

Wireless Sensor Endpoint

Sensor Connectivity Solution

WSE-1450



Connectivity

- Cellular Cat M1/NB-IoT
- LoRa
- Bluetooth® 5
- NFC
- 802.15.4

Features

- Cortex M4F 32-bit application processor with 1MB flash memory / 256K RAM
- 4MB external flash memory
- GPS receiver included in cellular radio
- LED indicator
- Lithium-Ion Polymer battery pack

Sensors

- Relative Humidity and Temperature
- 6-axis / 9-axis Inertial Measurement Unit
- Gas, Air Quality, Pressure, Temperature and Humidity
- Time-of-Flight Ranging
- Microphone



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The PCTEL® Wireless Sensor Endpoint (WSE) family are versatile Industrial IoT products that offer multiple radio connectivity options including cellular, LoRa, Bluetooth® 5, NFC as well as 802.15.4 support.

In addition to several radios, the PCTEL WSE family includes several sensors to monitor a variety of physical conditions. These sensors can detect air quality, temperature, relative humidity, acceleration, angular rate of change, magnetic field, range, and sound.

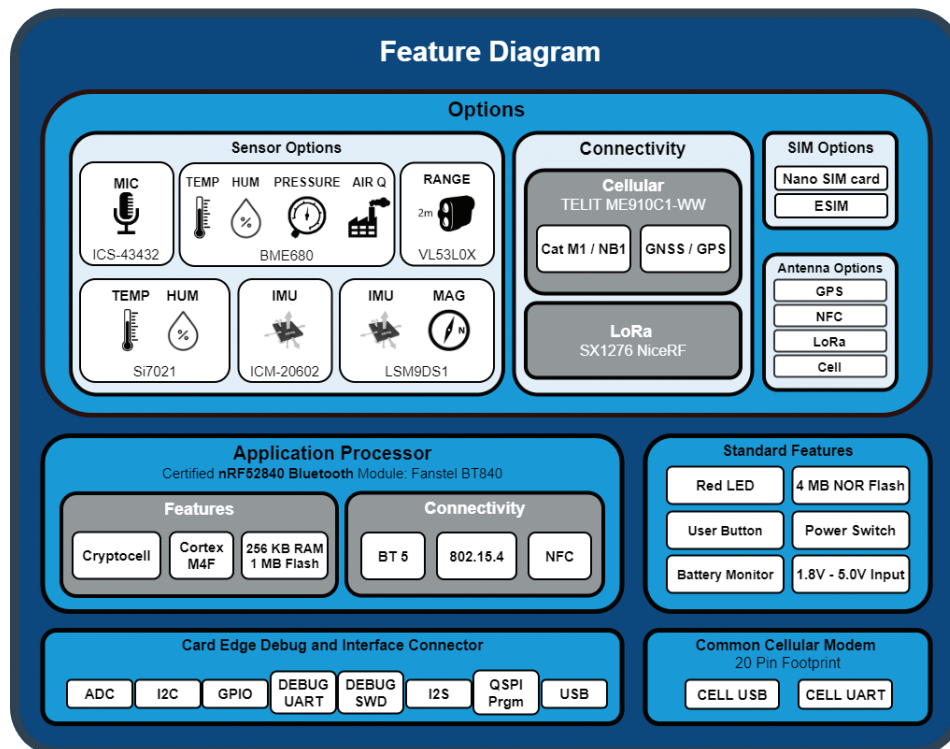
The PCTEL WSE is powered by a high capacity Lithium-Ion Polymer battery pack. The enclosure also has two mounting tabs for easy installation.

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Features and Benefits

Feature	Benefit
ARM Mbed Enabled	Faster time to market leveraging ARM Mbed OS to accelerate application software development.
Arm Pelion Enabled	Provides for the secure provisioning, connecting and managing of the endpoint reducing development time.
Internal Radio Antennas	No external connections with each radio having an individual antenna.
Rechargeable Battery Pack	Easily recharge the battery via USB Micro-B connector.
Mounting Tabs	Enclosure with two integrated tabs for easy installation.
Integrated Debug Interface	Ease of software development using the Wireless Sensor Development System.
Nano-Sim Card Holder	Easy installation of preferred cellular provider SIM card.
Power Switch	WSE can be turned on and off as needed.
Push Button	User defined operation.



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General Specifications

Parameter	Specification
Operating Temperature	-20°C to +60°C
Charging Temperature	0°C to +45°C
Storage Temperature	-20°C to +45°C (1-month) -20°C to +35°C (6-months)
Battery Pack	Li-Ion Polymer, 3.7V @ 4400mAh
Dimensions	60mm x 103mm x 43mm

Sensor Specifications

Device	Specification
Relative Humidity / Temperature	±3% RH (max) 0-80% RH / ±0.4°C (max) -10°C to +85°C
6-Axis IMU Motion Tracking Device	3-axis Accelerometer: ±2/±4/±8/±16 g linear 3-axis Gyroscope: ±250/±500/±1000/±2000 dps
9-Axis Inertial Measurement Unit	3-axis Accelerometer: ±2/±4/±8/±16 g (linear) 3-axis Angular rate: ±245/±500/±2000 dps 3-axis Magnetic position: ±4/±8/±12/±16 gauss
Time-of-Flight	Absolute range up to 2m (3% conditional accuracy)
Microphone	Frequency response: 50 Hz to 20 kHz SNR: 65 dBA, Sensitivity -26 dB FS
Environmental Gas / Air Quality	Gas (VOC): 20% tolerance; 5% accuracy Pressure: 300 to 1100 hPa (±0.6 hPa) Humidity: 10% to 90% RH (±3%) at 0°C to +65°C Temperature: -40°C to +85°C (±1°C), 25°C (±0.5°C) Air Quality Score: 0 to 500 (±15%)

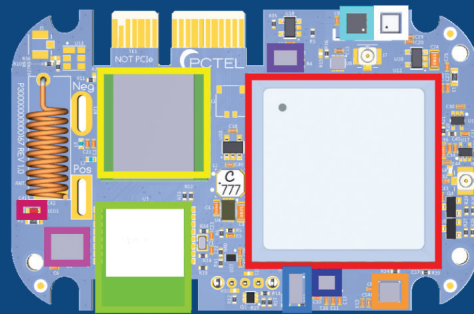
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Component Identification Diagram

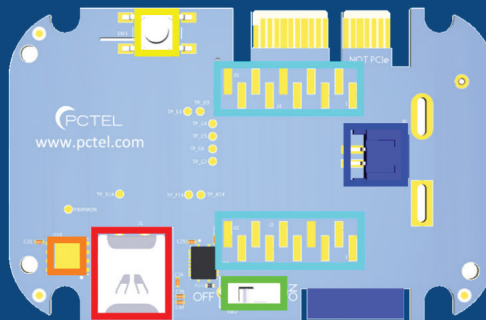
Top

Component	Function	COLOR
Telit ME910C1-WW	Cat-M1 / NB-IoT / GNSS	Red
TDK ICM-20602	Accelerometer - Gyro	Orange
NiceRF Lora1276	LoRa - 802.15.4 - <Gig	Yellow
BT840	MCU - BT5 - 802.15.4 - NFC	Green
BOSCH BME680	Temp - Hum - Pres - Air Q	White
SI7021	Temp - Humidity	Cyan
ST VL53L0X	Range Finding (ToF)	Blue
ST LSM9DS1	Accel - Gyro - Mag	Purple
TDK ICS-43432	Microphone	Dark Purple
Winbond	4MB QSPI NOR Flash	Pink
RED LED	Indicator	Red



Bottom

Component	Function	COLOR
Nano-SIM Holder	Size 4FF	Red
eSIM	Embedded SIM IC	Orange
Push Button	User button	Yellow
Power Switch	Slide Switch	Green
Battery Connector	JST	Blue
Modem Connector	Common Footprint for Cellular	Cyan



CONTACT US

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Solving Complex Wireless Challenges

PCTEL is a leading global provider of wireless technology, including purpose-built Industrial IoT devices, antenna systems, and test and measurement solutions. Trusted by our customers for over 25 years, we solve complex wireless challenges to help organizations stay connected, transform, and grow.



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