

## INNCOM B574 / PC-803 Datasheet

### Overview

INNCOM's B574 is an Edge Router that bridges wired Ethernet (802.3) networks with INNCOM's Deep Mesh RF network. In contrast, the PC-803 is an RF-Ethernet Protocol Converter typically installed in the guestroom or in other locations in proximity to the guestroom and again is used to bridge wired Ethernet to the room-level RF network. These devices are used as described in this datasheet and other documentation to form either in-room (PC-803) or backhaul networks (B574) with up to 200\* rooms per PAN (Personal Area Network). It supports multiple IP protocols (UDP, ICMP, DHCP).



Figure 1 B574 / PC-803

### Features

- 10MBit Ethernet
- Supports PoE (Powered Device) (*this is an optional feature and is available at additional cost*)
- 128 bit AES encryption
- Typical indoor RF range up to 100ft
- Supports 2.4Ghz IEEE 802.15.4 compliant RF transceiver
- DIN rail mounting option (Figure 1, left)
- Wall or ceiling mount on standard 2-gang ring (Figure 1, right)
- Supports up to 200 rooms depending on the guestroom application deployed and the selected RF environment at the site.

\* The 200 device limit is based on timing considerations used by the communication protocols of a Deep Mesh network. Local RF interference sources, conditions, and device placement can decrease this number.

## Specifications

Parameter	B574
RF Data Rate	250kbps
Indoor/Urban RF range	100ft
RF Transmit Power	10mW (+18dBm) for B574, 1mW (+0dBm) for PC-803
RF Receive Sensitivity	-94.6dBm
Frequency Band	2.4Ghz
Encryption	AES-128
Protocol	802.15.4
Frequency Channels	11-26
Network Topology	Mesh
Maximum devices per IP network segment	2000 room gateways; 200 Edge Routers
Maximum rooms per RF mesh network	Up to 200(depending on application profile and site situation)
Maximum in-room devices per room	Up to 50
Supply Voltage	12VDC
Current Consumption	200mA
Operating Ambient Temperature	0-40 °C
Dimensions	86mm x 78mm x 40mm (DIN rail mount); 20.65mm x 22.25mm (Edge Router)
Agency Approvals	FCC Part 15, CE Mark ETSI, RoHS

This device is listed under FCC ID: GTC029894TXR.

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.

The followings statements are required in the final product user manuals:

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

All Final Products containing the INNCOM 02-9894 should be kept at a safe distance of at least 20cm from all persons. The final product cannot be co-located with any other antenna or transmitter.

Modifications not expressly approved by INNCOM International Inc. could void the user's authority to operate the equipment.

## Mounting Considerations

The B574 Network Controllers are designed for mounting in a variety of applications. The bottom housing is equipped with a channel and tab for DIN rail mounting and therefore does not require any additional screws or hardware for installation. For screw-mounted applications, there are 4 countersunk holes located in the bottom housing that can be accessed by removing the top cover and Printed Circuit Board Assembly (PCBA).

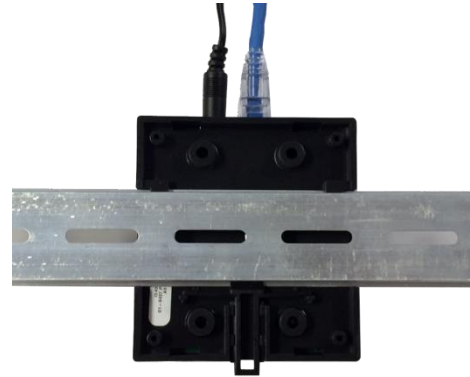
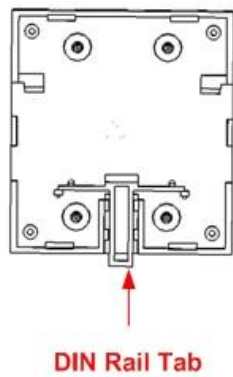


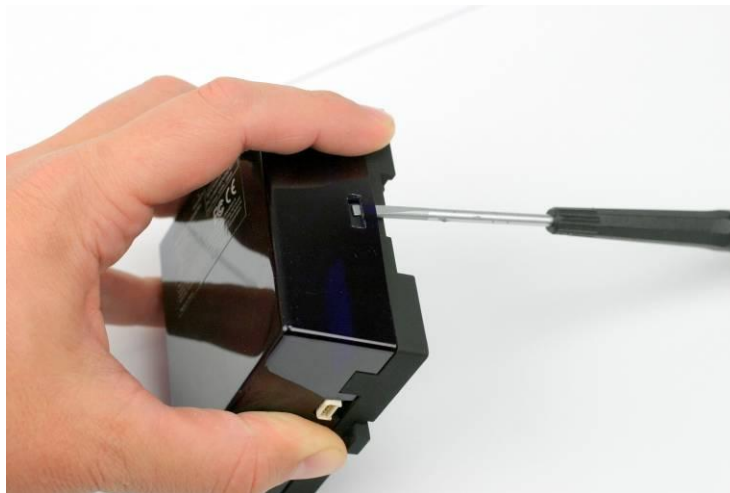
Figure 2 DIN Rail Mounting



Figure 3 B574 Network

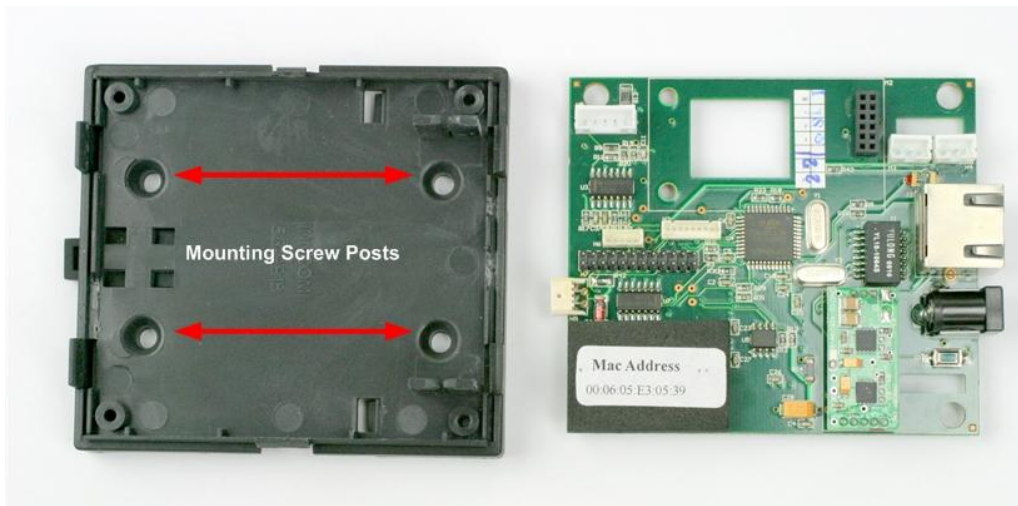
The B574 can be attached to an X-type DIN rail. To attach the B574 to a DIN rail, pull the tab (Figure 5) down and attach the bottom of the housing to the DIN rail (always mount the DIN rail with the tab at the bottom). Once the unit is sitting flush on the rail, release the tab. To remove the B574 from the DIN rail, pull the tab down and lift the bottom edge of the unit off the DIN rail first. This ensures that the cable, cable channels, and connections are always aligned in the correct orientation in a daisy-chained application.

Please note that the above picture is from the INNCOM QC lab. In the field deployment, B574s will typically be distributed throughout the building.



**Figure 4 Top Housing Removal**

To gain access to headers and connectors located on the PCBA, remove the B574 from the DIN rail or NEMA box enclosure. Using a flat screw driver, lift the top housing away from the snap tangs on the bottom housing.



**Figure 5 Mounting Screw Locations**

To screw mount the B574, open the B574 as described above and remove the PCBA, which is held in place by 4 tangs located at its perimeter. Once the PCBA is removed

- locate the 4 countersink posts
- mount the bottom housing to the intended fixture using a self-tapping screw
- mount the PCBA back on to the bottom housing
- make the necessary wire connections (see Headers and Connectors below)
- connect power to the DC jack
- plug in Ethernet connection
- snap the top housing back onto the unit

The Edge Router design mounts externally on a wall or ceiling or even on furnishings, if need be.

## Headers and Connections

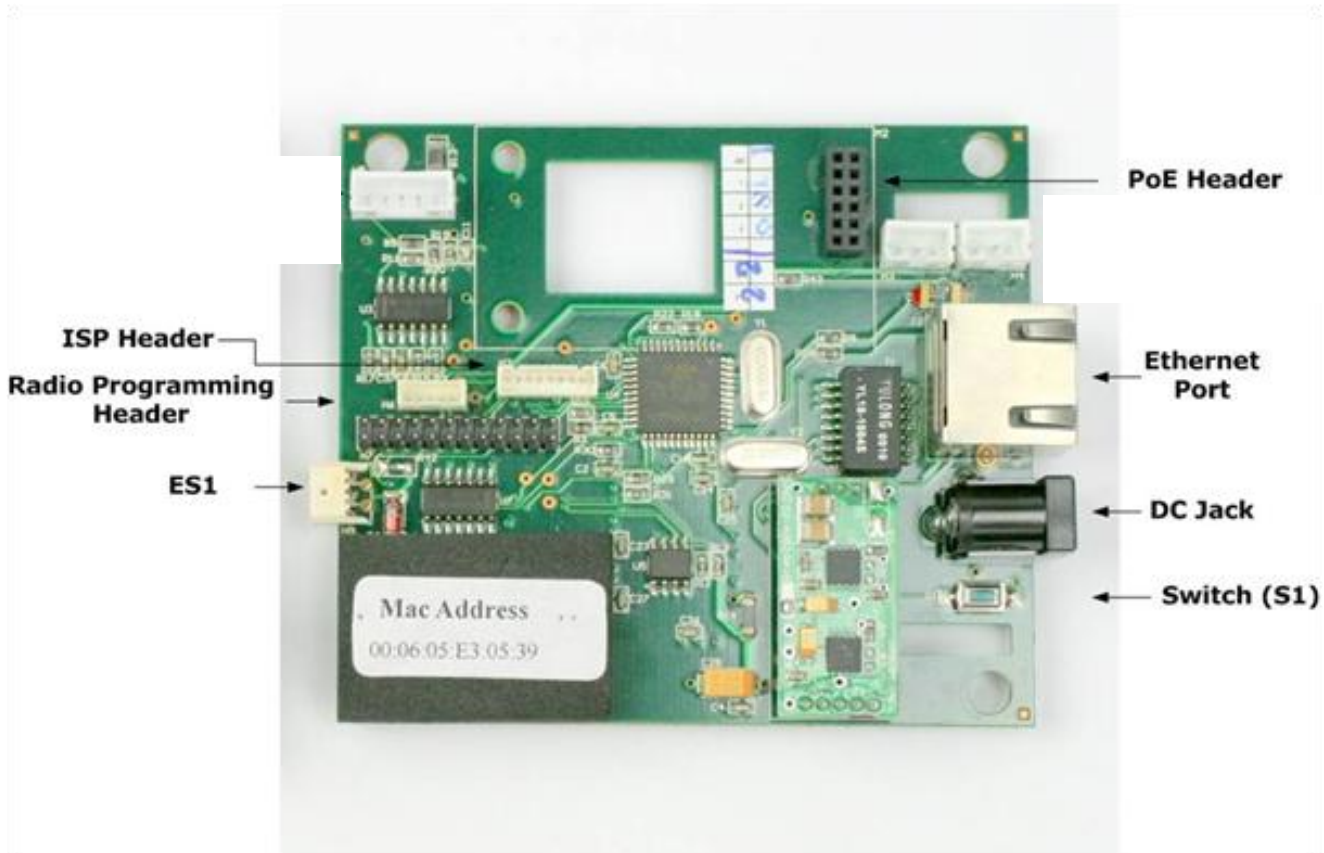


Figure 6 B574 Connections

### H2 (In System Programming)

Pin	Function	Type	Min	Max
1-8	Various signals for programming	-	-	-

### H3 / H4 (S5bus In/Out- Not Used)

Pin	Function	Type	Min	Max
1-3	Various NU Signals	-	-	-

### H5 (IR-Eye- Not Used)

Pin	Function	Type	Min	Max
1-3	Various NU signals	-	-	-

### H6 (Radio Programming)

Pin	Function	Type	Min	Max
1-5	Various signals for programming	-	-	-

### H8 (02-9436)

Pin	Function	Type	Min	Max
1-GND	Common	-	-	-
2-12VDC	12VDC out	Out	11.75VDC	12.25VDC
3-Input GND	Common	In	-	-
4 -Input	+24VDC --+15VDC input	Out	12VDC	24VDC

### H9 (ES1)

Pin	Function	Type	Min	Max
1-3	Reserved for future use	-	-	-

### J1 (DC Jack)

Pin	Function	Type	Min	Max
1-3	12VDC Input	11.75	12.25	11.75

### J3 (Ethernet)

Pin	Function	Type	Min	Max
1-8	Ethernet Connectivity	-	-	-

### M2 (PoE)

Pin	Function	Type	Min	Max
1-12	Signal and power for Power over Ethernet Module	-	-	-

## Output Function

The following table describes the function of the indicator LEDs on the B574 PCBA.

LED	Function
RED	Flash on power-up to indicate proper hardware initialization. Steady on to indicate no connectivity to B573 floor bridge (see Figure 7). Flashes fast to indicate a valid CIS connection. Flashes slow to indicate 75 seconds have passed with no packets from the CIS network.
Blue	Toggles when RF Rx tunnel packet is received

## Power Supplies

The B574 provides power supply options for three specific applications. For each configuration, follow the current consumption ratings below to determine the device's power budget.

Mode	Peak Current Consumption
B574 logic board (basic)	80mA
Logic board w/ 0dB radio	120mA
Logic board w/ 20dB radio	175mA

## Locally powered B574

The B574 can be powered directly with an external +12VDC power supply using either the DJ jack (J1) or by connecting GND and 12VDC to pins 1 and 2 of either H3 or H4. Typically, the INNCOM 04-4040 power supply is provided for the B574 in this power configuration. Note that when daisy chaining power, 12VDC is routed directly to H3 and H4, so the maximum current consumption of the daisy chained devices does not affect any internal power regulation on the B574.



## PoE Powered B574

The B574 is an IEEE 802.3af compliant Powered Device (PD) interface with a current mode switching regulator, providing a complete power solution for PD applications. The B574 is an IEEE class 2 device. PoE devices are classified below:

IEEE Class	Minimum Power Output at the PSE	Maximum power Input at the Powered Device
0	15.4W	0.44 to 12.95W
1	4.0W	0.44 to 3.84W
2	7.0W	3.84 to 6.49W
3	15.4W	6.49 to 12.95W

Powering another INNCOM device on the +12VDC rail directly from H2 or H3 when powering the B574 from PoE is not recommended. If the B574 exceeds its IEEE 802.3af class-2 power rating (i.e., draws more than 7W), the PSE switch in the network will shut down the power and Ethernet connectivity to the B574.

For B574 to support PoE power, order the PoE module (02-9949). Connect the module to M1 on the B574 logic board, then connect the PoE-powered Ethernet patch cable to J3 (RJ45) and power up the unit.



Figure 2 B574 Equipped for PoE Systems

## Ordering Information

The B574 is available in several operating ranges using the same fundamental hardware platform (see Ordering Notes below). The ordering part numbers (OPN) are formed by a combination of the separate elements, as shown in Figure 4 below.

## B574 Edge Router Configurations

Model #	Description
01-9437.P12.RF2.A0	RF Edge Router: 12VDC SMPS power; 20dB radio; DIN Rail housing
01-9437.P12.RF2.B0	RF Edge Router: 12VDC SMPS PoE power; 20dB radio; External housing
01-9437.POE.RF2.A0	RF Edge Router: PoE power; 20dB radio; DIN Rail housing
01-9437.POE.RF2.B0	RF Edge Router: PoE power; 20dB radio; External housing

## PC-803 Protocol Converter Configurations

Model #	Description
01-9437.POE.RF0.A0	PC-803 Protocol Converter: PoE power; 0dB radio; DIN Rail housing
01-9437.POE.RF0.B0	PC-803 Protocol Converter: PoE power; 0dB radio; External housing
01-9437.P12.RF0.A0	PC-803 Protocol Converter: 12VDC SMPS power; 0dB radio; DIN Rail housing
01-9437.P12.RF0.B0	PC-803 Protocol Converter: 12VDC SMPS PoE power; 0dB radio; External housing



Din Rail Housing (rev A0)



External Housing (rev B0)



## Document Revision History

Revision	Date Issued	Reason
0.1	12-Jun-2009	FCC for B574
0.2	24-Jun-2009	Edited for sense and format
0.3	29-Jun-2009	Incorporated review comments
0.4	08-Jul-2009	Clarified network bridge language and capacity
0.5	22-Jul-2009	Incorporated final R&D review comments
1.0	03-Aug-2009	Incorporated Approvers' comments and released.
1.1	10-Feb-2010	Updated FCC advisory
1.2	08-Mar-2010	Updated to add PC-803 application, PoE, and detailed power supply information
1.3	17-Mar-2010	Updated mechanical drawing
1.4	20-Mar-2010	Updated OPN
1.5	31-Aug-2010	Incorporate information from PC-803 Engineering Manual.
1.6	20-Sep-2010	PHR/RMG review and updates on number of devices per RF mesh network.
1.7	25-Oct-2011	Addition of Edge Router information.
1.8	06-Jan-2012	Network and function changes incorporated
1.9	08-Apr-2013	Formatted to Honeywell template.
2.0	23-Jul-2013	Conform OPN to SAP
2.1	21-Jul-2014	Updated to match JCA