

rstar AFFINITY



RSTAR AFFINITY DATA LOGGER

The RSTAR Affinity data logger is designed to connect a variety of field 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.

Built by our team of seasoned instrumentation experts specifically for geotechnical monitoring projects, the RSTAR Affinity system comprises loggers, gateways, secure communications for data telemetry, and mobile and desktop applications. Forget the headaches of improvised monitoring solutions cobbled together from different third-party vendors.

RSTAR Affinity represents your complete industrial internet of things (IIoT) solution for reliable, real-time data flow from your work site to your desktop—all from a single source.



Unprecedented modularity, scalability, and flexibility.

Instrument Interface Modules (IIM) allow RSTAR Affinity data loggers to accommodate up to five different sensor types in a single node. Each of the logger's five ports can be fitted with the appropriate module for the sensor type of your choice.

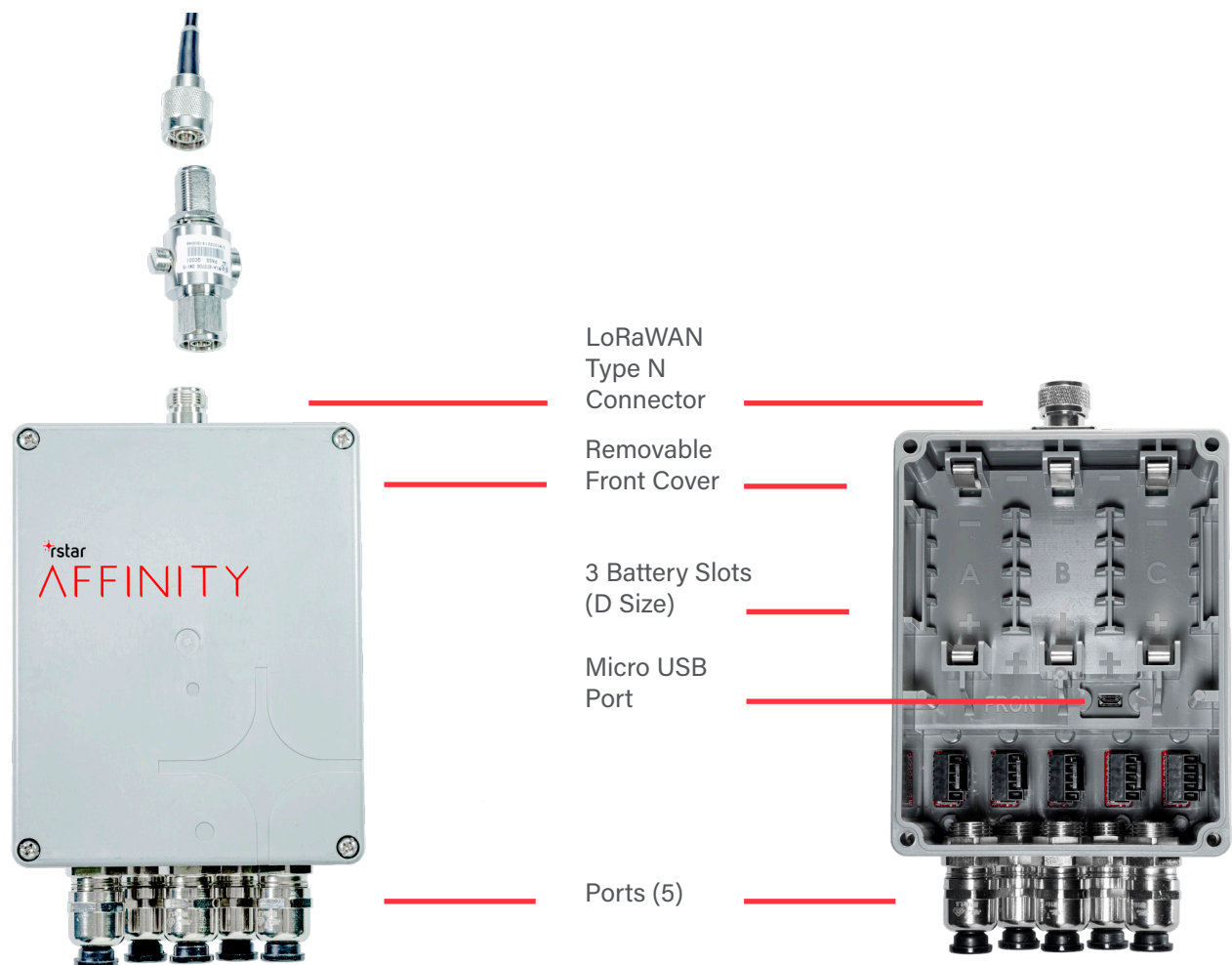
Each connected instrument has its own logging schedule. Data sample and port sample, and/or event alert threshold intervals can be globally or independently configured (between one minute and seven days) for most sensor types.

The RSTAR Affinity data logger is powered by three 13 Ah primary lithium-thionyl chloride (Li-SOCI₂) cells, each with its own fuel gauge.

Built to the customer's specifications and configured within RSTAR Affinity's software platform and companion mobile application (RSTAR Affinity Field app) to report logging intervals and/or alert thresholds reached based on the IIM, each data logger communicates with the closest RSTAR Affinity gateway within its range.

The set of instruments that each data logger supports is custom-configured, calibrated, and tested at our factory according to your order specifications and stores data locally to an onboard flash memory.

RSTAR Affinity is OpenAPI 3.0 compliant.



PHYSICAL SPECIFICATIONS	
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) Internal: ProAnt PRO-IS-573 PCB trace antenna

USB SPECIFICATIONS	
USB Power Requirements	min 0.5 A @ 5 V from USB host
USB Cable Recommendations	A to micro-B, shielded USB cable

LORA (LONG RANGE) RADIO SPECIFICATIONS	
Operating Regions	LoRaWAN US915 (Americas) LoRaWAN EU868 (Europe) LoRaWAN EU433 (Europe) LoRaWAN AS923-1/2/3/4 (Asia) LoRaWAN AU915 (Australia, Brazil)
Protocols	LoRaWAN® 1.01
Range	Up to 14 km (at 900 MHz) in open country, depending on frequency and antenna

GENERAL SPECIFICATIONS	
Temperature Operating Range	From -40°C to 60°C
Temperature Operating Range	From -40°C to 80°C
Lifespan	10-year service life

BLE (BLUETOOTH LOW ENERGY) RADIO SPECIFICATIONS	
Bluetooth	BT 5.0 single mode
Frequency	2.402 - 2.480 GHz
Antenna	Internal
Raw Data Rates	125 kbps, 500 kbps, 1 Mbps, 2 Mbps
Maximum Transmit Power	+8 dBm
Low Power Listen Mode	Continuous

POWER SPECIFICATIONS	
Battery voltage	3.6V
Number of Cells	1 to 3 primary battery cells
Battery Cell Size	D
Recommended Battery Cell	Saft LSH20
Battery Nominal Capacity	13.0 Ah @ 20°C per cell

RS-485 INTERFACE SPECIFICATIONS	
Part ID	IIM-RS-485
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		
Part ID	Vibrating Wire + Vibrating wire pair	IIM-VW-VW
	Vibrating Wire + Thermistor pair	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	± 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 ±2KV silent protection for instrument ports	

THERMISTOR SPECIFICATIONS		
Part ID	Vibrating Wire + Vibrating wire pair	IIM-VW-VW
	Vibrating Wire + Thermistor pair	IIM-VW-TH
Measurement Range	0 Ohm to 196 mOhm	
Measurement Resolution	0.183 Ohm	
Accuracy	± 0.1°C	
Protection	1500 VDC isolation on the 12 V 3000 VDC isolation on TTL signals Isolation ICs are EN62368-1 certified	