Current Transducer HTFS 200..800-P/SP2

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 current rms I_{PN} (A)	Primary current measuring range I_{PM} (A)	Type	RoHS since date code
200	± 300	**HTFS 200-P/SP2**	45326
400	± 600	**HTFS 400-P/SP2**	45060
800	± 1200	**HTFS 800-P/SP2**	45060

V_{OUT}	Output voltage (Analog) @ I_P	V_{REF}±(1.25·I_P/I_{PN})	V
	I_P = 0	V_{REF} ± 0.025	V
V_{REF}	Reference voltage [1] - Output voltage	1/2V_C ± 0.025	V
	V_{REF} Output impedance	typ. 200	Ω
	V_{REF} Load impedance	≥ 200	kΩ
R_L	Load resistance	≥ 2	kΩ
R_{OUT}	Output internal resistance	< 10	Ω
C_L	Capacitive loading < 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}
e_L	Linearity error 0 .. 1.5 x I_{PN}	≤ ± 0.5	% of I_{PN}
TCV_{OE}	Temperature coefficient of V_{OE} @ I_P = 0	≤ ± 0.3	mV/K
TCV_{REF}	Temperature coefficient of V_{REF}	≤ ± 0.01	%/K
TCV_{OUT}/V_{REF}	Temperature coefficient of V_{OUT} / V_{REF} @ I_P = 0	≤ ± 0.2	mV/K
TCV_{OUT}	Temperature coefficient of V_{OUT}	≤ ± 0.05% of reading/K	
V_{OM}	Magnetic offset 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 to 90 % of I_{PN} step	< 7	µs
di/dt	di/dt accurately followed	> 100	A/µs
V_{no}	Output voltage noise (DC ..10 kHz)	< 15	mVpp
	(DC .. 1 MHz)	< 40	mVpp
BW	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
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
- PCB fixation by 4 Ø1 pins
- Insulated plastic case recognized according to UL 94-V0

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

LEM reserves the right to carry out modifications on its transducers, in order to improve them, without prior notice.

Current Transducer HTFS 200..800-P/SP2

Isolation characteristics

V_b	Rated isolation voltage rms with IEC 61010-1 standards and following conditions - Single insulation - Over voltage category III - Pollution degree 2 - Heterogeneous field	150	V
V_b	Rated isolation voltage rms with EN 50178 standards and following conditions - Reinforced insulation - Over voltage category III - Pollution degree 2 - Heterogeneous field	150	V
V_d	Rms voltage for AC isolation test, 50 Hz, 1 min	2.5	kV
V_e	Partial discharge extinction voltage rms @ 10pC	> 1	kV
$\hat{V}_w$	Impulse withstand voltage 1.2/50 µs	4	kV
dCp	Creepage distance	> 4	mm
dCl	Clearance distance	> 4	mm
CTI	Comparative tracking index (Group IIIa)	> 220	

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.

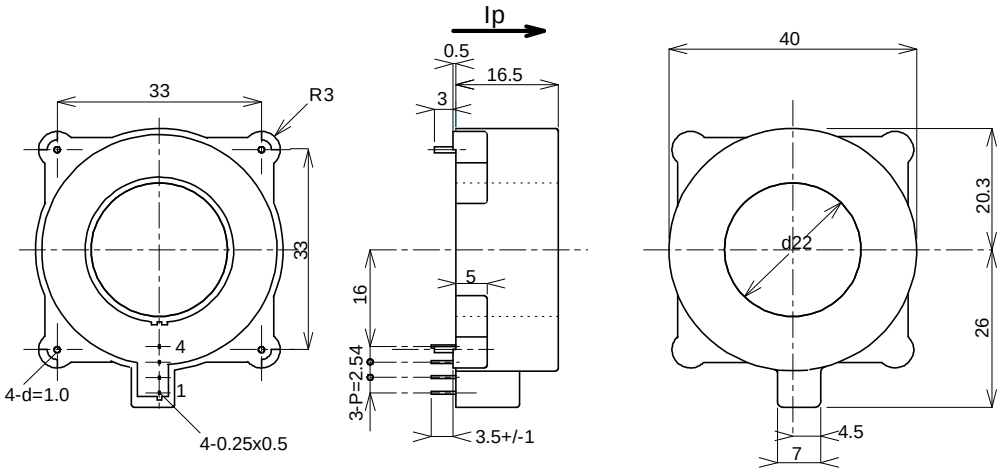


Caution, risk of electrical shock

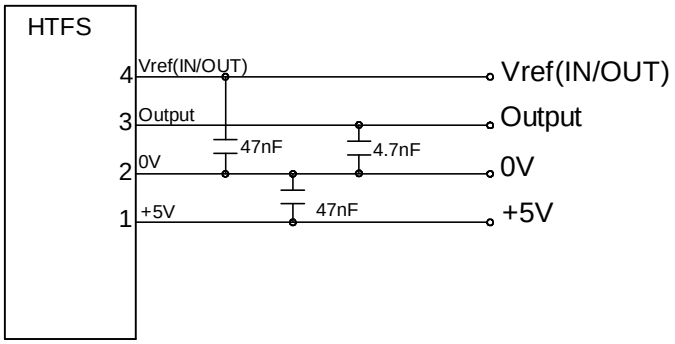
When operating the transducer, certain parts of the module can carry hazardous voltage (eg. primary busbar, power supply).
Ignoring this warning can lead to injury and/or cause serious damage.
This transducer is a built-in device, whose conducting parts must be inaccessible after installation.
A protective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

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Dimensions HTFS 200..800-P/SP2 (in mm. 1 mm = 0.0394 inch)



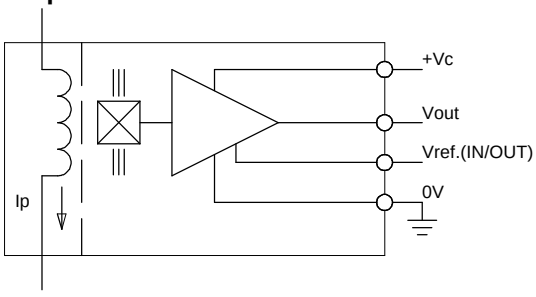
Required Connection Circuit



Terminal Pin

1…+5V
2…0V
3…Output
4…Vref(IN/OUT)

Operation Principle



Mechanical characteristics

• General tolerance	± 0.2 mm
• Fixation	4 pins x Ø 1.0
• Recommended PCB hole	Ø 1.2 mm
• 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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