

### S95-MID

#### Panel Mounted Multifunction Power Meter (MID Certified)

- Measures kWh, kVarh, kW, kVar, kVA, P, F, PF, Hz, dmd, V, A, etc.
- International Standard IEC61010
- Total Harmonic Distortion of Voltage and Current
- 2nd~63rd Individual Harmonic Distortion (Voltage and Current)
- 2GB of onboard memory



### S95 Multifunction Power Meter

The S95 is a new generation modern design power monitor that will measure and display electrical power quality parameters. It has been engineered to cover most applications (Single Phase and Three Phase networks / Built in Pulsed and RS485 Modbus / Import and Export kWh), replacing the need for several different models of this power meter.

As the demand for MID certified meters has increased, we have obtained annex B and D of the EC Directive 2004/22/EC. This power meter has been tested and certified for single or three phase networks and import and export active energy (kWh).

The S95 is produced to the highest quality and utilizes the latest microprocessor and technology. It has a backlit display and 16 different measuring parameters. This includes a negative power reading to indicate reversal of CT installation or connection. With built in pulsed outputs and RS485 Modbus RTU it is fully compatible for integration with BMS and remote monitoring systems.

### Parameters

- |  |                                  |
|--|----------------------------------|
| • Phase to Neutral Voltage (V)               | • Active Power (kW)              |
| • Phase to Phase Voltage (V)                 | • Reactive Power (kVar)          |
| • Phase Current (A)                          | • Apparent Power (kVA)           |
| • Voltage Total Harmonic Distortion (U% THD) | • Import Active Energy (kWh)     |
| • Current Total Harmonic Distortion (I% THD) | • Export Active Energy (kWh)     |
| • Frequency (Hz)                             | • Total Active Energy (kWh)      |
| • Power Factor (PF)                          | • Import Reactive Energy (kVarh) |
| • Current Max Demand (MD A)                  | • Export Reactive Energy (kVarh) |
| • Power Max Demand (MD kW)                   | • Total Reactive Energy (kVarh)  |

# Specifications

## Measured Parameters

The unit can monitor and display the following parameters of a Single Phase Two Wire (1P2W), Three Phase Three Wire (3P3W) or Three Phase Four Wire (3P4W) system.

## Voltage and Current

- Phase to Neutral Voltages 100 to 276V AC (not for 3P3W supplies).
- Phase to Phase Voltages 174 to 480V AC (3 Phase supplies only).
- Percentage total Voltage Harmonic Distortion (U THD%) for each Phase to N ( not for 3P3W supplies).
- Percentage Voltage THD% between Phases (3 Phase supplies only).
- Percentage total Current Harmonic Distortion (I THD%) for each Phase.

## Power factor and Frequency and Max. Demand

- Frequency in Hz (45~66Hz)
- Instantaneous power:
- Power 0 to 999MW
- Reactive power 0 to 999MVAR
- Volt-amps 0 to 999MVA
- Maximum demanded power since last Demand reset
- Power factor
- Maximum neutral demand current, since the last Demand reset (for 3 Phase supplies only)

## Energy Measurements

Imported/Exported active energy	0 to 9999999.9 kWh
Imported/Exported reactive energy	0 to 9999999.9 kVArh
Total active energy	0 to 9999999.9 kWh
Total reactive energy	0 to 9999999.9 kVArh

## Measured Inputs

Voltage inputs through 4-way fixed connector with 2.5mm<sup>2</sup> stranded wire capacity. Single Phase Two Wire (1P2W), Three Phase Three Wire (3P3W) or Three Phase Four Wire (3P4W) unbalanced. Line frequency measured from L1 Voltage or L3 Voltage. Three Current inputs (six physical terminals) with 2.5mm<sup>2</sup> stranded wire capacity for connection of external CTs. Nominal rated input Current 5A or 1A AC RMS.

Nominal Voltage Input	100-276V AC (Ph+N) or 174-480V AC (Ph+Ph)
Max Continuous Voltage	120% of Nominal
Nominal Input Current	0.25-5A AC RMS
Max Continuous Current	120% of Nominal
Nominal Input Current Burden	0.5VA
Frequency	45-66Hz

## Accuracy

Voltage	0.2% of range maximum
Current	0.2% of nominal
Frequency	0.2% of mid-frequency
Power Factor	0.5% of unity (0.01)
Active Power (W)	0.5% of range maximum
Reactive Power (VAR)	0.5% of range maximum
Apparent Power (VA)	0.5% of range maximum
Active Energy (Wh)	Class 0.5 IEC 62053-22
ReactiveEnergy (VARh)	Class 0.5 IEC 62053-24
Total Harmonic Distortion	1% up to 63rd harmonic

## Auxiliary Supply

This unit does not require a separate auxiliary supply; the unit draws the necessary power from the voltage input connections. If a three phase supply is connected, and the phase that is powering the unit fails, it will change the phase supply to avoid shutting down.

## Interfaces for External Monitoring

Three interfaces are provided:

- RS485 communication channel that can be programmed for Modbus RTU protocol
- Relay output indicating real-time measured energy.(configurable)
- Pulse output 3200imp/kWh (not configurable)

The Modbus configuration (baud rate etc.) and the pulse relay output assignments (kW/kVAh, import/export etc.) are configured through the set-up screens.

## Pulsed Outputs

The pulsed outputs are "passive type" and comply with Class A IEC 62053-31. The pulse output can be set to generate pulses to represent kWh or kVAh.

The Pulse Rate can be set as follows:

0.001	= 1 pulse per 1 Wh/VArh (1000 pulses per kWh/kVAh)
0.01	= 1 pulse per 10 Wh/VArh (100 pulses per kWh/kVAh)
0.1	= 1 pulse per 100 Wh/VArh (10 pulses per kWh/kVAh)
1	= 1 pulse per 1 kWh/kVAh
10	= 1 pulse per 10 kWh/kVAh
100	= 1 pulse per 100 kWh/kVAh
1000	= 1 pulse per 1000 kWh/kVAh

The Pulse width can be set as 200/100/60 mS.

## RS485 Output for Modbus RTU

For Modbus RTU, the following RS485 communication parameters can be configured from the set-up menu:

Baud rate 2400, 4800, 9600, 19200, 38400

Parity none (default) / even / odd

Stop bits 1 or 2

RS485 network address three digit number, 001 to 247

Response Time <100mS

## Reference Conditions of Influence Quantities

Influence Quantities are variables that affect measurement errors to a minor degree. Accuracy is verified under nominal value (within the specified tolerance) of these conditions.

Ambient temperature	23°C ±1°C
Input waveform	50 or 60Hz ±2%
Input waveform	Sinusoidal (distortion factor < 0.005)
Auxiliary supply voltage	Nominal ±1%
Auxiliary supply frequency	Nominal ±1%
Auxiliary supply waveform (if AC)	Sinusoidal (distortion factor < 0.05)
Magnetic field of external origin	Terrestrial flux

## Environment

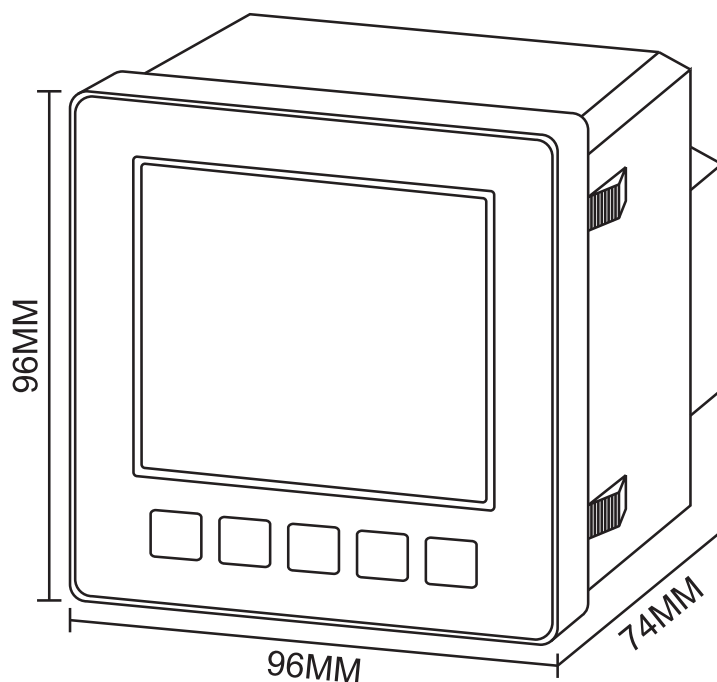
Operating temperature	-25°C to +55°C*
Storage temperature	-40°C to +70°C*
Relative humidity	0 to 95%, non-condensing
Altitude	Up to 3000m
Warm up time	1 minute
Vibration	10Hz to 60Hz, IEC 60068-2-6, 2g
Shock	30g in 3 planes

\*Maximum operating and storage temperatures are in the context of typical daily and seasonal variation.

## Mechanics

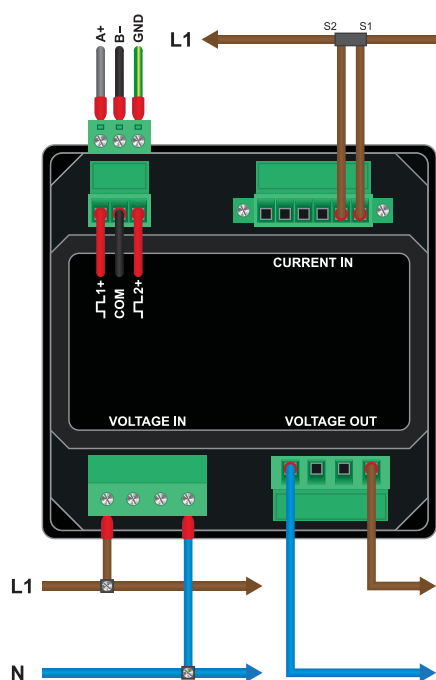
Dimensions	96 x 96 x 74mm (WxHxD)
Mounting	DIN 96 (92mm <sup>2</sup> Cutout)
Sealing	IP51 indoor
Material	Self-extinguishing UL 94 V-0

## Dimensions

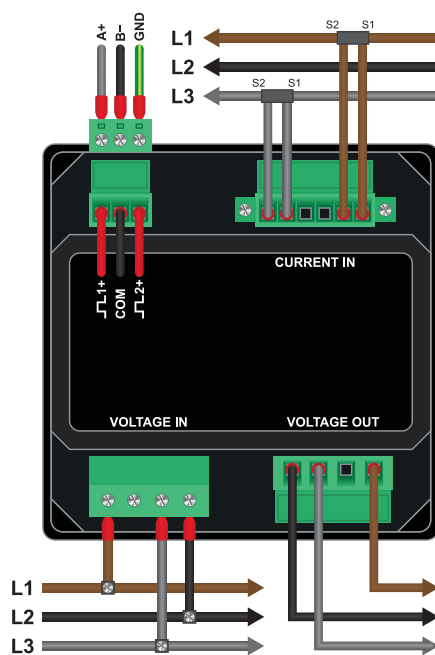


## Installation

Single Phase Two Wire



Three Phase Three Wire



Three Phase Four Wire

