

# Data Sheet

2018 v2.0

## SDM630-Modbus

### DIN Rail Multifunction Power Meter - 100A Direct Connected (MID Certified)

- MID B&D Certified by SGS UK
- Certified for Single & Three Phase
- Certified for Import / Export kWh
- Built in Pulse & Modbus Comms



## SDM630-Modbus Multifunction Power Meter

The SDM630-Modbus 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 SDM630-Modbus is produced to the highest quality and utilizes the latest microprocessor and technology. It has a blue backlit display and 16 different measuring parameters. This meter supports a maximum 100A Direct connection. Available 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)
- Phase Current (A)
- Voltage Total Harmonic Distortion (U%THD)
- Current Total Harmonic Distortion (I%THD)
- Frequency (Hz)
- Power Factor (PF)
- Current Max Demand (MD A)
- Power Max Demand (MD kW)
- Active Power (kW)
- Reactive Power (kVAR)
- Apparent Power (kVA)
- Import Active Energy (kWh)
- Export Active Energy (kWh)
- Total Active Energy (kWh)
- Import Reactive Energy (kVARh)
- Export Reactive Energy (kVARh)
- 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 100-289V AC (not for 3P3W supplies).
- Phase to Phase Voltages 173-500V AC (3 Phase supplies only).
- Percentage Total Voltage Harmonic Distortion (U% THD) for each Phase to N ( not for 3P3W supplies).
- Percentage Voltage Total Harmonic Distortion (U% THD) between Phases (3 Phase supplies only).
- Percentage Current Total Harmonic Distortion (I% THD) for each Phase.

## Power factor and Frequency and Max. Demand

- Frequency in Hz
- Instantaneous power:
- Power 0-3600 MW
- Reactive Power 0-3600 MVAR
- Volt-Amps 0-3600 MVA
- Maximum Demand Power since last reset
- Power factor
- Maximum neutral Demand Current, since the last reset (for Three Phase supplies only)

## Energy Measurements

|                                   |                     |
|-----------------------------------|---------------------|
| Imported/Exported active energy   | 0 to 9999999.9 kWh  |
| Imported/Exported reactive energy | 0 to 9999999.9 kVAh |
| Total active energy               | 0 to 9999999.9 kWh  |
| Total reactive energy             | 0 to 9999999.9 kVAh |

## Measured Inputs

Voltage inputs through 4-way fixed connector with 25mm<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.

|                        |   |
|------------------------|---|
| Nominal Voltage Input  | 100-289V AC (Ph+N) or 173-500V AC (Ph+Ph) |
| Max Continuous Voltage | 120% of Nominal                           |
| Nominal Input Current  | 0.5-10(100)A AC                           |
| Max Continuous Current | 120% of Nominal                           |
| Frequency              | 50Hz ±10%                                 |

## Accuracy

|                             |  |
|-----------------------------|--|
| Voltage                     | 0-5% of range maximum                            |
| Current                     | 0-5% of nominal                                  |
| Frequency                   | 0-2% of mid-frequency                            |
| Power Factor                | 1% of unity (0.01)                               |
| Active Power (W)            | ±1% of range maximum                             |
| Reactive Power (VAR)        | ±1% of range maximum                             |
| Apparent Power (VA)         | ±1% of range maximum                             |
| Active Energy (Wh)          | Class 1 IEC 62053-21                             |
| ReactiveEnergy (VARh)       | ±1% of range maximum                             |
| Total Harmonic Distortion   | 1% up to 31st harmonic                           |
| Response time to step input | 1s, typical, to >99% of final reading, at 50 Hz. |

## Auxiliary Supply

This unit does not require a separate auxiliary supply as it is self-powered from the Voltage Inputs.

## 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.

## Pulse Output

Opto-coupler with potential free SPST-NO Contact (Contact rating - Voltage: 5-27V DC, Current: Imin 2mA and Imax 27mA DC). The pulse output can be set to generate pulses to represent kWh or kVAh.

Rate can be set to generate 1 pulse per:

0.01 = 10 Wh/VArh  
0.1 = 100 Wh/VArh  
1 = 1 kWh/kVAh  
10 = 10 kWh/kVAh  
100 = 100 kWh/kVAh

Pulse width 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 Bate: 2400, 4800, 9600, 19200, 38400

Parity: None (default) / Odd / Even

Stop Bits: 1 or 2

RS485 Network Address: 3 Digit Number - 001 to 247

Modbus™ Word order Hi/Lo byte order is set automatically to normal or reverse. It cannot be configured from the set-up menu.

## 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

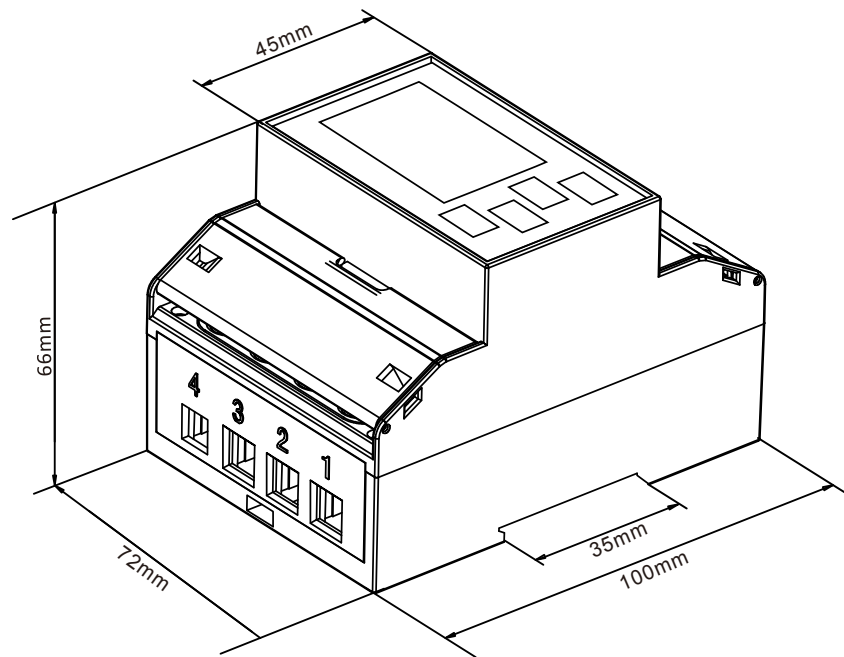
|                       |                                 |
|-----------------------|---------------------------------|
| Operating temperature | -25°C to +55°C*                 |
| Storage temperature   | -40°C to +70°C*                 |
| Relative humidity     | 0 to 95%, non-condensing        |
| Altitude              | Up to 3000m                     |
| Warm up time          | 1 minute                        |
| Vibration             | 10Hz to 50Hz, 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

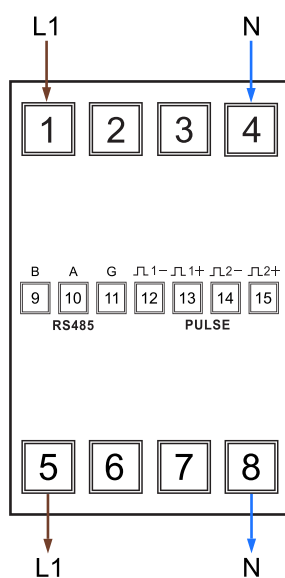
|                     |                                  |
|---------------------|----------------------------------|
| DIN rail dimensions | 72mm x 100mm (WxH) per DIN 43880 |
| Mounting            | DIN rail (DIN 43880)             |
| Sealing             | IP51 indoor                      |
| Material            | Self-extinguishing UL 94 V-0     |

## Dimensions

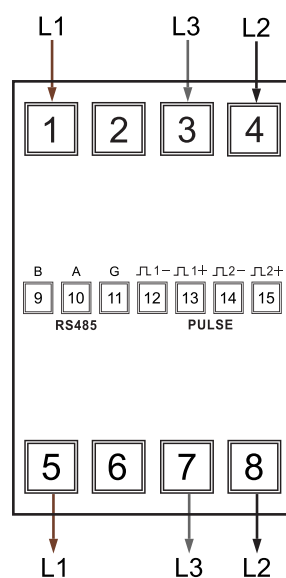


## Installation

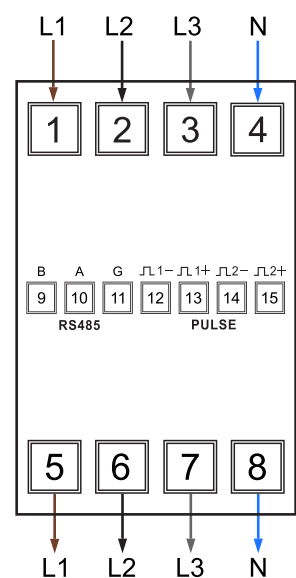
Single phase two wires



Three phase three wires



Three phase four wires



Specifications are subject to change without notice.