PC-502 Datasheet

Overview

The PC-502 is a wall mounted module that can be used to expand the range of a Layer-1 or Layer-2 RF network, or can be used to provide the protocol gateway from S5-bus to Layer-1 or Layer-2 RF protocol.
In the Layer-1 RF network the PC-502 is designed to provide S5-bus to RF protocol conversion to allow any product participating in the Integrated Room Automation System (IRAS) an RF transceiver for control of wireless products in the guestroom.
In the Layer-2 802.15.4 Zigbee 2006 mesh network, the PC-502 is designed to patch areas within the network where signal strength is lost due to distance limitations or interference. It also serves to create multiple pathways, increasing the redundancy of the mesh communications to ensure maximum network reliability.

Figure 1 PC-502

Features

- Small wall mountable form factor
- 2.4Ghz IEEE 802.15.4 compliant RF transceiver (CC2430 radio core)
- Medium and long range variants available
- Industrial temperature ratings 0-65 degrees C
- FCC Part 15b listed

Specification

Parameter	PC-502.1	PC-502.2
RF Data Rate	250kbps	250kbps
Antenna Type	SMT	SMT
Indoor Range	70ft	100ft
Outdoor/ RF line-of-sight range	540ft	1000ft+
Transmit Power	1mW (+0dBm)	10mW (+18dBm)
Receive Sensitivity	-94.6dBm	-94.6dBm
Frequency Band	2.4Ghz	2.4Ghz
Encryption	AES-128	AES-128
Protocol	802.15.4	802.15.4
Frequency Channels	11-26	11-26
Input Voltage	12VDC	12VDC
Current Consumption	50mA (Peak)	100mA (Peak)
Operating Ambient Temperature	0° C	40 ° C
LED /Switch	Reset indication, blinks when unit is connected to an RF network. Rapid blink during binding association.	

Ranges are determined by performing an RF link quality test using e528.3G thermostats as the transmitter, and the PC-502.x as the receiver. The maximum distance threshold is based on a 95% overall link quality. Outdoor ranges were conducted in a low noise, free air environment. Indoor ranges are for reference. Indoor ranges are impacted by the ambient environmental noise floor, and building construction materials.

Network Topology

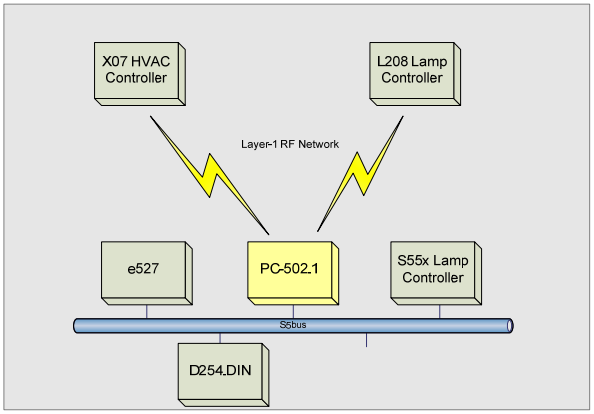


Figure 2 PC-502 Layer-1 Topology

In this application, the PC-502 acts as the S5-bus to RF gateway in the Layer-1 network. This would allow products that do not inherently support an RF radio to participate in the Layer-1 network. The PC-502 could also be used as a repeater to re-broadcast network traffic into areas that are difficult to maintain sold RF network links.

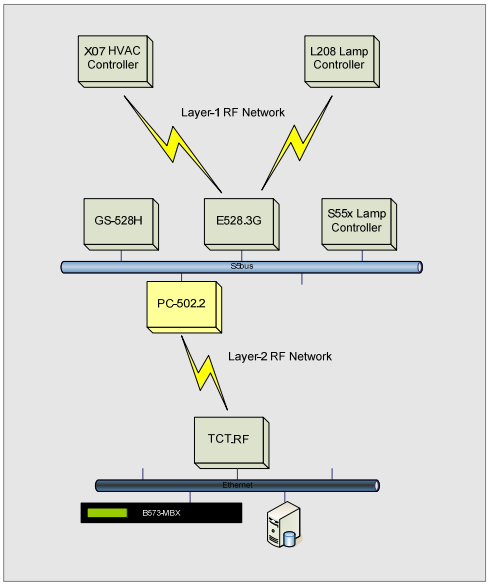


Figure 3 PC-502 Layer-2 Topology

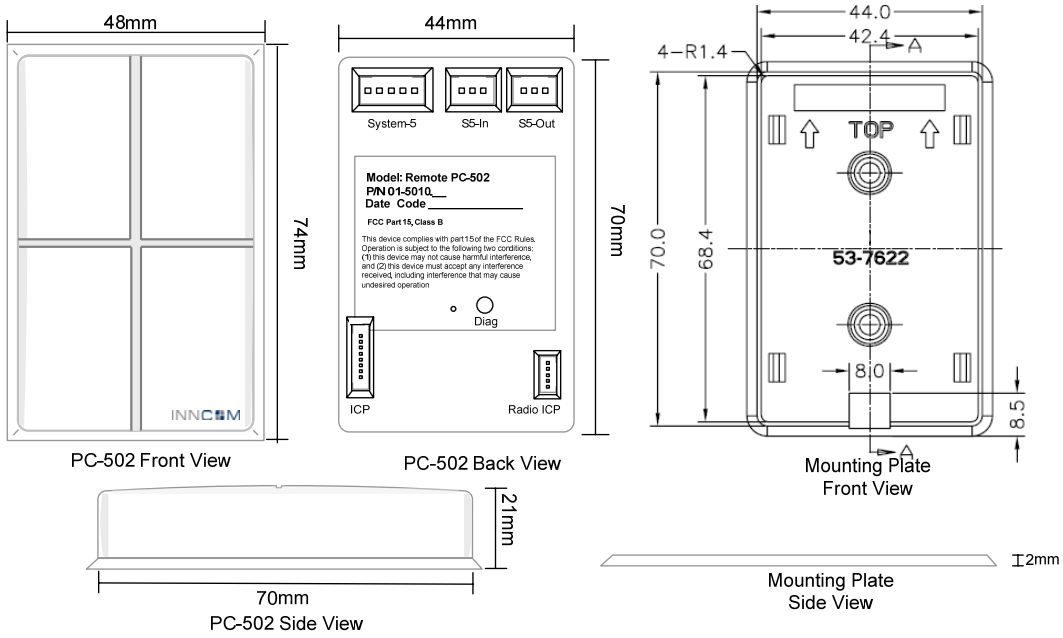
In this application, the PC-502 provides the Layer-1 to Layer-2 RF Bridge where both wireless applications are required. Additionally, the PC-502 could be used as a repeater to improve the link quality on the Layer-2 network.

Safety/Regulatory

Parameter	Condition	Status
FCC	Part 15b	02-9994 is FCC listed. 02-9894, and 02-9927 FCC listings are pending.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

PC-502 Dimensions



Header and Connections

H3 (In System Programming)

Pin	Function	Type	Min	Max
1-8	Programming	-	-	-

H4 / H5 (S5-bus In/Out)

Pin	Function	Type	Min	Max
1-GND	Common	-	-	-
2-12VDC	Input voltage	In	11.75	12.25
3-S5-bus	Multi-drop	In/Out	-	-

H6 (System-5)

Pin	Function	Type	Min	Max
1-GND	Common	-	-	-
2-12VDC	Input voltage	In	11.75	12.25
3-S5-bus	Multi-drop	In/Out	-	-
4 –InOut1	TTL	In/Out	-	-
5- InOut2	TTL	In/Out	-	-

Ordering Information

Part Number	OPN	Description
01-5010.1	PC-502.1	PC-502 with 02-9994 0 db Radio
01-5010.2	PC-502.2	PC-502 with 02-9894 20db Radio

Document Revision History

Revision	Date Issued	Reason
0.1	27-Mar-2009	FCC for PC-502

FCC NOTE:

THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER’S AUTHORITY TO OPERATE THE EQUIPMENT.