ANYWAVE

ATSC 1KW DTV Transmitter

User Manual

Version 1.11

September 12, 2014

Copyright Notice

FCC Compliance

This equipment complies with relevant portions of Parts 2, 73, & 74 of the FCC rules governing LPTV operation.

Disclaimer

Information provided by Anywave Communication Technologies is believed to be accurate and complete; however, no liability can be assumed for its use.

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USE OF THIS PRODUCT IN A MANNER OTHER THAN DESCRIBED IN THIS MANUAL MAY RESULT IN DAMAGE TO THE EQUIPMENT AND/OR PERSONAL INJURY.

PLEASE READ THIS MANUAL IN ITS ENTIRETY BEFORE ATTEMPTING TO OPERATE THE EQUIPMENT. CONTACT ANYWAVE WITH ANY QUESTIONS OR CONCERNS YOU MAY HAVE.

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Unpacking

Carefully unpack the equipment and perform a visual inspection to determine if any apparent damage has occurred during shipment. Please notify the delivery carrier and Anywave immediately if shipment damage has occurred. Retain all original shipping materials.

Please locate and reference the Packing Check List to verify you have received all components of your system. Retain the Packing Check List for future reference.

Also, please identify and remove all packing materials and supports (foam pads, etc.) prior to initial turn on of the equipment.

Returns and Exchanges

Written approval and a Return Authorization Number (RAN) are required from Anywave for all equipment returns. Please direct all return inquiries to the Anywave Service Department at support_us@anywavecom.com, providing the Sales Order number and Serial Number(s) of the equipment. Complete details regarding the nature and circumstances of your return must be included in your RAN request. Proper handling and return shipping instructions will be provided with an approved RAN number.

Technical Support

Technical support and troubleshooting assistance for Anywave Transmitters is available through the Anywave Service Department during normal business hours (8:00 AM - 5:00 PM CST) at (847) 415-2258. Email questions to support_us@anywavecom.com.

Note: For all service and support requests, you will need to provide the Serial Number of the equipment with your Sales Order number. For future reference, please record that information here:_____

WARNING

THE VOLTAGES, CURRENTS, AND RF ENERGY IN THIS EQUIPMENT ARE DANGEROUS. PERSONNEL MUST AT ALL TIMES OBSERVE ALL SAFETY WARNINGS, INSTRUCTIONS, AND REGULATIONS.

IN THE CASE OF EMERGENCY, ENSURE THAT ALL POWER HAS BEEN DISCONNECTED.

ALWAYS DISCONNECT POWER BEFORE REMOVING COVERS, ENCLOSURES, OR SHIELDS. DO NOT PERFROM SERVICE ON THE EQUIPMENT WHEN ALONE OR FATIGUED. KNOW YOUR EQUIPMENT AND DO NOT TAKE RISKS.

This manual is provided as a general guide for trained and qualified personnel well aware of the dangers inherent in handling potentially hazardous electrical transmission equipment.

The installation, operation, maintenance and service of this equipment involves risks both to personnel and equipment, and must ONLY be performed by qualified personnel exercising due care. Anywave Communication Technologies, Inc. shall not be responsible for injury or damage resulting from improper handling or from the use of improperly trained or inexperienced personnel performing such tasks.

All local building and electrical codes as well as fire protection standards must be observed in the installation and operation of the equipment.

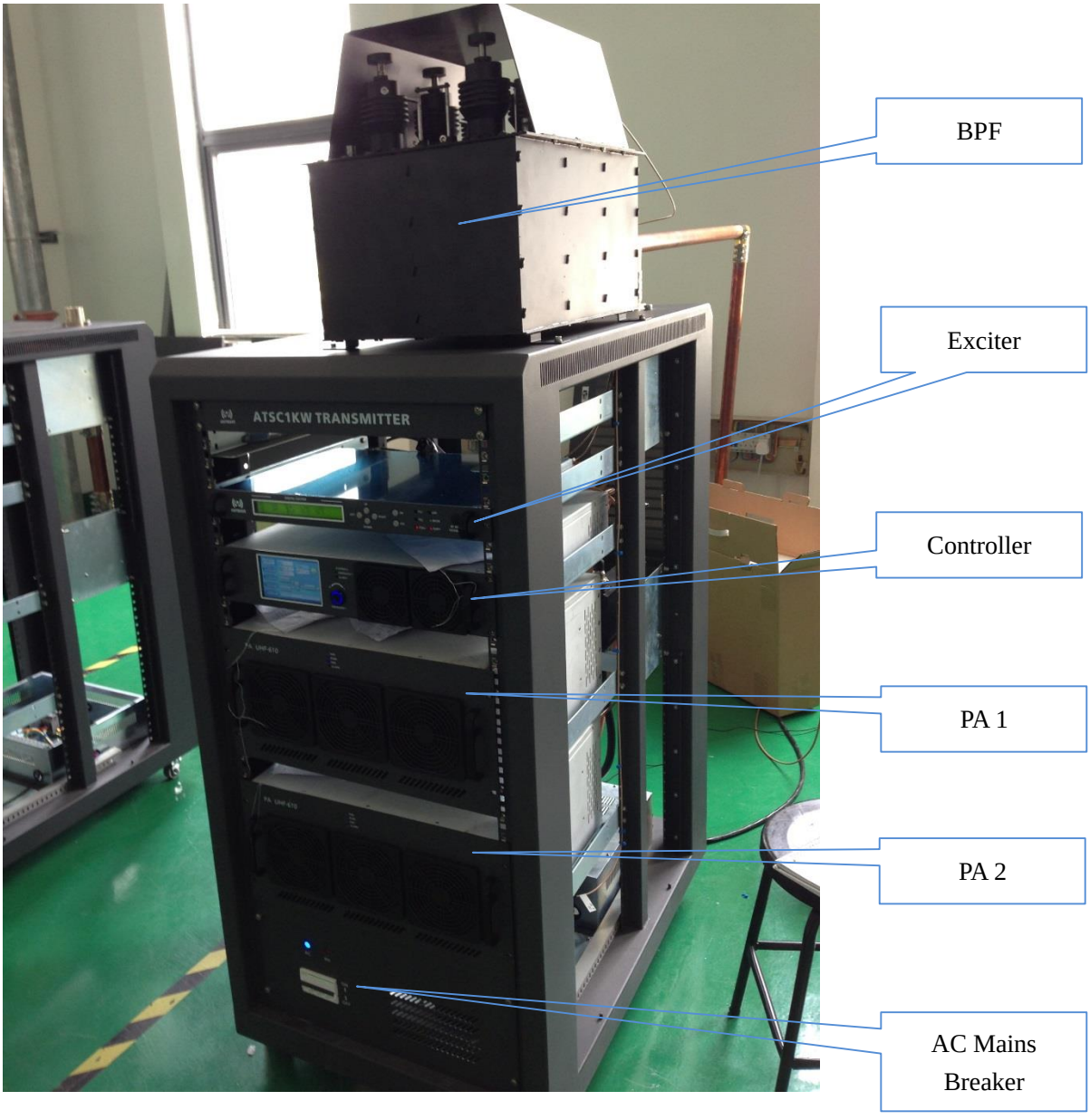
Contents

1 Introduction

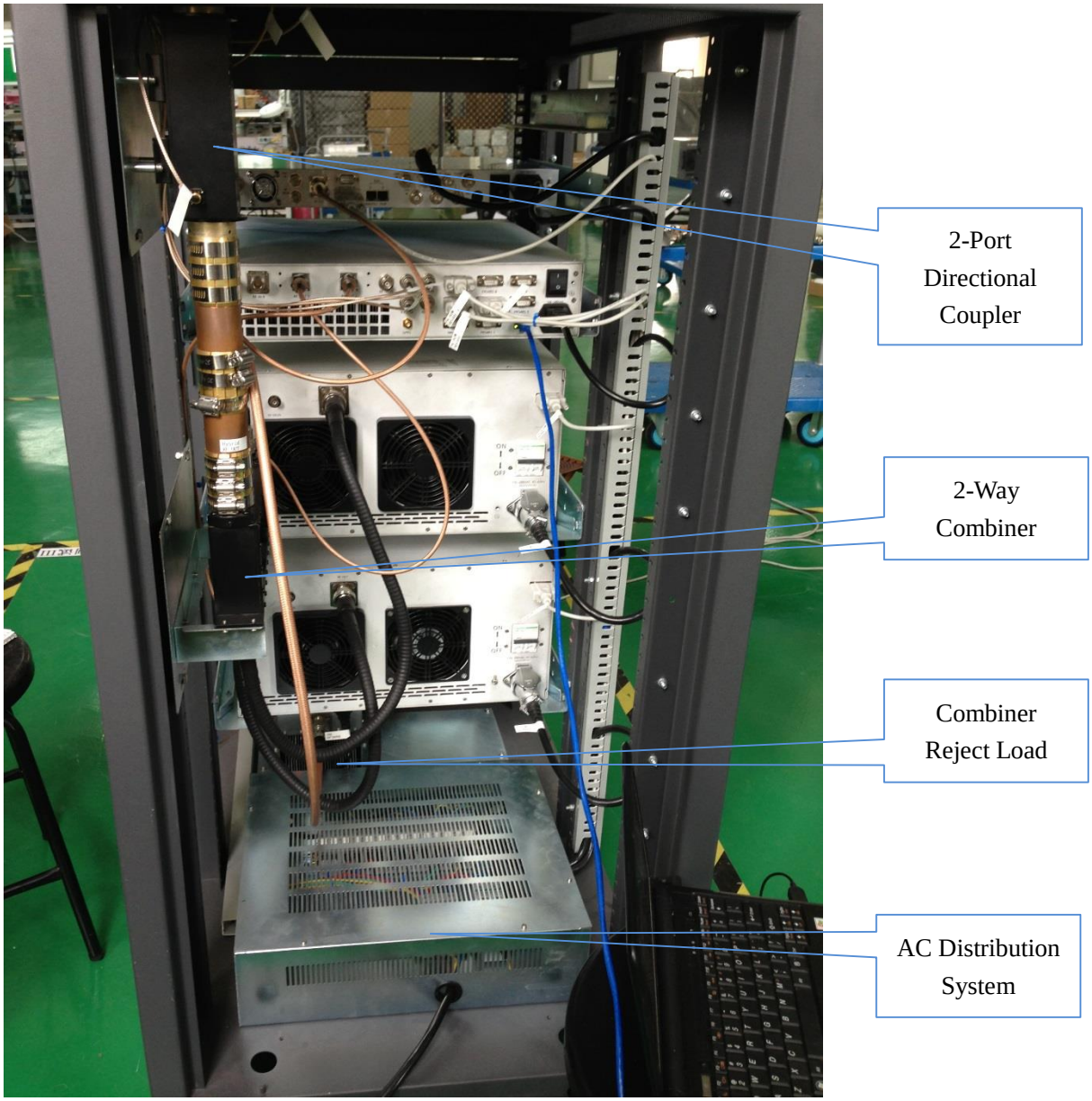
This User Manual contains operational instructions for the Anywave 1KW DTV Transmitter. Please note that trained and qualified personnel are required to operate install, maintain, and service this transmission equipment.

2 TX System Overview

The Anywave ATSC 1KW DTV Transmitter comes in single and dual exciter configurations. Photos of a single exciter system are shown below (with side panels and rear door removed). The main subsystems (as seen from the front) include the Exciter, Controller unit (with a touchscreen LCD, built-in preamp and 2-way splitter), two 600W power amplifiers, an AC Mains Breaker, and a channel mask Band Pass Filter (BPF) - optional.



From the rear view of the TX cabinet, several other main components can be seen which include an AC Distribution System, 2-way Combiner, 2-port Directional coupler and Reject Load.



3 TX Specifications

- RF Output
  - Connector: 1 5/8”, 50 Ω
  - Frequency: 470~860 MHz, in steps of 1 Hz
  - Rated Power: 1kW (rms)
  - Level Stability: < ±0.2 dB
  - MER: > 35 dB
  - Amplitude Flatness: < ±0.5 dB
  - Shoulder Level: < - 50 dB (after correction)
  - Return Loss: > 16 dB
- Environment
  - Operation Temperature: 0 ℃ ~ +40 ℃
  - Operation Humidity: < 95 % (non-condensing)
  - Atmospheric Pressure: 86 kPa ~ 106 kPa
- Power Supply
  - Voltage: 220 VAC, single phase 3-wire (30A)
  - Frequency: 50/60 Hz
  - Power Consumption: 5940 W @ 1170 W output (27 A / 220 V)
- Other
  - Cooling System： Forced air cooling
  - Control Interface: Front panel, Ethernet and RS232
  - Size (HxWxD): 1270 mm x 600 mm x 900 mm

Note

1. The electrical interface characteristics are measured under normal conditions. Values may vary.
2. Operating in abnormal conditions may result in damage to the equipment. Long operating hours in severe environments may reduce the reliability of the entire system, which may cause permanent damage to equipment. Make sure all electrical interface characteristics and environmental parameters are within the defined range listed above before operating this equipment.

4 Control Unit

The TX Control Unit consists of a pre-amp (1xBLF571 driving 2xBLF881 devices), a splitter and a powerful control system. It receives the RF input(s) from the exciter(s), performs the pre-amplification, and finally sends 2 RF outputs (1x 0° and 1x 90°) to the two PA modules. It also receives various RF signals for detection and monitoring.

Front panel

The front panel of Control Unit is shown below.

- Color touch screen
- NORMAL/EMERGENCY
  - NORMAL: The default mode of the transmitter for normal operation.
  - EMERGENCY: The password for the EMERGENCY mode is “17654”. After entering the correct password, if AGC is turned on, the transmitter reduces its output power to half of the AGC target power. Otherwise if AGC is turned off, the transmitter reduces its output power by 3 dB based on its current attenuation setting.
- LED_NORMAL
  - If the green light is ON, then the transmitter is working in NORMAL mode.
- LED_EMEGENCY
  - If the yellow light is ON, then the transmitter is working in EMERGENCY mode.
- LED_ALARM
  - If there is any alarm, the red light is ON, and the transmitter will shut down its output. The most common alarms include: Over-drive/over-current of PA modules or Preamp, high reflected power of PA modules or Preamp, high absorbed power, over temperature of PA modules or Preamp, etc. Please refer to Status Bar and LOG from the touch screen of Control Unit for details.

Rear Panel

The rear panel of Control Unit is shown below:

- RF_MON: Loop out of RF_OUT1/RF_OUT2 for monitoring
- RF_IN_A/RF_IN_B
  - Connector: N
  - Impedance: 50 Ω
  - Note: To receive the RF_OUT signal from Exciter_A / Exciter_B
- RF_OUT_1/RF_OUT_2
  - Connector: N
  - Impedance: 50 Ω
  - Note: Sends pre amplified RF signal to the inputs of PA modules
- PR_IN (TX Reflected Power)
  - Connector: BNC
  - Impedance: 50 Ω
  - Note: To receive feedback signal from Directional Coupler for Reflected Power detection and monitoring.
- PF_IN (TX Forward Power)
  - Connector: BNC
  - Impedance: 50 Ω
  - Note: To receive feedback signal from Directional Coupler for Forward Power detection and monitoring.
- PL_IN (TX Load Reject Power)
  - Connector: BNC
  - Impedance: 50 Ω
  - Note: To receive feedback signal from Directional Coupler and Load for Absorbed Power detection and monitoring
- AUX_IN (reserved)
- GPRS (reserved)
- ERS485-A/ERS485-B: To be connected to REMOTE of Exciter_A/Exciter_B for internal communication between exciters and Control Unit.
- PRS485-1/PRS485-2: To be connected to RS485 of PA610-1/PA610-2 for internal communication between PA modules and Control Unit.
- RS232: To be connected to a computer for external serial protocol communication with Control Unit for remote control.

- LAN: 10M/100M Ethernet port for web-based remote control (ipaddress: 192.168.1.210)
- AC INPUT/FUSE: 100-240 VAC
- Power Switch: ON/OFF

5 Digital Exciter

Front Panel

LCD:

40×2 LCD with power saving backlight

6 Buttons:

Left, Right, Up, Down, OK, ESC

6 LEDs:

When in Exciter mode:

LED_TS1: Green light on indicates TS1 is selected and the input TS signal is OK

LED_TS2: Green light on indicates TS2 is selected and the input TS signal is OK

LED_TSErr: Red light on indicates the selected input signal has error

When in Translator mode:

LED_ TS1: Green light on indicates the synchronization of input RF signal is OK

LED_TS2: Green light on indicates the equalization of input RF signal is OK

LED_TSErr: Red light on indicates there is synchronization error or equalization error

In both Exciter and Translator mode:

LED_ GPS: Green light on indicates GPS connected and locked

LED_ RFON: Green light on indicates system ready and RF on

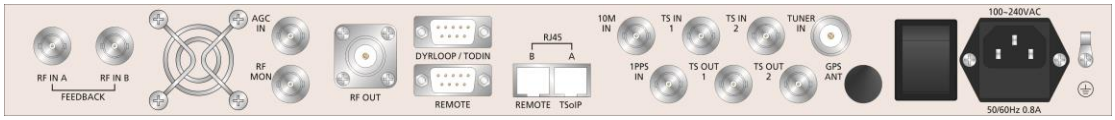
LED_ SysErr: A flashing red LED indicates the presence of a system error

A solid red LED indicates the unit is in "Local (LCL)" control mode, and when this LED is off, this indicates that the unit is in "Remote (RMT)" control mode

1 BNC connector:

RFMON: Reserved

Rear Panel



RF_IN_A:	Feedback signal, sampled after the band-pass filter (-5 to -15dBm)
RF_IN_B:	Feedback signal, sampled before the band-pass filter (-5 to -15dBm)
AGC_IN:	Feedback DC voltage for AGC control (0-5VDC)
RF_MON:	Loop out of RF_OUT for monitoring (-25 dB below RF_OUT)
RF_OUT:	Main RF signal output of exciter, to be connected to RF_IN_A/RF_IN_B of Control Unit (nominal 0 dBm output)
DRYLOOP:	Dry loop for remote control
REMOTE:	To be connected to ERS485-A/ERS485-B of Control Unit for internal communication between exciters and Control Unit
REMOTE (RJ45-B):	10M/100M Ethernet for remote control (ipaddress: 192.168.1.143)
TSoIP (RJ45-A):	Reserved
10M_IN:	10 MHz input from external GPS receiver
1PPS_IN:	1 PPS input from external GPS receiver
TS_IN_1:	The first port of TS inputs, DVB-ASI only
TS_OUT_1:	Loop out of [TS_IN_1] for monitoring
TS_IN_2:	The second port of TS inputs, DVB-ASI only
TS_OUT_2:	Loop out of [TS_IN_2] for monitoring
TUNER_IN:	Received RF signal input

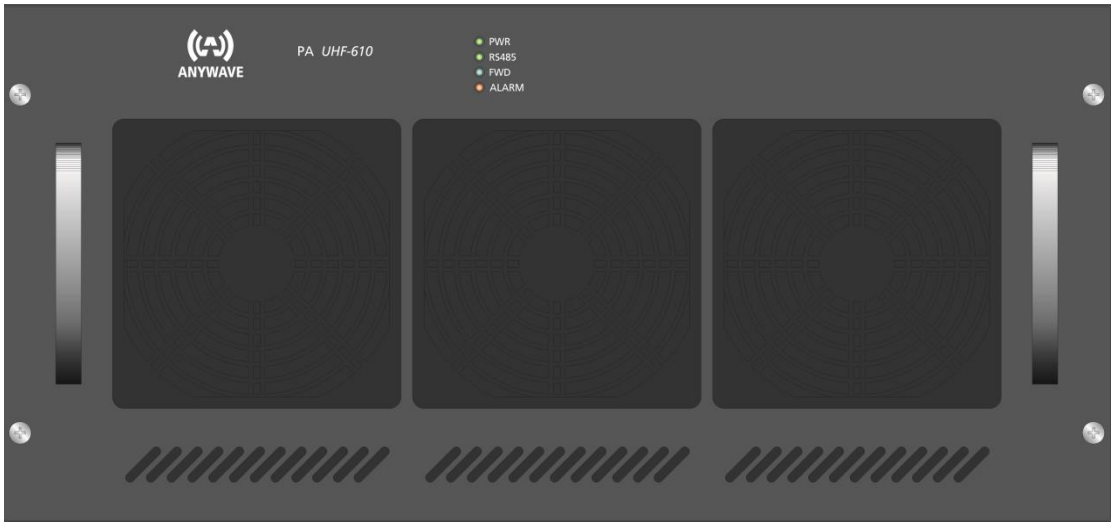
Note: Please refer to the ACT-5X Exciter User Manual for more details.

6 Power Amplifier – 600W

This TX is fitted with two UHF-610 PA modules to produce a total 1000W of output power after the BPF. Each module consists of two 2 pallets (a total of 4 BLF888A devices).

Front Panel

The front panel of PA UHF-610 is shown as below. The LED indicators and ports are listed below.



- LED_PWR
  - Green light will be on when the DC voltage of internal power supply is within the normal range (48 VDC ~ 52 VDC).
  - Green light will flash when the DC voltage of internal power supply is out of the normal range (48 VDC ~ 52 VDC).
  - Green light will be off when the external power supply is turned off, or internal power supply module does not work.
- LED_RS485
  - Green light will flash once per second when the internal communication is normal.
  - Green light will stay constantly on or off when the internal communication is abnormal.
- LED_FWD
  - Blue light will be on when TX power level is stable and higher than 10 W.
  - Blue light will flash once per second during the ramp up process and the TX power level is higher than 10 W.
  - Blue light will be off when the TX power level is less than 10 W, or it's turned off by configuration or for protection. There are several situations which will result in auto-protection mode, such as the input power is too high, the reflected power is too high, or the temperature is too high. When the transmitter reboots, the default setting of TX status is OFF.
- LED_ALARM
  - Red light will be on if there is any alarm and TX output will be shut down

- Red light will be off if there is no alarm

Note:

1) The front fan covers can be removed to clean the air intake path. No screw driver is needed, and no disassembly of the PA is required.
2) When a warning occurs and the PA enters auto-protection mode, the only way to clear this state is to cycle power on the PA module once the problem(s) is resolved. Otherwise all warning LEDs will remain on even if the problem(s) no longer exists.

Rear Panel

The rear panel of PA UHF-610 is shown below with ports described as follows.

- RF_IN
  - Connector: N
  - Impedance: 50 Ω
  - Note: To receive RF signal from RFOUT1/RFOUT2 of Control Unit.
- RF_OUT
  - Connector: 7/16 DIN
  - Impedance: 50 Ω
  - Note: To send out RF signal to the input of Power Combiner (attached to the cabinet). It must always be connected to a load.
- RF MON (loop out of RF_OUT)
  - Connector: BNC female
  - Impedance: 50 Ω
  - Note: It is OK to leave this port open without load.
- RS485
  - Connector: DB9-M
  - Note: To be connected to PRS485-1/ PRS485-2 of Control Unit for internal communication between PA and Control Unit.

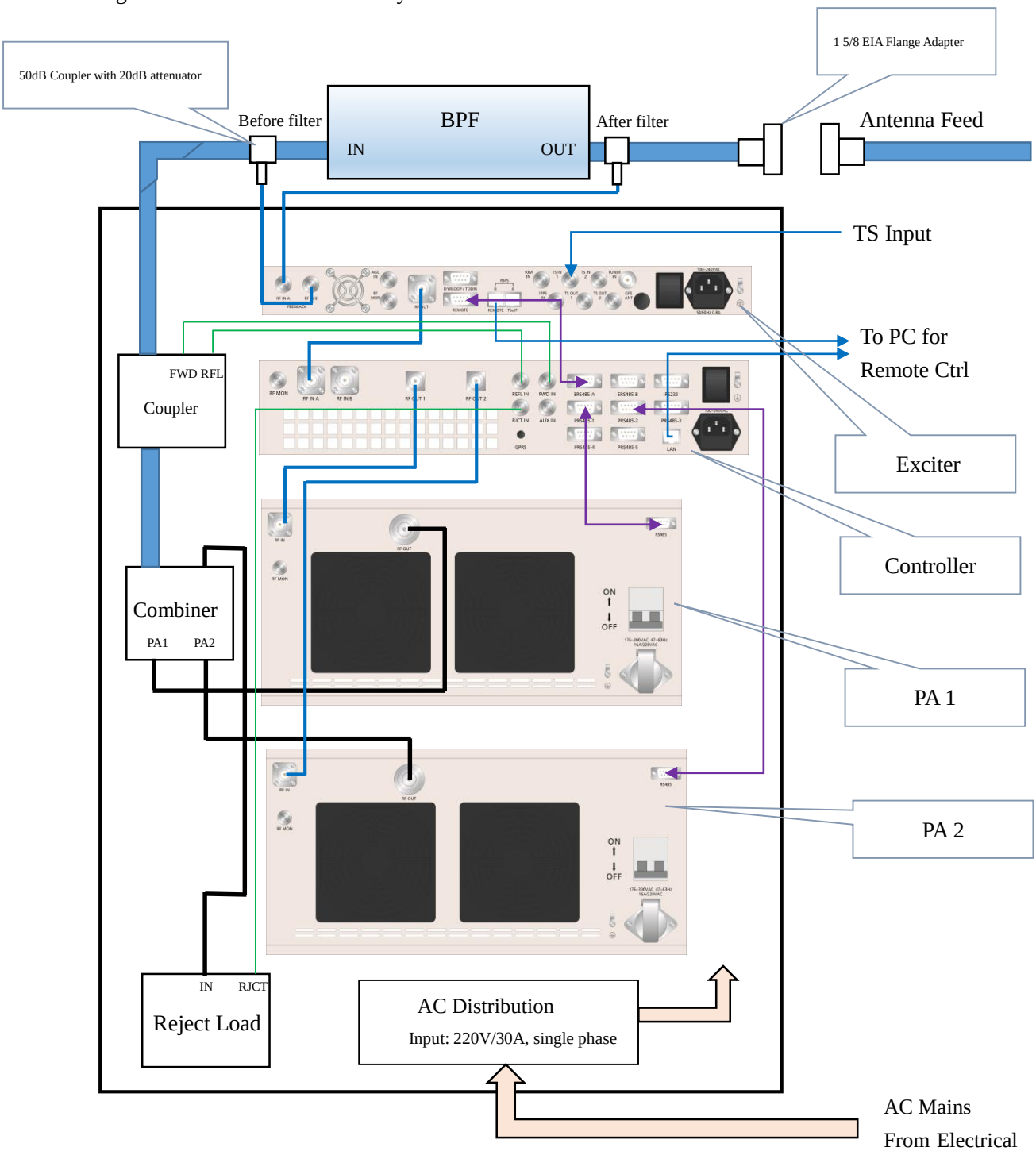
- AC220V input: To be connected with Power Supply System.
- Power Switch: ON/OFF

Note:

1) The back fan covers can also be removed to clean the air intake path. No screw driver is needed, and no disassembly of the PA is required.

7 TX System Interconnect Diagram

The diagram below shows the overall system interconnect between the various modules.



8 Theory of Operation

The ATSC 1000W DTV transmitter is conceptually simple to understand and easy to operate.

The Transmitter operates on 220VAC single-phase 30A AC Mains service. An AC Mains Distribution compartment is located in the back rear floor of the TX. This compartment is shielded for personnel safety and provides the distribution of appropriate AC power to the various modules inside the TX cabinet.

A standard ATSC ASI input stream is provided to one of the BNC connectors located on the rear panel of the Exciter. The Exciter (different platforms) supports options for DVB-ASI and SMPTE310M stream formats as well as an RF off-air input via a built-in tuner and TSoIP support via an RJ-45 input. The Exciter performs the appropriate FEC and Signal Processing to modulate a standard 19.39 Mbps ATSC TS to produce an RF output at the desired channel frequency. Supported ATSC modulation standards include A/53 (Legacy), A/153 (MH), and A110:20011 (SFN).

The TX supports both Single and Dual Drive (DD) Exciter configurations, and manages the automatic and manual switchover between Exciters in a DD configuration. The modulated RF output signal from the Exciter(s) is (are) fed into the Control module which contains a 50W preamp driver (1xBLF571 device driving 2xBLF881 transistors in parallel). The output of the Controller preamp is then split and fed to the RF inputs of each of the PA modules.

The PA modules contain 4x BLF888A devices that amplify the RF signal to produce 600W of output power per PA. The amplified output signals of the two PAs are fed into a 2-way Hybrid Combiner and then into a Directional Coupler and finally out the top of the cabinet via a section of 1 5/8 transmission line.

The 1 5/8 output stack of the Transmitter is then fed into an inline 1 5/8 Harmonic Filter (if required) before entering a channel mask BPF. The output of the BPF connects to the Antenna feed to radiate the DTV signal on-air.

The Exciter receives two feedback signals from FWD and REV couplers located at the BPF input and output. These before and after BPF feedback signals are used by the Exciter to provide automatic Linear and Non-Linear pre-correction of the ideal 8-VSB forward path signal.

Additional feedback signals are provided to the Control module, which monitors these samples to implement protective protocols including forward power reduction and shutting down the TX in the event of high reflected power or other unsafe operating conditions. System FWD and REV power samples are provided to the Control module from the Directional Coupler located directly after the 2-way power combiner. The Control module also receives a feedback sample

from the System Reject Load, enabling it to control the variable fan speed on the load.

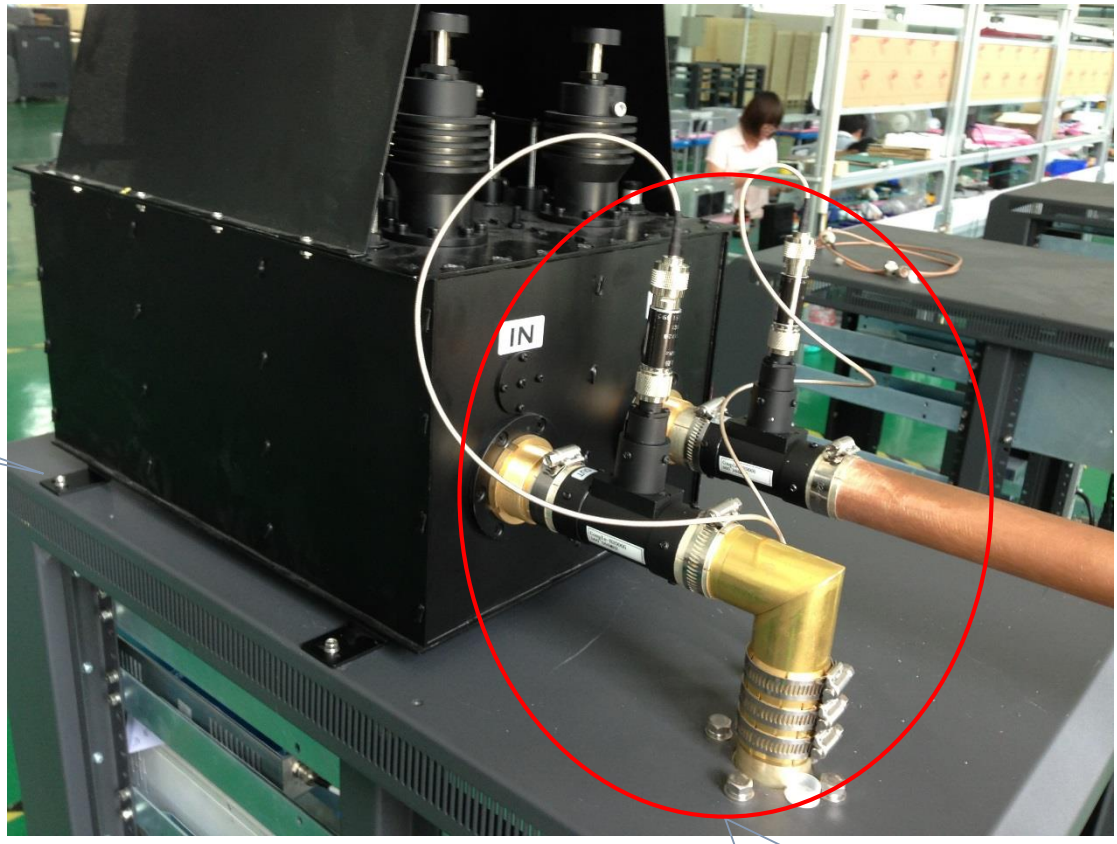
The Control module is in constant communication with the Exciter and PA modules via an RS-485 serial bus. Each module has a unique ID on the bus, and the Control module is continually talking with the Exciter and PA modules to provide monitoring and control capabilities via its front panel touchscreen and built-in web user interfaces. Both the Control module and the Exciter provide RJ-45 Ethernet connections through which the user may remotely monitor and control the TX via their respective built-in web interfaces.

9 Quick Start Guide

Please reference the separate 1KW TX Quickstart Guide provided with your 1KW TX system. This document will take you through the setup and installation of your RF System and AC Mains Electrical connections before guiding you step by step through the initial turn on of your TX.

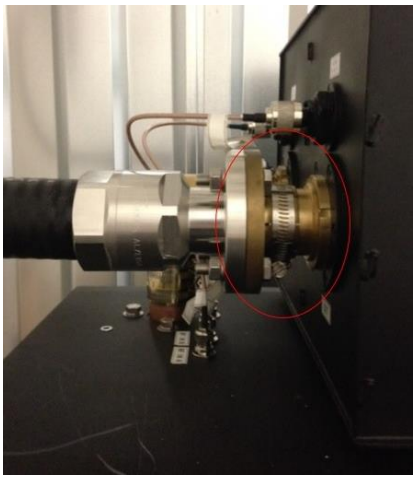
10 RF System Connections

If you purchased an Anywave BPF, it is designed to be installed and mounted on top of the 1KW TX cabinet (as shown below). Four metal stand-offs “feet” with mounting hardware are supplied with the BPF to allow it to be fastened and secured to four holes located in the top panel of the cabinet. Please reference your 1KW TX Quick Start Guide for step-by-step instructions on setting up and connecting your RF System components.



Mount BPF

Connect Elbow, Directional Couplers, Attenuators and Exciter feedback cables



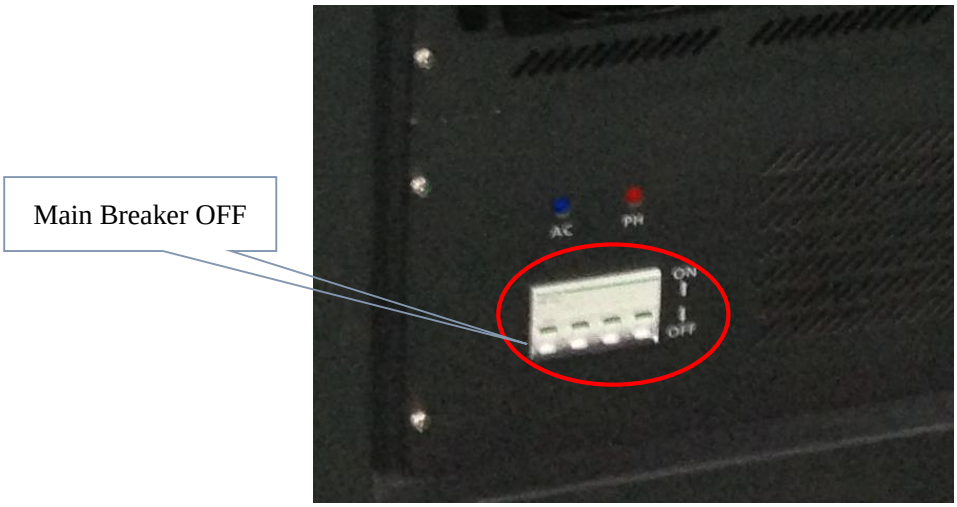
(Please note: If your Antenna feed is other than 1 5/8 EIA flanged (as shown on left), then you will need to provide whatever adapter hardware is necessary to facilitate this connection to your Antenna feed).

11 AC Mains Connections

Please review the safety WARNINGS on page 4 of this manual before proceeding with any electrical work.

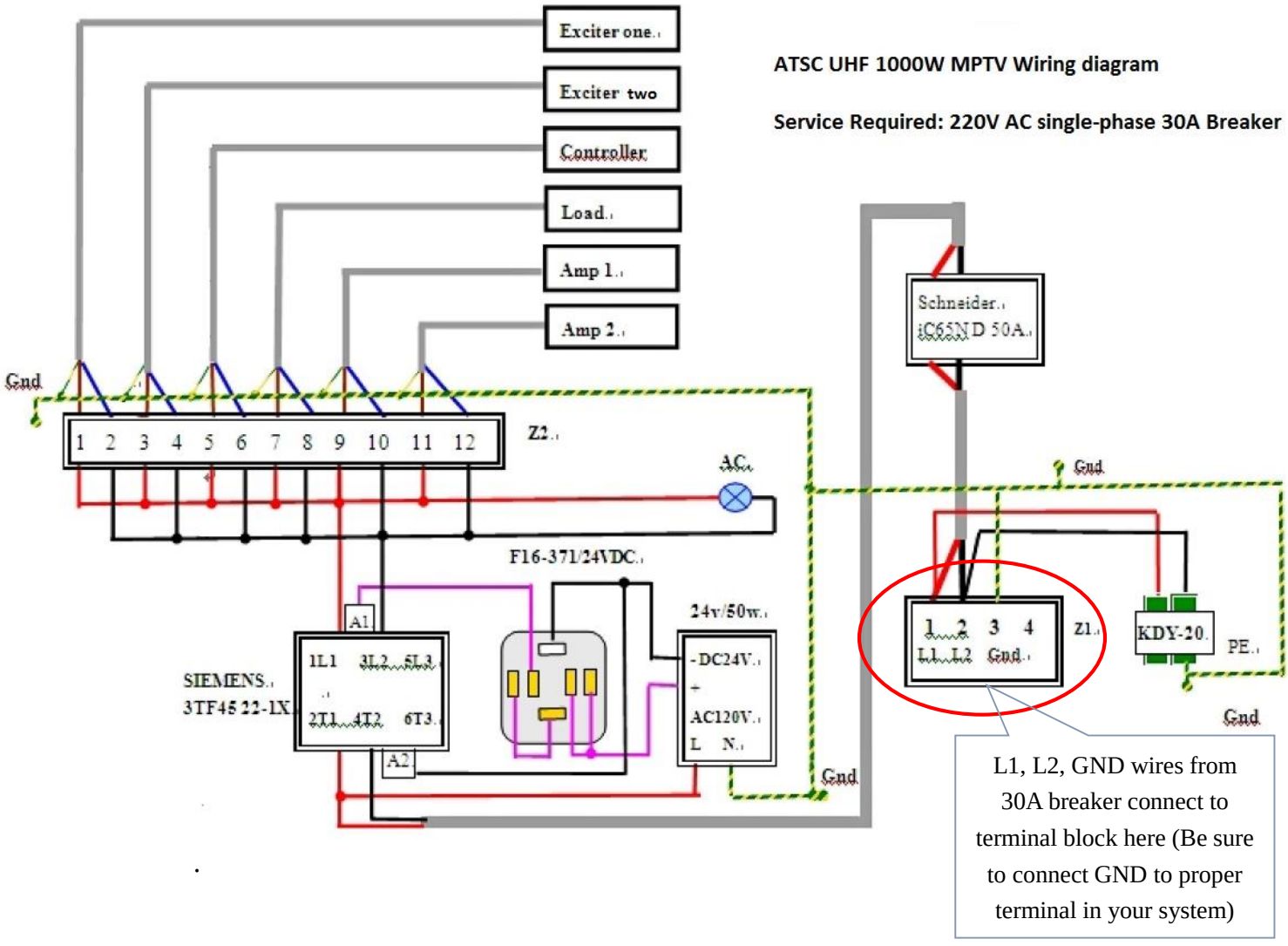
A licensed Electrician is required to properly and safely connect the 220V power cable from your stations electrical panel to the terminal block located inside the TX AC Mains Distribution compartment in compliance with local electrical and building codes. Please note: a power cable is not provided with the Transmitter system and should be obtained via your local Electrician.

Be sure the Main Breaker on the lower left front of the TX is turned OFF before performing any electrical work on the TX (as shown below).



Electrical Requirements

The 1KW ATSC Transmitter cabinet is wired for 220V single-phase power to be sourced from a 30A breaker. A 3-wire gauge10 cable is recommended to make the connection between the TX AC Mains Distribution terminal block and the 2-pole 30A breaker in the facility electrical panel. Please note: this cable is not provided with your Transmitter equipment and should be obtained from your local Electrician.



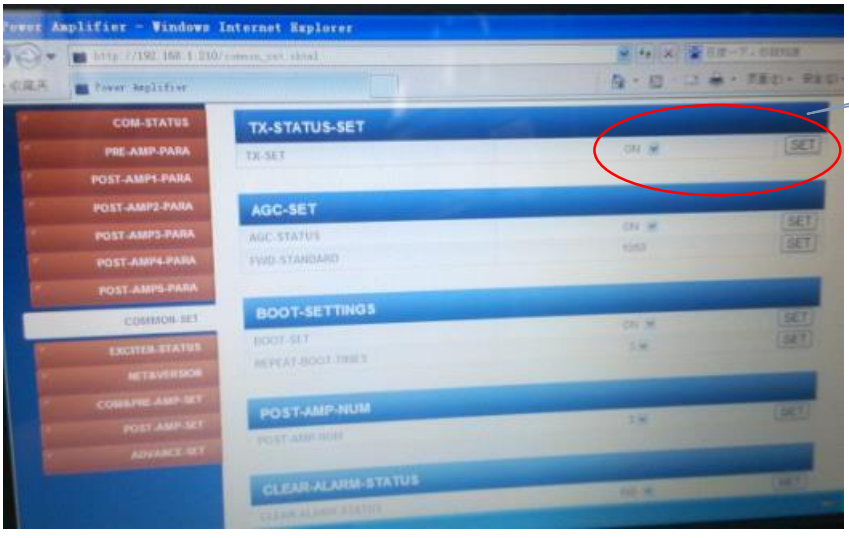
Properly connect the three wires to the terminal block as outlined in the above diagram, taking care to notice which terminal is connected to the chassis Ground in your system. Earlier systems (prior to the addition of the EMERGENCY Stop button – located on the upper right front of the cabinet) are wired L1, GND, L2, while newer systems are wired L1, L2, GND (as shown in the above diagram). Be sure to connect the GND terminal properly and other two connections as L1 and L2.

12 Operational Basics

12.1 TX ON/OFF

Local Control: To turn the TX On/Off, please use the TX On/Off button located on the HOME screen of the Control module. The Button will light Green when the TX is ON and RED when the TX is off. When turning the TX ON, please monitor the FWD power wattage on the HOME screen as FWD power ramps up to the AGC target level (which takes roughly 45-60 seconds).

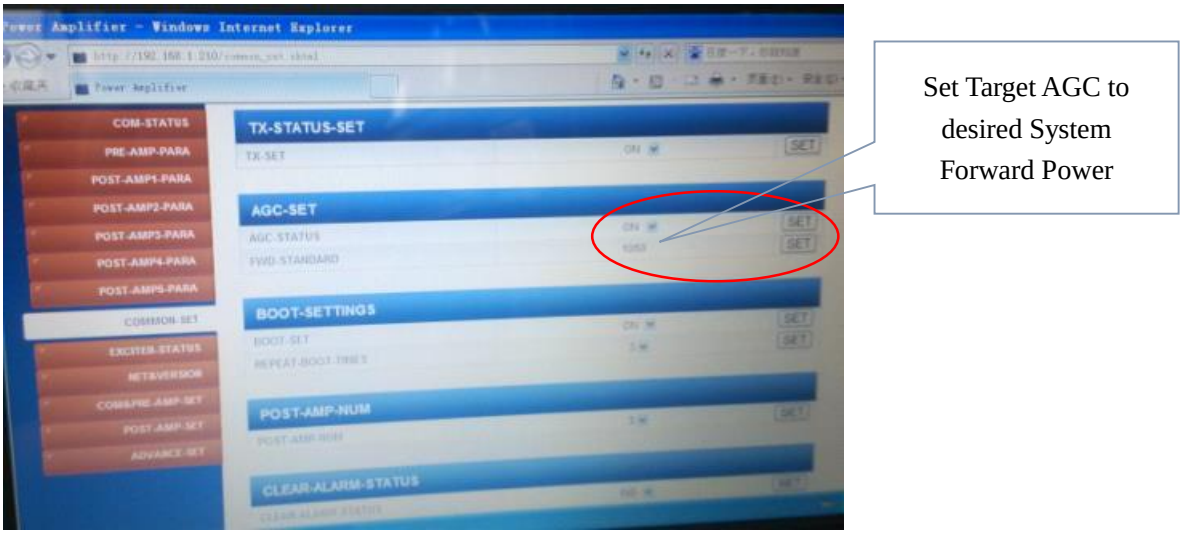
Remote Control: To Turn the TX On/Off from the Controller Web Interface, please select ON or OFF for TX_SET and press the SET button to the right (network to the Controller module via rear panel RJ-45 LAN connection, default ipaddress 192.168.1.210).



12.2 RAISE/LOWER POWER

Local Control: To raise or lower the TX system forward power, please adjust the target AGC power setting on the Controller AGC screen. Monitor the change in power via the Home screen FWD Power meter (which may take up to 60 seconds).

Remote Control: To raise or lower the TX system forward power from the Controller Web Interface, please adjust the target AGC power setting and press the SET button to the right (network to the Controller module via rear panel RJ-45 LAN connection, default ipaddress 192.168.1.210).



12.3 RUNNING CORRECTIONS

Local Control:

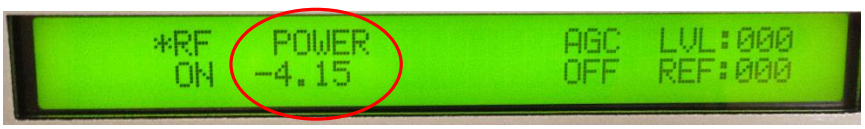
This section guides you through the process of running Linear and Nonliner Precorrection (You may also reference the Exciter User Manual for additional details and instructions on running corrections). If you are operating at reduced power you may wish to rerun corrections to achieve better RF performance.

Normal operation for the 1KW TX is to run with the Transmitter AGC enabled to compensate for slight variations in output power due to changes in temperature, AC mains, etc. It is not recommended to run corrections with AGC enabled, as the correction process can at times produce slight changes in output power.

1. Please navigate to the Controller AGC screen (by pressing the CONFIG button and then AGC button) and disable AGC by pressing the Green button (as shown below), so that the button then becomes transparent (blue). This indicates that AGC is OFF.

Press AGC button to turn AGC OFF (button becomes transparent = blue)

2. Adjust the Exciter POWER setting under the RF submenu to achieve the desired Forward System Power (1000W for example) as monitored on the Controller Home screen.



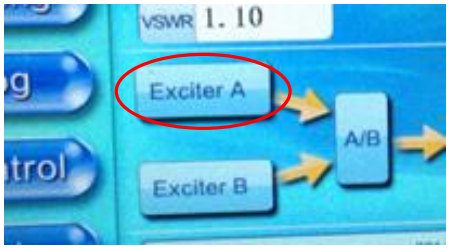
3. Before running corrections, it is important to verify proper feedback signal levels. There are two feedback signal samples used to compute corrections. “RF In A” (After BPF) is used to calculate Linear correction coefficients while “RF IN B” (Before BPF) is used to compute the Non-Linear correction coefficients.

4. Navigate to the Exciter “DPD” submenu in the Advanced User menu (simultaneously press Left and Right buttons, then simultaneously press UP and Down buttons). Be sure the value of Feedback Sample Signal Input (FSSI) for both A (after) and B (before) reads somewhere between 40% and 75% - which roughly corresponds to a value of -15 to -5 dBm as measured on a power meter (note: the FSSI indicator toggles between A and B and will “flash” when the signal level is out of range, too high or too low). Add or remove the appropriate attenuator padding to achieve feedback signal levels in the desired range.

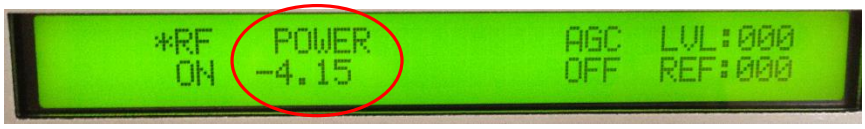
5. Check and set the value of PDT (set to 5) and CFR (set to F) in the DPD Advanced Menu (above) (Note: CFR=F means NO CFR, CFR=0, means maximum CFR)

6. Navigate to the Exciter “SYSTEM” submenu and select UPDATE under ADPC to run corrections. The exciter will then proceed through 4 stages of correction, automatically computing Linear and Non-Linear corrections, and saving the coefficients into non-volatile memory upon completion. The correction process typically takes from 8-10 minutes to complete while real-time performance metrics of SNR and Shoulder performance are displayed on the LCD.

7. Check the SNR and Shoulder (LIMD and UIMD) RF performance on the front panel screen of the exciter or by pressing the Exciter Icon on the Controller HOME screen. (Change the value of CFR or rerun correction if necessary to obtain optimal performance).

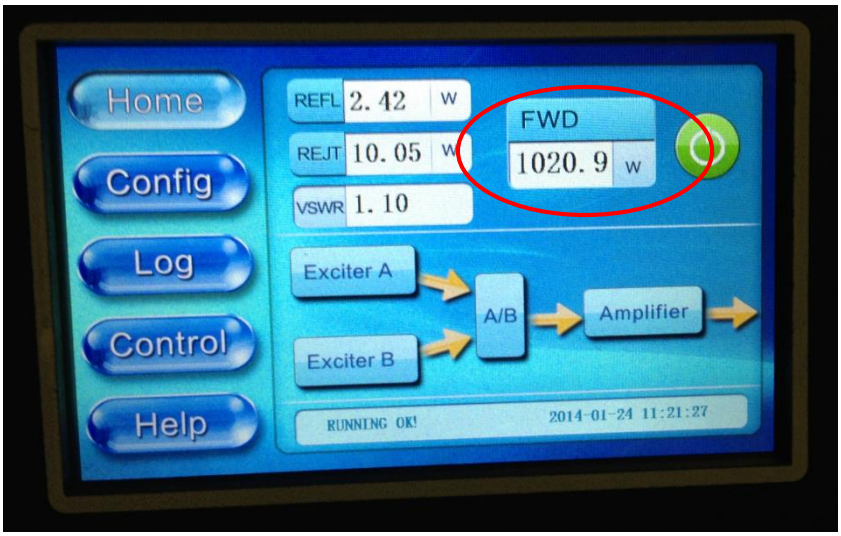


8. With your TX operating at your desired output power and with good RF performance, the next step is to set up and re-engage the TX AGC. To accomplish this, slowly increase the value of POWER in the Exciter RF submenu to raise the output power of the system to 1.1 x desired TPO (for example 1100W if a 1000W TPO level is desired). (Note: You are bringing up the TX to 1.1 x desired TPO to provide 10% headroom for AGC operation).



9. Navigate to the AGC screen on the Controller (by pressing the CONFIG button and then the AGC button). Be sure the AGC Target FWD power is set to 1000W, or whatever TPO level is desired for operation, and then press the unlit AGC button to engage the TX AGC and turn this button Green.

10. Press the HOME button to return to the HOME screen to monitor FWD power as it slowly reduces from 1.1 x TPO to the AGC target power (desired TPO) level over the next minute or so. With the AGC engaged, the FWD power metering may vary up to +/- 5%, so for a 1000W TX, meter variations from 950W to 1050W may be experienced.



11. On the Exciter, navigate to the CAL setting under the AD3 Advanced submenu and select CAL then press OK to calibrate the FWD PWR meter on the Exciter front panel to ~ 100%.

Please note that the Exciter FWD PWR meter reading is based on the RF_IN_A BNC feedback sample on the rear panel of the Exciter and is only available when this sample is connected and in the proper signal level range (40% < FSSI A < 75%).

12. You have completed running Linear and Non-Linear corrections on your TX.

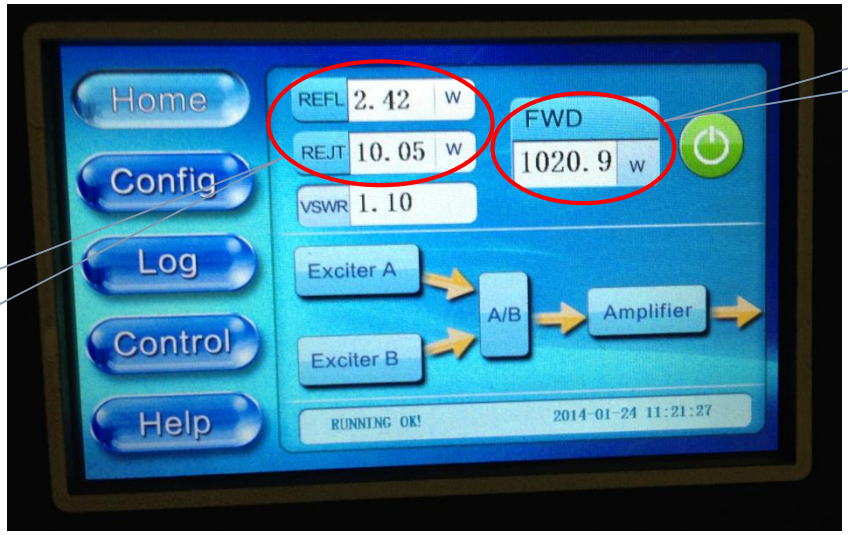
12.4 CALIBRATE EXCITER FWD POWER METER

On the Exciter, navigate to the CAL setting under the AD3 Advanced submenu and select CAL then press OK to calibrate the FWD PWR meter on the Exciter front panel to ~ 100%.

Please note that the Exciter FWD PWR meter reading is based on the RF_IN_A BNC feedback sample on the rear panel of the Exciter and is only available when this sample is connected and in the proper signal level range (40% < FSSI A < 75%).

12.5 CALIBRATE TX SYSTEM POWER METERS

Local Control: There are three TX system power meters located on the Controller HOME screen, Forward (FWD), Reflected (REFL), and Reject Load (REJT). These power meters were calibrated at the factory to provide accurate power readings when testing the TX at full output power (1000W after the BPF). These meters may be recalibrated if desired via the Controller calibration screens as outlined below.



System FWD power meter

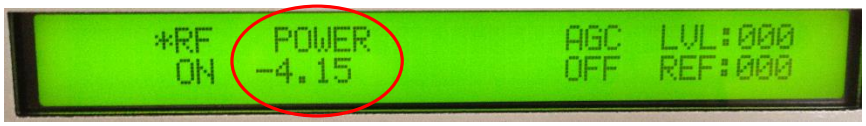
System Reflected and Reject Load power meters

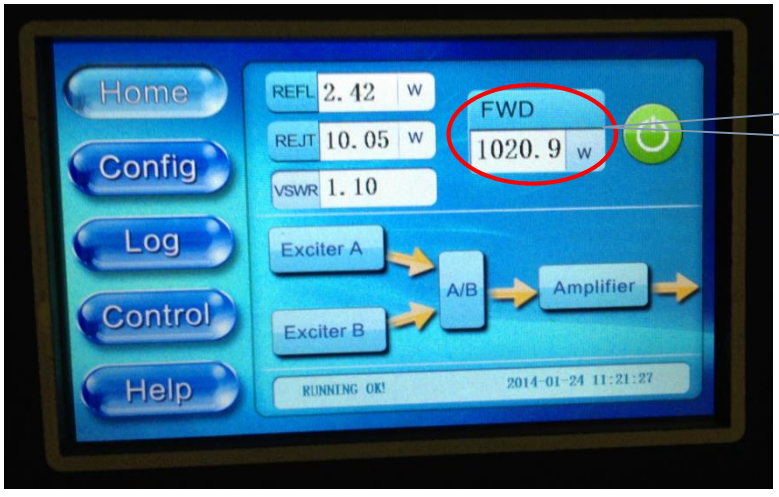
You will require a power meter to measure real power at the Controller input samples in order to properly calibrate the built-in system FWD, REFL, and REJT power meters. Please reference the TX System Interconnect Diagram in section 7 of this manual for connection details.

Normal operation for the 1KW TX is to run with the Transmitter AGC enabled to compensate for slight variations in output power due to changes in temperature, AC mains, etc. It is not recommended to perform power meter calibration with AGC enabled.

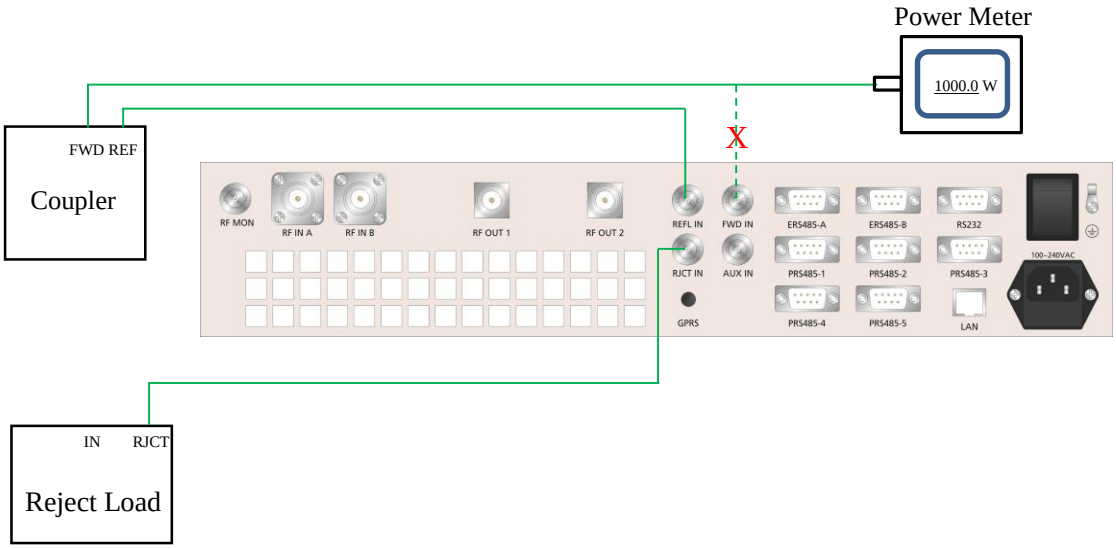
1. Please navigate to the Controller AGC screen (by pressing the CONFIG button and then AGC button) and disable AGC by pressing the Green button (as shown below), so that the button then becomes transparent (blue). This indicates that AGC is OFF.

2. Adjust the Exciter POWER setting under the RF submenu to achieve the desired Forward System Power (1000W for example) as monitored on the Controller Home screen.

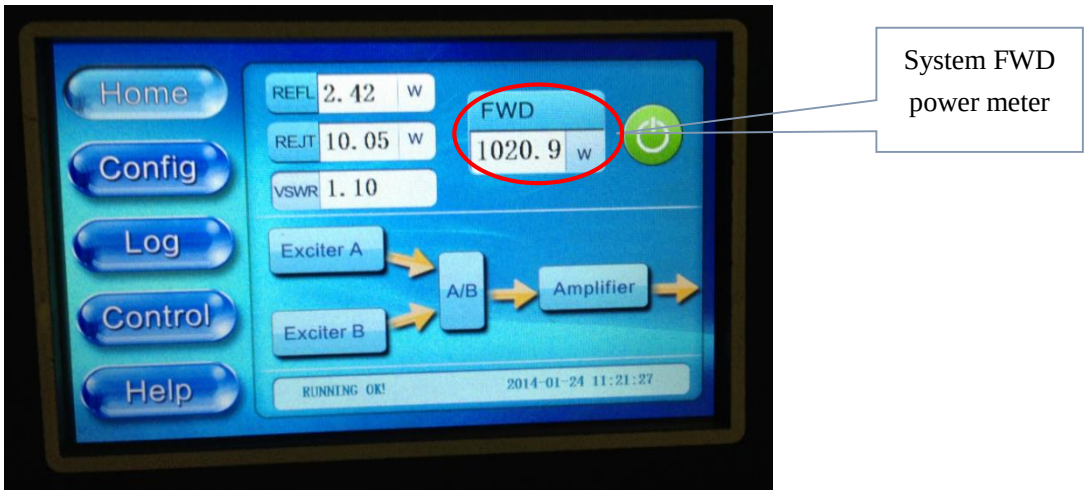




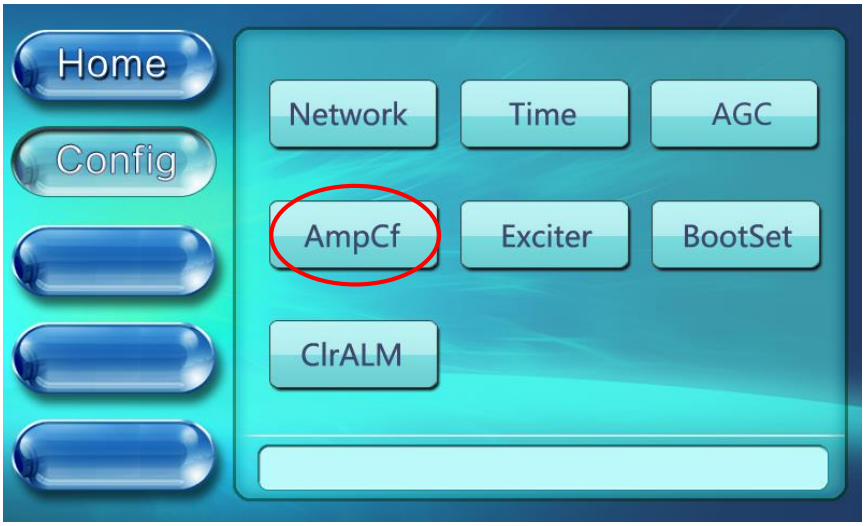
3. Disconnect the FWD IN sample from the rear panel of the Controller and connect this to your power meter. This sample comes from the TX output directional coupler and has a coupling value of 50dB (offset for your power meter). Measure and record the real Forward system power.



4. Disconnect the FWD sample from your power meter and reconnect it to the FWD IN port on the rear panel of the Controller.
5. Monitor the FWD power meter on the Controller HOME screen and notice if it reads higher or lower than your recorded power meter reading.



6. Navigate to the TX meter Calibration screen on the Controller by pressing the CONFIG button and then selecting AmpCF (Amplifier Configuration)

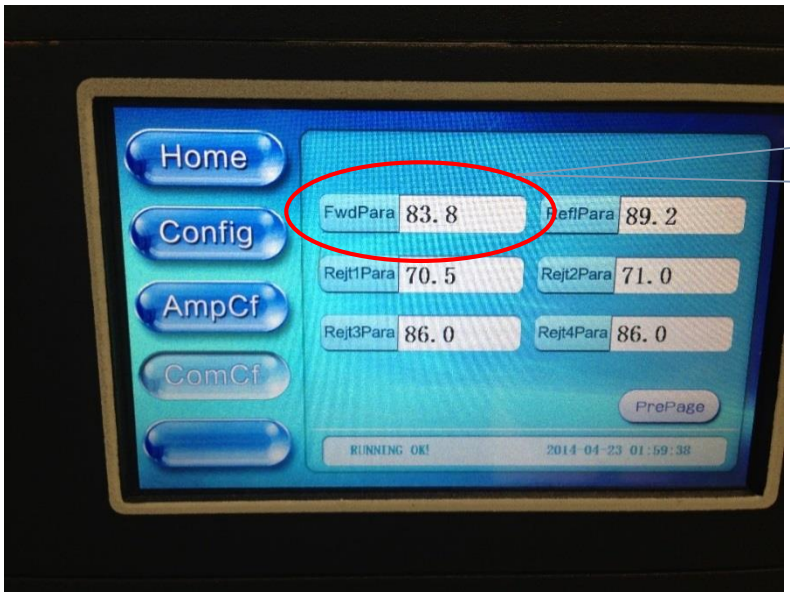


The AmpCF screen is used to configure advanced settings of the TX System and PAs, and is locked with a password. When pressing the "AmpCf" button in the Config Menu, a pop-up window requiring a password will appear. Please enter the "AmpCf" password "27654" and then press "OK".

With the password properly entered, the AmpCf configuration screen will appear, as shown below. Press the ComCF button.

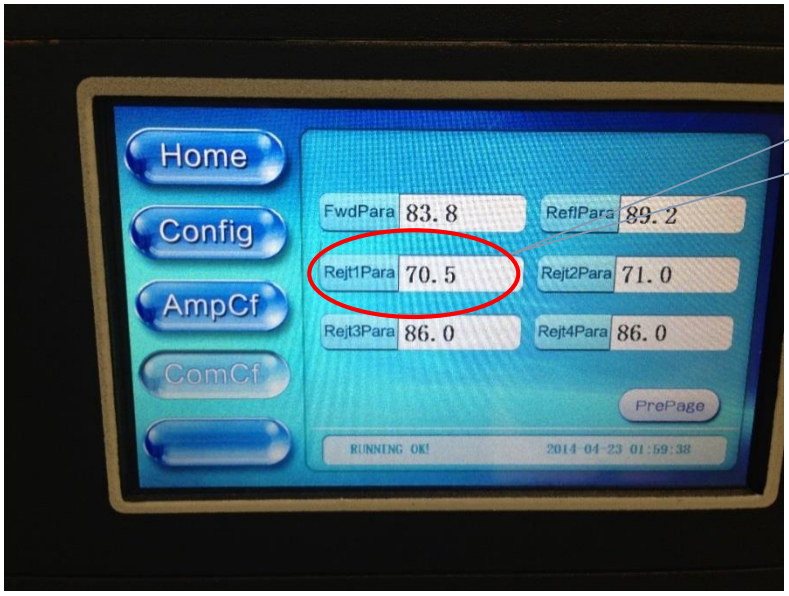
The ComCF screen is used to configure the TX maximum operating thresholds to engage safety and protective power reduction and shutdown mechanisms. Press the NextPage button to reach the FWD, REFL, and REJT power calibration screen below.

7. Press the word FwdPara to slightly adjust this value up or down (in small increments 0.1, 0.2, etc.) until the FWD power meter reading on the Controller HOME screen (also available via the Controller Web interface: RJ-45 LAN default IPaddress 192.168.1.210) agrees with the value of forward power you recorded from your power meter measurement.

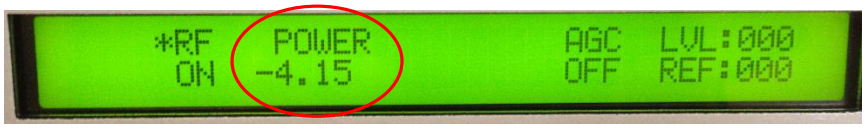


8. Repeat steps 3 through 7 above, this time removing, measuring, and returning the REFL IN sample to calibrate the Reflected system power meter by adjusting the value of RefPara below.

9. Repeat steps 3 through 7 above, this time removing, measuring, and returning the RJCT IN sample to calibrate the Reject Load system power meter by adjusting the value of Rejt1 below.

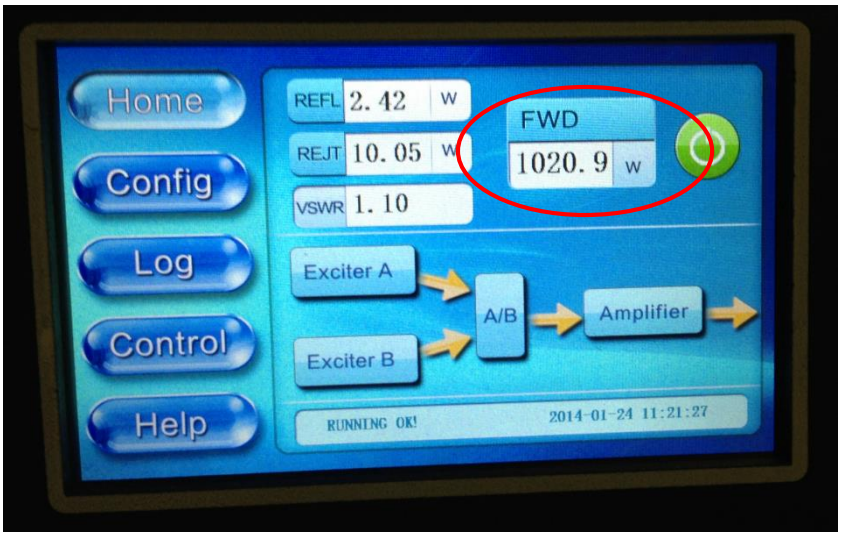


10. With your TX operating at your desired output power and with accurately calibrated system power metering, the next step is to set up and re-engage the TX AGC. To accomplish this, slowly increase the value of POWER in the Exciter RF submenu to raise the output power of the system to 1.1 x desired TPO (for example 1100W if a 1000W TPO level is desired). (Note: You are bringing up the TX to 1.1 x desired TPO to provide 10% headroom for AGC operation).



11. Navigate to the AGC screen on the Controller (by pressing the CONFIG button and then the AGC button). Be sure the AGC Target FWD power is set to 1000W, or whatever TPO level is desired for operation, and then press the unlit AGC button to engage the TX AGC and turn this button Green.

12. Press the HOME button to return to the HOME screen to monitor FWD power as it slowly reduces from 1.1 x TPO to the AGC target power (desired TPO) level over the next minute or so. With the AGC engaged, the FWD power metering may vary up to +/- 5%, so for a 1000W TX, meter variations from 950W to 1050W may be experienced.



13 Local (Touch Screen) User Interface

13.1 HOME SCREEN

Turn on the power supply and the TX enters the initialization process, and after 5 seconds, the TX enters the home screen (as shown below).

The home screen is divided into 4 parts: Title Bar (left column), Power Metering (upper right), Block Diagram (middle right) and Status Bar (lower right), as shown below.

- **Title Bar**: Shown in the picture above, the "Home" button is highlighted, indicating the Home screen is now displayed. This TX Control Unit screen is a touch screen. You may navigate to the other screens (Config, Log, Control, Help) by simply touching the coresponding button in the Title Bar.

- **Power Metering**
  - ON/OFF (Green) Button : Provides TX ON/OFF control. When GREEN (as shown above), this indicates the TX is ON. When RED, this indicates the TX is OFF.
    Note: When there is an alarm, this button is always RED.
  - FWD: Forward Power Meter. Touching the white display box of FWD will toggle its display units between "dBm" and "W".
  - REFL: Reflected Power Meter. REJT" in the "Home" screen shows the value of rejected power. Press the white box beside the "REJT" button, to enter a screen showing all rejected power values. For a 1500W Transmitter, there are two rejected power value (REJT_1 and REJT_2). All others are reserved for higher level transmitters. If there is more than one "REJT" value, the "REJT" value in the HOME screen will show the highest one (the one which is the closest to the preset threshold).

- VSWR: Voltage Standing Wave Ratio
- REJT: This is the system Reject Load Power Meter, derived from the REJT Load feedback sample. Displayed in units of “W” and cannot be changed.

- **Status Bar**: During normal operation, the default status is “RUNNING OK”. If there is any alarm, the alarm will show up in the Status Bar of each screen. Please see the Troubleshooting Guide – section 16 – of this manual for help in understanding and resolving alarms.

- **Block Diagram**: Press the “Exc A/B” graphic to navigate to the Dual Exciters Switching screen (shown below). This screen shows which exciter is currently on-air (highlighted GREEN) and allows you to manually change the on-air exciter. Press the “Amplifier” graphic to navigate to the home Amplifier Status Screens (shown below).

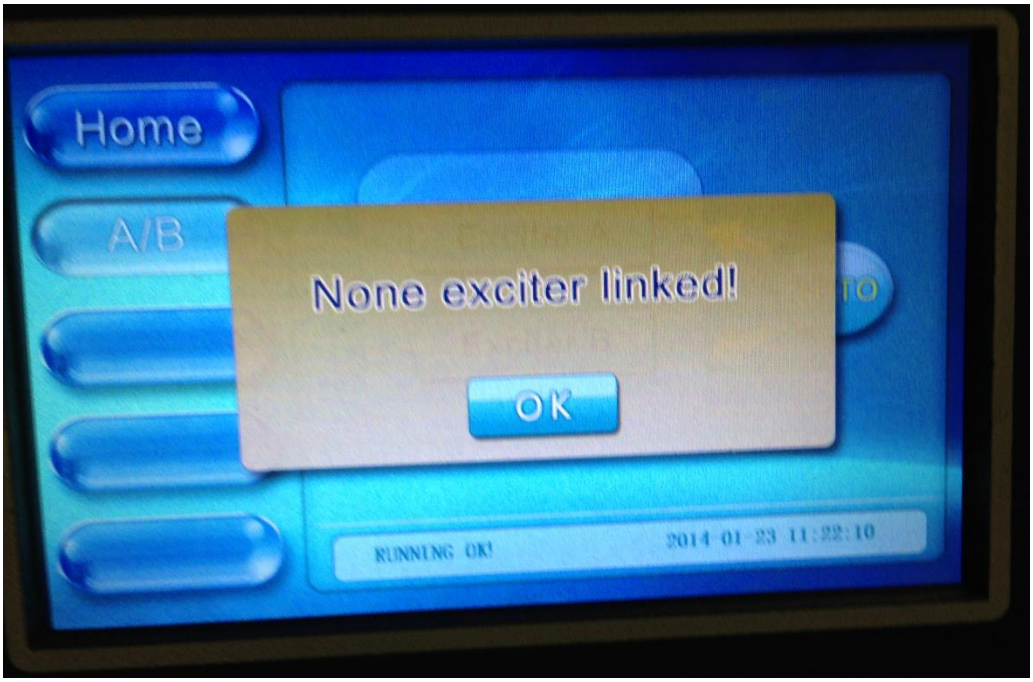
13.2 A/B EXCITER ICON SCREEN

Dual Exciters - Switching Screen: As mentioned above, pressing the “Exc A/B” icon will bring you to the Dual Exciters Switching Screen, as shown below.

➢ Manual Exciter Switchover: Exciter A is the default on-air exciter. The on-air exciter's status will be "GREEN", as shown in the screen above, indicating that Exciter B is the current on-air exciter. Pressing the "Exciter A" or "Exciter B" button on this screen will cause a manual switch between exciters, that is if the Controller is "linked" to both exciters. (Note: In a dual exciter configuration, both exciters are on at the same time, producing an RF output signal a the same time, and the Controller is considered "linked" with an exciter when the Controller detects an RF output present from the exciter as monitored inside the controller).

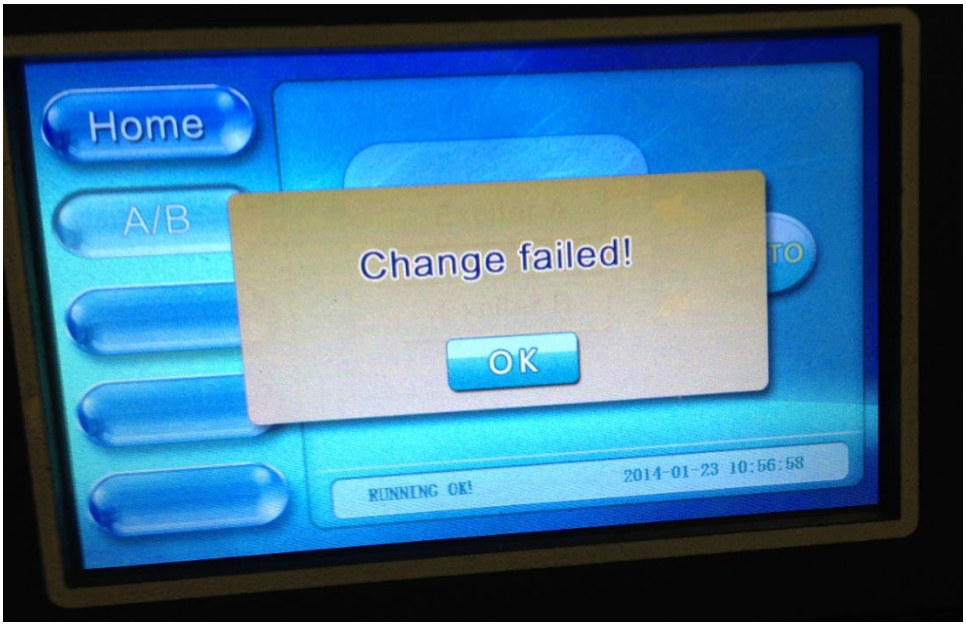
➢ Auto Exciter Switchover: In a Dual Drive configuration, the TX is set to auotmatically switch to the standby exciter in the event a problem occurs with the on-air exciter. The TX will not automatically switch back to the original Exciter as long as the standby Exciter is operating properly. However, the TX will automatically switch back to the original Exciter in the event of a problem with the on-air (standby) exciter. So the TX will continue to automatically switch to the standby exciter in the event of a problem with the on-air exciter.

If neither of the exciters can be linked successfully (i.e. the Controller does not detect a valid RF ouptut present from either exciter), a window will pop up, indicating "No Exciter Linked", as shown below.



- If the manual switching is successful, a window will pop up indicating “Change succeed!”, as shown below.

- If the manual switching is not successful, a window will pop up indicating “Change failed!”, as shown below.



Please note that the Exciter(s) comunicates via a RS-485 bus to the Transmitter Control module. In a single drive TX, the Exciter will be configured with an RS-485 addess ID of 80H (as found under the Exciter CONFIG submenu) corresponding with Exciter A. In a dual drive TX, Exciter B will be configured with an RS-485 ID of 81H.

Pressing the Exciter A or Exciter B button will bring up a window displaying the Exciter Channel Frequency and well as the TX System SNR and Upper and Lower Shoulder metrics. Please note: only the on-air exciter has valid readings.

13.3 AMPLIFIER ICON SCREEN

Amplifier Status Screens: As mentioned above, pressing the "Amplifier" icon on the Home page, will navigate to the Amplifier Status Screens.

- Title Bar: includes "PreAmp", "Amp1", "Amp2", ("Amp3 and more buttons are for higher power transmittes in the MPTV product line).

- PreAmp Status Screen

- Fwd: Forward Power reading of the preamp (calibrated for zero)
- Refl: Reflected Power reading of the preamp (calibrated for zero)
- Pin: Input Power reading of the preamp
- Tmp: Temperature of the preamp
- Cur: Current of the preamp
- V50: Reading of 50 V power supply
- V9: Reading of 9 V power supply
- V12: Reading of 12 V power supply
- GV1: Grid Voltage #1 of the preamp
- GV2: Grid Voltage #2 of the preamp

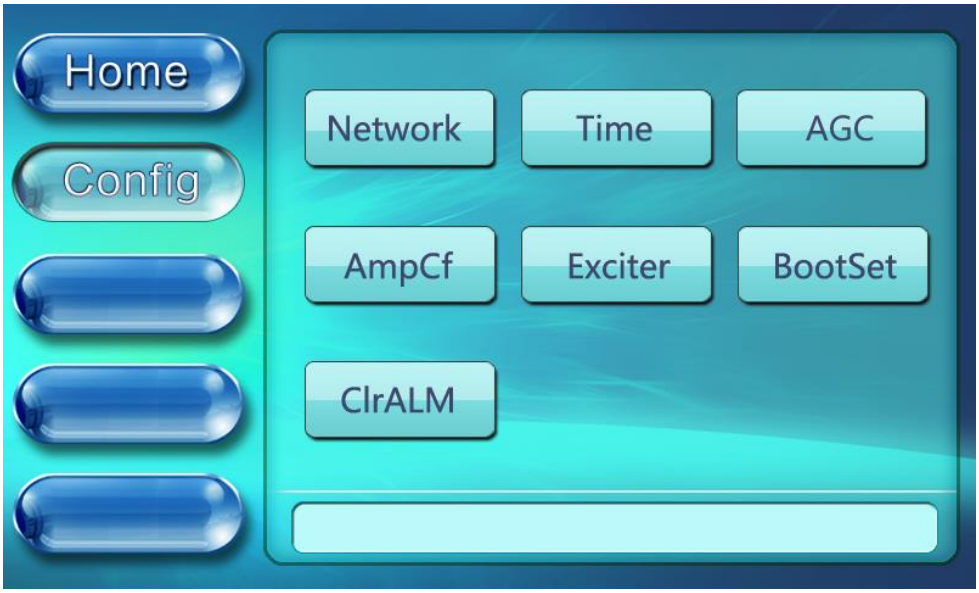
- Amp1/Amp2 Status Screen

- Fwd: Forward Power reading of the current amplifier
- Refl: Reflected Power reading of the current amplifier
- Fan1~Fan2: Fans' RPM of the current amplifier
- Tmp: Temperature of the current amplifier
- V50: Reading of 50 V power supply of the current amplifier
- Cur1~Cur4: Current of the current amplifier
- GV1~GV8: Grid Voltage of the current amplifier

Please note that the PAs comunicate via a RS-485 bus to the Transmitter Control module. In a 1000W TX, PA1 is configured with an RS-485 addess ID of 130 and PA2 is set to 131 (in higher power TXs, PA3 is set to 132, PA4 to 133 and PA5 to 134).

13.4 CONFIG SCREEN

Touching the Config button on Title Bar of the Home Screen, will navigate to the Config Screen, as shown below. The Config Screen has seven functional sections on the right. Press any of these buttons to navigate to that config screen. The Network screen is used to configure all the TX networking parameters including IP, Mask, and Gateway. The Time screen is used to set the current time. The AGC screen is used to turn the Controller AGC On/Off and to change the target AGC output power level. The AmpCf screen is for configuring the PA and Preamp settings, including FWD and REV fault threshold settings, and power meter calibrations. The Exciter screen provides Dual or Single Drive Exciter selection. The BootSet screen establishes how many times the TX attempts to reboot itself from power loss or fualt conidiotns. The ClrALM screen allows the user to clear any previous alarms. Please Note: Modifying factory default configurations of certain parameters may lead to potenial damage of the transmitter.



Network Screen: The User can check and set all the Contoller network information in this screen.

- Re-Defualt: Reset Default settings - This button is used to set all the network settings to the default values, as show below:

  IP: 192.168.1.210

  MASK: 255.255.255.0

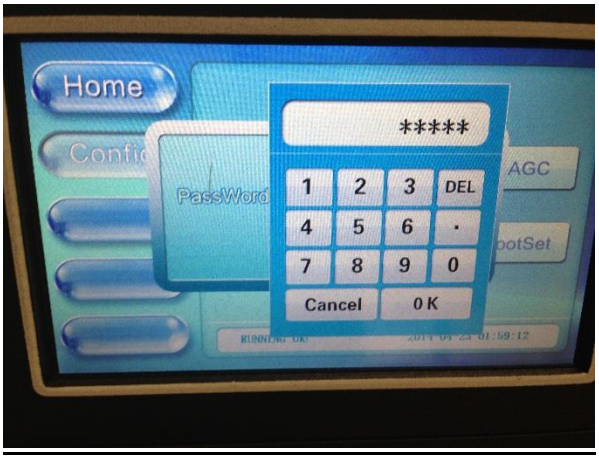
  GateWay: 192.168.1.1

- Set: There is a Set button for each bar in this screen. Pressing the Set button will lead to the corresponding configuration screen of IP or Mask or GateWay accordingly. Using the IP setting as example, Press any part of the white bar on the IP Setting Screen and the keyboard (shown below) will be enabled, turing from grey to yellow. The user can only set 3-digits of one bar at a time. When the configuration is finished, press OK to confirm. If the keyboard is enabled by mistake, press Cancel to exit the setting mode. Don’t press Ok without entering a valid number, otherwise the system will fill it with all zeros instead.

Time Screen: This screen is used to check and adjust the current time settings. It's similar to the Network Settings.

AGC Screen: This screen is used to set the AGC Reference output power of the TX and to turn the Controller AGC ON/OFF. Press the AGC button to turn AGC ON (button will turn green).

AmpCf Screen: This screen is used to configure advanced settings of the TX PAs. The AmpCf screen is locked with a password. When pressing the "AmpCf" button in the Config Menu, a pop-up window requiring a password will appear. The password for "AmpCf" access is "27654".



With the password properly entered, the AmpCf configuration screen will appear, as shown below.

ComCf Screen: This screen is used to configure the TX maximum operating thresholds to engage safety and protective power reduction and shutdown mechanisms.

- FwdMax: Max TX Forward Power fault threshold
- ReflMax: Max TX Reverse Power fault threshold
- Rejt1-4Max: Max TX Reject Load fault threshold
- VSWRMax: Max TX VSWR fault threshold

(Note: Press the word FwdMax, ReflMax, etc. to see a pop-up screen to modify these settings. Warning – changing these settings may cause improper TX opreation and shutdown of the Transmitter System).

- FwdPara: Adjust to calibrate the main screen FWD Power Metering
- ReflPara: Adjust to calibrate the main screen Refl Power Metering
- Rejt1-4Para: Adjust to calibrate the Rejt 1-4 Power Metering

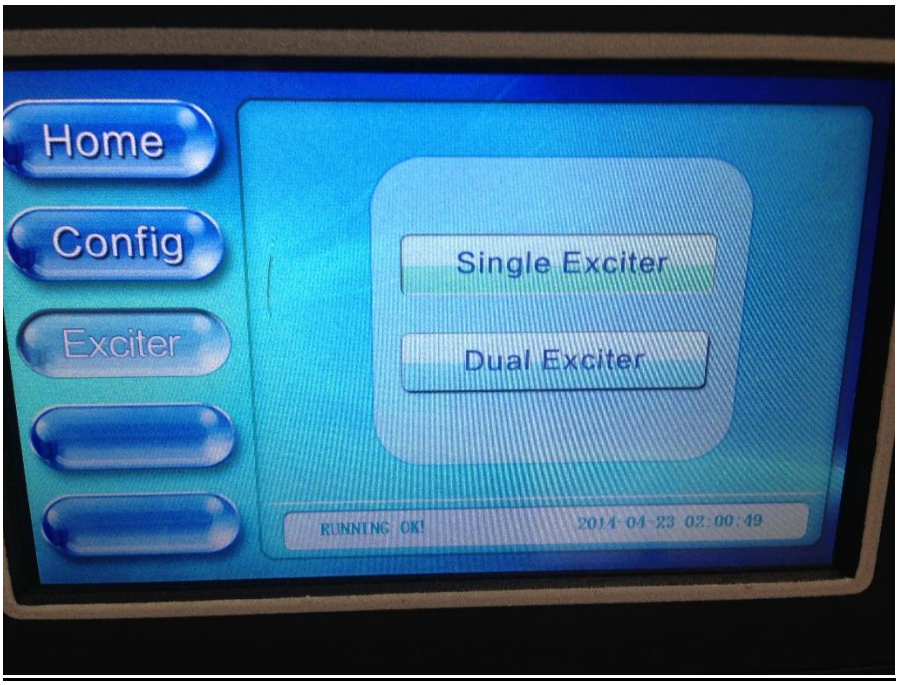
(Note: Press the word FwdPara, ReflPara, etc. to see a pop-up screen to modify these settings. Warning – changing these settings may cause improper TX opreation,m shutdown of the system, and erroneous power metering).

PreAmpCf Screen: This screen is used to configure the Preamp maimum operating thresholds to engage safety and protective power reduction and shutdown mechanisms. (Please note that AdjPara and InPara are always set to 0.0)

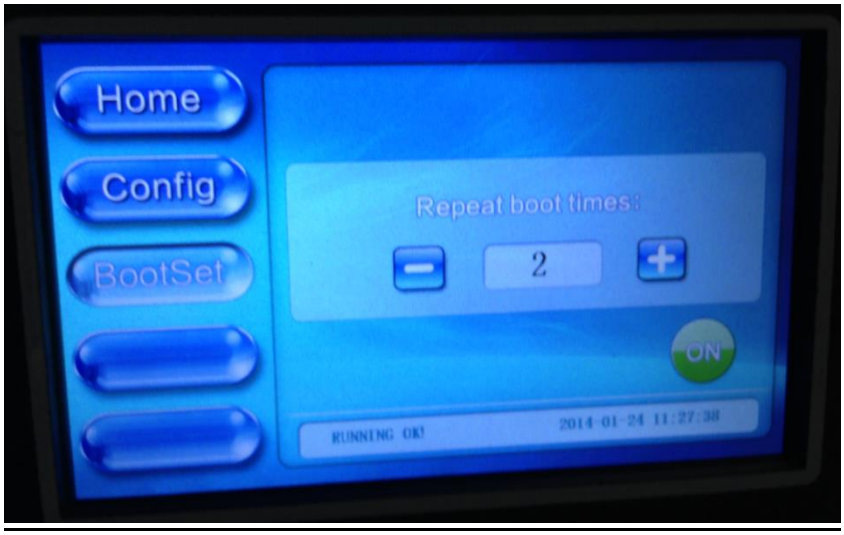
PosID Screen: This screen is used to configure and/or test the RS-485 communications between the Control module and each of the PA modules. **With the TX Turned OFF** and with a single PA connected (PA AC mains switched on and 485 serial connection established between the PA and Controller), PosID can be used to verify proper communications between each PA and the Control Module. With only PA#1 physically connected to the Control Module, pressing the Query button should return a value of 130. With only PA#2 physically connected, pressing the Query button should return a value of 131.

Amp1Cf/Amp2Cf / Amp3Cf Screens: These screens are used to configure the Maximum PA operating thresholds to engage safety and protective power reduction and shutdown mechanisms.

Exciter Screen: This screen is used to configure the TX for single or dual exciters.

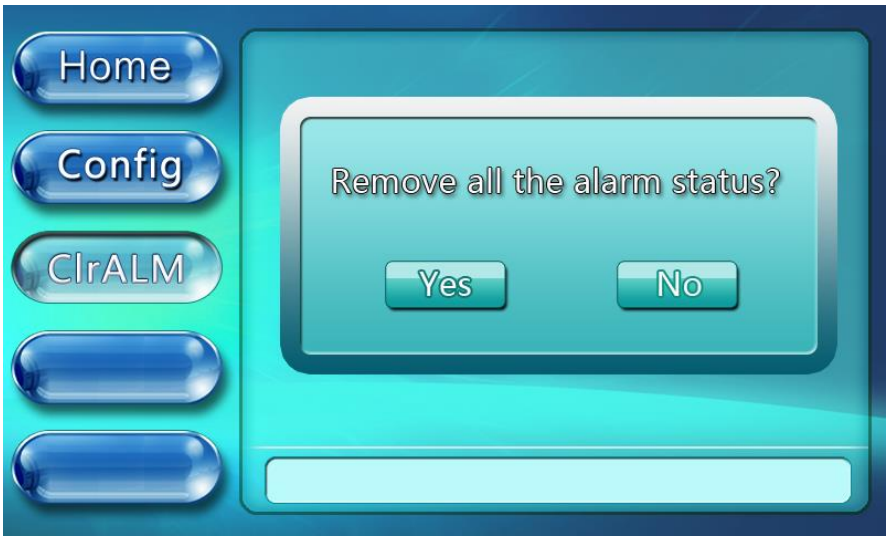


Bootset Screen: This screen is used to configure the number of attempts that the TX takes to successfully reboot on a shutdown condition, after which it gives up and remains off-air.



ClrALM: This is the Clear Alarm screen which is used to clear all alarms and recover the rated power (Note: ClrALM cannot be used in REMOTE mode)

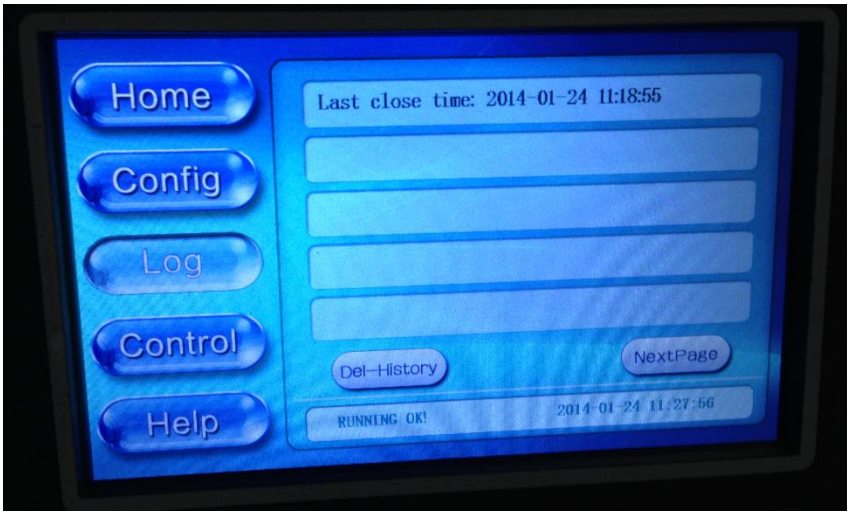
In LOCAL MODE, press the ClrALM button and a window pops out as below. Press Yes to clear all the alarms and restore the rated power. Alarms will not clear if they are currently active.



13.5 LOG SCREEN

Pressing the Log button on Title Bar in the Home Screen will navigate to the Log Screen, as shown below. There are two pages of current alarm information as well as history alarms. Each page can show up to 5 alarm messages. The user can use the NextPage/PrePage button to switch between pages.

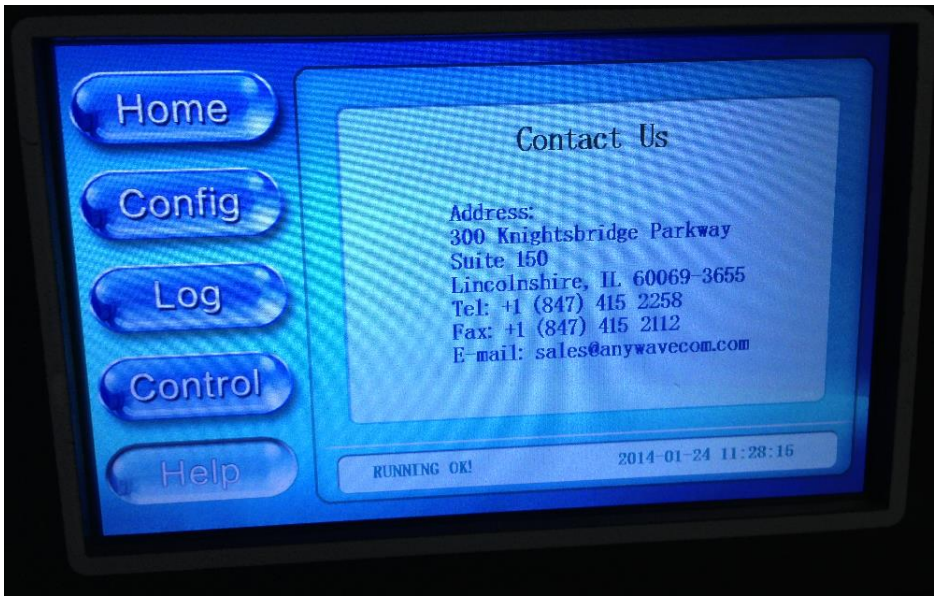
Please note: the Del-History button is used only to clear the status history of alarms. It will not clear any current active alarms which may require user intervention.



13.6 CONTROL SCREEN

Pressing the Control button on Title Bar in the Home Screen, will navigate to the Control Screen, as shown below. The Control screen allows the user to switch between Local and Remote Control of the TX. In Local, the TX processes commands from the front panel touchscreen and ignores commands via the Controller web interface. In Remote mode, the TX processes commands from the Controller Remote Web interface. Note: Be sure to switch the TX into Remote mode before leaving the TX site if Remote control of the TX is desired.

13.7 HELP SCREEN

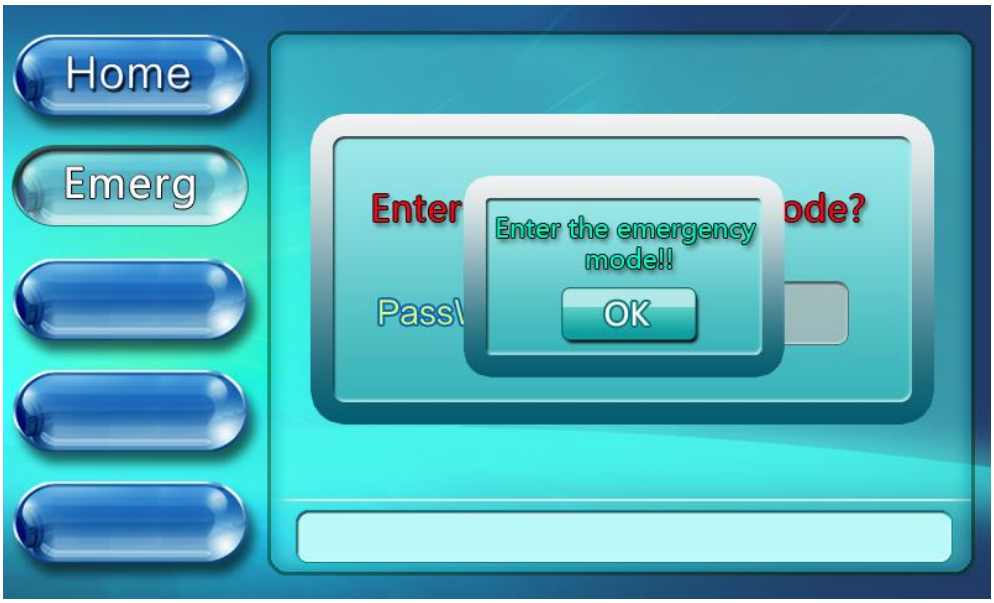


13.8 EMERGENCY MODE

When turning the NORMAL/EMERGENCY switch 90°clockwise from NORMAL (N) to EMERGENCY (E) mode, the touch screen is shown as below.

Note: If the EMERGENCY mode is turned on by mistake, after the transmitter is switched back to NORMAL mode, touching the “HOME” button on the screen will return to the normal menu.

The password for the EMERGENCY mode is “17654”. After entering the correct password, if AGC mode is turned on, the transmitter reduces its output power to the half of the AGC target power. Otherwise if AGC mode is turned off, the transmitter reduces its output power by 3 dB more based on its current attenuation setting.

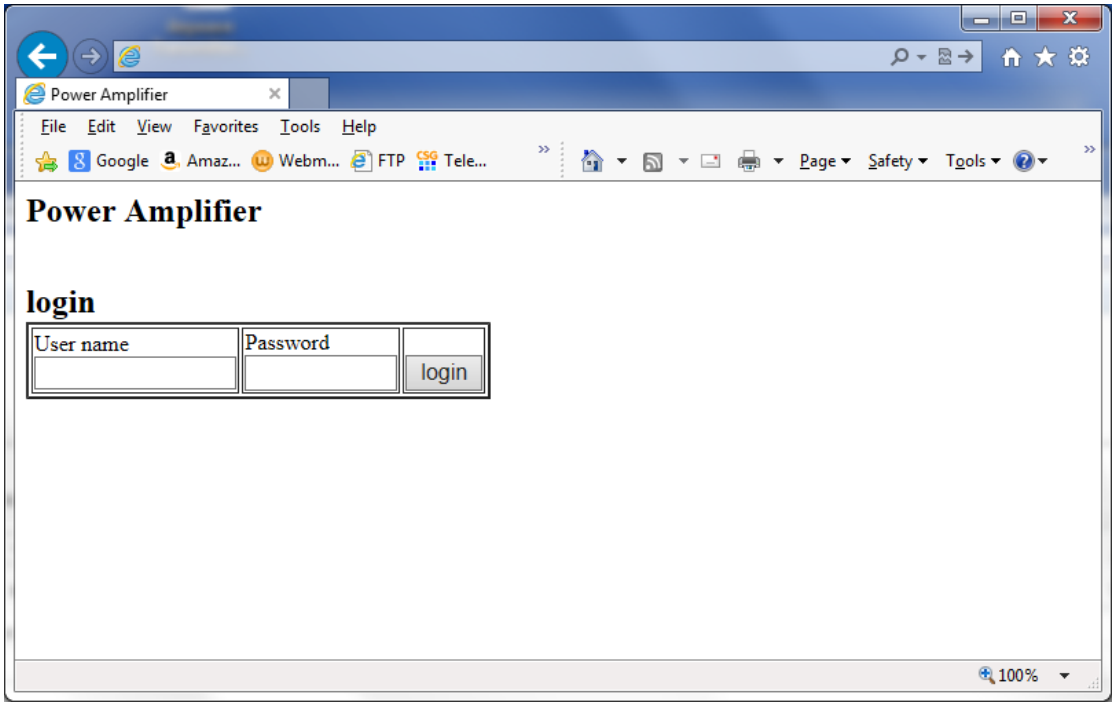


14 Remote (Web) User Interface

The TX Control module provides a built-in web interface that enables remote monitoring and control of the TX. This Control Module interface may be used for a variety of things, including turning the TX On/Off, manually switching between exciters (in a DD configuration), monitoring the voltages and currents of the PAs, etc. A built-in web interface also exists in the Exciter that may be used for such things as adjusting the TX output power, performing corrections, etc. (please reference the separate Exciter User Manual for a detailed description of the Exciter web interace). The Control Module communicates with the Exciter(s) and PAs inside the TX via an RS-485 bus network.

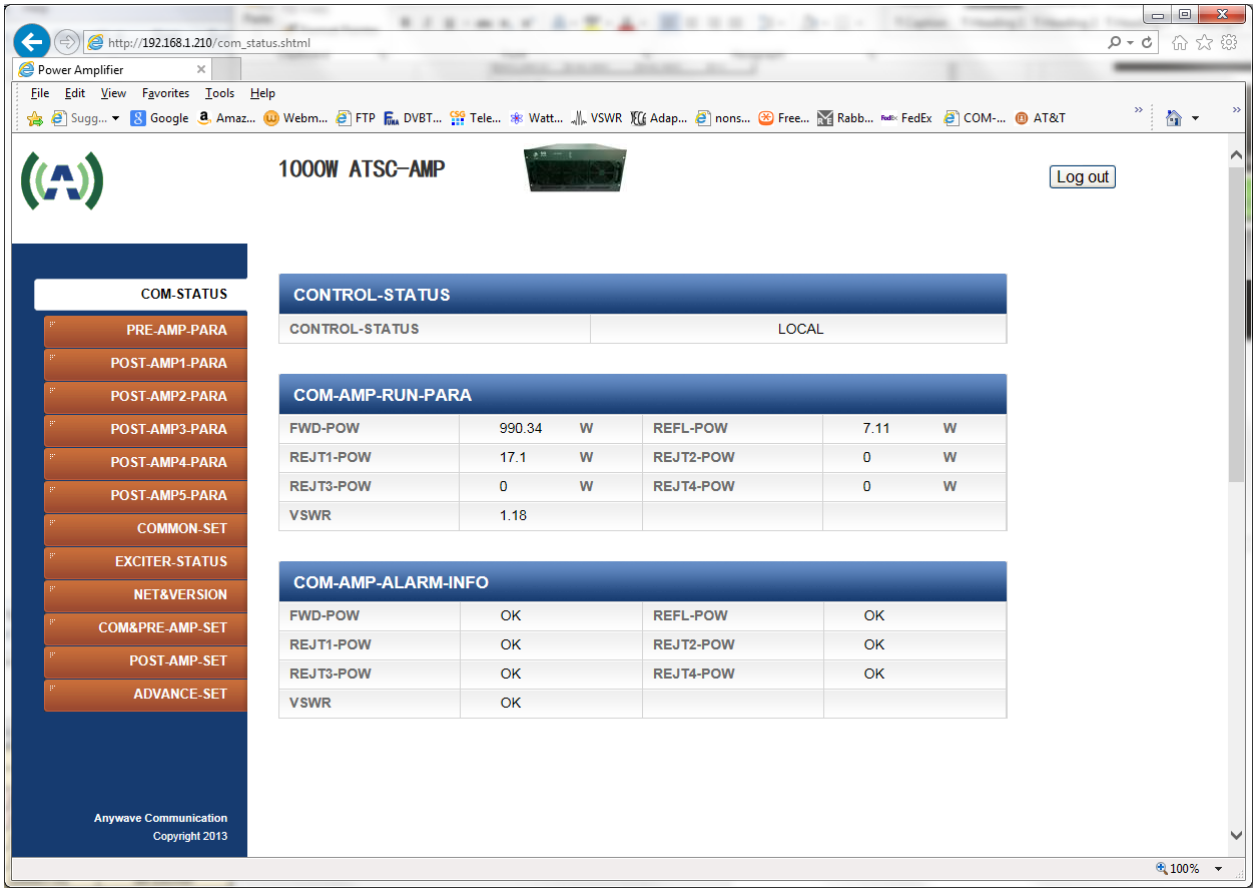
The Control Module built-in web interface is accessible via the rear panel LAN RJ-45 connection, Once networked to your PC, the built-in web interface may be accessed via a web browser (such as Internet Explorer or Firefox, etc.) by entering the IP address of the Controller (default 192.168.1.210, note: you can navigate to the Network setting under the Config menu to change the Controller IPaddress).

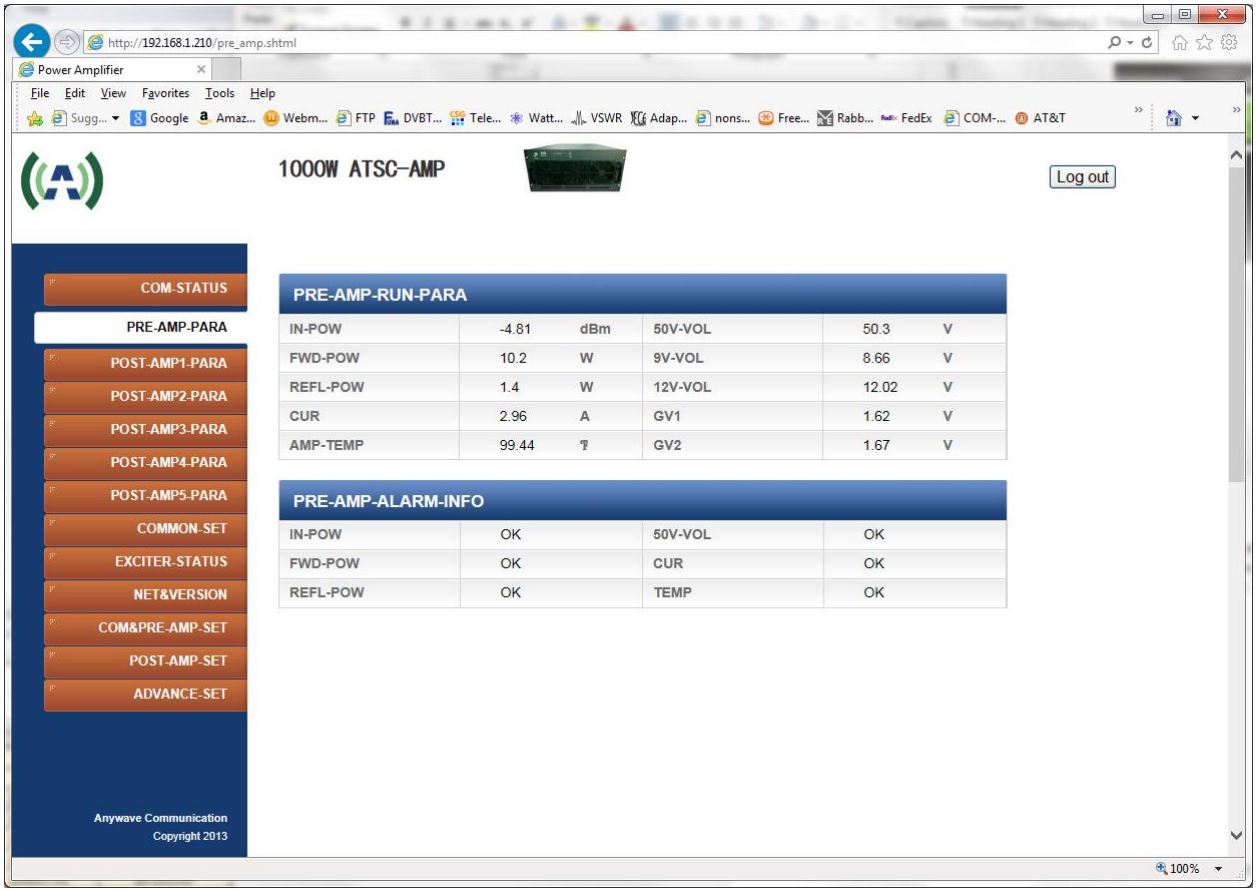
Launching a web browser and entering the Controller IP address (192.168.1.210) will bring up the following login window.

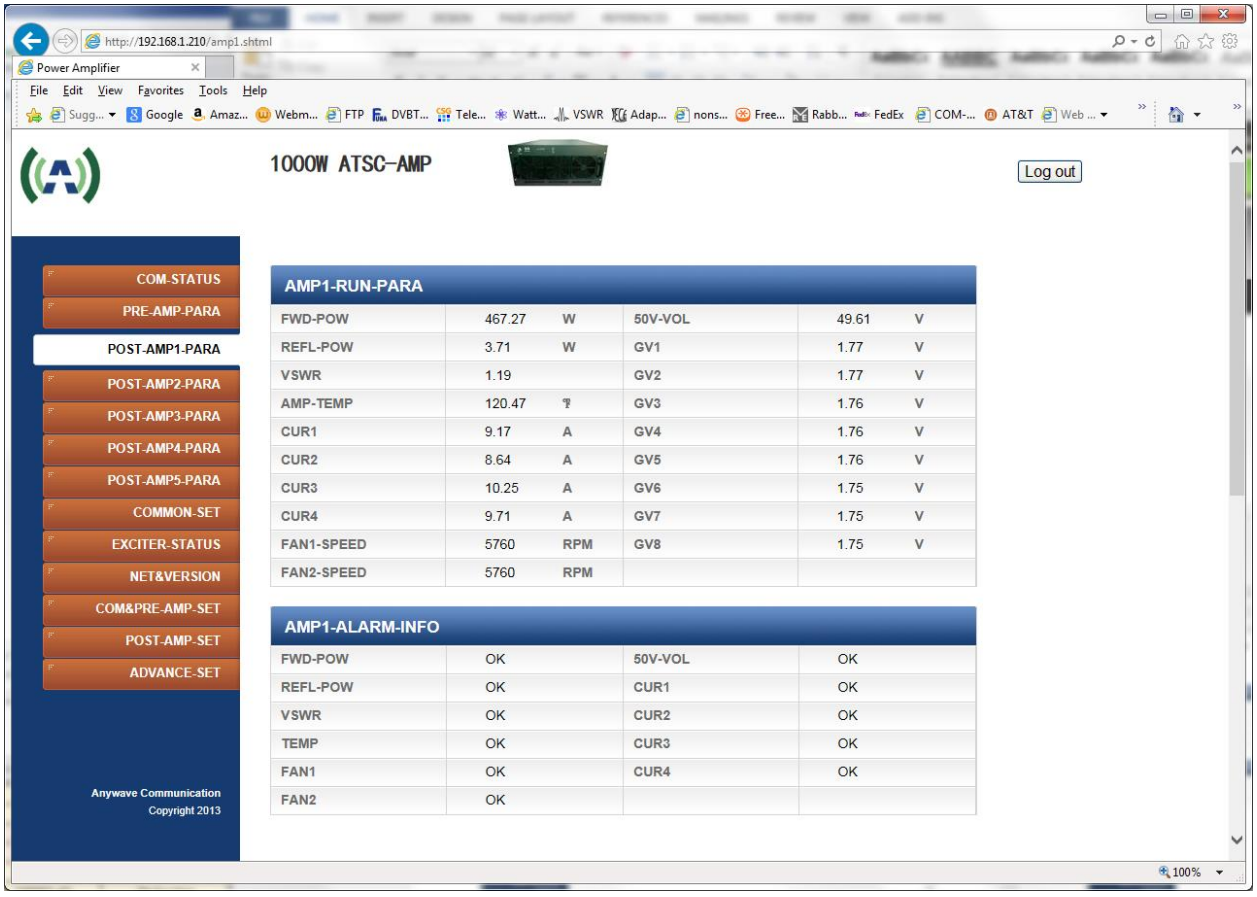


There are two tiers of web interface available. The first “guest” tier is limited in monitoring and control, allowing users to access only certain information. The guest account is accessed with a user name and password of "guest" and "guest" (case sensitive). The second “admin” tier provides full status and control of the Controller and is accessed with a username and password of "anywavecom" and "anywavecom" (case sensitive).

The screenshots below highlight the status and control available via the Controller web interface.




http://192.168.1.210/pre_amp.shtml
Power Amplifier
File Edit View Favorites Tools Help
1000W ATSC-AMP
Log out
COM-STATUS
PRE-AMP-PARA
POST-AMP1-PARA
POST-AMP2-PARA
POST-AMP3-PARA
POST-AMP4-PARA
POST-AMP5-PARA
COMMON-SET
EXCITER-STATUS
NET&VERSION
COM&PRE-AMP-SET
POST-AMP-SET
ADVANCE-SET
PRE-AMP-RUN-PARA
IN-POW -4.81 dBm 50V-VOL 50.3 V
FWD-POW 10.2 W 9V-VOL 8.66 V
REFL-POW 1.4 W 12V-VOL 12.02 V
CUR 2.96 A GV1 1.62 V
AMP-TEMP 99.44 ℃ GV2 1.67 V
PRE-AMP-ALARM-INFO
IN-POW OK 50V-VOL OK
FWD-POW OK CUR OK
REFL-POW OK TEMP OK
Anywave Communication
Copyright 2013
100%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Power Amplifier
File Edit View Favorites Tools Help
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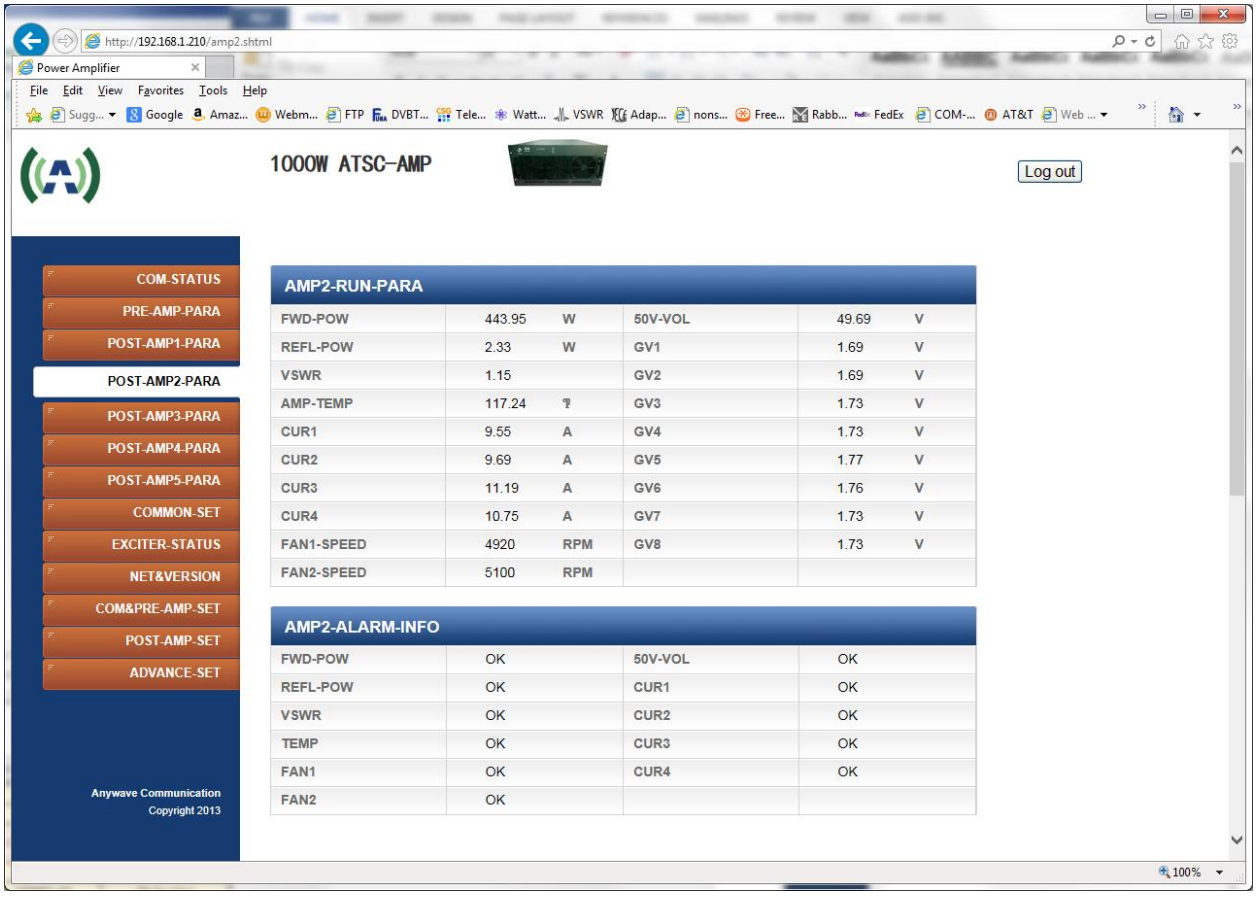
POST-AMP2-PARA
POST-AMP3-PARA
POST-AMP4-PARA
POST-AMP5-PARA
COMMON-SET
EXCITER-STATUS
NET&VERSION
COM&PRE-AMP-SET
POST-AMP-SET
ADVANCE-SET
Anywave Communication
Copyright 2013
AMP1-RUN-PARA
FWD-POW 467.27 W 50V-VOL 49.61 V
REFL-POW 3.71 W GV1 1.77 V
VSWR 1.19 GV2 1.77 V
AMP-TEMP 120.47 ℉ GV3 1.76 V
CUR1 9.17 A GV4 1.76 V
CUR2 8.64 A GV5 1.76 V
CUR3 10.25 A GV6 1.75 V
CUR4 9.71 A GV7 1.75 V
FAN1-SPEED 5760 RPM GV8 1.75 V
FAN2-SPEED 5760 RPM
AMP1-ALARM-INFO
FWD-POW OK 50V-VOL OK
REFL-POW OK CUR1 OK
VSWR OK CUR2 OK
TEMP OK CUR3 OK
FAN1 OK CUR4 OK
FAN2 OK
100%


http://192.168.1.210/amp2.shtml
Power Amplifier
File Edit View Favorites Tools Help
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POST-AMP2-PARA
POST-AMP3-PARA
POST-AMP4-PARA
POST-AMP5-PARA
COMMON-SET
EXCITER-STATUS
NET&VERSION
COM&PRE-AMP-SET
POST-AMP-SET
ADVANCE-SET
Anywave Communication
Copyright 2013
AMP2-RUN-PARA
FWD-POW 443.95 W 50V-VOL 49.69 V
REFL-POW 2.33 W GV1 1.69 V
VSWR 1.15 GV2 1.69 V
AMP-TEMP 117.24 ℉ GV3 1.73 V
CUR1 9.55 A GV4 1.73 V
CUR2 9.69 A GV5 1.77 V
CUR3 11.19 A GV6 1.76 V
CUR4 10.75 A GV7 1.73 V
FAN1-SPEED 4920 RPM GV8 1.73 V
FAN2-SPEED 5100 RPM
AMP2-ALARM-INFO
FWD-POW OK 50V-VOL OK
REFL-POW OK CUR1 OK
VSWR OK CUR2 OK
TEMP OK CUR3 OK
FAN1 OK CUR4 OK
FAN2 OK
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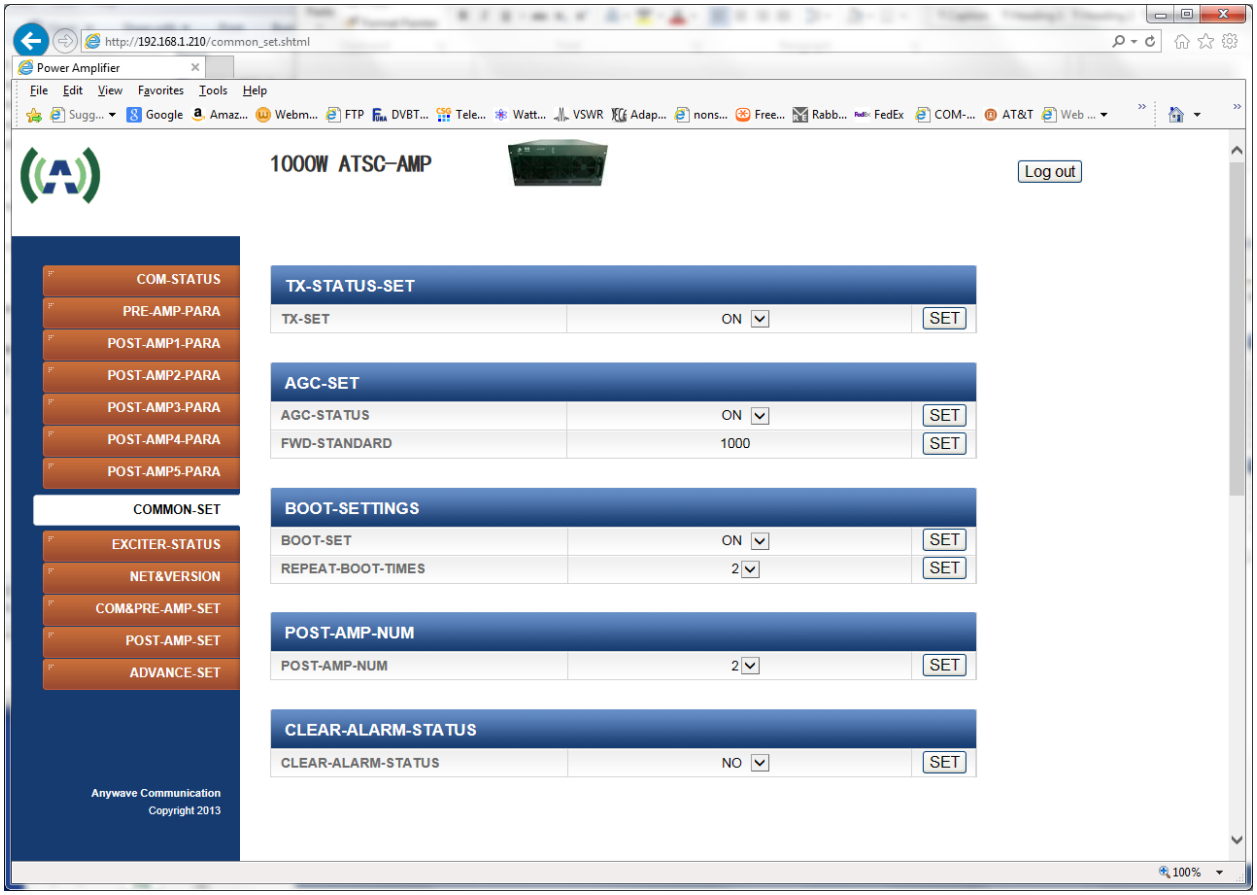
http://192.168.1.210/common_set.shtml
Power Amplifier
File Edit View Favorites Tools Help
1000W ATSC-AMP
Log out
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POST-AMP2-PARA
POST-AMP3-PARA
POST-AMP4-PARA
POST-AMP5-PARA
COMMON-SET
EXCITER-STATUS
NET&VERSION
COM&PRE-AMP-SET
POST-AMP-SET
ADVANCE-SET
Anywave Communication
Copyright 2013
TX-STATUS-SET
TX-SET
ON
SET
AGC-SET
AGC-STATUS
ON
SET
FWD-STANDARD
1000
SET
BOOT-SETTINGS
BOOT-SET
ON
SET
REPEAT-BOOT-TIMES
2
SET
POST-AMP-NUM
POST-AMP-NUM
2
SET
CLEAR-ALARM-STATUS
CLEAR-ALARM-STATUS
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SET
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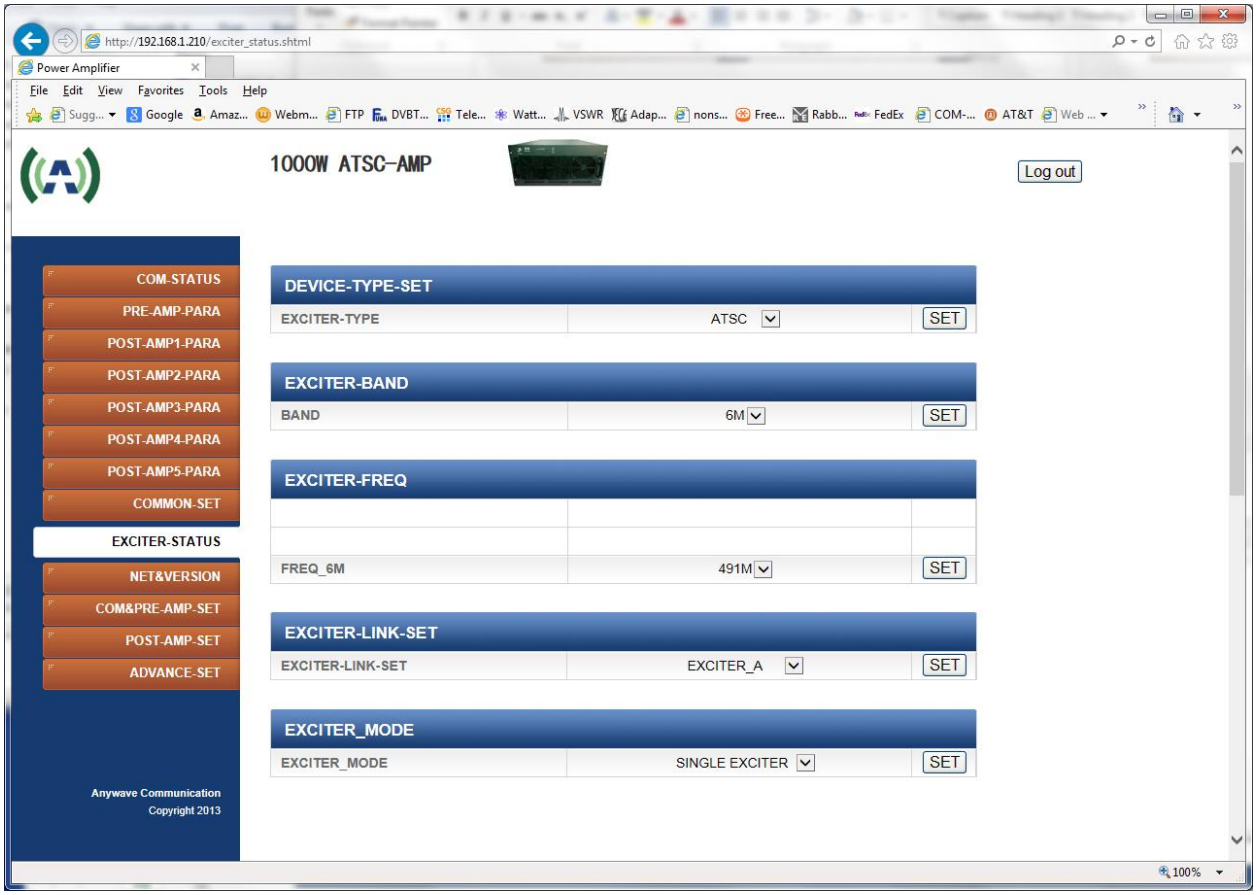
http://192.168.1.210/exciter_status.shtml
Power Amplifier
File Edit View Favorites Tools Help
1000W ATSC-AMP
Log out
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POST-AMP2-PARA
POST-AMP3-PARA
POST-AMP4-PARA
POST-AMP5-PARA
COMMON-SET
EXCITER-STATUS
NET&VERSION
COM&PRE-AMP-SET
POST-AMP-SET
ADVANCE-SET
Anywave Communication
Copyright 2013
DEVICE-TYPE-SET
EXCITER-TYPE
ATSC
SET
EXCITER-BAND
BAND
6M
SET
EXCITER-FREQ
FREQ_6M
491M
SET
EXCITER-LINK-SET
EXCITER-LINK-SET
EXCITER_A
SET
EXCITER_MODE
EXCITER_MODE
SINGLE EXCITER
SET
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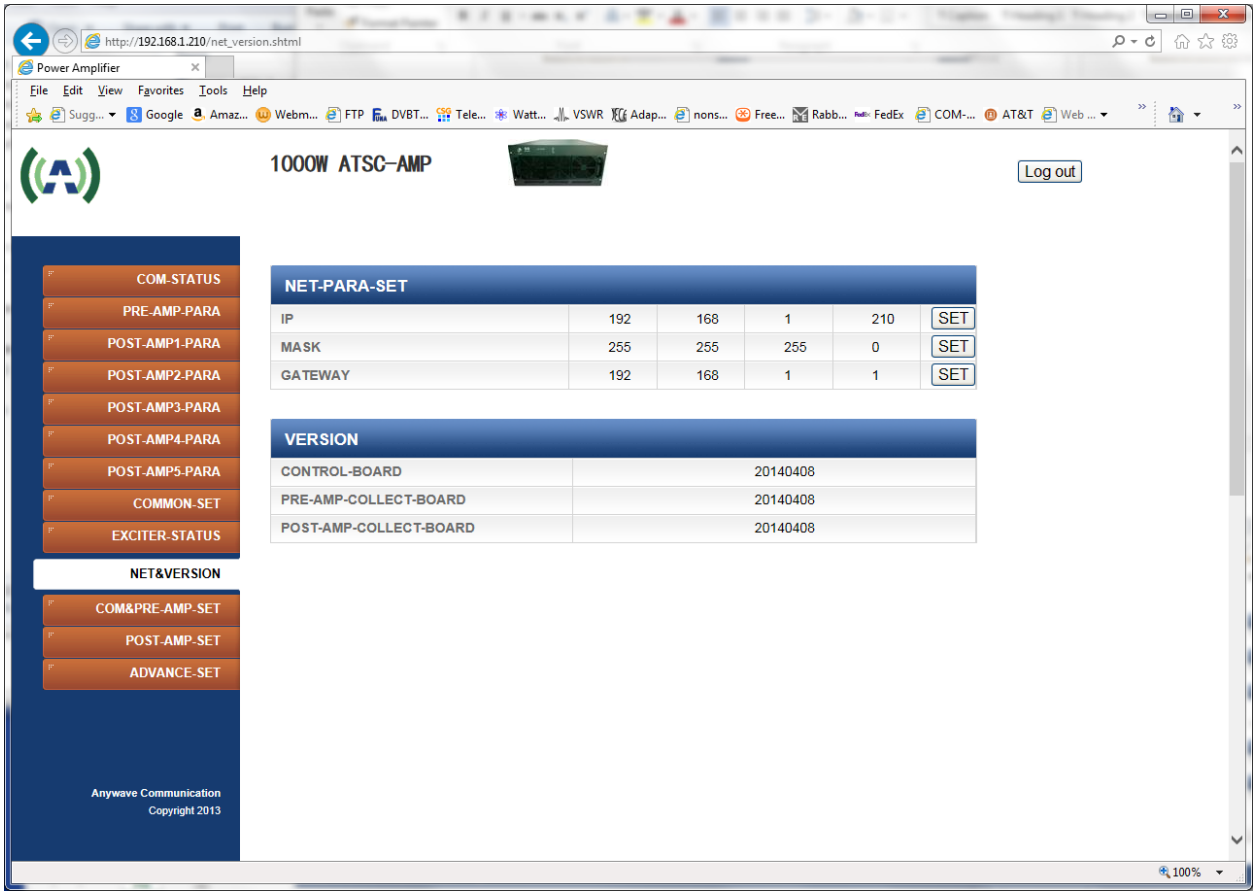
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Power Amplifier
File Edit View Favorites Tools Help
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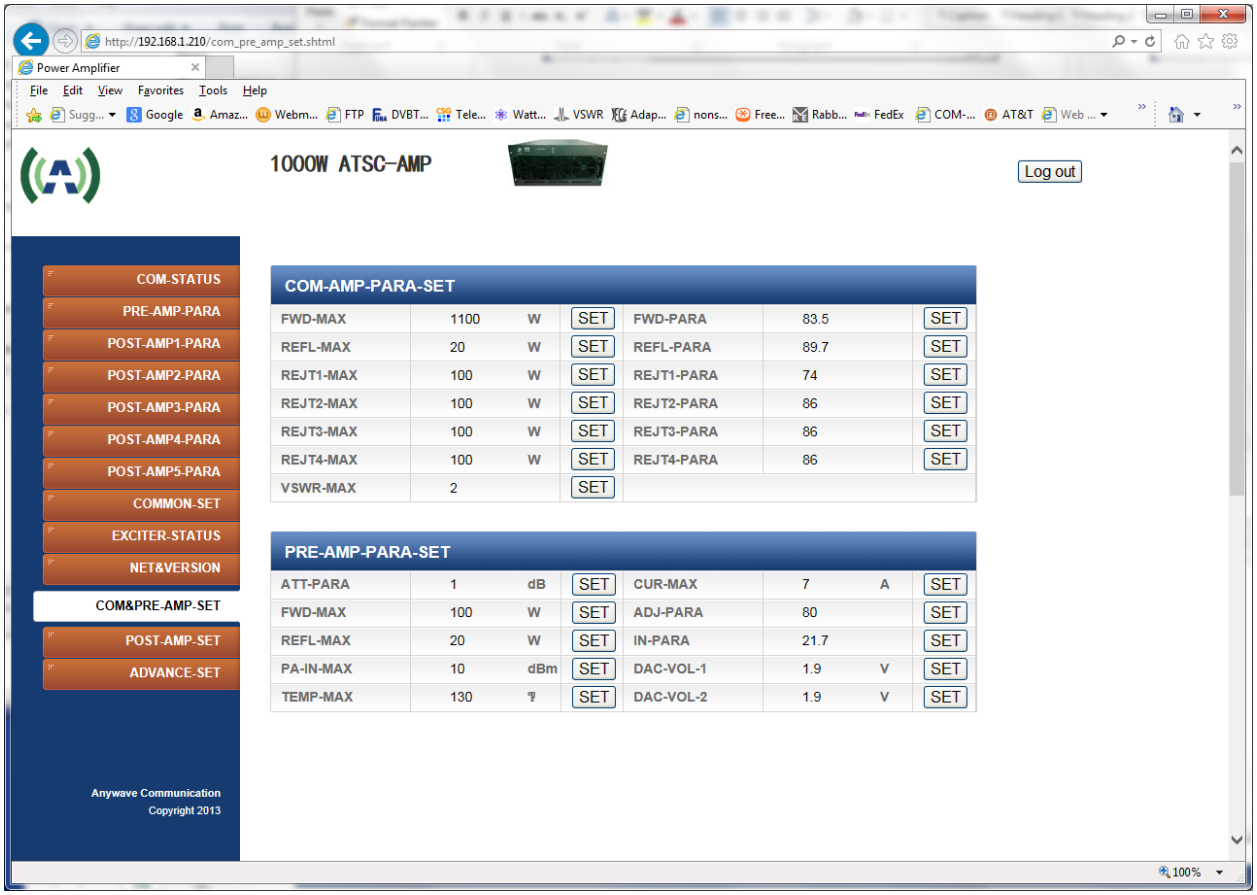
POST-AMP3-PARA
POST-AMP4-PARA
POST-AMP5-PARA
COMMON-SET
EXCITER-STATUS
NET&VERSION
COM&PRE-AMP-SET
POST-AMP-SET
ADVANCE-SET
NET-PARA-SET
IP 192 168 1 210 SET
MASK 255 255 255 0 SET
GATEWAY 192 168 1 1 SET
VERSION
CONTROL-BOARD 20140408
PRE-AMP-COLLECT-BOARD 20140408
POST-AMP-COLLECT-BOARD 20140408
Anywave Communication
Copyright 2013
100%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Power Amplifier
File Edit View Favorites Tools Help
1000W ATSC-AMP
Log out
COM-STATUS
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POST-AMP1-PARA
POST-AMP2-PARA
POST-AMP3-PARA
POST-AMP4-PARA
POST-AMP5-PARA
COMMON-SET
EXCITER-STATUS
NET&VERSION
COM&PRE-AMP-SET
POST-AMP-SET
ADVANCE-SET
Anywave Communication
Copyright 2013
COM-AMP-PARA-SET
FWD-MAX 1100 W SET FWD-PARA 83.5 SET
REFL-MAX 20 W SET REFL-PARA 89.7 SET
REJT1-MAX 100 W SET REJT1-PARA 74 SET
REJT2-MAX 100 W SET REJT2-PARA 86 SET
REJT3-MAX 100 W SET REJT3-PARA 86 SET
REJT4-MAX 100 W SET REJT4-PARA 86 SET
VSWR-MAX 2 SET
PRE-AMP-PARA-SET
ATT-PARA 1 dB SET CUR-MAX 7 A SET
FWD-MAX 100 W SET ADJ-PARA 80 SET
REFL-MAX 20 W SET IN-PARA 21.7 SET
PA-IN-MAX 10 dBm SET DAC-VOL-1 1.9 V SET
TEMP-MAX 130 SET DAC-VOL-2 1.9 V SET
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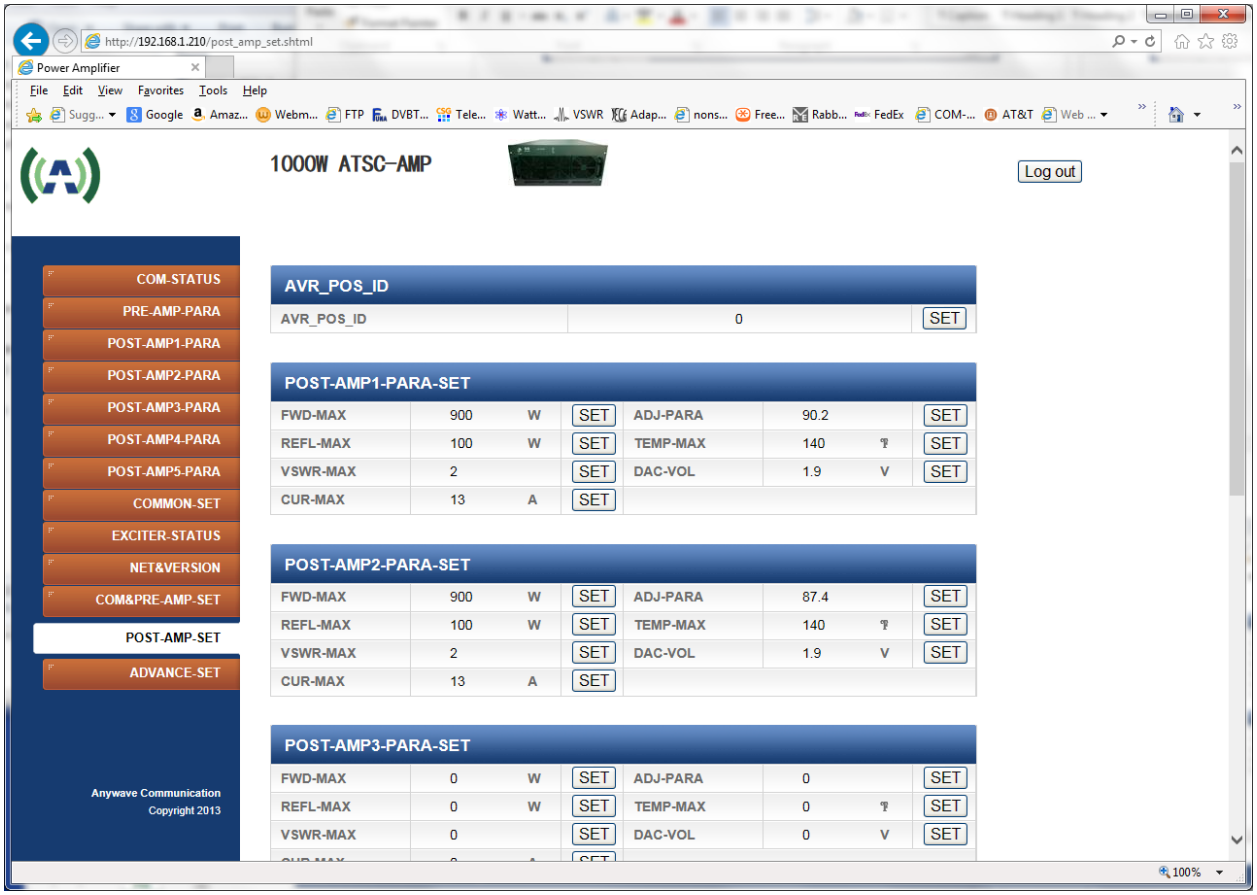
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Power Amplifier
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Log out
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POST-AMP1-PARA
POST-AMP2-PARA
POST-AMP3-PARA
POST-AMP4-PARA
POST-AMP5-PARA
COMMON-SET
EXCITER-STATUS
NET&VERSION
COM&PRE-AMP-SET
POST-AMP-SET
ADVANCE-SET
Anywave Communication
Copyright 2013
AVR_POS_ID
AVR_POS_ID 0 SET
POST-AMP1-PARA-SET
FWD-MAX 900 W SET ADJ-PARA 90.2 SET
REFL-MAX 100 W SET TEMP-MAX 140 SET
VSWR-MAX 2 SET DAC-VOL 1.9 V SET
CUR-MAX 13 A SET
POST-AMP2-PARA-SET
FWD-MAX 900 W SET ADJ-PARA 87.4 SET
REFL-MAX 100 W SET TEMP-MAX 140 SET
VSWR-MAX 2 SET DAC-VOL 1.9 V SET
CUR-MAX 13 A SET
POST-AMP3-PARA-SET
FWD-MAX 0 W SET ADJ-PARA 0 SET
REFL-MAX 0 W SET TEMP-MAX 0 SET
VSWR-MAX 0 SET DAC-VOL 0 V SET
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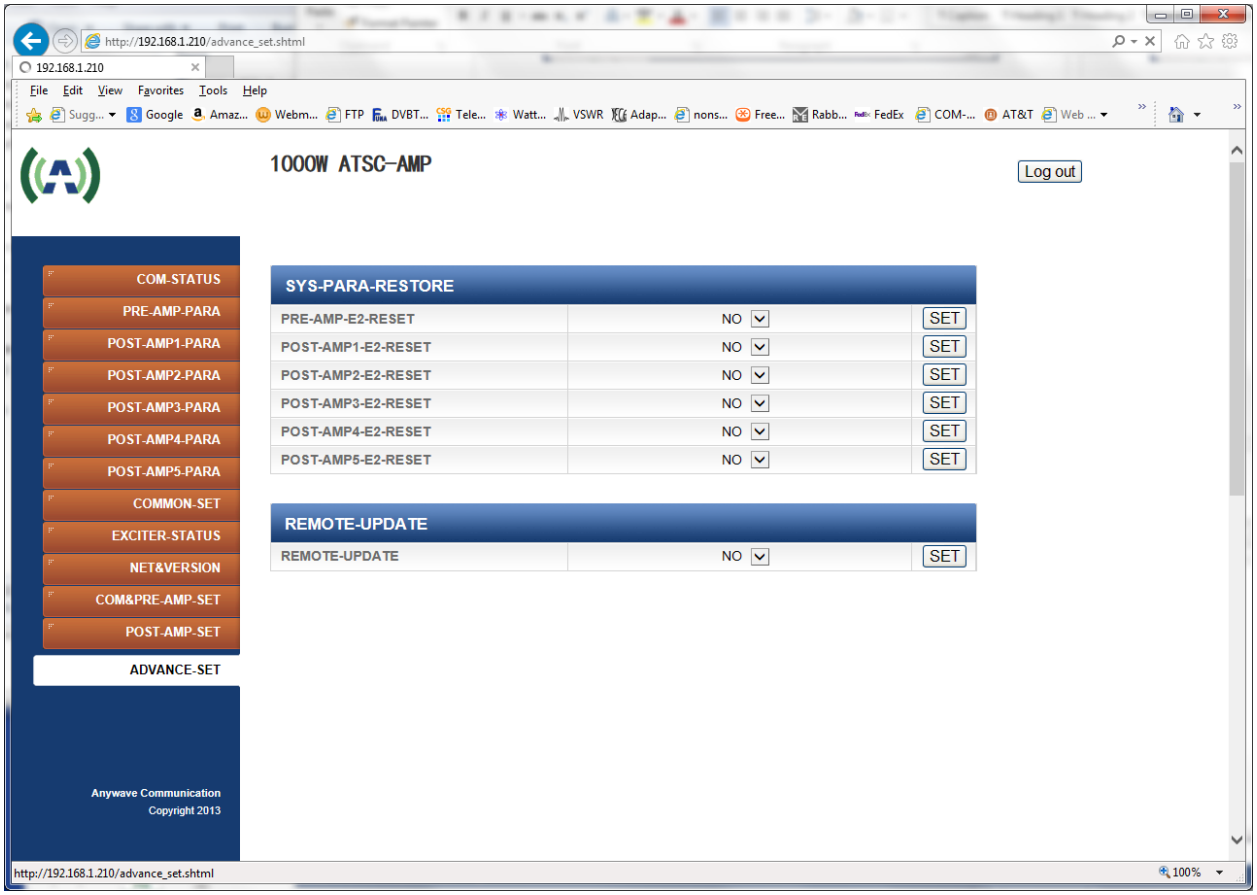
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192.168.1.210
File Edit View Favorites Tools Help
1000W ATSC-AMP
Log out
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POST-AMP1-PARA
POST-AMP2-PARA
POST-AMP3-PARA
POST-AMP4-PARA
POST-AMP5-PARA
COMMON-SET
EXCITER-STATUS
NET&VERSION
COM&PRE-AMP-SET
POST-AMP-SET
ADVANCE-SET
SYS-PARA-RESTORE
PRE-AMP-E2-RESET NO SET
POST-AMP1-E2-RESET NO SET
POST-AMP2-E2-RESET NO SET
POST-AMP3-E2-RESET NO SET
POST-AMP4-E2-RESET NO SET
POST-AMP5-E2-RESET NO SET
REMOTE-UPDATE
REMOTE-UPDATE NO SET
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