

Temperature probes for Silos



Temperature sensors, monitoring system for silos
Analog and Digital, wired and wireless, ATEX systems

The image illustrates the Loreme silo temperature monitoring system. It features a rack-mounted sensor unit connected to two silos via probes. A computer monitor displays the monitoring software interface, which includes a table of data and two probe diagrams showing temperature readings of 42.3°C and 35.8°C. The silos are marked with ATEX Ex and CE, and one is marked with SIL2.

Temperature of the storage (°C)									
10	20	30	40	50	60	70	80	90	100
10	20	30	40	50	60	70	80	90	100
10	20	30	40	50	60	70	80	90	100
10	20	30	40	50	60	70	80	90	100
10	20	30	40	50	60	70	80	90	100
10	20	30	40	50	60	70	80	90	100
10	20	30	40	50	60	70	80	90	100
10	20	30	40	50	60	70	80	90	100
10	20	30	40	50	60	70	80	90	100
10	20	30	40	50	60	70	80	90	100

Temperature monitoring system for grain silos

Analog sensors

CML36

LOREME



- **14 temperature measures per module**
RTD PT1000, Thermistor CTN inputs
- **Power supply and communication bus**
Into the DIN rail. up to 32 modules Interconnected

- **1 Ethernet Modbus TCP link**

For the entire BUS, up to 448 measurement points, embedded Web Server



- **ATEX dust zone 21 and 22 :**

Mounting in a box, all certified : II 2 D Ex tb IIIC T80°C Db

- **Application:**

Silo-thermometry, Acquisition Interface for PLC, process monitoring, supervision ...

- **fully compatible:**

With silo sensors: Chopin, Serdia, Tripette and Renaud, JUMO, AMI, Foss Advantageously replaces these solutions: no multiplexing, no adjustment, automatic detection and compensation of sensors

- **Upgradable :** introduction of new sensors curves by product update.

Characterization of measuring elements on request (record of the specific curve).



Temperature monitoring system for grain silos

Digital sensor

CML36N

- **46 temperature measures per module**
2 or 3 wires digital sensors
DS18B20 type for sensor elements
automatic detection of the sensors in the probe

- **Power supply and communication bus**

Incorporated into the DIN rail.
32 modules Interconnection

- **1 Ethernet Modbus TCP link**

for all the BUS,
1472 measurement points.
Embedded Web Server



- **ATEX dust zone 21 and 22 :**

boxed, the whole is certified : II 2 D Ex tb IIIC T80°C Db

- **Open solution:**

full compatibility with digital silo sensors: AMi and OPi (2 or 3 wires)
Advantageously replaces these solutions: the failure of a sensor does not cause the loss of several probes (probe bus separation)
evolving system: introduction of a new digital sensors type by product firmware update



Acquisition unit with isolated inputs with alarms relays and communication

INL100 , INL150

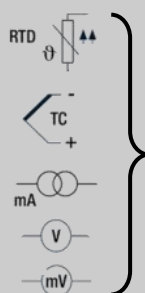
LOREME

- **Toutes entrées Analogique Température et Process**
INL100 , INL150 (mV, thermocouple, PT100 3 fils ou 4 fils Cu10,)
INL100P , INL150P (4...20 mA et 0...10V)

- **INL100:** 4, 8 ou 12 entrées isolées
- **INL150:** 16, 20 ou 24 entrées isolées
 - configuration individuelle de chaque entrées.
 - 2 seuils d'alarmes par entrée.
 - Option: sortie analogique

- **Communication :**
 - Profibus-DP
 - Modbus RTU
 - Modbus-TCP (Ethernet) 6 connexions simultanées
 - Serveur Web embarqué
 - SNMP

- **Application :** - surveillance de process, relais de protection, enregistreur de données



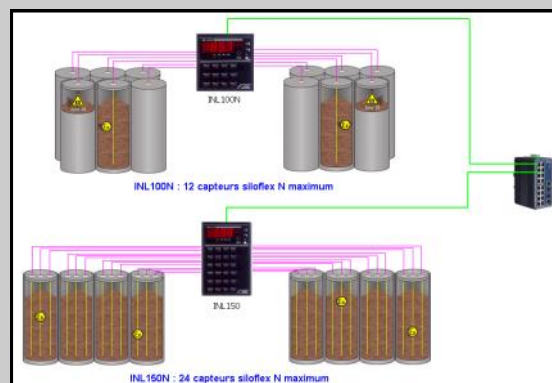
This versatile product can be used like a simple analog scanner with alarm management, or used as a communicating control unit with advanced processing function.

Silo temperature monitoring unit

Digital sensors

INL100N, INL150N

- **Up to 576 temperature points on a single device**
 (INL150N 576 points - INL100N 288 points)
- **3 wires cable by Silo probe**
- **Digital sensors in 3 wires link**
 (-55°C to +125°C)
- **Polling time 25 ms / measurement point**
 (576 measures in 15 seconds)
- **Accuracy: +/- 0.5 °C**
- **Output relay** (pre-alarm, alarm and Watchdog)
- **Communication option**
 - Modbus
 - Modbus TCP (on Ethernet)
 - Profibus



The INL150N is an monitoring unit allowing combination of a large number of temperature sensors in a single device. The « all digital » technology of the whole, reduce significantly the wiring and implementation costs, the sensors being interconnected on a 3 wires bus.

Wireless transmitter and repeater for SILOS temperature probes ATEX zone 21 and 22 **TNL120**



• up to 24 temperature inputs per module

Configurable : - PT1000 platinum probes.
- NTC, PTC thermistor.
+ Ambient temperature measurement.

• Bidirectional RF link

2.4 GHz band according to IEEE802.15.4.



• Great autonomy

> 3 years with 4 AA lithium batteries
with a refresh rate of 5 minutes
or 24Vdc auxiliary power supply

• Fully compatible

With sensors: Chopin, Serdia,
Tripette and Renaud, JUMO, MAI, Foss.
easily replaces these solutions:
No multiplexing, no adjustment.

• Upgradable

- Incorporation of new sensors curves
by updating the product.
- Characterization of measuring elements
on request (Plot of temperature curve).



The TNL120 is an autonomous and waterproof temperature acquisition station, capable to broadcast the measurements by radio link. It can be used both for new installations or as retrofit. The station is not dedicated to a particular type of sensor, but configurable depending on the installation.

Wireless receiver hub
Ethernet MODBUS-TCP output

SML160

• Bidirectional RF link

2.4 GHz band according to IEEE802.15.4
Up to 32 transmitters per receiver on one network
Several networks can coexist
Integrated or remote antenna



• Communication

- Modbus TCP (Ethernet) 6 concurrent connections
- Embedded web server (viewing and configuration)



• Power supply over Ethernet cable

- Power over Ethernet (PoE)



• Indoor, outdoor use

- Integrated antenna
- IP66 waterproof



The SML160 is a wireless receiver with an Ethernet connection, the product centralizes all measures issued by the radio transmitters, and makes them available through a standard communication protocol (Modbus-TCP) on the Ethernet link.

• **Up to 16 measure inputs per module**

Rtd sensor inputs (PT100 , PT1000)
 Thermocouples inputs (J ,K ,S ,T)
 Thermistor CTN , CTP inputs
 0..1.....5.....10Volts ; 0...4.....20mA
 Strain gauges
 Current : 0...5A.....100Aac
 with small split core transformer (Tio Dc)

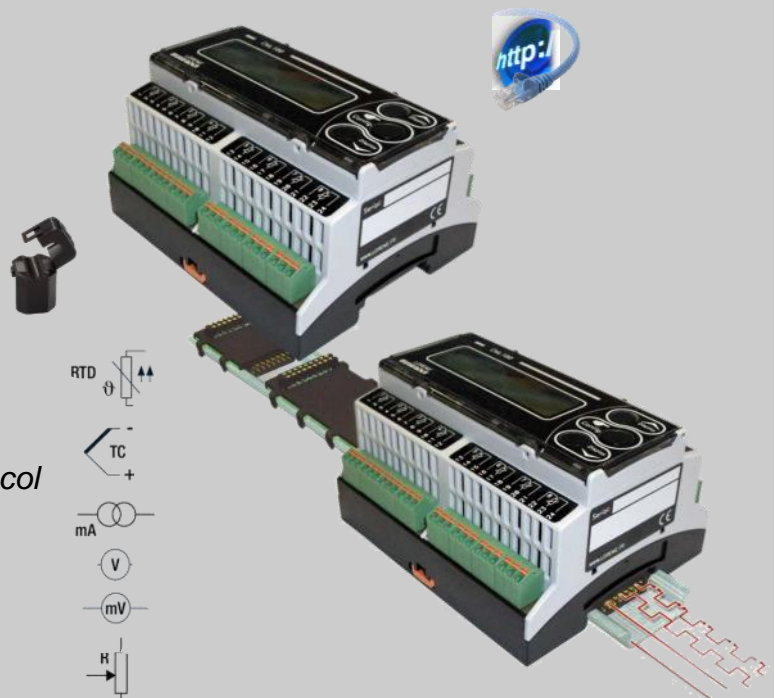
• **Ethernet Modbus TCP / SNMP link**

6 Modbus TCP concurrent connections
 Bus connection onto the DIN rail
 Embedded Web Server and SNMP protocol

• **RS485 Modbus RTU link**

• **2 threshold relays**

Local alarm



CML100 is a multi channel analog signals unit, allowing the acquisition of temperature, process signals or alternative current (via Tio transformer).

Measurements are available over Ethernet (Modbus TCP) or over RS485 (Modbus RTU).

The internal Bus (embeddable in DIN rail) allows multiple modules aggregated on the Ethernet link.

Flexible probe for silos temperature sensing , monitoring
multipoint sensors type : **SILOFLEX**

• **Easy and fast mounting**

probe to anchored to silo structure or fixed with flange on concrete floor

• **Analog or digital sensors**

standard analog measure elements like PT100,
 CTN, CTP, PT1000
 or addressable digital measuring elements
 up to 24 sensors on 3 wires bus.
 Temperature -55°C to $+125^{\circ}\text{C}$, $\pm 0.5^{\circ}\text{C}$ accuracy

• **Polyethylene outer sheath**

high tensile strength,
 wire steel reinforcement,
 low adherence,
 low diameter : 14mm, limit the tensile stress,
 waterproof IP65,
 food compatible material



• **Zone 0-1-2 or zone 20-21-22 ATEX notification**

Dust explosive zone
 Notification: 01atex 6052x
 SIL2 compliant

