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Preface

Who Should Read This

This document is intended for radio-frequency engineers at PRSS® interconnected stations: those responsible for installing, operating, and maintaining the transmission equipment at your radio station.

Warning: Operation of this transmitter requires a valid FCC BROADCAST STATION LICENSE. The FCC may impose fines for unlicensed operation. Criminal penalties may apply if the unlicensed use of this transmitter causes interference to any other licensed station.

About This Document

This document features a Setup Guide for configuring and operating the Nautel NHB-VS300 Transmitter. For specific and detailed instructions, please refer to the documents listed below under “Supporting Documents.”

Supporting Documents

The following list of documents cover the set-up and operation of the Nautel NHB-VS300 are available on the prss.org website:

- Nautel NHB-VS300 Pre-Installation Manual
- Nautel NHB-VS300 Installation Manual
- Nautel NHB-VS300 Operations Manual
- Nautel NHB-VS300 Troubleshooting Manual

Emergency Transmitter Kit Contents

The transmitter kit case includes the following components and supporting equipment:

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nautel NHB-VS300 transmitter</td>
</tr>
<tr>
<td>1</td>
<td>Interlock Connector DB25 for A1J2A</td>
</tr>
<tr>
<td>4</td>
<td>LP23 85.7 mm Ferrite coil for RF Line (2 on AC power in at VS300, 2 for RF cable.)</td>
</tr>
<tr>
<td>1</td>
<td>Quick Start Guide (laminated)</td>
</tr>
<tr>
<td>1</td>
<td>Equipment Inventory list (laminated – THIS LIST)</td>
</tr>
<tr>
<td>1</td>
<td>INOmini 638 w/rackmount</td>
</tr>
<tr>
<td>1</td>
<td>Dipole RX Antenna (attached to rear of FM monitor)</td>
</tr>
<tr>
<td>1</td>
<td>12’ Shireen RFC 400-UF cable with N connectors</td>
</tr>
<tr>
<td>1</td>
<td>Furman Power Conditioner PL-Plus-C</td>
</tr>
<tr>
<td>1</td>
<td>N to 7/16 inch DIN adapter</td>
</tr>
<tr>
<td>3</td>
<td>30 Ft XLR M-F</td>
</tr>
<tr>
<td>2</td>
<td>20 Ft Cat6 cable (Red)</td>
</tr>
<tr>
<td>1</td>
<td>DB9F- FXLR (2) Adapter Cable</td>
</tr>
</tbody>
</table>

Safety

Before operating the transmitter, please read the complete safety notice beginning on page XIII of the Nautel NHB-VS300 Pre-Installation Manual before operating the transmitter.

All Nautel transmitters are designed to meet the requirements of EN60215, Safety Requirements for
Radio Transmitters. The philosophy of EN60215 is that the removal of any cover or panel that can only be opened using a tool is a maintenance activity, and that any person performing a maintenance activity is expected to be trained for that activity. Under EN60215, it is assumed that trained personnel will be knowledgeable and will take precautions such as removing all power to the transmitter before accessing its components.

- Nautel NHB-VS300 Pre-Installation Manual, page XIII

WARNING: TO PREVENT ELECTRICAL SHOCK-HAZARD, DO NOT OPERATE TRANSMITTER IN WET, UNSHELTERED ENVIRONMENTS.

Setup Guide
For Operating of the Nautel VS300 Transmitter

Refer to the Nautel NHB-VS300 installation and operations manuals if you require further details on any installation or operational task. Please ensure you have read the pre-installation manual and have prepared your transmitter site accordingly. All interfacing connections for the Nautel NHB-VS300 are located on the rear of the transmitter.

For ease of operation and access to controls, it is recommended that the case housing the transmitter be set up on raised surface, such as a table or work bench.

1. Connect RF Output and Ground

User Supplied Components
- Adequately rated RF feed line with appropriate termination connector
- Low impedance copper conductor (4” copper strap recommended)

1. Install 85.7mm ferrite (part# LP23) x2 around RF feed line near transmitter end.
2. Connect RF feed line to RF OUT connector.

![RF Output Connector](image)

3. Connect a continuous, low impedance copper conductor to ¼” threaded stud (E1) located under AC INPUT receptacle. Secure copper conductor to E1 using pre-existing hardware on stud.
4. Ensure opposite end of low impedance copper conductor is securely connected to station reference ground.

CAUTION: Do not allow conductor to contact the transmitter or host cabinet chassis at any point other than ¼” threaded stud (E1).
2. Connecting Program Input

User Supplied Components
- XLR cable and connector
  OR
- MPX cable and BNC connector

Connection

See page 12 for instructions on how to connect analog sources. For alternate audio input sources, please refer to the Nautel Installation Manual (see page 3).

Feed audio input cable through 38 mm ferrite (Part # LXP38) x2. If possible, make multiple turns of cable through ferrite.
3. Applying AC Power to Transmitter

The Nautel NHB-VS300 transmitter is connected to a Furman PL-Plus-C power conditioner mounted above the transmitter in the shipping container. AC power is applied to the transmitter as follows:

1. Ensure the power cord is connected to the transmitter’s AC INPUT (Figure 1). Toggle the transmitter POWER switch up to “I” position (Figure 1).

   **Figure 1: Transmitter AC Input and Power Switch**

2. Toggle the power conditioner power switch up “I” position (Figure 2)

   **Figure 2: Power Conditioner Power Switch**
4. Final Setup and Going On-Air

The Nautel VS300 uses presets to hold operating parameters for the transmitter. Therefore, before beginning on-air use, the transmitter Preset 1 (P1*) parameter should be edited for your station’s specific power, frequency, and audio input requirements as follows:

1. Accessing Main Menu
   Press the accept button opposite the Settings Screen on the front panel of the Nautel NHB-VS300 (Figure 3) to enter the transmitter’s Main Menu (Figure 4). Press the button on the front panel to scroll down to “User Settings” (Figure 4).

2. Accessing Presets
   After scrolling to “User Settings,” press the accept button again to enter “Edit Presets” (Figure 5).
3. Editing P1*

Press the accept button to select P1* (Figure 6). Press the accept button again to enter P1* and a menu similar to Figure 7 will be displayed. Within the P1* editing menu, use the and buttons to scroll through the options and press the accept button to enter the selected parameter that you wish to edit. To edit the transmitter’s “Output Power,” “Frequency” and “Main Audio” settings, please follow the steps beginning on page 9.

![Figure 6: Edit Active (P1*) Selected](image)

![Figure 7: P1* Editing Menu](image)
4. Editing Output Power

Use the ▲ and ▼ buttons to scroll to “Output Power” in the P1* editing menu (Figure 8). Press the accept ✓ button to enter the “Output Power” editing menu screen (Figure 9). Next, push the ▲ and ▼ buttons to edit the “Output Power” in 1 watt increments and then press accept ✓ button to save the change. The maximum power setting is 330 watts. Press the ❌ button to cancel and discard the change and return to the previous menu.

Figure 8: Output Power Selected

![Output Power Selected](image)

Figure 9: Output Power Screen

![Output Power Screen](image)

5. Editing Frequency

Use the ▲ and ▼ buttons to scroll to “Frequency” in the P1* editing menu screen (Figure 10). Press the accept ✓ to enter the “Frequency” editing menu screen (Figure 11). Use the ▲ and ▼ buttons to edit the frequency in 0.01 MHz increments, then press the accept ✓ to save the change. Press the ❌ button to cancel and discard the change and return to the previous menu.

Figure 10: Frequency Selected

![Frequency Selected](image)
6. Editing Main Audio Source

Use the ▲ and ▼ buttons to scroll to “Main Audio” in the P1* editing menu screen (Figure 12). Press the accept ✓ button to enter “Main Audio” editing screen. Use the ▲ and ▼ buttons to scroll to “Source” (Figure 13) and press the accept ✓ button to enter the “Source” menu. Next, use the ▲ and ▼ to scroll through the “Source” options (e.g., Analog L/R, AES, MPX, etc.) (Figure 14). Press the accept ✓ button to select and save the desired “Source” option. Press the ❌ button to cancel and discard the change and return to the previous menu.

Figure 12: Main Audio Selected

Figure 13: Main Audio with Source Selected

Figure 14: Main Audio Source (Analog L/R Selected)
7. Finishing Setup
   Press the button approximately five times to return to the Nautel NHB-VS300 Settings Screen (Figure 3).

8. Installing Interlock
   The transmitter contains an electrical interlock which can be used to externally disable RF. You may defeat the interlock by installing the interlock jumper (Figure 15).

   **Figure 15: Upper Remote I/O Connector (A1J2A)**

   ![Upper Remote I/O Connector](image)

   Install the interlock jumper between pins 19 and 20 of the REMOTE I/O-A (A1J2A) connector (Figure 15).

9. Placing Transmitter On-Air
   Remove the interlock jumper (if used), then press and hold the button and the button simultaneously to enable RF.

   **WARNING:** ENSURE THAT THE TRANSMITTER IS CONNECTED TO AN ANTENNA OR A DUMMY LOAD OF AT LEAST 300 WATTS BEFORE ENABLING RF. FAILURE TO DO SO COULD RESULT IN SERIOUS PERSONAL INJURY AND/OR DAMAGE TO THE TRANSMITTER.

For additional information concerning the installation and operations of the Nautel NHB-VS300 transmitter, please refer to the installation and operations manuals (see page 3).

**Note:** Actual user interface screen images may not appear exactly as show in this guide.
Connecting Analog Source to Transmitter
Connecting the transmitter to an analog source such as the RODE Caster PRO analog console (included in the PRSS Emergency Studio Kit) is accomplished by using the DB9/XLR adaptor that is included with the transmitter kit (Figure 16).

Figure 16: DB9F- FXLR (2) Adapter Cable

Step 1
Connect the female DB9 connector of the DB9/XLR adaptor (Figure 17) to the male DB9 analog-audio connector on the rear panel of the Nautel VS300 transmitter (Figure 18).
**Step 2**
Connect the DB9/XLR adaptor’s left (black cable) and right (red cable) XLR connectors (Figure 19) to XLR/TRS cables (Figure 20) that are included with the studio kit.

**Step 3**
Insert the TRS jacks (Figure 21) of the XLR/TRS cables into the left and right monitor jacks on the rear of the RODE Caster Console (Figure 22).

**Getting Help**
If you have questions regarding the assembly and operation of the transmitter after reading the Transmitter Setup Guide and manufacturer’s manuals, please contact the PRSS Help Desk.

**How to get help from the PRSS Help Desk**
*Website:* www.prss.org
*Email:* prsshelp@npr.org
*Telephone:* 800.971.7677