

## RSTAR Affinity Data Logger

### Description

The RSTAR Affinity data logger is designed to connect a variety of field analog and digital sensors to the RSTAR Affinity web-based dashboard. Each data logger can be configured to support up to five instruments of varying types.

Instrument and data logger configuration is mediated through secure and authenticated Bluetooth (BLE).

Instrument readings are communicated in real-time by low-power wide area network (LPWAN) through an RSTAR Affinity gateway. LPWAN protocols supported include LoRaWAN for long-range outdoor applications (up to 15 km).

Standalone data logging is supported by the syncing of instrument data by local authenticated download in the RSTAR Affinity Field app.

### RSTAR Affinity Data Logger Physical Specifications

ITEM	SPECIFICATION
Dimensions	159 mm (L) x 120 mm (W) x 87 mm (H) (enclosure only) 163 mm (L) x 185 mm (W) X 87 mm (H) (enclosure + wall mounting)
Total Mass	500 g to 550 g
Housing Material	PBT
Ingress Protection Marking	IP67 rated
Mounting Options	Wall, pole, mounting kit available
Antenna Options	External: +3 dBi and +5.8 dBi (N type connector)

### General Specifications

ITEM	SPECIFICATION
Temperature Operating Range	From -40°C to 60°C
Lifespan	10-year service life

### BLE (Bluetooth Low Energy) Radio Specifications

Bluetooth	BT 5.0 single mode
Frequency	2.402 - 2.480 GHz
Raw Data Rates	125 kbps, 500 kbps, 1 Mbps, 2 Mbps
Maximum Transmit Power	+8 dBm

Low Power Listen Mode Continuous

## LORA (Long Range) Radio Specifications

Operating Regions	LoRaWAN US915 LoRaWAN EU868 LoRaWAN EU433 LoRaWAN AS923-1/2/3/4 LoRaWAN AU915 Refer to RST for the best frequency for your region.
Protocols	LoRaWAN® 1.0.1
Range	Up to 14 km (at 900 MHz) in open country, depending on frequency and antenna

## Power Specifications

Battery voltage	3.6V
Number of Cells	3 primary battery cells
Battery Cell Size	D
Recommended Battery Cell	Saft LSH20
Battery Nominal Capacity	13.0 Ah @ 20°C per cell
Battery Life Expectancy (Hourly readings)	1 x VW Piezometer @ 20°C = ~10 yrs 100 Segment ShapeArray @ @ 20°C = ~3 yrs

## RS-485 Interface Specifications

Part ID	IIM-RS-485 Contact RST for full sensor list compatibility
Supply Power	12 VDC up to 300 mA
Protocols Supported	RS485
Serial Data Rate	9600 to 115200 Baud configurable through RSTAR Affinity digital suite.
Serial Port	Half-duplex
Protection	1500 VDC isolation on the 12 V 3000 VDC isolation on TTL signals Isolation ICs are EN62368-1 certified

## Vibrating Wire Specifications

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Vibrating Wire + Thermistor pair part ID	IIM-VW-TH
Excitation Voltage	5 V
Resonant Frequency Measurement Range	300 Hz to 7,000 Hz
Resonant Frequency Resolution	0.11 Hz (1 part in 65,000)
Resonant Frequency Accuracy	$\pm 0.7$ Hz (0.01% FS)
Protection	Tran 1500 VDC isolation on the 5V 3000 VDC isolation on TTL signals Isolation ICs are EN62368-1 certified ESD protection to $\pm 2$ KV silent protection for instrument ports

## Thermistor Specifications

ITEM	SPECIFICATION
Thermistor pair + Thermistor pair part ID	IIM-TH-TH
Vibrating Wire + Thermistor pair Part ID	IIM-VW-TH
Measurement Range	0 Ohm to 196 mOhm
Measurement Resolution	0.183 Ohm
Accuracy	$\pm 0.1^{\circ}\text{C}$
Protection	1500 VDC isolation on the 12 V 3000 VDC isolation on TTL signals Isolation ICs are EN62368-1 certified
Specifications	