

ADVANCED PAYMENT SINGLE PHASE METER

EM102-2

Residential Applications (Low Voltage)



Token



Tariff (TOU)



Cut-Off Relay



Tampers



Battery



Optical



Bidirectional



Active Reactive

INTRODUCTION

The EM102-2 is a single phase two wire type S electronic meter equipped with the latest Optical Token communication technology.

The EM102-2 provides consumers with various features, such as high security and different forms of customer billing methods.

Furthermore, the EM102-2 allows consumers to better manage their budget by providing credit level indicators.

The EM102-2 benefits from the Optical Token technology which allows a two-way communication path between the utility company and the consumer.

Various forms of information and data can be transferred securely via the Optical Token card(s) including but not limited to customer data, meter configuration and monthly consumption.

STANDARDS

- ISO/IEC 14443-A
- ANSI C12.1-2001
- ANSI C12.18-1996
- IEC 62052-11-2003
- ANSI C12.20-2002
- ANSI C12-22-2008
- NOM-127-SCFI-1999
- IEC 62053-22-2003

Comply with:

1. CFE G0100-05: AMI Customer Billing System
2. CFE G0000-94-2008 Safety Rings

METER SPECIFICATIONS

Electrical Characteristics

Accuracy Class	0.5
Nominal Voltage	120V
Supply Variation	±30%
Spike Voltage Tolerance	4KV
Starting Current	50mA
Nominal Current	15A
Maximum Current	100A
Nominal Frequency	60Hz
Meter Constant	1600 imp/kWh
Inherent Consumption of Voltage Circuit	< 0.5W, < 4VA
Inherent Consumption of Current Circuit	< 0.5VA
Back-up Battery Reserve	10 Years
Real Time Clock	Quartz Crystal 32KHz
Real Time Clock Accuracy	With maximum error of 30ppm every 30 days

Memory

Type	EEPROM
Update Rate	Every 6 Hrs or After Power Failure
Data Retention Period	40 Years

Environmental Conditions

IP Rating	IP54
Temperature Range	-20°C to +70°C
Storage Temperature	-30°C to +75°C
Humidity Range	90%
Altitude	0-3600M
Lightning Protection Circuit	Included
Service Life	20 Years

Communication

Data Transmission Rate	Optical Port: 9600 bits/sec
Optical Port	Complies with ANSI C12.18

METER FEATURES

Feature	Description
Measurements	<ul style="list-style-type: none"> The EM102-2 is capable of measuring the active and Reactive power consumed Metering Mode (Unidirectional , Bidirectional) The meter supports Zero Cross and Sag to allow early detection of power failure
	<ul style="list-style-type: none"> The EM102-2 allows users to set the information to be displayed on the 8 digit seven segment LCD screen in accordance with the operating mode The meter supports a simulator disk indicating the energy flow direction The meter displays instantaneous as well as a cumulated values
Data Display	<ul style="list-style-type: none"> Optical Port Module: used to allow a PC/HHU to communicate with the EM102-2 Optical Token Module: Used to communicate with the EM102-2 via a variety of functional Optical Tokens
Communication Modules	<ul style="list-style-type: none"> The meter is fully configurable via the Optical Tokens Various data can be retrieved from the meter including but not limited to data relating to consumption, remaining credit, tamper attempts The meter can be recharged via the Optical Tokens Extremely secure as it includes an AES 128bit encryption/decryption module to verify the AES key and validate it using five different security levels to prove its suitability for the system
	<ul style="list-style-type: none"> The meter records the latest 1700 events with date and time stamps Recorded events include (but are not limited to): <ul style="list-style-type: none"> ✓ Exceeding Maximum Demand ✓ Meter Detachment ✓ Reverse Connection ✓ Connection/ Disconnection Events ✓ Power Failure ✓ Overvoltage ✓ Undervoltage ✓ Connection Events
Optical Token Operation	<ul style="list-style-type: none"> The Relay is activated in response to the following triggers, and may be configured otherwise: <ul style="list-style-type: none"> ✓ Removing the meter from its base ✓ Exceeding maximum demand ✓ Reverse power flow ✓ Cut-off date (in postpayment mode) ✓ No balance (in prepayment mode) ✓ By consumer ✓ Overvoltage ✓ Undervoltage
Events	<ul style="list-style-type: none"> The EM102-2 supports various indication methods for different triggers The EM102-2 supports various modes of operation including: <ul style="list-style-type: none"> Basic Mode The meter supports an open account payment form Prepaid Mode The meter disconnects the supply when balance is insufficient and reconnects upon recharging Postpaid Mode The meter acts upon the cut-off date of the billing cycle Test Mode The meter tests all of its main blocks without interrupting normal operation
Relay Operation	
Indicators	
Modes of Operation	

MECHANICAL SPECIFICATIONS

- **Dimensions:** (L x W x D) = 150.0 mm x 96.6 mm
- **Weight:** 0.6Kg
- **Meter Housing:** Flame Retardant Polycarbonate

