English

HONBDA-CA
HONBDA-EA

Dual Band VHF & UHF Signal Boosters

User Manual

UM-1053/ Rv.03

Document History

Description	Revision	Date Issued
Original Version	01	Sept 16th, 2020
General Review	02	Nov 24th, 2020
Installation guidelines review	03	April 20th, 2021

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About this manual

This manual describes installation, commissioning, operation and maintenance of Fiplex by Honeywell **VHF & UHF Dual Band Signal Booster and Fiplex Control Software (FCS).** The first part of the manual describes the Signal Booster hardware and the second part describes the software.

Hardware and software mentioned in this manual are subjected to continuous development and improvement. Consequently, there may be minor discrepancies between the information in this manual and the performance and design of the hardware and software. Specifications, dimensions, and other statements mentioned in this manual are subject to change without notice.

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Abbreviations

AGC	Automatic Gain Control
BS	Base Station, BS antenna = towards the base station
DC	Direct Current
DL	Downlink signal direction (from base station via Signal Booster / Master / Remote to mobile station)
DPLX	Duplex filter
EEPROM	Electrical Erasable Programmable Read Only Memory
ETSI	European Telecommunications Standard Institute
FCS	Fiplex Control Software
HW	Hardware
LED	Light Emitting Diode
LNA	Low Noise Amplifier, uplink and downlink
MS	Mobile Station, MS antenna = towards the mobile station
OL	Overload
OMS	Operation and Maintenance System
PA	Power Amplifier
pFOMS	Portable Fiplex Operation and Maintenance Software
PS	Power Supply
RF	Radio Frequency
RSSI	Received Signal Strength Indication
SW	Software
UL	Uplink signal direction (from mobile station via Signal Booster / Master / Remote to base station)
WEEE	Waste of Electric and Electronic Equipment

Part 1 HARDWARE

Safety Guidelines

The general safety information in this guide applies to both operation and service personnel. Specific warnings and cautions are located in the applicable guide sections but may not appear in this summary. Failure to comply with these precautions or specific warnings elsewhere in the manual violates safety standards of design, manufacture, and intended use of equipment. Fiplex by Honeywell assumes no liability for the customers failure to comply with these requirements:

- **Grounding** – These Signal Boosters must always be operated with the ground wire properly connected. The External Main Earth terminal shall be connected to the Building Main Earth.
- **Explosive atmosphere** - To avoid explosion or fire, do not operate this product in the presence of flammable gases or fumes.
- **Lightning Danger** - Do not install or adjust these unit during an electrical storm.

Consignes de sécurité

- Le plot de terre principal externe doit être connecte au bâtiment principal.



CAUTION: No user serviceable parts are inside this unit. Hazardous voltages are present when the cover is removed. Open the chassis only to perform necessary installation tasks described in this guide, and confine activities in those specified in this guide. Opening internal modules or modifying internal wiring may void your warranty.

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Safety Notices

This general safety information applies to both operating and service personnel. Specific warnings and cautions are located in other parts of this guide where they apply and may not appear in this summary. Failure to comply with these precautions or specific warnings elsewhere in the guide violates the safety standards of design, manufacture, and intended use of equipment. Fiplex by Honeywell assumes no liability for the customer's or user's failure to comply with these requirements:

- **Avoid explosive atmospheres** - To avoid explosion or fire, do not operate this product in the presence of flammable gases or fumes.
- **Lightning danger** - Do not install or make adjustments to this unit during an electrical storm.
- **Fuses** - Fuses are to be replaced by QUALIFIED SERVICE PERSONNEL only or Fiplex by Honeywell certified users.



WARNING: Changes and Modifications not expressly approved by Fiplex by Honeywell can
void your authority to operate this equipment under the Federal Communication Commission's rules.

Avis de Sécurité

- **Fusibles** – Les fusibles ne doivent être remplaces que par du PERSONNEL D'ENTRETIEN.

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FCC Compliance

Part 90 Signal Boosters **THIS IS A 90.219 CLASS A DEVICE**

WARNING. This is **NOT** a **CONSUMER** device. It is designed for installation by **FCC LICENSEES** and **QUALIFIED INSTALLERS**. You **MUST** have an **FCC LICENSE** or express consent of an FCC Licensee to operate this device. You **MUST** register Class B signal boosters(as defined in 47 CFR 90.219) online at **www.fcc.gov/signal-boosters/registration**. Unauthorized use may result in significant forfeiture penalties, including penalties in excess of $100,000 for each continuing violation.

Part 90 Signal Boosters **THIS IS A 90.219 CLASS B DEVICE**

WARNING. This is **NOT** a **CONSUMER** device. It is designed for installation by **FCC LICENSEES** and **QUALIFIED INSTALLERS**. You **MUST** have an **FCC LICENSE** or express consent of an FCC Licensee to operate this device. You **MUST** register Class B signal boosters (as defined in 47 CFR 90.219) online at **www.fcc.gov/signal-boosters/registration**. Unauthorized use may result in significant forfeiture penalties, including penalties in excess of $100,000 for each continuing violation.

ATTENTION: 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.

ATTENTION: The antenna gains and passive loss between the signal boosters used with this device should result on 0dBi or less and all persons should maintain a minimum separation of 20cm for General Uncontrolled Exposure and General Controlled Exposure.

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1. Product Description

These devices are FPGA based VHF and UHF Dual Band Signal Booster that transmits in the Downlink frequencies of 136-174 & 450-512MHz and receives in the Uplink frequencies 1446-174MHz & 450-512MHz for United States and Canada.

Each band has a separate intermediate filtering. The intermediate filtering is done using FPGA based Digital Signal Processing that is capable of handling 32 filters in uplink VHF, 32 filters in downlink VHF, 32 filters in uplink VHF and 32 filters in downlink UHF, making a total count of 124 filters.

The center frequency and BW of each one of the filters can be tuned via a software interface. Additionally, each filter can be programmed to have different bandwidth.

This signal booster has a Downlink and Uplink composite output power as described as follows:

- 30dBm in UHF DL
- 24dBm in VHF DL
- 24dBm in UHF UL
- 24dBm in VHF UL

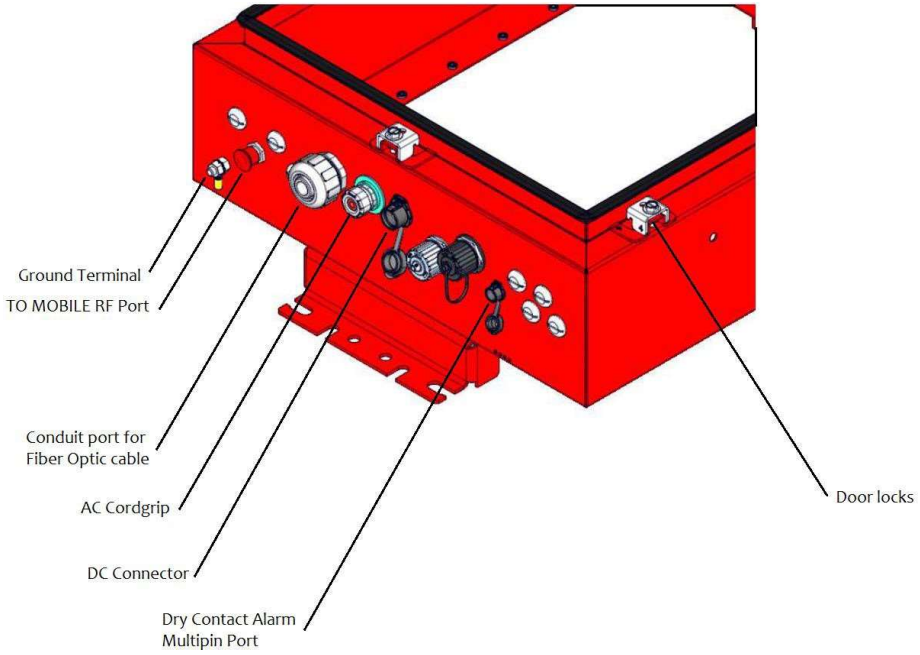
Each band has a separate intermediate filtering. The intermediate filtering is done using FPGA based Digital Signal Processing that, among many, has the following features:

- High Selectivity vs Low Delay
- AGC per channel and per time slot
- Squelch per channel and per time slot
- Integrated Spectrum Analyzer

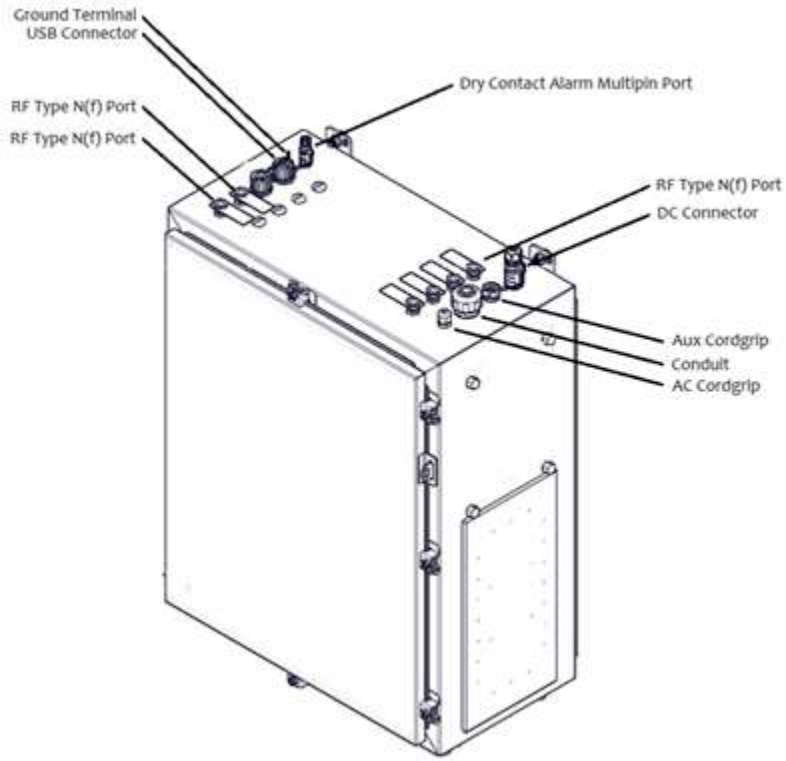
This Digital Signal Booster has a heavy duty NEMA 4 cabinet for outdoor usage, it is designed to be wall mount.

1.1 Product ports

“C” cabinet Connectors



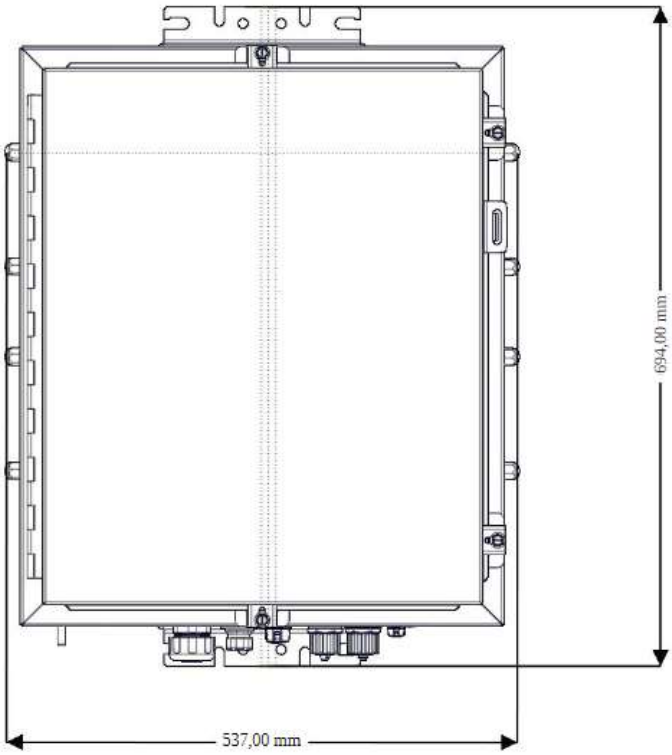
“E” cabinet Connectors

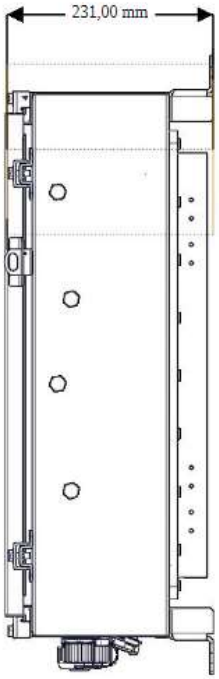


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1.2 Dimensions

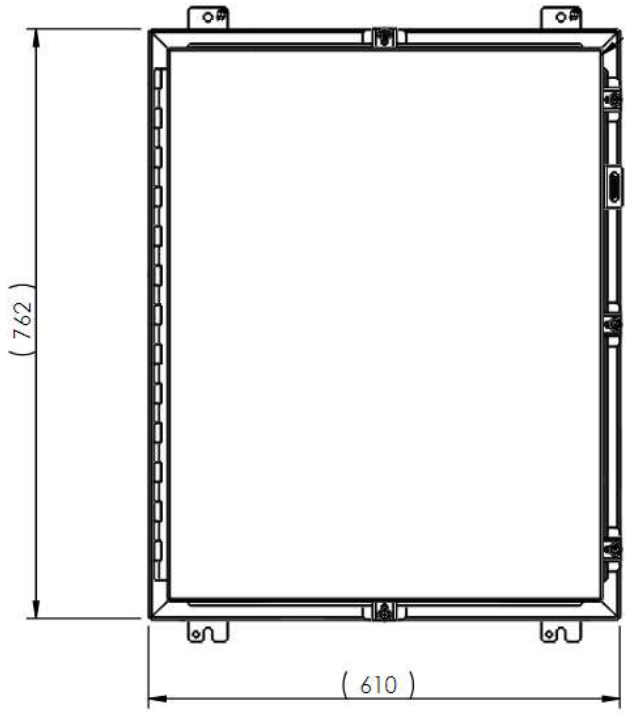
“C” cabinet Dimensions

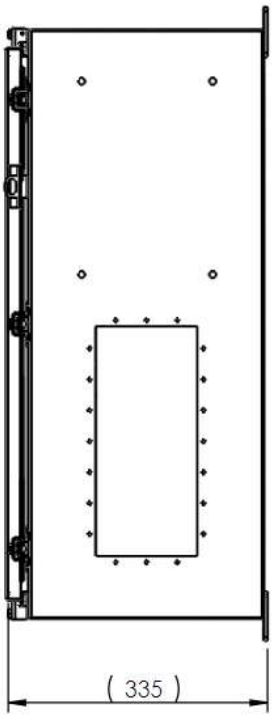




Dimensions in mm

“E” cabinet Dimensions





Dimensions in mm

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1.3 Power Specifications



CAUTION: Do not connect the AC and the DC input simultaneously. This equipment has two power configurations:

- **AC config – For this purpose use the dedicated AC cord-grip as indicated in the wiring diagram and do NOT use the DC connector.**
- **DC config – For this purpose use the dedicated DC connector to connect the device to the BBU and do NOT use the AC connection to the device.**

- Nominal Main Power Input Voltage: 110 VAC. Internal AC to DC Power Supply for AC Versions.
    - Secondary independent power source:
        - In USA: The secondary power source must be provided by an engine driven generator meeting NFPA 72, The National Fire Alarm and Signalling Code.
    - DO NOT USE THE DC INPUT OF THE DEVICE.

- Battery/DC Input Voltage: 24 VDC to -48VDC. External Battery Power Source. A UL 864 or UL 1481 listed power supply/battery charger and approved sealed lead acid batteries (not provided with this product) will be the DC input the DC version.
    - Secondary independent power source:
        - The secondary power source must be provided via the Fiplex by Honeywell Battery Backup Unit model BTTY-100100 or BTTY-100050.
    - Secondary independent power source (alternative):
        - In USA: The secondary power source must be provided by a separate equipment complying with UL 864, the Standard for Control Units and Accessories for Fire Alarm Systems or UL 1481, the Standard for Power Supplies for Fire Protective Signalling Systems, and which are supplied by at least two independent power sources.
    - DO NOT USE THE AC INPUT OF THE DEVICE.

NOTE: The AC version of this device must be connected to an annunciator that provide visual and audible alarms complying with the UL2524 standard. This can be:

- The BTTY-100100 or the BTTY-100050.
- Or any other Annunciator complying with the UL2524 standard.



CAUTION: This equipment is designed to permit the connection of the earthed conductor to the DC supply circuit to the earthing conductor of the equipment. If this connection is made, all the following conditions must be met:

• This equipment shall be connected to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode conductor is connected.

• This equipment shall be located at the same immediate area (such us adjacent cabinets) as any other equipment that has a connection between the earthed conductor off this same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system shall not be earthed elsewhere.

• The DC supply source is to be located within the same premises as the equipment.

• Switching or disconnecting devices shall not be in the earthed circuit conductor between the DC source on the point of connection of the earthing electrode conductor.

Mechanical Specifications

Parameter	Specifications	Notes
Size	30 x 24 x 13.2 in	762 x 610 x 335 mm
Weight	Aprox 77 lbs - 35kg	
Connectors	Donor/Coverage Antenna Ports: N (f)	Matting Male Connector Torque 3.7 ft.lbs.
	AC Power in	See wiring instructions
	DC (Battery) Power In	Dedicated two pole circular connector
	Frame Ground	Lug Ground
	USB Cable	Local Management
	8-Wire Dry contact round connector	Alarm Relay Interface
Mounting Type	Wall	Refer to section for mounting instructions.
Heat Dissipation	Natural Convection	
Finish	Red color paint	

1.4 Environmental Specifications

Parameter	Specifications	Notes
Operating Temperature	-25º C to +55ºC (ambient)	-13º F to +131º F
Storage Temperature	-40º C to +60ºC (ambient)	-40ºF to + 140ªF
Operating Humidity	5% to 95%	
Environmental	IP-67, NEMA 4 compliance	

1.5 Alarm Indicators

There is an indicator panel located at bottom of the Signal Boosters. This LED panel, shown in Figure 3-1 below, works as a status monitor, indicating warnings or alarms.

The LED panel has four LEDs:

- The LED labelled **PWR** (power) indicates whether the power is on.
- The LED labelled **STAT** or **STS** (status) indicates whether there is a critical alarm or general failure.
- The LED labelled **UL** (uplink) indicates whether an input signal from a base station is detected.
- The LED labelled **DL** (downlink) indicates whether the RF output is normal or in a VSWR alarm state.

2. Installation

Mounting the Signal Booster

This device is designed for outdoor usage with a weatherproof outdoor NEMA4 cabinet that can be mounted without any kind of shelter from rain, snow or hail.

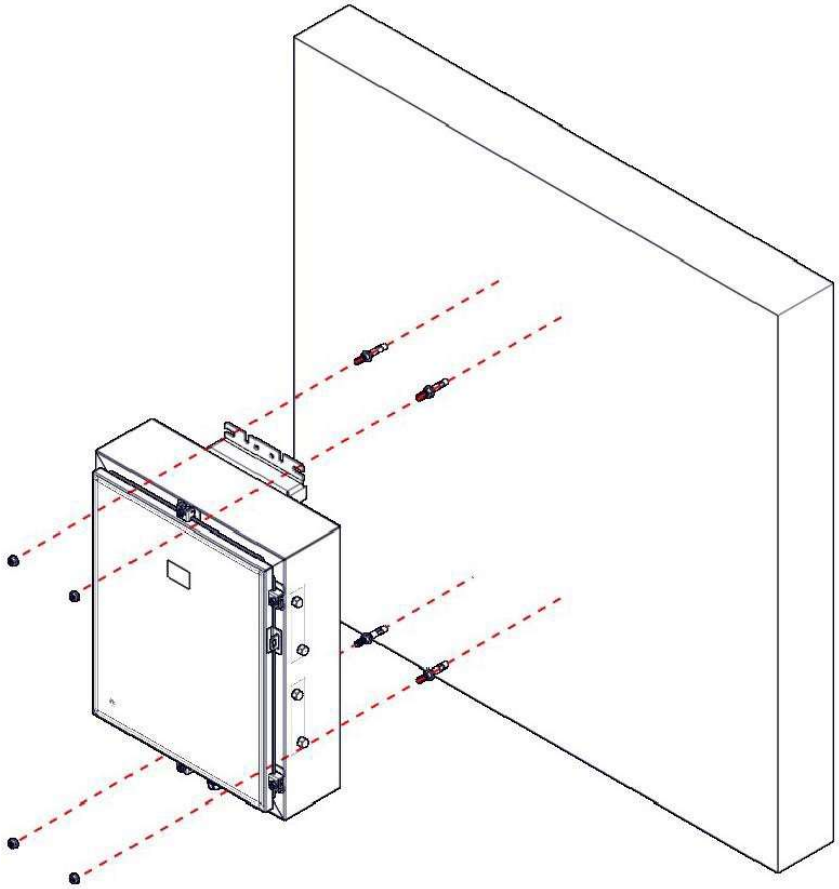
However, to improve reliability, it is recommended to mount this device on a site with shelter from direct exposure to sun, rain, snow and hailing.

It is not recommended to operate the Signal Booster under bad weather conditions, such as:

- Intense rainfall, snowfall or hail
- Storm or high wind
- Extremely low or high temperature
- High humidity of the air

Mounting step by step Cabinet "C"

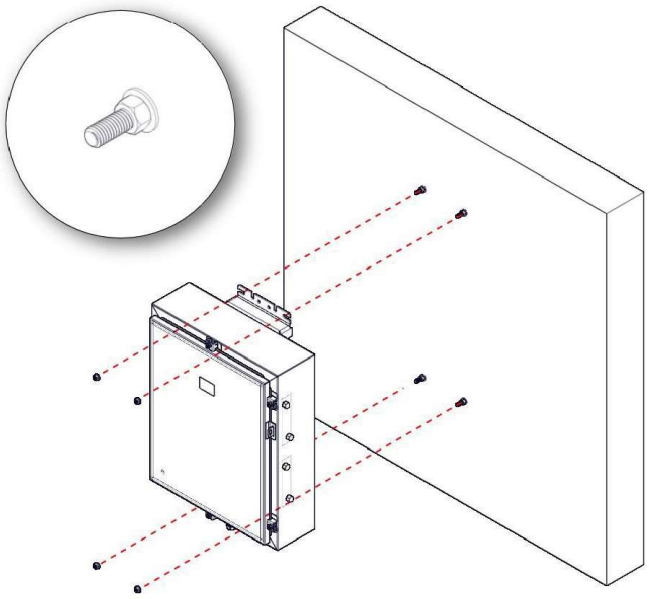
Step 1



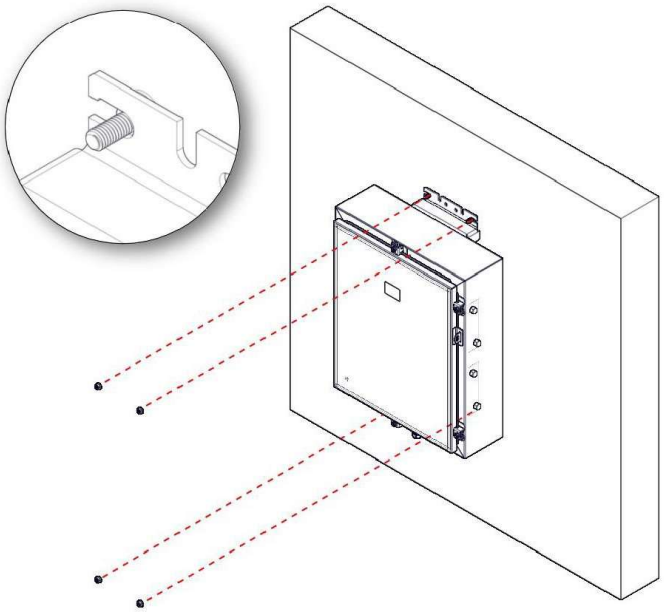
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Step 2

IMPORTANT! THE CABINET SHOULD BE INSTALLED IN A WALL THAT COVERS AN AREA THAT DOUBLES THE AREA OCCUPIED BY THIS DEVICE. THE WALL IN THE BACK OF THE CABINET SHOULD NOT HAVE ANY OPENING THAT ALLOWS PRESSURE WATER TO HIT THE BACK OF THE UNIT.

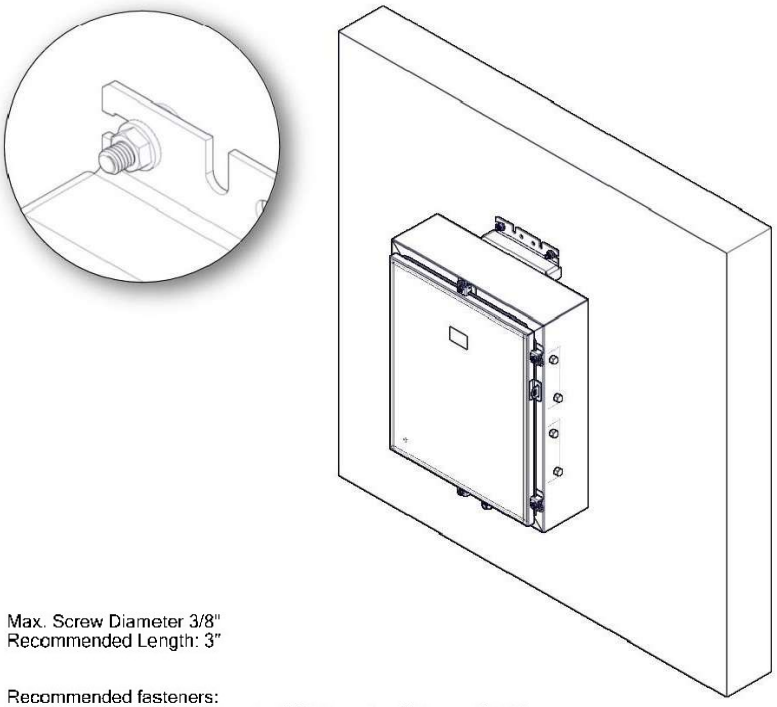


Step 3



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Step 4



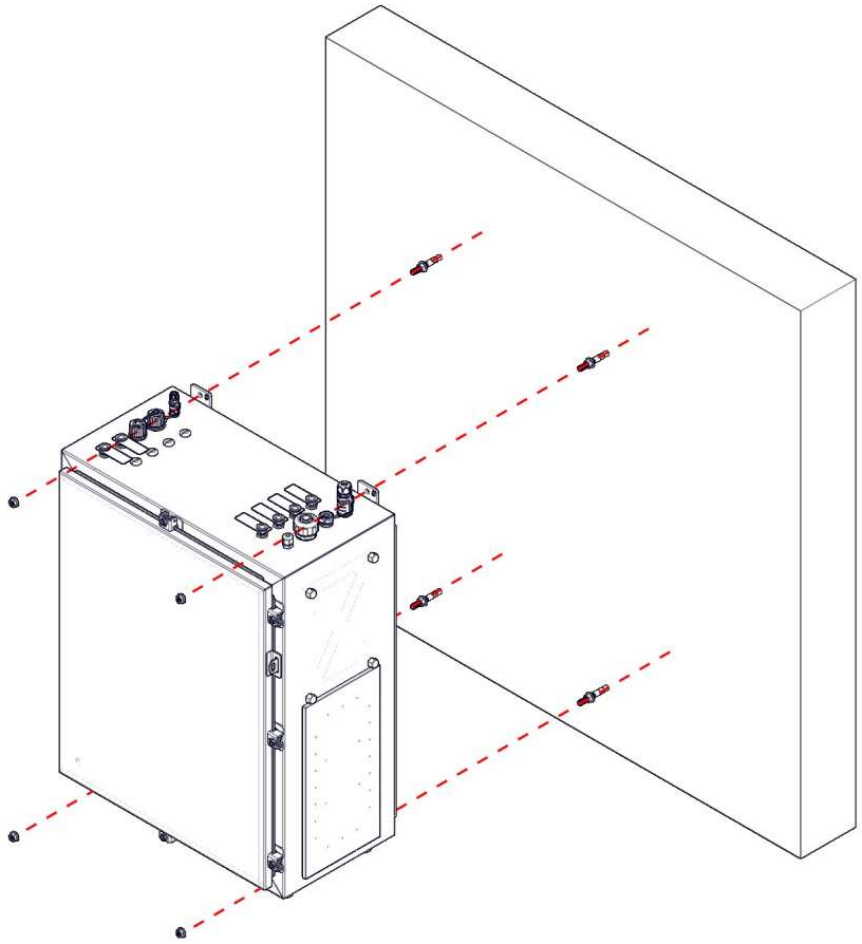
Max. Screw Diameter 3/8"
Recommended Length: 3"

Recommended fasteners:
-Steel Stud Anchor for Concrete, 3/8" Diameter, 3" Long. QTY.4
-Stainless Steel Serrated Flange Locknut, 3/8". QTY.4

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Mounting step by step Cabinet “E”

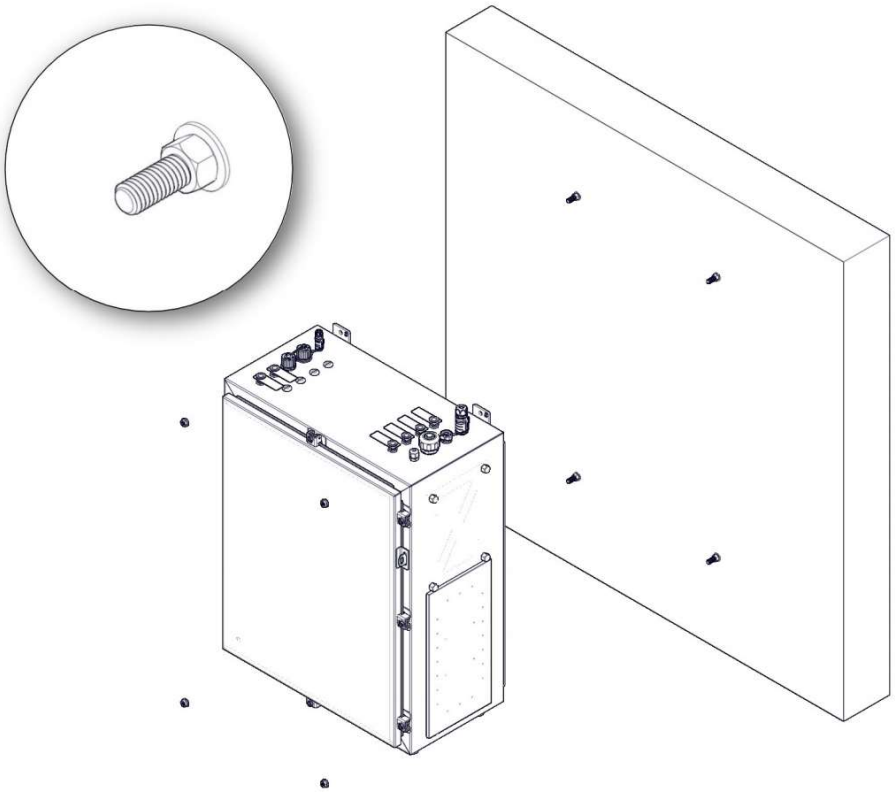
Step 1



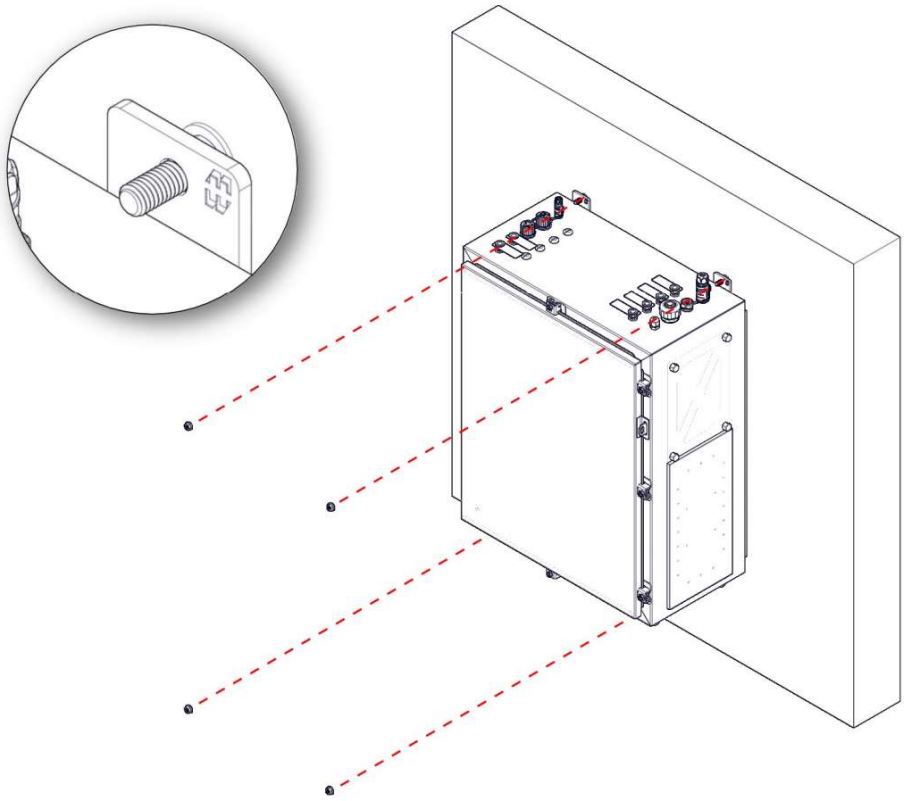
<u>IMPORTANT!</u> THE BRACKET SHOULD BE INSTALLED IN A WALL THAT COVERS AN AREA THAT DOUBLES THE AREA OCCUPIED BY THIS DEVICE. THE WALL IN THE BACK OF THE CABINET SHOULD NOT HAVE ANY OPENING THAT ALLOWS PRESSURE WATER TO HIT THE BACK OF THE UNIT.

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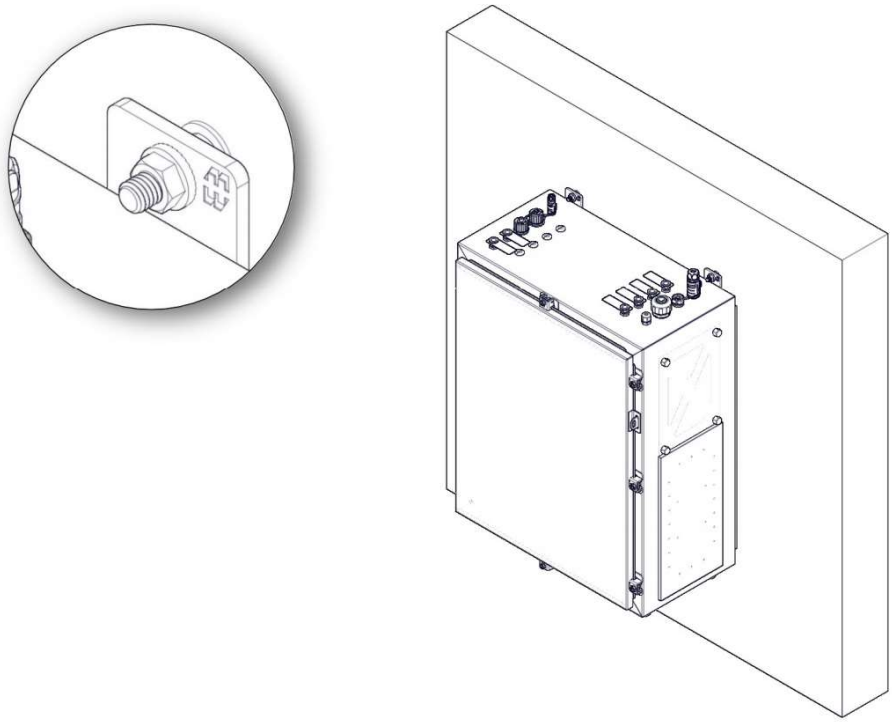
Step 2



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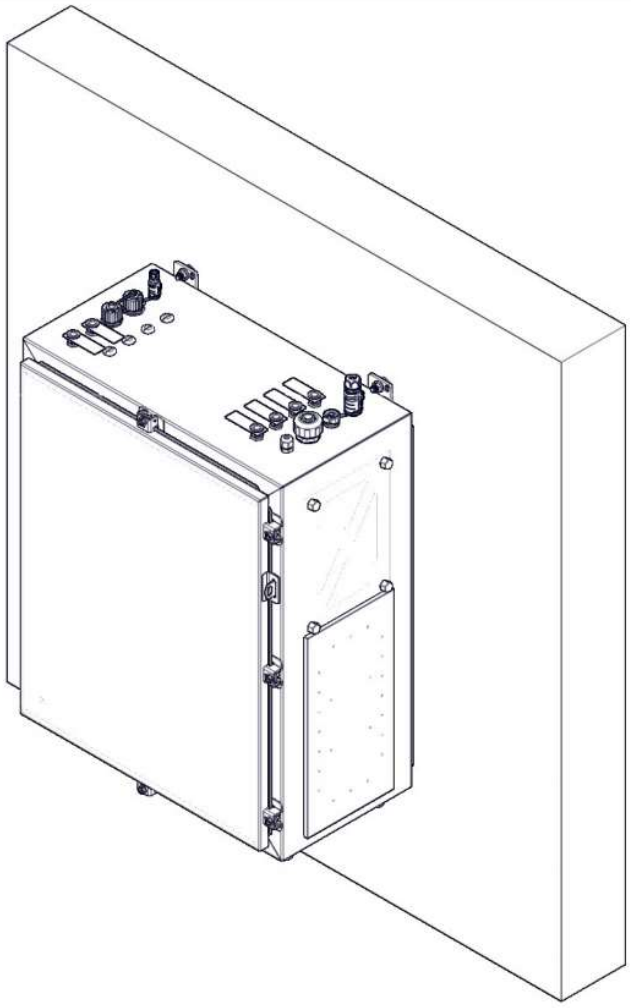


Step 3



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Step 4



Max. Screw Diameter 3/8"
Recommended Length: 3"

Recommended fasteners:
-Steel Stud Anchor for Concrete, 3/8" Diameter, 3" Long. QTY.4
-Stainless Steel Serrated Flange Locknut, 3/8". QTY.4

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Important Installation Guidelines

The following guidelines should be carefully observed for all installations.

• The unit shall be installed by QUALIFIED SERVICE PERSONNEL only.

• This device shall be installed in a restricted access location.

• All lines shall remain internal to the building. Only the antenna may be routed outdoors.

• This device must be installed in a vertical orientation (connectors on the bottom).

• Inadequate isolation between the outside and inside antennas may cause regenerative feedback in the system. This feedback can cause the amplifier to emit a continuous signal at maximum amplitude, and, in some cases, interfere with normal operation of the donor site.

Careful considerations of the layout and placement of the system is imperative to minimize the possibilities and to minimize the amount of signal leaking from the building.

• Do not dissemble the device.

• All secondary wiring shall be securely routed and separate from any primary wiring.

Required to comply with following Model Building and Installation Codes:

a) Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems, NFPA 1221;

b) UL Standard for Safety for In-building 2-Way Emergency Radio Communication Enhancement Systems, UL 2524;

c) Fire Code NFPA 1;

d) Life Safety Code, NFPA 101;"



WARNING: Refer to safety guidelines for proper antenna selection an installation. To avoid serious injuries, death, and/or damage to the device, do not install donor or server antennas near overhead power lines or high-power components. Allow enough distance so that falling antennas will not come in contact with those installations.



WARNING: Electric shock may occur if the signal of booster is installed in close proximity to water.



WARNING: Amplifier or handset damage may occur if a handset is connected directly to the sign of booster or to the coax that leads to the signal booster.

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• The signal booster must be connected to ground for protection.

• Fiplex by Honeywell recommends that installers not wear jewelry or metal accessories when installing this signal booster.

• Do not place cables or tools that may damage the signal booster in proximity to it.

• Check the insulation sites for hazardous conditions such as water covered floors or badly worn or damaged cables prior to installation.

• Lifespan and performance of the signal of booster may be reduced if the unit is operating outside its nominal temperature range.



CAUTION: Proximity to the donor or server and tennis with the signal booster in operation may expose users or installers to RF fields that exceed FCC limits for human exposure.

• Turn power to the signal booster off when connecting or disconnecting cables.

3. Commissioning

3.1 Connection step by step

1. Connect the TX Service antennas to the To Mobile RF DL Output ports. N type female connectors are used in the Signal Booster.

2. Connect the RX Service antenna to the To Mobile RF Input ports. N type female connectors are used in the Signal Booster.

3. Connect the VHF Donor antennas to the To Base RF Ports. N type female connectors are used in the Signal Booster.

4. Connect the UHF Donor antennas to the To Base RF Ports. N type female connectors are used in the Signal Booster.

5. Once RF ports of the Signal Booster are properly loaded connect the Main AC or DC power (depending on the model).

   If using the AC model, electrical installation must provide differential and thermo-magnetic breaker elements according to electric safety international regulations.

6. Connect the multipin dry contact connector to access to the dry contact alarms.

7. Once the Signal Booster has been connected to the power source, it takes about 40 seconds to run a booting routine. After that time, the Signal Booster is ready to be connected via USB cable to a computer running Fiplex Control Software (FCS) to be properly configured.

NOTE: If the Power Connector and Dry contact Multipin connector are not allowed in the local AHJ, then the user can use the provided conduit connector or cord-grips.



IMPORTANT NOTICE: Dry Contact Connector should not have cables with length longer than 98ft (30m)

NOTICE TO USERS, INSTALLERS, AUTHORITIES HAVING JURISDICTION, AND OTHER INVOLVED PARTIES			
This product incorporates field-programmable software. For the product to comply with the requirements in the Standard for In-building 2-Way Emergency Radio Communication Enhancement Systems, UL2524 certain programming features or options must be limited to specific values or not used at all as indicated below.			
Program feature or option	**Permitted in UL 2524? (Y/N)**	**Possible settings**	**Settings permitted in UL 2524**
Signal Boosteralarm assignment			
HW Fail Alarm	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 4
Antenna Isolation Alarm	Y	Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 4
VSWR VHF Alarm	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 2
Antenna Disconnection Alarm	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 3
UL PA Fail Alarm	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 4
Overload DL VHF Alarm	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 4
RX Power Low VHF/Donor antenna Malfunction Alarm	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 1
DL PA Fail VHF Alarm	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 4
TX Power Low VHF Alarm	Y	Enable/Disable - Assigned to	Enabled - Assigned to Relay 4

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		Relay 1, 2, 3 or 4	
Laser Fail	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 4
High Temperature Alarm	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 4
Oscillation Detection Alarm	Y	Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 4
VSWR UHF Alarm	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 2
Overload DL UF Alarm	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 4
RX Power Low UHF/Donor antenna Malfunction Alarm	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 1
DL PA Fail UHF Alarm	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 4
TX Power Low UHF Alarm	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 4
Photodiode Fail	Y	Enable/Disable - Assigned to Relay 1, 2, 3 or 4	Enabled - Assigned to Relay 4
Signal Booster alarm configuration			
Relay Status On Alarm	Y	Closed / Open	All Relay should be configured as "closed"

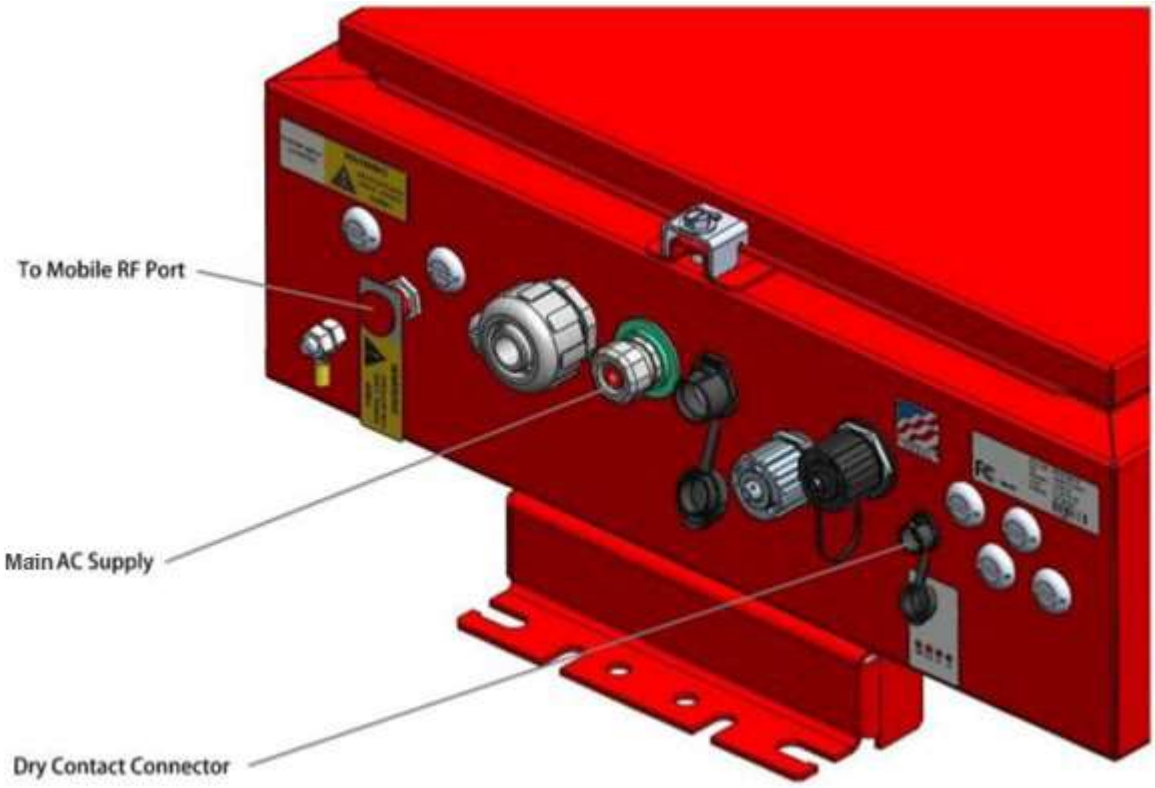
VSWR Meter for VHF and UHF	Y	The user has to select a Minimum TX Power for VSWR Detection / Return Loss Threshold / Alarm Sensitivity	The setting will vary from site to site, users must follow these instructions: - For Minimum TX Power for VSWR Detection: This feature is to avoid fake alarms, the user has to make sure that the indicated "Power Forward" is above the configured "Minimum TX Powe for VSWR detection" value. - For Return Loss Threshold: The user should see the "Return loss" measurement indicated in the screen. This Return Loss measurement will vary when the user disconnects the Indoor antennas. The user has to configure the Return Loss Threshold to allow the alarm to appear when the indoor antenna is disconnected. - For Alarm sensitivity: This configuration is to avoid the alarm to be switching on and off when a detection is too close form the threshold. TO VERIFY THE PROPER CONFIGURATION OF THIS ALARM USERS MUST CONNECT AND DISCONNECT THE INDOOR ANTENNA RF PORT (TO MOBILE PORT) AND VERIFY THAT RELAY 4 IS INDICATING THE ALARM UPON DISCONNECTION.
Antenna Disconnection Alarm	Y	The user has to select the Broadband Input Threshold for this alarm	To properly configure this parameter, the user must compare the measured Broadband Input Leve with and without the donor antenna connector to the "To Base" RF Port and configure the Broadband Input Threshold in between those two values. TO VERIFY THE PROPER CONFIGURATION OF THIS PARAMETER THE USER MUST DISCONNECT THE DONOR ANTENNA AND VERIFY THAT RELAY 3 IS INDICATING THE ALARM.
RX Powerlow Alarm VHF and UHF	Y	To trigger this alarm properly the user has to configure the DL Squelch Threshold	The RX Power low alarm is used to provide the Donor Antenna Malfunction. The user must configure the DL Squelch threshold on each channel below the power per channel measurement that the system is doing. TO VERIFY THE PROPER CONFIGURATION OF THIS PARAMETER THE USER MUST DISCONNECT THE DONOR ANTENNA AND VERIFY THAT RELAY 1 IS INDICATING THE ALARM.

Filter BW and Delay Selection	Y	150KHz, 11.5µS 100KHz, 13.5µS 75KHz, 16.0µS 62.5KHz, 18.0µS 50KHz, 21.0µS 37.5KHz, 25.5µS 25KHz, 35.0µS 12.5KHz, 61.5µS	To comply with P25 PH2 delay requirements the user must do the filtering selection ONLY with the following options: 150KHz, 11.5µS 100KHz, 13.5µS 75KHz, 16.0µS 62.5KHz, 18.0µS 50KHz, 21.0µS 37.5KHz, 25.5µS

4. Wiring Diagram

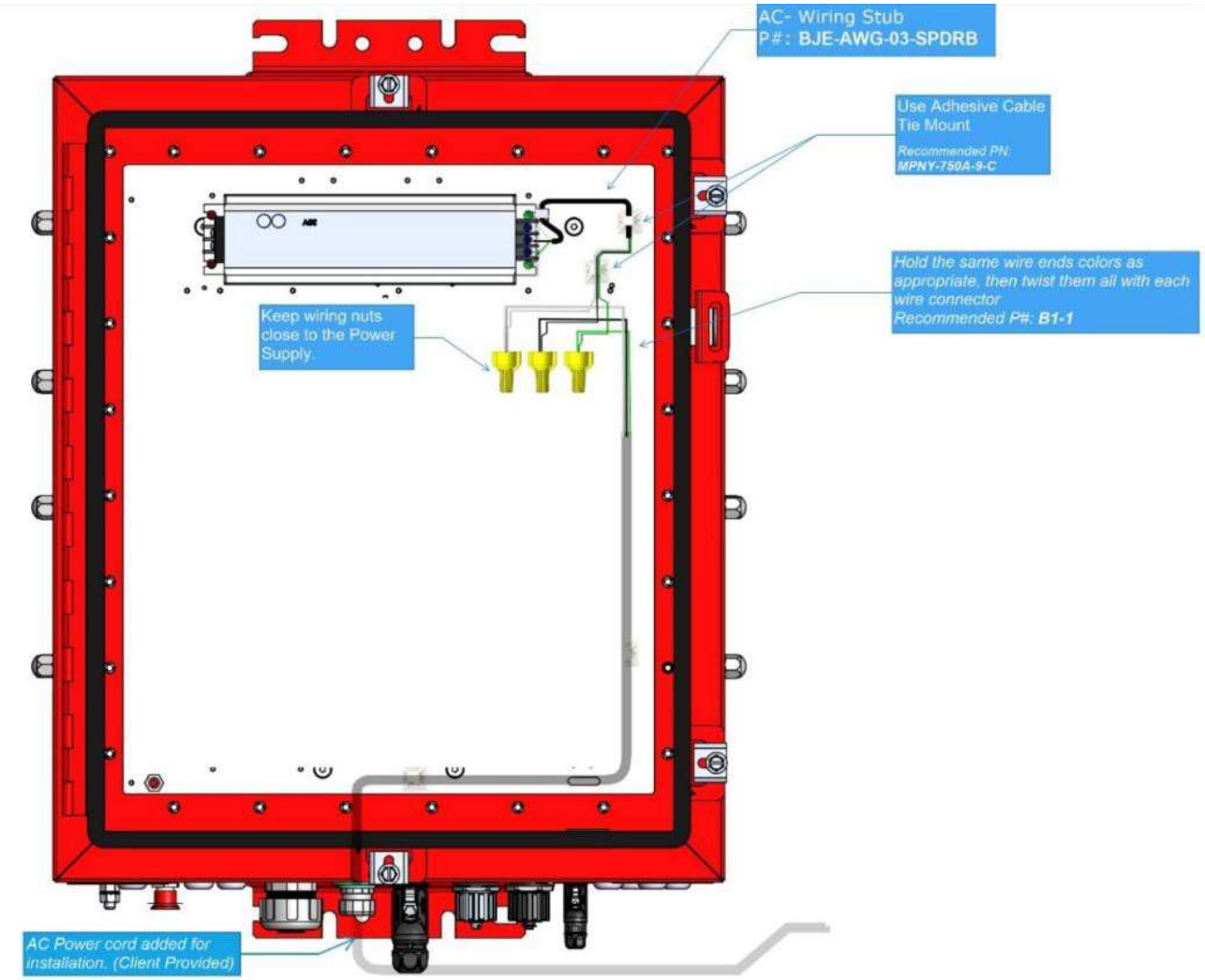
4.1.AC Version

4.1.1 Cabinet “C”



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4.1.1.1 AC Wiring Stub Assembly Procedure Cabinet “C”

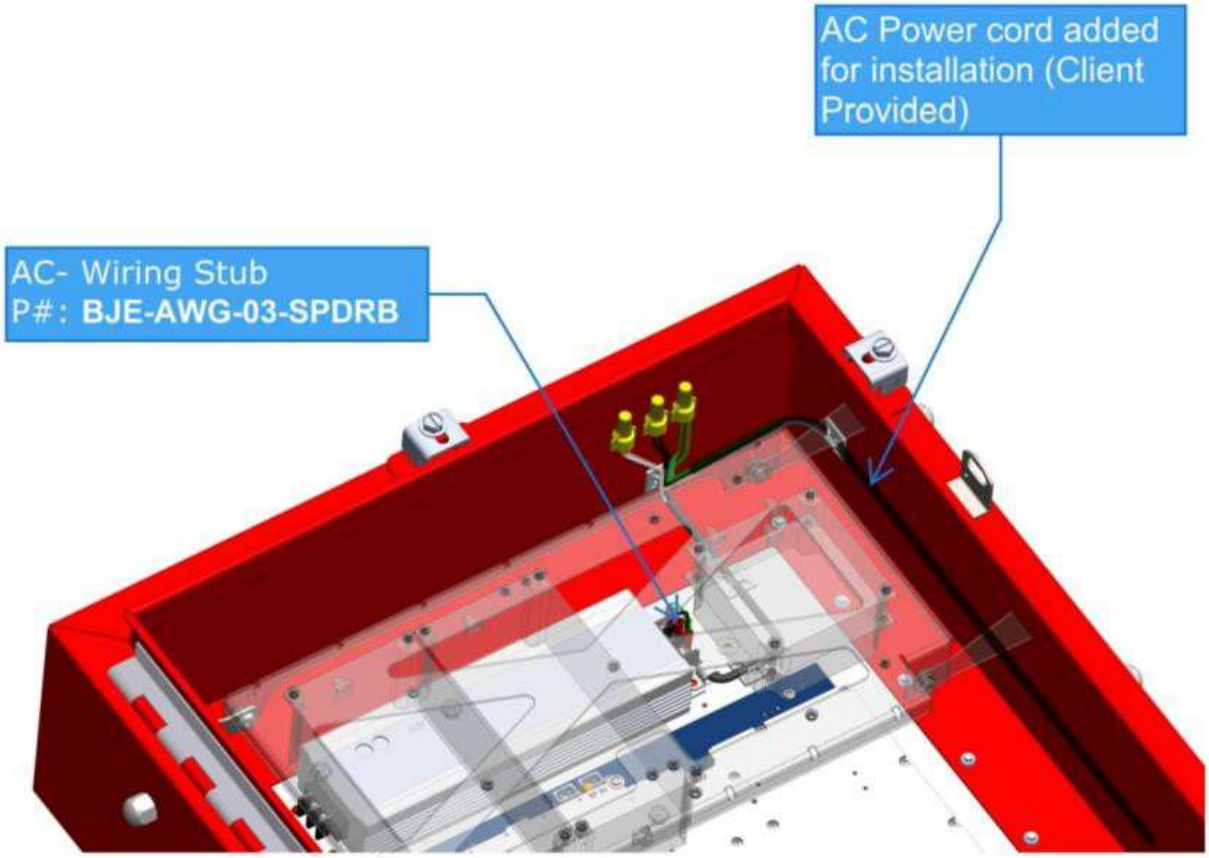


MAIN AC SUPPLY CIRCUIT: 120VAC, 4A, 60Hz

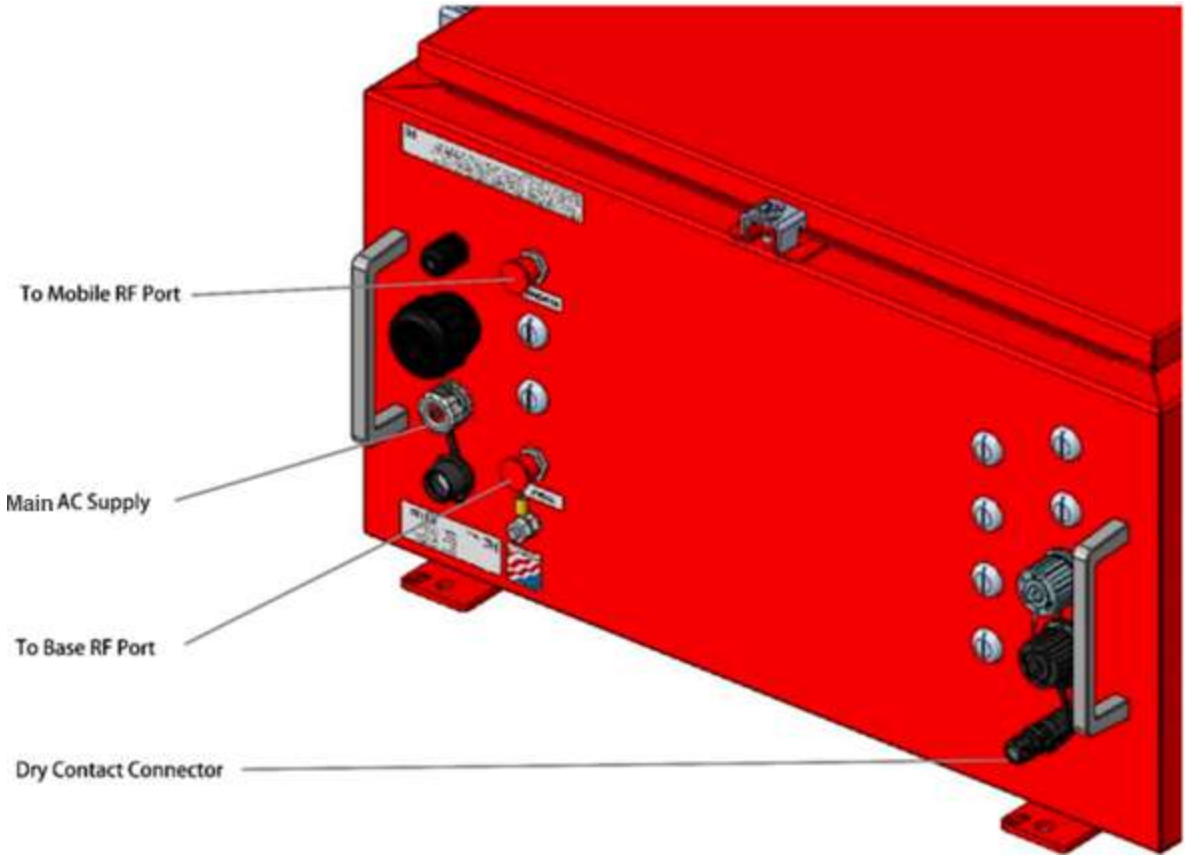
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4.1.1.2 Final wiring stub installation location

Secure the cable using the wire ties indicated in the following image.



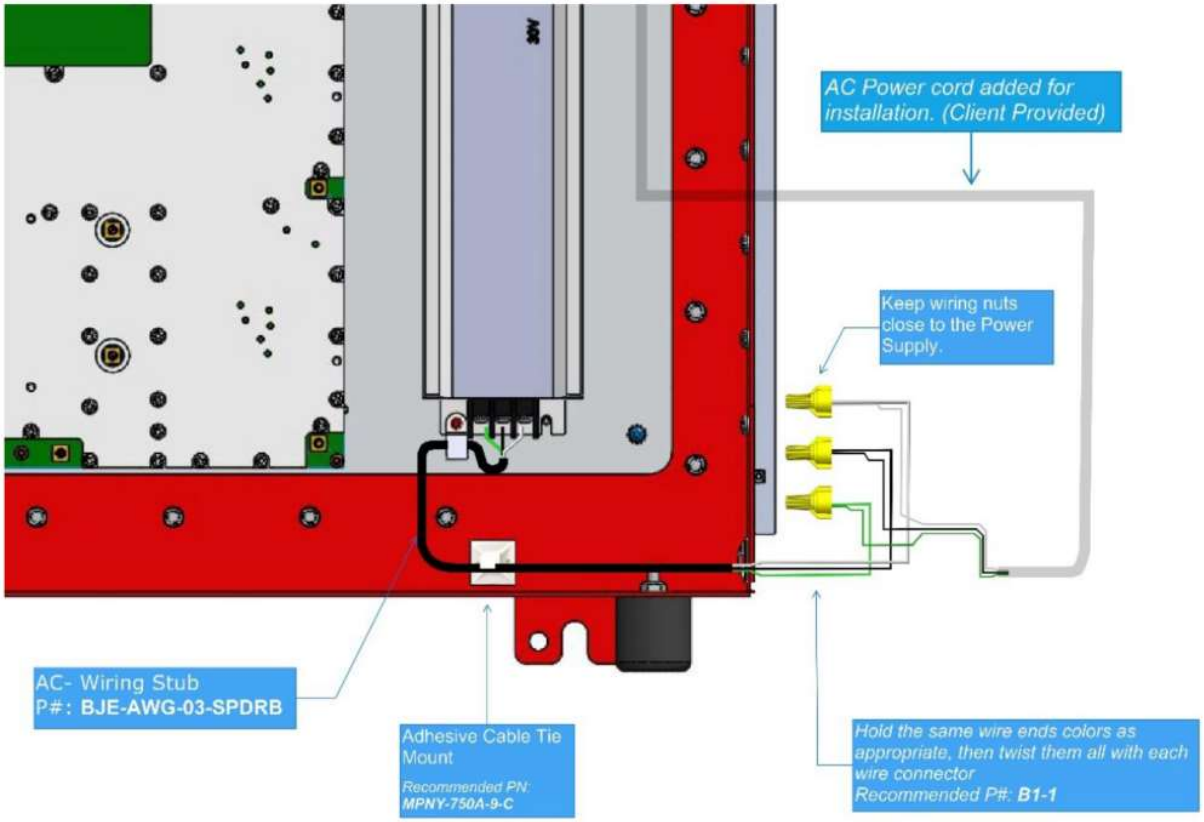
4.1.2 Cabinet “E”



- MAIN AC SUPPLY CIRCUIT: 110VAC / 60Hz, 100W max.

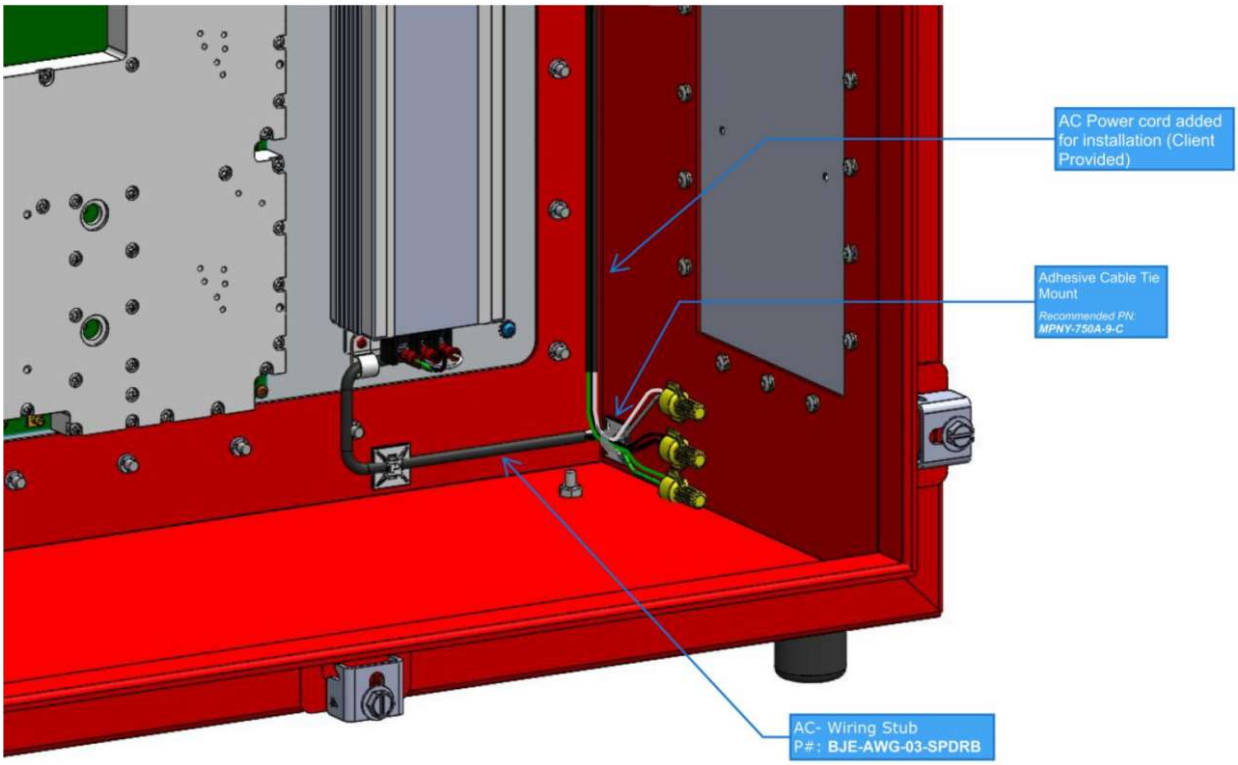
These Signal Boosters must always be operated with the ground wire properly connected. The External Main Earth terminal shall be connected to the Building Main Earth.

4.1.2.1 AC Wiring Stub Schematic Connections Cabinet “E”



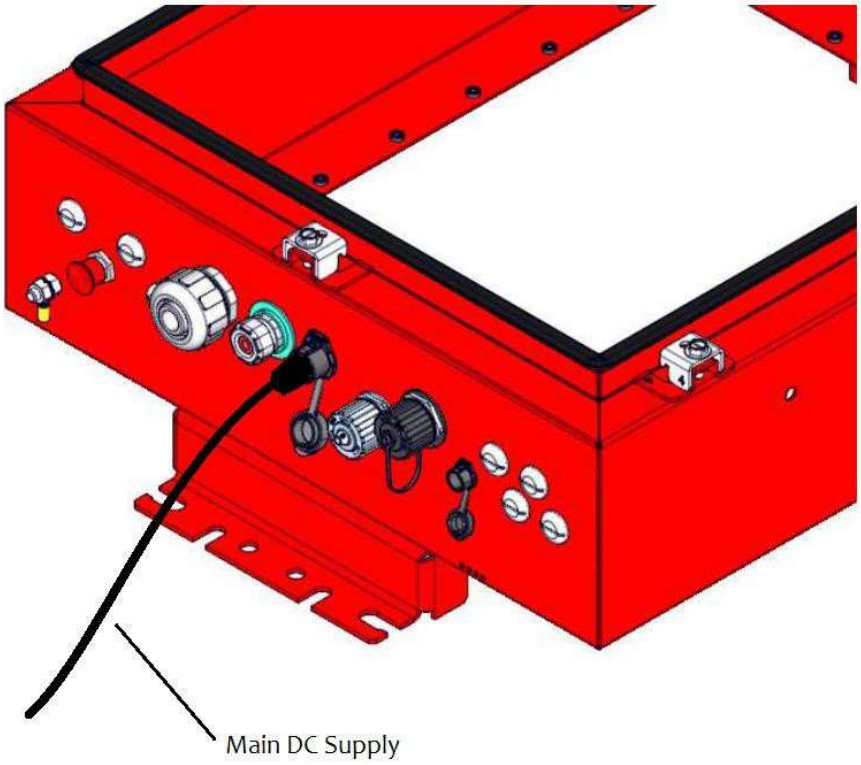
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4.1.2.2 AC Wiring Stub Final Assembly



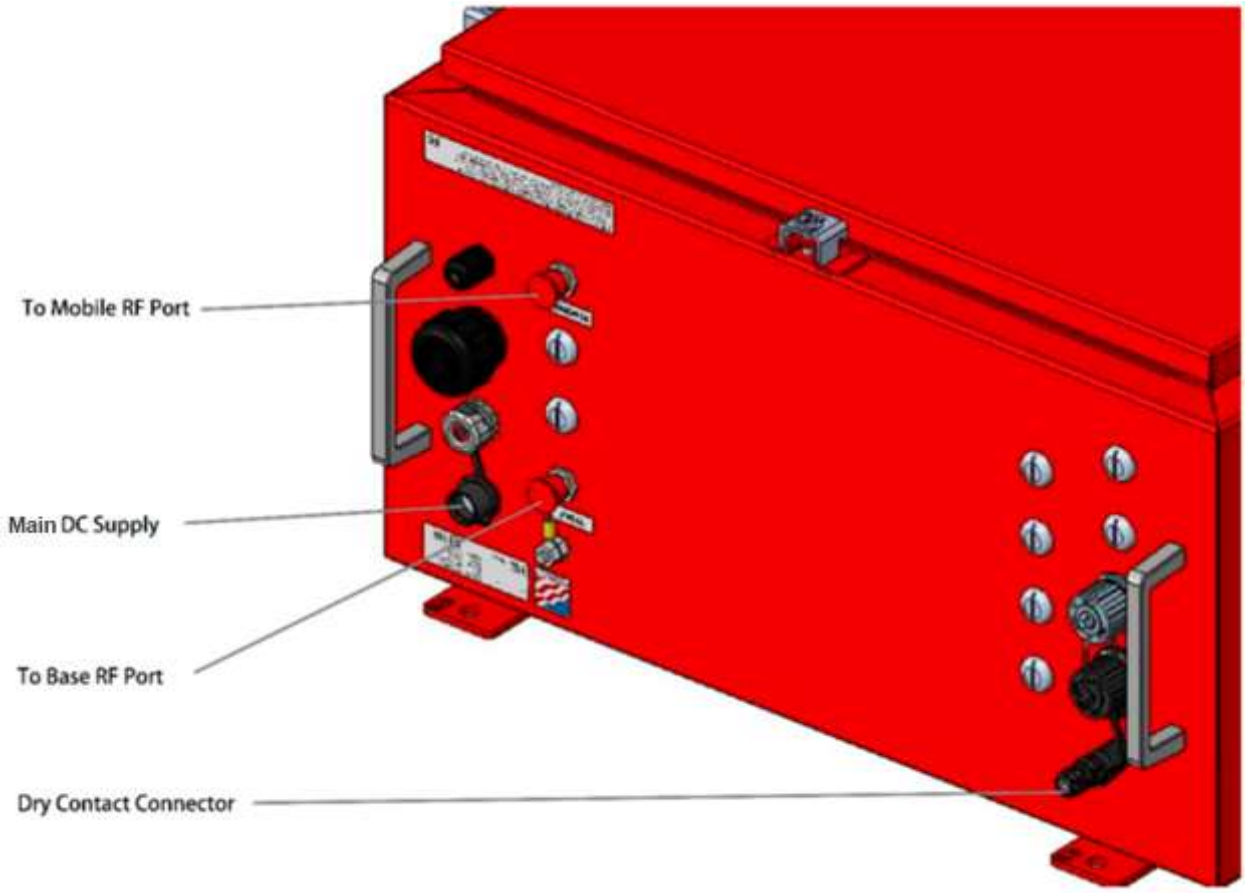
4.2 DC Version

4.2.1 Cabinet “C”



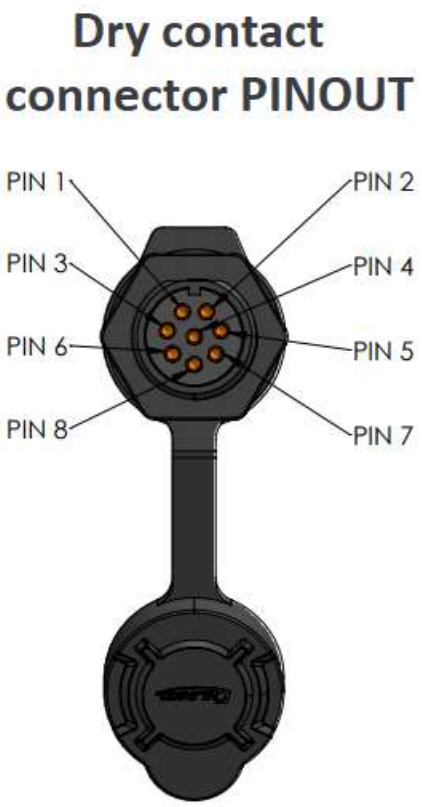
- MAIN DC SUPPLY CIRCUIT: 24VDC, 80W max.

4.2.2 Cabinet “E”



- MAIN DC SUPPLY CIRCUIT: 24 VDC Nominal, 100W max.

4.3 Dry Contacts



Pinout

- Pin 1-2: Relay 1
- Pin 3-4: Relay 2
- Pin 5-6: Relay 3
- Pin 7-8: Relay 4

Relay Pre-Assignment:

- Relay 1: Donor Antenna Malfunction
- Relay 2: DL VSWR
- Relay 3: Donor Antenna Disconnection
- Relay 4: General Failure

Users must use the provided connector to assembly the dry contact connections as indicated above.

Relay Specifications:

- Max Current: 300mA
- Max Voltage: 24VDC

Relay 1: Donor Antenna Malfunction – Relay CLOSED= ALARM
Relay 2: VSWR – Relay CLOSED= ALARM
Relay 3: Donor Antenna Disconnection – Relay CLOSED= ALARM
Relay 4: General Failure – Relay CLOSED= ALARM

4.4 RF Connections

- Max RF Input No-Damage: 0dBm
- Max RF Output Power: 30dBm in UHF and 24dBm in VHF.
- Frequency Range:
  - DL: 136-174MHz & 450-512MHz
  - UL: 136-174MHz & 450-512MHz

4.5 Maximum system configuration

- Max power Draw: 100W
- Max current for dry contacts: 300mA
- Max Voltage for dry contacts: 24VDC
- Max RF Input No-Damage in both “To Base” and “To Mobile” RF Ports: 0dBm

5. Starting Operation

BE SURE THAT ALL RF PORTS ARE PROPERLY LOADED EITHER WITH 50 OHMS DUMMY LOADS, OR RADIATING SYSTEM.

1. Turn ON the device, connect the computer to the Signal Booster through USB cable, and run Fiplex Control Software. You can find the Fiplex Control Software (FCS) on the support section of our web page (www.fiplex.com). A screen as the following should appear when click on "connect":



2. If channel filtering is required, turn ON the needed channel filters set the desired frequencies and bandwidths.



3. If adjustable bandwidth filtering is required, turn On the Adj.Bw filters and setup the start and stop frequencies in the following part of the GUI.

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4. If OFF, Turn ON the UL and DL power amplifiers, and check that any alarm indicator is active.



5. Setup desired operating gain using FCS. UL and DL chain are independent, so both values must be set. To set DL band gain is recommended that AGC works around 3 - 6dB in each channel, in this way, maximum output power is achieved.

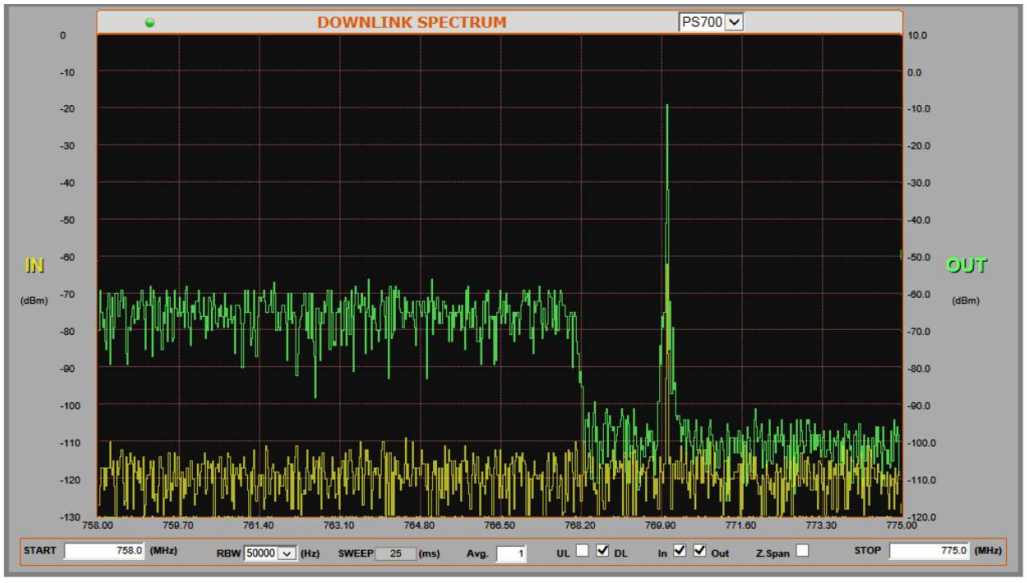
6. Set up squelch settings. Controls are independent in UL and DL bands. The user can configure a common UL squelch threshold for the UL channel filter,

independent per channel DL threshold, independent UL and DL squelch threshold per ADJBW filter.



7. Setup desired filter bandwidth, depending on presence of adjacent channels. The wider the filter the lower the added delay, but if adjacent signal is detected, narrow filters can be used. Spectrum analyzer of FCS can be used to know rejection to undesired signals. It is recommended that adjacent channels output power be, at least, 10dBc lower than useful carrier.

8. Use the integrated spectrum analyzer to verify the spectrum.



Laboratory Measurements

For specific parameters verification and laboratory tests, please contact factory.

Detailed procedures, recommended tests set up, and a knowledge engineering team will bring adequate support to perform the measurements in a comfortable and safely way.

Part 2 Software

1. Introduction

Fiplex Signal Booster can be fully configured and monitored in local and remote mode.

Local mode:
- USB port with Windows desktop application

Remote mode:
- Remote Web server

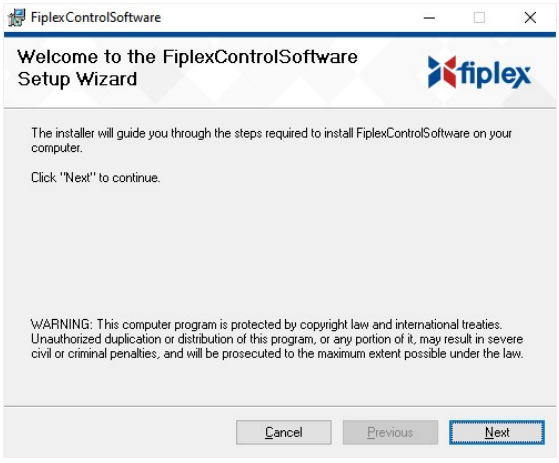
In following section, each control mode (configuration / monitoring) are described.

2. Local Software. Desktop application through USB port

2.1 Installation

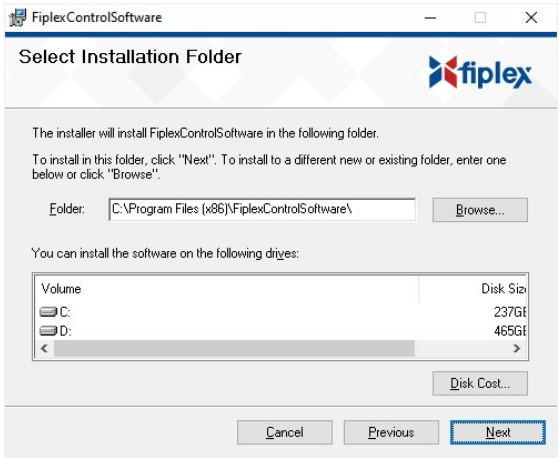
The following section will describe the steps to be followed in order to install and use the Fiplex Control software with your Fiplex Signal Booster.

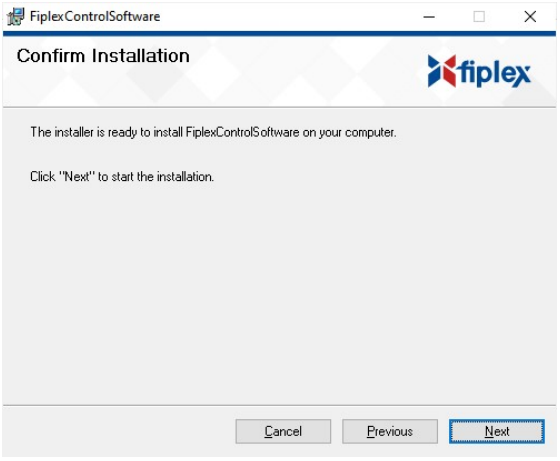
1. Before connect USB cable between computer and Signal Booster, run the FiplexControlSoftware.msi File. Next screen will appear…



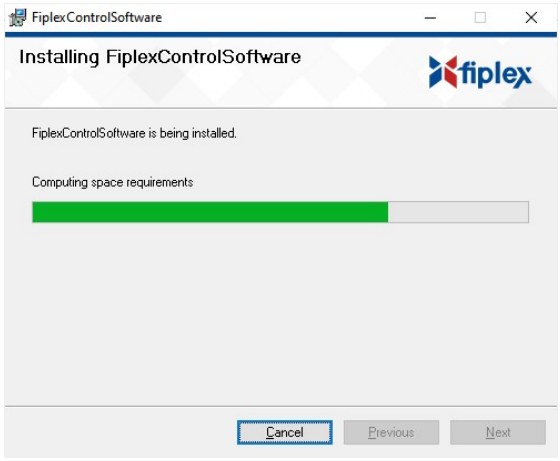
2. Choose the default installation path “C:\Program Files (x86)\FiplexControlSoftware”. Note that this can change according to your system configuration (32bits or 64bits), language and Windows Version.

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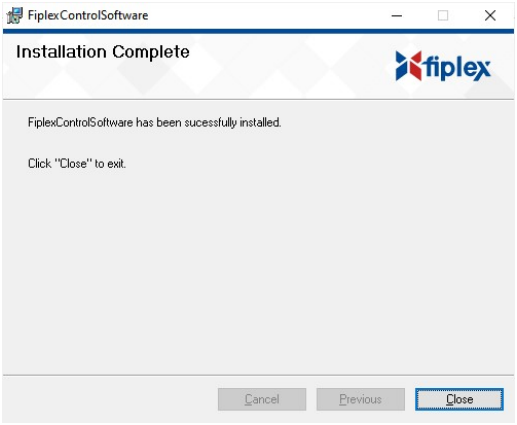


3. The installer will start to copy the necessary files.

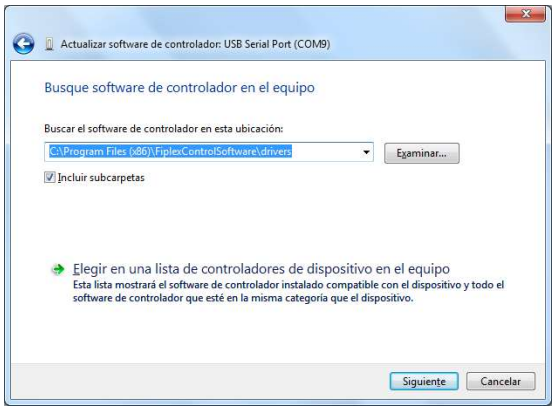


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4. After installation has completed, a shortcut in user desktop will appear.



5. Connect USB cable between computer and Signal Booster, keeping the Signal Booster powered off. Usually, drivers will be automatically installed, but depending on Windows version, screen asking for drivers of new device can appear. Drivers can be found in application folder: C:\Program Files (x86)\FiplexControlSoftware\drivers".



6. Turn on the Signal Booster

BE SURE THAT "TO MOBILE" AND "TO BASE" PORTS ARE PROPERLY LOADED EITHER WITH 50 OHMS DUMMY LOADS, OR RADIATING SYSTEM.

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7. Execute the Fiplex Control Software. Next window will appear:



User interface controls:

- Scan Devices Button: refresh the available COM ports and identify Fiplex devices
- Connection Button: connect / disconnect software from Signal Booster
- List of available devices: below two buttons, is placed a dropdown list that shows all available COM ports. Available COM ports not related to Fiplex Signal Boosters will be shown with its number and “Unknown device” label. COM ports related to Fiplex Signal Boosters will show a device description.
- Embedded Web browser: graphical area where configuration and monitoring parameters will be shown.
- File menu: contains menus to save Signal Booster configuration to a file and load configuration from file to Signal Booster.

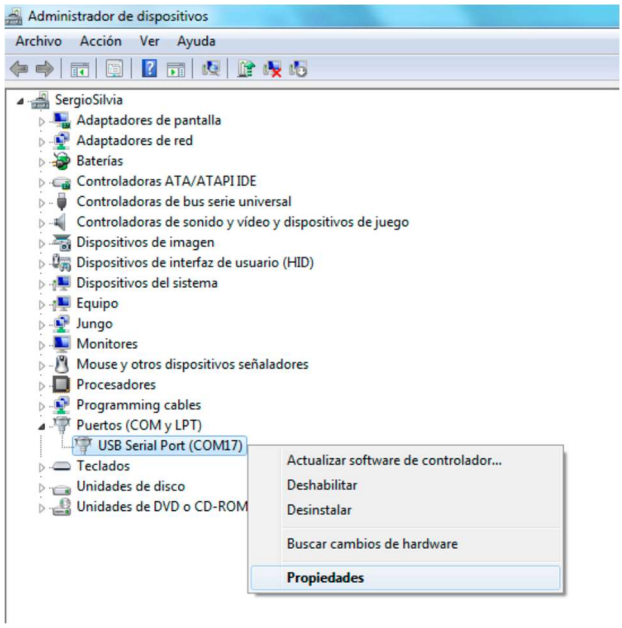
NOTE: if Fiplex Signal Booster is not turned on, related COM port will appear as “Unknown device”

8. Click “Scan Devices”



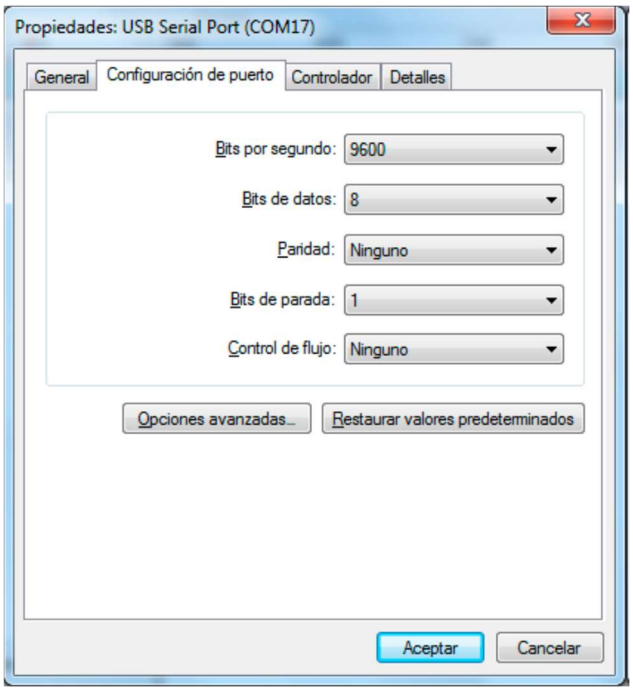
Now, the Fiplex Digital Signal Booster is shown in the list of available devices, and connection button is enabled.

NOTE: Fiplex Signal Booster could not appear in list, if COM port number is higher than COM16, depending on Windows version. COM port number can be forced to arbitrary number (below COM16) through Device Administrator. In order to change COM number, click “Properties” pop-up menu:

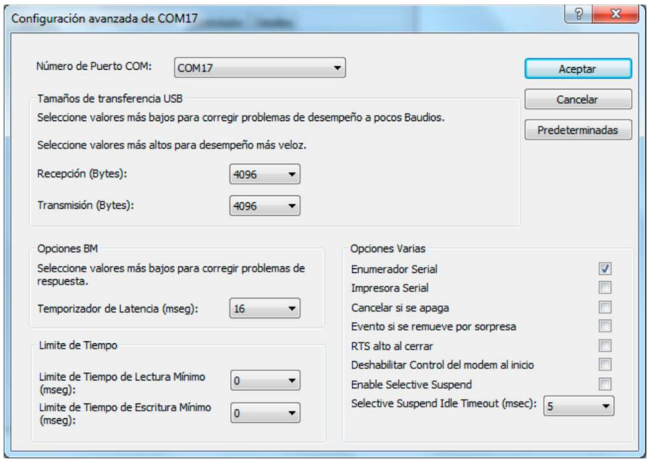


Click “Advanced Options”

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Change COM port number



9. Click “Connect”. Fiplex Control Software window will be automatically maximized, and web browser will show the configuration screen. Application screens are described in the next section due to these application screens and web pages (in webserver remote mode) are the same.

10. Once Signal Booster is configured, user can disconnect software using connection button, now labeled “Disconnect”. Initial window will be shown.

If Signal Booster is disconnected or turned off, while Fiplex Control Software is connected to device, software will go back to initial window. Moreover, if some communication problem occurs while device is monitored, the software will go back to initial state as well.