

## 1 | Overview

This module is a four-wire powered SDI2, SDI, or Option bus device that provides two-way communication over commercial cellular networks using a plug-in communicator.

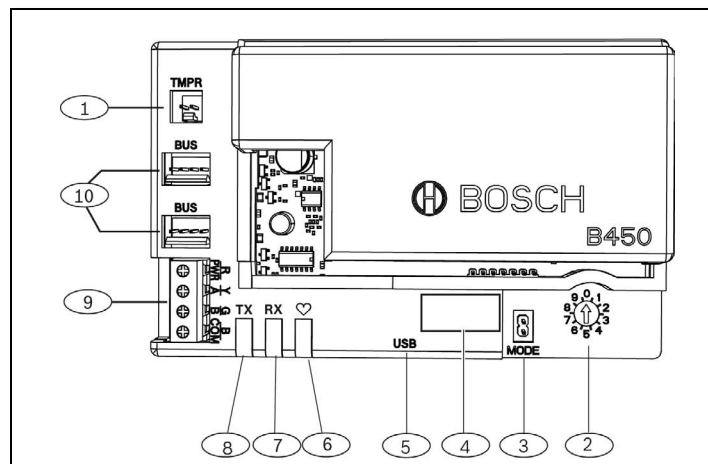


Figure 1.1: Board overview

### Callout – Description

1 – Tamper switch connector
2 – Address switch
3 – MODE 2-pin connector (for future use)
4 – Bus address label
5 – USB connector
6 – Heartbeat LED
7 – RX LED (indicates packets received from the wireless network)
8 – TX LED (indicates packets transmitted over the wireless network)
9 – Terminal strip (to control panel bus)
10 – Interconnect wiring connectors (to control panel bus or other compatible modules)

## 2 | SDI2 address settings

The address switch determines the bus address for the module. The control panel requires the address for communications. Use a slotted screwdriver to set the address switch.



### NOTICE!

The module reads the address switch setting only during power up. If you change the switch after you apply power to the module, you must cycle the power to the module in order for the new setting to be enabled.

## 2.1 | Set the module address

The module address switch determines the bus address of the device. Set the address switch per the control panel configuration. If multiple B450 devices reside on the same system, each B450 module must have a unique system address, and cannot share the same address value. *Figure 2.1* shows the address switch settings for address 01. Refer to *Table 2.1* for panel-specific settings.



Figure 2.1: Address switch set to address 1

Control Panels	Switch Position	Control Panel Address	Bus Type	Function
USB or SMS configuration setting	0	n/a	Any	Change Configuration
B9512G/B9512G-E B8512G/B8512G-E B6512/B5512/B5512E/ B4512/B4512E/B3512/ D9412GV4/D7412GV4/ D7212GV4/ Solution 2000/3000	1	1	SDI2	Automation, RPS, or Reporting
B9512G/B9512G-E B8512G/B8512G-E D9412GV4/D7412GV4/ D7212GV4 Solution 2000/3000	2	2	SDI2	Automation, RPS, or Reporting
D9412GV4/D7412GV4/ D7212GV4/D9412GV3/ D7412GV3/D7212GV3/ D9412GV2/D7412GV2/ D7212GV2 v7.06+	4	88	SDI <sup>1</sup>	RPS or Reporting
D9412GV4/D7412GV4/ D7212GV4 D9412GV3/D7412GV3/ D7212GV3	5	92	<sup>1</sup> SDI	RPS or Reporting
AMAX 2000/2100/3000/ 4000 CMS 6/8/40 Easy Series v3+ <sup>2</sup> FPD-7024 v1.06+	6	134	Option	RPS or Reporting
AMAX 2000/2100/3000/ 4000 FPD-7024 v1.03+	9	250	Option	RPS or Reporting

<sup>1</sup>For D9412GV4/D7412GV4/D7212GV4 configurations, SDI2 bus connection is the recommended configuration option, but SDI bus configuration is also supported.

<sup>2</sup>The FPD-7024 must be at firmware version 1.06 or greater to configure using bus address 134.

## 3 | Installation

Perform the following steps to install the module.

### 3.1 | Insert the module into the B450/B450-M

Insert the communication module into the slot of the B450, depending on your communication module (one with a SIM card, or one without). Refer to *Figure 3.1.2*.

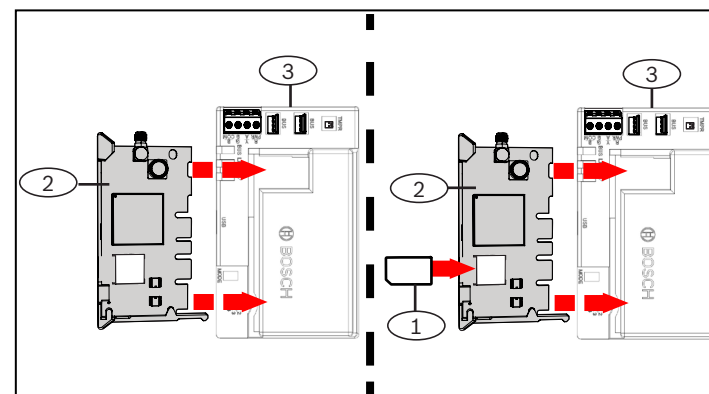


Figure 3.1.2: Inserting the communication module

### Callout – Description

1 – SIM card
2 – B44x cellular communication module (available separately)
3 – B450

## 3.2 | Install the module

Mount the module into the enclosure's 3-hole mounting pattern using the supplied mounting screws, and secure the antenna onto the enclosure. Mount the module into the interior side of the enclosure. Refer to *Figure 3.2*.

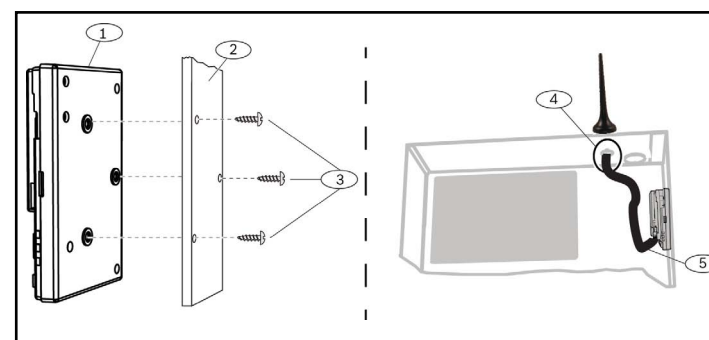


Figure 3.3: Installing the module

### Callout – Description

1 – B450
2 – Enclosure
3 – Mounting screws (3)
4 – B44x plug-in cellular communicator antenna (routed through any knock-out)
5 – B44x plug-in cellular communicator antenna cable (connected to the communication module)

## 3.3 | Wire to the control panel

When wiring a module to a control panel, you can use either the module's terminal strip labeled with PWR, A, B, and COM or the module's interconnect wiring connectors (wire included). Interconnect wiring parallels the PWR, A, B, and COM terminals on the terminal strip. *Figure 1.1* indicates the location of both the terminal strip and the interconnect connectors on the module.



### NOTICE!

UL requires that for security installations, the B450 module be installed in a UL Listed enclosure with a tamper.



### NOTICE!

Remove power to the control panel prior to wiring a module to the control panel using either the terminal strip wiring **or** interconnect cable to wire to the control panel. Do not use both.

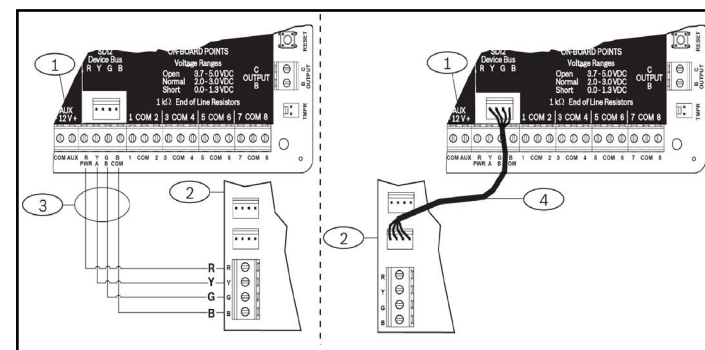


Figure 3.3: Using SDI2 terminal strip or SDI2 interconnect cable wiring (B5512 control panel shown).

### Callout – Description

1 – Control panel (B5512 shown)
2 – B450 module
3 – Terminal wiring strip
4 – Interconnect wiring (P/N: F01U079745) (included)

## 4 | Configuration

You can configure the module using one of the methods described in this section for your control panel type.

### 4.1 | Plug and play configuration

When installing under the following conditions, the module needs no further configuration to communicate:

- AES Encryption is not required.
- Low signal delay can be no more than 200 sec.

### 4.2 | Configuring with SDI2/Option bus control panels

An SDI2/Option bus-compatible control panel automatically configures a connected module.

1. Power off the compatible control panel.
2. Set the address switch to the correct address for the control panel (SDI2 control panels use address 1 or 2, option bus control panels use address 134 or 250).
3. Connect the module to the control panel bus and apply power.
4. Program the control panel communication settings using RPS for SDI2 control panels, A-Link Plus for option bus control panels, or the keypad.

### 4.3 | Configuring with SMS

The module supports configuration by SMS. You can send SMS via mobile phone to the module. For more information, refer to the *B450 Installation and Operation Guide*.



### NOTICE!

Power up the module with the address switch set to the desired bus. When ready to program using SMS, turn the switch to position 0. When done programming, turn the switch back. Failure to return the address switch to the previous setting will result in a troubled condition.

## 4.4 | Configuring with USB

The module supports configuration by USB. Before you can access the USB interface, you must install the **RBUS1CP.inf** file on the target PC or laptop. The **RBUS1CP.inf** file is available on the supplied CD-ROM.



### NOTICE!

Power up the module with the address switch set to the desired bus. When ready to program using USB, turn the switch to position 0. When done programming, turn the switch back. Failure to return the address switch to the previous setting will result in a trouble condition.

### 4.4.1 | Install a communication program

To use USB connection from a computer to the module to configure the module, you must use a terminal emulator software program such as Tera Term, located on the included B450 CD-ROM.

### 4.4.2 | Connect via USB cable

Insert one end of the USB cable into the PC or laptop, and insert the other end into the module USB port.



### NOTICE!

USB connection via the USB cable is only used for temporary configuration programming.

### 4.4.3 | Log into USB interface

Log into the USB interface and make your selections. For more information, refer to the *B450 Installation and Operation Guide*.

## 5 | LED descriptions

The module includes the following on-board LEDs to assist with troubleshooting issues (refer to *Figure 1.1* for the location of the LEDs):

- Heartbeat (system status). Refer to *Table 5.1*.
- RX/TX communication. Refer to *Table 5.2*

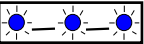
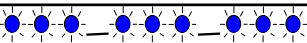


Flash pattern	Function
Flashes once every 1 sec 	Normal State: Indicates normal operation state.
3 quick flashes every 1 sec 	Communication Error State: Indicates a bus communication error with the control panel.
On Steady 	Trouble State: Indicates a trouble condition exists. Examine the other LEDs to determine the trouble condition.
Off 	LED Trouble State: Module is not powered, or there is a failure in the module. Check for proper installation.

Table 5.1: Heartbeat LED Descriptions



### NOTICE!

When the tamper is shorted, the firmware version flashes, then the module LEDs are disabled to conserve power. To see the troubleshooting LEDs, open the tamper circuit or jumper.

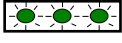
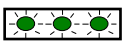
Flash pattern	Function
RX (Receive) Flashing 	Occurs when the module receives a message from over-the-air.
TX (Transmit) Flashing 	Occurs when the module receives a message to send out over-the-air.

Table 5.2: RX/TX LEDs Description

## 6 | Show the firmware version

To review the firmware version using an LED flash pattern, tamper the module.

Refer to *Section 5* for flash patterns.

To tamper the module, do one of the following:

- If the optional tamper switch is installed:  
With the enclosure door open, close the tamper switch.
- If the optional tamper switch is NOT installed:  
Momentarily short the tamper pins (use a jumper or screwdriver).

When the tamper switch is activated (open to closed), the heartbeat LED stays OFF for 3 sec before indicating the firmware version. The LED pulses the major, minor, and micro digits of the firmware version, with a 1 sec pause after each digit. The following is an example: The version 1.4.3 would be shown as LED flashes:



Figure 6.1: Firmware LED flash patterns example

[3 second pause] \* \_\_\_\*\*\*\* \_\_\_\*\*\* [3 second pause, then normal operation].

## 7 | Cellular compatibility

Use the following table for cellular interface compatibilities.

Function	Installed Bus		Details
	Option/SDI	SDI2	
IP Event Reporting	Y	Y	TCP protocols only supported on SDI2
Remote Program (RPS or A-link)	Y	Y	Requires Bosch Cellular service or other cellular network access
*Configure B450 from control panel (RPS, A-Link Plus)	N	Y	GV4/B Series v2.03+ AMAX 2100/3000/4000
Personal Notification via SMS or Email	N	Y	Requires compatible control panel and cellular plan
Remote Security Control App	N	Y	Requires Bosch Cellular service or other cellular network access
*AMAX 2100/3000/4000 option bus control panels must be at firmware version 1.5 or higher in order to configure the B450 using A-Link Plus.			

## 8 | Specifications

Dimensions (HxWxD)	79 mm x 128 mm x 38 mm (3.11 in x 5.03 in x 1.50 in)
Voltage (Operating)	12 VDC nominal
Current (Maximum)	<b>Standby:</b> B450 with B440/B441/B442/B443/B444 = 75mA <b>Alarm:</b> B450 with B440/B441/B442/B443/B444 = 180 mA
USB cable	USB cable (Type A to A male-to-male) - not supplied It is recommended to use Bosch cable B99 (F01U278853)
Data bus wire size	2 mm to 0.65 mm (12 AWG to 22 AWG)

Data bus wire length	Maximum Distance – wire size: 22 AWG (0.65 mm) --> 12 m (40 ft) 18 AWG (1.0 mm) --> 30 m (100 ft) 16 AWG (1.3 mm) --> 48 m (158 ft) 12 AWG (2.0 mm) --> 122 m (400 ft) Using a separate UL listed power supply, such as the B520 Auxiliary Power Supply Module, connected to the B450 within the specification listed above, the wire distance can be extended up to 300 m (1000 ft)
Control panel compatibility	B9512G/B9512G-E/B8512G/B8512G-E/B6512/B5512/B5512E/B4512/B4512E/B3512 control panel D9412GV4/D7412GV4 (v1.00.0xx and up) control panel D9412GV3/D7412GV3/D7212GV3 control panel D9412GV2/D7412GV2/D7212GV2 control panel v7.06+ FPD-7024 (v1.03 and higher) control panel AMAX 2000/2100/3000/4000 control panel v1.5+ CMS 6/8/40 control panel Solution 2000/3000 Easy Series v3+
Enclosure compatibility	<sup>1</sup> B10 enclosure, <sup>1</sup> B11 enclosure, <sup>1</sup> D8103 enclosure <sup>1</sup> D203 enclosure
Relative humidity	Up to 93% non-condensing
Temperature (operating)	0° to +49° C (+32° to 120° F)
The B450 reporting timing category of transmission path is dependent on the associated control panel. The maximum possible timing category for this device is SP4. Refer to the control panel's documentation for timing parameter values.	
<sup>1</sup> Temporary loss of communication may be caused by static when using any one of the above enclosures.	

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## Conettix Plug-in Communicator Interface B450



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