

MULTISER-01-96 Network Analyzer



SPECIFICATIONS

- Microprocessor based
- Measurement of 3 phase electrical quantities (VL-N, A, CosΦ, VL-L, Hz, W, VAR, VA ΣW, ΣVAR, ΣVA, ΣWh, ΣVAh)
- 1-60 min. adjustable demand values (VL-N, A, CosΦ, VL-L, W, VAR, VA)
- Correct learning of current transformer polarity (even if (k,l) is connected in reverse direction)
- Setting of current and voltage transformer ratios
- Separate or all together clearance of stored demand, peak and energy values
- Easy access to menus
- Reduces both number of measurement equipment used in the panel and connection time
- Lowers electrical panel costs

Foreword

All information and warnings about Network Analyzer MULTISER are given in this User's Manual. Please for your power network's and your own safety, read this manual carefully before commissioning the system. Please contact us for unclear points.

Warnings:



- 1- The connection, operation and parameter settings of device must be done by authorized technical service staff. Also, system checks must be done by this person when necessary.
- 2- Please do not open or do not let others open the device. There are no user serviceable parts inside.
- 3- Before making the connections to device's terminals, please be sure that there is no voltage across the cables or terminals. Also be sure that the panel is de-energized.
- 4- Please fix the device to electric panel with apparatuses supplied.
- 5- Please press the buttons only by your fingers, do not contact any other object with them.
- 6- Before cleaning the device, please be sure that it is de-energized and use only dry tissue-paper to clean it. Water or any other chemicals used for cleaning may harm the device.
- 7- Before commissioning the device, please be sure that the terminal connections are made exactly the same as in the connection diagram and avoid any connection problems, such as loose connections or contact of different cables.

General

Multiser gives the ability of tracking electrical parameters for 3 phase systems such as, phase currents, phase-neutral & phase-phase voltages, frequency, power factor, active powers, reactive powers and apparent powers. It also stores consumed energies. It also gives the opportunity of tracking total, max. demand and peak values for stated quantities. Current and voltage transformer ratios can be set by the user.

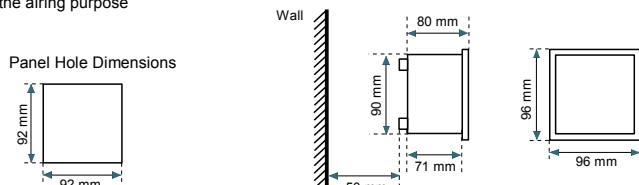
Using the directions buttons, desired parameters can be accessed easily. On the other hand, its displays make it possible to track values from long distance.

Installation Instructions :

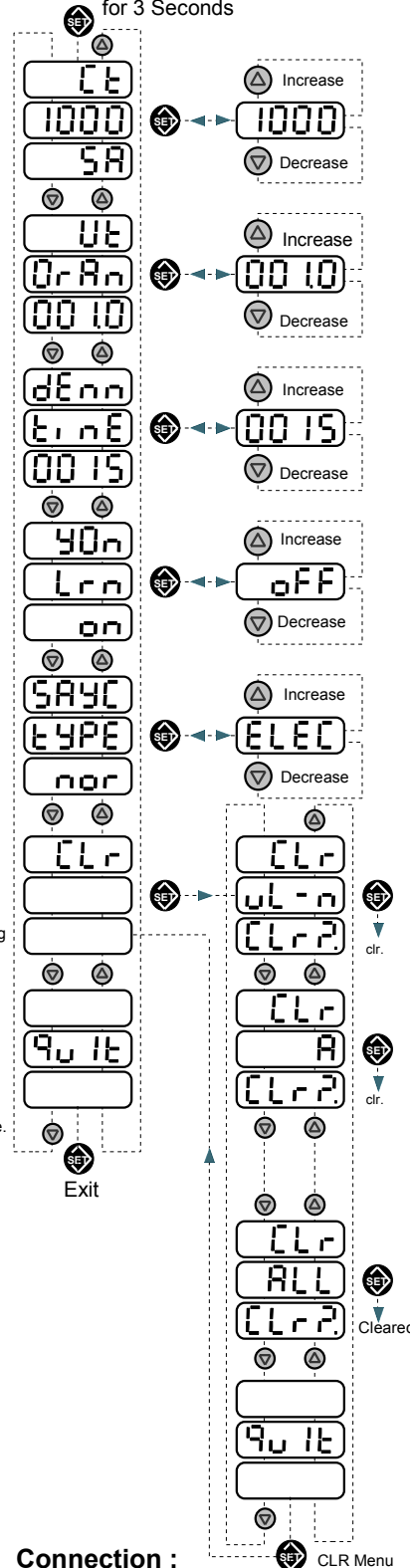
1. A hole with 92mm x 92 mm must be needed on the panel for device installation
2. Remove the fixing apparatus before installing the device
3. Place the device in the prepared hole from the front side.
4. Use the fixing apparatus to fix the device from the back side to the panel.

CAUTION:

Leave at least 50mm space between the back side of the device and the internal wall of the panel for the airing purpose



Enter Pressing
for 3 Seconds



ACCESSING PARAMETERS:
Using the direction buttons, it is possible to move up and down in the menu. When set button is pressed down for 3 seconds, parameter setting menu is accessed and to set any of the parameters, first set button is pressed, then using the directions buttons, value is increased/decreased. When desired value is reached, it is stored by pressing the set button. Using the direction buttons.

Ct: Current transformer value : (5...10000)
The current transformer's primary value should be entered. For example if 500/5A current is used then 500 must be entered.

Ut: Voltage transformer value : (1...1000)
If no voltage transformer is used, this parameter must be left as 1.

denn tInE : Demand time : (5-60 min)
Demand time parameter, determines the calculation period of demand and peak values.

YOn Lrn: Current transformer polarity direction learning: (on - off)
If it is "on" then the device would learn the direction automatically. If the device mounted in new panel or the polarity somehow changed then it learns the new direction. If off then the device would learn the direction once and never learn it again. Off position is required for some loads. If there would be a problem in the current transformer direction then the current transformer direction should be switched.

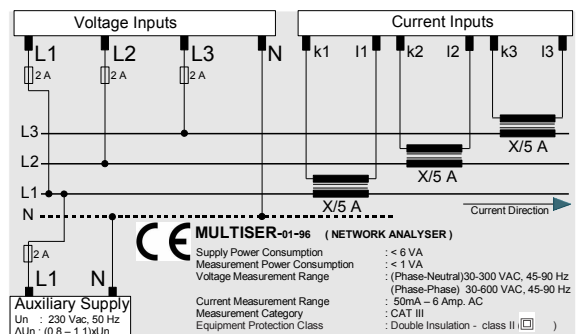
SAyC tYPE : Counter type : (nor-ELEC)
nor: Energies are calculated due the Vectorial sum of the phases.
ELEC: Energies are calculated for each phase separately.

CLR: To clear demand, peak and energy values:
placed where the stored values like demand, peak values and energies are cleared.
Values can be cleared either separately or all together, from ALL section, under this menu. In order to clear the stored values SET Button must be pressed. The following parameters can be set:

- CLR ul-n : Clears the demand and the peak values of the phase-neutral voltages
- CLR A : Clears the demand and the peak values of the currents
- CLR ul-L : Clears the demand and the peak values of the phase-phase voltages
- CLR P : Clears the demand and the peak values of the active energies
- CLR q : Clears the demand and the peak values of the reactive energies
- CLR S : Clears the demand and the peak values of the apparent energies
- CLR hr : Clears the stored active, reactive and apparent energy sums
- CLR ALL : Clears all mentioned values above

Note: If no button is pressed for 4 minutes under this menu, device automatically quits programming menu.

Connection :



Measured Electrical Parameters

(VL-N, A, CosΦ, VL-L, Hz, W, VAR, VA, ΣW, ΣVAR, ΣVA, ΣWh, ΣVAh, ΣVAh)

These parameters can be reached using the direction buttons, with the related led on and with the measured values for the three phases shown simultaneously.

V_{L-N} L1: 220.0 U_{1N}
L2: 220.0 U_{2N}
L3: 220.0 U_{3N}

Peak V_{L-N} L1: 227.0 U_{1N}
L2: 230.7 U_{2N}
L3: 223.0 U_{3N}

Max.Demand V_{L-N} L1: 223.0 U_{1N}
L2: 221.5 U_{2N}
L3: 222.0 U_{3N}

Voltage (V_{L-N}) **Peak (V_{L-N})** **Max.Demand (V_{L-N})**

A L1: 328.7 I₁
L2: 342.0 I₂
L3: 300.9 I₃

Peak A L1: 457.0 I₁
L2: 440.7 I₂
L3: 480.0 I₃

Max.Demand A L1: 388.1 I₁
L2: 393.5 I₂
L3: 362.0 I₃

Current (A) **Peak (A)** **Max.Demand (A)**

P.F L1: -0.99 PF₁
L2: 0.097 PF₂
L3: 0.099 PF₃

Resultant CosΦ: - - - -

Ind.Peak CosΦ L1: 0.092 PF₁
L2: 0.086 PF₂
L3: 0.082 PF₃

Cap.Peak CosΦ L1: -0.90 PF₁
L2: -0.75 PF₂
L3: -0.76 PF₃

Ind.Demand CosΦ L1: 0.098 PF₁
L2: 0.096 PF₂
L3: 0.093 PF₃

Cap.Demand CosΦ L1: -0.99 PF₁
L2: -0.99 PF₂
L3: -0.98 PF₃

Power Factor (CosΦ) **Resultant (CosΦ)** **Ind.Peak (CosΦ)** **Cap.Peak (CosΦ)** **Ind.Demand (CosΦ)** **Cap.Demand (CosΦ)**

V_{L-L} L1: 380.7 U₁₂
L2: 381.5 U₂₃
L3: 387.2 U₃₁

Peak V_{L-L} L1: 397.3 U₁₂
L2: 401.5 U₂₃
L3: 403.1 U₃₁

Max.Demand V_{L-L} L1: 392.5 U₁₂
L2: 390.6 U₂₃
L3: 385.8 U₃₁

Voltage (V_{L-L}) **Peak (V_{L-L})** **Max.Demand (V_{L-L})**

Hz L1: 050.0 f₁
L2: 050.0 f₂
L3: 050.0 f₃

Frequency (Hz)

W L1: 72.42 W₁
L2: 83.51 W₂
L3: 73.84 W₃

Σ Active Power: 606.1 W

Peak (Active Power) L1: 127.3 W₁
L2: 101.1 W₂
L3: 103.9 W₃

Max.Demand (Active Power) L1: 77.85 W₁
L2: 82.10 W₂
L3: 83.92 W₃

Active Power **Σ Active Power** **Peak (Active Power)** **Max.Demand (Active Power)**

VAR L1: -24.2 VAR₁
L2: 18.51 VAR₂
L3: 12.24 VAR₃

Σ ind: 30.75 VAR
Σ cap: -20.5 VAR
Σ i, Σ c: 10.25 VAR

Ind.Peak(Reactive Power) L1: 12.19 VAR₁
L2: 2.513 VAR₂
L3: 18.91 VAR₃

Cap.Peak(Reactive Power) L1: -8.89 VAR₁
L2: -7.95 VAR₂
L3: -6.53 VAR₃

Ind.Demand(Reactive Power) L1: 8.013 VAR₁
L2: 1.158 VAR₂
L3: 9.867 VAR₃

Cap.Demand (Reactive Power) L1: -3.57 VAR₁
L2: -2.81 VAR₂
L3: -2.24 VAR₃

Reactive Power **Σ Reactive Power** **Ind.Peak(Reactive Power)** **Cap.Peak(Reactive Power)** **Ind.Demand(Reactive Power)** **Cap.Demand (Reactive Power)**

VA L1: 95.12 VA₁
L2: 92.34 VA₂
L3: 98.13 VA₃

Σ Apparent Power: 606.1 VA

Peak (Apparent Power) L1: 125.1 VA₁
L2: 98.55 VA₂
L3: 101.2 VA₃

Max.Demand (Apparent Power) L1: 92.14 VA₁
L2: 85.98 VA₂
L3: 88.51 VA₃

Apparent Power **Σ Apparent Power** **Peak (Apparent Power)** **Max.Demand (Apparent Power)**

Σ Active Energy: 999.9 Wh

Σ Ind.Reactive Energy: Ind -

Σ Cap.Reactive Energy: CAP -

Σ Active Energy **Σ Ind.Reactive Energy** **Σ Cap.Reactive Energy** **Σ Reactive Energy**

Σ VA: APP -

Σ VAh: 999.9

Σ Apparent Energy

TECHNICAL DATA:

Rated Voltage (Un)	: 230 VAC
Operating Range	: (0.8 – 1.1)xUn
Frequency	: 50 Hz
Supply Power Consumption	: < 6 VA
Measurement Power Consumption	: < 1 VA
Voltage Measurement Range	: (Phase-Neutral)30-300 VAC, 45-90 Hz (Phase-Phase) 30-600 VAC, 45-90 Hz
Current Measurement Range	: (Secondary current) 50mA – 6 Amp. AC
Display Range	: 0 – 999.9 kV 0 – 999.9 M (W, VAR, VA) (Cosφ) 0.00 – 1.00 ind. & cap.
Minimum Measurement Values	: 50 mA, 30V
Measurement Sensitivity	: 1% ± digit
Voltage Transformer Ratio	: 1 1000
Current Transformer Ratio	: 5/5 10000/5 A
Display	: 4 Digits LED display
Measurement Category	: CAT III
Equipment Protection Class	: Double Insulation - class II ()
Device Protection Class	: IP20
Connector Protection Class	: IP00
Ambient Temperature	: -5°C.....+50°C
Humidity	: 15% 95% (without condensation)
Connection Type	: To front panel tap
Dimensions	: 96x96x80 mm