# Field Modification FM24007

# GV Series - Upgrading NAC124 or NAC124A Controller Module to GV2 Compatibility

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FIELD MODIFICATION

## 1 INTRODUCTION

This document provides instructions for customers to upgrade an NAC124 or NAC124A Controller Module for GV2 compatibility, and therefore eligible for an HD Air Chain software upgrade.

### 1.1 Reason for Modification

This modification allows the transmitter to be GV2-compatible, which will support a software upgrade to use the HD Air Chain feature (see Software Impact in paragraph 1.2.2).

### 1.2 Equipment Affected

#### 1.2.1 Hardware Impact

This procedure applies to GV transmitters with controller module Nautel Part # NAC124 or NAC124A.

#### 1.2.2 Software Impact

Upgrading the controller module introduces new software (version GV2 SW 1.0.2 or later), which changes the appearance of the advanced user interface (AUI) from Flash-based to HTML5. See Publications Affected (paragraph 1.8) for change details.

**NOTE**

*The details of the HD Air Chain feature are not included in this document. Using HD Air Chain will require software version GV2 SW.1.2.0 (minimum), when it is available:*

*Consult with Nautel Customer Service for more information on HD Air Chain.*

### 1.3 Responsibility for Implementation of Procedure

This modification is written for qualified transmitter maintenance personnel who are familiar with GV series transmitters.

### 1.4 Scheduling

Implement this modification at the convenience of station maintenance personnel. The transmitter must be off-air (RF off) with ac power locked out during this procedure.

### 1.5 Manpower Requirements

Upgrading the NAC124 or NAC124A Controller Module requires approximately 120 minutes (2 hours) to complete – 60 minutes for the hardware upgrade, 60 minutes to install new software.

## 1.6 Special Tools, Equipment, Download Requirements

- #1 and #2 Phillips screwdrivers
- M4 Socket screwdriver
- Laptop with Nautel legacy App installed (available at Nautel's FTP site: http://www3.nautel.com/pub/Legacy_AUI_Access/1.02/
- LAN cable
- Anti-static mat & wrist strap (recommended)
- Information Sheet IS24005* PDF in http://www3.nautel.com/pub/Utilities/SystemHealthEligibilityEvaluationProgram/
- Information Sheet IS25005* PDF in http://www3.nautel.com/pub/GV2_Series/Information%20Sheets/
- Information Sheet IS18005* from http://www3.nautel.com/pub/GV_Series/GV_SW_6.1.2/
- USB keyboard, if IS18005* is required
- SSH program, e/g/. PuTTY from http://www3.nautel.com/pub/Utilities/puTTy/
- Replacement 'Operating the Transmitter' documentation from http://www3.nautel.com/pub/GV_Series/GV_SW_6.1.2/Handbooks/
- GV2 SW 1.0.2 tgz file from http://www3.nautel.com/pub/GV2_Series/GV2_SW_1.0.2/

## 1.7 Material Required

Tables 1a and 1b list the items in the Field Modification Kit to aid in completing this procedure.

**NOTE**

*Depending on the outcome of performing the instructions in Information Sheet 'IS24005 - GV Series: Using the System Health Eligibility Evaluation Program (SHEEP)', also referenced in paragraph 2.1 (a), you will receive one of the two kits shown below. This document is valid for either kit and contains conditional steps/procedures as required.*

**Table 1a:** Field Mod Kit, GV Series - Upgrading NAC124 or NAC124A to GV2 Compatibility (Nautel Part # 219-5344)

| Item | Qty | Component | Part #/Description |
|---|---|---|---|
| 2 | 1 | 219-5291 | QR Code Sheet |
| 3 | 1 | 219-2131 | SSD Mod, Programmed |
| 4 | 1 | 219-5342 | Cable Set Assembly, GV Controller Upgrade |
| 5 | 1 | HAY402A | Label, GV2 Controller Branding |

**Table 1b:** Field Mod Kit, GV Series – Atmel Pod and Upgrading NAC124 or NAC124A to GV2 Compatibility (Nautel Part # 219-5348)

| Item | Qty | Component | Part #/Description |
|---|---|---|---|
| 2 | 1 | 219-5291 | QR Code Sheet |
| 3 | 1 | UB103 | Dongle, Programmer, ATMEL-ICE-BASIC |
| 4 | 1 | 219-2131 | SSD Mod, Programmed |
| 5 | 1 | 219-5342 | Cable Set Assembly, GV Controller Upgrade |
| 6 | 1 | HAY402A | Label, GV2 Controller Branding |

## 1.8 Publications Affected

### 1.8.1 Hardware Impact:

The Controller Module (A4) changes from Nautel Part # NAC124 or NAC124A to NAC124A/01. This change affects the following areas of the GV Troubleshooting Manual:

**NOTE**

*There are different models of GV transmitter, each with their own technical documentation. This document includes change descriptions that impact various sections (see below), and some replacement pages.*

- Parts Information section 4.2
  - Family Tree Figure 4.2, noting the specific updates:
    - A4, Controller, changes to NAC124A/01
    - A4A1, Single-Board Computer changes to 207-8720-01

- Wiring/Connector Lists section 4.3
  - added cables W53 and W54 (part of cable set 219-5342); see included Table 3: Connector Mating Information – Cable Set Assembly, GV Controller Upgrade
  - see included Table 4: Wiring List – NAC124A/01 GV Controller
  - see included Table 5: Connector Mating Information – NAC124A/01 GV Controller

- Electrical Schematics section 4.4
  - see included schematic for GV Transmitter – Control/Monitor Stage (Sheet 1, where applicable)
  - see included schematic for NAC124A/01 Controller

- Mechanical Drawings section 4.5
  - see included mechanical drawing for NAC124A/01 Controller

### 1.8.2 Software Impact:

The overall software version changes from GV SW 5.x.y to GV2 SW 1.0.2 or later (see paragraph 1.2.2). This modification introduces a new AUI interface; the local and remote AUI changes from a Flash-based menu to an HTML5-based menu. Download a new *'Operating the Transmitter'* document for your GV model from the Nautel FTP site (http://www3.nautel.com/pub/GV2_Series/GV2_SW_1.0.2/Handbooks/). This document provides full details on the new AUI and is intended to replace the 'Operating the Transmitter' chapter (3.2) in your *Operation and Maintenance Manual*.

## 1.9 Identification of Modified Assemblies/Parts

Identifying modified assemblies informs future maintainers of the current configuration. Mark the transmitter with "**FM24007**" next to the serial number label using indelible ink to indicate it has been modified.

## 2 PRELIMINARY TASKS

### 2.1 Evaluating the Transmitter for Software Eligibility

Some GV series transmitters are unable to complete certain software upgrades due to issues related to entering and exiting bootloader mode at the rack level. Before receiving one of the two Field Modification Kits in Table 1a or Table 1b, you would have been prompted by Nautel to verify if the GV series transmitter is eligible for the software upgrade provided with this Field Modification document. This verification involves performing the procedure in Information Sheet document '*IS24005 - GV Series: Using the System Health Eligibility Evaluation Program (SHEEP)*'.

(a) Ensure that *'IS24005 - GV Series: Using the System Health Eligibility Evaluation Program (SHEEP)*' has been performed. If necessary, download IS24005 from http://www3.nautel.com/pub/Utilities/SystemHealthEligibilityEvaluationProgram/.

- If the evaluation was successful, continue to paragraphs 2.2 and 2.3, then complete paragraph 3.

- If the evaluation was not successful, obtain and perform *IS25005 – GV/NVLT Series: Upgrading Backplane Firmware*' from http://www3.nautel.com/pub/GV2_Series/Information%20Sheets/.

### 2.2 Recording Settings

**NOTE**

*If the SSD currently installed is being replaced due to a failure of the AUI, these settings will not be available to record. If so, proceed to paragraph 3 using the replacement SSD.*

*There are various settings and logged data that will not be saved in your transmitter when you update the SSD. Nautel recommends that you record these settings and logged data, as desired, before removing your SSD so that you may re-enter them after inserting the new SSD. The following AUI pages apply (refer to the GV Operations and Maintenance Manual, if necessary, to navigate to these pages):*

(a) With the transmitter on, record and retain the existing settings in the AUI pages listed below. Record settings manually or use the laptop/Nautel Legacy App and LAN cable to remotely connect to the transmitter to create screen images. Refer to your existing *GV Operations and Maintenance Manual*, if necessary, to navigate to these AUI pages.

- Logs
- User Accounts
- Network Setup
- Email Configuration
- Notifications
- Exgine Settings
- NTP Servers
- SNMP Configuration
- Preset/audio settings
- Time zone setting
- Playlists

**NOTE**

*Audio Player functionality is not available in software version GV2 SW 1.0.2, but is planned for a future release. Nautel recommends recording all Audio Player related preset settings so that they can be restored when that functionality is available.*

### 2.3 Disabling the Watchdog Feature

(a) From the controller UI, go to the **System Settings -> Host Watchdog** screen. Ensure that the setting is set to **OFF** (disabled).

## 3 CONTROLLER UPGRADES

Perform the following steps to remove and upgrade the NAC124 or NAC124A Controller Module:

(a) Ensure the preliminary tasks in paragraph 2 have been completed before proceeding.

### 3.1 Removing the Controller Module and SSD

(a) Press RF Off. Turn off and lock out the transmitter's main ac power. Disconnect the UPS power source, if installed.

(b) Gain access to the controller module (see Figure 1) by opening the front door and removing the upper, rear panel. For GV30N, GV30 and GV40 models, remove the right-hand, upper, rear panel (as viewed from the rear).

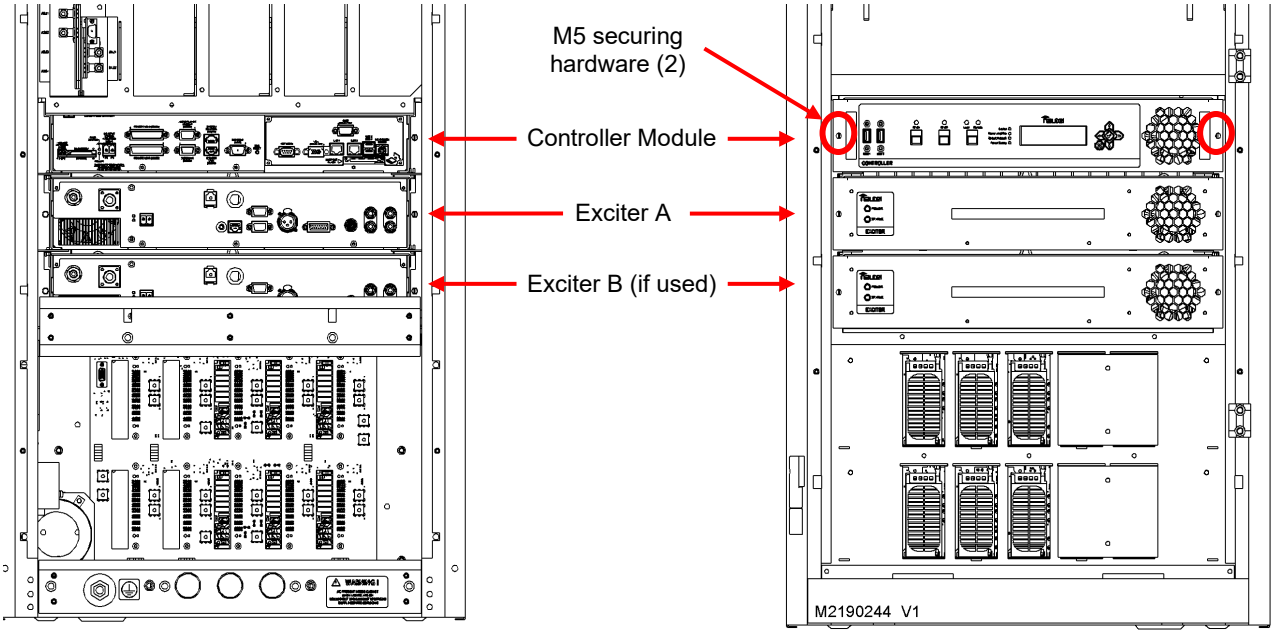



**Figure 1: Controller Module and Exciter Locations (GV5/GV3.5 shown for reference)**

(c) From the rear of the transmitter, disconnect the mating connectors from the controller module (A4).

(d) From the front of the transmitter, use a # 2 Phillips screwdriver to remove the two M5 screws that secure the controller module to the transmitter (see Figure 1), and pull out the controller module. Retain the M5 screws.

(e) Place the controller module on a workbench suitable to allow modifications.

**NOTE**

*There are static sensitive components inside the controller module. Use precautions when handling static sensitive devices. Nautel recommends using a properly grounded anti-static mat and wrist strap.*

(f) Remove and retain the 13 M3 Phillips screws that secure the controller module's top cover.

(g) Disconnect P1 (large black connector) from the SSD assembly (see Figure 2). **Do not remove SATA1 or SATA_PWR1 connectors**.

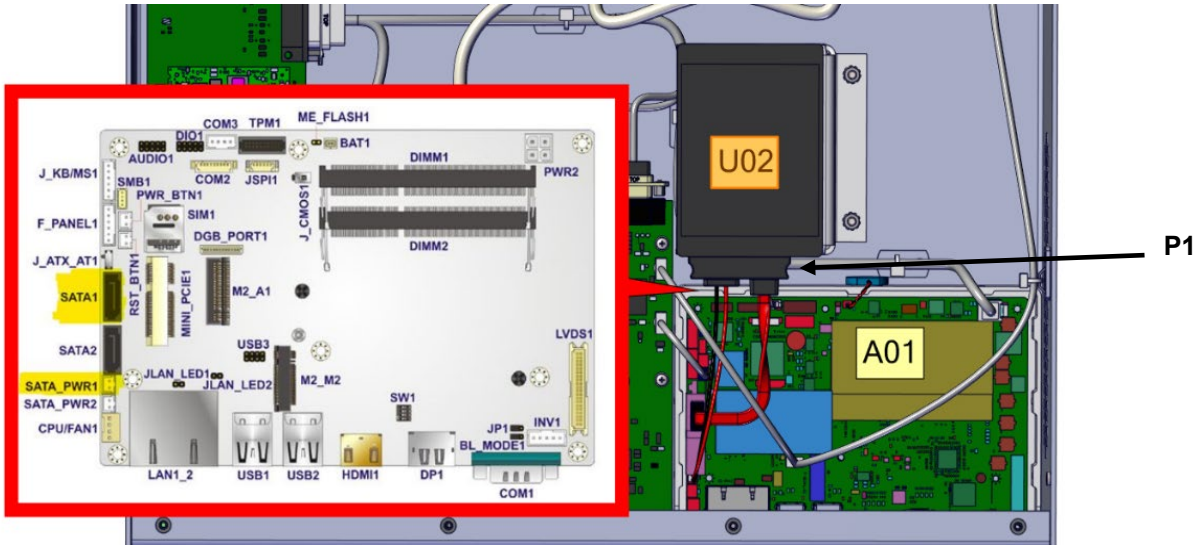



**Figure 2: SSD Assembly Removal**

(h) Remove and retain the two (2) M4 lock nuts that secure the SSD mounting bracket to the chassis (see Figure 3). Remove and retain the SSD mounting bracket. Dismount the SSD from the SSD mounting bracket.

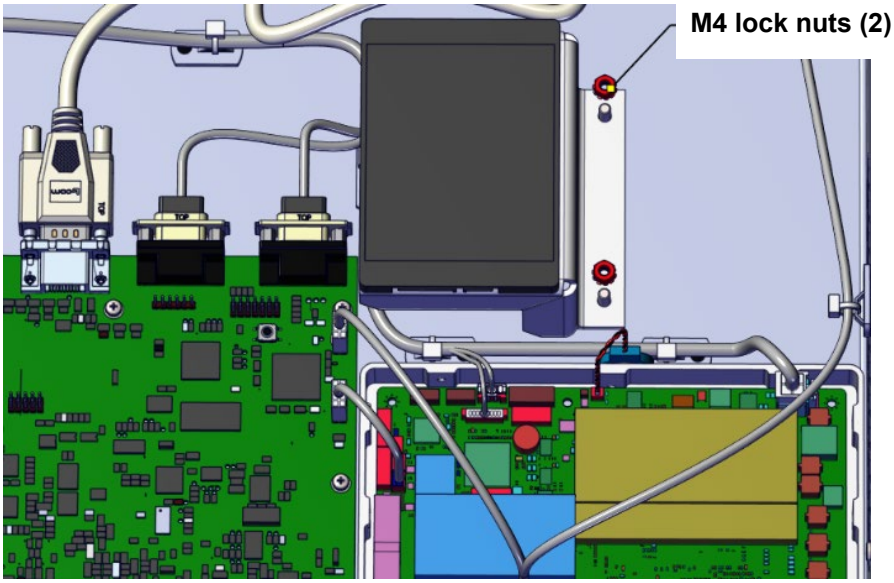



**Figure3: SSD Mounting Bracket Removal**

(i) Place the removed SSD into an anti-static bag for storage.

## 3.2 Installing the Replacement SSD

**NOTE**

*This section will require approximately 60 minutes of 'off air' time while the transmitter installs the new software.*

(a) Obtain the programmed SSD (Nautel Part # 219-2131) from the Field Modification Kit.

(b) Following steps 3.1 (h), (g) and (f), use retained hardware to install the replacement SSD, its mounting bracket, and the controller module top cover. See Figures 2 and 3 as required.

(c) Using retained hardware from step 3.1 (d), re-install the controller module and reconnect the mating connectors. See Figure 1 as required.

## 3.3 Installing the USB Cable Set Assembly

(a) Obtain the USB Cable Set Assembly (Nautel Part # 219-5342) from the Field Modification kit, which contains cables W53 and W54. Install cables W53 and W54 as follows:

**NOTE**

*The USB Cable Set Assembly contains two cables (W53 and W54). These cables permit 'HD Air Chain' compatibility, as applicable. If your exciter(s) does (do) not support HD Air Chain (i.e., does not have LAN/USB port U1J2 and front panel software-based Air Chain label), Nautel recommends you connect the cables to the Controller Module and tie them back for possible future use.*

- Connect W53 between the controller module's rear panel **USB 1A** port (W53P1) and exciter A's **LAN/USB** port (W53P2). Tie back W53P2 if the exciter is not HD Air Chain compatible in the NOTE above.

- Connect W54 between the controller module's rear panel **USB 1B** port (W54P1) and exciter B's **LAN/USB** port (W54P2). Tie back W54P2 if the exciter is not HD Air Chain compatible in the NOTE above, or if there is no exciter B.

## 3.4 Installing the GV2 Label

(a) Obtain the GV2 controller branding label (Nautel Part # HAY402A) from the Field Modification kit and install it on the front of the controller module as shown in Figure 4.

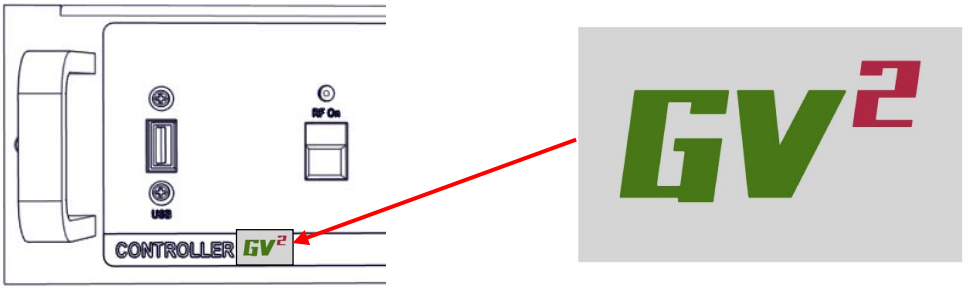



**Figure 4: GV2 Label Location on Controller Module**

## 4 SOFTWARE/FIRMWARE UPGRADES

(a) Turn on the transmitter's main ac power and UPS power source (if installed), leaving **RF off**.

**NOTE**

*If the SSD installed in 3.2 is a different brand than what was originally installed, you may need to update the BIOS boot options for the AUI to load. Plug in the USB keyboard and refer to IS18005* for further instructions (see http://www3.nautel.com/pub/GV2_Series/GV2_SW_1.0.2/).*

*GV2 SW 1.0.2 or later will update firmware on initial reboot, then reboot the AUI for those firmware updates to take effect.*

(b) The touchscreen monitor will turn on and a screen will appear, prompting you to perform a Touchscreen Calibration. Perform the touchscreen calibration.

(c) The transmitter is now entering initial firmware update.

(d) The local AUI will display the Nautel splash screen (animated Nautel logo with a white background) while firmware updates occur. Observe the progress of the firmware upgrades on the controller's front panel UI. The controller front panel UI will display that:

- Controller firmware is being updated with a pages sent indicator
- Exciter A firmware is being updated with a percentage-based indicator.
- Exciter B (if installed) firmware is being updated with a percentage-based indicator.
- Rack 1 firmware is being updated with a percentage-based indicator.
- Rack 2 through 8 (transmitter model dependent, as applicable) firmware is being updated with a percentage-based indicator

**NOTE**

*The controller firmware will take approximately five (5) minutes. The exciter firmware will take approximately 10 to 15 minutes per exciter. The rack firmware will take approximately five (5) minutes for each rack.*

(e) Once the final rack has completed its firmware update, "**Upgrade successful**" will appear on the controller front panel UI.

(f) Wait one (1) minute, then disable the transmitter's main ac power source (e.g., wall breaker, etc.) and UPS power source. Wait 30 seconds, then re-enable the transmitter's main ac power source and UPS power source. This will reboot the controller.

(g) When the controller front panel UI has rebooted, navigate to **System Settings** -> **Hardware Configuration** -> **GV Family** and select GV2 Air Chain.

(h) The controller front panel UI will indicate that it is rebooting the host.

(i) Wait two (2) minutes and the on the local AUI Nautel splash screen will be replaced by the upgraded local AUI.

**NOTE**

*If there are any failures during the firmware upgrade process, perform a software update by following the instructions in the Routine Maintenance section of the Operation and Maintenance Manual.*

(j) Click the remote AUI's Main Menu icon (☰) in the top right of the AUI dashboard (see Figure 5) to display the main menu options.

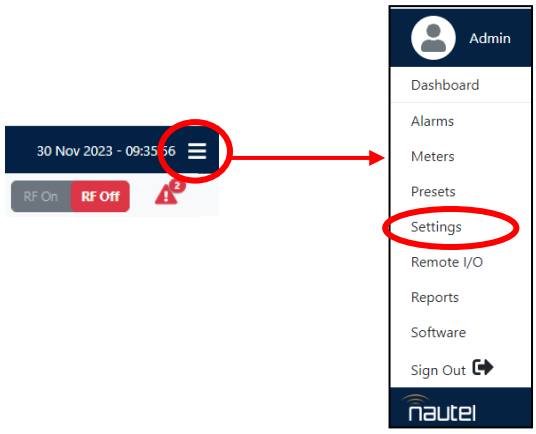



**Figure 5: Main Menu for HTML5-based Remote AUI**

(k) Reconfigure the network settings in the **Network Setup** page (in **Settings ► Network**). Refer to Table 2 for menu structure changes.

(l) Restore all custom user settings recorded in step 2.2 (a) via the local and remote AUI, using the appropriate settings in **Menu ► Settings.** Refer to Table 2 for menu structure changes.

**Table 2:** Old AUI versus new AUI menu structure changes

| Old AUI Menu | New AUI Menu |
|---|---|
| User Accounts | Settings ► Users |
| User Settings ► Network Setup | Settings ► Network |
| User Settings ► Email Configuration | Settings ► Notifications |
| User Settings ► Notifications | Settings ► Notifications |
| User Settings ► Exgine Settings | Settings ► HD/DRM |
| User Settings ► NTP Servers | Settings ► Time |
| User Settings ► SNMP Configuration | Settings ► SNMP |

(m) Ensure the transmitter configuration is restored in the Controller's UI **HW Config** menu by selecting **Installed Exciter (A/B)**, **LVPS Hardware** (correct number of LVPS modules) and **UPS Installed** (yes/no). See the Operations & Maintenance Manual for detailed instructions.

(n) With RF off and the system interlock circuit intact (closed), use the controller's front panel UI to initiate a Xmtr PA Bias routine (see **Main Menu -> System Settings -> Factory Settings -> Calibration**; refer to the Operations and Maintenance Manual for more details).

(o) Close the transmitter's front door. Re-install the transmitter's upper, rear filter panel, if it had been removed.

## 5 CHANGING THE OS PASSWORD

**IMPORTANT!**

***SOFTWARE SHIPS FROM NAUTEL WITH DEFAULT ROOT AND NAUTEL PASSWORDS. THESE PASSWORDS MUST BE CHANGED TO ENSURE THE SECURITY OF THE SYSTEM. FAILURE TO CHANGE THE PASSWORD EXPOSES THE TRANSMITTER TO UNAUTHORIZED ACCESS.***

**The OS password must be changed for security purposes.** To do this, you will need a way to remotely connect to a Linux computer using SSH. PuTTY is a common utility for Windows users (available at http://www3.nautel.com/pub/Utilities/puTTy/putty.exe; if unable to open this link, use a search engine to find new URL), while Linux users can use 'ssh' from the command line. Change the password as follows:

(a) Connect to the transmitter IP address using your selected SSH client.

(b) Login with username **nautel** and password **nautel**.

(c) At the prompt, type the command **passwd**. This is the Linux command to change the Nautel user password. Change the Nautel user password as desired.

(d) After changing the **nautel** user password type 'su' and press Enter.

(e) Enter 'nautel' as the password.

(f) At the prompt, type the command **passwd**. This is the Linux command to change the root user password. Change the root user password as desired.

**IMPORTANT**

***Ensure proper storage of new passwords. Once passwords have been changed, Nautel does not have access to reset passwords.***

The upgrade is complete. Restore the transmitter to the desired operational state.

**If you have any questions or require additional assistance, please contact Nautel's Customer Service Department at:**

**Telephone:1-877-662-8835**
**Email: support@nautel.com**

**Table 3***:* Connector Mating Information – Cable Set Assembly, GV Controller Upgrade

| CONNECTOR | MATE | REMARKS |
|---|---|---|
| W53P1 | A4A1 - USB 1A | |
| W53P2 | A5U1J2 - LAN/USB | |
| W54P1 | A4A1 - USB 1B | |
| W54P2 | A6U1J2 - LAN/USB | |

**Table 4:** Wiring List – NAC124A/01 Controller

| SOURCE | DESTINATION | WIRE # | COLOUR | SIZE | REMARKS |
|---|---|---|---|---|---|
| P1-1 | P2-1 | 1 | White | 22 | |
| P1-2 | P2-2 | 2 | White | 22 | |
| P1-3 | P2-11 | 3 | White | 22 | |
| P1-4 | P2-12 | 4 | White | 22 | |
| P1-5 | P2-16 | 5 | White | 22 | |
| P1-6 | P2-15 | 6 | Black | 22 | |
| P1-7 | P2-10 | 7 | White | 22 | |
| P1-8 | P2-9 | 8 | White | 22 | |
| P1-9 | P2-13 | 9 | White | 22 | |
| P3-1 | P4-1 | 10 | White | 22 | |
| P3-2 | P4-5 | 11 | White | 22 | |
| P3-3 | P5-4 | 12 | White | 22 | +12V SBC |
| P3-4 | P5-2 | 13 | Black | 22 | Gnd |
| P3-12 | P5-3 | 14 | White | 22 | |
| P3-6 | P5-1 | 15 | Black | 22 | |
| P3-5 | P4-2 | 16 | White | 22 | |
| P3-7 | P4-7 | 17 | White | 22 | |
| P3-8 | P4-8 | 18 | Black | 22 | |
| P3-9 | P4-9 | 19 | White | 22 | |
| P3-10 | P4-10 | 20 | White | 22 | |
| P3-11 | P4-11 | 21 | White | 22 | |
| - | - | 22 | Not Used | - | |
| P3-14 | P4-14 | 23 | White | 22 | |
| P3-15 | P4-15 | 24 | Black | 22 | |
| P6-6 | P7-2 | 25 | White | 26 | SBC Reset + |
| P6-8 | P7-1 | 26 | Black | 26 | SBC Reset - |
| P8-1 | P9-4 | - | Black | 24 | 2-Conductor |
| P8-6 | P9-3 | - | Red | 24 | 2-Conductor |
| P8-8 | - | 27 | Shield | 24 | Shield |
| P11-2 | P10-2 | 28 | White | 26 | RS232 TXD |
| P11-3 | P10-3 | 29 | Red | 26 | RS232 RXD |
| P11-5 | P10-5 | 30 | BLACK | 26 | RS232 GND |
| W4P3-1 | W4P2-1 | 31 | WHITE | 22 | SBC to NAPC163 |
| W4P3-3 | W4P2-3 | 32 | WHITE | 22 | SBC to NAPC163 |
| W4P3-5 | W4P2-5 | 33 | WHITE | 22 | SBC to NAPC163 |
| W4P3-7 | W4P2-7 | 34 | BLACK | 22 | SBC to NAPC163 |
| W4P1-4 | W4P2-2 | - | BLACK | 22 | USB Panel to SBC |
| W4P1-3 | W4P2-4 | - | GREEN | 28 | USB Panel to SBC |
| W4P1-2 | W4P2-6 | - | WHITE | 28 | USB Panel to SBC |
| W4P1-1 | W4P2-8 | - | BLACK | 22 | USB Panel to SBC |

**Table 5***:* Connector Mating Information – NAC124A/01 Controller

| CONNECTOR | MATE | REMARKS |
|---|---|---|
| P1 | A4J2 | UI Interface to Display |
| P2 | U1H1 | UI Interface to Display |
| P3 | A3J4 | Power Supply Distribution |
| P4 | A2J1 | Power Supply Distribution |
| P5 | A1U1_PWR2 | SBC Power |
| P6 | A2J13 | SBC Reset |
| P7 | A1U1_RST_BTN1 | SBC Reset |
| P8 | A2J4 | SBC Streaming Bus |
| P9 | A1U1_COM3 | SBC Streaming Bus |
| P10 | A1U1_COM2 | SBC Serial Bus |
| P11 | A2J3 | SBC Serial Bus |
| COM1 | - | Monitor COM Port (no mate) |
| W3P1 | A2J2 | Controller to UI Interface |
| W3P2 | A4J1 | Controller to UI Interface |
| W4P1 | USB | USB (Front Panel Mount) |
| W4P2 | A1U1_USB3_1 | SBC USB 3 1 (Red Wire Pin 8) |
| W4P2 | A1U1_USB3_0 | SBC USB 3 0 |
| W4P3 | A2J14 | USB |
| W7P1 | U2J1 | SSD SATA+ Power |
| W7P2 | A1U1_SATA1 | SBC to SSD SATA |
| W7P3 | A1U1_SATA_PWR1 | SBC to SSD Power |
| B1P1 | A3J3 | Module Fan |

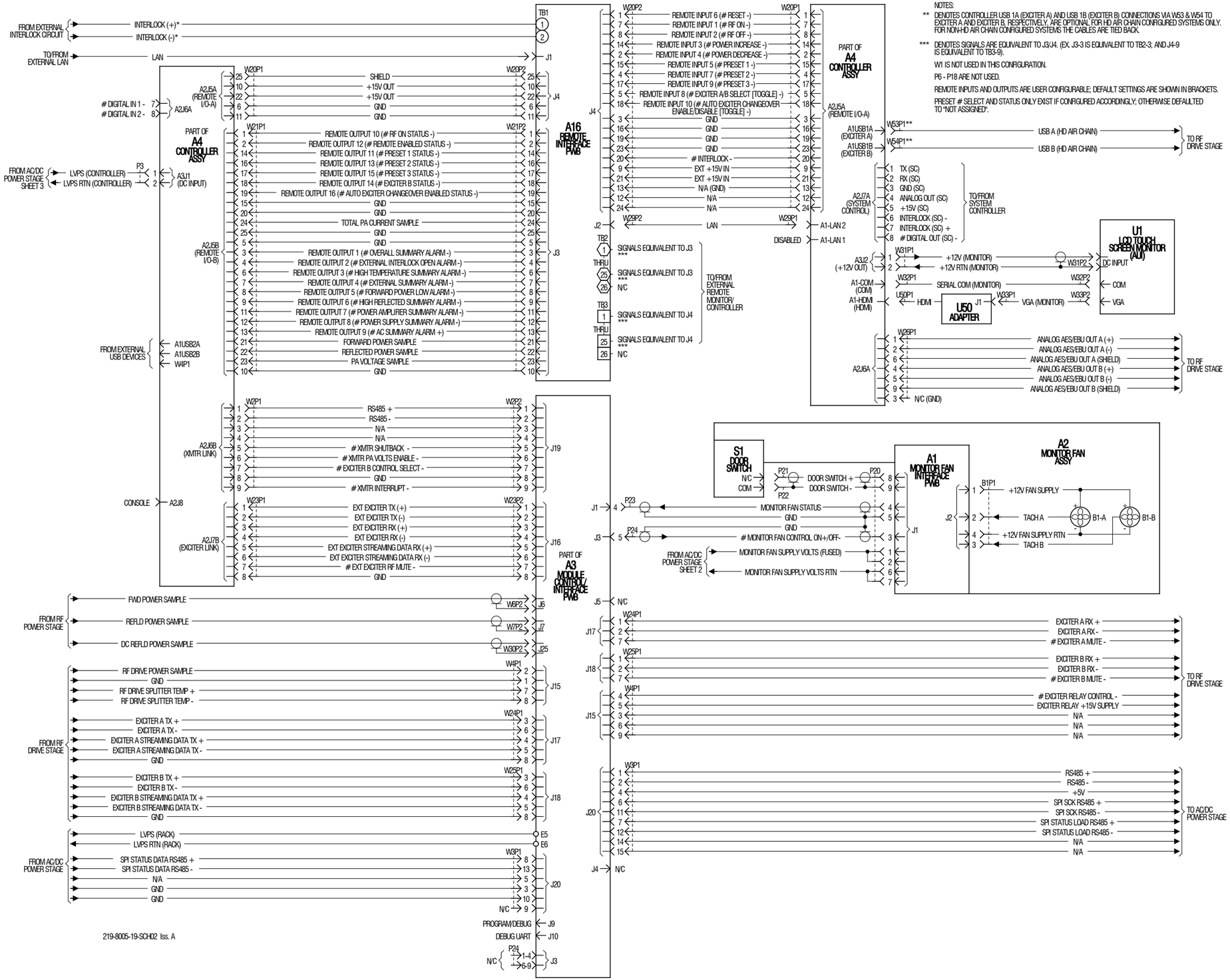



*Figure SD-2: GV5/GV3.5 Transmitter – Control/Monitor Stage*

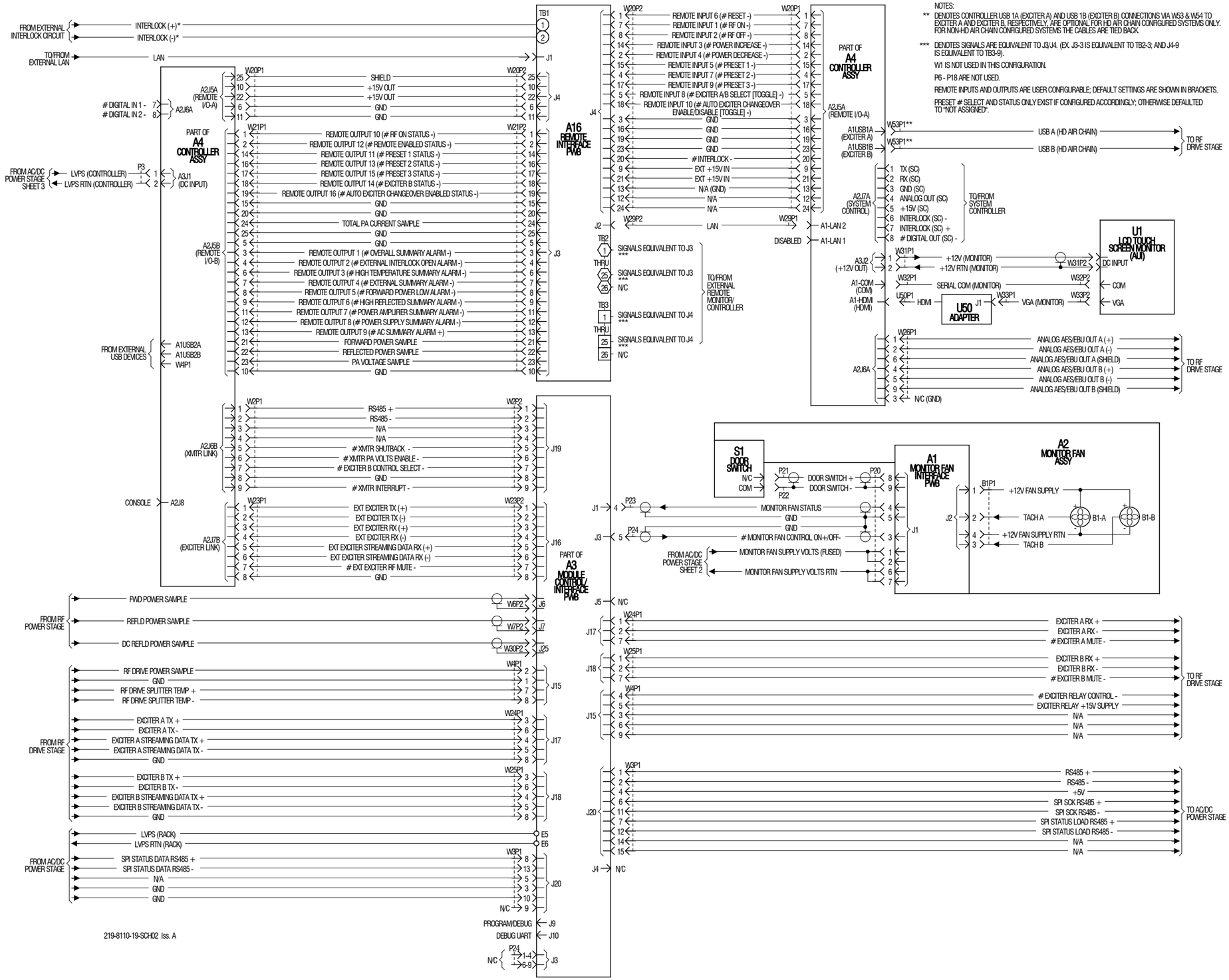



*Figure SD-2: GV10/GV7.5 Transmitter – Control/Monitor Stage*

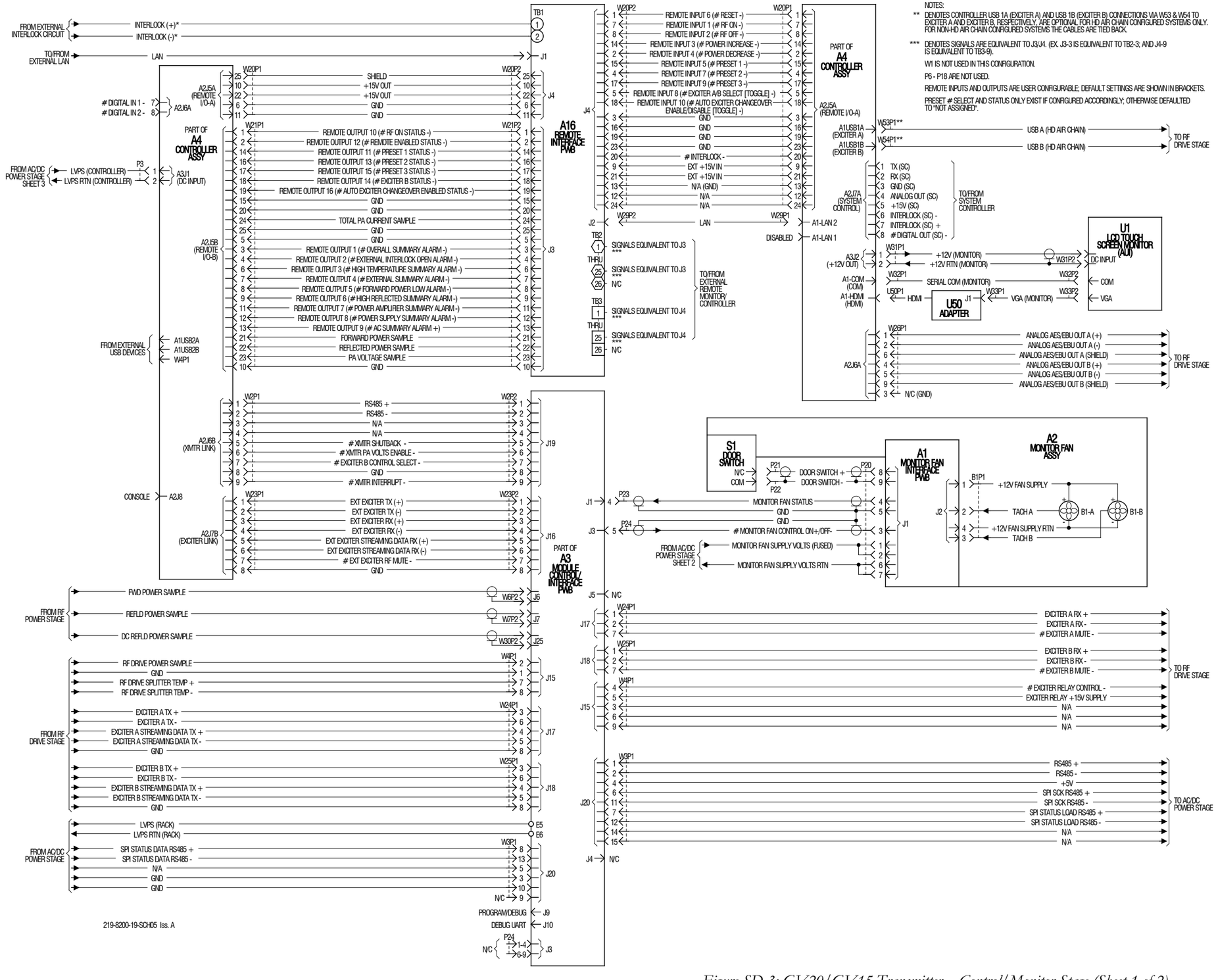



*Figure SD-3: GV20/GV15 Transmitter – Control/Monitor Stage (Sheet 1 of 2)*

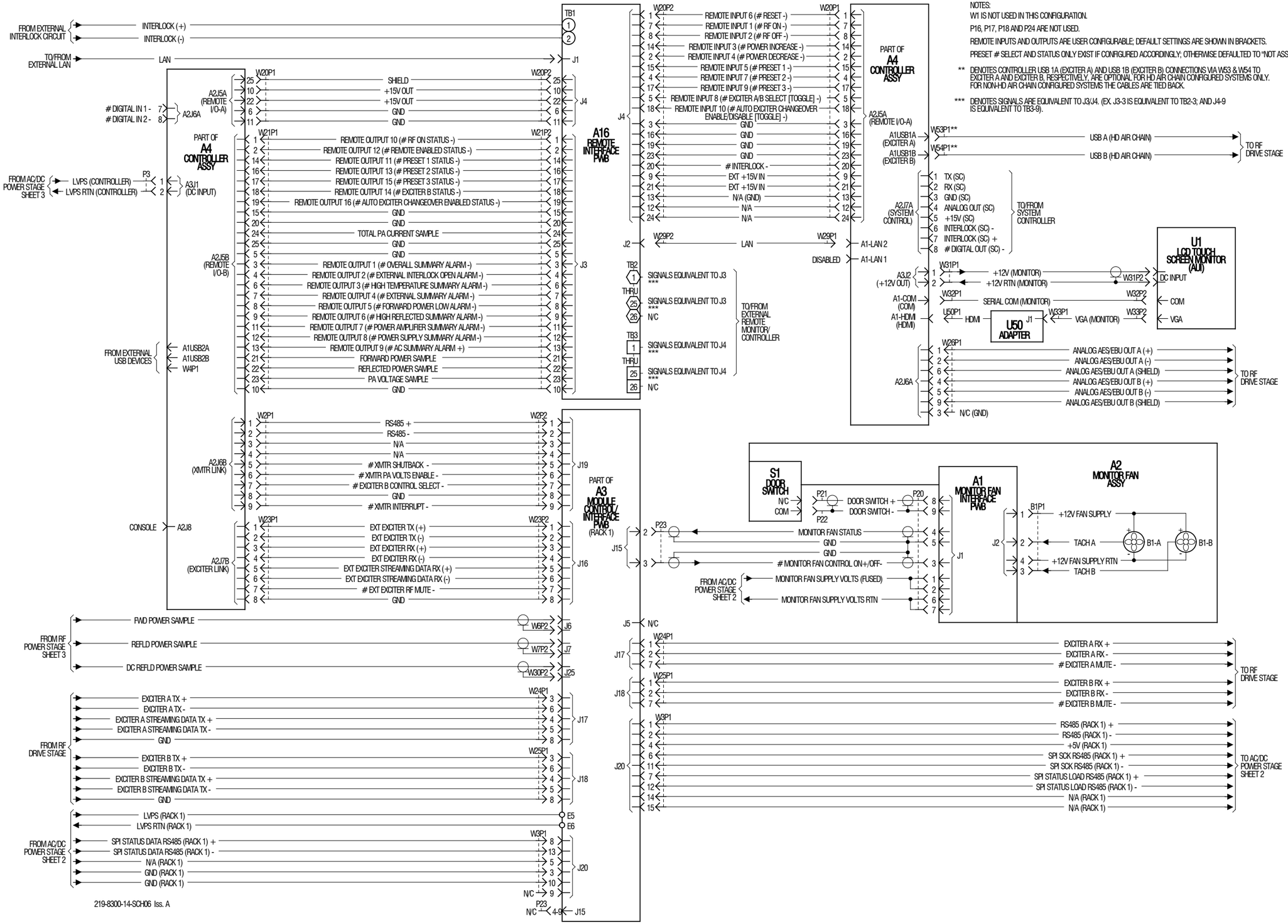



*Figure SD-4: GV30N Transmitter – Control/Monitor Stage (Sheet 1 of 2)*

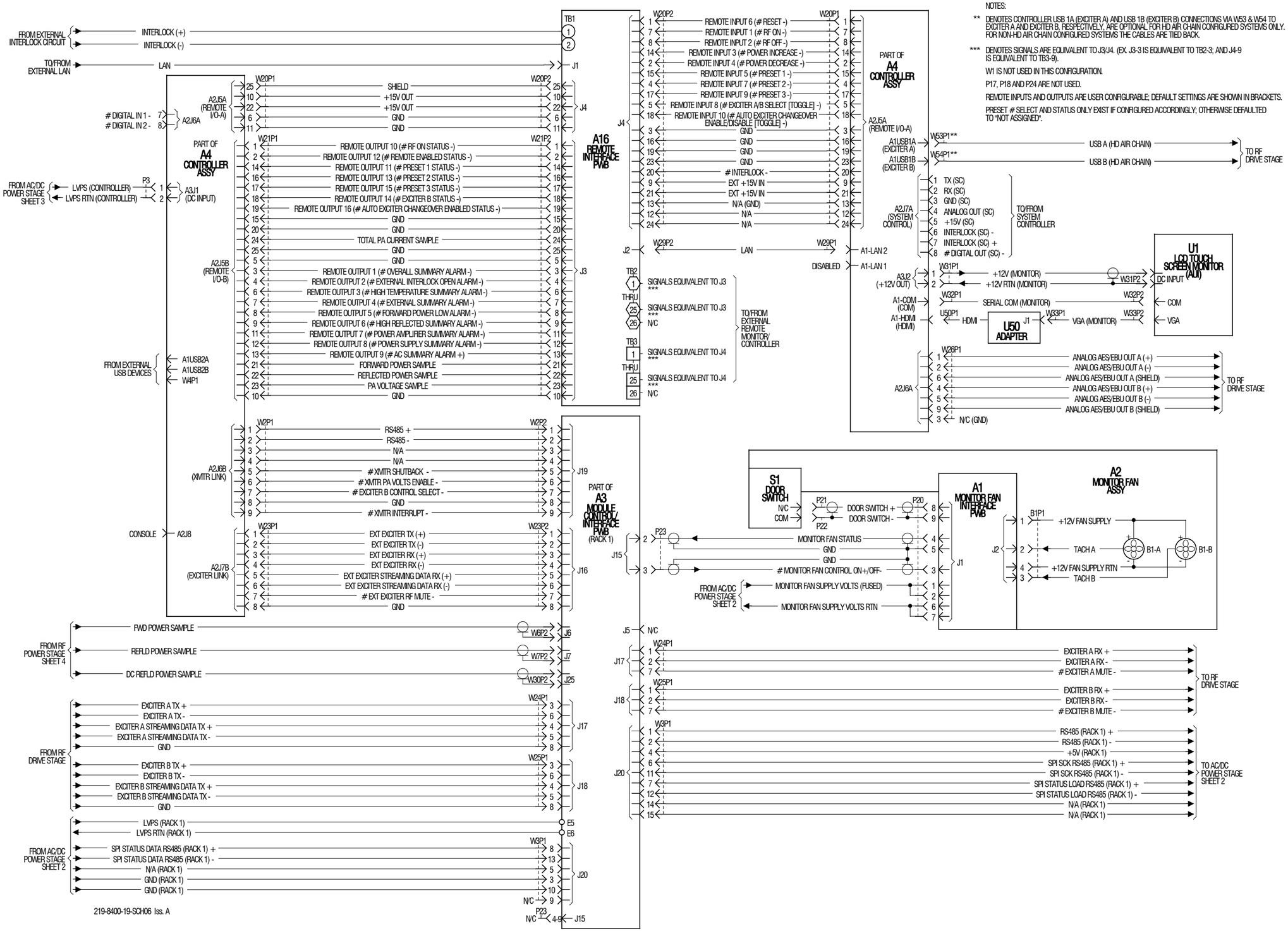
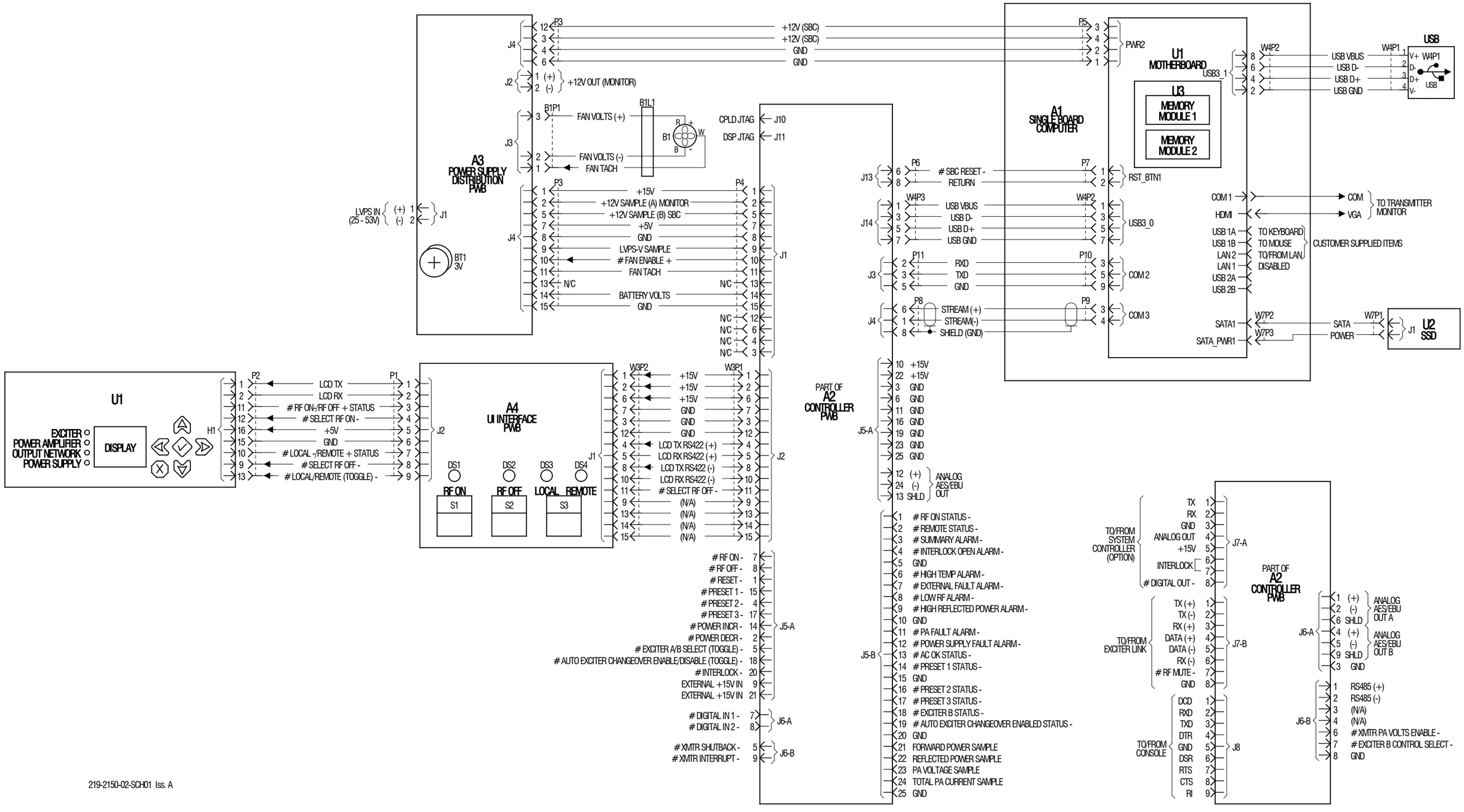
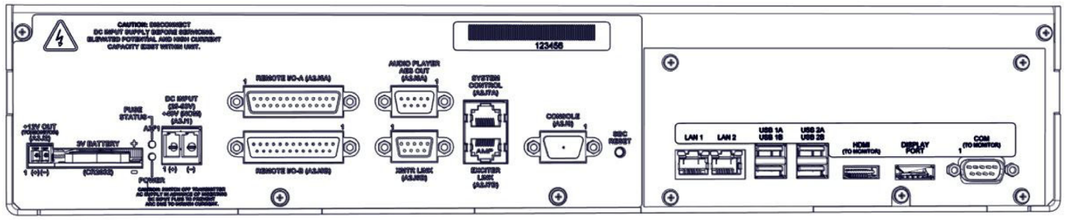


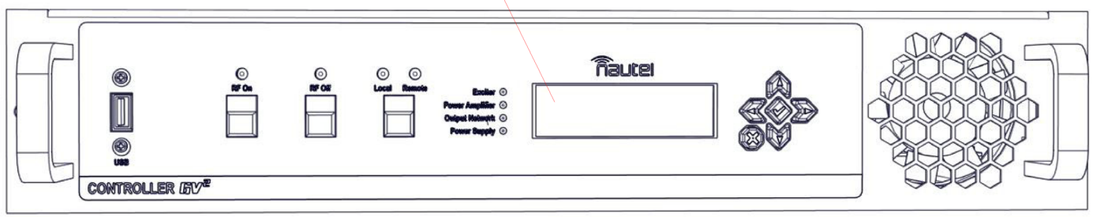

*Figure SD-4: GV40/GV30 Transmitter – Control/Monitor Stage (Sheet 1 of 2)*


A3
POWER SUPPLY
DISTRIBUTION
PWB
LVPS IN
(25 - 53V)
(+) 1
(-) 2
J1
BT1
3V
P3
J4
12
3
4
6
+12V (SBC)
+12V (SBC)
GND
GND
J2
1 (+)
2 (-)
+12V OUT (MONITOR)
B1P1
3
2
1
J3
FAN VOLTS (+)
FAN VOLTS (-)
FAN TACH
B1L1
B1
R
W
B
+
-
P3
P4
J4
J1
+15V
+12V SAMPLE (A) MONITOR
+12V SAMPLE (B) SBC
+5V
GND
LVPS-V SAMPLE
# FAN ENABLE +
FAN TACH
N/C
BATTERY VOLTS
GND
CPLD JTAG
DSP JTAG
J10
J11
A1
SINGLE BOARD
COMPUTER
P5
PWR2
U1
MOTHERBOARD
U3
MEMORY
MODULE 1
MEMORY
MODULE 2
USB3_1
W4P2
W4P1
USB
USB VBUS
USB D-
USB D+
USB GND
V+
V-
J13
P6
# SBC RESET -
RETURN
P7
RST_BTN1
J14
W4P3
W4P2
USB3_0
J3
P11
P10
COM 2
RXD
TXD
GND
J4
P8
P9
COM 3
STREAM (+)
STREAM(-)
SHIELD (GND)
COM 1
HDMI
COM
VGA
TO TRANSMITTER
MONITOR
USB 1A
USB 1B
LAN 2
LAN 1
USB 2A
USB 2B
TO KEYBOARD
TO MOUSE
TO/FROM LAN
DISABLED
CUSTOMER SUPPLIED ITEMS
SATA1
SATA_PWR1
W7P2
W7P3
W7P1
SATA
POWER
U2
SSD
J1
U1
EXCITER
POWER AMPLIFIER
OUTPUT NETWORK
POWER SUPPLY
DISPLAY
H1
P2
P1
J2
LCD TX
LCD RX
# RF ON-/RF OFF + STATUS
# SELECT RF ON -
+5V
GND
# LOCAL -/REMOTE + STATUS
# SELECT RF OFF -
# LOCAL/REMOTE (TOGGLE) -
A4
UI INTERFACE
PWB
DS1
DS2
DS3
DS4
RF ON
RF OFF
LOCAL
REMOTE
S1
S2
S3
W3P2
W3P1
J1
J2
+15V
GND
LCD TX RS422 (+)
LCD RX RS422 (+)
LCD TX RS422 (-)
LCD RX RS422 (-)
# SELECT RF OFF -
(N/A)
# RF ON -
# RF OFF -
# RESET -
# PRESET 1 -
# PRESET 2 -
# PRESET 3 -
# POWER INCR -
# POWER DECR -
# EXCITER A/B SELECT (TOGGLE) -
# AUTO EXCITER CHANGEOVER ENABLE/DISABLE (TOGGLE) -
# INTERLOCK -
EXTERNAL +15V IN
J5-A
# DIGITAL IN 1 -
# DIGITAL IN 2 -
J6-A
# XMTR SHUTBACK -
# XMTR INTERRUPT -
J6-B
PART OF
A2
CONTROLLER
PWB
J5-A
10 +15V
22 +15V
3 GND
6 GND
11 GND
16 GND
19 GND
23 GND
25 GND
12 (+)
24 (-)
13 SHLD
ANALOG
AES/EBU
OUT
J5-B
# RF ON STATUS -
# REMOTE STATUS -
# SUMMARY ALARM -
# INTERLOCK OPEN ALARM -
GND
# HIGH TEMP ALARM -
# EXTERNAL FAULT ALARM -
# LOW RF ALARM -
# HIGH REFLECTED POWER ALARM -
GND
# PA FAULT ALARM -
# POWER SUPPLY FAULT ALARM -
# AC OK STATUS -
# PRESET 1 STATUS -
GND
# PRESET 2 STATUS -
# PRESET 3 STATUS -
# EXCITER B STATUS -
# AUTO EXCITER CHANGEOVER ENABLED STATUS -
GND
FORWARD POWER SAMPLE
REFLECTED POWER SAMPLE
PA VOLTAGE SAMPLE
TOTAL PA CURRENT SAMPLE
GND
TO/FROM
SYSTEM
CONTROLLER
(OPTION)
TX
RX
GND
ANALOG OUT
+15V
INTERLOCK
# DIGITAL OUT -
J7-A
TO/FROM
EXCITER LINK
TX (+)
TX (-)
RX (+)
DATA (+)
DATA (-)
RX (-)
# RF MUTE -
GND
J7-B
TO/FROM
CONSOLE
DCD
RXD
TXD
DTR
GND
DSR
RTS
CTS
RI
J8
PART OF
A2
CONTROLLER
PWB
J6-A
1 (+)
2 (-)
6 SHLD
4 (+)
5 (-)
9 SHLD
3 GND
ANALOG
AES/EBU
OUT A
ANALOG
AES/EBU
OUT B
J6-B
1 RS485 (+)
2 RS485 (-)
3 (N/A)
4 (N/A)
6 # XMTR PA VOLTS ENABLE -
7 # EXCITER B CONTROL SELECT -
8 GND
219-2150-02-SCH01 Iss. A



REAR VIEW

LCD DISPLAY
(U1)



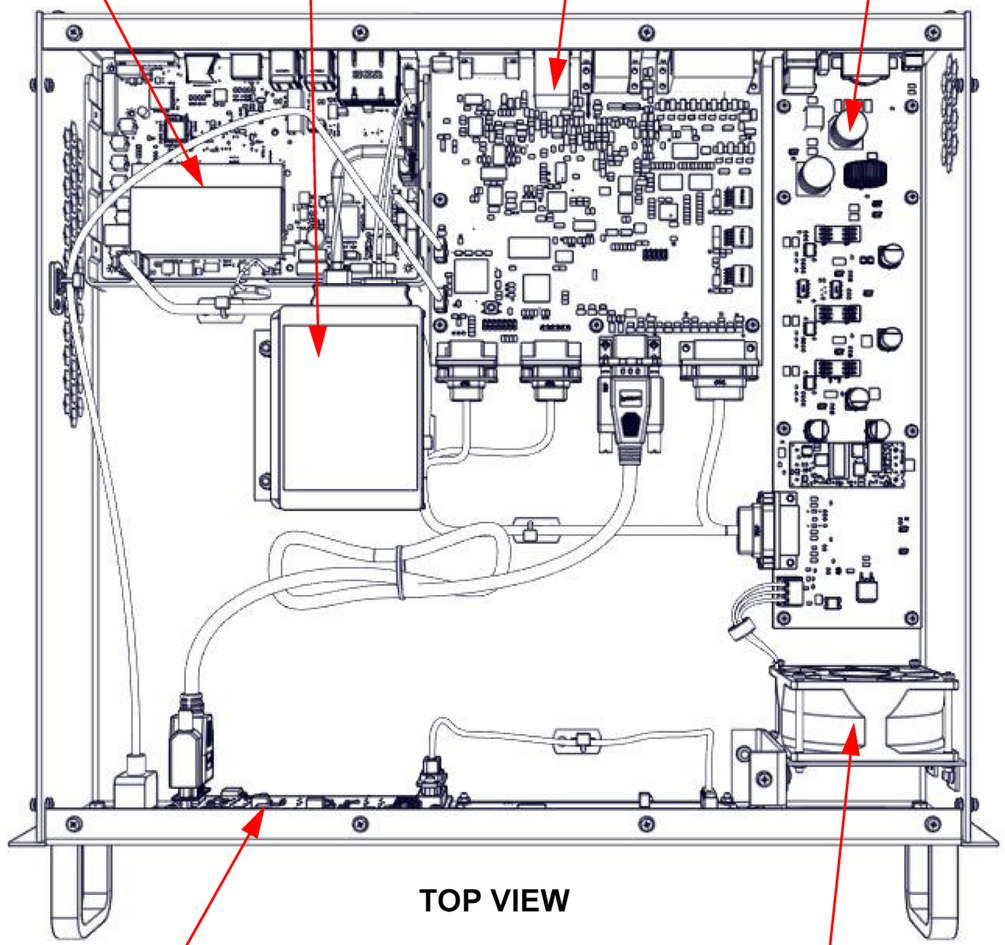

FRONT VIEW

SINGLE BOARD COMPUTER (A1)

SOLID-STATE DRIVE (SSD) (U2)

CONTROLLER PWB (A2)

POWER SUPPLY DISTRIBUTION PWB (A3)



TOP VIEW

UI INTERFACE PWB
(A4)
Behind front panel

COOLING FAN
(B1)

*Mechanical Drawing: NAC124A/01 Controller*