Fax Compact Class

GatesAir Training Department

What is Flexiva Compact Class?

Product Features

- Power levels up to 3850 W Analog FM, 3100 W FM+HD
- Broadband (88-108 MHz) – No Power Calibration Required
- High Efficiency
- Compact. 2-4RU depending on model
- Tri-Mode (FM, FM+HD, HD only)
- Integrated stereo encoder
- Static RDS generator
- 2 AES, 1 Analog L/R and 2 Composite inputs that are user selectable and with automatic failover capability

Features Continued

- Integrated Direct to Channel Digital FM modulator includes Stereo Encoder Auto-switching analog L/R (2),
- Internal harmonic filter
- Internal auto switching for external RF Source
- Built-in MOV transient voltage suppression on incoming AC mains lines
- Proportional VSWR fold-back for safe operation at reduced power into marginal loads (icy antenna, etc)
- RF ramp-up to minimize turn-on transients
- Meets or exceeds all applicable FCC, Industry Canada, CCIR and IEC215 standards, RoHS compliant
- Front panel control and metering.
- Built-in parallel interface for remote control, status and metering; RFI and transient protected.
- RF directional couplers for system protection and RF sample ports for customer use.
- Automatic restart after AC mains interruption; returns to previous operational mode.
- Web GUI for use in remote diagnostics using customer's PC.
- SNMP for basic network control and monitoring

Optional Boards

- GPS Board
  - Provides Exciter with 1PPS clock from GPS satellites to increase frequency stability and to improve HD radio diversity performance
  - When installed the Flexiva will have disciplined 10MHZ and 1PPS outputs available that could be used to sync other devices.

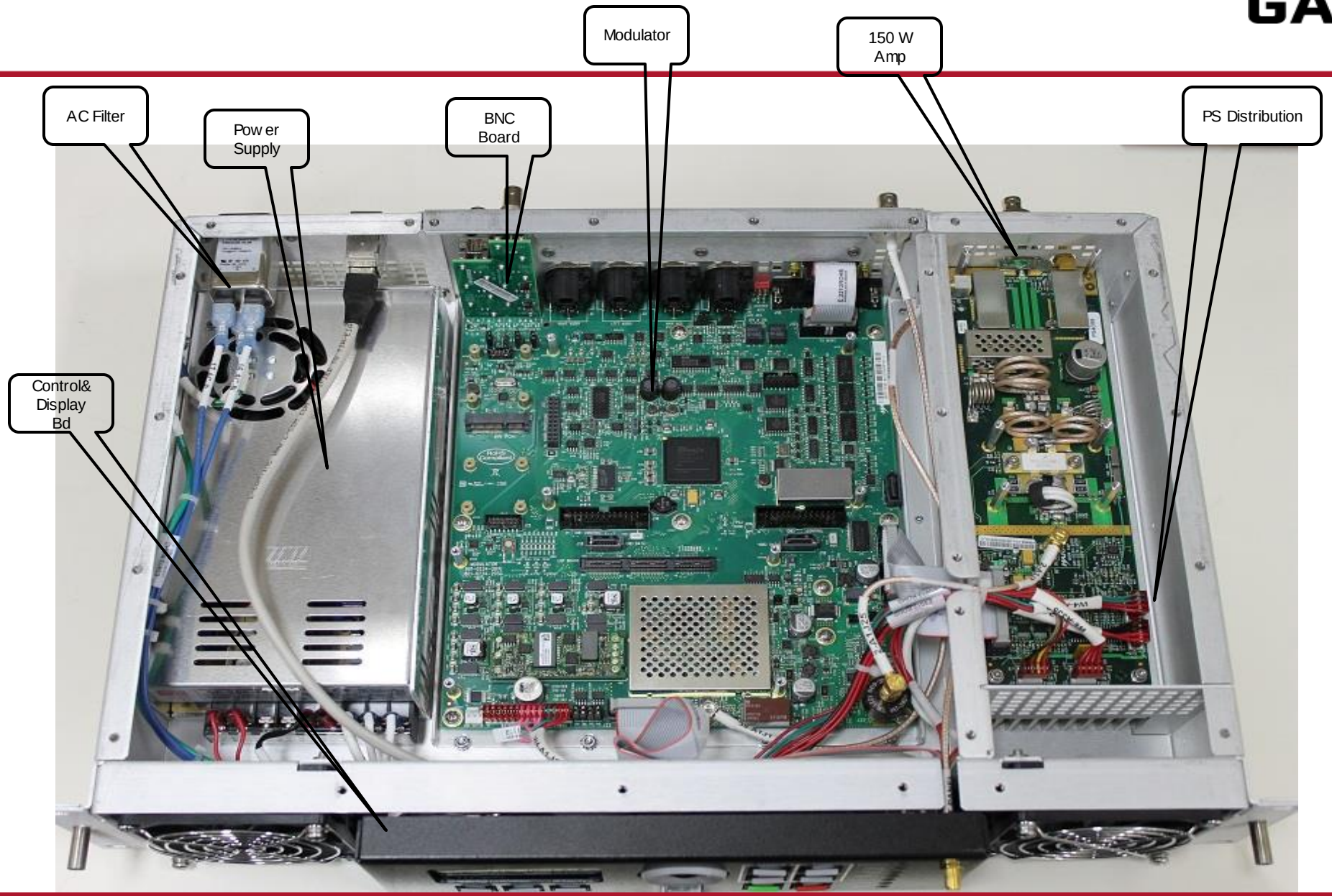
- Orban Card
  - On-board Orban processor. (5500)
  - User friendly GUI to setup processor
  - Much cheaper option than purchasing external unit.

- Exgine Card
  - Interfaces with HD exporter to produce HD carriers.
  - Setup is built into normal web GUI for LP Fax.
  - Can be used for Spectrum Analyzer option

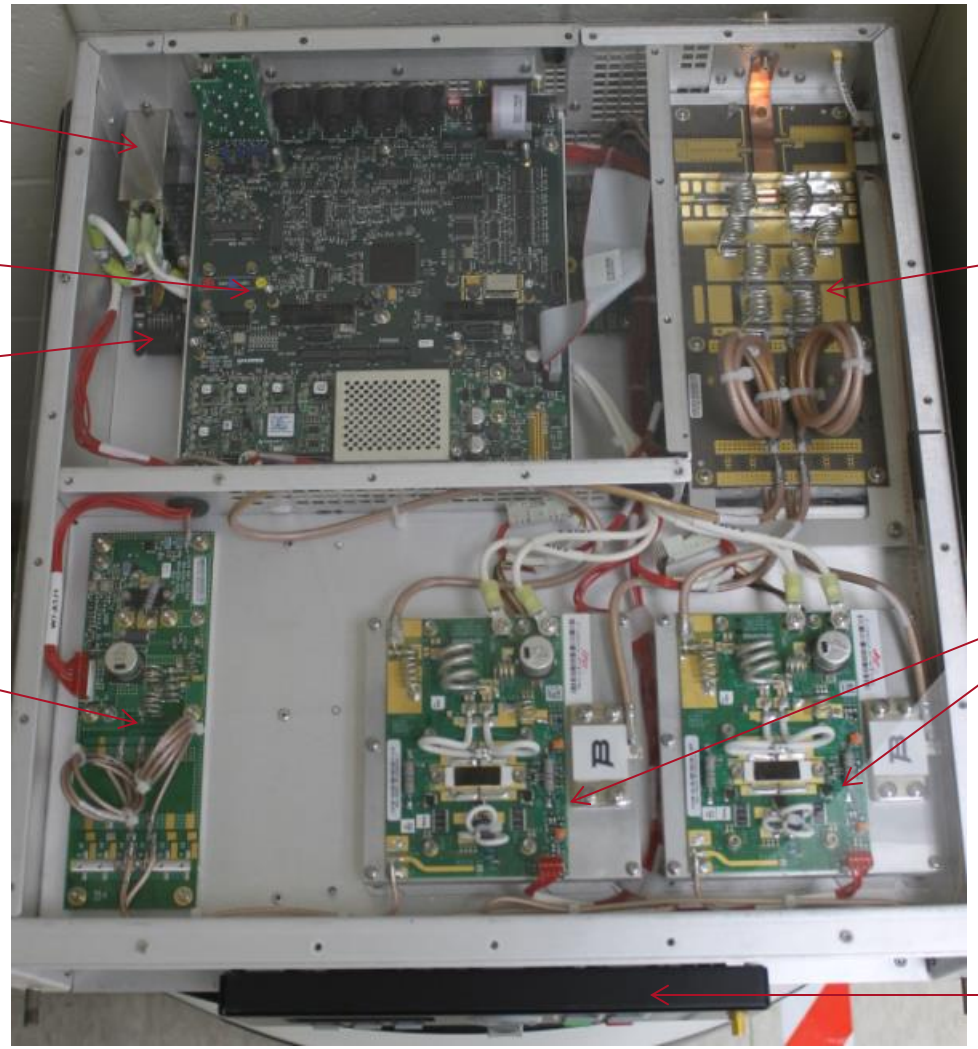
Effieciency (FM Only)

- Fax 150 – 42%
- Fax 300 – 45%
- Fax 500 – 50%
- Fax 1K – 65%
- Fax 2K – 65%
- Fax 3K – 65%
- Fax 3.5K – 65%

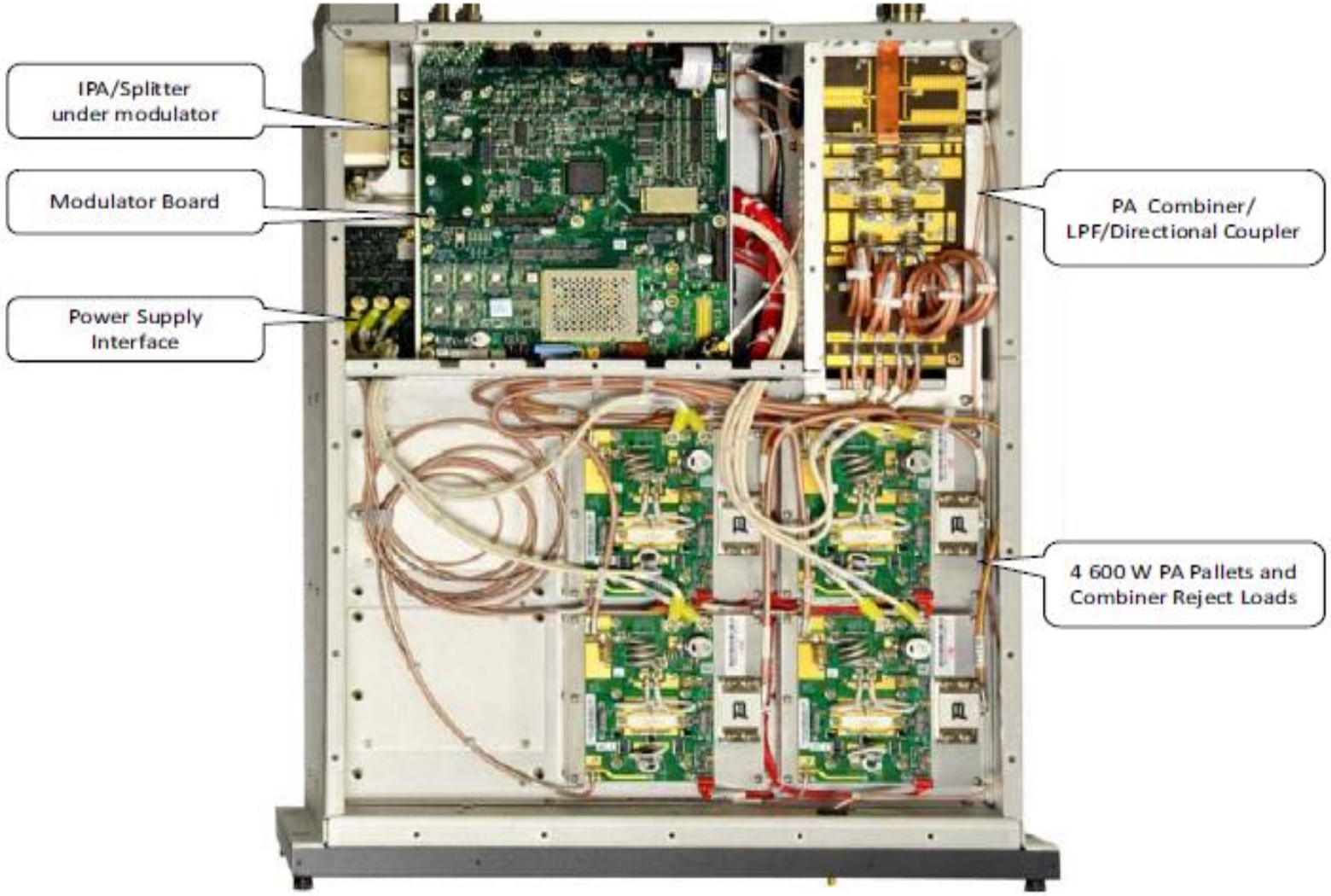
FAX 150 Exciter



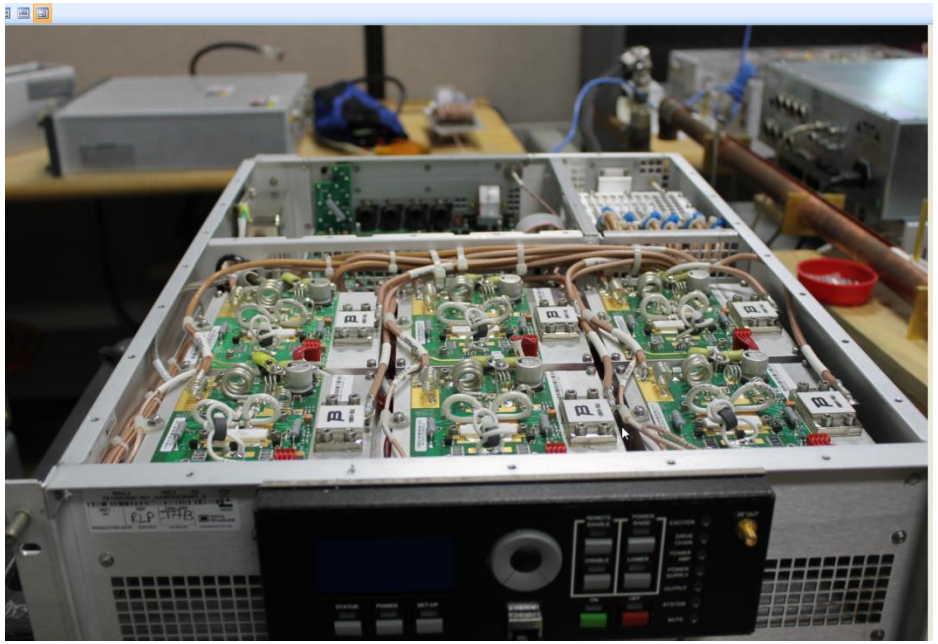
Fax 1K

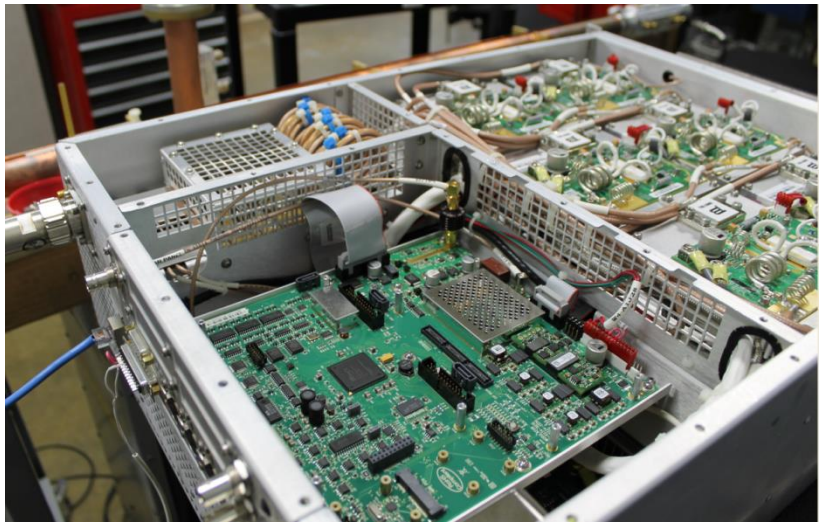

AC Filter
Modulator Board
PS Interface
Splitter Board
Combiner
PA's
Control and Display

Fax 2K


IPA/Splitter
under modulator
Modulator Board
Power Supply
Interface
PA Combiner/
LPF/Directional Coupler
4 600 W PA Pallets and
Combiner Reject Loads

Fax 3K

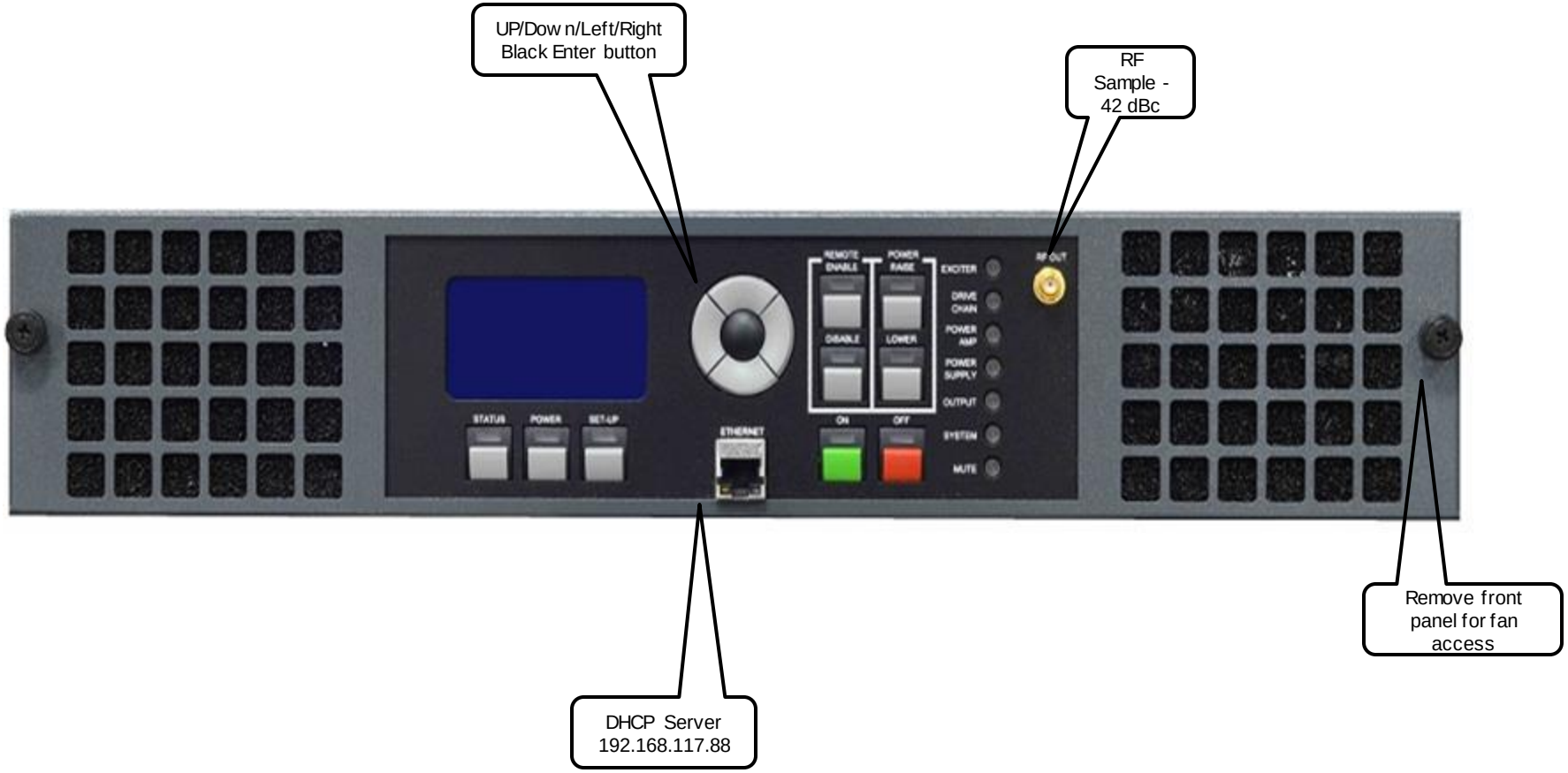




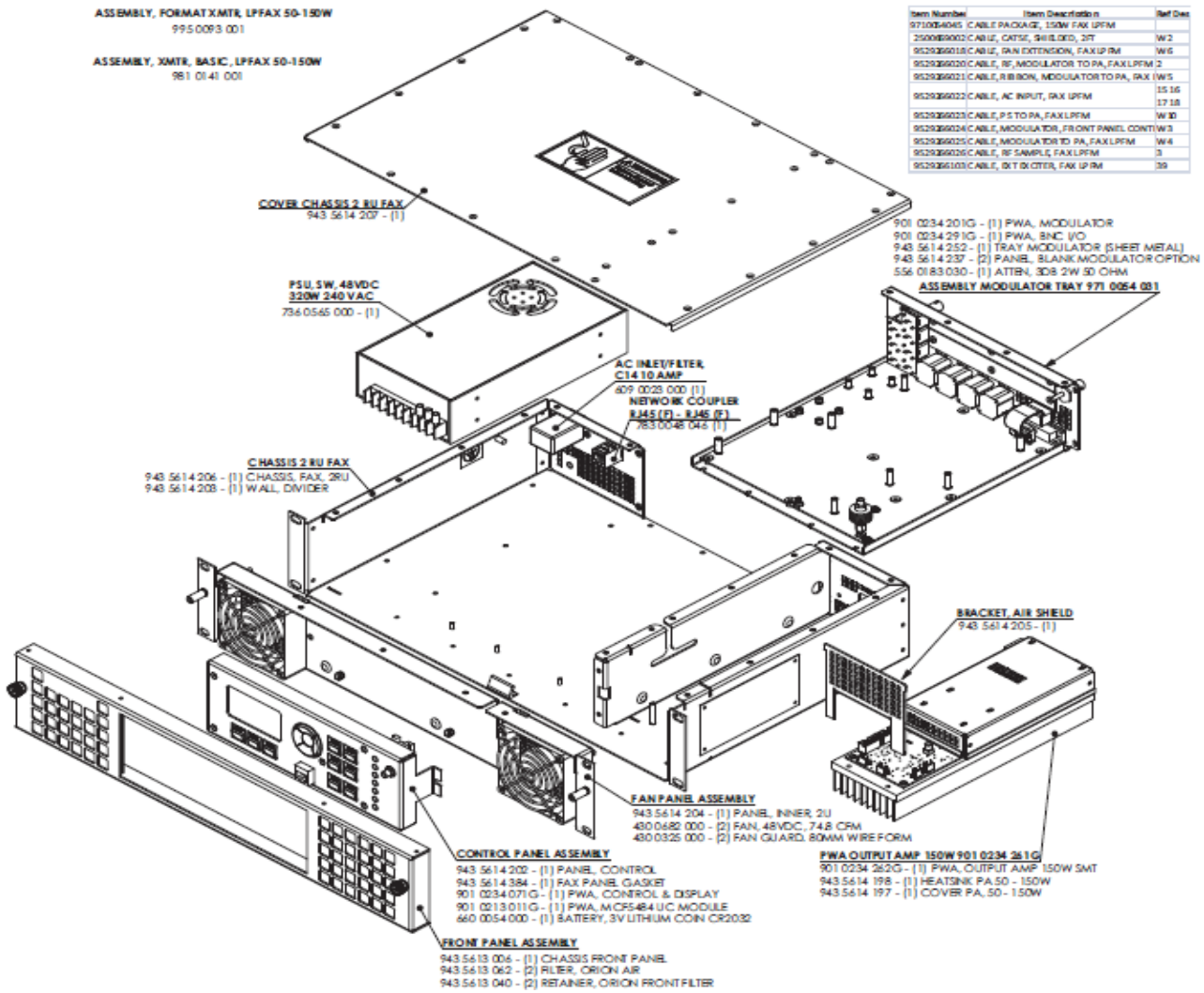
Fax 3K/3.5K


REMOTE ENABLE
POWER RAISE
DISABLE
LOWER
STATUS
POWER
SET-UP
ETHERNET
ON
OFF
EXCITER
DRIVE CHAIN
POWER AMP
POWER SUPPLY
OUTPUT
SYSTEM
MUTE
RF OUT

FAX 50/150 Exciter

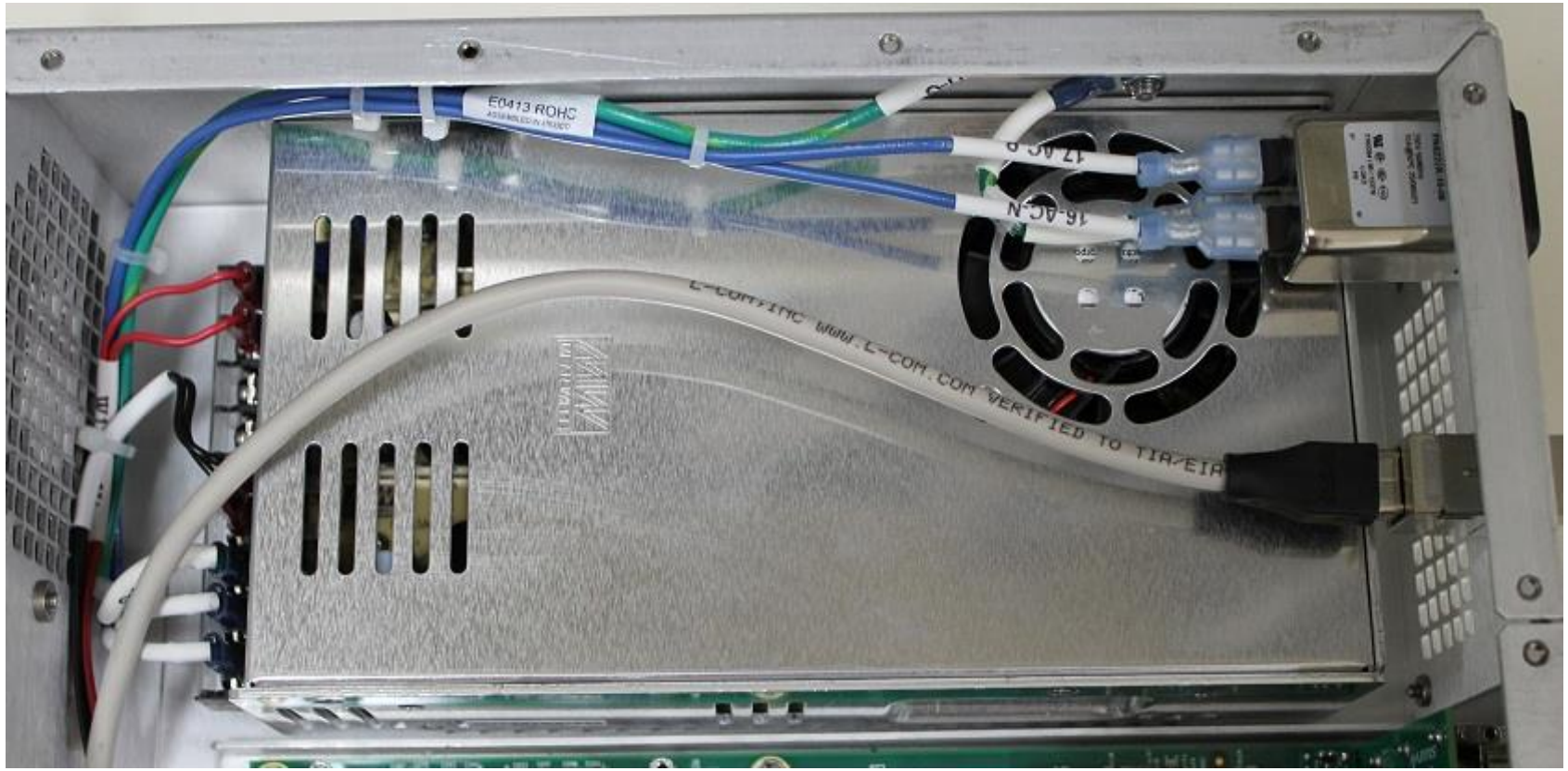


FAX150 Exploded View Parts List



Item Number	Item Description	Ref Des
971 0054 045	CABLE PACKAGE, 150W FAX LPFM	
250 0089 002	CABLE, CAT5E, SHIELDED, 2FT	W2
952 9266 018	CABLE, FAN EXTENSION, FAX LPFM	W6
952 9266 020	CABLE, RF, MODULATOR TO PA, FAX LPFM	2
952 9266 021	CABLE, RIBBON, MODULATOR TO PA, FAX LPFM	W5
952 9266 022	CABLE, AC INPUT, FAX LPFM	15 16 17 18
952 9266 023	CABLE, P.S TO PA, FAX LPFM	W10
952 9266 024	CABLE, MODULATOR, FRONT PANEL CONTROL	W3
952 9266 025	CABLE, MODULATOR TO PA, FAX LPFM	W4
952 9266 026	CABLE, RF SAMPLE, FAX LPFM	3
952 9266 103	CABLE, EXCITER, FAX LPFM	39

FAX 150 Power Supply



Power Supply Meanwell SP-320-48
Input – 88 – 264 VAC; 47 – 63 Hz; PF >0.95
Output - 48 VDC @ 320 Watts
50/150 supply shown above is adjustable but set to 48 VDC. No need to field adjust.

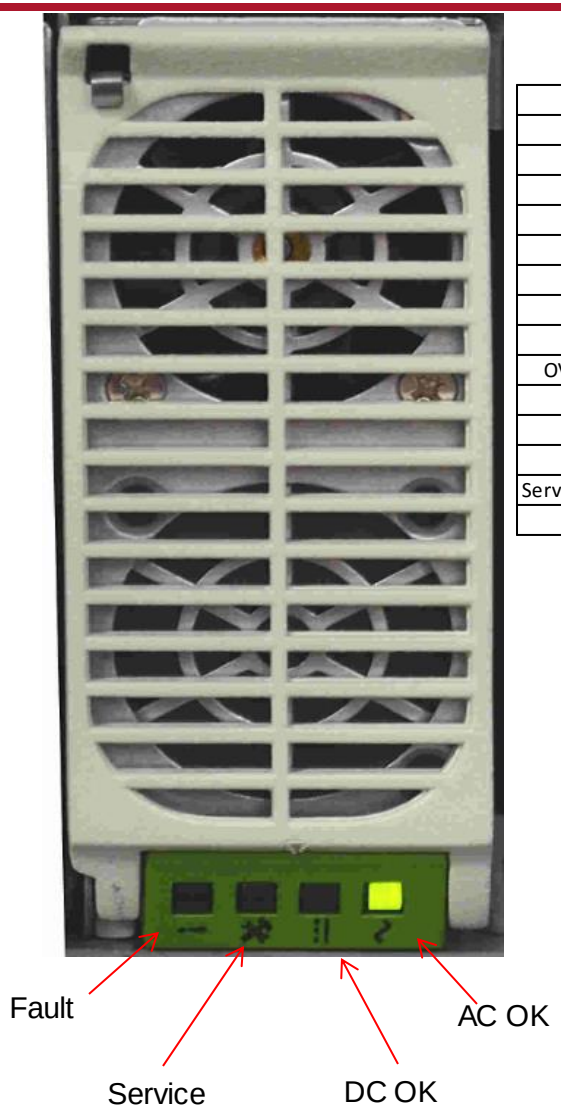
Fax Compact Class Power Supply (not 150)

- Voltage Range 90-260 V
- Watts Depends on V range
  - 90-120V (1200W)
  - 200-277 (2725W)
- Purchased Supply by Lineage
- Adjustable range from 44-52V
  - Set at 48V in LP Fax application
- Built in Diagnostics
  - Over Current
  - Over Temp
  - Over Voltage
- On command should reset PS faults

FAX Power Supplies

- High-efficiency ~96 %
- Supply has on-board power factor correction(>0.98, nominal)
- Low AC line harmonics
- Hot pluggable via front of transmitter
- One power supply per 2 PA Pallets

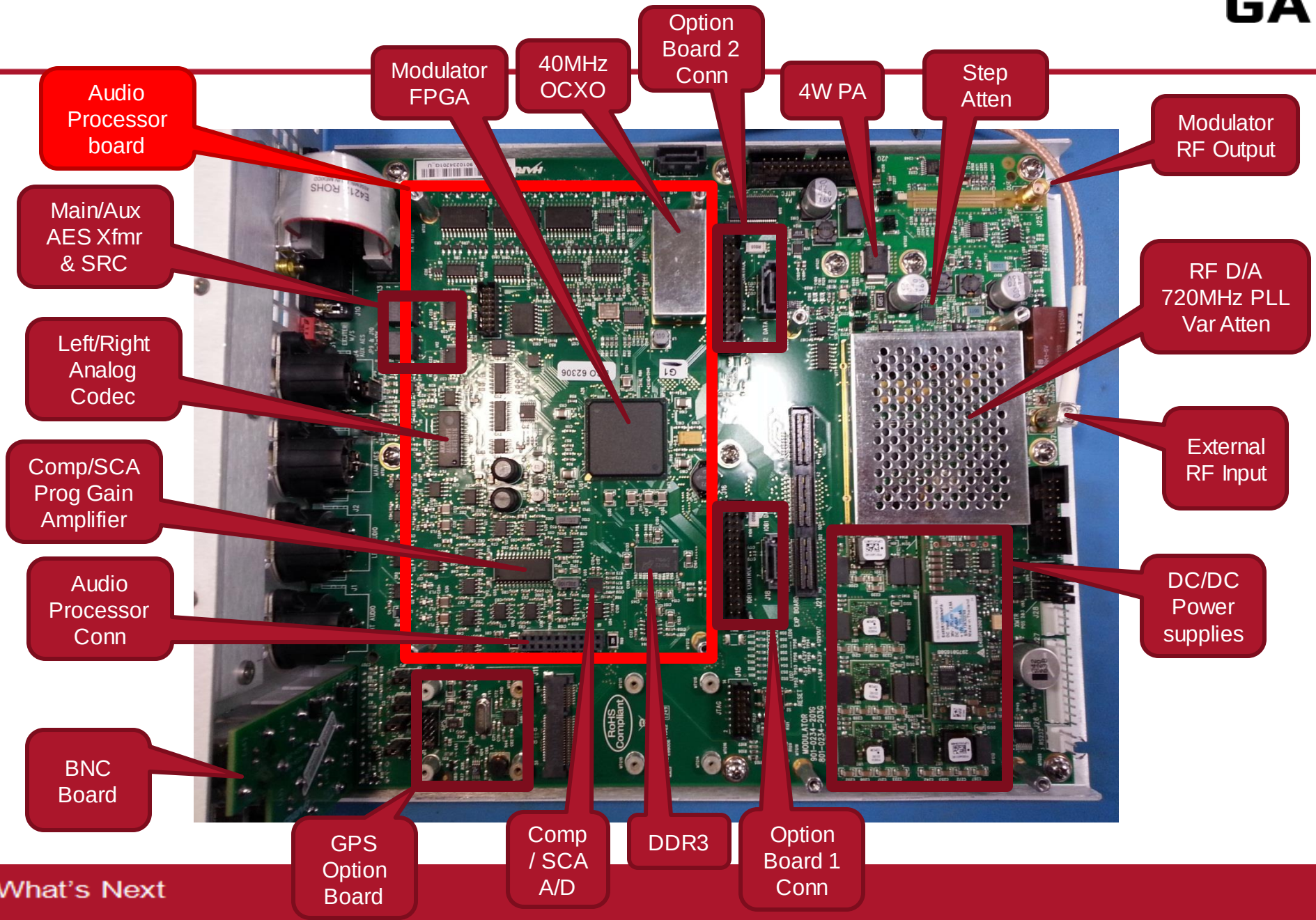
FAX Power Supplies



Condition	AC OK GREEN	DC OK GREEN	Service AMBER	Fault RED	FAULT	OTW	PFW
OK	ON	ON	OFF	OFF	1	1	1
Thermal Alarm	ON	ON	ON	OFF	1	0	1
THERMAL SHUTDOWN	ON	OFF	ON	ON	0	0	0
Defective Fan	ON	OFF	OFF	OFF	0	1	0
Blown AC Fuse	ON	OFF	OFF	ON	0	1	0
No AC <15 mS	OFF	ON	OFF	OFF	1	1	0
AC Present but OOL	Blinks	OFF	OFF	OFF	1	1	0
AC Not Present	OFF	OFF	OFF	OFF	1	1	0
Boost Stage Fail	ON	OFF	OFF	ON	0	1	0
OVR Volts Latched Shtdwn	ON	OFF	OFF	ON	0	1	0
Over Current	ON	Blinks	OFF	OFF	1	1	0
NON-Cat Internal Fail	ON	ON	OFF	ON	0	1	1
Standby (remote)	ON	OFF	OFF	OFF	1	1	0
Service Request (PMBus Mode)	ON	ON	Blinks	OFF	1	1	1
Comm Fault (RS485)	ON	ON	OFF	Blinks	1	1	1

All Fault outputs on PS are open drain; 1=logic HI pulled up to +5 VDC on PS Interface Card in Transmitter (See Sheet 5 of Schematic)

FAX Modulator Board layout



FAX Modulator I/O

- Stereo Generator
  - Analog Right/Left (-15 to +15 dBu) (JP9/10 changes Input Z)
  - Main AES (0 to -15 dBFS) 32 to 192 kHz Sample rate
  - Aux AES (0 to -15 dBFS) 32 to 192 kHz Sample rate
  - Main Composite (-6 to +18 dBu; 10 Hz – 100 kHz) (JP3 changes Input Z)
  - Aux Composite (-6 to +18 dBu; 10 Hz – 100 kHz) (JP2 changes Input Z)
  - SCA1 (-6.8 to +5.2 dBu; 53 – 100 kHz)
  - SCA2 (-6.8 to +5.2 dBu; 53 – 100 kHz)
- Timing
  - Internal GPS 1PPS (GPS option must be enabled and antenna attached)
  - External 10MHz (Programmable Input or Output) (50 Ohms Only)
  - External 1PPS (Programmable Input or Output) (10 k or 50 Ohms)
  - Internal Oscillator 40 MHz ±150 Hz

FAX Modulator I/O

- Communication Interfaces
  - Front Panel RS485
  - Transmitter Interface RS-485 to FAX HP
- On-board RS-232 VT100 diagnostics port
- RF Inputs/Outputs
  - Modulator RF Output – 88MHz to 108MHz (4W FM Only maximum)
  - External RF Input (0 to +10dBm max) Not Dual Exciters
- Stereo Generator Output
  - 19KHz Pilot 4.5 Vp-p Nominal; Injection level and phase adjustable
- Control/Status
  - Remote Control parallel I/O (Not same pinout as FAX HP transmitter)
  - Transmitter Interface (Used when in Exciter Configuration) Straight thru cable to FAX HP transmitter

FAX Modulator Features

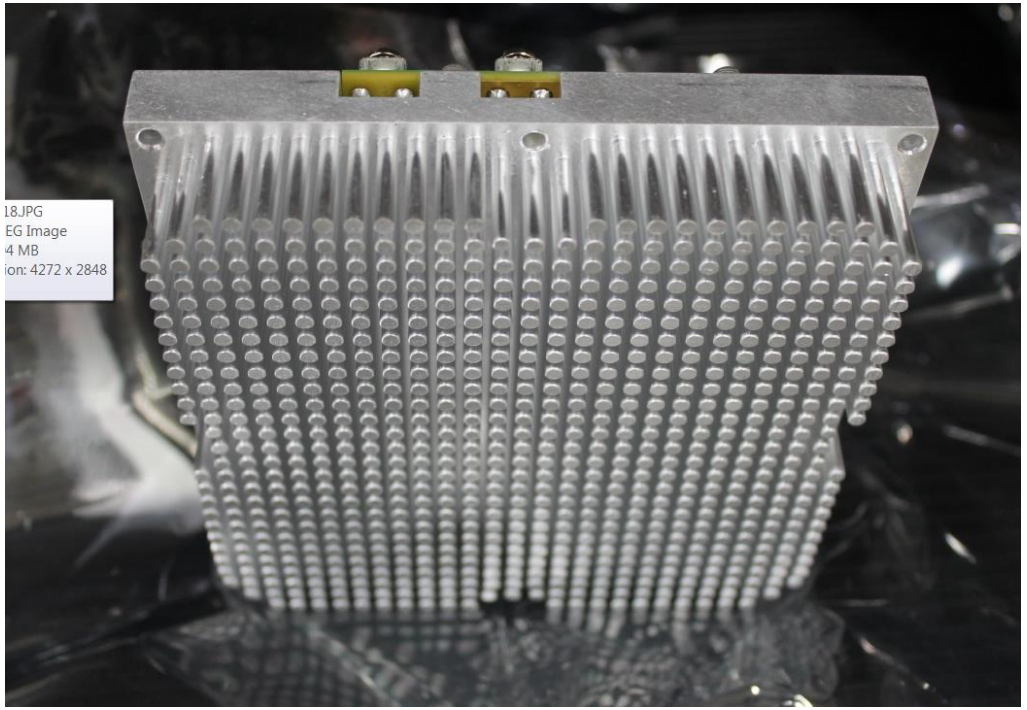
- Single board stereo generator/modulator/4W power amplifier
- +48 VDC input power at XX A maximum (all option boards populated)
- Frequency agile covering FM 88-108MHz band
- N+1 ready
- Integrated static RDS generator
- Integrated composite limiter (using internal stereo generator)
- Synchronous FM ready (testing/integration)
- Optional Orban Audio Processor board (Available)
- Optional GPS board (Available)
- Optional Exgine HD Radio board (in design)
- Fully In-System Programmable (ISP)
- No internal SCA generator

FAX150 Watt Amplifier

Provides the following functionality:

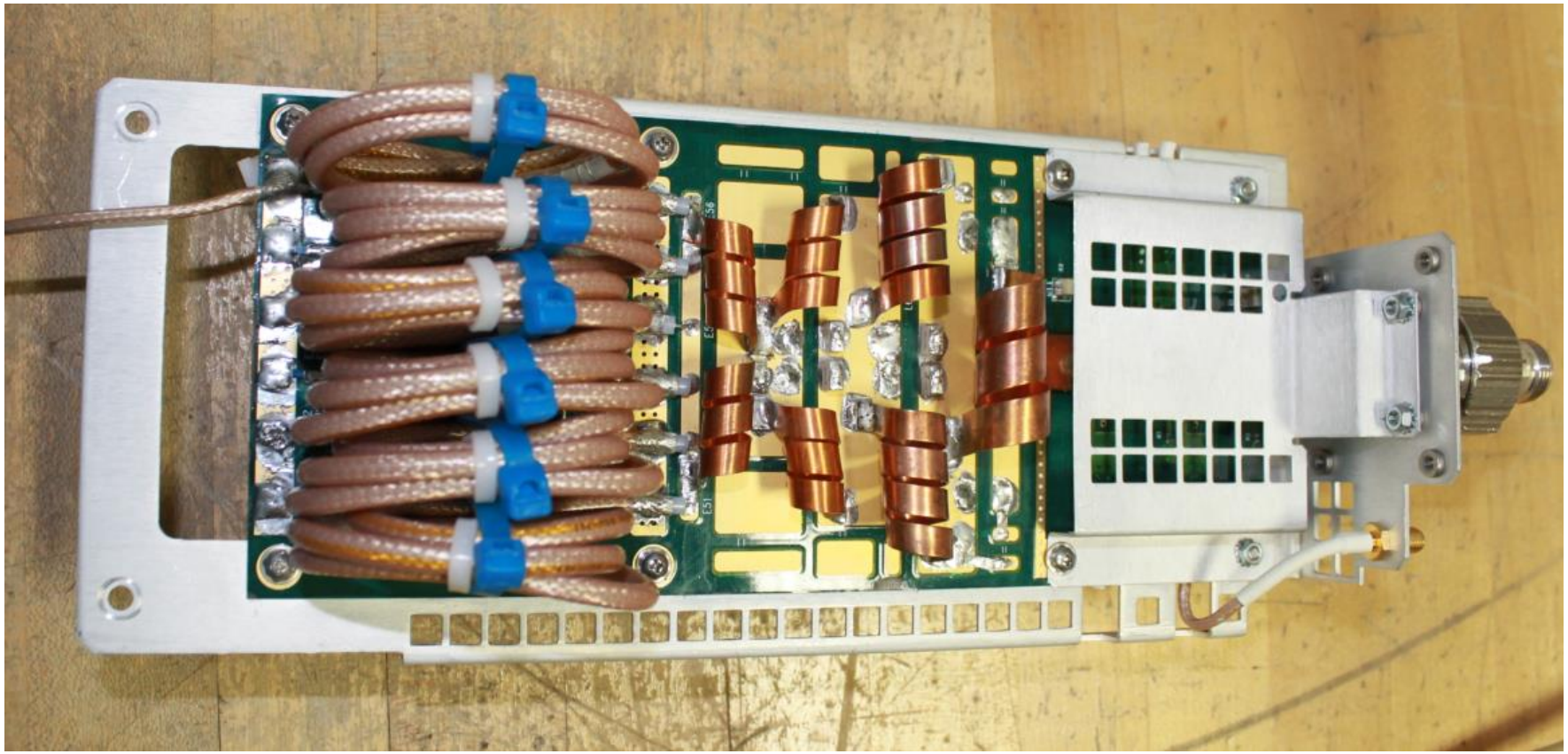
Up to 165 Watts RF Power with LPF
2 RF Samples – front and rear @ ≈-42 dBc
Power Supply Interface – Distributes to Modulator
Fan Interface – provides DC out to fans and Tach samples to controller

PA Module (not 150)



- 600W Output
- LDMOS FET
- 2 PA's/KW

Combiner



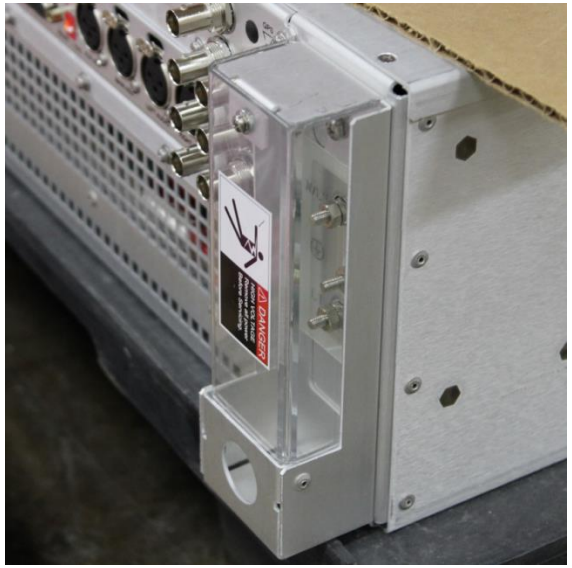
FAX Modulator rear panel

Rear Panel 1K

- AC input - See ECM sheets for each model and section 2.5 for Installation
- RF Sample - Sample of the RF output, can be used for modulation monitor (approx -42 dBc)
- RF Output - Each FAX model has a standard connector
  - FAX 50/150: Type N Female
  - 500 W/1 kW/2 kW/3 kW: Type 7-16 DIN
  - FAX 3.5 kW: Type 7/8 EIA male unflanged connector
- Ethernet - used for LAN, can be static or DHCP; provides Web GUI and SNMP control
- AUX Comp - Second Composite Audio Input
- SCA1/2 - SCA audio Inputs
- 19 kHz Out - Stereo pilot for external generator
- 1 pps - 1 PPS reference input or output from internally generated signal 50 Ohms or 10 k Ohms selectable
- 10 MHz - 10 MHz reference input or output from internally generated signal -10 dBm to +10 dBm; 50 Ohms
- GPS Antenna - When Optional GPS receiver is installed. Jumper setting available for voltage to antenna (+5 or +3.3 VDC)
- Switch - Left section resets transmitter back to Factory Pretest defaults, Right section indicates Exciter ID A or B

3K


RF SAMPLE
RF OUT
ETHERNET
10 / 100 Base T
TX INTERFACE
USER REMOTE
AUX AES
MAIN AES
LEFT AUDIO
RIGHT AUDIO
AC LINE
208-250V
2KW 16A
3KW 24A
50/60Hz
GND
DANGER


DANGER

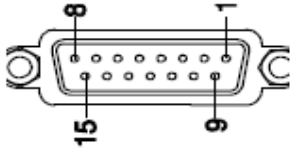
FAX Control & Display Board

Provides the following functionality:

Ethernet ports – front and rear
RS485 communication to FAX High power transmitter
User I/O – front panel buttons/LEDs/LCD
Time/Date Battery

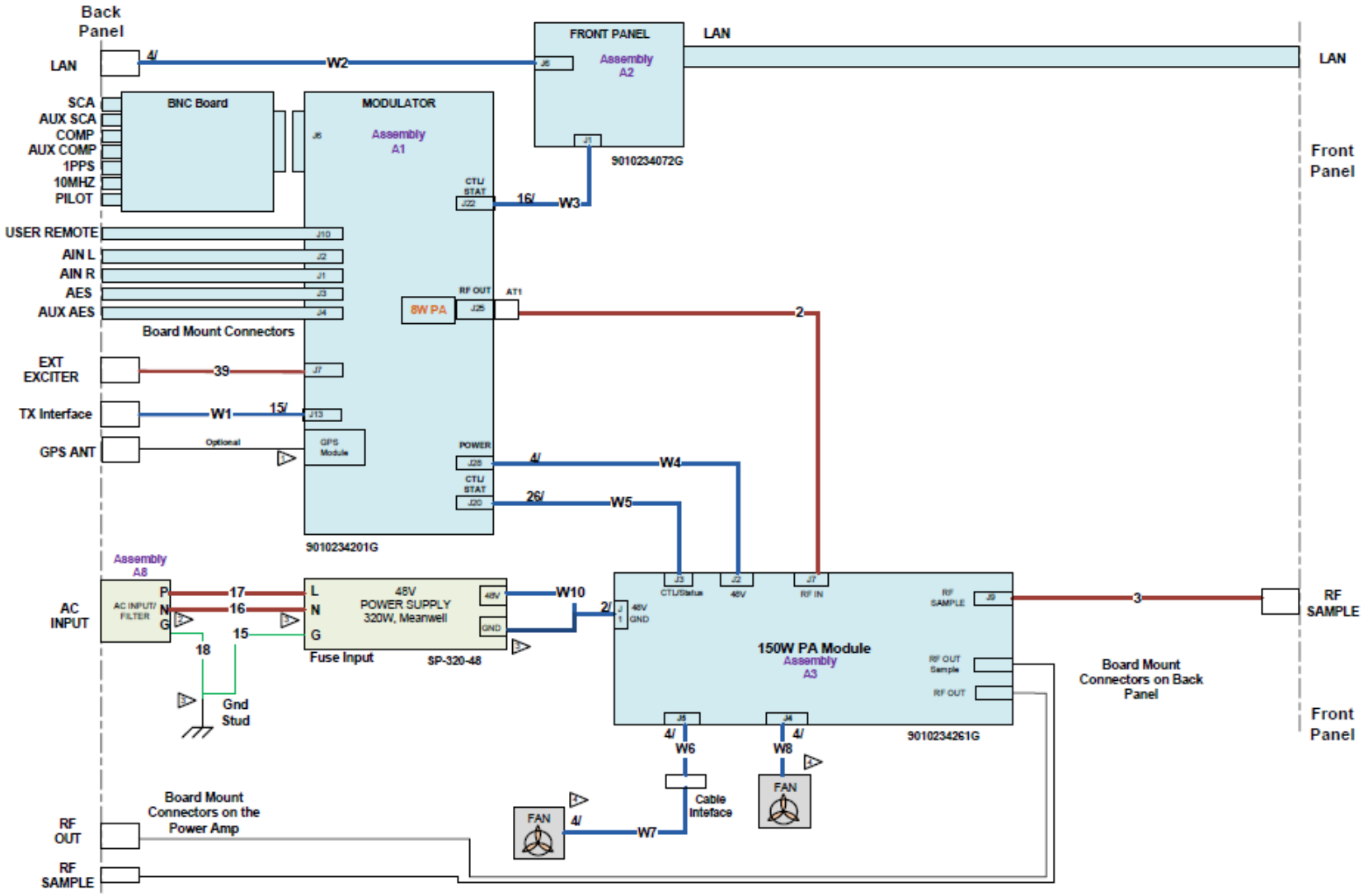
FAX Transmitter Interface

Table 2-1 TRANSMITTER INTERFACE (D-sub 15, amplifier rear)

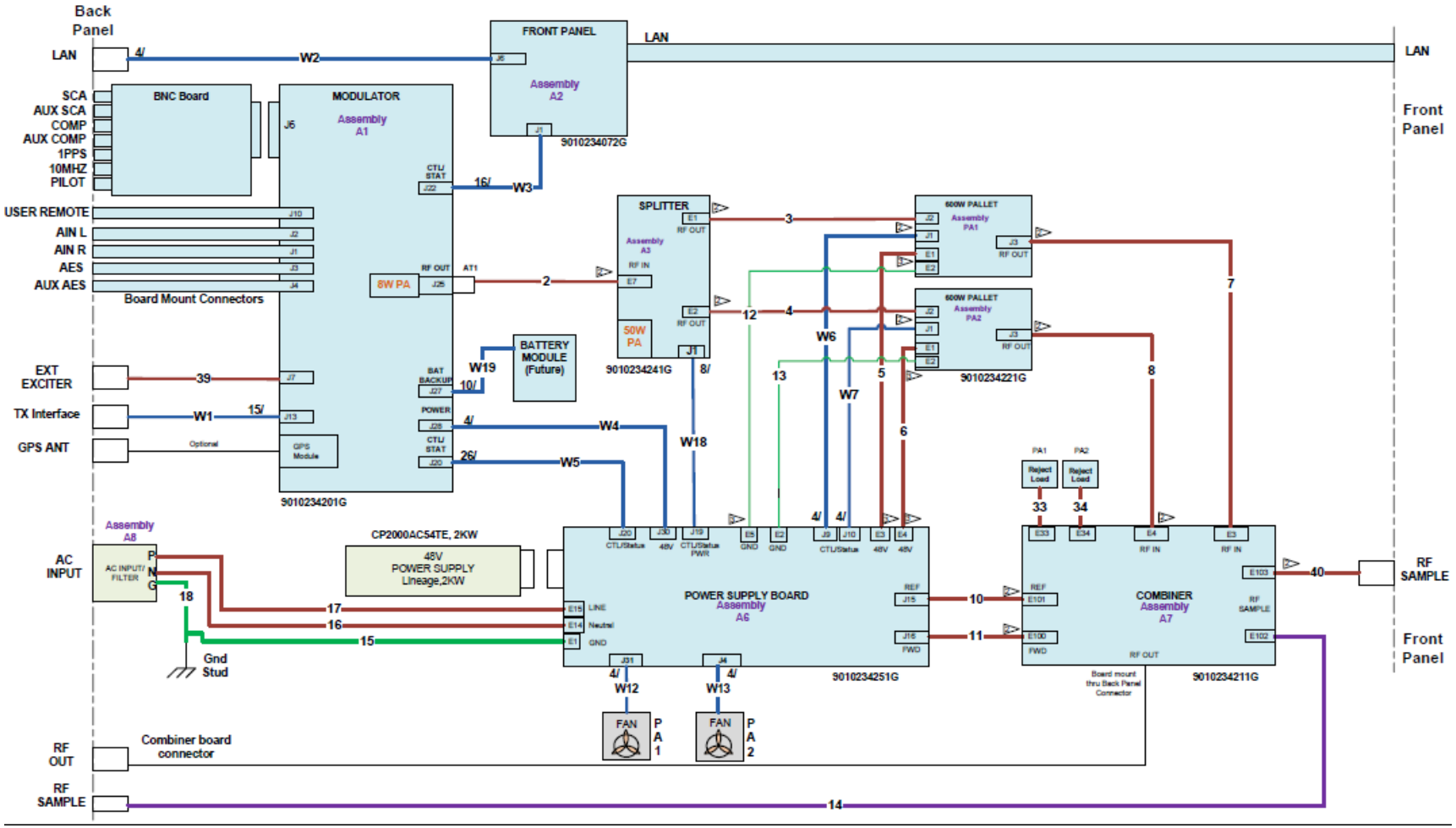
Designation	Remarks	Pin	
GND	Signal ground	1	
FORWARD POWER SAMPLE	Exciter Forward Power analog voltage (0-4 VDC linear scale); Scaling available via Remote GUI	2	Output
RS485	RS485 + (to communicate to FAX HP transmitter)	3	Input/Output
FM_ON_STATUS	Exciter grounds pin to indicate FM Only mode (continuous closure).	4	Output
HD_ON_STATUS	Exciter grounds pin to indicate HD carriers are on (continuous closure).	5	Output
EXC_SUM_FAULT	User selectable polarity Active Hi or Active Lo via Remote GUI	6	Output
Spare		7	
PA_APC	Analog Power Control voltage input to control RF Output power. 0-5 VDC	8	Input
MUTE	User selectable polarity Active Hi or Active Lo via Remote GUI	9	Input
REFLECTED POWER SAMPLE	Exciter Reflected Power analog voltage (0-4 VDC linear scale); Scaling available via Remote GUI	10	Output
RS485	RS485 - (to communicate to FAX HP transmitter)	11	Input/Output
N/C	No connection	12	n/a
EXCITER ACTIVE	Used by main/alt exciter switcher exciter is selected. Low=Exciter B;High=Exciter A Set by rear panel switch to determine if unit is Exc A or Exc B	13	Input
FAST MUTE	User selectable polarity Active Hi or Active Lo via Remote GUI	14	Input
EXCITER_READY	User selectable polarity Active Hi or Active Lo via Remote GUI	15	Output

Connection to FAX high power requires a straight through 15 pin cable.

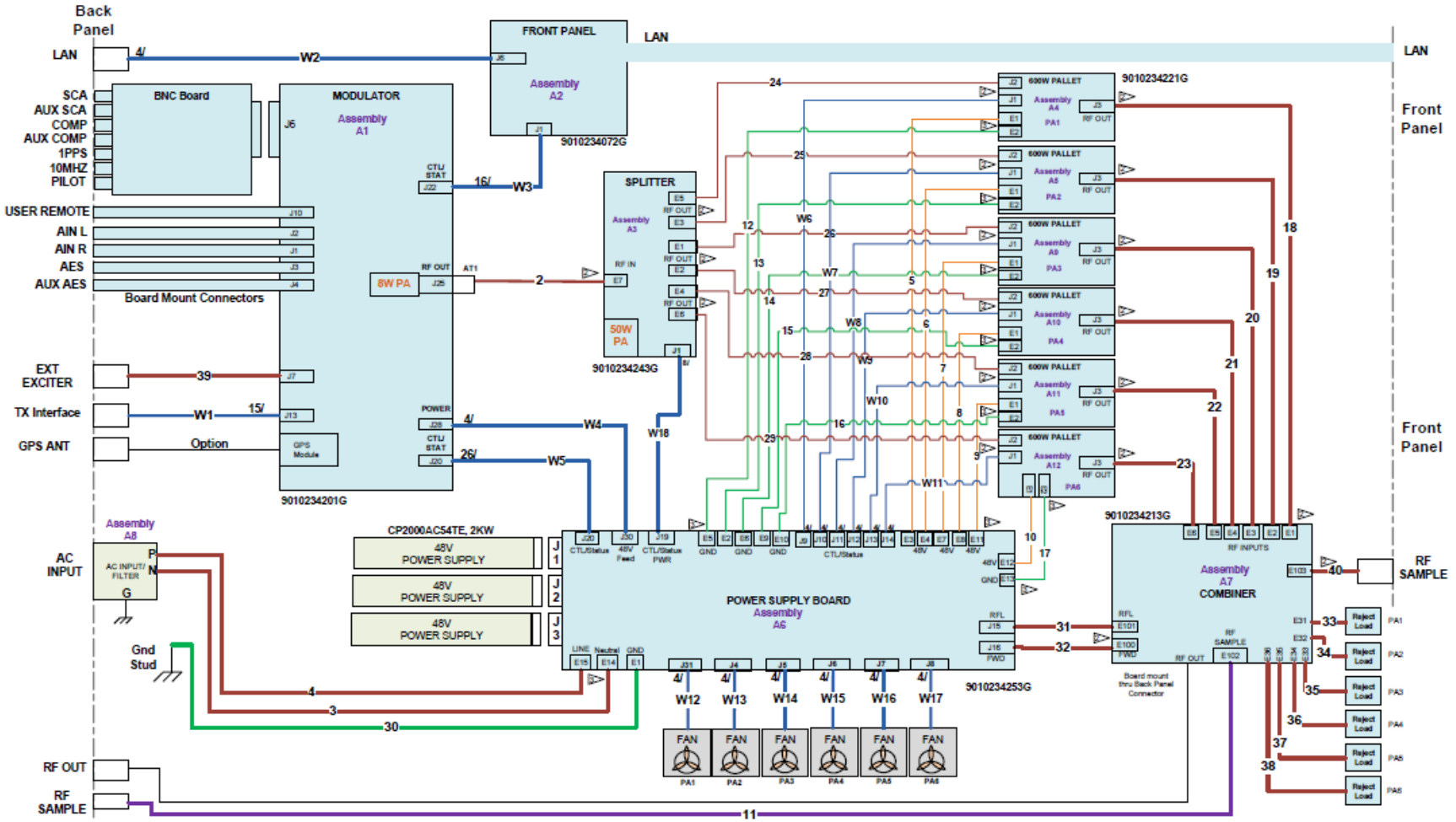
Signal Flow Fax 150



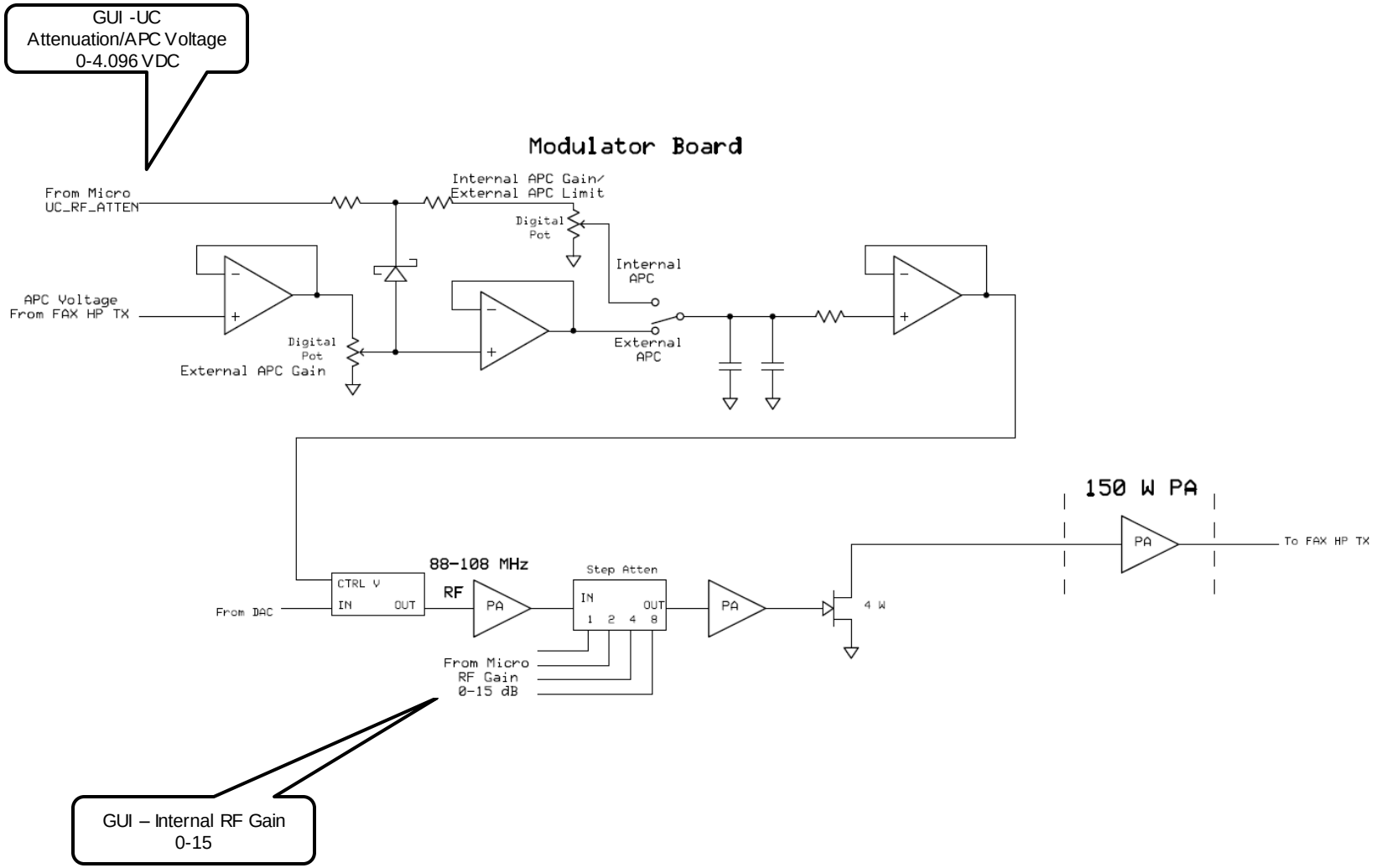
Signal Flow 1K



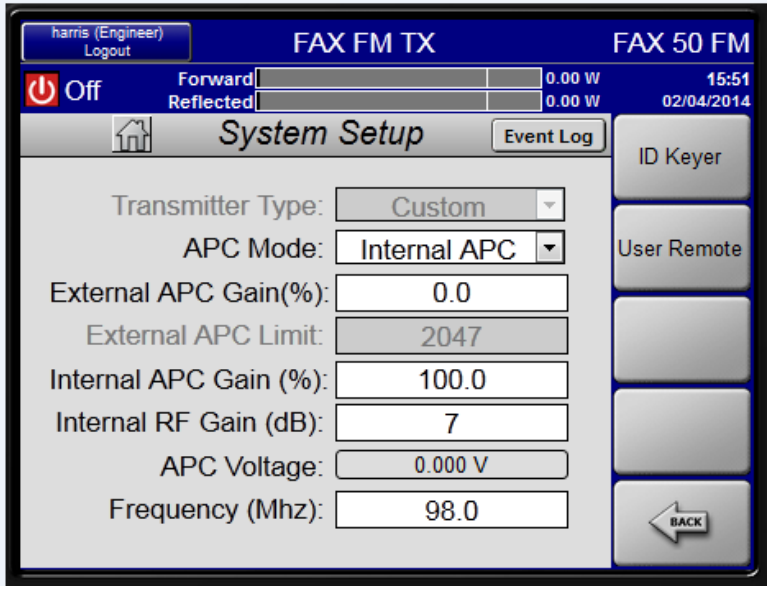
Signal Flow 3K



FAX APC


GUI -UC
Attenuation/APC Voltage
0-4.096 VDC
Modulator Board
From Micro
UC_RF_ATTEN
Internal APC Gain/
External APC Limit
Digital
Pot
Internal
APC
APC Voltage
From FAX HP TX
Digital
Pot
External APC Gain
External
APC
150 W PA
PA
To FAX HP TX
88-108 MHz
RF
CTRL V
IN
OUT
From DAC
PA
Step Atten
IN
OUT
1 2 4 8
PA
4 W
From Micro
RF Gain
0-15 dB
GUI – Internal RF Gain
0-15

FAX APC



Referring to APC Schematic on previous slide:

Internal APC Mode:
Internal RF GAIN is set depending on maximum power required by the FAX150 (Range 0-15). See next slide for Internal RF Gain setting levels. Internal APC Gain (%) is set so UC Attenuation is 3 ±0.1 VDC at TPO.

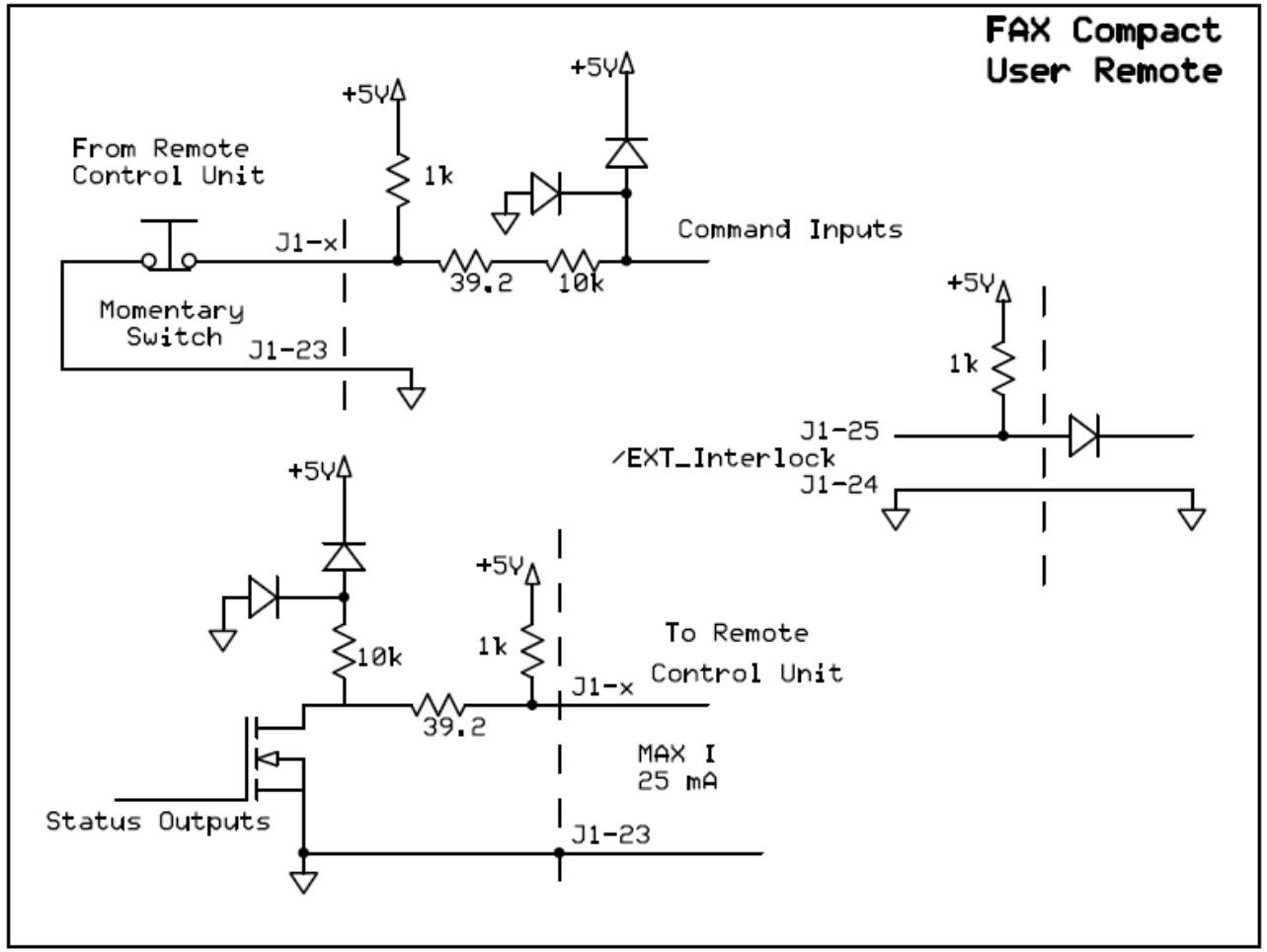
External APC Mode:
Set EXT APC GAIN for TPO in calibration routine of FAX HP transmitter. EXT APC LIMIT is not used and should be set to max 4095 in this case. The Internal RF Gain setting limits exciter power and FAX HP hardware limits the power out of the transmitter (calibrated power plus 10 %).

FAX APC

Table 3-14 RF GAIN Setting and Maximum Power Out FAX150

RF GAIN	Max Power Out FM Only
0	16
1	25
2	35
3	50
4	70
5	105
6	135
7	155
8	160
9	170
10	180
11	183
12	184
13	186
14	186
15	187

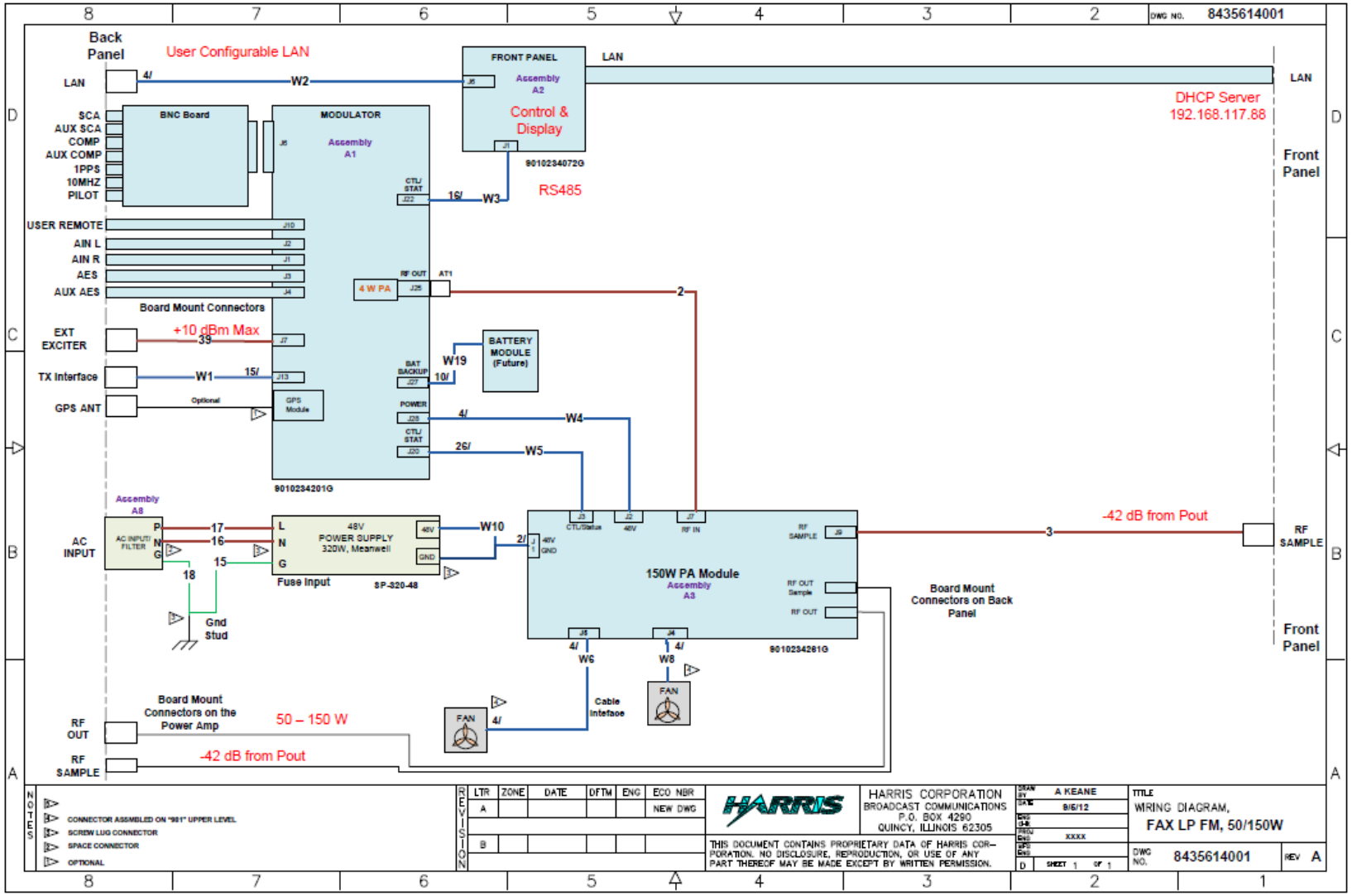
FAX User Remote I/O



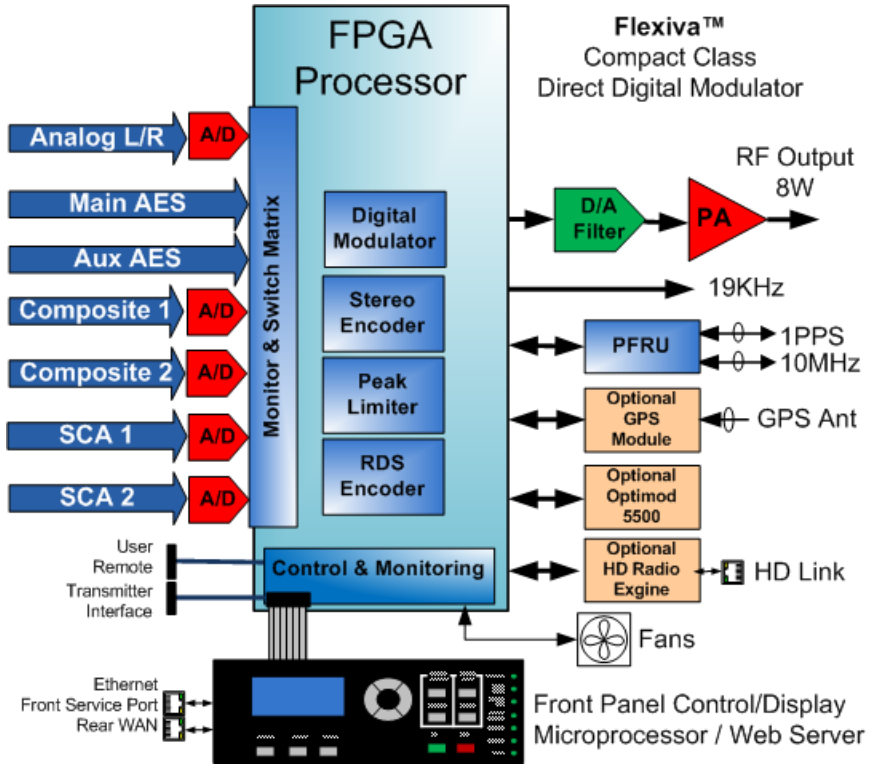
External Interlock requires a continuous connection between J1-24 and J1-25 or the transmitter will shut off. Once faulted it requires a manual ON command to turn the transmitter back on

On new Software there are 4 programmable outputs like FAX HP

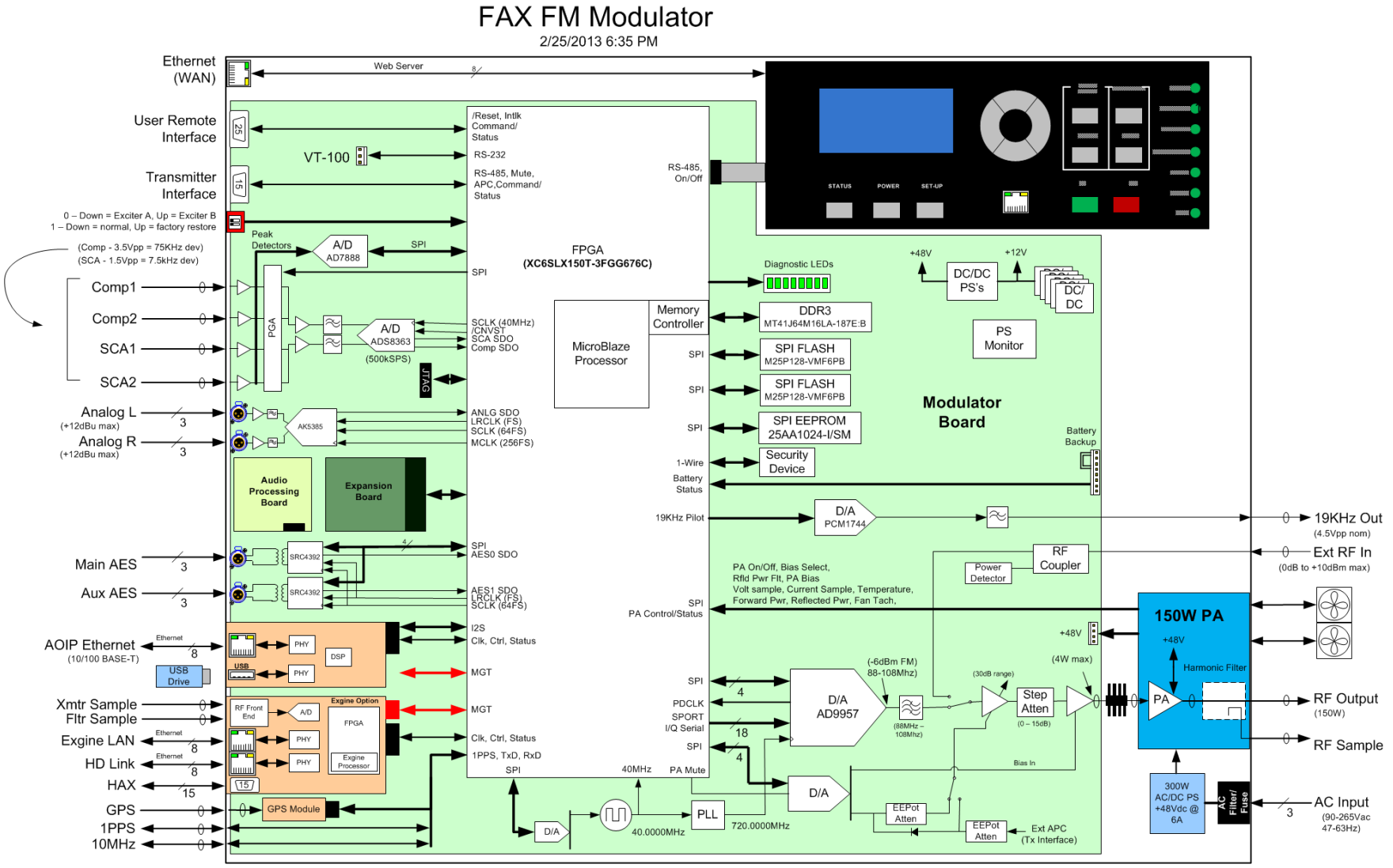
FAX150 Block Diagram



Modulator Block Diagram

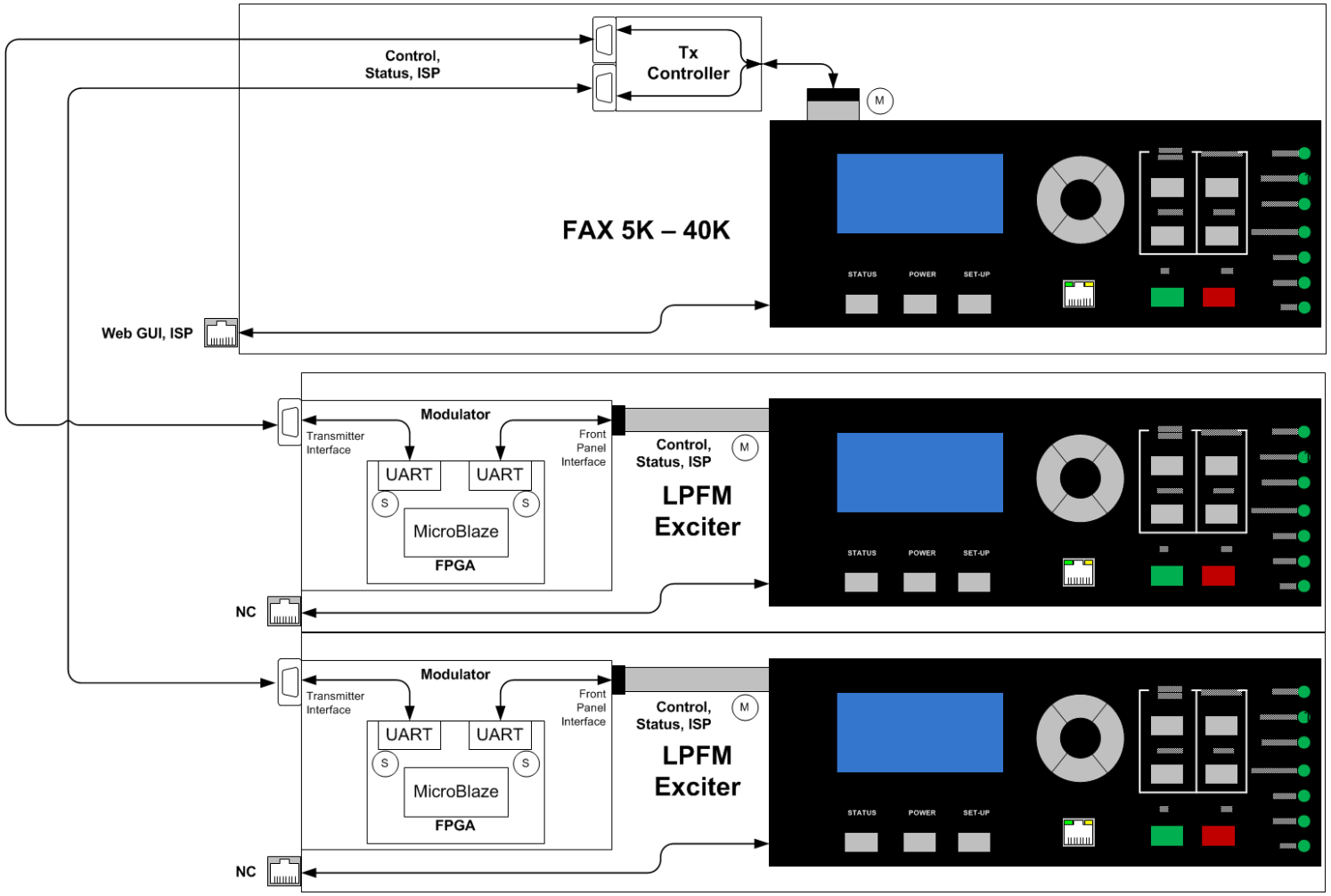


FAX Modulator Block Diagram

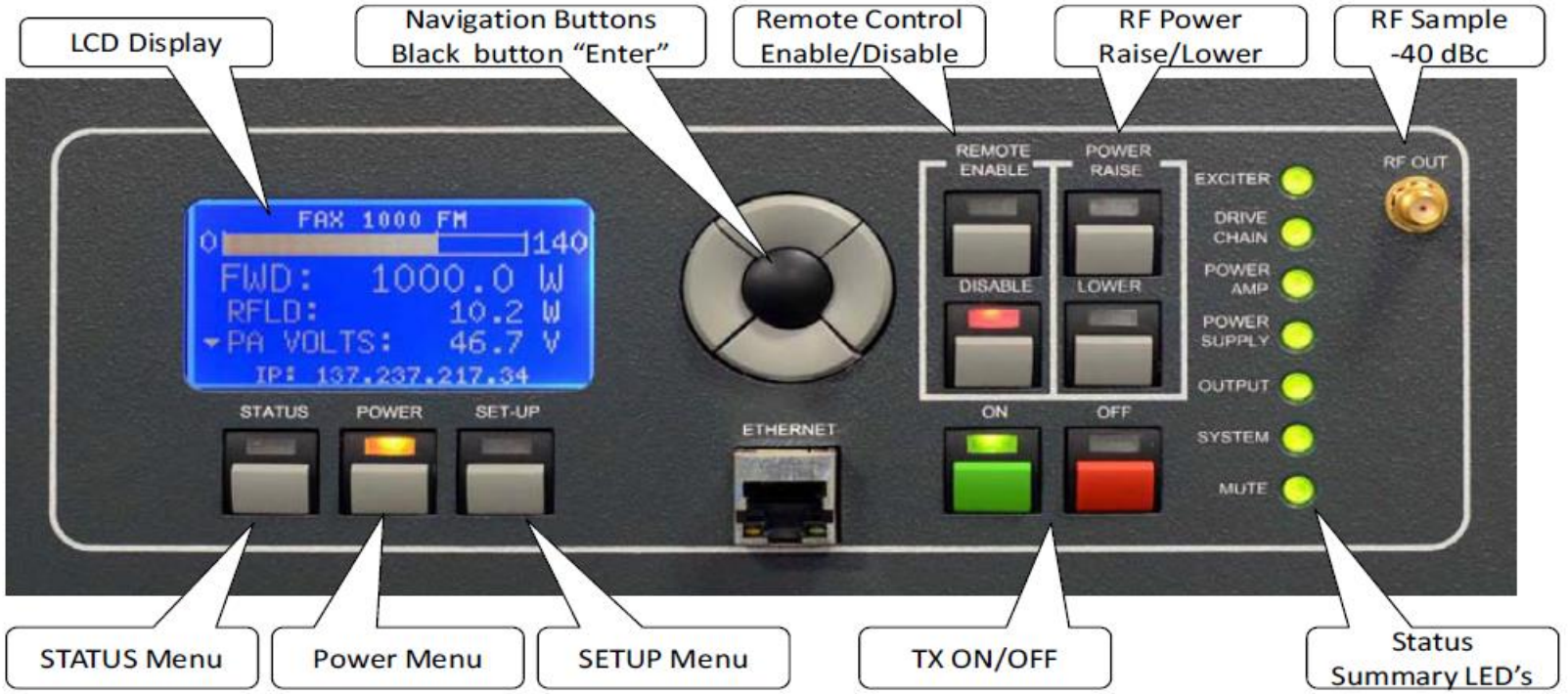


FAX Dual Exciter System

RS485 Communications in FAX high power transmitter only

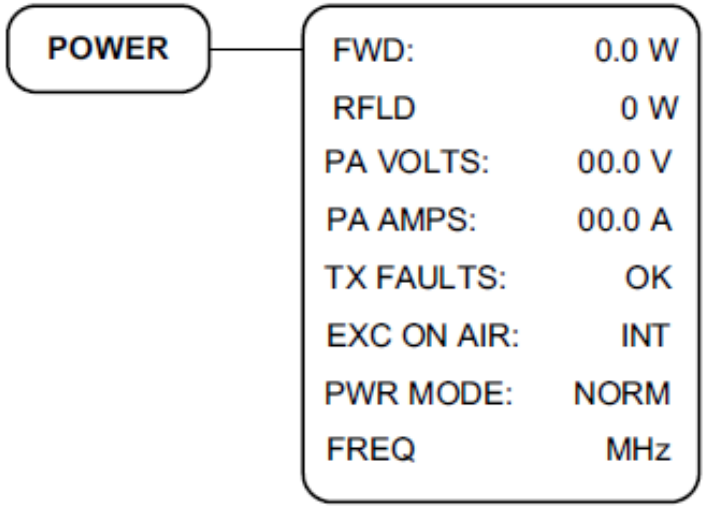


LCD Screen and Buttons

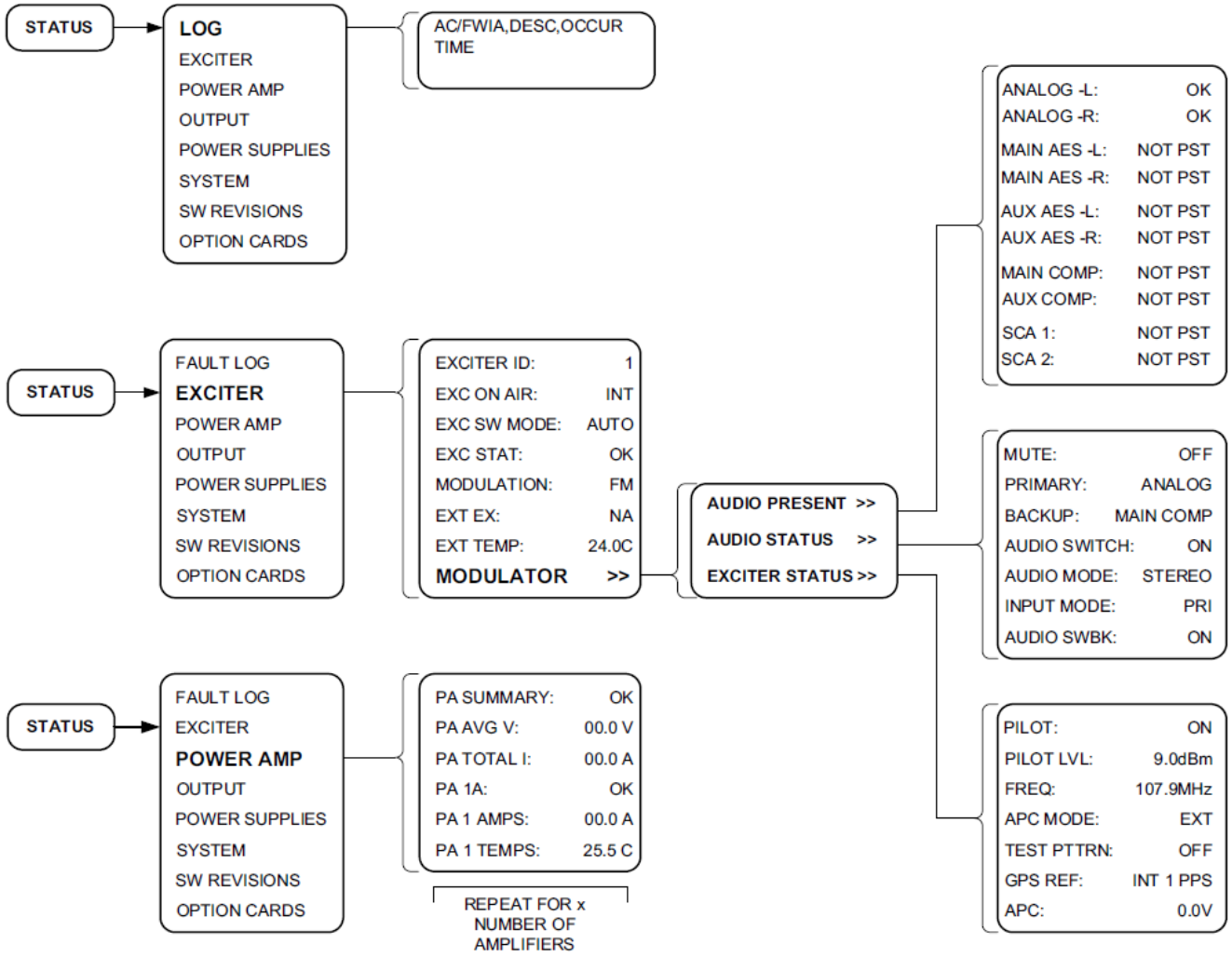


- Web GUI should be considered primary control, however most configuration changes can be made via front panel

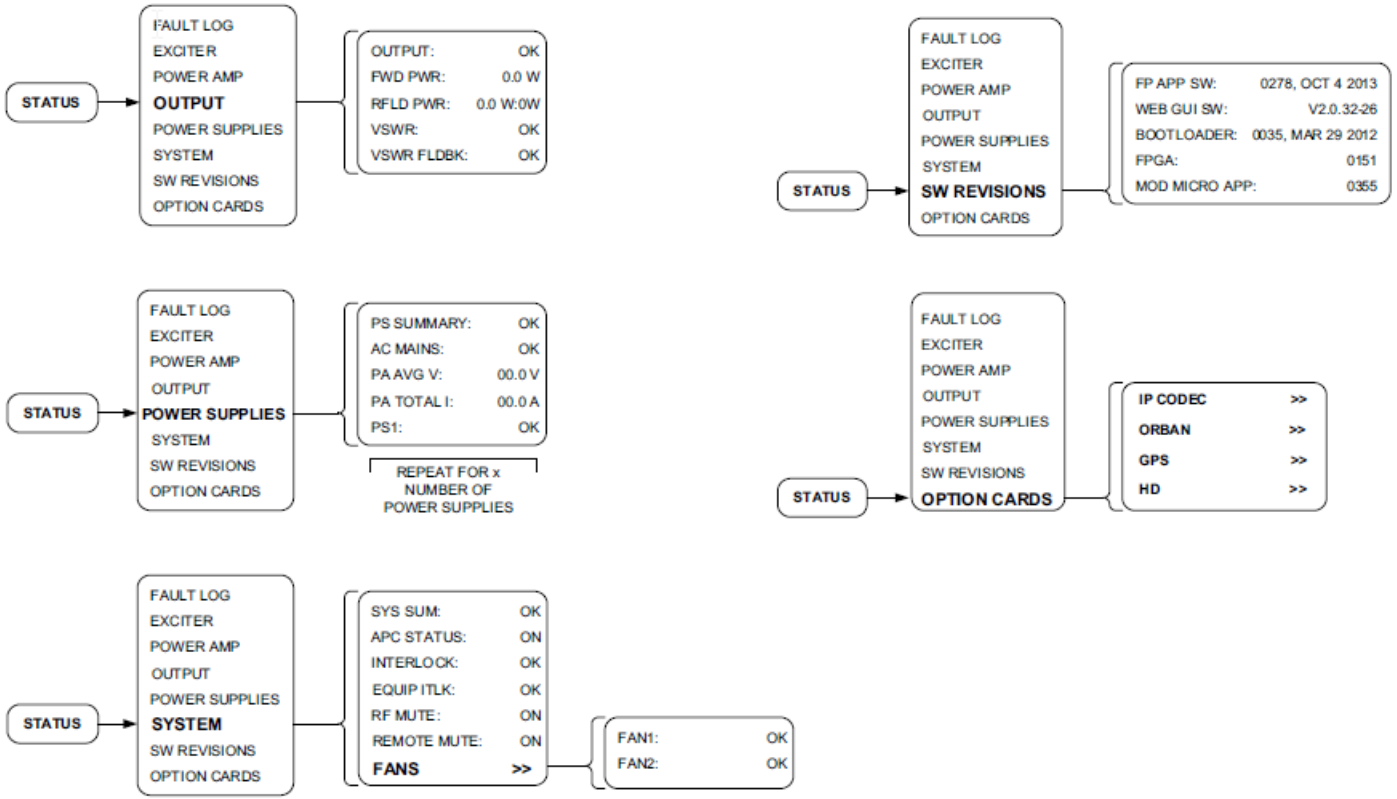
Power Menu


POWER
FWD: 0.0 W
RFLD 0 W
PA VOLTS: 00.0 V
PA AMPS: 00.0 A
TX FAULTS: OK
EXC ON AIR: INT
PWR MODE: NORM
FREQ MHz

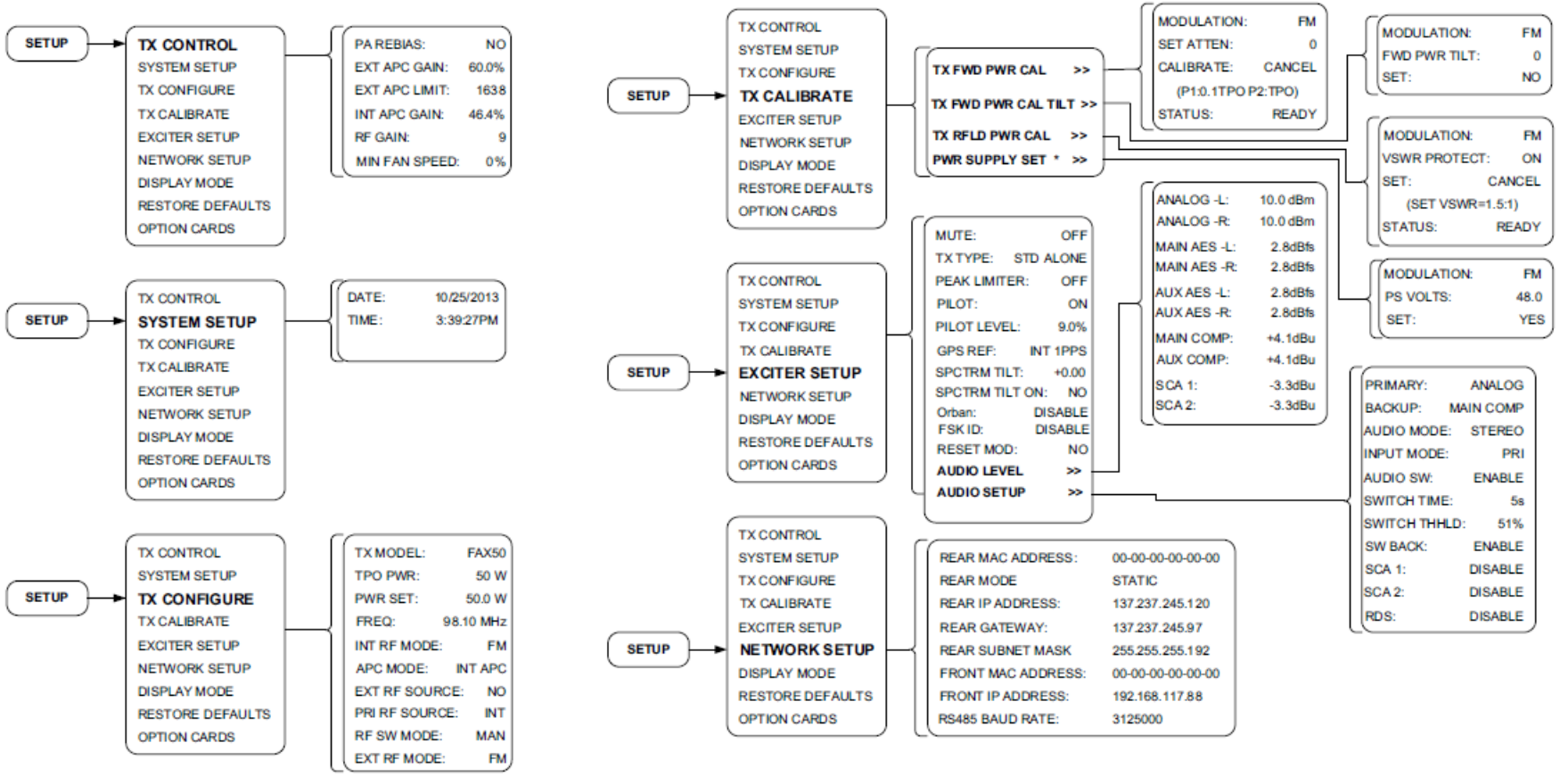
Status Menu


STATUS
LOG
EXCITER
POWER AMP
OUTPUT
POWER SUPPLIES
SYSTEM
SW REVISIONS
OPTION CARDS
AC/FWIA,DESC,OCCUR TIME
STATUS
FAULT LOG
EXCITER
POWER AMP
OUTPUT
POWER SUPPLIES
SYSTEM
SW REVISIONS
OPTION CARDS
EXCITER ID: 1
EXC ON AIR: INT
EXC SW MODE: AUTO
EXC STAT: OK
MODULATION: FM
EXT EX: NA
EXT TEMP: 24.0C
MODULATOR >>
AUDIO PRESENT >>
AUDIO STATUS >>
EXCITER STATUS >>
ANALOG -L: OK
ANALOG -R: OK
MAIN AES -L: NOT PST
MAIN AES -R: NOT PST
AUX AES -L: NOT PST
AUX AES -R: NOT PST
MAIN COMP: NOT PST
AUX COMP: NOT PST
SCA 1: NOT PST
SCA 2: NOT PST
MUTE: OFF
PRIMARY: ANALOG
BACKUP: MAIN COMP
AUDIO SWITCH: ON
AUDIO MODE: STEREO
INPUT MODE: PRI
AUDIO SWBK: ON
PILOT: ON
PILOT LVL: 9.0dBm
FREQ: 107.9MHz
APC MODE: EXT
TEST PTTRN: OFF
GPS REF: INT 1 PPS
APC: 0.0V
STATUS
FAULT LOG
EXCITER
POWER AMP
OUTPUT
POWER SUPPLIES
SYSTEM
SW REVISIONS
OPTION CARDS
PA SUMMARY: OK
PA AVG V: 00.0 V
PA TOTAL I: 00.0 A
PA 1A: OK
PA 1 AMPS: 00.0 A
PA 1 TEMPS: 25.5 C
REPEAT FOR x NUMBER OF AMPLIFIERS

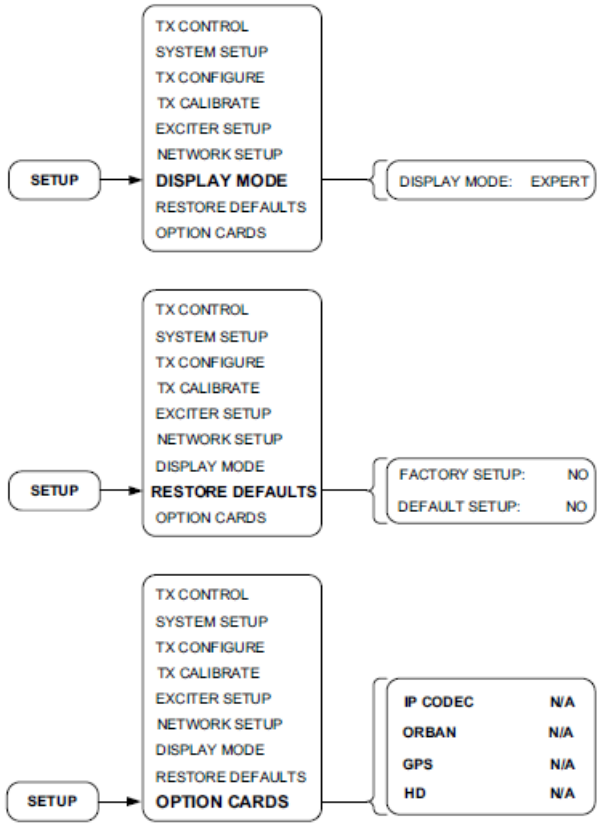
Status Menu


STATUS
FAULT LOG
EXCITER
POWER AMP
OUTPUT
POWER SUPPLIES
SYSTEM
SW REVISIONS
OPTION CARDS
OUTPUT: OK
FWD PWR: 0.0 W
RFLD PWR: 0.0 W:0W
VSWR: OK
VSWR FLDBK: OK
PS SUMMARY: OK
AC MAINS: OK
PA AVG V: 00.0 V
PA TOTAL I: 00.0 A
PS1: OK
REPEAT FOR x NUMBER OF POWER SUPPLIES
SYS SUM: OK
APC STATUS: ON
INTERLOCK: OK
EQUIP ITLK: OK
RF MUTE: ON
REMOTE MUTE: ON
FANS >>
FAN1: OK
FAN2: OK
FP APP SW: 0278, OCT 4 2013
WEB GUI SW: V2.0.32-26
BOOTLOADER: 0035, MAR 29 2012
FPGA: 0151
MOD MICRO APP: 0355
IP CODEC >>
ORBAN >>
GPS >>
HD >>

Setup Menu


SETUP
TX CONTROL
SYSTEM SETUP
TX CONFIGURE
TX CALIBRATE
EXCITER SETUP
NETWORK SETUP
DISPLAY MODE
RESTORE DEFAULTS
OPTION CARDS
PA REBIAS: NO
EXT APC GAIN: 60.0%
EXT APC LIMIT: 1638
INT APC GAIN: 46.4%
RF GAIN: 9
MIN FAN SPEED: 0%
SETUP
TX CONTROL
SYSTEM SETUP
TX CONFIGURE
TX CALIBRATE
EXCITER SETUP
NETWORK SETUP
DISPLAY MODE
RESTORE DEFAULTS
OPTION CARDS
DATE: 10/25/2013
TIME: 3:39:27PM
SETUP
TX CONTROL
SYSTEM SETUP
TX CONFIGURE
TX CALIBRATE
EXCITER SETUP
NETWORK SETUP
DISPLAY MODE
RESTORE DEFAULTS
OPTION CARDS
TX MODEL: FAX50
TPO PWR: 50 W
PWR SET: 50.0 W
FREQ: 98.10 MHz
INT RF MODE: FM
APC MODE: INT APC
EXT RF SOURCE: NO
PRI RF SOURCE: INT
RF SW MODE: MAN
EXT RF MODE: FM
SETUP
TX CONTROL
SYSTEM SETUP
TX CONFIGURE
TX CALIBRATE
EXCITER SETUP
NETWORK SETUP
DISPLAY MODE
RESTORE DEFAULTS
OPTION CARDS
TX FWD PWR CAL >>
TX FWD PWR CAL TILT >>
TX RFLD PWR CAL >>
PWR SUPPLY SET * >>
MODULATION: FM
SET ATTEN: 0
CALIBRATE: CANCEL
(P1:0.1TPO P2:TPO)
STATUS: READY
MODULATION: FM
FWD PWR TILT: 0
SET: NO
MODULATION: FM
VSWR PROTECT: ON
SET: CANCEL
(SET VSWR=1.5:1)
STATUS: READY
MODULATION: FM
PS VOLTS: 48.0
SET: YES
SETUP
TX CONTROL
SYSTEM SETUP
TX CONFIGURE
TX CALIBRATE
EXCITER SETUP
NETWORK SETUP
DISPLAY MODE
RESTORE DEFAULTS
OPTION CARDS
MUTE: OFF
TX TYPE: STD ALONE
PEAK LIMITER: OFF
PILOT: ON
PILOT LEVEL: 9.0%
GPS REF: INT 1PPS
SPCTRM TILT: +0.00
SPCTRM TILT ON: NO
Orban: DISABLE
FSK ID: DISABLE
RESET MOD: NO
AUDIO LEVEL >>
AUDIO SETUP >>
ANALOG -L: 10.0 dBm
ANALOG -R: 10.0 dBm
MAIN AES -L: 2.8dBfs
MAIN AES -R: 2.8dBfs
AUX AES -L: 2.8dBfs
AUX AES -R: 2.8dBfs
MAIN COMP: +4.1dBu
AUX COMP: +4.1dBu
SCA 1: -3.3dBu
SCA 2: -3.3dBu
PRIMARY: ANALOG
BACKUP: MAIN COMP
AUDIO MODE: STEREO
INPUT MODE: PRI
AUDIO SW: ENABLE
SWITCH TIME: 5s
SWITCH THHLD: 51%
SW BACK: ENABLE
SCA 1: DISABLE
SCA 2: DISABLE
RDS: DISABLE
SETUP
TX CONTROL
SYSTEM SETUP
TX CONFIGURE
TX CALIBRATE
EXCITER SETUP
NETWORK SETUP
DISPLAY MODE
RESTORE DEFAULTS
OPTION CARDS
REAR MAC ADDRESS: 00-00-00-00-00-00
REAR MODE STATIC
REAR IP ADDRESS: 137.237.245.120
REAR GATEWAY: 137.237.245.97
REAR SUBNET MASK 255.255.255.192
FRONT MAC ADDRESS: 00-00-00-00-00-00
FRONT IP ADDRESS: 192.168.117.88
RS485 BAUD RATE: 3125000

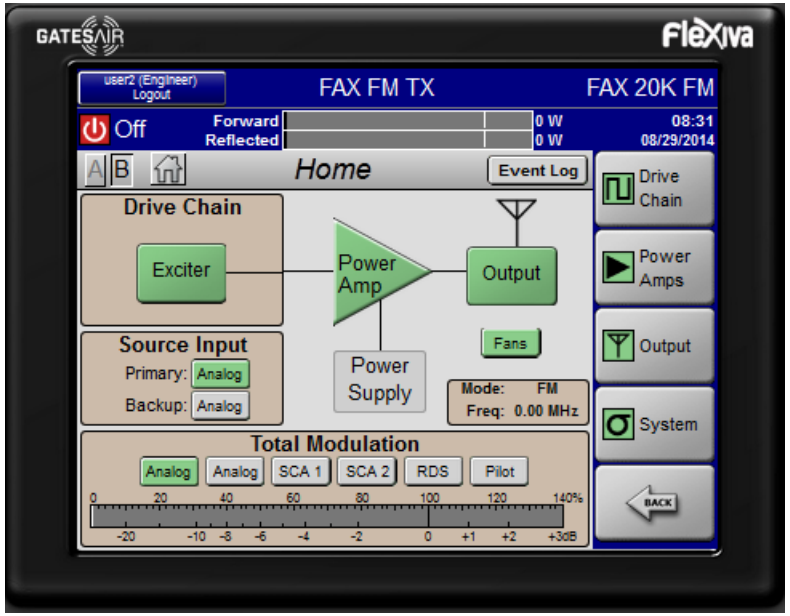
Setup Menu


SETUP
TX CONTROL
SYSTEM SETUP
TX CONFIGURE
TX CALIBRATE
EXCITER SETUP
NETWORK SETUP
DISPLAY MODE
RESTORE DEFAULTS
OPTION CARDS
DISPLAY MODE: EXPERT
SETUP
TX CONTROL
SYSTEM SETUP
TX CONFIGURE
TX CALIBRATE
EXCITER SETUP
NETWORK SETUP
DISPLAY MODE
RESTORE DEFAULTS
OPTION CARDS
FACTORY SETUP: NO
DEFAULT SETUP: NO
SETUP
TX CONTROL
SYSTEM SETUP
TX CONFIGURE
TX CALIBRATE
EXCITER SETUP
NETWORK SETUP
DISPLAY MODE
RESTORE DEFAULTS
OPTION CARDS
IP CODEC N/A
ORBAN N/A
GPS N/A
HD N/A

GUI Access (3 Ways)

- Through the front Ethernet port 192.168.117.88
  - This **is** the port that you should use for local maintenance tasks
  - This **is** the port that you should use for software upgrades.
  - This **is NOT** a port to put on a network. This port contains a DHCP server and will automatically assign IP addresses to computers that are attached to it.
- Through the rear Ethernet port
  - This **is** the port to add to your network
  - This port can be set to a static IP address or to receive from an DHCP server.
- If an exciter you can drill in through the RS-232 connection of the HP Fax transmitter.
  - This is a great workaround for the rear Ethernet port.
  - Do not load software through this connection even if you are connected directly to the front port of the HP Fax

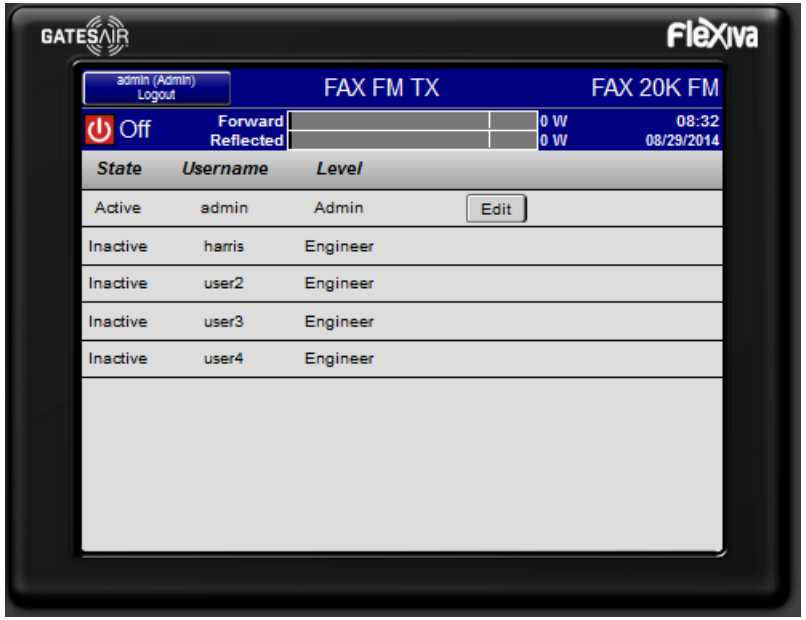
FAX Exciter Home Screen

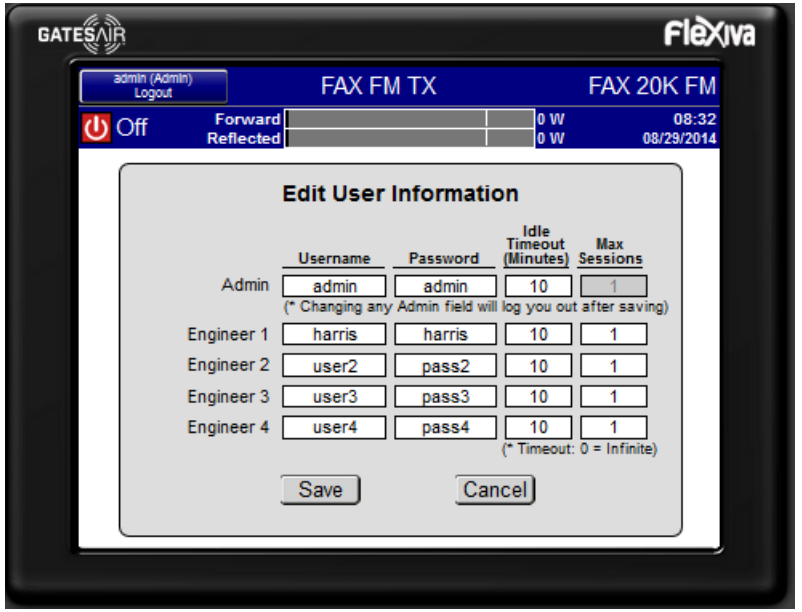


FAX Home Screen – All screens can be viewed without logging in, setup fields will be grayed out.

When house icon appears on screen, clicking it will take the user directly to this screen.

FAX Passwords



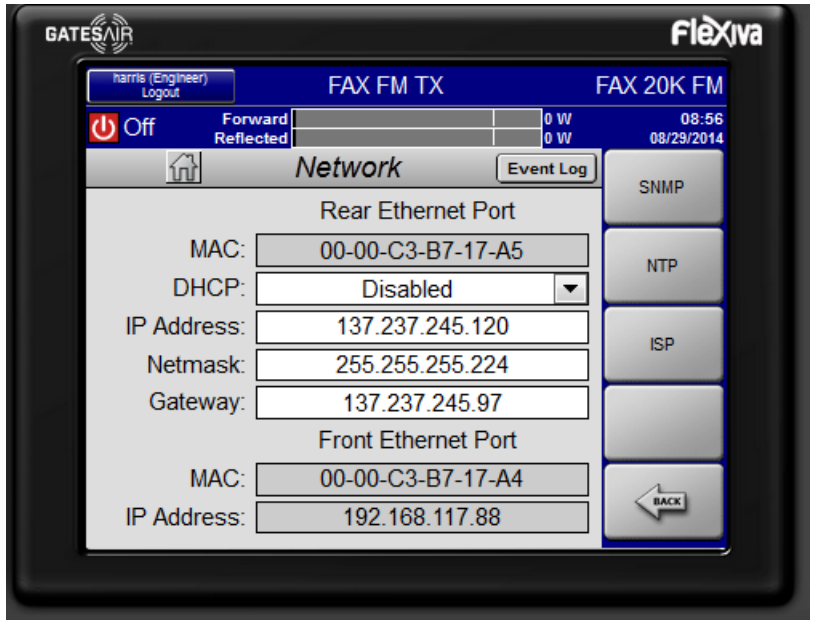


Ethernet – Default Login/Passwords shown in screen
Front Port – **DHCP Server**; IP – 192.168.117.88
Rear Port – User Configurable
Admin login gets to screen shown above ONLY

Log In

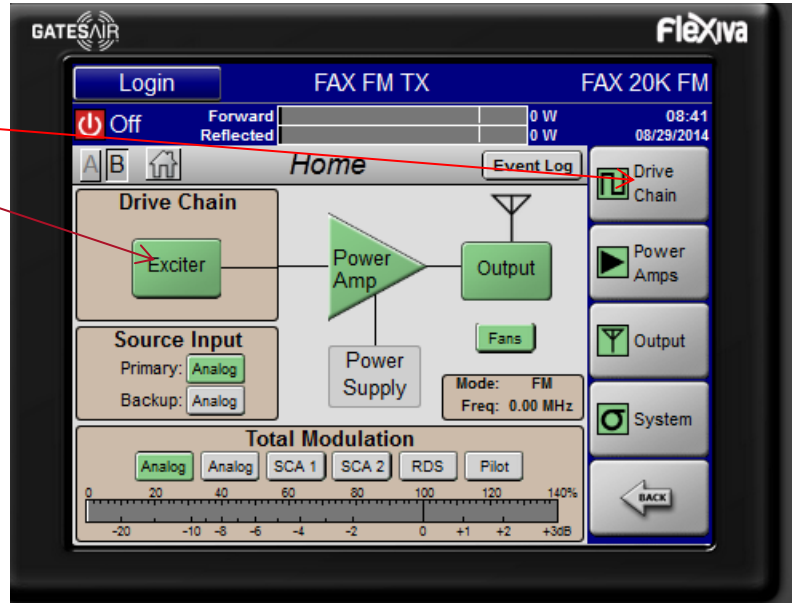
- To make changes to the transmitter you will need to be logged in as an engineer
- If you are not logged in you can still view everything but will not be able to make changes
- Even if you are logged in you still are subject to the status of the remote enable/disable switch. With remotes disabled you will still be able to view everything just no make changes. Similar to not being logged in.
- All engineer passwords have the same level of control. There is no tier access.
- Changing the “Idle Timeout” field to 0 = Infinate Minutes. If you get locked out you will need to reboot the controller before you can log back in. If doing software upgrades make sure you are set to at least 10 minutes.

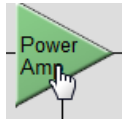
FAX Network Setup (System>Network)



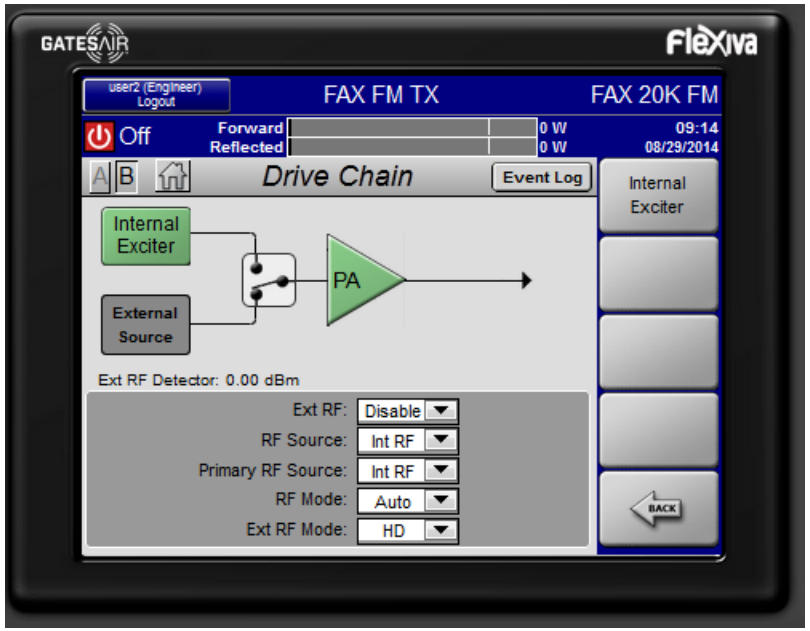
Navigation

- Sometimes there are multiple ways to get to the same screen
- Most of the boxes are clickable. If you see a finger for a pointer that you can click on it. If an arrow then it is not an active button.





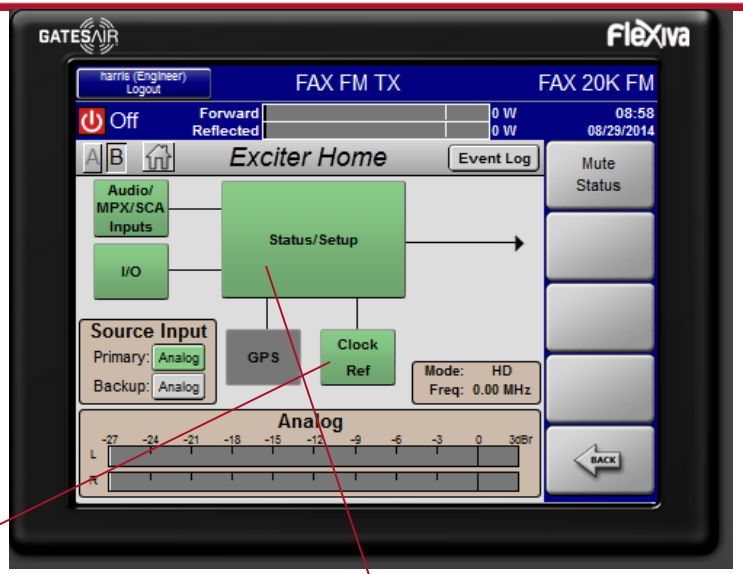
- Follow the red to drill in on faults.

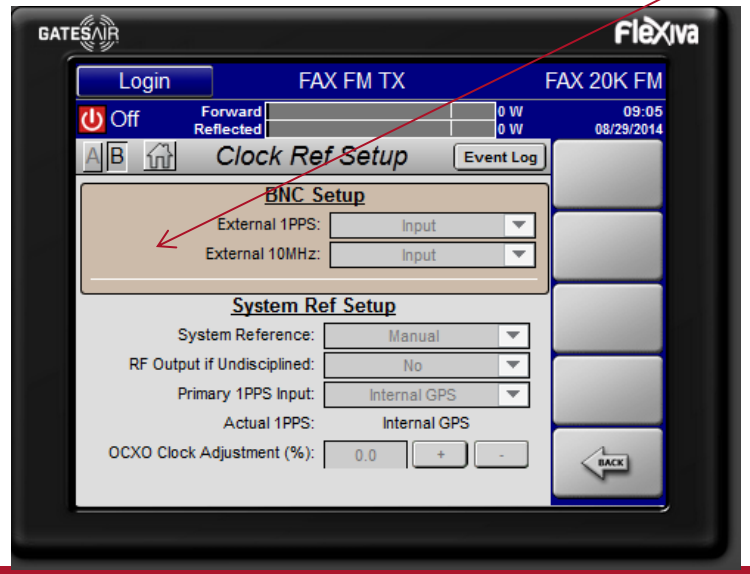

GATESAIR
FleXiva
user2 (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
09:14
08/29/2014
A
B
Drive Chain
Event Log
Internal Exciter
Internal Exciter
External Source
PA
Ext RF Detector: 0.00 dBm
Ext RF: Disable
RF Source: Int RF
Primary RF Source: Int RF
RF Mode: Auto
Ext RF Mode: HD
BACK

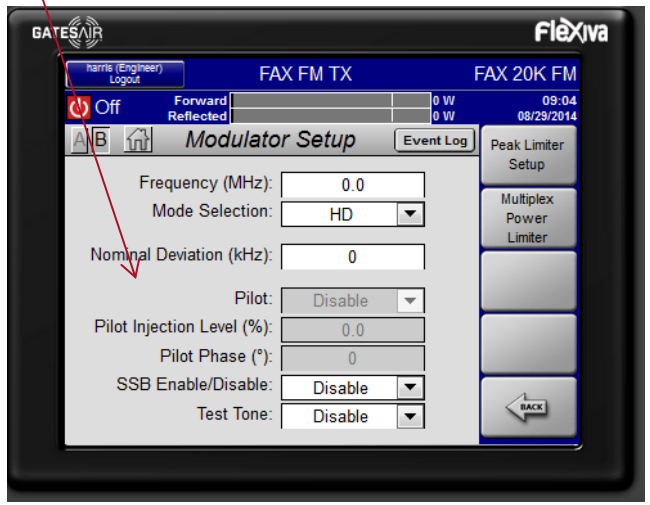
FAX Internal Exciter

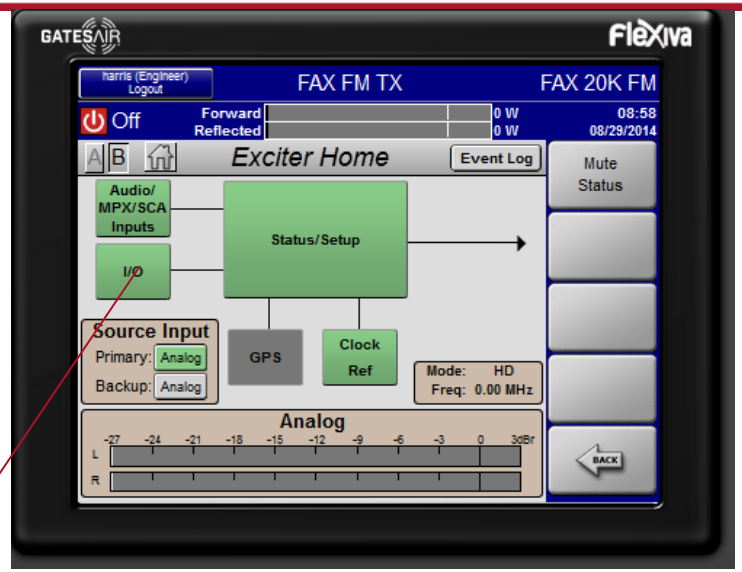
FAX Time Synchronization Options

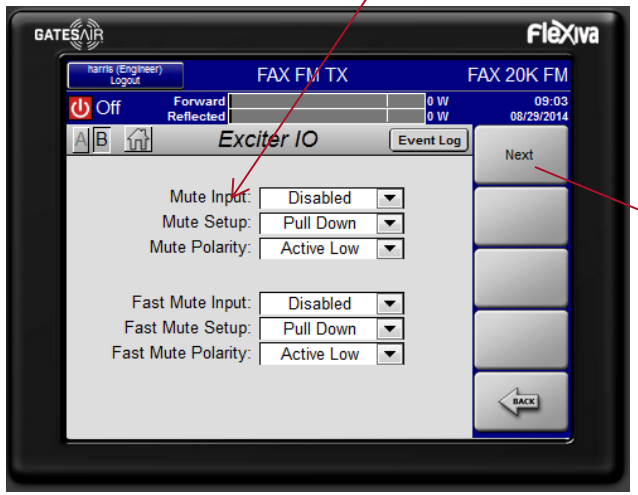
- Internal Clock ±150 Hz
- NTP – Requires Internet connectivity
- Internal GPS – Option
- External 10 MHz
- External 1 PPS

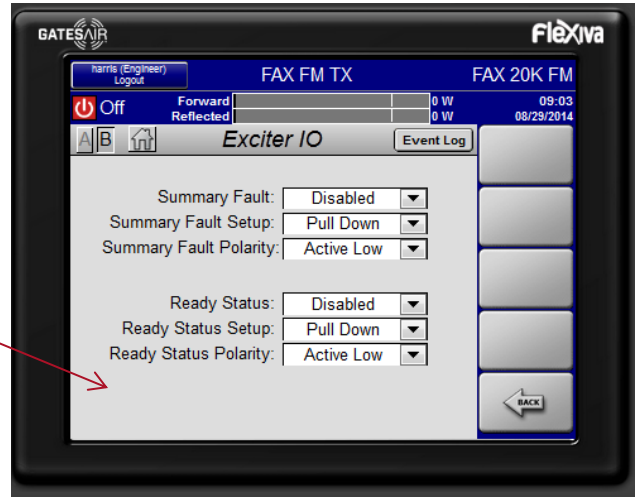


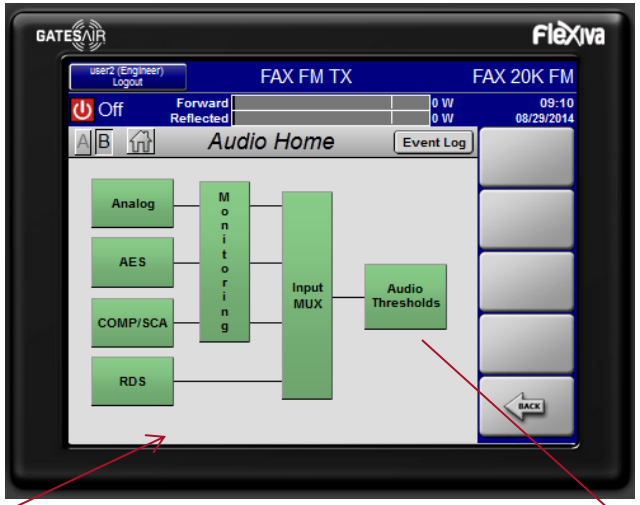


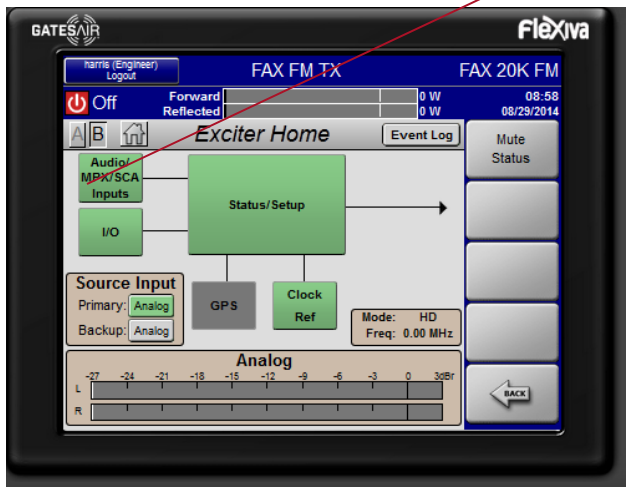



GATESAIR
FLEXIVA
harris (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
08:58
08/29/2014
A
B
Exciter Home
Event Log
Mute Status
Audio/ MPX/SCA Inputs
I/O
Status/Setup
Source Input
Primary:
Analog
Backup:
Analog
GPS
Clock Ref
Mode: HD
Freq: 0.00 MHz
Analog
-27 -24 -21 -18 -15 -12 -9 -6 -3 0 3dBr
L
R
BACK


GATESAIR
FLEXIVA
harris (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
09:03
08/29/2014
A
B
Exciter IO
Event Log
Next
Mute Input:
Disabled
Mute Setup:
Pull Down
Mute Polarity:
Active Low
Fast Mute Input:
Disabled
Fast Mute Setup:
Pull Down
Fast Mute Polarity:
Active Low
BACK


GATESAIR
FLEXIVA
harris (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
09:03
08/29/2014
A
B
Exciter IO
Event Log
Summary Fault:
Disabled
Summary Fault Setup:
Pull Down
Summary Fault Polarity:
Active Low
Ready Status:
Disabled
Ready Status Setup:
Pull Down
Ready Status Polarity:
Active Low
BACK

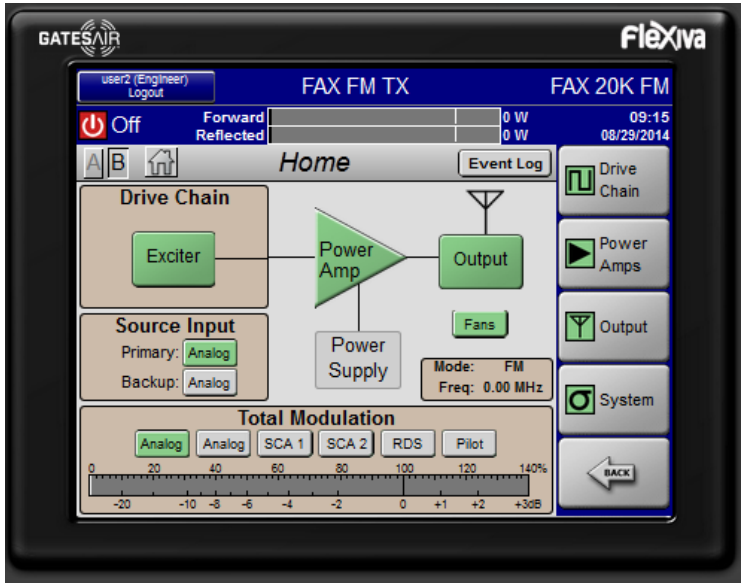

GATESAIR
FleXiva
user2 (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
09:10
08/29/2014
A
B
Audio Home
Event Log
Analog
AES
COMP/SCA
RDS
Monitoring
Input MUX
Audio Thresholds
BACK

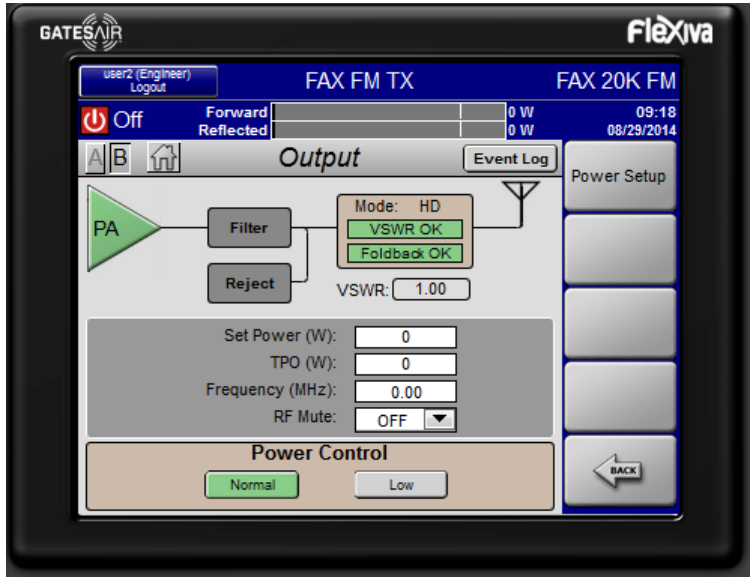

GATESAIR
FleXiva
harris (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
08:58
08/29/2014
A
B
Exciter Home
Event Log
Mute Status
Audio/ MPX/SCA Inputs
I/O
Status/Setup
Source Input
Primary:
Analog
Backup:
Analog
GPS
Clock Ref
Mode: HD
Freq: 0.00 MHz
Analog
-27 -24 -21 -18 -15 -12 -9 -6 -3 0 3dBr
L
R
BACK

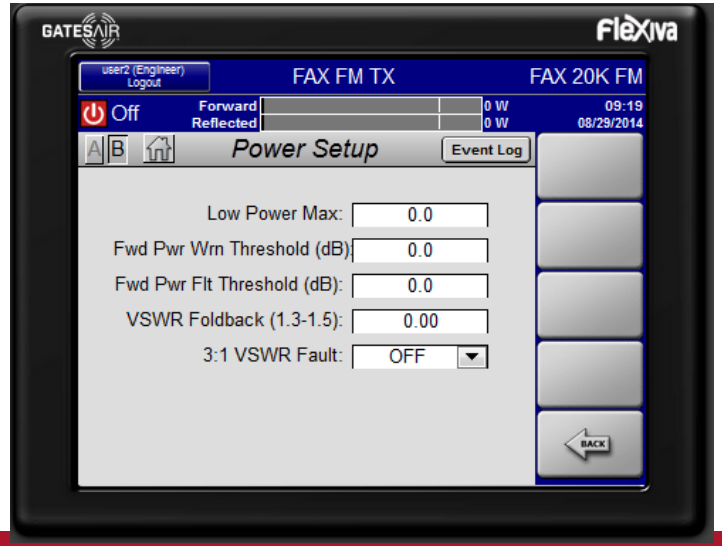

GATESAIR
FleXiva
user2 (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
09:11
08/29/2014
A
B
Audio Thresholds
Event Log
Monitor Threshold
Undercut Delay T1
Return Delay T2
Log Type
Analog: 0 dBu 0 S 0 S None
Main AES: 0 dBFS 0 S 0 S None
Aux AES: 0 dBFS 0 S 0 S None
Main Comp: 0 dBu 0 S 0 S None
Aux Comp: 0 dBu 0 S 0 S None
SCA 1: 0 dBu 0 S 0 S None
SCA 2: 0 dBu 0 S 0 S None
BACK

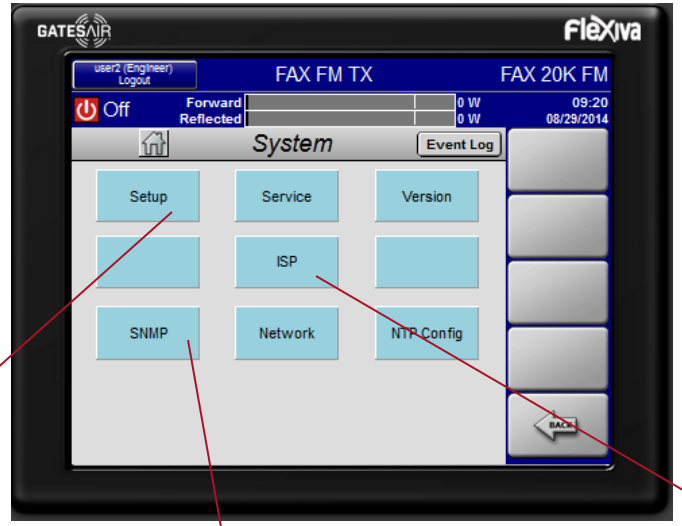

GATESAIR
FLEXIVA
user2 (Engineer) Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
09:10
08/29/2014
A B
Audio Home
Event Log
Analog
AES
COMP/SCA
RDS
Monitoring
Input MUX
Audio Thresholds
BACK
09:12
Exciter Analog
L Level
R Level
Analog Level (dBu):
0.0
0.0
Pre-Emphasis
Analog L/R:
Flat
Low Pass Filter
Analog Filter:
Bypass
Analog Polarity:
Normal
Audio Monitoring
Analog Audio
Main AES Input
Aux AES Input
Main Comp Input
Aux Comp Input
SCA 1 Injection
SCA 2 Injection
09:11
Input Mux Setup
Primary Source:
Analog
Backup Source:
Analog
Source Selection:
Primary
Stereo Mode:
Mono(L+R)
Auto Switching Primary to Back:
Disabled
Auto Switch Back:
Disabled
SCA 1 Auto Disconnect:
Disabled
SCA 2 Auto Disconnect:
Disabled

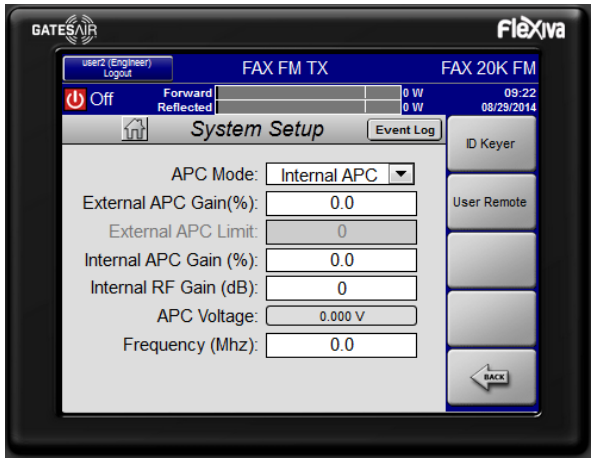

GATESAIR
FLEXIVA
user2 (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
09:15
08/29/2014
A
B
Home
Event Log
Drive Chain
Exciter
Power Amp
Output
Fans
Power Supply
Source Input
Primary:
Analog
Backup:
Analog
Mode: FM
Freq: 0.00 MHz
Total Modulation
Analog
Analog
SCA 1
SCA 2
RDS
Pilot
0
20
40
60
80
100
120
140%
-20
-10
-8
-6
-4
-2
0
+1
+2
+3dB
Drive Chain
Power Amps
Output
System
BACK
GATESAIR
FLEXIVA
user2 (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
09:16
08/29/2014
A
B
Power Amp
Event Log
Power Amp
Voltage: 0.00 V
Current: 0.00 A
Temperature: 0.00 C
Current OK
Temp OK
BACK

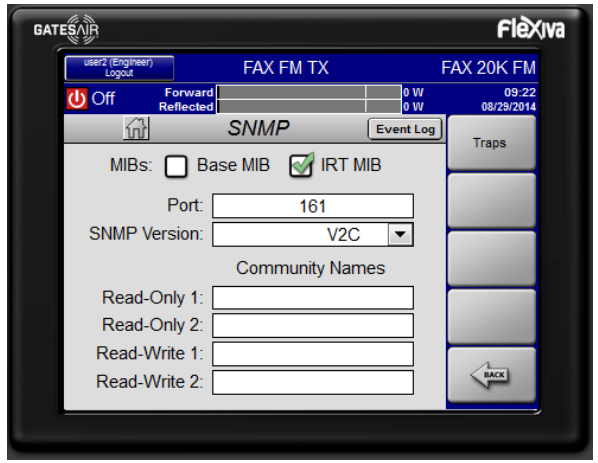

GATESAIR
FLEXIVA
user2 (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
09:15
08/29/2014
A
B
Home
Event Log
Drive Chain
Exciter
Power Amp
Output
Fans
Power Supply
Source Input
Primary:
Analog
Backup:
Analog
Mode: FM
Freq: 0.00 MHz
Total Modulation
Analog
Analog
SCA 1
SCA 2
RDS
Pilot
Drive Chain
Power Amps
Output
System
BACK


GATESAIR
FLEXIVA
user2 (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
09:18
08/29/2014
A
B
Output
Event Log
PA
Filter
Reject
Mode: HD
VSWR OK
Foldback OK
VSWR:
1.00
Set Power (W):
0
TPO (W):
0
Frequency (MHz):
0.00
RF Mute:
OFF
Power Control
Normal
Low
Power Setup
BACK


GATESAIR
FLEXIVA
user2 (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
09:19
08/29/2014
A
B
Power Setup
Event Log
Low Power Max:
0.0
Fwd Pwr Wrn Threshold (dB):
0.0
Fwd Pwr Flt Threshold (dB):
0.0
VSWR Foldback (1.3-1.5):
0.00
3:1 VSWR Fault:
OFF
BACK

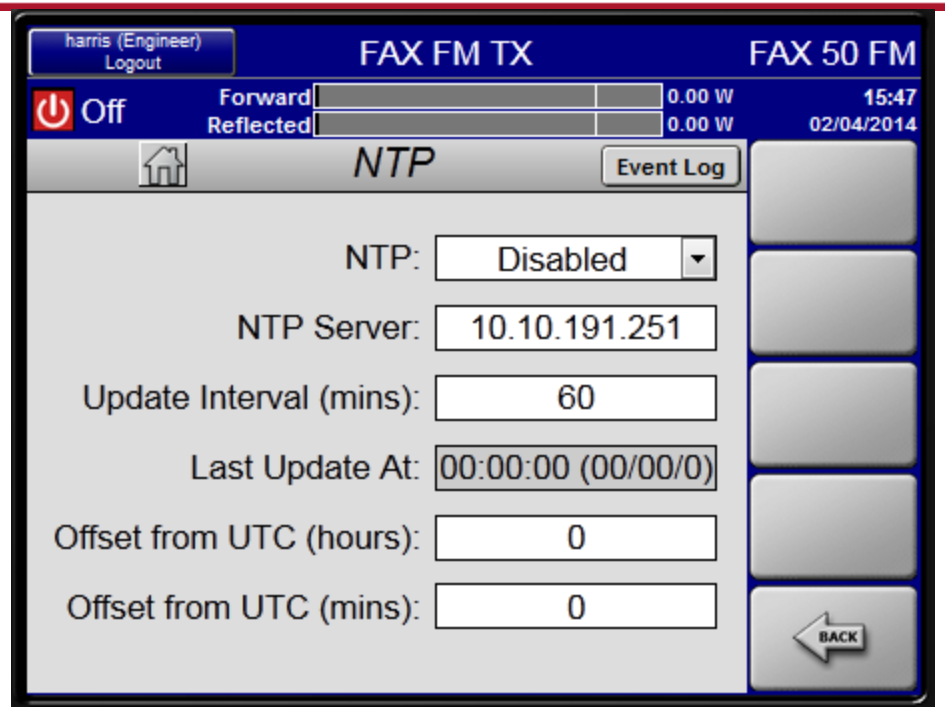

GATESAIR
FLEXIVA
user2 (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
09:20
08/29/2014
System
Event Log
Setup
Service
Version
ISP
SNMP
Network
NTP Config
BACK


GATESAIR
FLEXIVA
user2 (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
09:22
08/29/2014
System Setup
Event Log
ID Keyer
User Remote
APC Mode:
Internal APC
External APC Gain(%):
0.0
External APC Limit:
0
Internal APC Gain (%):
0.0
Internal RF Gain (dB):
0
APC Voltage:
0.000 V
Frequency (Mhz):
0.0
BACK


GATESAIR
FLEXIVA
user2 (Engineer)
Logout
FAX FM TX
FAX 20K FM
Off
Forward
Reflected
0 W
0 W
09:22
08/29/2014
SNMP
Event Log
Traps
MIBs:
Base MIB
IRT MIB
Port:
161
SNMP Version:
V2C
Community Names
Read-Only 1:
Read-Only 2:
Read-Write 1:
Read-Write 2:
BACK

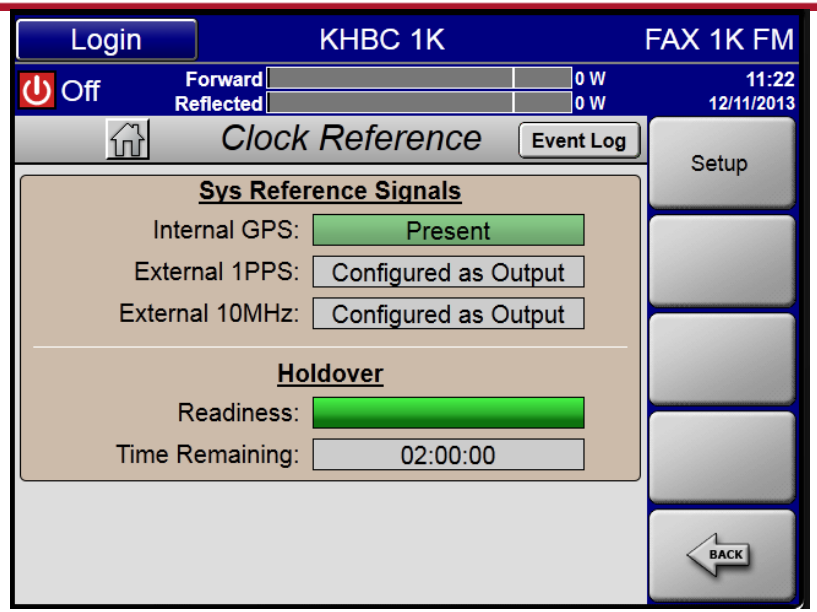

GATESAIR
FLEXIVA
user2 (Engineer)
Logout
Firmware Management
BACK
Upload
Configuration
Reset
Upload
Browse
Uploading:
0%
Status

FAX Time Sync



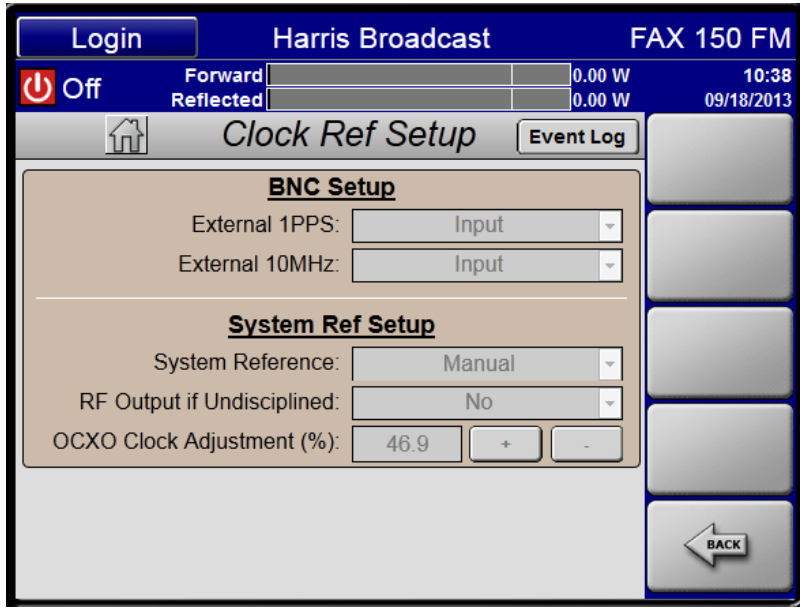
NTP sets time to NTP Server – must have internet connection
Update interval: 2 – 60 minutes
Offset: from Greenwich Mean Time (GMT)

FAX Time Sync



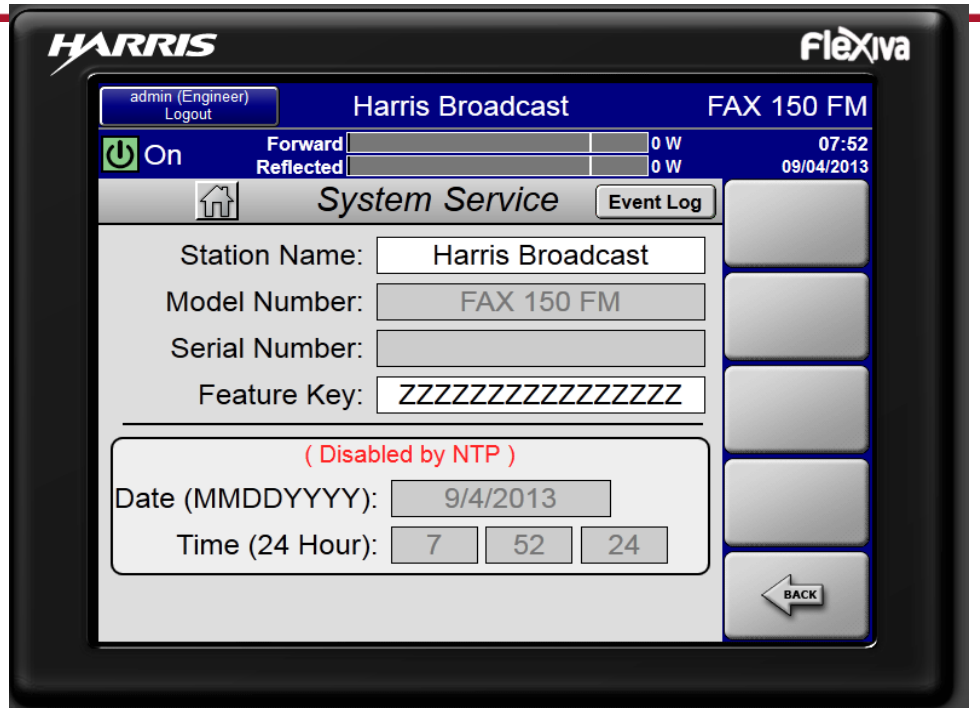
Internal GPS is option
Holdover available only when GPS option installed; will hold last setting until lock is re-acquired

FAX Time Sync



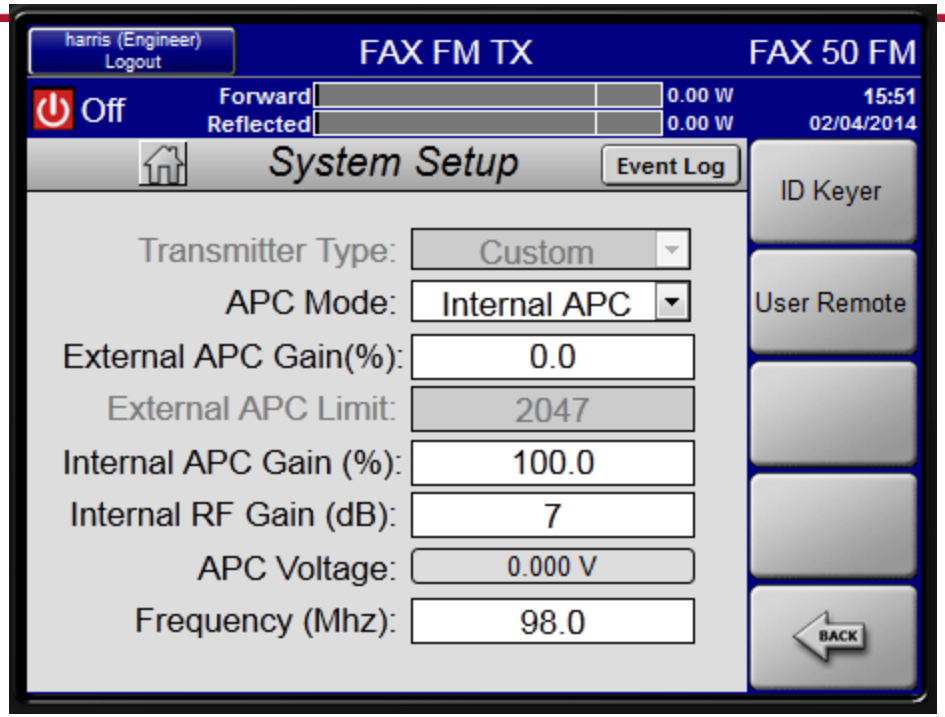
External 1 PPS and External 10 MHz: can be Input or Output; if Input and no signal detected Fault will occur
System reference: - can be locked to either external signal, manual (internal OCXO) or internal GPS.
RF Output if Undisciplined: - yes mutes RF until lock occurs; no runs on internal OCXO
OCXO Clock Adjust - available in Manual mode only. Adjusts internal 40 MHz OCXO, used to sets exciter on frequency.

FAX Service



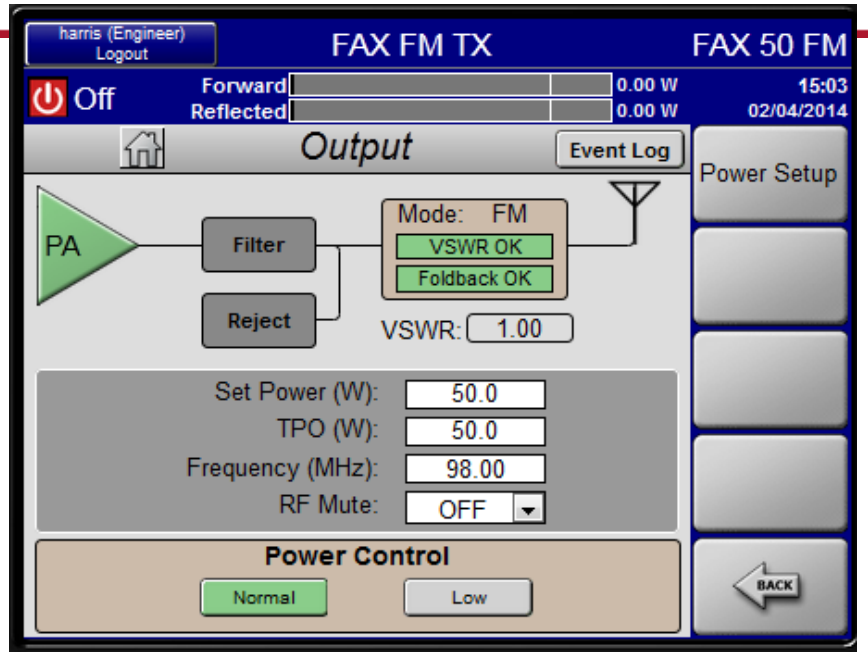
Station Name – Up to 20 characters
Feature Key – generated by Harris, contact service for upgrade options
Date/Time – Sets internal date time for Event Log. Can be sync'd to NTP or GPS

FAX System Setup



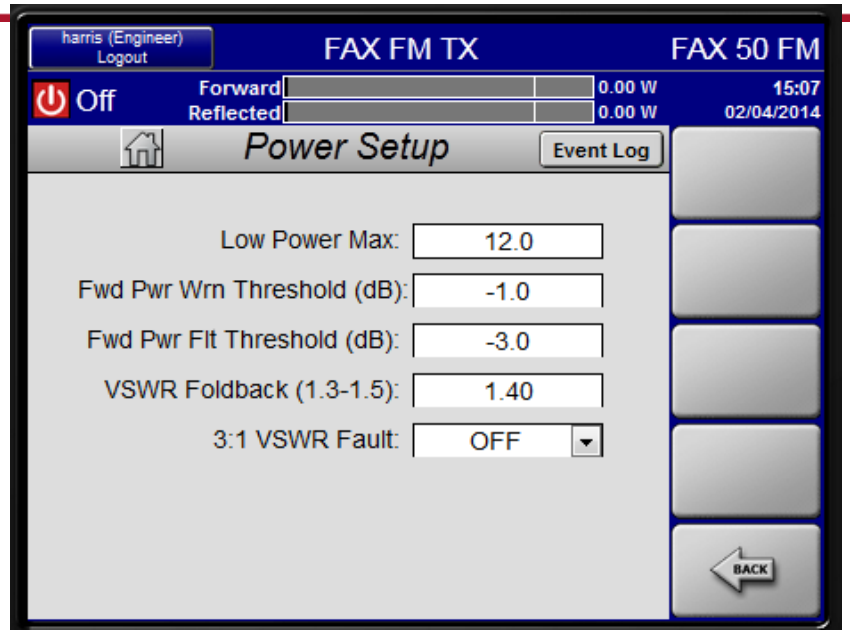
Transmitter Type – Not used
APC Mode – Internal, External or Boost Amp
External APC Gain – Set via front panel LCD. Sets gain for correct APC voltage.
External APC Limit – Not used, default is max 2047
Internal APC Gain – 0-100 %, used to set the APC Voltage
Internal RF Gain – Sets value of step attenuator
APC Voltage - is Internal APC to amplifier on the Modulator Board. Range is 0-5 VDC; Set to 3.0 VDC at TPO
Frequency – Set carrier frequency in 100 kHz steps on GUI; 10 kHz steps via LCD

FAX Output Setup



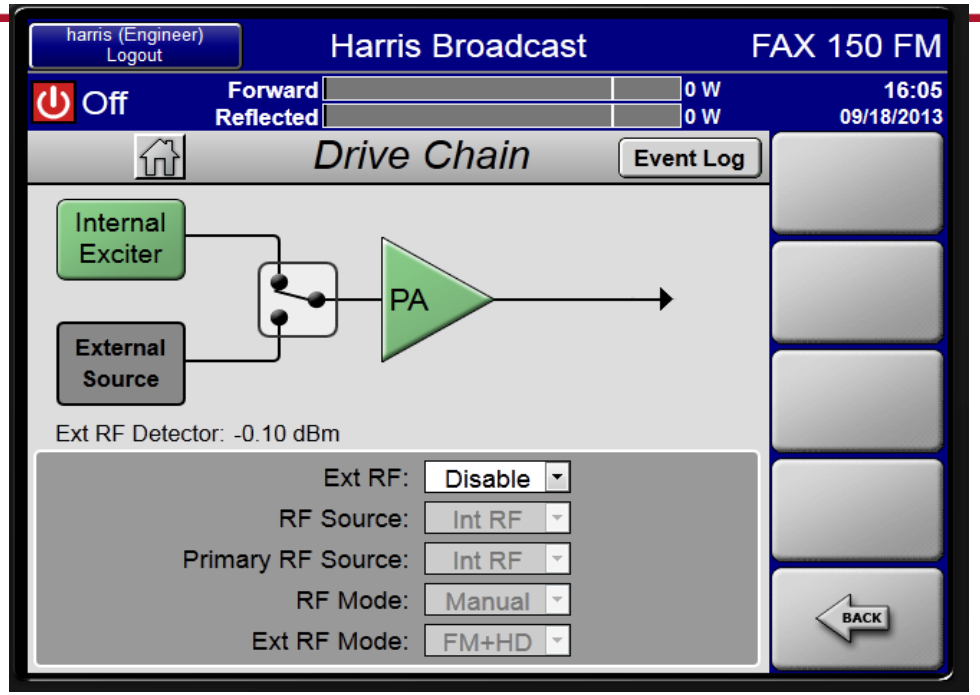
Set Power (W) – Sets actual power out of transmitter. Can be set 10 % above TPO Power setting.
TPO (W) – Sets maximum power out of the unit in Internal APC Mode, Set power can be 10 % above this number. In External APC Mode sets the power bargraph 100 % point
Power Control – Activates the Normal or Low power modes. Low power mode maximum power setup in the Power Setup screen.

FAX Output Setup



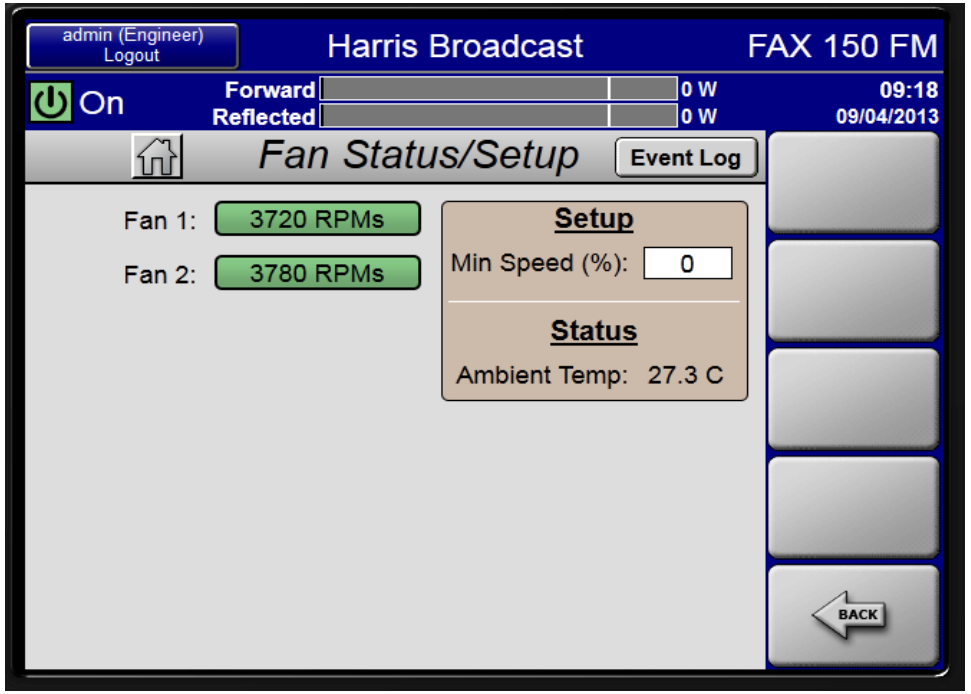
Low Power Max – Maximum power (Watts) the transmitter will operate when Low Power Mode is active
Fwd Wrn Threshold – Sets RF level in dB below Set Power where Warning is generated, must be in Internal APC mode
Fwd Flt Threshold – Sets RF level in dB below Set Power where Fault is generated; must be in Internal APC mode
VSWR Foldback – Sets level where APC begins to reduce power under high reflected power conditions
3:1 VSWR Fault: - As VSWR increases above the foldback threshold the VSWR ratio continues to increase even though the reflected power remains constant. With this field set to ON, when the VSWR reaches 3:1 the transmitter will fault off and three-strike. On the fourth strike in 60 seconds or less the transmitter will stay OFF and will require a manual ON to return to operation once the VSWR is corrected.

FAX Drive Chain



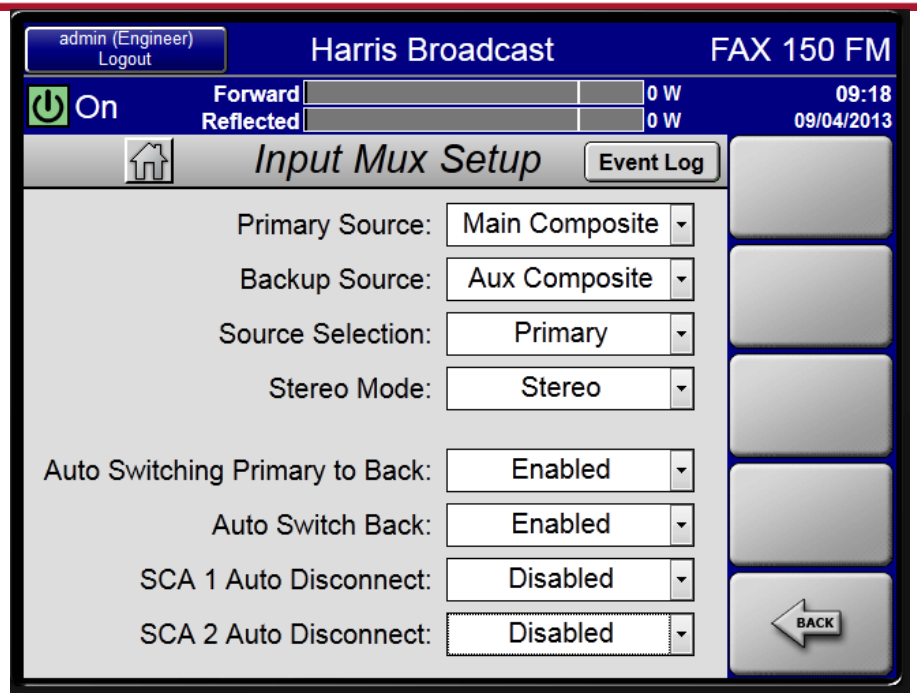
Ext RF: - Enables the External RF Source
RF Source: – Selects Internal or External
Primary RF Source:– Internal or External
RF Mode: – Manual or Auto; Note auto-switching can only happen from external to internal. This is not considered dual exciters.
Ext RF Mode: – FM, FM+HD or HD

FAX Fans



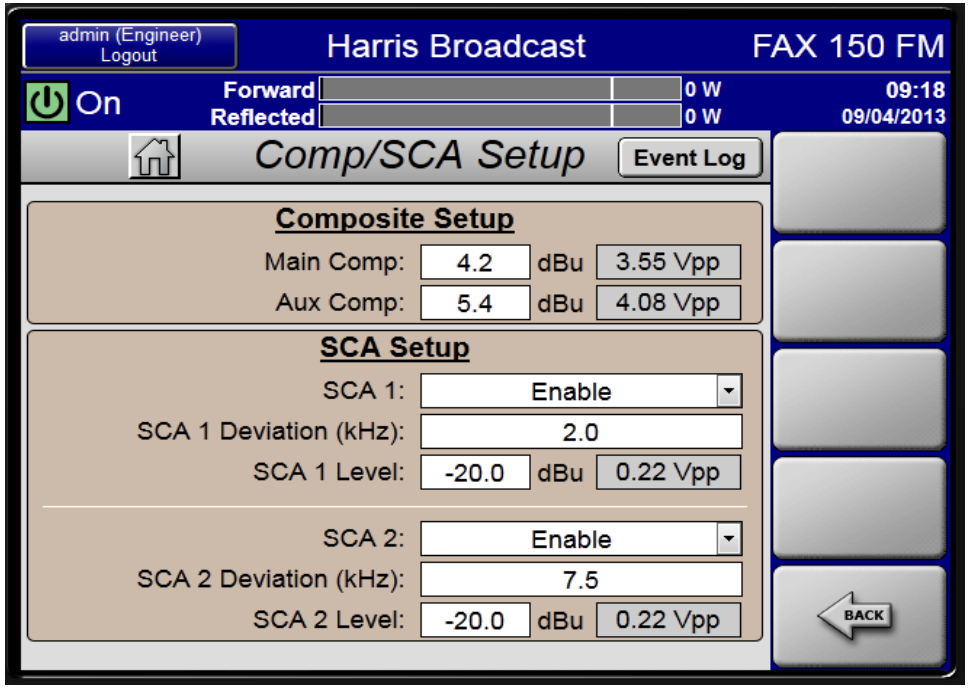
Min Speed (%) – Sets the minimum fan speed. This speed will be maintained only when transmitter is ON.

FAX Audio Setup



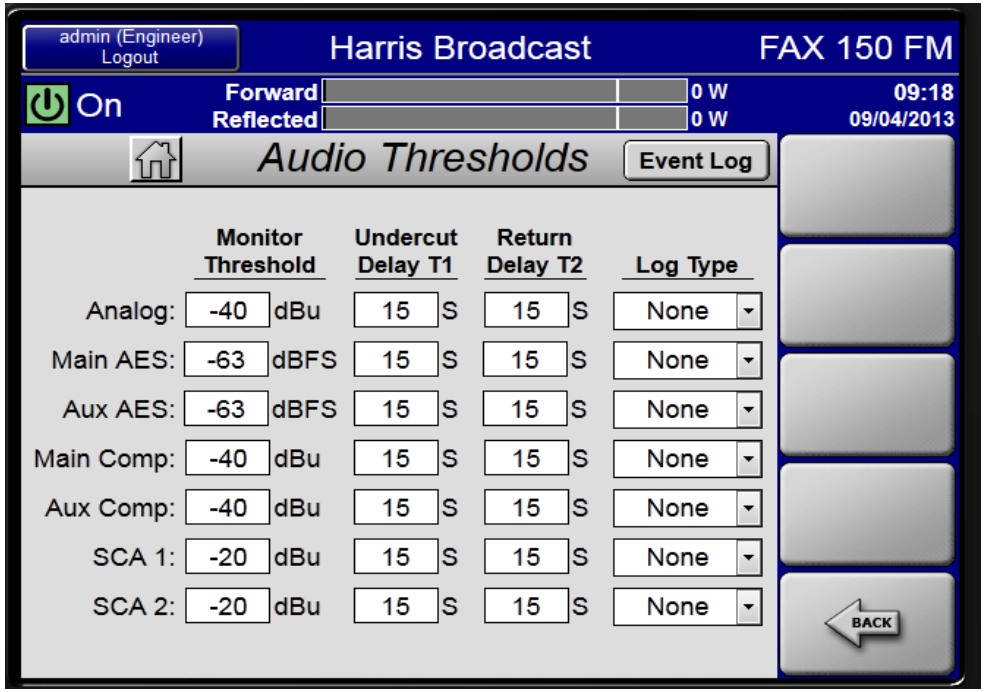
Primary Source – Audio source that is the main source to be put on-air.
Backup Source – Audio source to switch to in case of Primary source failure
Auto Switch Back – Enabled allows for the source to switch back to Primary once the primary source has met the criteria for switch back

FAX Audio Setup



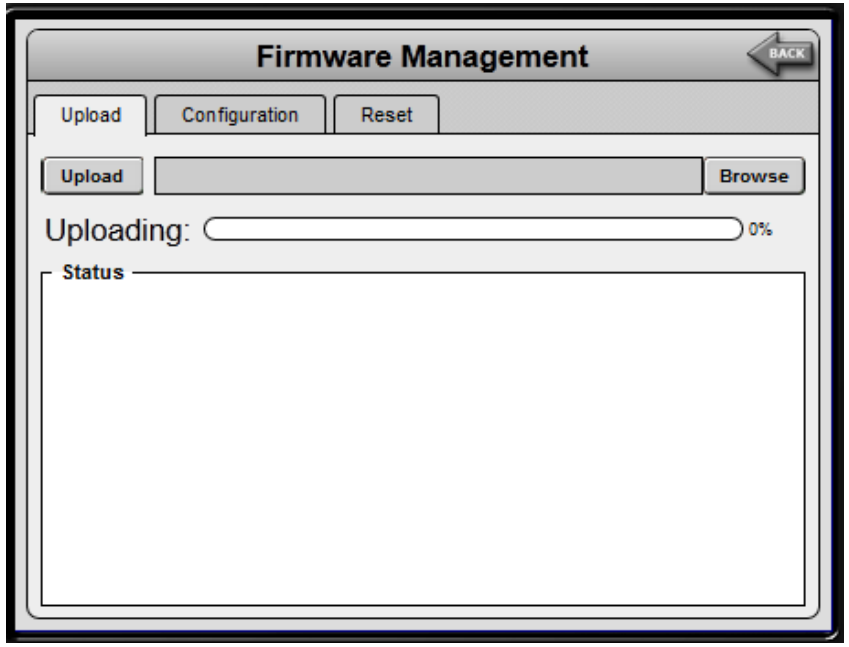
Composite/SCA Setup – enter the level that will be at the input of the Exciter/Transmitter. This level will produce 100 % modulation.

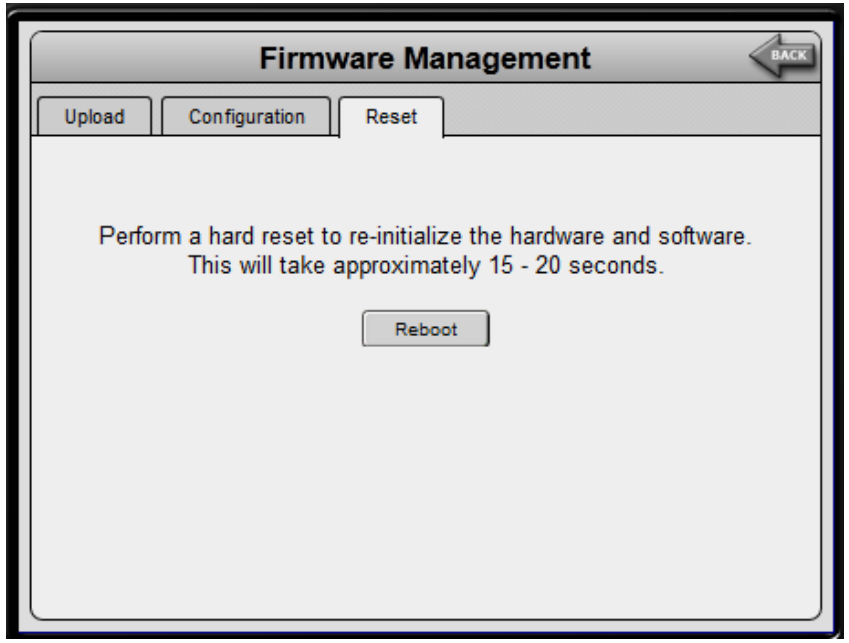
FAX Audio Setup



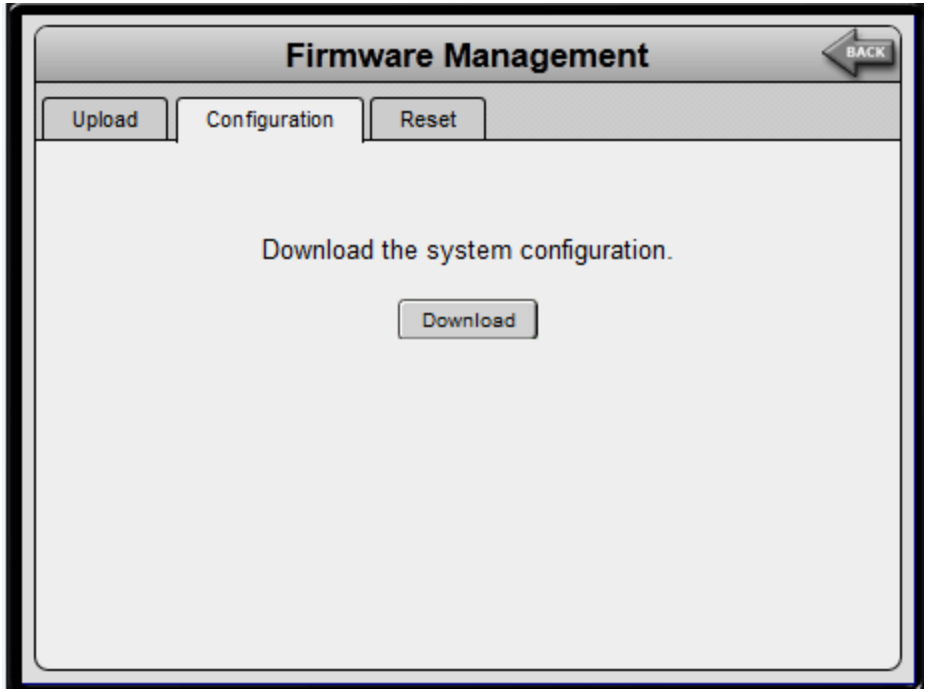
Monitor Threshold – If audio drops below this level for Delay T1 or stays above this level for T2 then switching occurs
Undercut Delay T1 – Audio must be below set level for this time to switch to Backup source
Return Delay T2 – wait time that the audio must meet the switching criteria to switch back to primary source
Log Type – None, Warning, Fault; Determines what type of event will be logged

FAX GUI ISP


Firmware Management
BACK
Upload
Configuration
Reset
Upload
Browse
Uploading:
0%
Status


Firmware Management
BACK
Upload
Configuration
Reset
Perform a hard reset to re-initialize the hardware and software.
This will take approximately 15 - 20 seconds.
Reboot

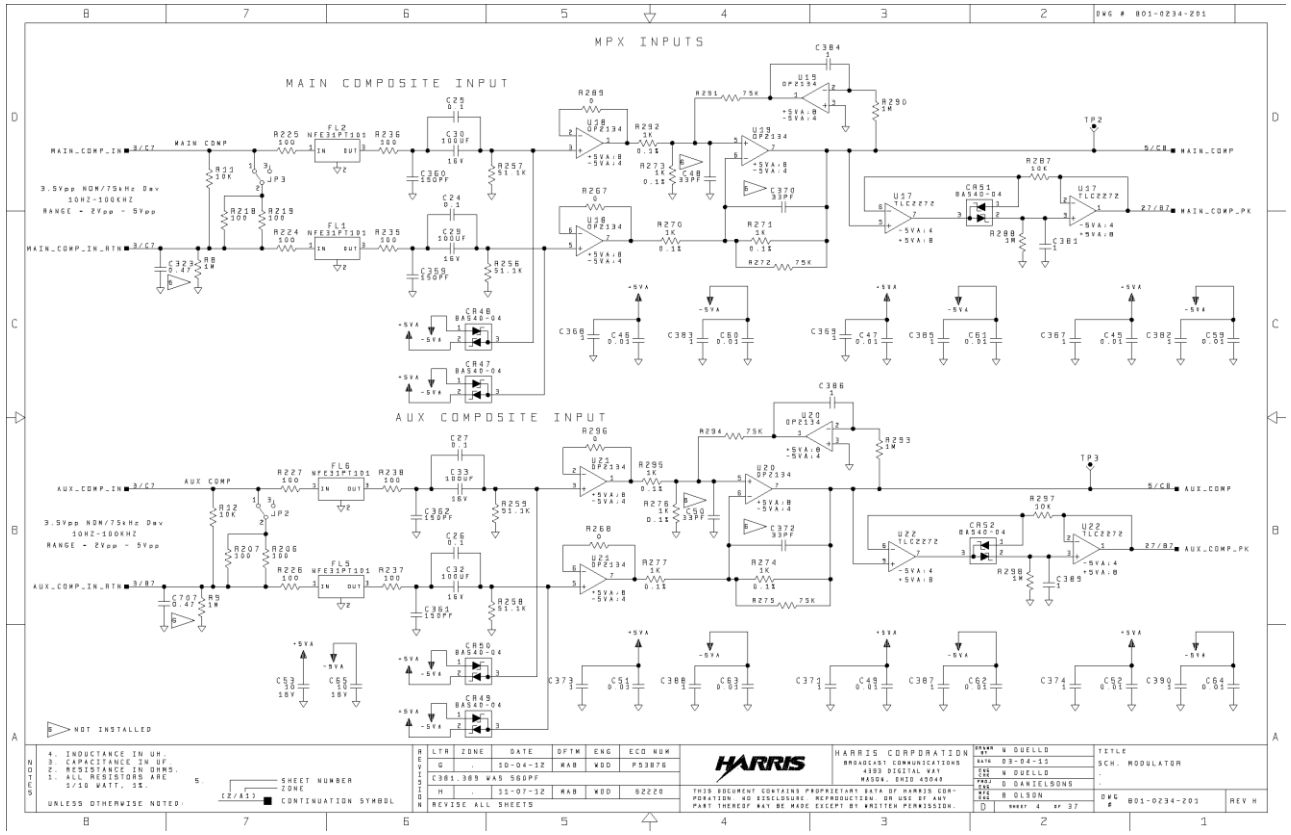
FAX GUI ISP



Downloads configuration of the transmitter/Exciter. Does not include the calibrations.

LPFM Modulator Schematics

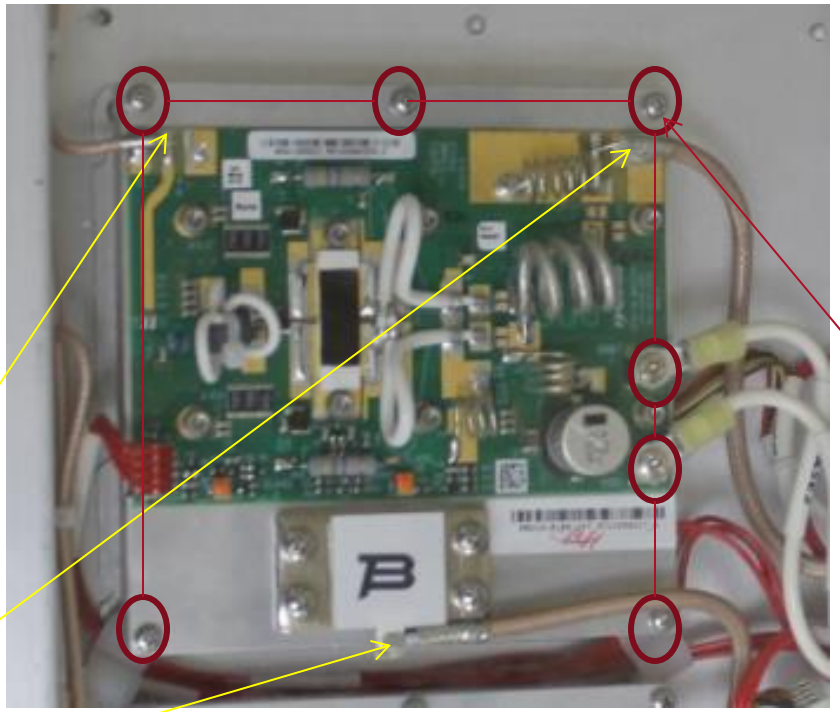
- Double click to open Modulator schematics in Acrobat…



Maintenance

- Monthly
  - Clean Air Filters
  - Capture Meters
- Yearly
  - Open up and check connections for tightness

PA Replacement

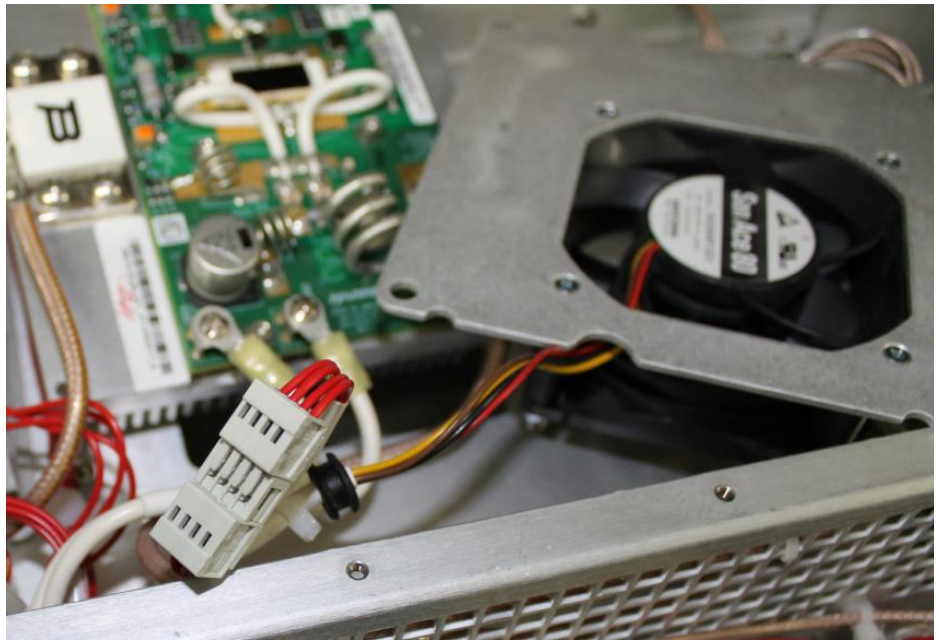


Unsolder

Unscrew

Fan Replacement 1K and 2K

- Remove 5 PA perimeter screws around PA
- Disconnect and Remove wire ties from fan power plug
- Lift module up without removing cables/wires. Remove fan



Lab Exercises/Hands On

- GUI Familiarization
  - How to connect to front and rear panels.
  - Demonstrate Remote Enable/Disable Button and how it works.
    - FP Port Needs Remote Disable
    - RP Port Needs Remote Enabled
  - Tracking down faults
  - Configuring audio
- Power Calibrations
  - Single Freq Cal
  - Wideband Cal
    - Setup Tilt
- Saving User Configuration Settings

Lab Exercises/Hands On

- Software Load
  - Upgrading
  - How to recover from crash
    - Golden image and reload
- Frequency Change
  - How to fine adjust freq
- Configuring Audio
- Configuring exciter to be a backup Tx.