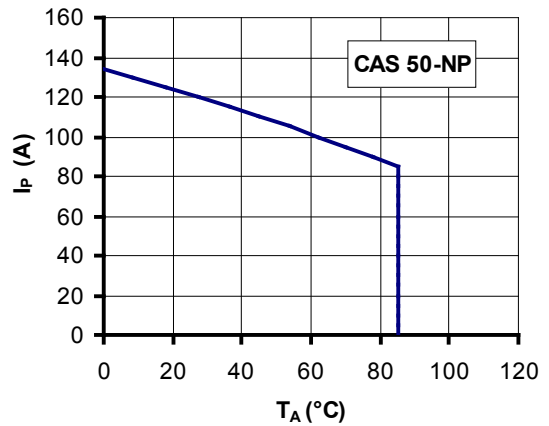


*Figure 28: $I_P$ vs $T_A$ for CAS 50-NP*

The maximum continuous DC primary current plot shows the boundary of the area for which all the following conditions are true:

- $I_P < I_{PM}$
- Junction temperature Tj < 125 °C
- Primary conductor temperature < 110 °C
- Resistor power dissipation < 0.5 x rated power

## Frequency derating



*Figure 29: Maximum RMS AC primary current / maximum DC primary current vs frequency*

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# Performance parameters definition

## Ampere-turns and amperes

The transducer is sensitive to the primary current linkage $\Theta_P$ (also called ampere-turns).

$$\Theta_P = N_P I_P (At)$$

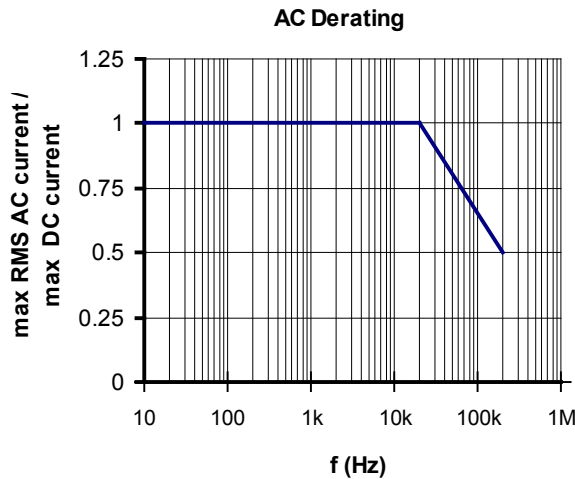Where $N_P I_P$ the number of primary turn (1, 2 or 3 depending on the connection of the primary jumpers)

Caution: As most applications will use the transducer with only one single primary turn ($N_P = 1$), much of this datasheet is written in terms of primary current instead of current linkages. However, the ampere-turns (A-t) unit is used to emphasis that current linkages are intended and applicable.

## Transducer simplified model

The static model of the transducer at temperature $T_A$ is:
$V_{OUT} = G \, \Theta_P + error$

In which error =

$V_{OE} + V_{OT}(T_A) + \varepsilon_G \cdot \Theta_P \cdot G + \varepsilon_L(\Theta_{Pmax}) \cdot \Theta_{Pmax} \cdot G + TCG \cdot (T_A - 25) \cdot \Theta_P \cdot G$

With:     $\Theta_P = N_P I_P$   :the input ampere-turns (At)
                              Please read above warning.
           $\Theta_P max$     :the maxi input ampere-turns that have been applied to the transducer (At)
           $V_{OUT}$     :the secondary voltage (V)
           $T_A$     :the ambient temperature (°C)
           $V_{OE}$     :the electrical offset voltage (V)
           $V_{OT}(T_A)$     :the temperature variation of $V_O$ at temperature $T_A$ (V)
           $G$     :the sensitivity of the transducer (V/At)
           $\varepsilon_G$     :the sensitivity error
           $\varepsilon_L(\Theta_{Pmax})$     :the linearity error for $\Theta_{Pmax}$

This model is valid for primary ampere-turns $\Theta_P$ between $-\Theta_{Pmax}$ and $+\Theta_{Pmax}$ only.

## Sensitivity and linearity

To measure sensitivity and linearity, the primary current (DC) is cycled from 0 to $I_P$, then to $-I_P$ and back to 0 (equally spaced $I_P$/10 steps).
The sensitivity G is defined as the slope of the linear regression line for a cycle between $\pm I_{PN}$.

The linearity error $\varepsilon_L$ is the maximum positive or negative difference between the measured points and the linear regression line, expressed in % of $I_{PN}$.

## Magnetic offset

The magnetic offset current $I_{OM}$ is the consequence of a current on the primary side ("memory effect" of the transducer's ferro-magnetic parts). It is included in the linearity figure but can be measured individually.
It is measured using the following primary current cycle. $I_{OM}$ depends on the current value $I_{P1}$.

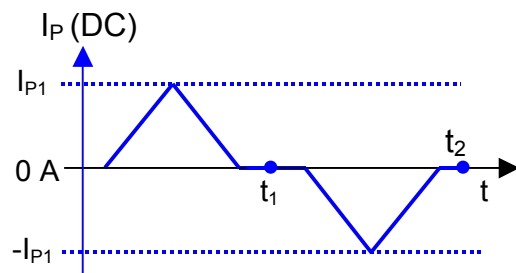$$I_{OM} = \frac{V_{OUT}(t_1) - V_{OUT}(t_2)}{2} \cdot \frac{1}{Gth}$$



*Figure 30: Current cycle used to measure magnetic and electrical offset (transducer supplied)*

# Performance parameters definition (continued)

## Electrical offset

The electrical offset voltage $V_{OE}$ can either be measured when the ferro-magnetic parts of the transducer are:

● completely demagnetized, which is difficult to realize,

● or in a known magnetization state, like in the current cycle shown in figure 30.

Using the current cycle shown in figure 30, the electrical offset is:

$$V_{OE} = \frac{V_{OUT}(t_1) + V_{OUT}(t_2)}{2}$$

The temperature variation $V_{OT}$ of the electrical offset voltage $V_{OE}$ is the variation of the electrical offset from 25°C to the considered temperature:

$$V_{OT}(T) = V_{OE}(T) - V_{OE}(25°C)$$

Note: the transducer has to be demagnetized prior to the application of the current cycle (for example with a demagnetization tunnel).

## Overall accuracy

The overall accuracy at 25°C $X_G$ is the error in the $-I_{PN}$ .. $+I_{PN}$ range, relative to the rated value $I_{PN}$.
It includes:

● the electrical offset $V_{OE}$
● the sensitivity error $\varepsilon_G$
● the linearity error $\varepsilon_L$ (to $I_{PN}$)

The magnetic offset is part of the overall accuracy. It is taken into account in the linearity error figure provided the transducer has not been magnetized by a current higher than $I_{PN}$.

## Response and reaction times

The response time tr and the reaction time tra are shown in figure 31.
Both depend on the primary current di/dt. They are measured at nominal ampere-turns.



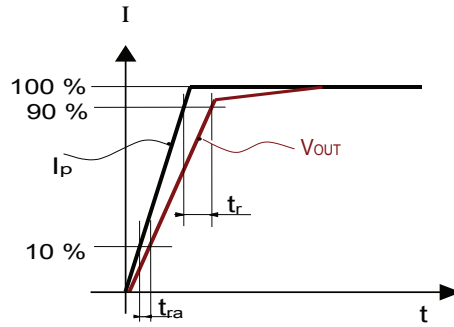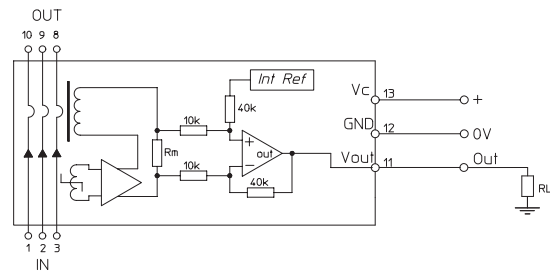Figure 31: Response time $t_r$ and reaction time $t_{ra}$



Figure 32: Test connection

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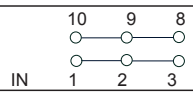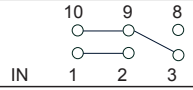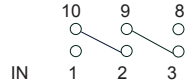# Application information

## Filtering and decoupling

### Supply voltage $V_C$

The fluxgate oscillator draws current pulses of up to 30 mA at a rate of ca. 900 kHz. Significant 900 kHz voltage ripple on $V_C$ can indicate a power supply with high impedance. At these frequencies the power supply rejection ratio is low, and the ripple may appear on the transducer output $V_{OUT}$ and reference $V_{REF}$. The transducer has internal decoupling capacitors, but in the case of a power supply with high impedance, it is advised to provide local decoupling (100 nF or more, located close to the transducer).

### Total Primary Resistance

The primary resistance is 0.72 m$\Omega$ per conductor.

In the following table, examples of primary resistance according to the number of primary turns.

| Number of primary turns | Primary resistance $R_P$ [ m$\Omega$ ] | Recommended connections |
|:---:|:---:|:---:|
| 1 | 0.24 | |
| 2 | 1.08 | |
| 3 | 2.16 | |

### Output $V_{OUT}$

The output $V_{OUT}$ has a very low output impedance of typically 2 Ohms; it can drive 100 pF directly. Adding series Rf = 100 Ohms allows much larger capacitive loads. Empirical evaluation may be necessary to obtain optimum results. The minimum load resistance on $V_{OUT}$ is 1 kOhm.
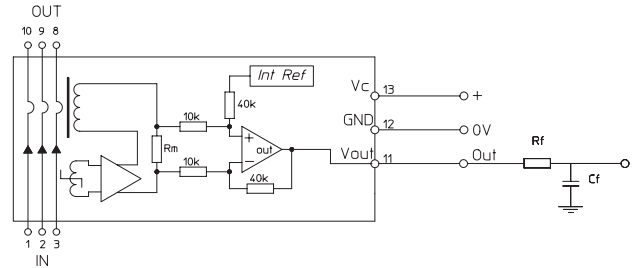
## CAS Series, PCB footprint
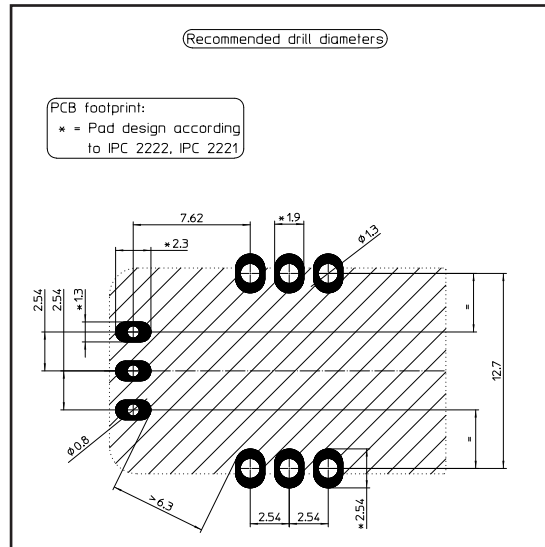


## Assembly on PCB

- Recommended PCB hole diameter 1.3 mm for primary pin
  0.8 mm for secondary pin
- Maximum PCB thickness          2.4 mm
- Wave soldering profile          maximum 260°C for 10 s
  No clean process only.

## Safety

This transducer must be used in limited-energy secondary circuits according to IEC 61010-1.



This transducer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the manufacturer's operating instructions.



Caution, risk of electrical shock

When operating the transducer, certain parts of the module can carry hazardous voltage (eg. primary busbar, power supply).
Ignoring this warning can lead to injury and/or cause serious damage.
This transducer is a build-in device, whose conducting parts must be inaccessible after installation.
A protective housing or additional shield could be used.
Main supply must be able to be disconnected.

## Dimensions CAS Series  (in mm. General linear tolerance ± 0.25 mm)

| | Clearance | Creepage |
|---|---|---|
| A–B | 7.7 mm | 7.7 mm |

**Connection**

OUT
10 9 8

Int Ref

Vc 13 — +
10k  40k
GND 12 — 0V
Rm  10k  Vout 11 — Out
40k

1 2 3
IN

13.4

2.54  2.54

13  12  11

3.62

11.71

IN  OUT

1  10

2  9

15.78  21.91

3  8

4  7

5  6

16

9.45

0.5

3x ⌀0.5x0.5 mm  A  B

3x⌀1 mm

1.55  7.62  2.54  2.54

LEM logo

SP number

Model type

Date code (production center/year/calendar day)

Production line

Date code (HHMMSS)

Arrow in positive current direction

Secondary input

+  0V  Out

3.5 x3

= (5.08) =

12.7

Additional marking on the TOP of the transducer, model type, current range and SP number

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