

## IEC Single Phase Meter

A new standard for  
Smart Energy Meters



Designed for residential and small commercial energy consumers, the IEC Single Phase Meter sets a new standard for revenue-grade smart energy meters.



Safe, accurate, and reliable, the meter incorporates a full suite of operating features with an integrated, software-controlled disconnect switch, a comprehensive information display, and robust, bidirectional power line signaling technology. Each meter, which is automatically managed by an NES<sup>1</sup> Data Concentrator, can also act as a repeater to reach other meters. This lets it create a power line-based meshed network of meters that exactly matches the real topology of a utility's low-voltage distribution network.

### Features

#### Integrated Disconnect/ Reconnect Switch

- Integrated 100A switch can be locally or remotely controlled.
- Supports customer move-in/move-out management, load limiting, and pre-paid metering.

#### Time-of-use Metering

- Remotely configurable time-of-use metering leading to peak load reduction supports 4 tariff tiers with up to 10 tier switches per day.
- Rich calendar functionality with day schedules for each season, adjustable time zones, and support for daylight savings time.
- Support for changing the calendar through a pending time-of-use calendar.

#### Advanced Power Line Communication

- Every NES smart meter includes Echelon's proven, standards-based, power line communications technology – the most widely deployed signaling technology.
- Every meter includes an automatic repeating function.
- Communicates with an NES Data Concentrator.

#### Multipurpose Expansion Port (MEP)

- Optional MEP lets partners attach secure hardware extensions to the meter for communication with devices like in-home displays, or gas and water meters.
- Powered MEP option can provide up to 1 Watt of power to external devices.
- Lets utilities expand meter capabilities when needed.

#### Load Profile

- Up to 16 channels of remotely configurable load profile data can be captured at programmable intervals ranging from 5 minutes to once a day.
- Load profile storage capacity is a function of the number of channels and the log interval. For example, 2-channel, 15-minute data can be retained for 3 months, and 2-channel, 1-hour data can be retained for 12 months, when using the recommended memory configuration.
- Meters support viewing load profile data on the meter display

#### Demand Metering

- Optional demand metering allows billing based on maximum demand.
- Includes support for block or rolling demand calculations, configurable demand intervals, and logging 2 coincident parameters.
- Supports local or remote demand reset.

#### Prepay Metering

Energy credit-based prepay functionality including varying deductions per time-of-use scheduling, configurable emergency credit, and audible low credit alarm.

#### Tamper Detection

- Cover tamper is detected, logged, and communicated.
- Measurement technology is highly resistant to tamper attempts with DC magnetic fields. However, magnetic tamper can be optionally detected.
- When used together, alarms, measurements, and tamper events can detect most fraud and tamper attempts.

### Power Quality Analysis

- Long and short outage detection with configurable time threshold.
- Voltage sag and swell detection with configurable voltage and duration thresholds.
- THD event detection with analysis up to 10th harmonic to reveal unusual conditions.

### Micro-generation support

- Measures forward, reverse, and net active energy.
- Measures kvarh import and export.
- Measures 4-quadrant kvarh when demand metering is included.

### Other Standard Features

- MID Class B active power, Class 2 reactive power.
- -40 °C to +70 °C operating temperature range.
- Event log with circular buffer to store 200 events when using the recommended memory configuration.
- Capacity to perform self-reads (automatic periodic readings of measurement data). The meter can store up to 36 self-read records when using the recommended memory configuration.
- Large-character, auto-scrolling, eight-digit LCD display.
- Two pulse output LEDs to represent active and reactive energy.
- Optical port for use with NES Provisioning Tool.
- Ability to have memory configurations with additional storage for load profiling, the event log, and meter self-reads.

### Specifications

#### Certifications

Certified to: IEC 62052-11 [2003]; IEC 62053-21 [2003]; IEC 62053-23 [2003]; IEC 62052-21 [2004]; IEC 62054-21 [2004]; IEC 61010-1 [2001]; EN 50065-1 [2001]; EN 50470-3 [2006]. Complies with: DIN 43857; DIN 43864; ANSI C12.18 [2006] (communications protocol); ANSI C12.19 [1997] (data structure); IEC 62053-31 (class A for SO pulse output); IEC 62056-21 [2002] (physical and electrical requirements only); DIN EN 13757-2 [2002]; DIN EN 13757-3 [2002].

### Accuracy

For 5A basic current and up to 100A maximum current.

Active: Class 1 certified to IEC 62053-21, Class B certified to EN 50470-3 (MID).

Reactive: Class 2 certified to IEC 62053-23.

### Temperature, Specified

#### Operating Range

-40 ° to +70 ° C (3K7), display fully operational from -25 ° to +60 ° C

### Temperature, Limited Operating Range

-40 ° to +70 ° C (3K7)

### Temperature, Limit Range for Storage and Transport

-40 ° to +70 ° C (3K7)

### Humidity

≤ 95% relative humidity, non condensing

### Timing

Real-time clock accurate per IEC 62052-21 / 62054-21 to +/- 0.5 seconds per day.

### Frequency

50 Hz +/- 5%

### Nominal Voltage

220V to 240V phase-to-neutral, range is -20% to +15%.

### Service Types

1-phase 2-wire.

### Connection Type

Direct connection of line and load conductors.

### Current

Basic 5A; maximum 100A (amperage depends on local regulatory requirements).

### Power Consumption

Voltage circuit: < 2W; apparent power < 5VA; Current circuit at Imax: < 6.0VA @100A, < 5.0VA @ 80A

### Starting Current

20 mA

### Load Disconnect Switch

With remote disconnect and enable.

Mechanical life at maximum power, PF=1	5.000 cycles
Maximum switching current	100 A
Maximum overload current	120A 150A (30 min.)
Maximum switching voltage	277 VAC
Short circuit < 3mS	3.000 A
Maximum switching power	27kVA
Insulation strength	4 kV at 50Hz, 1 minute
contact to contact	2 kV
coil to contact	4 kV
Impulse voltage	1.2 / 50µS, IEC 62052-11
Contact to contact	> 4 kV
Coil to contact	> 12 kV

### 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 and per quadrant kvarh (optional).

### 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, 20, 30, 60 minutes, or 1 day.

### Optical Port

IEC 62056-21 [2002] (physical and electrical requirements); ANSI C12.18 [2006] (communications protocol).

### Verification Output

2 pulse-output LEDs representing kWh and kvarh; signaling at 1,000 impulses per kWh or kvarh.

### Control Relay (optional)

Single-pole voltage-free latching relay; maximum load rating is 250V, 5A; fully isolated.

### Pulse Output, SO (optional)

1 reference and 1 signal terminal per IEC 62053-31 / DIN 43864.

### Pulse Count and Tamper (optional)

2 pulse input channels. Counting and recording pulses from devices with voltage-free pulse transmitters; 25-millisecond minimum pulse width; pulse input circuits are not designed to power intelligent external devices; operates with most passive and optocoupler/transistor interfaces.

### M-Bus (optional)

Up to 4 devices; isolated; short-circuit protection; encryption supported; DIN EN 13757-2 and DIN EN 13757-3 compliant.

### Power Wiring Terminals

Line, load, 2 neutral; maximum wire size: 35mm sq. (used cables may not fit) terminal inside diameter: 9mm.

### Data Security

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

### Data Storage

Non-volatile memory.

### Enclosure

IP 54 insulating encased meter of protective class 2.

### Mounting

DIN 43857

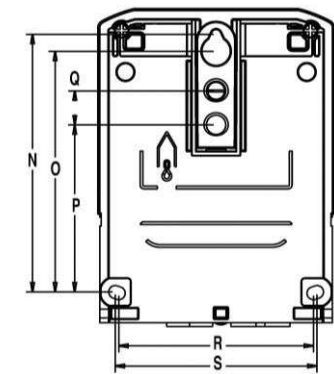
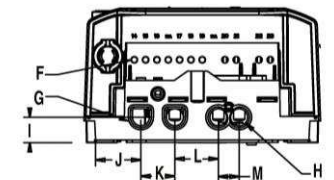
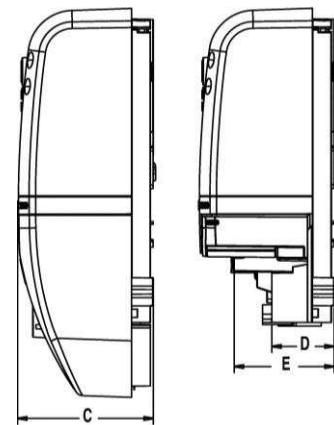
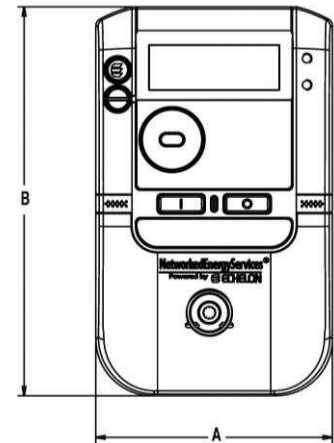
### Safety Ratings

Tested to IEC 61010-1; CE marked.

### Options

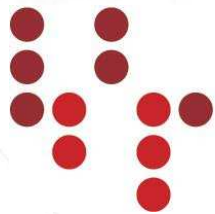
Control relay; magnetic tamper; pulse inputs; SO output; M-Bus; powered or un-powered MEP; demand metering. (Contact factory for valid option combinations.)

Dimensions IEC SP		
	mm	inches
A	125.30	4.93
B	206.30	8.12
C	71.82	2.38
D	33.00	1.30
E	52.90	2.08
F	3.00	0.12
G	9.00	0.35
H	9.00	0.35
I	13.50	0.53
J	24.00	0.94
K	18.00	0.71
L	23.00	0.91
M	11.00	0.43
N	136.68	5.38
O	127.68	5.03
P	88.68	3.49
Q	18.00	0.71
R	103.11	4.06
S	106.89	4.21



### Ordering Information

Product: IEC Single Phase Meter  
Model Number: 83332-1IXXX



**ubitronix**  
system solutions gmbh