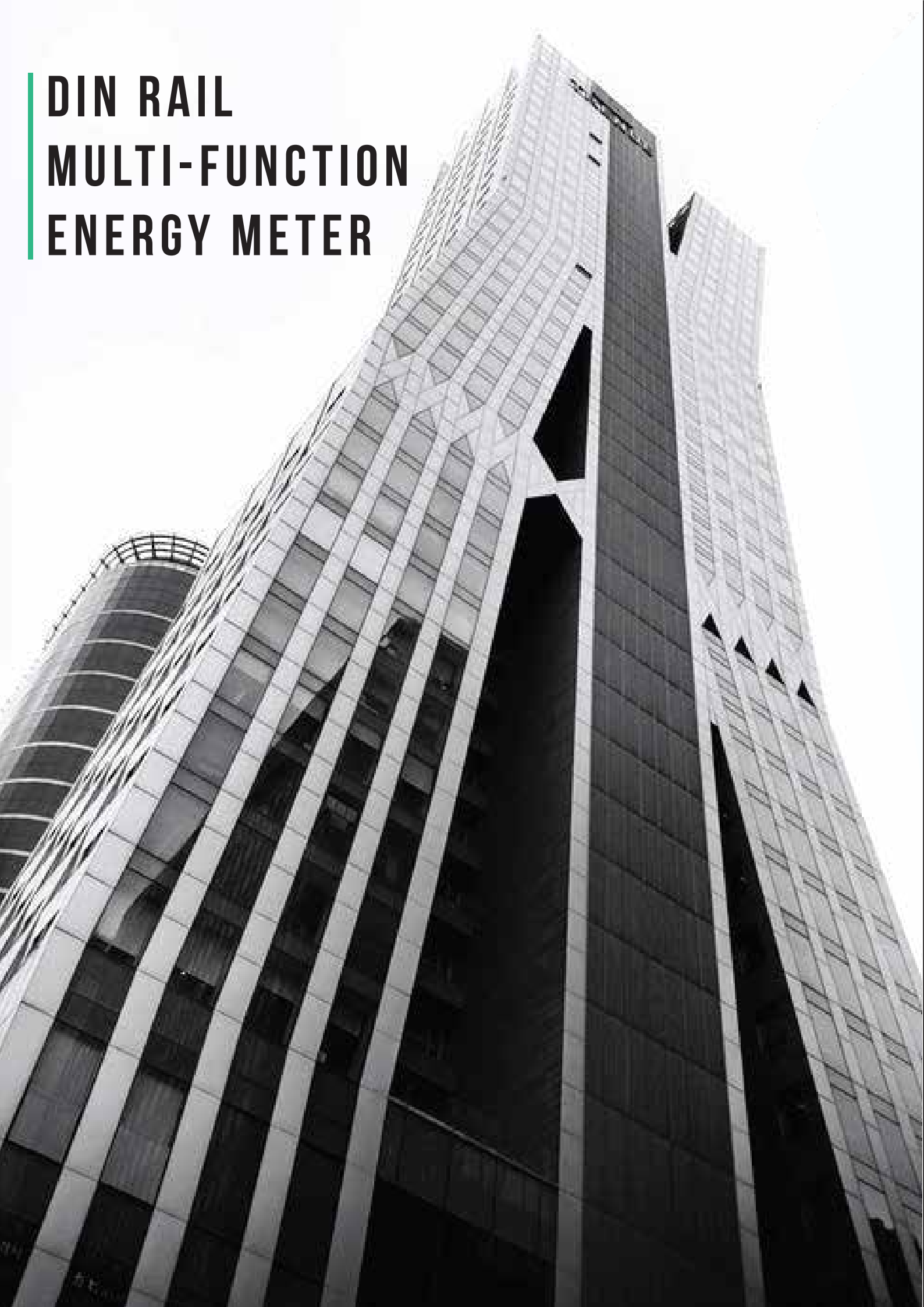
smartcontroller

Electrical Excellence

PRODUCT CATALOGUE

DIN RAIL MULTI-FUNCTION ENERGY METER



SINGLE PHASE MULTI-FUNCTION ENERGY METER

Model No: SMART-SME 100D

- **45A Direct Load**
- **Module 17.5mm Wide**
- **RS 485 Modbus or M-bus Communication**
- **Measuring kWh, W, A, PF, Hz, dmd, etc.**
- **Bi-Directional Measurement**
- **2 Pulse Outputs**

INTRODUCTION

Modbus/Mbus are advanced Single Phase Energy monitoring solution with built-in configuration push button and led data display particularly Indicated for energy and other parameter metering and for cost allocation.

Housing for din-rail mounting, IP51 protection degree direct connection for energy and other parameter metering and cost allocation. Housing for din-rail mounting, IP51 protection degree, direct connection up to max 45A.

The meter can be provided with a pulses output proportional to the active energy being measured and a RS485 output / M-bus output port for remote monitoring. It is an ideal choice as a sub-meter for AMR system or SCADA system.

SPECIFICATION

Nominal Voltage(Un)	120V or 230V ac
Operational Voltage	80%~120% of Un
Insulation Capabilities	
- AC Voltage withstand	4KV for 1 minute
- Impulse Voltage withstand	6KV-1.2μS
Basic Current (Ib)	5A
Maximum Rated Current (Imax)	45A
Operational Current Range	0.4% Ib-Imax
Over Current withstand	30 Imax for 0.01s
Operational frequency Range	50 / 60Hz
Internal Power Consumption	≤ 2W/10VA
Pulse Output	1000imp/kWh
Display	LCD with backlight
Max Reading	999999 kWh

PERFORMANCE CRITERIA

Operating Humidity	≤ 90%
Storage Humidity	≤ 95%
Operating Temperature	-25°C - +55°C
Storage Temperature	-40°C - +70°C
Reference Temperature	23°C± 2°C
International Standard	IEC 62053-21 / EN50470-1/3
Accuracy Class	Class1/Class B
Installation Category	CAT II
Mechanical Environment	M1
Degree of Pollution	2
Protection Against Penetration of Dust and Water	2
Insulating Encased Meter of Protective Class	IP51(indoor)
Attitude	II
Electrostatic Discharges	up to 2000m
Electromagnetic HF Fields	8kV contact / 15kV air gap
Electrical Fast Transients	IEC 61000-4-3
Surge	4kV
Radiated and Conducted	4kV
Emission	55022

ACCURACY

Voltage, Current	0·5%
Frequency	0·2% of mid-frequency
Power Factor	1% of unity (0.01)
Active Power, Apparent Power	±1% of range maximum
Reactive Power	±1% of range maximum
Reactive Energy (Varh)	Class 2
Active Energy (Wh)	Class 1

MODBUS

Bus Type	RS485(semi-duplex)
Protocol	Modbus RTU
Baud Rate	1200/2400/4800/9600bps
Address Range	1-247
Max. Bus loading	64pcs
Communication Distance	1000M
Parity	EVEN/ODD/NONE
Data Bit	8
Stop Bit	1

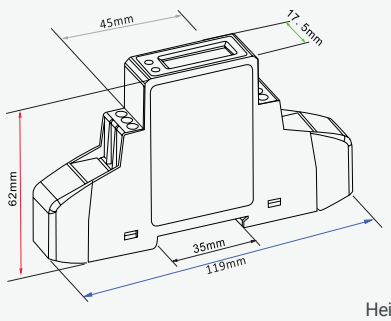
M-BUS

Bus Type	M-bus
Protocol	13757-3
Baud Rate	300/600/1200/2400/4800/9600
Parity	NONE/EVEN/ODD
Stop Bit	1 or 2
Primary Address	1 to 250
Secondary Address	00 00 00 01 to 99 99 99 99

PULSE OUTPUT

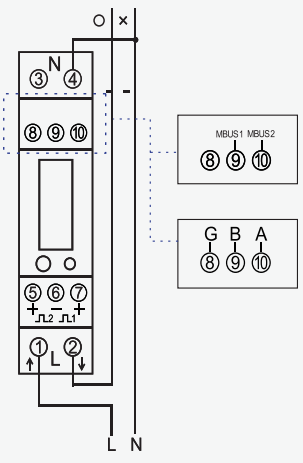
Pulse Outputs	2
Pulse Output Type	Passive
Pulse Output 1	Configurable
Pulse Width	200/100(default)/60ms
Pulse Output 2	1000imp/kWh

DIMENSIONS



Height 119mm
Width 17.5mm
Depth 62mm

WIRING DIAGRAM



SINGLE PHASE MULTI-FUNCTION ENERGY METER

Model No: SMART-SME 102CT

- **CT Operated**
- **One Module 17.5mm Wide**
- **Measuring kWh, W, A, PF, Hz, dmd, etc.**
- **Bi-Directional Measurement**
- **2 Pulse Outputs**
- **RS 485 Modbus or M-bus Communication**

INTRODUCTION

Modbus/Mbus are advanced Single Phase Energy monitoring solution with built-in configuration push button and led data display particularly Indicated for energy and other parameter metering and for cost allocation.

Housing for din-rail mounting, IP51 protection degree direct connection for energy and other parameter metering and cost allocation. Housing for din-rail mounting , IP51 protection degree, direct connection up to max 45A.

The meter can be provided with a pulses output proportional to the active energy being measured and a RS485 output / M-bus output port for remote monitoring. It is an ideal choice as a sub-meter for AMR system or SCADA system.

SPECIFICATION

Nominal Voltage(Un)	120V or 230V ac
Operational Voltage	80%~120% of Un
Insulation Capabilities	
- AC Voltage withstand	4KV for 1 minute
- Impulse Voltage withstand	6KV-1.2μS
Basic Current (Ib)	5~9999A
Maximum Rated Current (Imax)	100mV or 100mA
Operational Current Range	20 Imax for 0.01s
Over Current withstand	50 or 60Hz
Operational frequency Range	≤ 2W/10VA
Internal Power Consumption	configurable
Pulse Output	1000imp/kWh
Display	LCD with backlight
Max Reading	999999 kWh

PERFORMANCE CRITERIA

Operating Humidity	≤ 90%
Storage Humidity	≤ 95%
Operating Temperature	-25°C - +55°C
Storage Temperature	-40°C - +70°C
Reference Temperature	23°C± 2°C
International Standard	IEC 62053-21 / EN50470-1/3
Accuracy Class	Class1/Class B
Installation Category	CAT II
Mechanical Environment	M1
Degree of Pollution	E2
Protection Against Penetration of Dust and Water	2
Insulating Encased Meter of Protective Class	IP51(indoor)
Attitude	II
Electrostatic Discharges	up to 2000m
Electromagnetic HF Fields	8kV contact / 15kV air gap
Electrical Fast Transients	IEC 61000-4-3
Surge	4kV
Radiated and Conducted	4kV
Emission	EN 55022

ACCURACY

Voltage, Current	0.5%
Frequency	0.2% of mid-frequency
Power Factor	1% of unity (0.01)
Active Power, Apparent Power	±1% of range maximum
Reactive Power	±1% of range maximum
Reactive Energy (Varh)	Class 2
Active Energy (Wh)	Class 1

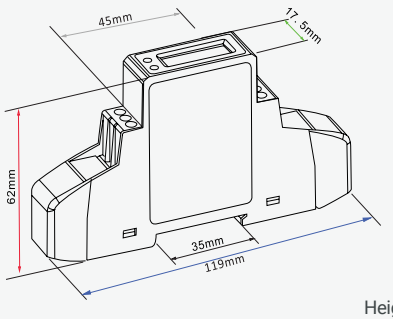
MODBUS

Bus Type	RS485(semi-duplex)
Protocol	Modbus RTU
Baud Rate	1200/2400/4800/9600bps
Address Range	1-247
Max. Bus loading	64pcs
Communication Distance	1000M
Parity	EVEN/ODD/NONE
Data Bit	8
Stop Bit	1

M-BUS

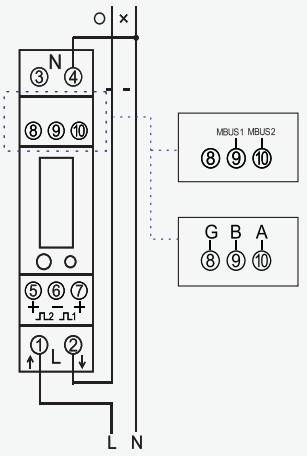
Bus Type	M-bus
Protocol	13757-3
Baud Rate	300/600/1200/2400/4800/9600
Parity	NONE/EVEN/ODD
Stop Bit	1 or 2
Primary Address	1 to 250
Secondary Address	00 00 00 01 to 99 99 99 99

DIMENSIONS



Height 119mm
Width 17.5mm
Depth 62mm

WIRING DIAGRAM



SINGLE PHASE MULTI-FUNCTION ENERGY METER

Model No: SMART-SME 102D

- **100A Direct Load**
- **2 Module 36mm Wide**
- **Measuring kWh, W, A, PF, Hz, dmd, etc.**
- **Bi-Directional Measurement**
- **RS 485 Modbus or M-bus Communication**
- **Multi-Tariffs VA, PF, Hz, dmd, V, A etc.**

INTRODUCTION

Smart Controller series is advanced Digital Single Phase multi-function energy meter, which measures up to 100A direct load.

The unit measures Active Energy, Reactive Energy, Current, Voltage, Power, Power Factor, Frequency, Demand, etc. Bi-directional measurement makes this unit an ideal choice for solar PV measurement.

A remote communication port is provided, RS 485 Modbus RTU or M-bus EN 13757-3 and communication parameters are password protected in setup mode. User can check data and set up the meter via the buttons on the front panel.

SPECIFICATION

Nominal Voltage(Un)	230V ac
Operational Voltage	80%~120% of Un
Instation Capabilities	
- AC Voltage Withstand	4KV for 1 minute
- Impulse Voltage Withstand	6KV-1.2μS
Basic Current (Ib)	5A
Maximum Rated Current (Imax)	100A
Operational Current Range	0.4% Ib-Imax
Over Current Withstand	30 Imax for 0.01s
Internal Frequency Range	50 or 60Hz
Internal Power Consumption	≤ 2W/10VA
Pulse Output 1	configurable
Pulse Output 2	1000imp/kWh
Max Reading	99999.99 kWh

PERFORMANCE CRITERIA

Operating Humidity	≤ 90%
Storage Humidity	≤ 95%
Operating Temperature	-25°C - +55°C
Storage Temperature	-40°C - +70°C
Reference Temperature	23°C± 2°C
International Standard	IEC 62053-21 / EN50470-1/3
Accuracy Class	Class1/Class B
Installation Category	CAT II
Mechanical Environment	M1
Degree of Pollution	E2
Protection Against Penetration of Dust and Water	2
Insulating Encased Meter of Protective Class	IP51(indoor)
	II

MULTI-TARIFF

Time Clock Accuracy	< 1s/day
Tariffs	4
Time Segments	10

ACCURCY

Voltage, Current	0.5%
Frequency	0.2% of mid-frequency
Power Factor	1% of unity (0.01)
Active Power, Apparent Power	±1% of range maximum
Reactive Power	±1% of range maximum
Reactive Energy (Varh)	Class 2
Active Energy (Wh)	Class 1

MODBUS

Bus Type	RS485(semi-duplex)
Protocol	Modbus RTU
Baud Rate	1200/2400/4800/9600bps
Address Range	1-247
Max. Bus loading	64pcs
Communication Distance	1000M
Parity	EVEN/ODD/NONE
Data Bit	8
Stop Bit	1

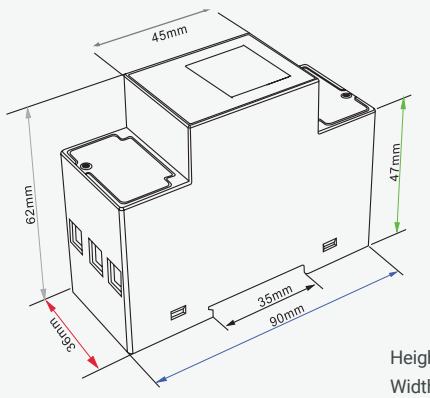
M-BUS

Bus Type	M-bus
Protocol	EN13757-3
Baud Rate	300/600/1200/2400/4800/9600
Parity	NONE/EVEN/ODD
Stop Bit	1 or 2
Primary Address	1 to 250
Secondary Address	00 00 00 01 to 99 99 99 99

PULSE OUTPUT

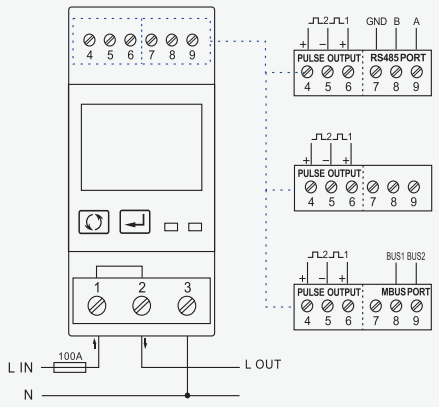
Pulse Outputs	2
Pulse Output Type	Passive
Pulse Output 1	Configurable
Pulse Width	200/100(default)/60ms
Pulse Output 2	1000imp/kWh

DIMENSIONS



Height 90mm
Width 36mm
Depth 62mm

WIRING DIAGRAM



SINGLE PHASE MULTI-FUNCTION ENERGY METER

Model No: SMART-SME 103D

- **100A Direct Load**
- **2 Module 36mm Wide**
- **Measuring kWh, W, A, PF, Hz, dmd, etc.**
- **Bi-Directional Measurement**
- **2 Pulse Outputs**
- **RS 485 Modbus or M-bus Communication**
- **2 Tariffs Available**

INTRODUCTION

Smart Controller series is advanced Digital Single Phase multi-function energy meter, which measures up to 100A direct load. The unit measures Active Energy, Reactive Energy, Current, Voltage, Power, Power Factor Frequency, Demand, etc.

Bi-directionalmeasurement makes this unit an ideal choice for solar PV measurement. A remote communication port is provided

RS485 mudbus RTU and M-bus EN13757-3 communication parameters are password protectedin setup mode. User can check data and set up the meter via the buttons on the front panel.

SPECIFICATION

Nominal Voltage(Un)	120V or 230V ac
Operational Voltage	80%~120% of Un
Instation Capabilities	
- AC Voltage withstand	4KV for 1 minute
- Impulse Voltage withstand	6KV-1.2μS
Basic Current (Ib)	5A
Maximum Rated Current (Imax)	100A
Operational Current Range	0.4% Ib-Imax
Over Current withstand	30 Imax for 0.01s
Internal Frequency Range	50 or 60Hz
Internal Power Consumption	≤ 2W/10VA
Pulse Output 1	1000imp/kWh
Pulse Output 2	1000imp/kWh(only for SDM230DR/Bi)
Max Reading	999999.9 kWh

PERFORMANCE CRITERIA

Operating Humidity	≤ 90%
Storage Humidity	≤ 95%
Operating Temperature	-25°C - +55°C
Storage Temperature	-40°C - +70°C
Reference Temperature	23°C± 2°C
International Standard	IEC 62053-21 / EN50470-1/3
Accuracy Class	Class1/Class B
Installation Category	CAT II
Mechanical Environment	M1
Degree of Pollution	E2
Protection Against Penetration of Dust and Water	2
Insulating Encased Meter of Protective Class	IP51(indoor)
Attitude	II
Electrostatic Discharges	8kV contact / 15kV air gap
Electromagnetic HF Fields	IEC 61000-4-3
Electrical Fast Transients	4kV
Surge	4kV
Radiated and Conducted Emission	EN 55022

ACCURACY

Voltage, Current	0.5%
Frequency	0.2% of mid-frequency
Power Factor	1% of unity (0.01)
Active Power, Apparent Power	±1% of range maximum
Reactive Power	±1% of range maximum
Reactive Energy (Varh)	Class 2
Active Energy (Wh)	Class 1

MODBUS

Bus Type	RS485(semi-duplex)
Protocol	Modbus RTU
Baud Rate	1200/2400/4800/9600bps
Address Range	1-247
Max. Bus loading	64pcs
Communication Distance	1000M
Parity	EVEN/ODD/NONE
Data Bit	8
Stop Bit	1

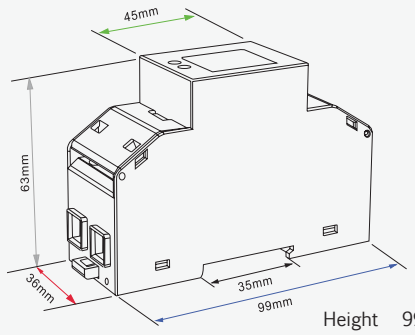
M-BUS

Bus Type	M-bus
Protocol	EN13757-3
Baud Rate	300/600/1200/2400/4800/9600
Parity	NONE/EVEN/ODD
Stop Bit	1 or 2
Primary Address	1 to 250
Secondary Address	00 00 00 01 to 99 99 99 99

PULSE OUTPUT

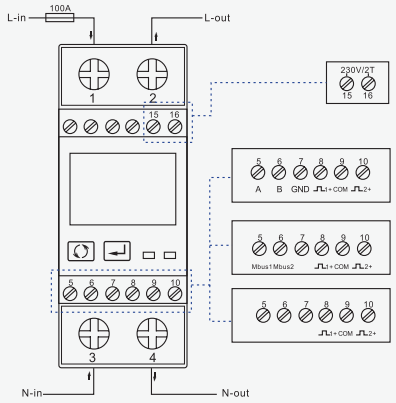
Pulse Outputs	2
Pulse Output Type	Passive
Pulse Output 1	Configurable
Pulse width	200/100(default)/60ms
Pulse Output 2	1000imp/kWh

DIMENSIONS



Height 99mm
Width 36mm
Depth 63mm

WIRING DIAGRAM



SINGLE PHASE MULTI-FUNCTION ENERGY METER

Model No: SMART-SME 104D

- **Max. 100A Direct Load**
- **2 Module Wide**
- **Measuring kWh, W, A, PF, Hz, dmd, etc.**
- **Active Energy Measured**
- **Pulse Output**
- **LCD Display**

INTRODUCTION

Smart Controller series is advanced Digital Single Phase multi-function energy meter, which measures up to 100A direct load. The unit measures active energy, reactive energy, current, voltage, power, power factor frequency, demand, etc.

Bi-directional measurement makes this unit an ideal choice for solar PV measurement. A remote communication port is provided. The unit allows Max.100A direct connection, saving the cost and avoiding the trouble to connect external CTs. 1 pulse output is provided for energy measurement.

RS485 mudbus RTU and M-bus EN13757-3 communication parameters are password protectedin setup mode. User can check data and set up the meter via the buttons on the front panel.

SPECIFICATION

Nominal Voltage(Un)	120V or 230V ac
Operational Voltage	80%~120% of Un
Instation Capabilities	
- AC Voltage withstand	4KV for 1 minute
- Impulse Voltage withstand	6KV-1.2μS
Basic Current (Ib)	5A
Maximum Rated Current (Imax)	100A
Operational Current Range	0.4% Ib-Imax
Over Current withstand	30 Imax for 0.01s
Internal Frequency Range	50 or 60Hz
Internal Power Consumption	≤ 2W/10VA
Pulse Output 1	1000imp/kWh
Pulse Output 2	1000imp/kWh(only for SDM230DR/Bi)
Max Reading	999999.9 kWh

PERFORMANCE CRITERIA

Operating Humidity	≤ 90%
Storage Humidity	≤ 95%
Operating Temperature	-25°C - +55°C
Storage Temperature	-40°C - +70°C
Reference Temperature	23°C± 2°C
International Standard	IEC 62053-21 / EN50470-1/3
Accuracy Class	Class1/Class B
Installation Category	CAT II
Mechanical Environment	M1
Degree of Pollution	E2
Protection Against Penetration of Dust and Water	2
Insulating Encased Meter of Protective Class	IP51(indoor)
Attitude	II
Electrostatic Discharges	8kV contact / 15kV air gap
Electromagnetic HF Fields	IEC 61000-4-3
Electrical Fast Transients	4kV
Surge	4kV
Radiated and Conducted Emission	EN 55022

ACCURACY

Voltage, Current	0.5%
Frequency	0.2% of mid-frequency
Power Factor	1% of unity (0.01)
Active Power, Apparent Power	±1% of range maximum
Reactive Power	±1% of range maximum
Reactive Energy (Varh)	Class 2
Active Energy (Wh)	Class 1

MODBUS

Bus Type	RS485(semi-duplex)
Protocol	Modbus RTU
Baud Rate	1200/2400/4800/9600bps
Address Range	1-247
Max. Bus loading	64pcs
Communication Distance	1000M
Parity	EVEN/ODD/NONE
Data Bit	8
Stop Bit	1

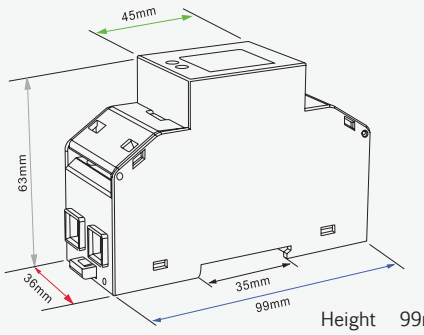
M-BUS

Rated Current	10 A
Max Current	100A A
Min Current	0.5 A
Starting Current	20mA
Stop Bit	1 or 2
Primary Address	1 to 250
Secondary Address	00 00 00 01 to 99 99 99 99

PULSE OUTPUT

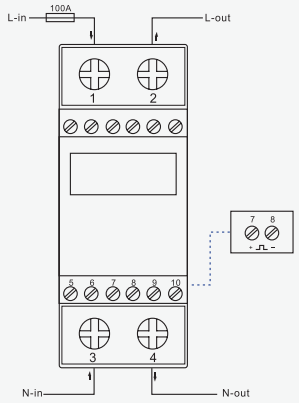
Pulse Outputs	2
Pulse Output Type	Passive
Pulse Output 1	Configurable
Pulse width	200/100(default)/60ms
Pulse Output 2	1000imp/kWh

DIMENSIONS



Height 99mm
Width 36mm
Depth 63mm

WIRING DIAGRAM



THREE PHASE 4 WIRE MULTI-FUNCTION ENERGY METER

Model No: SMART-SME 200D

- **100A Direct Load**
- **7 Module Wide**
- **Bi-Directional Measurement**
- **2 Pulse Outputs**
- **RS 485 Modbus or M-bus Communication**
- **Multi kWh, kVarh, W, Var, VA, PF, Hz, dmd, etc.**
- **Multi-Tariffs**

INTRODUCTION

The Smart Controller series measure and display the characteristics of three phase four wires (3p, 4w) Supplies, Including Voltage, Frequency, Current, Power Active and Reactive Energy, Import or Exported.

Energy is measured in terms of kWh, KVArh. Maximum demand current can be measured over preset periods of up to 60 minutes. In order to measure energy the unit requires voltage and current input in addition tot he supply required to power the product.

Smart Controller series support max. 100A direct connection, save the cost the trouble to connect CTs, giving the unit a cost-effective and easy operation. Built-in interface provides pulse and RS485 modbus RTU output / MBus port. All the configuration are password protected.

SPECIFICATION

Nominal Voltage(Un)	3x230/400 V ac
Operational Voltage	80%~120% of Un
Instation Capabilities	
- AC Voltage Withstand	4KV for 1 minute
- Impulse Voltage Withstand	6KV-1.2μS
Basic Current (Ib)	10A
Maximum Rated Current (Imax)	0.4% Ib-Imax
Operational Current Range	30 Imax for 0.01s
Over Current Withstand	50 or 60Hz
Pulse Output	≤ 2W/10VA
Display	LCD
Max Reading	999999.99 kWh/kVarh

PERFORMANCE CRITERIA

Operating Humidity	≤ 90%
Storage Humidity	≤ 95%
Operating Temperature	-25°C - +55°C
Storage Temperature	-40°C - +70°C
Reference Temperature	23°C± 2°C
International Standard	IEC 62053-21 / EN50470-1/3
Accuracy Class	Class1/Class B
Installation Category	CAT III
Mechanical Environment	M1
Degree of Pollution	E2
Protection Against Penetration of Dust and Water	2
Insulating Encased Meter of Protective Class	IP51(indoor)
Attitude	II
Electrostatic Discharges	8kV contact / 15kV air gap
Electromagnetic HF Fields	IEC 61000-4-3
Electrical Fast Transients	4kV

MULTI-TARIFF

Time Clock Accuracy	< 1s/day
Tariffs	4
Time Segments	10

ACCURACY

Voltage, Current	0.5%
Frequency	0.2% of mid-frequency
Power Factor	1% of unity (0.01)
Active Power, Apparent Power	±1% of range maximum
Reactive Power	±1% of range maximum
Reactive Energy (Varh)	Class 2
Active Energy (Wh)	Class 1

MODBUS

Bus Type	RS485(semi-duplex)
Protocol	Modbus RTU
Baud Rate	1200/2400/4800/9600bps
Address Range	1-247
Max. Bus Loading	64pcs
Communication Distance	1000M
Parity	EVEN/ODD/NONE
Data Bit	8
Stop Bit	1

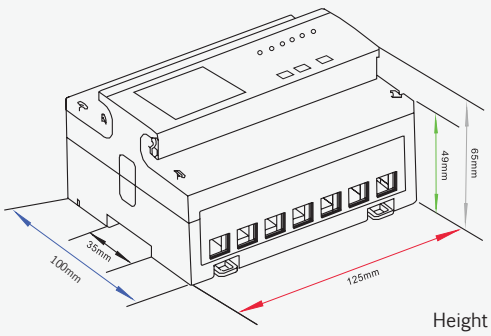
M-BUS

Bus Type	M-bus
Protocol	EN13757-3
Baud Rate	300/600/1200/2400/4800/9600
Parity	NONE/EVEN/ODD
Stop Bit	1 or 2
Primary Address	1 to 250
Secondary Address	00 00 00 01 to 99 99 99 99

PULSE OUTPUT

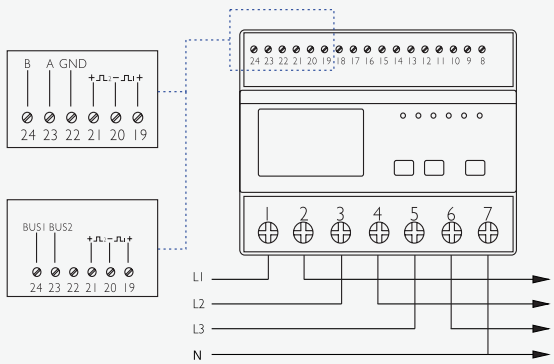
Pulse Outputs	2
Pulse Output Type	Passive
Pulse Output 1	Configurable
Pulse Width	200/100(default)/60ms
Pulse Output 2	400imp/kWh

DIMENSIONS



Height 100mm
Width 125mm
Depth 65mm

WIRING DIAGRAM



THREE PHASE 4 WIRE MULTI-FUNCTION ENERGY METER

Model No: SMART-SME 201CT

- **5A CT Operated**
- **7 Module Wide**
- **Multi kWh, kVarh, W, Var, VA, PF, Hz, dmd, etc.**
- **Bi-Directional Measurement**
- **2 Pulse Outputs**
- **RS 485 Modbus or M-bus Communication**
- **Multi-Tariffs**

INTRODUCTION

The Smart Controller series measure and display the characteristics of Three Phase four wires including voltage, frequency, current, power active and reactive energy, import or exported. Energy is measured in terms of kWh, KVArh.

Maximum demand current can be measured over preset periods of up to 60 minutes. In order to measure energy the unit requires voltage and current input in addition to the supply required to power the product.

Smart Controller series can be configured to work with wide range of Ct,s giving the unit a wide rangeof operation. Built-in interfaces provides pulse and RS485 Modbus or Mbus.

SPECIFICATION

Nominal Voltage(Un)	3x230/400 V ac
Operational Voltage	80%~120% of Un
Instation Capabilities	
- AC Voltage Withstand	4KV for 1 minute
- Impulse Voltage Withstand	6KV-1.2μS
Basic Current (Ib)	5A
Maximum Rated Current (Imax)	0.4% Ib-Imax
Operational Current Range	20 Imax for 0.01s
Over Current Withstand	50 or 60Hz
Pulse Output	≤ 2W/10VA
Display	LCD
Max Reading	999999.99 kWh/kVarh

PERFORMANCE CRITERIA

Operating Humidity	≤ 90%
Storage Humidity	≤ 95%
Operating Temperature	-25°C - +55°C
Storage Temperature	-40°C - +70°C
Reference Temperature	23°C± 2°C
International Standard	IEC 62053-21 / EN50470-1/3
Accuracy Class	Class1/Class B
Installation Category	CAT III
Mechanical Environment	M1
Degree of Pollution	E2
Protection Against Penetration of Dust and Water	2
Insulating Encased Meter of Protective Class	IP51(indoor)
Attitude	II
Electrostatic Discharges	8kV contact / 15kV air gap
Electromagnetic HF Fields	IEC 61000-4-3
Electrical Fast Transients	4kV

MULTI-TARIFF

Time Clock Accuracy	< 1s/day
Tariffs	4
Time Segments	10

ACCURACY

Voltage, Current	0.5%
Frequency	0.2% of mid-frequency
Power Factor	1% of unity (0.01)
Active Power, Apparent Power	±1% of range maximum
Reactive Power	±1% of range maximum
Reactive Energy (Varh)	Class 2
Active Energy (Wh)	Class 1

MODBUS

Bus Type	RS485(semi-duplex)
Protocol	Modbus RTU
Baud Rate	1200/2400/4800/9600bps
Address Range	1-247
Max. Bus loading	64pcs
Communication Distance	1000M
Parity	EVEN/ODD/NONE
Data Bit	8
Stop Bit	1

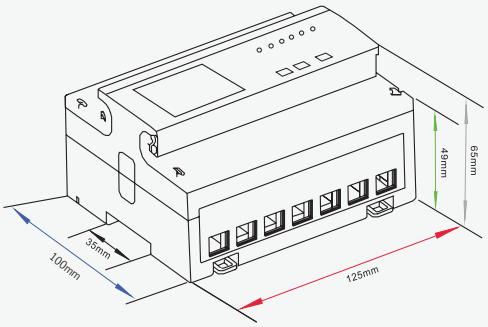
M-BUS

Bus Type	M-bus
Protocol	EN13757-3
Baud Rate	300/600/1200/2400/4800/9600
Parity	NONE/EVEN/ODD
Stop Bit	1 or 2
Primary Address	1 to 250
Secondary Address	00 00 00 01 to 99 99 99 99

PULSE OUTPUT

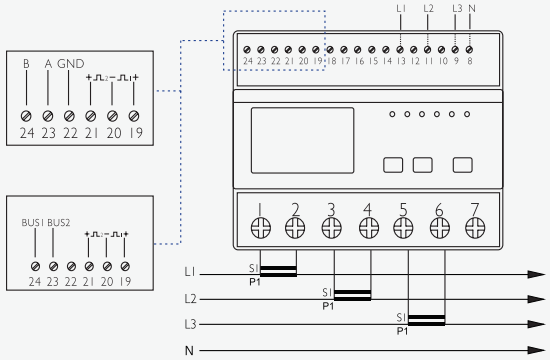
Pulse Outputs	2
Pulse Output Type	Passive
Pulse Output 1	Configurable
Pulse Width	200/100(default)/60ms
Pulse Output 2	1000imp/kWh

DIMENSIONS



Height 100mm
Width 125mm
Depth 65mm

WIRING DIAGRAM



THREE PHASE 4 WIRE ENERGY METER

Model No: SMART-SME 202

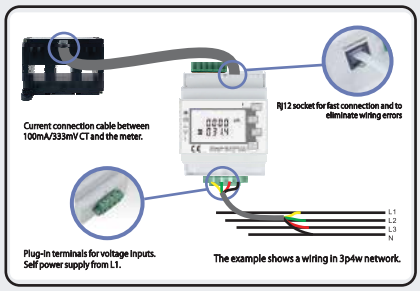
- CT Operated
- Plug-in Conncetion
- RJ 12 100mA / 33mV Current Input
- Multi-Parameter Measures
- THD of Voltage and Current
- RS 485 Modbus RTS and Pulse Output

INTRODUCTION

The Smart Controller is a Three Phase 4 wire multi-function energy meter. It measure and display the characteristic of 3p4w Network, Including Voltage, Current, Power Active and Reactive Energy Imported And Exported, thd, Power Demand, Frequency, Power Factor etc.

The meter use plug-in terminals for both voltage input current input. With 3-in-1 current transformer meter provides easy an quick and error-free connection solution. Equipped with RS485 communication port and 2 pulse outputs the meter ideal product for sub-metering in low voltage application.

LOAD SOLUTION



SPECIFICATION

Nominal Voltage(Un)	3x230/400 V ac
Operational Voltage	60%~120% of Un
Instation Capabilities	
- AC Voltage withstand	4KV for 1 minute
- Impulse Voltage withstand	6KV-1.2μS
Basic Current (Ib)	100mA or 333mV CT input
Maximum Rated Current (Imax)	0.4% Ib-Imax
Operational Current Range	20 Imax for 0.01s
Over Current withstand	50 or 60Hz
Internal Frequency Range	≤ 2W/10VA
Internal Power Consumption	Configurable
Pulse Output 1	3200 imp/kWh
Display	LCD
Max Reading	9999999.9 kWh/kVarh

PERFORMANCE CRITERIA

Operating Humidity	≤ 90%
Storage Humidity	≤ 95%
Operating Temperature	-25°C - +55°C
Storage Temperature	-40°C - +70°C
Reference Temperature	23°C± 2°C
International Standard	IEC 62053-21 / EN50470-1/3
Accuracy Class	Class1/Class B
Installation Category	CAT III
Mechanical Environment	M1
Degree of Pollution	E2
Protection Against Penetration of Dust and Water	2
Insulating Encased Meter of Protective Class	IP51(indoor)
Attitude	II
Electrostatic Discharges	8kV contact / 15kV air gap
Electromagnetic HF Fields	EN 55022

ACCURACY

Voltage, Current	0.5%
Frequency	0.2% of mid-frequency
Power Factor	1% of unity (0.01)
Active Power, Apparent Power	±1% of range maximum
Reactive Power	±1% of range maximum
Reactive Energy (Varh)	Class 2
Active Energy (Wh)	Class 1

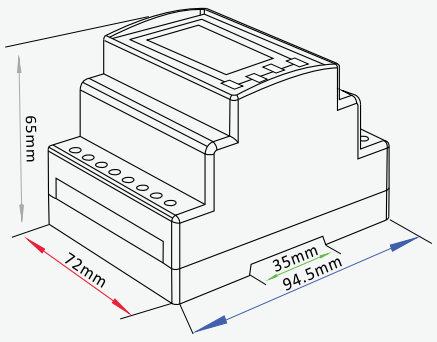
MODBUS

Bus Type	RS485(semi-duplex)
Protocol	Modbus RTU
Baud Rate	2400/4800/9600/19200/38400bps
Address Range	1-247
Max. Bus loading	64pcs
Communication Distance	1000M
Parity	EVEN/ODD/NONE
Data Bit	8
Stop Bit	1

M-BUS (OPTIONAL)

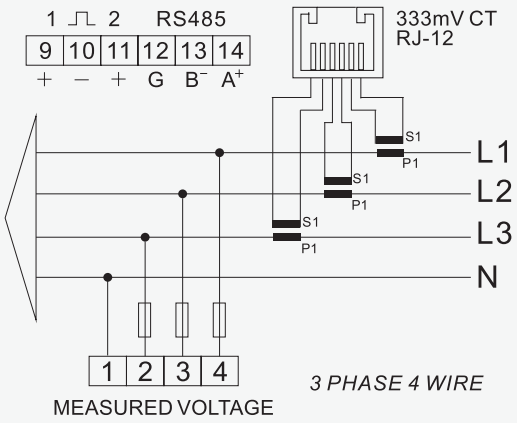
Bus Type	M-bus
Protocol	EN13757-3
Baud Rate	300/600/1200/2400/4800/9600
Parity	NONE/EVEN/ODD
Stop Bit	1 or 2
Primary Address	1 to 250
Secondary Address	00 00 00 01 to 99 99 99 99

DIMENSIONS



Height 94.5mm
Width 72mm
Depth 65mm

WIRING DIAGRAM



THREE PHASE MULTI-FUNCTION POWER ANALYZER

Model No: SMART-SME 203D

- **100A Direct Load**
- **4 Module Wide**
- **Work with 3P 4W/ 3P 4W/ 1P 2W**
- **Bi-Directional Measurement**
- **2 Pulse Outputs**
- **RS 485 Modbus or M-bus Communication**
- **Multi-Tariffs**

INTRODUCTION

The Smart Controller series is a Three Phase multi-function DIN rail meter. It can measure and display the characteristic of 1p2w, 3p3w and 3p4w supplies, including voltage, including voltage, current power active and reactive energy imported or exported. Energy is measured in terms of kWH, kVarh. Max demand current can be measured over preset periods of up to 60 minutes.

The 100A series has wonderful industrial design, big size LCD and touch buttons. All electronic parameters can be set with the button and the configuration is password protected. It can directly connect to 100A max.

Saving the cost to install external CT. Built-in interface provide pulse and RS485 Modbus RTS output.

SPECIFICATION

Nominal Voltage(Un)	3x230/400 V ac
Operational Voltage	80%～120% of Un
Instation Capabilities	
- AC Voltage withstand	4KV for 1 minute
- Impulse Voltage withstand	6KV-1.2μS
Basic Current (Ib)	10A
Maximum Rated Current (Imax)	0.4% Ib-Imax
Operational Current Range	30 Imax for 0.01s
Over Current withstan	50 or 60Hz
Pulse Output	≤ 2W/10VA
Display	LCD
Max Reading	999999.99 kWh/kVarh

PERFORMANCE CRITERIA

Operating Humidity	≤ 90%
Storage Humidity	≤ 95%
Operating Temperature	-25°C - +55°C
Storage Temperature	-40°C - +70°C
Reference Temperature	23°C± 2°C
International Standard	IEC 62053-21 / EN50470-1/3
Accuracy Class	Class1/Class B
Installation Category	CAT III
Mechanical Environment	M1
Degree of Pollution	E2
Protection Against Penetration of Dust and Water	2
Insulating Encased Meter of Protective Class	IP51(indoor)
Attitude	II
Electrostatic Discharges	8kV contact / 15kV air gap
Electromagnetic HF Fields	IEC 61000-4-3
Electrical Fast Transients	4kV

MULTI-TARIFF

Time Clock Accuracy	< 1s/day
Tariffs	4
Time Segments	10

ACCURACY

Voltage, Current	0.5%
Frequency	0.2% of mid-frequency
Power Factor	1% of unity (0.01)
Active Power, Apparent Power	±1% of range maximum
Reactive Power	±1% of range maximum
Reactive Energy (Varh)	Class 2
Active Energy (Wh)	Class 1

MODBUS

Bus Type	RS485(semi-duplex)
Protocol	Modbus RTU
Baud Rate	2400/4800/9600/19200/38400bps
Address Range	1-247
Max. Bus Loading	64pcs
Communication Distance	1000M
Parity	EVEN/ODD/NONE
Data Bit	8
Stop Bit	1

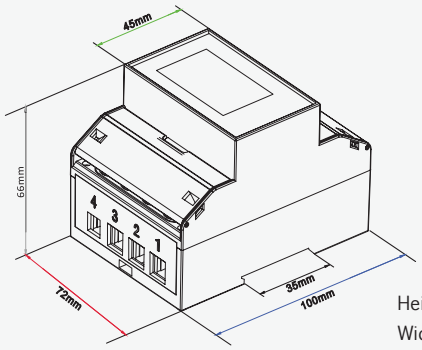
M-BUS

Bus Type	M-bus
Protocol	EN13757-3
Baud Rate	300/600/1200/2400/4800/9600
Parity	NONE/EVEN/ODD
Stop Bit	1 or 2
Primary Address	1 to 250
Secondary Address	00 00 00 01 to 99 99 99 99

PULSE OUTPUT

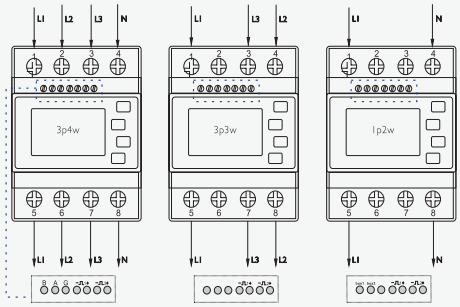
Pulse Outputs	2
Pulse Output Type	Passive
Pulse Output 1	Configurable
Pulse Width	200/100(default)/60ms
Pulse Output 2	400imp/kWh

DIMENSIONS



Height 100mm
Width 72mm
Depth 66mm

WIRING DIAGRAM



THREE PHASE MULTI-FUNCTION POWER ANALYZER

Model No: SMART-SME 204CT

- **CT Operated**
- **Work with 3P 4W/ 3P 4W/ 1P 2W**
- **Bi-Directional Measurement**
- **RS 485 Modbus or M-bus Communication**
- **Pulse Outputs**
- **Tariffs Available**
- **Module Wide**

CT

INTRODUCTION

The Smart Controller series is a Three Phase multi-function DIN rail meter. It can measure and display the characteristic of 1p2w, 3p3w and 3p4w supplies, including voltage, including voltage, current power active and reactive energy imported or exported. Energy is measured in terms of kWH, kVarh. Max demand current can be measured over preset periods of up to 60 minutes.

The 100A series has wonderful industrial design, big size LCD and touch buttons.All electronic parameters can be set with the button and the configuration is password protected. It can directly connect to 100A max.

Saving the cost to install external CT. Built-in interface provide pulse and RS485 Modbus RTS output.

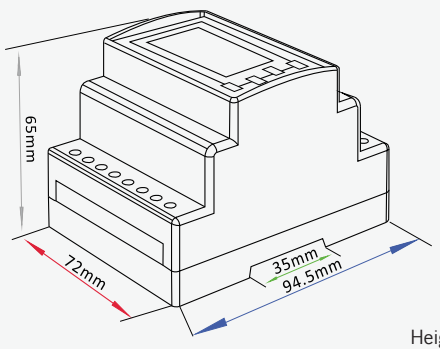
SPECIFICATION

Nominal Voltage(Un)	3x230/400 V ac
Operational Voltage	60%~120% of Un
Instation Capabilities	
- AC Voltage withstand	4KV for 1 minute
- Impulse Voltage withstand	6KV-1.2μS
Basic Current (Ib)	5A CT or 333mV CT input
Maximum Rated Current (Imax)	0.4% Ib-Imax
Operational Current Range	20 Imax for 0.01s
Over Current withstand	50 or 60Hz
Internal Frequency Range	≤ 2W/10VA
Internal Power Consumption	Configurable
Pulse Output	3200 imp/kWh
Display	LCD
Max Reading	9999999.9 kWh/kVarh

PERFORMANCE CRITERIA

Operating Humidity	≤ 90%
Storage Humidity	≤ 95%
Operating Temperature	-25°C - +55°C
Storage Temperature	-40°C - +70°C
Reference Temperature	23°C± 2°C
International Standard	IEC 62053-21 / EN50470-1/3
Accuracy Class	Class1/Class B
Installation Category	CAT III
Mechanical Environment	M1
Degree of Pollution	E2
Protection Against Penetration of Dust and Water	2
Insulating Encased Meter of Protective Class	IP51(indoor)
Electrostatic Discharges	II
Electromagnetic HF Fields	8kV contact / 15kV air gap
Electrical Fast Transients	EN 55022

DIMENSIONS



Height 94.5mm
Width 72mm
Depth 65mm

ACCURACY

Voltage, Current	0.5%
Frequency	0.2% of mid-frequency
Power Factor	1% of unity (0.01)
Active Power, Apparent Power	±1% of range maximum
Reactive Power	±1% of range maximum
Reactive Energy (Varh)	Class 2
Active Energy (Wh)	Class 1

MODBUS

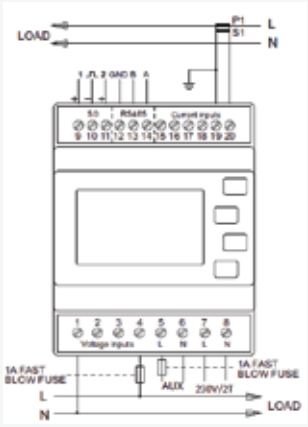
Bus Type	RS485(semi-duplex)
Protocol	Modbus RTU
Baud Rate	2400/4800/9600/19200/38400bps
Address Range	1-247
Max. Bus loading	64pcs
Communication Distance	1000M
Parity	EVEN/ODD/NONE
Data Bit	8
Stop Bit	1

M-BUS

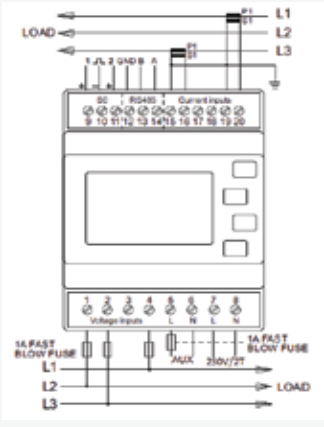
Bus Type	M-bus
Protocol	EN13757-3
Baud Rate	300/600/1200/2400/4800/9600
Parity	NONE/EVEN/ODD
Stop Bit	1 or 2
Primary Address	1 to 250
Secondary Address	00 00 00 01 to 99 99 99 99

WIRING DIAGRAM

SINGLE PHASE TWO WIRE



THREE PHASE THREE WIRE



THREE PHASE MULTI-FUNCTION POWER ANALYZER

Model No: SMART-SME 204D

- **100A Direct Load**
- **Work with 3P4W/3P3W/1P2W**
- **4 Module 72mm Wide**
- **Bi-Directional Measurement**
- **2 Pulse Outputs**
- **RS485 Modbus**
- **2 Tariffs Available (Dual Power Source)**
- **Multi-Measurement: kWh,kVarh,W,Var,VA,PF,Hz,dmd,V,**

INTRODUCTION

The Smart Controller series series measures and displays the characteristics of 1p2w, 3p3w and 3p4w supplies, Including Voltage, Frequency, Current, Power, Active and Reactive Energy, Imported or Exported, harmonic etc. Bi-directional measurement makes it an ideal choice for Solar PV measurement.

The units support Max. 100A direct connection, saving the cost and avoiding the trouble to connect external CTs. Two pulse outputs and 1 communication port (Mbus/Modbus) are provided for remote monitoring.

The unit has been approved to meet the requirements of EU Directive 2014/32/EU.

MEASUREMENT

Power	0.5% of range maximum
Active Energy	IEC 62053-22 Class 0.5S, IEC 62053-21
Reactive Energy	IEC62053-23 Class 2, IEC 61557-12 Class 2
Frequuecy	0.1% of mid-frequency
Current	0.2% of range maximum
Voltage	0.2% of range maximum
Power Factor	1% of unity (0.01)

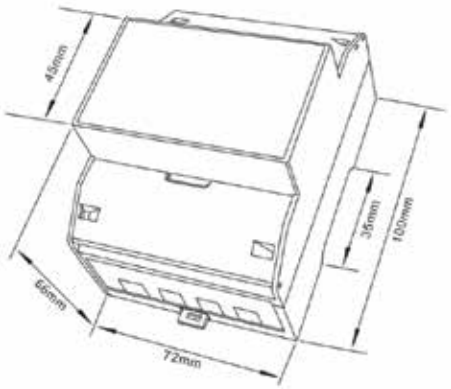
INPUT-OUTPUT

Rated Current	10A
Max Current	100A
Min Current	0.5A
Starting Current	40mA
TME104-Pulse	2 Pulse Output for imp/exp. energy
TME104-Modbus	2 Pulse Output + RS485 Modbus
TME104D-Mbus	2 Pulse Output + M-bus EN13757

MODBUS COMMUNICATIONS

Interface Standard and Protocol	RS485 and MODBUS RTU
Communication Address	1-247
Transmission Mode	Half Duplex
Data Type	Floating Point
Transmission Distance	1000m Maximum
Transmission Speed	2400bps-38400bps
Parity	None (default). Odd, Even
Stop Bits	1 or 2
Response Time	<100 mS

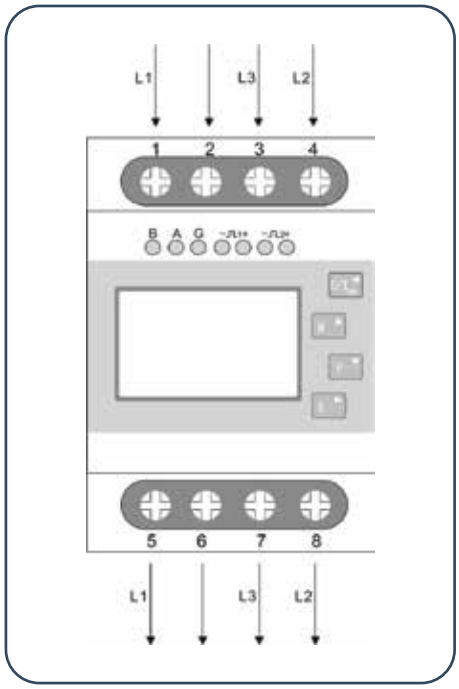
DIMENSIONS

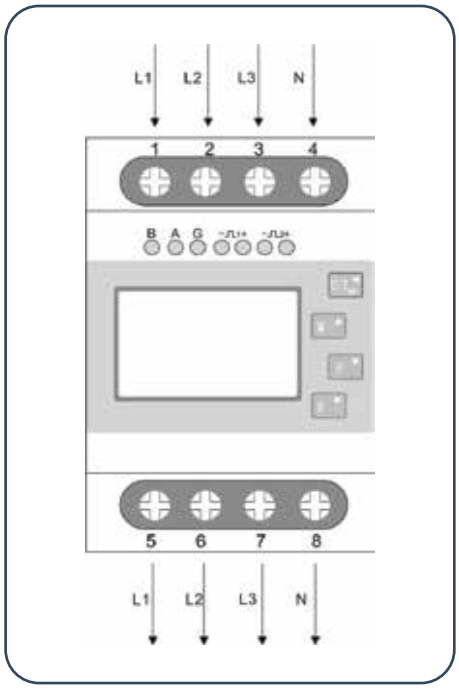


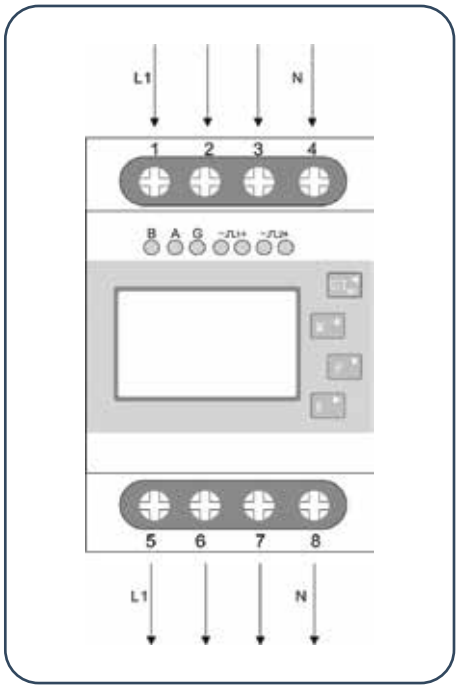
WIRING GUIDE

Terminals		
COMM/Pulse/2T	0.5~1.5mm²	0.4Nm
Load	4~25mm²	3Nm

WIRING DIAGRAM







DUAL LOAD MULTI-FUNCTION ENERGY METER

Model No: SMART-DME 300

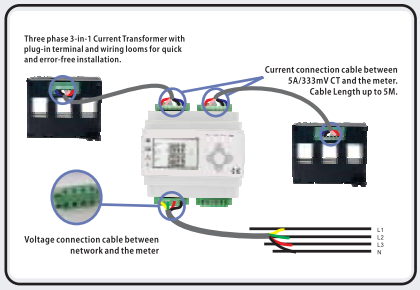
- 2 Meters in 1
- Easy and Error free Connection
- 5A/33mV CT Input
- Multi-Paramter Measures
- 2 Pulse Output
- RS 485 Modbus RTS

INTRODUCTION

The Smart - DME 300 is a Dual Load Three Phase 4 wire multi-function energy meter for measuring energy consumption in split load applications such as power and lighting loads. The meter measures 2 three phase circuits separately and display the parameters including voltage, current, power, power factor, demand active energy reactive energy.

The meter connect with 3-in 1 CT via wiring looms for plug-in connection. It is a cost effective and space saving solution for all new power and lighting, or dual load, distribution and panel boards.

DUAL LOAD SOLUTION



SPECIFICATION

Nominal Voltage(Un)	3x230/400 V ac
Operational Voltage	80%~120% of Un
Instation Capabilities	
- AC Voltage Withstand	4KV for 1 minute
- Impulse Voltage Withstand	6KV-1.2μS
Basic Current (Ib)	5A or 333mV CT input
Maximum Rated Current (Imax)	0.4% Ib-Imax
Operational	20 Imax for 0.01s
Current Range	50 or 60Hz
Over Current Withstand	≤ 2W/10VA
Pulse Output	Configurable
Display	LCD
Max Reading	9999999.9 kWh/kVarh

PERFORMANCE CRITERIA

Operating Humidity	≤ 90%
Storage Humidity	≤ 95%
Operating Temperature	-25°C - +55°C
Storage Temperature	-40°C - +70°C
Reference Temperature	23°C± 2°C
International Standard	IEC 62053-21 / EN50470-1/3
Accuracy Class	Class1/Class B
Installation Category	CAT III
Mechanical Environment	M1
Degree of Pollution	E2
Protection Against Penetration of Dust and Water	2
Insulating Encased Meter of Protective Class	IP51(indoor)
Electrostatic Discharges	II
Electromagnetic HF Fields	8kV contact / 15kV air gap
Electrical Fast Transients	IEC 61000-4-3
Surge	4kV
Radiated and Conducted	4kV
Emissions	EN 55022

ACCURACY

Voltage, Current	0.5%
Frequency	0.2% of mid-frequency
Power Factor	1% of unity (0.01)
Active Power, Apparent Power	±1% of range maximum
Reactive Power	±1% of range maximum
Reactive Energy (Varh)	Class 2
Active Energy (Wh)	Class 1

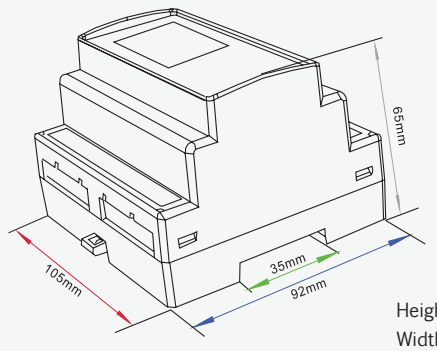
MODBUS

Bus Type	RS485(semi-duplex)
Protocol	Modbus RTU
Baud Rate	2400/4800/9600/19200/38400 bps
Address Range	1-247
Max. Bus Loading	64pcs
Communication Distance	1000M
Parity	EVEN/ODD/NONE
Data Bit	8
Stop Bit	1

PULSE OUTPUT

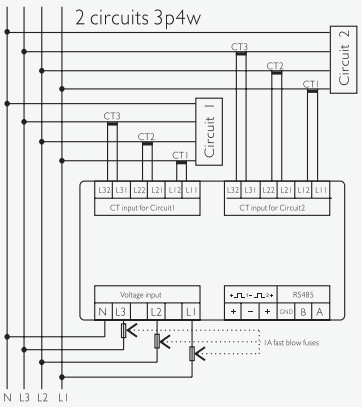
Pulse Outputs	2
Pulse Output Type	Passive
Pulse Output 1	C1 Configurable
Pulse Width	C2 Configurable
Pulse Output 2	200/100(default)/60ms

DIMENSIONS



Height 92mm
Width 105mm
Depth 65mm

WIRING DIAGRAM



THREE PHASE MULTI-FUNCTION DIN RAIL METER

Model No: SMART-VEN 580CT / VEN 580D

- **The Smart Controller Smart VEN580 series multi-function is a Three-Phase DIN rail power quality meter with multi-tariff.**
- **Output is LCD displayed and the data can be transported by isolated RS485. The meter is provided with a non-volatile memory sys tem that ensures that the readings are not los t or altered when power off.**

INTRODUCTION

The Smart VEN580 has both direct connection version and CT connection version. The direct connection version meter measures up to 100A load. The CT connection Type requests an external current transformerwith 5A secondary input. Although we produce the Smart VEN 580 meter according to IEC 62053 - 21 and our quality inspection is very accurate there might always be a possibility that your product shows afault or failure for which we do apologize. Under normal conditions your product should give you years of benefit and pleasure. In case there is a problem with the energy meter you should contact your dealer immediately.

All energy meters are sealed with a special seal. Once this seal is broken there is no possibility to claim for warranty. Therefore NEVER open an energy meter or break the seal of the energy meter. The warranty time is 18 months, after installation, and only valid for construction faults.

RS485 OUTPUT

RS485 communication port is between the meter terminals 11 and 10. It is a synchronization wire port. Installing a software in PC, via RS485 adapter connecting the terminal 11 and 10, PC can communicate with the meter immediately.

COMMUNICATION PROTOCOL

Smart Controller Smart VEN580 has a RS485 port with Modbus RTU protocol. RS485 is a balanced line half-duple transmission system allowing transmission dis tances of up to 1km. The following table summarizes the RS-485 Standard.

PARAMETER	
Mode of Operation	Differential
Number of Drivers and Receivers	32 Drivers 32 Receivers
Maximum Cable Length	1200m
Maximum Data Rate	10M baud
Maximum Common Mode Voltage	12V to -7V
Minimum Driver Output Levels (Loaded)	±1.5V
Minimum Driver Output Levels (Uploaded)	±6V
Drive Load	Minimum 60 ohms
Driver Output Short Circuit Current Limit	150mA to Ghd 250mA to 12V 250mA to -7V
Minimum Receiver Input Resistance	12kohms
Receiver Sensitivity	±200mV

Further information relating to RS485 may be obtained from either the smart controller directly or the various RS485 device manufacturers, for example Texas Ins truments or Maximum Semi conductors. This list is not exhaustive.

SPECIFICATION

Meter Type	SMART VEN580 (LCD display)
Nominal Voltage(Un)	230/400V AC (3~) ; 110/190V AC (3~)
Operational Voltage	161/279 – 300/520V AC (3~)
Insulation Capabilities	4KV for 1 minute
- AC Voltage withstand	6KV – 1.2μS waveform
- Impulse Voltage withstand	
Basic Current (Ib)	
- CT Type	1.5A
- Directly Connect	10A
Maximum Rated Current (Imax)	
- CT Type	6A
- Directly Connect	100A

PERFORMANCE CRITERIA

Operational Current Range	0.4% Ib- Imax
Over Current Withstand	20Imax for 0.01s
Operational Frequency Range	50Hz ±10%
Internal Power Consumption	≤2W / 10VA per phase
Test Output Flash Rate (Pulse Led)	
- Ct Type	3200imp/kWh
- Directly Connect	400imp/kWh
Test Pulse Output Rate (Pins 8 & 9)	
- Ct Type	3200imp/kWh
- Directly Connect	400imp/kWh
Consumption Indicator (PULSE & SO LED)	Flashing at load running
Communication Indicator	Flashing at communication running
Data Communication Port	RS485 and far infrared
Data Save	than 20 years when power off
Voltage, LN & LL (Phase1, 2,3)	±0.5%
Amps (Phase 1,2,3)	±0.5%

TARIFF

Tariff Number	4
Time Segments	10
Clock Accuracy	≤0.5S (every 24 hours)

ACCURACY

PF (Phase 1,2,3 &Σ)	±0.5%
Active Power (Phase 1,2,3&Σ)	±0.5%
Frequency	±1%
Active Energy	± 1%
Reactive energy	±1%
Protection Against penetration of dust and water	IP51
Insulating Encased meter of protective class	II

RS485 COMMUNICATION

Bus Type	RS485
Protocol	MODBUS RTU with 16 bit CRC & DL/T645
Baud Rate	1200(default), 2400, 4800,9600
Address Range	0-247 user settable
Bus Loading	32 meters per bus
Rage	1200m
Parity	Even
Data Bit	8
Stop Bit	1

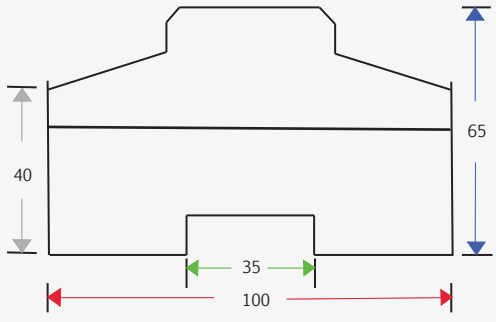
BASIC ERRORS

0.05Ib	Cosφ = 1	±1.5%
0.1Ib	Cosφ = 0.5L	±1.5%
0.1Ib - Imax	Cosφ = 0.8C	±1.5%
0.2Ib - Imax	Cosφ = 0.5L	±1.0%
With balanced loads	Cosφ = 0.8C	±1.0%
0.1Ib - Imax	Cosφ = 1	±2.0%
0.2Ib - Imax	Cosφ = 0.5L	±2.0%

FAR INFRARED COMMUNICATION

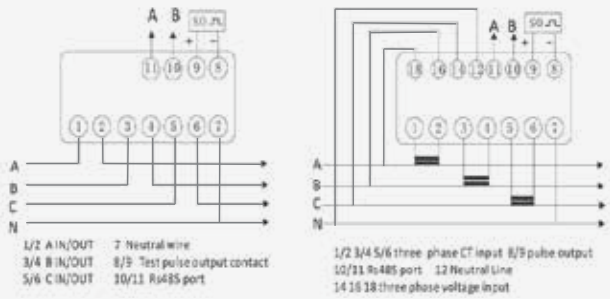
Infrared Wavelengths	900- 1000nm
Baud Rate	1200bps (default), 9600bps (optional)
Communication Distance	5m
Communication Angle	-15°~+15°
Protocol	MODBUS RTU with 16 bit CRC & DL/T645

DIMENSIONS



Height 65mm
Width 100mm
Depth 40mm

WIRING DIAGRAM



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