

INNCOM B578 Datasheet

Overview

INNCOM's multifunctional controller works in three configurations to facilitate different Integrated Room Automation System (IRAS) operations:

- As the B578S Edge Router, it networks Ethernet to INNCOM's Deep Mesh RF network. It provides backhaul networks with up to 200* rooms per PAN ID. It supports multiple IP protocols (UDP, ICMP). The expanded addressing facilitates transport reliability and multicasting. The Edge Router enhances security and offers RF-to-Ethernet protocol conversion, with the availability of a PoE power supply for Power over Ethernet applications.
- As the B578N, the Edge Router interfaces with the Tridium Niagara JACE (Java Application Control Engine) controller to provide connectivity to numerous common network protocols such as LonWorks and BACNet, as well as proprietary networks.
- As the PC-803, the device acts as a protocol converter, converting in-room RF traffic to Ethernet towards the server.

Note: The device will generally be referred to as the "B578" throughout this document. Statements specific to a particular configuration will be noted accordingly.



Figure 1 B578 DIN

Features

- Supports CBL32 control algorithms
- RS485 System Interface dongle
- 10MBit Ethernet
- Available in PoE and +12VDC powered models
- 128 bit AES encryption (Ethernet link and RF network)
- Typical indoor RF range up to 100ft
- Supports 2.4Ghz IEEE 802.15.4 compliant RF transceiver
- Supports S5bus (through external adapter)
- Compact physical dimension
- DIN rail mounting option (Figure 1)
- Wall or ceiling mount on standard 2-gang ring (Figure 2)
- Supports up to 200 rooms depending on the guestroom application deployed and the selected RF environment at the site.
- 4 kBytes mailbox memory usable as a relay-buffer for battery operated devices (Edge Router)
- IPv6 support (Edge Router)



Figure 2 B578 Wall/Ceiling Mountable

* 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	B578
RF Data Rate	250kbps
Indoor/Urban RF range	100ft
RF Transmit Power	50mW (+17dBm)
RF Receive Sensitivity	-97.7dBm
Frequency Band	2.4Ghz
Encryption	AES-128
Protocol	802.15.4
Frequency Channels	11–26
Network Topology	Mesh
Maximum devices per IP network segment	50 B578 PAN coordinators; 2000 PC-803 room gateways; 200 Edge Routers
Maximum devices 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 peak, 100mA RMS
Operating Ambient Temperature	0–40 °C
Dimensions	86mm x 78mm x 40mm (DIN rail mount); 20.65mm x 22.25mm (wall mount)
Agency Approvals	FCC Part 15, CE Mark ETSI, RoHS

This device contains FCC ID: GTC201104TXR.

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.

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

Mounting Considerations

The B578 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).

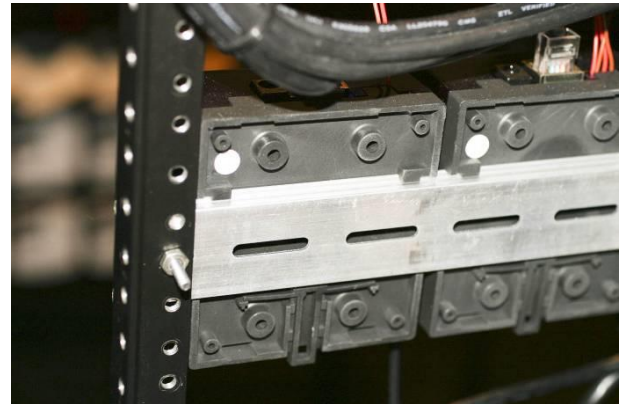
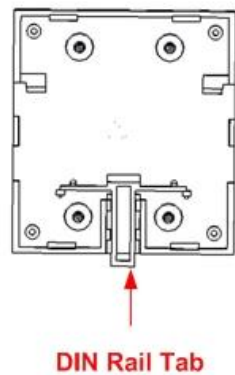


Figure 2 DIN Rail Mounting

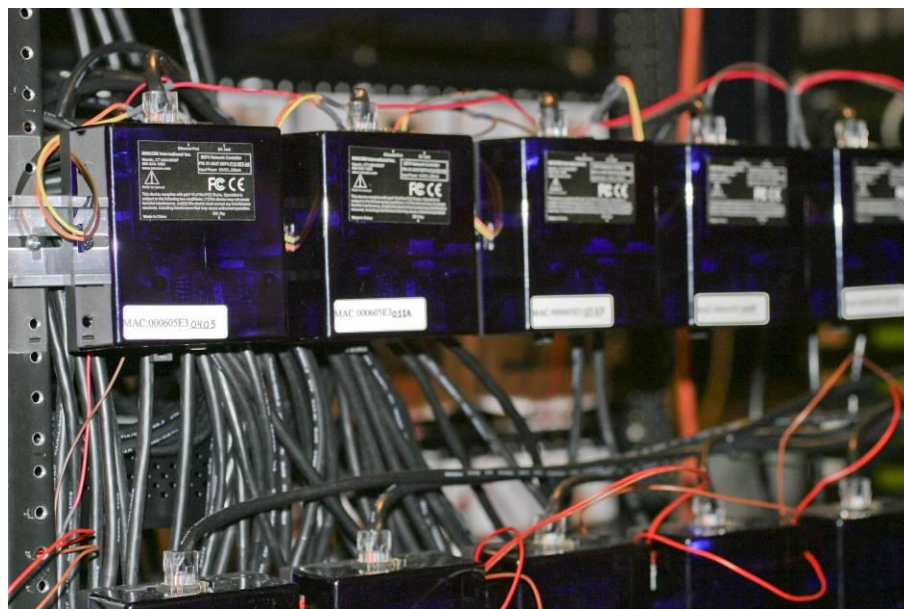


Figure 3 B578 Network

The B578 can be attached to an X-type DIN rail. To attach the B578 to a DIN rail, pull the tab (Figure 3) 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 B578 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 field deployment, B578s will typically be distributed throughout the building.

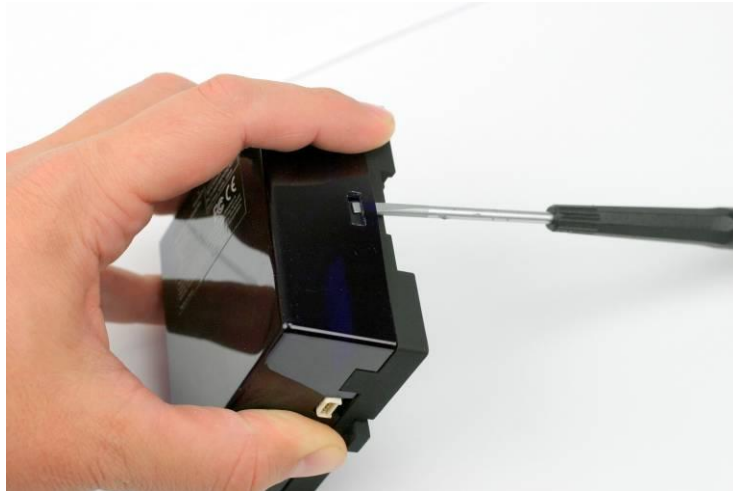


Figure 4 Top Housing Removal

To gain access to headers and connectors located on the PCBA, remove the B578 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.

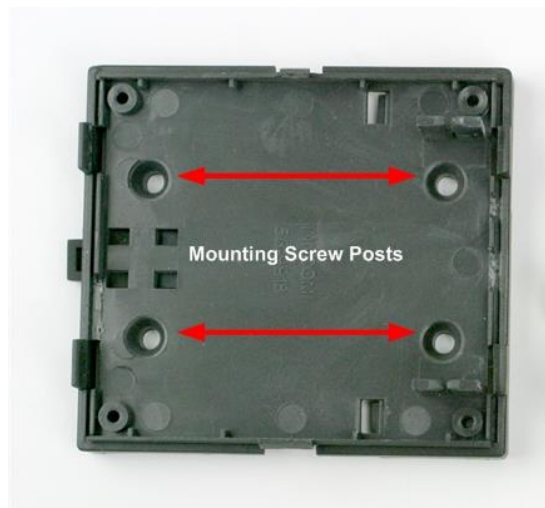


Figure 5 Mounting Screw Locations

To screw mount the B578, open the B578 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.

Input/Output Connections

Headers: The B578 contains the following headers:

- H1: In Circuit Programming Header
- J1: DC Jack 12VDC Input
- M1: PoE Module header (02-9949)
- H2: NU
- H3: ES1 / ES2 header
- H4: RS485 (203-251)
- H5: RS485 (203-251)

Note: RS485 connectivity is not supported: these headers may be used to connect to an S5bus adapter (203-255).

Output Function

The following table describes the function of the indicator LEDs on the B578 PCBA.

LED	Function
Red	Flash on power-up to indicate proper hardware initialization. Steady on to indicate no connectivity to B573 floor bridge. 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 B578 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
B578 logic board (basic)	200mA peak, 100mA RMS
PC-803 logic board w/ 0dB radio	120mA
PC-803 logic board w/ 20dB radio	175mA
PC-803 logic board w/ IR5 eye	200mA

Locally powered B578

The B578 can be powered directly with an external +12VDC power supply using the DC jack (J1). Typically, the INNCOM 204-005 power supply and 262-301 100-120VAC power cable are provided for the B578 in this power configuration.

PoE Powered B578

The B578 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 B578 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 B578 from PoE is not recommended. If the B578 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 B578.

For B578 to support PoE power, order the PoE module (02-9949). Connect the module to M1 on the B578 logic board, then connect the PoE-powered Ethernet patch cable to J3 (RJ45) and power up the unit.

FCC Statement

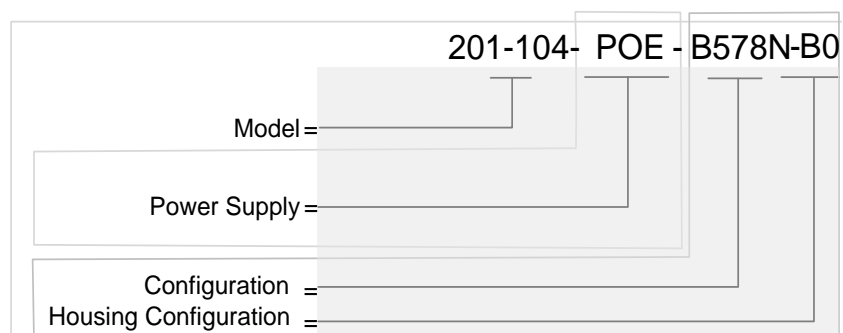
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

IC Statement

This Class B Digital Apparatus complies with Canadian ICES-003
Cet appareil numérique de la classes B est conforme a la norme NMB-0003 du Canada.

Ordering Information

The B57x is available in several operating ranges all based on the same fundamental hardware platform. The ordering part numbers (OPN) are formed by a combination of the elements, as shown below.



Example: 201-104-POE-B578S-B0: B578 with PoE power supply, configured as a Deep Mesh RF Edge Router in a surface mount housing configuration.

Example: 201-104-P12-B578N-A0: B578 with a +12VDC power supply configured as a Deep Mesh RF Edge Router and Tridium Niagara Interface, in a DIN rail housing configuration.

Example: 201-104-P12-PC-803S-A0: PC-803 with a +12VDC power supply configured as a PC-803 room

gateway used for Ethernet to S5bus protocol conversion in a DIN rail housing configuration.

SAP VC Configuration Material Name

When entering the model number in SAP, use the following description:

Name	Description
B578_Controller	B57x Platform

Root Part Number

This character set defines the model name for the B57x Platform Controller.

OP/N Code	Description
201-104	B57x Platform

Power Supply Option

This character set defines the power supply options available for the B57x platform.

OP/N Code	Power Supply Type	Part Number
P00	No Power Supply	-
POE	Power over Ethernet	02-9499
P12	External inline power supply with AC cable	204-005 / 262-301

Configuration Option

This character set defines the software configuration of B57x.

OP/N Code	Logic Board Type	Part Number
PC-803	(4G) Ethernet to RF protocol converter	
B578S	Deep Mesh RF Edge Router	
B578N	Deep Mesh RF Edge Router with Niagara Interface	

Housing Configuration Option

This character set defines the software configuration of B57x.



B57x Din Rail Housings A0



B57x Surface Mount Housings B0

OP/N Code	Logic Board Type	Part Number
A0	DIN Rail Mounted Housings	See "Individual Components" chapter
B0	Surface Mounted Housings	See "Individual Components" chapter

Base Models

The base model is used as the baseline configuration from which to build the variant configuration options and models.

Name	Description
201-104-P00-B578S-B0	Base Model in a surface mount configuration.

Individual Components

Below are a set of components such as housings, PCBA's and harnesses which can be ordered or added for final configuration.

OP/N Code	Description
202-104	PC-803, B578S, B578N logic board PCBA
02-9949	PC-803, B578S, B578N PoE power supply PCBA
204-005	Meanwell GS15A 100-240VAC, +12VDC 15W SMPS
262-301	AC Power Cable (used with 204-005)
53-8083	B57x DIN rail latch
53-9918	B57x DIN rail bottom housing
53-8292	B57x DIN rail top housing
253-532	B57x Surface mount bottom housing
253-533	B57x Surface mount top housing
04-8047.7B	7' black CAT5E patch cable
62-2035	3 pin cable, 300mm
241-018 x 4	FASTENER SCREW 6x1.25 OVAL PHILIPS

Document Revision History

Revision	Date Issued	Reason
0.1	12-Apr-2014	FCC for B578
0.2	23-Apr-2014	Formatted
0.3	03-Jun-2014	Input from "NPI: CBL32 Dimmer and Controller Platform Updates"