

Bullhorn Remote Monitoring Data Communication



American Innovations' **Bullhorn RM2020 & APM4AM &** monitor assets in oil & gas, water and irrigation industries by utilizing reliable digital cellular or satellite networks to communicate measurement results. The 6-channel units capture data from city gates, compressors, lift stations, irrigation equipment and more. AI recommends the CP-specific **RM4020** and **RM4010** for Cathodic Protection applications, and the **APM4AM-SAT WS** (wireless sensor) for applications requiring up to 7 digital inputs.

Applications

- ✓ **Oil & Gas assets, including:**
 - City gates, compressors, storage tanks, pumping stations, gas pressure & gas measurements
- ✓ **Water & Wastewater assets, including:**
 - Lift stations, irrigation systems, storage tanks, liquid flow measurements, water samplers



Multiple communication and enclosure options

Features	Benefits
Inputs: 4 analog (1-4), 2 digital channels (5-6); channel 5 can be digital or accumulator, channel 6 accumulator or accumulator reset	Measure data from city gates, compressors, lift stations, irrigation
Data communication via digital cellular or satellite (Inmarsat) network	Reliable, cost-effective data communication
Power: sealed lead-acid battery with solar or AC charger; optional lithium battery for cellular model	Long term product reliability & easy installation
Bullhorn Asset Tracker (BAT™) system communicates unit status by email, voice and/or text notifications; includes BAT™txt and BAT™mobile	Notifications on equipment status eliminate remote site visits; on-the-go access via smartphone
Proven backend system for data storage with disaster recovery	Bullhorn unit data stored for 18 months

APM4AM (GSM/SAT) Specifications Summary	
Inputs	<p><u>Analog or Digital channels</u></p> <ul style="list-style-type: none"> •Channels 1- 4: ±5VDC <p><u>Digital channels</u></p> <ul style="list-style-type: none"> •RM2020 & APM4AM-GSM = Channel 5: Digital or Accumulator, Channel 6: Digital, Accumulator or Accumulator Reset <i>Digital:</i> Logic 1 = 2Vmin, Logic 0=800mVmax <i>Accumulator:</i> Max. input = 2.5 cycles/1 sec., Min. Width = 100 ms/state change •APM4AM SAT = Channel 5: Digital or Accumulator, Channel 6: Digital or Accumulator Reset <i>Digital:</i> Logic 1 = 2Vmin, Logic 0=800mVmax <i>Accumulator:</i> Max. input = 1 cycle/2 sec., Min. Width = 1 sec/state change
Communications	•GSM Digital Cellular •Inmarsat Satellite •Orbcomm Satellite
Software Interface	Bullhorn Asset Tracker website. AI network operations center.
Power Supply	•Sealed lead-acid gel cell battery w/ solar or AC charger. Optional lithium battery for GSM unit.
Dimensions	<ul style="list-style-type: none"> •Satellite unit: Polycarbonate box enclosure (8.5 X 6.5 X 4 .5") •Cellular unit: Polycarbonate box or anodized aluminum an (3.66 X 5.5" without antenna)
Data Integrity	Data stored in non-volatile (EEPROM) memory
Environment	Temperature: -30 degrees C to +70 degrees C. Humidity: 0-100% non-condensing.
Compliance	FCC Part 15. Enclosure - NEMA 4X compliant. ESD: 8kV Air/ 4kV Contact.

Services. American Technical Service Engineers provide: Technical support via phone and email | Bullhorn installation services | Customer training (on-site and in Austin, TX) | Bullhorn Asset Tracker (BAT™) data services

About American Innovations. American Innovations (AI) provides oil and gas companies with critical knowledge and decision support for assets and infrastructure via corrosion protection and integrity management services. The company supplies products and services to automate the collection, storage, and reporting of equipment and pipeline compliance data. Bass Engineering, a subsidiary of American Innovations, offers Cathodic Protection engineering services. American Innovations product lines include: Pipeline Compliance System (PCS™), Allegro Field Data PC®, Bullhorn® Remote Monitoring, MicroMax® Current Interrupters, and Integrity Management via Risk Intelligence™ Software and Integrity & Compliance Services.

Product	Application	Comm. Method	Features
Bullhorn RM2012	General Purpose & Agriculture	Inmarsat satellite	7 wireless Digital Inputs, Solar & AC power with battery backup
Bullhorn RM2020	General purpose	Orbcomm satellite	4 Analog Inputs, 2 Digital Inputs, Solar & AC power with battery backup
Bullhorn RM4010	Cathodic Protection, two-way with interruption	Inmarsat satellite	Low-latency worldwide coverage, 4 Analog Inputs, 2 Digital Inputs, GPS- based current interruption, AC power with battery backup, two-way communication, over the air configuration
Bullhorn RM4012	Cathodic Protection, Current Density, Induced AC Voltage	Inmarsat satellite	4 Analog Inputs monitoring AC Amperage, AC & DC pipe-to-soil potentials, AC current density on test coupon
Bullhorn RM4020	Low-cost Cathodic Protection monitoring	Orbcomm satellite	Low-cost worldwide coverage, 4 Analog Inputs, 2 Digital Inputs, Solar & AC power with battery backup
Bullhorn AMR6	Gas measurement	Inmarsat & Orbcomm satellite Digital cellular	6 digital accumulator or Digital Input, Solar, AC, or Lithium battery power options
Bullhorn APM4AM	General purpose	Inmarsat satellite Digital cellular	Analog Inputs, 2 Digital Inputs, Solar & AC power with battery backup
Bullhorn SDT16	Compressor, oil & gas equipment	Inmarsat & Orbcomm satellite Digital cellular	Supports Modbus, Mercury, Dresser, and Reynolds protocols communication, up to 16, 6-bit registers or 8, 12-bit registers, 1 digital input

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