

IEC CT Meter

A New Standard for
Transformer-Operated
Smart Energy Meters



Designed for the operation with a current/ voltage transformer, the IEC CT Meter sets a new standard for monitoring energy use at the distribution transformer level.



Together with a current/voltage transformer, the IEC CT Meter is ideal for monitoring energy use at the distribution transformer level. Safe, precise and reliable the meter performs a large number of operative tasks. Also included are a comprehensive information display and Echelon's robust, bidirectional power line signaling technology. Each meter, which is automatically managed by an NES¹ Data Concentrator, can act as a repeater to reach other meters.

Features

Field of application

- Measures on the basis of configurable CT and VT ratios the energy.
- Permits energy loss and theft detection.

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.

Tamper Detection

- Cover tamper is detected, logged, and communicated. Cover tamper operates even during a power failure.
- 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.

Demand Metering

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

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, single channel, for example, 15min data of 4 channels can be retained for 60 days.

Multipurpose Expansion Port (MEP)

- Optional isolated powered or unpowered serial port 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.

Power Line Communication

- Every NES¹ smart meter includes Echelon's proven, standards-based, power line communications technology – the world's most widely deployed signaling technology.
- Every meter includes an automatic repeating function.
- Communicates with an NES¹ Data Concentrator.

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 measurement up to 10th harmonic to reveal unusual conditions.

Prepay Metering

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

Micro-generation Support

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

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Other Standard Features

- Two accuracy classes:
Model 83521-XXXX: MID Class B active power, Class 2 reactive power.
Model 83531-XXXX: MID Class C active power, Class 2 reactive power.
- Nominal current 5A, maximum 20A.
- -40°C to +70°C operating temperature range.
- 1-, 2-, and 3-phase operation.
- Event log with circular buffer to store 100 events.
- Large-character, auto-scrolling, 8-digit LCD display.
- 2 pulse output LEDs to represent active and reactive energy.
- Optical port for use with NES Provisioning Tool.

Note: Accumulator registers use CT/VT ratios. Instantaneous measurements like voltage and current are pre-ratio. Active and reactive power values are available in both pre-ratio and post-ratio formats.

Specifications

Certifications

Certified to: IEC 62052-11 [2003]; IEC 62053-21 [2003]; IEC 62053-22 [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 S0 pulse output); IEC 62056-21 [2002] (physical and electrical requirements only); DIN EN 13757-2 [2002]; DIN EN 13757-3 [2002].

Accuracy

5A rated current, 20A maximum current
Model 83521-XXXX - Active: MID Class B (per EN 50470-3), Class 1 (per 62053-21); Reactive: Class 2 (per IEC 62053-23).
Model 83531-XXXX - Active: MID Class C (per EN 50470-3), Class 0.5 (per 62053-22); Reactive: Class 2 (per 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% RH, non-condensing.

Timing

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

Nominal Voltage

220V to 240V phase-to-neutral, 380V to 415V phase-to-phase, range is -20% to +15%.

Connection Type

Indirect.

Frequency

50Hz +/- 5%

Service Types

3-phase, 4-wire Wye/Star.

Current

Basic 5A; maximum 20A.

Power Consumption

Voltage circuit:
< 2W; apparent power < 5VA
Current circuit at I_{max}: < 1.0VA @20A.

Starting Current

Model 83521-XXXX: 10mA
Model 83531-XXXX: 5mA

Units Measured

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

Verification Output

2 pulse-output LEDs representing kWh and kvarh; signaling at 1,000 impulses per kWh or kvarh, independent of CT and VT ratios.

Control Relay (optional)

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

Pulse Output, S0 (optional)

1 reference and 1 signal terminal per IEC 62053-31. Independent of the CT or VT ratios in use.

Puls Count and Tamper (optional)

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

Multipurpose Expansion Port MEP (optional)

Isolated powered or unpowered serial port for adding secure hardware extensions to meter for communication with other devices like in-home displays or gas/water meters.

Control Wiring Terminals

Maximum wire size: 8mm sq.
Terminal inside diameter: 3mm.

Power Wiring Terminals

3 line, 3 load, 2 neutral; maximum wire size: 6mm sq. to 35mm sq.; used cables may not fit; terminal inside diameter: 9mm.

Data Communications

CENELEC A-Band Power line communication channel.

Data Security

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

Data Storage

Non-volatile memory.

Enclosure

Outdoor (IP54), insulating encased meter of protective class 2.

Mounting

DIN 43857

Safety Ratings

IEC 61010-1 [2001]; CE marked.

Options

Demand metering including per-quadrant reactive energy measurement; magnetic tamper; control relay; SO output; M-bus; powered or unpowered MEP; 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.

Specifications subject to change without notice.

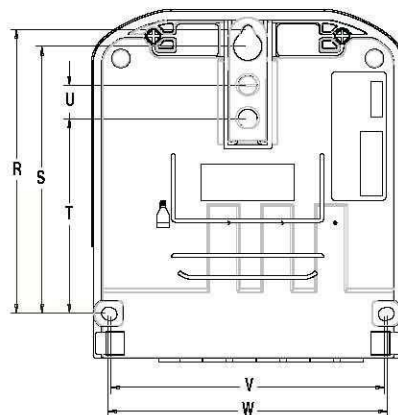
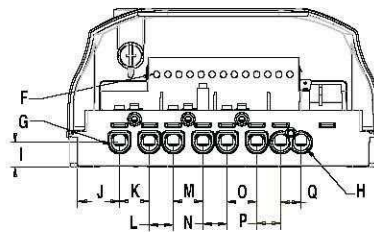
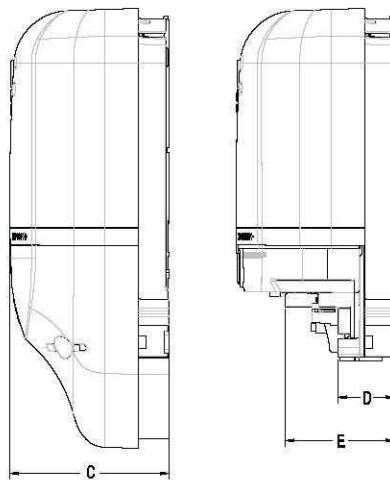
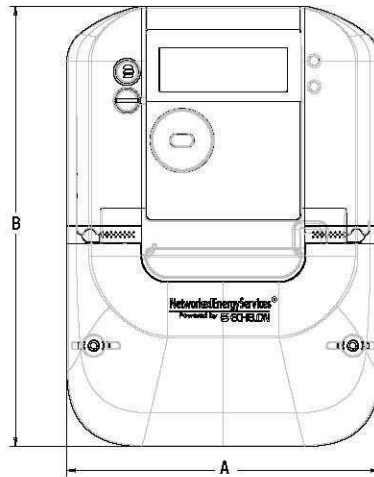
Ordering Information

Product: IEC CT Meter

Model Numbers:

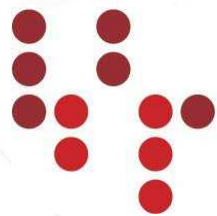
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0,5% 83531-XXXX



Dimensions IEC CT Meter

	mm	inches
A	168,95	6.65
B	237,95	9.37
C	85,87	3.38
D	31,00	1.22
E	59,25	2.33
F	3,00	0.12
G	9,00	0.35
H	9,00	0.35
I	13,50	0.53
J	22,73	0.89
K	16,00	0.63
L	13,00	0.51
M	16,00	0.63
N	13,00	0.51
O	16,00	0.63
P	13,00	0.51
Q	11,00	0.43
R	153,35	6.04
S	144,35	5.68
T	105,35	4.15
U	18,00	0.71
V	148,10	5.83
W	150,95	5.94



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