Isolated HART temperature transmitter
PT100 and thermocouple   *CNL40iG*

LOREME

- **Universal**   RTD (3 or 4 wires), thermocouple, mV, mA

- **CNL40iG**   Galvanic isolation

- **CNL40iGH**   + HART protocol

- **CNL40iGL**   Low cost version

- **Fully configurable**   RS232 and HART

- **FDT certified DTM HART Drivers**

  FDT Group ✓Certified

- **Loop powered:** *Powered by the 4-20 mA loop current*

- **SIL2 conformity** *according to IEC 61508*

HART

The CNL40ig is a universal smart in-head mounting temperature sensor transmitters. Cover all temperature measurement (RTD and thermocouples) in all range with an unique device. The CNL40igH integrate the HART communication protocol, FDT compliant and it is available with SIL2 conformity according to IEC 61508 standard.

Temperature measurement:
- Thermocouples, platinum resistance sensor.

Sensor correction:
- RTD and thermocouple linearization,
- Cold junction compensation for thermocouple,
- Line length compensation for RTD.

Process measures:
- Voltage (mV), current (mA) on external shunt.

Signal conditioning:
- Square root extraction (on process measures),
- Programmable sensor breaking safety value,
- Programmable response time from 0.2 to 60 sec,
  (measure filtering function)
- Reverse or standard output,
- Measure offset adjustment,
- Neutralization of ambient thermal variation effects

Features:
- Temperature sensor in-head anti-vibration mounting: optimal fitting of measure element in thermowell with the spring loaded. Improved reliability and response time accuracy.
- wiring on spring terminal (stainless) (1.5mm^2 wire section),
- loop voltage presence indicated by Led,
- reverse polarity protected,
- input/output isolation (elimination of measure errors due to ground loop),
- protection rating (enclosure/terminals): IP68 / IP20

Mounting and connection:
- For DIN B head, M4 screw (33mm between axis)
- wide central tunnel for wires path (7 mm diameter)

Performance / Environment:
- Long-term stability 0.1 % / year,
- operating temperature up to 85 °C peak,
- excellent EMC performance,
- resistant, protected against shocks and vibrations
(silicon bonding resin)

Configuration
- setting by RS232 serial link (terminal mode without specific software)
- USB-RS232 cable available separately
- Online communication and setting with standard HART programming handheld (cnl40igH)

Operational safety data:
Type B components, HFT = 0
λf : 458 fit   (1/MTBF)
DC : 91.8 %   (Diagnostic Coverage)
PFH : 21 fit   (Probability of Failure per Hour)
SFF : 95.4.1 %   (Safe Failure Fraction)

SIL2 IEC 61508 / IEC 61511

Synoptic
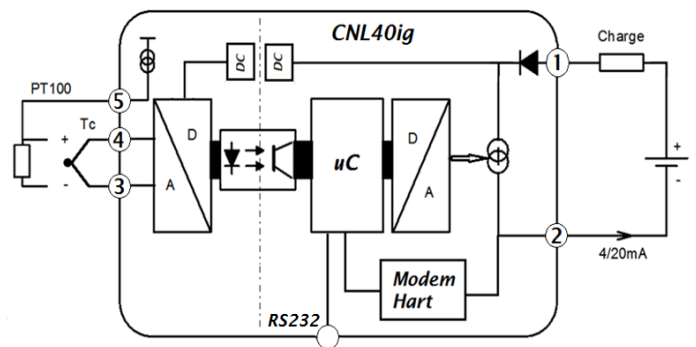
Version and order code   Request a quote ✉

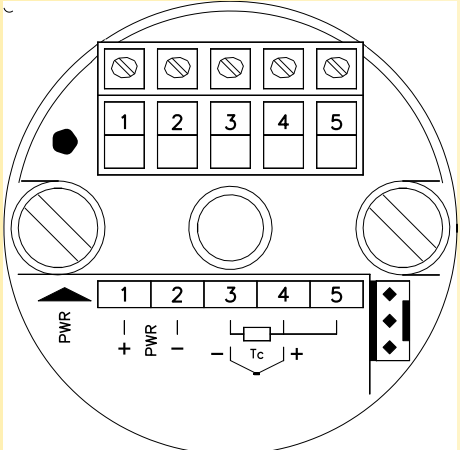|	
CNL40ig:	isolated RTD 3 wires, thermocouple, mV, mA input
CNL40ig-NW:	Special thermocouple: N , W3, W5, ...
CNL40igH:	isolated RTD 3 wires, thermocouple, mV, mA input (with HART communication protocol)
CNL40ig-4f:	isolated RTD 4 wires, thermocouple, mV, mA input
CNL40igH-4f:	isolated RTD 4 wires, thermocouple, mV, mA input (with HART communication protocol)
Option : /L	Low cost version (20 bits input converter)
/SIL2	Sil2 version according to IEC61508
Option : /RD	with DIN rail mounting hook

INPUT

TYPE	RANGE	ACCURACY (24bits resol.) CNL40IG	(20bits resol.) CNL40IGL
Tc B	200….1800 °C	+/- 2 °C	+/- 2 °C
Tc E	-250….1000 °C	+/- 0.4 °C	+/- 0.7 °C
Tc J	-200….600 °C	+/- 0.4 °C	+/- 0.7 °C
Tc K	-200….1350 °C	+/- 0.4 °C	+/- 0.7 °C
Tc R	0….1750 °C	+/- 1 °C	+/- 1.5 °C
Tc S	-50….1600 °C	+/- 1.5°C	+/- 1.5 °C
Tc T	-250….400 °C	+/- 0.5 °C	+/- 0.7 °C

		CNL40IG-NW	
Tc N	-250.....1500 °C	+/- 0.5 °C	
TC W3	0.......2300 °C	+/- 2 °C	
TC W5	0.......2300 °C	+/- 2 °C	

Compensation T°	-20 to 85 °C	+/- 0.3 °C	+/- 0.4 °C

Input impedance		>1Mohms

RTD	-200/800°C	+/- 0.3 °C	+/- 0.4 °C
(2, 3 wires mounting)			
excitation current		300 µA	
Line influence		0.3°C / 10 Ohms	

Voltage	0 /120 mV	+/- 0,02 mV	+/- 0,02 mV
Current	0 /30 mA	+/- 0,025 mA	+/- 0,025 mA
(on external 2,5 Ohms shunt)			

Response time		~ 200 ms
Sampling rate		6 / second

POWER SUPPLY / OUTPUT (14 bits resolution)

TYPE	RANGE	ACCURACY
Loop powered	13 to 40Vdc	
Current	4 / 20 mA	+/- 0.01 mA
Load @ 24Vdc	550 Ohms	
Power supply influence	0.002 % / V	
Load influence	0.004 % / 100 Ohms	
Intrinsic consumption	<3.6 mA	
Burn out current	3.6... 21mA	
Dielectric strength (Input / Output)	1000 Vrms (CNL40ig)	

ENVIRONMENT

Operating temperature	-30 to +65 °C
Storage temperature	-30 to +85 °C
Influence (% of full scale)	< 0.01 % / °C
Relative humidity	85 % not condensed
Weight	45 g
MTBF (IEC 62380)	> 2 180 000 Hrs @ 30°C
Life time	> 250 000 Hrs @ 30°C

Electromagnetic compatibility 2014/30/UE / Low Voltage Directive 2014/35/UE

Immunity standard for industrial environments EN 61000-6-2		Emission standard for industrial environments EN 61000-6-4	
EN 61000-4-2 ESD	*EN 61000-4-8 AC MF*	*EN 55011*	
EN 61000-4-3 RF	*EN 61000-4-9 pulse MF*		
EN 61000-4-4 EFT	*EN 61000-4-11 AC dips*	*group 1*	
EN 61000-4-5 CWG	*EN 61000-4-12 ring wave*	*class A*	
EN 61000-4-6 RF	*EN 61000-4-29 DC dips*		

CE

WIRING AND OUTLINE DIMENSIONS:
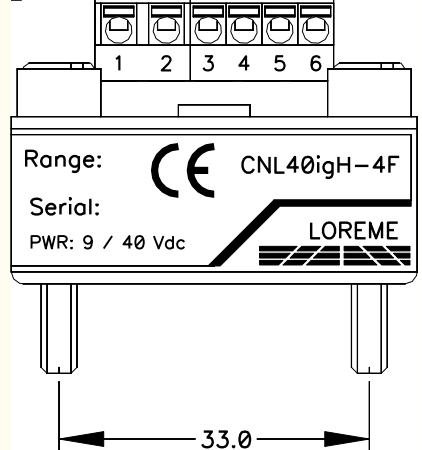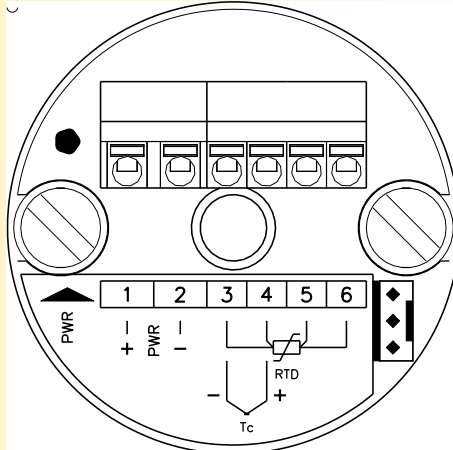
CNL40ig: isolated RTD 3 wires thermocouple, mV, mA input

CNL40igH: isolated RTD 3 wires, thermocouple, mV, mA input (with HART communication protocol)

CNL40ig-4f: isolated RTD 4 wires thermocouple, mV, mA input

CNL40igH-4f: isolated RTD 4 wires, thermocouple, mV, mA input (with HART communication protocol)

Range: CE CNL40igH-4F
Serial:
PWR: 9 / 40 Vdc LOREME

33.0

Spring terminal block 1.5mm² section

Spring loaded mounting

30.5
17.8
M4
43.2

On account of the constant technologies and standards evolution, LOREME keeps the possibility to modify the specifications of the included products without notice.