Wzzard™ Mesh Wireless Sensor
for Commercial Applications
Model BB-WCD1H2102H

B+B SmartWorx
Powered by ADVANTECH
www.advantech-bb.com

PRODUCT FEATURES

+ Ultra low power 802.15.4e SmartMesh IP technology
+ Communicates with SmartSwarm 342 gateway via highly scalable and reliable wireless mesh networks
+ Connect to industry standard analog or digital sensors
+ MQTT and JSON IoT protocol to application platform
+ Wide operating temperature
+ Environmental monitoring - including commercial refrigeration, food processing and storage applications and more

WIRELESS CONNECTIVITY WHERE YOU NEED IT

The Wzzard mesh intelligent wireless sensor platform creates a complete, quick and easy connectivity stack between your sensors and your application, on your network or on the Internet. The platform uses Wzzard mesh wireless sensor nodes, a wireless 802.15.4e SmartMesh IP network to transmit sensor data to the gateway. The SmartSwarm 342 Gateway can connect to the Internet via wired connections or the cellular data networks and communicate.

Secure, Reliable and Highly Scalable Wireless Networking

The Wzzard Mesh 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 mesh sensor platform is easy via the B+B SmartWorx Hub cloud management portal.

ORDERING INFORMATION

MODEL NUMBER	
BB-WCD1H2102H	Wzzard Mesh Wireless 802.15.4e Sensor – Commercial Cooler HVAC Node, Temperature & Humidity Sensor

ACCESSORIES

BB-WCHMS	Door sensor cable
BB-WCHCBL	Thermistor/Breakout cable

SPECIFICATIONS

POWER	
Internal	3.6V 1650 mAH Lithium Thionyl Chloride 2/3 AA battery
Battery Life	5-year battery life, based on 1 minute sensor sampling interval
MECHANICAL	
Physical Connection	Molex 6-pin MicroClasp
Sensor Inputs	(2) Analog Inputs 0-10VDC or 0-20mA (Software Selectable)
	(1) Internal Temperature
	(1) Thermistor 10K @ 25 °C
	(1) Digital Input (0-48V DC)
	(1) Internal Humidity
Mounting Options	Mounting bracket (included), VHB adhesive strip (included), or zip tie (ties not included)
Weight	0.2 lbs (0.09 kg)
TECHNOLOGY	
Wireless	802.15.4e, SmartMesh IP
LED	Network Connectivity, Node Status
ENVIRONMENTAL	
Installation	Indoor
Operating Temperature	-20 to +70°C (-4 to 158°F)
Storage Temperature	-40 to 85°C (-40 to 187°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	

All product specifications are subject to change without notice.
BB-WCD1H2102H_WzzardMeshWirelessSensor-CommApps_0318ds

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SENSOR INTERFACE SPECIFICATIONS

ANALOG INPUTS	
Input Range	0 - 10 VDC / 0-20mA (Software Selectable)
Resolution	0.3 mV/1.3 uA
Input Load Resistance	59 K Ohms
Accuracy	+/-25mV +/-0.05mA
Number of Inputs	2
THERMISTOR INPUT	
Types Supported	10K @ 25 °C
Ranges Supported	-40 to +85 °C
Resolution	0.05 °C
Accuracy	Typical ± 0.3 °C @ 25 °C
Number of Inputs	1
DIGITAL INPUTS	
Voltage Range	0 -48 VDC
V_{IL}	0.4 V Maximum
V_{IH}	2.5 V Minimum
Pull-up Current	65 µA
Type	Sinking (NPN) Input
Isolation	None

INTEGRATED SENSORS

HUMIDITY SENSOR	
Accuracy	4% RH
Response Time	80% response within 10 minutes

TEMPERATURE SENSOR	CONDITIONS	MIN	TYP	MAX	UNITS
Offset	Temperature Offset Error @ 25 °C		± 0.25		°C
Slope Error			± 0.033		°C/ °C

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	Indoor		100		m
	Outdoor		200		m
Receiver Sensitivity	Packet Data Error Rate (PER) = 1%			-93	dBm
Receiver Sensitivity	PER = 50%			-95	dBm
Conducted Output Power (PA on)	Delivered to a 50 Ω load		8		dBm
Conducted Output Power (PA off)	Delivered to a 50 Ω load		0		dBm
Radiated Output Power (PA on)	Taoglas PA.11.BB antenna		7		dBm
Radiated Output Power (PA off)	Taoglas PA.11.BB antenna		-1		dBm

Note: UL Class1/Division2 Applications
B+B SmartWorx Product Exceptions Summary
- UL C1/D2 rating is voided when using M12 model outdoors.
- UL C1/D2 rating is voided if magnetic mounting is used for permanent installation.
- UL C1/D2 rating is voided when using non UL-specified batteries. Do not mix old and new batteries.

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THIONYL CHLORIDE LITHIUM BATTERY* (1 SUPPLIED WITH PRODUCT)

CHARACTERISTICS	CONDITIONS
Temperature Range	-60 to 85 °C
Nominal Capacity	1.65 Ah
Nominal Voltage	3.6 V
Diameter	14.5 mm
Height	33.5 mm
*Potential Hazard: Do not recharge, crush, disassemble or heat above 212 °F (100 °C)	

APPROVALS AND CERTIFICATIONS

CE	
EN55022	CISPR (EN55022) Class B
EN 61000-6-2:2005	Generic Immunity Standard for (Heavy) Industrial Environments
EN 61000-6-4:2006+A1:2011	Emission Standard for (Heavy) Industrial Environments
EN61000-4-2	ESD +/- 15kV air, +/- 4kV contact
EN61000-4-3	RFI
EN61000-4-4	EFT
EN61000-4-5	Surge
EN61000-4-6	CI
ENVIRONMENTAL	
EN60255-21-1	Vibration, 2g, 10-500 Hz,1.5mm displacement
EN60255-21-2	Shock, 50g, 11ms half sine wave, 18 shocks
IEC 60068-2-31:2008	Drop
FCC/IC	
FCC Part 15 Class B	
FCC - Part 15.247	
Industry Canada - RSS210	
REGULATORY APPROVALS	
ROHS and WEEE Compliant	

MECHANICAL DIAGRAM