

## SECURE, SCALABLE WIRELESS SENSORS FOR LONG RANGE IOT APPLICATIONS



Laird Connectivity's Sentrius RS1xx external RTD temperature probe is a **battery-powered, long range** sensor platform that leverages the benefits of LoRaWAN and Bluetooth Low Energy (BLE) connectivity.

Packaged in a small, rugged form factor containing **superior RF performance** and connected to a stainless-steel probe measuring just 100 millimeters (4 inches) in length, housing a **Class A tolerance PT100 RTD** with a measurement temperature range of -40°C to +180°C (-40°F to +350°F). At the high end of the supported range the external temperature probe is ideally designed for monitoring low and slow cooking temps mounted inside a **smoker** and transmitting your **data over LoRaWAN**.

Equally, **the probe can be used in any environment** from -40°C to +180°C where a shorter, thinner stainless-steel probe would be beneficial.

At its core, the RS1xx external RTD temperature sensor utilizes Laird Connectivity's field proven and reliable RS1xx Series hardware, providing **LoRaWAN** options in **868, 915, and 923 MHz** frequencies. The RS1xx works with Laird Connectivity's Sentrius RG1xx Gateway for simple out-of-the-box integration and is compatible with third-party Cloud and LoRa network ecosystem partners.

- **Multi-wireless:** LoRaWAN (868/915/923 MHz) and Bluetooth v4.2 (Central/Peripheral) with fully integrated high-performance antennas
- **External Sensor Probe:** Class A PT100 RTD temperature sensor within cabled IP67 probe
- **Fully certified** for FCC/IC/CE/ASNZS/NCC/IMDA and Bluetooth SIG
- **Simple wireless configuration** using mobile application over BLE
- **Harsh Environments:** Robust IP65 enclosure to serve many varied installation needs
- **Integrated out of the box networks:** Default configuration with Laird Connectivity's RG1xx gateway for simple, out-of-the-box cloud connectivity



## FEATURES AT A GLANCE



### YOUR WIRELESS NETWORK

Develop a fully owned private LoRaWAN network to capture, route and process IoT data for your application. Choose from RM1xx modules, RS1xx finished sensors, or RG1xx Gateways



### RUGGED DURABILITY WITH A BROAD SENSOR ARRAY

Robust enclosures provide a robust and resilient platform for recording and delivering sensor data from a range of harsh environments



### COMPREHENSIVE SECURITY AND RELIABILITY

Robust multi-layer security at each interface to safeguard your network at every level



### BROAD CERTIFICATION AND APPROVALS

Ready for deployment in multiple regulatory domains – FCC, IC, CE, ASNZ, NCC, IMDA and Bluetooth SIG listing



### PLATFORM FOR BUILDING ACTIONABLE IOT INTELLIGENCE

Route sensor data to the Cloud with Laird Connectivity's simplified wireless connectivity deployment



### PERSONAL SUPPORT FOR YOUR IMPLEMENTATION

Our Tier-2 support and engineering teams work to help configure and deploy your application

## APPLICATION AREAS



Product Transportation Monitoring



Food Safety Management



Industrial Heating and Cooling

## KEY SPECIFICATIONS

CATEGORY	FEATURE	SPECIFICATION
Chipset	LoRa®	Semtech SX1272
	Bluetooth®	Nordic nRF51822 – 256 k/32 k
LoRa	Frequencies	863 – 870 MHz (EU), 902 – 928 MHz (US), 915 – 928 MHz (AU + AS923)
Temperature Probe	Type	Class A tolerance PT100-M222 RTD
	Interface	Resistance Temperature Detector (RTD) using Three-Wire interface
	Operating Range and Variance	-40°C (-40°F) to +180°C (350°F) Variance of reported temperature data can be calculated taking the following uncertainties into account;
		i) BS EN 60751:2008 / IEC 60751 standards which state accuracy of class A PT100 measurements to be: $\pm (0.15^{\circ}\text{C} + 0.002  t )$ ii) RTD-to-Digital conversion, utilizing the MAX31865 with a 'Total Accuracy Over All Operating Conditions' of 0.5°C
Dimensions and Connector	Cable length – 1320 mm $\pm$ 20 mm, stainless-steel shaft - 4.0 mm $\pm$ 0.2 mm (dia.) x 100 mm $\pm$ 2 mm (length) RJ45C Connector (IP66~68 rated), user connected	
Antenna Power	Integrated	Custom Laird Connectivity antenna for 868, 915, or 923 MHz. Ceramic chip antenna for 2.4 GHz
	Battery	2 x AA - replaceable
Software	Mobile Application	Android and iOS – Remote sensor display and/or configuration + firmware update
Storage	Data logging	10,000 measurements (256 k of flash memory available)
LED	Status	3 – BLE and LoRa status
Button	User Input	Multi-use – default BLE pairing
Physical	Enclosure Dimensions	116 x 131 x 34 mm
	Connector	RJ45C Jack (IP66~68 rated), user connected
Environmental	Enclosure Operating Temp	-25° to +50°C (Temperature range dictated by AA battery chemistry, Alkaline/Lithium)
	Storage Temperature	-40° to +50°C
Regulatory	Approvals	FCC, IC, CE, ASNZ, NCC, IMDA and Bluetooth SIG
Warranty		1-year warranty

## ORDERING INFORMATION

PART NUMBER	DESCRIPTION
455-00103	Sentrius™ RS1xx LoRaWAN – 915 MHz Ext. RTD Temperature Probe (Smoker) – North America
455-00104	Sentrius™ RS1xx LoRaWAN – 868 MHz Ext. RTD Temperature Probe (Smoker) - Europe
455-00105	Sentrius™ RS1xx LoRaWAN – 923 MHz Ext. RTD Temperature Probe (Smoker) - Taiwan
455-00106	Sentrius™ RS1xx LoRaWAN – 923 MHz Ext. RTD Temperature Probe (Smoker) – New Zealand (AS923)
455-00108	Sentrius™ RS1xx LoRaWAN – 923 MHz Ext. RTD Temperature Probe (Smoker) – Singapore
455-00109	Sentrius™ RS1xx LoRaWAN – 923 MHz Ext. RTD Temperature Probe (Smoker) – Hong Kong
455-00110	Sentrius™ RS1xx LoRaWAN – 915 MHz Ext. RTD Temperature Probe (Smoker) - Australia (AU915)
455-00111	Sentrius™ RS1xx LoRaWAN – 923 MHz Ext. RTD Temperature Probe (Smoker) - Australia (AS923)
455-00112	RTD Temp Sensor, -40°C ~ +180°C, 100mm x 4.0mm SS Probe, 1320mm Cable, <b>Cable Assembly ONLY (SINGLE)</b>
455-00112B	RTD Temp Sensor, -40°C ~ +180°C, 100mm x 4.0mm SS Probe, 1320mm Cable, <b>Cable Assembly ONLY (BULK - Carton Qty 50pcs)</b>

## ALTERNATIVE RTD CABLE ASSEMBLIES ALSO AVAILABLE

455-00124	RTD Temp Sensor, -100°C ~ +100°C, 50mm x 4.0mm SS Probe, 1320mm Cable, <b>Cable Assembly ONLY (SINGLE)</b>
455-00124B	RTD Temp Sensor, -100°C ~ +100°C, 50mm x 4.0mm SS Probe, 1320mm Cable, <b>Cable Assembly ONLY (BULK - Carton Qty 50pcs)</b>
<b>Coming Soon!</b>	RTD Temp Sensor, -50°C ~ +450°C, 100mm x 4.0mm SS Probe, 1320mm Cable, <b>Cable Assembly ONLY (SINGLE)</b>
<b>Coming Soon!</b>	RTD Temp Sensor, -50°C ~ +450°C, 100mm x 4.0mm SS Probe, 1320mm Cable, <b>Cable Assembly ONLY (BULK - Carton Qty 50pcs)</b>

**Note:** The RTD external temperature probe cable assembly is **not** included with the Sentrius sensor enclosure and each part must be ordered individually. It's a 1 to 1 ratio of region-specific sensor enclosure to sensor cable assembly. Additionally, sensor cable assemblies available as part of the Sentrius product range are **not** interchangeable between Sentrius sensor enclosures (blue housing) with RJ45 port. The user must connect the appropriate sensor cable assembly with the intended enclosure. Please check the product description on the sensor label/part number on the packaging if in doubt.