



ACE9000 STP PLC

Split Three Phase BS footprint Power Line Communications Prepayment Electricity Meter

The ACE9000 Split Three Phase PLC (STP PLC) is a compact BS 5685 footprint 100A Class 1 accuracy three phase split STS prepayment meter utilizing Power Line Carrier (PLC) technology for communications between the meter and customer interface unit.

KEY BENEFITS

- » Power Line Communication to CIU
- » Prepaid and post paid metering modes
- » Bi Directional metering per phase to support embedded generation
- » Cover open (with and without power) and magnetic tamper detect

The meter has a split configuration, which allows for increased revenue protection by mounting the Metering Control Unit (MCU) in a secure pavement kiosk or pole mounted box away from consumer access.

The standard BS mounting of the MCU means it is ideal to replace old electromechanical credit meters. The meter consists of two parts, the MCU and the Customer Interface Unit (CIU).

The PLC communication uses existing household wiring and does not require additional wiring to the consumer's house. The CIU can be conveniently located by plugging it into an available mains socket.

The meter is a 4 wire three phase meter and can operate as a simple prepayment or post payment meter, but is also ready for integration into a larger revenue protection system by providing the necessary open standards, interfaces and management features.

An optional under terminal powered RS232 port allows a back end communications modem to be fitted.

The meter has advanced features such as load profile and anti-tamper cover open detect and magnetic tamper detect.

MCU (METERING AND CONTROL UNIT)

The MCU consists of the metrology circuit, the STS decryption engine, Load switch control and communications interfaces. An LCD provides visual indication of remaining credit/ total consumption while contactor and communication status and consumption rate are provided by LEDs. An IEC62055-52 compliant optical port is also standard. This port is used for data extraction and can also provide an interface to the revenue protection system.

An RS232 port under the terminal cover provides a modem interface to the Head End System, while a wired port allows a wired CIU to be connected to the meter as an alternative.

A version of the STP is also available with a keypad on the MCU, allowing the technician easy access to the registers on the MCU through the short codes.

The PLC communication is based on a highly robust implementation of the multi carrier OFDM technology. The phase, on

which the PLC communications to the CIU is injected, can be selected during installation.

The MCU includes cover open (with and without power) and magnetic tamper detect and the meter cover makes provision for fitting utility anti tamper seals.

CIU (CUSTOMER INTERFACE UNIT)

Any of the ACE9000 PLC CIU's can be used with the MCU. The CIU is available as a stand-alone format, which can be plugged into an available mains socket and also a standard base unit (with battery back-up or integral load switch) which plugs into the Eskom standard base socket.

The stand alone CIU is the recommended device because it offers flexibility of installation, while the Standard base CIU's can be used if a fixed CIU installation is required.

The CIU is paired to an individual MCU during the installation process, ensuring privacy of data for the user.

The CIU includes a large LCD with user friendly language independent icons to display meter information in a user friendly format.

Technical Specifications

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 for one-way numeric and magnetic card token carriers
IEC 62055-52	Part 52 - Standard Transfer Specification - Physical Layer Protocol for a two-way virtual token carrier for direct local connection
SANS 1524-1	South African National Standard – Part 1: Prepayment Meters
DSP 34-1635	ESKOM: Particular Requirements for Prepayment meters
EN 50065-1	Signaling on low-voltage electrical installations in the frequency range 3kHz to 148.5kHz - Part 1: General requirements, frequency bands and electromagnetic disturbances.

Technical Specifications

Rated Voltage	230V/400V (-48%, +15%) 240V/415V (-48%, +15%)
Frequency	50Hz, 60Hz ± 2%
Basic Current (I _b)	5A
Maximum Current (I _{max})	100A
Starting Current	20mA
Accuracy Class	Class 1
Continuous Supply Voltage	Maximum 265V, Minimum 120V
Maximum withstand voltage	440V (48Hours)
RF Immunity (no-creep)	30V/m
RF immunity (accurate)	16V/m
Power Consumption	<2W & 10VA
Rate Indicator	1000 imp/kWh
Status Indication	Contact Status, Comms Status, Rate Indicator LED's LCD - remaining credit / total consumption
Installation	Standard BS 5685 mounting footprint
Disconnection Device	100A three Pole Bi-stable latch
Anti tamper features	Meter sealed for life Terminal Cover Open Detect (with and without power) Magnetic Detect
Operating Temperature range	-25°C to +55°C
Limiting Temperature Range of Operation	-40°C to +70°C
Humidity Operating Range	95% RH
IP Rating	IP54
Meter Weight	2.5kg
Dimensions (W x D x H)	300 x 95 x 160 mm
Terminal Wiring	Asymmetrical
Communication (CIU)	PLC (OFDM technology) - 120m range dependent on the noise environment
Communication (Optical port)	IEC 62055-52 compliant bi-directional optical port
Communication (µUSB)	DSP 34-1635 type B interface port compliant (optional)
Communication (Head end)	Under terminal modem port
Product Life	15 Years

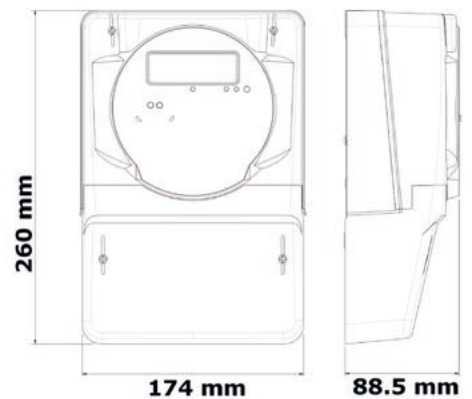
Customer Interface Unit (CIU)

User Interface	12 Digit keypad with audio feedback
User Display	8 digit LCD with language independent icons
Consumption Display	Optional LED (not for metrological purposes)
Communication Circuitry	CENELEC A compliant PLC
IP Rating	IP 51
Installation Type	Stand alone (plugs into mains socket)
Weight	0.3kg

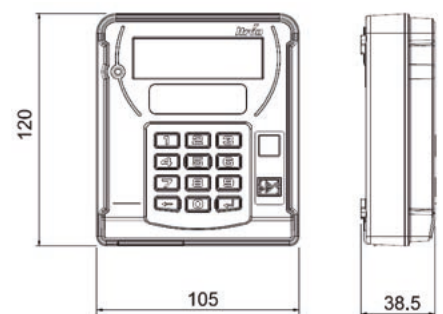
Operating Modes

Prepayment mode	12 Digit keypad with audio feedback
Post paid Metering Mode	Credit display, with over current disconnect
Bi-directional per phase	Decrement credit on import only, register export separately
Utility Test Mode	High speed, high resolution calibration mode

MCU



Stand Alone CIU



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