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# B578 Edge Router

## OVERVIEW

The B578 acts as a router between the Inncom RF Room Gateway device installed in each guestroom and the Inncom Deep Mesh server. Control of which individual RF Room Gateway devices communicate through each B578 is controlled by configuring the same PAN ID and RF Channel into the B578 and RF Gateway devices. 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.

B578 Edge Router (Surface Mount Housing)

The B578 RF edge router provides a high-performance, low-cost alternative to the B574 RF edge router. The B578 is available in multiple personalities, each of which varies slightly in application and functionality. The B578L (legacy) is designed to function identically to a B574 and can be used as a drop-in replacement for existing systems. Other personalities, such as the B578R (In-Room) and B578S (Standard), are designed to provide end-to-end encryption between the in-room devices and the Deep Mesh Server, and as such, the commissioning procedure varies slightly. For a networked property which utilizes INNCOM's INNcontrol 5 EMS it is suggested to use a B578S.

## FEATURES & BENEFITS

- Supports up to 100 rooms depending on the guestroom application deployed and the selected RF environment at the site
- RF Wireless Communication
- Wall or Ceiling Mount on standard 2-gang ring
- Compact physical dimension
- May be integrated with the INNCOM Room Automation System over the Deep Mesh Network with INNCOM's INNcontrol software

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# B578 Edge Router Properties

| PARAMETER | MEASUREMENT |
|---|---|
| RF Data Rate | 250kbps |
| Indoor/urban RF Range | 100ft |
| RF Transmit Power | 50mW (+17dBm) |
| RF Receive Sensitivity | 94.6dBm |
| Frequency Band | 2.4Ghz |
| Encryption | AES-128 |
| Protocol | 802.15.4 |
| Network Topology | Deep Mesh |
| 802.15.4 ZigBee Frequency Channels | 11-26. Channels 15, 20, 25 and 26 are preferred |
| Maximum Room Gateway devices that can be routed by a single B578 | B578-L/S - Up to 200. In actual use, this number is not guaranteed and can be significantly lower depending on the placement ofthe B578 in relation to the Room Gateways managed by the B578, existing RF interference sources and building construction.<br>B578-R – 1 room |
| 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 | 4.75” x 4.9” x 0.8” Wall Mounted |
| Agency Approvals | FCC Part 15, CE Mark ETSI, RoHS |
| Network Connection | Supports 10/100Mbs |
| Supported Network IP Protocols | UDP, ICMP , DHCP |

**For More Information**:
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# B578 Power Supplies

The B578 logic board has the following power requirement:

| Mode | Peak Current Consumption |
|---|---|
| B578 logic board (basic) | 200mA peak, 100mA RMS |

The B578 can be powered via PoE (Power over Ethernet), or locally from an external 12VDC power source

# PoE Powered B578

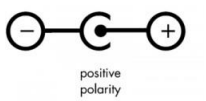
The B578 is an IEEE 802.3af compliant Powered Device (PD) interface with a current mode switching regulator. The B578 is an IEEE class 2 device. PoE devices are classified below.

| 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 |

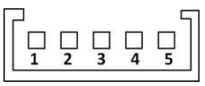
If the B578 exceeds its IEEE 802.3af class-2 power rating (i.e., draws more than 7W), the PSE switch in the network will shut down the power and Ethernet connectivity to the B578.
For B578 to support PoE power, order the PoE module (02-9949). Connect the module to M1 on the B578 logic board, then connect the PoE-powered Ethernet patch cable to J2 (RJ45) and power up the unit. DO NOT connect external 12VDC to the B578 when it is powered from a PoE switch.

# B578 Locally Powered

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




The B578 can also be powered by 12VDC connected to Pins 1 and 2 of the 5 pin Header H2



H2

Pin 1 – Common
Pin 2 – 12VDC Pin 3,4,5 – Not used and you should not connect anything to these pins
Two cables are available that can plug into H2:
62-2035 – 3 Pin to 3 Pin 300mm . Brown wire Pin 1 - Common, Red wire Pin 2 - 12VDC
62-1511-A0 – 5 pin 300mm with stripped ends. Brown wire Pin 1-Common, Red wire Pin 2 -12VDC
Cut/Remove un-used wires from the cable

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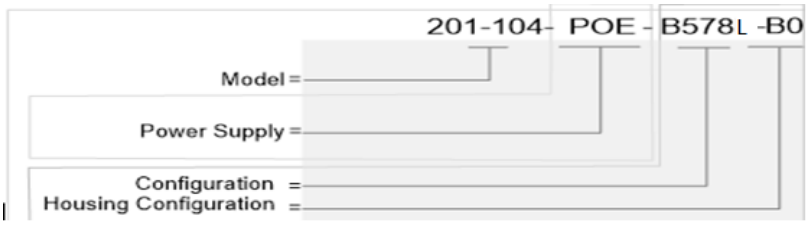
# B578 Ordering Information

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**: B578S with UDP Port 23211 Encryption with PoE power supply, configured as a Deep Mesh RF EdgeRouter in a surface mount housing configuration.
**Example: 201-104-P12-B578R-A0**: B578R with a +12VDC power supply configured for "Edge Router per Room" installation with UDP Port 23211 Encryption in a DIN rail mount housing.

### 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 | B578 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 PoE Board |
| P12 | External Inline Power Supply US with AC cable | 204-005 / 262-301 |
| P13 | External Inline Power Supply China with AC cable | |

### Configuration

| OP/N Code | Description |
|---|---|
| L | Legacy Edge Router version. Identical functionality to legacy B574. Uses NO UDP packet encryption. Routes data from multiple rooms set to the same RF Channel/PAN ID as the B578L. |
| S | Standard Version that uses UDP packet encryption. Used in networked applications, especially with IC5.. Routes data from multiple rooms set to the same RF Channel/ PAN ID as the B578S. |
| R | In-room version. One B578R is installed in each guestroom. Edge Router ID must be set to the Room ID and PAN ID must be set to 0. Uses UDP packet encryption. |

### Housing Configuration Option

| OP/N Code | Description |
|---|---|
| A0 | DIN Rail Mount Housing |
| B0 | Surface Mount Housing |

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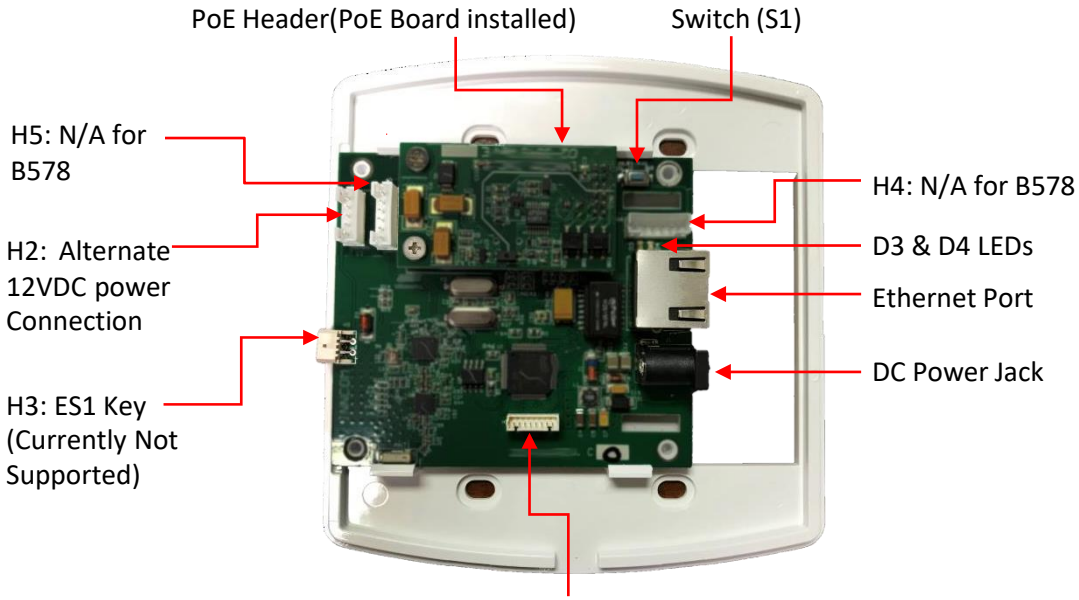
# Headers and Connections




H1: ST-Link V2 STM 32 Programming Header

| Header or Connection | Pin | Function | Type | Min | Max |
|---|---|---|---|---|---|
| H1 | 1-8 | STM 32 Programming Header | | | |
| H2 | 1-5 | Can be used to power B578 with 12vdc instead of using DC Jack or PoE. Use 62-2035 or 62-1511-A0 cable | Pin 1 – Common<br>Pin 2 – 12VDC<br>Pin 3,4,5 – N/A for B578. Do Not connect to these pins |  | |
| H3 | 1-5 | ES1 Key (Future Support) | Future firmware upgrading (Currently not Supported) | | |
| H4 / H5 | 1-6 | Used to connect DM485 modules when PC Board is used in a B576 Floor Bridges | N/A for B578. Used to connect RS-485 modules when board used in B576 | | |
| PoE Header | 1-12 | Signal and power for Power over Ethernet Module | | | |
| Ethernet Port | 1-8 | Connects B578 to Ethernet Network | | - | - |
| DC Jack | - | 12VDC Input | Accepts 2.5mm ID x 5.5mm OD Plug | 12.25V | 11.75 |

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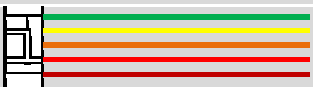
# B578 Individual Components

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 | B578 base hardware |
| 02-9949 | B578 PoE Power Supply PCBA |
| 204-005 | GS15A 100-240VAC, +12VDC 15W SMPS |
| 262-301 | AC Power Cable (used with 204-005) |
| 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. Can be use to connect 12VDC to H2 Pins 1,2 |
| 62-1511-A0  | 5 pin cable , 300 mm. Can be use to connect 12VDC to H2 Pins 1,2 |
| 241-018 x 4 | Fastener Screw 6x1.25 Oval Philips |

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**Ethernet Jack LED Key**

| POSITION/COLOR/STATE | MEANING |
|---|---|
| Left-Yellow LED OFF | 10 Mbs connection |
| Left-Yellow LED ON | 100 Mbs connection |
| Right-Green LED Blinking | Network connection active |

**D3 and D4 LED Key for B578 Loaded with B578_X_V1_06.srec or later version (X=L,S or R)**

| | B578-L | B578-S | B578-R |
|---|---|---|---|
| **D3 Red , D4 Yellow alternately blink for 5 seconds** | Power was just applied to the B578-L | Power was just applied to the B578-S | Power was just applied to the B578-R |
| **D3 Red randomly blinks , D4 Yellow Rapid steady blink (5 blinks / second)** | Yellow D4 rapid blink indicates the B578-L has connected to TermDMS. Red D3 LED blinks anytime a connected Room Gateway sends data. | Yellow D4 rapid blink indicates the B578-S has connected to TermDMS. Red D3 LED blinks anytime a connected Room Gateway sends data. | Yellow D4 rapid blink indicates the B578-R has connected to TermDMS. Red D3 LED blinks anytime a connected Room Gateway sends data. |
| **D3 Red and D4 Yellow are OFF and never blinking** | The B578-L is not powered , not loaded with software or is damaged. Verify the B578 is powered via 12VDC via 12V power socket or via PoE network switch | The B578-S is not powered , not loaded with software or is damaged. Verify the B578 is powered via 12VDC via 12V power socket or via PoE network switch | The B578-R is not powered , not loaded with software or is damaged. Verify the B578 is powered via 12VDC via 12V power socket or via PoE network switch |
| **D3 Red OFF , D4 Yellow repeating ON for 2 seconds and OFF for 2 seconds** | This is a B578-L that is powered but has not yet connected to TermDMS | N/A | N/A |
| **D3 Red ON for 1 second,Off for 1 second and repeats. D4 Yellow Blinks 2 times every 2 seconds** | N/A | This is a B578-S that is powered but has not yet been configured with an Encryption Key. It can't connect to TermDMS until it gets configured with its Encryption Key via DM_Workbench or EngINN | |
| **D3 Red ON for 1 second,Off for 1 second and repeats. D4 Yellow Blinks 3 times every 2 seconds** | N/A | N/A | This is a B578-R that is powered but has not yet been configured with an Encryption Key. It can't connect to TermDMS until it gets configured with its Encryption Key via DM_Workbench or EngINN |
| **D3 Red OFF. D4 Yellow Blinks 2 times every 2 seconds** | N/A | This is a B578-S that is powered but has not yet connected to TermDMS but HAS been configured with its Encryption Key | |
| **D3 Red OFF. D4 Yellow Blinks 3 times every 2 seconds** | N/A | N/A | This is a B578-R that is powered but has not yet connected to TermDMS but HAS been configured with its Encryption Key |

**D3 and D4 LED Key for B578 Loaded with B578_X_V1_05.srec or previous version (X=L,S or R)**

| | B578-L | B578-S | B578-R |
|---|---|---|---|
| **D3 Red , D4 Yellow alternately blink for 5 seconds** | Power was just applied to the B578-L | Power was just applied to the B578-S | Power was just applied to the B578-R |
| **D3 Red randomly blinks , D4 Yellow rapid steady blink (5 blinks / second)** | Yellow D4 rapid blink indicates the B578-L has connected to TermDMS. Red D3 LED blinks anytime a connected Room Gateway sends data. | Yellow D4 rapid blink indicates the B578-S has connected to TermDMS. Red D3 LED blinks anytime a connected Room Gateway sends data. | Yellow D4 rapid blink indicates the B578-R has connected to TermDMS. Red D3 LED blinks anytime a connected Room Gateway sends data. |
| **D3 Red and D4 Yellow are OFF and never blinking** | The B578-L is not powered , not loaded with software or is damaged. Verify the B578 is powered via 12VDC via 12V power socket or via PoE network switch | The B578-S is not powered , not loaded with software or is damaged. Verify the B578 is powered via 12VDC via 12V power socket or via PoE network switch | The B578-R is not powered , not loaded with software or is damaged. Verify the B578 is powered via 12VDC via 12V power socket or via PoE network switch |
| **D3 Red OFF , D4 Yellow repeating ON for 2 seconds and OFF for 2 seconds** | The B578-L is powered but has not yet connected to TermDMS | The B578-S is powered and HAS been configured with its Encryption Key , but has not yet connected to TermDMS | The B578-R is powered and HAS been configured with its Encryption Key , but has not yet connected to TermDMS |
| **D3 Red OFF. D4 Yellow ON Solid** | N/A | This is a B578-S that is powered but has not yet been configured with an Encryption Key. It can't connect to TermDMS until it gets configured with its Encryption Key via DM_Workbench or EngINN. | This is a B578-R that is powered but has not yet been configured with an Encryption Key. It can't connect to TermDMS until it gets configured with its Encryption Key via DM_Workbench or EngINN |
| **D3 Red ON Solid. D4 Yellow ON Solid** | The B578-L was loaded with the B578-L "AutoConfig" file setting the B578 type to B578-L , but it was not programmed with the actual operatioal B578-L software. Contact Inncom Customer Service. | The B578-S was loaded with the B578-S "AutoConfig" file setting the B578 type to B578-S , but it was not programmed with the actual operatioal B578-S software. Contact Inncom Customer Service. | The B578-R was loaded with the B578-R "AutoConfig" file setting the B578 type to B578-R , but it was not programmed with the actual operatioal B578-R software. Contact Inncom Customer Service. |

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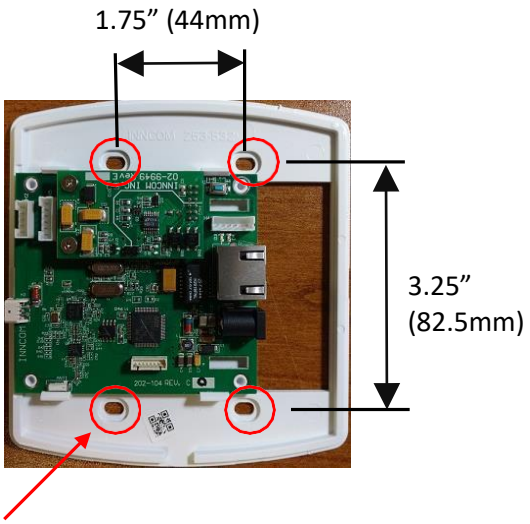
# Mounting Considerations

The B578 in the **201-104-XXX-B578X-B0** surface mount housing can be mounted to a 4” x 4” electrical box or directly to a wall or other surface using appropriate fasteners and the 4 mounting holes. Four 6x32 machine screws are provided with theB578.

You must consider where the B578 is mounted in relation to metal objects and the location of the RF Room Gateway devices that will communicate through the B578. If mounting the B578 to a metal wall box, be aware that this will shield RF signals to/from the B578, especially from any areas behind B578 where the metal box is acting as a shield. **Do not** mount the B578 **inside** a metal box , panel or enclosure.

For optimal RF Signal transmission/reception, the B578 should be mounted in a vertical or horizontal orientation.




4 Mounting Holes spaced for standard 4"x4" electrical box mounting

# Configuration

It is beyond the scope of this document to provide detailed steps required to configure the B578. Refer to any specific provided documentation or the Inncom Engineering Technical Bulletin ETB103 B578 Overview.pdf available at the following link:

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