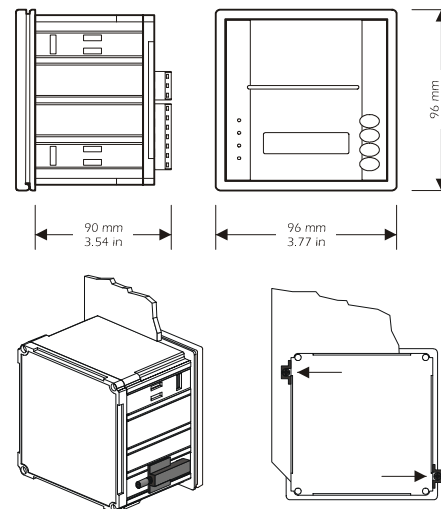# PR 100A

Two channels data recorder (one can expand them up to six)

ENGLISH

1   PREPARATIONS

1.1   How to install the instrument

Panel mounting, panel cut out 92 x 92 mm (3.62 x 3.62 in), with screw brackets (they are supplied by the builder).

90 mm
3.54 in

96 mm
3.77 in

96 mm
3.77 in

installation with screw brackets (position the brackets as indicated); you have to moderate the clamping torque, in order not to damage the box and screw brackets.

2   OPERATION

2.1   How to turn the instrument ON/OFF

If you have to turn the instrument ON/OFF:

▪ press   (on/off)

During the normal operation the instrument prints and/or stores the values the probes are reading and the events.

During the OFF mode the instrument stores the values the probes are reading and the events.

2.2   How to feed the paper by hand

If you have to feed the paper by hand:

▪ press   (feed)

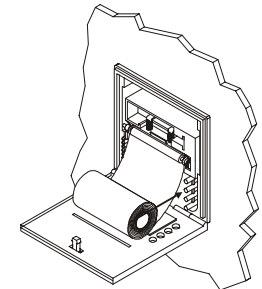### 2.3   How to change the roll of paper

If you have to change the roll of paper:

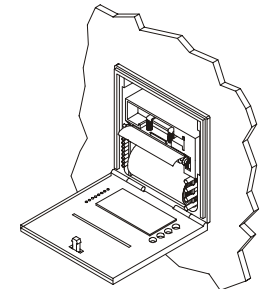▪ turn the instrument OFF

▪ press   (🖐)   for opening the panel at the front of the instrument

▪ slip the roll of paper into the lower side of the roller

▪ press   (feed)   as long as the roller drags the roll of paper

▪ put the roll of paper into its box

▪ close the panel at the front of the instrument.

3   PRINTING MODES

3.1   On Line Report

The instrument prints and stores the events; once the acquisition time you have set with the parameter `Acq. Time` has passed, the instrument will print and store the values the probes will be reading as well.

The parameter `Off Line` must have value No.

3.2   Daily Report

The instrument stores the events; once the acquisition time you have set with the parameter `Acq. Time` has passed, the instrument will store the values the probes will be reading as well.

The instrument will print the data it has stored at the time you have set with the parameter `Print Hour` [(1)].

The parameter `Off Line` must have value Yes and the parameter `Print Hour` must have values different from Off [(2)].

[(1)]   the instrument will print the data it has stored during the interval between two times you have set with the parameter `Print Hour`

[(2)]   you can use the Daily Report and Historical Report printing modes at the same time.

3.3   Historical Report

The instrument stores the events; once the acquisition time you have set with the parameter `Acq. Time` has passed, the instrument will store the values the probes will be reading as well.

If you have to print the data the instrument has stored:

- press   (▼)   the instrument will show

                                                        `Histor. Report?`

- press   (▲)   within 10 s ▷   [(3)] .

The parameter `Off Line` must have value Yes [(2)] .

[(2)]   you can use the Daily Report and Historical Report printing modes at the same time

[(3)]   if the parameter `Remote Print` has value Yes, you have to activate the input for remote print.

4   CONFIGURATION PARAMETERS

4.1   How to set the configuration parameters

Configuration parameters are arranged on two levels (you can select them according to the password you use).

If you have to gain access the procedure:

- press   (▲)   the instrument will

                                                        show `password`

- press   (▲) and (▼)   the instrument will

                                                        show `<>`

If you have to gain access the "User" level

- press   (▲) or (▼)   for setting " **-19** "

- press   (▲) and (▼)   the instrument will

                                                        show `Print Setup?`

If you have to gain access the "Installer" level

- press   (▲) or (▼)   for setting " **19** "

- press   (▲) and (▼)   the instrument will

                                                        show `Print Setup?`

If you have to select a parameter:

- press   (▲) or (▼)

If you have to modify the value of the parameter:

- press   (▲) and (▼)   the instrument will

                                                        show `<>` and …

- press   (▲) or (▼)   then …

- press   (▲) and (▼)

If you have to quit the procedure:

- do not operate for the time you have set with the parameter `Timeout Setup`

If you modify the value of the parameter, the modification will have effect as soon as you will quit the setting procedure.
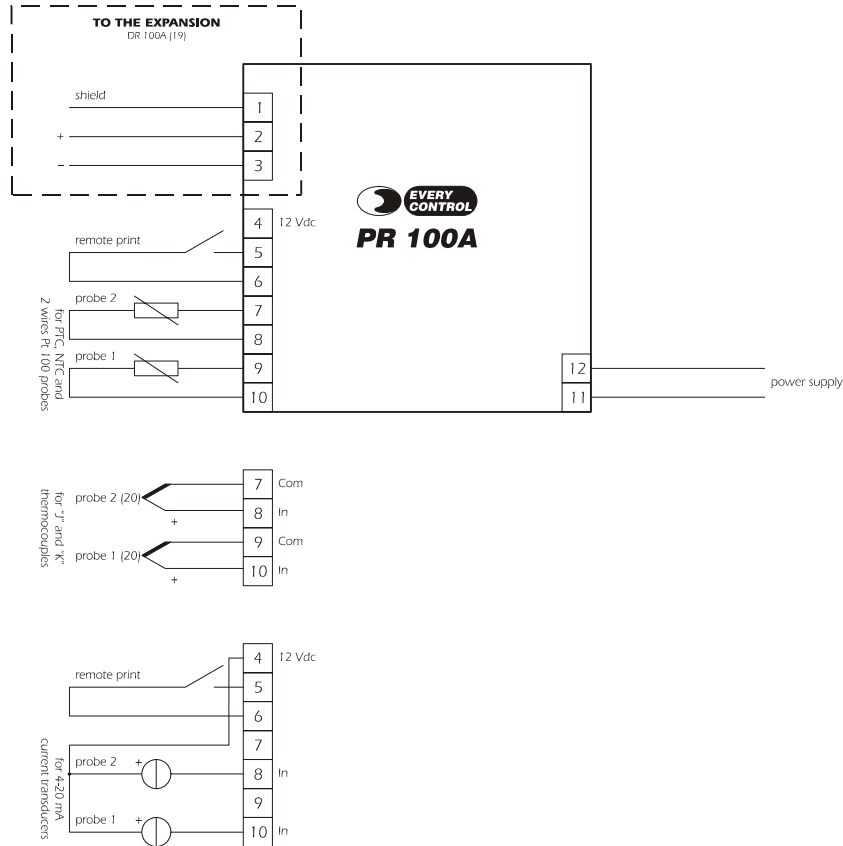
5   SIGNALS

5.1   Signals

LED	MEANING
on/off	ON/OFF LED
	if it is lighted, the instrument will be in the ON mode
alarm	Alarm LED
	if it flashes, an alarm will be running
set	Set LED
	if it is lighted, the configuration parameters setting procedure will be running
	if it flashes, the modification of the value of configuration parameters will be running
timer	Timer LED
	if it is lighted, the Daily Report printing mode will be running

9 ELECTRICAL CONNECTION

9.1 Electrical connection

TO THE EXPANSION
DR 100A (19)

shield — 1
+ — 2
– — 3

EVERY CONTROL
PR 100A

4 — 12 Vdc
remote print — 5
6
probe 2 — 7
8
probe 1 — 9
10

for PTC, NTC and 2 wires Pt 100 probes

12
11 — power supply

for "J" and "K" thermocouples:
probe 2 (20) — 7 Com
8 In
+
probe 1 (20) — 9 Com
10 In
+

for 4-20 mA current transducers:
4 — 12 Vdc
remote print — 5
6
7
probe 2 + — 8 In
9
probe 1 + — 10 In

(19) you have to connect the probes in succession (for example, if you are using three channels, you have to connect probe 1 and probe 2 with the data recorder PR 100A and probe 3 with the expansion DR 100A); connect PR 100A with DR 100A by using a twisted pair

(20) provide the probe with a protection able to protect it against contacts with metal parts or use insulated probes.

INDICATION	MEANING
Printing...	the On Line Report printing mode will be running
Recording...	the Daily Report and/or Historical Report printing modes will be running
Memory 90% ... 99%	the memory will be running out

6 ALARMS

6.1 Alarms

CODE	REASONS	REMEDIES	EFFECTS
AN1...6 Err probe 1...6 alarm	• the kind of probe 1...6 you have connected is not right • the probe 1...6 plays up • the connection instrument-probe 1...6 is wrong • the value the probe 1...6 is reading is outside the limits allowed by the working range of the instrument • the value the probe 1...6 is reading is unstable (the value has changed more than 1 degree/point per 2 s for 8 times in succession)	• look at the parameter AN1...6 Type • test the integrity of the probe • test the instrument-probe connection • test the value close to the probe (it has to be between the limits allowed by the working range)	if the On Line Report printing mode is running, the instrument will print and store the event; if the Daily Report and/or Historical Report printing modes are running, the instrument will store the event
AN1...6 AH upper alarm probe 1...6	the value the probe 1...6 is reading is outside the limit you have set with the parameter AN1...6 Max Alarm	test the value close to the probe (look at the parameters AN1...6 Alarm Hyst and AN1...6 Max Alarm)	if the On Line Report printing mode is running, the instrument will print and store the event; if the Daily Report and/or Historical Report printing modes are running, the inst. will store the event
AN1...6 AL lower alarm probe 1...6	the value the probe 1...6 is reading is outside the limit you have set with the parameter AN1...6 Min Alarm	test the value close to the probe (look at the parameters AN1...6 Alarm Hyst and AN1...6 Min Alarm)	if the On Line Report printing mode is running, the instrument will print and store the event; if the Daily Report and/or Historical Report printing modes are running, the instrument will store the event
Memory Full memory run out alarm	the memory has run out	erase the data the instrument has stored (look at the parameters Delete Memory? and Memory Type)	the instrument will not store any data

7 TECHNICAL DATA

7.1 Technical data

Box: self-extinguishing grey.

Size: 96 x 96 x 90 mm (3.77 x 3.77 x 3.54 in).

Installation: panel mounting, panel cut out 92 x 92 mm (3.62 x 3.62 in), with screw brackets (they are supplied by the builder).

Frontal protection: IP 30.

Connections: extractable terminal blocks with pitch 5 mm (0.19 in) for cables up to 2.5 mm² (0.38 sq in, inputs and expansion) and with pitch 7.5 mm (0.29 in) for cables up to 2.5 mm² (0.38 sq in, power supply).

Ambient temperature: from 0 to 55 °C (32 to 131 °F; 10 ... 90% of relative humidity without condensate).

Power supply: 110-240 Vac, 50/60 Hz (standard) or 12-36 Vac/dc, 50/60 Hz (by request).

Clock data maintenance without power supply: typically more than 3 years.

Capacity of memory: 2,000 printing lines, independently on the number of measure inputs (for example, if the acquisition time is 15 min, the capacity of memory will be 500 h that will be about 21 days).

Measure inputs: 2 (one can expand them up to 6 by using the expansion DR 100A) for PTC or NTC probes, "J" or "K" thermocouples, 2 wires Pt 100 probes, 4-20 mA current transducers; the probes can be up to 15 m long (49.21 ft). At terminal 4 there are 12 Vdc you can use in order to supply the transducers.

Digital inputs: 1 for remote print (NO contact) without voltage (it works with 5 mA).

Working range: from -45 to 150 °C (-49 to 302 °F) for PTC probe, from -20 to 110 °C (-4 to 230 °F) for NTC probe, from -100 to 700 °C (-148 to 1,292 °F) for "J" thermocouple (if the cold joint is at 0 °C), from -100 to 1,300 °C (-148 to 2,372 °F) for "K" thermocouple (if the cold joint is at 0 °C), from -100 to 600 °C (-148 to 1,112 °F) for 2 wires Pt 100 probe.

Resolution: 1 °F with unit of measure in Fahrenheit, 1 °C with unit of measure in Celsius, 1% of relative humidity, 1 bar.

Display: one green LCD (2 lines per 16 characters) 11.5 mm (0.45 in) high, instrument mode indicators.

Maximum size of the roll of paper: 58 x Ø 30 mm (2.28 x Ø 1.18 in).

Print width: 48 mm (1.88 in).

Dot number (for every line): 384.

Print density: 8 dot per mm.

AN6 4-20mA Type	—	—	—	%RH	4-20 mA unit of measure (it is important if **AN6 Type** = 4-20 mA; RH% = percentage of relative humidity, bar = bar, °C = Celsius degree, °F = Fahrenheit degree, Hz = hertz, mA = milliampere, - = dimensionless) [17]
AN6 4-20mA Min	-99	999	points	0	minimum value of the range of the transducer 6 (it is important if **AN6 Type** = 4-20 mA) [17]
AN6 4-20mA Max	-99	999	points	100	maximum value of the range of the transducer 6 (it is important if **AN6 Type** = 4-20 mA) [17]
AN6 dec. point	0	2	—	0	decimal point position (it is important if **AN6 Type** = 4-20 mA; 0 = it will never be showed, 1 = ten, 2 = hundred) [17]

(4)   if the parameter has value Yes, the instrument will print the set up as soon as you will quit the configuration parameters setting procedure

(5)   in order to activate the Daily Report printing mode, the parameter **Off Line** must have value Yes and the parameter **Print Hour** must have values different from Off; in order to activate the Historical Report printing mode, the parameter **Off Line** must have value Yes

(6)   as soon as you will quit the configuration parameters setting procedure, the parameter will automatically get value No

(7)   if you modify the value of the parameter, this will erase the data the instrument has stored

(8)   the unit of measure depends on the parameters **AN1 Type**, **Celsius/Fahr.** and **AN1 4-20mA Type**

(9)   unless the parameter **N. Probe** has value 2, the parameter will not be showed

(10)   the unit of measure depends on the parameters **AN2 Type**, **Celsius/Fahr.** and **AN2 4-20mA Type**

(11)   unless the parameter **N. Probe** has value 3, the parameter will not be showed

(12)   the unit of measure depends on the parameters **AN3 Type**, **Celsius/Fahr.** and **AN3 4-20mA Type**

(13)   unless the parameter **N. Probe** has value 4, the parameter will not be showed

(14)   the unit of measure depends on the parameters **AN4 Type**, **Celsius/Fahr.** and **AN4 4-20mA Type**

(15)   unless the parameter **N. Probe** has value 5, the parameter will not be showed

(16)   the unit of measure depends on the parameters **AN5 Type**, **Celsius/Fahr.** and **AN5 4-20mA Type**

(17)   unless the parameter **N. Probe** has value 6, the parameter will not be showed

(15)   the unit of measure depends on the parameters **AN6 Type**, **Celsius/Fahr.** and **AN6 4-20mA Type**.

8 CONFIGURATION PARAMETERS

8.1 "User" level parameters (password -19)

LABEL	MIN.	MAX.	U.M.	DEF.	PASSWORD
Password	-99	99	—	0	password

LABEL	MIN.	MAX.	U.M.	DEF.	PRINT OF THE INSTRUMENT SET UP
Print Setup?	Yes	No	—	No	print of the instrument set up [4]

LABEL	MIN.	MAX.	U.M.	DEF.	PRINTING MODE
Off Line	Yes	No	—	No	printing mode (Yes = Daily Report and Historical Report, No = On Line Report) [5]
Remote Print	Yes	No	—	No	enabling of the input for remote print during the Historical Report printing mode (it is important if Off Line = Yes)
Print Hour	Off	23	h	8	printing time by using the Daily Report printing mode (it is important if Off Line = Yes; Off = the instrument will never print the data)

8.2 "Installer" level parameters (password 19)

LABEL	MIN.	MAX.	U.M.	DEF.	PASSWORD
Password	-99	99	—	0	password

LABEL	MIN.	MAX.	U.M.	DEF.	PRINT OF THE INSTRUMENT SET UP
Print Setup?	Yes	No	—	No	print of the instrument set up [4]

LABEL	MIN.	MAX.	U.M.	DEF.	GENERIC SETTINGS
Celsius/Fahr.	°C	°F	—	°C	temperature unit of measure (it is important if AN1...6 Type ≠ 4-20 mA)
Acq. Time	1	360	min	15	acquisition time
Day Setup	1	31	day	1	real day
Month Setup	1	12	month	1	real month
Year Setup	1990	2050	year	2001	real year
Hour Setup	0	23	h	0	real hour
Min Setup	0	59	min	0	real minute

LABEL	MIN.	MAX.	U.M.	DEF.	PRINTING MODE
Off Line	Yes	No	—	No	printing mode (Yes = Daily Report and Historical Report, No = On Line Report) [5]
Remote Print	Yes	No	—	No	enabling of the Historical Report printing mode (it is important if Off Line = Yes)
Timeout Setup	5	100	s	10	time without you operate with the keys in order that the instrument can quit the configuration parameters setting procedure
Print Hour	Off	23	h	8	printing time by using the Daily Report printing mode (it is important if Off Line = Yes; the instrument will never print the data)

LABEL	MIN.	MAX.	U.M.	DEF.	(continued)
AN4 4-20mA Type	—	—	—	%RH	4-20 mA unit of measure (it is important if AN4 Type = 4-20 mA; RH% = percentage of relative humidity, bar = bar, °C = Celsius degree, °F = Fahrenheit degree, Hz = hertz, mA = milliampere, - = dimensionless) [13]
AN4 4-20mA Min	-99	999	points	0	minimum value of the range of the transducer 4 (it is important if AN4 Type = 4-20 mA) [13]
AN4 4-20mA Max	-99	999	points	100	maximum value of the range of the transducer 4 (it is important if AN4 Type = 4-20 mA) [13]
AN4 dec. point	0	2	—	0	decimal point position (it is important if AN4 Type = 4-20 mA; 0 = it will never be showed, 1 = ten, 2 = hundred) [13]

LABEL	MIN.	MAX.	U.M.	DEF.	MEASURE INPUT 5
AN5 Type	—	—	—	PTC	kind of probe 5 (PTC, TC J, TC K, NTC, 4-20mA, PT 100) [15]
AN5 Alarm Setup	—	—	—	No	kind of alarm (No = it will never be activated, AL = lower alarm, AH = upper alarm, AH & AL = both the upper alarm and the lower one) [15]
AN5 Max Alarm	-99	999	[16]	70	upper alarm threshold (it is important if AN5 Alarm Setup = AH or AH & AL) [15]
AN5 Min Alarm	-99	999	[16]	10	lower alarm threshold (it is important if AN5 Alarm Setup = AL or AH & AL) [15]
AN5 Alarm Hyst	1	20	[16]	2	hysteresis (differential, it is relative to AN5 Max Alarm and AN5 Min Alarm, it is important if AN5 Alarm Setup ≠ No) [15]
AN5 Offset	-20	20	[16]	0	probe 5 calibration [15]
AN5 4-20mA Type	—	—	—	%RH	4-20 mA unit of measure (it is important if AN5 Type = 4-20 mA; RH% = percentage of relative humidity, bar = bar, °C = Celsius degree, °F = Fahrenheit degree, Hz = hertz, mA = milliampere, - = dimensionless) [15]
AN5 4-20mA Min	-99	999	points	0	minimum value of the range of the transducer 5 (it is important if AN5 Type = 4-20 mA) [15]
AN5 4-20mA Max	-99	999	points	100	maximum value of the range of the transducer 5 (it is important if AN5 Type = 4-20 mA) [15]
AN5 dec. point	0	2	—	0	decimal point position (it is important if AN5 Type = 4-20 mA; 0 = it will never be showed, 1 = ten, 2 = hundred) [15]

LABEL	MIN.	MAX.	U.M.	DEF.	MEASURE INPUT 6
AN6 Type	—	—	—	PTC	kind of probe 6 (PTC, TC J, TC K, NTC, 4-20mA, PT 100) [17]
AN6 Alarm Setup	—	—	—	No	kind of alarm (No = it will never be activated, AL = lower alarm, AH = upper alarm, AH & AL = both the upper alarm and the lower one) [17]
AN6 Max Alarm	-99	999	[18]	70	upper alarm threshold (it is important if AN6 Alarm Setup = AH or AH & AL) [17]
AN6 Min Alarm	-99	999	[18]	10	lower alarm threshold (it is important if AN6 Alarm Setup = AL or AH & AL) [17]
AN6 Alarm Hyst	1	20	[18]	2	hysteresis (differential, it is relative to AN6 Max Alarm and AN6 Min Alarm, it is important if AN6 Alarm Setup ≠ No) [17]
AN6 Offset	-20	20	[18]	0	probe 6 calibration [17]

LABEL	MIN.	MAX.	U.M.	DEF.	ERASING OF THE DATA THE INSTRUMENT HAS STORED
Delete Memory?	Yes	No	—	No [6]	erasing of the data the instrument has stored
Memory Type	0	1	—	0	data control when the memory has run out (0 = the instrument will not store any data, 1 = the instrument will erase the oldest data in order to store the new ones) [7]
Delete Auto	Yes	No	—	No	erasing of the data the instrument has stored after you have printed them during the Historical Report printing mode

LABEL	MIN.	MAX.	U.M.	DEF.	MEASURE INPUTS NUMBER
N. Probe	1	6	—	2	measure inputs number

LABEL	MIN.	MAX.	U.M.	DEF.	MEASURE INPUT 1
AN1 Type	—	—	—	PTC	kind of probe 1 (PTC, TC J, TC K, NTC, 4-20mA, PT 100)
AN1 Alarm Setup	—	—	—	No	kind of alarm (No = it will never be activated, AL = lower alarm, AH = upper alarm, AH & AL = both the upper alarm and the lower one)
AN1 Max Alarm	-99	999	[8]	70	upper alarm threshold (it is important if AN1 Alarm Setup = AH or AH & AL)
AN1 Min Alarm	-99	999	[8]	10	lower alarm threshold (it is important if AN1 Alarm Setup = AL or AH & AL)
AN1 Alarm Hyst	1	20	[8]	2	hysteresis (differential, it is relative to AN1 Max Alarm and AN1 Min Alarm, it is important if AN1 Alarm Setup ≠ No)
AN1 Offset	-20	20	[8]	0	probe 1 calibration
AN1 4-20mA Type	—	—	—	%RH	4-20 mA unit of measure (it is important if AN1 Type = 4-20 mA; RH% = percentage of relative humidity, bar = bar, °C = Celsius degree, °F = Fahrenheit degree, Hz = hertz, mA = milliampere, - = dimensionless)
AN1 4-20mA Min	-99	999	points	0	minimum value of the range of the transducer 1 (it is important if AN1 Type = 4-20 mA)
AN1 4-20mA Max	-99	999	points	100	maximum value of the range of the transducer 1 (it is important if AN1 Type = 4-20 mA)
AN1 dec. point	0	2	—	0	decimal point position (it is important if AN1 Type = 4-20 mA; 0 = it will never be showed, 1 = ten, 2 = hundred)

LABEL	MIN.	MAX.	U.M.	DEF.	MEASURE INPUT 2
AN2 Type	—	—	—	PTC	kind of probe 2 (PTC, TC J, TC K, NTC, 4-20mA, PT 100) [9]
AN2 Alarm Setup	—	—	—	No	kind of alarm (No = it will never be activated, AL = lower alarm, AH = upper alarm, AH & AL = both the upper alarm and the lower one) [9]
AN2 Max Alarm	-99	999	[10]	70	upper alarm threshold (it is important if AN2 Alarm Setup = AH or AH & AL) [9]
AN2 Min Alarm	-99	999	[10]	10	lower alarm threshold (it is important if AN2 Alarm Setup = AL or AH & AL) [9]
AN2 Alarm Hyst	1	20	[10]	2	hysteresis (differential, it is relative to AN2 Max Alarm and AN2 Min Alarm, it is important if AN2 Alarm Setup ≠ No) [9]
AN2 Offset	-20	20	[10]	0	probe 2 calibration [9]
AN2 4-20mA Type	—	—	—	%RH	4-20 mA unit of measure (it is important if AN2 Type = 4-20 mA; RH% = percentage of relative humidity, bar = bar, °C = Celsius degree, °F = Fahrenheit degree, Hz = hertz, mA = milliampere, - = dimensionless) [9]
AN2 4-20mA Min	-99	999	points	0	minimum value of the range of the transducer 2 (it is important if AN2 Type = 4-20 mA) [9]
AN2 4-20mA Max	-99	999	points	100	maximum value of the range of the transducer 2 (it is important if AN2 Type = 4-20 mA) [9]
AN2 dec. point	0	2	—	0	decimal point position (it is important if AN2 Type = 4-20 mA; 0 = it will never be showed, 1 = ten, 2 = hundred) [9]

LABEL	MIN.	MAX.	U.M.	DEF.	MEASURE INPUT 3
AN3 Type	—	—	—	PTC	kind of probe 3 (PTC, TC J, TC K, NTC, 4-20mA, PT 100) [11]
AN3 Alarm Setup	—	—	—	No	kind of alarm (No = it will never be activated, AL = lower alarm, AH = upper alarm, AH & AL = both the upper alarm and the lower one) [11]
AN3 Max Alarm	-99	999	[12]	70	upper alarm threshold (it is important if AN3 Alarm Setup = AH or AH & AL) [11]
AN3 Min Alarm	-99	999	[12]	10	lower alarm threshold (it is important if AN3 Alarm Setup = AL or AH & AL) [11]
AN3 Alarm Hyst	1	20	[12]	2	hysteresis (differential, it is relative to AN3 Max Alarm and AN3 Min Alarm, it is important if AN3 Alarm Setup ≠ No) [11]
AN3 Offset	-20	20	[12]	0	probe 3 calibration [11]
AN3 4-20mA Type	—	—	—	%RH	4-20 mA unit of measure (it is important if AN3 Type = 4-20 mA; RH% = percentage of relative humidity, bar = bar, °C = Celsius degree, °F = Fahrenheit degree, Hz = hertz, mA = milliampere, - = dimensionless) [11]
AN3 4-20mA Min	-99	999	points	0	minimum value of the range of the transducer 3 (it is important if AN3 Type = 4-20 mA) [11]
AN3 4-20mA Max	-99	999	points	100	maximum value of the range of the transducer 3 (it is important if AN3 Type = 4-20 mA) [11]
AN3 dec. point	0	2	—	0	decimal point position (it is important if AN3 Type = 4-20 mA; 0 = it will never be showed, 1 = ten, 2 = hundred) [11]

LABEL	MIN.	MAX.	U.M.	DEF.	MEASURE INPUT 4
AN4 Type	—	—	—	PTC	kind of probe 4 (PTC, TC J, TC K, NTC, 4-20mA, PT 100) [13]
AN4 Alarm Setup	—	—	—	No	kind of alarm (No = it will never be activated, AL = lower alarm, AH = upper alarm, AH & AL = both the upper alarm and the lower one) [13]
AN4 Max Alarm	-99	999	[14]	70	upper alarm threshold (it is important if AN4 Alarm Setup = AH or AH & AL) [13]
AN4 Min Alarm	-99	999	[14]	10	lower alarm threshold (it is important if AN4 Alarm Setup = AL or AH & AL) [13]
AN4 Alarm Hyst	1	20	[14]	2	hysteresis (differential, it is relative to AN4 Max Alarm and AN4 Min Alarm, it is important if AN4 Alarm Setup ≠ No) [13]
AN4 Offset	-20	20	[14]	0	probe 4 calibration [13]