

SDM01

Smart Energy Monitor with Split-core Current Transformers

Datasheet



Product Description

The SDM01 Smart Energy Monitor is a compact 18mm-wide DIN-rail device for real-time three-phase and multi-branch single-phase monitoring. With three split-core CTs, it precisely measures voltage, current, power, and energy, supporting wired and wireless communication for seamless integration.

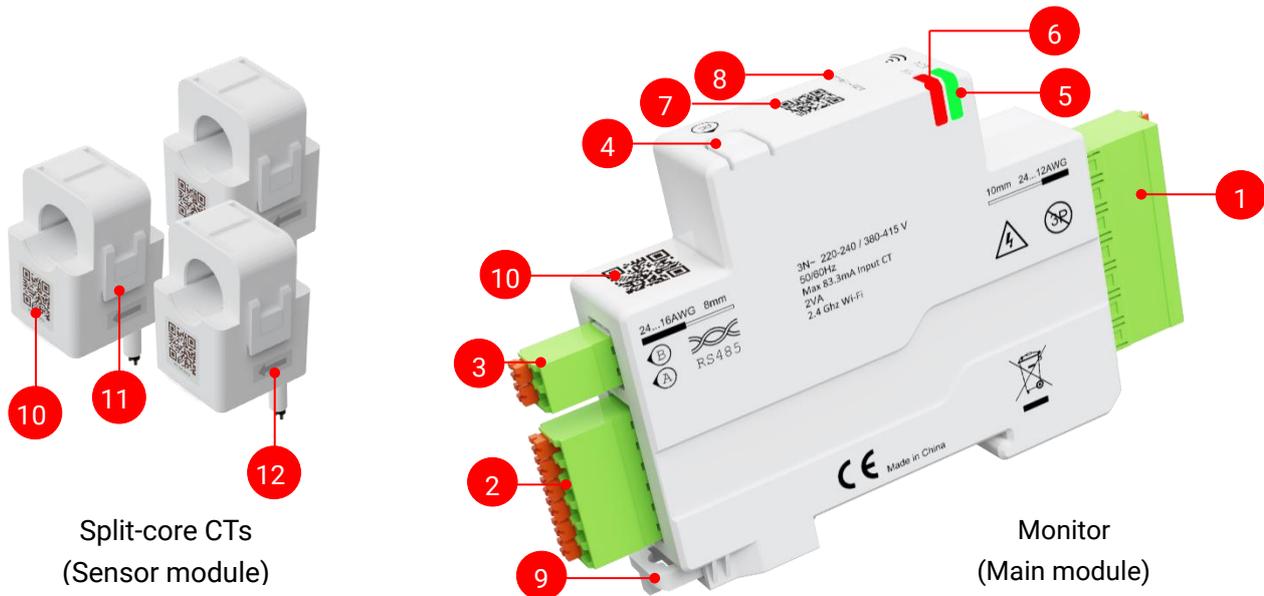
Product Highlights

- Bi-directional energy metering – Accurately monitors both energy consumption and generation.
- Real-time data acquisition – Continuously tracks voltage, current, power, and energy.
- Ultra-compact form factor – Slim 18mm DIN-rail design with easy installation using split-core CTs.
- Flexible connectivity options – Supports Wi-Fi, Zigbee, BLE, and Modbus for smooth system integration.
- Built-in local automation support – Enables local Wi-Fi (UDP/HTTP), Zigbee and Modbus RTU for local automation

Typical applications

- Home energy management systems (HEMS)
- Small business energy management
- Building management systems (BMS)
- Energy management systems (EMS) for buildings, Infrastructure and Industry
- Dynamic load balancing (DLB) for electrical vehicle charging
- Export limitation for renewable power generation

Part Description



Split-core CTs
(Sensor module)

Monitor
(Main module)

#	Element	Description
(1)	Connector for voltage take-offs connection	The monitor is powered by 230VAC power supply and measures voltage through four cables: X, Y, Z, and N
(2)	Connector for current transformer connection	The Red (+) and Black (-) wires of CT(X), CT(Y), and CT(Z) must match the corresponding polarity of the connector.
(3)	Connector for RS485 communication	Available only in RS485-compatible product versions.
(4)	Reset button	Press and hold for 3–5 seconds to enter pairing mode.
(5)	Status LED (ACT)	Indicates device operation and network status through different flashing patterns.
(6)	Alarm LED (AL)	Flashes to indicate system alarms or errors.
(7)	Product QR code	Contains manufacturing batch information.
(8)	Product model	See "Ordering Information" section for product selection
(9)	Locking clip for DIN rail mounting	Mounts onto a 35mm DIN rail.
(10)	Calibration ID	The calibration ID on the split-core CT must match the one on the monitor for optimal accuracy.
(11)	Split-core CT locking clasp	Ensure the clasp is securely locked for precise measurement.
(12)	Positive power flow direction	Indicates positive power flow direction for CT(X), CT(Y), and CT(Z) installation.

Technical Specification

#	Technical specification	
101	Rated operating voltage U_n	~220-240 VAC phase to neutral, 50/60 Hz ~380-415 VAC phase to phase, 50/60 Hz ¹⁾
102	Max current I_{max}	120A / 200A
103	Over-voltage category	III
104	Rated insulating voltage U_i	440V
105	Rated impulse withstand voltage U_{imp}	4kV
106	Pollution degree	3
107	Protection degree	IP20
108	Reference standard for measurement tolerance: IEC 61557-12	Voltage: Class 0.5 Current: Class 1 Active power: Class 1 Forward active energy: Class 1
109	Maximum Power consumption	≤ 2VA
110	Rated operating temperature	-25°C to 70°C
111	Size: Height x Width x Depth	Monitoring Module: 113.7mm × 18.0mm × 65.9mm Split-core CT: Refer to mechanical outline page
112	Reference standard:	IEC 61557-12 IEC 61326-1 ETSI EN 300 328 ETSI EN 301 489-1 ETSI EN 301 489-17
113	Integrated communication option ²⁾	BLE + Wi-Fi +RS485; Wi-Fi + RS485; Zigbee + RS485; BLE + Wi-Fi; Wi-Fi; Zigbee; RS485

Remark:

- 1) Not suitable for 3P3W installation.
- 2) SDM01 features a modular hardware platform, expandable to support additional communication protocols such as Thread and DL645.

Ordering Information

Product Part 1 – Combined Wireless and Wired Communication

#	Ordering number	Description
1	SDM01-TWM-12	SDM01, 3×120A SCT-A/Φ16, 3PN, Tuya Wi-Fi ¹⁾ + Modbus RTU
2	SDM01-TWM-20	SDM01, 3×200A SCT-A/Φ20, 3PN, Tuya Wi-Fi ¹⁾ + Modbus RTU
3	SDM01-EWM-12	SDM01, 3×120A SCT-A/Φ16, 3PN, ESP32 BLE&Wi-Fi ²⁾ + Modbus RTU
4	SDM01-EWM-20	SDM01, 3×200A SCT-A/Φ20, 3PN, ESP32 BLE&Wi-Fi ²⁾ + Modbus RTU
5	SDM01-TZM-12	SDM01, 3×120A SCT-A/Φ16, 3PN, Tuya Zigbee ³⁾ + Modbus RTU
6	SDM01-TZM-20	SDM01, 3×200A SCT-A/Φ20, 3PN, Tuya Zigbee ³⁾ + Modbus RTU

Product Part 2 – Wireless Communication

#	Ordering number	Description
1	SDM01-TW0-12	SDM01, 3×120A SCT-A/Φ16, 3PN, Tuya Wi-Fi ¹⁾
2	SDM01-TW0-20	SDM01, 3×200A SCT-A/Φ20, 3PN, Tuya Wi-Fi ¹⁾
3	SDM01-EW0-12	SDM01, 3×120A SCT-A/Φ16, 3PN, ESP32 BLE&Wi-Fi ²⁾
4	SDM01-EW0-20	SDM01, 3×200A SCT-A/Φ20, 3PN, ESP32 BLE&Wi-Fi ²⁾
5	SDM01-TZ0-12	SDM01, 3×120A SCT-A/Φ16, 3PN, Tuya Zigbee ³⁾
6	SDM01-TZ0-20	SDM01, 3×200A SCT-A/Φ20, 3PN, Tuya Zigbee ³⁾

Product part 3 – Wired communication

#	Ordering number	Description
1	SDM01-CCM-12	SDM01, 3×120A SCT-A/Φ16, 3PN, Modbus RTU
2	SDM01-CCM-20	SDM01, 3×200A SCT-A/Φ20, 3PN, Modbus RTU

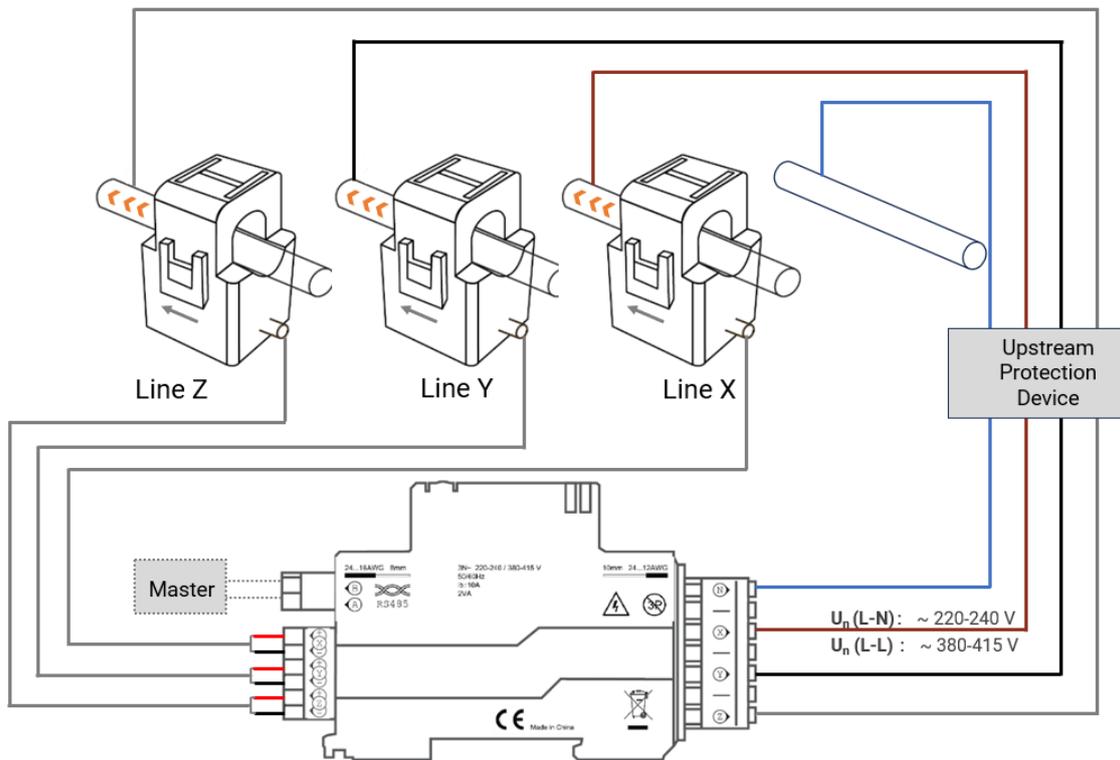
Remark:

- 1) Tuya CB3S Wi-Fi & Bluetooth module (BK7231N SoC) with Tuya firmware is used for products connecting to the Tuya cloud. The Smart Life app (owned by Tuya Smart) allows device access for Modbus configuration.
- 2) The ESP8685-WROOM-01 Wi-Fi & Bluetooth module (ESP8685H4 SoC) with our firmware supports customer-specific cloud integration and local monitoring. The 'BT Powerlink' smartphone app (available on Google Play and the Apple App Store) and the monitor's embedded configuration webpage allow local access for Modbus configuration.
- 3) The Tuya ZS3L Zigbee module (EFR32MG21A020F768IM32-B SoC) uses Tuya's proprietary Zigbee clusters and attributes. It connects via the Tuya Zigbee gateway but is also compatible with universal Zigbee coordinators for Zigbee2MQTT integration into Home Assistant.

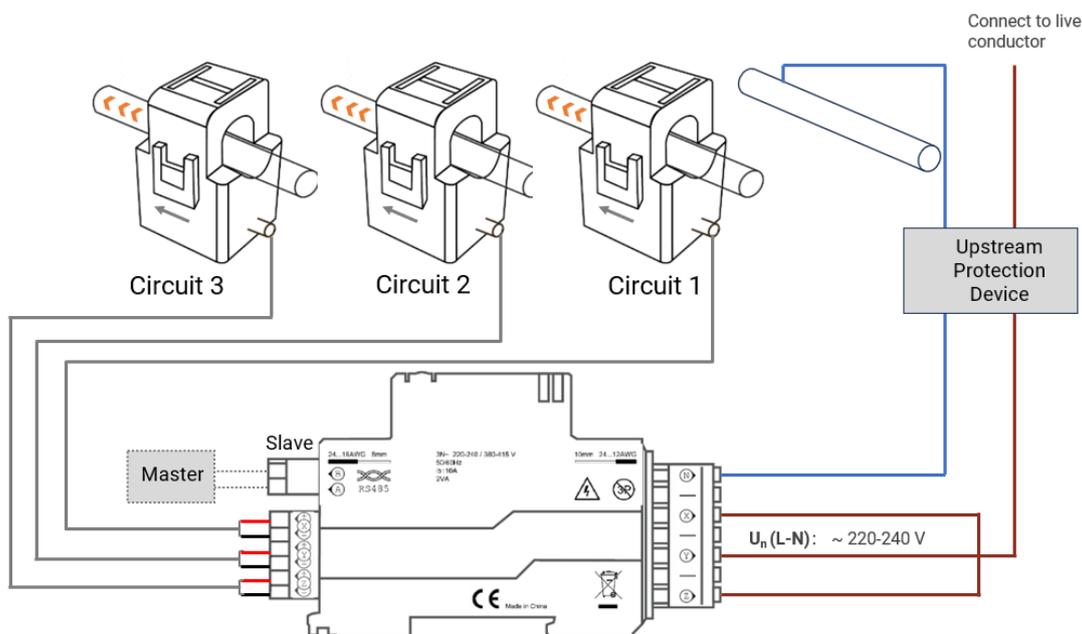
Wiring Scheme

Please Note: Refer to the user guide for detailed wiring diagrams and safety precautions.

3P+N System Wiring



1P+N System Wiring up to 3 Branch Circuits

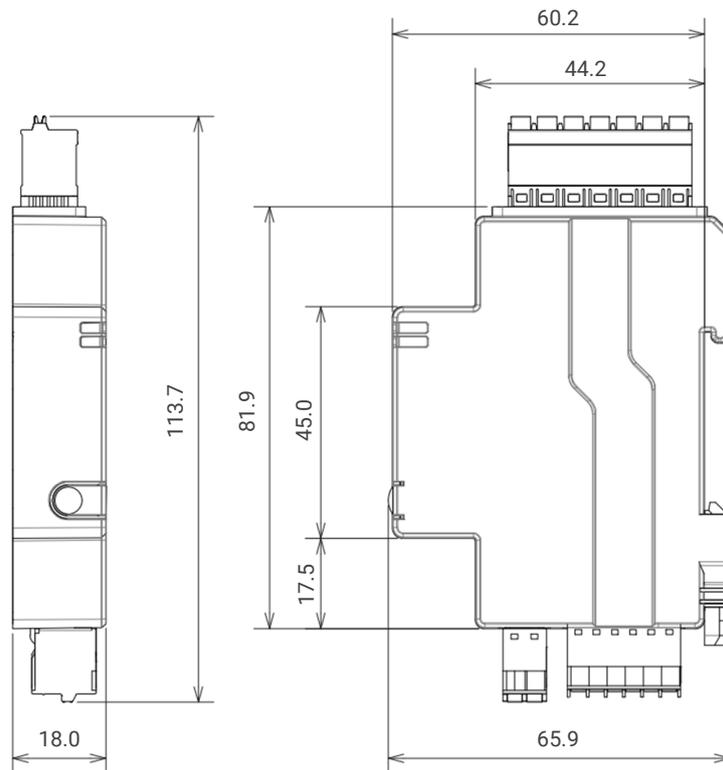


SDM01 must be installed, operated, serviced, and maintained ONLY by qualified professionals. Please read the user guide carefully before installation. The user guide is a separate document from the datasheet.

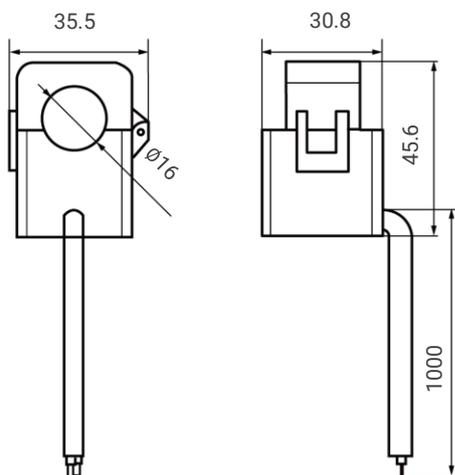
Mechanical Outline

Dimension: Unit in mm

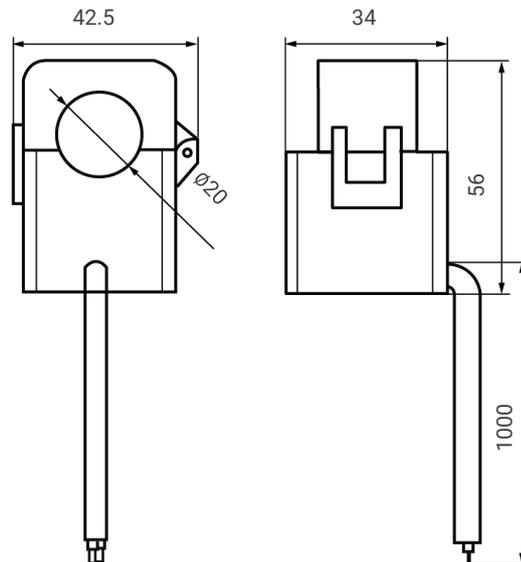
Monitoring module for Din-rail installation



Split-core CT - 120A



Split-core CT - 200A



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Shanghai Bituo Electric Co., Ltd.

Address: 5F, Building 24, No. 518 Xinzhuan Road, Songjiang District, Shanghai 201612, China

Tel: +86 (21) 5780 8599

Email: info@bituo-technik.com

Website: www.bituo-technik.com