

CONFIGURATION HANDBOOK

CPL36



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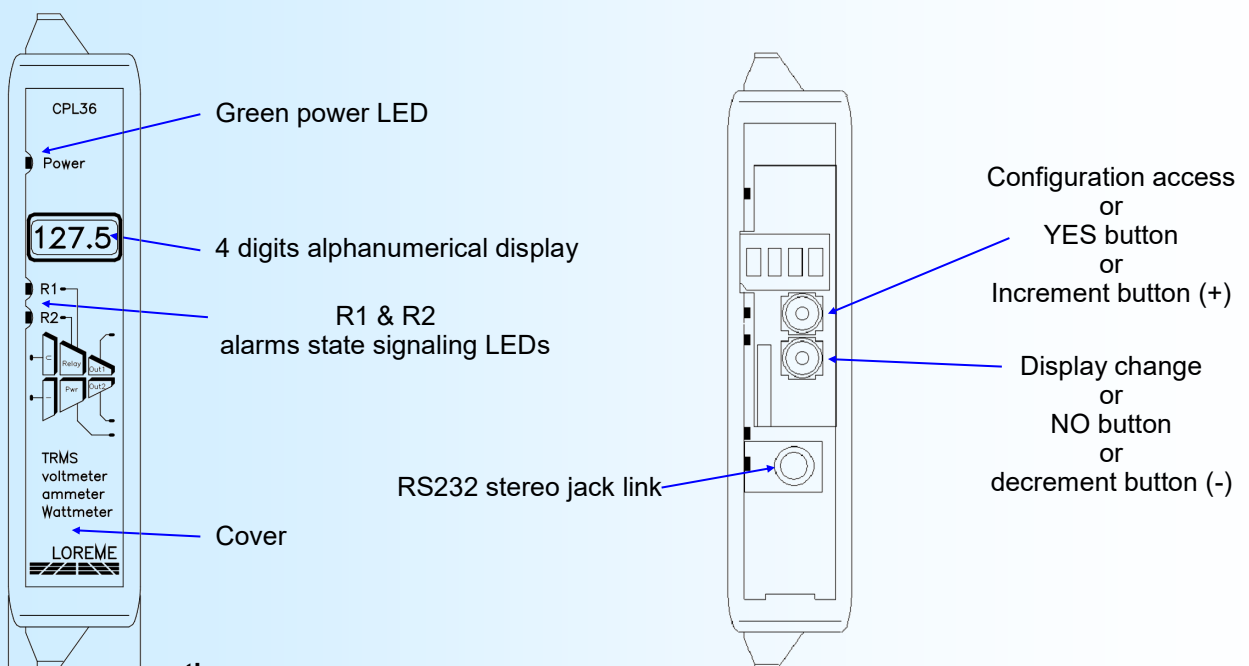
Device Presentation

The CPL36 is a TRMS (AC+DC) converter for measuring, monitoring and retransmission of electrical parameters. Implementation is fast by simple front face configuration. The various output options allow a wide range of application: measurement, protection, control.

Device has several options:

- CPL36 : standard base version with one analog output.
- CPL36-Rogo : Rogowski sensor input base version with one analog output.
- CPL36-Hall : Hall sensor input base version with one analog output.
- CPL36../R1 : + 1 relay.
- CPL36../R2 : + 2 relays.
- CPL36../S2 : 2 analog outputs.

The technical data sheet is downloadable here: http://www.loreme.fr/fichtech/CPL36_eng.pdf



1) Visualization

At power on, the device displays a Hard-Soft revision number (r0-1) during 1 s and then the last selected measurement.

during 1 s and then the last selected measurement.

2) Display change

Normally, the device displays the value of the currently selected measurement. Pressing the bottom button toggles the display to the unit for 2 seconds. The units shown are:

- **VOLT** for voltage measurement.
- **AMP** for current measurement.
- **Hz** for frequency measurement.
- **WATT** for the active power measurement.
- **VAR** for the reactive power measurement.
- **VA** for the apparent power measurement.
- **COS** for power factor measurement.

During the display of the unit, the operator can change measurement by re pressing the bottom button as many times as necessary. The unit changes after each press. The device automatically returns to the measurement display mode after 2 seconds.

Remarks:

The type of measurement displayed remains active even when the device is powered off.

3) Reset of memorized alarms

Simultaneous pressing both buttons provides a alarms reset if the hold function is enabled and whether the alarm condition no longer exists.

4) CONFIGURATION

To access the configuration, push the top button. It is possible to lock the access in the "Special Functions" rubric. If access is locked then the message "NOT ALLOWED!" is displayed.

Remark for value setting:

Use the (+)/(-) buttons to increase or decrease the value. The value is automatically validated after 4 seconds if no button is pressed.

4.1) Language configuration

LANGUAGE CONFIGURATION?
FRENCH? or ENGLISH?

This message scrolls on the display. Push the **YES** button to access to the rubric. **YES** button to choose French language, **NO** button to select the next choice.

4.2) Inputs configuration

The input configuration rubric permits to set the measurement response time (integration time for the TRMS value calculation). This parameter is configurable from 0.01 s to 60 s (1 s by default). It should be noted that the amplitude of the ripple on the calculated TRMS measurement is inversely proportional to this value. A fast response time implies a strong ripple on the TRMS measure value. For example with a filter of 1 s, the ripple is 0.6% of the TRMS value.

INPUTS CONFIG? This message scrolls on the display. Push the **YES** button to access to the rubric. Push the **NO** button to go to the next rubric.

MEASURE RESPONSE TIME? Push the **YES** button to access to the response time setting (0.01 s to 60 s).

4.3) Network configuration

The wiring options on the network are:

- Alternative or Continuous (only on CPL36 or CPL36-Hall),
- Single-phase or balanced three phases with neutral for a alternative network.

It is also necessary to configure:

- The Potential Transformer ratio.
- The external current shunt sensibility for the standard version, or the Hall sensor current caliber for the **-Hall** version, or the Rogowski sensor sensibility for the **-Rogo** version.

NETWORK CONFIG? Push the **YES** button to access to the rubric. Push the **NO** button to go to the next rubric.

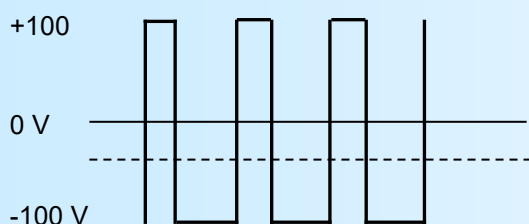
ALTERNATIVE? Push the **YES** button to choose TRMS (AC+DC) measure mode or the **NO** button to select the next choice.

CONTINUOUS? Push the **YES** button to choose the DC measure mode or the **NO** button to select the previous choice.

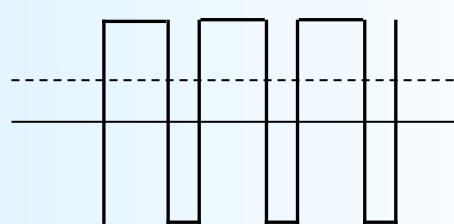
Remarks:

- Per default, the **Hall** version is configured in CONTINUOUS mode at factory output.
- In CONTINUOUS mode, the device calculate the average value of the signal with the response time set previously. For an AC signal the average value is 0.

Signal with an average value < 0.



Signal with an average value > 0.



The next 2 rubrics are only accessible if the ALTERNATIVE mode was previously selected

SINGLE PHASE? Push the **YES** button to choose the single phase mode or the **NO** button to select the next choice.

THREE PHASES? Push the **YES** button to choose the three phases mode with neutral. In this mode the power measurements are multiply by 3.

PT RATIO? Push the **YES** button to access the PT ration setting (0.001 to 1 M) or the **NO** button to go to the next rubric.

SHUNT SENSIBILITY? Access to the shunt sensibility setting (0.001 A/ mV to 1 MA/mV).

or on a CPL36-Hall

HALL CALIBER? Access to the Hall sensor caliber setting (1 to 65500 A) if the Hall input is selected.

or on a CPL36-Rogo

ROGO SENSIBILITY? Access to the Rogowski sensor sensibility setting (10.00 to 1000 mV/kA).

4.4) Relays configuration

This rubric is only visible if the device is equipped with 1 or 2 relays (option /R1 or /R2).

RELAYS CONFIG? Push the **YES** button to access to the rubric.

RELAY 1? Push the **YES** button to access to the relay 1 configuration.

THRESHOLD DETECTION? **YES** to activate the detection, **NO** to deactivate it.

MEASURE: VOLTAGE? Choice of monitored measure type. Push the **YES** button to choose the displayed type. Push the **NO** button to display the next type.

HIGH THRESHOLD? Choose the type of detection.
LOW THRESHOLD?

THRESHOLD? Push the **YES** button to access the threshold value setting.

RELAY CLOSED IN ALARM? Choose the type of security.
RELAY CLOSED OUT OF ALARM?

ALARM HOLD? **YES** to activate the hold function, **NO** to deactivate it.

ACTIVATION DELAY? Push the **YES** button to access the activation delay setting.

DEACTIVATION DELAY? Push the **YES** button to access the deactivation delay setting. Absent if the alarm hold function is enabled.

RELAY 2? Push the **YES** button to access to the relay 2 configuration (only with /R2 option).
same as relay 1

See page 9 for more details about the relay parameters.

4.5) Output configuration

OUTPUTS CONFIG? Push the **YES** button to access to the rubric.

OUTPUT 1? Push the **YES** button to access to the output 1 configuration.

CURRENT? VOLTAGE? Choose the output type, current or voltage.

OUTPUT 0%? Push the **YES** button to access the output low scale setting.

OUTPUT 100%?	Push the YES button to access the output high scale setting.
RESPONSE TIME?	Push the YES button to access the output response time setting (0 to 60 s).
LIMITATION?	Push the YES button to activate the output limitation, Push the NO button to deactivate the output limitation.
MEASURE: VOLTAGE?	Choice of monitored measure. Push the YES button to choose the displayed type. Push the NO button to display the next measurement type.
MEASURE 0%?	Push the YES button to access the measure low scale setting.
MEASURE 100%?	Push the YES button to access the measure high scale setting.
OUTPUT 2? <i>Same as output 1.</i>	Push the YES button to access to the output 2 configuration (only if /S2 option).

The default factory parameters are:

For output 1: output scale = 4/20 mA, input scale = 0/600 V, response time = 0 s, no limitation.

For output 2: output scale = 4/20 mA, input scale = 0/200 Aac (standard) or 0/2000 Aac (Rogo) or 0/100 Adc (Hall) response time = 0 s, no limitation.

See page 10 for more details about the output parameters.

4.6) Display configuration

This section allows you to customize the display of measurements on front.

DISPLAY CONFIG?	Push the YES button to access to the rubric.
DISPLAY FILTER?	Push the YES button to access the display filter setting (0 to 60 s). Allows filtering of the displayed value to smooth fluctuations of the measurement.
DECIMAL POINT?	Push the YES button to access the decimal point mode setting.
AUTO(Y/N)?	Pressing YES selects the automatic decimal point display mode. Pressing NO selects the fixed mode.
NUMBER OF DECIMAL FOR: VOLTAGE? CURRENT? FREQUENCY? ACTIVE P.? REACTIVE P.? APPARENT P.? POWER FACTOR?	Choosing the number of decimals (0, 1 or 2) for each measure in fixed mode. Push the YES button to access the number of decimals displayed for the voltage measure. And so on for all the other measurements.

4.7) End of configuration

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

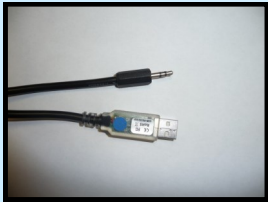
Remark:

If, during the configuration process, no buttons are pressed for more than 90 s, the device returns to measure mode without saving the new configured parameters.

RS232 link setting

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 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.

Configuration

2.2) Language

The language possibilities are: - French
- English

2.3) Input

The input configuration is made of:
- Measure response time.

2.4) Network

The wiring options on the network are:
- Alternative TRMS (AC+DC) or continuous (DC) (only on standard or Hall version).
- Single-phase or balanced three phases with neutral.

It is also necessary to configure:

- The Potential Transformer ratio,

And on a standard version:

- The external current shunt sensibility (200mV input).

Or on a Hall version:

- The Hall sensor caliber (Hall input).

Or on a Rogo version:

- The Rogowski sensor sensibility (200mV input).

2.5) Relays

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

Relay parameters are:

- Monitored value: voltage, current, frequency, active power, reactive power, apparent power, power factor.
- Type of detection: high or low threshold.
- Threshold and hysteresis value.
- Security.
- Hold function.
- Activation and deactivation delays.

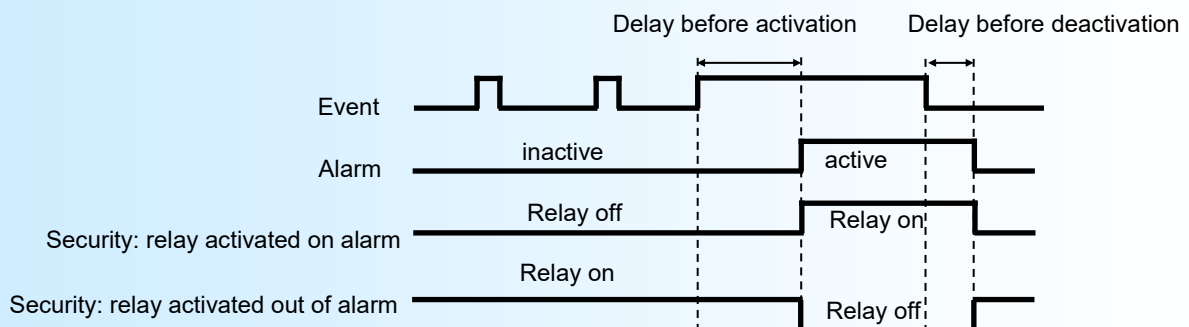
The alarm detection works in this manner:

- **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.

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

The **Hold** function keeps the alarm activated, even if the measure comes off alarm, and this until it has been disabled by a reset on the front (see § 3 page 4).

The **activation and deactivation** delays, configurable from 0 to 600 s set the time above which alarm changes its state after event appearance and disappearance.



2.6) Analogical output

In standard the device provides one analogical output, insulated and configurable. It can by /S2 option be equipped with a second insulated output. The two outputs are configurable independently of each other. The two outputs can also be used for one bipolar +/- 10V output (see "special functions" below and p16 for wiring).

Configurable output parameters:

- Type of output: Current output (mA) or Voltage output (V) with strap connected.
- Low and high output scales.
- Response time.
- Limitation.
- Monitored value: voltage, current, frequency, active power, reactive power, apparent power, power factor.
- Low and high input measure scales.

The **limitation** allows to bound the output signal swing to the configured output scales for all input signal values.

The **response time** allows a smoothing of the output. It is configurable from 0 to 60 s (set to 0 s at the factory).

2.7) Display

This rubric permits to personalize the measurements display on the front.

The display parameters are:

- Display filter.
- Decimal point display mode.

DISPLAY CONFIGURATION?

(Y-N) Press the 'Y' key to access display configuration.

DISPLAY FILTER?

1 s Enter the filter value (0 to 60 s).

DECIMAL POINT?

(Y-N) Press the 'Y' key to access decimal point mode configuration.

AUTO(Y/N)?

(Y-N)YES Press 'Y' key to choose the automatic decimal point display mode or 'N' to choose the fixed mode.

NUMBER OF DECIMAL FOR: configure number of decimal for the fixed mode for each measure.

VOLTAGE

1 Enter the number of decimals to display for the voltage measurement.

etc.....

2.8) Special functions

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

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

The **bipolar output** allows to use the 2 unipolar outputs as one +/-10 V bipolar output. It is necessary to reconfigure the output parameters after activation of the bipolar output.

SPECIAL FUNCTIONS? Press 'Y' to access the special function configuration.

(Y-N)

FRONT FACE CONFIG. LOCK?

(Y-N)NO Press 'Y' and 'Enter' to lock the front face configuration access.

BIPOLAR OUTPUT?

(Y-N)NO Press 'Y' and 'Enter' to activate the bipolar +/-10 V output.

2.9) End of the configuration

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

Remark:

If no action is performed during the configuration process, the device returns automatically to measurement mode after a wait of two minutes, without taking into account of the modifications made before.

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 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

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 sheet (direction of assembly, spacing between the devices, ...).
- Comply with the recommendations of use indicated in the technical 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.

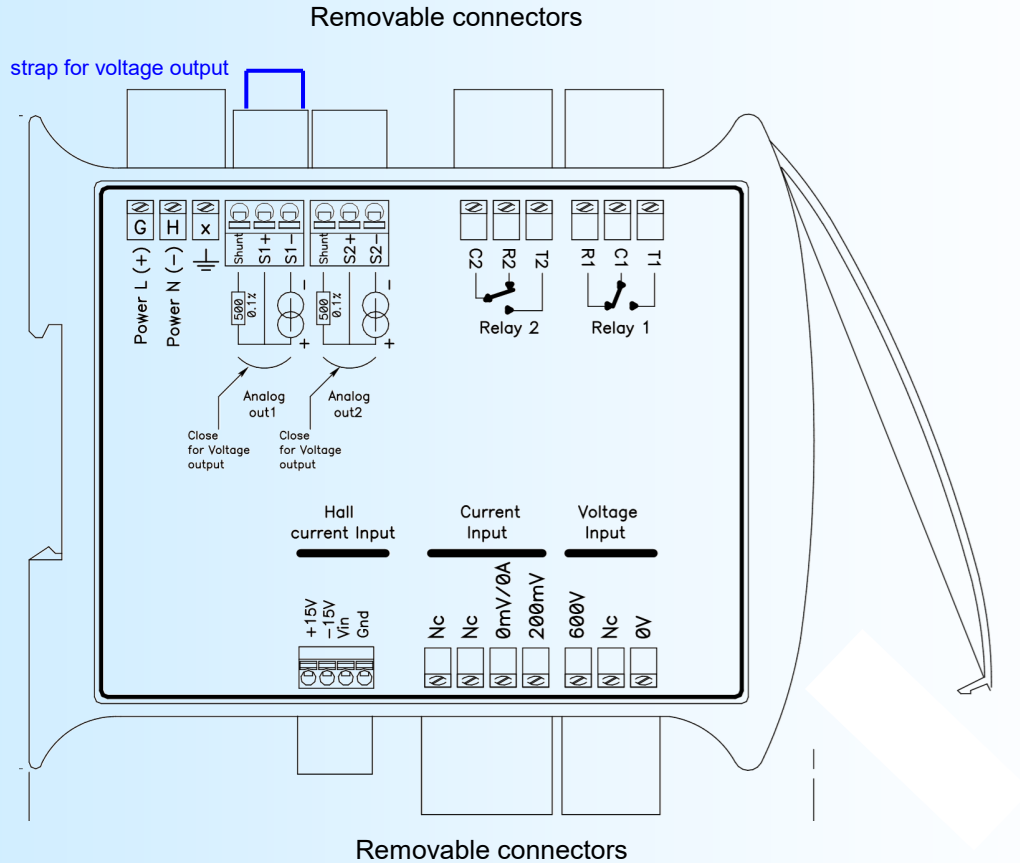
2.2) Power supply

- 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.

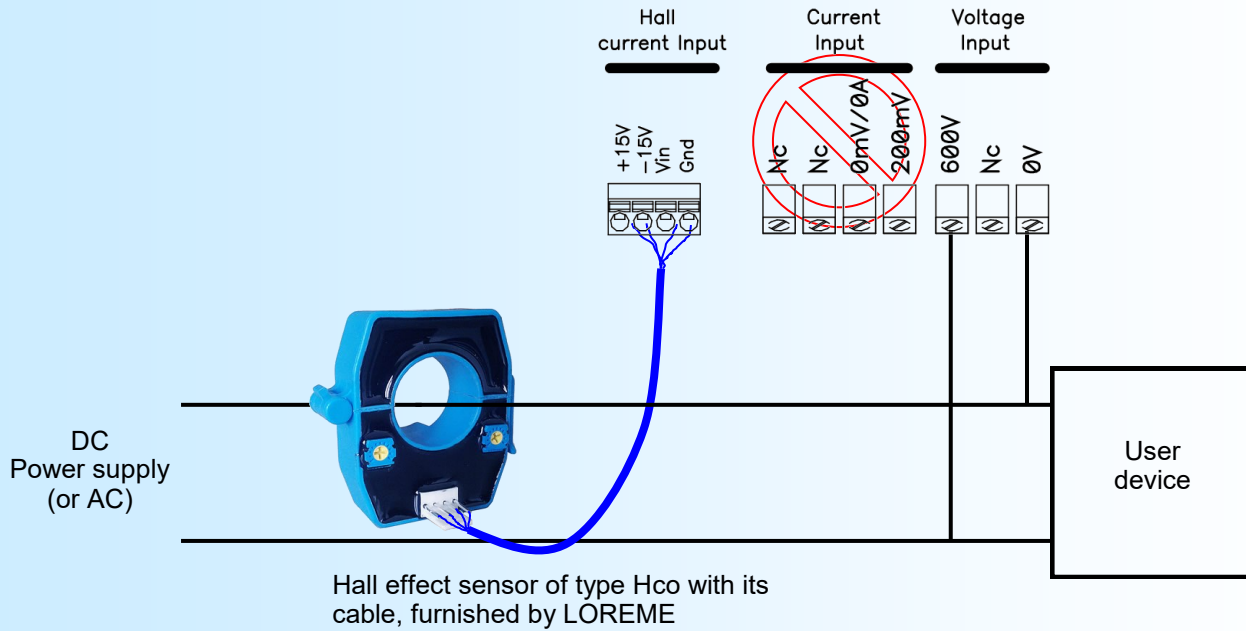
Wirings



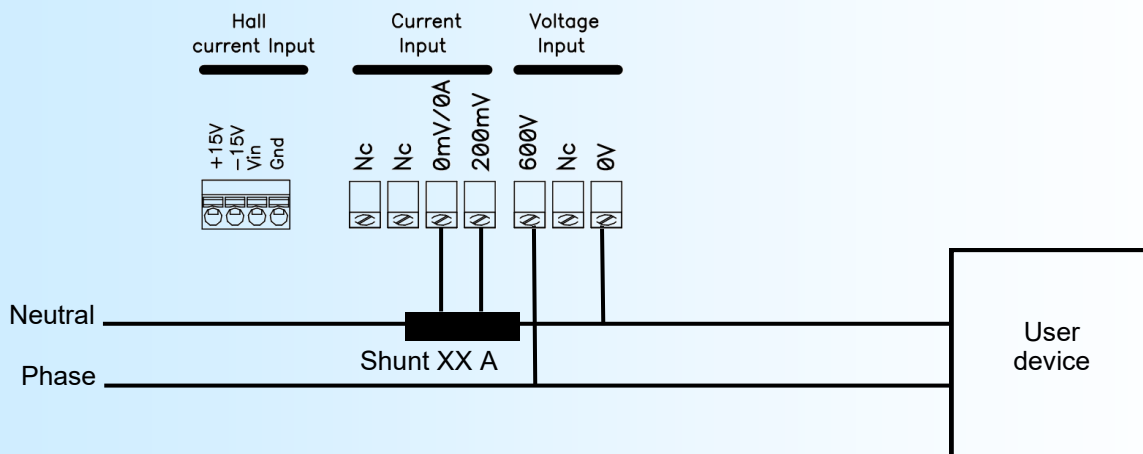
- Power supply: terminals G, H.
- Relay 1: terminals common (C1), rest (R1), work (T1).
- Relay 2: terminals common (C2), rest (R2), work (T2).
- Analogical output 1: terminals S1+, S1-, Shunt (Internal 500 Ohms shunt for voltage output).
- Analogical output 2: terminals S2+, S2-, Shunt (Internal 500 Ohms shunt for voltage output).
- Voltage input: terminals 600V, 0V (Terminal **Nc** is internally not connected).
- Current inputs:
- Standard version
- External shunt: terminals 200mV, 0mV/0A.
- Hall version
- Hall sensor input: terminals Vin, Gnd for the signal.
terminals +15V & -15V for the sensor power supply.
- Rogo version
- Rogowski sensor input: terminals 200mV, 0mV/0A.

Wiring examples

For a CPL36-Hall with Hall sensor current input



For a CPL36 with external shunt current measurement



Bipolar output Wirings

