

CONFIGURATION HANDBOOK

ANL36



LOREME 12, rue des Potiers d'Etain Actipole BORN Y - B.P. 35014 - 57071 METZ CEDEX 3
Phone 03.87.76.32.51

Contact : Commercial@Loreme.fr - Technique@Loreme.fr
Download manual at : www.loreme.fr

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Device Presentation

OPERATING

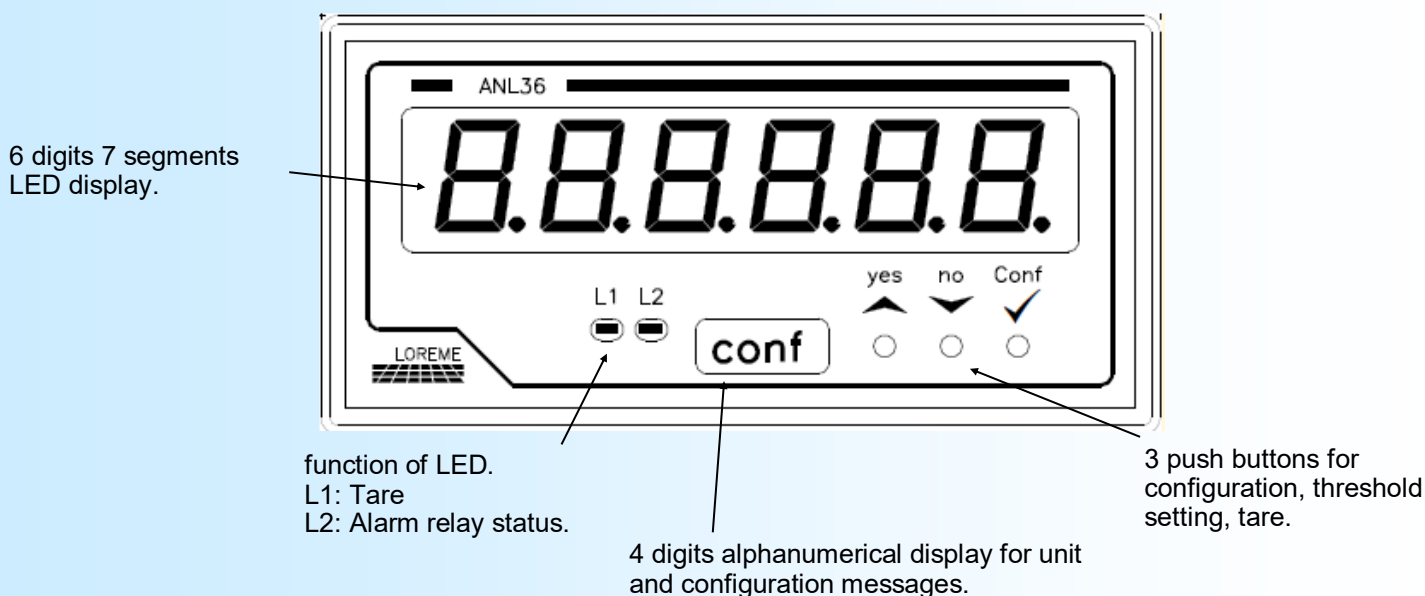
The ANL36 is a 6 digits display with parallel TOR inputs. It read and display the inputs code and transmit it to an optional analog output or a communication port (RS485 or Ethernet).

This ANL36 display can have few options:

- ANL36 : base version,
- ANL36 /R : + 1 relay,
- ANL36 /S : + 1 analog output,
- ANL36 /CMTCP : + 1 Modbus TCP communication.

The options /R, /S, /C, /CMTCP are not cumulative.

The datasheet can be downloaded at : <http://www.loreme.fr/fichtech/ANL36.pdf>



Actions on push buttons:

- ▲ <YES> answer / increase display value / Access to Tare function.
- ▼ <NO> answer / decrease the display value / Access to the alarm threshold setting.
- ✓ Validation of value / Access to device configuration.

Front face configuration

1) VISUALIZATION

At the power on, the device display the version number during 1sec. Is a message like 'r- 0.1'.

2) TARE

The Tare function may be activated with front face buttons. Press the ▲, a message scroll on the unit display:

Tare Y/N? : . Press on ▲ to activate the Tare. The device take the actual input value and save it as tare. This value still active even after a power loss. Press on ▼ to deactivate the function.

When the tare is activated, the L1 LED is light on.

3) FRONT FACE CONFIGURATION

Press on '✓ conf.' to access to configuration menus. The button ▲ is for access to rubric, Yes answer or validate the display option. The button ▼ is for skip the rubric, No answer or to not validate the display option. When a value is setting, use ▲ to increase and ▼ to decrease. Validate the value with '✓ conf.'

3.1) Setting of language of message

LANGUAGE CONFIGURATION?

FRENCH or ENGLISH

This message scroll on the unit display.

Press on ▲ to access to rubric. Press on ▼ to skip

Press on ▲ to validate the display option or ▼ to display the next option

3.2) Setting of inputs parameters

INPUT CONFIGURATION ?

FORMAT?

BIN, GRAY, BCD

to define the format of input code.

RESOLUTION?

16 bit

to define the number of inputs available.

SIGNE?

Unsigned NB/ Signed NB

to specify if the Most significant bit means the sign or not

LOGIC?

POSITIVE, NEGATIVE

to define the logic of inputs (positive if inputs are activated with a high level, negative if inputs are activated with low level)

3.3) Setting of display parameters

DISPLAY CONFIGURATION ?

LOW INPUT ?

To define the low and high value for input code

HIGH INPUT ?

NUMBER OF DECIMAL ?

To specify the number of decimal displaying

DISPLAY LOW ?

To define the low and high value of display

DISPLAY HIGH ?

UNIT

To choose the unit from a list of 37 predefined units
(To have a specific unit, you must use the RS232 configuration)
to smooth / average the display.

RESPONSE TIME?

The display value (without linearization) correspond to :

calculation of percent value of input with the high and low scale:

$$E\% = ((\text{input-tare}) - \text{LOW INPUT}) / (\text{HIGH INPUT} - \text{LOW INPUT}).$$

With this percent value, calculation of display value:

$$(E\% \times (\text{DISPLAY HIGH} - \text{DISPLAY LOW})) + \text{DISPLAY LOW}$$

Ex: Setting for a display of 0 / 100 % for a BIN or GRAY 16bits inputs.

Setting the input scales like : low input= 0, high input= 65535. Setting the display scales like: low = 0.00, high = 100.00 with 2 decimals. Choose "%" for unit.

3.4) Setting of linearization

In some case, it be useful to have a specific display for the encoder value. After define the number of linearization points, the device ask for the input point (is the binary input code) and the linearized point (is the value that have to be displayed for this input). During calculation, the device define a straight segment between two points of linearization.

SPECIAL LINEARIZATION ?

ACTIVE LINEARISATION?

Press on ▲ to activate the linearization.
Press on ▼ to deactivate the linearization

CONFIGURATION ?

NUMBER OF POINTS?

Press on ▲ to setting the linearization points

INPUT POINT ?

Define the number of used points (3 to 26 points)

LINEARIZED POINT ?

Input binary code ('PE' is display as unit and 01 as first point)
Value to be display for this input point ('PL' is display as unit and 01 as first point)

Linearization example:

An encoder provide a 8 bit gray code. We like to display 0 - 34 m³/s with a special linearization.

The input parameters are : format Gray, 8 bits resolution, unsigned.

The display parameters are: low input =0, high input=255, display low=0, display high=34, number of decimal=1, unité= m³/s.

A 6 point linearization may be :

N°	Gray code for inputs	Binary equivalent (Input point)	Display m ³ /s (Linearized point)
1	00000000 (0)	0	0
2	00010100 (20)	24	6.6
3	11010101 (213)	153	12.4
4	11101010 (234)	179	20.4
5	10010101 (149)	230	26.7
6	10000000 (128)	255	34

3.5) Setting of analog output

This rubric is available only for device with /S option.

OUTPUT CONFIGURATION ?

CURRENT / VOLTAGE

define the type of output.

LOW SCALE

define the physical range

HIGH SCALE

DISPLAY for low output

enter the display range according to the output scale

DSIPLAY for high output

(ex: scale output: 4 / 20mA for a display range of 0 / 65536)

RESPONSE TIME?

allows to apply a filter on the output to smooth the signal.

LIMITED OUTPUT ?

allows to clamp the output signal to the output scale. Except in breaking condition.

3.6) Setting of relay parameters

This menu is available only for device with the /R1 option. The L2 LED is for status of alarm.

RELAY CONFIGURATION ?

THRESHOLD?

▲ to activate, ▼ to deactivate the threshold detection.

LOW? / HIGH?

Define the type of detection.

THRESHOLD?

Define the threshold value

HYSTERESIS ?

Define the hysteresis value

FRONT FACE THRESHOLD ADJUST ?

▲ for YES, ▼ for NO.

Allow the adjustment of threshold value with front face buttons.

NEGATIVE / POSITIVE SECURITY

Define the security mode

ACTIVATION DELAY?

Define the delay for activation and release

DEACTIVATION DELAY?

(value in second and 0.01s step)

3.7) Setting of communication

This rubric is available only for device with /CMTCP option.

COMMUNICATION?

3.7.1) Option /CMTCP

IP ADDRESS? IP1, IP2, IP3, IP4	▲ to access to setting, ▼ to skip this rubric Use the ▲ / ▼ buttons to modify the value. ✓ to validate the setting. Configuration of 4 fields IP1.IP2.IP3.IP4. The factory value is : 192.168.0.253.
IP MASK? MsK1, MsK2, MsK3, MsK4	▲ to access to setting, ▼ to skip this rubric Use the ▲ / ▼ buttons to modify the value. ✓ to validate the setting. Configuration of 4 fields MsK1.MsK2.MsK3.MsK4. The factory value is: 255.255.255.0.
GATEWAY? Gt1, Gt2, Gt3, Gt4	▲ to access to setting, ▼ to skip this rubric Setting of address of gateway. Configuration of 4 fields Gt1.Gt2.Gt3.Gt4. The factory value is: 0.0.0.0

Note:

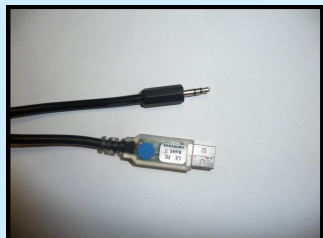
When the user access to communication menu, the device display at the end the message '**MeMo**' on the unit display and a series of 5 hyphen on the measure display to indicate the saving of the new parameters. A message "**OK!**" is display to confirm that parameters are saved in memory.

Note: If no action, the device go back to measure mode after 90 seconds delays without tacking account of new parameters.

RS232 link configuration

The device can be configured or updated in terminal mode via an RS232 link.

Step 1: Driver installation for USB / RS232 adapter



- download driver at www.loreme.fr/download/ rubric accessories

- Click on executable file to install the driver,
- Plug the cable on a USB port, Windows install a new serial communication port **COMx** (x >= 4).

Note :

The use of the cable on another USB port don't generates a new communication port. Use of another adapter generates another communication port number (COMx) and requires the reconfiguration of the HyperTerminal.

Step 2: Setting of terminal emulation software (PC with windows).

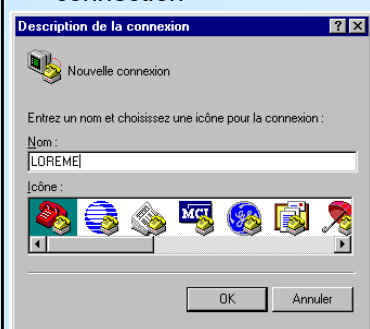
1 The terminal emulation software for PC « HyperTerminal » is resident in windows up to XP version. For later versions, it is downloadable on : **www.loreme.fr in download part** (www.loreme.fr/download/)

=> Run the downloaded software to install it.

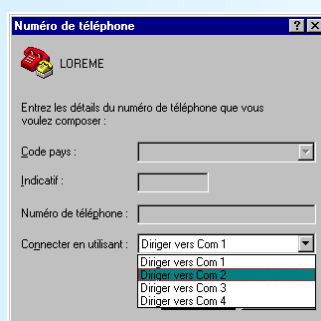
2 Start a "hyper Terminal" connection :

- Click on **"START"** button
- Go to **"All programs \ HyperTerminal Private Edition"**
- Click on **"HyperTerminal Private Edition"**

3 Enter name for the new connection

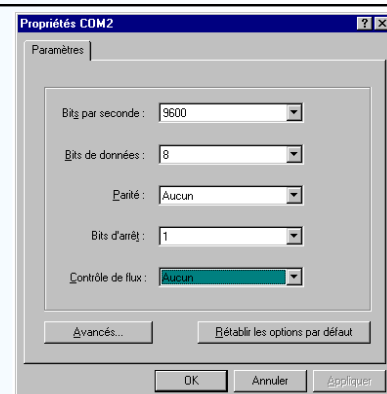


4 Choose the communication port related to the adapter.



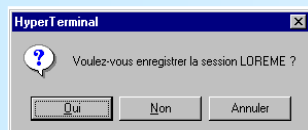
5

- Choose:
- 9600 bauds
 - 8 DATA bits
 - no parity
 - 1 stop bit
 - **XON/XOFF**



6 The PC is now in terminal mode, connect it to the device by plugging the RS232 cable. The measure is now displayed on the terminal. To access configuration, press 'C' key.

7 When leaving Hyper terminal, the following window will appear. By saving, the terminal session will start with the same configuration.



Thus, the shortcut **LOREME.ht** will permit to communicate with all LOREME devices.

Note: to modify the parameters of terminal mode whereas this one is already started, it is necessary, after having carried out the modifications, to close the terminal and to open it again so that the modifications are effective.

Terminal mode

1) Visualization

The ANL36 can be configured using the RS232 link on the front of the device.

This requires a USB/Jack or DB9/jack adapter cable, depending on connectors available on the PC, and have a ASCII emulation program like 'Hyperterminal ' or else.

Note: For RS232 cable installation, see the "RS232 Configuration" page.

Once the ANL36 connected to PC, it send following information:

C:13319	encoder value after bit formatting (with bit Low, bit High) and tare,
G:20.32%	corresponding value in display range (after linearization)
S:7.25 mA	value of analog output. If present.

To access to the configuration, press the "C" key on PC keyboard.

The device display:	
CONFIGURATION	temporary display of device version.
REV x.y	

Many message can be display:

- Message of menu: RELAY CONFIGURATION (Y-N)	Press the "Y" (Yes) to enter in this menu. Press the "N" (Non) to skip and go to next menu.
- Message for choosing: GRAY (Y-N)YES	The actual choice is display. Press "N" to change. The device will display another choice.
- Numerical enter: RESPONSE TIME 1.0 s	The current value is display. Enter the new value and validate it with ENTER For no change, just press the ENTER key. In case of error when entering new value, press the "←" (backspace) to cancel the modification.

2) Configuration menus

2-1) Language of messages

This rubric is for define the language of messages. French or English

2-2) Input parameters

INPUT CONFIGURATION ?
(Y-N)

FORMAT (Y-N)	
BIN / GRAY / BCD (Y-N)YES	Define the format of input code.
RESOLUTION 16 bit	Define the numbers of inputs taking account.
SIGNE (Y-N)	
UNSIGNED / SIGNED (Y-N)YES	Signed if Most significant bit represent the signe Unsigned if not.
LOGIQUE POSITIVE / NEGATIVE (Y-N)YES	Define the logic of inputs

2-3) Display parameters

This rubric is for setting the display range (see page 5, chapter 4-3).

UNIT

2.3) Display parameters

DISPLAY CONFIGURATION?

(Y-N)

Low input 0	input code range
High input 65535	
Display Low 0	display scale equivalent
Display high 100	
Number of decimal 2	Set the number of decimal
UNIT %	set the specific unit (4 characters)
DISPLAY FILTER? (Y-N)	smooth the display.
DISPLAY FILTER 0 s	

2.4) Linearization

SPECIAL LINEARIZATION?

(Y-N)

ACTIVATED LINEARISATION (Y-N) YES	Yes to activated the function
CONFIGURATION (Y-N)	
NUMBER OF PTS 5 Pts	Set the number of linearized points used (3 to 25 points)
INPUT POINT 01 8192	Setting the value of input (binary value of input code)
LINEARIZED POINT 01 33 %	Setting the equivalent value to be displaying.
...	Same for the other points.

2.5) Analog output parameters

Only for device with /S option.

OUTPUT CONFIGURATION ?

(Y-N)

CURRENT / VOLTAGE (Y-N)YES	type of output.
LOW SCALE 4.00 mA	setting of physical scale
HIGH SCALE 20.00 mA	
DISPLAY for Smin 0%	setting of display value according to the physical scales
DISPLAY for Smax 100.0%	(ex: output: 4 - 20 mA for display of 0 - 100.0%)

RESPONSE TIME? 0 s	apply a filter on output (smooth the signal).
LIMITED OUTPUT ? (Y-N)NO	Limit the output signal to low and high scale.

2.6) Relay parameters

Only for device with /R option.

RELAY CONFIGURATION? (Y-N)	
THRESHOLD? (Y-N) YES	
Low? / High? (Y-N)YES	choose the mode of threshold
THRESHOLD? 25.0%	threshold value
HYSTERESIS ? 2.0 %	hysteresis value
FRONT FACE THRESHOLD ADJUST (Y-N)YES	allow the modification of threshold with front face buttons.
SECURITY (Y-N)YES	relay security mode
ACTIVATION DELAY? 0 s	Activation and deactivation delays
DEACTIVATION DELAY? 2.0 s	(in second with 0.01s step)

2.7) Communication parameters

Only for device with /CMTCP option.

COMMUNICATION? (Y-N)	
IP ADDRESS 192.168.000.253	
IP MASK 255.255.255.000	
GATEWAY 000.000.000.000	

2.8) Special function

SPECIAL FUNCTION (Y-N)	
FRONT FACE LOCKED (Y-N)NO	Type 'Y'es to forbid the access to configuration with the front face buttons. The threshold setting still be accessible.

2.9) End of configuration

OK!	Message to indicate the saving of new parameters.
-----	---

Note: If no action, the device go back to measure mode and ignore the modifications.

Modbus TCP communication

1) Characteristic

Protocol: MODBUS TCP
 Link: Ethernet 10/ 100 base T
 Plug: RJ45
 Default IP address: 192.168.0.253
 Port: 502
 Reading request: Function code : 03,04
 Writing request: Not supported
 Type of data: measure display, alarm.
 Data format: Value in 32bits IEEE float format, unsigned 32bits integer.

2) Using of multi master link

The ANL36 can be access with few master with different IP address (up to 6). However, care must be taken that the average network load does not become too high, which could cause communication errors (no response from the slave (timeout, etc.).

The average response time to a read request is around 15ms to 50ms (with 6 connections).

3) Detail of data

3.1) Available data

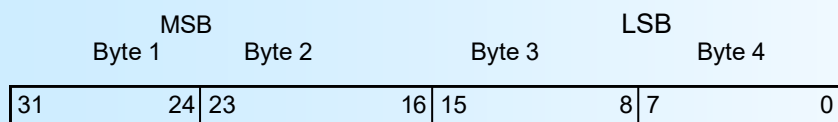
All measures are accessible for reading.

3.2) Data format

- 32bits IEEE float format.
- Data send with MSB first (word1: exponent + MSB mantissa, word2: mantissa)



- 32bits signed integer.
- Data send MSB first, composed of 2 words (4 bytes).



4) Table of data

This table list the available measure.

Register address decimal (Hexadecimal)	Designation	Total Word
0000 (\$0000)	Displaying value	Word 1
	32bits IEEE Floating format	Word 2
0002 (\$0002)	input code (code - Tare)	Word 1
	32bits IEEE Floating format	Word 2
0004 (\$0004)	Direct Input code (code + Tare)	Word 1
	32bits signed integer	Word 2

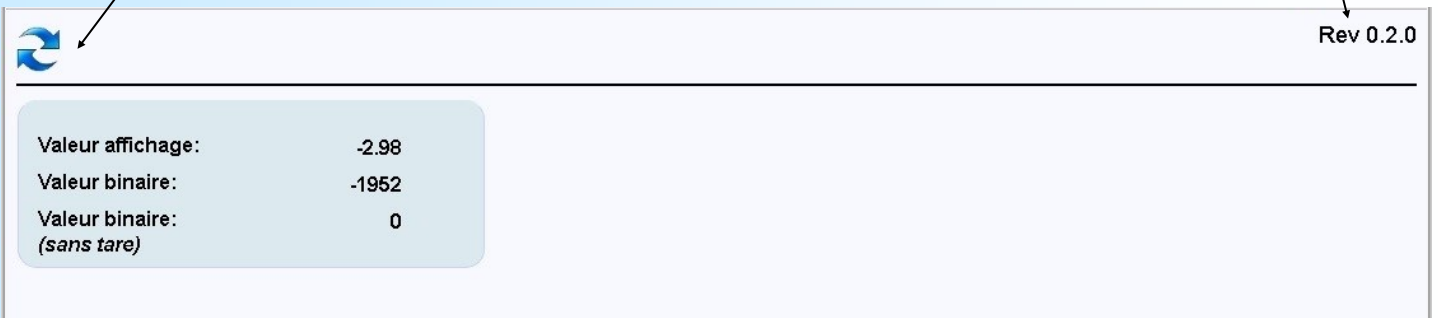
WEB server

WEB page overview

The web page allows to show some information. Click on icon to refresh.

Button to refresh
measure

version number



The screenshot shows a web page with a light blue header. On the left, there is a blue circular refresh icon. On the right, the text "Rev 0.2.0" is displayed. Below the header, there is a light blue box containing three lines of text:

Valeur affichage:	-2.98
Valeur binaire:	-1952
Valeur binaire: (sans tare)	0



The screenshot shows a light blue box containing three lines of text, representing the default display condition:

Valeur affichage:	----
Valeur binaire:	----
Valeur binaire: (sans tare)	----

Measure display in default
condition.

Note:

"**Valeur affichage**" means display value. The value you can see on 6 digits display.

"**Valeur binaire**" means the input code minus the tare

"**Valeur binaire (sans tare)**" means the direct input code value

FIRMWARE update

To access to the firmware update function, you must first open an HyperTerminal session on a PC, connect the device to the PC with the RS232 link cable and then power on the device.

The following character is send to the terminal:

> <————— The device sends this character then it waits the « F » key during 0.5 s.

If the user has pressed the « F » key in the allowed time, the following message is displayed in the Hyperterminal windows:

FIRMWARE LOADER Rev2 READY TO TRANSFER...

The device is now in the firmware load mode and is waiting for the firmware file. This file is provide by LOREME and contain the firmware code in Intel HEX format.

Select the « Transfer », « Send a text file ... » in the Hyperterminal menu.
Select the directory and open the file. The Hyperterminal program begins to send the file to the device.

FIRMWARE LOADER Rev2 READY TO TRANSFER

***** <————— The star characters appears to show the progress of the uploading.

At the end, the message « **PROGRAMMING OK !** » is display if no errors occurs. Otherwise, these following message could be displayed:

- | | |
|-------------------------------|---|
| - SERIAL COM ERROR ! | Error during receipt. |
| - SERIAL TIMEOUT ! | Waiting time of receipt elapsed (60 s). |
| - PROGRAMMING FAILED ! | Programming error in the internal flash memory. |

Attention

*If an error occurs during the programming process, it is necessary to start again the whole procedure.
A bad programming leads to an inoperative device.*

EMC Consideration

1) Introduction

To meet its policy concerning EMC, based on the Community directives **2014/30/EU** & **2014/35/EU**, the LOREME company takes into account the standards relative to this directives from the very start of the conception of each product.

The set of tests performed on the devices, designed to work in an industrial environment, are made in accordance with **IEC 61000-6-4** and **IEC 61000-6-2** standards in order to establish the EU declaration of conformity. The devices being in certain typical configurations during the tests, it is impossible to guarantee the results in every possible configurations. To ensure optimum operation of each device, it would be judicious to comply with several recommendations of use.

2) Recommendations of use

2.1) General remarks

- Comply with the recommendations of assembly indicated in the technical data sheet (direction of assembly, spacing between the devices, ...).
- Comply with the recommendations of use indicated in the technical data sheet (temperature range, protection index).
- Avoid dust and excessive humidity, corrosive gas, considerable sources of heat.
- Avoid disturbed environments and disruptive phenomena or elements.
- If possible, group together the instrumentation devices in a zone separated from the power and relay circuits.
- Avoid the direct proximity with considerable power distance switches, contactors, relays, thyristor power groups, ...
- Do not get closer within fifty centimeters of a device with a transmitter (walkie-talkie) of a power of 5 W, because the latter can create a field with an intensity higher than 10 V/M for a distance fewer than 50 cm.

2.2) Power supply

- Comply with the features indicated in the technical sheet (power supply voltage, frequency, allowance of the values, stability, variations ...).
- It is better that the power supply should come from a system with section switches equipped with fuses for the instrumentation element and that the power supply line be the most direct possible from the section switch.
- Avoid using this power supply for the control of relays, of contactors, of electrogates, ...
- If the switching of thyristor statical groups, of engines, of speed variator, ... causes strong interferences on the power supply circuit, it would be necessary to put an insulation transformer especially intended for instrumentation linking the screen to earth.
- It is also important that the installation should have a good earth system and it is better that the voltage in relation to the neutral should not exceed 1V, and the resistance be inferior to 6 ohms.
- If the installation is near high frequency generators or installations of arc welding, it is better to put suitable section filters.

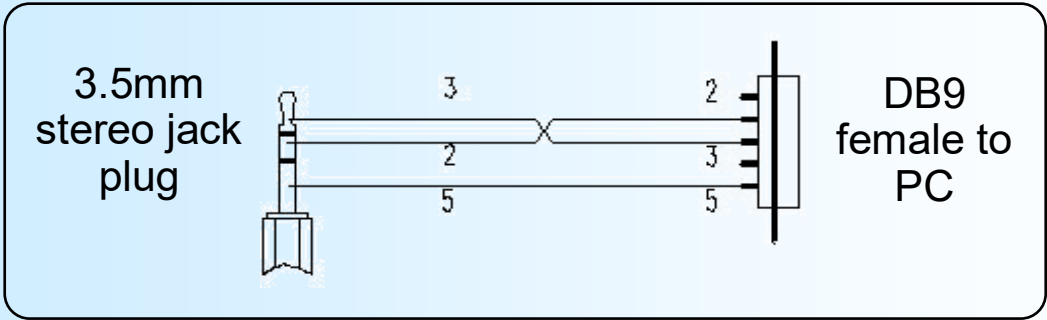
2.3) Inputs / Outputs

- In harsh conditions, it is advisable to use sheathed and twisted cables whose ground braid will be linked to the earth at a single point.
- It is advisable to separate the input / output lines from the power supply lines in order to avoid the coupling phenomena.
- It is also advisable to limit the lengths of data cables as much as possible.

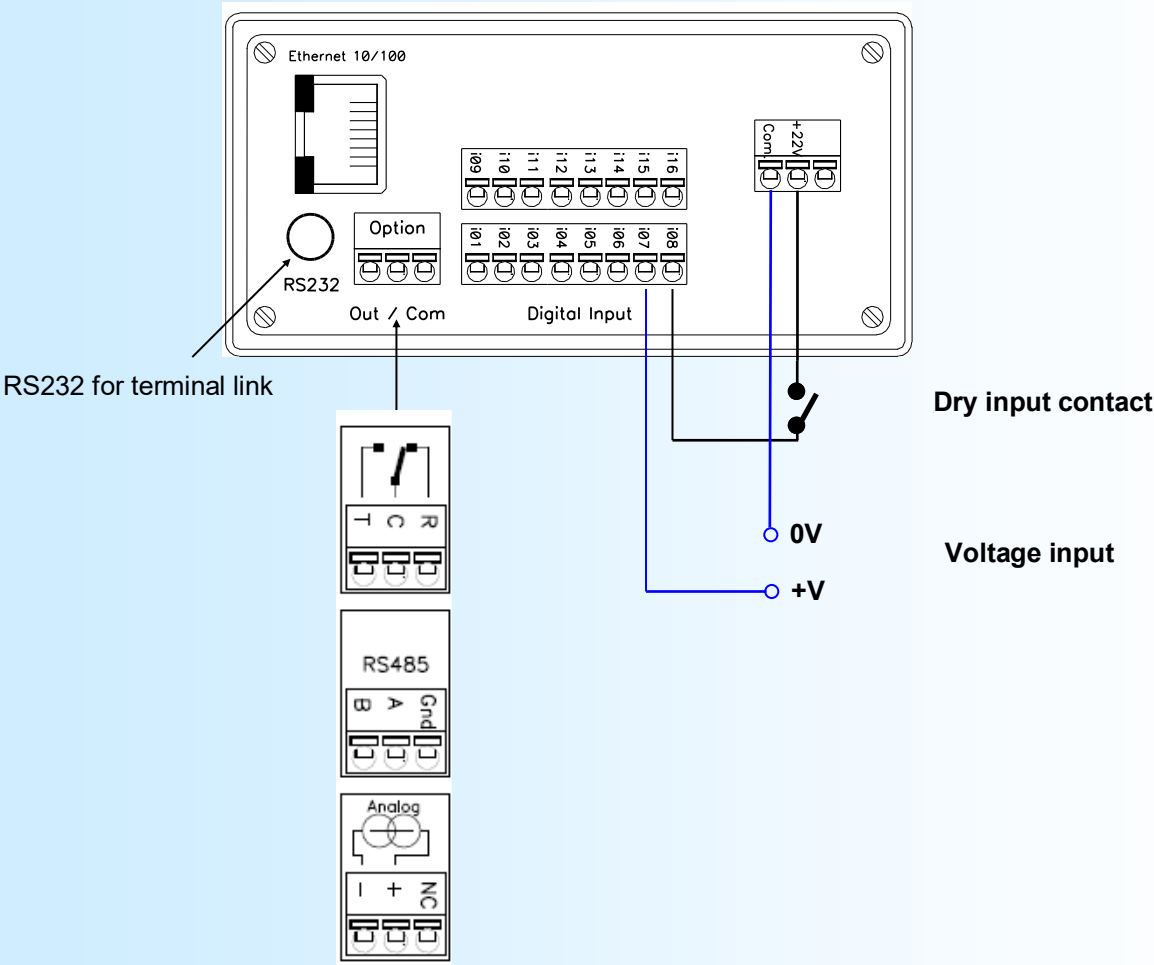
Wirings



Terminal - device link



WIRING



Outline dimensions

