

SIENNA SSP DIN-R PLC

Split Single Phase DIN Rail Mount Power Line Communications Electricity Meter

The Sienna SSP DIN-R PLC meter is a 4-terminal bottom connect 80A DIN rail mounted Class1 split single phase pre-payment meter. It employs OFDM (Orthogonal Frequency Division Multiplexing) PLC technology between the MCU (Metering Control Unit) and the CIU (Customer Interface Unit).

The meter is rated at 230V (80A) with an operating temperature range of -15 °C to +55 °C with Class 1 active energy accuracy. The terminal arrangement is bottom connect and the IP rating of the meter is IP54.

The meter is configurable for either STS pre-payment or post-payment operation. It incorporates a tamper detection and disconnection feature. Communication with the meter is via an IEC 62055-52 protocol optical port, however provision has been made to extend the communication options in the future to allow for back-end system communication.

The split metering configuration allows for revenue protection by separating the meter, that is securely installed in a metering enclosure, from the CIU that is on the customer premises. In the case of the CIU (common base with relay), a further level of bypass detection is achieved.

METERING CONTROL UNIT (MCU)

The MCU consists of the metering control elements: metrology circuits; STS token decryption and load monitoring with respective disconnecting and reconnecting actions. The IEC 62055-52 optical interface is used for 2-way communication such as data extraction and STS token transfer.

Bi-colour LED status indicators are used to identify various meter states such as the relay state, tamper mode and communication status, adding a further level of troubleshooting without requiring access to the customer premises.

CUSTOMER INTERFACE UNIT (CIU)

The CIU serves as the customer interface to the meter. The large LCD display has language independent icons indicating the meter status. A low credit threshold function notifies the user of a low credit condition by audible alarm and indication on the LCD. The keypad incorporates braille features for the partially sighted.

Customer focussed short codes are available to assist managing power consumption by, for example, displaying total kWh consumed or the instantaneous power.

KEY BENEFITS

- OFDM PLC technology provides resilient high reliability communications in noisy electrical environments
- Pre-payment and post-payment operating modes are available.
- Bottom connect terminal arrangement for ease of installation.
- Provision for different communication technology, with ESKOM DSP 34-1635 µUSB port currently available.
- Bi-colour LEDs to easily identify the meter status.
- Quality of supply Over and Under states for voltage, frequency and power monitored.

PRIMARY STANDARD COMPLIANCE

IEC 62055-21	Electricity metering – Payment systems – Part 21: Framework for standardization
IEC 62055-31	Particular Requirements - Static Payment Meters for active energy (Classes 1 and 2)
IEC 62055-41	Part 41: Standard Transfer Specification (STS) – Application Layer protocol for one-way token carrier systems
IEC 62055-51	Part 51: Standard Transfer Specification (STS) – Physical Layer Protocol one-way numeric and magnetic card token carriers
IEC 62055-52	Part 52: Standard Transfer Specification (STS) – Physical Layer Protocol for a two-way virtual token carrier for direct local connection
SANS 1524-1	SANS Electricity Payment Systems – Part 1: Payment meters
DSP 34-1635	ESKOM – Particular Requirements for Pre-payment meters
240-76619489	ESKOM – ALT Testing
IEC 62052-11	General Requirements, tests and test conditions — Part 11: Metering Equipment
IEC 62053-52	Electricity Metering Equipment (AC) — Part 52: Symbols

SPECIFICATIONS

METERING CONTROL UNIT (MCU)	
Voltage Range	Un = 220V / 230V / 240V, 50Hz (80 % Un to 115 % Un)
Frequency	50Hz +/- 2 %
Current range	I _b =5A, I _{max} = 80A
Accuracy	Active Energy Class 1
Power supply and consumption	Power consumption with CU connected in the voltage circuit of the meter is less than 2W and 10VA.
Rate Indicator	1000 imp/kWh
Temperature	-15 °C to +55 °C
Operating Range	
Humidity Operating Range	<95 % RH
Protection Class (MCU)	IP 54
RF Immunity	30V/m
Terminal Arrangements	4 Terminal bottom connect
Terminals	Current rating 100A (continuous). Conductor diameter 8mm or 35mm ²
Sealing	Meter enclosure sealed for life with terminal seal provision.
Metering Modes	STS pre- and post-payment
Disconnections	Zero Credit, Tamper, Reverse Energy, Over and Under Voltage, Over and Under Frequency, Over Power Limit
Tamper	Magnetic, Relay CIU bypass, Reverse Energy Detection
Communication Option	Optical port (IEC 62055-52), PLC
Visual Indicators	Rate, Relay Status, CIU Communication Status LEDs, LCD with language independent icons
Weight	390g
Dimensions (WxDxH)	55.9 x 110 x 105.5mm
Product Reliability	Designed for a 15yr lifespan in the field

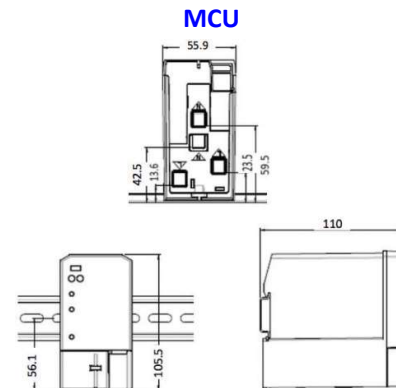
CUSTOMER INTERFACE UNIT (CIU)

User Display	LCD to 8 digits values & language independent icons
User Interface	CIU keypad incorporating braille features
IP Rating	Relay CIU IP52 Standalone CIU IP52
CIU Common Base (with relay)	Relay rated to carry 80A 277VAC
CIU Standalone (with battery backup)	Batteries accessible from the back of the unit with mains isolation safety feature

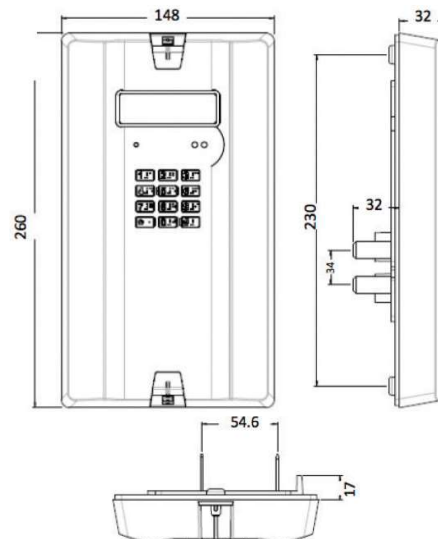
PAYMENT MODES

Pre- and post-payment	Fully STS compliant
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DIMENSIONS (mm)



CIU (common base relay)



CIU (standalone)

