

CONFIGURATION HANDBOOK

94000iCmV



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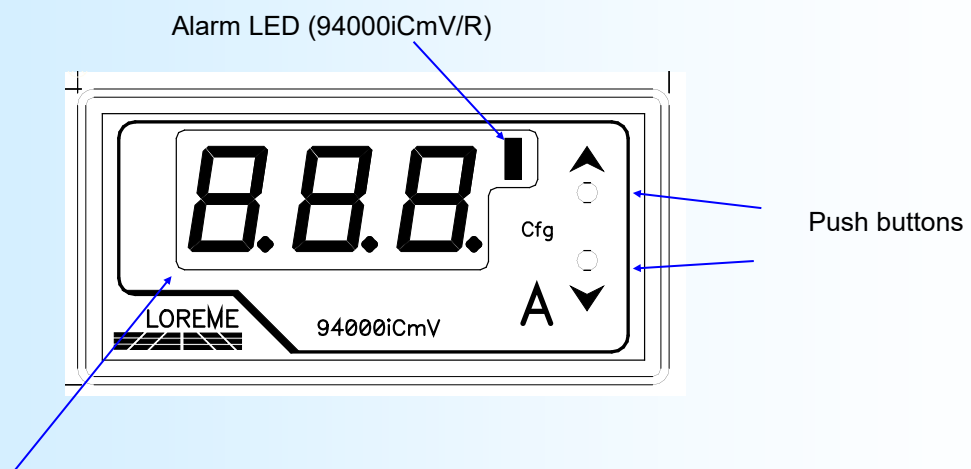
Device Presentation

The 94000iCmV is a panel meter for AC or DC current measurement by shunt. The device is designed for cost sensitive or requiring small footprint application, The relay option (/R) allows to use the device as protection relay.

The implementation is fast by simple programming by the front face.

The technical data sheet can be downloaded here : http://www.loreme.fr/fichtech/94000CA_eng.pdf

USER INTERFACE



3 digits display for measurement

The front face includes :

- 3 digits display - 1000 pts for measurement,
- 1 alarm LED (model /R),
- 2 push buttons.

Functions associated to push buttons:

- ▲ Access to configuration or <YES> answer or increase display value.
- ▼ <NO> answer or decrease display value.

Operating

1) Visualization

At the power ON, the display show the revision of device during 1 second. It's a message like 'X-Y' where 'x' show the hard revision and 'y' show the soft revision. After this start-up, the input current measurement is display.

The device can measure current from -99kA to 999kA depending of shunt sensitivity. A high overflow will be display as 'Hi' and a low overflow as 'Lo'.

The measure value is smoothed with a response time of about 2 seconds.

2) Configuration

The 94000iCmV is fully configurable with the push buttons. It is possible to change the measure parameters and the alarm relay parameters (for /R model).

To access to configuration mode, press the ▲ button.

2.1) Measure parameters

The message 'NES' is display and the user can access to input parameters with the ▲ (Yes) button, or skip to the next message with the ▼ (No) button.

The configurable parameters are :

- The measure mode : Alternative (AC true rms) or continuous (DC) (not available with 400 Hz option).
- The current shunt sensitivity.
- The value of the integration filter response for AC measure or smoothing filter for DC measure.
This parameters can be setting in the range 0,01 s to 60 s (1 s by default).

The response time parameter modify the integration time for the true rms value calculation. It should be note that the amplitude of the residual ripple on the rms value is inversely proportional to this value. A fast response time implies a bigger of residual ripple on the measure.

For example: with a response time of 1second, the residual ripple is 0.6% of measured AC current value.

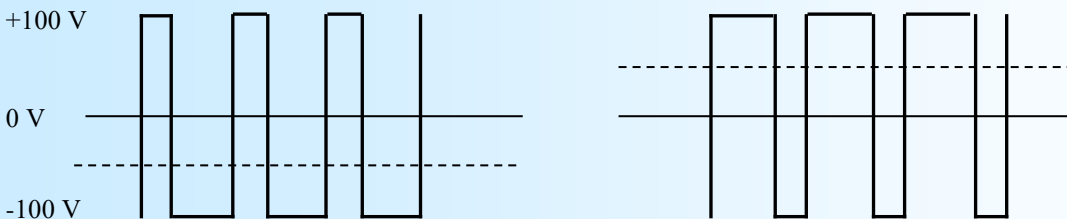
Notes:

- In CONTINUOUS mode, the device calculated the average value of signal with the response time set. For an ALTERNATIVE signal, the average value =0.

Signal with average value < 0

and signal with average value > 0

- In ALTERNATIVE mode, the device will measure the true rms value. En mode ALTERNATIF, l'appareil mesurera la



valeur efficace vrai (TRMS) du signal, That's is to say the AC component + the DC component of signal.

2.1.1) Configuration of measure mode (not available with 400Hz option)

The choices are:

- Alternating mode with message 'iAC'.
- Continuous mode with message 'iDC'.

Press on ▼ (NO) to skip to followed choice.

Press on ▲ (Yes) to validate the displayed choice. The device go to the next rubric.

2.1.2) Configuration of shunt sensitivity

The message 'SEn' is displayed and the user can access to parameter setting with the ▲ (Yes), or go to the next rubric with the ▼ (No).

The sensitivity is display and the ▲ , ▼ buttons are used to increase or decrease the value.

The display is blinking during the setting. The value is store after 4s if no buttons are press. The value can be modify in the range 0,01 A/mV to 999 000 A/mV.

2.1.3) Configuration of measure filter

The message 'FLt' is displayed. Access to parameter with ▲ or go to next rubric with ▼ .
 The filter value is display and the ▲ , ▼ buttons are used to increase or decrease the value.
 The display is blinking during the setting. The value is store after 4s if no buttons are press.

2.2) Configuration of relay (/R option)

The message 'rEL' is displayed and the user can access to threshold, hysteresis and sense of alarm parameters by press the ▲ (Yes), or exit the configuration mode with the ▼ (No) button.

2.2.1) Threshold setting

The message 'thr' is displayed and the user can set the parameter with the ▲ (Yes) button, or go to the next with the ▼ (No) buton.

The threshold value is display and the ▲ , ▼ buttons are used to increase or decrease the value.
 The display is blinking during the setting. The value is store after 4s if no buttons are press.

2.2.2) Hysteresis setting

The message 'db' is displayed and the user can set the parameter with the ▲ (Yes) button, or go to the next with the ▼ (No) buton.

The hysteresis value is display and the ▲ , ▼ buttons are used to increase or decrease the value.
 The display is blinking during the setting. The value is store after 4s if no buttons are press.

2.2.3) Sense of alarm

The user can choose the type of threshold detection as follow:

- high alarm:

- .The alarm is activated when the measure is above to threshold,
- .The alarm is release when the measure goes below the threshold minus hysteresis.

- Low alarm:

- .The alarm is activated when the measure is below the threshold,
- .The alarm is deactivated when the measure goes above the threshold plus hysteresis.

The choice are :

- High alarm with the display 'AHi'.
- Low alarm with the display 'ALo'.

Press on the ▼ (No) for displayed the next choice.

Press on the ▲ (Yes) to validate the choice who is display, The device go to the next rubric.

2.3) End of configuration

At the end of configuration, the parameters are saved in non-volatile memory and are active when return to measure mode.

Note:

If the waiting time for the action on buttons exceeds 60 seconds, the device return automatically to measure mode and discard the new configuration .

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

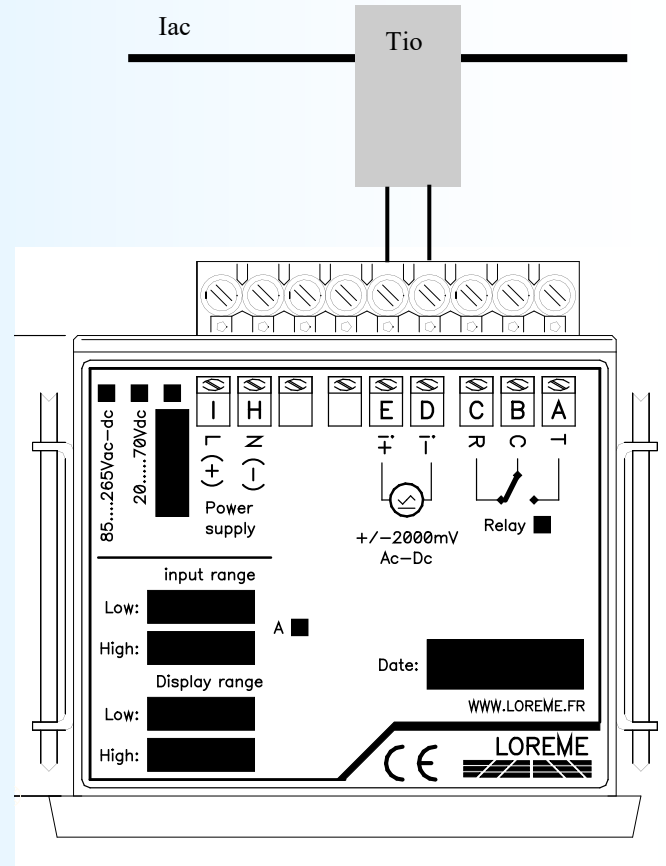
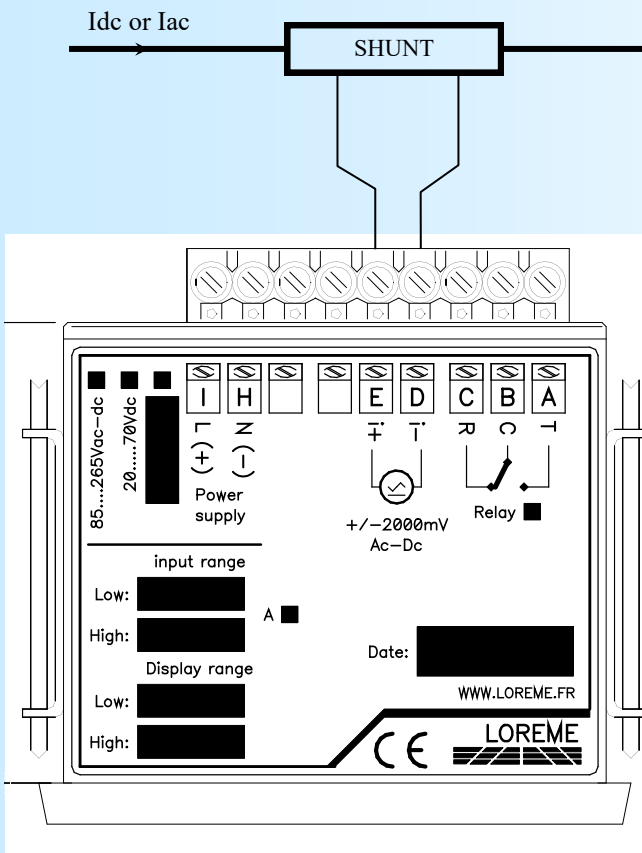
- Comply with the features indicated in the technical sheet (power supply voltage, frequency, allowance of the values, stability, variations ...).
- It is better that the power supply should come from a system with section switches equipped with fuses for the instrumentation element and that the power 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.

Wiring

Connection diagram



Input current with external shunt or Tio:

pin E (+), pin D (-)

Relay :

pin A (Normally open contact),
pin B (Common),
pin C (Normally closed contact)

Supply:

pin I and H