

# MDS™ Orbit MCR-4G

## Managed Connected Router 4G and WiFi



Public cellular infrastructure has many benefits that make it a great complement to private infrastructure. Due to its simple deployment, ubiquitous coverage, and reduced operating costs, public network utilization is on the rise. GE has developed an integrated networking device to utilize public infrastructure and extend industrial communications networks. In addition to serial and Ethernet interfaces, MDS Orbit MCR-4G supports both cellular and WiFi communications in a single, integrated package, without the need for additional modules or add-ons, thus reducing costs and network complexity. MDS Orbit MCR-4G is a highly secure, industrial hardened, wireless communications product for broad based applications, such as control center monitoring, well site pad operations, and video surveillance.

### Key Benefits

- Built for harsh environments with an industrially hardened compact enclosure to ensure reliable operation.
- Integrates cellular and WiFi technologies without the need for expansion cards or external modems, resulting in less equipment and less cost to extend networks and coverage.
- Offers cellular-only, WiFi-only, and cellular/WiFi models, all including, serial and Ethernet interfaces, to match terminal server and other application needs.
- Developed with best-in-class security software, providing confidence that systems comply with NERC CIP and FIPS 140-2 requirements.
- Provides a consistent user interface for configuration and maintenance, reducing training costs and time. Easy to set up, learn, and maintain the network, and transfer knowledge across multiple technicians.

### Application Specific Wireless Solution



#### Oil & Gas

- Well Site Monitoring and Control
- WiFi Connectivity for Field Technicians



#### Power Utility

- Distribution Automation for Legacy Line Devices
- Substation Device Monitoring and Video Surveillance
- Communications for Meters Outside of Mesh



#### Water & Wastewater

- Holding Tank and Flow Measurement Monitoring
- Leak Detection Communications



#### Transport

- Train Control, Passenger WiFi Services



#### Mining

- Excavation Machine Control
- WiFi Services Across Excavation and Employee Dwelling Sites

### Flexible Communications

- Integrated cellular/WiFi eliminates the cost of purchasing additional modules or add-ons
- Standalone cellular and WiFi options support any communication configuration
- Serial, Ethernet, USB ports easily connect into existing systems

### Enhanced Security

- Advanced security to facilitate NERC® CIP compliance
- WPA/WPA2 WiFi security with PSK and certificate-based enterprise modes
- IPsec VPN with NAT and firewall for secure cellular communications
- Secure device management with NETCONF, HTTPS, SNMPv3, and SSH

### Durable Construction

- Industrial hardened enclosure for harsh environments
- Extended temperature range -40°C to 65°C (-40°F to 149°F) for wide environmental variations

### Transferable Training and Maintenance

- Consistent user interface across the MDS Orbit platform of products simplifies configuration and maintenance, resulting in reduced training costs and time
- Uniform hardware sizing and integrated DIN rail mount reduce design time of cabinets and wiring diagrams across regions and applications



## MDS Orbit Series

GE MDS has been providing products to meet the specific and unique requirements for a broad range of industrial applications for over twenty-five years. The MDS Orbit Series extends the portfolio to support public infrastructure requirements. Built on a common platform, GE's MDS Orbit Series provides integrated communications, enhanced security, consistent user interface configuration, common packaging, and the rugged construction inherent in all MDS products.

## Flexible Communications

The MDS Orbit Series was designed to support Ethernet and legacy serial applications. Serial protocol support, both active and transparent, provides easy connectivity to common control and data acquisition equipment and protocols, such as Modbus and DNP3. The MDS Orbit MCR-4G devices are equipped with two Ethernet ports, reducing the need for cabling when used in multiple Ethernet applications. Serial needs are covered by an RS232/RS485 port. A USB port provides access for a PC or laptop to connect and configure, troubleshoot, or maintain the device.

## Provides a Secure Environment

Critical infrastructure communication must ensure availability, integrity, and confidentiality for data flows. The MDS Orbit platform provides a wealth of best-in-class cyber security capabilities. Cellular communication is protected with IPsec VPN, network address translation, and a stateful firewall. WiFi communication is protected with WPA/WPA2 security. Access to device management is protected through role-based access control with RADIUS integration and secure protocols including NETCONF, HTTPS, SNMPv3, and SSH. The MDS Orbit MCR-4G is protected with boot security and digitally signed firmware.

## Ease of Use

The combination of cellular and WiFi provides a method for extending communications across a well pad or substation. The MDS Orbit MCR-4G delivers 54 Mbps throughput making it ideal for video monitoring of remote sites with public access for backhaul. The compact enclosure easily fits into existing cabinets and its integrated DIN rail mount makes it a quick and easy product for deployment in all applications.

## Network Management Ready

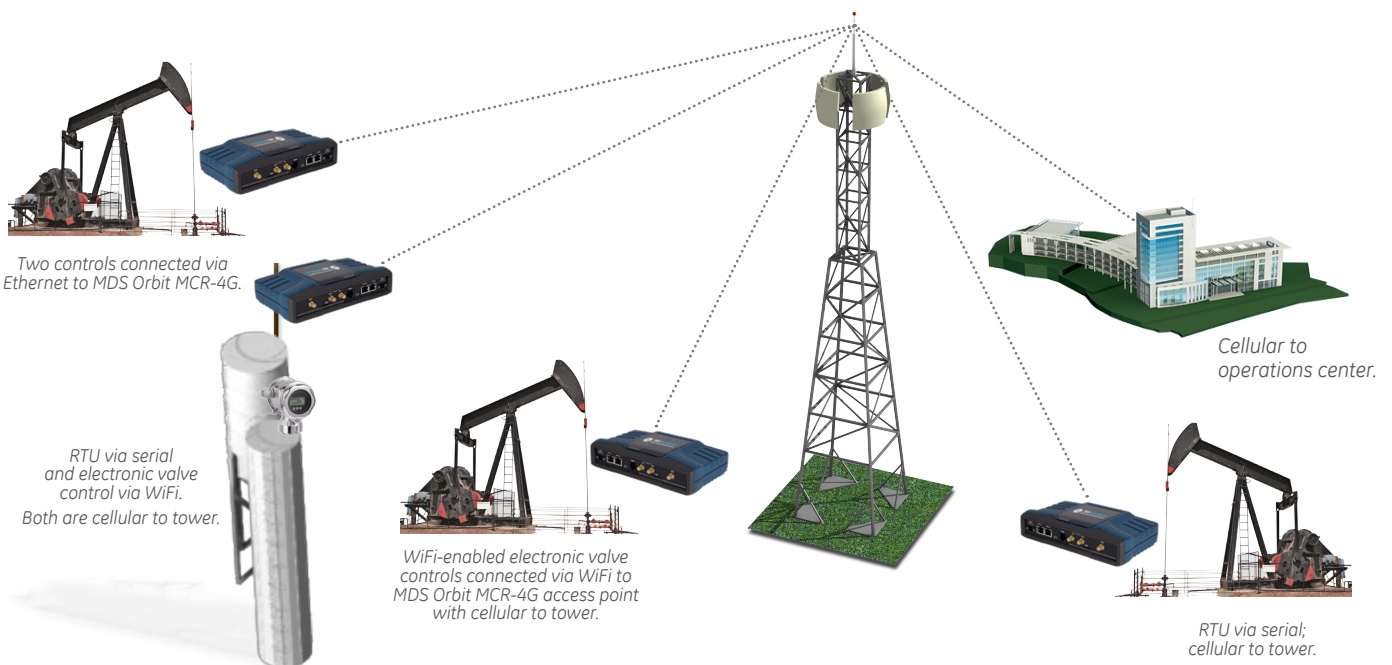
Once a network is operational, users are able to utilize the MDS PulseNET™ comprehensive network management system for end-to-end management. MDS PulseNET provides pre-built workflows, along with intuitive graphical representations of the communications network. It provides real-time availability, performance, and configuration management of all MDS radio products and select third party devices, allowing operations personnel to create customizable, pro-active support processes.



## Application Example:

### Device Monitoring

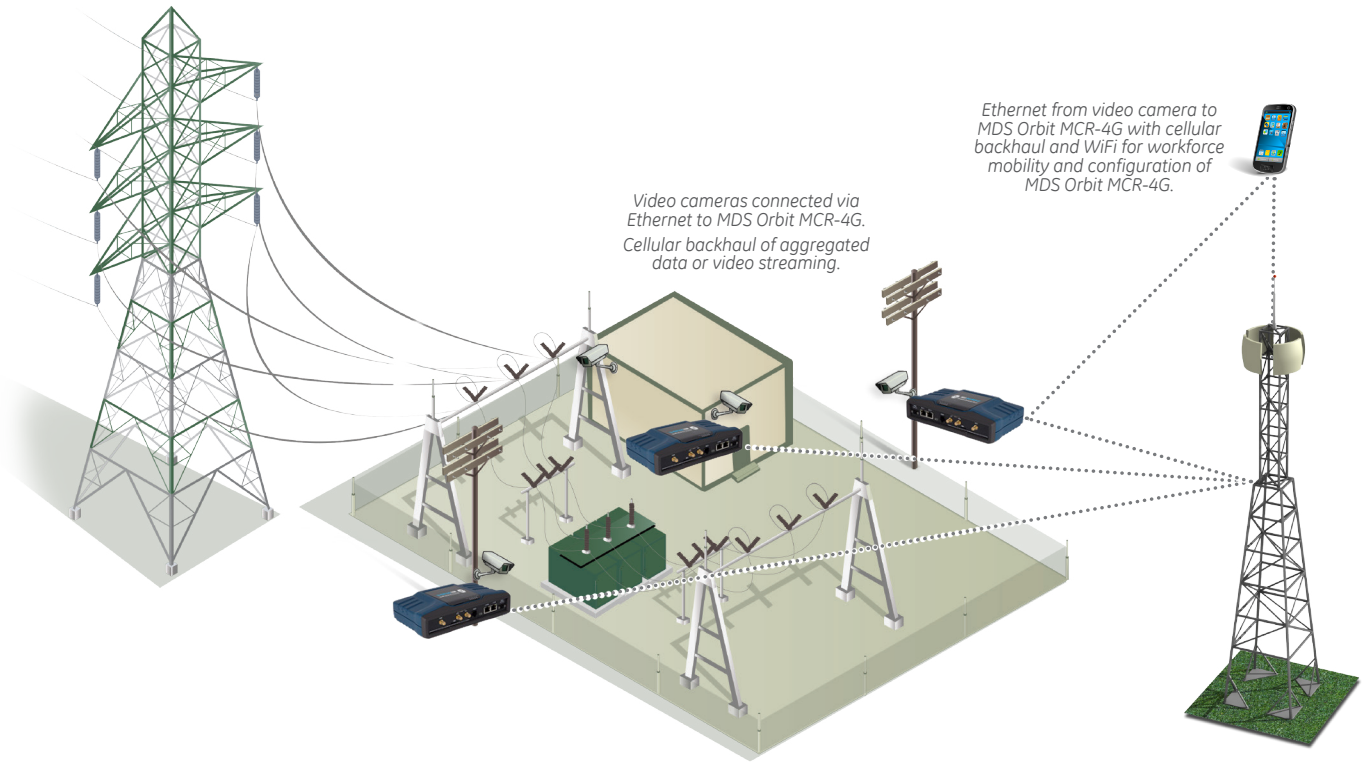
Monitoring devices from a distance is achieved with the MDS Orbit MCR-4G, which provides the bridge to tie your remote private networks to public access.



Application Example:

Video Surveillance

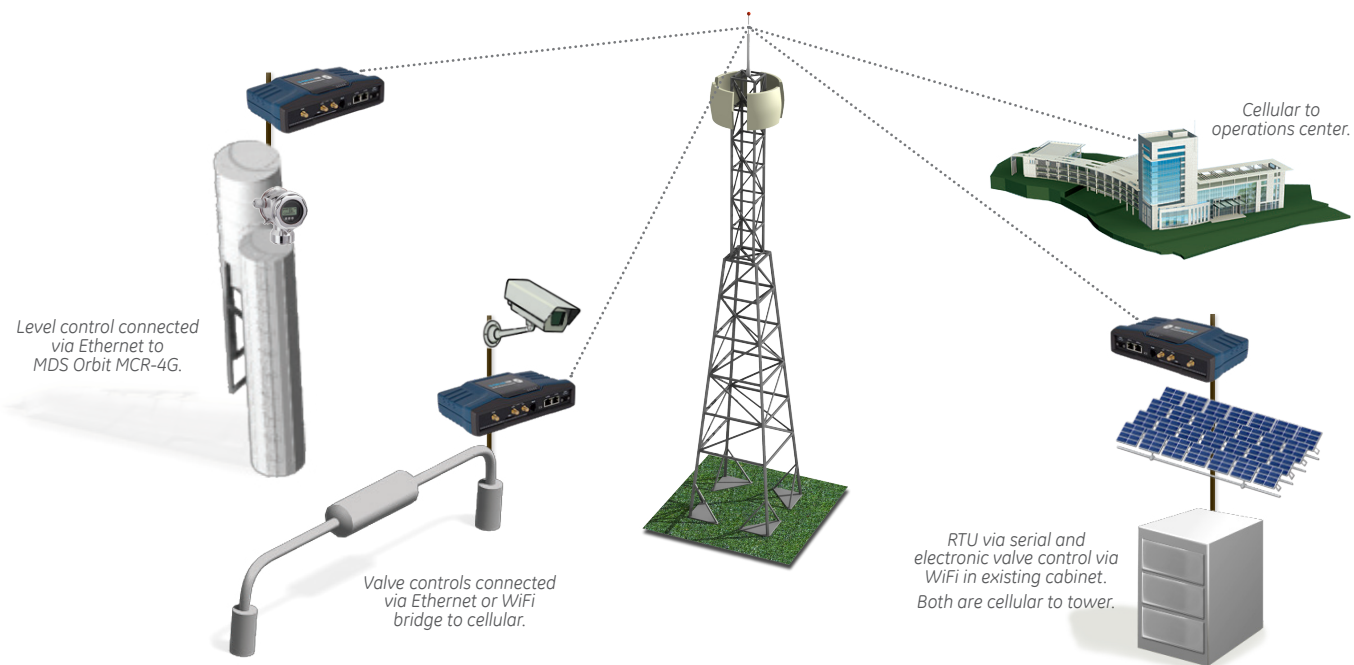
The MDS Orbit MCR-4G provides Ethernet and serial connectivity to existing or new equipment, WiFi across a facility, and backhaul through existing public infrastructure, to enable 24/7 video surveillance of substations.



Application Example:

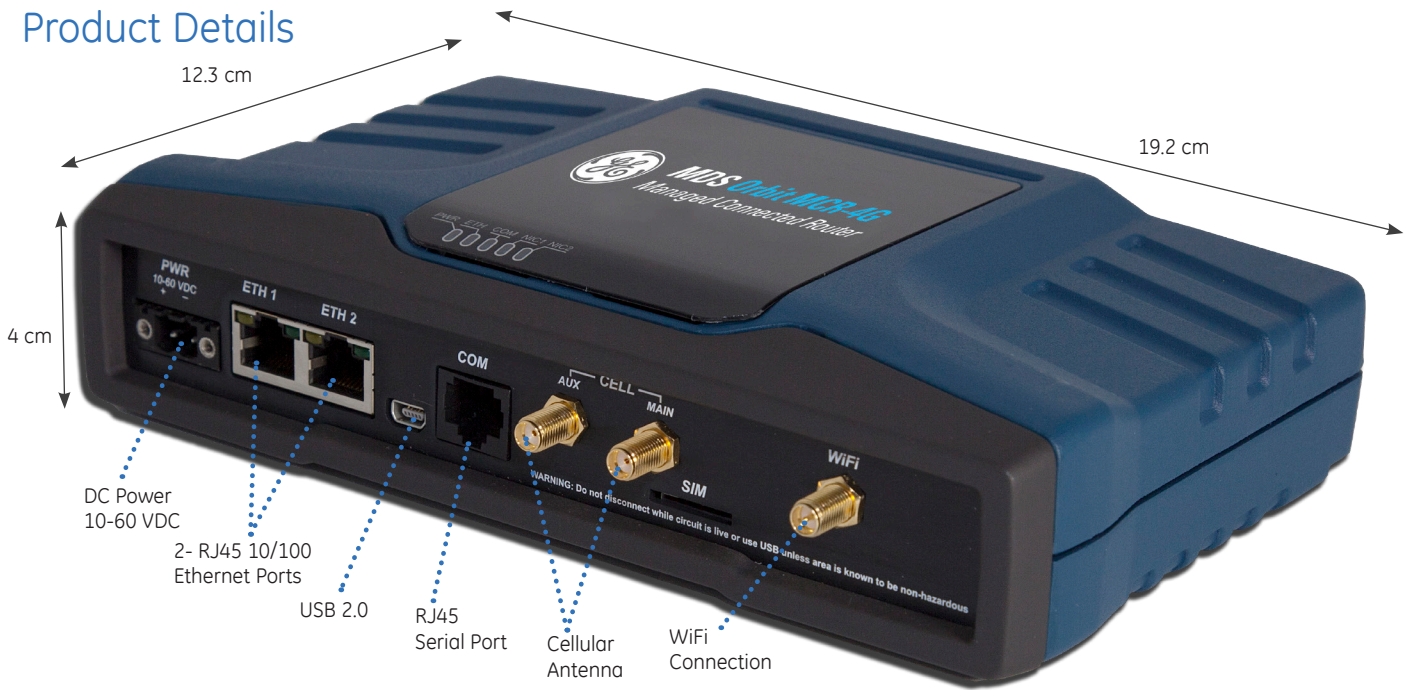
Gas Field Well Monitoring

Using widely available and low cost cellular service, the MDS Orbit MCR-4G provides the required bandwidth and interfaces to link all devices at a production site and sends data to the remote control center.





## Product Details



## Specifications

GENERAL	
Technology	802.11 b/g/n WiFi, 4G/LTE
Max Throughput	54 Mbps ~ 20 Mbps actual delivered

WIFI	
Frequency	2.4 GHz
Carrier Power	Up to 20 dBm
Security	WPA,WPA2

CELLULAR	
Frequency	Band 13 700MHz (MIMO)
Carrier Power	23.5 dBm
3G Technology	CDMA (EVDO RevA, 1xRTT)
4G Technology	LTE Release 8

PROTOCOLS	
Ethernet	IEEE 802.3, Spanning Tree (Bridging), VLAN, IGMP
TCP/IP	DHCP, ICMP, UDP, TCP, ARP Multicast, SNTP, TFTP
Serial	Modbus TCP converter to serial Modbus RTU or Modbus ASCII, TCP, UDP Unicast, UDP Multicast, BSAP and DNP3

PHYSICAL INTERFACES	
Ethernet	Dual 10/100Base-T, RJ-45 Integrated Switch
Serial	RS232, RS485 2-wire and 4-wire, RJ45
USB	2.0 Management Port
Antennas	SMA for Cellular RP-SMA for WiFi
LEDs	PWR, ETH, COM, NIC1, NIC2

MECHANICAL	
Case	Die Cast Aluminum
Dimensions	20cm W x 12cm D x 4cm H (8in W x 4.9in D x 1.75in H)
Weight	0.68 kg (1.5 lbs)
Mounting Options	Integrated DIN Rail Mount

ELECTRICAL	
Input Voltage	10-60 VDC
Current Consumption	< 4.5 amps

ENVIRONMENTAL	
Temperature	-40°C to +65°C (-40°F to 149°F)
Humidity	95% non-condensing

AGENCY APPROVALS * PENDING	
FCC Part 15	
IC	
CSA Class 1, Div. 2	
IEEE 1613	

RADIO SENSITIVITY IN DBM	
WiFi	94dBm @ 54 Mbps
Cellular	-97dBm VZ compliant

MANAGEMENT	
HTTP, HTTPS, SSH, local console SNMPv1/v2/v3, MIB-II, Enterprise MIB, NETCONF, MDS PulseNET compatible**	

MDS CYBER SECURITY SUITE	
Encryption Authentication	802.1x, RADIUS EAP/TLS, PKI, PAP, CHAP, IPsec * Secure Boot * Signed FW Packages

\*\* support pending

### Accessories for the MDS Orbit MCR-4G

- Enclosure BridgeNET
- Antenna kit for WiFi cellular and cabling
- Antenna kit for WiFi only
- Stand-alone antennas
- Ground wire surge suppressors

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