

# Acquisition unit with isolated inputs, SIL2, alarms relays, RS485 or ETHERNET

INL100, INL150



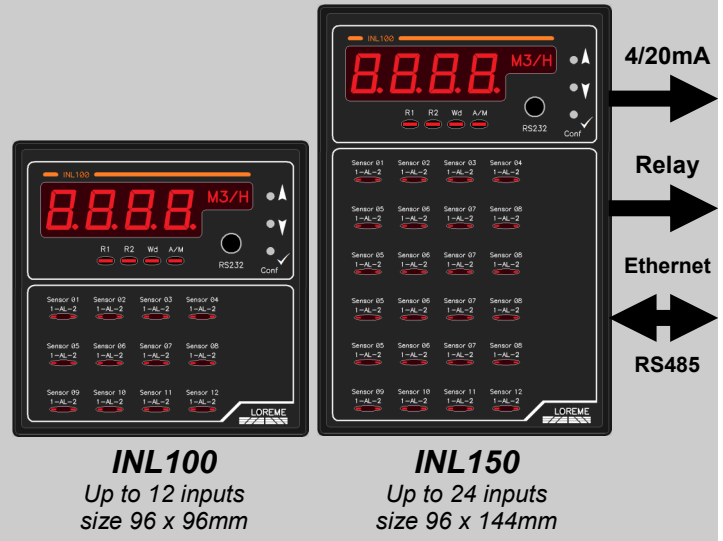
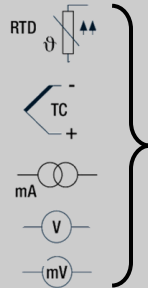
**INL100, INL150**, input : thermocouple, PT100 3 or 4 wires, Cu10, mV, ...  
**INL100P, INL150P** input: 4...20 mA and 0...10V

**INL100(P)**: 4, 8 or 12 isolated inputs.  
**INL150(P)**: 16, 20 or 24 isolated inputs.

individual setting for each inputs.  
 2 alarm thresholds per inputs.  
 option: analog output.

**• Communication:**

- RS485 Profibus-DP
- RS485 Modbus RTU
- Modbus-TCP (Ethernet)
- Embedded Web Server
- SNMP
- 6 simultaneous connections



**• SIL2 option:** According to IEC61508

This versatile product can be used like a simple analog scanner with alarm management, or used as a communicating control unit with advanced processing function.

**Measure input: (all measure inputs are isolated)**  
 INL100 and INL150 : thermocouples , Pt100 ,Cu10, mV, resistance  
 INL100P and INL150P : 4...20 mA and 0.....10V  
 Special input on request (by firmware update) :  
 CTN , CTP , NI100 , PT1000 , Balco 500, potentiometer, 0...100V,.....

**Front panel:**

- Display measure on 4 digits (10000 points), 14.2 mm LED display.
- Indication of selected channel on auxiliary alphanumeric display.
- Alarms status LED indicator: 2 per channel.
- Relays and Watchdog status LED indicator.
- LED indication for display mode : scanning or fixed.
- Three buttons allowing full configuration of device & alarms resetting.  
 (input type, thresholds setting, communication, display mode, ...) configuration access locking is possible via serial USB link.

**Alarms:**

The device has 2 configurable alarms per measure channel.  
 ( threshold, direction, hysteresis, delay, sensor breaking detection ).  
 These alarms control respectively two relays common to all channels alarms. An alarm hold function is available for each of these 2 relays.  
 In addition, a single contact relay is available for each channels allowing remote identification of channel in alarm (**inl100/R**). Each relays can be configured in positive or negative security (NO/NC). A "Watchdog" output relay (NC) signals an internal default or the loss of power.

**Special and complementary functions:**

- Selection or inhibition of each measured channels in the scan sequence.
- Possibility to have a mirror channel (a channel who follow another) for increase the number of alarms and relays by measure channel.
- Differential alarm for monitoring a temperature gap
- Analog output giving the image of a specific channel or an inter-channel calculation

**Communication:**

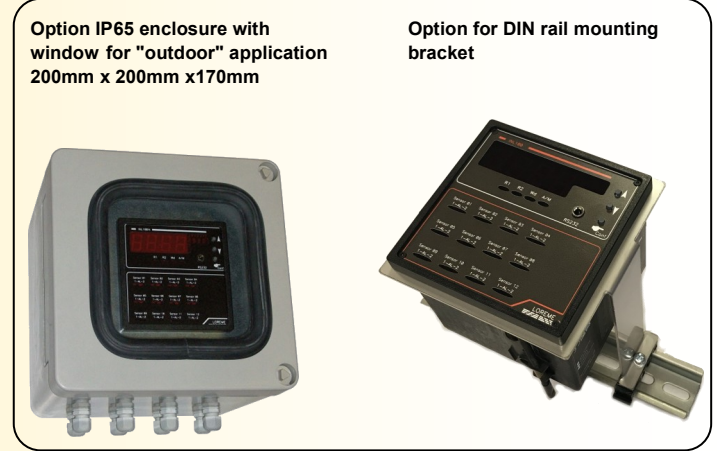
In option, the measurement feedback can be carried out via several communications protocols :  
 - RS485: Modbus RTU, Profibus-DP / - Ethernet: Modbus TCP

**Features:**

- DIN panel case according to DIN IEC 61554, in Noryl SE1, GFN2, 701 black, UL94 V1 non-halogen fire retardant, fastening by clamp
- pluggable spring (in standard) or screw terminal blocks  
 (2.5mm<sup>2</sup> for power supply, 1.5mm<sup>2</sup> for inputs)
- 4 ways galvanic isolation inputs / output / power supply / relays

**Configuration:** The device is fully configurable via front panel or via the serial RS232 link (jack 3.5). USB to jack cable supplied separately.  
 Possible firmware update via this RS232 link.

**Operational safety data :** (12 channels + individual relays @ 30°C)  
 component type B , HFT = 0  
 $\lambda f = 725 \text{ fit}$  (1/MTBF)  
 DC = 90.8 % (diagnostic coverage)  
 SFF = 91.9 % (probability of failure fraction)  
 PFH = 67 fit (probability of failure per hour)



**Version and order code:**

<b>INL100:</b>	4, 8, 12	Temperature inputs (Tc, 3 wires RTD)	(96 x 96mm)
<b>INL100P:</b>	4, 8, 12	Process input (mA , V)	(96 x 96mm)
<b>INL150:</b>	16,20,24	Temperature input (Tc, 3 wires RTD)	(96 x 144mm)
<b>INL150P:</b>	16,20,24	Process input (mA , V)	(96 x 144mm)

For all models: 2 alarm relays common to all measure channels  
 + 1 Watchdog relay

**OPTION:**

- pt4f: measurement board for PT100 4 wires input
- /R: individual relay per measure channel (250V 2A)
- /Ri: Individual relay without common (4 isolated NO contact)
- /S: Isolated analog output. Configurable: recopy of one channel, max value, min value, sum or average of all channels, gap between all channels
- /CM RS485 link MODBUS RTU protocol
- /CP RS485 link PROFIBUS-DP protocol
- /CMTCP Ethernet link, Modbus TCP, 6 connections + web
- /SNMP Ethernet link, SNMP protocol
- /SIL2 SIL2 version according to IEC 61508

**Note:** Analog output and communication options are not cumulative !

**INPUT**

TYPE	RANGE	ACCURACY
Voltage	0 / 120 mV	+/- 30 µV
Input impedance	> 4 Mohms	
Resistance	0 / 380 Ohms	+/- 0.2 Ohms
Pt100 2 or 3 wires	-200 / 600 °C	+/- 0.35 °C
Pt100 4 wires	-200 / 600 °C	+/- 0.15 °C
Cu10 2 or 3 wires	-100 / 200 °C	+/- 1 °C
Tc B	200 / 1800 °C	+/- 3 °C
Tc E	-250 / 1000 °C	+/- 0.5 °C
Tc J	-200 / 700 °C	+/- 0.7 °C
Tc K	-200 / 1350 °C	+/- 0.8 °C
Tc R	0 / 1750 °C	+/- 3 °C
Tc S	0 / 1600 °C	+/- 3 °C
Tc T	-250 / 400 °C	+/- 0.7 °C
Tc N	-250.....1350 °C	+/- 0.5 °C
TC W3	0.....2300 °C	+/- 2 °C
TC W5	0.....2300 °C	+/- 2 °C
T° compensation	-10 / 60 °C	+/- 0.2 °C
Other thermocouples on request		

**INL100P and INL150P (process)**

Voltage	0 / 10 V	+/- 5 mV
Input impedance	250 Kohms	
Current	0 / 20 mA	+/- 10 µA
Current	4 / 20 mA	+/- 10 µA
Input impedance	5 ohms	
cycle time ( all channels acquisition)		<1500 ms

**ANALOG OUTPUT**

TYPE	RANGE	ACCURACY
Current	0...4 ...20 mA	+/- 10 µA
Load	700 Ohms max	

**RELAYS**

Electrical endurance:		
≤30mV/≤10mA min.		2.5x10 <sup>6</sup> operations
resistive, 125VDC / 0.24A - 30W		5x10 <sup>5</sup> operations
resistive, 220VDC / 0.27A - 60W		1x10 <sup>5</sup> operations
resistive, 250VAC / 0.25A - 62.5VA		1x10 <sup>5</sup> operations
resistive, 30VDC / 1A - 30W		5x10 <sup>5</sup> operations

**WIRING AND OUTLINE DIMENSIONS:**

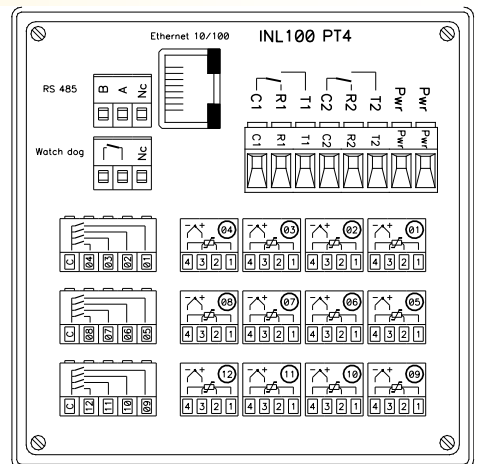
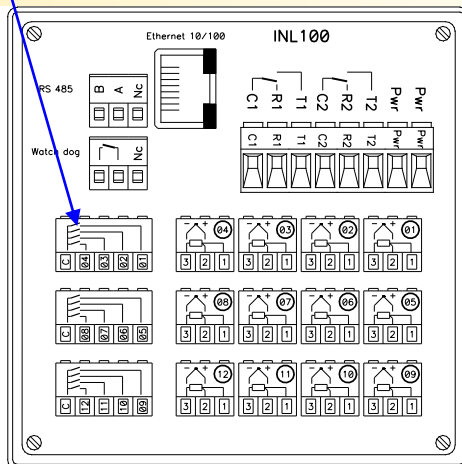
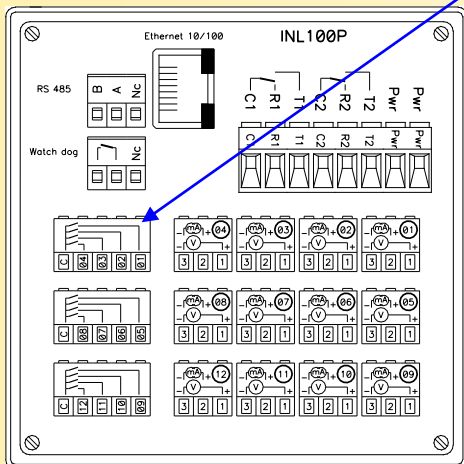
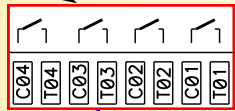
**Size w x h :**

INL100 : 96 x 96 mm  
Cut off w x h: 89 x 92 mm

Depth: 90 mm

INL150 : 96 x 144 mm  
Cut off w x h: 89 x 139 mm

Option : /Ri  
contact relay without common point  
(not available for INL100 PT4F)



**POWER SUPPLY**

20 Vdc ... 265 Vac-dc, 5 VA

**ENVIRONMENT**

Operating temperature	-20 to 60 °C
Storage temperature	-25 to +85 °C
Influence (% full scale)	< 0.01 % / °C
Humidity (not condensed)	85 %
Weight (depend of number of channels)	~ 500 g (12 channels)
Protection rating	IP20, standard IP65, kit in option
	IK06 (1 joule) front panel

**Dielectric strength:**

input/Supply/output/relay/communication	1500 Vrms continuous
inputs/inputs	500 Vrms continuous

MTBF (MIL HDBK 217F)

> 1 500 000 Hrs @ 25°C

Life time

> 180 000 Hrs @ 30°C

Shock CEI 60068-2-27 (operational)

15 G / 11 ms

Bump CEI 60068-2-29 (transportation)

40 G / 6 ms

Vibrations CEI 60068-2-6 ( operational)

1 G / 10 - 150 Hz

Vibrations CEI 60068-2-6 ( transportation)

2 G / 10 - 150 Hz

**COMMUNICATION**

Modbus RTU (/CM option): RS485 from 1200 to 38400 bds.

Profibus-DP (/CP option): RS485 from 9600 to 1,5 Mbds.

Ethernet 10/100 T base (RJ45 connection)

**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	group 1 class A	
EN 61000-4-4 EFT	EN 61000-4-11 AC dips		
EN 61000-4-5 CWG	EN 61000-4-12 ring wave		
EN 61000-4-6 RF	EN 61000-4-29 DC dips		

**Synoptic:**

