

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 synching of instrument data by local authenticated download in the RSTAR Affinity Field app.

RSTAR Affinity

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.

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

General Specifications

ITEM

Temperature Operating Range
Lifespan

SPECIFICATION

From -40°C to 60°C
10-year service life.

USB Specifications

ITEM

USB Power Requirements
USB Cable Recommendations

SPECIFICATION

min 0.5 A @ 5 V from USB host
A to micro-B, shielded USB cable

BLE (Bluetooth Low Energy) Specifications

ITEM

Bluetooth
Frequency
Antenna
Raw Data Rates
Maximum Transmit Power
Low Power Listen Mode

SPECIFICATION

BT 5.0 single mode
2.402 - 2.480 GHz
Internal
125 kbps, 500 kbps, 1 Mbps, 2 Mbps
+8 dBm
Continuous

LORA (Long Range) Radio Specifications

ITEM

Operating Regions

Protocols
Range

SPECIFICATION

LoRaWAN EU433 (Europe) LoRaWAN EU868 (Europe) LoRaWAN US915 (Americas) LoRaWAN AU915 (Australia, Brazil) LoRaWAN AS923-1/2/3/4 (Asia)
LoRaWAN® 1.0.1
Line of site: 7 km (min) / 15 km (max) Urban environment: 2 km (min) / 5 km (max)

Power Specifications

ITEM

Battery voltage
Number of Cells
Battery Cell Size

SPECIFICATION

3.6V
1 to 3 primary battery cells
D

Recommended Battery Cell
Battery Nominal Capacity

Saft LSH20
13.0 Ah @ 20°C per cell

RS-485 Interface Specifications

ITEM

Part ID
Supply Power
Protocols Supported
Serial Data Rate
Serial Port
Protection

SPECIFICATION

IIM-RS-485
12 VDC up to 300 mA
RS485
9600 to 115200 Baud configurable through RSTAR Affinity digital suite.
Half-duplex
1500 VDC isolation on the 12 V 3000 VDC isolation on TTL signals Isolation ICs are EN62368-1 certified

Vibrating Wire Specifications

ITEM

Vibrating Wire + Vibrating wire pair Part ID
Vibrating Wire + Thermistor pair Part ID
Excitation Voltage
Resonant Frequency Measurement Range
Resonant Frequency Resolution
Resonant Frequency Accuracy
Protection

SPECIFICATION

IIM-VW-VW
IIM-VW-TH
5 V
300 Hz to 7,000 Hz
0.11 Hz (1 part in 65,000)
 ± 0.7 Hz (0.01% FS)
Tran 1500 VDC isolation on the 5V 3000 VDC isolation on TTL signals Isolation ICs are EN62368-1 certified ESD protection to ± 2 KV silent protection for instrument ports

Thermistor Specifications

ITEM

Vibrating Wire + Vibrating wire pair Part ID
Vibrating Wire + Thermistor pair Part ID
Measurement Range
Measurement Resolution
Accuracy
Protection
Specifications

SPECIFICATION

IIM-VW-VW
IIM-VW-TH
0 Ohm to 196 mOhm
0.183 Ohm
 $\pm 0.1^{\circ}\text{C}$
1500 VDC isolation on the 12 V 3000 VDC isolation on TTL signals Isolation ICs are EN62368-1 certified