Current Transducer HTFS 200 .. 800-P

I_{PN} = 200 .. 800 A

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



All data are given with R_L = 10 kΩ

Electrical data

Primary nominal rms current I_{PN} (A)	Primary current measuring range I_P (A)	Type
200	±300	**HTFS 200-P**
400	±600	**HTFS 400-P**
600	±900	**HTFS 600-P**
800	±1200	**HTFS 800-P**

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	1/2 U_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		<5	Ω
C_L	Capacitive loading		4.7	nF
U_C	Supply voltage (±5 %)		5	V
I_C	Current consumption @ U_C = 5 V		19 (typ)	mA
			25 (max)	mA

Accuracy - Dynamic performance data

X	Accuracy [2] @ I_{PN}, T_A = 25 °C	≤±1	%
ε_L	Linearity error 0 .. 1.5 × I_{PN}	≤±0.5	%
TCV_{OE}	Temperature of coefficient of V_{OE} @ I_P = 0,	≤±0.1	mV/K
TCV_{ref}	Temperature of coefficient of V_{ref}	≤±190	ppm/K
TCG	Temperature of coefficient of V_{out}	≤±420	ppm/K
V_{OM}	Magnetic offset voltage @ I_P = 0 and specified R_M, after an overload of 3 × $I_{PN\,DC}$	<±0.5	%
V_{no}	Output voltage noise (DC .. 20 MHz)	<40	mVpp
t_{ra}	Reaction time to 10 % of I_{PN}	<2	µs
t_r	Step response time to 90 % of I_{PN}	<3.5	µs
di/dt	di/dt accurately followed	>100	A/µs
BW	Frequency bandwidth (-3 dB) [3]	DC .. 240	kHz

Notes: [1] It is possible to overdrive V_{ref} with an external reference voltage between 0.5 - 2.65 V

[2] Excluding offset and magnetic offset voltage

[3] 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
- Single power supply +5 V
- Ratiometric offset
- Insulating plastic case recognized according to UL 94-V0
- Fixation by M3 nuts and screws
- T_A = -40 °C .. +105 °C.

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.

Current Transducer HTFS 200 .. 800-P

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	

Isolation characteristics

U_d	Rms voltage for AC insulation test, 50 Hz, 1 min	2.5	kV
$\hat{U}_W$	Impulse withstand voltage 1.2/50 µs	4	kV
U_e	Partial discharge extinction rms voltage @ 10 pC	>1 Min	kV
d_{Cp}	Creepage distance	>4	mm
d_{Cl}	Clearance	>4	mm
CTI	Comparative Tracking Index (group IIIa)	>220	V

Applications examples

	EN 50178	IEC 61010-1
d_{Cp}, d_{Cl}, $\hat{U}_W$	Rated insulation voltage	Nominal voltage
Basic insulation	300 V	300 V
Reinforced insulation	150 V	150 V

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

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

Safety

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



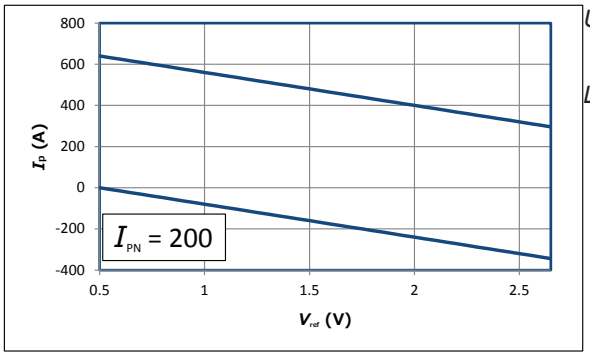
This transducer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the manufacturer's operating instructions.



Caution, risk of electrical shock

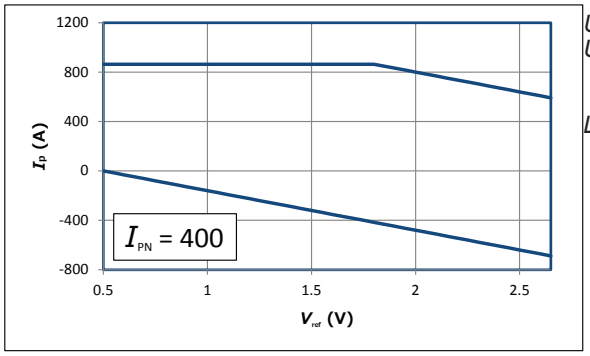
When operating the transducer, certain parts of the module can carry hazardous voltage (eg. primary busbar, power supply). Ignoring this warning can lead to injury and/or cause serious damage.
This transducer is a build-in device, whose conducting parts must be inaccessible after installation.A protective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

HTFS measuring range with external V_{ref}



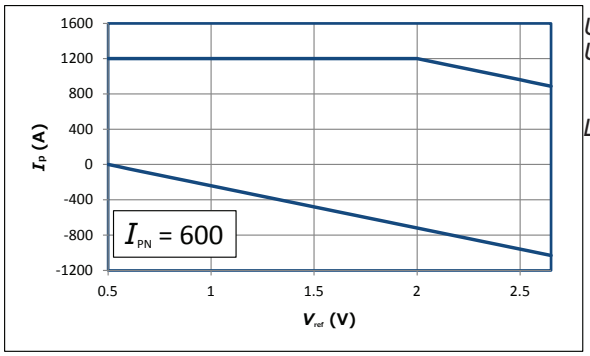
Upper limit: I_P = -160 × V_{ref} +720 (V_{ref} = 0.5 .. 2.65 V)

Lower limit: I_P = -160 × V_{ref} +80 (V_{ref} = 0.5 .. 2.65 V)



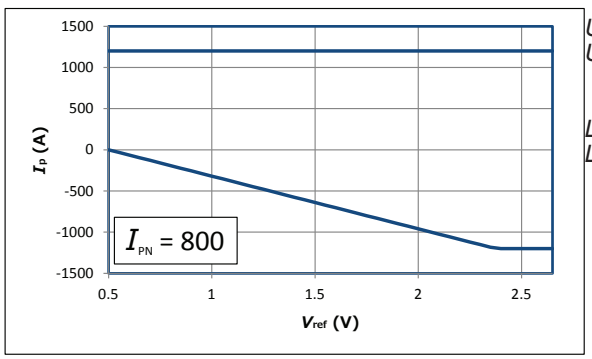
Upper limit: I_P = 864 (V_{ref} = 0.5 .. 1.8 V)
Upper limit: I_P = -320 × V_{ref} +1440 (V_{ref} = 1.8 .. 2.65 V)

Lower limit: I_P = -320 × V_{ref} +160 (V_{ref} = 0.5 .. 2.65 V)



Upper limit: I_P = 1200 (V_{ref} = 0.5 .. 2.0 V)
Upper limit: I_P = -480 × V_{ref} +2160 (V_{ref} = 2 .. 2.65 V)

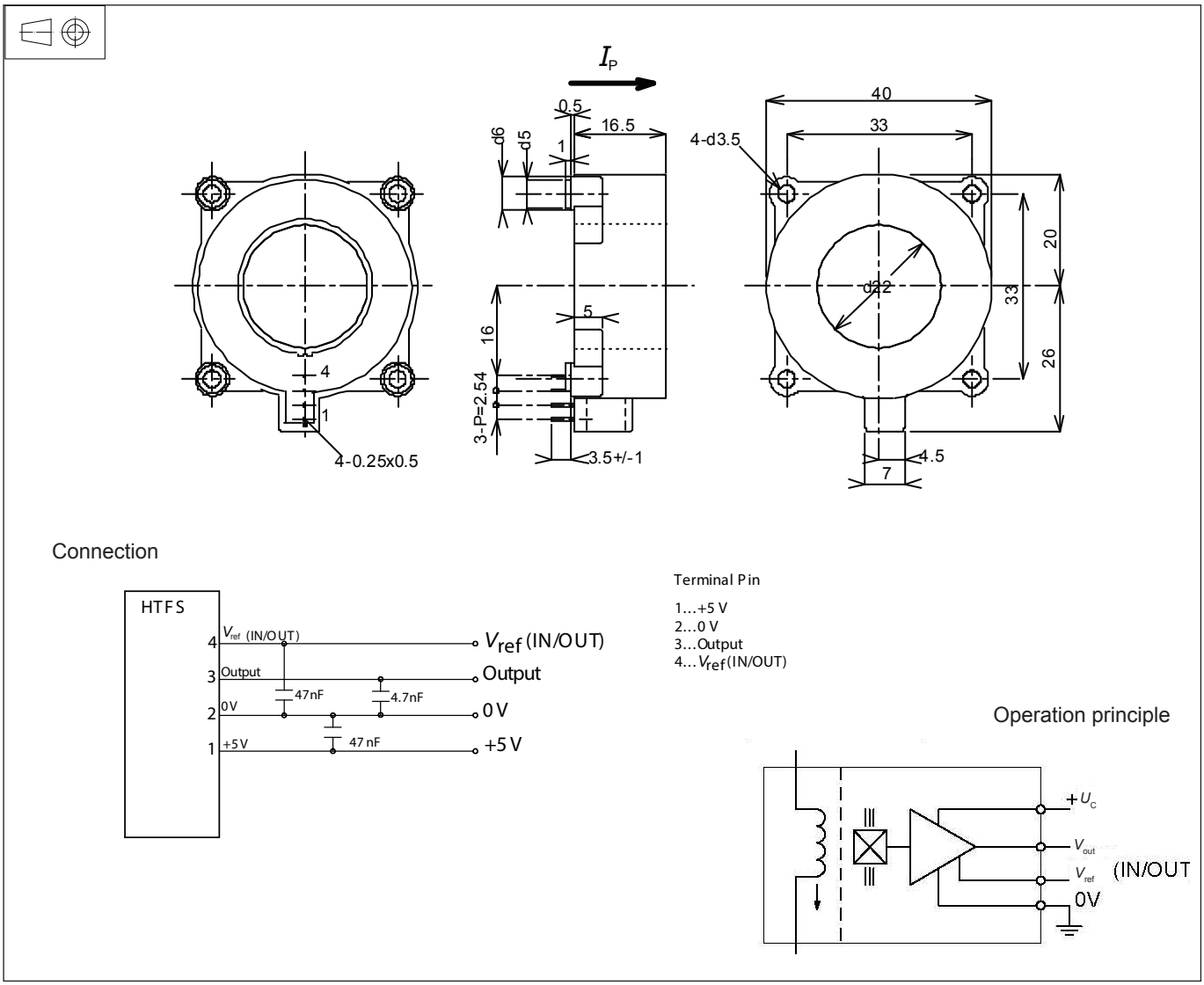
Lower limit: I_P = -480 × V_{ref} +240 (V_{ref} = 0.5 .. 2.65 V)



Upper limit: I_P = 1200 (V_{ref} = 0.5 .. 2.625 V)
Upper limit: I_P = -640 × V_{ref} +2880 (V_{ref} = 2.625 .. 2.65 V)

Lower limit: I_P = -640 × V_{ref} +320 (V_{ref} = 0.5 .. 2.4 V)
Lower limit: I_P = -1200 (V_{ref} = 2.4 .. 2.65 V)

Dimensions HTFS 200 .. 800-P (in mm)



Connection

Terminal Pin

1...+5 V
2...0 V
3...Output
4... V_{ref} (IN/OUT)

Operation principle

Mechanical characteristics

- General tolerance ±0.2 mm
- Fixation to PCB 4 × M3 (not supplied)
  Recommended PCB hole <2.5 N·m
- Connection to secondary 4 pins 0.5 × 0.25 mm
  Recommended PCB hole ⌀ 0.7 mm

Remarks

- V_{out} is positive when I_P flows in the direction of the arrow.
- **Temperature of the primary conductor should not exceed 120 °C.**