



PhaseLOG *plus*

VOLTAGE MONITOR WITH PROTECTION
FOR THREE-PHASE LOADS AND
INTERNAL DATALOGGER

Ver.02



PHASELOG02-01T-11468

1. DESCRIPTION

The **PhaseLOG *plus*** is a device for monitoring and protecting electrical installations, making possible its use in both residential as well as commercial applications. Having a real time clock and internal memory the **PhaseLOG *plus*** is capable of storing the voltage values for each phase of the electrical network during time periods defined by the user. Through the True RMS* voltage measurement method the **PhaseLOG *plus*** performs the energy quality monitoring and can protect multiphase loads against: under and over voltage, angular asymmetry, modular asymmetry, lack of phase and phase sequence.

Using the SITRAD® software the configuration of the **PhaseLOG *plus*** is done in a simple and quick way such as the access to the written information in its 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. APPLICATION

- Monitoring quality of energy
- Protection of motors
- Electrical panels
- Other multiphase equipments

3. TECHNICAL SPECIFICATIONS

- Power Supply: 90 ~ 264 Vac (50/60 Hz)
- Control Voltage: 90 to 500Vac
- Resolution: 1 Vac
- Maximum Current: 5(3)A / 250 Vac 1/8HP
- Dimensions: 71 x 28 x 71mm
- Operational Temperature: 0 to 50°C
- Operational Humidity: 10 to 90% RH (without condensation)

4. CONFIGURATIONS

4.1 - To enter the function menu

Press and at the same time for 2 seconds until appears, letting off on it instantly. When appears, press (short touch) and enter the code (123) through the keys and to confirm press the key . Through the keys and access the other functions and do the same to adjust them. To leave the menu and return to normal operation, press (Long touch) until appears.

4.2 - Functions

- Entry of access code
- Advanced configuration functions
- Adjustment of clock and date

4.3 - Chart of parameters

Configuration parameters protected by access code.

Fun	Description	Min	Max	Unit	Standard
	Number of phases in operation	1	3	-	3
	Activation of phase inversion detection	0-no	1-yes	-	1-yes
	Angular asymmetry sensibility	0	100	-	80.0
	Time to validate angular asymmetry	0	30	sec.	5
	Modular asymmetry sensibility	0	100	-	80.0
	Time to validate modular asymmetry	0	30	sec.	5
	Minimum operational voltage	90	500	Vac	90
	Maximum operational voltage	90	500	Vac	500
	Time to validate out of range voltage	0	30	sec.	5
	R voltage indication offset	-20	20	Vac	0
	S voltage indication offset	-20	20	Vac	0
	T voltage indication offset	-20	20	Vac	0
	Controller start delay	0	999	sec.	0
	Relay delay after off	0	999	sec.	0
	Instrument powered by an auxiliar power supply	0-no	1-yes	-	1-yes
	Datalogger actioning	0	2	-	2
	Time between each sample in memory	5	999	sec.	5
	Variation of the voltage to force data recording	3		Volts	
	Variation of the output to force data recording	0-off	1-on	-	0-off
	Overwrite the old data in the datalogger	0-no	1-yes	-	1-yes
	Preferential indication on display			-	
	RS-485 net address	1	247	-	1

5. PARAMETERS DESCRIPTION

Number of phases in operation:

In this parameter the user configures which phases are connected to the instrument and will be monitored:

- Only Phase R (used with single-phase connections)
- Phases R and S (used with two-phase connections)
- Phases R, S and T (used with three-phase connections)

Activation of phase inversion detection:

This parameter can adjust the multiphase monitor to supervise the sequence of phases, in this way protecting the load from a possible phase inversion. Obs: A protection against phase inversion is only available if F01 is configured with the value 3.

Angular asymmetry sensibility:

In this parameter the user can adjust the sensibility with which the PhaseLOG *plus* will detect the angle asymmetry of phases configured in F01. The higher the value of this parameter will minimize the tolerance to errors. In case this monitoring needs to be deactivated just configure the function with the value 00.0.

Time to validate angular asymmetry:

Time in seconds that the three- phase monitor waits to validate the angular asymmetry error.

Modular asymmetry sensibility:

In this parameter the user can adjust the sensibility with which the **PhaseLOG *plus*** will detect the modular asymmetry of phases configured in F01. The higher the value of this parameter the easier the controller will detect the error. In case this monitoring needs to be deactivated just configure the function with the value 00.0.

Time to validate modular asymmetry:

Time in seconds that the three-phase monitor waits to validate the modular asymmetry error.

Minimum operational voltage:

Voltage lower limit for the **PhaseLOG *plus*** to drive the load protection.

Maximum operational voltage:

Voltage upper limit for the **PhaseLOG *plus*** to drive the load protection.

Time to validate out of range voltage:

Time in seconds that the three-phase monitor waits to validate the out of range voltage error.

R voltage indication offset:

This parameter lets the user adjust the R phase voltage indication offset.

S voltage indication offset:

This parameter lets the user adjust the S phase voltage indication offset.

T voltage indication offset:

This parameter lets the user adjust the T phase voltage indication offset.

Controller start delay:

Time in seconds that the **PhaseLOG *plus*** waits before the protection control start.

Relay delay after off:

Minimum time that the output will remain turned off, this means, the space of time between the last shut off and the next activation.

Instrument powered by an auxiliar power supply

Indicates if the instrument is powered by an auxiliar energy power supply. (example: no-break)

- No (powered directly from mains power line)
- Yes (powered by an auxiliar power supply)

Datalogger actioning:

Indicates how the voltage register device can be activated:

- Always OFF
- Always ON
- Manual Operation

Time between each sample in memory:

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

Variation of voltage to force data recording:

Voltage difference in any of the phases monitored so that the **PhaseLOG *plus*** forces the recording of data in the memory, independently of the sampling time configured at F17. This function can be configured from 3 to 50 volts. To deactivate it just press the key until the message appears in the display.

Variation of the output to force data recording

Indicates whether the change in the output will force the recording of data in memory regardless of the time of sampling set in F17.

Overwrite the old data in the datalogger

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.

Preferential indication on the display:

In this parameter the user configures the phase voltage which should be shown on the display for each standard:

- Phase R
- Phase S
- Phase T
- Alternate indication of all phases

RS-485 network address:

Address of the instrument on the network to communicate with the SITRAD® software. Obs: in one network there can not exist more than one instrument with the same address.

6. FUNCTIONS WITH FACILITATED ACCESS

6.1 - Visualize current time

Pressing rapidly the key **SET** the date and adjusted time on the controller can be visualized. It will show sequentially, current day, month, year, hour and minutes on the display.

Ex.: 17/03/2006 12h43min

17 Day
03 Month
06 Year
12 Hour
43 Minutes

6.2 - Visualizing maximum and minimum voltages

Pressing the **▲** key minimum and maximum voltages from each phase can be visualized. When pressing the **▲** key (short touch), the message **P-R** will be displayed indicating the voltage on phase R and immediately its minimum and maximum voltages. Immediately after this the voltages for phase S (**P-S**) and phase T (**P-T**) are displayed. To reinstate the registers, release and press the **▲** key again until the message **P-SL** is showed on the display.

6.3 - Visualizing other voltages

To alternate visualization of voltage of phases R, S or T, press **▼** until the desired phase voltage is shown on the display:

P-R Voltage on phase R
P-S Voltage on phase S
P-T Voltage on phase T

The selected voltage will be shown on the display during 15 seconds and after this time the preferential indication returns to the display (in accordance with adjustments on parameter F21).

6.4 - Cleaning datalogger memory

Press for 4 seconds the **▲** and **SET** keys and wait for the message **DEL CLR**. After this message the display will show **000**, and if the memory should not be cleared press the **SET** Key. To clear the memory, press the **▲** key until the message **YES** shows on the display, press **SET** to confirm and leave the function.

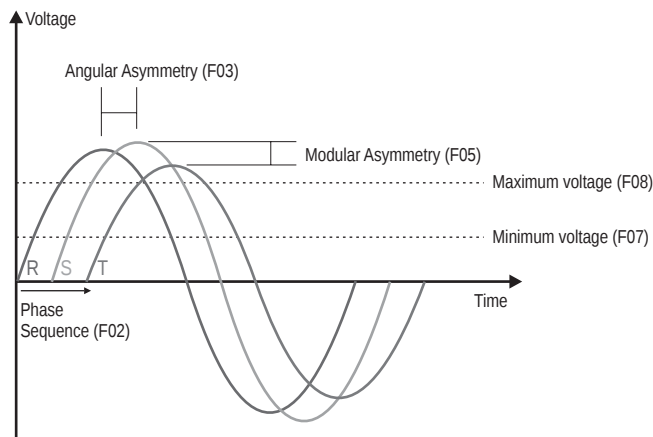
6.5 - Manual Operation of the datalogger

Pressing the **SET** key for 2 seconds the internal register operation for voltage values can be activated or deactivated (datalogger). The message **LOG** will display followed by the message **ON** when the datalogger is activated and **OFF** when it is deactivated. If the parameter F15 is configured with the values **0** or **1** the messages **ON** and **OFF** will be respectively displayed.

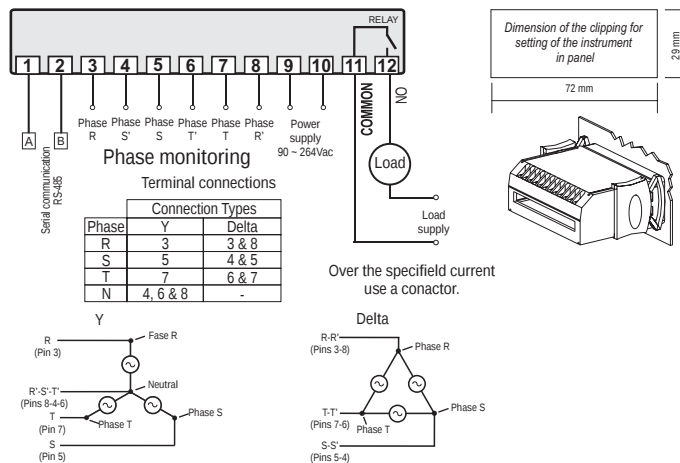
7. SIGNALLING

E-T Phase T voltage reading error
E-R Phase R voltage reading error
E-S Phase S voltage reading error
A-1 Voltage out of range alarm
A-2 Phase sequence inversion alarm
A-3 Angular asymmetry alarm
A-4 Modular asymmetry alarm
dFL Datalogger memory full alarm
dEr Memory of the datalogger corrupted
PPP Configuration parameters deprogrammed or out of range
DEL It indicates that it is searching the datalogger memory when the controller start.
NOTE: This feature can take some time if there is too many data on datalogger memory

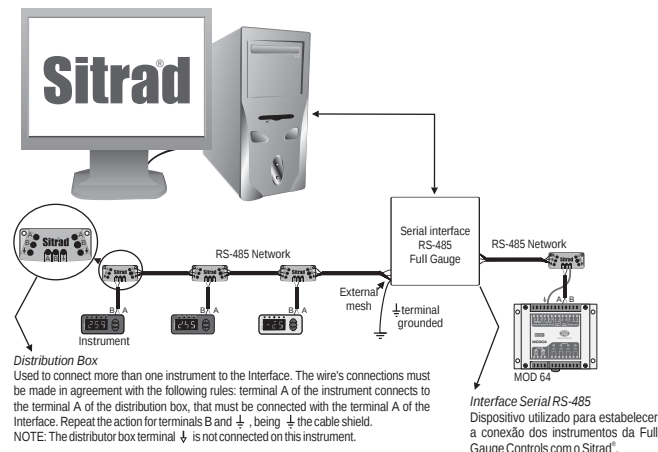
8. EXPLANATORY CHART



9. WIRING DIAGRAM



Integrating Controllers, RS-485 Serial Interface and Computer



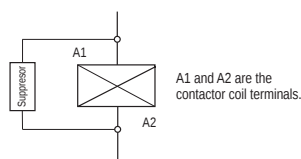
IMPORTANT

According to the chapters of norm IEC 60364:

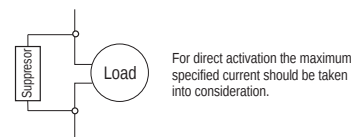
- 1: Install protector against overvoltage on the power supply
- 2: Sensor cables and signal cables of the computer may be joined, but not in the same electric conduit through which the electric input and the activation of the loads run
- 3: Install transient suppressors (RC filters) parallel to the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

For more information, please contact our Technical Support by e-mail: support@fullgauge.com or by phone +55 51 3475.3308

Schematic for the connection of suppressors to contactors



Schematic for the connection of suppressors to direct activation loads



PROTECTIVE VINYL:

This adhesive vinyl (included inside the packing) protects the instruments against water drippings, as in commercial refrigerators, for example. Do the application after finishing the electrical connections.

Remove the protective paper and apply the vinyl on the entire superior part of the device, folding the flaps as indicated by the arrows.

