



# MTR 5000 Series ANSI Smart Meters

A proven, safe and reliable solution powered by the world's most widely deployed smart metering technology



## MTR 5000 Key Features

- Load profiling; power-quality analysis; time-of-use and prepay billing; integrated, remote-controlled disconnect
- Tamper-events detected, logged and communicated even during a power failure; Energy measurement technology highly resistant to DC magnetic fields
- Over- and Under-Voltage detection with configurable voltage and duration thresholds.
- THD detection with measurement up to 10th harmonic to reveal unusual conditions.
- Forward, reverse, net active energy, kvarh import/export, and four-quadrant kvarh measurements enable customer micro-generation sources and power quality monitoring
- Each meter acts as repeater to reach other meters and create a power line-based mesh that matches the real topology of the low-voltage distribution network

## Proven, Safe and Accurate

Designed for residential and small commercial energy consumers, Echelon's ANSI meters allow utilities to accurately collect billing data and vital health statistics from the low voltage grid. Accurate, these MET Labs-certified meters are proven to deliver 99.7- 100% reliability. Safe, our power line based network does not interfere with RF-based in-home devices such as mobile phones, baby monitors, or garage door openers.

## Protect Revenue While Reducing Operational Costs

As with the entire line of Echelon smart meters, our ANSI meters create a highly reliable power line based meshed network so you can protect revenue from electricity theft and fraud, as well as identify unexpected technical losses. Tamper-events are detected and logged, even during a power failure. Software enabled features like our remote disconnect/reconnect switch and secure, remotely managed firmware upgrades allow you to change rate plans, add time-of-use tariffs, or update meters without a trip to the field.

## Advanced Billing Provides Limitless Options

Our smart meters enable many billing features from collecting daily reads, to time-of-use or demand metering. Up to 16 channels of remotely configurable load profile data can be captured at programmable intervals ranging from 5 minutes to once a day. Remotely configurable time-of-use metering leading to peak load reduction supports 4 tariff tiers

with up to 10 tier switches per day. Our ANSI smart meter family supports rich calendar functionality with day schedules for each season, adjustable time zones, and support for daylight savings time. All meters measure forward and reverse active energy and import and export of reactive energy. Optional demand metering allows billing to be based on maximum demand and includes support for block or rolling demand calculations, configurable demand intervals, and logging 2 coincident parameters with local or remote demand reset.

## Improve Reliability at the Edge of the Grid

Consumers' heightened demand for power availability, distributed generation, and requirements for greater efficiency in power distribution is creating a need for real-time, accurate and reliable measurements of power consumption and power quality at the edge of the grid. Echelon ANSI smart meters double as a powerful grid sensor and provide real-time, reliable readings for voltage, current, energy usage, net micro-generation output, and vital power quality metrics, enabling you to prevent problems before they occur and improve the reliability of your grid.

## Specifications

### Certifications

ANSI C12.1-2008 (code for electricity metering); ANSI C12.18-2006 (protocol specification for ANSI Type 2 optical port); ANSI C12.19-1997 (utility end device data tables); ANSI C12.20-2002 (accuracy classes); ANSI C12.10-2004 (physical aspects of watt-hour meters - safety standard).

### Accuracy

ANSI C 12.20 Class 0.5, Class 0.2  
Temperature, Specified

### Operating Range

-40° to +85° C; display fully operational from -25° to +60° C

### Temperature, Limit Range for Storage and Transport

-40° to +85° C

### Humidity

≤95% RH; non-condensing.

### Clock

Real-time clock accurate to +/- 0.5 seconds per day.

### Nominal Voltage

Form 1S, 12S 120 VAC, range is -20% to +15%.

Form 2S, 4S, 240 VAC, range is -20% to +15%.

### Frequency

60 Hz +/- 5%

### Service Types

Form 1S, 1-phase, 2-wire.  
Form 2S, 4S: 1-phase, 3-wire.  
Form 12S: 2-phase or split phase, 3 wire

### Current

Form 1S CL100, TA 15A  
Form 2S, 12S CL200, TA 30A  
Form 4S, CL20, TA 2.5A

### Load Disconnect Switch (direct connected meters only)

Form 2S and 12S 200A ; Form 1S 100A  
5,000 operations at full load, PF = 1.0.  
Remote disconnect and enable, local reconnect via push button; remote reconnect; safe operation with load-side voltage sensing and load-sensing.

### Power Consumption

Voltage circuit: < 2W, < 5VA  
Current circuit at TA: <1VA

### Units Measured

kW forward, reverse; kWh forward, reverse, forward + reverse, forward - reverse; kvar import, export; kvarh import, export; RMS voltage; RMS current; power factor; frequency; rolling and block demand for energy sources (optional); kvarh per quadrant (with demand metering option).

### Power Quality Analysis

Sag; swell; number of over-current occurrences; number of short power outages; number of long power outages; duration and time of the last 10 long power outages; maximum and minimum frequency; phase loss; total harmonic distortion.

### Time of Use

4 tariffs with 10 possible tier switches per day; 4 seasons per perpetual calendar (set by day/month); perpetual holiday calendar for up to 15 holidays per year; perpetual daylight savings changeover; 2 separate holiday day schedules per season; 1 weekday, 1 Saturday, and 1 Sunday day schedule per season.

### Data Logging Intervals

User-selected at 5, 10, 15, 30, 60 minutes, or 1 day.

### Verification Output

2 pulse-output LEDs representing active and reactive energy.

### Optical Port

ANSI C12.18-2006

### Display

8-digit liquid crystal display, 0.4" height; simulated wheel electronic load indicator.

### Data Communications

A-band power line communication based on ISO 14908 and ANSI CEA 709 with encryption and authentication.

### Data Security

Password protection for optical communication; authenticated, password-protected transactions and encryption for power line communication.

### Data Storage

Non-volatile memory.

### Enclosure

ANSI C12.10-2004

### Life Expectancy

20-year design.

### Safety Rating

UL 61010-1 (2001)

## Options

Demand metering including per-quadrant reactive energy measurement; magnetic tamper; surge tabs; 3.6V field-serviceable battery; control relay; KYZ outputs; Multipurpose Expansion Port (powered or unpowered); 2 pulse inputs. Note: All options other than demand metering (which can be activated in the field) must be ordered and included when the meter is manufactured. Certain option combinations may not be available.

## Documentaton

ANSI Meter User's Guide  
078-0384-01x

## Odering Information

Product Name and Model Numbers  
MTR 5001, ANSI 1S Meter 83012-1CXXX  
MTR 5002, ANSI 2S Meter 83021-2IXXX  
MTR 5004, ANSI 4S Meter  
83042-2GXXXMTR 5012, ANSI 12S Meter  
83122-2DXXX

Specifications subject to change without notice.

For more information about this product, contact Echelon at+1 408 938 5200 or visit [www.echelon.com](http://www.echelon.com).

## Dimensions

MTR 5000 Series		
	mm	inches
<b>A</b>	154.43	6.08
<b>B</b>	176.53	6.95
<b>C</b>	161.04	6.34
<b>D</b>	<b>110.00</b>	<b>4.33</b>
<b>E</b>	121.60	4.79
<b>F</b>	155.35	6.12

Note that these dimensions reflect the length, width and height of the meter while the meter cover is in place.

