B+B SMARTWORX®

WzzardC™ Intelligent Edge Node
With SmartMesh IP and Bluetooth LE

PRODUCT FEATURES

- Ultra low power 802.15.4e SmartMesh IP technology
- Communicates with Spectre Network Gateway via highly scalable and reliable wireless mesh networks
- Connect to industry standard analog or digital sensors
- Wzzard app lets you read or configure the nodes using Android tablets and smart phones
- MQTT and JSON IoT protocol to application platform

Wireless Connectivity Where You Need It

The Wzzard™ intelligent wireless sensor platform creates a complete, quick and easy connectivity stack between your sensors and your application, on you network or the Internet. The platform uses Intelligent Edge Nodes, a wireless 802.15.4e SmartMesh IP network, to transmit sensor data to the Spectre Network Gateway. The Spectre Network Gateway can connect to the Internet via wired connections or the cellular data networks and communicate with application platforms using the MQTT IoT protocol and JSON data formats.

Wzzard Intelligent Edge Nodes accommodate virtually any industry-standard external sensors. The Nodes provide a wide variety of sensor interface options, including general purpose analog inputs, digital input/output and thermocouple. They can also contain internal sensors like an accelerometer (depending upon the model number). All 802.15.4e Wzzard Intelligent Edge Nodes contain an internal temperature sensor.

Secure, Reliable and Highly Scalable Wireless Networking

The Wzzard platform uses mesh networking and time-synchronized channel hopping to provide up to 99.999% connectivity, even in the most demanding RF environments. New nodes may be added at any time, and the SmartMesh IP network will dynamically self-configure as new nodes are added or removed. This is a function of the mesh network itself and does not need to be controlled by the network gateway.

Easy Configuration and Installation

Configuration of the Wzzard sensor platform is easy via Android smart phones or tablets. Using the Wzzard app, handheld devices can configure the Wzzard Intelligent Edge Nodes over their Bluetooth LE connections. The Nodes can be configured with calibration and scaling information, eng. units, friendly names, geolocation and other descriptive information.

The platform simplifies physical installation as well. The Wzzard Intelligent Edge Nodes can be attached to any surface using Velcro with dual lock adhesive or a holster mount.

Intelligence at the Network Edge

The Wzzard wireless platform places intelligence at the network edge. The Wzzard Intelligent Edge Nodes can be configured to communicate data only when specified threshold or alert levels are exceeded. When reporting, they can associate useful information like geolocation, device name and uptime. This eliminates unnecessary network traffic, eases the processing burden on upstream resources, and cuts the cost of cellular data plans when the Gateway is using the cellular data network. Thanks to low-power wireless technology and programmable time synchronization, the Intelligent Edge Nodes can operate for multiple years on battery power.

SPECIFICATIONS

POWER	
Internal	(2) 3.6V 2400 mAH Lithium Thionyl Chloride AA batteries
Battery Life	Multiyear based on 1 min sensor sampling and reporting
Optional External Input Voltage	5.0 VDC +/- 10%, 50mA max, via micro USB
MECHANICAL	
Physical Connection	3.5 mm terminal blocks
Sensor Inputs	Analog Input (0 - 5 VDC, 0 – 20 mA, 4 – 20 mA) Digital Input (0-48 VDC) Dgital Input Frequency 1-1K Hz Digital Input Counter Integrated Temperature Thermocouple J Type Digital Output (0-30 VDC)
Mounting	Velcro with dual lock adhesive Holster Mount (optional)
Weight	150 g (5.28 oz) with batteries installed
TECHNOLOGY	
Wireless	802.15.4e, SmartMesh IP
Protocols	MQTT-SN, MQTT, JSON
Bluetooth	Bluetooth 4.0 Low Energy (LE)
LED	Network Connectivity
ENVIRONMENTAL	
Installation	Indoor
Operating Temperature	0 to 65°C (32 to 149°F)
Storage Temperature	0 to 70°C (32 to 158°F)
Operating Humidity	0 to 95% Non-condensing
WIRELESS SECURITY	
Device Authentication	
128 bit AES-based encryption with multiple keys	
Message integrity check (MIC)	
Synchronized key changeovers	
Customized key rotation	

SENSOR INTERFACE SPECIFICATIONS

DIGITAL INPUTS

Voltage range	0 – 48 VDC
V_{IL}	0.97 V Maximum
V_{IH}	1.8 V Minimum
Pull up current	32uA
Type	Sourcing (PNP)/Sinking (NPN) Software selectable input
Isolation	None

RATE/FREQUENCY INPUTS

Frequency	Does a 1 second measurement at each measurement/publish interval
	1-1K Hz (Accuracy + or – 1 Hz)
	Uses the falling edge or rising edge based on the Invert Enabled setting

COUNTER INPUT

Channels	Actively counts either the falling edge (Invert enabled) or rising edge (Invert disabled)
	Can use a multiplier to convert to a unit type or count
	2 selectable/shared with Digital inputs
	Rolls over at 999999.9

ANALOG INPUTS

Input ranges	0 - 5 VDC, 0 – 20 mA, 4 – 20 mA
Resolution	12 bit
Input load resistance	100 Mega ohm (0-5VDC), 250 ohm (0 - 20 mA)
Accuracy	Voltage: 0.10% of full scale reading, 0.20% max.
	Current: 0.11% of full scale reading, 0.24% max.

THERMOCOUPLE INPUT

Types Supported	J
Ranges Supported	Type J -210 to +1,200 °C
Resolution	0.25 °C
Accuracy	Typical +/- 2 °C
	+/- 6 °C over the temperature range of -0 to 65 °C

DIGITAL OUTPUTS

Voltage range	0 - 30 VDC
Output Type	Open Drain
Output Current	Not to be less than 100mA
Protection	Current Limit Protection
Isolation	None

SMARTMESH IP 802.15.4E RADIO SPECIFICATIONS

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Frequency Band		2,400		2,4835	GHz
Number of Channels			15		
Channel Separation			5		MHz
Channel Clear Frequency	Where k = 11 to 25, as defined by IEEE 802.4.15		2405 + 5*(k-11)		MHz
Modulation	IEEE 802.15.4 Direct Sequence Spread Spectrum (DSSS)				
Raw data rate			250		kbps
Range	25 °C, 50% RH, +2dBi Omni-Directional Antenna, Antenna 2 m above ground				
	Indoor		100		m
	Outdoor		300		m
Receiver Sensitivity	Packet Data Error Rate (PER) = 1%			-93	dBm
Receiver Sensitivity	PER = 50%			-95	dBm
Output Power	Delivered to a 50 Ω load			8	dBm

BLUETOOTH LE RADIO SPECIFICATIONS

NO.	CHARACTERISTICS	CONDITIONS	MIN	TYP	MAX	BT SPEC.	UNIT
1	Operation Frequency Range		2402		2480		MHz
2	Channel Spacing			2			Mhz
3	Output Power	Maximum setting, measured at single ended 50ohm.		4			dBm
		Minimum setting, measured at single ended 50ohm.		-24			dBm
4	Sensitivity, High Gain Mode	High Gain Mode		-93.0		-70	dBm
		Standard Mode		-92.5		-70	dBm

THIONYL CHLORIDE LITHIUM BATTERIES (2 SUPPLIED WITH PRODUCT)

CHARACTERISTICS	CONDITIONS
Temperature Range	-40 to 85°C
Nominal Capacity	2.4 Ah
Nominal Voltage	3.6 V
Diameter	14.5 mm
Height	50.5 mm

*Potential hazard: Do not recharge, crush, disassemble or heat above 212°F (100°C)

ORDERING INFORMATION

MODEL NUMBER	ANALOG INPUT
WCHOLST	Walll-mount holster

ACCESSORIES

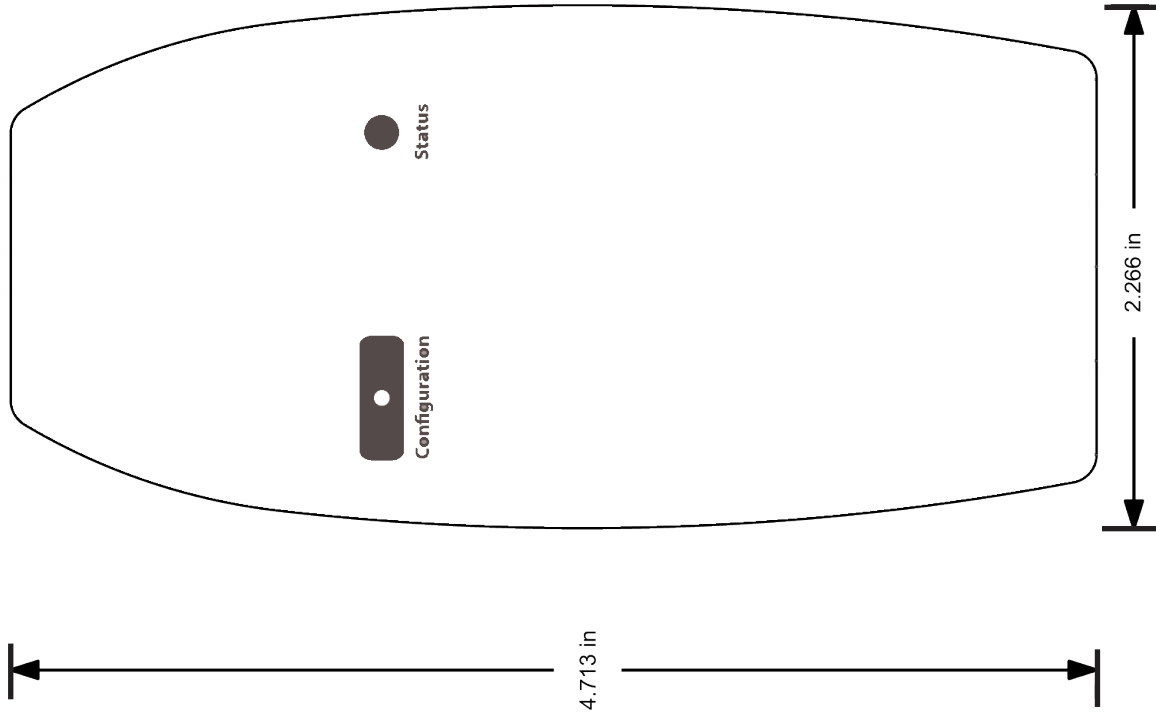| PART NUMBER	DESCRIPTION
ACH2-DBAT-DP003	External Antenna, 2.4 GHz, 2 dBi, Dipole, RP-SMA, hinged, 3.8 dBi
ACH2-AT-DP011	Magnetic Mount Antenna, 2.4 GHz, 3.8 dBi

APPROVALS AND CERTIFICATIONS

CE	
EN55022	CISPR (EN55022) Class A
EN 61000-6-1:2007	Generic immunity standard for residential, commercial and light industrial environments
EN 61000-6-3:2006+A1:2011	Emission standard for residential, commercial and light-industrial environments
EN61000-4-2	ESD +/- 8kV air, +/- 4kV contact
EN61000-4-3	RFI
EN61000-4-4	EFT
EN61000-4-6	CI

FCC/IC
FCC Part 15 Class A
FCC - Part 15.247
Industry Canada - RSS210

REGULATORY APPROVALS
ROHS and WEEE Compliant

MECHANICAL DIAGRAM · WZZARD COMMERCIAL

Status

Configuration

2.266 in

4.713 in

MECHANICAL DIAGRAM · HOLSTER ACCESSORY

A

[10.67]
.42

[66.04]
2.60

[38.10]
1.50

[38.10]
1.50

A

[4.47]
Ø .176

[6.60]
.26

[8.65]
Ø .34