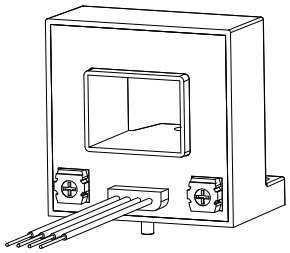
Current Transducer HAL 100-S/SP10

I_{PN} = 150 A

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



Electrical data

I_{PN}	Primary nominal RMS current		150	A
I_{PM}	Primary current, measuring range		0 ... ±217	A
$\hat{I}_{P\,max}$	Primary withstand peak current (maximum)		30000	At
U_{out}	Output voltage (Analog) @ I_P = ±150 A		±8	V
	@ I_P = ±217 A		±11.57	V
R_L	Load resistance		> 3	kΩ
U_C	Supply voltage (±5 %) [1) 2)]		±15	V
I_C	Current consumption		< 25	mA
R_{INS}	Insulation resistance @ 500 V DC		> 500	MΩ

Accuracy - Dynamic performance data

ε_{tot}	Total error [3)]	@ I_{PN}, T_A = 25 °C	< ±1	% of I_{PN}
		@ I_{PN}, T_A = −25 °C ... +75 °C	< ±3.5	% of I_{PN}
		@ I_{PN}, T_A = −45 °C ... +85 °C	< ±4.5	% of I_{PN}
ε_L	Linearity error [3)]		< ±0.5	% of I_{PN}
U_{OE}	Electrical offset voltage	@ I_P = 0, T_A = 25 °C	< ±10	mV
		@ I_P = 0, T_A = −25 °C ... +75 °C	< ±50	mV
U_{OM}	Magnetic offset voltage	@ I_P = 0, after an overload of 3 × I_{PN}	< ±10	mV
TCU_{OE}	Temperature coefficient of U_{OE}	@ T_A = −25 °C ... +85 °C	< ±1	mV/K
TCU_{out}	Temperature coefficient of U_{out}	@ I_{PN}	< ±2.8	mV/K
$t_{D\,90}$	Delay time [4)] to 90 % of the final output value for I_{PN} step		< 5	µs
BW	Frequency bandwidth (small signal) [5)]		DC ... 50	kHz

General data

T_A	Ambient operating temperature		−45 ... +85	°C
$T_{A\,st}$	Ambient storage temperature		−45 ... +85	°C
m	Mass		75	g
	Standard		EN 50178: 1997	
	MTBF		78662	h
γ	Vibration	Acceleration (0 - 10 Hz)	25/f²	
		Acceleration (10 - 100 Hz)	250/f²	
	Shock	Max acceleration	50	m/s²
RH	Relative humidity @ T_A = 40 °C		95	%

Notes: [1)] Reverse polarity protected
[2)] Overvoltage protection to 1.2 × U_C
[3)] Excludes the electrical offset
[4)] For a di/dt = 50 A/µs
[5)] Please refer to derating curves in the technical file to avoid excessive core heating at high frequency.

Features

- Hall effect measuring principle
- Insulating plastic case recognized according to UL 94-V0.

Special features

- Connection of secondary on flying leads 500 mm long
- T_A = −45 °C ... +85 °C
- 8 V output.

Advantages

- Very good linerity
- Very good accuracy
- Low temperature drift
- Wide frequency bandwidth
- Very low insertion losses
- High immunity to external interference
- Low power consumption.

Applications

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

Application domain

- Industrial.

17January2022/Version 4

LEM International SA
Chemin des Aulx 8
1228 PLAN-LES-OUATES Switzerland
www.lem.com

Current Transducer HAL 100-S/SP10

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 µs	> 8	kV
		Min	
d_{Cp}	Creepage distance	12.1	mm
d_{Cl}	Clearance	9.8	mm
CTI	Comparative tracking index (group I)	600	

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}, U_{Ni}	Rated insulation voltage	Nominal voltage
Basic insulation	1000 V	1000 V
Reinforced insulation	600 V	300 V

Safety

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

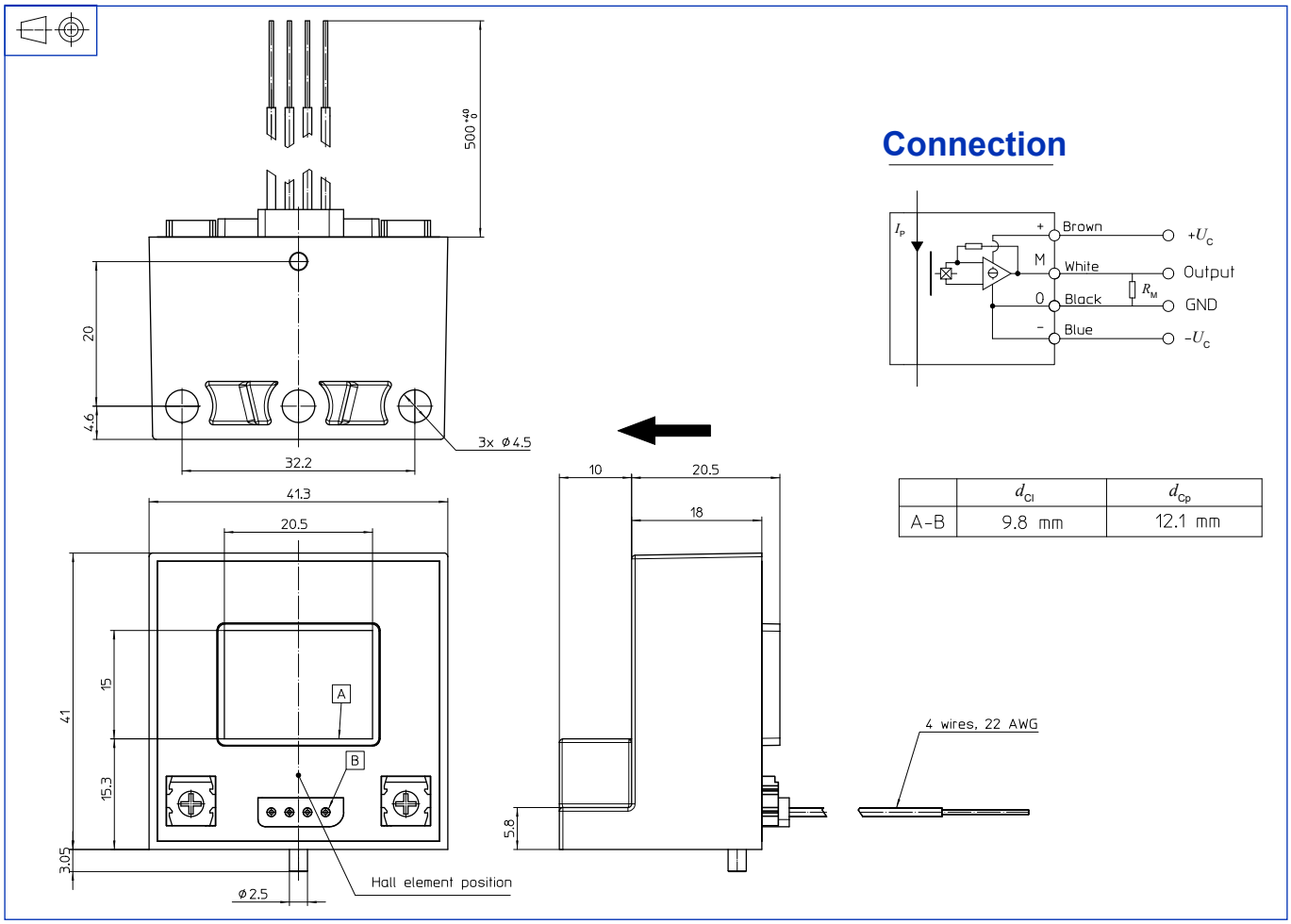
This transducer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the manufacturer's operating instructions.

Caution, risk of electrical shock

When operating the transducer, certain parts of the module can carry hazardous voltage (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.

LEM International SA
Chemin des Aulx 8
1228 PLAN-LES-OUATES Switzerland
www.lem.com

Dimensions HAL 100-S/SP10 (in mm)



	d_{Cl}	d_{Cp}
A-B	9.8 mm	12.1 mm

Mechanical characteristics

- General tolerance ±0.5 mm
- Transducer fastening 3 holes ∅ 4.5 mm
  3 M4 steel screws
  Recommended fastening torque 1.2 N·m (±10 %)
- Primary through-hole 20.5 × 15 mm
- Connection of secondary flying leads
  500 mm long

Remarks

- U_{out} is positive when I_P flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 90 °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/file/3137/download/**.
- Dynamic performances (di/dt and delay time) are best with a single bar completely filling the primary hole.

17January2022/Version 4

LEM International SA
Chemin des Aulx 8
1228 PLAN-LES-OUATES Switzerland
www.lem.com