MOTOROLA SOLUTIONS

PDR8000® Portable Digital Repeater Programming Guide

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The Futurecom Repeater Configurator provided by Futurecom Systems Group ULC includes the following Publicly Available Software.

MFC Grid Control

Version
2.24

Modified
Yes

Software Site
http://www.codeproject.com/KB/miscctrl/gridctrl.aspx

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

Changes or modifications not expressly approved by Futurecom Systems Group, ULC. could void the User’s authority to operate the equipment.

Déclaration de Conformité

Cet équipement a été testé et déclaré conforme aux limites pour appareils numériques de classe A, selon la partie 15 des règlements de la FCC. Ces limites sont destinées à assurer une protection raisonnable contre

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Important Safety Information

The PDR8000® is intended for use in occupational/controlled conditions, where users have full knowledge of the operator exposure and can exercise control over the operator exposure to meet FCC/ISED limits. This radio is NOT authorized for general population, consumer, or any other use.

Informations de Sécurité Importantes

Le PDR8000® est conçu pour être utilisé dans des conditions professionnelles contrôlées, dans lesquelles les utilisateurs connaissent à fond leur exposition et peuvent exercer le contrôle nécessaire sur celle-ci pour se conformer aux limites de la FCC/ISED. Cette radio N'EST PAS autorisée pour être utilisée par le grand public, les consommateurs ou autres.

Notice to Users (FCC/ISED)

To satisfy FCC/ISED RF exposure requirements for mobile transmitting devices, refer to the RF Safety Booklet[1] for TX – RX duty cycle and a separation distance between the antenna of this device and persons during operation. To ensure compliance, operations at closer than this distance is not allowed.

Futurecom requires the P25 DVRS operator to ensure FCC/ISED Requirements for Radio Frequency Exposure are met. The minimum distance between all possible personnel and the body of the DVRS equipped vehicle is specified in the RF Safety Booklet[1]. Failure to observe the Maximum Permissible Exposure (MPE) distance exclusion area around the antenna may expose persons within this area to RF energy above the FCC exposure limit for bystanders (general population).

It is the responsibility of the repeater operator to ensure that MPR limits are always observed during repeater transmissions. The repeater operator must always ensure that no person comes within MPE distance from the antenna.

Avis Aux Utilisateurs (FCC/ISED)

Pour satisfaire les exigences de la FCC / ISED en matière d'exposition à l'énergie RF pour les transmetteurs mobiles, prière de consulter la Brochure Sécurité RF[1] pour obtenir le facteur d'utilisation transmission / réception et la distance de séparation entre l'antenne de cet appareil et les personnes pendant l'utilisation. Pour assurer la conformité, le fonctionnement à une distance moins élevée n'est pas autorisé.

Futurecom demande à l'opérateur du répéteur P25 DVRS de satisfaire aux exigences de la FCC/ISED en matière d'exposition à l'énergie RF. La distance minimale entre toutes les personnes possibles et une antenne omnidirectionnelle doit respecter les indications de la Brochure Sécurité RF[1]. Tout manquement à respecter la zone d'exclusion autour de l'antenne définie par la distance correspondant à la limite d'exposition maximale peut exposer les personnes qui se trouvent dans ce rayon à une énergie RF supérieure à la limite d'exposition de la FCC pour les spectateurs (population générale).

C'est à l'opérateur du répéteur qu'il incombe de s'assurer que les limites d'exposition maximales sont respectées en tout temps pendant les transmissions du répéteur. L'opérateur du répéteur doit s'assurer en

[1] Refer to the manuals *Product Safety and RF Energy Exposure Booklet for PDR8000* (publication number MN010431A01) and *Product Safety and RF Energy Exposure Booklet for Booster Pack* (publication number MN010430A01).

tout temps que personne ne s’approche de l’antenne à une distance inférieure à celle correspondant à la limite d’exposition minimale.

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3. Select "Support" on the motorolasolutions.com page.

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- A description of the error

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Document History

Version	Description	Date
MN010432A01-AA	Initial converted edition.	May 2024

Contents

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List of Tables

About This Manual

The Futurecom Repeater Configurator (FRC) is the software used for all hardware programming needs.

For requirements on compatible Mobile and Portable radios, refer to the *Compatibility Charts*.

For details on the APX series Mobile or Portable Radios operation, refer to the applicable Manuals available from Motorola Solutions Learning eXperience Portal (LXP) website.

FRC contains three main components to service all hardware programming needs:

1. Configurator for APX Repeaters (DVR, DVR-LX, and VRX1000)
2. Configurator for PDR8000®
3. Flash Downloader Utility (used to update the firmware of the VR)

The following table list of Firmware is the minimum requirement for the PDR8000 operation described in this manual.

Repeater Module Firmware:	4C088X01 R5.05
Repeater Module Boot Firmware:	4C088X02 R5.04
Transceiver DSP:	4C083X03 R1.18
Baseband DSP:	4C083X04 R1.54
IF Module Firmware:	4C088X07 R5.05
IF Module Boot Firmware:	4C088X08 R5.05
Futurecom Repeater Configurator (FRC):	6V088X01 R1.40 or later

Notations Used in This Manual

This guide is designed to give you more visual cues.

The following graphic icons are used throughout the user guide.

DANGER: The signal word DANGER with the associated safety icon implies information that, if disregarded, will result in death or serious injury.

WARNING: The signal word WARNING with the associated safety icon implies information that, if disregarded, could result in death or serious injury, or serious product damage.

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NOTE: NOTE contains information more important than the surrounding text, such as exceptions or preconditions. They also refer the reader elsewhere for additional information, remind the reader how to complete an action (when it is not part of the current procedure, for instance), or tell the reader where something is on the screen. There is no warning level associated with a notice.

TIP: TIP contains information that provides the reader a different or quicker method in accomplishing the same task. At times, they also give the reader the best way to proceed or handle the task.

The following special notations highlight certain information:

Table 1: Special Notations

Example	Description
Menu key or **PTT** button	Bold words indicate a name of a key, button, soft menu item, or programming menu item.
Ordering Guide	Italic word indicates title of a bibliographic resource.
`Powering Off`	Typewriter words indicate the Human Machine Interface (HMI) strings or messages displayed on your display.
File → Templates (DPD Files) → Load DPD Template	Bold words with the arrow between indicate the navigation structure in the menu items.

Related Publications

User Guides

Part Number	Description
MN010354A01	Battery Pack and Charger User Guide
MN010433A01	PDR8000 Portable Digital Repeater Connectivity Deployment Application Note
MN010436A01	PDR8000 Product Planner
MN010434A01	PDR8000 and Booster Pack Deployment Guide

Data Sheets

Data sheets can be retrieved from the Futurecom website. Go to **Support → Documentation and Software → PDR8000 → Datasheets**.

Model	Data sheets
PDR8000®	• PDR8000 - Suitcase • PDR8000 - Rackmount

Safety Booklets

Part Number	Description
MN010430A01	Product Safety and RF Energy Exposure Booklet for Booster Pack
MN010431A01	Product Safety and RF Energy Exposure Booklet for PDR8000

Others

Publication	Description
Ordering Guides	Include the following guides: • PDR8000 Ordering Guide • PDR8000 Rackmount Ordering Guide Ordering guides can be retrieved from the Futurecom website. Go to **Support → Documentation and Software → PDR8000 → Ordering Guide**.

Chapter 1

PDR8000 Programming Basics

This section gives an introduction to the basics of Portable Digital Repeater (PDR) programming on the Futurecom Repeater Configurator (FRC).

1.1 Installation of FRC Software

The following presents the software installation and the requirements for the Futurecom Repeater Configurator (FRC) software.

The following parameters represent the minimum hardware and software requirements for FRC.

Operating Systems
Microsoft® Windows® 10 or Windows® 11

Processor
1 GHz or higher grade Processor

Peripherals
USB port

1.1.1 Uninstalling Previous FRC

Procedure:

1. To remove any previous installation of FRC[2] versions, go to **Start** → **Settings** → **Apps** → **Installed Apps**[3].
2. Find the FRC application and select on the **Uninstall** option.

1.1.2 Installing FRC

Procedure:

1. Download and save the Futurecom Repeater Configurator (FRC) installer.

   The latest version of FRC is available on the Futurecom website. Go to **Support** → **Documentation and Software** → **PDR8000** → **FRC Programming Software**.
2. On the **Downloads** page, fill in the required fields and click on **SUBMIT & DOWNLOAD**.
3. Select a location to save the application, and click **Save**.
4. Double-click on the setup application from the saved location.
5. In the License Agreement window, select **I accept the agreement** and click **Next**.

[2] Also formally known as Tweaker
[3] Depending on the Operating System you are using, the steps to get to the list of Installed Applications may differs.

6. Select the destination location folder for the installation files and click **Next**.

   NOTE: You can change the filepath folder for the installation.

7. Select the additional tasks to be included during the installation and click **Next**.
8. Click **Install** to start the installation.

Result: The installation starts.

1.1.3
Setting Up Communications with the PDR8000

Prerequisites:

- Ensure that the USB cable is plugged into the computer and connected to the USB port on the PDR8000.
- Ensure that the PDR8000 is powered up. Check the LED Display on the panel.
  - The Power LED and DC/Battery LED should light up in green.

Procedure:

1. On the FRC launch window, select **PDR8000**.

   NOTE: The FRC launch window has two choices, **DVR-LX/DVR/VRX1000** and **PDR8000**.

2. On the FRC, select **Options** → **COM Ports**.
3. In the **Ports** window, check if `Futurecom USB modem` is displayed. See Ports on page 36 for more information.
4. If the COM Port field is blank, check the USB connection or change the USB Port on the computer.

1.1.4
Setting Optimum View of the FRC

Procedure:

For an optimum view of the FRC menu windows on the PC, ensure that the following recommended display settings on your PC are set:

- Text size no greater than 125%.
- Use Tahoma Regular Font.
- Adjust the font size for your display and preference.

NOTE: Procedures to make these changes may differs depending on your Operating System. Contact your administrator for further assistance.

1.2
Introduction to FRC

The Futurecom Repeater Configurator (FRC) application provides the interface for servicing the hardware programming needs on all supported PDR8000.

Using FRC Online

To use FRC online, ensure that the following requirements are active:

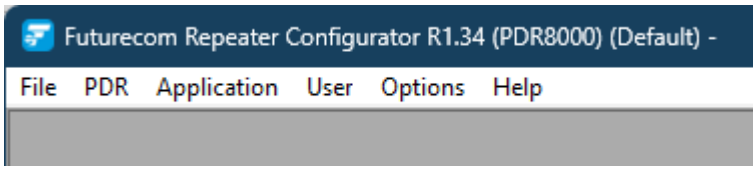
1. FRC is installed on the PC.

2. Powered up PDR8000.
3. Programming cable (USB cable) connected to PDR8000.

1.2.1
FRC Menu Bar

The FRC menu bar contains a number of options, commands, and shortcut buttons.

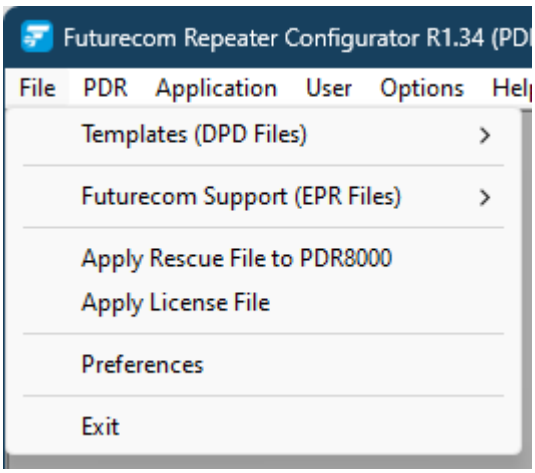
Figure 1: FRC Menu Bar



1.2.1.1
File Menu in FRC

The File menu in FRC contains commands for file operations, including applying, loading, and saving.

Figure 2: File Menu



The File menu contains the following elements:

Table 2: File Menu

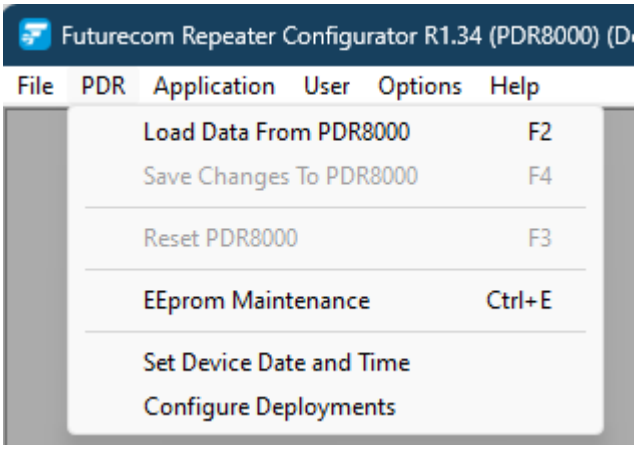
Menu Item	Dropdown Menus (Keyboard Shortcut)	Description
Templates (DPD Files)	Apply DPD Template to PDR8000	Apply, load, and save DPD files.
	Save DPD Template	
	Load DPD Template (**Ctrl + F6**)	
Futurecom Support (EPR Files)	Save EPR Support File	Apply, load, and save EPR files.
	Load EPR Support File (**F6**)	
Apply Rescue File to PDR8000		Load rescue files.

Menu Item	Dropdown Menus (Keyboard Shortcut)	Description
Apply License File		Load licenses.
Preferences		Open the **Preferences** window.
Exit		Exits the FRC application.

1.2.1.2 PDR Menu in FRC

The PDR menu in FRC contains commands for the PDR, including load, save, and reset.

Figure 3: PDR Menu



The PDR menu contains the following elements:

Table 3: PDR Menu

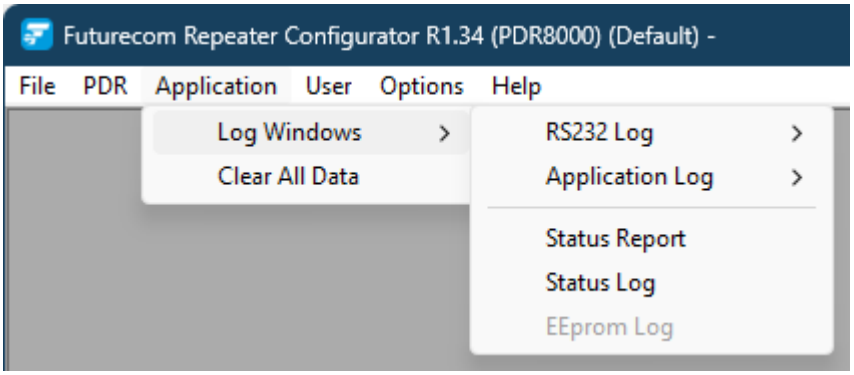
Menu Item (Keyboard Shortcut)	Description
Load Data from PDR8000 (**F2**)	Read data from the PDR and load to the FRC for review and editing.
Save Changes to PDR8000 (**F4**)	Upload updated data from the FRC to the PDR.
Reset PDR8000 (**F3**)	Reset the PDR. Usually done to ensure updates take effect.
EEprom Maintenance (**Ctrl + E**)	Opens the **EEprom maintenance** window which is used for debugging purposes.
Set Device Date and Time	View or set date and time on the device
Configure Deployment	Opens **Deployment Configuration** window which allows reordering, copying, and clearing of deployments.

1.2.1.3

Application Menu in FRC

The Application menu in the FRC log information for technical support purposes.

Figure 4: Application Menu



The Application menu contains the following elements:

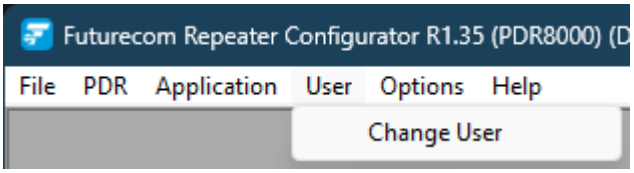
Table 4: Application Menu

Menu Item	Dropdown Menus	Description
Log Windows	RS232 Log • Save • Clear	Save and clear RS232 log information.
	Application Log • Show • Save • Clear	View, save, and clear application log information.
	Status Report	Lists the number of occurrences for errors, warnings, and more info from the repeater (resets on power cycle).
	Status Log	Lists each error, warning, and more info from the repeater (resets on power cycle).
	EEprom Log	Displays errors, warnings, channel or deployment changes, and system status.
Clear All Data		Clear all log information.

1.2.1.4
User Menu in FRC

The User menu in FRC allows user changes for technical support purposes.

Figure 5: User Menu



The User menu contains the following elements:

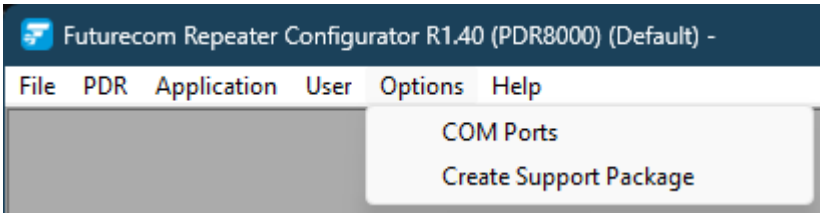
Table 5: User Menu

Menu Item	Description
Change User	Opens the **Login** window to log in as a different user.

1.2.1.5
Options Menu in FRC

The Options menu in the FRC allows you to make changes to the COM port.

Figure 6: Options Menu



The Options menu contains the following elements:

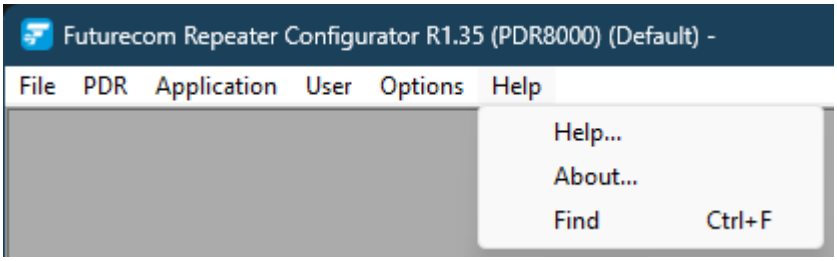
Table 6: Options Menu

Menu Item	Description
COM Ports	Opens the **Ports** window.
Create Support Package	Creates standard support files required for the Support team to debug PDR8000 issues. See Creating a Support Package on page 29.

1.2.1.6
Help Menu in FRC

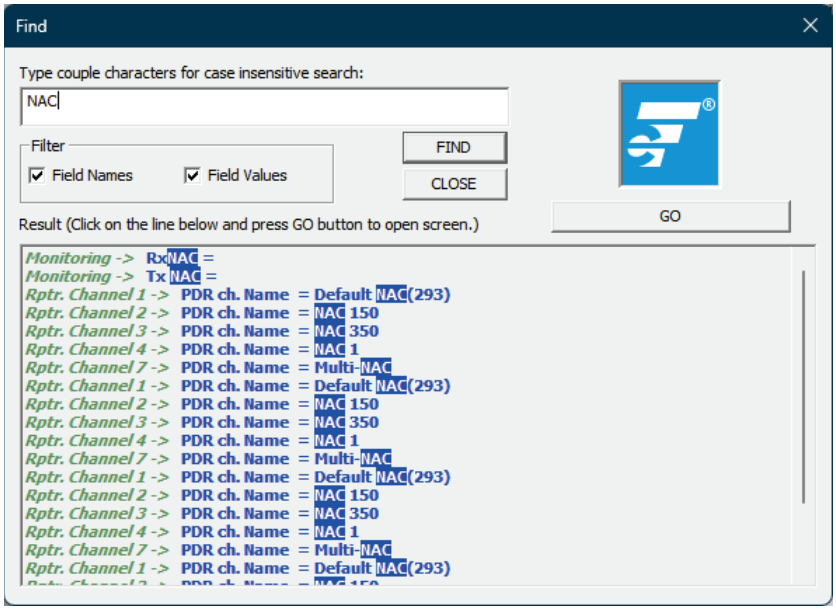
The Help menu links to support documentation and compatibility charts, and provides search functionality.

Figure 7: Help Menu



The Help menu contains the following elements:

Table 7: Help Menu

Menu Item (Keyboard Shortcut)	Description
Help	Open the online help system.
About	View software version information.
Find (**Ctrl + F**)	Find functionality provides a quick way to search through FRC for a particular field. Enter a few letters of a field name, click **FIND** and results will show all fields matching the string. Select the desired result and click GO to open that screen. **Figure 8: Find Feature in Help Menu** 

1.2.2

FRC Icons

Table 8: FRC Icons

Icon	Description
	**Font** Allows selecting font type, style, size, color, and effects
	**Application Reset** Clears all data in the application memory
	**Save** Save changes to the file
	**Com Port Log** Contains communication between FRC and repeater, used for debugging
	**Application Log** Contains details that may be required when accessing technical support
	**Find** Search function by field name and/or field values
	**Change User Level** Used to switch between default user and admin access
	**EEPROM Maintenance** Used for debugging
	**Deployment Configuration** Allows reordering, copying, and clearing of deployments
	**Status Report** Lists the number of occurrences for errors, warnings, and more info from the repeater (resets on power cycle)
	**Status Log** Lists each error, warning, and more info from the repeater (resets on power cycle)
	**Status EEPROM Log** Displays errors, warnings, channel or deployment changes, and system status
	**Set Date and Time** View or set date and time on the device
	**Undo** Undo last action
	**Copy** Copy selected content
	**Paste** Paste selected content
	**Minimize/Restore** Minimize/Maximize window

Icon	Description
	**Help** Access Help function

1.2.3
Reading the PDR8000 Electronic Label

The Electronic Label of the PDR8000 contains information regarding the firmware currently loaded in the PDR8000, the hardware model, and the serial number. The Electronic Label can be read either on-line or by loading a previously saved EPR or DPD file. The information contained in the Electronic Label stored in the DPD file does not overwrite the electronic labels of the PDR8000s during cloning.

Procedure:

To read the PDR8000 Electronic Label, from the FRC navigation tree, select **PDR Configuration → Hardware/Software Information**.

NOTE: An EPR file contains the personality and calibration data of a specific PDR8000 unit. A DPD file contains the personality settings of a PDR8000 unit that may be used as a template to copy into other PDR8000 units.

1.2.4
Reading from the PDR8000

This procedure uploads data from the currently connected PDR8000 to the FRC.

Procedure:

1. Establish communication with the PDR8000.
2. Perform one of the following options:
   - Select **PDR → Load Data from PDR8000**.
   - Press shortcut key **F2**.

   A progress dialog pops up.

Result: Personality data of the currently connected PDR8000 unit will be loaded into FRC for reviewing and/or editing.

1.2.5
Writing to the PDR8000

This procedure downloads data from the FRC to the currently connected PDR8000.

Procedure:

To write to the PDR8000, perform one of the following options:

- Applying DPD File (Cloning) on page 28
- Writing Selected Changes to the PDR8000 on page 29

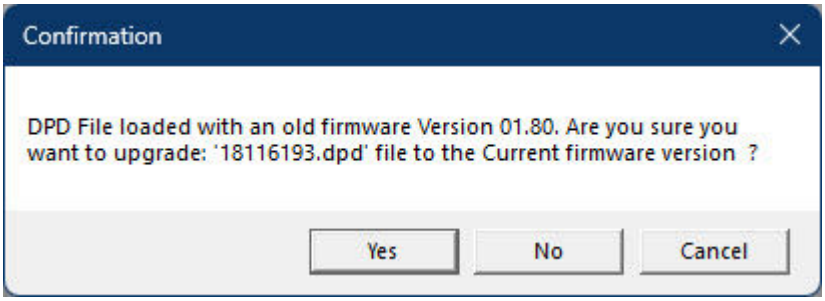
1.2.5.1

Applying DPD File (Cloning)

This action reads (uploads) data from the attached PDR8000, applies a selected DPD Template, and then writes (downloads) the modified configuration to the PDR8000.

Procedure:

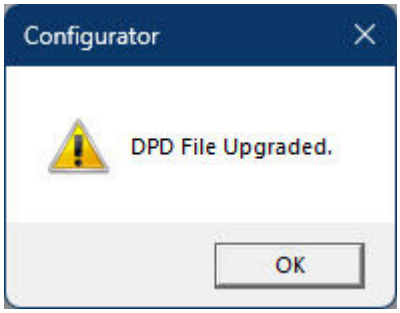
1. From the menu bar, select **File** → **Templates (DPD Files)** → **Apply DPD Template to PDR8000**.
2. Specify the desired DPD file name and location when prompted.
3. If an outdated DPD file is loaded, an upgrade confirmation dialog window appears.



NOTE: If there exists an outdated DPD file created with outdated versions (for example, R1.0, R2.0, or R3.0), the FRC upgrades this file to the current DPD format prior to applying it to the PDR8000.

4. To continue, click **Yes**.

Result: An upgrade completion notification is shown once the upgrade is completed.



This indicates that the program created a new file with the same name as the original file, but with the suffix: ***<_v2_to_v4_updated.dpd>***.

For example, if the original file was named: ***<Myfile.dpd>***, the upgraded file would be: ***<Myfile_v2_to_v4_updated.dpd>***.

Click **OK** to close this message, and the new upgraded DPD file will be loaded.

1.2.5.2

Writing Selected Changes to the PDR8000

This action writes (downloads) the modified configuration to the PDR8000.

Procedure:

1. Perform changes to the parameters of the uploaded personality data.

   NOTE: All changes to the parameters are indicated as follows:
   Valid Changes
   If any of the parameters within FRC are modified from its original value, the modified fields are shaded in green. In addition, the EEPROM maintenance icon flashes yellow  , and when hovering over it, a message indicates `EEprom Changed`.

   Invalid Changes
   If any invalid changes are made, the modified fields are shaded in red. In addition, the EEPROM maintenance icon flashes red  and the configuration windows containing conflicting data is marked with a red exclamation mark on the FRC navigation tree.

   The changes cannot be written to the PDR8000 until the errors are eliminated.

2. To save data changes to the PDR8000, perform one of the following options:
   - From the menu bar, select **PDR** → **Save Changes to PDR8000**, or press shortcut key **F4**.
   - From the menu bar, select **PDR** → **EEprom Maintenance**, or press shortcut key **Ctrl + E**. Select **Changes ➜ Repeater**.
   - On the FRC navigation tree, click on  and select **Changes ➜ Repeater**.
3. To ensure that the changes take effect, reset the repeater. Perform one of the following options:
   - From the menu bar, select **PDR** → **Reset PDR8000**, or press shortcut key **F3**.
   - From the menu bar, select **PDR** → **EEprom Maintenance**, or press shortcut key **Ctrl + E**. Select **Reset Repeater**.

1.2.6

Creating a Support Package

Support Packages are standard support files required for the Support team to debug repeater issues.

Procedure:

To create a Support Package, from the FRC Menu Bar, select **Options** → **Create Support Package**.

Result: FRC takes over and creates the standard support package that includes the following support files:

1. EPR file
2. DPD file
3. Com Port Trace
4. App Log Trace

When saving all FRC support files is completed, an additional compressed file will be created: `SN_SP_Timestamp_SupportPackage.gz`.

1.3
FRC Offline Editing

FRC offline editing allows you to view, modify, and save new personality templates (DPD) files.

1.3.1
Viewing PDR8000 Personality Files Offline

Prerequisites: Launch the FRC.

Procedure:

1. Select **File** → **Templates (DPD Files)** → **Load DPD Template**.
2. Navigate to the file location, and click **Open**.
3. If the file was previously saved using custom encryption, enter the corresponding password to continue.

1.3.2
Modifying PDR8000 Personality Files Offline

Procedure:

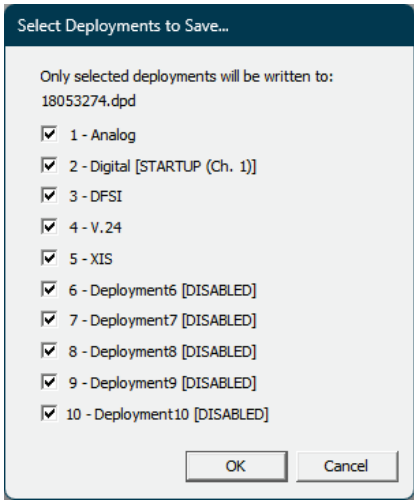
On the loaded DPD file, review and modify the field values.

1.3.3
Saving PDR8000 Personality Files Offline

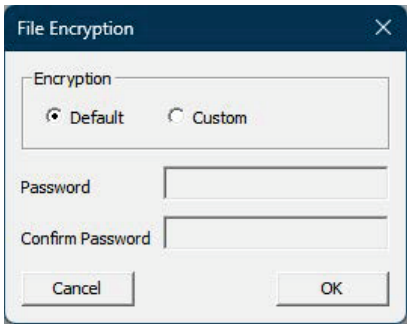
NOTE: After the PDR8000 is programmed as per the needed requirements and the unit has been tested successfully with this template, it is recommended to save the template as a DPD file on the computer for future use.

Procedure:

1. To save the edited DPD file, select **File** → **Templates (DPD Files)** → **Save DPD Template**.
2. Navigate to the desired save location, specify filename, and click **Save**.
3. Fill in the fields in the **Save** window and click **Save**.
4. Select the desired Deployments to be saved, and click **OK**.



5. Specify the encryption type and click **OK**.



Chapter 2

PDR8000 Programming Guidelines

This section provides guidelines of Portable Digital Repeater (PDR) programming on the Futurecom Repeater Configurator (FRC).

2.1 Programming Steps Overview

The PDR8000 operation depends on the following components:

- PDR8000 firmware and programming settings
- Subscriber Unit type, firmware, and programmed personality
- System infrastructure

2.2 PDR8000 Programming Information

The following provide detailed PDR8000 programming information.

IMPORTANT:

- Do not change PDR8000 settings unless fully familiar with the meaning of a specific option.
- The FRC program reports any obvious errors and does not allow invalid data to be saved to the PDR8000. However, not all inconsistencies can be reported by the FRC. Successful PDR8000 programming requires a thorough understanding of the PDR8000 and PSU programming as well as the specific User or System requirements. Only when all templates (PDR8000 and PSU) are matched, the PDR8000 will operate properly.

2.3 FRC Window and Field Definitions

This section provides details to the fields available on the Futurecom Repeater Configurator (FRC).

Documentation Conventions

The following table provides information on conventions used throughout the document.

Table 9: FRC Conventions

Convention	Description	Examples
Window Name → Field Name	Used through field descriptions to refer to a specific FRC field on a specific FRC window.	**Personality Information → Personality Name** refers to the **Personality Name** field located on the **Personality Information** window.
Field Name containing fields indented under it	Field grouping or box title for a set of fields logically grouped together on an FRC window.	**Personality Information → Date of Programming** is the group name for the following fields:

Convention	Description	Examples
		• **DAY** • **MONTH** • **YEAR**
Range	Valid values allowed for a field with units of measurement (where appropriate) and a default value identified where the default value exists.	**Display Unit** → **Timeout for Menu**: 5–60 (**10**) Seconds
Bold Text in Range Column	Factory default value.	**Start-Up** → **BSI Interval**: 1–60 (**30**) minutes 30 minutes is the default value.
<Italic> Field Names	Fields displayed without a title or label.	
Description	Explains what the field represents and provides details on each field value where appropriate.	**Frequency Band Configuration** → **Base Rx Frequency** Indicates the base receive frequency for this PDR8000.
Notes	Restrictions or limitations related to the programming of the field; identifies dependencies on other fields, or if a feature license is required.	**Common Settings** → **Variable Fan** Variable Fan feature is only operational with PDRs version 4 hardware and later.
Bolded feature license text	Feature license is required for this field to be editable.	
Field Name ✶	Model-specific fields.	
Field Name ¤	Fields that are only applicable to the connected PDR. These fields will NOT be propagated to another Repeater using a template file (DPD). These fields are grayed out during offline editing except for **Hardware/Software Information** window.	**General Configuration** → **DFSI** → **Fixed Station IP Address ¤**
Field Name ¤§	Fields that are only applicable to the connected PDR. These fields will NOT be propagated to another Repeater using a template file (DPD). These fields are grayed out during offline editing.	**General Configuration** → **DFSI** → **Fixed Station Port ¤§**
Field Name ●	Fields that are only applicable to the installed FRC and stored locally on its PC. These fields will NOT be propagated to another Repeater using the template file (DPD).	**Ports** → **COM Port ●** COM Port setting specific to the version of FRC installed on the PC.

Convention	Description	Examples
Grayed Out (Disabled) Fields	Grayed out fields cannot be edited. Two scenarios exist: **1.** Parameters displayed are ignored by PDR either due to licensing, or configuration of other fields. **2.** Parameters displayed are fixed based on PDR unit hardware or software.	Examples: **1.** Observed with V.24 Transmit Clock **2.** Observed with Hardware/Software Information

2.3.1

Setting Device Date and Time

This section sets the PDR8000 date and time of the connected PDR8000.

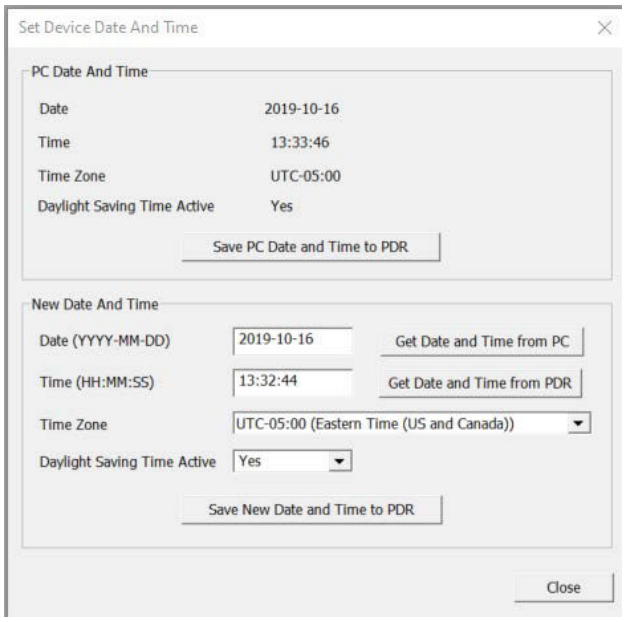
Prerequisites: Ensure that the PDR8000 is connected to the PC.

Procedure:

Perform one of the following options:

- From the FRC menu bar, select **PDR** → **Set Device Date and Time**.
- From the FRC navigation tree, click on  **Set Date and Time**.

Result: The **Set Device Date and Time** window opens.



describes the fields of the **Set Device Date and Time** menu.

Field Name	Options/Units	Description
PC Date and Time		

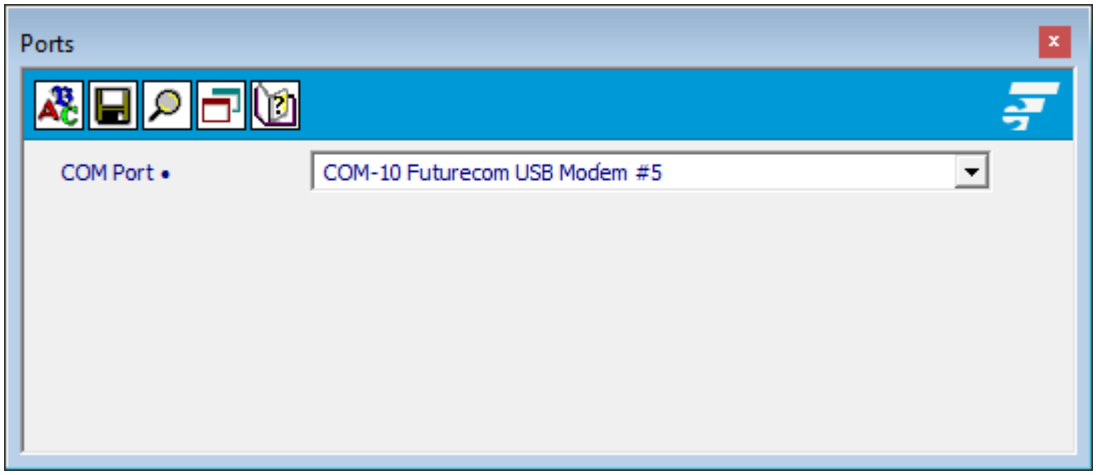
Field Name	Options/Units	Description
Date	YYYY-MM-DD	Displays the current PC date. **NOTE:** Display only.
Time	HH:MM:SS	Displays the current PC time. **NOTE:** Display only.
Time Zone		Displays the Time Zone. **NOTE:** Display only.
Daylight Saving Time Active	• Yes • No	Displays Daylight Saving Time. **NOTE:** Display only.
Save PC Date and Time to PDR		Saves the PC Date and Time to the PDR8000.
New Date and Time		
Get Date and Time from PC	YYYY-MM-DD	Current Date and Time will be obtained from the PC connected to the PDR. **NOTE:** Can be changed manually.
Get Date and Time from PDR	HH:MM:SS	Obtain the current Date, Time, and Time Zone information from the PDR8000 connected to the PC. **NOTE:** Can be changed manually.
Time Zone		Select world Time Zones from the dropdown menu.
Daylight Saving Time Active	• Yes • No	Enables or disable Daylight Saving Time. **NOTE:** Adds one hour to the DST.
Save New Date and Time to PDR		Save the Date and Time programmed in the **New Date and Time** section to the PDR8000.

2.3.2
COM Options

This section contains information for the elements under **COM Options** in the FRC navigation tree.

2.3.2.1
Ports

Figure 9: Ports Window



Field Name	Range	Description
COM Port •	N/A	A drop-down list of available ports when connecting directly to the PDR8000 USB Port. **NOTE:** The save icon sets the selected COM port as the default USB Port so it is the first port accessed for any read/write operation.

2.3.3
PDR Configuration

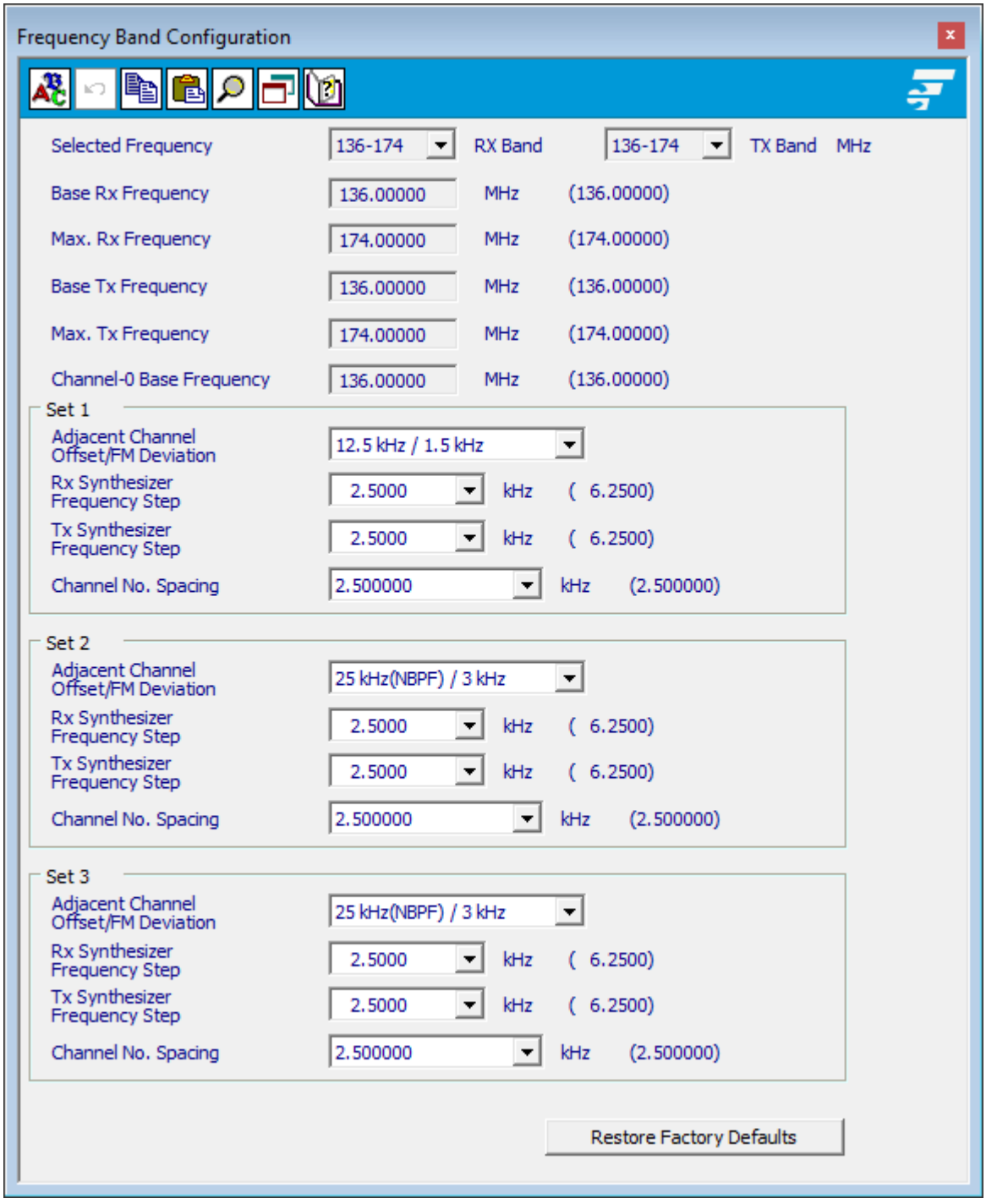
This section contains information for the elements under **PDR Configuration** in the FRC navigation tree.

2.3.3.1
Frequency Band Configuration

The **Frequency Band Configuration** window is used for selecting the Adjacent Channel Separation.

There are three selections possible; Set 1, Set 2, and Set 3. Each of these sets can either be Narrowband (12.5 kHz / 1.5 kHz), Wideband (25 kHz / 3 kHz), or NPSPAC (25 kHz / 4 kHz). Ensure the correct spacing (Set 1, Set 2, or Set 3) is selected to match the portable radio programming on each PDR8000 channel. See **Bandwidth** field in Channel Configuration on page 58.

Figure 10: Frequency Band Configuration Window



Field Name	Options/Units	Description
Selected Frequency		
RX Band	MHz • 136–174 (VHF)	Indicates the receiver band supported by the current hardware platform. **NOTE:** This field is read only.

Field Name	Options/Units	Description
	• 380–430 (UHF R1) • 450–470 (UHF R2) • 470–512 (UHF R3) • 794–806 (700) • 806–825 (800)	
TX Band	MHz • 136–174 (VHF) • 380–430 (UHF R1) • 450–470 (UHF R2) • 470–512 (UHF R3) • 764–776 (700) • 851–870 (800)	Indicates the transmitter band supported by the current hardware platform. **NOTE:** This field is read only.
Base Rx Frequency	MHz	Indicates the base receive frequency for the current PDR8000. **NOTE:** This field is read only. The value in parentheses is the factory default value.
Max. Rx Frequency	MHz	Indicates the maximum receive frequency for the current PDR8000. **NOTE:** This field is read only. The value in parentheses is the factory default value.
Base Tx Frequency	MHz	Indicates the minimum transmit frequency for the current PDR8000. **NOTE:** This field is read only. The value in parentheses is the factory default value.
Max. Tx Frequency	MHz	Indicates the maximum transmit frequency for the current PDR8000. **NOTE:** This field is read only. The value in parentheses is the factory default value.

Field Name	Options/Units	Description
Channel-0 Base Frequency	MHz	Indicates the lowest frequency for the current PDR8000, either transmit or receive. **NOTE:** This field is read only. The value in parentheses is the factory default value.
Adjacent Channel Offset/FM Deviation	• Reserved • 12.5 kHz/1.5 kHz • 25 kHz (NBPF) / 3 kHz • 25 kHz / 4 kHz (NPSPAC)	Offset indicates the width of each channel; used to determine the frequency of the next channel.
Rx Synthesizer Frequency Step	• 2.5000 kHz[4] • 5.0000 kHz[4] • 6.2500 kHz	Frequency step size used by the receive synthesizer. **NOTE:** The value in parentheses is the factory default value.
Tx Synthesizer Frequency Step	• 2.5000 kHz[4] • 5.0000 kHz[4] • 6.2500 kHz	Frequency step size used by the transmit synthesizer. **NOTE:** The value in parentheses is the factory default value.
Restore Factory Default		Resets all the values to the factory preset values.

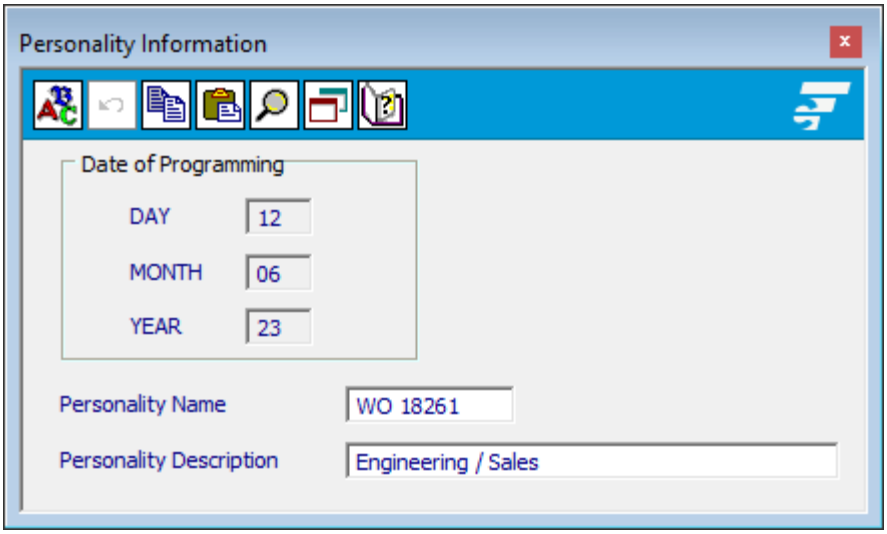
[4] Valid for VHF only.

2.3.3.2

Personality Information

The **Personality Information** window shows the information of the template.

Figure 11: Personality Information Window



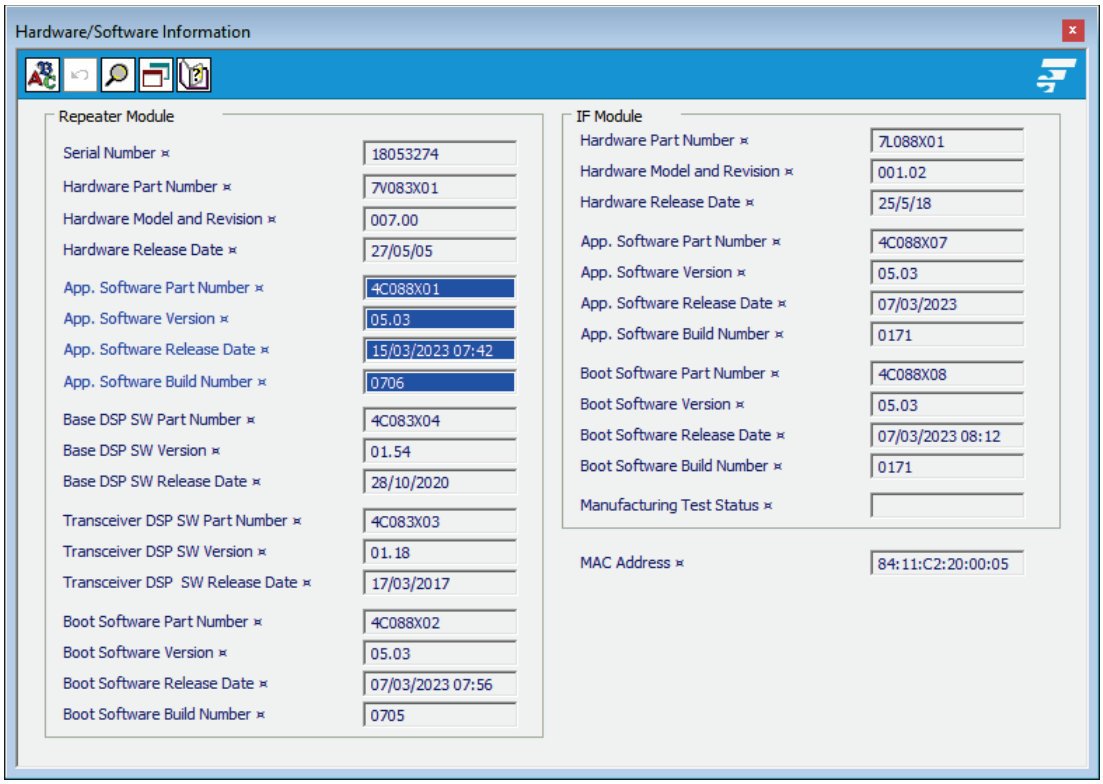
Field Name	Options/Units	Description
Date of Programming		
DAY	Two (2) digits	Indicates the day for the date of programming for this personality template.
MONTH	Two (2) digits	Indicates the month for the date of programming for this personality template.
YEAR	Two (2) digits	Indicates the year for the date of programming for this personality template.
Personality Name	Maximum 14 alphanumeric characters	Name used to reference this personality template.
Personality Description	Maximum 32 alphanumeric characters	Descriptive text used to reference this personality template.

2.3.3.3

Hardware/Software Information

The **Hardware/Software Information** is for information purposes only. It displays information relating to the Repeater Module and the IF Module, such as the repeater serial number, part numbers, revision or version numbers, and release dates.

Figure 12: Hardware/Software Information Window

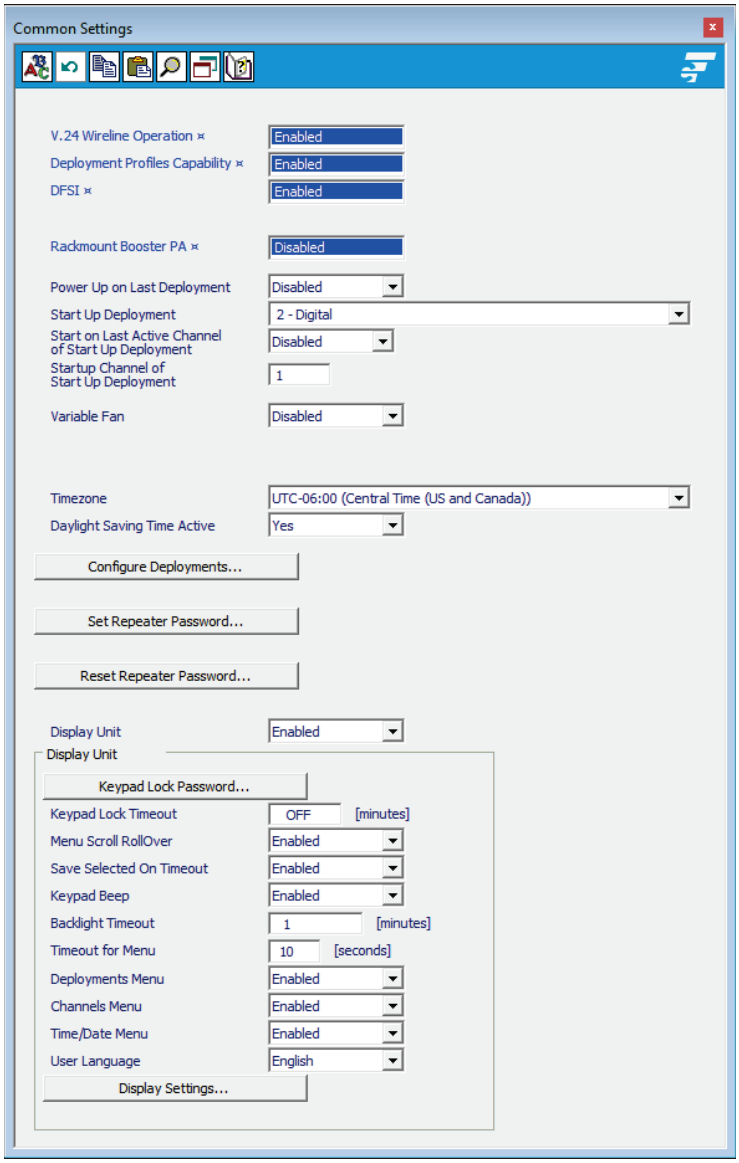


2.3.3.4

Common Settings

The **Common Settings** window is used for configuring deployments, choosing the desired channel, setting password, and selecting the display unit menu. It also indicates if the V.24 or DFSI Wireline operation and Deployment Profile Capability options are installed.

Figure 13: Common Settings Window



Field Name	Options/Units	Description
V.24 Wireline Operation	• Enabled • Disabled	Display if the V.24 Wireline Operation is enabled or disabled. **NOTE:** This is a read only field. ***Feature License–V.24 Wireline Operation*** is required to enable this feature. Refer to *Ordering Guides* for order code.
Deployment Profiles Capability	• Enabled • Disabled	Display if the use of multiple deployment profiles is enabled or disabled. **NOTE:** This is a read only field. ***Feature License–Deployment Profiles Capability*** is required to enable this feature. Refer to *Ordering Guides* for order code.

Field Name	Options/Units	Description
DFSI	• Enabled • Disabled	Display if the DFSI Wireline Operation is enabled or disabled. **NOTE:** This is a read only field. ***Feature License–DFSI Operation*** is required to enable this feature. Refer to *Ordering Guides* for order code.
Rackmount Booster	• Enabled • Disabled	Rackmount PDR8000 only. **NOTE:** This is a read only field. ***Feature License*** is required to enable this feature. Refer to *Ordering Guides* for more information and order code.
Power up on Last Deployment	• **Enabled** • Disabled	**When Enabled** The PDR8000 powers up on the last active Deployment Profile. **NOTE:** The channel within the deployment profile that is active upon power up is determined by configuration within the **General Configuration** window of that Deployment Profile. **When Disabled** The PDR8000 powers up on the deployment profile configured in **Start Up Deployment**.
Start Up Deployment	• **1** • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • 10	Selects the Start Up Deployment. **NOTE:** Not applicable if **Power up on Last Deployment** is enabled.
Start on Last Active Channel of Start Up Deployment	• Enabled • **Disabled**	If enabled, the PDR8000 will switch to the last active channel upon starting. **NOTE:** Not applicable if **Power up on Last Deployment** is enabled. In that case, the channel activated at power up is determined by configuration within the **General Configuration** window of that Deployment Profile.
Startup Channel of Start Up Deployment	**1** to X X denotes the number of	Channel number of the Start Up Deployment on which the PDR8000 shall start upon. Maximum chan-

Field Name	Options/Units	Description
	maximum channels.	nel number is the highest channel configured in the **Start Up Deployment**. **NOTE:** Not applicable if **Start on Last Active Channel of Start Up Deployment** is enabled. If **Power up on Last Deployment** is enabled, then the channel activated at power up is determined by configuration within the **General Configuration** window of that Deployment Profile.
Variable Fan	• **Enabled** • Disabled	Controls the speed of the internal cooling fans of the suitcase PDR and Booster Pack. **When Enabled** Fan speed is automatically adjusted depending on the internal temperature of the unit. **NOTE:** The Variable Fan feature is only operational with PDR version 4 hardware and later. (Earlier hardware always runs fans at full speed.) **When Disabled** Fans always run at full speed. **NOTE:** Disabling this feature also disables the PDR ability to query a suitcase Booster Pack for its RF Band information. This prevents PDR from warning a user if a nonmatching RF Band booster is connected to a PDR.
Time Zone	**UTC–05:00 (Eastern Time (US and Canada))** A drop-down list consisting of the world time zone.	Select Time Zone from the drop-down menu. **NOTE:** Follows the settings in **Set Device Date and Time**. See Setting Device Date and Time on page 34.
Daylight Saving Time Active	• **Yes** • No	Enables or disables Daylight saving time. **NOTE:** Follows the settings in **Set Device Date and Time**. See Setting Device Date and Time on page 34.
Configure Deployments		Enables or disables Deployment Profiles as per the PDR8000 Order. Any Deployment Profile can be cop-

Field Name	Options/Units	Description
		ied to any other Deployment Profile. Deployment Profiles can be reset to factory default. **NOTE:** • Opens a new window. • Available only if **Deployment Profile Capability** is enabled. • See Deployment Configuration on page 47.
Set Repeater Password		Set the password for the PDR8000.
Reset Repeater Password		Reset the PDR8000 password.
Display Unit	• **Enabled** • Disabled	Enables functionality on the front panel keypad display. **NOTE:** • Only affects PDR units equipped with a display unit. • When disabled, the fields in **Display Unit** are not configurable.
Keypad Lock Password		Set the password to lock the keypad. **NOTE:** See Keypad Lock Password on page 49.
Keypad Lock Timeout	0 minutes to 60 minutes (**OFF**)	The keypad locks after the programmed time.
Menu Scroll RollOver	• **Enabled** • Disabled	When enabled, the menu can be scrolled over on the display.
Save Selected on Timeout	• **Enabled** • Disabled	When enabled, PDR saves any setting changed on display unit when **Timeout for Menu** elapses. **NOTE:** Settings can also be saved by pressing **Select**.
Keypad Beep	• **Enabled** • Disabled	Enables or disables the keypad beeps.
Backlight Timeout	0 minutes to 60 minutes (**0** minutes)	The backlight turns off when the programmed time runs out. **NOTE:** The default setting is Always ON; the timer can be set from 1–60 minutes. Enter (0) to select Always ON.

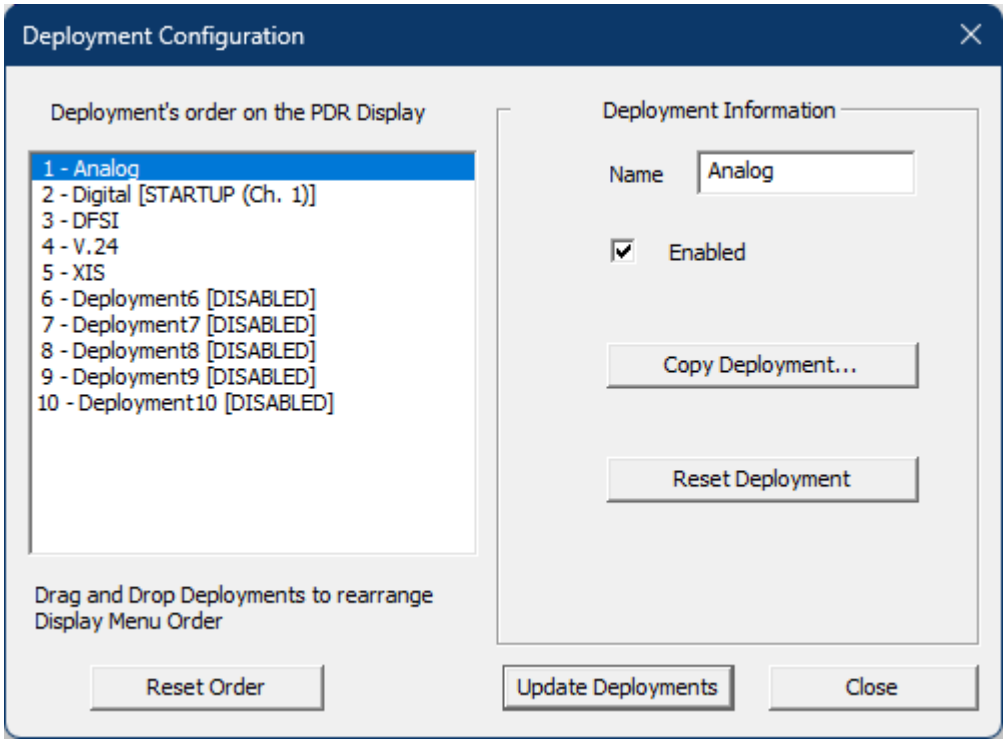
Field Name	Options/Units	Description
Timeout for Menu	5 seconds to 60 seconds (**10** seconds)	The menu display turns off when the programmed time runs out. **NOTE: Save Selected on Timeout** can be configured to save selection after elapsed time.
Deployments Menu	• **Enabled** • Disabled	Enables or disable the Deployment menu on the Display panel.
Channels Menu	• **Enabled** • Disabled	Enables or disable the Channels menu on the Display panel.
Time/Date Menu	• **Enabled** • Disabled	Enables or disable the Time/Date menu on the Display panel.
User Language	• **English** • French • Spanish	Selects the preferred language.
Display Settings		Upon button click, a new window opens to reset display contrast and brightness.

2.3.3.4.1

Deployment Configuration

The **Configure Deployment** window configures the Deployment profiles as per the Order placed for PDR8000.

Figure 14: Deployment Configuration Window



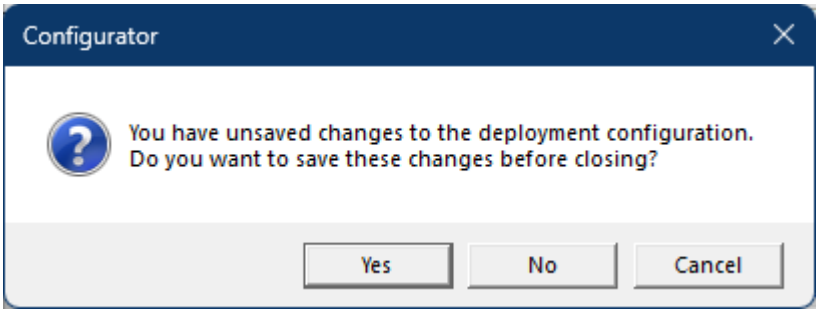
NOTE: The order of the deployment profiles can be rearranged by dragging and dropping up or down within the list of deployment profiles.

Field Name	Options/Units	Description
Deployments order on the PDR8000 Display		List of Deployment Profiles and their status. **NOTE:** Enabled or disabled.
Deployment Information		
Name	Maximum 16 alphanumeric characters	Name of the currently selected Deployment Profile. **NOTE:** Do not use the underscore (_) in the Deployment name as it will be displayed as a space on the PDR8000 display.
Enabled	Check box (Enable/Disable)	Deployment Profile is enabled when the check box is checked. **NOTE:** • Deployment status is displayed in the list of Deployments. • Deployment 1 is always enabled.

Field Name	Options/Units	Description
Copy Deployment		Copy the currently selected Deployment Profile configuration to another Deployment Profile. A new window opens for selection of target Deployment Profile.
Reset Deployment		Resets the currently selected Deployment Profile to Factory default.
Reset Order		Resets to factory order.
Update Deployments		Update the Deployment Profiles as configured.
Close		Close the **Deployment Configuration** window. **NOTE:** If there are changes made but not saved, prompts to confirm the changes made to the Deployment Profiles before the window closes. See Change Confirmation Prompts on page 48.

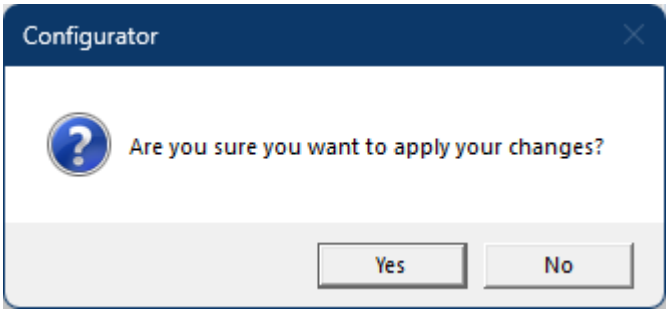
Change Confirmation Prompts

When **Close** is clicked and no modifications have been made to the Deployment Profile order or any Deployment Profile name or enable status, the window will close. If any changes have been made, the following prompt message pops up.



- Click **Yes** to apply the changes and close the **Deployment Configuration** window.
- Click **No** to discard the changes and close the **Deployment Configuration** window.
- Click **Cancel** to return back to the **Deployment Configuration** window.

When **Yes** is selected, a confirmation prompt appears. Click **Yes** in the confirmation window to apply the changes to the Deployment Profile configuration.

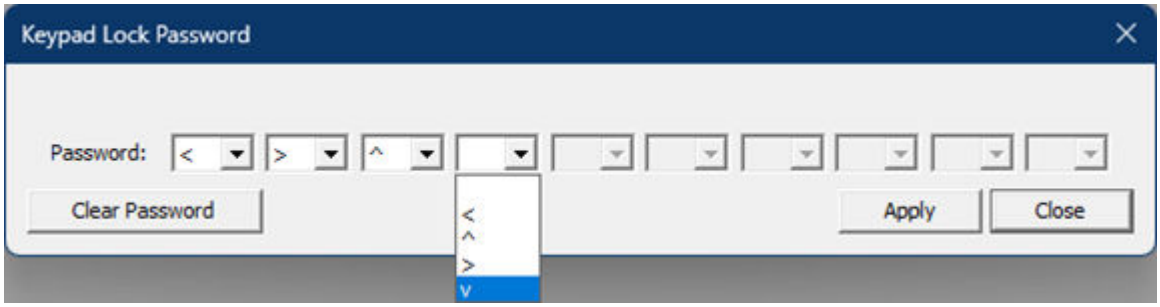


2.3.3.4.2

Keypad Lock Password

Clicking the **Keypad Lock Password** button on the **Common Settings** window opens a new window. The **Keypad Lock Password** window allows you to set a password to lock the PDR8000 keypad.

Figure 15: Keypad Lock Password Window



Field Name	Options/Units	Description
Password	4 to 10 directional arrows	Select the sequence of the directional arrow signs (up, down, left, right) from the drop-down menu to set the password. **NOTE:** • The keypad password is unlocked using the Arrow keys on the PDR8000 display panel. • The duration between the key presses must be less than 10 seconds.
Save		Save the password to the PDR8000.
Clear Password		Clears the password.
Close		Close the **Keypad Lock Password** window.

2.3.4

Deployment Data Configuration

This section details the Deployment Data Configuration of PDR8000, including customization of configuration parameters, use of Deployment Profiles, and the Futurecom Repeater Configurator (FRC) configuration software. It explains how PDR8000 can be programmed with up to ten different Deployment Profiles, each defining unique operational characteristics. The guide also covers the use of the FRC software to create new Deployment Profiles and the supported interfaces for PDR8000.

PDR8000 is intended to be utilized in a variety of different scenarios, each supported by customizing PDR8000 configuration parameters to match the needs of a given deployment. Since PDR8000 is intended to be an easily redeployed unit, it offers an optional feature allowing multiple Deployment Profiles to be preprogrammed. The desired preconfigured Deployment Profile is easily activated from the unit front panel keypad/display.

With the Deployment Profile Capability enabled, PDR8000 can hold up to ten unique Deployment Profiles, each defining the operational characteristics of the unit. This allows for preprovisioning with different Deployment Profiles. For instance, one profile could be used when the unit operates as a Standalone Repeater with specific frequencies, timings, and access codes. Another profile could be defined for connecting the PDR8000 to a Motorola Solutions comparator or infrastructure core using a wireline link and potentially different RF frequencies.

Another convenient use of Deployment Profiles is to manage a PDR8000 that utilizes different physical duplexers. Sometimes different duplexers have different values for Insertion Loss (Duplexer Transmit/Receive Losses). The values for Duplexer Losses are configured into PDR8000 on a per Deployment Profile basis. Therefore, when a duplexer is swapped into the PDR8000, the user can choose a Deployment Profile that has been preconfigured with the Transmit/Receive Duplexer Loss values that correspond to the duplexer being connected to the PDR8000 unit.

By utilizing the ten possible Deployment Profiles, PDR8000 can be ready to “pick up and go” for a large number of common use case scenarios. The PDR8000 can be configured to power up to a specific Deployment Profile or can power to the “last active” Deployment Profile. During field use, the active Deployment Profile can be changed through the front-panel display.

The capability of the PDR8000 to store common configurations in its Deployment Profile set allows for the use of temporary set-ups without overwriting frequently used ones.

The PDR8000 FRC configuration software enables the creation of new Deployment Profiles from scratch or the modification of duplicated existing ones. This flexibility allows for operational adjustments when requirements are similar but not identical.

The PDR8000 can be configured for ten different Deployment profiles. If the Deployment Profile Capability is not purchased, PDR8000 can be programmed with a single set of configuration parameters. In this case, any need to switch to a different set of operational parameters requires a PC running FRC to modify or load the new set of configuration parameters into the PDR8000. See Table 10: Supported Interfaces for PDR8000 on page 50 for supported Hardware Platform, Wireline Interface, Repeater Operation, and Channel Types.

Table 10: Supported Interfaces for PDR8000

Hardware Platform	Wireline Interface	Repeater Operation	Channel Type
PDR	None	Repeater	Digital, Analog, and Mixed Channels
PDR	V.24	Base or Repeater	Digital Channels only
PDR	DFSI	Base or Repeater	Digital, Analog, and Mixed Channels
Satellite Receive	V.24	Base	Digital Channels only
Satellite Transmit	V.24	Base	Digital Channels only

Each Deployment consists of General Configuration data and Channel Configuration as described in the following sections.

High-Level categories of configuration parameters are:

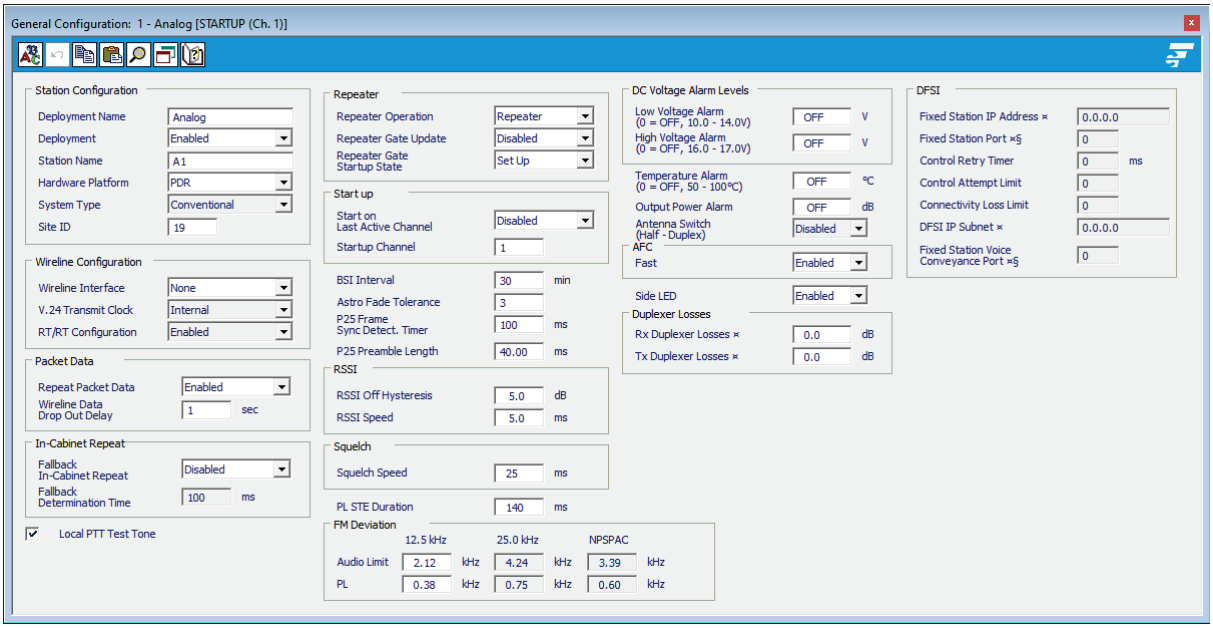
- General Configuration
- Channel Configuration

2.3.4.1
General Configuration

The Deployment data is configured in the **General Configuration** window. The Deployment Profile can be Enabled or Disabled. The PDR8000 Hardware platform can be specified.

Wireline or RT/RT mode is selected on this window. Many other general parameters pertaining to the specific Deployment Profile can be programmed.

Figure 16: General Configuration Window



Field Name	Options/Units	Description
Station Configuration		
Deployment Name	Maximum 16 alphanumeric characters	Name of the current Deployment Profile. **NOTE:** Do not use the underscore (_) in the Deployment name as it will be displayed as a space on the PDR8000 display.
Deployment	• Enabled • Disabled	Enables or disables the Deployment Profile.
Station Name	Maximum 31 alphanumeric characters, except for _, ", ?, ', %, *, and .	A unique name or alias that identifies the PDR8000.
Hardware Platform	• PDR • Satellite Rx • Satellite Tx	Identifies the hardware platform for this PDR8000.
System Type	**Conventional**	The supported system type is Conventional. **NOTE:** This is a read-only field.
Site ID	1 to 62 (**1**)	When the Wireline Interface is set to V.24, this field is used as the Terminal Endpoint Identifier number.
Wireline Configuration		

Field Name	Options/Units	Description
Wireline Interface	• **None** • V.24 • DFSI	Select the wireline interface to be used. **NOTE:** If **None** is selected, the other Wireline Configuration fields are disabled.
V.24 Transmit Clock	• **Internal** • External	This specifies the source of the V.24 Transmit Clock. This is needed for PDR8000 cross-connect (RT/RT) and some modems. **Internal** The PDR8000 provides the clock. This choice is typically selected when the radio is connected directly to an infrastructure device. **External** An external device (for example, a Modem) is providing the V.24 clock. **NOTE:** This field is enabled when **Wireline Interface** is set to **V.24**. Only available if the ***V.24*** license is purchased.
RT/RT Configuration	• Enabled • **Disabled**	**Enabled** PDR8000 used in RT/RT (back-to-back) configuration. **Disabled** PDR8000 cannot be used in RT/RT configuration. **NOTE:** This field is enabled when **Wireline Interface** is set to **V.24**. Only available if the **V.24** license is purchased.
Packet Data		
Repeat Packet Data	• Enabled • **Disabled**	**Enabled** Data is repeated locally. **Disabled** Data is sent to Infrastructure. **NOTE:** Packet Data is not applicable to DFSI deployments.
Wireline Data Drop Out Delay	0 seconds to 255 seconds (**0** seconds)	Specifies the duration of the transmission of idle packets following the transmission of an infrastructure originated data packet. **NOTE:** A value of **0** means disabled.
In-Cabinet Repeat		
Fallback In-Cabinet Repeat	• **Disabled** • Link Failure • Link Failure/Timer	**Disabled** When the link failure is detected, the PDR8000 does not automatically activate its local repeat capabilities.

Field Name	Options/Units	Description
		Link Failure When the link is disconnected, the PDR8000 automatically activate its local repeat capabilities. **Link Failure/Timer** When the link is disconnected, or the **Fallback Determination Time** expires, then the PDR8000 automatically activate its local repeat capabilities. **NOTE:** • This field is not applicable to channels in Half Duplex or Simplex Mode. • When **Wireline Interface** is set to **None**, this field must be set to **Disabled**.
Fallback Determination Time	50 ms to 10000 ms (**180** ms)	Amount of time the PDR8000 waits for an outbound payload from the infrastructure after sending an inbound payload through the wireline interface. **NOTE:** • This timer is used when the **Fallback In-Cabinet Repeat** is set to **Link Failure/ Timer**. • This field is disregarded when **Fallback In-Cabinet Repeat** is set to **Disabled** or **Link Failure**.
Local PTT Test Tone	Check box (**Enable**/Disable)	**Enabled** Pushing the Local PTT button transmits a 1 kHz test tone on the active channel. **Disabled** Pushing the Local PTT button transmits an RF carrier on the active channel.
Repeater		
Repeater Operation	• Base • **Repeater**	Specifies whether a station is operating as a Base mode or Repeater mode. **Repeater** Local repeat is available on Full Duplex channels only (depending on Gate Parameters). **Base** Local repeat is unavailable (Full Duplex, Half Duplex, and Simplex are supported).
Repeater Gate Update	• Enabled • **Disabled**	Specifies how the station determines its state after a reset. **Enabled** The station comes up in the state last requested by the console (**Repeater Set Up** or **Repeater Knocked Down**).

Field Name	Options/Units	Description
		Disabled The station comes up in the state specified by the **Repeater Gate Startup State** field. **NOTE:** Accessible only when **Repeater Operation** is set to **Repeater**.
Repeater Gate Startup State	• Knocked Down • **Set Up**	Specifies the station state after a reset, either Repeat Set Up or Repeater Knocked Down. **NOTE:** Accessible only when **Repeater Operation** is set to **Repeater** AND **Repeater Gate Update** is **Disabled**.
Start up		
Start on Last Active Channel	• **Enabled** • Disabled	Specifies if the PDR8000 starts on the last active channel after a reset.
Startup Channel	1 to 64 (**1**)	Specifies the channel to which PDR8000 is set after a reset. **NOTE:** Ignored when **Startup on Last Active Channel** field is set to **Enabled**.
BSI Interval	1 minute to 60 minutes (**30** minutes)	Specifies the time interval at which the FCC assigned station call sign is broadcast.
Astro Fade Tolerance	1 to 3 frames (**3** frames)	Specifies the number of missed frames before the ASTRO message is considered terminated.
P25 Frame Sync Detection Timer	30 ms to 255 ms (**100** ms)	Specifies for how long the PDR8000 digital decoder waits for P25 digital signaling (Frame Sync) before it assumes that the received signal is analog.
P25 Preamble Length	7.50 ms to 265.00 ms (**40** ms)	Specifies the duration of bit sync preamble packets that are sent at the beginning of all ASTRO transmissions.
RSSI		
RSSI Off Hysteresis	2 dB to 20 dB (**5** dB)	Sets the Received Signal Strength Indicator (RSSI) Off threshold in dB below the **Received Signal Strength On Threshold**. See Channel Configuration on page 58.
RSSI Speed	2 ms to 10 ms (**5** ms)	Sets the RSSI averaging integration time.
Squelch		
Squelch Speed	10 ms to 150 ms (**25** ms)	Squelch Averaging Integration Time. **NOTE:** Affects Analog Mode only.

Field Name	Options/Units	Description
PL STE Duration	120 ms to 250 ms (**140** ms)	PL Squelch Tail Elimination Delay. Must be set to match the portable setting. The typical setting is 140 ms. **NOTE:** • Affects Analog Mode only. • If this field is programmed too short, the squelch tail will not be fully eliminated. If it is programmed too long, the portable may unmute unnecessarily.
FM Deviation		
Audio Limit		
12.5 kHz	0.75 kHz to 2.52 kHz (**2.12** kHz)	Typically set to 2.12 kHz (12.5 kHz channel spacing), 4.24 kHz (25 kHz channel spacing), or 3.39 kHz (25 kHz NPSPAC channel spacing). **NOTE:** • Affects Analog Mode only. • Depends on the selected Channel Spacing. See Frequency Band Configuration on page 36 menu. • Corresponding values for 25 kHz channel spacing and NPSPAC are calculated based on entry for 12.5 kHz channel spacing.
25 kHz	1.5 kHz to 5.04 kHz (**4.24** kHz)	
NPSPAC	1.20 kHz to 4.03 kHz (**3.39** kHz)	
PL		
12.5 kHz	0.19 kHz to 0.60 kHz (**0.38** kHz)	Typically set to 0.38 kHz (12.5 kHz channel spacing), 0.75 kHz (25 kHz channel spacing), or 0.60 kHz (25 kHz NPSPAC channel spacing). **NOTE:** • Affects Analog Mode only. • Depends on the selected Channel Spacing. See Frequency Band Configuration on page 36 menu.
25 kHz	0.38 kHz to 1.2 kHz (**0.75** kHz)	
NPSPAC	0.30 kHz to 0.96 kHz (**0.60** kHz)	
DC Voltage Alarm Levels		
Low Voltage Alarm	• 0 (Disabled, displayed as OFF) • 10.0 V to 14.0 V (**11.6** V)	Voltage level that triggers the Low Battery Alarm.

Field Name	Options/Units	Description
High-Voltage Alarm	• 0 (Disabled, displayed as OFF) • 16.0 V to 17.0 V (**11.6** V)	Voltage level that triggers the DC Voltage High Alarm.
Temperature Alarm	• 0 (Disabled, displayed as OFF) • 50°C to 100°C (**70°C**)	PDR8000 activates the temperature alarm if the RF transmitter module temperature exceeds this threshold.
Output Power Alarm	• **0** (Disabled, displayed as OFF) • 1 dB to 5 dB	PDR8000 activates the output power alarm if the difference in the measured RF transmit power and programmed transmit power exceeds this threshold. **NOTE:** An alarm is indicated if the transmit power level is too low. This could be caused by limits of the PDR8000 hardware (per product specification) compared to programmed levels.
Antenna Switch (Half - Duplex	• Enabled • **Disabled**	Specifies whether the external antenna switch is used for single antenna operation. **NOTE:** Only accessible when **Repeater Operation** is set to **Base**.
AFC		
Fast	• **Enabled** • Disabled	Enables or disables the Fast AFC. **NOTE:** Set to **Disabled** during calibration.
Side LED	• **Enabled** • Disabled	**Enabled** Operational status can be viewed when the case is closed. **Disabled** The LED is disabled. **NOTE:** Applicable for PDR8000 Suitcase only. See the manual *PDR8000 and Booster Pack Deployment Guide* for additional information.
Duplexer Losses		
Rx Duplexer Losses ¤	0 dB to 3.0 dB (*) Losses corresponding to	Displays the Rx Duplexer Losses.

Field Name	Options/Units	Description
	the Duplexer shipped in the PDR8000.	Allows the PDR8000 to compensate for the Receive Signal losses due to the Duplexer. **NOTE:** • This field is preconfigured during production of the PDR8000 and should only be adjusted if or when the Duplexer connected to the unit is changed or replaced. • The values entered in this field should match the RX IL value shown on the label affixed to each supplied duplexer. See Figure 17: Duplexer Label (With Identified Insertion Losses) on page 58.
Tx Duplexer Losses ¤	0 dB to 3.0 dB (*) Losses corresponding to the Duplexer shipped in the PDR8000.	Displays the Tx Duplexer Losses. Allows the PDR8000 to compensate for the Transmit Signal losses due to the Duplexer. **NOTE:** • This field is preconfigured during production of the PDR8000 and should only be adjusted if or when the Duplexer connected to the unit is changed or replaced. • The values entered in this field should match the TX IL value shown on the label affixed to each supplied duplexer. See Figure 17: Duplexer Label (With Identified Insertion Losses) on page 58.
DFSI[5]		
Fixed Station IP Address ¤	0.0.0.0 to 255.255.255.254	Standard IP address for the fixed station. This value shall match what was programmed in the DFSI host to connect to this station.
Fixed Station Port ¤§	0 to 65535 (**50006**)	UDP Port at which the fixed station supplies the Control Service.
Control Retry Timer	200 ms to 2000 ms (**500** ms) In 100 ms increments.	Retry period for control messages. This period shall be used for all control messages except for Heartbeat and Acknowledgments.
Control Attempt Limit	1 to 10 (**3**)	Maximum number of attempts for control messages. This number shall be used for all control messages except for Heartbeat and Acknowledgments.
Connectivity Loss Limit	1 to 10	Maximum number of heartbeat losses to allow.

[5]
- Only applicable if the ***DFSI*** license has been purchased.
- Fields in this group are applicable and editable only when **Wireline Interface** field is set to **DFSI**.

Field Name	Options/Units	Description
	(**2**)	
DFSI IP Subnet ¤	255.x.x.x	The standard subnet mask, usually set to 255.255.255.0 for C-class network.
Fixed Station Voice Conveyance Port ¤§	2 to 65534 (**51000**)	UDP Port at which RTP traffic is conveyed to the PDR8000. The port number shall be even. **NOTE:** Even values only.

Figure 17: Duplexer Label (With Identified Insertion Losses)

2.3.4.2

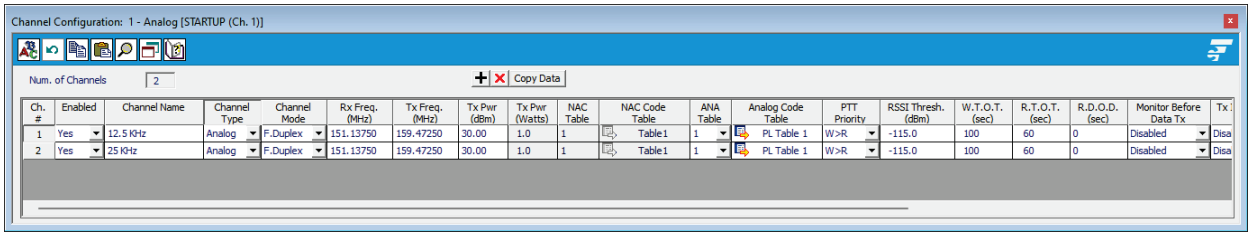
Channel Configuration

The **Channel Configuration** window allows configuration of channels within each Deployment Profile.

The wireline interface to PDR8000 is a full-duplex link, able to send and receive information at the same time. The RF configuration of the PDR8000 determines whether it can transmit and receive on the RF channel simultaneously (full-duplex) or service only one side of the RF channel at a time (half-duplex).

This (Full/Half) Duplex mode is configurable on a per-channel basis.

Figure 18: Channel Configuration Window



Field Name	Options/Units	Description
Ch. #	1 to 64	Identifies the current channel as one of 64 possible channels. **NOTE:** This is a read-only field.
Enabled	• No • Yes	Used to enable/disable channels. **NOTE:** Ch1 must be enabled.

Field Name	Options/Units	Description
Channel Name	Maximum 16 alphanumeric characters	A name that identifies the channel. **NOTE:** Do not use the underscore (_) in the Channel name as it will be displayed as a space on the PDR8000 display.
Channel Type	• Analog • Digital • Mixed	Determines the PDR8000 Channel type. **NOTE:** Analog and Mixed Channels are not compatible with V.24 wireline operation.
Channel Mode	• **F.Duplex** • Simplex • H.Duplex	Determines the PDR8000 mode of operation for the current channel; Full Duplex, Half Duplex, or Simplex. **NOTE:** **Repeater Mode** Only Full Duplex Channels are allowed. **Base Station Mode** Full Duplex, Half Duplex, or Simplex channels are allowed.
Rx Freq. (MHz)	MHz	Receive the frequency for the current channel. **NOTE:** • When Hardware Platform is set to Satellite Tx or channel mode to Simplex, this field is read only and is disregarded. • Must equal Channel-0 Base Frequency plus an integer multiple of Channel No. Spacing as defined in **Frequency Band Configuration** window. • Must also match the subscriber unit Transmit Frequency.
Tx Freq. (MHz)	MHz	Transmit frequency for the current channel. **NOTE:** • When Hardware Platform is set to Satellite Rx, this field is read only and is disregarded. • Must correspond to Channel-0 Base Frequency plus an integer multiple of Channel No. Spacing as defined in **Frequency Band Configuration** window. • Must also match the subscriber unit Receive Frequency.

Field Name	Options/Units	Description
Tx Pwr (dBm)	30 dBm to 43 dBm (**40** dBm)	Specifies the transmit power at the PDR8000 antenna port. **NOTE:** • TX power levels are those desired at the PDR8000 antenna port, either with or without a duplexer. PDR8000 attempts to adjust its transmit power level to compensate for duplexer losses however, is limited to the maximum output power of the transmitter. • When Hardware Platform is set to Satellite Rx, this field is read only and is disregarded.
Tx Pwr (Watts)	1 Watts to 20 Watts (**10** Watts)	Specifies the transmit power at the PDR8000 antenna port in Watts (W). **NOTE:** This is a read-only field.
NAC Table Index	1 to 64	Identifies which of the 64 possible Access Code Tables applies to the current channel.
NAC Code Table	Link, Maximum 10 alphanumeric characters	**NOTE:** This is a read-only field that displays the name of the Access Code Table only when configured in **Astro NAC Assignments** window (**Channel Configuration** → **NAC Code Table**). See Channel-Access Code Table ASTRO NAC Assignments on page 62.
ANA Table	1 to 64	Identifies which of the 64 possible PL/DPL Tables applies to the current channel.
Analog Code Table	Link, Maximum 10 alphanumeric characters	Identifies by name and provides a link to open the **PL/DPL Code Table** window (**Channel Configuration** → **Analog Code Table**) associated with the current channel. **NOTE:** This is a read-only field that displays the name of the Analog Code Table only when configured in **PL/DPL Code Table** window.
PTT Priority	• **W>R** • R>W • R=W	Specifies priority order of two types of PTT requests: • W = Wireline • R = Receive of the Repeater **NOTE:** **W > R** Wireline has priority over Repeater. **R > W** Repeater Receive has priority over Wireline. **R = W** Repeater Receive and Wireline have equal priority. Whichever occurs first takes and maintains PTT control.

Field Name	Options/Units	Description
RSSI Thresh. (dBm)	–50 dBm to –127 dBm (**–115** dBm)	The Received Signal Strength Indicator (RSSI) Threshold specifies the signal level at the input of the PDR8000, required to validate the signal. **NOTE:** RSSI Threshold levels correspond to the level at the PDR8000 antenna port. PDR8000 attempts to compensate for duplexer losses but is limited to the maximum receiver sensitivity.
W.T.O.T. (sec)	0 seconds to 2550 seconds, in increments of 10 seconds (**0** seconds, depicts Disabled, and is displayed as OFF)	The Wireline Time Out Timer specifies the maximum amount of time the transmitter may be continuously activated through the wireline signal. **NOTE:** Any value entered that is not an increment of 10 is rounded up to the next valid value.
R.T.O.T. (sec)	0 seconds to 2550 seconds, in increments of 10 seconds (**0** seconds, depicts Disabled, and is displayed as OFF)	The Repeater Time Out Timer specifies the maximum amount of time the repeater mode may be continuously activated by the subscriber through the receiver. **NOTE:** Any value entered that is not an increment of 10 is rounded up to the next valid value.
R.D.O.D. (sec)	0 seconds to 2550 seconds (**0** seconds)	The Repeater Drop Out Delay specifies the amount of time the repeater mode is maintained following loss of received signal. **NOTE:** Repeater Drop Out Delay is also known as hangtime.
Monitor Before Data Tx	• **Disabled** • Enabled	**Disabled** PDR8000 does not monitor or notify the infrastructure of any cochannel users. **Enabled** PDR8000 monitors the Rx channel for cochannel users and notifies the infrastructure. **NOTE:** If a cochannel user is detected, the PDR8000 will notify the infrastructure (wireline) every 5 seconds. The PDR8000 will not transmit data once it receives this message. When cochannel activity stops, the PDR8000 will again notify the infrastructure (wireline). The PDR8000 will resume data transmission once it receives this message.
Tx Inhibit	• **Disabled** • Enabled	**Disabled** PDR8000 transmits on the selected channel.

Field Name	Options/Units	Description
		Enabled PDR8000 does not transmit if this field is enabled.
Base Station ID	Maximum 20 alphanumeric characters (uppercase letters only)	Used for automatic, periodic, over-the-air transmission of the PDR8000 call sign. If the field is empty, BSID will not be transmitted. **NOTE:** Assigned on a per channel basis, allowing preconfiguration of different call signs on channels that are used for different geographical deployments.
Sq. On Tr	4 dB SINAD to 28 dB SINAD (**16** dB SINAD)	Squelch ON Threshold. **NOTE:** When Trigger is selected as Squelch.
Sq. Off Tr	3 dB SINAD to 25 dB SINAD (**10** dB SINAD)	Squelch OFF Threshold. **NOTE:** When Trigger is selected as Squelch.
ON/OFF Trigger	• **RSSI** • Squelch • Sq&RSSI	**Analog Mode** Any ON/OFF trigger can be selected. **Digital Mode** Only RSSI is allowed. **Mixed Mode** Only RSSI is allowed. **NOTE:** Squelch is an invalid setting in Digital or Mixed Mode PDR8000 Channels.
Bandwidth	• Set 1 • Set 2 • Set 3	Selects the FM channel bandwidth (12.5 kHz, 25 kHz, or NPSPAC) as programmed in the **Frequency Band Configuration** window. **NOTE:** See Frequency Band Configuration on page 36.

2.3.4.2.1

Channel-Access Code Table ASTRO NAC Assignments

In the Channel Configuration, the **NAC Code Table** allows the user to configure NAC Assignment Table associated with that channel.

The Network Access Code or NAC is a feature of Project 25 digital radios that operates similarly to PL/DPL codes for analog radios. NAC codes minimize cochannel interference and allow repeater addressing by keeping the receiver squelched unless a signal with a matching NAC arrives. NACs are programmed as a 3-digit hexadecimal code that is broadcast along with the digital signal (Voice, Data, or Supplementary Data) being transmitted.

Since the NAC is a 3-digit hexadecimal number (12 bits), it gives 4096 possible NACs for programming.

Three of these NACs have special meaning:

$293
The default NAC.

$F7E

Receiver Monitor; a receiver set for this NAC will unsquelch on any NAC received.

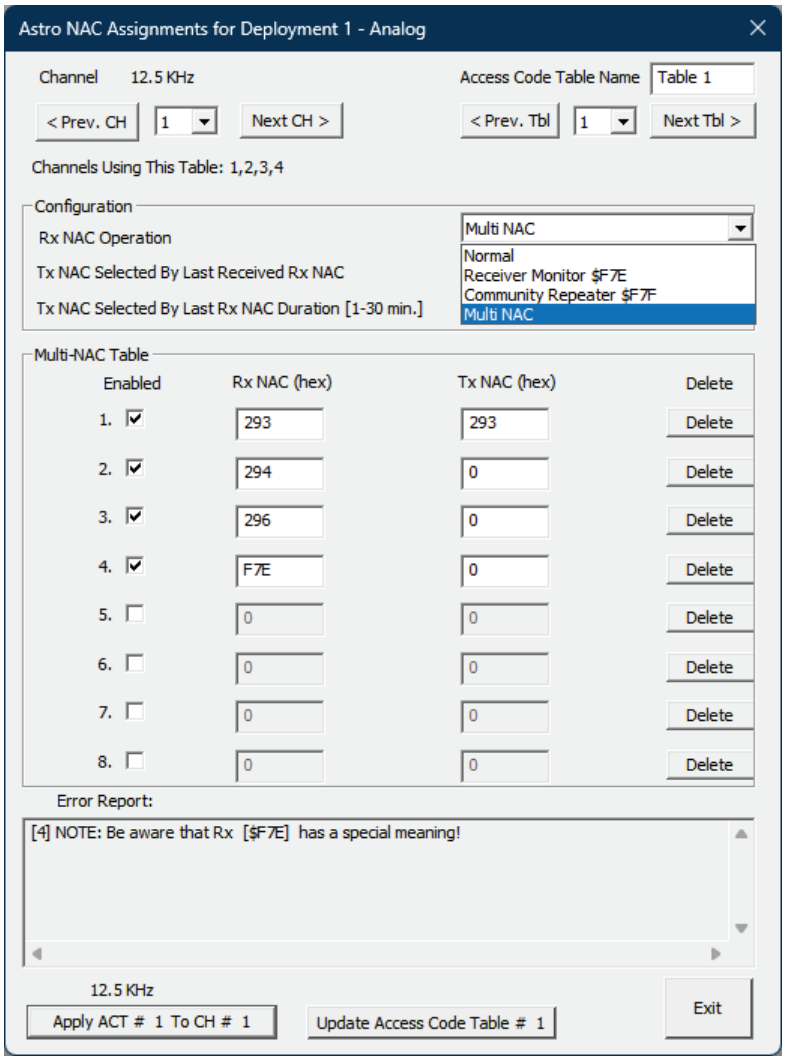
$F7F

Community Repeater; a repeater receiver set for this NAC will allow all incoming signals to be repeated with the NAC intact.

PDR8000 allows each of its digital-enabled channels to be configured with a desired behavior for utilizing NACs. These behaviors are captured in NAC Code Table. Each configured channel in the PDR8000 can point to one of the configured Access Code Tables. Each Access Code Table can be used to define NAC operation for a specific channel or may capture behavior shared by multiple channels.

The Channel-Access Code Table ASTRO NAC Assignments Table excerpt is shown as follow with the description of each field in the following table.

Figure 19: ASTRO NAC Assignments Window



Field Name	Options/Units	Description
Channel	1 to 64 Channels	Identifies the name of the channel for the current Access Code Table.

Field Name	Options/Units	Description
< Prev.CH	1 to 64	Go to the previous Channel by moving backward. **NOTE:** Changes the Access Code Table accordingly.
Next CH >	1 to 64	Go to the next Channel by moving forward. **NOTE:** Changes the Access Code Table accordingly.
Access Code Table Name	Maximum 10 alphanumeric characters	The name that identifies the current Access Code Table.
< Prev.Tbl	1 to 64	Go to the previous Access Code Table by moving backward.
Next Tbl >	1 to 64	Go to the next Access Code Table by moving forward.
Channels Using This Table:	1 to 64, with comma to separate the list of numbers	List of PDR8000 channel numbers that use the current Access Code Table. **NOTE:** This is a read-only field.
Configuration		
Rx NAC Operation	• **Normal** • Receiver Monitor $F7E • Community Repeater $F7F • Multi NAC	Controls the mode of received Network Access Code operation. **Normal** Receiver operation allows PDR8000 to accept incoming RF frames containing a specific NAC value as defined by the Rx NAC field in the first row of the Multi NAC table. Repeater and console calls are transmitted using the Tx NAC field value as defined in the first row of the Multi NAC table. **Receiver Monitor $F7E** Receiver operation allows a PDR8000 to accept incoming RF frames containing any NAC value. Repeater and console calls are transmitted using the same fixed NAC. **Community Repeater $F7F** Community Repeater operation allows a PDR8000 to accept incoming RF frames containing any NAC value. ASTRO packets are repeated with the same NAC that was received by the incoming transmission. Infrastructure packets are transmitted using a fixed Tx NAC. **Multi NAC** Multicoded squelch allows you to predefine a set of accepted Rx NAC and associated Tx NAC being

Field Name	Options/Units	Description
		used by repeat and infrastructure calls. (Requires Multi Coded Squelch enabled.) **NOTE:** A DFSI-connected console may utilize this functionality by specifying Tx NAC of $F7E, or may override this behavior by providing a specific Tx NAC as part of the transmission information.
Tx NAC Selected by Last Received Rx NAC	• Enabled • **Disabled**	Specifies how Tx NAC is selected for transmitting the infrastructure audio. **Enabled** When the **Tx NAC Selected by Last Rx NAC Duration** has not expired, the Tx NAC is selected according to the following rules: • For Multi-NAC operation, Tx NAC is set to the programmed Tx NAC from the row in the Multi-NAC table where Rx NAC is equal to the last received Rx NAC. • For $F7E and $F7F, Tx NAC is set to the last received Rx NAC. When the **Tx NAC Selected by Last Rx NAC Duration** has expired, the Tx NAC is set to the programmed Tx NAC from the first enabled row in the Multi-NAC table. **Disabled** The Tx NAC is set to the programmed Tx NAC from the first enabled row in the Multi-NAC table. **NOTE:** A DFSI-connected console may utilize this functionality by specifying Tx NAC of $F7E, or may override this behavior by providing a specific Tx NAC as part of the transmission information.
Tx NAC selected by Last Rx NAC Duration	1 min to 30 mins (**5** mins)	Defines how long the last Rx NAC is used for transmissions after the last received call. Each received call restarts the timer. **NOTE:** • This field is accessible only when Tx NAC Selected By Last Rx NAC is Enabled. • A DFSI-connected console may utilize this functionality by specifying Tx NAC of $F7E, or may override this behavior by providing a specific Tx NAC as part of the transmission information.

Field Name	Options/Units	Description
Multi-NAC Table	Maximum 8 pairs	Defines up to eight (8) Rx and Tx Network Access Code pairs for the specified Access Code Table. **NOTE:** If **Rx NAC Operation** is set to **Multi NAC**, all rows in the Multi-NAC Table are accessible. If **Rx NAC Operation** is not set to **Multi NAC**, only the first row in the Multi-NAC Table is accessible.
Enabled	Check box (Enable/Disable)	Identifies if the current row of the table is enabled for use.
Rx NAC (hex)	000 to FFF (**293**)	Defines the receive ASTRO Network ID.
Tx NAC (hex)	000 to FFF (**293**)	Defines the transmit ASTRO Network ID.
Delete		Pressing this button deletes all entries in this row of the table and shifts all rows beneath up by one row.
Error report:		Displays any warnings or errors related to the creation of Rx or Tx NAC pairs in the Multi-NAC table.
Apply ACT # ***<xx>*** to CH # ***<yy>***		Clicking on this button applies the NAC values Access Code Table ***<xx>*** to Channel ***<yy>*** in the **Channel Configuration** Channel ***<yy>***.
Update Access Code Table # ***<xx>***		Updates the Access Code Table ***<xx>*** in the **Channel Configuration**
Exit		Exits the **NAC Code Table**.

Within each digital Access Code Table is a setting for the **Rx NAC Operation** mode to be utilized by channels pointing to this table. The four modes of Rx NAC Operation are:

1. Normal
2. Receiver Monitor $F7E
3. Community Repeater $F7F
4. Multi NAC

Within each digital Access Code Table, a **Multi NAC Table** defining the NAC values is used to govern squelch operation on the configured channel. The table consists of eight rows, having an Rx NAC and corresponding Tx NAC value (each value 0 to $FFF). In most cases, only one row of values is used. If the configured **Rx NAC Operation** operation is selected for Multi NAC; then all eight rows are available for use (each row can be enabled/disabled for use in configuration.)

2.3.4.2.2

Analog Code Table: Multi-Coded Squelch (PL/DPL)

Multi-Coded Squelch is a feature commonly used in analog radio operation. Operation is driven by the addition of a subaudible tone on the RF carrier in addition to the voice payload.

When an RF signal is received, the receiver checks for the presence of PL/DPL, and modifies its behavior based upon detection of the decoded PL/DPL tones. In most cases, the receiving radio will choose to either unsquelch, or mute the incoming signal based on the presence of the detected PL/DPL.

PDR8000 allows each of its analog-enabled channels to be configured with a desired behavior for utilizing PLs/DPLs. These behaviors are captured in Analog Code Tables. Each configured channel in the PDR8000 can point to one of the configured Analog Code tables. Each table can be used to define PL/DPL operation for a specific channel or capture behavior shared by multiple channels.

Within each Analog Code Table, exists a Multi-PL/DPL table defining the PL/DPL values used to govern squelch code on the configured channel. The table consists of 14 rows, having an Rx Squelch Code, a corresponding Tx Squelch Code, as well as parameters to control Squelch Tail Elimination. In most cases, the table is configured for Normal operation, allowing only the first row of the table to be used (see Table 11: Analog Code Table on page 67). If, however, the table is configured for Multi-PL/DPL operation (see Figure 20: Multi-Coded Squelch (PL/DPL) Code Table Window on page 69) then all 14 rows are available for use (each row can then be individually enabled or disabled as desired.)

Rx PL Operation:

- Normal
- Multi-PL/DPL

Table 11: Analog Code Table

Row Enabled	Rx Squelch Tail Elimination (STE)	Rx Squelch Code	Tx Squelch Code	Tx Squelch Tail Elimination (STE)
Y/N	Off / DPL / –135 / +135 / 180	Rx Code 1	Tx Code 1	Off / DPL / –135 / +135 / 180
Y/N	Off / DPL / –135 / +135 / 180	Rx Code 2	Tx Code 2	Off / DPL / –135 / +135 / 180
Y/N	Off / DPL / –135 / +135 / 180	Rx Code 3	Tx Code 3	Off / DPL / –135 / +135 / 180
Y/N	Off / DPL / –135 / +135 / 180	Rx Code 4	Tx Code 4	Off / DPL / –135 / +135 / 180
Y/N	Off / DPL / –135 / +135 / 180	Rx Code 5	Tx Code 5	Off / DPL / –135 / +135 / 180
Y/N	Off / DPL / –135 / +135 / 180	Rx Code 6	Tx Code 6	Off / DPL / –135 / +135 / 180
Y/N	Off / DPL / –135 / +135 / 180	Rx Code 7	Tx Code 7	Off / DPL / –135 / +135 / 180
Y/N	Off / DPL / –135 / +135 / 180	Rx Code 8	Tx Code 8	Off / DPL / –135 / +135 / 180
Y/N	Off / DPL / –135 / +135 / 180	Rx Code 9	Tx Code 9	Off / DPL / –135 / +135 / 180
Y/N	Off / DPL / –135 / +135 / 180	Rx Code 10	Tx Code 10	Off / DPL / –135 / +135 / 180
Y/N	Off / DPL / –135 / +135 / 180	Rx Code 11	Tx Code 11	Off / DPL / –135 / +135 / 180
Y/N	Off / DPL / –135 / +135 / 180	Rx Code 12	Tx Code 12	Off / DPL / –135 / +135 / 180
Y/N	Off / DPL / –135 / +135 / 180	Rx Code 13	Tx Code 13	Off / DPL / –135 / +135 / 180
Y/N	Off / DPL / –135 / +135 / 180	Rx Code 14	Tx Code 14	Off / DPL / –135 / +135 / 180

PL and DPL codes are predefined in a common way, to allow use across radios manufactured by multiple vendors. The Rx and Tx squelch code entries in the table can be set to a defined PL Code, a defined DPL Code, or set to OFF (Carrier Squelch operation).

Squelch Tail Elimination is a method used to prevent the receiving radio from hearing a brief noise (squelch tail) at the end of each transmission. By having the transmitter provide a phase-shifted signal (for PL), or a specific tone (for DPL), the receiver can quickly detect the end of the transmitted signal and mute the unwanted noise. When PL is used, Tx STE and Rx STE can be set to Off, –135° phase shift, +135° phase shift, or 180° phase shift. When DPL is used, Tx STE and Rx STE can be set to either Off or DPL (enabled).

Multi-Coded Squelch: Normal (Multi-PL/DPL Not Enabled)

If the active PDR8000 channel is configured to use an Analog Code Table for **Normal** PL/DPL operation, then the first row of the PL/DPL table is enabled. That row defines the Tx and Rx behavior associated with all traffic on the channel.

The PDR8000 only processes analog signals received over the air with PL or DPL that is equal to the Rx PL/DPL code entry found in the first row of the table. In the first row, if the Rx Squelch Code is set to OFF (Carrier Squelch), then all received signals on that channel that meet the Signal Strength and/or Signal Quality criteria defined for this channel are processed by the PDR8000 (for example, no PL/DPL filtering is done). Received signals not meeting the strength/quality criteria are ignored. PDR8000 Rx STE should be set to match the Tx STE sent by the subscriber units.

When the PDR8000 sends a transmission, it encodes the Tx Squelch Code configured in the first row of the Analog Code table. At the end of the transmission, PDR8000 can be configured to send a configured STE (Squelch Tail Elimination) signal to help receiving radios quickly mute at the end of the transmission. The configuration for Tx STE should be set to match the Rx STE expected by the subscriber units.

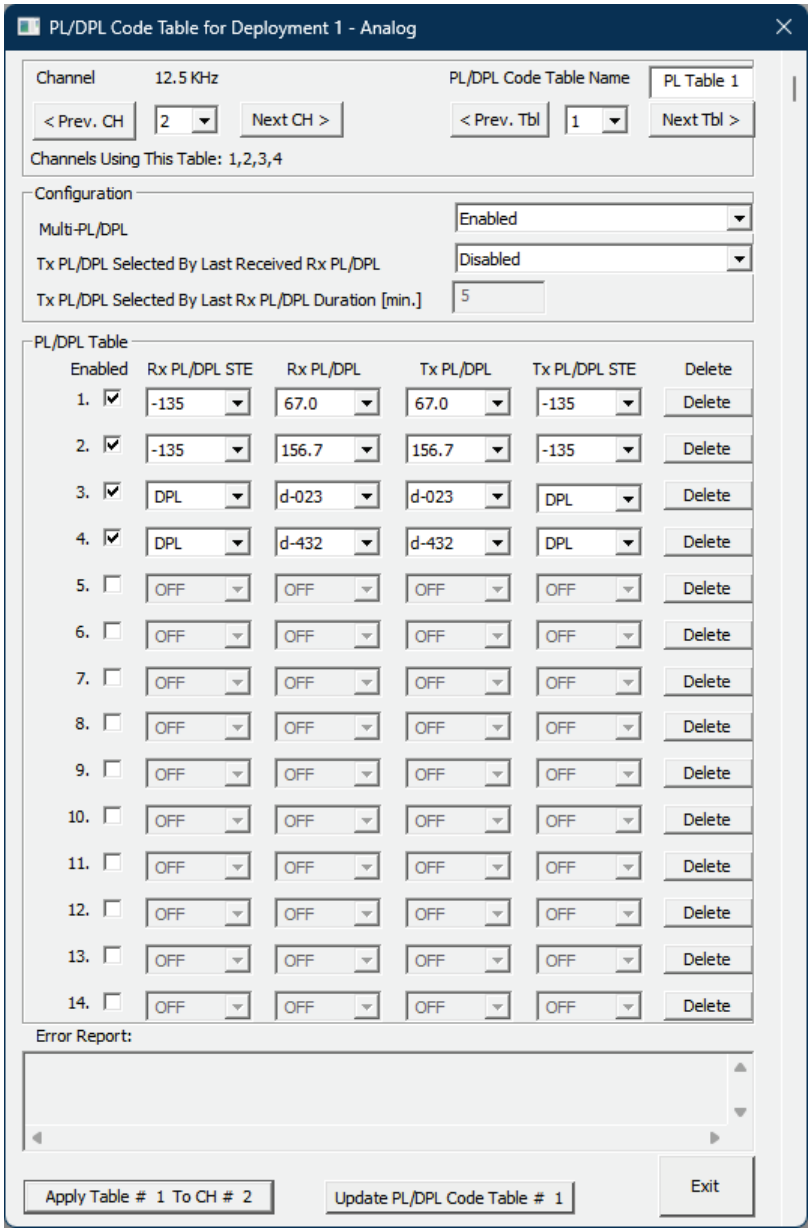
Multi-Coded Squelch: Multi-PL/DPL

If the active PDR8000 channel is configured to use an Analog Code Table configured for **Multi-PL/DPL** operation, then the PDR8000 utilizes the full table to define filtering and translation. The PDR8000 only processes analog signals received over the air with PL or DPL that is equal to any of the Rx PL/DPL code entries found in any enabled row of the table. Rx STE od the PDR8000 in that row of the table should be set to match the Tx STE sent by the subscriber units.

When the PDR8000 repeats an over-the-air analog transmission, it encodes the Tx PL/DPL found in the same table row as the received signal Rx PL/DPL. At the end of the transmission, PDR8000 can be configured to send a configured STE (Squelch Tail Elimination) signal to help receiving radios quickly mute at the end of the transmission. The configuration for Tx STE should be set to match the Rx STE expected by the subscriber units.

The Analog Code Table when clicked opens the PL/DPL Code Table for current Deployment. Table excerpt is shown as follow with the description of each field in the following table.

Figure 20: Multi-Coded Squelch (PL/DPL) Code Table Window



Field Name	Options/Units	Description
Channel	1 to 64 Channels	Identifies the name of the channel for the current Analog Code Table.
< Prev.CH	1 to 64	Go to the previous Channel by moving backward. **NOTE:** Changes the Analog Code Table accordingly.
Next CH >	1 to 64	Go to the next Channel by moving forward. **NOTE:** Changes the Analog Code Table accordingly.

Field Name	Options/Units	Description
PL/DPL Code Table Name	Maximum 10 alphanumeric characters	The name that identifies the current Analog Code Table.
< Prev.Tbl	1 to 64	Go to the previous Analog Code Table by moving backward.
Next Tbl >	1 to 64	Go to the next Analog Code Table by moving forward.
Channels Using This Table:	1 to 64, with comma to separate the list of numbers	List of PDR8000 channel numbers that use the current Analog Code Table. **NOTE:** This is a read-only field.
Configuration		
Multi PL/DPL	• Enabled • **Disabled**	Multicoded squelch allows you to predefine a set of accepted Rx PL/DPL and associated Tx PL/DPL being used by repeat calls. **Enabled** Receiver operation allows PDR8000 to accept incoming RF signal containing a specific PL/DPL value as defined by the Rx PL/DPL field in all the 14 rows if **Enabled** in the PL/DPL table. Repeater calls are transmitted using the Tx PL/DPL field value as defined in the PL/DPL table. **Disabled** Receiver operation allows PDR8000 to accept incoming RF signal containing a specific PL/DPL value as defined by the Rx PL/DPL field in the first row of the PL/DPL table. Repeater calls are transmitted using the Tx PL/DPL field value as defined in the first row of the PL/DPL table.
Tx PL/DPL Selected by Last Received Rx PL/DPL	• Enabled • **Disabled**	Specifies how Tx PL/DPL is selected for transmitting the infrastructure audio when Multi-PL/DPL is enabled. **Enabled** When the **Tx PL/DPL Selected by Last Rx PL/DPL Duration** has not expired, the Tx PL/DPL is set to the programmed Tx PL/DPL from the row in the Multi-PL/DPL table, where Rx PL/DPL is equal to the last received Rx PL/DPL. When the **Tx PL/DPL Selected by Last Rx PL/DPL Duration** has expired, the Tx PL/DPL is set to the programmed Tx PL/DPL from the first enabled row row in the Multi-PL/DPL table. **Disabled** The Tx PL/DPL is set to the programmed Tx PL/DPL from the first enabled row in the Multi-PL/DPL table.

Field Name	Options/Units	Description
Tx PL/DPL selected by Last Rx PL/DPL Duration	1 min to 30 mins (**5** mins)	Defines how long the last Rx PL/DPL is used for transmissions after the last received call. Each received call restarts the timer. **NOTE:** This field is accessible only when **Tx PL/DPL Selected By Last Rx PL/DPL** is **Enabled**.
PL/DPL Table	Maximum 14 pairs	Defines up to 14 Rx and Tx Network Access Code pairs for the specified Analog Code Table. **NOTE:** If **Rx PL/DPL Operation** is set to **Multi PL/DPL**, all rows in the PL/DPL table are accessible. If **Rx PL/DPL Operation** is not set to **Multi PL/DPL**, only the first row in the PL/DPL table is accessible.
Enabled	Check box (Enable/Disable)	Identifies if the current row of the table is enabled for use.
Rx PL/DPL STE	deg/DPL	Analog PSU PL/DPL STE-Squelch Tail Elimination – must be programmed to match the Tx squelch STE of expected by subscriber units.
Rx PL/DPL	**PL** 67.0 to 254.1 **DPL** d-023 to d-754	Defines receive PL/DPL.
Tx PL/DPL	**PL** 67.0 to 254.1 **DPL** d-023 to d-754	Defines transmit PL/DPL.
Tx PL/DPL STE	deg/DPL	Analog PSU PL/DPL STE-Squelch Tail Elimination – must be programmed to match the Rx squelch STE of expected by subscriber units.
Delete		Pressing this button deletes all entries in this row of the table and shifts all rows beneath up by one row.
Error report:		Displays any warnings or errors related to the creation of Rx or Tx PL/DPL pairs in the PL/DPL table.
Apply Table # ***<xx>*** to CH # ***<yy>***		Clicking on this button applies the NAC values Analog Code Table ***<xx>*** to Channel ***<yy>*** in the **Channel Configuration** Channel ***<yy>***.
Update Access Code Table # ***<xx>***		Updates the Analog Code Table ***<xx>*** in the **Channel Configuration**
Exit		Exits the **PL/DPL Code Table**.

2.3.5
Service

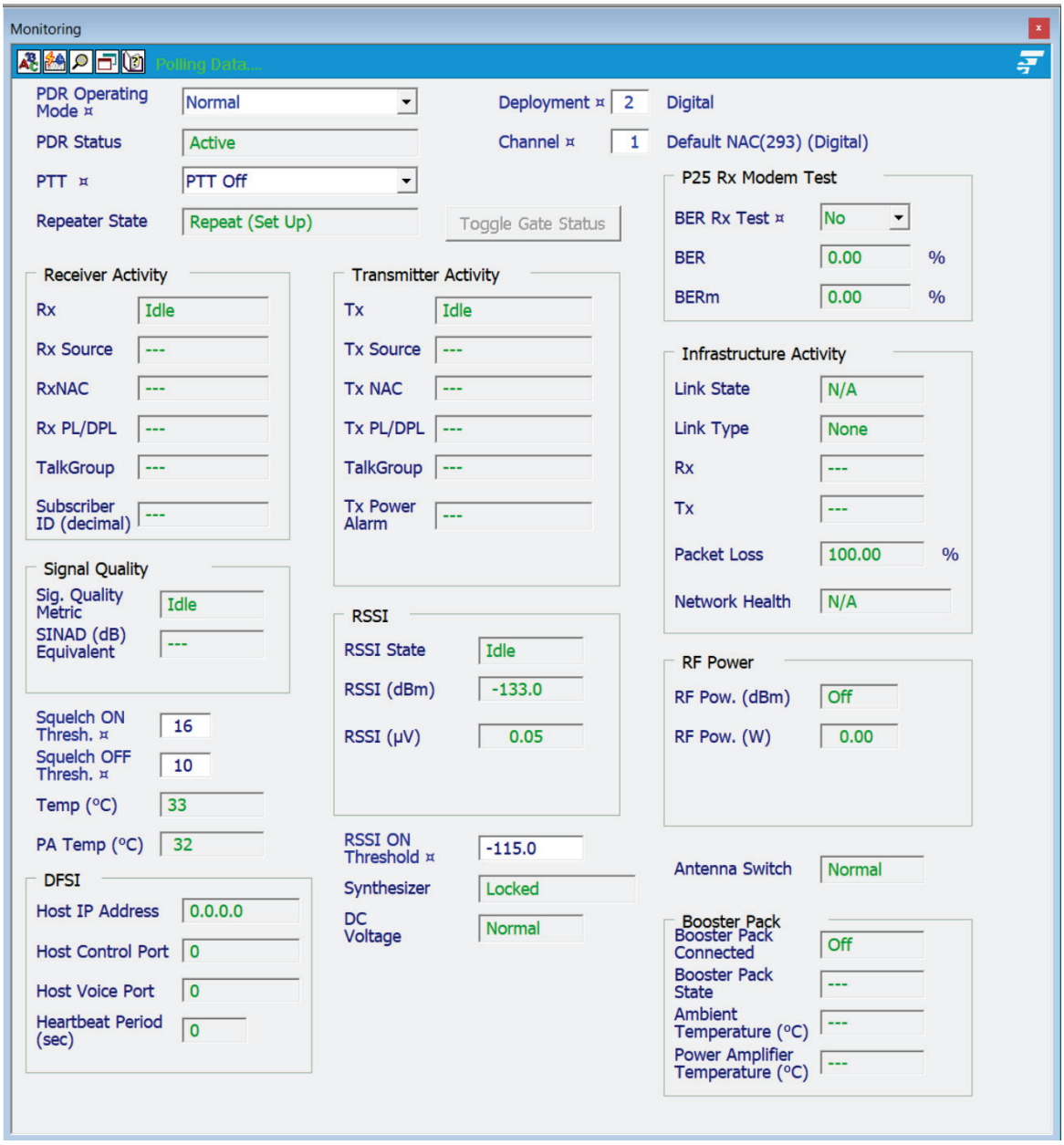
The FRC **Monitoring** window is provided to assist the field technician with PDR8000 setup and troubleshooting. The **Monitoring** window provides real-time indication of the RSSI level, RF Power, NAC, PL/DPL detection, BER measurement, and display of Signal quality.

Note that the fields Squelch ON Thresh, Squelch OFF Thresh, RSSI ON Threshold may be temporarily modified in the **Monitoring** window for "tuning" the PDR. However, leaving the Monitoring Screen will result in reverting to the previously programmed or saved values.

The user must make permanent changes to these configuration values using the normal editing windows in the FRC, not through the **Monitoring** window.

IMPORTANT: It must be noted that the **Monitoring** window application is not intended to replace the use of properly calibrated test equipment in the field.

2.3.5.1
Monitoring



Field Name	Options/ Units	Description
PDR Operating Mode	• **Normal** • Service	Specifies the current mode of operation. **Normal** PDR8000 is operating as programmed.

Field Name	Options/ Units	Description
		Service PDR8000 is operating with user-initiated PTT Tx only. **NOTE:** • This field is user-configurable. • When PDR8000 is operating in Service mode, transmissions are initiated only by using the front panel PTT button or the PTT configurable field in this window.
PDR Status	• Active • Idle	Displays the current PDR8000 status. **NOTE:** This is a read-only field.
PTT	• **PTT Off** • PTT On • Carrier • Test Tone • V.52 Test Pattern	**PTT Off** End test transmission. **PTT On** **Digital or Mixed Mode channel** Transmit silent frames using NAC = the configured Tx NAC of the channel on the programmed Tx Frequency of the channel. **Analog channel** Transmit using the first enabled PL/DPL of the channel on the programmed Tx Frequency of the channel. **Carrier** Transmit raw RF Carrier on the programmed Tx Frequency of the channel. **Test Tone** **Digital or Mixed Mode channel** Transmit 1011 Hz test tone using ID=1, Talkgroup = 1, NAC = the configured Tx NAC of the channel on the programmed Tx Frequency of the channel. **Analog channel** Transmit 1 kHz test tone using the first enabled PL/DPL of the channel on the programmed Tx Frequency of the channel. **V.52 Test Pattern** Transmit V.52 test pattern on the programmed Tx Frequency of the channel. **NOTE:** This field is user-configurable, only available in Service mode.
Repeater State	• Repeat (Set up) • Repeat (Knocked Down)	Indicates the PDR8000 repeat or base operation status. **NOTE:** This is a read-only field.

Field Name	Options/ Units	Description
	• Base station	
Deployment ¤	1 to 10	Identifies the current Deployment of the 10 possible deployments.
Channel ¤	1 to 64	Identifies the current channel of the 64 possible channels.
Toggle Gate Status	• Set Up • Knocked Down	Toggles the Repeater Gate Status between **Set Up** and **Knocked Down**. **NOTE:** PDR8000 must be configured as a Repeater (**Deployment → General Configuration → Repeater → Repeater Operation**) and be configured to use a wireline interface (**Deployment → General Configuration → Wireline Configuration → Wireline Interface**) to have this button enabled.
Receiver Activity		
Rx State	• Idle • Active	Specifies the Receiver Activity.
Rx Source	• Inbound • Outbound	Displays if the PDR8000 is receiving from the Subscriber or transmitting on V.24 Link.
Rx NAC		Displays the received NAC from the Subscriber.
Rx PL/DPL		Displays the received PL/DPL from the Subscriber.
TalkGroup		Displays the Subscriber Talkgroup ID.
Subscriber ID (decimal)		Displays the Subscriber ID in decimal format.
Signal Quality		
Sig. Quality Metric	• Idle • Active	**Idle** Below the SINAD threshold. **Active** Above the SINAD threshold. **NOTE:** This is a read-only field.
SINAD (dB) Equivalent	dB	SINAD value. **NOTE:** This is a read-only field.

Field Name	Options/ Units	Description
Squelch ON Thresh. ¤	4 dB SINAD to 28 dB SINAD (**16** dB SINAD)	Sets the Squelch ON Threshold. **NOTE:** • Affects Analog Mode only. • If this field is temporarily modified in **Monitoring** window for "tuning" the PDR, leaving the **Monitoring** window will result in reverting to the previously programmed or saved values.
Squelch OFF Thresh. ¤	3 dB SINAD to 25 dB SINAD (**10** dB SINAD)	Sets the Squelch OFF Threshold. **NOTE:** • Affects Analog Mode only. • If this field is temporarily modified in **Monitoring** window for "tuning" the PDR, leaving the **Monitoring** window will result in reverting to the previously programmed or saved values.
Temp (°C)	Celsius	PDR8000 internal temperature. **NOTE:** This is a read-only field.
PA Temp (°C)	Celsius	RF Power Amplifier temperature. **NOTE:** This is a read-only field.
DFSI		
Host IP Address	0.0.0.0	Shows the IP Address of the DFSI Host. **NOTE:** IPv4 address for the DFSI host. Provided to PDR8000 by the host when PDR8000 wireline interface is set to DFSI.
Host Control Port	Up to 65535	UDP Port at which the fixed station supplies the Control Service. **NOTE:** Provided to PDR8000 by the host when PDR8000 wireline interface is set to DFSI.
Host Voice Port	Up to 65535	UDP Port at which the fixed station supplies the Voice communication. **NOTE:** Provided to PDR8000 by the host when PDR8000 wireline interface is set to DFSI.
Heartbeat Period (sec)	5 to 55	Periodicity of Host Heartbeats at which the PDR8000 expects a heartbeat from the host. **NOTE:** Provided to PDR8000 by the host when PDR8000 wireline interface is set to DFSI.

Field Name	Options/ Units	Description
Transmitter Activity		
Tx	• **Idle** • Active	Specifies the Transmitter Activity.
Tx Source	• **Inbound** • Outbound	Displays if the PDR8000 is receiving from the Subscriber or transmitting from the wireline Link.
Tx NAC		Displays the NAC transmitted to the Subscriber.
Tx PL/DPL		Displays the PL/DPL transmitted to the Subscriber.
TalkGroup		Displays the Talkgroup ID transmitted to the subscriber.
Tx Power Alarm	• **----** (blank) • Active	PDR8000 activates the Tx power alarm (Active) if the difference in the measured RF Tx power and programmed Tx power exceeds the configured threshold. **NOTE:** An alarm is indicated if the transmit power level is too low. This could be caused by limits of the PDR8000 hardware (per product specification) compared to programmed levels.
RSSI		
RSSI State	• **Idle** • Active	Specifies the state of the Receiver. **NOTE:** This is a read-only field.
RSSI (dBm)	dBm	Received signal strength in dBm. **NOTE:** This is a read-only field.
RSSI (µV)	µV	Received signal strength in µV. **NOTE:** This is a read-only field.
RSSI ON Threshold ¤	–127 dBm to –50 dBm (**–115** dBm)	Sets the RSSI ON Threshold. **NOTE:** • If this field is temporarily modified in **Monitoring** window for "tuning" the PDR, leaving the **Monitoring** window will result in reverting to the previously programmed or saved values. • The programmed RSSI Threshold level corresponds to the level at the PDR8000 antenna port. PDR8000 attempts to compensate for duplexer losses but is limited to the maximum receiver sensitivity.

Field Name	Options/ Units	Description
Synthesizer	• Locked • Out of Lock	Current state of the Synthesizer. **NOTE:** This is a read-only field.
DC Voltage	• Normal • High • Low	DC Voltage. **NOTE:** This is a read-only field.
P25 Rx Modem Test		
BER Rx Test	• **NO** • YES	Bit Error Rate P25 Rx Modem Test control. **NOTE:** This field is user-configurable, only available in Service mode.
BER	%	Current Bit Error Rate. **NOTE:** Available in Service mode only.
BERm	%	Mean Bit Error Rate. **NOTE:** Available in Service mode only.
Infrastructure Activity		
Link State	• Active • Idle • Fail • NA	Current State of the Wireline Interface Link. **Active** Link is established with activity. **Idle** Link is established, no current activity. **Fail** Link is not established. **NA** Not applicable. PDR is not configured to use a wireline link. **NOTE:** This is a read-only field.
Link Type	• V.24 • DFSI	Current Link type. **NOTE:** This is a read-only field.
Rx	• Idle • Active	Specifies the receive Link Activity. **NOTE:** This is a read-only field.
Tx	• Idle • Active	Specifies the transmit Link Activity. **NOTE:** This is a read-only field.

Field Name	Options/ Units	Description
Packet Loss	%	Specifies the percentage of Packet loss over the wireline interface. **NOTE:** This is a read-only field.
Network Health	• Good • Marginal • Poor	Specified the Link Quality of the wireline interface. **NOTE:** This is a read-only field.
RF Power		
RF Pow. (dBm)	dBm	PDR8000 transmitting RF power in dBm. **NOTE:** • This is a read-only field. • Indicates the programmed TX power level at the PDR8000 antenna port, either with or without a duplexer. PDR8000 attempts to adjust its power level to compensate for duplexer losses, however, it is limited to the maximum output power.
RF Pow. (W)	W	PDR8000 transmitting RF power in Watts. **NOTE:** This is a read-only field.
Antenna Switch	• **Normal** • Reverse	Current antenna switch position. **NOTE:** This is a read-only field.
Booster Pack **NOTE:** • Fields in the Booster Pack group are populated only when the PDR8000 is connected to a Booster Pack. • Not applicable to Rackmount PDR8000 with 50 W PA option.		
Booster Pack Connected	• ON • OFF	**ON** Booster Pack connected to the PDR8000. **OFF** Booster Pack is not connected. **NOTE:** The PDR8000 detects the Booster Pack when connected through the AUX Port.
Booster Pack State	ACTIVE	• This is a read-only field. • For Hardware Rel.4, the booster pack is connected and of matching frequency band.
Ambient Temperature (°C)	Celsius	Booster Pack Internal temperature. **NOTE:** This is a read-only field.

Field Name	Options/ Units	Description
Power Amplifier Temperature (°C)	Celsius	RF Power Amplifier temperature. **NOTE:** This is a read-only field.

2.3.5.2

Logs and Reports

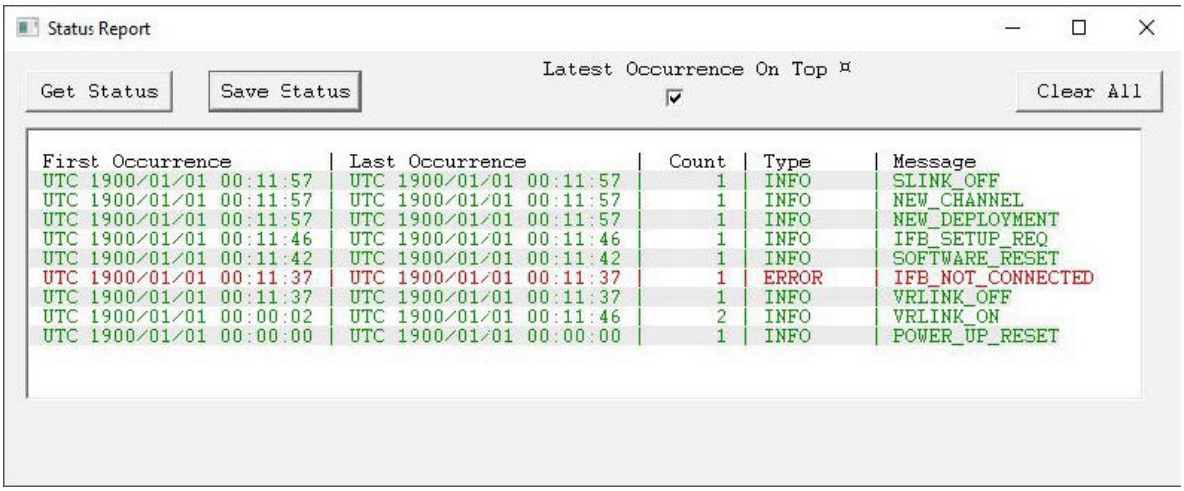
Option	Description
Get Status	Refreshes data.
Save Status	Saves data as text file.
Latest Occurrence On Top	When checked (default), items are listed with the most recent at the top.
Clear All	Clears the contents.

2.3.5.2.1

Status Report

The Status Report is a summary of occurrences for errors, warnings, and events for the active session.

This information is reset when PDR is powered down.

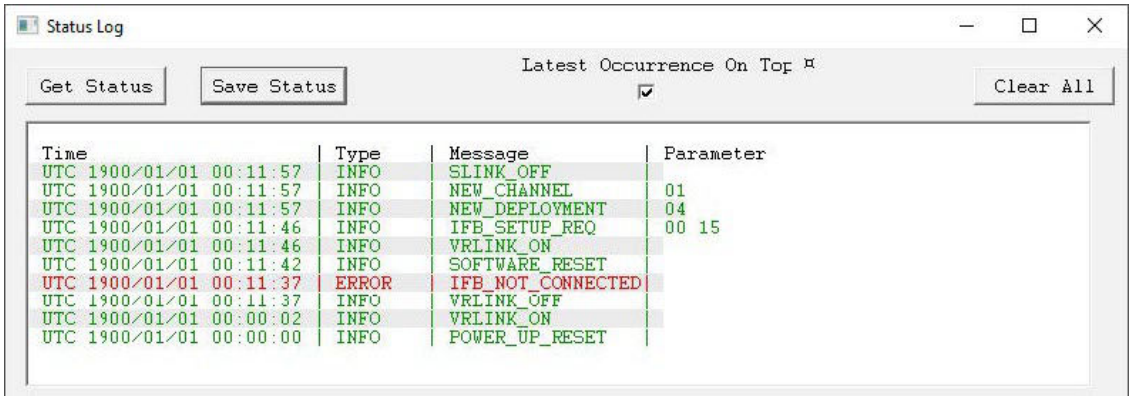


2.3.5.2.2

Status Log

The Status Log is a chronological list of errors, warnings, and other activity for the active session. Each occurrence of an activity will appear on a separate line.

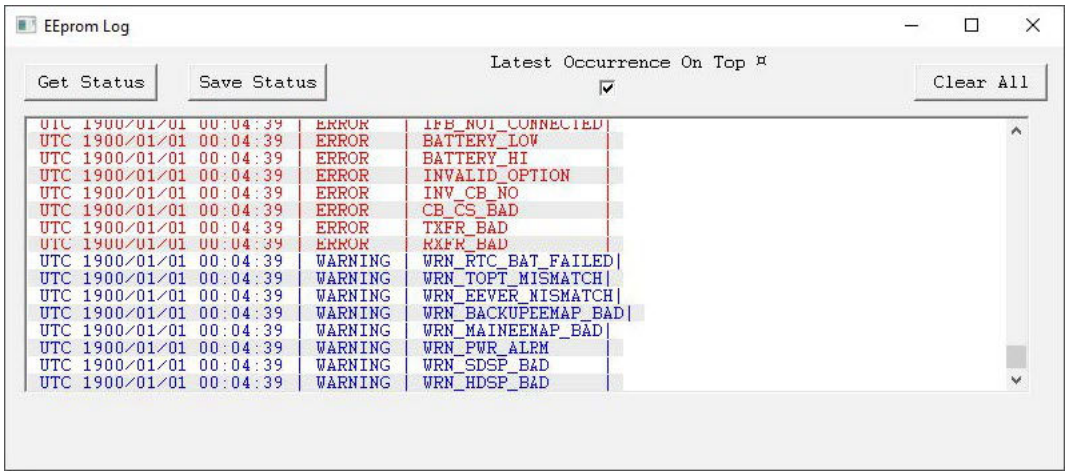
This information is reset when PDR is powered down.



2.3.5.2.3
Status EEPROM Log

The Status EEPROM Log displays errors, warnings, channel or deployment changes, and system status.

Data is kept until cleared, or until the log reaches its maximum size causing the earliest entries to be deleted.



Chapter 3

Booster Pack

For those agencies using Mobile Radios in their system, the PDR8000 Portable Digital Repeater Booster Pack can assist them with additional output power above the native PDR8000 transmit power. The Booster Pack is available in VHF, UHF 380 MHz–430 MHz, UHF 450 MHz–470 MHz, 700 MHz, and 800 MHz bands. It is housed in a separate suitcase, which is the same size as the PDR8000 suitcase.

NOTE: Booster Pack is not available for Rackmount PDR.

During operation of the PDR8000 in a Booster Pack configuration, the PDR8000 automatically detects the presence of the Booster Pack and adjusts its operating parameters to be compatible with the Booster Pack, providing a preduplexer output signal of 50 Watts.

Figure 21: PDR8000 and Booster Pack

Booster Pack (Open Lid) **PDR8000 (Open Lid)**

3.1 PDR8000 and Booster Pack Hardware Configurations

Multiple RF hardware configurations of the PDR8000 and the Booster Pack are supported, using accessible internal and external connection points to enable the desired configuration.

The following figures show the interconnection between the PDR8000 and the Booster pack. These figures are also screened on the back of the removable top panel inside the PDR8000.

Figure 22: Internal Duplexer and Booster Pack Hardware Configuration

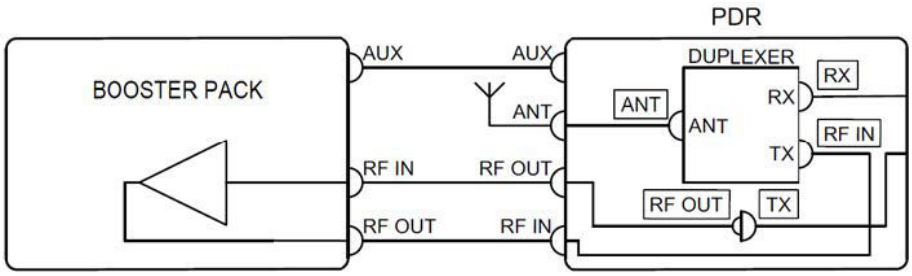


Figure 23: Simplex PDR8000 and Booster Pack Hardware Configuration

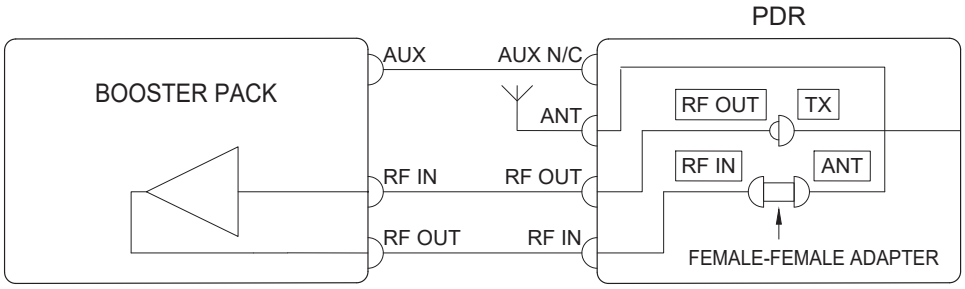
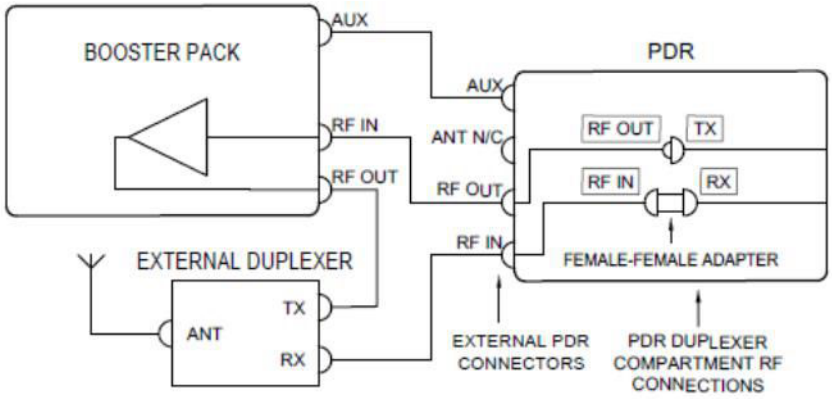


Figure 24: External Duplexer and Booster Pack Hardware Configuration



3.2 PDR8000 Operation with Booster Pack

The PDR8000 Tx Output Power is programmed for each individual channel in the **Deployment → Channel Configuration**. The PDR8000 can be configured to transmit max 20 W (43 dBm) output power at its Antenna Port.

When the Booster pack is connected to the PDR8000, the PDR8000 automatically detects the presence of the Booster pack and adjusts its Output Tx Power on the selected channel to 1.75 W (32.5 dBm), to supply a compatible signal to the Booster Pack. The RF output using a Booster pack is 50 W (47 dBm) when no Duplexer is connected to the PDR8000.

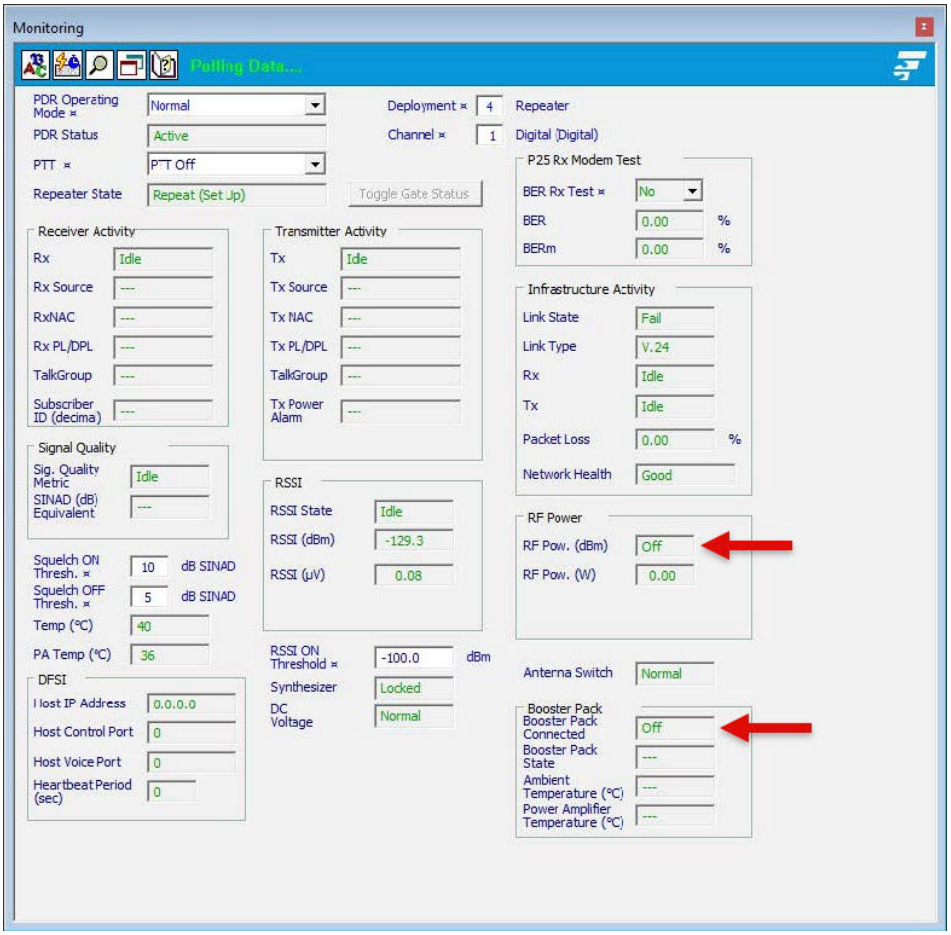
When a Booster Pack is connected, the Tx Duplexer Losses configured in FRC are not compensated for, since the Booster Pack transmits a constant power level. Therefore, with the duplexer connected, the power at the PDR antenna port is the power at the PDR8000 RF Out port plus duplexer losses. For example, if the Booster Pack output power is 45 dBm and the duplexer loss is –1.5 dB, the output power at the PDR8000 antenna port is 43.5 dBm.

The following screenshots show the PDR8000 FRC **Monitoring** window that indicates the Tx RF Power with and without the Booster pack connected to the PDR8000.

Monitoring Window with Booster Pack Not Connected and PDR8000 Not Transmitting

The Monitoring window indicates that the PDR8000 is not transmitting, and no Booster pack connected to the PDR8000.

Figure 25: Monitoring Window with Booster Pack Not Connected and PDR8000 Not Transmitting

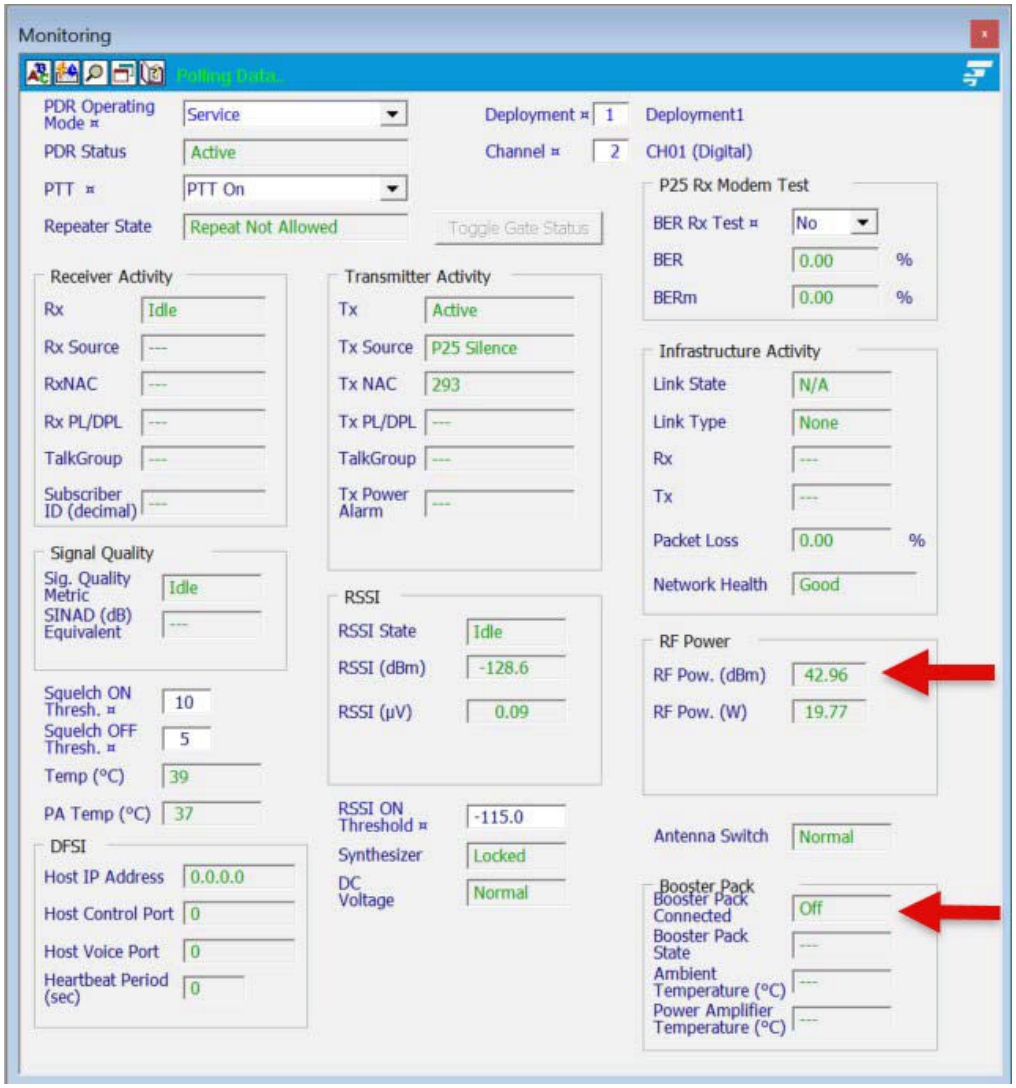


Monitoring Window with PDR8000 Transmitting but Booster Pack Not Connected

In the **Monitoring** window, select the **PDR8000 Operating Mode** as **Service**, **PTT** as **PTT On**. Observe the RF Power in the **Monitoring** window. (The PDR8000 on Deployment 1, Channel DIG. Programmed Tx Power 20 W (43 dBm).)

The Booster pack is still not connected to the PDR8000. The Booster pack State is `OFF`.

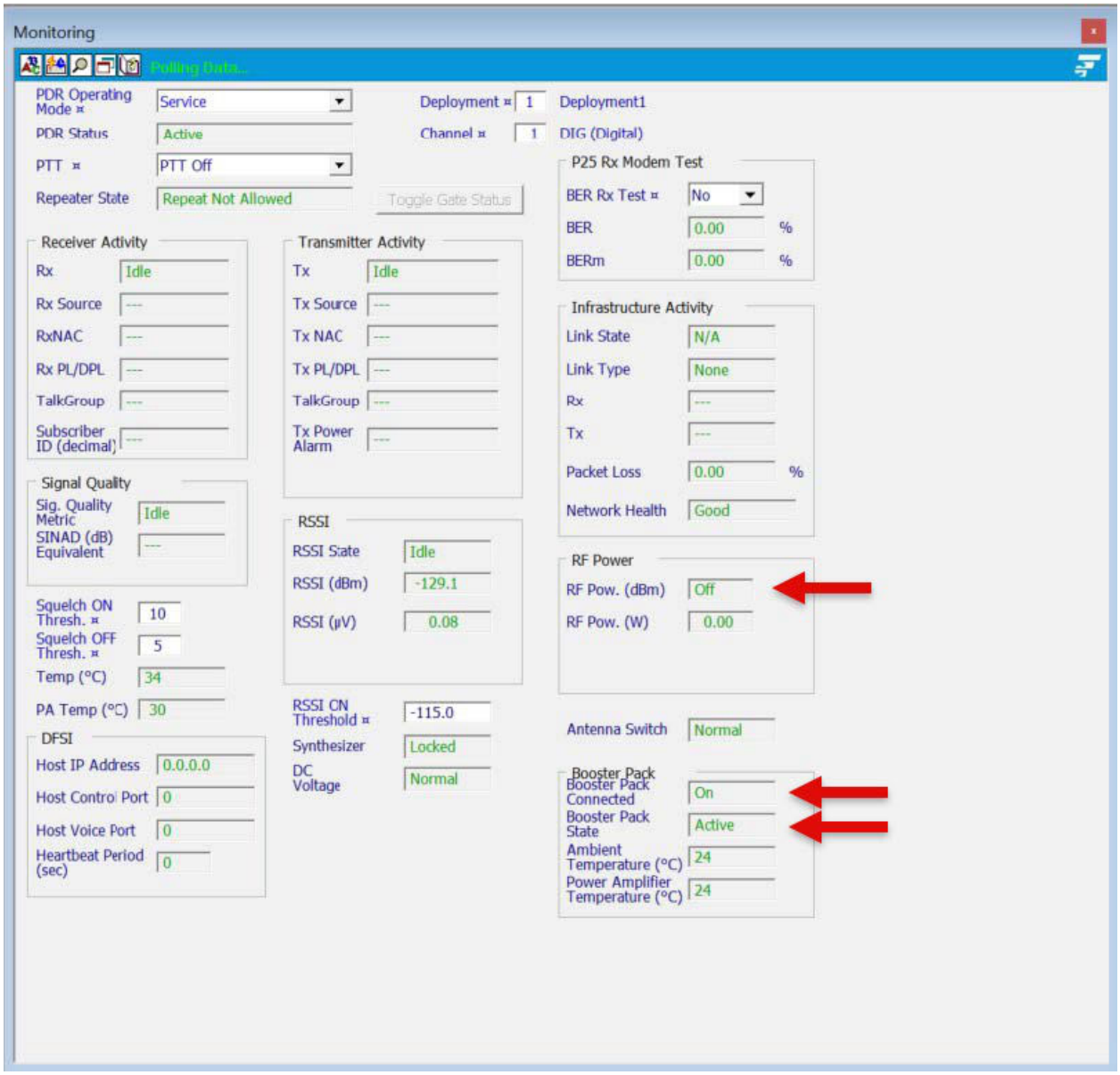
Figure 26: Monitoring Window with PDR8000 Transmitting but Booster Pack Not Connected



Monitoring Window with Booster Pack Connected but PDR8000 Not Transmitting

The Booster Pack is now connected to the PDR8000 and powered up. The **Monitoring** window indicates that the Booster pack is On and Active but the PDR8000 is not transmitting (PTT OFF).

Figure 27: Monitoring Window with Booster Pack Connected but PDR8000 Not Transmitting

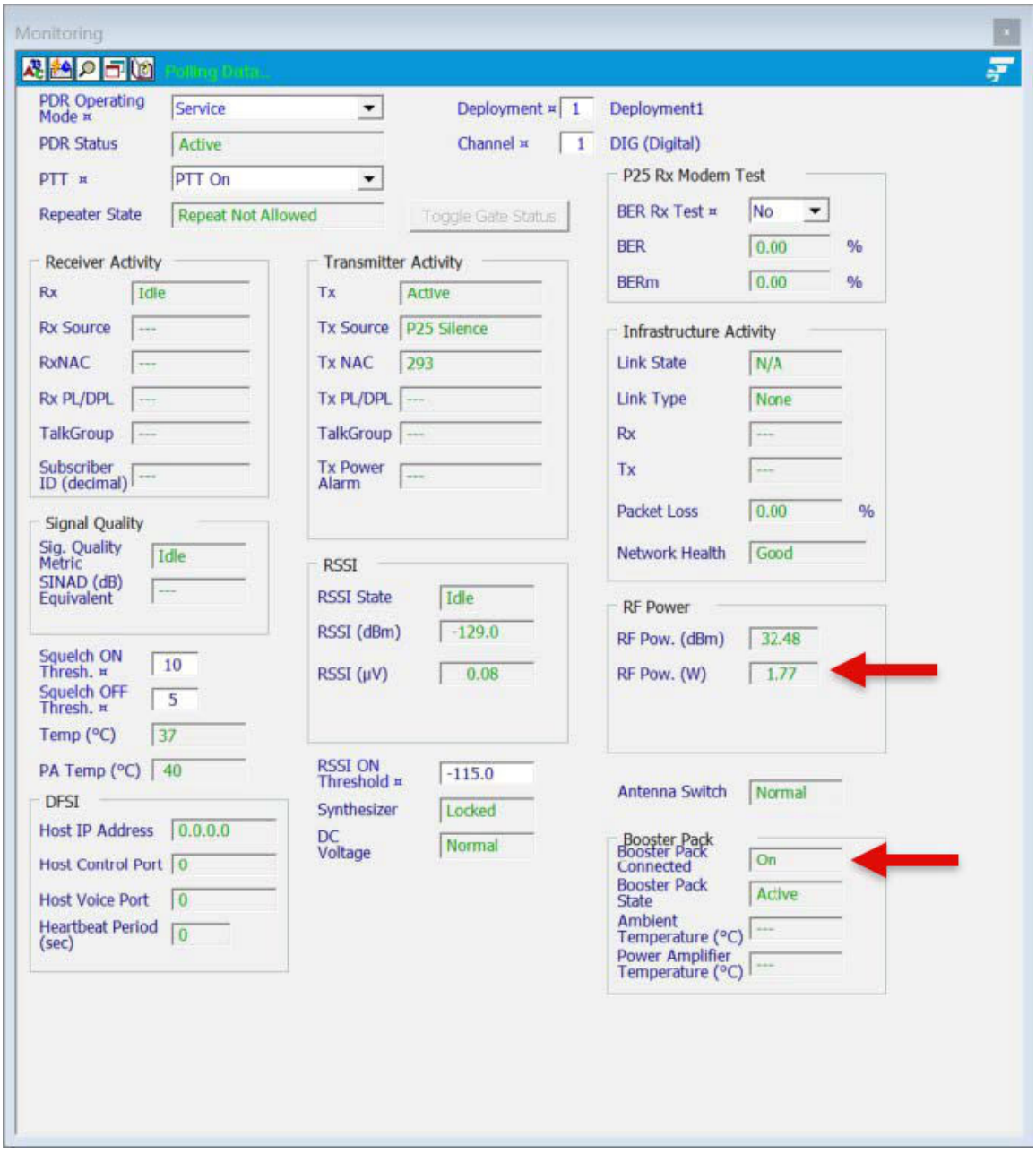


Monitoring Window with Booster Pack Connected and PDR8000 Transmitting

Select the **PDR8000 Operating Mode** as **Service** and **PTT** as **PTT On**. The Booster Pack is connected and active. The RF power of the PDR8000 drops down to a figure between 1 W and 2 W (1.75 W) from the programmed 20 W as displayed.

The Power measured at RF output of the Amplifier of the Booster pack will be 50 W.

Figure 28: Monitoring Window with Booster Pack Connected and PDR8000 Transmitting



Chapter 4

Troubleshooting

If the FRC PC has difficulty communicating with the PDR:

1. Ensure that only one instance of FRC is open.
2. Make a second attempt to read the PDR.
3. Reconnect the USB, by disconnecting and connecting, and wait a few seconds for the device to be recognized. Proceed to read the PDR again.
4. Power-cycle the PDR by disconnecting and reconnecting the power cord. Wait for a few seconds until the PDR is on and the USB connects, then try to read the PDR. If the device is not recognized or read fails again, try power-cycling the PDR one more time.
5. If still unable to read, reboot the PC.

The cause of errors or warnings may be due to any of the following reasons:

- Improper PDR8000 Programming.
- PDR8000 Firmware upgrade is improperly done.

NOTE: Ensure that the PDR8000 is on the latest released Firmware.

There are three locations where the errors or warnings are displayed:

1. Front Panel LED
2. Side Panel LED
3. Alphanumeric Display

Figure 29: Front Panel LEDs

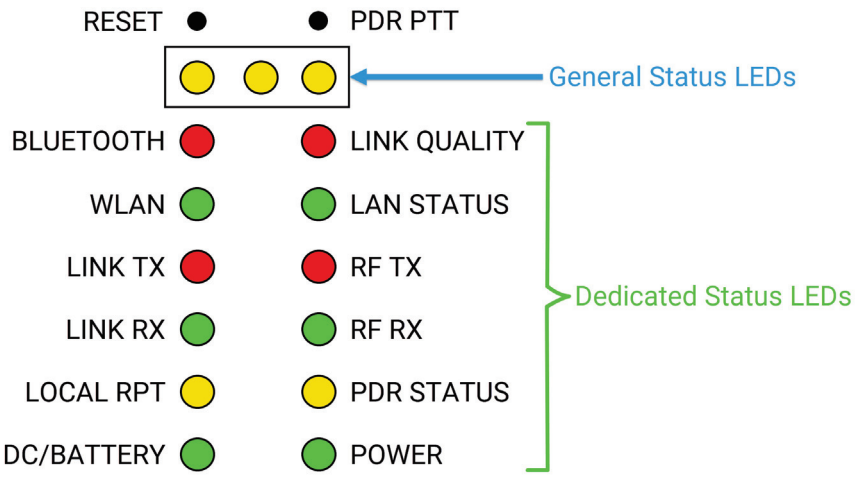


Table 12: Front Panel LEDs Status

PDR8000 Status	LED	LED Status (ON/OFF/ Flashing)	Action
Power Up	• Power LED • DC/Battery LED	OFF	Disconnect the power source and replace the appropriate fuse.
Wireline Enabled	• LINK TX LED • LINK RX LED	Flashing	Check the Wireline connection and PDR8000 Deployment programming.
Repeater Fallback Mode	Top-left Fallback LED	ON	Check Deployment programming.
Service Mode	Top Center Status Warning LED	ON	Check the **Monitoring** window, if the PDR8000 is in Service mode.
Error	Top-Right Error Status LED	ON	Indicates Errors in the PDR8000. Error codes are displayed.

Table 13: Side Panel LED Status

LED Status	Status	Action
Slow Flash	PDR8000 is operating, but under an abnormal or warning condition. This includes operating in Fallback In-Cabinet Repeat when the wireline link has ceased communication.	See front panel LEDs, front panel display, or technicians log for further insight.
Fast Flash	PDR8000 is not functioning. A major error has occurred.	

4.1

Error and Warning Codes

The following error and warning codes may be displayed on the PDR8000 display.

Error Codes	Description
Major Error Codes	
80000000	Incompatible BaseBand DSP code loaded
40000000	Incompatible Transceiver DSP code loaded
20000000	Invalid EEPROM repeater model data
10000000	Invalid EEPROM checksum (data corrupted, any block)
8000000	Invalid EEPROM MAP (bad index table)
4000000	Incompatible hardware detected
2000000	Invalid EEPROM data (BlockID not found)
1000000	Invalid data in options block

Error Codes	Description
Minor Error Codes	
1000	Factory Calibration/Test Issue (CALIBRATION ERROR)
800	RF band mismatch (BOOSTER MISMATCH)
400	RTC Chip failure
200	Invalid deployment number (INVALID DEPLOYMENT)
100	Disabled Channel Selected (DISABLED CHANNEL)
80	IF board link down – V.24 programmed and needed
40	Low Battery alarm (LOW BATTERY ERROR)
20	Hi Battery alarm (HIGH BATTERY ERROR)
10	Invalid Customer Option Programmed (INVALID CONFIG)
8	Invalid or unprogrammed channels selected (INVALID CHANNEL)
4	Invalid channel block checksum
2	Invalid Tx frequency programmed (INVALID TX FREQ)
1	Invalid Rx frequency programmed (INVALID RX FREQ)
Warning Codes	
1	Low Battery warning (LOW BATTERY WARN)
2	IF Board not connected – V.24 not programmed
4	Incompatible Baseband DSP
8	Incompatible Transceiver DSP
10	Temperature alarm on PA board (HIGH TEMPERATURE)
20	Tx Power alarm (Outside range) (LOW TX POWER)
40	Bad main EEPROM map data
80	Bad backup EEPROM map data
100	EE map version mismatch
200	Options mismatch (INVALID CHANNELS)
400	RTC battery failed/time invalid (DATE/TIME WARN)
800	PDR8000 fan control board failed (FAN CONTROL WARN)
RF Error Codes	
8000	Baseband DSP alarm (failed to load/start)
4000	Transceiver DSP alarm (failed to load/start)
2000	Baseband DSP alarm (invalid checksum)
1000	Transceiver DSP alarm (invalid checksum)
800	Rx synthesizer lock alarm
400	Tx synthesizer lock alarm
Other Warnings	
	Packet Loss on V.24 or Ethernet (LOW QUALITY LINK)

Error Codes	Description
	Unable to establish wireline connection (`LINK FAILURE`)

Glossary

Acknowledgment (ACK) A message sent in response to another message to indicate status.

Booster Pack An optional hardware accessory for PDR8000 to boost the RF transmit power to 50 W.

Base Station Identification (BSI) The assigned station identification callsign issued for the system by the local licensing authority. In the U.S., this is the Federal Communications Commission (FCC) for non-federal government customers, and the National Telecommunications and Information Administration (NTIA) for government customers.

Channel A group of characteristics, such as transmit or receive frequency pair, radio parameters, and potentially encryption encoding.

Coded Squelch Tone Private-Line (PL) or Digital Private-Line (DPL). Used on conventional channels for signal validation.

Conventional Refers to radio-to-radio communications, sometimes through a Base Station repeater or vehicular repeater. A radio system operation that does not use a control channel. It uses nontrunked telecommunications equipment.

Deployment Complete personality setup of the PDR8000.

Digital Fixed Station Interface (DFSI) An industry standard protocol for radio voice communication over IP network between a host and station.

Dispatcher An individual who manages the radio system.

DPD File Personality file saved as `file_name.DPD`.

DPL Coded Squelch A continuous subaudible data signal (CDCSS) transmitted with the carrier.

EPR File File containing personality (DPD) and calibration data of the specific repeater unit. Typically saved in the following format `xxxxxxxx.epr` where xxxxxxxx is the serial number of the specific repeater unit.

Federal Communications Commission (FCC) Regulates interstate and international communications by radio, television, wire, satellite and cable in all 50 states, the District of Columbia, and U.S. territories. It was established by the Communications Act of 1934 and operates as an independent U.S. government agency overseen by Congress. The commission is committed to being a responsive, efficient, and effective agency capable of facing the technological and economic opportunities of the new millennium.

Futurecom Repeater Configurator (FRC) Programming software application for the DVR-LX®, VRX1000, and PDR8000®.

Network Access Code (NAC) Used in P25 mode for validation of P25 radio communications, similar to the use of PL/DPL in analog mode.

Over-The-Air-Programming (OTAP) An ASTRO® 25 Integrated Voice and Data (IVD) service for programming subscriber units over the ASTRO 25 IVD air interface.

PL Coded Squelch Private Line. A continuous subaudible tone (CTCSS) transmitted with the carrier.

Portable Subscriber Unit (PSU) A portable subscriber unit.

Radio Frequency (RF) A portion of the electromagnetic spectrum that resides between audio sound and infrared light (approximately 10 kHz to 10 GHz).

Received Signal Strength Indicator (RSSI) A value that represents the power level in a received radio signal strength measured in dBm.

Talkgroup A uniquely named group of radios that can share calls and messages. A talkgroup normal communications do not require interfacing with other talkgroups. Typically, the majority communications of a radio user are within their own talkgroup.

V.24 A digital link better described as a physical V.24 link with High-level Data Link Control (HDLC). Used to connect the PDR8000 to other infrastructure elements (for example, CCGW, DIU, comparator).