Vertiv™ Wireless Sensor Network (WSN)

Benefits

- Substantially decrease installation installation labor costs compared to wired solutions

- Save up to 15% in material costs with less to manage and deploy

- Effectively monitor data center environment with a single user interface for many sensors

- Act fast if a problem occurs

- Improved end-to-end security

- Fast firmware updates and device configuration

- Flexible, fast relocation options

- SNMP and Modbus TCP communication for easy integration into monitoring software

Overview

Vertiv™ Wireless Sensor Network (WSN) provides an effective and secure method for data center thermal monitoring that reduces deployment costs and network complexity.

How It Works

The Vertiv™ WSN solution uses wireless LoRa technology for increased distance, battery life and security. The platform is easily deployed and scalable from small monitoring environments to large multi-room mission critical control applications. A single deployed gateway can communicate to hundreds of wireless sensors collecting environmental data.

Increase Visibility to Environmental Conditions

Getting a clear picture of the environmental conditions, identifying trends and knowing when issues occur are all key to managing thermal conditions in your data center. But today's data centers face a unique challenge of constant change, equipment additions and moves that require thermal solutions to be highly adaptable. Ensuring data security is also key when implementing a wireless thermal solution.

Vertiv WSN allows you to design and implement a thermal monitoring solution that is easy to install and produces measurable results.

Vertiv™ Wireless Sensors (WSN)

Cover More in Less Time with Less Materials

Wireless sensors take less time and fewer resources for the initial deployment. They also provide a fluid solution that can adapt with the changing, dynamic design of today's data centers. There are no wires to run, fewer cabinets and junction boxes to deal with and simplified wiring diagrams.

More Accuracy and Longer Battery Life

By not being tethered to wires, single point sensors can be placed exactly where they need to be for actionable readings. In addition, Vertiv wireless sensors have a best in class level of accuracy (+/-0.3 deg. C., +/-2% RH) and a longer battery life.

Vertiv™ WSN-Flex Sensor View with Extended Battery Pack

Easy Integration

Vertiv™ WSN provides flexibility for how data is collected. The embedded web Interface provides a simple solution for onsite monitoring. Vertiv WSN also comes with the ability to communicate via SNMP or Modbus TCP to a larger data center monitoring software like Vertiv™ Environet™ Alert or other BMS systems that use SNMP or Modbus TCP to communicate. Finally, Vertiv WSN fully integrates with Vertiv™ Liebert® iCOM™-S for mission critical control.

Best in Class Security

The Vertiv WSN solution boasts unique device key validation, frame count validation and encrypted payloads for top of the line data security. There is no automatic control algorithm incorporation for newly added wireless devices. This means that an unknown device cannot be added to the system without the intended user knowing about it. In addition, the gateway has an auto-joining mode that must be enabled to allow new wireless devices to join the network. This feature decreases human error by automatically disabling if users forget to turn it off.

3.87"
[98.3 mm]

14"
[356 mm]

2.92"
[742 mm]

Vertiv™ WSN-Gateway View with Antenna fully extended

Vertiv™ WaveFlex Wireless Sensor Accessories

The Vertiv™ WSN-Flex sensors now have temperature probe accessories. The Vertiv™ WSN-Probe-Temp30 has a 30 inch/.76 meter cable and the Vertiv WSN-Probe-Temp60 has a 60 inch/1.52 meter cable. The extension cable supports a single temperature point with a ribbon cable that can be coiled for shorter lengths. The probes are auto-recognized when plugged into the Flex IO Port of the Vertiv WSN-Flex sensor. The values will automatically populate to the Vertiv™ WSN-Gateway during the next sensor report.

Remote Temperature Probe

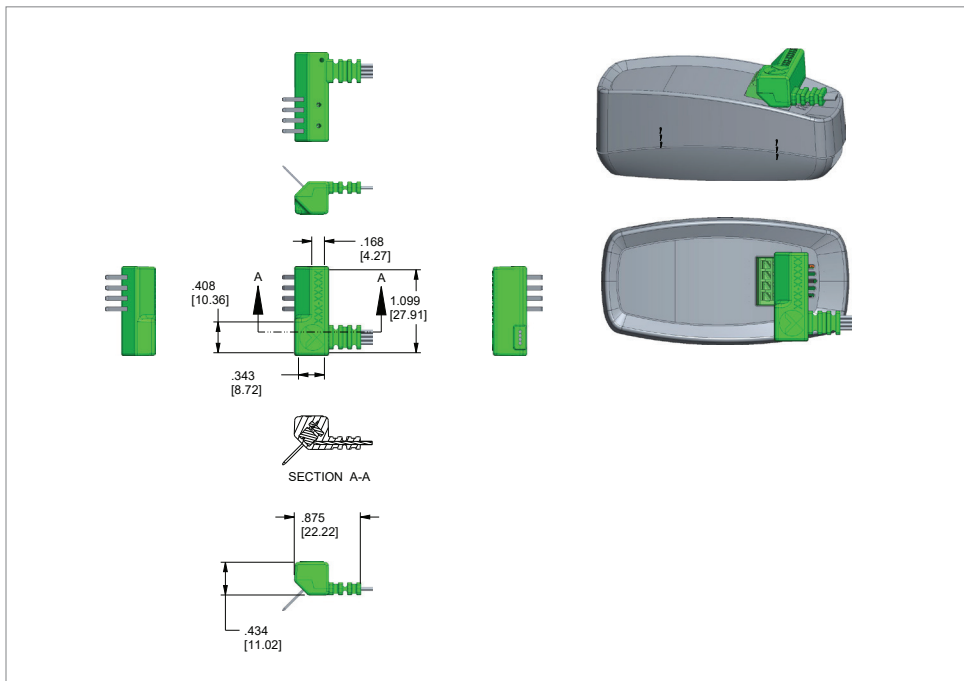| Item	Description
Type	CMOS Analog
Overmold Material	PVC
Power	Autodiscover: 3.3V, 10mA (Provided by FLEXio Port) Runtime: 3.3V, 20uA (Provided by FLEXio Port)
Device Dimensions	Plug: 27.91 x 8.72 x 11.02 mm (1.10 x 0.34 x 0.43 in) Sensor: 28.45 x 12.7 x 10.7 mm (1.12 x 0.50 x 0.42 in)
Temperature Range	40°C to 105°C (-40°F to 221°F)
Temperature Accuracy	±0.05°C (typ) or ±0.13°C (max) from 20°C to 42°C ±0.2°C (max) from -20°C to 90°C
Long term stability	±0.01°C, 10k hours at 90°C
Response Time	Thermal response time to 63% of final value in still air: 73 sec Thermal response time to 63% of final value in air flow: 50 sec
Calibration Required?	No
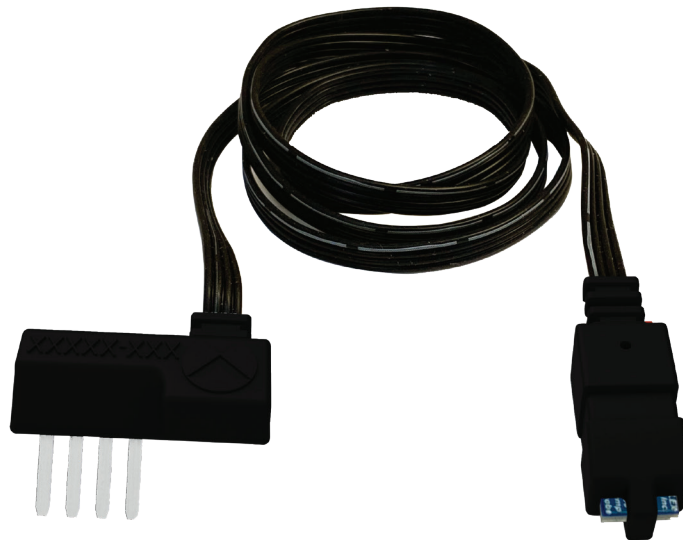
Standalone Remote Temperature Probe

Dimensions of the Temperature Probe
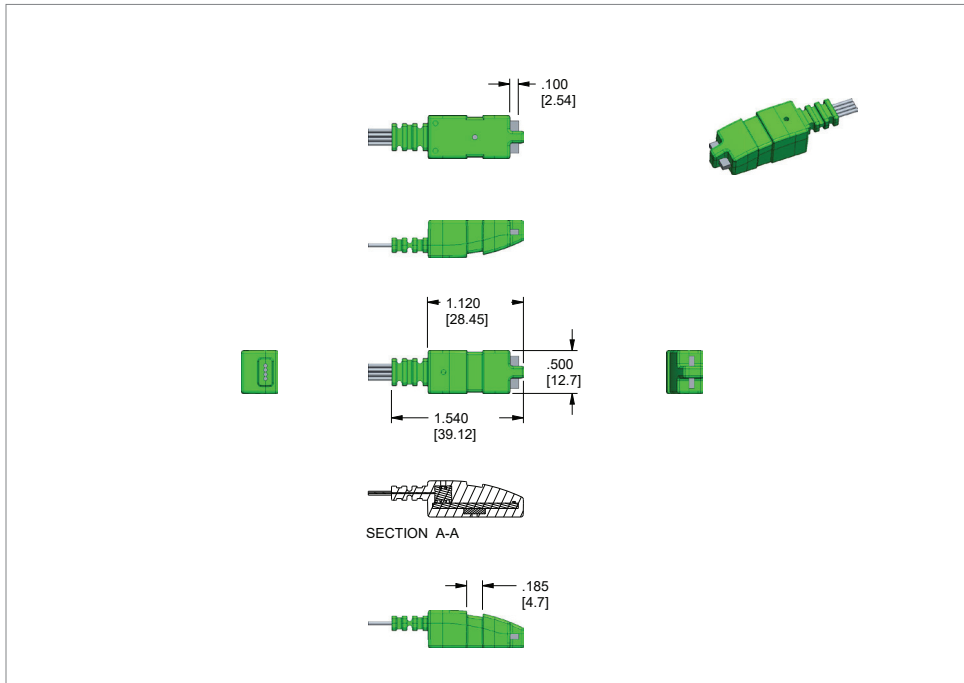
Dimensions of Attachment Point of Vertiv™ WSN-Probe and Mounting to Vertiv™ WSN-Flex Sensor

Product Specifications

Vertiv™ WSN-GATEWAY Specifications:

Item	Description	Specification
Voltage Input	2.1mm ID x 5.5mm OD Locking Barrel Plug	12VDC (± 10%)
Power	Current Draw @ 12VDC	400 mA (4.8W)
Ethernet	Dual Ethernet ports	2 x 10/100 base-TX Ethernet RJ45 Cat5/6
Physical Parameters	Outside Dimensions (w/ DIN Rail)	74.6 x 98.3 x 173.3 mm (2.9 x 3.9 x 6.8 in)
	Outside Dimensions (w/ DIN Rail and Antenna)	74.6 x 98.3 x 356 mm (2.9 x 3.9 x 14 in)
	Total Weight	1 lb. 7 oz. / 652g
Operating Range	Operating Temperature	0 °C to 60 °C
RF Characteristics	Maximum RF Input Level	-10 dBm
	Maximum RF Output Level for US/CAN/AS-NZ	+27.8dBm
	Receiver Sensitivity	-139 dBm at SF12 BW 125 kHz
		-125 dBm at SF7 BW 125 kHz
	Freq. Range – US/CAN/AS-NZ	915 ISM Band (902 MHz to 928 MHz)
	Max ERP	24.9mW at 867.1MHz at 0 degrees C.
Agency Approval	Certifications	FCC/IC/CE

Vertiv™ WSN-GATEWAY Antenna Specifications:

Frequency	865-928 MHz
Peak Gain	2.2 dBi
Average Gain	0.2 dBi
VSWR	3.0 : 1 Max
Polarization	Linear, vertical
Connector	RP-SMA PLUG
Dimensions	137mm

Vertiv™ WSN-FLEX Specifications:

Power	Two AAA Energizer L92 - Ultimate Lithium Batteries
Micro USB Port	Micro USB Port as optional power source for Sensor, 5VDC
Device Dimensions	83.8 x 43.2 x 34 mm (3.3 x 1.7 x 1.34 in) – with mounting bracket
Temperature	Typical Temperature Accuracy +/- 0.3 deg. Celsius
	Ambient Operating Temperature Range -40°C to 60°C
Relative Humidity	Typical Relative Humidity Accuracy +/- 2%
	Humidity Operating Range 0 to 100% RH
RF Frequencies	Supported Frequencies – 915 MHz Bands
LoRa Protocol	Supports LoRa Class-A End Device Protocol
FLEXio (push button ports #1->#4 left to right on front of sensor)	Digital Input: 3.3VDC wMaximum Digital Output: 3.3VDC at 8mA Maximum Analog Input: 0 to 3.0VDC Measurement Range (3.3VDC Max) Analog Output: 0 to 3.0VDC at 8mA Maximum
Digital Input Mode (Dry Contact Switch)	Wire dry contact switch to 1&2 or 3&4. Switching logic voltage is 3.3VDC and is provided internally by sensor
Digital Output Mode (3.3VDC, 8mA – Maximum Output Rating)	Wire Relay Driver Circuit with maximum rating of 3VDC and 8mA to pins #1 (+3.3V) and #2 (GND) or to pins #3 (GND) and #4 (+3.3VDC). This is then used to drive a Latching Buffer Relay
Analog Input Mode (0 to 3.0VDC Analog Input)	Wire 0 to 3.0VDC Analog Input Voltage to Pins #1 or #4 and the ground of the circuit to Pins #2 or #3 respectively
Analog Input Mode (0 to 3.0VDC Analog Input)	Wire the Analog Output Voltage of 0 to 3.0VDC from Pins #1 or #4 to the User's Analog Output Circuit and the ground of the circuit to Pins #2 or #3 respectively

Vertiv™ WSN-EXTBATT (Extended Battery Pack) Specifications:

Power	Two AA Energizer L91 - Ultimate Lithium Batteries
Device Dimensions	83.8 x 43.2 x 55.9 mm (3.3 x 1.7 x 2.2 in) – With Vertiv WSN-FLEX Sensor

Vertiv™ WSN-FLEX/WSN-EXTBATT Mounting Bracket Specifications:

Mounting Options	Tie Wraps, Wall Screws, Integrated Magnetic Mount
Device Dimensions	66 x 33 x 4 mm (2.6 x 1.3 x 0.16 in) – With Vertiv WSN-FLEX Sensor

Supported Frequency by Country

Country(s)	Part(s)	Frequency
USA, Canada	Vertiv WSN-Gateway, Vertiv WSN-Flex	915-928MHz band
Australia, New Zealand, Brazil	Vertiv WSN-Gateway, Vertiv WSN-Flex-010	915-928MHz band
Europe: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, UK	Vertiv WSN-Gateway-868, Vertiv WSN-Flex-018	868MHz band
India	Vertiv WSN-Gateway-868, Vertiv WSN-Flex-021	868MHz band

Vertiv.com | **Vertiv Headquarters,** 1050 Dearborn Drive, Columbus, OH, 43085, USA

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