

SNG96 NETWORK ANALYZER

INSTRUCTION MANUAL



The SNG96 model is a digital device, able to measure some of the all variables associated with an electrical line, as is shown in the following table. It accepts the three current and three voltages signals in a 4 wire configuration. It is also possible to use it in 3 wire configuration, using two or three current transformers.

| MEASURED VALUE | | T O T A L | | | M a x / M i n | M a x D e m a n d |
|--------------------------|-----------------|-----------|-----|-----|---------------|-------------------|
| | | L 1 | L 2 | L 3 | | |
| Line/phase Voltage | V | X | X | X | | |
| Line Current | A | X | X | X | | X |
| Neutral current | | | | | | |
| Active Power | P | | | | | |
| Reactive Power | Q | | | | | |
| Apparent Power | S | | | | | |
| Power Factor | PF | | | | | |
| Frequency | Hz | | | | | |
| % THD current | | | | | | |
| % THD Voltage | | | | | | |
| Active Energy Pos. | Ep+ | X | | | | |
| Active Energy Neg. | Ep- | X | | | | |
| React. Energy Inductive | E _{rL} | | | | | |
| React. Energy Capacitive | E _{rC} | | | | | |

Main characteristics of the unit are:

- LCD 128x64 DISPLAY, WITH BACKLIGHT
- TRUE RMS VOLTAGE AND CURRENT MEASUREMENT
- MAXIMUM DEMAND
- 4 QUADRANT MEASUREMENT
- DIN SIZE 96x96.
- DETACHABLE SCREW CONNECTORS
- PROGRAMMABLE THROUGH FRONT KEYS.

OPERATING INSTRUCTIONS.

1.- KEYBOARD.

Five keys are provided:

Key1 Key2 Key3 Key4 Key5
 Down/RESET Up/PROG Shift/MAX ENTER/MD P

Each key has different function depending on the mode selected.

The MAX and MD keys have no effect in this equipment. Only have functionality in programming mode.

2.- DISPLAY.

A graphical LCD 128x64 dots is used. The information is shown through pages, grouping similar measurements, normally in four lines each.

The energy counters can be reset using the keyboard. Pressing the P + Down Keys together show the password screen. Validate the password and the energy counters shall be reset.

3.- WORKING MODES.

3.1.- INDICATION MODE.

This is the normal functioning of the device. When is powered up after resetting, the display shows the first page. Pressing Up or Down keys changes to the following or last pages. The order is as follows:

| Page | Line1 | Line2 | Line3 | Line4 |
|------|-----------|-------|-------|-------|
| 1/5 | Voltage | V12 | V23 | V31 |
| 2/5 | Voltage | V1 | V2 | V3 |
| 3/5 | Current | I1 | I2 | I3 |
| 4/5 | Max. Dem. | M1 | M2 | M3 |
| 5/5 | Energy P | Ep+ | Ep- | |

3.3.- MAXIMUM DEMAND MODE.

The maximum demand is calculated as the mean value reached during the time specified. Three values are shown, one per current phase, indicating the maximum from the last resetting of the values. The refresh time between changes in the display is 1 minute. The minimum period is 5 minutes.

To reset the values, press simultaneously P and RESET, and, input the password. See next chapter "4.- Programming mode", to know how to enter the password.

4.- PROGRAMMING MODE.

To enter in this mode, press P and PROG. The information appears also in pages. The device asks for the password. The ENTER key selects the position to be changed. Each number can be changed pressing UP or DOWN. To accept the value, press ENTER.

Once in the Prog. Menu the following pages can be selected.

Page 1 Apr CT ratio (Ipr)
 Page 2 MD period Select time
 Page 3 Password Change password
 Page 4 B_light Select the delay time to switch off the backlight in seconds. (0 for always ON).

The selected page is showed in reverse video. To accept the digits and change between different values, press the ENTER key. To exit or back to the previous digit, press the Shift/MAX key.

To finish, press again P and Down key.

The default password is 0000. Be careful if the password is changed, and do not forget it, as no programming is allowed if the correct password is not entered.

4.1.- LCD CONTRAST ADJUST.

To change the LCD contrast it is necessary to do the next steps:

- Press the P key and at the same time press the Enter Key for more than 3 seconds. A screen asking for password is showed.
- Enter the password. In this case is fixed to the value 0002. Press the Enter Key to validate the password.
- Press the Enter key to select the contrast value. Use the Up and Down keys to change the value between 0 to 9. A good value is 4. To increase the contrast select from 5 to 9. To decrease the contrast select from 3 to 0. The defect value is 4. Press the Enter key to validate the new value or press the Shift key to avoid the change.
- At last, to exit from this mode, press the P key and at the same time press the Down Key.

ACCURACY

| Parameter | Operating Range | Accuracy |
|--------------|-----------------|-----------------|
| Voltage | 20-120% | 0,3%Read+0,3%FS |
| Current | 1-120% | 0,3%Read+0,3%FS |
| Act.energy | 5-120 % | 0,5% Read |
| React.energy | 5-120 % | 1% Read |

ENVIRONMENTAL

| | |
|-------------------|--------------------------|
| Operating Temp | -10/70 °C |
| Storage Temp | -20/85 °C |
| RH | up to 95% non condensing |
| Ventilation | Not required. |
| Protection degree | Front IP54. Back IP20 |

CONNECTIONS

Detachable connectors. Max. 2,5 mm² wire.

No protection is included. It must be provided by the user, by means of a disconnecting device or fuses not higher than 2 amps rating, both for measuring inputs and Aux. Supply.

TECHNICAL FEATURES

INPUT

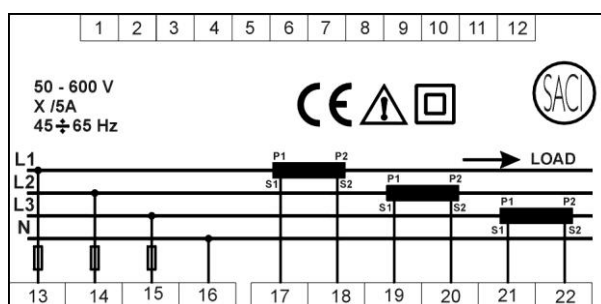
| | |
|-----------------|------------------------------|
| Nominal voltage | 400 V AC. Phase-Phase. |
| Burden | 1 mA per phase |
| Measuring range | 50 – 600 V AC phase to phase |

| | |
|-----------------|------------------|
| Nominal current | 5 A |
| Burden | 0,3 VA per phase |
| Measuring range | 0-120 % In |

| | |
|-----------|----------|
| Frequency | 50-60 Hz |
|-----------|----------|

| | |
|------------------|---------------|
| Auxiliary supply | Self-supplied |
| Consumption | < 4 VA |

| | |
|-----------|---|
| Overload: | 2In permanent, 20In 1s. 1,2Vn permanent, 2Vn 10 s. |
|-----------|---|



DIMENSIONS

| | |
|--|-------------|
| Device: | 96x96x61 mm |
| Allow additional clearance in the backside of 30 mm for connections. | |
| Weight: | 0,4 kg. |

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| Frequency | Hz | | | | | |
| % THD current | | | | | | |
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| Active Energy Neg. | Ep- | X | | | | |
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TECHNICAL FEATURES

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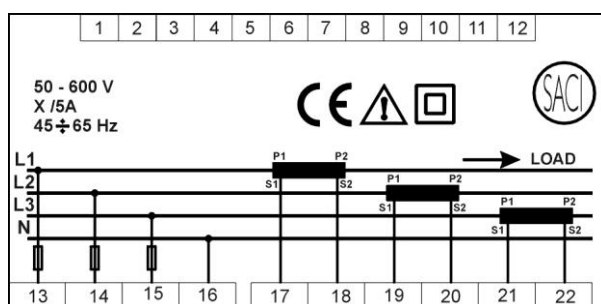
| | |
|-----------------|------------------------------|
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| Burden | 1 mA per phase |
| Measuring range | 50 – 600 V AC phase to phase |

| | |
|-----------------|------------------|
| Nominal current | 5 A |
| Burden | 0,3 VA per phase |
| Measuring range | 0-120 % In |

| | |
|-----------|----------|
| Frequency | 50-60 Hz |
|-----------|----------|

| | |
|------------------|---------------|
| Auxiliary supply | Self-supplied |
| Consumption | < 4 VA |

| | |
|-----------|---|
| Overload: | 2In permanent, 20In 1s. 1,2Vn permanent, 2Vn 10 s. |
|-----------|---|



DIMENSIONS

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|--|-------------|
| Device: | 96x96x61 mm |
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