- ***14 temperature measures per module***
  RTD PT1000, Thermistor NTC 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, Pfeuffer .... 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 curve).*

The CML36 is a compact temperature monitoring unit allowing to concentrate up to 32 modules of 14 channels into one Ethernet connection (Modbus TCP protocol) via the internal bus.

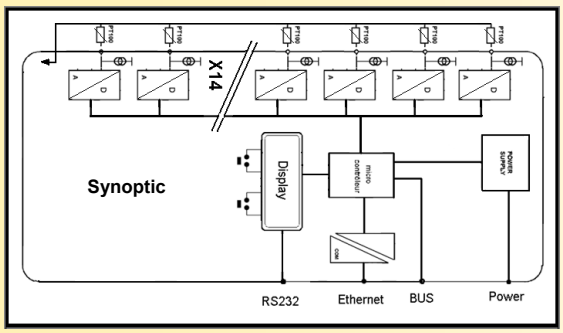
Available configurable inputs:
- 14 RTD PT1000 or NTC / PTC sensors in 2 wires assembly with one common and the possibility of adding new sensors type with firmware update (serial link), USB cable supplied separately.
- support the sensors with embedded diodes (automatic detection of the diode element and its direction with measurement compensation, for multiplexed systems sensors).
- all inputs with common ground (isolated from communication).

Front face:
- Measure display: Green LEDs 7 segments, 3 digits (1100 pts), digits height:10 mm, resolution 1 °C
- Sensor break detection or scale overflow (display: LO, HI or Err).
- Two push buttons under the cover for the configuration

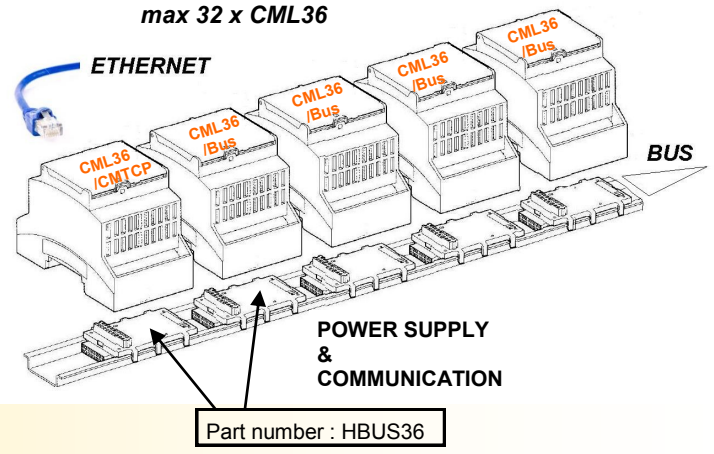
Feature:
- Mounting on DIN rail, communication bus (built-in DIN rail)
- connection on spring terminal block (max section 1 mm ²)
- Conformal coating, protection rating : IP20

Configuration / update:
- The device can be configured via the front panel,
- Firmware update is possible via serial link.

Communication:
-Modbus TCP over Ethernet 10/100 T base (RJ45 connection)



BUS composition on the DIN rail.



Part number : HBUS36

Version and order code:

Request a quote

CML36/CMTCP	Master module with the Ethernet MODBUS TCP link
CML36/BUS	Slave module on the internal bus
HBUS36	Connecting element for the internal bus.
NAPPE-HBUS	Interconnection ribbon cable (length 50cm) (for bus continuity on another DIN rail) only one ribbon cable by Bus
ATEX IP66 Box **reference: 06.25 40 12**	400mm x 250 mm x 121 mm, polyester, supply with 20 cable glands M20 for sensor inputs, 1 cable gland M20 for power supply (5..9mm), 1 cable gland M25 for the communication link (10..16mm) (certification off all CML36 + box) dust zone, protection by enclosure can include up to 10 CML36

90 days accuracy (20 °C +/- 2 °C) DATA SHEET CAN BE DOWNLOADED ON WWW.LOREME.FR

TECHNICAL SPECIFICATIONS

INPUT (16 bits resolution)

Type	Range	Accuracy
Pt1000 2 wires	-50.....150 °C	+/- 0.8 °C
NTC/PTC 2 wires	-20.....100 °C	+/- 0.8 °C

The accuracy on 2 wires connection depends on the resistance binding the sensor (offset correction possible).

Measure current	< 2 mA
Measurement rate	5 per second

COMMUNICATION

Modbus TCP over Ethernet 10 /100 T Base Port 502
RJ45 socket.

Auxiliary POWER SUPPLY

8 ..... 32 Vdc

consumption:	(CML36/CMTCP)	60 mA typical @ 24V
consumption:	(CML36/BUS)	25 mA typical @ 24V

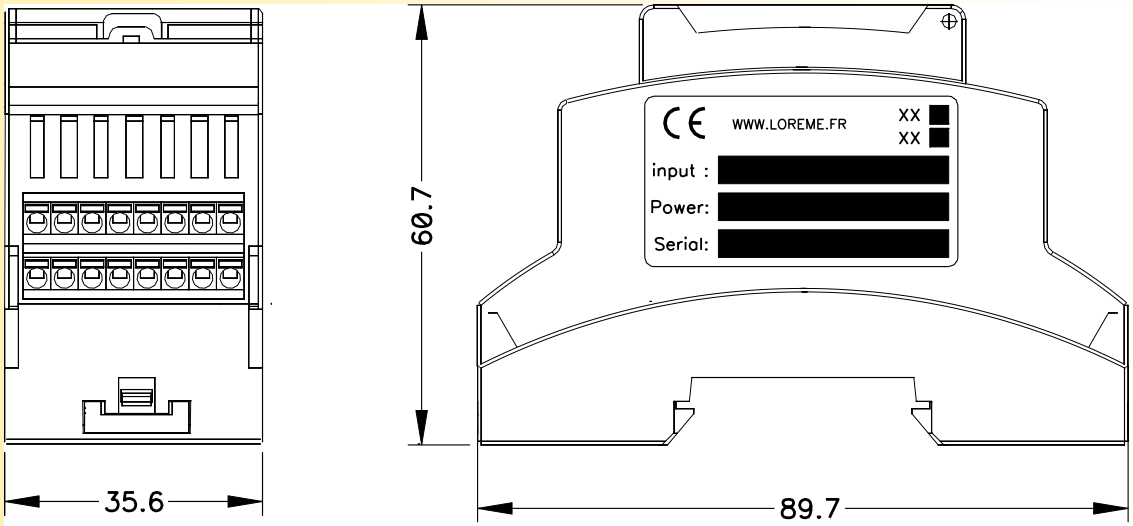
ENVIRONMENT

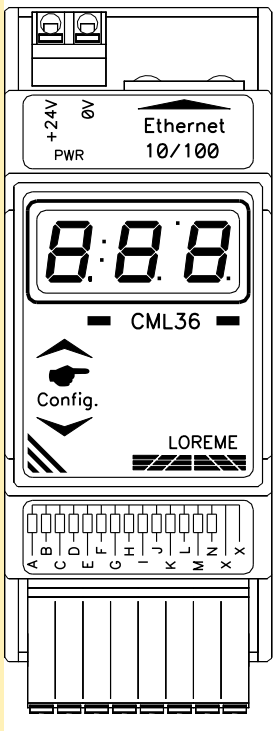
Operating temperature	-20 to 65 °C
Storage temperature	-20 to 85 °C
Thermal drift	< 0.1 % / °C
Humidity	85 % not condensed
Weight	100 g
Protection rating	IP 20
Dielectric strength:	
inputs / power supply:	no isolation
input / input:	no isolation
inputs / Ethernet communication:	500 V

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

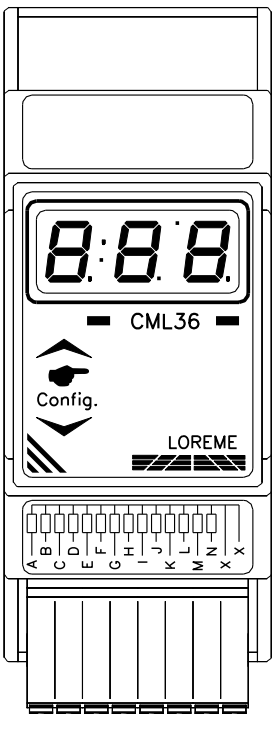
Immunity standard for industrial environments EN 61000-6-2		Emission standard for industrial environments EN 61000-6-4
EN 61000-4-2 ESD	*EN 61000-4-8 AC MF*	*EN 55011*
EN 61000-4-3 RF	*EN 61000-4-9 pulse MF*	*group 1*
EN 61000-4-4 EFT	*EN 61000-4-11 AC dips*	*class A*
EN 61000-4-5 CWG	*EN 61000-4-12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

WIRING AND OUTLINE DIMENSIONS:



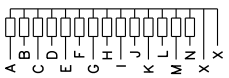


CML36/CMTCP

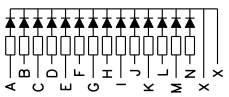


CML36/BUS

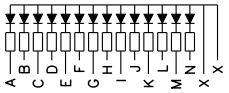
possible use:



Sensor RTD 1000 with common point:



Sensor NTC with common point and internal diode. direct sense:



Sensor NTC with common point and internal diode. reverse sense:

LOREME 12, rue des Potiers d'Etain - 57071 Metz ☎ 03.87.76.32.51 - www.loreme.fr - Email: Commercial@Loreme.fr - Technique@Loreme.fr

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

Isolated power supply for CML36 on Bus

type:AL71-bus

• *Direct bus power supply of 8 CML36 Modules*

- *No wiring to do, 24V distributed directly on the communication bus.*
- *Ensures perfect isolation of the bus.*
- *Allows direct 230Vac power supply.*
- *Low noise linear power supply.*
- *24 V / 250 mA output.*
- *Auxiliary 24 V output terminal.*

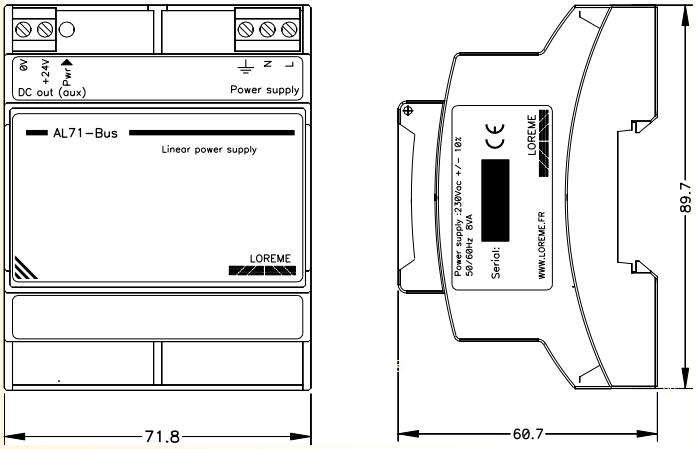
This power supply is particularly suitable for the implementation of CML36 acquisition units, the very high isolation impedance of the output eliminates ground loop problems, and ground currents that can affect measurements or destroy modules in extreme cases. This solution greatly improves the reliability of the installation, and facilitates the implementation of CML36 modules. It contributes to compliance with the recommendations for implementing silothermometry acquisition systems.

Features :

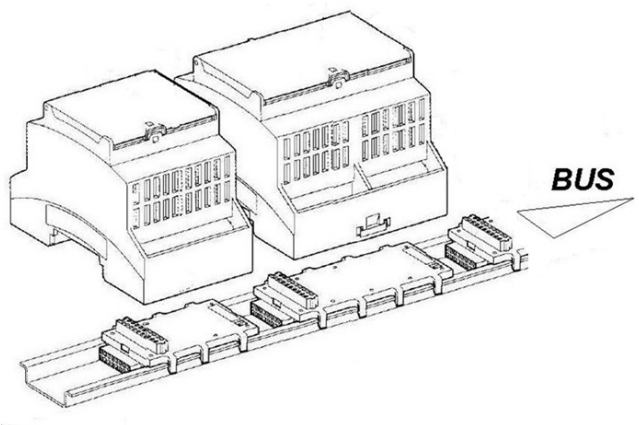
- Auxiliary 24Vdc output (the power used on the auxiliary output is subtracted from the power available on the Bus)
- Short Circuit Protection, Overload Protection.
- Thermal protection (output power limitation).
- Cooling by natural convection
- Built-in EMC filter conforming to EN55022 class A
- Regulated output voltage
- DIN rail mounting, IP20 protection rating
- Protection of the electronics by tropicalization varnish
- Green mains voltage presence LED,
- Connection by screw terminal block (section of wires up to 2.5 mm²).

Power supply	
Input voltage	230 Vac or 115 Vac
Input frequency	45….65 Hz
Power consumption	10 VA max
Output	
Output voltage	24 V (±2 %)
Output current	250 mA max (6 W)
Load regulation	0.1 % max
Output ripple	< 20 mVpp (10 Hz to 10 kHz BW)
ENVIRONMENT	
Operating temperature	-25 °C to 60 °C (natural convection)
Thermal protection	100 °C internal
Storage temperature	-25 °C to 85 °C
Humidity	85 % (not condensed)
Thermal drift	±0.02 %/°C (-2 mV/°C typically)
Insulation resistance	> 500 MΩ min.
Dielectric strength	2500 VAC (input / output)
Weight	400 g

Alimentation des CML36 directement par le bus
+ sorie 24V auxiliaire

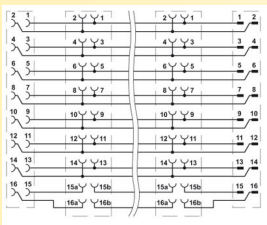


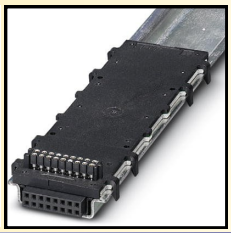
1 x AL71-BUS + 8 x CML36 maximum. *The power supply can be inserted at any location on the bus*



HBUS70 : Bus connecting element for AL71-Bus

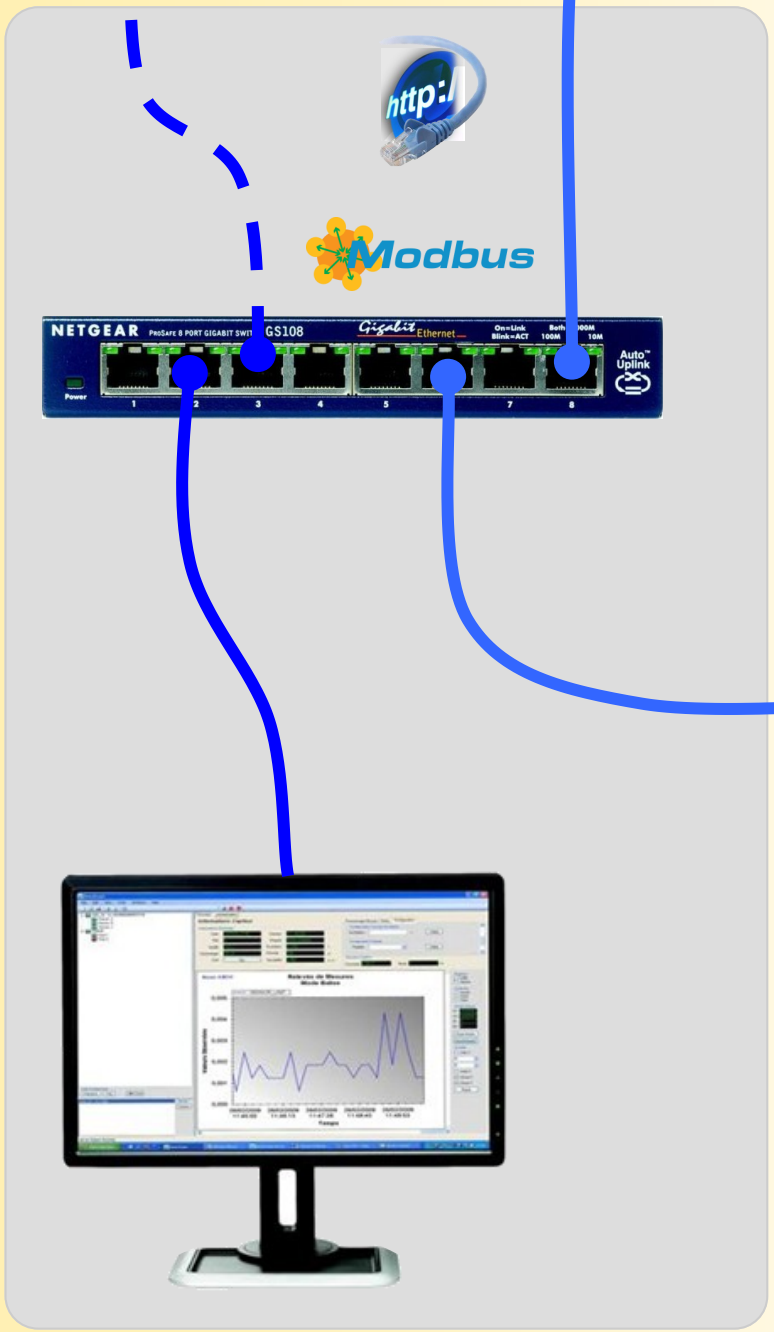
Technical data:
Colour black
Length 37,1 mm
Width 71,6 mm
Nominal voltage UN 60 V
Nominal current IN 2 A
Indicator1 CUL1 Flammability rating according to UL 94 V0

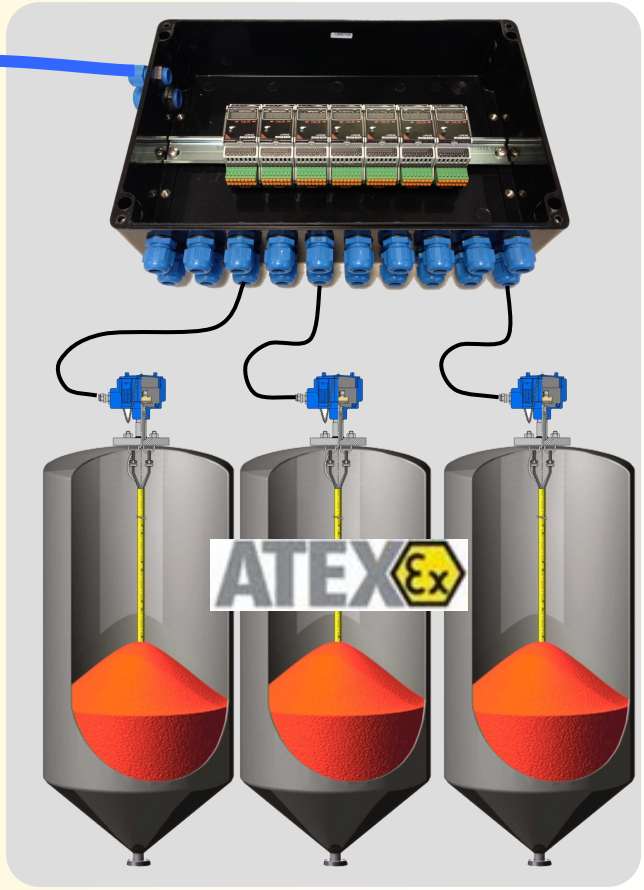


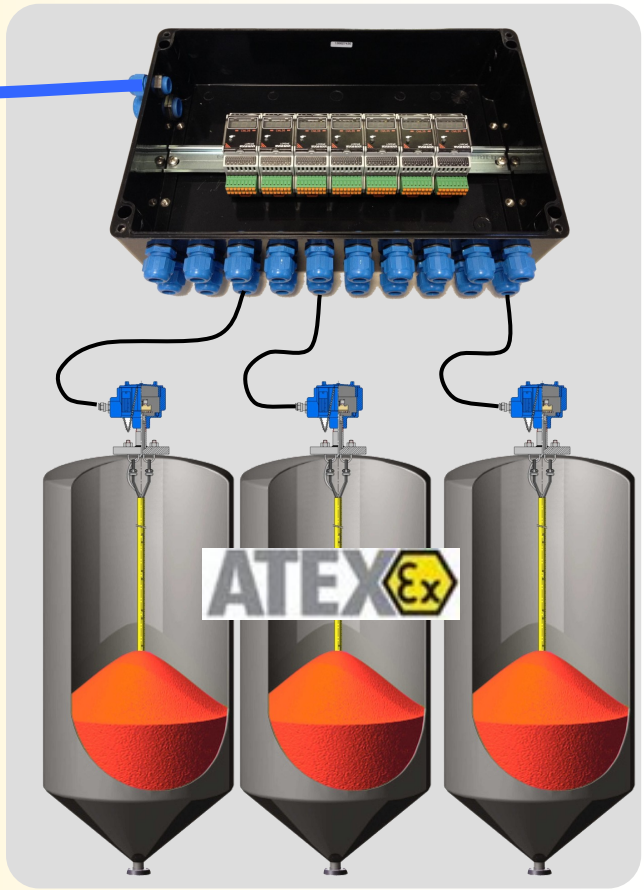


Version and order code:

AL71-Bus	Isolated power supply on internal bus allowing the supply of 8 CML36
HBUS70	Connecting element for the internal bus.


http://
Modbus
NETGEAR
GS108
Gigabit Ethernet
Auto Uplink


ATEX


ATEX

The device can measure sensor like PT1000 or NTC or PTC.
The CTN sensors can have a diode in series with temperature sensor (multiplexed application).
The CML36 is able to eliminate the influence of this diode in order to have the temperature of the sensor only.

Measurement process
For each point, the CML36 make measurement in direct and reverse polarity.
The presence of a diode is detected if the circuit is open in one of this two polarity.
The CML36 calculate the resistance of the sensor alone by eliminating the influence of diode impedance.
The temperature is calculate via a resistance -> temperature table.

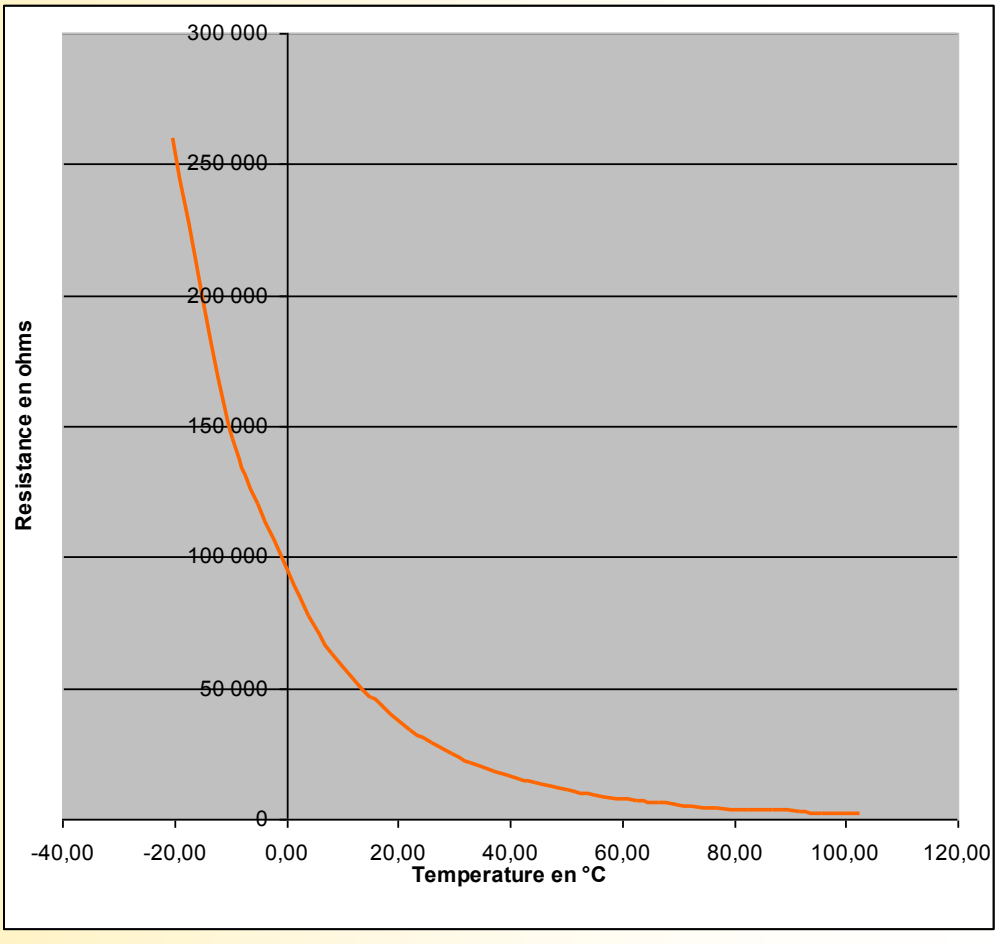
NOTE:
For the PT1000, CTN2, CTP6 and CTN7, the measure is made only in one polarity.
So, this sensor type must not include diode!.

NTC / PTC characteristics

Type "CTN1" (compatible with temperature sensors like "**CHOPIN", ex "SERDIA"**):

With this element, the CML36 measures are not influence by presence of diode.
NTC parameters: Beta = 3780, R0 = 30 kOhms.

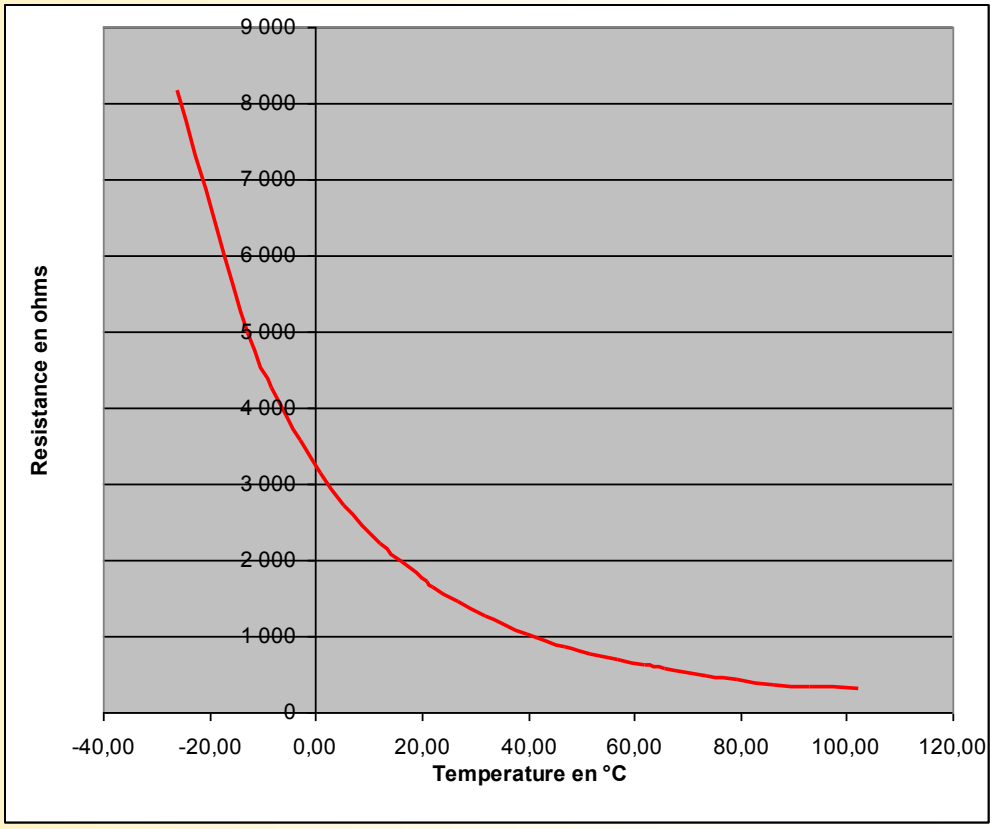
Temp (°C)		NTC (ohms)	
-20,28	°C	260 000	Ohms
-14,78	°C	197 100	Ohms
-9,54	°C	145 000	Ohms
-5,10	°C	120 000	Ohms
0,60	°C	94 200	Ohms
4,07	°C	77 600	Ohms
8,42	°C	63 100	Ohms
15,00	°C	46 600	Ohms
15,30	°C	46 000	Ohms
22,15	°C	33 900	Ohms
26,06	°C	28 800	Ohms
29,69	°C	24 700	Ohms
33,03	°C	21 600	Ohms
41,63	°C	15 200	Ohms
44,62	°C	13 610	Ohms
50,21	°C	11 020	Ohms
55,30	°C	9 120	Ohms
62,81	°C	7 220	Ohms
66,60	°C	6 060	Ohms
72,51	°C	4 970	Ohms
76,77	°C	4 320	Ohms
82,37	°C	3 600	Ohms
86,91	°C	3 120	Ohms
91,67	°C	2 690	Ohms
95,70	°C	2 380	Ohms
102,60	°C	1 920	Ohms



Type "CTN2" (compatible with temperature sensors like "**A/S Foss Electric**"):

With this element, the sensor must not include diode.
NTC parameters: Beta = 2400, R0 = 1,5 kOhms.

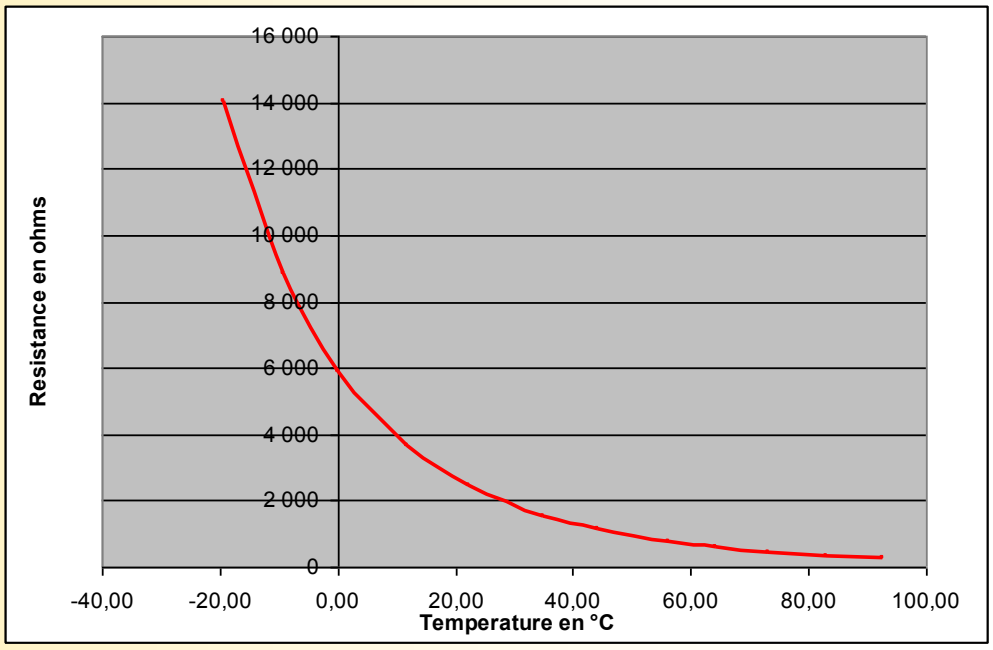
Temp (°C)		NTC (ohms)	
-26,09	°C	8 155	ohms
-12,56	°C	4 985	ohms
-8,16	°C	4 272	ohms
-2,93	°C	3 576	ohms
1,06	°C	3 139	ohms
5,54	°C	2 716	ohms
12,28	°C	2 215	ohms
16,31	°C	1 982	ohms
21,19	°C	1 715	ohms
22,16	°C	1 644	ohms
26,88	°C	1 453	ohms
32,13	°C	1 265	ohms
39,72	°C	1 035	ohms
47,09	°C	862	ohms
51,89	°C	770	ohms
56,76	°C	692	ohms
61,90	°C	620	ohms
65,89	°C	565	ohms
73,45	°C	484	ohms
79,27	°C	425	ohms
86,18	°C	365	ohms
92,99	°C	344	ohms
102,30	°C	299	ohms



Type "CTN3" (compatible with temperature sensor like "**SERDIA**"):

With this element, the CML36 measures are not influence by presence of diode.
NTC parameters: Beta = 3320, R0 = 2,2 kOhms.

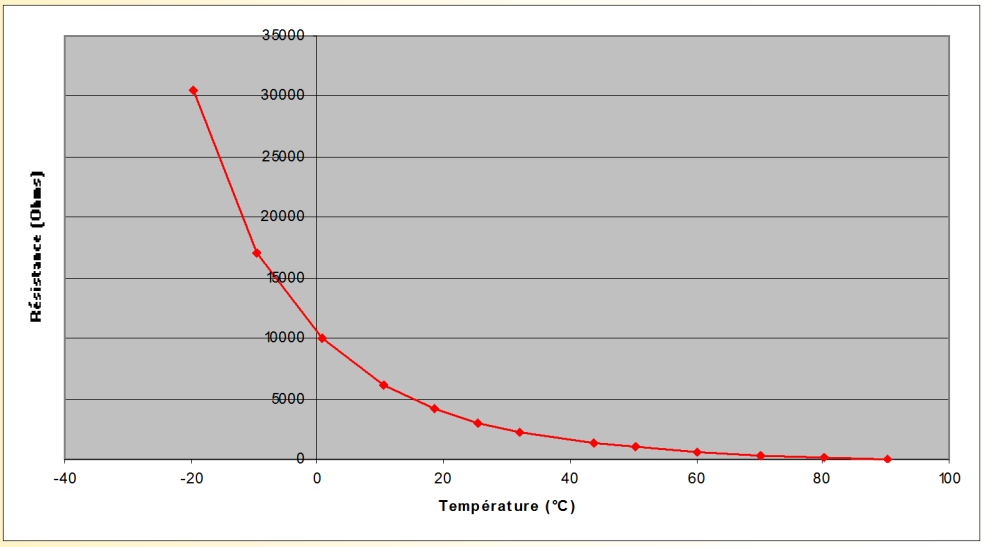
Temp (°C)		CTN (ohms)	
-19,37	°C	13 968	ohms
-9,18	°C	8 693	ohms
0,08	°C	5 857	ohms
11,88	°C	3 632	ohms
22,22	°C	2 457	ohms
35,08	°C	1 519	ohms
44,24	°C	1 112	ohms
56,07	°C	764	ohms
64,18	°C	595	ohms
73,31	°C	458	ohms
83,12	°C	346	ohms
92,72	°C	269	ohms



Type "CTN4" (compatibles with temperature sensor like "**AMI**")

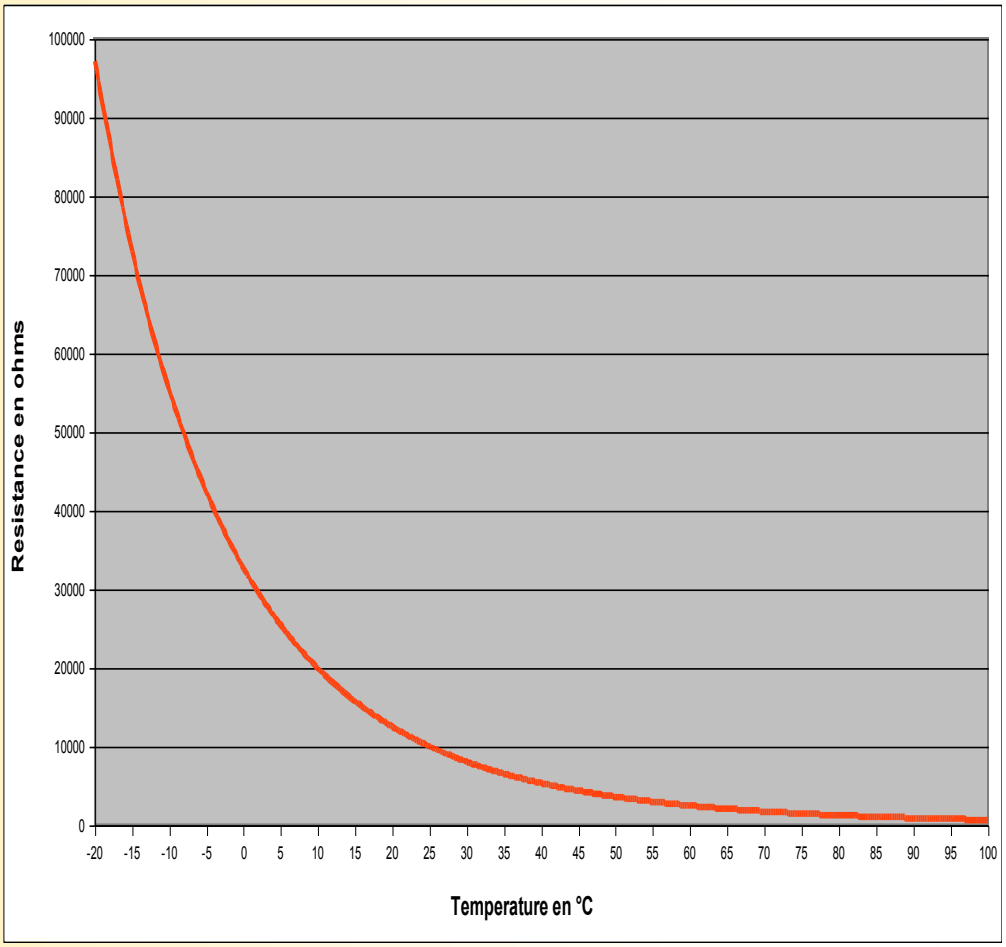
With this element, the CML36 measures are not influence by presence of diode.
NTC parameters: Beta = 3950, R0 = 3,0 kOhms.

Temp (°C)		NTC	
-19,61	°C	30474	ohms
-9,62	°C	17061	ohms
0,86	°C	9972	ohms
10,43	°C	6135	ohms
18,45	°C	4183	ohms
25,27	°C	3064	ohms
32,04	°C	2262	ohms
43,63	°C	1342	ohms
50,24	°C	1005	ohms
60,25	°C	615	ohms
70,27	°C	344	ohms
80,27	°C	152	ohms



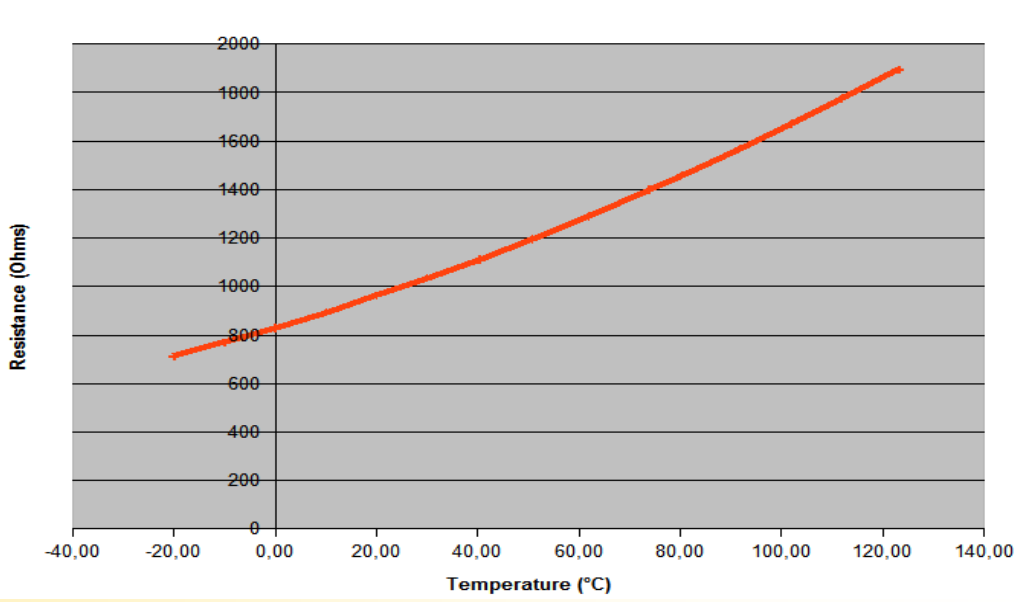
Type "CTN5" (sensitive element **US SENSOR** 103JM1A): With this element, the CML36 measures are not influence by presence of diode.
NTC parameters: Beta = 3890, R0 = 10 kOhms.

Temp (°C)		NTC	
-20	°C	97080	ohms
-15	°C	72960	ohms
-10	°C	55330	ohms
-5	°C	42330	ohms
0	°C	32650	ohms
5	°C	25390	ohms
10	°C	19900	ohms
15	°C	15710	ohms
20	°C	12490	ohms
25	°C	10000	ohms
30	°C	8060	ohms
35	°C	6530	ohms
40	°C	5330	ohms
45	°C	4370	ohms
50	°C	3600	ohms
55	°C	2990	ohms
60	°C	2490	ohms
65	°C	2080	ohms
70	°C	1750	ohms
75	°C	1480	ohms
80	°C	1260	ohms
85	°C	1070	ohms
90	°C	920	ohms
95	°C	790	ohms
100	°C	680	ohms



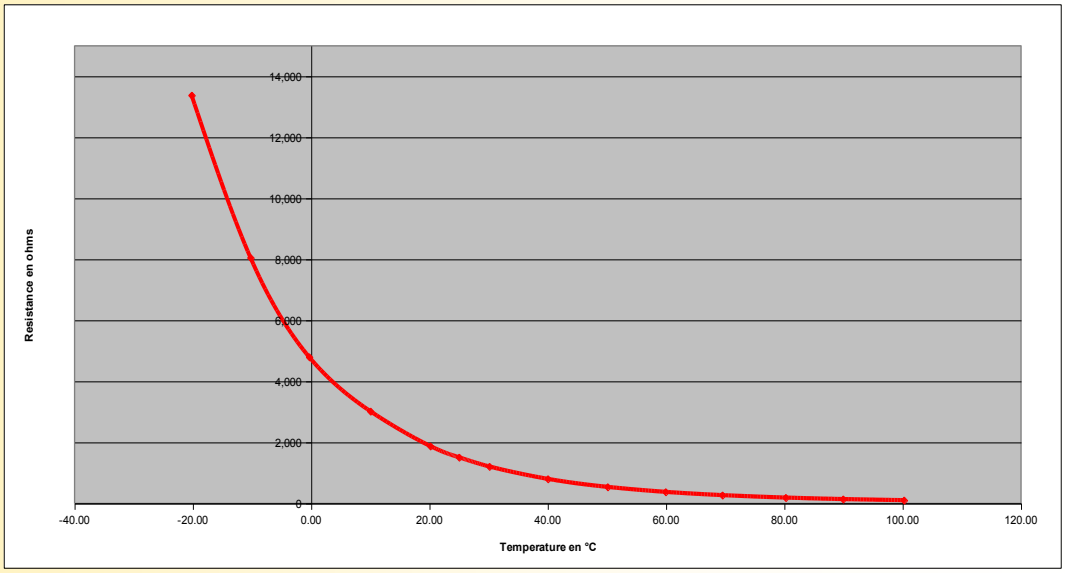
Type "CTP6":

Temp (°C)		CTP (ohms)
-20,00	°C	693
-10,00	°C	761
0,00	°C	827
10,00	°C	894
20,00	°C	963
30,00	°C	1035
40,40	°C	1112
50,80	°C	1194
61,80	°C	1290
73,80	°C	1399
80,20	°C	1459
91,80	°C	1569
101,90	°C	1670
112,00	°C	1775
123,20	°C	1895



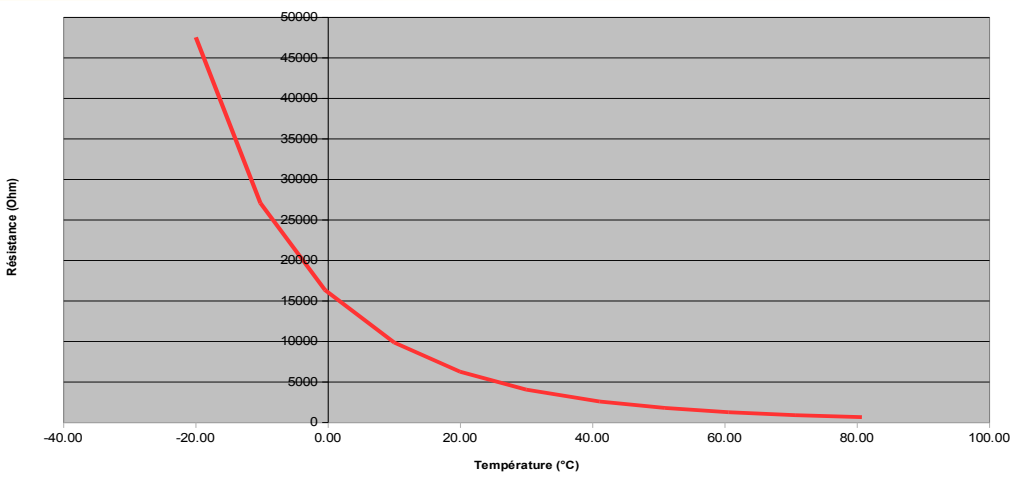
Type "CTN7": With this element, the sensor must not include diode.
NTC parameters: Beta = 3900, R0 = 1,5 kOhms.

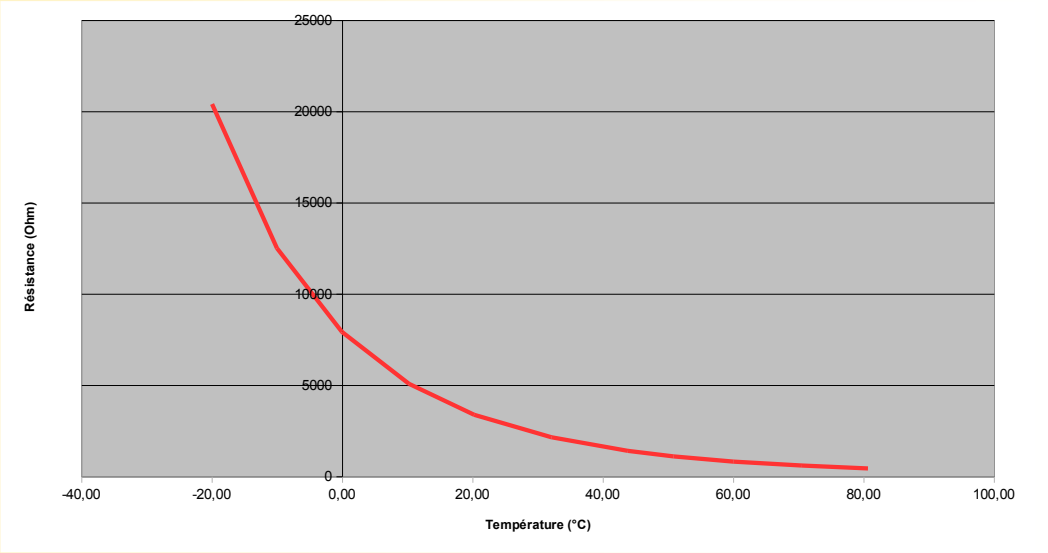
Temp (°C)		CTN (ohms)
-20.22	°C	13379
-10.25	°C	8052
-0.35	°C	4800
10.00	°C	3021
20.12	°C	1881
24.98	°C	1513
30.10	°C	1211
40.00	°C	804
50.10	°C	541
59.90	°C	378
69.50	°C	271
80.20	°C	191
89.90	°C	142
100.20	°C	105



Type "CTN8" (compatible with sensor like "**PFEUFFER**"): With this element, the CML36 measures are not influence by presence of diode. NTC parameters: Beta = 4000, R0 = 5000 Ohms.

Temp (°C)		NTC(ohms)
-19.94	°C	47485
-10.17	°C	27030
-0.41	°C	16298
10.07	°C	9815
20.03	°C	6212
30.03	°C	4007
41.13	°C	2537
50.99	°C	1743
60.64	°C	1217
70.68	°C	853
80.78	°C	612



Type "CTN9": With this element, the CML36 measures are not influence by presence of diode.
NTC parameters: Beta = 3500, R0 = 2.8 kOhms.

Temp (°C)	CTN (ohms)
-19.93°C	20393
-9.97°C	12493
0.00°C	7908
10.28°C	5063
20.28°C	3365
32.14°C	2134
43.87°C	1390
50.89°C	1085
60.04°C	800
70.56°C	585
80.70°C	425