

# Current Transducer HAFS 600-S/SP8

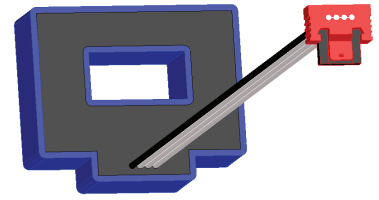
For the electronic measurement of currents: DC, AC, pulsed..., with galvanic separation between the primary circuit and the secondary circuit.



RoHS

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

$$I_{PN} = 600 \text{ A}$$



## Electrical data

$I_{PN}$	Primary nominal rms current	600	A
$I_{PM}$	Primary current, measuring range	$\pm 900$	A
$V_{out}$	Output voltage (Analog) @ $I_p$	$V_{OE} \pm (1.3 \cdot I_p / I_{PN})$	V
$G_{th}$	Theoretical sensitivity	1.3	V / $I_{PN}$
$V_{ref}$	Reference voltage <sup>1)</sup>	Output voltage	$1/2 U_C \pm 0.025$
		Output impedance	typ. 200 $\Omega$
		Load impedance	$\geq 200$ k $\Omega$
$R_L$	Load resistance	$\geq 2$	k $\Omega$
$R_{out}$	Output internal resistance	$< 5$	$\Omega$
$C_L$	Capacitive loading ( $\pm 20 \%$ )	$= 4.7$	nF
$U_C$	Supply voltage ( $\pm 5 \%$ ) <sup>2)</sup>	5	V
$I_C$	Current consumption @ $U_C = 5 \text{ V}$	19	mA

## Accuracy - Dynamic performance data

X	Accuracy <sup>3)</sup> @ $I_{PN}$ , $T_A = 25 \text{ }^\circ\text{C}$	$\leq \pm 1$	% of $I_{PN}$
$\epsilon_L$	Linearity error 0 .. $I_{PN}$	$\leq \pm 1$	% of $I_{PN}$
$TCV_{OE}$	Temperature coefficient of $V_{OE}$	$\leq \pm 0.2$	mV/K
$TCV_{ref}$	Temperature coefficient of $V_{ref}$ +25 .. +125 $^\circ\text{C}$ -40 .. +25 $^\circ\text{C}$	$\leq \pm 0.01$ $\leq \pm 0.015$	%/K %/K
$TCV_{OE/N_{ref}}$	Temperature coefficient of $V_{OE} / V_{ref}$	$\leq \pm 0.2$	mV/K
$TCV_{out}$	Temperature coefficient of $V_{out}$	$\leq \pm 0.1$	%/K
$V_{OE}$	Electrical offset voltage @ $I_p = 0$ , $T_A = 25 \text{ }^\circ\text{C}$	$V_{ref} \pm 0.025$	V
$V_{OM}$	Magnetic offset voltage @ $I_p = 0$ after an overload of $3 \times I_{PNDC}$	$< \pm 0.2$	% of $I_{PN}$
$t_{ra}$	Reaction time @ 10 % of $I_{PN}$	$< 3$	$\mu\text{s}$
$t_r$	Step response time to 90 % of $I_{PN}$	$< 5$	$\mu\text{s}$
$di/dt$	$di/dt$ accurately followed	$> 100$	A/ $\mu\text{s}$
$V_{no}$	Output voltage noise (DC .. 10 kHz)	$< 20$	mVpp
	(DC .. 1 MHz)	$< 40$	mVpp
BW	Frequency bandwidth (-3 dB) <sup>4)</sup>	DC .. 50	kHz

Notes: <sup>1)</sup> It is possible to overdrive  $V_{ref}$  with an external reference voltage between 1.5 - 2.8 V providing its ability to sink or source approx. 5 mA

<sup>2)</sup> Maximum supply voltage (not operating)  $< 6.5 \text{ V}$

<sup>3)</sup> Excluding offset and magnetic offset voltage

<sup>4)</sup> 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 + 5V
- Ratiometric offset
- Insulating plastic case recognized according to UL 94-V0.
- Transducer dedicated.

## Special feature

- $T_A = -40 \dots +125 \text{ }^\circ\text{C}$ .

## Advantages

- Small size and space saving
- High immunity to external interference
- $V_{ref}$  IN/OUT.

## Applications

- This is a customer specific product for Forklift drives application.

## Application domain

- Industrial.

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### General data

$T_A$	Ambient operating temperature	-40 .. +125	°C
$T_S$	Ambient storage temperature	-40 .. +125	°C
$m$	Mass	25	g
	Standards	EN 50178: 1997	

### Isolation characteristics

$U_d$	Rms voltage for AC insulation test, 50 Hz, 1 min	4.6 <sup>1)</sup>	kV
$U_e$	Partial discharge extinction rms voltage	>1	kV
$\hat{U}_W$	Impulse withstand voltage 1.2/50 $\mu$ s	8.7 <sup>2)</sup>	kV
		Min	
$d_{cp}$	Creepage distance	>9	mm
$d_{cl}$	Clearance	>9	mm
$CTI$	Comparative tracking index (group IIIa)	275	

Notes: <sup>1)</sup> Between primary and secondary  
<sup>2)</sup> Tested with 10.2 kV at an altitude of 500 m.

### 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
$d_{cp}, d_{cl}, \hat{U}_W$	Rated insulation voltage	Nominal voltage
Basic insulation rms Voltage (V)	900	900
Reinforced insulation rms Voltage (V)	450	300

### 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.



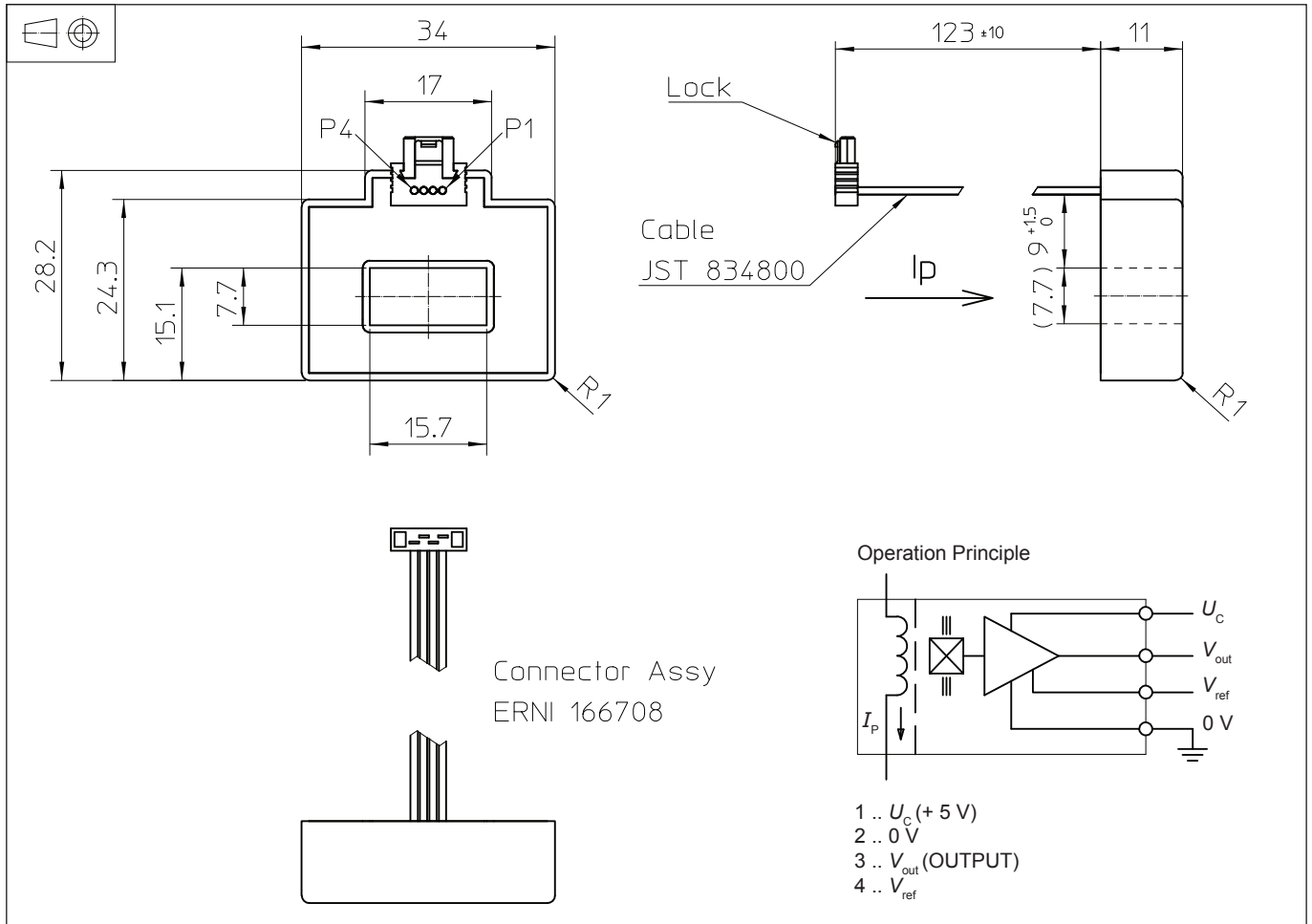
Caution, risk of electrical shock

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.

Mains supply must be able to be disconnected.

### Dimensions HAFS 600-S/SP8 (in mm)



### Mechanical characteristic

- General tolerance  $\pm 0.2$  mm

### Remarks

- $V_{out}$  is positive when  $I_p$  flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 125 °C.