WSG-101 - Product Datasheet

POWERCAST®

Building Automation System Gateway

The WSG-101 Building Automation System (BAS) Gateway connects Powercast's wireless sensor devices to the wired BAS network. It receives data from up to 100 Lifetime Power® wireless sensor devices (WSN-10XX) and communicates to a BAS network through a wide range of industry standard protocols and physical interfaces.

- *Multiple BAS protocols*
- *Up to 100 devices*
- *Easy configuration*

KEY FEATURES

- Supports up to 100 devices
- Multiple BAS interface options
- Integrated antenna
- Gateway redundancy options
- 24VAC/DC power

BENEFITS

- Deployment scalability
- Easily integrates with virtually any BAS
- Simple configuration and deployment
- Maintenance-free operation
- No interference with or from Wi-Fi

BAS GATEWAY
WSN-101

PC INTERFACE SENSOR INTERFACE STATUS POWER BAS NETWORK INTERFACE
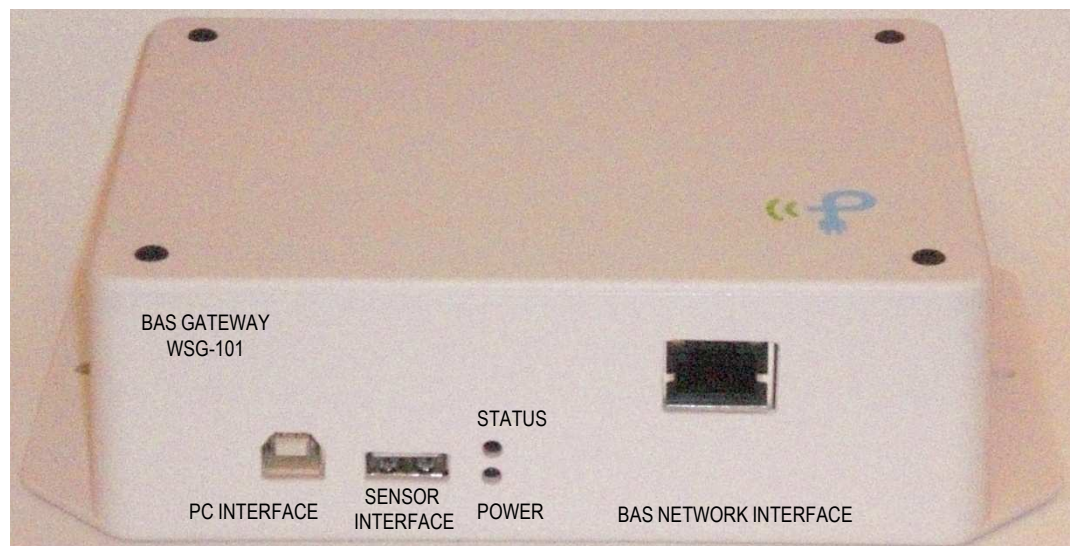
Ethernet

BACnet/IP
BACnet Ethernet
Modbus TCP
Ethernet/IP
SNMP

RS-485

BACnet MS/TP
Metasys N2
Modbus RTU

FTT-10

LonWorks

WSG-101 - Product Datasheet

Building Automation System Gateway
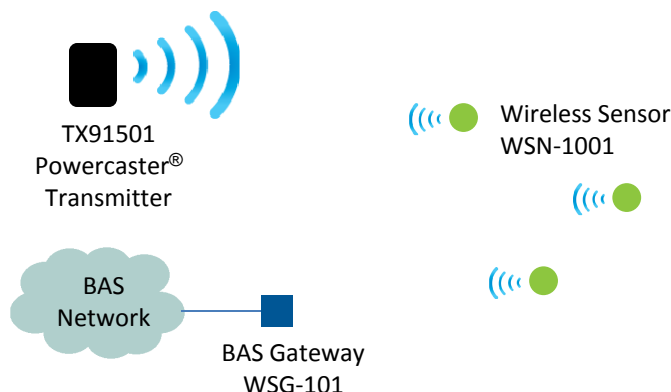
TX91501
Powercaster®
Transmitter

Wireless Sensor
WSN-1001

BAS
Network

BAS Gateway
WSG-101

SPECIFICATIONS

Radio	IEEE 802.15.4, 2.4GHz
Approvals	FCC Part 15 and Industry Canada Contains FCC ID: OA3MRF24J0MA Contains IC: 7693A-24J40MA
Antenna	Internal, 360° pattern
Range	Data - 100 ft indoor in typical commercial office building
Power	24VAC/DC, removable terminal block
Configuration Ports	USB Type B – PC Interface USB Type A – Sensor Interface
BAS Network Port	Ethernet , RS-485, or FTT-10
Enclosure	ABS plastic, UL94-5VA rating, color – bone
Mounting	Wall mount or desktop
Dimensions	6.6" x 4.4" x 1.75"
Environment	-20°C to 50°C, indoor use only
Weight	0.5 lbs.
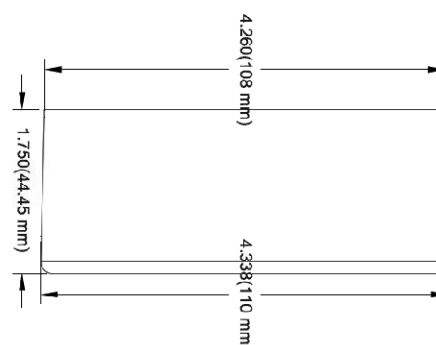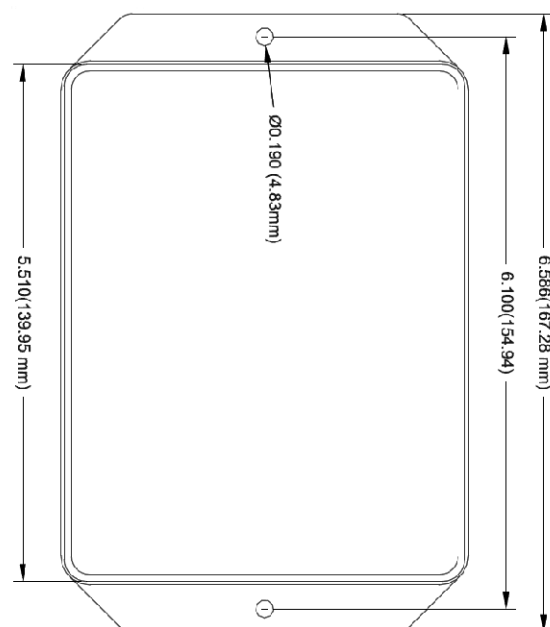
ORDERING INFORMATION

BACnet/IP	WSG-101-BACNET-IP
BACnet/Ethernet	WSG-101-BACNET-ETH
Modbus TCP	WSG-101-MODBUS-TCP
Ethernet/IP	WSG-101-ETHERNET-IP
SNMP	WSG-101-SNMP
BACnet/MSTP	WSG-101-BACNET-MSTP
Metasys N2	WSG-101-METASYS-N2
Modbus RTU	WSG-101-MODBUS-RTU
LonWorks	WSG-101-LON
USB-only	WSB-101-USB

WSN-1001 - Product Datasheet

POWERCAST®

Lifetime Power® Wireless Temperature and Humidity Sensor

The Lifetime Power Wireless Temperature and Humidity Sensor (WSN-1001) is a battery-less sensor that is powered wirelessly by radio waves for applications such as HVAC control, building automation, and industrial monitoring. It reports accurate temperature and humidity measurements in real-time to Powercast's Building Automation System (BAS) Gateway. The gateway receives data from up to 100 sensor devices and interfaces to a wide range of standard BAS protocols including BACnet, Metasys, Modbus, and LonWorks.

- ■ *Powered wirelessly*
- ■ *No wires to install*
- ■ *No batteries to replace*

KEY FEATURES

- Internal temperature and humidity sensors
- Powered wirelessly
- Automated configuration
- 802.15.4 radio hardware
- Integrated mounting flanges

BENEFITS

- No batteries, no wiring
- Maintenance-free operation
- Simple configuration and deployment
- No interference with or from Wi-Fi
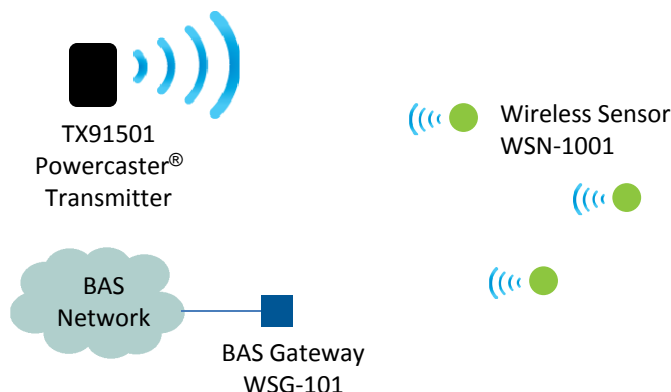- Multiple units powered from a single power transmitter

WSN-1001 - Product Datasheet

POWERCAST®

Lifetime Power® Wireless Temperature and Humidity Sensor

TX91501
Powercaster®
Transmitter

Wireless Sensor
WSN-1001

BAS
Network

BAS Gateway
WSG-101

SPECIFICATIONS

Radio	IEEE 802.15.4, 2.4GHz
Approvals	FCC Part 15 and Industry Canada Contains FCC ID: OA3MRF24J0MA Contains IC: 7693A-24J40MA
Antennas	Rx – 915MHz, internal, 120° Tx – 2.4GHz, internal, 360°
Range	Power – up to 60 feet line of sight Data – 100 ft indoor in typical commercial office building
Accuracy	• Temperature: +/- 1°F (55-85°F) • Humidity: +/- 3% (10-90)
Power	RF energy (915MHz) from Powercaster transmitter
Enclosure	ABS, UL94-5VA rating, Bone color
Configuration Port	USB mini-B connector
Mounting	• Wall mount, vertical, indoors • Face toward power transmitter • Optimal mounting height: 7 ft.
Dimensions	6.50x2.88x1.13 in. (excluding flanges)
Environment	-20°C to 50°C, indoor use only
Transmitted Data for BAS	Node ID, Temperature, Humidity, RSSI, Power Transmitter ID
Weight	<0.5 lbs.

Dimension annotations: 7.704(195.68 mm), 7.084(179.93 mm), 6.500(165.1 mm), 2X∅.188(4.77 mm), .750(19.05 mm), 2.875(73.025 mm)

User's Manual
TX91501 – 915 MHz Powercaster™ Transmitter

PRODUCT DESCRIPTION

The Powercast TX91501 Powercaster transmitter is specially designed to provide both power and data to end devices containing the Powercast P2110 or P1110 Powerharvester® receivers. The TX91501 is housed in a durable plastic case with several mounting options. Operational power is provided to either of the two DC power connectors at 5V DC. The TX91501 includes a status LED to provide feedback on functional state. The TX91501 has a factory set, fixed power output and no user-adjustable settings. The label indicates the effective power for which the device is configured, with 3 watts EIRP being the maximum. Once properly mounted, transmission is initiated by applying power to the TX91501.

FEATURES

- FCC and IC approved
- Flexible wall mounting options
- Fully integrated system
- Transmits power and data
- Factory configurable for custom applications
- Wide temperature range
- RoHS compliant

ORDERING OPTIONS

Model   Firmware

TX91501 – XX – XX

Data
ID: Transmitter ID

Output Power
3W: 3 Watts
1W: 1 Watt

POWERING APPLICATIONS

- Wireless battery charging
- Battery-free wireless sensors
  - Industrial Monitoring
  - Smart Grid
  - Structural Health Monitoring
  - Defense
  - Building automation
  - Agriculture
  - Oil & Gas
  - Location-aware services
- Wireless trigger
- Low power electronics

PRODUCT CONTENTS

The following items are included inside the package:

Qty	Description
1	915 MHz transmitter
1	Power supply
1	US plug for Power supply (must be snapped in to the Power supply)
1	Quick Start instruction card

User's Manual
TX91501 – 915 MHz Powercaster™ Transmitter

SET-UP AND OPERATION

1. Wall-mount the TX91501 in the desired location with the Powercast logo and status LED facing the direction in which the energy is desired. For permanent installations, mount the TX91501 eight feet or more above floor level.
2. Plug the DC connector of the power supply into one of the two available connectors on the TX91501.   Plug the power supply into a 120V outlet.
3. When the green LED illuminates, the TX91501 is active and transmitting radio frequency (RF) energy. Data is automatically included in the transmission and can be received by one of Powercast's Powerharvester Modules.

The status LED indicates the following operating conditions:

LED	Status	Description
Off	Off	5VDC is not applied
Green	Active	Transmitting normally
Red[1]	Fault	Transmission stopped due to an obstruction in close proximity[2]

[1]During fault status, the LED will momentarily blink about once per second until the obstruction is removed.

[2]If operating on a flat surface for testing purposes, such as a table, it is recommended that the TX91501 is elevated off the surface with a non-conducting material, such as foam or a cardboard box, OR the TX91501 is positioned near the edge for unobstructed transmission.

SPECIFICATIONS

Item	Description
Modulation	Power: Direct Sequence Spread Spectrum (DSSS) Data: Amplitude Shift Keying (ASK)
Frequency	915 MHz Center Frequency
Power output (not user adjustable)	TX91501-3W-XX: 3 watts EIRP TX91501-1W-XX: 1 watt EIRP
Beam pattern	60° width, 60° height Vertical Polarization (with logo in upright position)
Approvals	FCC Part 15.247 Industry Canada
Firmware Version	Located on the TX91501 label
Data Communications	An 8-bit, factory-set, TX91501 identification (ID) number is broadcast with random intervals up to 10ms using Amplitude Shift Keying (ASK) modulation. The ID number can be found on the TX91501 label.
Operating Temperature	-20°C to 50°C
Installation Environment	Indoor use only
Mounting	6 bracket mounting holes (See mechanical drawing for dimensions) 2 keyholes (See mechanical drawing for dimensions)
Power	5VDC/1A through included Power Supply
Color	Black
Dimensions	6.75" x 6.25" x 1.63" (171.45 x 158.75 x 41.4 mm)
Weight	1 lb
Warranty	1 year

User's Manual
TX91501 – 915 MHz Powercaster™ Transmitter

MECHANICAL (REAR VIEW)
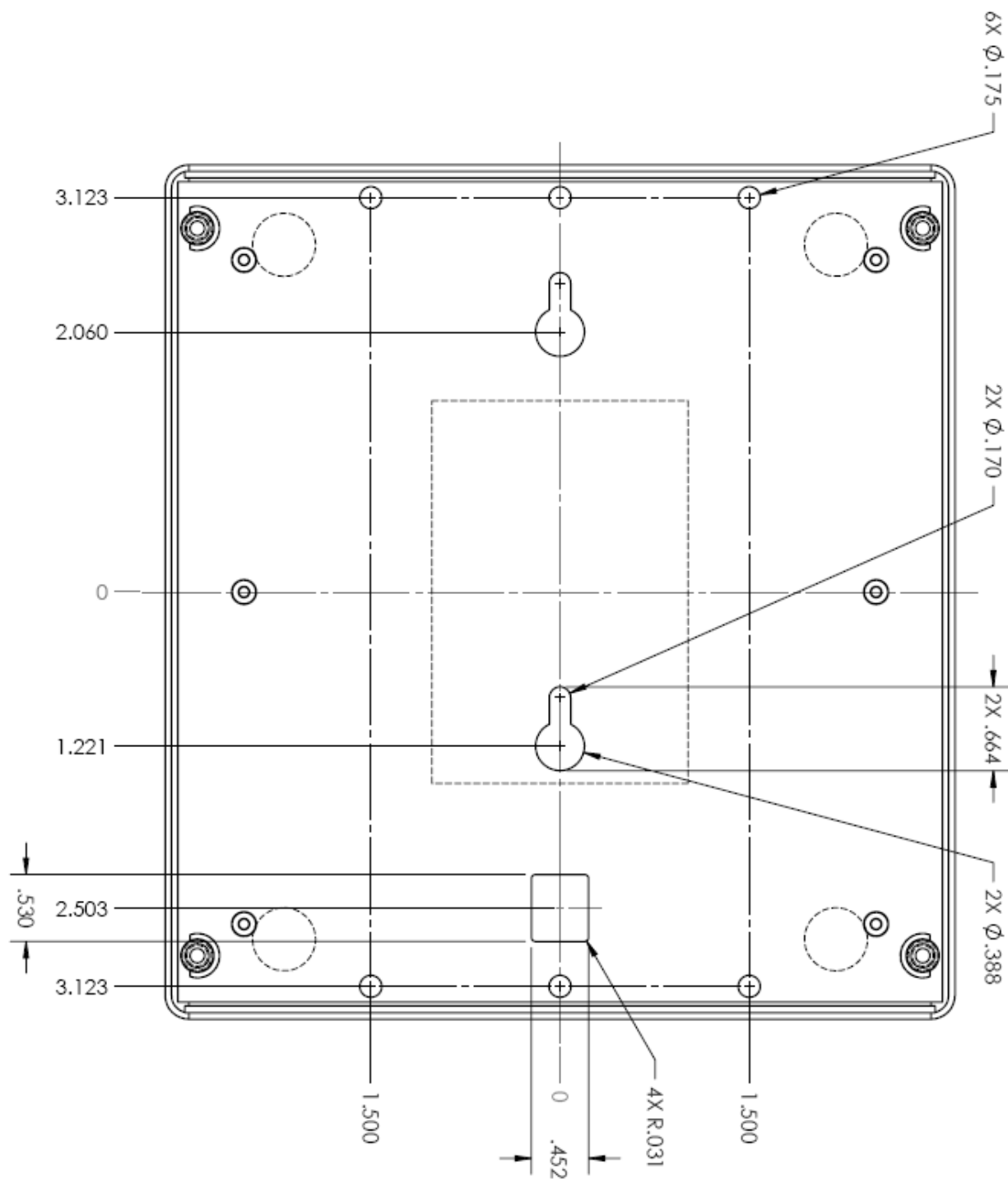
*Dimensions in inches

User's Manual
TX91501 – 915 MHz Powercaster^{TM} Transmitter

ACCESSORIES

The power supply included with the TX91501 supports interchangeable wall plugs. The power supply ships with the US AC input clip.

Power supply: PSAC05R-050(P)

AC Input Clips:	US	RPA	India	RPI
	Brazil	RPB	UK	RPK
	China	RPC	Argentina	RPN
	Europe	RPE	Australia	RPS
	Korea	RPH		

Datasheet: http://www.phihong.com/assets/pdf/PSAC05R.pdf

Mounting Brackets: http://www.polycase.com/category/nema-mounting-flange-kit.html
              or equivalent

SUPPORT

Technical support for Powercast products can be initiated through the following methods:
Website contact form: http://www.powercastco.com/contact/
Telephone: +1 724-238-3700

User's Manual
TX91501 – 915 MHz Powercaster™ Transmitter

COMPLIANCE STATEMENTS

This device is intended for commercial and industrial applications.

Changes or modifications not expressly approved by Powercast could void the user's authority to operate the equipment. Use and maintain device only as specified in this manual.

All end devices marketed for use with this transmitter must properly receive and extract data from this device.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING!
FCC and IC Radiation Exposure Statement:
This equipment complies with FCC's and IC's RF radiation exposure limits set forth for an uncontrolled environment under the following conditions:

1. This equipment should be installed and operated such that a minimum separation distance of 23cm is maintained between the radiator (antenna) & user's/nearby person's body at all times.
2. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

User's Manual
TX91501 – 915 MHz Powercaster™ Transmitter

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User's Manual
TX91501 – 915 MHz Powercaster^{TM} Transmitter

WARRANTY

THIS LIMITED WARRANTY applies solely to standard transmitters manufactured by or on behalf of Powercast. Subject to the limitations herein, Powercast warrants that transmitters, when delivered by Powercast or its authorized distributor, for one (1) year following the delivery date, will be free from defects in material and workmanship and will substantially conform to Powercast publicly available specifications for such products in effect at the time of delivery. This limited warranty excludes: (i) engineering samples (which are provided "AS-IS" without warranty); (ii) bare circuit boards (iii) development products (such as boards and cables); (iv) design defects or errors known as "errata"; (v) transmitters procured through unauthorized third parties; and (vi) transmitters that have been subject to misuse, mishandling, accident, alteration, neglect, unauthorized repair or installation. Furthermore, this limited warranty shall not apply to the use of covered products in an application or environment that is not within Powercast specifications or in the event of any act, error, neglect or default of Customer. If such Powercast products fail to conform to the warranty above, the exclusive remedy of Customer and the sole liability of Powercast shall be, at the option of Powercast, to replace or repair the affected products, or to refund to Customer the price of the affected products. The availability of replacement products is subject to product discontinuance policies at Powercast. Customer may not return products without first obtaining a customer return material authorization (RMA) number from Powercast. THE WARRANTIES SET FORTH HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. POWERCAST DISCLAIMS ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT, AND ANY WARRANTY THAT MAY ARISE FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. IF POWERCAST CANNOT LAWFULLY DISCLAIM IMPLIED WARRANTIES UNDER THIS LIMITED PRODUCT WARRANTY, ALL SUCH IMPLIED WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE WARRANTY PERIOD (AS DEFINED ABOVE). YOUR SOLE REMEDY WITH RESPECT TO ANY BREACH OF THE LIMITED PRODUCT WARRANTY SHALL BE THE REPAIR OR REPLACEMENT OF THE DEVICE AS SPECIFIED IN THE LIMITED PRODUCT WARRANTY. POWERCAST IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR UNDER ANY OTHER LEGAL THEORY INCLUDING, BUT NOT LIMITED TO, LOST PROFITS, DOWNTIME, GOODWILL, DAMAGE TO OR REPLACEMENT OF EQUIPMENT AND PROPERTY, AND ANY COSTS OF RECOVERING, REPROGRAMMING, OR REPRODUCING ANY PROGRAM OR DATA STORED IN OR USED WITH A SYSTEM CONTAINING POWERCAST TRANSMITTERS. Some states do not allow the exclusion or limitation of incidental or consequential damages or exclusions or limitations on the duration of implied warranties or conditions, so the above limitations or exclusions may not apply to you. This limited product warranty gives you specific legal rights, and you may also have other legal rights which vary from state to state.

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