

MTR 3500 Series CT Poly Phase Smart Meters

Unmatched Visibility and Control at the Edge of the Low Voltage Grid for Commercial and Industrial Service



Networked Energy Services

MTR 3500 Key Features

- Energy measurement technology highly resistant to magnetic fields.
- Complex multi-tariff energy measurements configurable to time of day, weekends, holidays and seasonal changes
- Configure and store up to 4x16-channels of load profile data
- Power quality measurements include: voltage, current, active power, reactive power, power factor
- Secure firmware upgrades
- Integrated automatic topology management / Graphic Information System (GIS)
- Connect to auxiliary meters (gas, water, heat) and grid devices
- Enable smart home energy management services
- External CT (Current Transformer) support for large residential or light commercial installation.

A Smart Meter and Powerful Grid Sensor In One

Heightened demand for power availability, distributed generation, and greater efficiency are creating a need for more consumption and power quality measurements at the edge. Meeting this need, NES introduces the first smart meters to offer 4x16 channels of load profile data; each of which can be configured independently for interval, size and collection settings. Now you can have a dedicated data set for billing and up to three additional data sets for collecting power quality metrics like voltage, current, total harmonic distortion (THD), and net micro-generation output. You have the flexibility to store this data locally (in the meter) or pull measurements back whenever you need them — daily, weekly or even on a monthly basis.

Reduce Outages and Maximize the Life of Grid Assets

Load imbalances can damage transformers and grid assets resulting in costly replacement expenses and disruption of service. MTR 3500 offers protection from outages due to single phase overload situations by measuring peak power consumption per phase allowing you to respond proactively. Now you can identify load imbalances at the transformer and take action to optimize efficiency and maximize the life of your grid assets including your transformers.

Open Communications for Expandability and Interoperability

Invest in a meter that can grow with you as your requirements evolve. MTR 3500 smart meters provide options that allow you to accommodate auxiliary meters (gas, water, heat) through a



standards compliant interface, and is fully capable of securely connecting to ZigBee radio frequency (RF) or LonWorks® power line (PL), M-bus, Multipurpose Expansion Port (MEP) or Open Smart Grid Protocol (OSGP) devices for Home Area Network (HAN) integration, energy management or other expanded services.

The Proven, Safe Choice

Reliable, field-tested and accurate, MTR 3500 is based on NES's proven power line technology used in millions of smart meters, making it Europe's market leading solution. By creating a highly reliable power line based meshed network, you can have daily communication reads proven to deliver 99.7-100% reliability. As with the entire line of NES smart meters, the MTR 3500 is certified to withstand noise disturbances in the range of 2 kHz to 150 kHz harmonics.

Specifications

Voltage

Nominal Voltage:\Model 835X2-3XXXX

220V to 240V phase-to-neutral

380V to 415V phase-to-phase

Voltage Range: -20% to +15%

Model 83532-2IXXX

220V to 240V phase-to-phase for delta networks

Frequency

Nominal Frequency: 50 Hz

Tolerance: +/- 5%

Power Consumption

Voltage Circuit: < 2W

Apparent Power: <5VA

Current Circuit @ Imax: < 1.0 VA @20A

Temperature

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

Limited Operating Range: -40° to +70° C (3K7)

Storage and Transport: -40° to +70° C (3K7)

Humidity: <=95% RH, non-condensing.

Currents

Model 83522-3IXXX:

Starting Current: 10 mA

Base: 5A

Maximum: 10A/6A

Model 83522-3JXXX

Starting Current: 2 mA

Base Current: 1A

Maximum Current: 6A

Model 83532-3IXXX

Starting Current: 5 mA

Base: 5A

Maximum: 10A/6A

Model 83532-2IXXX

Starting Current: 5 mA

Base Current: 5A

Maximum Current: 10A/6A

Service and Connection Types

Model 835X2-3XXXX: Designed for indirect connection via CT transformer for 3-phase, 4-wire Wye/Star service. Model 83532-2IXXX: Designed for indirect connection via CT transformer for 3-phase delta service. Consult the User's Guide or the connection diagram attached to the meter terminal cover for more information on the connection type.

Installation

Mounting: DIN 43857

Control Wiring Terminals: Maximum wire size: 8mm sq.

Terminal inside diameter: 3mm

Power Wiring Terminals : 2 line, 2 load

Minimum/maximum wire size: 6-mm sq-35mm sq. (used cables may not fit)

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

Communications

Optical Port: Certified to IEC 62056-21 [2002] (physical and electrical requirements); ANSI C12.18 [2006] (communications protocol); ANSI C12.19 [1997] (data structure)

Channel Type: 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 Logging: Up to 4x16 channels available for load profiling. Logging intervals user-selected at 5, 10, 12, 15, 20, 30, 60 minutes, 2, 3, 4, 6, 12 hours, or 1 day.

Data Storage: Non-volatile memory.

Certifications

Measurement Accuracy (for 5A basic current and 20A maximum current).

Active Energy:

Model 83522-3XXXX

Class 1 certified to IEC 62053-21 [2003]

MID Class B certified to EN 50470-3 [2006]

Model 83532-XXXX

Class 0.5 certified to IEC-62053-22 [2003]

MID Class C certified to EN 50470-3 [2006]

Reactive Energy: Class 2 certified to IEC 62053-23 [2003] (all models)

Other specifications

Timing/Real Time Clock: Accurate per IEC 62052-21 [2004] and IEC 62054-21 [2004] to +/-0.5 seconds per day.

Safety Ratings: Certified to IEC 61010-1 [2001], CE marked.

S0 Pulse Output: IEC 62053-31, Class A

Physical and Electrical Requirements:

IEC 62056-21 [2002]

PLC Compliance: EN 50065-1 [2001]

M-Bus Compliance: DIN EN 13757-2 [2002]

DIN EN 13757-3 [2002]

Pulse Output/S0: DIN 43864

Mounting: DIN 43857 (All models except 83532-2IXXX)

Energy Measurements and Data Collection

Units Measured: kW 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 10,000 impulses per kWh or kvarh, independent of CT or VT ratios in use.

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: Meters running firmware version 3.5x support 4 tariffs with 10 possible tier switches per day; 12 seasons per perpetual calendar (set by day/month); perpetual holiday calendar for up to 23 holidays per year and 25 non-recurring special days; perpetual daylight savings changeover; 2 separate holiday day schedules per season; 1 weekday, 1 Saturday, and 1 Sunday day schedule per season. Meters running firmware version 3.7x and higher optionally support up to 8 tariffs.

Data Storage: Non-volatile memory.

Optional Features. 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 designed for indirect connection via CT/VT transformer available.

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

Pulse Output, SO: 1 reference and 1 signal terminal per IEC 62053-31 / DIN 43864, independent of the CT/VT ratios in use.

Pulse Count and Tamper: 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 opto-coupler/transistor interfaces.

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

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

CNX 2000: Provides means of communicating with ZigBee Smart Energy Profile 1.0 compliant devices.

CNX 3000: Provides means of communicating with in-home Smart Energy devices based on ISO/IEC 14908-3 C-Band power line communication.

Ordering Information

Product

MTR 3500 Series

CT Poly Phase Meter

Model Number

83522-31XXX

83522-3JXXX

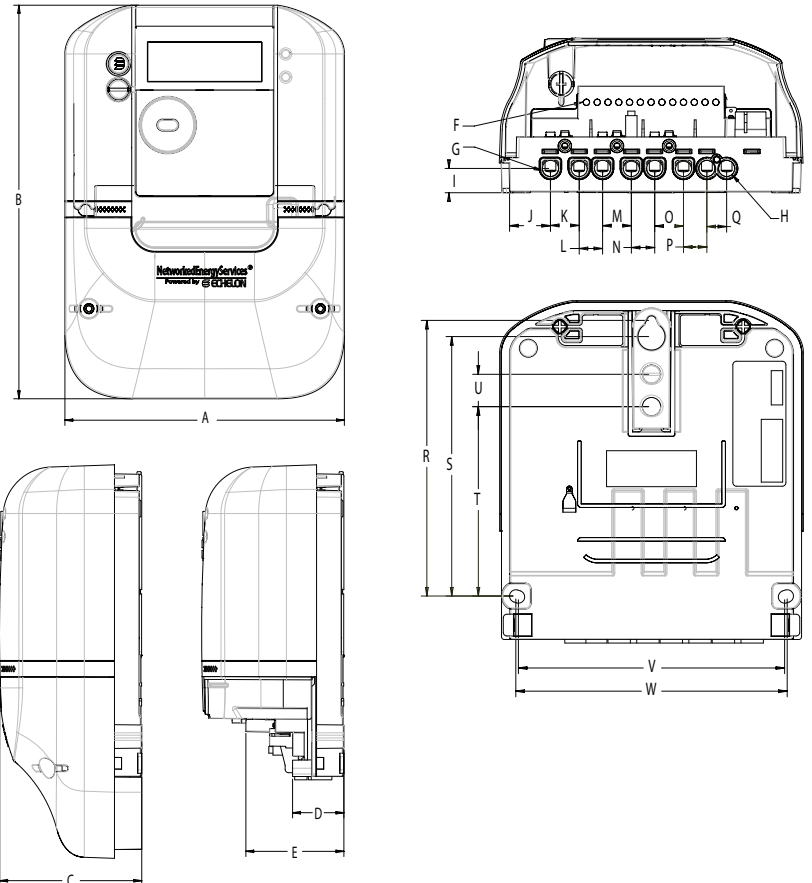
83532-31XXX

83532-21XXX (Delta)

All specifications subject to change without notice.

MTR 3500 Meter Dimensions

MTR 3500		
	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



*Model 83532-21XXX has no neutral terminals and no power terminals for phase 2.