Futurecom Systems Group, ULC

PDR8000® Portable Digital Repeater and Booster Pack Deployment Guide

ATTENTION!

Please read the RF Safety Booklet provided with the product before proceeding with deployment

Document: 8K088X03
Revision: R5.00
Date: 2021-11-15

Document Revisions

Revision	Date	Notes & References
D2	2017-05-09	Trial Release
R1.0	2017-05-25	Initial Release
R2.0	2017-10-02	Contents applicable to R2.0 and R1.0; added newsletter info
R2.1	2018-02-26	Correction of DC voltage 13.8V made
R3.0	2018-07-19	R3.0 Updates - Keypad/Display, V.24 interface details, cable pinouts
R4.0	2019-09-23	PDR8000® R4.0 and Booster Pack updates
R4.01	2020-07-30	FRC references change
R5.0	2021-11-15	Changes to R5.0 DFSI menu items and other

Subscribe to our newsletter if you want to be informed about new releases and updates.
Please visit http://futurecom.com/support/newsletter/

Proprietary Statement

Contents

Table of Figures

1. Introduction

The PDR8000 is typically a self-contained device but is easily modified to utilize an alternate duplexer and/or a transmit power Booster Pack when required. Multiple RF hardware configurations are supported, using accessible internal and external connection points to enable the desired configuration. This manual provides installation instructions for each of these configurations. The figures below are also screened on the back of the removable top panel inside the PDR8000.
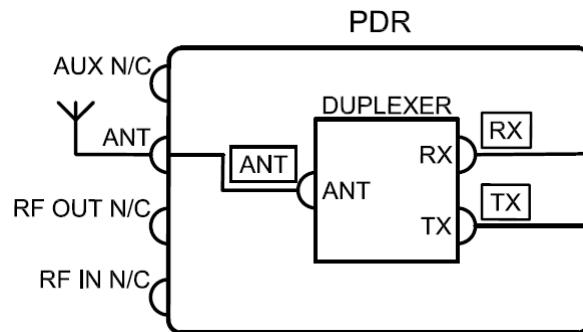
Figure 1 - Internal Duplexer Hardware Configuration
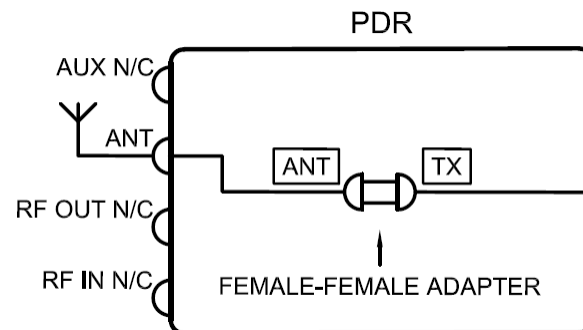
Figure 2 - Simplex Hardware Configuration
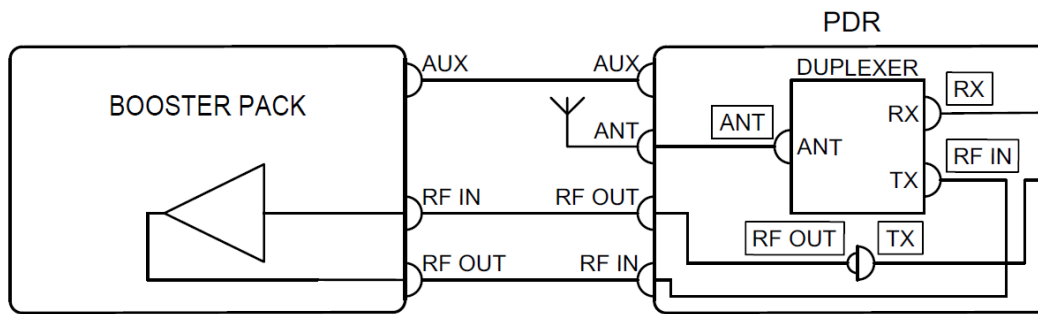
Figure 3 - Internal Duplexer and Booster Pack Hardware Configuration
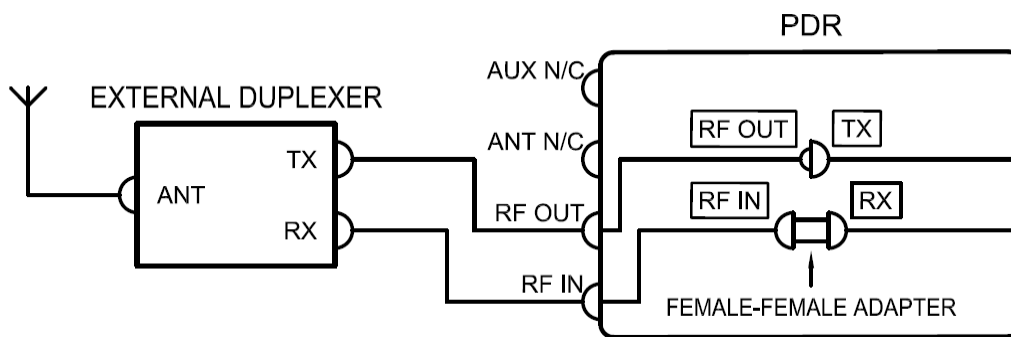
Figure 4 - External Duplexer Hardware Configuration
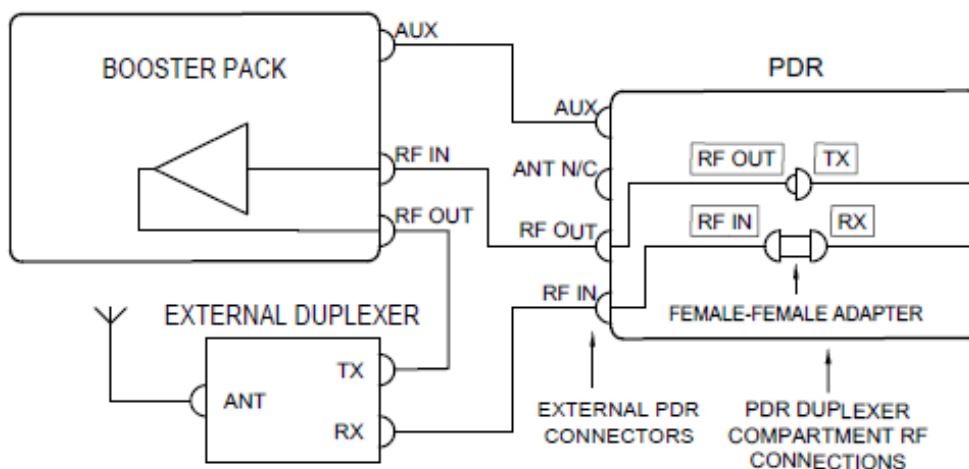
Figure 5 - External Duplexer and Booster Pack Hardware Configuration

Note: External Duplexer Cabling supplied by user

2. PDR8000 Deployment

Step 1- Internal Connections

Determine the required RF hardware configuration and confirm the internal connections correspond to the instructions below.   To access the internal connections, unscrew the four corner thumbscrews of the top panel and remove it.

Figure 6 - Removable Top Panel

Figure 7 - Top Panel Removed

Internal Duplexer Cable Connections

- RX labelled cable is connected to RX port on Duplexer
- TX labelled cable is connected to TX port on Duplexer
- ANTENNA labelled cable is connected to ANTENNA port on Duplexer

Simplex Cable Connections

- TX labelled cable is connected to ANTENNA labelled cable using the supplied Female-Female adapter

Internal Duplexer and Booster Pack Cable Connections

- RX labelled cable is connected to RX port on Duplexer
- RF IN labelled cable is connected to TX port on Duplexer
- ANTENNA labelled cable is connected to ANTENNA port on Duplexer
- TX labelled cable is connected to RF OUT labelled cable

External Duplexer Cable Connections

- TX labelled cable is connected to RF OUT labelled cable
- RX labelled cable is connected to RF IN labelled cable using the supplied Female-Female adapter

External Duplexer and Booster Pack Cable Connections

- TX labelled cable is connected to RF OUT labelled cable
- RX labelled cable is connected to RF IN labelled cable using the supplied Female-Female adapter

Once connections are complete, replace the top cover and screw back in place.

Step 2- External Connections

Based on the required RF hardware configuration, proceed with the external connections as per the instructions below. To access the external connections, pull the release latch and remove the side panel. When replacing the side panel, hook left side of panel in place first and then push the right side of panel in place. A click will be heard when it locks in place.

Figure 8 - PDR8000 Side Panel Cover

Figure 9 - Pull Release Latch
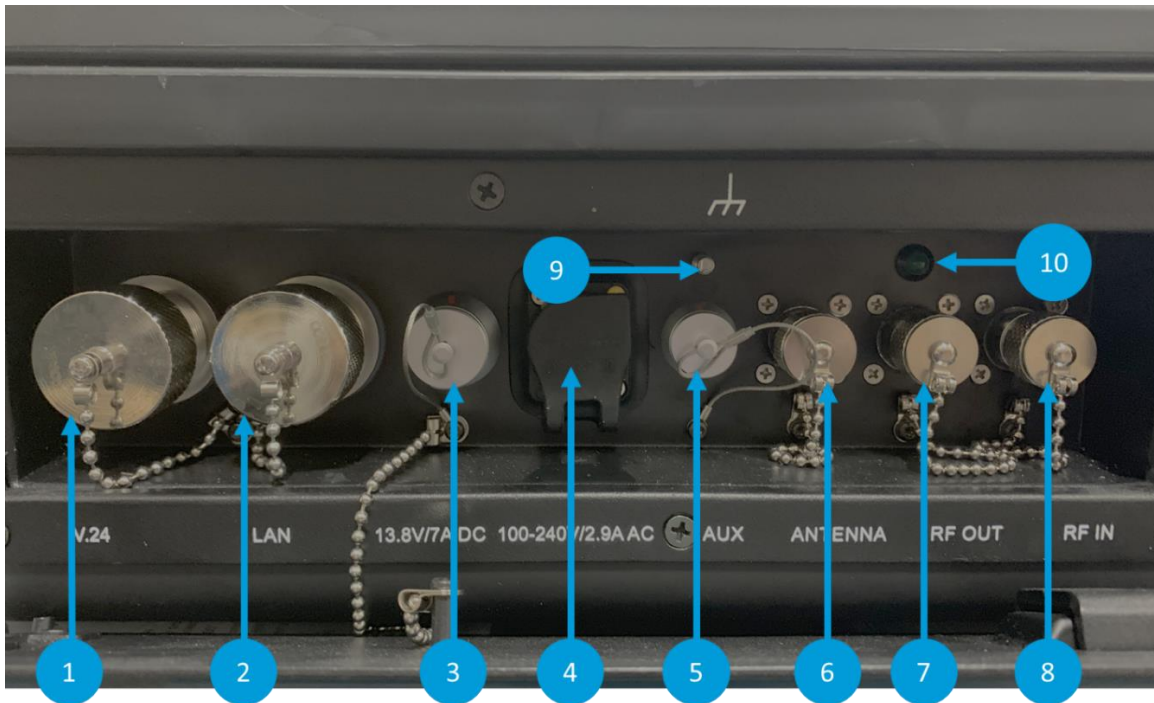
Figure 10: PDR8000 Side Panel

ID	Label	Type	Manufacturer	Model Ref*	Open/Close Mechanism
1	V.24	RJ-45	CONEC	17-111574	Screw/Unscrew Dust Cap
2[1]	LAN	RJ-45	CONEC	17-111574	Screw/Unscrew Dust Cap
3	13V/7A DC	DC Power Input	LEMO	EGL.2K.302. CLA	Push Pull Dust Cap
4	100-240V/4A AC	AC Power Input	NEUTRIK	NAC3MPX	Push Pull Sealing Cover
5	AUX	Circular Receptacle	LEMO	EGG.1K.308 .CLL[2]	Push Pull Dust Cap
6	ANTENNA	N Female	N/A	N/A	Screw/Unscrew Dust Cap
7	RF OUT	N Female	N/A	N/A	Screw/Unscrew Dust Cap
8	RF IN	N Female	N/A	N/A	Screw/Unscrew Dust Cap
9	⏚	Ground Lug	NA	N/A	N/A
10	Green LED Indicator		N/A	N/A	N/A

Figure 11 - PDR8000 External Connectors' and LED Specifications

---

[1] LAN port is not enabled on PDR8000

[2] Connector was EGG.1K.306.CLL on releases prior to PDR8000 Release 4

Internal Duplexer

- ANTENNA cable is connected ANTENNA connector
- AUX, RF OUT, and RF IN are not connected

Simplex

- ANTENNA cable is connected ANTENNA connector
- AUX, RF OUT, and RF IN are not connected

Internal Duplexer and Booster Pack

- AUX cable is connected from AUX connector of PDR8000 to AUX connector of Booster Pack
- ANTENNA cable is connected to ANTENNA connector
- RF cable is connected from RF OUT connector of PDR8000 to RF IN connector of Booster Pack
- RF cable is connected from RF IN connector of PDR8000 to RF OUT connector of Booster Pack

External Duplexer

- Duplexer cable (supplied by end user) is connected from RF OUT connector of PDR8000 to TX port of External Duplexer
- Duplexer cable (supplied by end user) is connected from RF IN connector of PDR8000 to RX port of External Duplexer
- AUX and ANTENNA are not connected

External Duplexer and Booster Pack

- AUX cable is connected from AUX connector of PDR8000 to AUX connector of Booster Pack
- RF cable is connected from RF OUT connector of PDR8000 to RF IN connector of Booster Pack
- Duplexer cable (supplied by end user) is connected from RF IN connector of PDR8000 to RX port of External Duplexer
- Duplexer cable (supplied by end user) is connected from TX port of External Duplexer to RF OUT end connector of Booster Pack.
- The ANTENNA cable is connected to the ANTENNA port of the External Duplexer
- The ANTENNA connector of PDR8000 is not connected

Step 3A - V.24 Connection (optional)

To access the V.24 end connector, unscrew the dust cover (refer to Figure 10). The V.24 cable (supplied by end user- seeAppendix A - V**.24 Cable**) is connected from the V.24 end connector of the PDR8000 to the V.24 system device: DIU (supplied by end user), Modem (supplied by end user), Conventional Channel Gateway (supplied by end user- available as model number SQM01SUM0205 from Motorola Solutions) or another PDR8000.

NOTES:

The V.24 end connector on the PDR8000 is weatherproof. To ensure connection remains weatherproof, an IP 65 compliant end connector (ie CONEC 17-103274) should be used with the V.24 cable.

PDR8000 has been tested with DIU3000 and serial modems namely Raymar-Telenetics V.3600 SA Modem and Paradyne 325.

Step 3B - Ethernet Connection (optional)

To access the Ethernet end connector labelled LAN, unscrew the dust cover (refer to Figure 10). The Ethernet cable (supplied by end user) is connected from the LAN end connector of the PDR8000 to the Ethernet system device: Ethernet Switch or Modems (supplied by end user), Gateway (supplied by end user).

NOTES:

The LAN end connector on the PDR8000 is weatherproof. To ensure connection remains weatherproof, an IP 65 compliant end connector should be used with the Ethernet cable.

Step 4- Power

> **ATTENTION!**
>
> Please read the RF Safety Booklet Before proceeding with this step.
>
> Only proceed with this step once all the other connections are complete.

DC Power:

- To access the end connector, unscrew side panel cover as shown in Figure 9 - Pull Release Latch.
- Line up the red dots on the end connector and the cable and push DC power cable into place as shown in Figure 12 and Figure 13.
- Connect the other end of the DC power cable to the DC power supply.
- To remove the DC cable, pull back on the cable connector sleeve and then pull out by connector body as shown in Figure 14
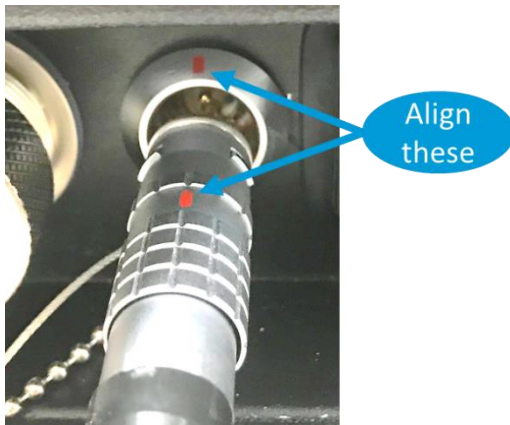
Figure 12 - DC connector alignment

Figure 13 - DC Connector plugged in

Figure 14 - Pull to unplug DC Power

AC Power:

- To access the end connector, pull off the dust cover as shown in Figure 15
- Insert the cable connector with the yellow release latch at the 11:00 position and twist clockwise until it locks into place at the 12:00 position. A click will be heard. See Figure 16
- Connect the other end of the AC power cable to the AC power supply.
- To remove the cable, pull the yellow release latch back, twist cable connector counter-clockwise and then pull the cable out.
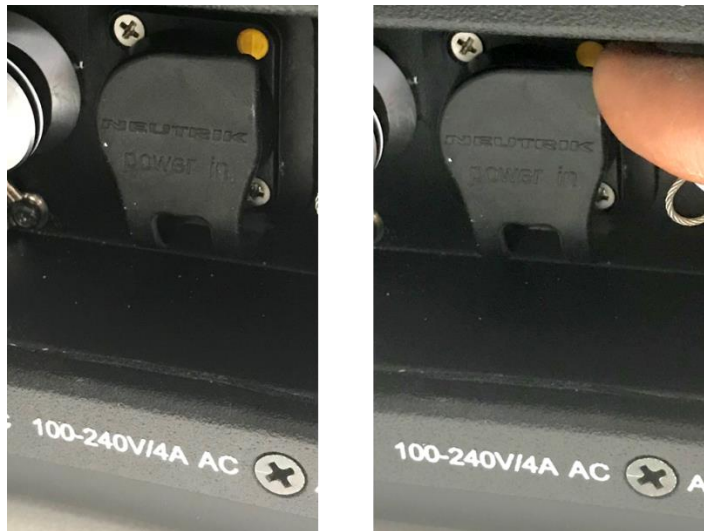
Figure 15 - Pull AC Power Dust Cover
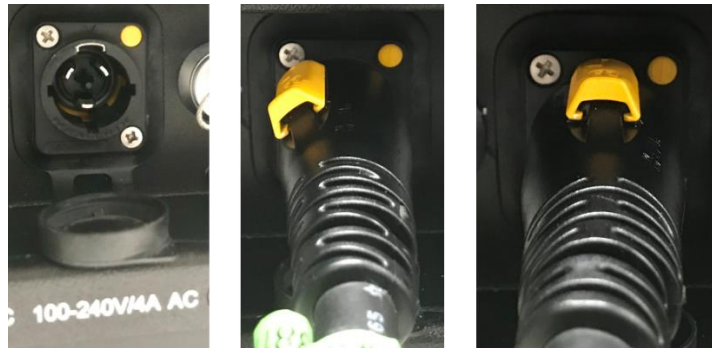
Figure 16 - AC Power Connection to PDR8000

Powering Scheme- both AC (100-240V) and DC (13.8V) can be connected simultaneously. The PDR8000 will dynamically choose the supply with the highest voltage and if one supply fails, the other will take over with an instant transfer of power.

NOTE: The AC power will not charge the DC battery pack.

Step 5- Power Up Confirmation

If the PDR8000 successfully powers up, the fan will start running and the POWER LED in the bottom right corner of the LED panel will turn on.

The three General Status LEDs are used to communicate various high-level status:
• PDR8000 Operational Mode
• PDR8000 Warning Status
• PDR8000 Error Status

These dedicated status LEDs are labelled to indicate the PDR8000 functions they represent. The specific state of the status may differ depending on the configuration and notifications mechanism used below (on/off/blinking)

Figure 17 - PDR8000 LED Panel

The following table contains the General Status LED state definitions.

LED 1	LED 2	LED 3	Status Description
PDR Operational Modes			
OFF	OFF	OFF	In Normal mode - No errors or warnings
STEADY			In Fallback In-Cabinet Repeat (FBICR) Mode
	STEADY		In Service Mode
PDR Error Status			
	BLINK FAST		Internal Software Image Error
PDR Warning Status			
BLINK FAST			Real Time Clock Battery Alarm
	BLINK SLOW		Low Transmit Power Alarm
		BLINK SLOW	Temperature Alarm

Figure 18 - General LED Status Definitions

Dedicated Status LEDs

The following table contains the state definitions for Dedicated Status LEDs.

Label	State	Status Description
LINK QUALITY	OFF	No Connection
LINK QUALITY	BLKS	Low Quality Network
LINK QUALITY	BLKF	Medium Quality Network
LINK QUALITY	STDY	High Quality Network
LAN STATUS	OFF	Ethernet Cable Disconnected
LAN STATUS	STDY	Ethernet Cable Connected
LINK TX	OFF	Link Tx Interface Off
LINK TX	BLKP	Link Tx Interface On
LINK TX	STDY	Link Tx Interface Activity
LINK TX	BLKF	Link Tx Interface Failure (see Tech Log)
LINK RX	OFF	Link Rx Interface Off
LINK RX	BLKP	Link Rx Interface Working
LINK RX	STDY	Link Rx Interface Activity
LINK RX	BLKF	Link Rx Interface Failure (see Tech Log)
LOCAL RPT	OFF	Local Repeat disabled
LOCAL RPT	STDY	Local Repeat enabled
DC BATTERY	OFF	DC source below threshold
DC BATTERY	BLKF	DC source above threshold
DC BATTERY	STDY	DC power acceptable
DC BATTERY	BLKS	Warning, DC source approaching lower threshold
RF TX	OFF	Transmitter Inactive
RF TX	STDY	Transmitter Active
RF RX	OFF	Receiver Inactive
RF RX	STDY	Receiver Active
PDR STATUS	BLKF	Error (Check Tech Log)
PDR STATUS	BLKS	Warning (Check Tech Log)
PDR STATUS	BLKP	PDR Functional

Label	State	Status Description
POWER	OFF	PDR Power Off
POWER	STDY	PDR Power On

Figure 19 – PDR8000 Dedicated Status LEDs Definition

If the PDR8000 does not successfully power up, the fan will not start running and there will be no lights displayed on the LED light panel. Disconnect the power source and replace the appropriate fuse.

DC Power- the DC fuses are located inside the PDR8000. Contact Futurecom for service: 1-800-701-9180 or support@futurecom.com

AC Power- the AC Fuse is located inside the Duplexer compartment. Unscrew the four screws and remove the top panel as shown in Figure 6 and Figure 7. The fuse is in the bottom right corner. Unscrew the fuse cover counterclockwise to remove it and replace the fuse (Manufacturer: Bel, Part Number: 5ST5-R, 5Amps).

Step 6- Keypad/Display

PDR8000 is equipped with an LCD display, providing a means to access and control several aspects of the unit. Access to various functions is available utilizing an on-screen menu, and a set of navigation buttons.
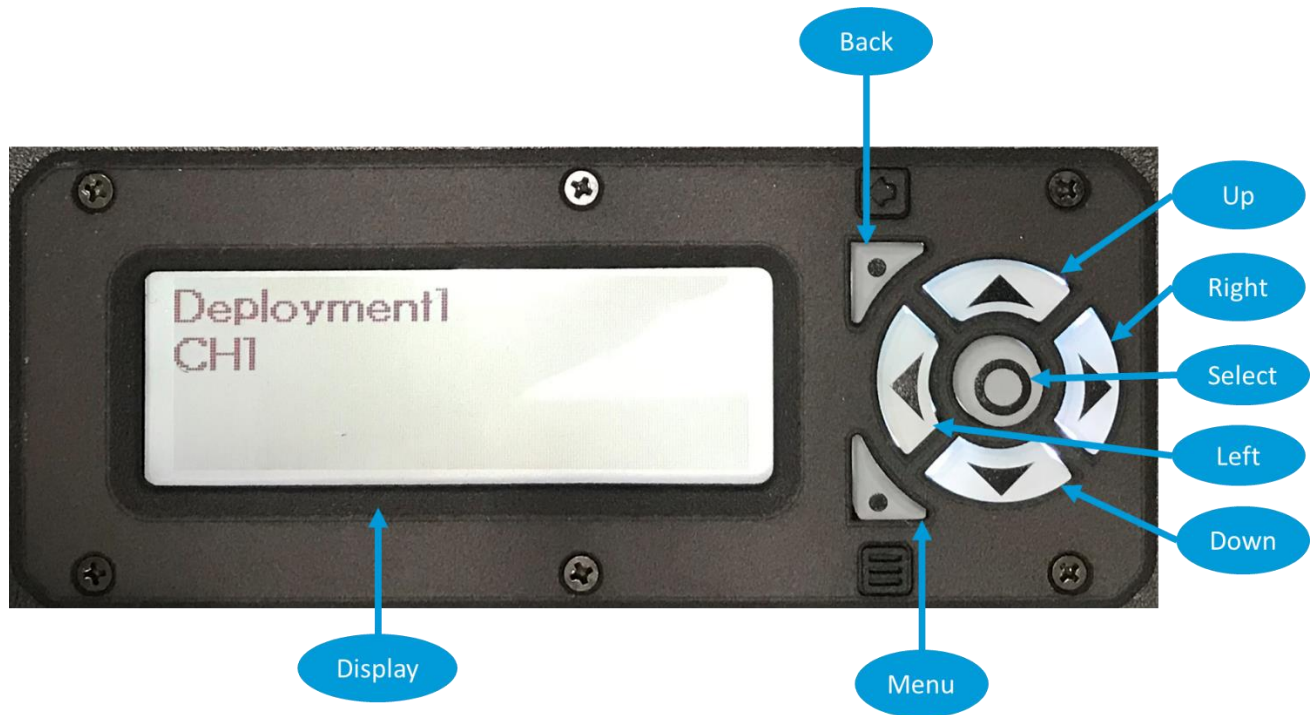
Figure 20 - PDR8000 Keypad/Display

The Display Menu may be configured by the PDR8000 configuration utility program known as the Futurecom Repeater Configurator (FRC). Therefore, any PDR8000 will have the menu specifically configured for the unit.

The PDR8000 can be configured to protect the access to display/keypad control operation with a password. If the display/keypad is in locked state, then the user must enter the correct password to access the menu options using the keypad. The display/keypad switches to the locked state either by a timeout value or by selecting the LOCK KEYPAD command under SETTINGS menu.

The following menu navigation is based on a generic configuration of a PDR8000 unit.

Buttons	Effect
Menu	Toggles Menu On/Off (Menu may auto toggle off after a period of time). User would be prompted for password if the menu access is password protected and in locked state.
Back	Goes back to previous menu level
Up	Navigate up in a list of menu items
Down	Navigate down in a list of menu items
Right*	a) Increment values such as CONTRAST, BRIGHTNESS, TIME ZONE, HOURS MINUTES, SECONDS b) Toggle (ENABLED/DISABLED) values for KEYPAD TONE or DST c) * When the main screen is displayed as shown in Figure 20, pressing and holding the Right button for 7 seconds sets the BRIGHTNESS to 100% and CONTRAST to 43%.
Left	a) Decrement values such as CONTRAST, BRIGHTNESS, TIME ZONE, HOURS MINUTES, SECONDS b) Toggle (ENABLED/DISABLED) values for KEYPAD TONE or DST
Select	Select a menu item or value

NOTE: Response rate of display may be a bit slow at extremely low temperatures.

Main Menu	Sub-Menu	Action/Info
>CHANNELS	>List of Channels	View/Select Active Channel
>DEPLOYMENTS	>List of Deployment Profiles	View/Select Active Deployment Profiles
>SETTINGS	>CONTRAST	View/Set Display's Contrast Level
	>BRIGHTNESS	View/Set Display's Brightness Level
	>TIME/DATE	View/Set the following ◄Time Zone UTC+/- H:MM ► ◄DST ENABLED/DISABLED ► ◄YEAR YYYY ► ◄MONTH MM ► ◄DAY DD ► ◄HOUR HH ► ◄MINUTE mm ► ◄SECOND SS ►
	>KEYPAD TONE	Toggle keypad tone ENABLED/DISABLED
	>LOCK KEYPAD	Lock keypad access
>DIAGNOSTICS	>RSSI xxx	View Received Signal Strength (RSSI) value
	>LINK ►►►	Shows link quality bar of the V.24 or Ethernet Network ► or ►► or ►►►
>LINK	>DFSI ON/OFF >SIP: x.x.x.x >SUB: x.x.x.x >SCP: X >SVP: X >HIP: x.x.x.x >HCP: X >HVP: X >HB: X	Shows whether DFSI connection is ON or OFF IP Address of the DFSI station Subnet of the DFSI station DFSI Station's Control Port number DFSI Station's Voice Conveyance Port number IP Address of the DFSI station DFSI Host's Control Port number DFSI Host's Voice Conveyance Port number Heartbeat in Seconds between host and station

>**ABOUT**	> PDR 8000	Product Name
	> SN: xxxxxxxx	Product serial number
	> HW PN: 7V083X01	Hardware part number
	> HW REV: xx.xx	Hardware revision
	> HW REL: dd/mm/yy	Hardware release date
	> APP PN: 4C088X01	Repeater firmware part number
	> APP VER: xx.xx	Repeater version
	> APP REL: dd/mm/yy	Repeater release date
	> APP BUILD: xxx	Repeater build number
	> B PN: 4C088X02	Repeater boot firmware part number
	> B VER: xx.xx	Repeater boot firmware version
	> B REL: DD/MM/YY	Repeater boot firmware release date
	> B BUILD: xxx	Repeater boot firmware build number
	> BBD PN:4C083X04	Baseband DSP part number
	> BBD VER: xx.xx	Baseband DSP version
	> BBD REL: dd/mm/yy	Baseband DSP release date
	> TRD PN: 4C083X03	Transceiver DSP part number
	> TRD VER: xx.xx	Transceiver DSP version
	> TRD REL: dd/mm/yy	Transceiver DSP release date
	> IF HW PN: 7L088X01	Interface hardware part number
	> IF HW REV:xxx.xx	Interface hardware revision number
	> IF HW REL: dd/mm/yy	Interface hardware release date
	> IF APP PN: 4C088X05	Interface firmware part number
	> IF APP VER: xxx.xx	Interface firmware version
	> IF APP R: dd/mm/yy	Interface firmware release date
	> IF APP BUILD: xxx	Interface firmware build number
	> IF B PN: 4C088X06	Interface boot part number
	> IF B VER: xxx.xx	Interface firmware version
	> IF B R: dd/mm/yy	Interface firmware release date
	> IF B BUILD: xxx	Interface firmware build number
	> Copyright (C) 2018	Copyright information
	> FUTURECOM	
	> SYSTEMS	
	> GROUP, ULC	

STEP 7 - Open/Closed Case Operation

PDR8000 has been designed to support both open-case and closed-case operation. When operating closed-case, the PDR8000 should be standing on its hinged side, allowing the case to provide better cooling efficiency. When operating open-case (providing the best cooling capability), the PDR8000 is to be placed flat on its large surface. Note that the PDR8000 is not water resistant when operating open-case.

Figure 21 - Open case operation

Figure 22 - Closed case operation

3. Booster Pack Deployment (Optional)

PDR8000 natively provides a pre-duplexer output power configurable up to 20 watts. If higher output power is needed, an external Booster Pack can be utilized. The Booster Pack configuration utilizes the standard PDR8000 hardware/software and adds an additional suitcase (same dimensions/colors as the PDR8000) which provides additional transmit power. The PDR8000 and Booster Pack are connected via RF cables and a control cable. When a Booster Pack is connected to the PDR8000, it transmits power of 50 watts (pre-duplexer).

Depending on the PDR8000 configuration (simplex, internal duplexer or external duplexer), the Booster Pack connection steps vary accordingly. The following sections describe the entire steps needed to connect PDR8000 and Booster Pack for each of the configurations.

Before attaching a Booster Pack to the PDR8000, the PDR8000's RF cables must be wired properly as shown in the following possible configurations.

ATTENTION:

PDR8000 and Booster Pack are sold in different band configurations. The PDR8000 must be connected to a matching band Booster Pack for them to operate properly. The following table shows compatible PDR8000s and Booster Packs. **Ensure that the PDR8000 is paired with the matching Booster Pack.**

PDR8000 Model Number	Booster Pack Model Number	Band (Frequency Range)
TT3148	DDN7232	VHF (136 – 174 MHz)
TT3149	DDN7233	UHF (380 – 430 MHz)
TT3150	DDN7234	UHF (450 – 470 MHz)
TT3152	DDN7235*	700 (764 – 776 MHz)
TT3153	DDN7235*	800 (851 – 869 MHz)

*The 700 and 800 MHz bands are covered by a single Booster Pack Model

Figure 23 - Booster Pack

Booster Pack External Connections

Figure 24 - Booster Pack External Connections

ID	Label	Type	Manufacturer	Model Ref*	Open/Close Mechanism
1	RF OUT	N Female	N/A	N/A	Screw/Unscrew Dust Cap
2	RF IN	N Female	N/A	N/A	Screw/Unscrew Dust Cap
3	AUX	Circular Receptacle	LEMO	EGG.1K.30 8.CLL	Push Pull Dust Cap
4	100-240V/4A AC	AC Power Input	NEUTRIK	NAC3MPX	Push Pull Sealing Cover
5	13V/14.3A DC	DC Power Input	LEMO	EGL.2K.30 2.CLA	Push Pull Dust Cap
6		Ground Lug	NA	N/A	N/A
7	POWER	Green LED Indicator	N/A	N/A	N/A
8		Toggle Switch	NKK	M2012LL3 W01	Pull out / Toggle switch for power LED to operate in stealth mode

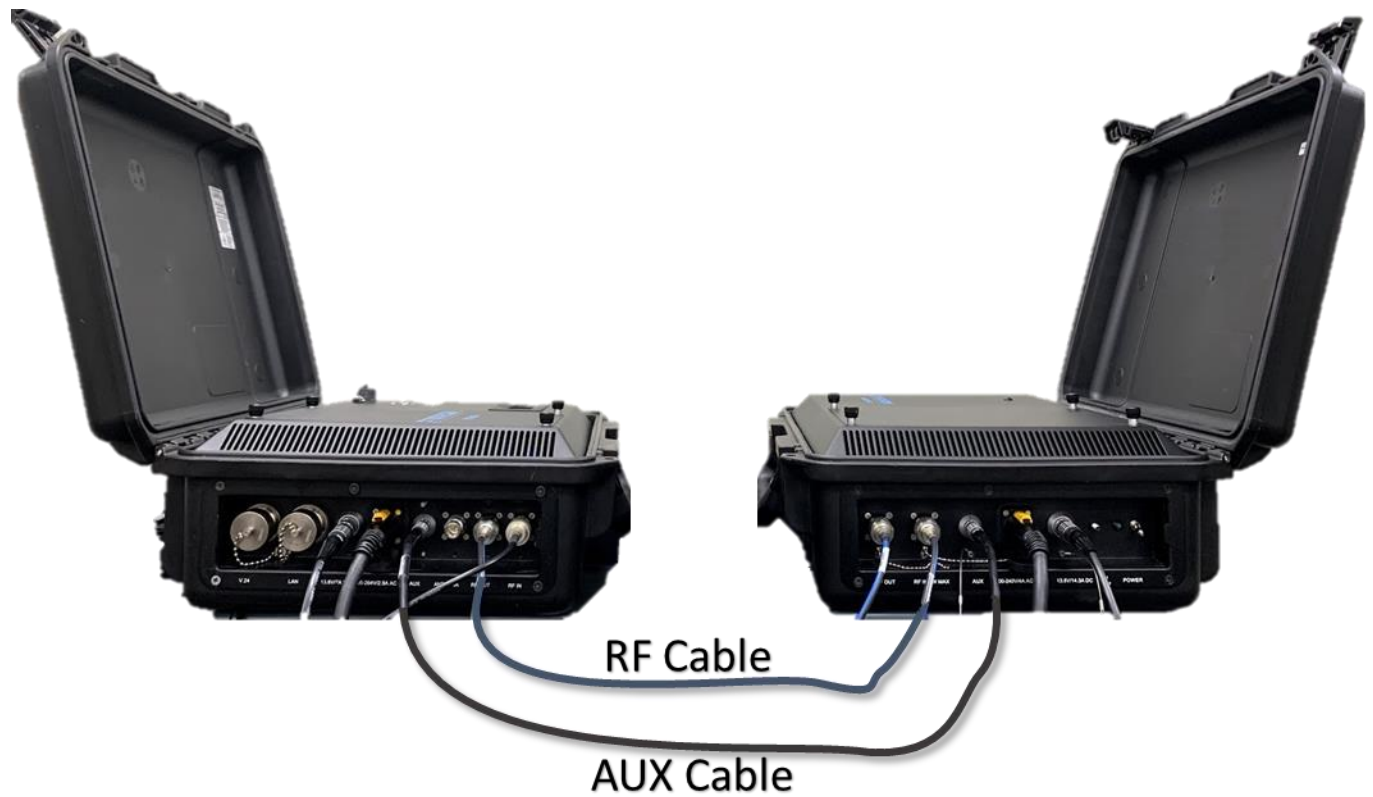**Figure 25 - Booster Pack External Connectors' and LED Specifications**

Figure 26 - Booster Pack Connected to PDR8000

Configuration 1 - Simplex with Booster Pack Configuration

Step 1 – Preparing PDR8000 for Booster Pack

Use this configuration when PDR8000 does not have a duplexer and is intended to be used in a Simplex operation with a single antenna. The following steps shall be followed in sequence and is depicted in Figure 27.

1. On PDR8000, open the top panel cover as shown in Figure 6 - Removable Top Panel and Figure 7 - Top Panel Removed
2. Connect RF cable labelled TX to RF Cable Labelled ANT using a female-female adapter as shown in Figure 27
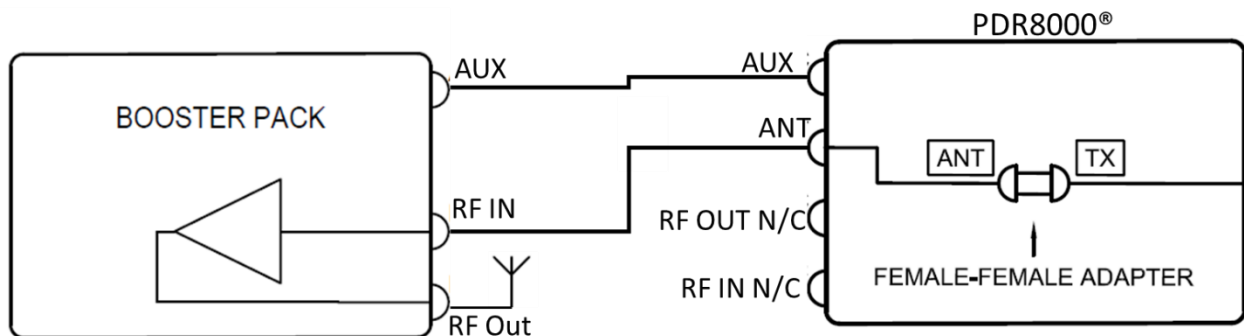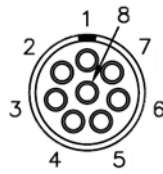3. Close the top panel cover

Figure 27 – PDR8000 Simplex with Booster Pack Configuration

Step 2 – Connect the AUX Cable

The AUX cable is used for PDR8000 to detect and communicate with the Booster Pack. Depending on the revision of PDR8000, the AUX connector on the side panel may have either a 6-PIN or 8-PIN connector as shown in Figure 28.

AUX 8-PIN Connectors
PDR8000® R4.0 or Newer
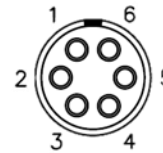
AUX 6-PIN Connectors
PDR8000® R3.0 or Older

Figure 28 – 8-PIN or 6-PIN PDR8000 AUX Connector

1. Connect the AUX cable to PDR8000 using the appropriate connector option (either 6-PIN or 8-PIN)
2. Connect the other end of the AUX cable to Booster Pack AUX connector (8-PIN)

Step 3 – Connect the External RF Cables and Antenna

The simplex configuration requires one external RF cable and an antenna. This cable and the antenna shall be connected as follows (refer to Figure 27 for wiring diagram)

1. Connect an RF cable to ANT port on the side panel of PDR8000 and the other end of it to RF IN connector on the Booster Pack's side panel
2. Connect the antenna to the RF OUT connector on the Booster Pack's side panel

Step 4 – Connect the Power Cables

Once the AUX, RF cables and antenna are connected, the power cables (AC or DC) shall be connected to PDR8000 and Booster Pack. Ensure that the power cables to the units are connected securely before plugging the cables to wall outlet or DC power supply.

1. Connect the DC or AC power cable to PDR8000
2. Power up the PDR8000
3. Connect the DC or AC power cable to Booster Pack
4. Power up the Booster Pack after the PDR8000 has been powered up

Configuration 2 – PDR8000 Internal Duplexer with Booster Pack Configuration

Step 1 – Preparing PDR8000 for Booster Pack

Use this configuration when PDR8000 has an internal duplexer and is intended to be used in a full duplex operation with a single antenna. The following steps shall be followed in sequence and is depicted in Figure 29.

1. On PDR8000, open the top panel cover as shown in Figure 6 - Removable Top Panel and Figure 7 - Top Panel Removed
2. Connect RF cable labelled RX to the RX connector of the duplexer
3. Connect the RF cable labelled RF IN to the TX connector of the duplexer
4. Connect RF cable labelled TX to the cable labelled RF OUT
5. Connect the RF cable labelled ANT to the ANT connector of the duplexer
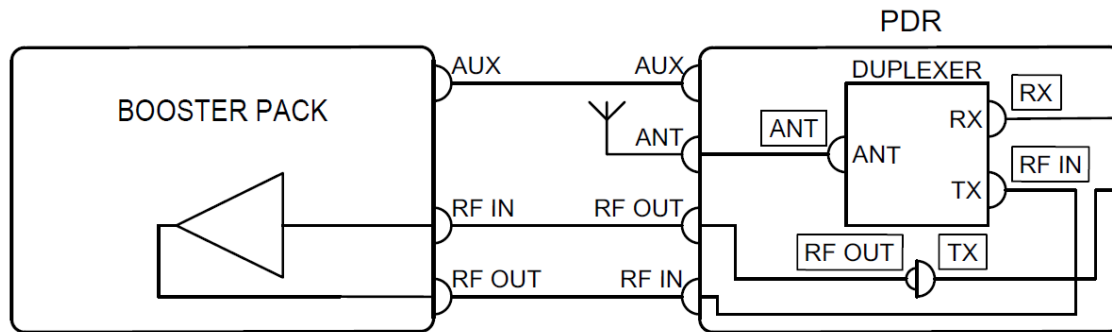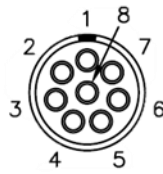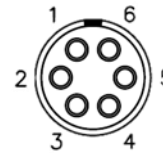6. Close the top panel cover

Figure 29 - Internal Duplexer and Booster Pack Hardware Configuration

Step 2 – Connect the AUX Cable

The AUX cable is used for PDR8000 to detect and communicate with the Booster Pack. Depending on the revision of PDR8000, the AUX connector on the side panel may have either a 6-PIN or 8-PIN connector as shown in Figure 28.

Figure 30 – 8-PIN or 6-PIN PDR8000 AUX Connector

1. Connect the AUX cable to PDR8000 using the appropriate connector option (either 6-PIN or 8-PIN)
2. Connect the other end of the AUX cable to Booster Pack AUX connector (8-PIN)

Step 3 – Connect the External RF Cables and Antenna

This configuration requires two external RF cables and an antenna. These cables and antenna shall be connected as follows (refer to Figure 29 for wiring diagram)

1. Connect an RF cable to RF OUT port on the side panel of PDR8000 and the other end of it to RF IN connector on the Booster Pack's side panel
2. Connect an RF cable to RF IN port on the side panel of PDR8000 and the other end of it to RF OUT connector on the Booster Pack's side panel
3. Connect the antenna to the ANT connector on the PDR8000's side panel

Step 4 – Connect the Power Cables

Once the AUX, RF cables and antenna are connected, the power cables (AC or DC) shall be connected to PDR8000 and Booster Pack. Ensure that the power cables to the units are connected securely before plugging the cables to wall outlet or DC power supply.

1. Connect the DC or AC power cable to PDR8000
2. Power up the PDR8000
3. Connect the DC or AC power cable to Booster Pack
4. Power up the Booster Pack after the PDR8000 has been powered up

Configuration 3 – PDR8000 External Duplexer with Booster Pack Configuration

Step 1 – Preparing PDR8000 for Booster Pack

Use this configuration when PDR8000 has an external duplexer and is intended to be used in a full duplex operation with a single antenna. The following steps shall be followed in sequence and is depicted in Figure 31.

1. On PDR8000, open the top panel cover as shown in Figure 6 - Removable Top Panel and Figure 7 - Top Panel Removed
2. Connect RF cable labelled TX to the cable labelled RF OUT
3. Connect RF cable labelled RX to the cable labelled RF IN using a female-female adapter
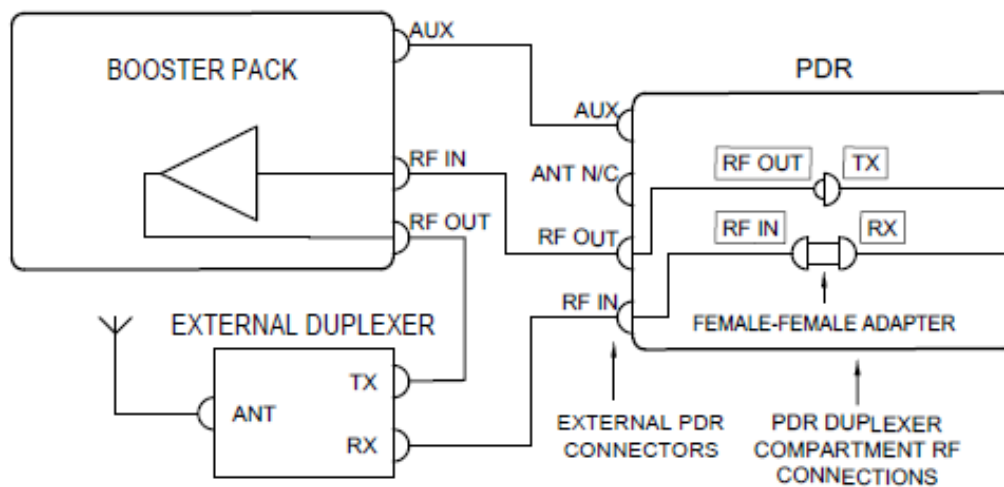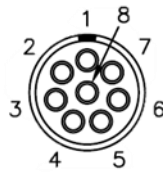4. Close the top panel cover

Figure 31 - External Duplexer and Booster Pack Hardware Configuration

Step 2 – Connect the AUX Cable

The AUX cable is used for PDR8000 to detect and communicate with the Booster Pack. Depending on the revision of PDR8000, the AUX connector on the side panel may have either a 6-PIN or 8-PIN connector as shown in Figure 28.

AUX 8-PIN Connectors
PDR8000® R4.0 or Newer
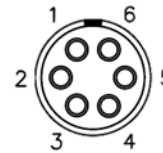
AUX 6-PIN Connectors
PDR8000® R3.0 or Older

Figure 32 – 8-PIN or 6-PIN PDR8000 AUX Connector

1. Connect the AUX cable to PDR8000 using the appropriate connector option (either 6-PIN or 8-PIN)
2. Connect the other end of the AUX cable to Booster Pack AUX connector (8-PIN)

Step 3 – Connect the External RF Cables and Antenna

This configuration requires two external RF cables and an antenna. These cables and antenna shall be connected as follows (refer to Figure 31 for wiring diagram)

1. Connect an RF cable to RF OUT port on the side panel of PDR8000 and the other end of it to RF IN connector on the Booster Pack's side panel
2. Connect an RF cable to RF IN port on the side panel of PDR8000 and the other end of it to RX connector on the external duplexer
3. Connect an RF cable to the RF OUT of the Booster Pack's side panel and the other end of it to the TX connector on the external duplexer
4. Connect the antenna to the ANT connector on the external duplexer

Step 4 – Connect the Power Cables

Once the AUX, RF cables and antenna are connected, the power cables (AC or DC) shall be connected to PDR8000 and Booster Pack. Ensure that the power cables to the units are connected securely before plugging the cables to wall outlet or DC power supply.

1. Connect the DC or AC power cable to PDR8000
2. Power up the PDR8000
3. Connect the DC or AC power cable to Booster Pack
4. Power up the Booster Pack after the PDR8000 has been powered up

Appendix A - V.24 Cable

The V.24 cable may be created at a custom length for each customer configuration. It consists of an RJ-45 connector used with CAT5e (minimum) cable that provides the interface to the following categories of devices.

1) A Digital Interface Unit (DIU), Conventional Channel Gateway (CCGW) or Voting Comparator as per the port pin-outs below.

Signal Name	Pin Num	Type
RCLK	1	Input
RX Line Det	2	Input
TCLK	3	Input/Output
GND	4	GND
Data RX	5	Input
Data TX	6	Output
CTS	7	Input
RTS	8	Output

Figure 33 – PDR8000 V.24 PinOut specification to connect DIU or CCGW

2) Another PDR/Repeater as per the cross over connection shown in the pin-outs below.

Signal Name	Pin Num	Type
RCLK	1	Input
Rx Line Det	2	Input
TCLK	3	Input/Output
GND	4	GND
Data Rx	5	Input
Data Tx	6	Output
CTS	7	Input
RTS	8	Output

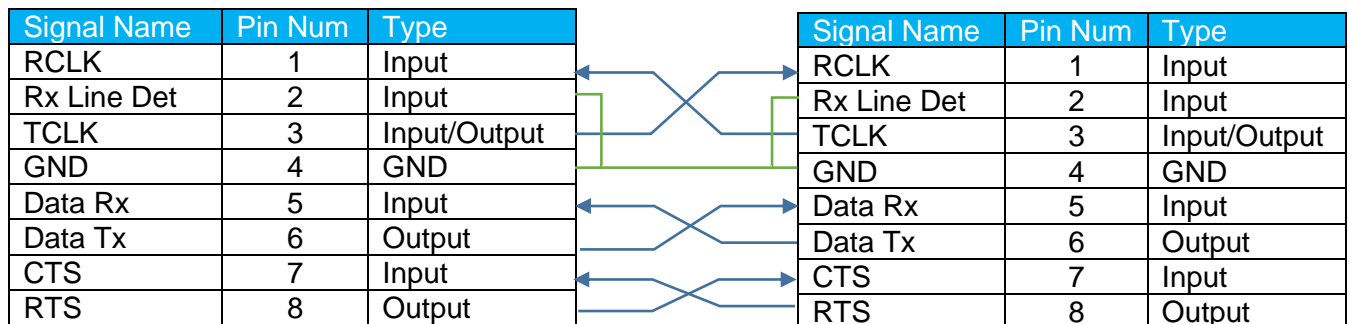| Signal Name	Pin Num	Type
RCLK	1	Input
Rx Line Det	2	Input
TCLK	3	Input/Output
GND	4	GND
Data Rx	5	Input
Data Tx	6	Output
CTS	7	Input
RTS	8	Output

Figure 34 - V.24 Connection between two PDR8000s

To ensure connection remains weatherproof, it is recommended to use RJ-45 connector CONEC 17-103274.

Appendix B - DC Cable

The DC cable shipped with the PDR8000 has a connector on one end and flying leads on the other. To complete the cable, connect the black wire to ground and the red wire to +13.8V.

Removable Cap

Figure 35 - DC Power Cable

Appendix C – LIST OF ACRONYMS

ACRONYMS	DESCRIPTION
AUX	Auxiliary
CTS	Clear to Send
DC	Direct Current
DFSI	Digital Fixed Station Interface
DST	Daylight Saving Time
GND	Ground
kHz	Kilohertz A unit of frequency measurement
MHz	Megahertz A unit of frequency measurement
PC	Personal Computer or Laptop
PDR / PDR8000®	Portable Digital Repeater. An awesome product made proudly by Futurecom.
RCLK	Receive Clock
RF	Radio Frequency
RSSI	Received Signal Strength Indicator
RTS	Request to Send
Rx / RX	Receiver
TCLK	Transmit Clock
Tx / TX	Transmitter
USB	Universal Serial Bus Used for connecting the PDR to the programming PC.