

PORTABLE TACTICAL REPEATER PDR-3500

This repeater weights 46 lbs.

THE PDR-3500 PORTABLE REPEATER KIT CONTAINS THE FOLLOWING COMPONENTS:

- Aircraft Power Cord
- 12 VDC Power Cord
- 120Vac Power Cord
- ¼ Wave Whip antenna and Magnetic Mount
- Adapter N-Male to UHF (PL259)
- Aircraft Antenna Cable Jumper 3' (N to BNC)

Use care when repacking the kit to avoid damage to the duplexer connections.

For Airborne Operations:

1. Contact the IC or the mission CUL to determine operating channel and tasking.
2. Before deploying on the mission:
 - a. Select the proper channel with the channel switch. **Channel 1 through 6 ONLY.**
 - b. Connect the aircraft antenna cable jumper to repeater and the BNC connector on the right armrest of the aircraft.
 - c. Connect the aircraft power cord to the power connector on the right armrest of the aircraft.
 - d. Connect the power cord to the repeater.
 - e. Make sure the Auxiliary Power switch on the aircraft is turned on.
 - f. A light should illuminate above the PTT/Reset switch. The repeater will then go through a self test that will take about 45 seconds. When the repeater is ready, the "Station On" light will be solid green. The AUX light will continue to flash.
3. Select the proper channel on the aircraft radio. Key the radio to watch for the light on the repeater to turn red. Release the mic, you should hear a short squelch tail.
4. Turn the aircraft Auxiliary Power switch off.
5. Make sure the repeater is secured with seatbelt and/or straps.
6. After take off, or when directed by the IC or CUL turn the Auxiliary Power switch on to activate the repeater.
7. Turn the repeater off before approach to landing.

For Ground Operations:

1. Contact the IC or the mission CUL to determine operating channel and tasking.
2. Select the proper channel with the channel switch.
3. Assemble the magnetic mount and antenna element.
4. Connect the antenna coax to the repeater and place the antenna as far as possible from the repeater on a metal surface.
5. Connect to power:
 - a. If using battery power, attach the cable to the battery first, then the repeater.
 - b. If using AC, Connect to the repeater first, then the outlet.
 - c. A light should illuminate above the PTT/Reset switch. The repeater will then go through a self test that will take about 45 seconds. When the repeater is ready, the "Station On" light will be solid green. The AUX light will continue to flash.
6. The repeater should now be operational. Avoid an area of 5 feet around the antenna.

If you have any problems, contact the CUL, IC, or Wing DC as soon as possible.

AIRBORNE USE CHANNELS
(10 WATTS)

GROUND USE CHANNELS
(25 WATTS)

CH 1	R-63	TAC-5	FREQ PAIR "A"	CH 7	R-63	TAC-5	FREQ PAIR "A"
CH 2	R-64	TAC-6	FREQ PAIR "B"	CH 8	R-64	TAC-6	FREQ PAIR "B"
CH 3	R-67	TAC-1	FREQ PAIR "C"	CH 9	R-67	TAC-1	FREQ PAIR "C"
CH 4	R-68	TAC-2	FREQ PAIR "C"	CH 10	R-68	TAC-2	FREQ PAIR "C"
CH 5	R-69	TAC-3	FREQ PAIR "C"	CH 11	R-69	TAC-3	FREQ PAIR "C"
CH 6	R-70	TAC-4	FREQ PAIR "C"	CH 12	R-70	TAC-4	FREQ PAIR "C"

NOTE: All channels are configured Mixed-Mode: Analog and Digital
Frequency Pair "A" and "B" are the same as the fixed ground based repeaters (R01-R64)
Frequency Pair "C" is a separate pair and is not the same as ground based repeaters



Tactical repeater for Ground and Airborne use

Ground

1. Replace fixed repeater
2. Use at a Mission or Activity Base
3. Deployable for forward Ground Team support

Air

1. Airborne operations
2. Wide area radio nets

Magnetic
mount
antenna
whip

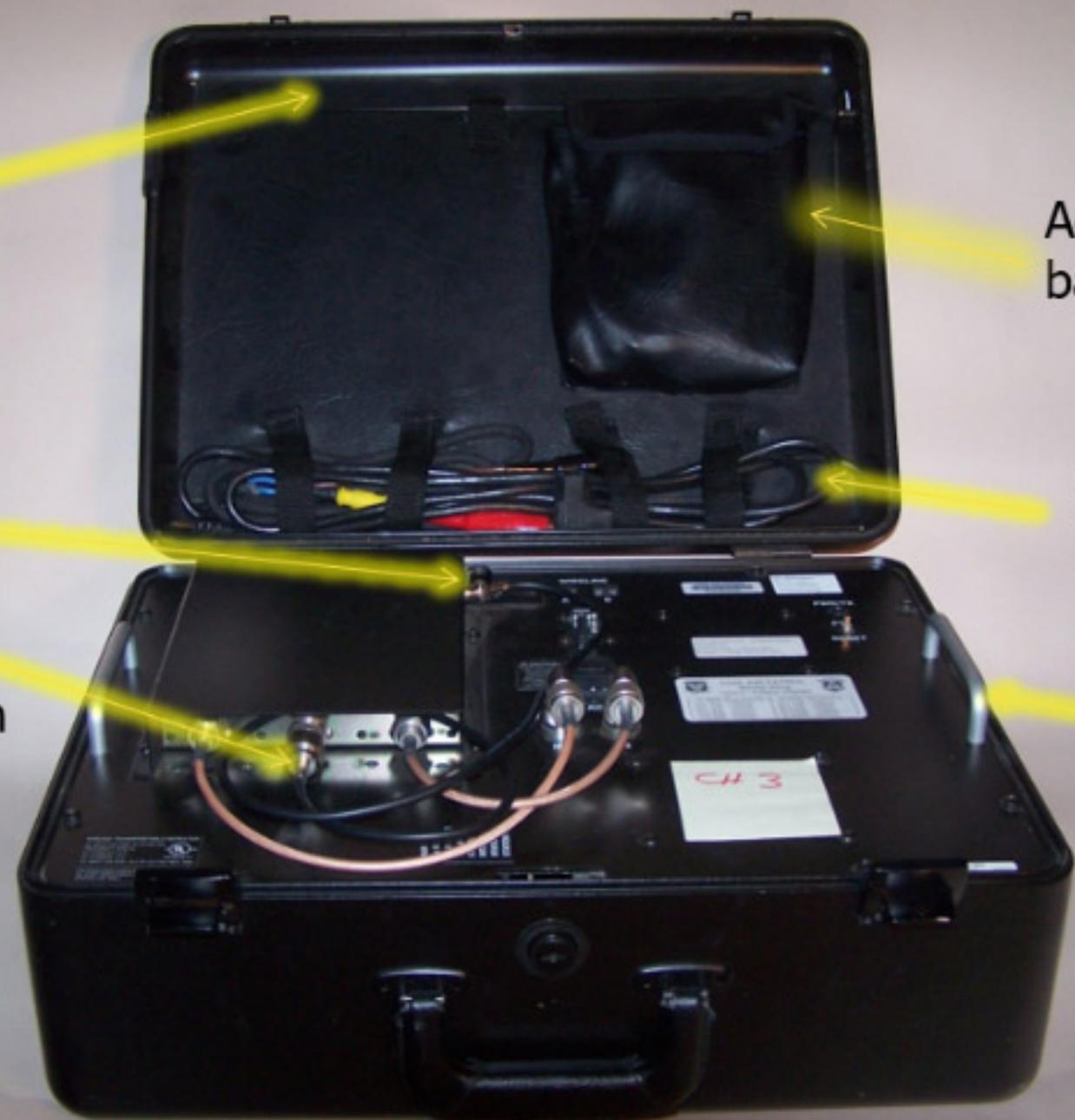
Channel
Select
switch

Antenna
Connection

Accessory
bag

Power
Cables

Seatbelt
retainer





Included accessories

Aircraft antenna cable



12v DC



Power Cables
Aircraft power



AC Power



Magnetic mount and coax



Various coax adapters
(These will vary by wing)



Keys



Cables required for aircraft installation

3ft coax with "N"
connector and
"BNC" connector



Power cable with "DC"
connector and 3-pin
Aircraft connector





Accessories needed for ground operation

Power Cable
"DC" or "AC"



Magnetic mount and
Whip



PL-259 to "N"
adapter





Differences between PL-259 and "N" connectors

PL-259 Male

"N" Male

"N"
Female

PL-259 Female





Please note, the included magnetic-mount and coax in this kit has a "PL-259" connector. A "PL-259" to "N" adapter is required.

If the adapter is omitted, the connector will still screw onto the repeater , but will destroy the "N" connector in the process





Repeater in air operation configuration



Weight in this configuration is 42 pounds, with lid and accessories 45 pounds



The tactical repeater is capable of 16 channels. CAP has programmed 12 channels into it. You will be told what channel to use during the sortie communications briefing.

The sticker on this Illinois repeater shows that channels 1 through 6 are designators R63, R64, R67 - R70 having 10 watts of power. That is the maximum permitted for air operations. See CAPR 100-1, 10.4.3. This sticker reflects the national channel plan for all tactical repeaters.

Channels 7 through 12 are designators R63, R64, R67 – R70 having 25 watts of power. These are for ground operations only.

R63 & R64 use the same frequency pairs as CAP fixed repeaters.





Air operations:

1. For planning purposes in air configuration without lid, etc, weight is 42 pounds.
2. Take the repeater, power and antenna cables for air ops.
3. Place repeater in back seat nearest the connections.
4. Secure repeater with seatbelt through the retainers.
5. Make connections for antenna and power
6. Activate the A/C Master , and the rear seat power.
7. Repeater should power up. Wait for the boot process to complete.
8. Should see steady green "Station on" LED & flashing AUX LED
9. Set to assigned channel (1 – 6)
10. Set the A/C radio to the correct channel (Low power may be used)
11. Make test call from A/C radio to another radio using repeater.
12. Power down.
13. Stow repeater lid and accessories in baggage compartment.
14. After start-up for sortie, remember to reactivate rear power switch.

The following pictures will show a typical aircraft installation:



This picture shows the seat belt receptacles in the rear seat. This aircraft is equipped with airbags on the seatbelts. The short pair activate the seatbelt airbag. Do not use these. Use the longer pair.



This shows the repeater in place in rear seat. It was found that twisting the seatbelt, inverting the clip, allowed for easy passage through the seatbelt retainer on the repeater.

This orientation allows crew easy in-flight access to channel selector if necessary.

NOTE: The repeater must be secured with seatbelt for safety reasons.



After securing repeater, make connections for both antenna and power. Jacks are located on arm rest and should have caps on them.

This is the connector configuration on most newer aircraft. Some older aircraft may be configured differently. Check with the Aircraft POC or Wing Maintenance officer.



This shows the "Aft Accessory Outlet" switch. This must be on for repeater to function.

Observer must remember to reactivate this after engine start



(This switch style circuit breaker and the circuit breaker panel is conveniently placed under the VHF-FM radio in this aircraft. Not all breakers are in the same location. Take time to become familiar with your particular aircraft.)

"Aft Accessory Outlet" switch



After making antenna and power connections, activating the A/C Master and the "Aft Accessory Outlet" switch, The repeater should start it's boot-up process. When complete, a steady green "Station on" LED should be lit.



Ground Operations

There are many uses for the tactical repeater in ground operations.

Airshows

Provides excellent coverage over a large area.

Encampments

Summer Encampment

Spring Encampment

Missions

Exercises

Forward Operations

Relay teams

Replacement for a fixed repeater



AC or DC operation (Commercial power, Generator, or Battery)

Can be deployed anywhere extended coverage is needed with approval of Wing DC or higher . (Ref CAPR 100-1 8.4.3)

Any VHF antenna may be used

Included magnetic mount for rapid vehicle deployment

Mast mounted base station type antenna

Note: Antennas may not be indoors at any time. Be aware of RF exposure limitations.

Requires a coax with type N" connector, or Use of a PL-259 to "N" adapter..

May be use with lid closed to protect from elements.



Rules

Rules dealing with tac-repeater use can be found in CAPR 100-1 Paragraph 8.4.3

Tactical repeaters may be used in temporary fixed, mobile, or airborne operations. Use of such systems is limited to operational missions (including training), emergencies, temporary fixed site restoration, scheduled tests, and other short term activities. **Approval of the wing director of communications or higher is required before each use, except emergency use and during authorized missions.**



Safety Considerations

With every CAP activity, safety is always the number one priority.

When using the tactical repeater there are several safety considerations:

1. When placed in an aircraft, the repeater must be secured with a seatbelt.
2. Use exercises to verify the repeater does not interfere with any other equipment in the aircraft (CAP and FAA radios, navigation aids, etc.)
3. When used on the ground, it is recommended to avoid placing the magnetic mount antenna indoors. The power output of the repeater exceeds the maximum power allowed for use indoors.
4. When using base type antennas with masts, always employ proper safety equipment: gloves, safety glasses, hardhats, etc.
5. Always verify the repeater is not powered up when anyone is near, or working on the antenna because the transmitter could be keyed up at any time with out the local operator's knowledge.



One More Time.....

- **Caution:**
- You will cause damage if you fail to use the PL-259 to N adapter provided for ground operations. This is **required**. Without it, it will seem to work but it will cause damage.



For more on tactical repeaters

- See CAPR 100-1

– 8.4.3

– 8.4.3.1

– 8.4.3.2

– 8.4.3.3

– 8.4.3.4

