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STX shown in option rack

STX Upgrade Kit

Power Upgrade Application Guide

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Power Upgrade

Application Guide

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1 STX Power Upgrade

1.1 Overview of the upgrade

Upgrading the power requires the addition of PA modules and the replacement or addition of a combiner. Addition of PA modules and adding or replacing the STX combiner is a straight forward procedure.

This application guide covers all power upgrades to the STX product line, Gen I and Gen 2;

- STX-1 to STX-2, STX-3, and STX-5.
- STX-2 to STX-3, and STX-5.
- STX-3 to STX-5.

NOTE: You may NOT combine Gen I and Gen 2 units into one transmitter. All units must be the same generation.

2 Preparation

2.1 Overview / Estimated Completion Time

The replacement of the STX combiner will take about 1 ½ hours. The procedure is the same for upgrading to an STX-2, STX-3 or STX-5 with the only main difference being the number of cables to be disconnected and reconnected to the PA modules and the number of PA modules themselves.

2.2 Items / Tools required for the Replacement Process

- ☐ No. 2 Phillips Screwdriver
- ☐ 3/16" flat blade screw driver
- ☐ 5/16" nut driver
- ☐ 3/16" Allen wrench

2.3 Rack Space

Each additional PA will require 3 RU of rack space (5.25" of height), and the combiner will need 4 RU (7" of height) in a standard 19 inch E.I.A. rack. Determine placement in the rack that is best suited for the transmitter. It is recommended to mount the combiner at the top of the transmitter, the main unit under that, then the add-on units below that. AC distribution disconnect should be mounted and the bottom of the rack.

Model	Number of PA	Combiner	Total height	Total Rack units
STX-1	1	No	5.25"	3
STX-2	2	Yes	17.5"	10
STX-3	3	Yes	22.75	13
STX-5	5	Yes	33.25	19
AC Distribution Panel			3. 5"	2

3 Software Requirements

Note that prior to upgrading the STX LP, the STX LP controller software must be updated to version 2.0 or greater. Failure to update the controller software to version 2.0 or greater will result in combiner faults that will prevent the transmitter from operating.

4 Replacement of the STX Combiner

If the transmitter that you are starting with is an STX-2 or STX-3 you will have to remove and replace the existing combiner in addition to adding PA modules. The following procedure describes how to remove the existing combiner, installation is the reverse order.



WARNING: ENSURE ALL PRIMARY POWER IS DISCONNECTED BEFORE PROCEEDING.

4.1 Power unit OFF.

Step 1 – Power unit OFF and disconnect all transmitter primary power.

4.2 Remove combiner on STX-2 and STX-3.

Step 2 – Note the AC wiring orientation on the rear of the combiner on a piece of paper or on this application guide for re-assembly.





Figure 1. Rear of combiner if applicable (STX-5 shown).

Step 3 – Remove High Voltage safety cover using a #2 Philips screwdriver.

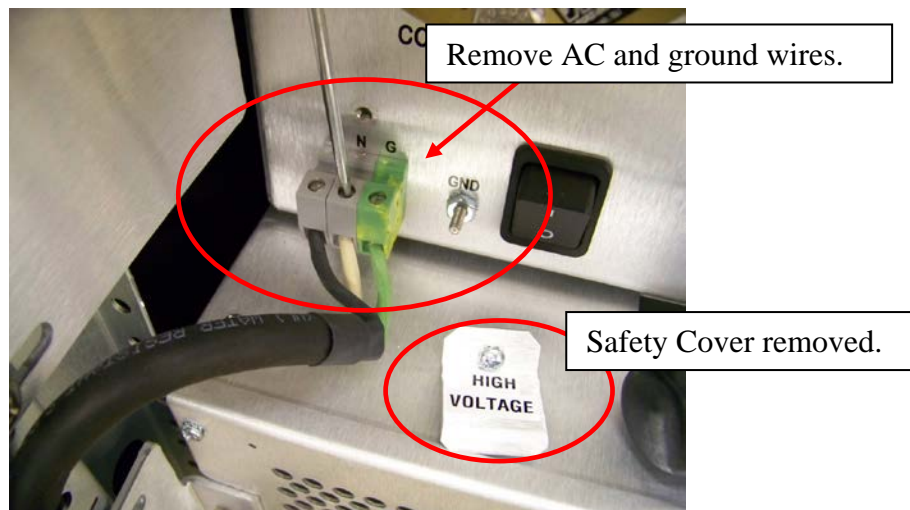


Figure 2. Remove wiring

Step 4 – Using a 3/16" flat blade screwdriver, loosen the screws holding the wires in the back of the combiner.

Step 5 – Remove the ground wire from the ground stud using a 5/16" nut driver.

4.3 Disconnect RF transmission line

Step 6 – Use the 5/16" nut driver to loosen the band clamp on the output slip flange and remove transmission line or elbow. You may have to remove or move other transmission line pieces to allow line removal from flange.

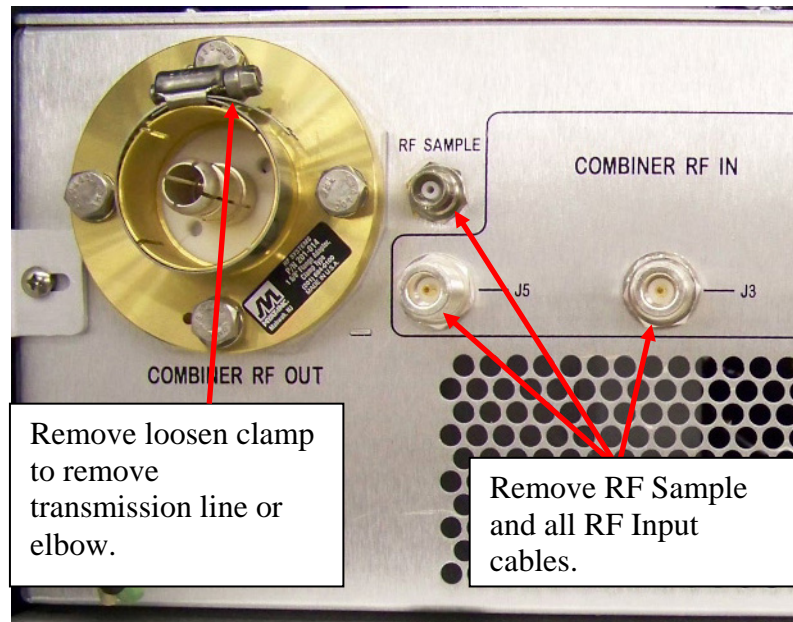


Figure 5. Remove transmission line and RF cables

Step 7 – Disconnect RF Sample cable if used, from BNC connector.

Step 8 – Note the RF Input cable orientation on a piece of paper or on this application guide for re-assembly.

Step 9 – Remove all RF Combiner Input cables from J1 – J5. Depending on which combiner you have there will be 2, 3 or 5 RF input cables.

Step 10 – Remove the Ethernet Control cable from the RJ45 connector on the rear of the combiner depressing the tab on the bottom.

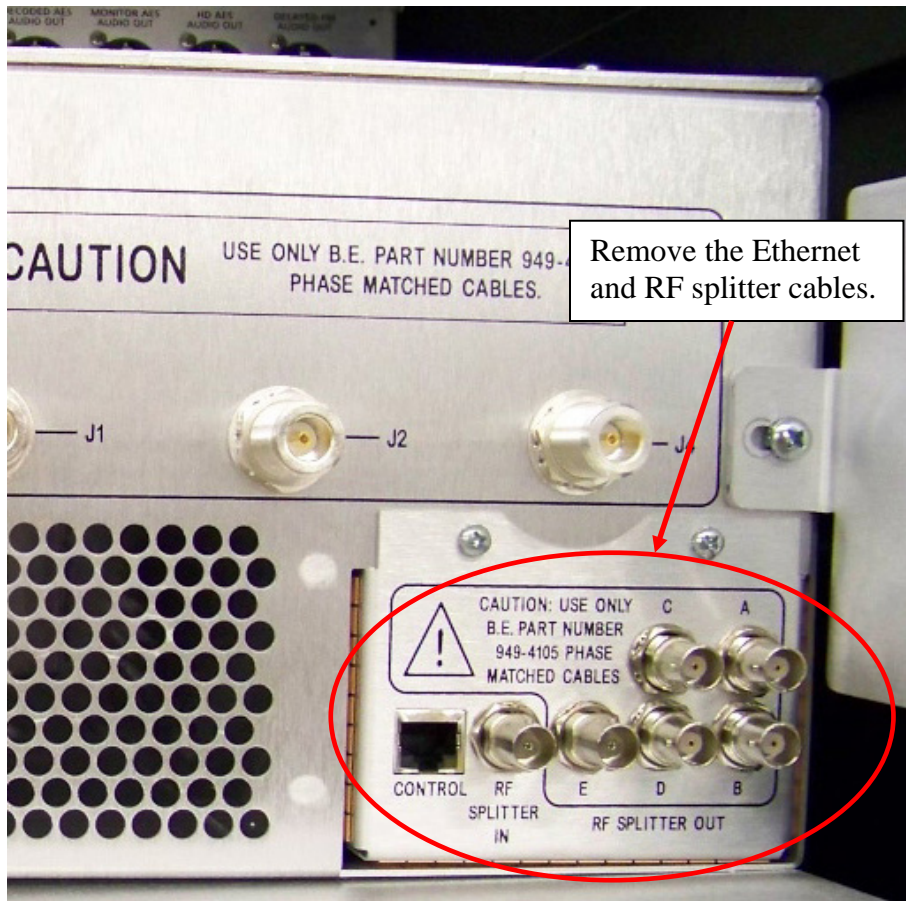


Figure 6. Remove Ethernet and BNC cables.

Step 11 – Note the RF Splitter input and output cable orientations on a piece of paper or on this application guide for re-assembly.

Step 12 – Remove the Splitter RF input and output cables.

4.4 Mechanical Disassembly

Step 13 – Remove the two #2 Philips screws from the brackets on the back of the combiner.

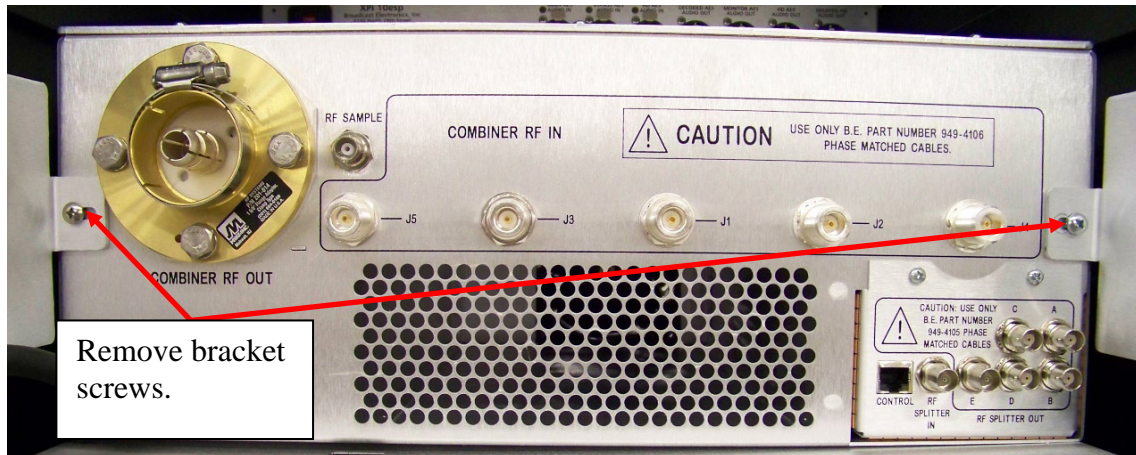


Figure 7. Remove bracket screws.

- Step 14** – From the front of the combiner, remove the four rack screws using the appropriate tool for the fastener used.
- Step 15** – Slide the combiner out the front of the rack. You may need to remove any filler panels above or below the combiner to allow easier removal.
- Step 16** – Install the new combiner into the same location as the old combiner and assemble in the reverse order.

5 Remove AC Distribution Panel



WARNING: ENSURE ALL PRIMARY POWER IS DISCONNECTED BEFORE PROCEEDING.

Make sure the Primary power is turned off and the main AC disconnect that leads to the STX Distribution panel is locked out.

NOTE: The interconnection wires from the customer supplied AC main disconnect box to the STX Power Distribution panel, and AC mains fusing will need to be upgraded to supply and protect the higher power output transmitter. Refer to the STX installation section in the product manual for fusing and wire sizes.

Remove the AC Distribution Panel, and replace with the new Distribution Panel for the upgraded transmitter.

- Step 1** – Disconnect the AC wires that come from the wall disconnect using a 3/16" Allen wrench.





Figure 8. Remove input AC wiring.

Step 2 – Replace this wire with appropriate gauge wire for the new transmitter. Follow electrical codes and see the Interconnect diagrams at the end of the guide.

Step 3 – Disconnect the individual wires at the rear of each PA removing the AC safety cover and then removing the wire at the rear of each existing PA using the same process as with the combiner.

Step 4 – Remove the AC panel from the rack.

6 Install add-on PA Into Equipment Rack

The STXLP – 1kW requires 3 rack units of space in a standard 19 inch E.I.A. rack. Overall installation information is presented in the installation drawing at the end of the regular build manual that shipped with your transmitter. To install the unit proceed as follows:

1. Determine the location for the unit in the rack.
2. Refer to Figure 9 and install the unit in the rack using the mounting hardware located in the accessory kit.



CAUTION: THE UNIT MUST HAVE REAR MOUNTING SUPPORT TO PREVENT DAMAGE.

3. Refer to Figure 9 and install the rear mounting plates as shown. If the rack is not equipped with rear rails, modify the rack to provide rear support.

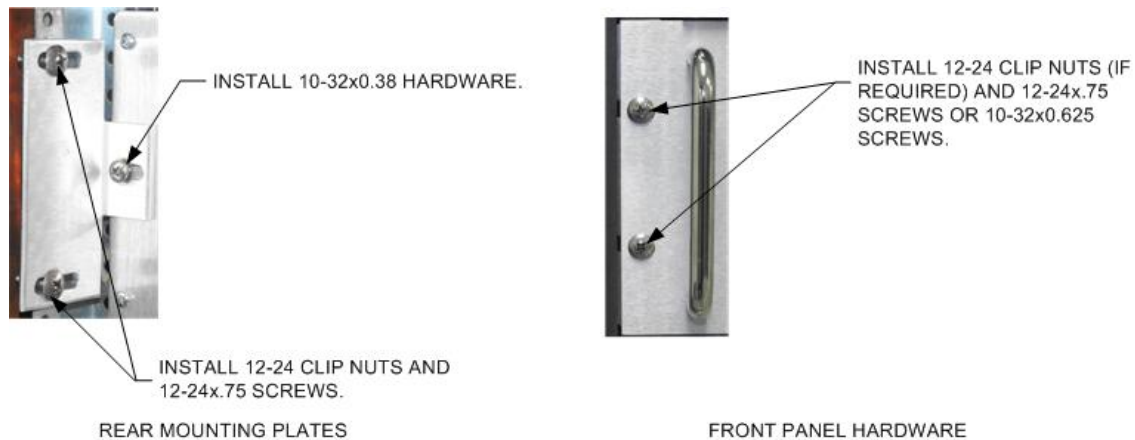


Figure 9. Rack Installation.

7 Install AC Distribution Panel

Follow all Electrical codes when wiring the STX AC Power Distribution panel to the AC Main disconnect.

Step 1 – Install new AC Distribution panel into the rack.

Step 2 – Route the individual wires to each PA and Combiner and connect observing the same wiring as before. Connect circuit breaker #1 to the first (Main) PA and the Combiner with the provided wires. Subsequent units will be connected as shown in the interconnect drawings at the end of this guide; circuit breaker #2 to PA #2, etc.

NOTE: Re-install the safety covers on each unit and Combiner.



WARNING: ENSURE ALL PRIMARY POWER IS DISCONNECTED BEFORE PROCEEDING.

Step 3 – Connect the new AC Mains wiring from the wall breaker to the input of the Power Distribution panel using a 3/16" Allen wrench. Tighten sufficiently to ensure a good connection.

8 Interconnections

Using the interconnection drawings at the end of this guide, (Gen I and Gen 2 are included, observe the appropriate drawing for your transmitter), and the regular build manual that came with your transmitter for interconnect wiring diagrams, connect the following cables between the units:

1. RF Drive
2. PA RF output
3. Communications cable

8.1 RF Drive Cables

Use the new RF Drive cables supplied with the upgrade kit to provide RF drive to the new units being added. Connect existing RF drive cables to combiner.



8.2 PA RF Output Cables

Use the new PA RF Output cables supplied with the upgrade kit to connect the PA RF out from the new units to the combiner input. Connect the RF cables from the existing PA to the combiner.

8.3 Communications Cables

There are two different configurations of communications used in the STX transmitters depending on generation of transmitter.

The First generation STX transmitters (Gen I) used communications cables in a "star" configuration; every cable connects to the main unit with the other end of each cable to each additional PA and combiner.

The Second generation (Gen 2) uses a "Daisy Chain" configuration; one cable attaches between the main PA and the next PA. Another cable connects between the second PA and the third PA and so on. Finally the last PA connects to the Combiner.


Refer to the Interconnect diagrams at the end of this Guide for both generations. Your manual will have the version for your generation transmitter.

9 Configure Transmitter

GEN I Transmitters:

Using the LED display Control Center on the front of the main unit, the navigation buttons under it, and the flow chart (if needed) at the end of the technical manual, navigate to the screen that selects the transmitter type.


SETUP > TXTYPE

Change the transmitter type to the new model you have upgraded to and Depress .

GEN II Transmitters:

Using the LED display Control Center on the front of the main unit, the navigation buttons under it, and the flow chart (if needed) at the end of the technical manual, navigate to the screen that selects the transmitter type.

SETUP > TXTYPE (example: "2kW TX")

Simultaneously, depress all five buttons under the LED display Control Center on the front of the main unit. Change the transmitter type to the new model you have upgraded to and Depress . Lastly, AC power must be cycled on the main unit.

10 RF Technical Services Contact Information

RF Technical Services -

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