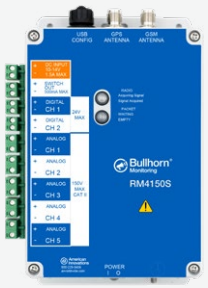
Bullhorn Monitoring

REMOTE MONITORS FOR RECTIFIERS

American Innovations

Find the Right Bullhorn for Your Rectifiers

	SATELLITE			CELLULAR	SATELLITE/CELLULAR
					
Click for Detailed Specifications:	RM4014S	RM4015	RM4016	RM4150S	RM510S/RM510C
Application	Rectifier	Rectifier	Rectifier	Rectifier	Rectifier
Analog Channels	4	4	4	5	4
Digital Channels	2	2	2	2	2
Typical Measurements	✓ Rectifier Volts ✓ Rectifier Amps ✓ Pipe-to-Soil	✓ Rectifier Volts ✓ Rectifier Amps ✓ Pipe-to-Soil	✓ Rectifier Volts ✓ Rectifier Amps ✓ Pipe-to-Soil	✓ Rectifier Volts ✓ Rectifier Amps ✓ Pipe-to-Soil ✓ Instant Off	✓ Rectifier Volts ✓ Rectifier Amps ✓ Pipe-to-Soil ✓ Instant Off
Interruption	Yes	Yes	No	Yes	Yes
Communication	Two-Way	Two-Way	One-Way	Two-Way	Two-Way
Mounting	External	Internal	External	Internal	Internal/External
Surge Immunity	Hardened	Requires Surge Kit	Requires Surge Kit	Hardened	Hardened
Surge Rating	30kV	8kV	8kV	30kV	30kV System Surge
Power Source	Line	Line	Solar	Line	Line
Backup Power	Battery	Battery	Battery	Battery	Battery
Warranty	3 Year All Inclusive	Standard	Standard	3 Year All Inclusive	3 Year All Inclusive
View More Details					

Bullhorn RM4014S Specifications

INPUTS

4 Analog Channels	4 analog + 2 digital channels
Channel 1, 3, 4 DC Voltage Range:	+/- 5 V
Channel 2, AC Voltage Range	+/- 100 V
Scan Rate	16 scans per second
Channel-to-channel isolation	≥ 250 V DC
Surge	Survives multiple 30KV strikes. Tested using 50uS waveform to simulate lightning strike.
Accuracy	2% of reading

2 DIGITAL CHANNELS

Functions	Digital input, accumulator, accumulator reset, or contact closure (0 - 15 V DC)
Logic Levels	minimum Logic 1 = 2 V; maximum Logic 0 = 800 mV
Scan Rate	16 scans per second
Accumulator maximum cycle rate:	1 cycle/2 s
Minimum state change period:	1 s
Minimum pulse width:	250 ms

INTERRUPTION OPTIONS

Maximum current:	500 mA DC
Output voltage:	10-14 V DC
Min. switching cycle:	No or NC, Solid State or Mechanical
On/off cycle increments:	100 ms
Interruption modes:	Daily, interference, start/stop, and continuous
Interference mode:	Set up to 99 rectifiers or groups for influence studies
Relay types:	NO or NC, solid state or mechanical

SOFTWARE INTERFACE

Bullhorn Web

Bullhorn Tools for PC

COMMUNICATIONS

Satellite:	Orbcomm - IsatData Pro

Poll, reconfigure, and set alarm thresholds over-the-air

POWER SUPPLY

AC:	100 - 240 V AC with included AC/DC converter
DC:	10-14 V DC with interruption; 5-25 V DC without interruption
Backup:	Internal sealed rechargeable battery

DIMENSIONS

RM4014s	NEMA 4X compliant enclosure (7.5” x 5.25” x 12.25”)

DATA INTEGRITY

Memory	EEPROM

ENVIRONMENTAL SPECS

Temperature	-30° C to +70° C
Humidity	0 - 100% non-condensing

SAFETY AND COMPLIANCE

Tested Safety Standards	EN61010-1:2010 EN61010-2-030:2010 CAN/CSA C22.2 No. 61010-1-2012 CAN/CSA C22.2 No. 61010-2-030:2010 UL61010-1:2012 supplemented by UL61010-2-030:2012

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Bullhorn Monitoring

Bullhorn RM4015 Specifications

INPUTS

4 Analog Channels	
Channel 1, 3, 4 DC Voltage Range:	+/- 5 V
Channel 2, AC Voltage Range	+/- 100 V
Scan Rate	16 scans per second
Channel-to-channel isolation	≥ 250 V DC
Accuracy	2% of reading

2 DIGITAL CHANNELS

Functions	Digital input, accumulator, accumulator reset, or contact closure (0 - 15 V DC)
Logic Levels	minimum Logic 1 = 2 V; maximum Logic 0 = 800 mV
Scan Rate	16 scans per second
Accumulator maximum cycle rate:	1 cycle/2 s
Minimum state change period:	1 s
Minimum pulse width:	250 ms

INTERRUPTION OPTIONS

Maximum current:	500 mA DC
Output voltage:	10-14 V DC
Min. switching cycle:	1s
On/off cycle increments:	100 ms
Interruption modes:	Daily, interference, start/stop, and continuous
Interference mode:	Set up to 99 rectifiers or groups for influence studies
Relay types:	NO or NC, solid state or mechanical

SOFTWARE INTERFACE

Bullhorn Web	
Bullhorn Tools for PC	

COMMUNICATIONS

Orbcomm:	IsatData Pro
Poll, reconfigure, and set alarm thresholds over-the-air	

POWER SUPPLY

AC:	100 - 240 V AC with included AC/DC converter
DC:	10-14 V DC with interruption; 5-25 V DC without interruption
Backup:	Internal sealed rechargeable battery

DIMENSIONS

RM4015	Polycarbonate enclosure 4.75” x 3” x 8”

DATA INTEGRITY

Memory	EEPROM

ENVIRONMENTAL SPECS

Temperature	-30° C to +70° C
Humidity	0 - 100% non-condensing

SAFETY AND COMPLIANCE

Certifcation Mark:	TUV
Tested Safety Standards	EN61010-1:2010 EN61010-2-030:2010 CAN/CSA C22.2 No. 61010-1-2012 CAN/CSA C22.2 No. 61010-2-030:2010 UL61010-1:2012 supplemented by UL61010-2-030:2012
Emissions:	FCC Part 15
Surge	8kV Air / 4kV Contact

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Bullhorn RM4016 Specifications

INPUTS

4 Analog Channels	
Channel 1, 3, 4 DC Voltage Range:	+/- 5 V
Channel 2, DC Voltage Range	+/- 100 V
Scan Rate	16 scans per second
Channel-to-channel isolation	≥ 250 V DC
Accuracy	2% of reading

2 DIGITAL CHANNELS

Functions	Digital input, accumulator, accumulator reset, or contact closure (0 - 15 V DC)
Logic Levels	Minimum logic 1 = 2 V; Maximum logic 0 = 800 mV
Scan Rate	1 scan per second
Minimum pulse width:	250 ms

SOFTWARE INTERFACE

Bullhorn Web	
Bullhorn Tools for PC	

COMMUNICATIONS

Orbcomm:	IsatData Pro

POWER SUPPLY

Solar:	3.4 Amp-Hr sealed lead acid battery with 1.6 W solar panel

DIMENSIONS

RM4016	Weatherproof enclosure 8.5” x 6.5” x 4.5”

DATA INTEGRITY

Memory	EEPROM

ENVIRONMENTAL SPECS

Temperature	-30° C to +70° C
Humidity	0 - 95% non-condensing

SAFETY AND COMPLIANCE

Emissions:	FCC Part 15
Surge	8kV Air / 4kV Contact

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Bullhorn RM4150S Specifications

INPUTS

5 Analog Channels	
DC Voltage Range:	±150 V with accuracy of 1% of reading
AC Voltage Range	150 V with accuracy of 1% of reading
Input Impendance	10 MΩ
Scan Rate	Once every 30 seconds
Channel-to-channel isolation	≥ 250 V DC
Surge	Survives multiple 30KV strikes. Tested using 50uS waveform to simulate lightning strike.

2 DIGITAL CHANNELS

Functions	Digital input, accumulator, accumulator reset, or contact closure (0 - 24 V DC)
Minimum Logic	1 = 2 V
Maximum Logix	0 = 1 V
Scan Rate	20 scans per second
Minimum pulse width:	250 ms

INTERRUPTION

Switch Out Channel	
Maximum current:	500 mA DC
Output voltage:	10-14 V DC
Minimum switching cycle:	1s
On/off cycle increments:	100 ms
Interruption modes:	Daily, interference, start/stop, continuous, and Instant Off
Interference mode:	Set up to 99 rectifiers or groups for influence studies
Relay types:	NO or NC, solid state or mechanical

INSTANT OFF

Analog channel 3:	± 10 V DC, sampled 60 times per sec
IR drop edge delay:	0 to 60 seconds in increments of 1 ms
Configuration	GPS-synchronized measurement using configurable on, off, and delay settings

COMMUNICATIONS

GSM cellular:	Worldwide compatibility on LTE cellular networks
USA:	Carrier independent. Automatically selects the best signal.

Poll, reconfigure, and set alarm thresholds over-the-air

SOFTWARE INTERFACE

Bullhorn Web

Bullhorn Tools for PC

POWER SUPPLY

AC:	100 - 240 V AC with included AC/DC converter
DC:	10-14 V DC with interruption; 5-25 V DC without interruption
Backup:	Internal sealed rechargeable battery

DIMENSIONS

RM4150S	Polycarbonate enclosure (5” x 2.25” x 8”)
External mount (optional): Part #: 517200-000	Aluminum Enclosure (7.3” x 4” x 12.4”)

DATA INTEGRITY

Memory	EEPROM

ENVIRONMENTAL SPECS

Temperature	-30° C to +70° C
Humidity	0 - 95% non-condensing

SAFETY AND COMPLIANCE

Tested Safety Standards	FCC Part 15

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Bullhorn Monitoring

Bullhorn RM510S/RM510C Specifications

INPUTS

Channels	4 analog + 2 digital channels
Max DC Voltage	+/-150Vdc
Max AC Voltage	100V
Accuracy	+/- 2% of range. Ranges: +/-1.25V, +/-2.5V, +/-5V, +/-63.75V, +/-127.5V, +/-255V. Ranges can handle simultaneous DC and AC voltages
Input Impedance	20 Meg ohms
Channel-to-Channel Isolation	>250Vdc
Surge Immunity	The RM5 system survives 30kV peak-to-peak, 300ms transients. Includes full 3-year warranty.

DIGITAL

Minimum Logic	<1.1V for logic low
Maximum Logic	>1.1V for logic high, 20Vmax

INTERRUPTION

Interruption Verification	Every five minutes
Maximum Current	500mAdc
Output Voltage	10-14Vdc
Minimum Switching Cycle	1s
On/Off Cycle Increments	100ms
Relay Support	System surge rating maintained only with REL2510 100V/100A AC SSR. Use AI Lightning Arrestor if using other relays (Mercury or Solid State).

POWER

Input	12Vdc
Power Source	RM5 Power Supply providing Output of 12Vdc @ 1A Max with Input of 10-42Vac/dc @ 3A Max

COMMUNICATIONS

Cell Network (RM510C)	AT&T
Satellite Network (RM510S)	Iridium
GPS	GPS Network, Accurate to 5m

DIMENSIONS

Dome	4” x 6.4” x 2.2”
IO	2.4” x 4.88” x 1.1”
Terminal Blocks	1.38” x 2.48” x 0.75”
Power Supply	1.85” x 4.37” x 1.09”
Relay	2.98” x 5.5” x 0.84”

ENVIRONMENTAL SPECS

Temperature (Dome, IO, PS, and Relay)	-30° C to +60° C
Humidity (Dome)	0 - 100%
Humidity (IO, PS, and Relay)	0 - 95%

CERTIFICATIONS

FCC
Industry Canada

DATA

Memory	EEPROM

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