PREPAIDMETERS

PPL44SR

Single-Phase Split Din Rail Prepaid Meter

The PPL44SR is a single-phase 60A (80A optional) split meter in a DIN rail-mount housing. Ideal for new reticulation where housing is informal and the prepayment meters are mounted in a pole-top enclosure with respective customer interface units conveniently mounted in the dwellings below.

Due to the small size and DIN rail housing, multiple Power-Rail meters can be mounted in a small enclosure thereby making installation cost effective .

Features

- Compact meter design, with DIN rail-mount layout for high density stacking
- Easy to install
- Customer Interface Unit (CIU) provides valuable information to help consumers effectively manage their electricity consumption
- Galvanically isolated communication link to customer interface unit for consumer safety
- Plug-in communications connector on the meter for easier utility access and maintenance
- Programmable software power limit
- Programmable operating mode - Energy Limiting Mode, Prepayment or Credit metering
- Programmable monthly allocation of energy (MAE)
- Commissioning and de-commissioning feature
- Significant Reverse Energy (SRE) detection
- Meter state indication LED and communication diagnostic LED at the meter
- High surge withstand capability for areas prone to lightning or other line surges
- High temperature withstand capability
- SABS 1524 and IEC 62052-11, IEC 62053-21 compliant

Functionality

Split Meter Concept

The PPL44SR consists of two parts: the CIU and the Meter. The CIU is a compact unit with user friendly display and keypad that can be installed in any convenient location inside the consumer's premises.

Connection to the remotely installed meter is via a pair of communications wires. The connection of these wires at the meter is achieved by means of a plug-in connector, facilitating easy installation and maintenance.

The meter contains all critical metering, number decryption and load control functionality. It operates independently of the CIU and is immune to any form of tampering on the customer interface.

The meter is usually installed in a secure, locked enclosure - typically a pavement kiosk or pole mounted equivalent. It is outside the consumer's premises to facilitate easy inspection by the utility at any time, thus reducing the possibility of tampering.

Optical Interface

The meter has an IEC 62056-21 compliant optical communications port. This allows the utility to access a variety of information stored inside the meter, and to upload it to a hand-held unit.

Automatic/Manual Supply Re-connection

A programmable function allows for either automatic or manual restoration of power to the load after it has beendisconnected for a period due to expiry of credit or Power Limiting. Manual restoration is accomplished via the CIU.

User-friendly Customer Interface

The meter is controlled via the CIU in exactly the same way as other meters in the meter range. User interaction with the meter, and access to meter information e.g. rate of energy consumption, low credit warning and load contactor status is available using the customer Interface's keypad and large LCD. The CIU makes use of clear, language independent icons.

Copyright @ 2017 Enbaya Prepaid Meters (Pty) Ltd | Tel: 087 550 0870 | www.PrepaidMeters.co.za

Interrogation Port

As a customer option, more detailed information and programming is achieved via the standard interrogation port on the side of the meter.

Disconnect on Power Fail

The meter includes a feature to cater for a condition where the neutral link to the device is removed. The meter can be personalised to disconnect the load if a power failure is detected, as would be the case if the neutral wire were to be removed.

Principle of operation

The PPL44SR meter in the Energy Limiting Mode, provides utilities with the utmost flexibility in terms of being able to adapt to a range of different consumer profiles. Three utility-programmable modes of operation are available and it is possible to switch between modes as required:

Energy Limiting Mode

This mode allows utilities to distribute a fixed, monthly allocation of energy to consumers. It encourages the rational use of energy without severely inconveniencing the consumer. Operation is as follows:

Assume that a monthly energy allowance of 150kWh has been allocated to a consumer. The meter allocates this energy in regular, equal portions, over the thirty-day period i.e. by incrementing the kWh credit level with a value of 0.00087kWh every 15 seconds.

Assuming that the consumer draws no power at all, the credit level will continue to increase. However, as soon as energy starts to be used, the credit level is proportionately decremented. If the rate at which energy is being used is less than the rate at which it is being incremented, the credit level will slowly continue to increase.

If the rate at which energy is being used is greater than the rate at which it is being incremented, the credit level will slowly decrease. It is in the consumer's interest to ensure that electricity is not wasted and that unnecessary appliances are turned off.

By conserving energy, it will be possible to use it at a high rate for periods when required. In the event of the consumer exceeding the allocated allowance (credit level reduced to zero), the load is disconnected.

However, the next allocation of credit will be available within a very short period of time (15 seconds) and the supply of electricity restored.

Providing the consumer takes immediate steps to disconnect unnecessary appliances, it will be possible to have at least basic services available e.g. lighting. With a 150kWh monthly allocation of energy, it will be possible to maintain a continuous load of 200W whilst still maintaining a positive credit balance.

Prepayment mode

In Prepayment metering mode, it functions as a normal prepayment meter. Credit tokens are purchased and entered into the meter via the CIU keypad. On expiry of credit, the load is disconnected and will only be re-connected when a valid credit token, purchased by the consumer, is entered.

Credit mode

In Credit metering mode, it functions as a conventional credit meter. Power is continuously supplied to the consumer and total kWh used is continuously measured and recorded. The meter must be read by the utility at regular intervals and the consumer billed accordingly.

Meter status and diagnostic indicators

The meter includes an LED status indicator. This allows a technician to view the state of the meter without the need for specialised interrogation tools or having to gain access to the consumer's premises. Information such as Tamper status, Power Limiting, Commissioned/Decommissioned status and Remaining Credit status are available.

The meter also features a dedicated diagnostic LED for the Customer Interface. It can indicate the presence of "Open" or "Short" circuited communication lines. This is a valuable visual aid that assists the technician to validate the installation and determine probable fault types.

Tamper Detection

The split configuration of the meter significantly reduces the risk of tampering. The meter is installed in a remote, secure location and is mechanically sealed against tampering through the use mechanical clips and inaccessible assembly screws.

Utility-sealed wire seals can be field-fitted to secure the main power cable terminations. The use of these mechanical seals ensures that there will be visible signs of tampering if unauthorised entry to the system is attempted.

The meter also has a feature allowing detection of Significant Reverse Energy (SRE). If the line and load wires are swapped during installation, the meter will continue to operate and decrement credit. The unit may be factory programmed to Tamper and disconnect the consumer?s load should SRE be detected.

Surge protection

The meter has been designed to have a surge voltage withstand that significantly exceeds the requirements of both SABS 1524 and IEC 62052-11. Depending on the installation?s electrical environment, the customer has the option of fitting an additional surge arrestor with a current surge rating in excess of 30kA

Copyright @ 2017 Enbaya Prepaid Meters (Pty) Ltd | Tel: 087 550 0870 | www.PrepaidMeters.co.za

ENBAYA

Technical Specifications

Item	Specification
Meter type	Single-phase, 2-wire, direct connected meter
Compatible network(s)	Single-phase, 2-wire, earthed neutral
General operation	Credit store with decrement-on-usage
Credit entry mechanism	Keypad, encrypted numbers (prepayment mode or automatically incremented monthly allocation (UP2 mode)
Encryption algorithm	STS compliant
Applicable specifications	NRS009-1, NRS009-6-6, NRS009-6-7
Nominal voltage (Un) - rated voltage	230VAC rms (other voltages available on request)
Nominal frequency	50Hz (60Hz option available)
Operating voltage range	80% to 120% of Un (184V - 276V)
Maximum continuous current (Imax)	60 or 80 Amps (factory and field programmable to lower power limits)
Voltage circuit burden	<1.8W / <10VA @ 230V
Current circuit burden	<2.5VA @ base reference current (Ib)
Protective class (according to IEC62052-11)	Class II (double insulated)
Measurement direction	Forward and reverse power detection and metering (credit is decremented in both directions)
Meter constant (LED flash rate)	1000 impulses / kWh
Basic reference current (Ib)	10A
Accurate metering range	0.05Ib to Imax
Starting current	≤ 0.005Ib for Class 2
Power threshold	6.5W for base 10A (approx 28mA @ 230V and cos(Φ) = 1)
Accuracy class index	Class 2 (Class 1 optional)
Maximum error Class 2	< ± 2% over range 0.1Ib to Imax; (with 0.5 ≤ cos(Φ) ≤ 1.0 lagging and 0.8≤ cos(Φ) ≤ 1.0 leading)
Disconnection device type	Single pole latching contactor, 100A
Insulation system classification	Protective Class II (according to IEC 62052-11)
Insulation level	4kV rms for 1 minute
Over voltage withstand	440VAC for 48 hours, 600VDC for 1 minute
Voltage impulse withstand differential	In excess of 6kV, 1.2/50µs, with 2W source impedance (according to SABS 1524-1)
Current impulse withstand service rating	5kA 8/20µs (with optional surge arrestor populated)
Current impulse withstand withstand rating	30kA, 4/10µs (with optional surge arrestor populated)
Surge compliance	SABS 1524-1, IEC 62052-11
Electrostatic discharge	15kV air discharge
Immunity to RF fields	80MHz to 2GHz @ 10V/m with load, 80MHz to 2GHz @ 30V/m no load
Immunity to fast transient bursts	4kV
Radio interference	Complies with requirements for CISPR 22
Electromagnetic compliance	IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-6, CISPR 22

Copyright @ 2017 Enbaya Prepaid Meters (Pty) Ltd | Tel: 087 550 0870 | www.PrepaidMeters.co.za

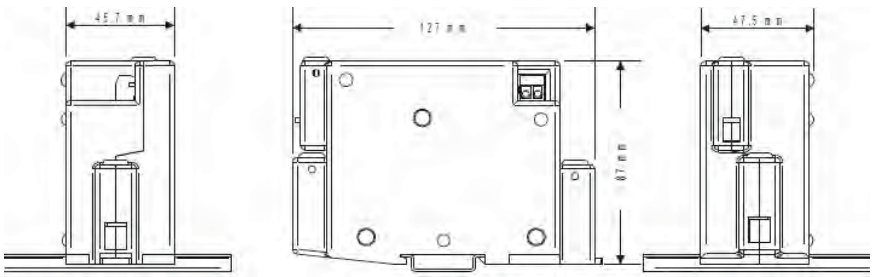
Technical Specifications

Item	Specification
Communication circuitry type	Galvanically isolated, non-polarised, 2-wire, half-duplex. Meter function is independent of CIU function
Rated impulse voltage	Peak Voltage 6kV (1,2/50m S) waveform, (according to IEC 62052-11 Protective Class II)
Insulation properties	4kV rms (1 minute), (according to IEC 62052-11 Protective Class II)
Communication distance	Up to 130 meters, with a maximum total loop resistance of 40W
Main enclosure type	Rail mount, with locking clip compatible with 35mm DIN standard rail
Main enclosure rating	Product is designed to be installed in a pole-top or street kiosk housing rated at IP51 or better.
Main enclosure material	Polycarbonate, flame-retardant, glass-filled grade
Resistance to heat and fire	Complies with 960°C glow-wire (IEC 60695-2-1)
Resistance to spread of fire	UL94-V0 rated @1.5mm. No toxic gases emitted: "Green Material?"
Dimensions (h x w x d)	127 x 47.5 x 87 (mm)
Weight	275g
Terminals layout	Top: Live-in, neutral-in cage terminals, Bottom: Live-out cage terminal, Front: Communication connector
Live terminals type	Single screw (M8), moving-cage terminal
Live terminals material	Mild steel, yellow passivated)
Live terminals maximum cable size	25mm2
Neutral terminal type	Single screw (M6), moving-cage terminal
Neutral terminal material	Mild steel, yellow passivated
Neutral terminal maximum cable size	16mm2
Customer interface connector	Plug-in, single screw cage terminal (with wire protector)
Customer interface connector type	1.5mm2
Meter enclosure sealing	Factory sealed with screw-seal
Terminals sealing	Utility sealed with wire and crimped ferrule, and sealing plugs
Area of application	Indoor meter (according to IEC62052-11)
Operating temperature range	-10°C (+14°F) to +55°C (+131°F)
Storage temperature range	-25°C (-13°F) to +70°C (+158°F)
Relative humidity	Maximum <95%, Annual mean 75%
Rate of consumption indicator	Visible red LED, 1000 pulses/kWh
Status indication	Visible LED
CIU operating Indication	Visible LED
Standard interrogation port	8-pin interface according to ESKOM DISSCAAA9
Optical communications port	According to IEC 62056-21
Proprietary interrogation port	Data interface for powerscope II
SABS compliance	SABS 1524-1 Edition 3
Eskom prepayment meters	ESKOM DISSCAAA9

Copyright @ 2017 Enbaya Prepaid Meters (Pty) Ltd | Tel: 087 550 0870 | www.PrepaidMeters.co.za

Technical Specifications

Item	Specification
Electrical type	Isolated, non-polarised, 2-wire, half-duplex, 12VDC from meter
Operating range (communication)	Up to 130 meters, with a maximum total loop resistance of 40W
Operating temperature range	-10°C (+14°F) to +55°C (+131°F)
Storage temperature range	-25°C (+12°F) to +70°C (+158°F)
Relative humidity (IEC 6 1036)	Maximum <95%, Annual mean 75%
Enclosure type	Slimline, wall mounted
Enclosure rating	IP 51
Enclosure material	ABS
Dimensions (h x w x d)	69 x 134 x 25
Weight	100g
Terminal type	2-way screw terminal
Terminal maximum cable size	2.5mm2
Sealing enclosure	Factory sealed, no user serviceable parts
Man-machine interface type	Language-independent
Components	Pictographic/numeric LCD display, keypad, LED rate of consumption
LCD size (w x h)	9cm2 (45 x 20) (mm), 8 digits + 11 icons
LCD icon information	Happy face, sad face, alert, breaker status, info, kWh, 4-segment credit wedge
LCD numeric information	Display of various meter information such as credit levels, number entry, etc.
Keypad	12-key, international standard layout incl "information" & "Backspace keys"
Buzzer	Audio feedback on key press, encrypted number, Accept and Reject melodies,Low-credit alarms as a factory-programmable option
Light Emitting Diode (LED)	Rate of consumption indicator (pulse rate proportional to current rate of consumption)
Diagnostic information	Additional meter parameters accessible via the "Information" key



UP TO 5 YEAR WARRANTY · 360° TURNKEY SOLUTIONS · RELIABLE SERVICE · REGULAR SUPPLIES · ONLINE MANAGEMENT · 24/7 VENDING · 7 DAY SUPPORT · ALWAYS READY