



**GHANA  
ELECTROMETER®**

# eCash-III 3phs SMART DIRECT SINGLE PHASE METER

## EM341-4



Residential Applications (Low Voltage)



Active Reactive



Modular



Cut-Off Relay



Tampers



Battery



GSM/GPRS



RFID

### INTRODUCTION

The EM341-4 Prepaid electricity meter series are modern, electronic, fully programmable devices, designed for application in payment systems for monitoring and control of electricity consumption, and have been designed to serve billing purposes.

The EM341-4 Prepaid meter series is part of Advanced Payment Solution suitable for Residential consumers who would like to control their Bill and Utilities who would like to increase their Revenue collection.

The meter series enables Reading, Billing and Collection with flexible methods using RFI Smart cards.

The EM341-4 Prepaid three phase meter is a four wire, Prepaid compact electronic meter (direct connection meter), with accuracy class 0.5, capable of measuring KWh and is type approved according to IEC/EN standards.

The meter is used to measure energy consumption in 3 X 220/400 Vac, 50 Hz, and 10A-100A. It contains an independent measuring element allowing consumed energy to be measured in both line and neutral.

There is a LED mounted on the front panel of the meter, pulsing at a rate of 1000 pulses per KWh for energy registration.

The modular nature of the meter means that its communications interface support broad range of field-upgradable communications options including GPRS, RF.

### STANDARDS

- IEC 62053-23:2003
- IEC 62055 (for contactor)
- IEC 62056
- IEC 695-2-1
- IEC 62052-11
- EN 50470
- IEC 60068

## METER SPECIFICATIONS

### Electrical Characteristics

Nominal Voltage	3X230/400 V
Voltage Variation (Min)	-40% Vn
Voltage Variation (Max)	30% Vn
Nominal Current (Ibase)	10 A
Maximum Current (Imax)	100 A
Nominal Frequency	50 Hz
Frequency Variations	±5%
Accuracy Class	1 Active 2 Reactive
Starting Current	0.4 % Ib
Wiring	3 PH, 4 wires Network
Number of elements	4
Power Consumption	≤ 2W
Measurements	KWh MD(A)(KW)
Back-up Battery Type	Lithium Battery
Back-up Battery Lifetime	10 Years

### Memory

Type	Flash memory
Retention Period	More than 20 Years

### Environmental Conditions

IP Rating	IP54
Temperature Range	-5°C to +70°C
Storage Temperature	-25°C to +80°C
Humidity Range	<90%
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 <b>Modem or RF Modem</b>
Data Transmission Rate	Optical Port: 9600 bit/s RS-485: 9600 bit/s <b>GPRS: 56-114 Kbit/s</b>

## MECHANICAL SPECIFICATIONS

- **Dimensions:** (L x W x D) = 277.3 mm x 177.4 mm x 88.5 mm
- **Weight:** Approximately 1.8Kg
- **Meter Housing: Flame Retardant Polycarbonate**

## METER FEATURES

Feature	Description
Display	• <b>Fully electronic (LCD) with backlight</b>
Tariff	• Supports TOU or STEP (up to 10 steps)
Load Profile	• <b>The meter can store two profiles. One for energy and one for other parameters</b> • <b>Each profile has an integration period of 1 to 60 minutes</b> • <b>The profiling period extends for at least 45 days</b>
Events	• The EM341-4 records a considerable amount of data for extended periods of time • In addition, the EM341-4 stores up to 400 events • Events are logged with a date/time stamp
Tamper Proofing	• The EM341-4 can detect the following types of tamper attempts: ✓ Meter Cover Open ✓ Terminal Cover Open ✓ Module Cover Open ✓ Reverse Connection ✓ Earth or Current Bypass Connection ✓ Overload ✓ Over Voltage ✓ Under Voltage ✓ Phase Sequence ✓ Missing Potential
Alarms	• The meter supports two alarm methods ✓ LED Indicator ✓ Audible Alarm ✓ Messages on LCD • <b>The meter can be configured to give any combination of alarms as required</b>
Relay Operation	• The relay control modes include: ✓ Remote Disconnect ✓ Local Disconnect • <b>The relay is configurable to be triggered in the event of:</b> ✓ Meter cover open ✓ Meter Terminal Cover Open ✓ Module Cover Open ✓ Energy Reverses ✓ Earth or Current Bypass Connection ✓ Meter Current Overload ✓ Meter Over Voltage and Under Voltage ✓ At Low Battery ✓ Phase Sequence ✓ Missing Potential ✓ Low Credit
Auto-diagnostics	• <b>With each power-up or firmware update, the meter shall diagnose:</b> ✓ Meter and memory integrity ✓ Display, alarms & battery status ✓ External communication module status
RFID Operation	• <b>The meter is fully configurable via the RFID cards</b> • Various data can be retrieved from the meter including but not limited to data relating to consumption, remaining credit, tamper attempts • <b>The meter can be recharged via the RFID cards</b> • <b>Extremely secure as it includes a MIFARE CLASSIC encryption/decryption module to verify and validate the authenticity of the card used</b>

