

## MI.NET<sup>®</sup> MUELLER INFRASTRUCTURE NETWORK Mi.Net Repeaters

### FEATURES

**Overview:** Repeater components of the Mi.Net<sup>®</sup> Mueller Infrastructure Network for Utilities provide a bridge between Mi.Node devices and the Mi.Hub collector, increasing the maximum distance between the meter and the collector. Multiple repeaters can be installed to further extend the range. Implementing these repeaters reduces the network cost and complexity.

**Real Time Data:** The repeaters periodically collect data retrieved from each Mi.Node within its range before forwarding the data to an upstream Mi.Hub data collector or to other repeaters. The repeaters can also be instructed to retrieve “On Demand” meter readings in real-time from one or all meters in their range when a user requests them, offering true two-way communication between the user and all meters in the network.

**Secure and Robust:** The innovative repeater design provides robust multi-path RF coverage and is capable of storing Mi.Node data for surrounding meters in internal memory and transmitting it to other devices within the Mi.Net System, such as the Mi.Hub and other nearby repeaters or nodes. All communications are protected with advanced encryption algorithms to ensure data privacy and prevent intrusion.

### BENEFITS

- Enhances access to information about water and electric utilization and increases operational efficiency
- Reduces operating cost and dramatically decreases installation and maintenance expense by reducing backhaul requirements
- Facilitates instant remote access to usage and demand data
- Large data capacity provides weeks of data storage across thousands of meters
- Seamless interoperability with all existing Mi.Net devices

- Backup battery keeps system fully operational even during power outages
- Optional solar photovoltaic module eliminates need for external power

### REPEATER PRODUCTS PROVIDE A VERSATILE AND ROBUST NETWORK ACROSS ALL AREAS OF THE COMMUNITY.



**MI.NODE OWL:** The Owl infrastructure repeater conveniently installs in existing street lights, minimizing installation complexity and cost. The Owl repeater takes advantage of the daylight sensor’s available power source and utilizes this existing socket without hindering the sensor’s operation. The Owl requires no dedicated wiring for installation and is unobtrusive in appearance, completely blending into the existing neighborhood landscape. The Owl repeater is built in a weatherproof enclosure for robust, all-season operation.



**MI.NODE AC REPEATER:** This AC-powered repeater installs onto virtually any solid surface, such as a pole, wall or tower. It is powered by an external AC power source. It also contains an internal backup battery pack for operation during short power outages. The repeaters are housed in weather proof enclosures for robust, all-season operation.



**MI.NODE DC REPEATER:** This DC-powered repeater installs onto virtually any solid surface, such as a pole, wall or tower. It is equipped with a high-capacity battery pack, providing an exceptionally long lifetime between battery replacements. It incorporates multiple vapor barriers such as a weather proof enclosure, coated electronic board and potting compound, all of which eliminate moisture intrusion in even the harshest environments.



**MI.HYDRANT XR:** The Mi.Hydrant XR consists of an enclosed, weatherproof transceiver that is unobtrusively fixed under the rim of the most common fire hydrants. The repeater does not hinder the hydrant's operation and comes equipped with an extended range high-gain antenna, which provides a dual function as a hydrant marker during extreme snow and weather related events. Mi.Hydrant XR is equipped with a high-capacity battery pack providing an exceptionally long lifetime. The Mi.Hydrant XR unit incorporates multiple vapor barriers such as a weather proof enclosure, coated electronic board and potting compound, all of which eliminate moisture intrusion in even the harshest environments.

## SPECIFICATIONS (SUBJECT TO CHANGE)

	MI.NODE OWL	MI.NODE AC POLE MOUNT	MI.NODE DC POLE MOUNT	MI.HYDRANT XR
<b>POWER</b>				
<b>Power Dissipation</b>	>1 W typical, 5 W max	>1 W typical, 5 W max	<0.01 W typical when idle; <3 W typical when transmitting	<0.01 W typical when idle; <3 W typical when transmitting
<b>Power Source</b>	AC Line Voltage; 110-277 VAC; 60 / 50 Hz	AC Line Voltage; 110-277 VAC; 60 / 50 Hz; Internal battery backup for up to 8 hours operation during outage	Sealed Lithium battery pack.	Sealed Lithium battery pack.
<b>PHYSICAL</b>				
<b>Dimensions</b>	6" x 5.5" x 4.5" (15.2 cm x 14.0 cm x 11.4 cm) Light Sensor: 2" x 5.5" x 4.5" (6.8 cm x 14.0 cm x 11.4 cm)	5.0" x 5.0" (12.7 cm x 12.7 cm) x 3.0" (7.6 cm) Power cable : 3 conductor 16 AWG RF cable: LMR240 with type N male connectors	10.5" x 5.0" x 3.5" (26.7 cm x 12.7 cm x 8.9 cm) Antenna : 54.0" tall (137.2 cm) x 0.75" diameter (1.9 cm)	10.5" x 5.0" x 3.5" (26.7 cm x 12.7 cm x 8.9 cm) Antenna : 54.0" tall (137.2 cm) x 0.75" diameter (1.9 cm) with a 4.0" diameter spring base (10.2 cm)
<b>Color</b>	Grey polymer	White polymer	Grey powder coating	Grey powder coating
<b>Weight</b>	1.2 lbs (0.5 kg) Light sensor: 0.2 lbs (0.1 kg)	1.0 lb (0.5 kg) (without antenna & bracket) 5.5 lbs (2.5 kg) (with antenna & bracket)	5.0 lbs (2.3 kg) (without antenna & bracket) 9.5 lbs (4.3 kg) (with antenna & bracket)	5.0 lbs (2.3 kg) (without antenna & bracket) 9.5 lbs (4.3 kg) (with antenna & bracket)
<b>I/O</b>	None	Green AC; Power Led	None	None
<b>RF RADIO</b>				
<b>Frequency</b>	915 MHz ISM Band Operation Frequency Hopping / Spread Spectrum Operation			
<b>Output Power</b>	1W Transmit			
<b>Antenna</b>	External 2.5 dBi Antenna, included	External 3.0 dBi Antenna, included	External 2.5 dBi Antenna, included	External 4.0 dBi Antenna, included
<b>ENVIRONMENTAL</b>	-30 to +70°C Operating; -40 to +85°C Storage; 5 to 95% Relative Humidity NEMA-4 Weather Proof Enclosure			
<b>DATA</b>	<ul style="list-style-type: none"> <li>Collect and store data from up to 2000 meters, 2MB Solid-state Flash Memory for dedicated storage of readings</li> <li>Mueller protocol with up to 5 Redundant Links</li> <li>Infrastructure or ad hoc networking</li> <li>Remote configuration capability</li> <li>Packet data up to 28.8 kbps , End-to-end 128bit RC4 encryption</li> <li>ICMP and SNMP for remote diagnostics and monitoring</li> </ul>			
<b>CERTIFICATIONS</b>	<ul style="list-style-type: none"> <li>CC 47 Part 15, Unintentional Radiators</li> <li>ANSCI C136.10-2010</li> <li>FCC 47 CFR Part 15.247</li> <li>UL/TUV 61010, CSA-C22.2 Compliant</li> <li>IC RSS-210</li> </ul>			

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