

Hardware Installation and Setup Instructions









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Attention

This section serves as a notice of the immediate or potential dangers involved when working with the equipment described throughout this manual. Any person involved in installation, maintenance, or service of the equipment should first carefully examine the equipment and read the instructions contained in this manual to ensure that personal and/or equipment injury is avoided.

The following safety messages appear throughout this manual to alert of immediate or potential danger to life as well as property.

	NOTE : Indicates an important note.
	TIP : Indicates a helpful tip or trick.
	SAFETY REMINDER : Applicable safety instructions will be included with this symbol.
	DANGER : Indicates an immediately hazardous situation which ,if not avoided, will result in serious injury or death.
	WARNING : Indicates a potentially hazardous situation which ,if not avoided, may result in serious injury or death.
	CAUTION : Indicates a potentially hazardous situation which ,if not avoided, may result in minor or moderate injury.

Disclaimer

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 designated 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.

Instructions contained in this user's guide should be performed only by qualified persons in accordance with local and national codes. Blue Ridge Technologies International, LLC and its affiliates assume no responsibility for any consequences related to the improper use of this manual.

Overview : Document

This document provides mounting and connection instructions for the following Blue Ridge Technologies products :

BACnet Telephone Override Module (BTOM)

BTOM enclosures are Type 1 rated and must be mounted in a dry / indoor environment.

Sections of this Install Guide apply to optional equipment and may not be applicable.

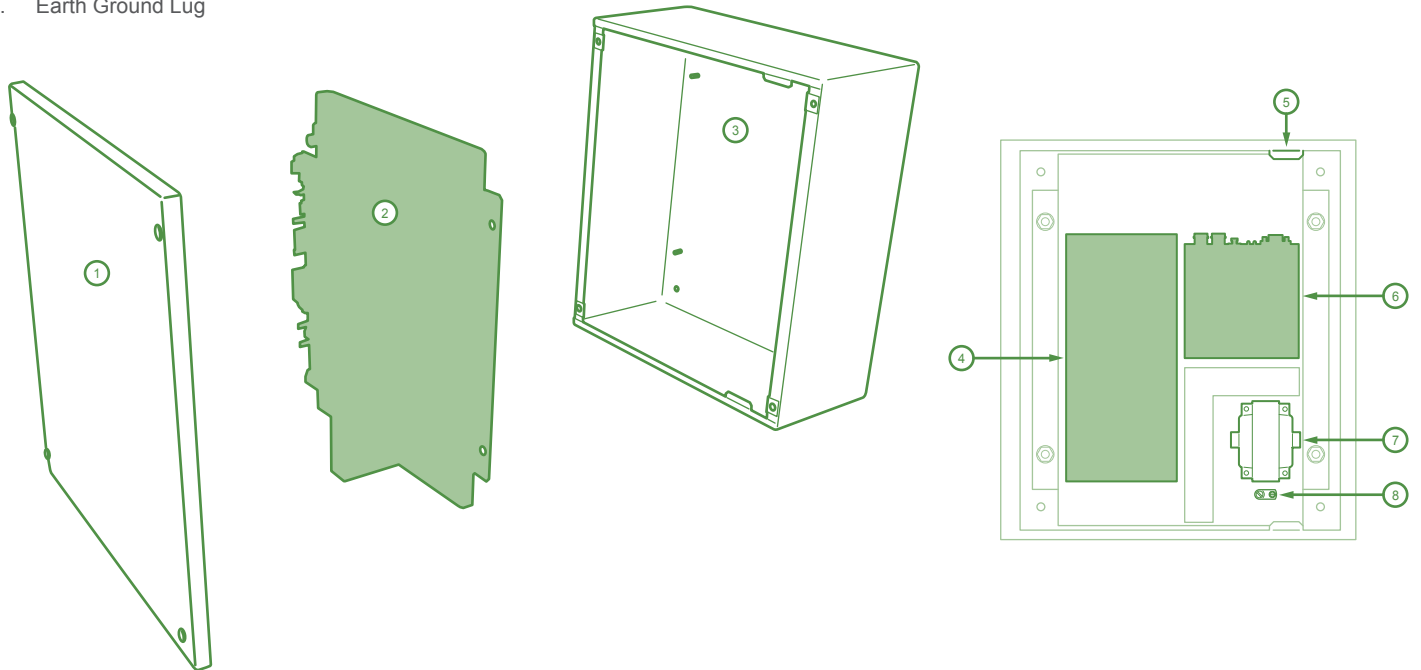
Overview : Component

The BTOM includes the following items :

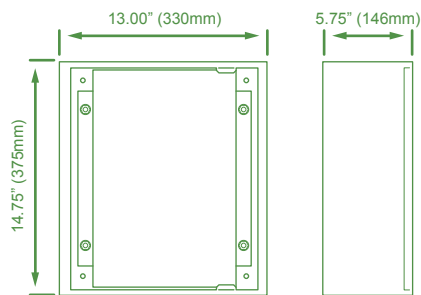
- 1 - BTOM
- 1 - BT485 BAS Network Terminator (BT485 Terminator)

Overview : Assembly

1. Door
2. Interior
3. Enclosure
4. Controller
5. Tab (Indicates Enclosure's right side)
6. Telephone Interface Module (TIM)
7. Transformer
8. Earth Ground Lug



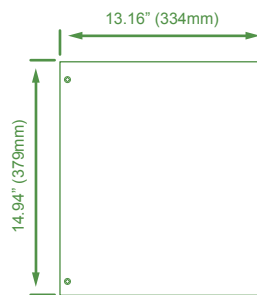
Enclosure Dimensions



Front

Side

Door Dimensions



(Figure 1)



Disconnect line voltage power before performing BTOM installation.



All circuits must be tested for wiring errors and shorts prior to BTOM installation.
Before handling any BTOM components, the technician should be grounded to prevent circuit board damage.

Preparation : Door Removal

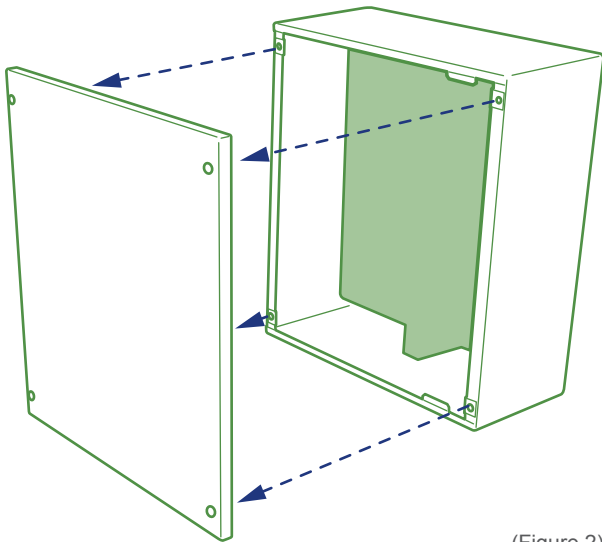
Remove the Door from the Enclosure. (Figure 2)

1. Release fasteners at the corners of the Door. These fasteners are captured. DO NOT remove the fasteners from the Door.
2. Pull Door free of Enclosure.

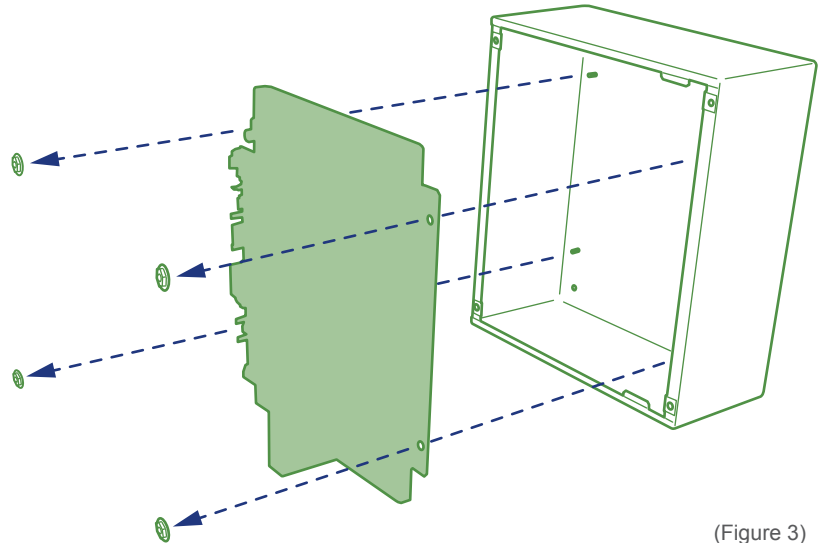
Preparation : Interior Removal

Remove the Interior from the Enclosure. It is beneficial to mark position of penetrations in the Enclosure prior to removing the Interior. (Figure 3)

1. Unfasten the nuts retaining the Interior.
2. Pull the Interior outward to free it from the Enclosure.
3. Store the Interior in a secure location free of dust and debris.



(Figure 2)

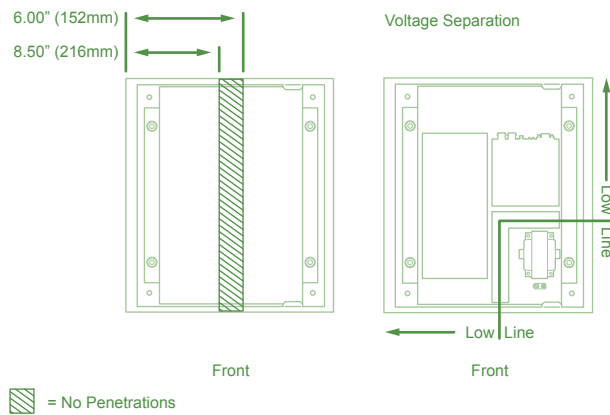


(Figure 3)

Preparation : Enclosure

Prior to mounting the Enclosure make penetrations for all applicable bushings and/or conduit. Ensure sufficient clearance for Enclosure structure and Interior. (Figure 4)

1. Ensure the Enclosure is oriented correctly. Tabs should be located on the Enclosure's right side. (Figure 1)
2. Drill or punch the appropriate hole(s) in the Enclosure for the application.

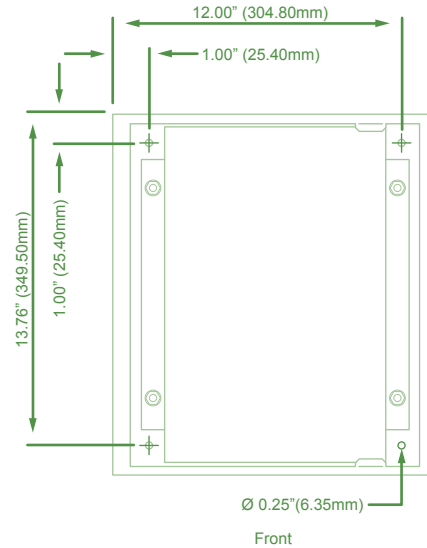


(Figure 4)

Mounting

The Enclosure may now be mounted.

1. Ensure the Enclosure is oriented correctly. Tabs should be located on the Enclosure's right side. (Figure 1)
2. Mark the location of all Enclosure mounting holes to the mounting surface. (Figure 5)
3. Prepare the mounting surface with hardware appropriate to support BTOM's weight 16lbs(7kg).
4. Hang Enclosure.
5. Remove dust and debris from Enclosure.
6. Reinstall Interior. DO NOT exceed 40 in-lbs when tightening Interior retention nuts.
7. Install appropriate bushings, conduit, and wire.



(Figure 5)

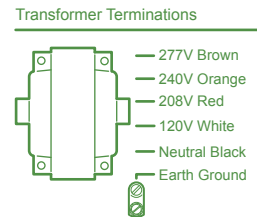
Terminations : Line Voltage

Complete line voltage terminations. (Figure 6)

1. Confirm power is disconnected from the BTOM.
2. Route leads as appropriate.
3. Cut to length and strip as appropriate.
4. Complete Transformer terminations.
5. Cap unused primary leads from Transformer.

Transformer Specifications

Type: 40VA Inherently Limited UL Listed
 Primary: Multi Tap 120, 208, 240, or 277VAC +/-10%, 40VA, 50-60 Hz
 Secondary: 24VAC +/-10% Inherently Limited
 Wire Requirement: 18AWG Minimum (Solid or Stranded)



(Figure 6)

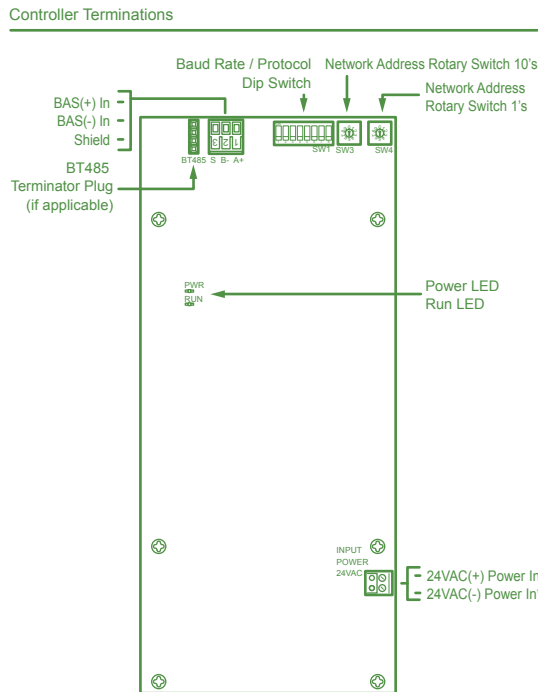
Terminations : Low Voltage

All low voltage leads are terminated on the Controller and TIM. The screw terminals accept a 0.4 x 2.5mm slot head screw driver. (Figure 7)

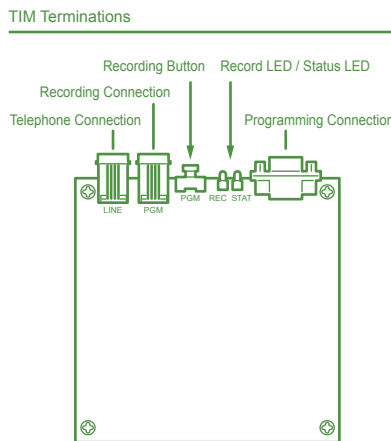
1. Confirm power is disconnected from the BTOM.
2. Route leads and telephone line.
3. Cut leads to length and strip as appropriate.
4. Insert stripped lead into screw terminal and tighten screw.
5. Repeat for each lead.
6. Complete telephone connection.

Controller Terminations

Power In: 24VAC +/-10%, 30VA, 50-60 Hz
 Auxiliary Out: 24VAC Full Wave Rectified



(Figure 7)



Terminations : Low Voltage

BAS Network Specifications

Topology: RS-485, 3 conductor (+, -, and shield), daisy chain wiring (no stars or t-taps)

Wire Requirement / Maximum Length: Belden 8760 / 4000'(1216m)

BACnet MS/TP

Baud Rate: DIP switch selectable 9.6K, 19.2K, 38.4K, or 76.8K

Device Profile: BACnet Advance Application Controller (AAC)

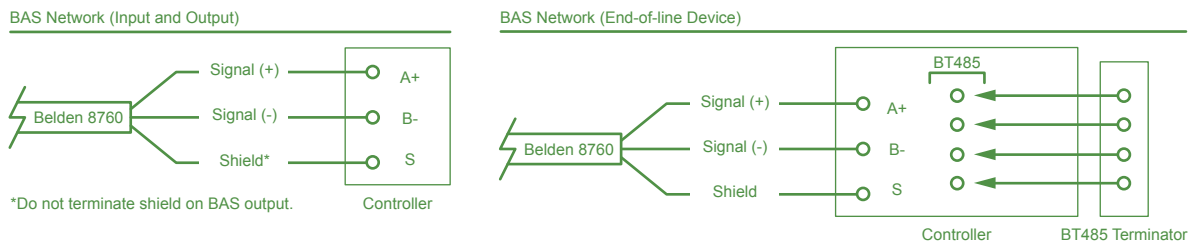
Address Range: 1 – 99 selectable with rotary dials

Unit Load: Full unit load, 32 devices per MS/TP segment

Points: See Application Guide and PIC Statement

Install BT485 Terminator if BTOM is operated as end of line device(first or last device on network). BT485 Terminator requires no specific orientation in relation to the terminal.

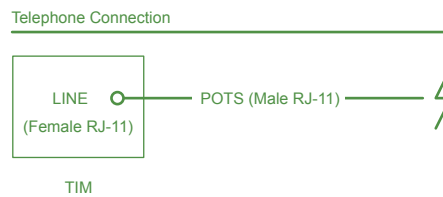
See Controller Setup for Address and Protocol settings.



(Figure 8)

Telephone Connection

Wire / Plug Requirement: Plain Old Telephone System (POTS) / male RJ-11



(Figure 9)

Controller Setup

Perform Controller configuration and BTOM power testing. (Figure 10)

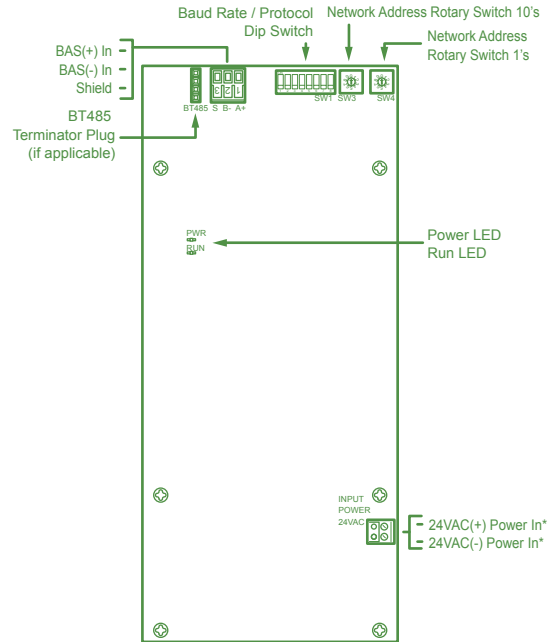
Setup

1. Confirm power is disconnected from the Controller and TIM. Ensure none of the LED's are illuminated.
2. Set the Programing / Protocol Dip Switch for protocol and baud rate.
3. Set the Network Address.

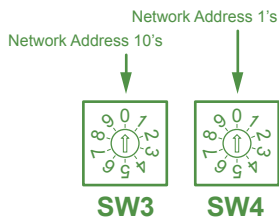
Testing

1. Connect power to the Controller. Wait 10 seconds for power up.
2. Confirm Controller LED operation.
Power LED: Solid illumination
Run LED: Continuous blinking
3. Confirm TIM LED operation.
STAT LED: Solid illumination
4. Test procedure complete.

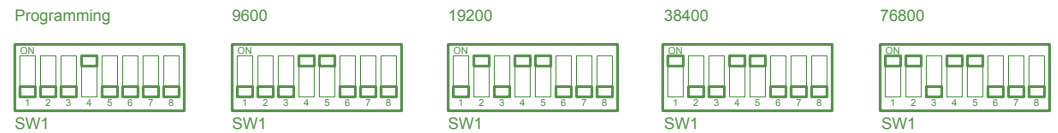
Controller Terminations



Network Address



Baud Rate / Protocol Dip Switch: BACnet MS/TP



(Figure 10)

Programming : General Operation

The BTOM will perform as follows upon completion of programming.

1. User dials the BTOM utilizing any push button telephone.
2. BTOM Prompt 1 "Please enter your Unit Number followed by the # sign."
3. User dials 4 digit Unit Number. Each Unit Number represents a zone to override.
4. BTOM Prompt 2 "Enter your password followed by the # sign."
5. User dials 4 digit password.
6. BTOM Prompt 3 "Enter 1 through 6 for override hours or 7 for off."
7. User dials 1-6 to override lighting and/or HVAC for up to 6 hours.
8. BTOM Prompt 4 "Your request has been submitted. You may make additional entries."
9. User may hang up or enter additional overrides.
10. The BTOM then exposes the Unit Numbers and Override Times to the BAS for implementation.

Programming : Connections

Complete BTOM programming.

1. Connect PC to TIM's Programming Connection .(Figure 7)
2. Run terminal program and establish correct settings. (See Terminal Setting Chart)
3. Connect terminal program to BTOM and complete desired programming.
4. Disconnect from BTOM.

Programming Connection Specifications

Cable / Plug Requirement : RS-232 / male pins

Interface: PC Terminal Program (Hyper Terminal)

Terminal Setting Chart

Field	Setting
Baud Rate	9600
Bits	8
Parity	None
Stop Bits	1
Flow Control	None or Off
Echo	On

Programming : Passwords

BTOM Unit Numbers and passwords are 4 digit numbers.

Unit Number Range : 0001-1022 (Zones to override)

Password Range : 0000-9999

Default passwords are the same as the Unit Number. For example, the default password for Unit Number 0050 is 0050. Passwords may be manipulated utilizing List, Read, Write, and Reset functions in a PC terminal program.

List Passwords

List displays all existing passwords for review or saving to a file.

Enter : Enter (*L).

Reply : A list of existing passwords will be displayed in 8 password segments. Each segment is preceded by the Unit Number for the first password in the segment. Ex : 0001-0001 0002 0003 0004 0005 0006 0007 0008

Read Password

Read displays passwords written to individual Unit Numbers.

Enter : Enter (R) followed by the desired Unit Number. Ex : R 0050

Reply : (R) Unit Number – Password Ex : R 0050-1234

Write Password

Write assigns passwords to individual Unit Numbers.

Enter : Enter (W) followed by the desired Unit Number and password. Ex : W 0050-1234 (The dash will automatically appear)

Reply : Unit Number – Password Ex : 0050-1234

Reset Passwords

Reset restores all existing passwords to factory default.

Enter : Enter (*D)

Reply : Reset All Passwords? Y(YES) or N(NO)

Enter : Y

Reply : Reset Done

Administrator Password

Unit Number 0000 is an Administrator Number. The password assigned to the Administrator Number will serve for any Unit Number.

Programming : Output Timing

Output timing represents the period for which BTOM exposes the Unit Numbers and Override Times to the BAS for implementation. The default period is 10 seconds. This period's length may be reset from 1-200 seconds by writing the desired time as the password for Unit Number 1023 in a PC terminal program.

1. Write the password for Unit Number 1023. Enter W1023-xxxx. The value for xxxx may be 0001-0200 for 1-200 seconds.

Recording Voice Prompts

Default voice prompts may be replaced utilizing a push button telephone handset. Default voice prompts cannot be restored once replaced. (Figure 7)

1. Plug the handset into the Recording Connection.
2. Press the Recording Button. The green Status (green) LED will turn off.
3. Dial the number (1-6) of desired prompt. (See Prompt Chart)
4. Record the prompt when the Record (red) LED illuminates.
5. Press the Recording Button to stop and review the new recording. The Status LED will illuminate after the new recording has played.
6. Repeat for each prompt.
7. Disconnect from BTOM.

For concise prompts press the Recording Button immediately after completing a new recording. If maximum recording time is exceeded the recording will stop and the prompt will replay automatically.

Recording Connection Specifications

Wire / Plug Requirement: Plain Old Telephone System (POTS) / male RJ-11

Interface: Push button telephone handset

Prompt Chart

Prompt Number	Message	Maximum Length (Seconds)
Prompt 1	Please enter your unit number followed by the # sign.	15
Prompt 2	Enter your password followed by the # sign.	7.5
Prompt 3	Enter 1 through 6 for override hours or 7 for off.	7.5
Prompt 4	Your request has been submitted. You may make additional entries.	7.5
Prompt 5	Invalid Entry, please try again.	7.5
Prompt 6	Good bye.	7.5

BACnet MS/TP Points

The BTOM prompts users to dial a Unit Number, Password, and Override Time. The BTOM handles Passwords internally while the Unit Number and Override Time are exposed as 2 BACnet Analog Values (BAV) for 10 seconds (default).

Ex : BTOM user dials Unit Number 0005 and an Override Time of 3 hours. BTOM changes AV:2 to a value of 5 representing Unit Number 0005 and AV:1 to a value of 3 representing an Override Time of 3 hours.

The BAS must be programmed to implement overrides based on the BAV.

Points List

Name	Type	Object	Name	Description
Telephone Override Time	BAV	AV:1	override_time_1	Override time
Telephone Override ID	BAV	AV:2	override_id_2	Zone to override