

Manpack Installations

When combined with a battery pack, the PRC-4090 easily adapts to suit man-pack configurations. The Control Handset can be easily mounted to molle or webbing with a molle attachment.

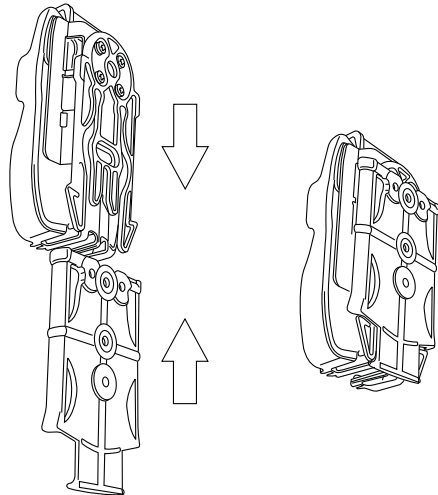
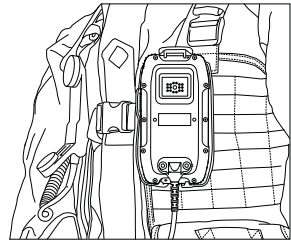
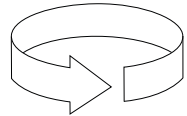
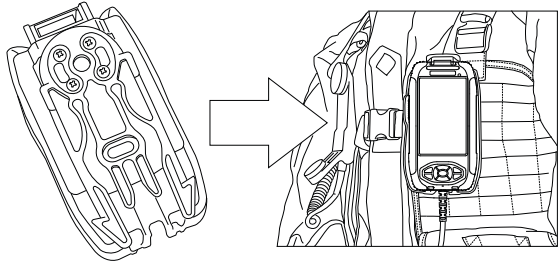


Control Handset Mounting

The PRC-4090 Control Handset can easily be mounted to webbing or molle using the PRC-4090 Molle Attachment (P/N 4090-05-02).

The transceiver can be stored screen facing outwards or reversed so that the screen is protected.

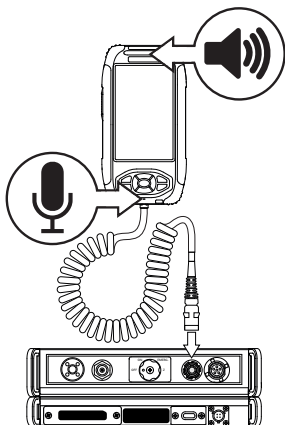
The Molle Attachment can also be used to attach to solid surfaces.



Audio Routing

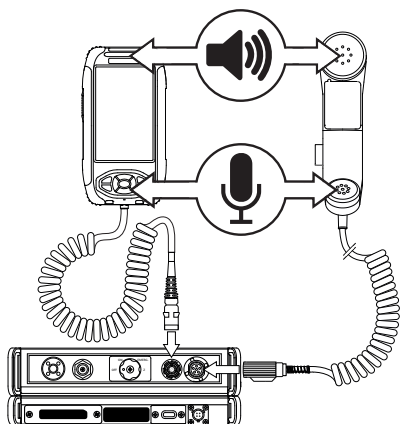
When in manpack configuration, all audio and microphone options are active as illustrated by the below images.

Volume for both the PRC-4090 Control Handset and the H250 handset are controlled by the PRC-4090 Control Handset.



Control Handset

- Control Handset mic and speaker are enabled
- Volume control via the Control Handset



Control Handset and H250

- Control Handset mic and speaker are enabled
- H250 mic and speaker are enabled
- Volume control via the Control Handset

Battery Pack

The Barrett PRC-4090 Transceiver can be powered in multiple ways. For man-pack use, it has been designed to use the Barrett PRC-4090 16Ah Battery pack or external military battery. The PRC-4090 Battery Pack has an in-built charger/battery management system. This battery pack can be charged in multiple ways as outlined over the following pages.

With the battery pack fitted, the transceiver can be operated and the battery pack charged simultaneously when a DC input of between 10 V DC and 60 V DC is supplied to the unit.

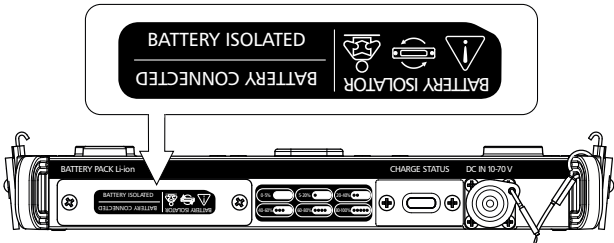
Additionally, the PRC-4090 battery pack can be charged connected or disconnected to the manpack using the AC/DC input universal power adaptor unit or directly from a 12 or 24 V tactical solar panel (MPPT charger fitted for optimised current input), or BB series military battery.



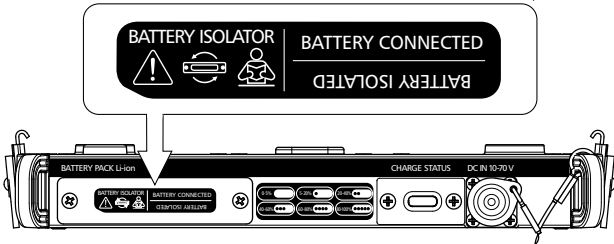
Removing the battery isolator

The 16Ah battery pack (P/N 4090-03-05/BCA409005) is, by default, shipped with the battery cells isolated (see below). To use the battery, the cells must be connected. Follow the steps below to switch the isolator from “Battery Isolated” to “Battery Connected”.

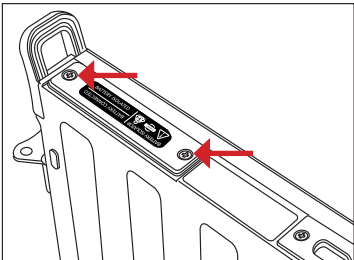
Isolated



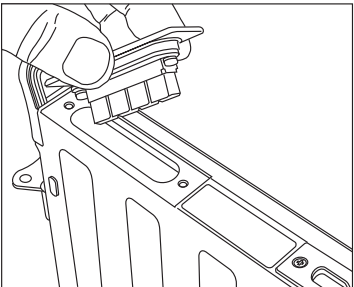
Connected



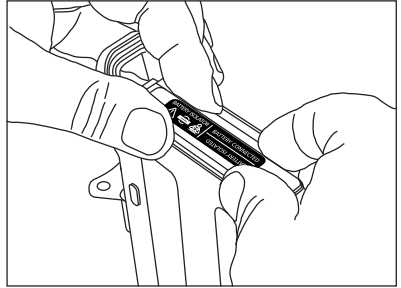
1. Ensuring that nothing is connected to the battery, use a Philips head screw driver to remove the screws securing the isolator in place, as shown opposite.



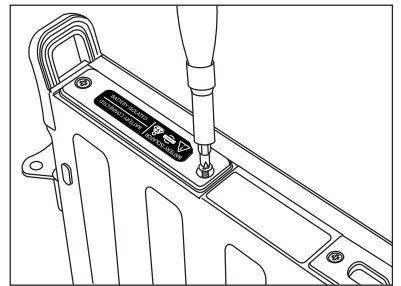
2. Remove the isolator.



3. Turn the isolator 180° and gently replace the isolator evenly in the socket, ensuring that "Battery Connected" is now at the top of the isolator.

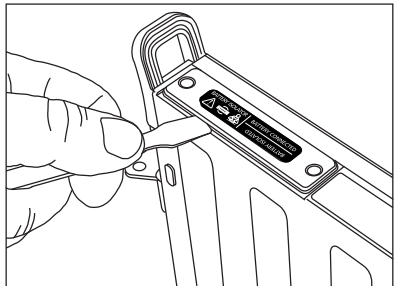


4. Return the screws to their original positions. The e-ink display will turn black.
5. Connect the charger to the battery to begin use.



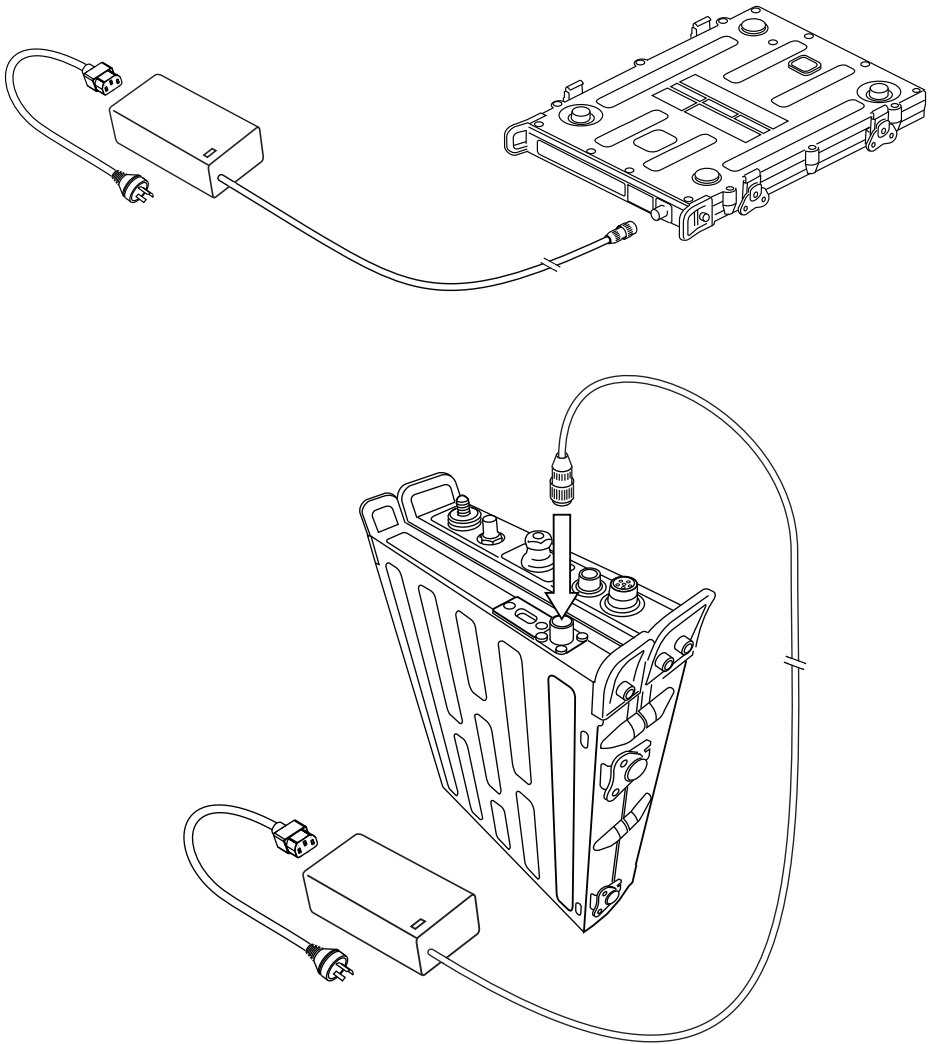
Re-isolating the battery

1. Ensuring that nothing is connected to the battery, remove the screws securing the isolator with a Philips head screw driver.
2. Using an appropriate tool, gently and evenly prise the isolator from the socket (see opposite).
3. Turn the isolator 180° and gently replace the isolator evenly in the socket, ensuring that "Battery Isolated" is now at the top of the isolator.
4. Return the screws to their original positions.

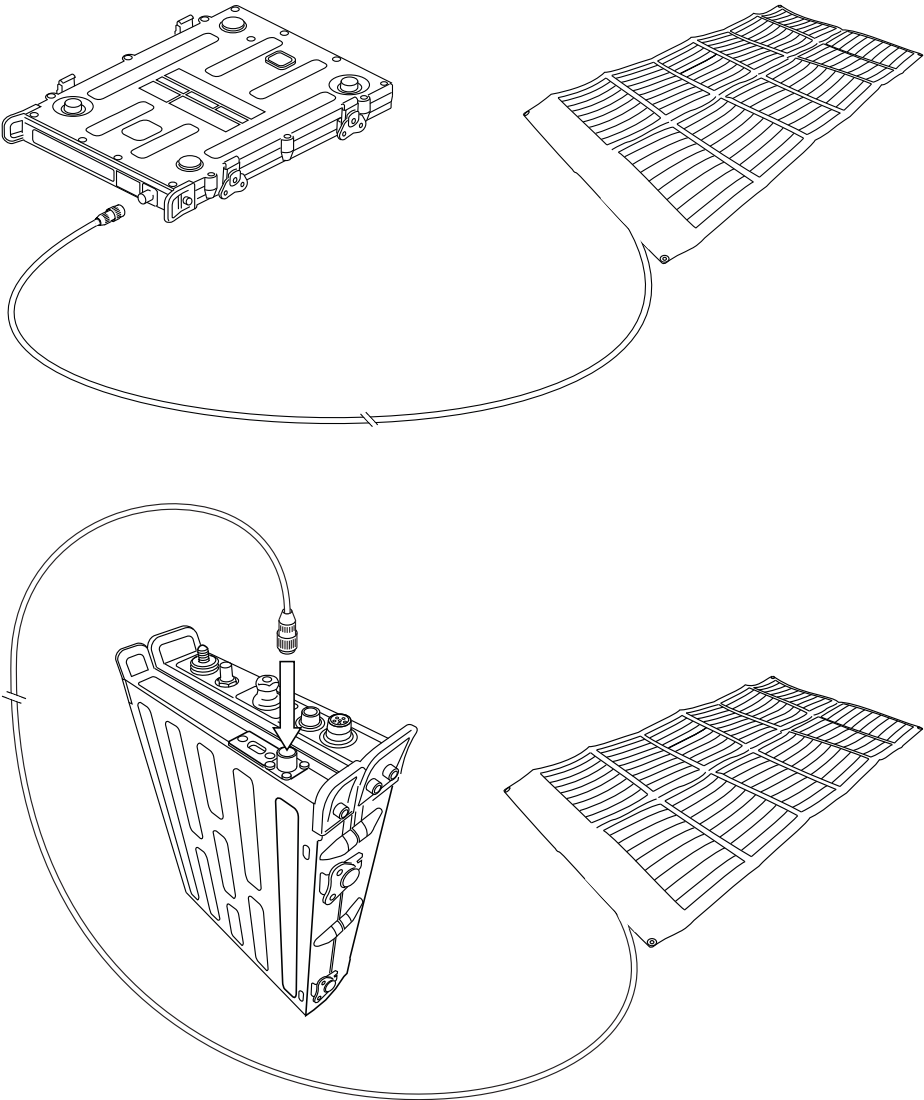


AC/DC Input Universal Power Adaptor Unit P/N 2090-03-01

For operation from a mains voltage between 100-254 V AC sources:

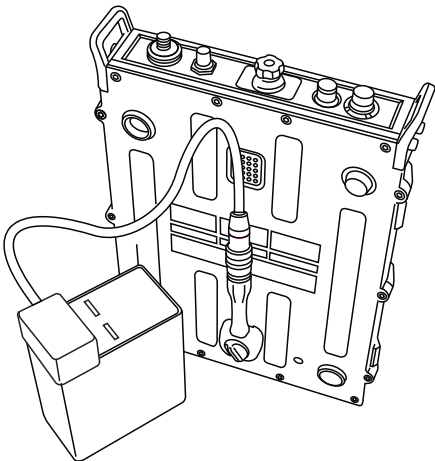


Tactical Solar Panel P/N 2090-03-02 or 03

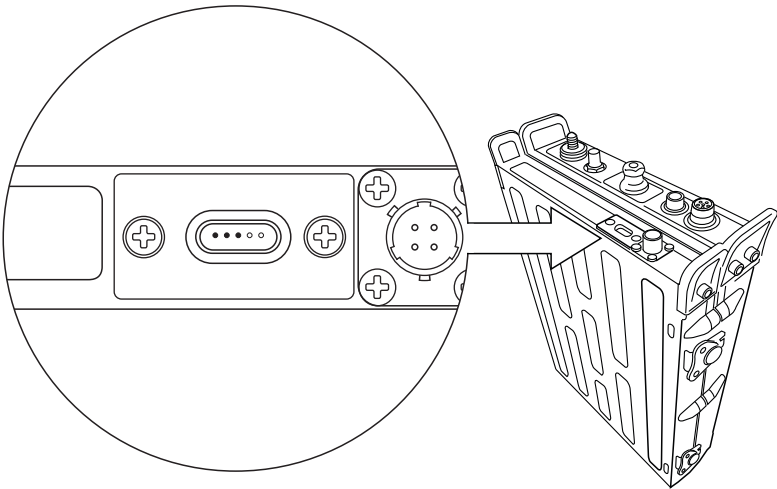


Military battery

The PRC-4090 can interface with off-the-shelf Military standard batteries such as BB series batteries. To interface with such batteries, the adaptor and interface cable are required.



Battery Charge Indicator of the 4090



The e-ink display of the PRC-4090 Battery Pack displays five dots indicating battery charge levels:

	Zero dots	<5%
	Solid 1 black dots	5%-20%
	Solid 2 black dots	20%-40%
	Solid 3 black dots	40%-60%
	Solid 4 black dots	60%-80%
	Solid 5 black dots	80%-100%

When charging the 4090 Battery Pack, the LED indication will animate.

5 running dots: Filling up 0 - 20% charge

1 solid dot and 4 running dots: 20% - 40% charge

2 solid dots and 3 running dots: 40% - 60% charge

3 solid dots and 2 running dots: 60% - 80% charge

4 solid dots and 1 dot blinking: 80% - 95% charge

5 dots: charge complete

The Control Handset display will also display the following icon when charging:



Tactical Antenna Options

The PRC-4090 manpack can be used with the 10 metre throw over long-wire provided or the optional 3 metre collapsible whip.

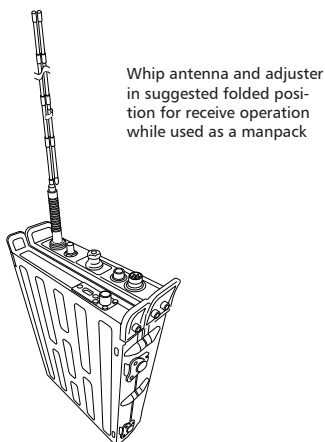
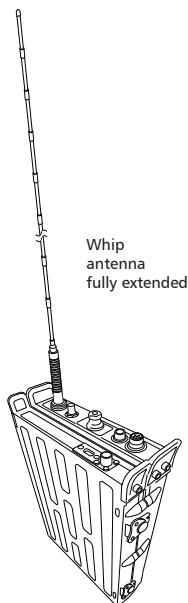
Note: Either the whip or the long-wire can be used but not both together.

Collapsible Whip Antenna (P/N 4090-02-07)

The gooseneck is fitted to the whip antenna stud and the whip to the gooseneck by bayonet fitting. The whip antenna should then be unfolded to its maximum height. If using the Barrett manpack while walking in the backpack configuration it is suggested that while in receive standby mode the collapsible antenna be only extended to half height and secured using the Velcro tab. When a call is received extend the antenna to full height before transmission.

When using an un-tuned antenna such as the whip or the long-wire the selection "Antenna Type" (see page 24) in the standard menu should be used to enable the automatic tuner i.e. select "Whip/Long-wire" operation. When this is selected the in-built tuner automatically tunes the whip or long-wire whenever the unit transmits after a channel change.

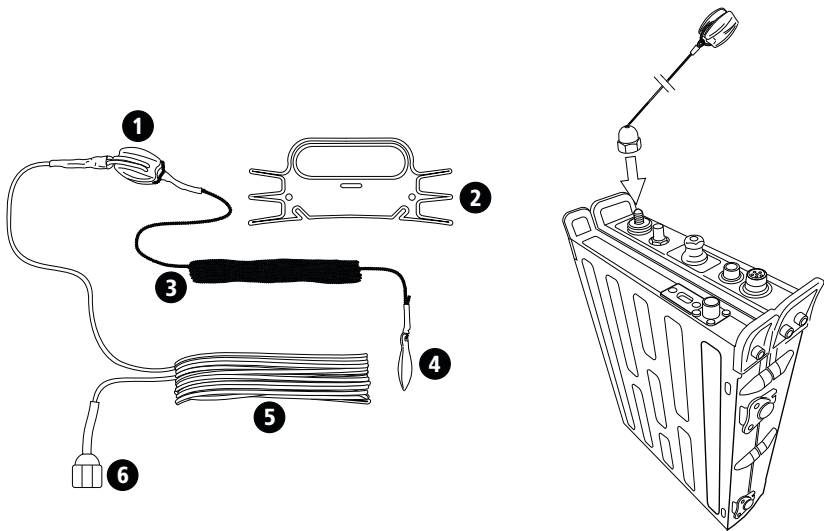
Note: Do not use the whip antenna near metallic structures. This can produce high voltages within tuner and may cause damage.



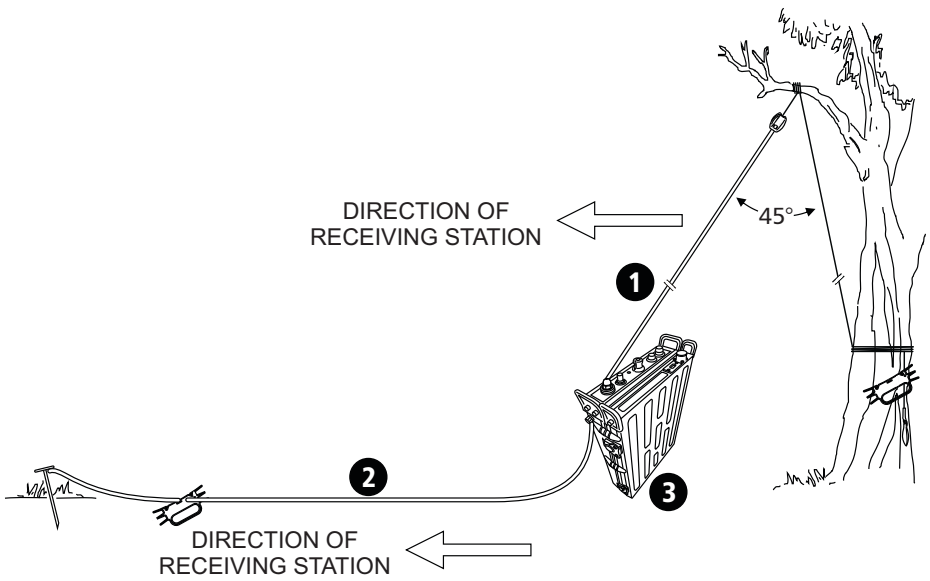
Throw Over Long-wire Antenna (P/N 4090-02-06)

The long-wire antenna should be unfurled and the end away from the man-pack Transceiver should be attached to any structure available and as high as possible.

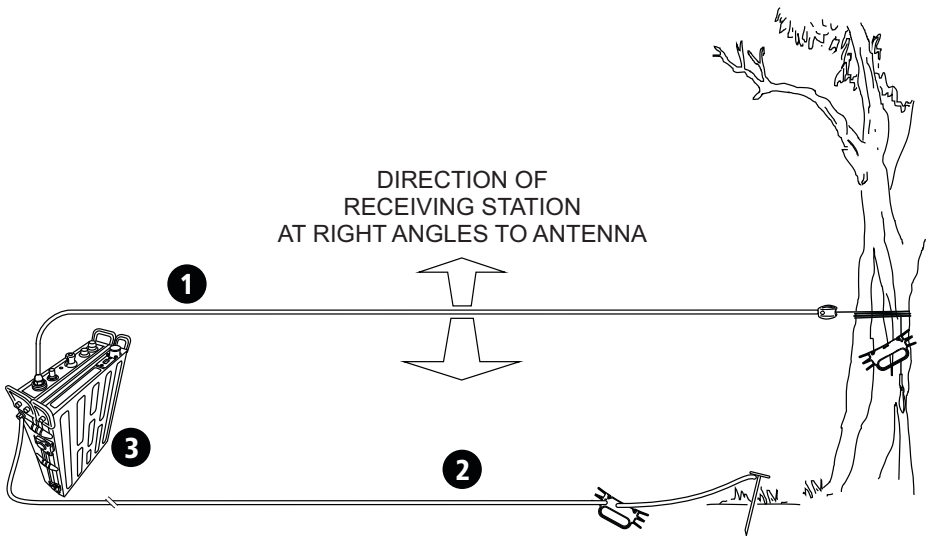
When using an un-tuned antenna such as the whip or the long-wire the selection "Antenna Type" (see page 24) in the standard menu should be used to enable the automatic tuner i.e. select "Whip/Long-wire" operation. When this is selected the in-built tuner automatically tunes the whip or long-wire whenever the unit transmits after a channel change.



- 1 Balun
- 2 Spool
- 3 Cord
- 4 Weight
- 5 Antenna
- 6 Coaxial connector



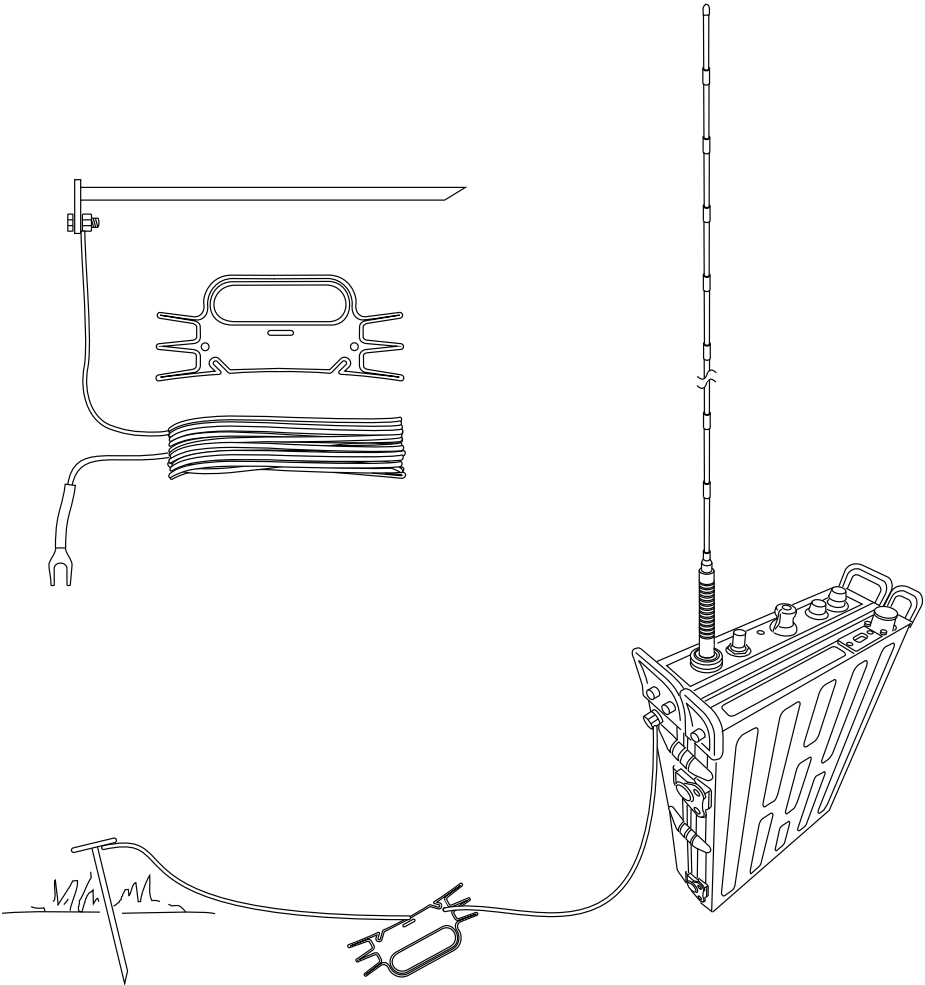
- ① Antenna
- ② Earth (ground)
- ③ PRC-4090 Transceiver (P/N 4090-00-01)



- 1 Antenna
- 2 Earth (ground)
- 3 PRC-4090 Transceiver (P/N 4090-00-01)

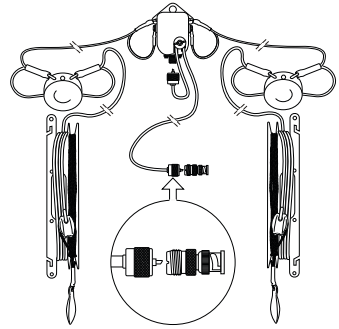
Single-wire Counterpoise (P/N 4090-02-09)

When using either a whip or the long-wire antenna use of the counterpoise supplied is recommended for better efficiency. This is connected to the PRC-4090 via the ground post.



Tactical Broadband Dipole Antenna (2090-02-03)

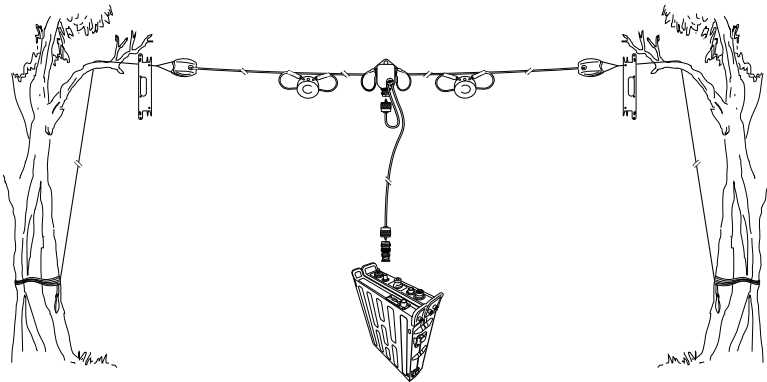
The Tactical Broadband Dipole Antenna is a dipole antenna with loading to allow broadband operation. For operation, each side of the antenna is unwound to its full length. Throwing cords are provided that can be used to elevate the antenna or tie it to ground for an inverted V configuration. The antenna will handle continuous data and CW transmission with a Barrett 30 W manpack transceiver. Only low duty cycle voice operation is supported for operation with 100 W transmitters. The antenna can be used in a number of configurations, depending on structures available for elevation.



Tactical Broadband Dipole Antenna Configurations

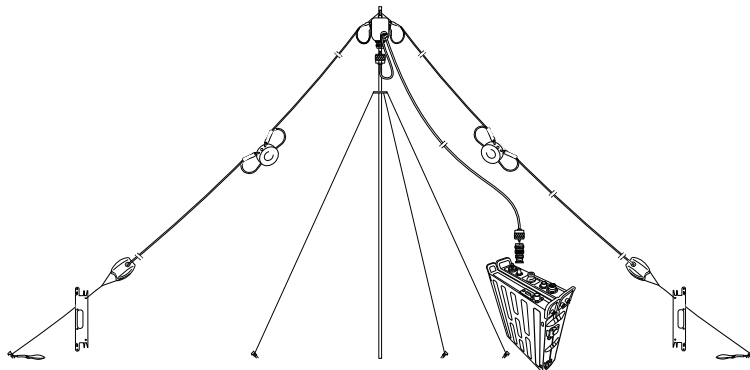
Horizontal Dipole

The horizontal dipole has maximum gain on the broadsides of the antenna and reduced gain along the axis. Height above ground affects radiation angle. Lower heights give higher angle radiation, better for NVIS (short distance). Higher heights give lower radiation angle, better for long distance communication.



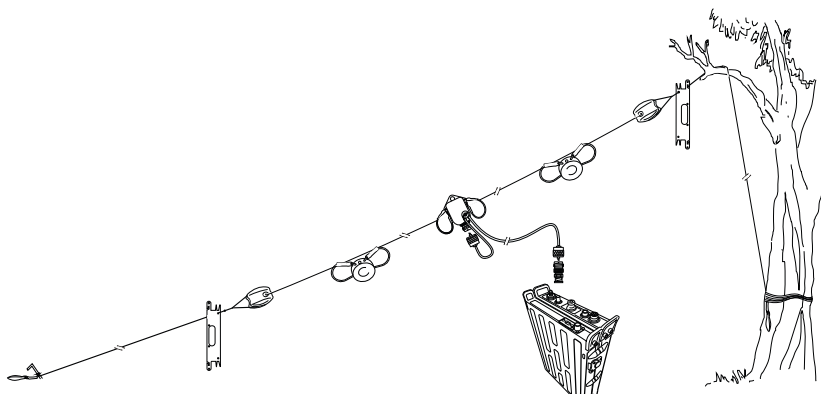
Inverted V

The inverted-V has a more omni-directional pattern than the Horizontal Dipole, with lower maximum gain. The ends of the antenna should be at least 0.5 m above ground. Suitable mainly for NVIS and medium distance.



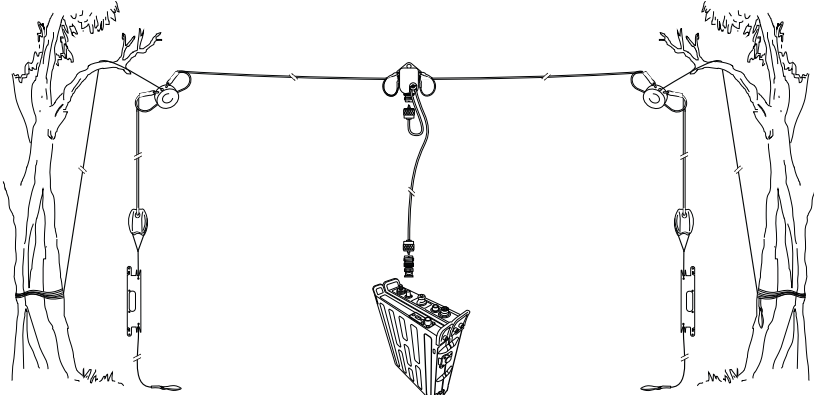
Sloping Dipole

Radiation with the Sloping Dipole becomes more directional, with increased gain in the direction of the lower end of the antenna, and reduced gain towards the higher end.



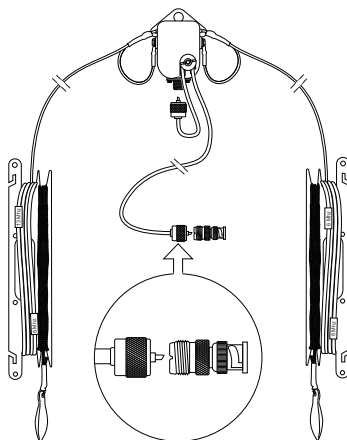
Inverted U

The inverted U has a radiation pattern between that of horizontal dipole and inverted V. For optimum performance, the radiating elements should be fully unwound, and should not touch the ground. Suitable for NVIS to medium distance. Longer distance performance will be enhanced by erecting the antenna at a height of 10 m or more.



Tactical Tuned Wire Dipole Antenna (2090-02-01)

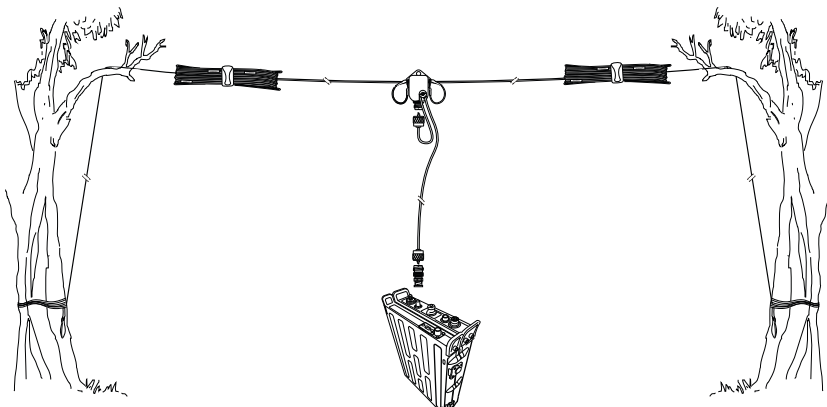
The Tactical Tuned Wire Dipole Antenna is a tuned antenna with frequency labels to indicate tuned lengths. For operation, each side of the antenna is unwound to the tuned length for the frequency required. For operation at a labelled frequency, the label should be level with the end of the winder as shown in the picture below. Lengths for intermediate frequencies should be estimated and tied off appropriately. The remaining wire remains on the winder. The throwing cord can then be used to elevate the antenna. The antenna will handle 100 W continuous data and CW transmission. The antenna can be used in a number of configurations, depending on structures available for elevation.



Tactical Tuned Wire Dipole Antenna Configurations

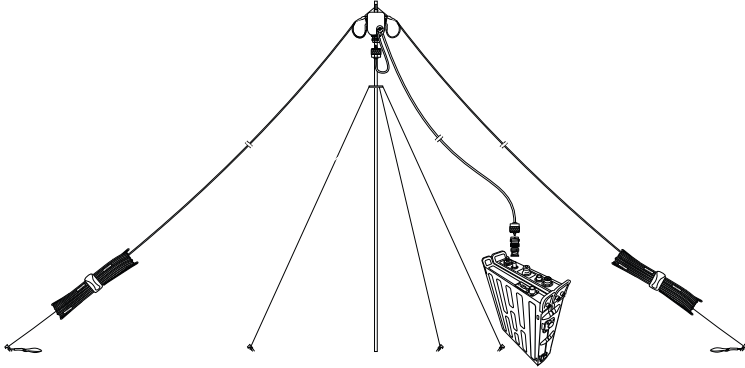
Horizontal Dipole

The horizontal dipole has maximum gain on the broadsides of the antenna, and reduced gain along the axis. Height above ground affects radiation angle. Lower heights give higher angle radiation, better for NVIS (short distance). Higher heights give lower radiation angle, better for long distance communication.



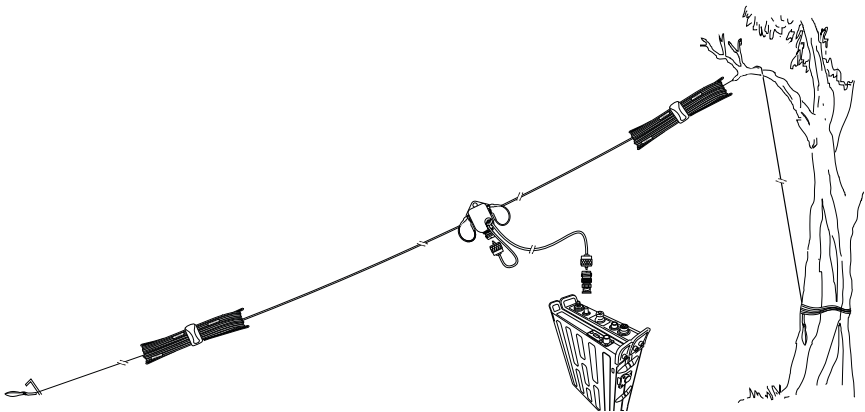
Inverted V

The inverted-V has a more omni-directional pattern than the Horizontal Dipole, with lower maximum gain. The ends of the antenna should be at least 1 m above ground. Suitable mainly for NVIS and medium distance.



Sloping Dipole

Radiation with the Sloping Dipole becomes somewhat asymmetrical, with increased gain in the direction of the lower end of the antenna, and reduced gain towards the higher end.



Single Ended

For rapid deployment, with reduced but still acceptable efficiency, the antenna can be operated single ended. In this configuration, one side of the antenna (labelled "antenna") is unwound to the desired frequency and tied to an elevated structure. The central balun should be located close to the ground, and the remaining side of the antenna ("earth") partly unwound (5 to 10 m) and stretched out on the ground below the radiating element.

