

Mi.Node – Electric

TWO WAY COMMUNICATIONS: The Mueller Systems Mi.Node E meter interface unit provides a direct connection to all Landis+Gyr electric meters. The primary function of the Mi.Node E is to provide full, two way communications between the Mi.Net Mesh/Fixed AMI system and the smart meter.

SYSTEM COMPONENTS: Information retrieved from a electric meter is stored temporarily within the Mi.Node E unit's internal memory. At a time specified by the system or controlled by the user for an "On Demand" read, the Mi.Node E interface unit will transmit all meter data. This data is sent to a Mi.Gate collector via an unlicensed radio frequency and then relayed to the Mi.Net host server for analysis and storage. All Mi.Node units support the relay of data (Data Hopping) to other Mi.Node units. This allows the Mi.Net system to successfully overcome obstacles encountered in varied and difficult network topographies. Up to four routing options for each Mi.Node unit ensure that the data will be retrieved by the server.

CONSTRUCTION: The Mueller Systems Smart Meter or Mi.Node E component of the Mi.Net system is an under the glass Mi.Node module set into a solid-state electric meter from Landis + Gyr. The main function of this component is to obtain energy consumption, negative consumption, and voltage readings for billing, distribution monitoring, fraud detection, and conservation purposes.

All interval and alert data is stored temporarily within the smart meter's solid-state memory. At a specified interval, the Smart Meter will automatically transmit this information to the Mi.Host AMI server via other Smart Meters, Water and Gas Mi.Nodes or directly to a Mi.Gate using the 900MHz Radio Frequency (RF) network. The meter is programmed to report at a pre-set interval, but this duration between intervals is remotely programmable via the User Interface. Additionally, "On-Demand" reads can be captured. When data is collected, the Mi.Host server analyzes all data received for subsequent viewing by the utility.

Designed to be a simpler solution, the Smart Meter's functionality can be upgraded without visiting the actual installation location. When a firmware upgrade is needed, it can be made over the Mi.Net network, allowing each Smart Meter to be upgraded in an autonomous fashion. All Smart Meters within a system are scheduled for each upgrade and a notification is received once the process is complete.

SCALABLE AND UPGRADABLE: All Smart Meters are capable of backhauling data via the network in a star or mesh configuration, allowing the greatest flexibility in real world conditions. In a mesh configuration, data can be relayed utilizing other Smart Meters, Water and Gas Mi.Nodes. In a star configuration, data is sent directly to a Mi.Gate collector. By providing predefined data paths, the Mi.Net system is self-managing, while also providing reliable data transmission paths. To ensure reliability, the Smart Meter uses Super-Capacitors to support transmission of power failure messages and to maintain the time-of-day clock. The Smart Meter does not use any internal batteries therefore eliminating the need for field service.

When ordering, there are multiple Smart Meter models available to support various needs. Types available include: Smart Meter-H, and Smart Meter-L. The Smart Meter-H is the "High Power" RF enabled device. The Smart Meter-L is the "Low Power" RF enabled device. The various models of Smart Meters allow the Mi.Net system to provide robust and efficient AMI and energy conservation solutions for residential applications.

Other Mi.Node modules provide connectivity to gas meters; Mi.Node G, electric meters; Mi.Node E and thermostats; Mi.NodeT, making the Mi.Net AMI system the most flexible and scalable system available. Obtain readings from water, gas and electric meters and transmit the data to a central location for billing and resource management purposes. The Mi.Node will be able to communicate with a thermostat via a wireless connection to control and monitor the thermostat's operation and provide digital information relative to the account's water and energy consumption. Mi.Node W meter interface units are also capable of relaying one way, hourly data received from Mi.Hot Rod meter interface units back to the central Mi.Net system server thereby providing a cost effective migration path for mobile Hot Rod AMR customers who wish to upgrade to AMI. The various models of Mi.Node meter interface units allow the Mi.Net system to provide robust and efficient AMI, water and energy conservation solutions for all types of residential and commercial applications.

The Mi.Node's functionality can be upgraded remotely. A firmware upgrade made over the Mi.Net network allows the Mi.Node to be upgraded autonomously. All system Mi.Node units can be scheduled for an upgrade at one time and the system will notify the user when the process is complete.



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Specifications & Solution Highlights

OPERATING TEMPERATURE	-40°C to +85°C under cover
NOMINAL VOLTAGE	120V & 240V
OPERATING VOLTAGE	80% to 115% of Vn
FREQUENCY	60Hz +/- 5%
HUMIDITY	5% to 95% relative humidity (non condensing)
STARTING LOAD	Class 200 0.050 Amp Class 100 0.025 Amp Class 20 0.004 Amp Class 320 0.050 Amp Class 480 0.120 Amp
STARTING WATTS (Form 2S)	12W
BURDEN	1.8W Max
LOAD PERFORMANCE ACCURACY	0.2
AVAILABLE FORMS	Self-Contained 2S, 2SE, 12S, 25S
TRANSFORMER RATED	3S, 4S K-Base 2K

SOLUTION HIGHLIGHTS

- Digital Multiplication Measurement Technique
- Non-volatile memory
- Designed for a 15+ year life
- Meets or exceeds ANSI standards
- Uses ANSI protocol (between meter and AMR device)
- 6-digit LCD and 2 Alpha ID
- Logs time-stamped meter readings in internal flash memory
- RF enabled, communicates in unlicensed 900MHz band