Current Transducer HTFS 200..800-P

I_{PN} = 200 - 400 - 800 A

For the electronic measurement of currents : DC, AC, pulsed, mixed, with a galvanic isolation between the primary circuit (high power) and the secondary circuit (electronic circuit).



All Data are given with a R_L = 10 kΩ

Electrical data

Primary nominal r.m.s. current I_{PN} (A)	Primary current measuring range I_P (A)	Type
200	± 300	**HTFS 200-P**
400	± 600	**HTFS 400-P**
800	± 1200	**HTFS 800-P**

V_{OUT}	Analog output voltage @ I_P	V_{REF}±(1.25·I_P/I_{PN})	V
	I_P = 0	V_{REF} ± 0.025	V
V_{REF}	Internal Reference[1] - Output voltage	1/2V_C ± 0.025	V
	V_{REF} Output impedance typ.	200	Ω
	V_{REF} Load impedance	≥ 200	kΩ
R_L	Output load resistance		≥ 2 kΩ
R_{OUT}	Output impedance	< 10	Ω
C_L	Max. output capacitive load	< 1	µF
V_C	Supply voltage (± 5 %)	5	V
I_C	Current consumption @ V_C = 5 V	22	mA

Accuracy - Dynamic performance data

X	Accuracy [2] @ I_{PN}, T_A = 25°C	≤ ± 1	% of I_{PN}
ε_L	Linearity error 0 .. 1.5 x I_{PN}	≤ ± 0.5	% of I_{PN}
TCV_{OUT}	Thermal drift of V_{OUT} @ I_P = 0	≤ ± 0.3	mV/K
TCV_{REF}	Thermal drift of V_{REF}	≤ ± 0.01	%/K
TCV_{OUT}/V_{REF}	Thermal drift of V_{OUT} / V_{REF} @ I_P = 0	≤ ± 0.2	mV/K
$TC\varepsilon_G$	Thermal drift of the gain	≤ ± 0.05	% of reading/K
V_{OM}	Residual voltage @ I_P = 0, after an overload of 3 x $I_{PN\ DC}$	< ± 0.5	% of I_{PN}
t_{ra}	Reaction time @ 10 % of I_{PN}	< 3	µs
t_r	Response time @ 90 % of I_{PN}	< 7	µs
di/dt	di/dt accurately followed	> 100	A/µs
	Output noise (DC ..10 kHz)	< 15	mVpp
	(DC .. 1 MHz)	< 40	mVpp
f	Frequency bandwidth (- 3 dB) [3]	DC .. 20	kHz

General data

T_A	Ambient operating temperature	- 40 .. + 105	°C
T_S	Ambient storage temperature	- 40 .. + 105	°C
	UL94 classification	V0	
m	Mass	60	g
	Standards	EN 50178: 1997	

Notes : [1] It is possible to overdrive V_{REF} with an external reference voltage between 2 - 2.8 V providing its ability to sink or source approx. 2.5 mA.
[2] Excluding offset.
[3] Small signal only to avoid excessive heatings of the magnetic core.

Features

- Hall effect measuring principle
- Galvanic isolation between primary and secondary circuit
- Low power consumption
- Single power supply +5V
- Ratiometric offset
- T_A = -40..+105 °C
- Fixation by M3 nuts and screws

Advantages

- Small size and space saving
- Only one design for wide current ratings range
- High immunity to external interference.
- $V_{REF.}$ 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

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Isolation characteristics

V_b	Nominal Voltage with IEC 61010-1 standards and following conditions - Single insulation - Over voltage category III - Pollution degree 2 - Heterogeneous field	150	V r.m.s.
V_b	Nominal Voltage with EN 50178 standards and following conditions - Reinforced insulation - Over voltage category III - Pollution degree 2 - Heterogeneous field	150	V r.m.s.
V_d	R.m.s. voltage for AC isolation test, 50/60 Hz, 1 mn	2.5	kV
V_e	R.m.s. voltage for partial discharge extinction @ 10pC	> 1	kV
V_w	Impulse withstand voltage 1.2/50µs	4	kV
dCp	Creepage distance	> 4	m m
dCl	Clearance distance	> 4	m m
CTI	Comparative tracking index (Group IIIa)	> 220	V

If insulated cable is used for the primary circuit, the voltage category could be improved with the following table :

Cable insulation (primary)	Category
HAR 03	300V CAT III
HAR 05	400V CAT III
HAR 07	500V CAT III

Safety



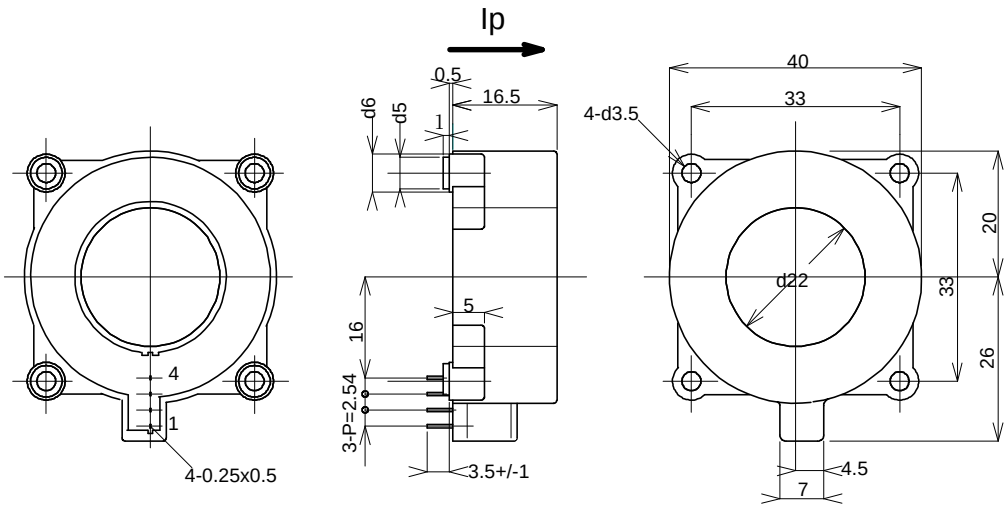
This transducer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the following manufacturer's operating instructions.



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 built-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.

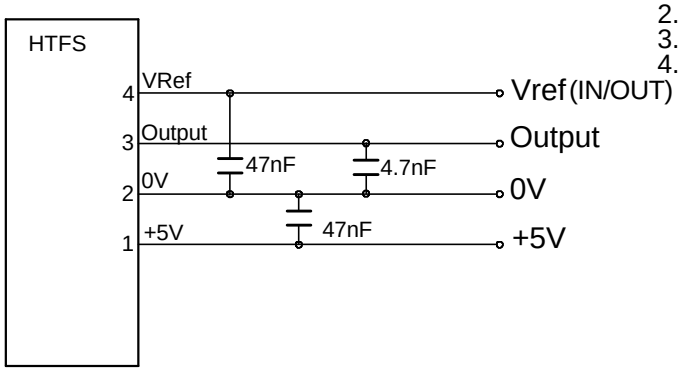
Dimensions HTFS 200..800-P (in mm. 1 mm = 0.0394 inch)



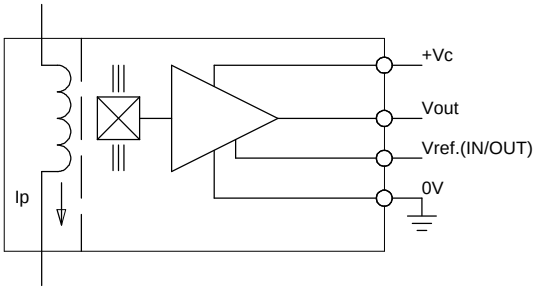
Terminal Pin

1...+5V
2...0V
3...Output
4...Vref (IN/OUT)

Required Connection Circuit



Operation Principle



Mechanical characteristics

• General tolerance	± 0.2 mm
• Fixation by	4 x M3 (not supplied)
• Recommended fastening torque	< 2.5 Nm
• Fastening & connection of secondary	4 pins 0.5 x 0.25
Recommended PCB hole	Ø 0.7 mm

Remarks

- $\mathbf{V}_{OUT}$ is positive when $\mathbf{I}_P$ flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 120°C.

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