Data Sheet
2018 v1.0

SDM120-Modbus
DIN Rail Multifunction Power Meter

- MID B&D Approved
- Class B (kWh) EC Directive 2004/22/EC
- Dual Pulsed Outputs
- RS485 Modbus RTU Comms
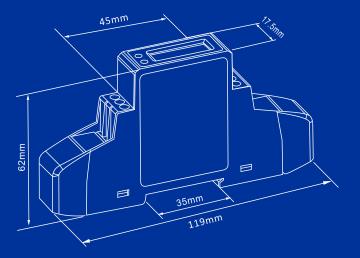- Digital Backlit Display

SDM120-Modbus
Single Phase kWh Meter

The SDM120-Modbus family of meters have been produced to offer a low-cost solution to metering low Amp circuits. The SDM120-Modbus range work directly connected to a maximum load 45A AC circuit.

This particular version of the SDM120 has Dual Pulsed Outputs as well as Built In RS485 Modbus RTU comms. The X45M measures a vast range of parameters, including Voltage, Current and Power Factor.

All SDM120 meters are housed in a 1 Module DIN rail-mounted housing. They also come complete with sealable terminal covers to stop any tampering with the connections.

Dimensions

45mm · 17.5mm · 62mm · 35mm · 119mm

Measured Parameters

The SDM120-ModbusM monitors and displays the following parameters of a single phase two wire (1p2w) system:

• Voltage (V)
• Current (A)
• Active Power (kW)
• Power Factor (PF)
• Frequency (Hz)
• Import Active Energy (kWh)
• Export Active Energy (kWh)
• Total Active Energy (kWh)

Voltage and Current

• Phase to Neutral Voltage - 176 to 276V AC

• Phase Current - Imin-Ib(Imax) 0.25-5(45)A AC

Power factor and Frequency and Max. Demand

• Frequency in Hz

• Instantaneous power:

• Power 0 to 12 kW

• Reactive power 0 to 12 kVAr

• Volt-amps 0 to 12 kVA

• Maximum demanded power since last Demand reset Power factor

Energy Measurements

Imported/Exported active energy	0 to 99999.99 kWh
Imported/Exported reactive energy	0 to 99999.99 kVArh
Total active energy	0 to 99999.99 kWh
Total reactive energy	0 to 99999.99 kVArh

Measured Inputs

Nominal Voltage Input	(Ph+N) 176 to 276V
Max Continuous Voltage	120% of nominal
Nominal Input Current	5(45)A
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
Reactive energy (VARh)	±1% of range maximum

Interfaces for External Monitoring

Two interfaces are provided:

- RS485 communication channel that can be programmed for Modbus RTU protocol
- Relay output indicating real-time measured energy.(configurable)

The Modbus configuration (baud rate etc.) and the pulse relay output assignments (kW/kVArh, import/export etc.) are configured through modbus interrogation.

Pulse Output

The meter provides two pulsed outputs, both pulsed outputs are passive type. The first pulsed output is configurable. The pulsed output can be set to read total / import / export/ kWh /

kVarh. The pulse constant can be set to generate 1 pulse per: 0.001(default) /0.01/0.1/1kWh/kVarh. The second pulsed output is non-configurable. It is fixed to read total kWh.

Rate can be set to generate 1 pulse per:
0.001 = 1 Wh/VArh (default)
0.01 = 10 Wh/VArh
0.1 = 100 Wh/VArh
1 = 1 kWh/kVArh

Pulse width 200/100/60 ms.

RS485 Output for Modbus RTU

For Modbus RTU, the following RS485 communication parameters can be configured through modbus interrogation:

Baud rate 1200, 2400, 4800, 9600.

Parity none (default) / odd / even

Stop bits 1 or 2

RS485 network address 3-digit number, 1 to 247

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

Wiring Diagram

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	18mm x 90mm (WxH) per DIN 43880
Mounting	DIN rail (DIN 43880)
Sealing	IP51 indoor
Material	Self-extinguishing UL 94 V-0

Specifications are subject to change without notice.