

eCash-IV 1phs SMART DIRECT SINGLE PHASE METER

EM101-6

Residential, Commercial, and Industrial
Applications (Low Voltage)



Active Reactive



Modular



Cut-Off Relay



Tampers



Battery



GSM/GPRS



PLC



RF

INTRODUCTION

The eCash-IV SMART DIRECT electricity meter series are modern, electronic & fully programmable devices designed for application in AMI systems supporting monitoring and control of electricity consumption.

The eCash-IV SMART DIRECT electricity meter series meet remote data transmission requirements and enable readouts of various measurements. The meters are compliant with IEC and DLMS/COSEM standards and have been designed to serve billing purposes.

The EM101-6 eCash-IV SMART DIRECT single phase meter is a two wire compact electronic meter (direct connection meter). It supports Prepaid / Postpaid features (up to 10 rates Step / 8 TOU) with Friendly Hours, Weekends & Holidays available. It also supports other features such as accuracy class 0.5 Active, 1 Reactive capable of measuring KWh and KVarh according to IEC/EN standards.

The meter is used to measure energy consumption in 240 Vac, 50 Hz, and 5A-100A. It contains an independent measuring element allowing consumed energy to be measured in both line and neutral. There are two LEDs mounted on the front panel of the meter, pulsing at a rate of 3200 pulses per KWh and KVarh for energy registration.

The modular nature of the meter means that its communications interface **supports a broad range of field-upgradable communications options including** GPRS, PLC, and RF among others.

STANDARDS

- IEC 62052-11
- IEC 62053-23:2003
- EN 50470
- IEC 695-2-1
- IEC62055 (for contactor)
- IEC 62056-42
- IEC 62056-46
- IEC 62056-53
- IEC 62056-61
- IEC 60068



METER SPECIFICATIONS

Electrical Characteristics

Nominal Voltage	230 V
Voltage Variation (Min)	-30% Vn
Voltage Variation (Max)	+20% Vn
Nominal Current (Ibase)	5 A
Maximum Current (Imax)	60 A
Nominal Frequency	50 Hz
Frequency Variations	±5%
Accuracy Class	1
Starting Current	0.4 % Ib
Power Consumption	≤ 2W
Measurements	KWh, KVarh, V, I, PF, P, Q MD (KW) Block or Sliding Windows (Configurable)
Back-up Battery Type	Lithium Battery and Super Capacitor (Optional)
Back-up Battery Lifetime	10 Years

Memory

Type	FLASH and EEPROM Memory
Retention Period	More than 20 Years

Environmental Conditions

IP Rating	IP54
Temperature Range	-25°C to +70°C
Storage Temperature	-40°C to +80°C
Humidity Range	<95%
Altitude	0-3600M
Service Life	20 Years

Communication

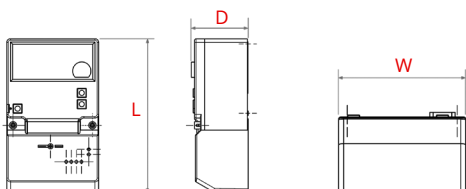
Optical Interface	Standard Optical Port (IEC 62056-21) Complies with DLMS/COSEM HDLC mode-E protocol
Serial Communication Port	RS-485 Complies with DLMS/COSEM direct HDLC protocol
AMI/AMM Module	Supported through the use of a GSM/GPRS Modem, PLC Modem or RF Modem
Data Transmission Rate	Optical Port: Up to 19200 bit/s RS-485: Up to 19200 bit/s GPRS: 56-114 Kbit/s

MECHANICAL SPECIFICATIONS

→ **Dimensions:** (L x D x W) =
223 mm x 77.50 mm x 126 mm

→ **Weight:** Approximately 1.5Kg

→ **Meter Housing:** Flame Retardant Polycarbonate



METER FEATURES

Feature

Description

Display	<ul style="list-style-type: none"> Fully electronic (LCD) with backlight
Load Profile	<ul style="list-style-type: none"> The meter is capable of storing two profiles. Each profile support up to 8 channels (Configurable), For instantaneous parameters channels can be chosen as follows: <ul style="list-style-type: none"> a. Average b. Minimum c. Maximum d. Instantaneous Each profile has an integration period of 1 to 60 minutes The profiling period extends up to 240 day (15min integration period)
Events	<ul style="list-style-type: none"> The EM101-6 eCash-IV SMART DIRECT records a considerable amount of data for extended periods of time In addition, the EM101-6-SMART DIRECT stores up to 400 events Events are logged with a date/time stamp
Power Quality	<ul style="list-style-type: none"> Meter records under voltage, over voltage (threshold and duration of under voltage and over voltage adjustable locally and remotely) For each under voltage or over voltage occurrence during the adjustable / Programmable (1 to 60) second period; the meter will detect and record event, date and time of last occurrence and the cumulative number of the occurrences For Power cuts; long duration power cuts (more than 3min) and short duration power cuts events are recorded in addition to the number of power cuts
Firmware Upgrade	<ul style="list-style-type: none"> Ability to easily update / change the meter firmware without processing it on-site. This is done locally via optical port and remotely in a massive change command from the Management Software The meter supports three concurrent firmware images. For every image; activation (Flashing) can be scheduled to be performed immediately or at a future date. The meter will perform a self-check process after the execution of the new firmware update, and the result of the self-check process will be stored on the meter event log (and will be retrievable locally or remotely)
Tamper Proofing	<ul style="list-style-type: none"> The EM101-6 eCash-IV SMART DIRECT has the ability to detect the following types of tamper attempts: <ul style="list-style-type: none"> ✓ Meter Cover Open ✓ Reverse Connection ✓ Overload ✓ Under Voltage ✓ Terminal Cover Open ✓ Current Bypass Connection ✓ Over Voltage ✓ Parameter Change
Test Mode	<ul style="list-style-type: none"> The meter supports a Test Mode in which there will be an automated test sequence available that includes: <ol style="list-style-type: none"> Full diagnostic test; testing all of the active and inactive functionality Metering accuracy test; enabled to allow for accuracy testing to be performed without affecting the recorded customer registration of energy
Load Control Plan	<ul style="list-style-type: none"> The meter supports the option to control loads (configurable) that is remotely activated or deactivated The control functionality includes: <ul style="list-style-type: none"> ✓ Allowed loads for given time periods ✓ Demand Limit
Alarms	<ul style="list-style-type: none"> The meter supports three alarm methods: <ul style="list-style-type: none"> ✓ LED Indicator ✓ Audible Alarm ✓ Messages on LCD The meter can be configured to give any combination of alarms as required
Relay Operation	<ul style="list-style-type: none"> The relay control modes include: <ul style="list-style-type: none"> ✓ Remote Disconnect ✓ Local Disconnect The relay is configurable to be triggered as Permanent or Hint in the event of: <ul style="list-style-type: none"> ✓ Meter cover open ✓ Meter Terminal Cover Open ✓ Energy Reverses ✓ Meter Current Overload ✓ Meter Over Voltage and Under Voltage ✓ At Low Battery ✓ Low Credit (Two Threshold) ✓ Current Bypass Connections
Auto-diagnostics	<ul style="list-style-type: none"> With firmware update, the meter will diagnose: <ul style="list-style-type: none"> ✓ Meter and memory integrity ✓ Display, alarms & battery status