EM500 type 550

Advanced Residential Electricity Meter Portfolio

Itron EM500 meters employ an evolutive platform for advanced metering infrastructure (AMI) to support the new needs arising from the modernization of electricity network. EM500 is designed to meet broader set of advanced metering, control and smart grid requirement that many utilities are facing today.

Smart

Compliant with IEC standards, these meters include large innovative capabilities and support data access via local and remote communication.

Secure

EM500 meters follow Itron's "Security-by-design" methodology which aims at identifying security risks (such as malicious attack) and mitigate them "by design".

Flexible

Designed for direct connection operated networks, EM500 meters employ a scalable architecture that makes them operate in traditional electricity distribution networks as well as helps utilities to move into the new and challenging deregulation scenarios.

Wide Range of Applications

This meter type is intended to be used across a variety of AMI applications.

Accuracy and linearity ensure high quality billing and load profiling data. Instantaneous values for a variety of quantities serve as a base for network monitoring.

EM500 meters manage an extremely complete billing calendar, allowing utilities and end-users to easily adapt tariffication to new market situations. They also allow to track energy usage to enable demand-response implementation that is critical to protecting the utility smart grid.

IP communication over Cellular or Ethernet networks are supported, along with DLMS/Cosem messaging protocol, to provide advanced information to head-end system.

ADDING VALUE

Through the application of the latest generation metrological and communications technologies, EM500 meters bring significant benefits to utilities and end-users alike, adding value to every aspect of the metering process.

Utility Benefits

» Reduced Data Collection Cost
Read cycles are kept to a minimum by internal storage of all historical data, and powerful communications capabilities permit low-cost remote meter reading. Conformance with the latest DLMS/Cosem protocol standards ensures that the meters can be integrated easily into standard data collection systems based on various communication media.

» Revenue Protection
Information on tamper, consumption and customer data can be retrieved easily, allowing utilities to take immediate action. Disconnection and consumption limitation can be activated remotely, and alarm signals are sent in case of interference with the meter.

» Reduced Non-Technical Losses
Multiple safety features guard against technical problems being introduced by human intervention.

» Monitoring Electrical Network
Measurement of power quality data such as voltage variations, THD and notification of power outage and restoration events.

» Withstand Adverse Environments
Our meters are designed and tested to cope with severe environmental conditions, such as electromagnetic disturbances and network condition variations.

End-user Benefits

» Excess Consumption Feature
EM500 meters can monitor consumption against configurable thresholds and can activate contacts if consumption exceeds limits.

» Instantaneous values such as Power Factor, Demand, Volts and Amps are made available for the end-user to help monitor personal consumption.

Multi-quantities

Internal measurement of active and reactive power in each direction (four-quadrant:

» 41 total energy, 8 average demand, 8 maximum demand, 8 cumulative maximum demand, 2 power factor registers.

» Rate switching performed by internal calendar (8-rates registers per demand energy and power factor quantities).

Historical sets

» Load profile (up to 12 channels) with configurable interval (from 1 to 60 min).

» Power quality profile (up to 10 channels) with configurable interval (from 5 to 60 min).

» Separate billing records for monthly and daily data.

» Multiple event logs.

"Smart metering" features

» Remote operations of supply disconnection and reconnection via internal contactor.

» Real-time alarm notification via push mechanism.

» Firmware upgrade Over-The-Air.

Communications

» 3 communication channels: local, remote and readout.

» External modem power-supplied by the meter

» Secure DLMS messages transactions (security suite 0)

Software

» ACE Pilot software for reading and programming

» Seamless integration with already deployed AMR systems

Technical specifications

Ratings	Voltage:	3*57.7/100V up to 3*265/460V auto ranging
	Current:	In (Imax): 5(100)A or 10(100)A
Network Types	DC:	4 wires for VDE (asymmetrical) connection
Accuracy	Class 1 (active energy), Class 2 (reactive energy)	
Frequency	50 / 60 Hz	
Real Time clock	Back up with removable battery and internal super capacitor Compliant with IEC 62054-21	
Temperature Range	Operation: -10°C to +75°C Storage and transport: -10°C to +85°C	
Standards	IEC62052-11, 62053-21/22/23, RoHS2 directive (2011/65/EU) IEC 62056-21/42/46/53/61/62 for communication protocol Full compliance with CE marking standards	
Communications	IR port up to 19,200bds for software tool RS485 port up to 115,200bds for modem interface RS485 port up to 115,200bds for data readout (e.g. IHD)	
Modem Power Supply	12V (±5%), 5W max. available on RJ45 connectors	
Read Without Power	Internal battery	
Protection and Immunity	IP54, class II, external magnetic field (up to 500mT)	
Network Quality	Voltage cuts, sags, swells detection Total Harmonics Distortion (THD) measurement, up to H15.	
Integrated contactor	Up to 120A breaking capacity (conformity to IEC62055-31 "UC3")	
Anti-fraud	Main and terminal cover opening detection Magnetic field detection	
Security	DLMS security suite 0 (AES128- GCM encryption algorithm) HLS-5 (GMAC) association mechanism	

Accessories

Communications	External modem (e.g. Itron Sparklet cellular, IP) Cabling for external communications devices IR-reading device for connection to PC
Configuration	ACE Pilot Utility Software for configuration and reading
Documentation	User manual (including installation guide) Cosem object model definition Test certificates

Dimensions
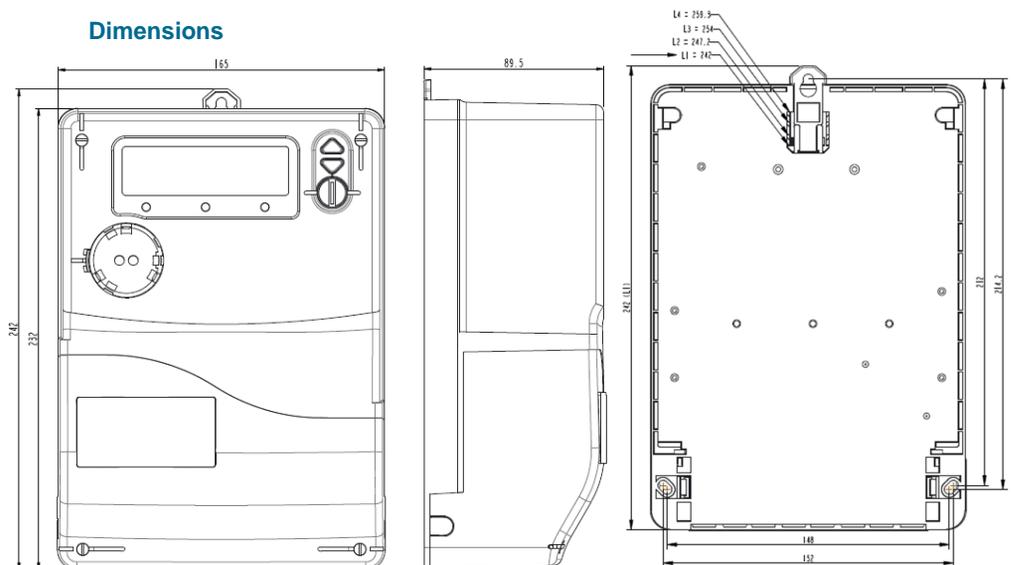
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