BARGRAPH PANEL METER single channel with 4 digits display

LOREME

CONFIGURATION HANDBOOK

BGL136

BGL 136

100%
95%
90%
85%
80%
75%
70%
65%
60%
55%
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%

127.5

AL 1   AL 2

Config

Yes   No

REV 0.0 - 24/05/19

Table of contents

Device Presentation

LOREME

The BGL136 device is a numeric bar graph that allows with it's LED strip to quickly appreciate the measure order of input as well as it's variation. The digital display provide a more accurate reading of the input. This display, associated with two push buttons, is also used for the configuration of the device by the front panel.
The BGL136 is compatible with the European RoHS Directive to reduce the use of certain hazardous materials. The RoHS certificate is provided by LOREME on request.

It's necessary to notice the difference between different models:
BGL136   :   Base version, without relays.
BGL136-NAV1 :   Base version for Naval Group, without relays, without push-buttons.

And the option available:
 /R1, /R2 :   + 1 or 2 alarm relays.

The technical data sheet can be downloaded here: http://www.loreme.fr/fichtech/BGL136_eng.pdf

USER INTERFACE

Customized scale on demand

40 LED ramp

4 digits dot matrix display
(display the measurement
alternately with the display range unit)

Alarms state signaling LED
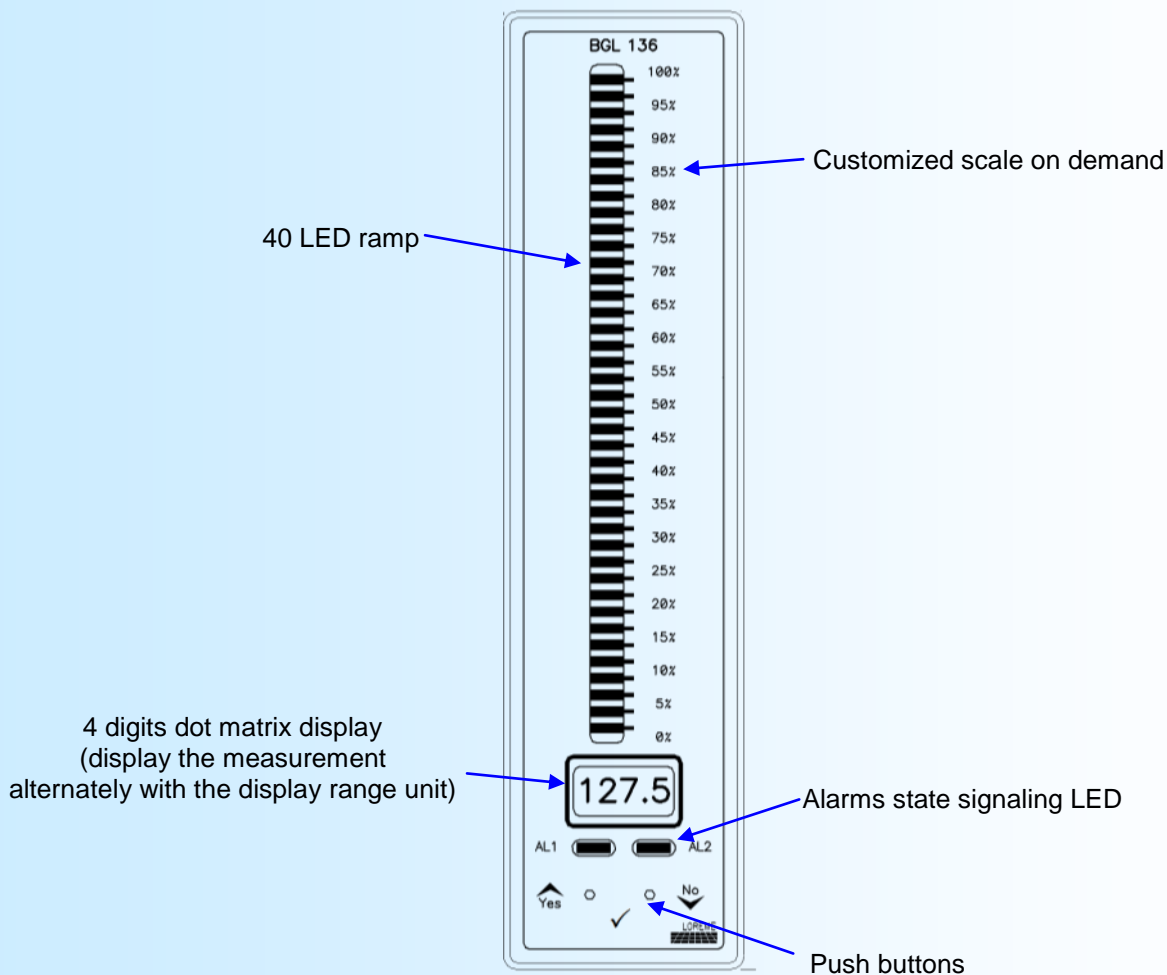
Push buttons

The device front panel includes:
- One 4 digits dot matrix display, 10 000 points resolution.
- One 40 LED ramp.
- Two alarm state signaling LED (AL1, AL2).
- Two push buttons:
  • ⋀   Access to alarm 1 threshold setting, Yes key, value increment.
  • ⋁   Access to alarm 2 threshold setting, No key, value decrement.
  • ✓   Access to the configuration by simultaneous press on both push buttons.

.

Configuration via the front face

LOREME

1) Alarm thresholds setting

The user can change de threshold by the front panel, if relays are configured in threshold detection and access to setting is allowed.

To modify the alarm 1 threshold, press on ▲ button. After a warning beep and depending on the configuration of relay 1, the threshold value is displayed. If threshold setting is allowed, press the ▲ or ▼ button to modify the value. During the setting, the alarm LED AL1 is blinking. The device automatically exits the setting mode and stores the set value after a delay of 4 seconds without pressing any buttons.

To modify the alarm 2 threshold, press on ▼ button. After a warning beep and depending on the configuration of relay 2, the threshold value is displayed. If threshold setting is allowed, press the ▲ or ▼ button to modify the value. During the setting, the alarm LED AL2 is blinking. The device automatically exits the setting mode and stores the set value after a delay of 4 seconds without pressing any buttons.

Note:
The device stop measuring when the user access to the threshold setting. The state of the relay don't change. the measurement restart when the user leaves the setting procedure.

2) Device configuration

The device is fully configurable by the push buttons on the front panel. This possibility can be secured by locking the access when configuring the special functions in Terminal mode. If access is allowed, the user can change the configuration settings.

The modifiable parameters are:
- The language of the messages (French or English).
- The configuration of the measurement input (input type, measurement scales).
- The configuration of the display range (Displayed unit, number of decimals, low & high display scales).
- The relays configuration (detection type, threshold type, threshold, hysteresis, delays).
- Special functions:
    - The filtering time of the measurement (makes it possible to smooth the variations of the input measurement).
    - The square root calculation.
    - The display mode of the ramp (display of the last point or display of all the points).

2.1) Method

For each rubric, a message is scrolling on the display. The ▲(**yes**) button allows to access to the rubric or to validate the choice. The ▼(**no**) button allows to skip the rubric and access to the next choice.
In case of value setting, the ▲ button permits to increase the value and the ▼ button to decrease it. During the setting, the LED AL1 is blinking. All parameters are limited except the display range (**LOW** or **HIGH** is displayed in case of low or high overflow). The device automatically validates the setting after a delay of 4 seconds without pressing the buttons.

Note:
If no action are made during 30 seconds, the device returns to measurement mode without saving any changes.

2.2) Configuration details

The access to the configuration mode is made by pressing simultaneously both buttons. A temporary message is displayed. This message shows the device version « `REVx.y` », where **x** is the Hardware version and **y** is the Software version.

If the message '**NOT ALLOWED!**' appears, it means that access to the configuration is locked.

2.2.1) Language configuration

`LANGUAGE CONFIGURATION?`	Press the ▲ button to access to the menu. Press the ▼ button to skip.
`ENGLISH?`	Language choice.
`FRENCH?`	Press ▲ button to confirm the displayed choice. ▼ button to display the next choice.

LOREME

2.2.2) Input configuration

`INPUT CONFIGURATION?`	Access to the input configuration (type and scales). The actual configured input type is showed at first.
`CURRENT?`	Press ▲ button to confirm the displayed choice. ▼ button to display the next choice.
`VOLTAGE(V)?`	
`LOW SCALE?` `4.00 mA`	Access to the low scale setting of the selected input. Set the value with ▲ , ▼ buttons (limited to 0).
`HIGH SCALE?` `20.00 mA`	Access to the low scale setting of the selected input. Set the value with ▲ , ▼ buttons (limited to 20 mA or 50 V).

2.2.3) Display range
`DISPLAY RANGE?`

`UNIT?`	Access to the setting of the measurement unit to display.

User can choose between the following predefined units:
```
V, mV, mA, A, Ohm, S, uS, %, °C, °F, °K, s, min, Hz, rpm, kg, g, N, t, t/h, Pa, kPa,
hPa, MPa, mBar, Bar, kJ, mm, cm, m, m/s, m3, m3/h, L, L/s, L/h, mol, pH.
```

`NUMBER OF DECIMAL?` `1`	Access to the setting of the number of displayed decimals. Set the value with ▲ , ▼ buttons (0, 1, 2 or 3).
`LOW SCALE?` `0.5 m3`	Access to the display range low scale setting. Set the value with ▲ , ▼ buttons (value not limited).
`HIGH SCALE?` `14.0 m3`	Access to the display range high scale setting. Set the value with ▲ , ▼ buttons (value not limited).

2.2.4) Relays configuration
This rubrics are only visible if the device is equipped with 1 or 2 relays (options /R1 or /R2).

`RELAY #1?`	Access to the relay #1 parameters (/R1 or /R2 option).
`BREAK DETECTION?N`	The break detection is disabled. "`?N`" is displayed. Press ▼ confirms the deactivation of the break detection. Press ▲ activates the break detection. ("`?Y`" will be displayed next time).
`THRESHOLD DETECTION?N`	The threshold detection is disabled. "`?N`" is displayed. Press ▼ confirms the deactivation of the threshold detection. Press ▲ activates the break detection. ("`?Y`" will be displayed next time).
`LOW THERSHOLD?` `HIGH THERSHOLD?`	Choose the type of threshold detection.
`THERSHOLD?` `3.5 m3`	Access to the threshold setting. Set the value with ▲ , ▼ buttons (value not limited).
`HYSTERESIS?` `0.2 m3`	Access to the hysteresis setting. Set the value with ▲ , ▼ buttons (value not limited).
`FRONT FACE THRESHOLD ADJUST?N`	The front face threshold setting is not allowed. "`?N`" is displayed. Press ▼ confirms this. Press ▲ to allow the setting via the front face. ("`?Y`" will be displayed next time).

RELAY CLOSED IN ALARM?   Choose the relay security.
RELAY CLOSED OUT OF ALARM?

ACTIVATION DELAY?   Access to the activation delay setting (0 to 7200 s).
1.0 s

DEACTIVATION DELAY?   Access to the deactivation delay setting (0 to 7200 s).
1.0 s

RELAY #2?   Access to relay #2 parameters configuration (only if /R2 option).
same as relay 1

2.2.5) Special functions

SPECIAL FUNCTIONS?

MEASURE DAMPING?   Access to the measurement filter setting.
0 s   Set the value with ▲ , ▼ buttons (0 to 60 s).

SQUARE ROOT?N   The square root calculation is disabled. "**?N**" is displayed. Press ▼ confirms the
          deactivation of the square root calculation. Press ▲ activates it.
          ("**?Y**" will be displayed next time).

DISPLAY MODE?   Access to the bar graph display mode setting
  RAMP?   Choice of the ramp display mode.
  POINT?   Choice of the point display mode.

2.3) End of configuration

OK!   This message indicates that all the parameters have been successfully saved.

Note:
If, during the configuration process, no buttons are pressed for more than 30 s, the device returns to measure mode without saving the new configuration.

RS232 link setting

LOREME

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:
> http://www.loreme.fr/aff_produits.asp?rubid=53&langue=fr

- 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** (http://www.loreme.fr/HyperTerm/htpe63.exe)

=> Run the downloaded software to install it.

2 Start a "hyper Terminal" connection :
- Click on **"START"** button
Up to XP version
- Go to **"Programs \ Accessories \ Communication \ Hyper Terminal"**
- Click on **"Hypertrm.exe"**
Or if the software was downloaded
- 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 session whereas this one is connected, it is necessary to disconnect it, modify the parameters and then to reconnect it.

Terminal mode

LOREME

1) Visualization

The BGL136 can be connected to a PC in terminal mode via the stereo jack on the rear.
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 on the PC.

Once the device is connected to the PC, it displays the following measurements page every 3 seconds.

        0 m3   Value of display range measurement.

2) Configuration

The handbook explains in detail the different configurations possibilities:
Language, input, relays, special functions.
To enter the configuration mode, just press the **"C"** key. The message '**CONF**' is displayed in front.
And on the Terminal screen:

CONFIGURATION
Rev0.0   This message indicates the revision of the device in the form **Hard.Soft**.

2.1) Method

At the configuration time, different types of questions are displayed. For each one, several answers are possible.
You will find below the detailed description of each case.

2.1.1) Menu selection

example: INPUT CONFIGURATION
            (Y-N)

The user makes a choice by pressing the keys **"Y"** or **"N"**.
This choice permits to access or skip the different configuration rubrics.

2.1.2) Parameter selection

example: CURRENT   or   CURRENT
            (Y-N)YES   (Y-N)NO

Previous choice = YES: - pressing **"Y"** or **"Enter"** => choice validation = YES.
                        - pressing **"N"** => choice changing = NO.

Previous choice = NO: - pressing **"N"** or **"Enter"** => choice validation = NO.
                        - pressing **"Y"** => choice changing = YES.

2.1.3) Value acquisition

Example: LOW SCALE
            4.00 mA

There are two possibilities:
- The validation without modification by typing "**Enter**",
- The modification with simultaneous display followed by validation with "**Enter**".

Notes:
- It is possible, when a mistake is made during a value acquisition, before validating it, to go back by pressing on backspace key. This re-displays the message without taking notice of the mistake.
- In configuration mode, if there is no action on a key during 2 minutes, device goes back in measure mode without taking notice of the modifications made before.
- In configuration mode, if you want go back to measure mode without taking notice of modifications made before, just press the escape key.

Configuration

LOREME

2.2) Language
The language possibilities are:
- French
- English

2.3) Input
The input configuration is made of:
- input type choice (current or voltage).
- Scales setting

INPUT CONFIGURATION
(Y-N)

CURRENT
(Y-N)YES

LOW SCALE
4.00 mA

HIGH SCALE
20.00 mA

2.4) Display range
The display range converts the input signal in a other physical unit, thus making the reading of the measured information easier.

Ex: Input 4-20 mA / Display range 0-1000 kg
  => Input = 12 mA, displayed value = 500 kg

To configure the display range, it is necessary to configure:
- The unit.
- The number of decimal.
- The low & high scales.

The **unit** of the display range is useful to interpret the real size of the measurement. It is limited to 4 characters. This characters are type on terminal keyboard and display on screen. The <Enter> key valid the unit entered.

The **number of decimal** correspond to the number of digit displayed behind the decimal point (0, 1, 2 or 3).

DISPLAY RANGE
(Y-N)
UNIT
m3

NUMBER OF DECIMAL
1

LOW SCALE
0.5 m3

HIGH SCALE
20.0 m3

2.5) Relays
The device can, by /R1 or /R2 option, provide respectively 1 or 2 independently configurable alarm relays.

Relays configuration is presented through 2 rubrics:
- Detection type (The two detections types can be activated simultaneously):
- breaking detection/watchdog function,
- threshold detection.

The **breaking detection** activates alarm on input measure range underflow or overflow. Underflow is detected when the measure falls under the low scale minus 10 % of measurement scale (LOW is displayed). Overflow is detected when the measure drops above the high scale plus 10 % of measurement scale (HIGH is displayed).

The **threshold detection** activates alarm on threshold overflow. It is necessary to choose the threshold type, high or low, threshold and hysteresis value.

The threshold detection parameters are:
- Type of detection: high or low threshold.
- Threshold and hysteresis value.
- Front face adjustment possibility.
- Security.
- Activation and deactivation delays.

The alarm detection works in this manner:
- **High threshold** detection: .alarm is activated when measure goes above threshold,
.alarm is removed when measure goes below threshold minus hysteresis.

- **Low threshold** detection: .alarm is activated when measure goes below threshold,
.alarm is removed when measure goes above threshold plus hysteresis.

Relay parameter:
- authorization of threshold adjustment by the front panel, security, delay.

When alarm is used in threshold detection, the **Front face threshold adjustment** is authorized by default.
This possibility can be deactivated if the adjustment must be inaccessible in front face, only the visualization is then possible.

The security function allows to choose between the activation or the de-activation of the relay when alarm is activated.

The activation and deactivation delays, configurable from 0 to 7200 s set the time above which alarm changes its state after event appearance and disappearance.
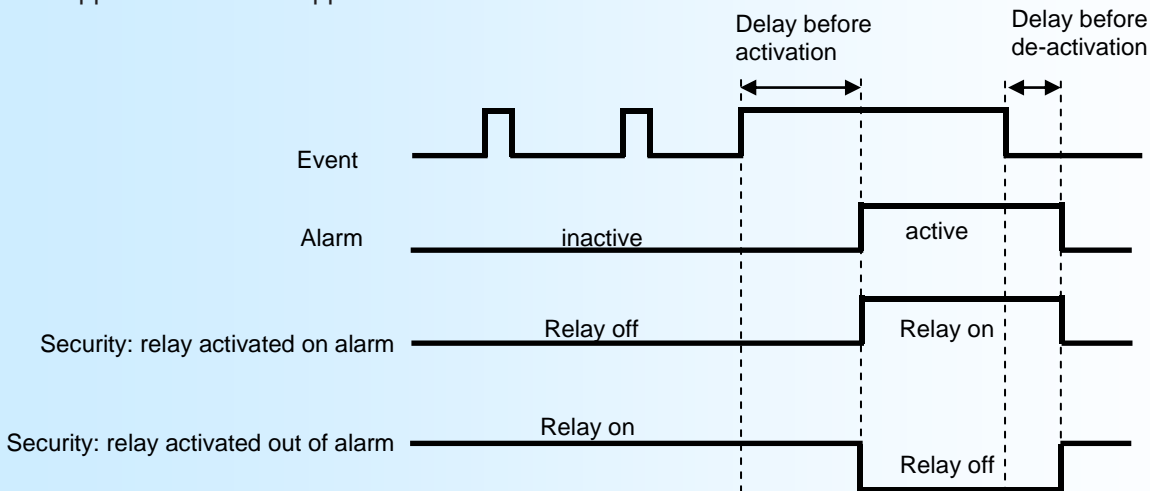
RELAY #1	If /R1 or /R2 option
(Y-N)	
BREAK DETECTION	Activation/deactivation of the relay on failure of the measurement.
(Y-N)NO	
THRESHOLD DETECTION	Activation / deactivation of the relay on threshold overflow.
(Y-N)YES	
HIGH/LOW THRESHOLD	Choice of the detection type, high or low.

THRESHOLD
10.0 m3   Enter the threshold value.

HYSTERESIS
0.5 m3   Enter the hysteresis value.

FRONT FACE THRESHOLD ADJUST Choice of front face threshold adjustment or not.
(Y-N)YES

RELAY CLOSED IN ALARM   Choice of the relay security.
RELAY CLOSED OUT OF ALARM

ACTIVATION DELAY
0 s   Enter of the activation delay (0 to 7200 s).

DEACTIVATION DELAY
0 s   Enter of the deactivation delay (0 to 7200 s).

RELAY #2
(Y-N)
..... Same as for relay 1

2.6) Special functions
The device disposes of some special functions to adapt its operation.

The **measure damping** allows to filter the measure in case of a fluctuating input signal.

The **square root** function extract the square root of the input range percentage. The result is reported on the displayed value (ramp & digital display).

The **special linearization** function allows the user to create a personalized response curve by configuring points of correspondence between measured input signal, the display range and the displayed ramp. When this function is choose, it is directly activated, but linearization points are not modified. To modify linearization points, it is necessary to access to the configuration of the points.

When **special linearization** is enabled, the device uses linearization curve corresponding to configured points.

To personalize a response curve, it's necessary to set for each curve point the input value, the corresponding display range value and, if activated, the corresponding ramp display point (maximum 26 points including input points 0 % and 100 %). So, for each measured point, the device will make correspondence to the linearized display range value and the linearized ramp value. If the ramp is not linearized it will then be the percent of the display range linearized value relative to the display range scale (point100%-point0%).
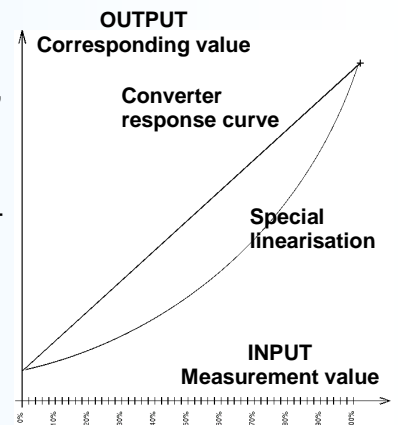
Display mode:
    - Ramp / Bar mode : The LED's are lit from the first one to the actual position.
    - Dot mode: Only the LED indicating the actual position is lit.

The **front face configuration lock** allows the user to lock the configuration procedure accessible via the front face.

SPECIAL FUNCTIONS?   Press 'Y' to access the special function configuration.
(Y-N)

    MEASURE DAMPING
    0 s   Enter of the measurement filter response time (0 to 60 s).

    SQUARE ROOT   Activation / deactivation of the square root calculation.
    (Y-N)NO   If the square root is active, then the special linearization function is deactivated and
                                inaccessible.

SPECIAL LINEARIZATION
(Y-N)YES   Activation / deactivation of the special linearization. If the linearization is active
                            then the square root function is deactivated and inaccessible.
    RAMP LINEARIZATION
    (Y-N)YES   Activation / deactivation of the ramp linearization.

    CONFIGURATION
    (Y-N)   Access to the configuration of the linearization points.

        NUMBER OF POINTS
        3   Enter the number of points of the special linearization.

        INPUT POINT 01
        4.00 mA   Enter the input value of point 1.

        DISPLAY RANGE POINT 01
        0.5 m3   Enter the display range value of point 1.

        RAMP POINT(%) 01 This rubric is only visible if the ramp linearization has been previously activated.
        20.0%   Enter the ramp value of point 1.
        etc........

DISPLAY MODE
(Y-N)   Access to the ramp display mode configuration.
    RAMP   Choice of the ramp display mode.
    DOT

FRONT FACE CONFIG. LOCK?
(Y-N)NO   Lock or unlock the front face configuration access.

2.7) <u>End of the configuration</u>

OK!   This message indicates that all the parameters have been successfully saved.

Measure offset

Sometimes, it may be interesting to modify the measure by a simple terminal keyboard action.
It can be used in many situations as sensor aging, an input refinement as a result of magnifying effect, etc...

To offset the measure, it is necessary:
- To be in measure mode,
- type on "**+**" or "**-**" to access the function,
- on terminal the display become:

      OFFSET 0.5   offset function, offset value in Analog to digital conversion points.
      15.1 m3   Measure with offset.

- Use keys "**+**" and "**-**" to adjust offset, measure is directly modified.
- Type on "**ENTER**" to memorize the offset value.

Notes:

- When the device is not supplied or is in configuration mode, offset stay active. To reset the offset, it is necessary to start the "OFFSET" function, set the offset value to zero with the "+" and "-" keys, then validate it by "ENTER".
- In offset control mode, when there is no action on "+", "-" or "ENTER" keys during 2 minutes, the device leaves the mode without taking account of the adjusted offset value.

FIRMWARE update

LOREME

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 window:

FIRMWARE LOADER Rev3
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 Rev3
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

LOREME

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

LOREME

AC/DC power supply
AC/DC power supply
Internally not connected

Rest
Common   Relay 1
Work
Rest
Common   Relay 2
Work

Stereo Jack for the
RS232 link

Voltage input (V)
Current input (mA)
Ground