ECHELON®

EM-1023 POLY-PHASE IEC RESIDENTIAL ELECTRICITY METER

MODEL 83320-33

ECHELON®

The IEC Poly-Phase Electric Meters, an integral part of the Networked Energy Services (NES) system, are designed to meet the needs of residential and small commercial energy consumers. They set a new standard for revenue-grade energy meters by integrating a full suite of operating features with a software-controlled disconnect switch, a comprehensive information display, and Echelon's robust, bi-directional power line communications system. NES meters are more than just meters, however: Each meter, automatically managed by NES data concentrators, can also act as a repeater to reach other meters, making it a fundamental component of the underlying mesh communications infrastructure.

F E A T U R E S

- Intelligent, fully featured IEC-style communicating electronic meter with integrated disconnect and information display
- Accurate to Class 1 active power, Class 2 reactive power
- 1, 2, and 3 phase operation
- Maximum current up to 100A, with integrated disconnect switch that's controlled manually (via an external lever) or via software
- Measures active power, active energy, reactive power, reactive energy, RMS voltage, RMS current, and power factor
- Time-of-use metering with up to four tariffs and custom billing cycles
- Power quality measurements, including outage detection and duration
- Load profiling capability captures up to eight values at adjustable intervals
- Automatic, periodic configurable billing self-reads, and stores up to 12 sets of readings
- Event log with circular memory buffer to store up to 100 events
- Maximum power limiting to disconnect load when configurable power threshold is exceeded
- Extensive tamper detection features
- Operates autonomously and communicates with Echelon NES DC-1000 Data Concentrators via Echelon A-band power line communications channel with automatic repeating function
- Optical port to be used with Echelon NES Provisioning Tool, Model 13101
- Large-character LCD information auto-scrolling display with manual push-button advance and energy-indicating LEDs
- Optional S0 pulse output and configurable control relay
- Two optional pulse input channels capture data from external devices such as gas or water meters
- -40°C to +70°C operating temperature range
- Certified to IEC 62052-11, 62053-21, 62053-23, 62052-21, 62054-21, 61010-1, and EN 50065-1

Part Number: 003-0395-01A

PRODUCT	ECHELON MODEL NUMBER
NES EM-1023 Poly-Phase IEC Residential Meter	83320-33XXX

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]; IEC 50065-1 [2001] Complies with: DIN 43857; DIN 43864; ANSI C12.18 [1996] (communications protocol); ANSI C12.19 [1997] (data structure); IEC 62053-31 (class A); IEC 61107[1996] (physical and electrical requirements only)
Accuracy	For 5A basic current and 100A maximum current. Active: Class 1 certified to IEC 62053-21. 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%
Timing	Real-time clock accurate per IEC 62052-21 / 62054-21 to +/- .5 seconds per day;
Nominal Voltage	220V to 240V phase-to-neutral, 380V to 415V phase-to-phase, range is -20% to +15%
Frequency	50 Hz +/- 5%
Service types	3-phase 4-wire Wye/Star; 2-phases of a 3-phase 4-wire (of Wye/Star service); 1-phase 2-wire
Connection type	Direct connection of line and load conductors
Current	Basic 5A; maximum 100A (amperage depends on local regulatory requirements)
Load switch disconnect	100A maximum (amperage depends on local regulatory requirements); remote disconnect and enable
Power consumption	Voltage circuit: < 2W; Apparent Power < 5VA; Current circuit at Imax: < 6.0VA @100A, < 5.0VA @ 80A
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
Power quality analysis	Sag; swell; number of over-current occurrences; number of power outages; duration and time of the last 8 power outages; maximum and minimum frequency; phase loss
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, 15, 30, 60 minutes, or 1 day
Verification output	2 pulse-output LEDs representing kWh and kvarh; signaling at 1,000 impulses per kWh or kvarh
Optical port	IEC 61107 [1996] (physical and electrical requirements); ANSI C12.18 [1996] (communications protocol)
Control relay (optional)	Single-pole single-throw (1P1T) latching relay: supplies line voltage from terminal 1 (L1) to a control terminal; maximum load rating 5A
Pulse count and tamper (optional)	2 channels. Counting and recording pulse output from devices with voltage-free pulse transmitters; 25 millisecond minimum pulse width
Power wiring terminals	3 line, 3 load, 2 neutral; wire size: 25mm sq. (3 AWG); terminal inside diameter: 9mm
Control wiring terminals (optional)	Maximum wire size 8mm sq. (8 AWG); terminal inside diameter: 3mm
Data communications	A-band power line communication channel
Data security	Password protection for optical communication; authenticated, password-protected transactions for power line communication
Data storage	Non-volatile memory
Dimensions	See diagram at right
Enclosure	Outdoor (IP54), insulating encased meter of protective class 2
Mounting	DIN 43857
Safety ratings	IEC 61010-1 [2001]; CE marked

Dimensions in Millimeters

Adjustable Mounting Brackets