



EnergyLOG *plus*

FOR MONITORING AND DISPLAYING THE
ELECTRIC ENERGY QUALITY AND
CONSUMPTION

Ver.01



ENERGYLOG01-08T-11099

1 - DESCRIPTION

The **EnergyLOG plus** was developed for monitoring and displaying the electric energy quality and consumption. It can be used in business or home applications. It has a real time clock and internal memory to periodically store the electric network data measured and the user can configure the period between measurements. The voltage/current True-RMS* measurement method allows the **EnergyLOG plus** to calculate and display the active, reactive and apparent power, plus the power factor and power supply frequency. Current up to 5A can be measured directly through the controller. A current transformer (CT) is needed if you want to measure higher currents up to 1000A. Configuring the **EnergyLOG plus** is easy and fast with the SITRAD® software. Equally easy and fast is the access to the data stored in device internal memory.

*True RMS: Is the real and effective voltage value which also includes the voltage generated by high frequency noise in the distributing network (harmonic distortion). This is the actual voltage applied to the connected load (example: electric motor, compressor). This method allows the precise voltage measurement for any type of wave form. Other measurement methods give correct value of applied voltage only for perfect sine wave forms.

2 - APPLICATIONS

- Monitoring and displaying the energy quality and consumption for single-phase electrical installations.

3 - TECHNICAL SPECIFICATIONS

- **Power Supply:** 100 - 240Vac (50/60 Hz)
- **Monitored Voltage:** 80 to 280Vac (different versions for 50 or 60Hz)
- **Monitored Current:** 0 to 5A without CT and 0 to 1000A with CT*
- **Dimensions:** 71 x 28 x 71mm (2,8" x 1,103" x 2,8")
- **Operation temperature:** 0° to 50°C (32° to 122°F)
- **Operation humidity:** 10 to 90% RH (without condensation)
- **Resolution:**

- Voltage:** 1Vac for the whole range
- Current:** 0.01A between 0 and 10A
0.1A between 10A and 100A
1A between 100A and 1000A
- Apparent Power (also valid for Active Power, in W, and Positive Reactive Power in VAR):**
0.01VA between 0 and 10VA
0.1VA between 10VA and 100VA
1VA between 100VA and 1000VA
10VA between 1kVA and 10kVA
100VA between 10kVA and 100kVA
1kVA between 100kVA and 280kVA
- Negative Reactive Power (Capacitive power factor, see item 7.2):**
0.1VAr between 0 and -10VAr
1VAr between -10VAr and -100 VAr
100VAr between -100VAr and -10kVAr
1kVAr between -10kVAr and -100kVAr
100kVAr between -100k and -280kVAr

- Energy:** 0.01VAh between 0 and 10VAh
0.1VAh between 10VAh and 100VAh
1VAh between 100VAh and 1000VAh
10VAh between 1kVAh and 10kVAh
100VAh between 10kVAh and 100kVAh
1kVAh between 100kVAh and 1000kVAh
10kVAh between 1MVAh and 10MVAh
100kVAh between 10MVAh and 100MVAh
1MVAh between 100MVAh and 1000MVAh
10MVAh between 1GVAh and 10GVAh
100MVAh between 10GVAh and 100GVAh
1GVAh between 100GVAh and 999GVAh

*The stability of the current transformer has a direct effect on the measured readings

4 - CONFIGURATIONS

4.1 - To enter the function menu

Press **SEL** and **ENT** simultaneously for 2 seconds to display **SEL** and release the keys. When **Code** is displayed, press **ENT** (shortly), and enter the code (123) through the **SEL** and **ENT** keys. Press **ENT** to confirm. Use the **SEL** and **ENT** keys to access the other functions and proceed the same way to adjust them. Press **ENT** (long touch) until **---** is displayed to exit the menu and return to normal operation.

4.2 - Functions

- Code** To enter the access code
- Fun** Advanced setting functions
- CLo** Date and time setting

4.3 - Parameters table

| Fun | Description | Min. | Max. | Unit | Default |
|------------|--|------|-------|---------|---------|
| F01 | Default display parameter | 0 | 7 | - | 0 |
| F02 | Primary CT winding current | 5 | 1000 | Amperes | 5 |
| F03 | Datalogger operation mode | 0 | 2 | - | 2 |
| F04 | Datalogger sampling interval | 5 | 999 | Seconds | 5 |
| F05 | Record data when error occur | 0-no | 1-yes | - | 1-yes |
| F06 | Overwrite data in the memory when it is full | 0-no | 1-yes | - | 1-yes |
| F07 | Network equipment address RS - 485 | 1 | 247 | - | 1 |

5 - PARAMETERS DESCRIPTION

F01 Default display parameter

The user can select the parameter to be displayed as default from the options below:

- 0 Voltage
- 1 Current
- 2 Apparent Power
- 3 Active Power
- 4 Reactive Power
- 5 Power Factor
- 6 Consumption of energy (in the period)
- 7 Mains Frequency

F02 Primary CT winding current:

This allows you to configure the settings for the transformer that will be used with the **EnergyLOG plus**. Select the primary winding current that will produce a secondary winding current of 5 A. If you wish to measure currents up to 5 A you don't need to use the current transformer; in this case you just need to configure the function with the value 5 and connect your controller directly to the load.

F03 Datalogger operation mode:

This indicates how the data storage device operates:

- 0 Always OFF
- 1 Always ON
- 2 Manual Operation

F04 Datalogger sampling interval:

Time period in which the controller will register a sample of the electric network.

F05 Record data when error occur

It indicates whether any errors in the meter will force the recording of data in memory regardless of sampling interval set in F04.

F06 Overwrite data in the memory when it is full

This allows you to start overwriting data from datalogger memory beginning when the memory is full. This prevents the latest data recorded from equipment being erased first.

F07 Network equipment address RS-485:

This is the device address for communication with **Sitrاد** software. Note: You cannot have two or more devices with the same address in the network.

6 - EASY ACCESS FUNCTIONS

6.1 - Viewing current date and time:

You can press the **SET** key shortly to view the date and time set in the controller. The display shows the current day, month, year, hours and minutes, in this order.

Ex: 03/17/2006 12h43min

- 17d** Day
- 03M** Month
- 06Y** Year
- 12h** Hours
- 43'** Minutes

6.2 - Viewing other functions:

To switch among the other data of energy and power press **SEL** to display the desired data code, as follows:

- UOL** Voltage
- CUr** Current
- AU9** Apparent power
- AEe** Active power
- REe** Reactive power
- PF** Power factor
- Enr** Consumption of energy measured by the device
- Fr** Mains Frequency

The selected information will be displayed during 15 seconds. The display returns then to the parameter selected in F01 (default display parameter).

6.3 - Clearing datalogger memory:

Press the **SEL** and **ENT** keys for 2 seconds to display **DEL CLR**. The LCD then displays **no**. If you don't want to clear the memory and cancel the operation press **SEL**. To clear the memory press **ENT** until **YES** is displayed and press **ENT** to confirm and exit the function.

6.4 - Manual datalogger activation:

With **F03** configured as **2** and pressing the **ENT** key for 2 second, you can turn the voltage data internal recording (datalogger) ON or OFF. The **LOG** message is displayed followed by the message **On** (datalogger **On**) or **OFF** (datalogger **OFF**).

If the parameter **F03** is configured with the values **0** or **1** the messages **On** or **OFF** will be displayed accordingly. The operation of the datalogger is indicated by LED "LOG" at the top of the display.

6.5 - Energy meter

The energy meter is started as soon as the device is switched on. The energy is indicated in VAh units (Volt-Amp hour). For measurements exceeding 999VAh, the leds **K**, **M** and **G** are used to indicate Kilo, Mega and Giga respectively. Thus, if a measurement is, for instance, 9750VAh, it will be indicated as 9.75kVAh. This way, the device allows viewing measurements up to 999GVAh. The remaining figures of the measurement can be viewed using SITRAD®.

6.5.1 - Restarting the energy meter

The energy meter can be restarted by pressing **↵** and **SET** for approximately 2 seconds. The display will show the message **Err** **CLP**.

Then the display will show **no**. If you do not want to restart the energy measurement and want to cancel the operation, press **SET**. To restart the energy measurement, press **↵** until the message **YES** is displayed, and press **SET** to confirm and exit the function.

6.5.2 - Energy and Datalogger

When the device is started, the last energy value stored in the datalogger is used to continue measuring the energy. If the memory has no values stored, the energy is started with zero.

If you do not want to lose the measured value during a power fault, please set **F03** to **1** (datalogger always on).

6.6 - Minimum and maximum values

To view the minimum and maximum values recorded in the device, press **↵**. The values will be displayed in sequence: Voltage (**UOL**), Current (**CUP**), Apparent power (**RLP**), Active power (**ReP**), Reactive power (**FcP**), Power factor (**PP**) and Mains frequency (**FP**). To restart the registers, keep **↵** pressed until the message **F5B** is displayed.

7 - SIGNALING

7.1 - Indication

The **EnergyLOG** plus has 4 indicator leds in the upper part. The leds **K**, **M** and **G** are used to indicate power and energy consumption values. They represent Kilo, Mega and Giga respectively. For instance, 7685.45W will be indicated as 7.68kW by using the led **K** in the display. Another example: an energy value of 75,550,000VAh will be indicated as 75.5MVAh by using the led **M**. The led **LOG** indicates if the datalogger is on.

7.2 - Reactive power

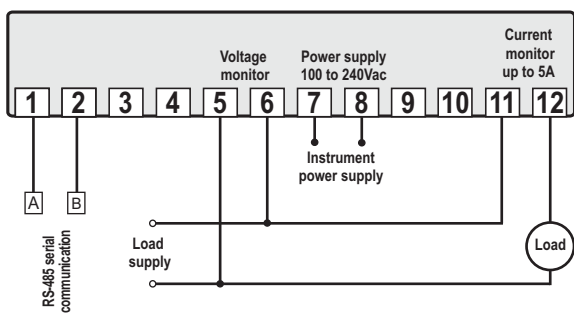
The reactive power indicates whether the load connected to the system is inductive or capacitive. To discriminate them **EnergyLOG** plus indicates the reactive power with a positive value for inductive loads. For capacitive loads, the value will be negative.

7.3 - Warning messages

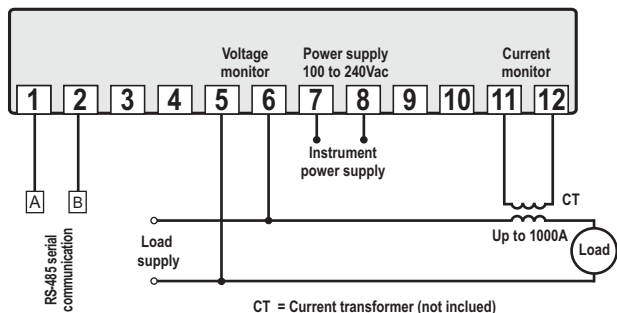
- Err** Reading error
- dFL** Datalogger memory full alarm
- dEr** Memory of the datalogger corrupted
- inv** Current transformer wires inverted
- PPP** Configuration parameters not programmed or out of the range

8 - CONNECTION DIAGRAM

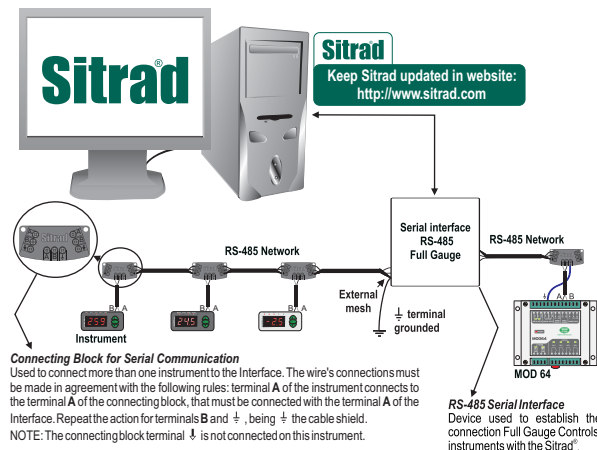
8.1 - For current up to 5A



8.2 - For current up to 1000A



9 - INTEGRATING CONTROLLERS, RS-485 SERIAL INTERFACE AND COMPUTER

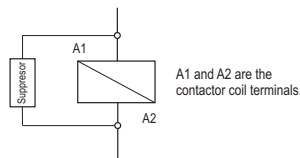


IMPORTANT

According to the chapters of norm IEC 60364:

- 1: Install protector against overvoltage on the power supply
- 2: Signal cables of the computer may not be joined with electric conduit through which the electric input and the activation of the loads run
- 3: Install transient suppressors (RC filters) parallel to the loads as to increase the product life of the relays.

Schematic for the connection of suppressors to contactors



Schematic for the connection of suppressors to direct activation loads



ENVIRONMENTAL INFORMATION

Packaging:

The materials used in the packaging of Full Gauge products are 100% recyclable. Try to dispose of it through specialized recycling agents.

Product:

Components used in Full Gauge controllers can be recycled and reused if disassembled by specialized companies.

Disposal:

Do not burn or dispose of controllers that reach the end of their service life. Observe the legislation in your area regarding the disposal of electronic waste. If you have any questions, please contact Full Gauge Controls.

WARRANTY TERM- FULL GAUGE CONTROLS

Products manufactured by Full Gauge Controls, as of May 2005, have a warranty period of 10 (ten) years directly with the factory and 01 (one) year with accredited resellers, starting from the date of the consigned sale that appears on the tax receipt. After this year with resellers, the warranty will continue to be in force if the instrument is sent directly to Full Gauge Controls. This period is valid for the Brazilian market. Other countries have a warranty of 2 (two) years. Products are warranted in the event of manufacturing failure that makes them unsuitable or inadequate for their intended applications. The warranty is limited to the maintenance of instruments manufactured by Full Gauge Controls, disregarding other types of expenses, such as indemnity due to damage caused to other equipment.

EXCEPTIONS OF THE WARRANTY

The Warranty does not cover shipping and/or insurance costs for shipping products with indications of defect or malfunction to Technical Support. Also, the following events are not covered: natural wear of parts, external damage caused by falls, or improper packaging of products.

LOSS OF WARRANTY

The product will lose the warranty automatically if:

- Failure to follow the instructions for use and assembly contained in the technical description and the installation procedures contained in Standard NBR5410;
- It is subjected to conditions beyond the limits specified in its technical description;
- It is tampered with or repaired by a person not on Full Gauge's technical team;
- Damage is caused by falling, hitting and/or impact, water infiltration, overload and/or atmospheric discharge.

WARRANTY USE

In order to receive the warranty, the customer must send the duly packaged product, along with the corresponding purchase Tax Receipt, to Full Gauge Controls. The shipping charge of the products is at the customer's expense. It is also necessary to send as much information as possible regarding the detected defect, thus enabling faster analysis, testing and execution of the service.

These processes and the eventual maintenance of the product will only be carried out by Full Gauge Controls Technical Assistance, at the Company's headquarters - Rua Júlio de Castilhos 250 - CEP 92120-030 - Canoas - Rio Grande do Sul - Brazil.