Mi.Net® Mueller Infrastructure Network

Mi.Hub and Mi.Hub XR-R Data Collectors

Mueller SYSTEMS®

Features

OVERVIEW: The Mueller Systems **Mi.Hub** and **Mi.Hub** XR-R data collectors enable efficient, robust data acquisition across the **Mi.Net®** Mueller Infrastructure Network for Utilities by providing for long range wireless communications from originating **Mi.Nodes** to the user's **Mi.Net** Software Platform. The wide range provides an extended coverage area and dramatically reduces system cost and maintenance.

The **Mi.Hub** product family enables full two-way radio frequency (RF) communication between water meters equipped with Translator encoder registers, **Mi.Node** W meter interface modules, **Mi.Node** E electric modules and the **Mi.Host** server. Collectors are equipped with a large array of non-volatile memory and are able to take advantage of unique multi-path routing innovation that provides redundant paths to transfer information across the network. This results in resilient communications, a robust network and ultimately peace of mind for the user.

REAL TIME DATA: The **Mi.Hub** collector automatically receives data from Mi.Node modules at prescheduled intervals or "on demand" providing real-time updates from all or selected nodes. The stored data is then transferred to the **Mi.Host** server, where it immediately provides utility personnel with node status, system reports and usage analytics. Collection intervals can be adjusted in order to pinpoint usage issues.

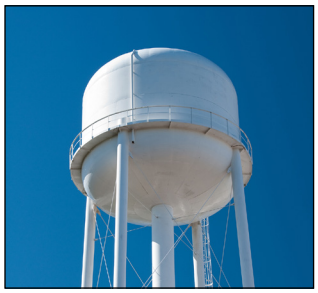
SECURE COMMUNICATION: A variety of options for **Mi.Hub** collector communication are available. Wired network connections (Ethernet, fiber, DSL), wireless cellular or any existing network infrastructure are all supported to fully utilize available utility assets to communicate to users. One **Mi.Hub** collector can support up to 10,000 individual water or electric meters. **Mi.Hub** communications are heavily encrypted to ensure security and guard against theft or corruption of data.

AC powered **Mi.Hub** collectors are directly powered from a 120-240VAC source and contain a rechargeable backup battery capable of powering them for up to eight hours during a power outage. DC powered **Mi.Hub** collectors are powered from any 12V DC source or from an attached solar panel and battery.

MI.HUB XR-R OPTION: The Mueller Systems **Mi.Hub** XR-R extended range data collector system presents all of the features of the **Mi.Hub** radio combined with the addition of an external long range amplifier module for extending the wireless radius of the collector. This simplifies system layout and dramatically reduces system cost and installation time because fewer collectors are required to cover a given geography. The remotely installed power amplifier unit is powered off of the **Mi.Hub** base unit, through the RF cable, which reduces the wiring cost and installation overhead.

All **MiHub** and **Mi.Hub** XR-R collectors are enclosed in rugged, weather proof enclosures that can be mounted in virtually any location.

Mi.Hub Data Collector



Mi.Hub XR-R remote amplifier box installed on top of tower locations

Benefits

- AC 120v or 12vDC solar
- Increases operational efficiency
- Accounts for non-revenue water and electricity consumption
- Reduces utility system operating cost and dramatically decreases installation and maintenance expense
- Easy mounting options for pole, tower or building mounting
- Enables robust and resilient network communications
- Enables instant remote access to usage and demand data
- Large data capacity for storing weeks of data across thousands of meters
- Seamless interoperability with all existing **Mi.Net** devices
- Backup battery keeps system fully operational even during power outages
- Optionalsolar photovoltaic module eliminates need for external power
- Reduces carbon footprint

See Specifications on next page

Specifications:

(Specifications subject to change)

	Mi.Hub	Mi.Hub XR-R
POWER CONSUMPTION	AC Line Voltage; 110-240 VAC, 60 Hz	
PHYSICAL / DIMENSIONS	12.5"x10.5"x5.25" (31.8 cm x 26.7 cm x 13.3 cm)	Both Main Enclosure and Remote Power Amplifier Enclosure Measure 12.5"x10.5"x5.25" (31.8 cm x 26.7 cm x 13.3 cm)
	Grey durable polycarbonate enclosure	Grey durable polycarbonate enclosure
WEIGHT	17 lbs (7.7 kg)	Base Unit 17 lbs (7.7 kg) Power Amplifier Unit 15 lbs (6.8 kg)
RF POWER	1W Transmit Power	1W Transmit Power
	External 2.5dBi Antenna, included and attached to housing	External 6 dBi Antenna, included, attaches to Power Amplifier housing
	FCC Approved; 915MHz ISM Band Operation Frequency Hopping/Spread Spectrum Operation	FCC Approved; 915MHz ISM Band Operation Frequency Hopping/Spread Spectrum Operation
ENVIRONMENTAL	-30 to +60°C Operating; -40 to +85°C Storage; 5 to 95% Relative Humidity NEMA-4 Weather Proof Enclosure	
SOLAR POWER (Optional Accessory)	Sealed Lead-Acid Battery; Solar Panel optimized for Region 5 Day Continuous Operation With-out Sunlight 10.6—>30 VDC power input	
BATTERY BACK-UP	Up to 8 Hours Continuous Operation Without AC Power Battery is recharged when AC power is restored	
MI.HOST CONNECTION	GSM/GPRS or Ethernet connectivity to Mi.Host server GPRS Class 10 operation; Transmit power of 1.6W; Dual-band 850/1900 MHz GSM/GPRS operation; Coding Schemes: CS1 to CS4; Embedded TCP/IP stack Packet data up to 85.6k bps; WEP 64/128, WPA – PSk, TkIP, AES Infrastructure or ad hoc networking; DHCP to ease installation; ICMP and SNMP for remote diagnostics and monitoring; Remote configuration capability	
DATA	Collect and store data from up to 10000 meters 10MB Solid-state Flash Memory for dedicated storage of readings Mesh protocol Up to 5 Redundant Links Packet data up to 28.8 kbps End-to-end 128bit RC4 encryption Infrastructure or ad hoc networking ICMP and SNMP for remote diagnostics and monitoring Remote configuration capability	
CERTIFICATIONS	FCC 47 Part 15, Unintentional Radiators UL/TUV 61010, CSA-C22.2 Compliant ANSCI C136.10-2010 IC RSS-210	
INDICATORS	Externally visible Green AC Power LED	