

Hughes 9201-M2M Satellite IP Terminal for Remote SCADA Applications

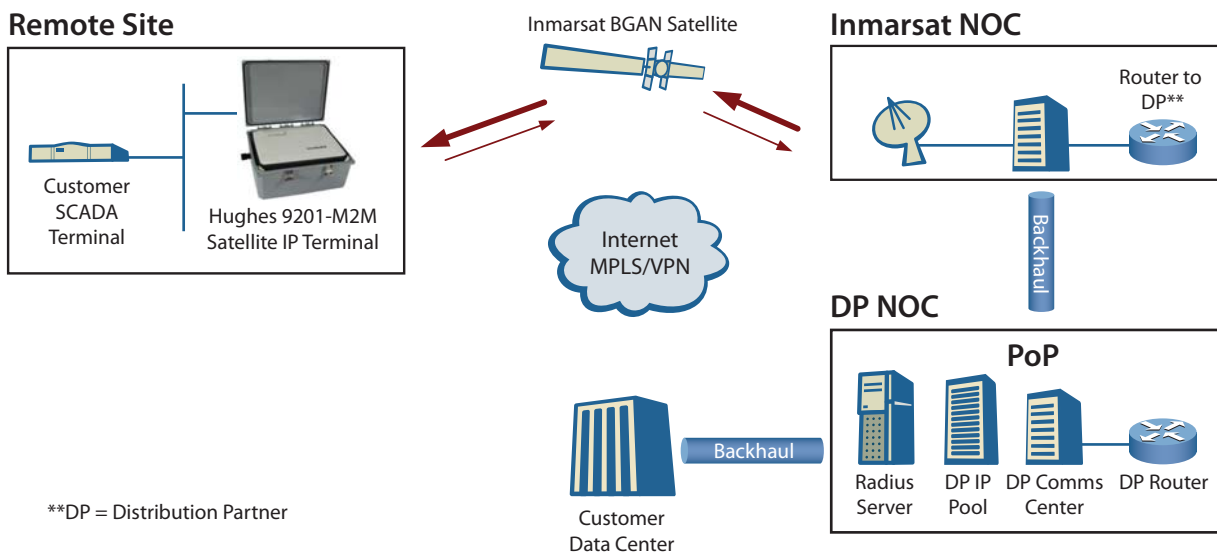
In 2009, Hughes introduced the Hughes 9201-M2M satellite IP terminal, a single-box, SCADA-ready, machine-to-machine version of the highly successful Hughes 9201 terminal, certified for operation on the Inmarsat Broadband Global Area Network (BGAN). Rugged and easy to use, the Hughes 9201-M2M is fully IP compatible and configured for self-contained SCADA operation via a standard Ethernet interface.



IP SCADA ready

Ideal for the oil, gas, water, and utility industries, the Hughes 9201-M2M is easily packaged for continuous monitoring and control of remote sites, such as well automation, pipeline monitoring, utility SmartGrid such as SmartMeter backhaul, distribution automation, and substation SCADA. The robust IP55 rated* Hughes 9201-M2M provides immediate connectivity and is built to operate in extreme weather conditions. Compact and versatile, the single-box Hughes 9201-M2M is a highly secure, cost-effective, and always-on SCADA solution for a wide range of traffic sites handling kilobytes, megabytes, or gigabytes of data.

*Ingress Protection standard of 55 for water and dust ingress.



Inmarsat BGAN IP Communications Network Using Hughes 9201-M2M Terminal

As illustrated, the Hughes 9201-M2M facilitates true end-to-end IP communications supporting TCP and UDP traffic and with essential IP SCADA benefits and features such as:

- **Auto Context Activation** automatically sets up a data context with the network for the user device that is connected to the Hughes 9201-M2M. The user device can use either a static local IP address or obtain a dynamic DHCP local IP address to set up the automatic context.
- **Auto On/Auto Power Cycle** enables the Hughes 9201-M2M to automatically restore power to itself and turn back ON if the site loses power or experiences a brief power interruption, eliminating the need to send personnel to the site to manually reboot.
- **Point Once** provides the installer with a quick and easy method of installing, pointing, and activating the terminal without the need for a laptop in the field.
- **24/7 Keep Alive Link Supervision** is designed into the Hughes 9201-M2M firmware to autonomously supervise and maintain the data connection, even when there is inactivity of data being sent for over 12 hours, so that the customer's remote terminal unit (RTU) doesn't have to facilitate that task.
- **IP Watchdog for "always-on access."** The IP watchdog monitors the health of the data connection and takes various steps to always keep it active on the network. If the data connection goes down (regardless of whether it is a network or terminal fault) and nothing is able to re-establish the connection, the terminal will initiate a reboot command to get back online with the network.
- **Internal Battery Back-up.** The Hughes 9201-M2M can be equipped optionally with a 9-cell, extended-life, Lithium-ion battery pack for backup power should the site power fail.

Oil, Gas, and Water Applications

The Hughes 9201-M2M is ideal for operational well data collection such as electronic flow measurement, pressure, and custody transfer data reading.

The Hughes 9201-M2M is also installed at natural gas sites to enable remote monitoring and control of the compressor responsible for pushing high volumes of natural gas through the pipeline transmission system.

For instance, in these photographs the Hughes 9201-M2M is not only used for purposes of data collection, but also for delivering critical and time-sensitive command and control instructions to downhole systems. This increases well performance and production, saving the operator time and money dispatching personnel, and increasing the producer's revenues due to the information provided for real-time decision making.

Engineers from anywhere in the world can access the site remotely to make informed decisions on well site management.



Tsunami Early Warning Systems

Hughes supported a project to develop and deploy a Tsunami early warning detection system.

This photo shows a typical Hughes 9201-M2M installation that provides mission-critical communications as part of an innovative system deployed at various locations worldwide.



Utility Applications

The Hughes 9201-M2M is being adopted and deployed for a range of utility solutions.

- **Advanced Metering Infrastructure (AMI) Smart Meter Backhaul.** Thousands of residential and business wireless smart meters send usage data back to a collector point. The collector point sends the aggregate data over the Hughes 9201-M2M to the utility's data center.
- **Distribution Automation.** The Hughes 9201-M2M can be deployed at utility poles to enable control of SmartGrid infrastructure such as reclosers, fault indicators, capacitor banks, etc.
- **Substation Communications.** To dramatically enhance communication link availability at a substation, a Hughes 9201-M2M can operate as the backup path for automatic failover when the primary line fails.
- **Disaster Preparedness/Business Continuity Solutions.** The Hughes 9201-M2M can be used for critical communications during the recovery period immediately following a catastrophic event that interrupts utility services.

In this photo, the Hughes 9201-M2M is connected to an AMI collection point to deliver Smart Meter data from meters on residences and businesses. AMI enables readings for billing, service connections and disconnections; and consumer remote control over the Internet of lights, thermostats, and appliances, proactively reducing electricity usage costs. Utilities can manage peak loads where generation costs are high, reducing greenhouse gas emissions and helping measure and mitigate the risk of blackouts.



Earthquake Monitoring and Detection Systems



The data obtained via the Hughes 9201-M2M is used to better understand tectonic processes and the location, size, and timing of future large earthquakes in a particular area of study.



Serial to Ethernet

Customers who require RS-232, 422/485 serial to Ethernet connectivity, simply use one of a variety of commercially available serial-to-Ethernet interfaces available from companies such as:

- Moxa: http://www.moxa.com/product/Serial_to_Ethernet_Products.htm
- Encore Networks: http://www.encorenetworks.com/click_ds_BANDIT_3.htm
- Advantech: <http://www.advantech.com/products>
- Satcom Gadgets: http://www.satcomgadgets.com/Products/products_scada.htm

Technical Specifications

Physical and Environmental

Weight:	2.8 kg (terminal with battery)
Dimensions:	27.5 cm H x 34.5 cm D x 5.0 cm W
Battery Life*:	Transmit: 162 megabytes Receive: 864 megabytes
Humidity:	95% RH at +40° C
Temperature:	-25° C to +60° C operating -25° C to +60° C storage (with battery)
Water and Dust:	IP55 standard
Wind:	Operational 100 mph (160 km/h)
Ice:	25 mm non-operational
Power consumption:	4W average, 32W maximum for typical applications

Solar Compatible

Requires 55–60 W solar panel plus DC/DC power adapter to deliver 20 V to the Hughes 9201-M2M, for full transmit power plus the ability to charge the battery. Solar requirements should be determined by the customer or integrator.

*Actual performance will vary based upon a wide range of factors and actual usage.

Proprietary Statement

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