



Installation & Operations Manual

SmartCommand System



2YEAR
WARRANTY

N56W24720 N. Corporate Circle • Sussex, WI 53089
800-451-1460 • www.rathcommunications.com

RP85000BOSS32
Ver 01
05/23



At RATH®, we take great pride in our products, service, and support. We have been in the Emergency Communication business for over three decades and are the largest manufacturer of Emergency Phones in North America so you can rest assured that the quality and performance of our Communication Systems lead the industry. It is our sincere hope that your experience with us has and will continue to surpass your expectations.

The RATH® Team

Table of Contents

Pre-Installation	Page 3
BOSS Internal Overview	Page 3
Typical System Layout	Page 4
System Installation & Wiring	Page 4
System Programming	Page 7
Call Commander Operating Instructions	Page 9
Power and Battery Monitoring	Page 10
Troubleshooting	Page 12
Specifications	Page 13
Appendix	Page 14-16

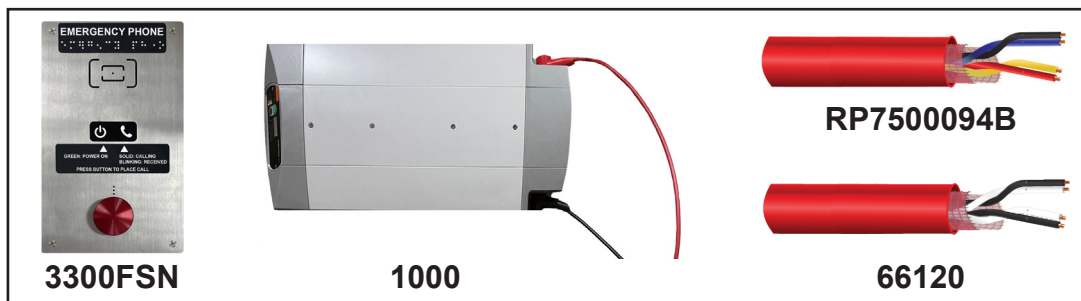
Pre-Installation

Included:

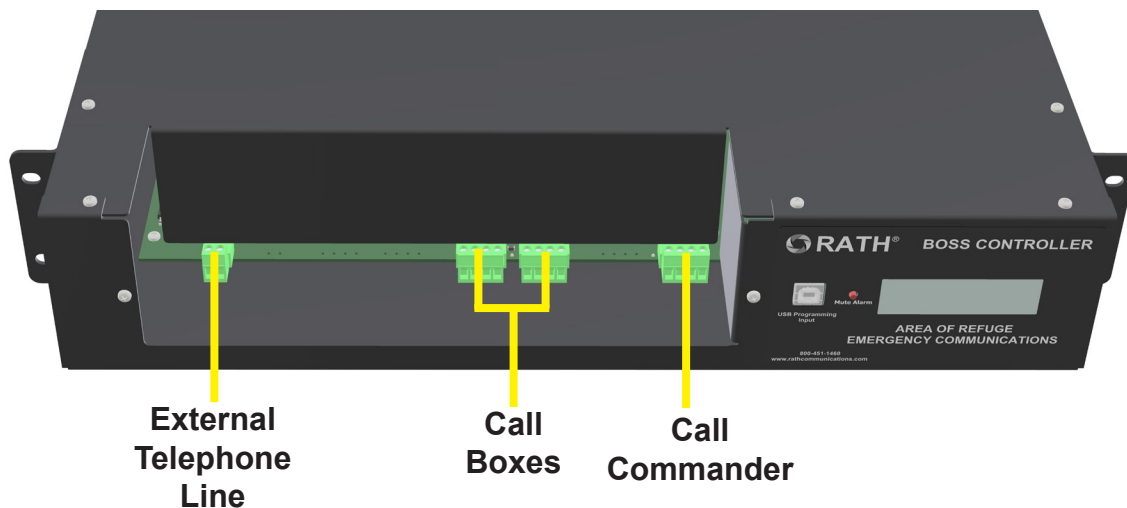
- RATH® Call Commander (Part #: 3200S, 3200F, or 3200D)
- USB programming cable
- USB flash drive with Configurator Software
- AC power cable
- 4-pin loop connectors
- 2-pin phone line connector

Not Included/Sold Separately:

- RATH® 3300 Series Call Boxes
- Power supply with battery backup (Part #: 1000)
 - 18AWG, 4 conductor, 2 pair cable
 - Plenum Part #: RP7500094B
 - 2 Hour Fire-Rated Part #: 66120
- 120vac power
- Multimeter
- Windows based laptop (Windows 7 or greater required)
- Dedicated analog or digital phone line (if the system needs the ability to call out)

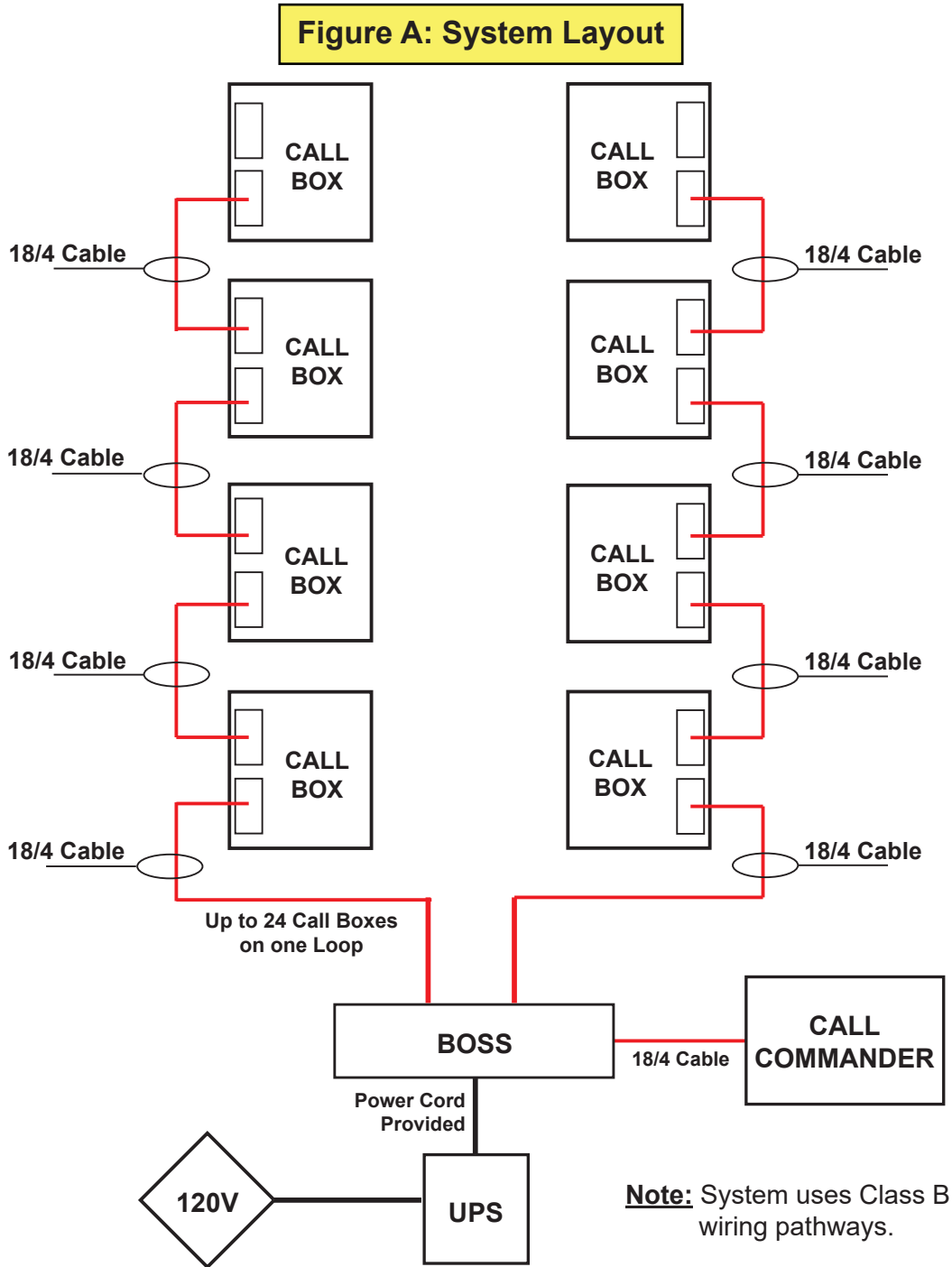


Brains of SmartCommand System (BOSS) Internal Overview



NOTE: To expose these connections, remove the two screws on the top of the housing to remove the cover.

Typical System Layout



System Installation & Wiring

Powering the System

1. Mount the BOSS unit and power supply with battery backup in an appropriate location. The BOSS should be installed in a secure area with limited public access. A network closet or machine room is recommended.

Note: The BOSS can be rack mounted or wall mounted.

2. Plug power supply with battery backup into a standard 120v wall outlet.

Note: System is to be powered by 120v, 60Hz, AC outlet protected by a 15A maximum circuit breaker.

3. Using the provided power cord, plug the 3-pin female connector side into the power input next to the power switch on the back of the BOSS unit. Plug the male 3-prong side of the power cable into any of the open outlets on the power supply with battery backup. Wait to power on the BOSS unit until all connections are made.
4. If not already done, remove the two screws on top of the metal housing holding the front most cover in place.
5. Remove cover to expose internal terminal connectors.
6. Remove the knock-out on left hand side of BOSS unit to route cables through.

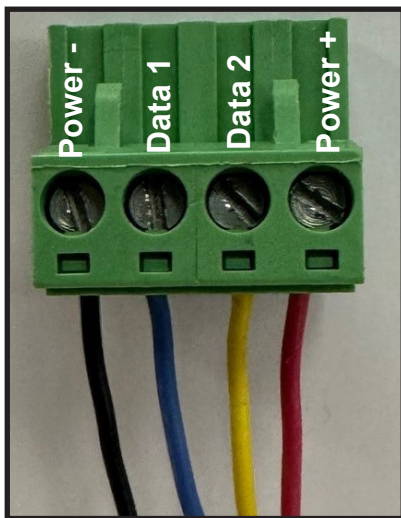
Call Commander Wiring

1. Install the Call Commander
 - a. **Desk Mount:** Install included foot stand on the back of the Call Commander and place in location per owner's specifications.
 - b. **Cabinet Mount:** Use the provided Allen Wrench to remove the back box or back plate from the cabinet. Remove any applicable knockouts. Mount the back box or plate in location per owner's specifications using appropriate mounting hardware. Wait to reassemble the cabinet until all wiring is done.
2. Run an 18/4 cable from the Call Commander back to the BOSS unit.

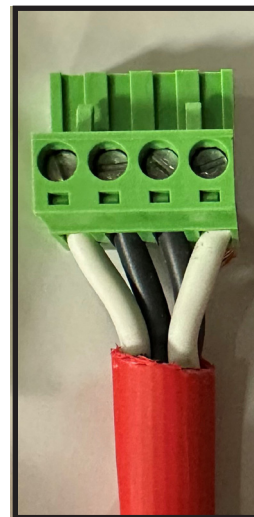
Note: This cable provides communication and power. No additional power is needed.

Note: Maximum wire run length from the Call Commander to the BOSS is 500 feet.

Note: Only one Call Commander can be used with the system.
3. On both ends of the 18/4 cable, strip back and expose 1/4" of wire on individual conductors of 18/4.
4. Route cable through applicable knock-outs.
5. Screw 4 wires into 4-pin loop connector following wire scheme below verifying wires seated fully into connector.



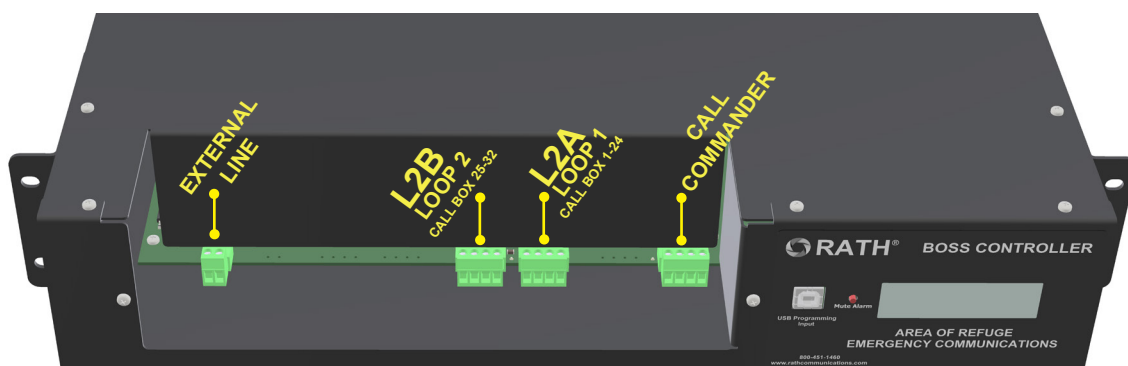
P/N: RP7500094B



P/N: 66120

If using RATH® 66120 cable, follow the "1" and "2" printed on the insulation jacket around the wire. Recommended order is 1 White, 1 Black, 2 Black, 2 White.

6. Once both ends of cable have 4-pin loop connectors securely terminated, plug one end into either of the green terminal plugs on the back of the Call Commander, then plug the other end onto port L1A on the BOSS. See below for detailed port labels on the BOSS.



BOSS to Call Box Wiring

1. Run an 18/4 cable from the BOSS to the first Call Box.

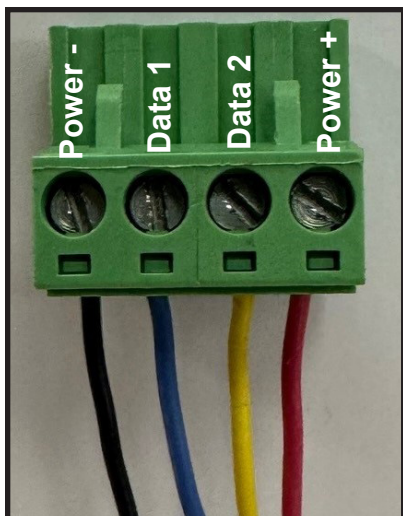
Note: This cable provides communication and power. No additional power is needed.

Note: Maximum wire length to the first Call Box is 200 feet.

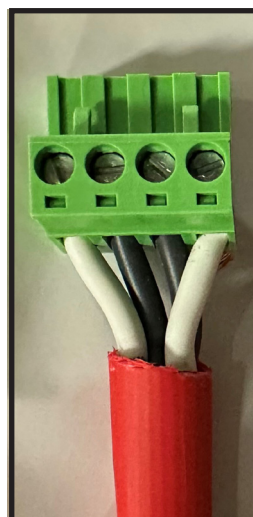
2. On both ends of the 18/4 cable, strip back and expose 1/4" of wire on individual conductors of 18/4.

3. Route cable through applicable knock-outs.

4. Screw four wires into 4-pin loop connector following wire scheme below verifying wires seated fully into connector.



P/N: RP7500094B



P/N: 66120

If using RATH® 66120 cable, follow the "1" and "2" printed on the insulation jacket around the wire. Recommended order is 1 White, 1 Black, 2 Black, 2 White.

5. Once both ends of the cable have 4-pin loop connectors securely terminated, plug one end into either of the green terminal plugs onto the first Call Box, then plug the other end into port L2A on the BOSS. See below for detailed port labels on the BOSS.

Note: Either connection on the call box can be used for input/output. It is recommended to always use the same port on each call box for the input and the other as the output for simplification purposes.

Call Box to Call Box Wiring

1. Run an 18/4 cable from the first Call Box to the next in line Call Box.

2. On both ends of the 18/4 cable, strip back and expose 1/4" of wire on individual conductors of 18/4.

3. Route cable through applicable knock-outs.

4. Screw four wires into 4-pin loop connectors following same pin out as above verifying wires seated fully into connector.

5. Once both ends of the cable have 4-pin loop connectors securely terminated, plug one end into remaining open port on the first Call Box, then plug other end into either port on the next Call Box in line of the loop.

6. Repeat for each call box.

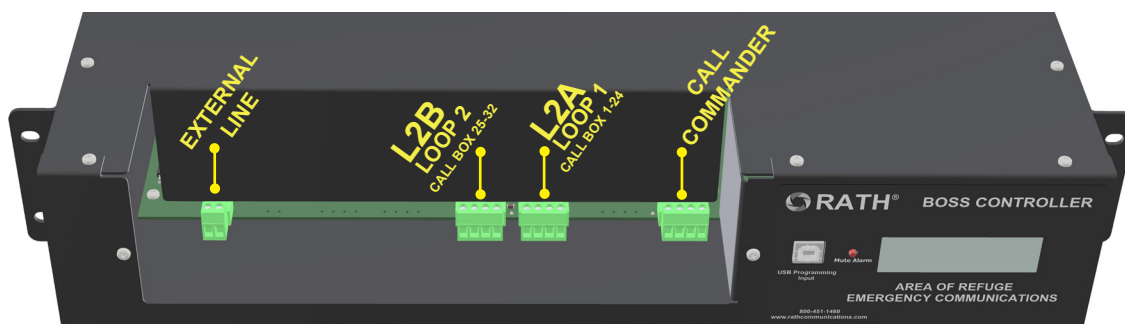
Note: Maximum wire run length between each Call Box is 200 feet.

Note: Maximum wire run length for a single loop is 1200 feet.

Note: A maximum of 24 Call Boxes can be connected on a single loop.

7. Connect remaining call boxes to L2B following same steps as above.

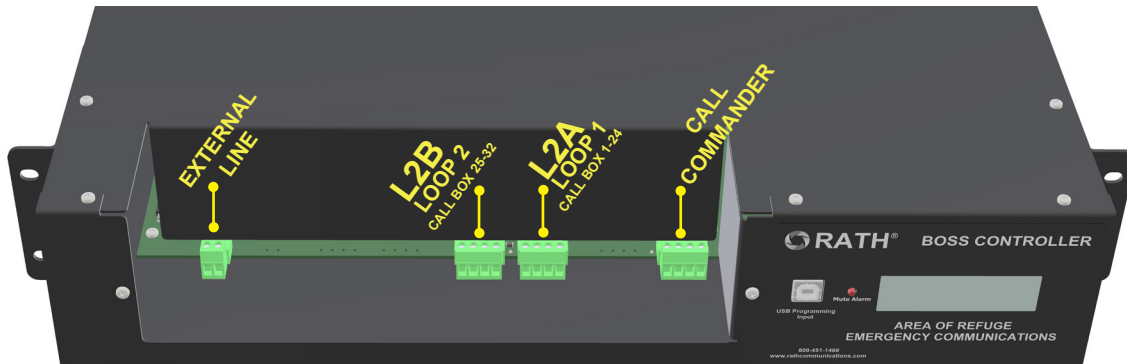
Note: Either connection on the call box can be used for input/output. It is recommended to always use the same port on each call box for the input and the other as the output for simplification purposes.



Phone Line Wiring (Optional)

1. Connect the analog phone line or equivalent connection (cable modem, VoIP gateway, or cellular device) to the 2-pin screw terminal connector then connect it to the external line connection. Polarity does not matter.

Note: If using an external phone line with the system, it is recommended the line is verified and functional before connecting to the system. Phone Line should have voltage, as well as dial tone. It is not recommended to use “ring-down” style phone lines with this system.



Powering On System

1. Screw terminal connector cover back onto BOSS unit.
2. Once all connections are made, power on the BOSS using the power switch on the back of the unit. The Call Commander should power on. The BOSS should display the correct number of connected Call Boxes and one Call Commander. All call boxes should have green power LED illuminated.
Note: If information is not correct upon start-up, there is likely a wiring or connection issue. Please power down system and correct issue before resuming setup of system.
3. Upon first power up, system will sound internal alarm due to lack of configuration. There will be multiple scrolling “SYS CONFIG XX” errors. Press and hold the mute button next to the display on the front of the BOSS controller for two seconds to silence the alarm. Once configuration is complete, faults will clear automatically.

System Programming

1. Verify Call Commander has fully booted.
2. Connect laptop to the BOSS via provided USB cable. The USB port on the BOSS is located to the left of the display on the front of the unit.
3. Plug provided USB flash drive into laptop.
4. Open the Configuration Software from the flash drive.
5. Log into Configurator Software.
Username: admin **Password:** password
6. After opening the Configuration Software, the system will take you to the **Quick Start** screen to give an overview of the Configurator. Click **Begin** after reading. After clicking **Begin**, click **Connect** to connect to the BOSS unit. Connection may take a few minutes to complete. After connecting, the Configurator should show the correct number of connected Call Boxes, Call Commanders, and phone lines.
Note: If configuration software shows incorrect information there is likely a wiring or connection issue. Please exit configuration software, power down system, and correct issue before resuming setup of system.
7. Click **Configuration** option on the left. App will automatically go to the **General Information** menu and **System Information** tab.
8. In **System Information**, then **Edit Device**, type in connected number of Call Boxes, Call Commanders, and phone lines, click **Finish Edit**. A box will pop up asking you to confirm the information just entered.
Note: If what was entered does not match what is on the display of the BOSS, go back to **Edit Device** and correct. The two must match. System will go into fault and sound internal alarm if incorrect.
9. Click **Address Information**, then **Edit Device**, enter address of where the system is installed, then click **Finish Edit**. (The system will use this information for the outbound message if calling off site)

10. Click **Telephone Information**, then **Edit Device**, enter the telephone number that the system will call out to if not answered at Call Commander. Up to two numbers can be programmed, one in the Number 1 slot, one in the Number 2 slot. Enter in the amount of time Call Boxes will ring Call Commander (in seconds) next to **Ring Time**. If not doing a location message click **Finish Edit**, if doing a location message proceed to step 11.
Note: Ring Time will also determine amount of time the system will ring at the first programmed number before rolling over to a second number if two numbers are programmed in.
Note: If system only needs to ring at the Call Commander set time to "0".
Note: Call Commander will continue to ring until call answered or joined at Call Commander or hung-up by external line.
11. If using a location message, while still in the **Telephone Information** tab, click drop-down menu next to **Outbound Message Replay** to select if location message will play once, twice, or continuous. Click **Finish Edit**.
Note: If continuous option selected, message will play on a loop until answering party hits any key on their telephone keypad to stop it. This option is recommended for call centers that have a recording or a long wait before answering.
12. Click on **Call Boxes** in the **Configuration** menu.
13. Click on first Call Box listed, then **Edit Device**, enter in location or desired name of Call Box in **Location**, then click **Finish Edit**. There is a 16 character limit for names. (The system will use this information at the Call Commander as well as the outbound message if calling off site)
14. Repeat above steps for all Call Boxes until all show **Set** under status.
15. Click the **Outbound Message** tab in the menu on the left-hand side. This is only used if system is calling an outside line. If no outside line is being used, skip to step 20.
16. Click drop down next to **Message Voice** to change from male voice to female if desired.
17. In table below, check boxes next to all call stations that the message needs to be uploaded to.
Note: If uploading messages for the first time, make sure the first six boxes are checked for address information and operating instructions.
18. To hear an audio sample of each line, click **Click to Test**. If pronunciation of text needs to be modified, click on call box that needs to be modified. Under **Update Audio** on the left, type in corrected text, then click **Test**. Once proper text is determined, click **Generate New** to save. Repeat for each line as necessary.
19. After selecting all call stations, and adjusting audio if necessary, click **Upload** button. Upload will take roughly two minutes per message. Wait until all messages upload before clicking out of message tab.
20. Once all configuration is complete, close out of Configuration Software before testing.

Optional Programming:

Programming Date & Time

1. Open Configuration Software following steps 1-6 under the **Quick Start** section on page 7.
2. Click **Settings** in the bottom left hand corner.
3. Next to time, the current system information will be displayed. Click **Sync Time**. This will sync the system time with the PC. Verify time on PC is correct before syncing with system.

System Fault

In the **General Information** tab under the **Configuration** menu there is the option for enabling power and battery monitoring on the system. By default this feature is disabled. To enable and for more information about fault monitoring, see page 10.

Factory Reset

Performing a factory reset on the system will restore all configuration done in the Configuration software and take the system back to factory defaults. To perform a reset perform the following:

1. While in Configuration Software click **Settings** in the bottom left corner.
2. Click **Factory Reset** button.
3. When pop-up appears asking "Are you sure you want to perform a factory reset?" click **Yes**
4. The BOSS controller and system will power down and re-boot. Wait until system fully boots before reconfiguring the system.

Call Commander Operating Instructions

Answering Call at Call Commander

1. When the Call Commander is ringing, either lift the handset or press the **Hands-Free** button to answer the call.
2. If multiple calls are coming in, press the **Hold** button to put the original call on hold. After putting the original call on hold, use the **Scroll Down** button to scroll to desired call, then press the **Select** button. Repeat for any incoming calls.
3. To hang up call, press **Disconnect Internal** button, then scroll to next call or hang up by either hanging up the handset or pressing the **Hands-Free** button.

Joining a Call Already in Progress from Call Commander

1. Lift handset or press the **Hands-Free** button.
2. Scroll to desired call then press the **Select** button. Call Commander will automatically be in a three-way call with the Call Box and the external line.
3. Press the **Disconnect External** button to disconnect the external line.
4. Press the **Disconnect Internal** button to hang up Call Box, then scroll to next call or hang up by either hanging up the handset or pressing the **Hands-Free** button.

Calling to Call Box from Call Commander

1. Lift handset or press the **Hands-Free** button.
2. Press the **Directory** button.
3. Scroll to the desired call then press the **Select** button.
4. Press the **Disconnect Internal** button then hang up the handset or press the **Hands-Free** button to end the call.
5. Press the **Directory** button a second time to exit.

Broadcast a Message to all Call Boxes using All Call Feature

1. With handset hung-up press **All Call** button.
2. Lift handset and press and hold the **Select** button. While pressing and holding the **Select** button, speak message (Maximum 10 seconds), then release the **Select** button.
3. To review recorded message, press and release **Select** button.
4. To broadcast message, hang up the handset and press the **Select** button.
5. Message will broadcast to four Call Boxes at a time until message has been sent to all Call Boxes. Call Commander display will go back to its home screen when the broadcast is finished.

Note: During All Call, the Call Commander cannot answer an incoming call until message broadcast is complete.

Call Indicators:

WTG- Call Waiting to be Answered

ACT- Active Call

HLD- Call on Hold

EXT- Call Box using External Line

3WAY- Call Box in a Call with External Line and Call Commander

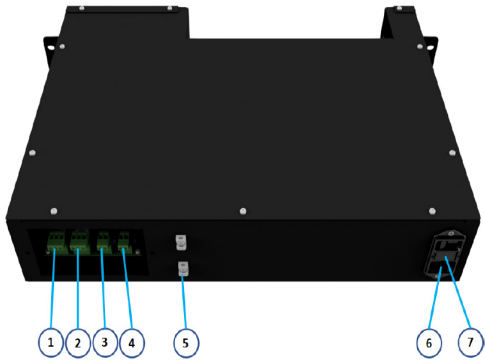
Adjusting Volume on Call Commander.

To adjust ringer volume: When system is idle, press **Volume** button on the Call Commander. Each time **Volume** button is pressed phone will scroll through 0 to 3 (0 being lowest, 3 being the highest). This setting will be saved automatically.

To adjust handset volume: When the Call Commander is on a call, press **Volume** button on the Call Commander. Each time **Volume** button is pressed phone will scroll through 0 to 3 (0 being lowest, 3 being the highest). This setting will be saved automatically.

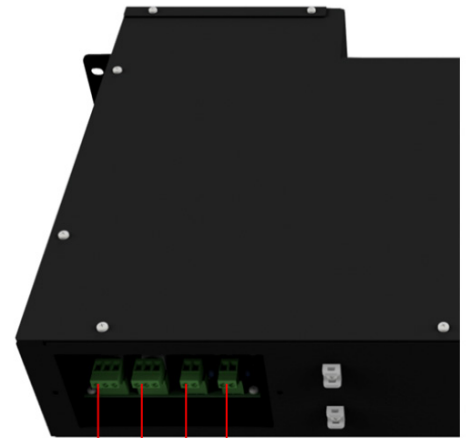
Power Fail and Battery Fault Monitoring

BOSS controller has built in external power and backup battery monitoring. Fault monitoring needs to be enabled in configuration app (see page 11). Incoming power will be paralleled to power fault input relay on BOSS. Battery terminals will be paralleled to battery input relay on BOSS. When in fault the System Fault Relay output will change state. This application is only recommended to be used with the RATH® 1000 power supply.

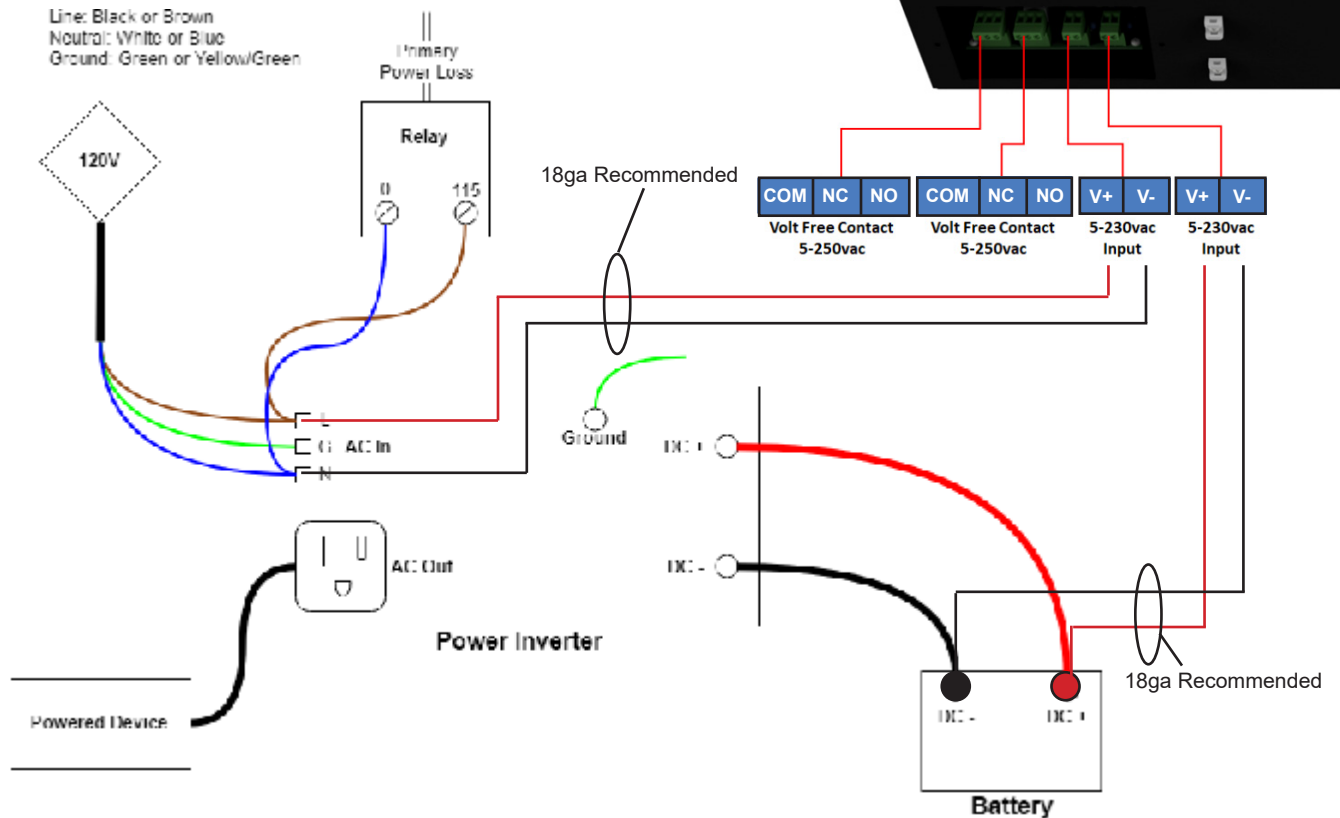


Back Components

1. System fault relay output- Changes state when any fault occurs on system.
2. Call Box Active Call relay output-Changes state if any call box is attempting a call
3. Power supply fault input- Monitors Input Power
4. Battery fault input- Monitors Backup Battery
5. Cable strain relief
6. IEC power supply input



Wiring Diagram



Power and Battery Fault Monitoring

By default, fault monitoring of input power and battery on the system is disabled. To enable, perform the following:

1. Connect laptop to the BOSS via provided USB cable. The USB port on the BOSS is located directly to the left of the display on the front of the unit.
2. Plug provided USB flash drive into laptop.
3. Open the Configuration Software from the flash drive.
4. Log into Configurator Software.
Username: admin **Password:** password
5. After opening the Configuration Software, click **Begin** on the **Quick Start** screen to connect to the BOSS.
6. Click on the **Configuration** menu on the left.
7. In the **General Information** tab, click on **System Fault Config**.
8. Click **Edit Device**.
9. Click drop-down next to **Supply Fault Input** and select **Active Low**.
10. Click drop-down next to **System Fault Input** and select **Active Low**.
Note: Do not use **Active High** setting as it will trip when voltage is applied vs voltage lost.
11. Click **Finish Edit** to save.

Testing

Power Loss: Unplug 110vac incoming power from 1000 power supply. Within 90 seconds the display on BOSS should show Supply Fault Input fault and system fault relay output should change state.

Battery Loss: Disconnect battery from 1000 power supply, when battery drops below 5vdc, within 90 seconds the display on the BOSS should show Battery Fault and fault relay output should change state.

Note: If battery fully charged it may take up to 12 hours for battery to drop below 5vdc.

System Fault Notifications

If power and battery monitoring is disabled, system will still fault if certain errors occur. The internal sounder on the BOSS controller will sound and fault code will display on the display of the BOSS controller. For an explanation of fault code, see below. If there are multiple faults, display will scroll between them.

- **Relay 1 Fault** – Error signal detected on alarm input (currently “Battery Alarm”)
- **Relay 2 Fault** – Error signal detected on alarm input (currently “Power Supply”)
- **Ground Fault** – There is a grounding fault in the installation wiring
- **Sys Config CC** – The number of Call Commanders connected does not match the configuration set in the PC App
- **Sys Config CB** – The number of Call Boxes connected does not match the configuration set in the PC App
- **Sys Config EL** – The number of external lines connected does not match the configuration set in the PC App
- **Loc:XXX CRC**– messaging errors detected on loop XXX, indicative of possible connection issues on loop
- **Loc:XXX a-x-b** – Loop break detected on loop XXX
- **Loc:XXX Amps Hi** – Overcurrent event on loop XXX
- **Loc:XXX Volts Hi** – Overvoltage event on loop XXX
- **Loc:XXX Volts Lo** – Undervoltage event on loop XXX
- **Lox:XXX Ext. Line** – Fault on external phone line XXX

To silence the sounder on the BOSS controller press and hold the **Mute** button to the left of the display for two seconds. This will silence the alarm for 24 hours or until fault resolved.

Troubleshooting

Problem	Possible Cause & Solutions
Can't connect to App:	<ul style="list-style-type: none"> • Make sure Call Commander is fully booted before attempting to open App. • Verify USB cable is plugged into a working USB port on PC and plugged in all the way on the BOSS. • Close the App and power cycle the BOSS. After Call Commander reboots, attempt to open the App again. • Computer being used may not have a Virtual Com Port (VCP) driver installed. Either install a VCP driver on PC or try a different computer.
Call Commander won't power on or boot:	<ul style="list-style-type: none"> • Verify Call Commander is connected to port L1A on the BOSS. • Verify Call Commander is on its own loop. The Call Commander cannot share wiring with any Call Boxes. • Verify outer pins of wiring on 4-pin loop connector. Pins should have 44-48vdc on pins 1 and 4. • Verify at least one call box is connected to the BOSS. The Call Commander will not boot without a call box connected.
Call Boxes won't call out:	<ul style="list-style-type: none"> • Verify phone line is connected to PSTN 1 on the BOSS. • Verify phone line has 48-52vdc on it as well as dial tone. • Verify an analog phone line can be connected to the line and place calls out to the number being entered into the BOSS. • Verify line doesn't require any special characters such as an 8 or 9 to dial out.
BOSS not displaying the correct amount of Call Boxes after booting:	<ul style="list-style-type: none"> • Verify Call Boxes have 44-48vdc on pins 1 and 4 of terminal connector. • Verify pin out of 4-pin terminal connector on both ends. • Verify wires are stripped back and fully seated in connectors. • Go to the last Call Box in the loop that the BOSS has recognized and verify connector and pin out to the rest of the loop.
Can't clear fault notification:	<ul style="list-style-type: none"> • Refer to fault error code log on page 11 to verify error code. • If the fault is for the external line, verify the line has active dial tone and voltage and can place a call in and out. • If the fault is for a loop break, verify wiring and pin out between problematic locations listed on the screen. • If fault is for over-current or over-voltage, verify no more than 24 devices are connected to a single loop.
Call Box has no power LED:	<ul style="list-style-type: none"> • Verify call boxes are only connected to L2A or L2B, see page 6 for connection diagram. • Verify pin-out of 4-pin terminal connector, see page 5 for pin-out details. • Verify wires are seated into connector properly with wire not stripped back too much or not fully screwed into connector. • Verify maximum loop length isn't being exceeded. A single loop cannot be more than 1200 ft. • Verify first call box is within 200ft of the BOSS controller. • Verify Call Boxes have 44-48vdc on pins 1 and 4 of terminal connector.
System has a Ground Fault Error Code:	<ul style="list-style-type: none"> • Verify no more than 24 call boxes are connected to a single loop. • Identify which call box is causing fault by looking for first call box on the loop without it's power LED illuminated. Try swapping that call box with a known good unit to see if issue follows call box. • Verify wires in terminal connector not touching or broken off inside of connector. • Verify wires going from call box to call box are daisy-chained with no wires spliced in that could break the loop.

Specifications

Connections

- Power | Public Switched Telephone Network (PSTN) | Battery Management System (BMS) Relay In/Out| USB Type B

Power Requirements/Protection

- 120v, 8A | Short Circuit, Overload, Over Voltage

Supervision

- Primary Power | Secondary Power | Telephone Line | Loop Monitoring

Operating Temperature

- Call Boxes: -13°F to 131°F (-25°C to 55°C)
- Call Commander: 23°F to 131°F (-5°C to 55°C)
- BOSS: 23°F to 131°F (-5°C to 55°C)
- For Indoor Use Only

Product Dimensions (W x H x D)

- BOSS: 17.20" x 12.59" x 3.46" (437 x 320 x 88mm)
- Call Commander: 7.95" x 9.84" x 2.91" (202 x 250 x 74mm)
- Surface Mount Call Box: 4.72" x 7.87" x 1.85" (120 x 200 x 47mm)
- Flush Mount Call Box: 5.11" x 8.66" x 3.62" (130 x 220 x 92mm)

Certifications

- UL 2525

FCC Disclaimer

This device complies with Part 68 and Part 15 of the FCC rules. Operation 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.

FCC Reg. No: AW7AL01A8055 Ringer Equiv.:.01A

Telco Voltage

23-27vdc on a PBX line or 48-52vdc on an analog/digital line with at least 25mA of loop current and valid dial tone. Line must be dedicated for the system.

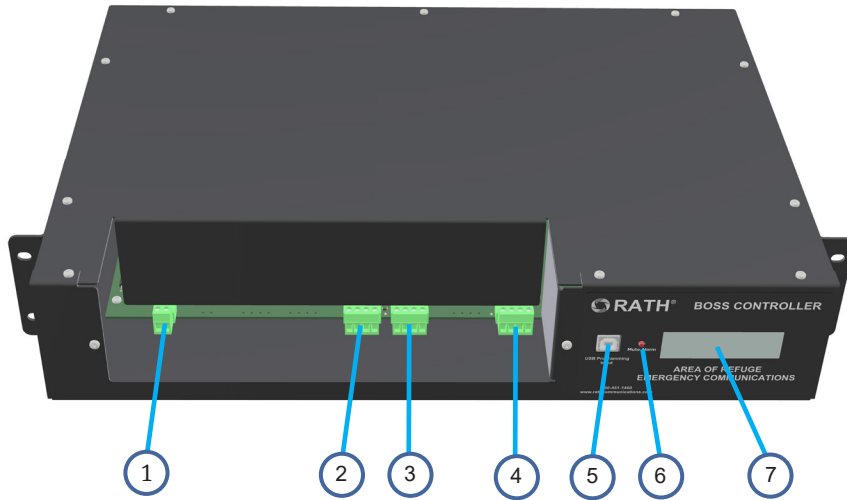
Safety

- Do not expose to liquids or excessive humidity.
- Do not expose any of the components to fire.
- Do not try to modify any of the equipment.
- Do not use the equipment in hazardous areas.

Maintenance

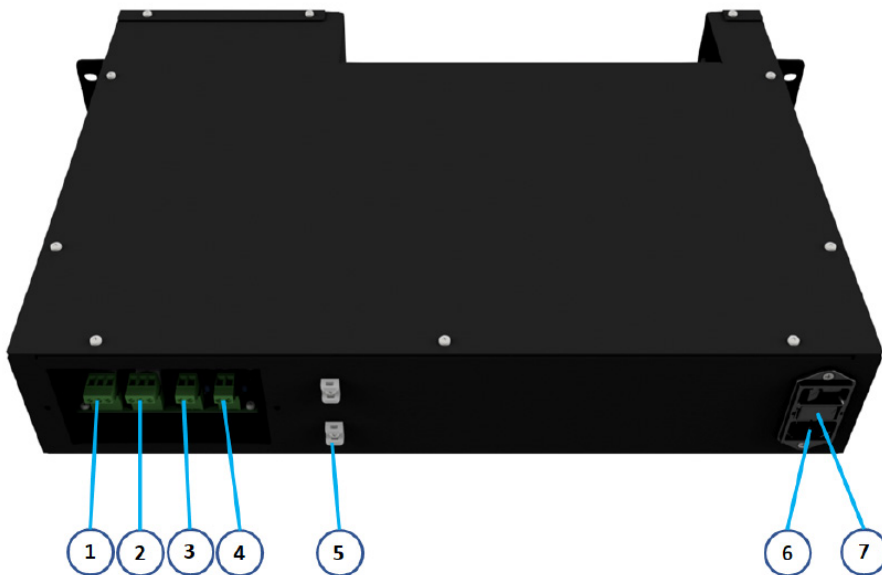
It is recommended for the system to be tested monthly to verify operation. If call boxes are in need of cleaning, use a soft dry cloth. It is not recommended to use solvent or spray cleaners around the speaker and microphone holes.

Appendix A – BOSS Detail and Mounting



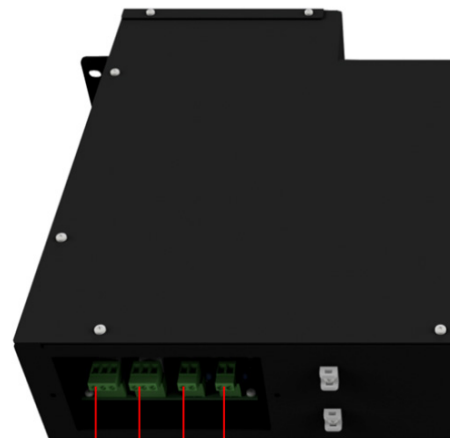
Front Components

1. PSTN connection
2. Call Box loop 1
3. Call Box loop 2
4. Call Commander
5. USB programming input
6. Mute Button
7. System status display

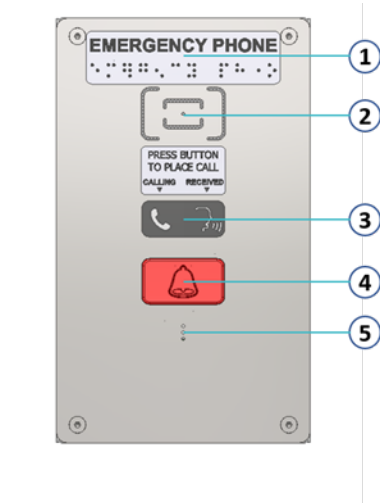


Back Components

1. System fault relay output
2. Call Box Active Call relay output
3. Power supply fault input
4. Battery fault input
5. Cable strain relief
6. IEC power supply input
7. Power supply fuse

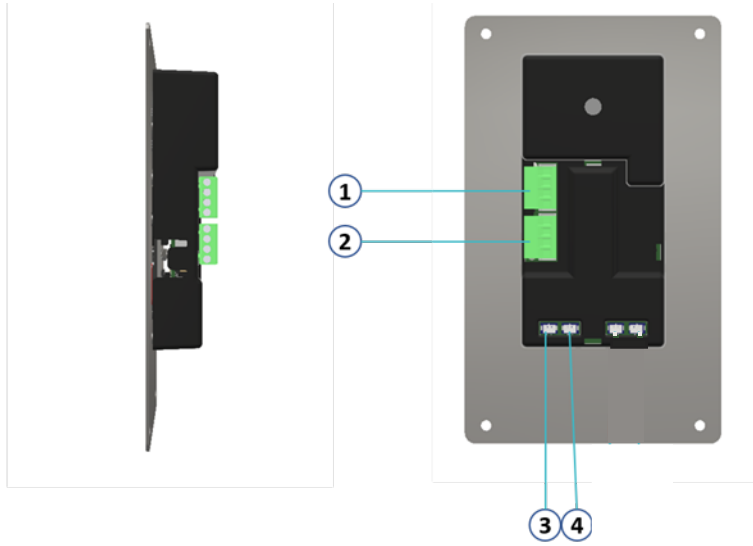


Appendix B – Call Box Detail and Mounting



Call Box Front

1. Braille/emergency phone label
2. Speaker grille
3. Emergency call pictograms
4. Emergency call button
5. Microphone



Call Box Rear

1. Loop input/output 1
2. Loop input/output 2
3. External LED
4. External alarm button

Flush Mount

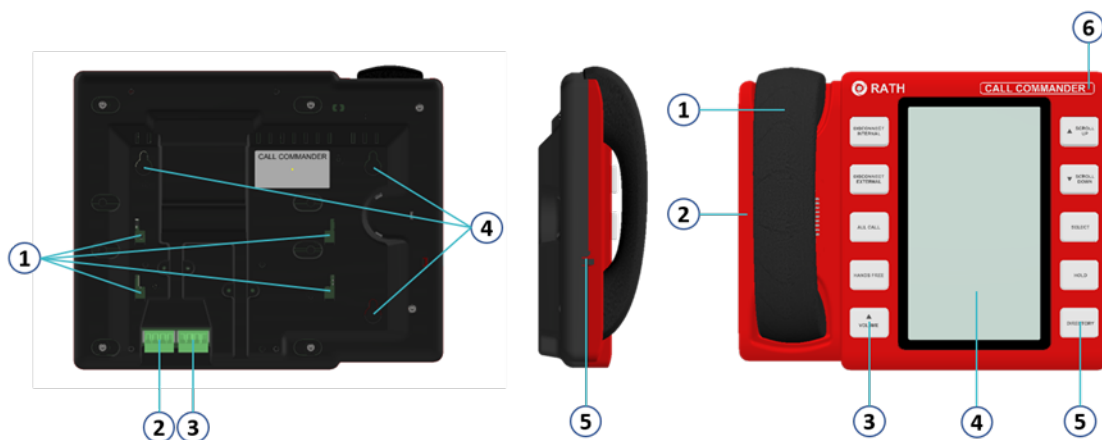
The flush mount Call Box is designed to be mounted on to a standard 4 gang wall box.



Surface Mount

The surface mount Call Box can be fixed to any wall using the 4 keyhole slots in the metal back box. Cable entry points are on the top, bottom, and back of the enclosure.

Appendix C – Call Commander Detail and Mounting



Rear & Side of Call Commander

1. Desk stand mounting clips
2. Call Commander input/output 1
3. Call Commander input/output 2
4. Wall mounting keyhole slots

Front of Call Commander

1. Phone handset and hook switch
2. Hands-free speaker
3. Call management buttons
4. 7 inch display
5. Software navigation buttons
6. Hands-free microphone

