PRIME SGE-PLC1000 / SGE-PLC50 / SGE-SBT CONCENTRATORS

The PRIME **SGE-PLC1000** and **SGE-PLC50** concentrators manage and read single and three-phase energy meters with PRIME communications systems connected to the same low voltage network. The format used is of the DIN rail type with PLC PRIME communications, Ethernet port and RS-485 or RS-232. The concentrator can add an indirect three-phase meter, with the same format and LV supervision functions (**SGE-SBT**).
Additional modules can be connected to the **SGE-PLC1000** concentrator, such as **SGE-PLC1000S** (secondary concentrator for a second transformer) or **SGE-AL** (alarm module with digital inputs)

This manual is a quick use and operating guide of the **PLC SGE-PLC1000/50** and **SGE-SBT** concentrators. This manual is available in electronic format on the **CIRCUTOR** web site: www.circutor.es

⚠ Disconnect the device from the power supply source before undertaking any form of maintenance, modification of connections, repairs, etc. If you suspect that there is an operational fault in the unit or in its protection system, remove the unit from service. The design of the unit makes it easy to replace in the event of a fault.

1.- INTRODUCTION

The PLC concentrator is the device that reads both the single and three-phase energy meters connected to the low voltage network. The **SGE-PLC1000/50** concentrator is typically installed in the transformer substation with a three-phase connection to the low voltage network. This enables telemanaging the energy meters either by reading the information they supply or by executing actions that this type of unit can execute, for example, modifying tariffs, activating the circuit breaker, etc.

2.- LED INDICATORS

The **SGE-PLC1000** concentrator has a series of LED indicators that provide information on its operation and the communications status, both internal and external, such as Ethernet port or PLC traffic.

The following is a list of what each concentrator LED indicates:

LED	FUNCTION
PC POWER	Power supply of the PLC portion of the concentrator
PLC>>CPU	Communications indicator of the PLC to concentrator portion
PLC<<CPU	Communications indicator of the Concentrator to PLC portion
TX PLC	Concentrator output frame indication
RX PLC	Concentrator input frame indication
CPU POWER	Concentrator power supply
ACTIVITY	Indicates whether the concentrator is carrying out a task or activity
ALARM	Malfunction indicator
PLC.DATA	Indicates whether the concentrator is receiving PLC frames
ETH.LINK	Indicates whether there is an Ethernet connection
ETH.ACT	Activity on the Ethernet port

The **SGE-SBT** supervisor module has the following LED indicators:

LED	FUNCTION
POWER	Power supply of the supervisor
SBT>>CPU	Supervisor to concentrator communications indicator
SBT<<CPU	Concentrator to supervisor communications indicator
20,000 imp/kWh	Active energy pulses
20,000 imp/kVArh	Reactive energy pulses

3.- START-UP

3.1.- Initial information

The **SGE-PLC1000** and **SGE-PLC50** concentrators are fully configured on the concentrator's web site, so there is no need for any additional start-up software.
However, a computer with an Ethernet port and a crossover type network cable is necessary for configuring the unit. The concentrator's default IP is:

IP: 192.168.42.30
Port: 80
Netmask: 255.255.255.0

The user and password must be entered on the main page to access the concentrator. The user authorised to modify parameters is:

- **Username:** *admin*
- **Password:** *admin.*

The read-only user is:

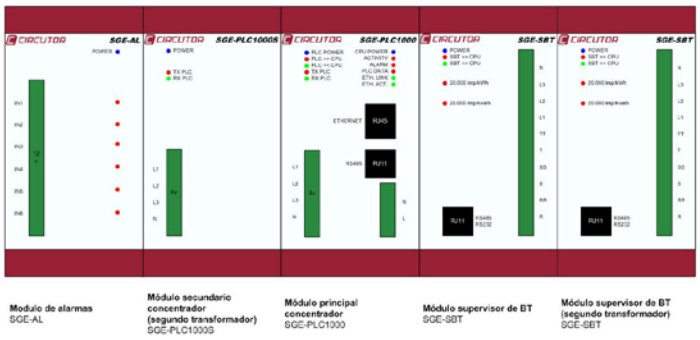
- **Username:** *user*
- **Password:** *user*

These parameters can be changed on the concentrator's web site.

3.2.- Module assembly

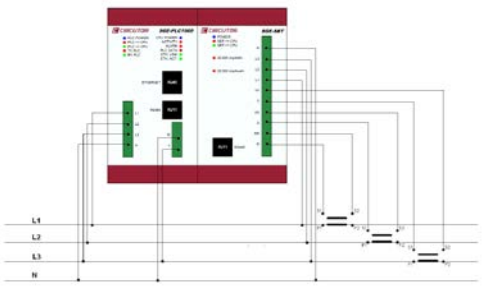
The SGE PRIME system is composed of a base module or main concentrator (**SGE-PLC1000** or **SGE-PLC50**) which requires a power supply and which features an embedded PC that controls all PLC, Ethernet and back-plane communications that internally communicate with all other modules.

Each SGE module must be located specifically. The diagram of the full kit with all SGE modules available is shown next:



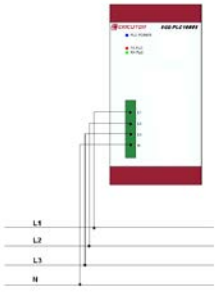
4.- CONNECTION OF THE MODULES

The connection of the **SGE-PLC1000** or **SGE-PLC50** concentrator and **SGE-SBT** supervisor is as follows:



Connection diagram of the SG-PLC1000/50 concentrator and SGE-SBT supervisor module

In case a second concentrator module (**SGE-PLC1000S**) is used, the connection is as follows:



Connection diagram of the SG-PLC1000S concentrator

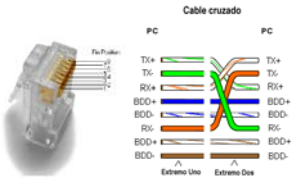
5.- COMMUNICATIONS PORT CONNECTION

The **SGE-PLC1000** and **SGE-PLC50** concentrators have an Ethernet port and RS-232 or RS-485 port (depending on the model) and the **SGE-SBT** supervisor module has an RS-232/485 dual serial port.

5.1.- SGE-PLC1000 and SGE-PLC50 Ethernet port

The Ethernet port of the concentrator can be connected to a modem-router, switch or computer. If the unit connected to this port is a modem-router or a computer, the network cable must be of the crossover Ethernet cable type, according to the following diagram:

RJ-45 Connector



Crossover Ethernet connection diagram.

5.2.- SGE-PLC1000 and SGE-SBT serial port

SGE-PLC1000 serial port

RJ-11 Connector	PIN	RS-232	RS-485
	1	GND	GND
	2	RX	
	3	TX	
	4		A+
	5		B (-)
	6	GND	GND

SGE-SBT dual serial port:

RJ-11 Connector	PIN	FUNCTION	PORT
	1	GND	RS232/485
	2	RX	RS232
	3	TX	RS232
	4	A (+)	RS485
	5	B (-)	RS485
	6	GND	RS232/485

6.- TECHNICAL FEATURES

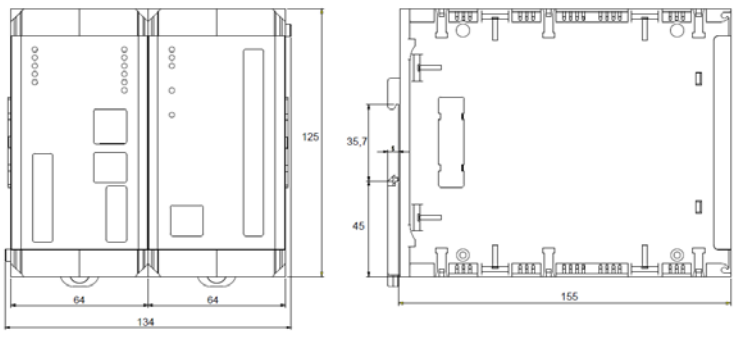
SGE-PLC1000/50 power circuit :	
- Single-phase:	110…230 Vac
- Voltage tolerance:	-20 % / +20 %
- Frequency:	50 - 60 Hz
- Maximum consumption:	~7W and ~13 VA
- Working temperature:	-20 ... +70 ºC
- Humidity (non-condensing):	95% max.
Mechanical features:	
- Case material:	V0 self-extinguishing plastic
- Protection:	IP 41
- SGE-PLC1000 and SGE-PLC50 dimensions:	155 x 64 x 125 mm
- SGE-SBT dimensions:	155 x 64 x 125 mm
- SGE-PLC1000S dimensions:	155 x 64 x 125 mm
- Power supply and voltage measurement cables:	Minimum cross-section: 1 mm²
- Secondary current transformer cables:	Minimum cross-section: 2.5 mm²
- Maximum altitude:	2,000 m.
SGE-SBT Accuracy Class:	
- Active energy:	Class B (1)
- Reactive energy:	Class 2
- Active E. pulse LED:	20,000 imp/kWh
- Reactive E. pulse LED:	20,000 imp/kvarh
- Current measurement:	Indirect …/5 (10) A
- Voltage measurement:	Direct 3x230/400 V

PLC coupling circuit (SGE-PLC1000, SGE-PLC50 and SGE-PLC1000S):	
- Rated voltage: phase-neutral / between phases	3x230/400 V or 3x127/220 V
- Frequency:	45 ~ 65 Hz
- Modulation:	OFDM (PRIME)
- Band:	CENELEC A
SGE-PLC1000 / SGE-PLC50 Memory:	
- Type:	Flash
- Capacity:	256 Mb
Embedded PC:	
- Microprocessor :	ARM 400Mhz
- Memory:	16MB FLASH 32 MB SDRAM 1xSD Card slot
- Consumption:	< 2.5W
- Communications ports:	3xRS-232 1xEthernet 10/100MBit
- OS:	Linux

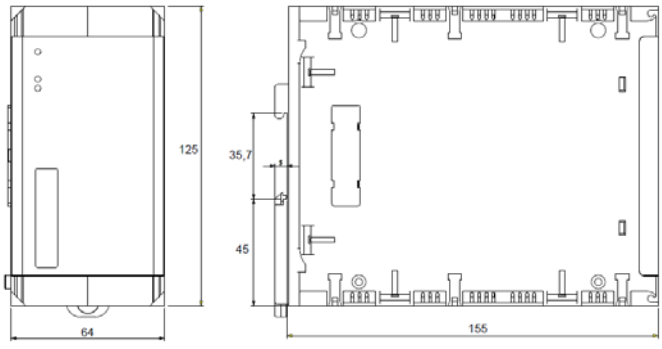
Safety:
Category III - 300 Vac / 520 ac. EN-61010 Double-insulated electric shock protection class II

Standards:
IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 62052-11

7.- DIMENSIONS



SGE-PLC1000/ SGE-PLC50 and SGE-SBT dimensions



SGE-PLC1000S dimensions

8.- TECHNICAL SERVICE

In the case of any query in relation to unit operation or malfunction, please contact the CIRCUTOR, S.A. Technical Support Service.

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