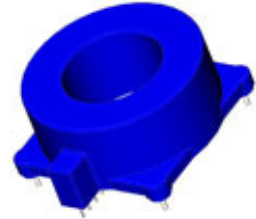


Current Transducer HTFS 400-P/SP7

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

$$I_{PN} = 400 \text{ A}$$



All data are given with $R_L = 10 \text{ k}\Omega$

Electrical data

I_{PN}	Primary nominal RMS current	400	A
I_{PM}	Primary current, measuring range	± 600	A
U_{out}	Output voltage (Analog) @ I_p	$U_{ref} \pm (0.77 \times I_p / I_{PN}) V$	
	$I_p = 0$	$U_{ref} \pm 0.025$	V
U_{ref}	Reference voltage	U_{ref} Output voltage ¹⁾	1.65 ± 0.025
		U_{ref} Output impedance	200 (typ) Ω
		U_{ref} Load impedance	≥ 200 k Ω
R_L	Load resistance	≥ 2	k Ω
R_{out}	Output internal resistance	< 5	Ω
C_L	Load capacitance	4.7	nF
U_C	Supply voltage ($\pm 5\%$)	3.3	V
I_C	Current consumption @ $U_C = 3.3 \text{ V}$	Typ 19	Max 25 mA

Accuracy - Dynamic performance data

ε	Error ²⁾ @ I_{PN} , $T_A = 25^\circ \text{C}$	$\leq \pm 1$	%
ε_L	Linearity error 0 ... $1.5 \times I_{PN}$	$\leq \pm 0.5$	%
TCU_{OE}	Temperature coefficient of U_{OE} @ $I_p = 0$	$\leq \pm 0.1$	mV/K
TCU_{ref}	Temperature coefficient of U_{ref}	$\leq \pm 190$	ppm/K
TCS	Temperature coefficient of S	$\leq \pm 420$	ppm/K
U_{OM}	Magnetic offset voltage @ $I_p = 0$ and specified R_M , after an overload of $3 \times I_{PNDC}$	$< \pm 0.5$	%
U_{no}	RMS noise voltage referred to primary (DC ... 20 MHz)	< 40	mVpp
t_{D10}	Delay time @ 10 % of I_{PN}	< 2	μs
t_{D90}	Delay time @ 10 % of \bar{I}_{PN} ³⁾	< 3.5	μs
BW	Frequency bandwidth (-3 dB) ⁴⁾	DC ... 240	kHz

General data

T_A	Ambient operating temperature	$-40 \dots +105$	$^\circ\text{C}$
T_S	Ambient storage temperature	$-40 \dots +105$	$^\circ\text{C}$
m	Mass	60	g
	Standard	EN 50178: 1997	

Notes: ¹⁾ It is possible to overdrive U_{ref} with an external reference voltage between 0.5 ... 1.8 V

²⁾ Excluding offset and magnetic offset voltage

³⁾ For a $di/dt = 100 \text{ A}/\mu\text{s}$

⁴⁾ Small signal only to avoid excessive heatings of the magnetic core.

Features

- Hall effect measuring principle
- Galvanic separation between primary and secondary circuit
- Low power consumption
- Insulating plastic case recognized according to UL 94-V0
- $T_A = -40^\circ \text{C} \dots +105^\circ \text{C}$.

Special features

- Single power supply +3.3 V
- PCB fixation with 4 pins $\varnothing 1 \text{ mm}$
- Fixed offset.

Advantages

- Small size and space saving
- Only one design for wide current ratings range
- High immunity to external interference
- U_{ref} IN/OUT.

Applications

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

Application domain

- Industrial.

Current Transducer HTFS 400-P/SP7

Insulation coordination

U_d	RMS voltage for AC insulation test, 50 Hz, 1 min	2.5	kV
U_{Ni}	Impulse withstand voltage 1.2/50 μ s	4	kV
U_e	Partial discharge extinction RMS voltage @ 10 pC	> 1	kV
		Min	
d_{cp}	Creepage distance	> 4	mm
d_{ci}	Clearance	> 4	mm
CTI	Comparative tracking index (group IIIa)	> 220	

Applications examples

According to EN 50178 and IEC 61010-1 standards and following conditions:

- Over voltage category OV 3
- Pollution degree PD2
- Non-uniform field

	EN 50178	IEC 61010-1
d_{cp}, d_{ci}, U_{Ni}	Rated insulation voltage	Nominal voltage
Basic insulation	300 V	300 V
Reinforced insulation	150 V	150 V

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.



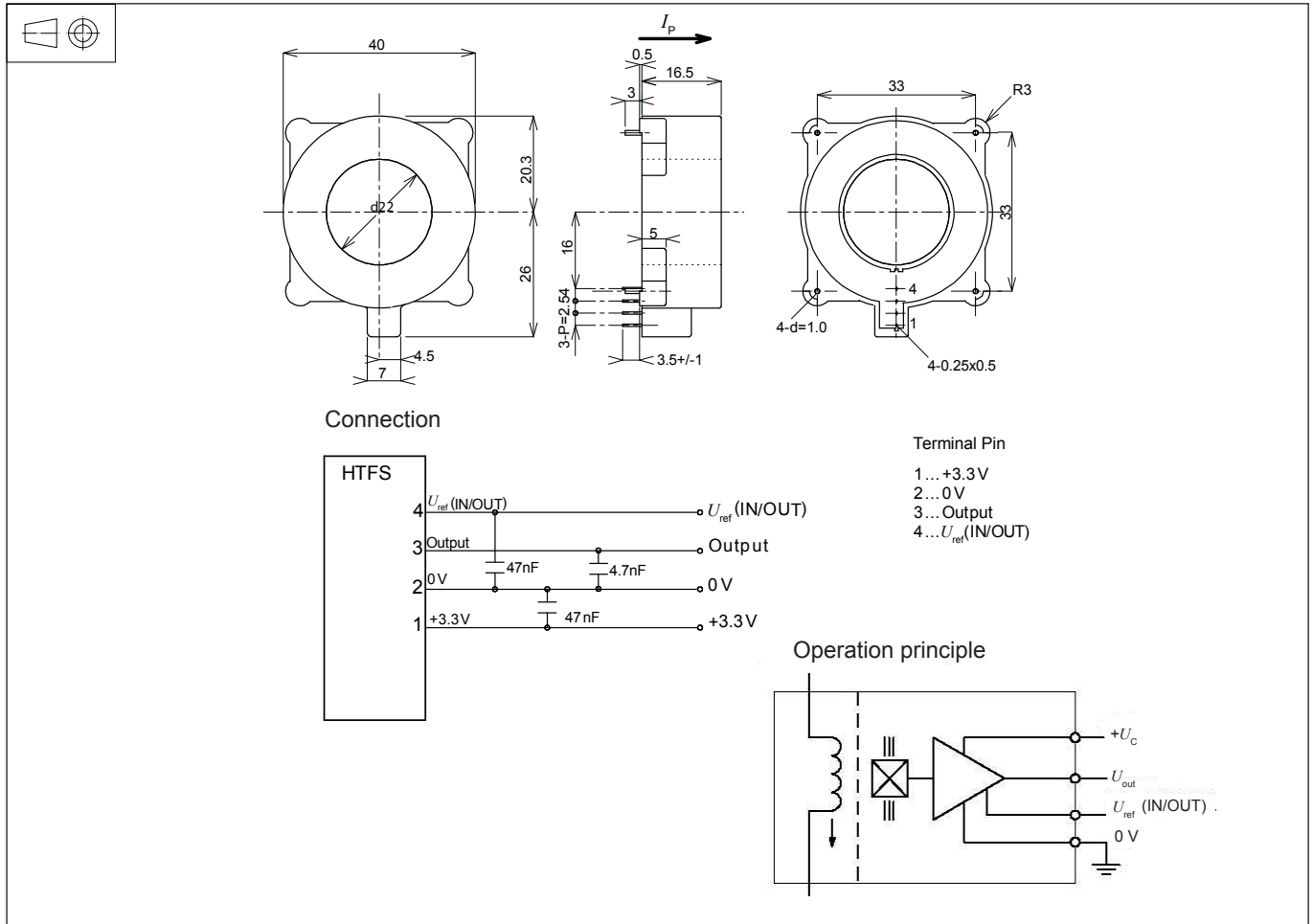
Caution, risk of electrical shock

When operating the transducer, certain parts of the module can carry hazardous voltage (e.g. 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 HTFS 400-P/SP7 (in mm)



Mechanical characteristics

- General tolerance ± 0.2 mm
- Fixation to PCB
Recommended PCB hole $\varnothing 1.2$ mm
- Connection of secondary
Recommended PCB hole $\varnothing 0.7$ mm

Remarks

- U_S is positive when I_p flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 120 °C.
- Installation of the transducer must be done unless otherwise specified on the datasheet, according to LEM Transducer Generic Mounting Rules. Please refer to LEM document N°ANE120504 available on our Web site: <https://www.lem.com/en/file3137/download/>.