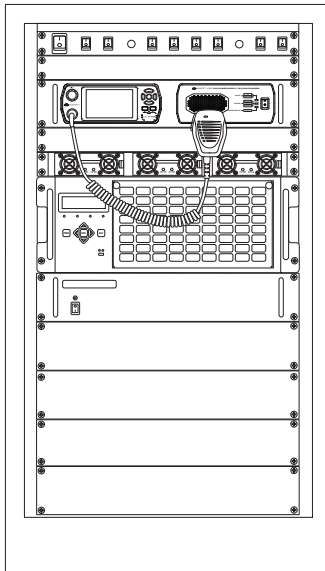


Operating and Installation Manual

Barrett 4075 High Power HF Transmitter



Model: BC407500 and BC407501
BCM407500/4

Safety



Lethal AC and RF voltages are present within the cabinets of the Barrett 4075 solid-state Linear Amplifiers and the Barrett 4075 Power Supply Unit.

The proper, safe installation of the Barrett 4075 solid-state Linear Amplifier is not difficult to accomplish if the following guidelines are followed:

All electrical work should be undertaken by a suitably qualified person and in accordance with local bylaws.

Use extreme caution when opening the cabinet(s) to perform any alignment or adjustment steps, and take particular care to inspect interconnection cables frequently to ensure that they are in good condition.

The Linear Amplifier units are heavy! Proper lifting techniques are recommended when installing the Power Amplifier and Power Supply units.

A suitable minimum 3 kVA rated Line Conditioner unit is required to ensure protection for the Power Supply unit against unstable mains supply. Failure due to mains power fluctuation and no Mains Line Conditioning unit employed will not be considered as a warranty repair.

Suitable Lightning Protection and Earth connection is essential to minimize or prevent lightning induced damage of the Linear Amplifier. Barrett Communications Earthing Kit (P/N BCA207503) is suitable for this purpose. Lightning induced damage is not considered a warranty repair.

Approved antennas and minimum separation distance:

Antenna part number	Gain (dBi)	PEP (W)	Minimum separation distance (m)	Typical Environment
BC91203	8	1000	20	Fixed
	8	500	14	Fixed
BC91207	8	1000	20	Fixed
	8	500	14	Fixed
BC91713	2.1	1000	11	Fixed
	2.1	500	8	Fixed
BC91202	8	500	14	Fixed

FCC RF Exposure Compliance Statement

The 4075 Linear Amplifiers have been evaluated and comply with the Federal Communications Commission (FCC) RF exposure limits for the General Population/Uncontrolled exposure environment.

Supplier's Declaration of Conformity

Per FCC CFR 47 Part 2 Section 2.1007(a)



FCC ID: OW4-407510 (1kW configuration)

FCC ID: OW4-407505 (500W configuration)

Responsible Party

Name: Barrett Communications

Address: 47 Discovery Dr, Bibra Lake, Western Australia, 6163

Phone Number: +618 9434 1700

Hereby declares that the product:

Model Name: 4075 Linear Amplifier - 500W, 4075 Linear Amplifier - 1000W
conforms to the following regulations:

FCC part 15, subpart B, section 15.107(a), 15.107(d), and section 15.109(a)

Class A Digital Device

As a personal computer peripheral, this device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Notice:

This equipment has been tested and found to comply within 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice to Users (FCC)

This device complies with Part 15 of the FCC rules per the following conditions:

- Changes or modifications made to this device, not expressly approved by Barrett Communications, could void the authority of the user to operate this equipment.

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SYSTEM OVERVIEW 1

Introduction

The Barrett 4075 high power HF Transmitter is a compact rack mounted communications solution developed for base station applications in large HF networks. It can be supplied in 1kW and 500 W versions. The transmitter comes as a complete package with an exciter, power supply, power amplifier, interconnecting cables and all required rack mount hardware.

The 4075 linear amplifier is designed and engineered for modern communications which are heavily data orientated, requiring the equipment to work at high duty cycles for extended periods of time. The unique liquid cooled design increases cooling efficiency resulting in less system deterioration due to overheating in the power stages, extending overall equipment service life.

The compact rack mounted amplifier, together with its power supply occupies just 5U of cabinet space.

The Barrett 4075 amplifier natively supports the Barrett 4050 Transceiver/Exciter which when coupled requires no further tuning or adjustment. A flexible I/O interface and analogue ALC feedback provide the transceiver/exciter full control over final output power. Intelligent electronic controls protect the 4075 from input and output overload while providing a sophisticated early warning and a diagnostic interface for system monitoring and event logging.

The 4075 system is field re-programmable via USB allowing the end user to update system software.

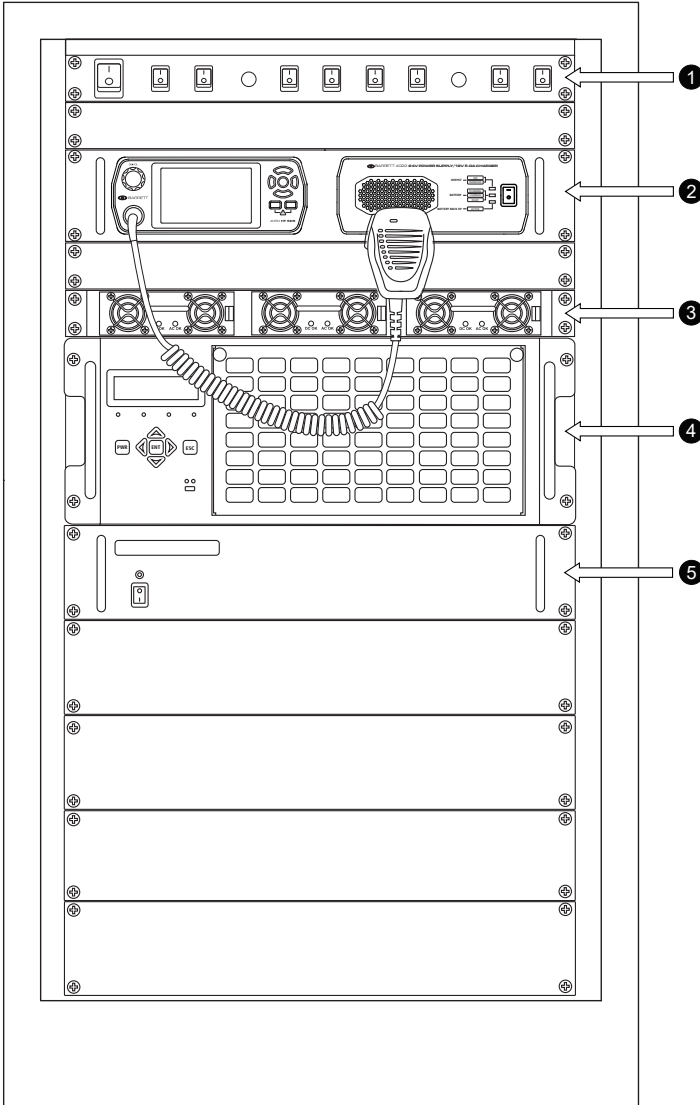
The Barrett ISO9001 Quality Assurance Program ensures consistent performance and the highest reliability.

Terms and Abbreviations

Term	Definition
CW	Continuous Wave (used for Morse code)
dB	Decibels
dBc	Decibels relative to the carrier - is the power ratio of a signal to a carrier signal, expressed in decibels.
dBm	Power ratio in decibels (dB) of the measured power referenced to one milliwatt (mW).
LPF	Low Pass Filter
OLED	Organic Light Emitting Diode
PEP	Peak Envelope Power
PTT	Press-To-Talk button
Selcall	Selective Calls
SSB	Single Sideband (a transmission format)
USB	Universal Serial Bus
VSWR	Voltage Standing Wave Ration

System Overview

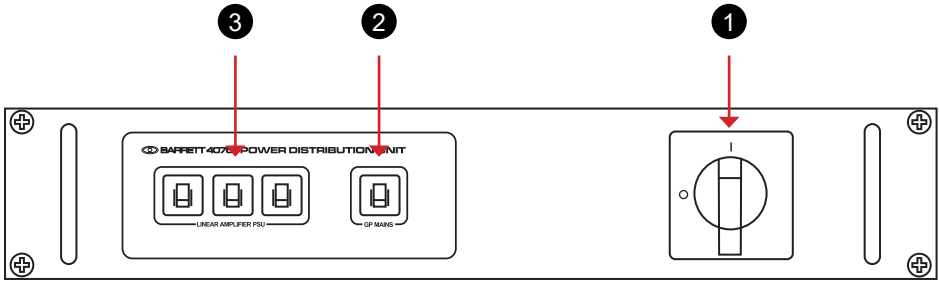
4075 High Power HF Transmitter - Front



Reference	Description
①	AC Power Distribution Unit
②	4050 HF SDR Transceiver (left) and 4022 (24V) Power Supply (right)
③	4075 48V Power Supply
④	4075 Linear Amplifier
⑤	ATU Interface Unit (BCA407536) - Optional

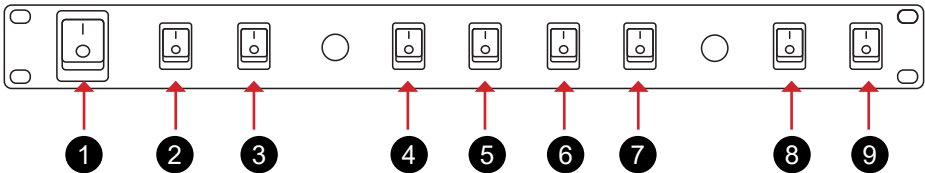
Panels

AC Power Distribution Unit - Type 1



Reference	Description
1	Mains Input Power Isolation ON/OFF switch (shown in the ON configuration)
2	5A Mains output sockets circuit breaker
3	11A Mains output sockets circuit breaker

AC Power Distribution Unit - Type 2 (from July 2021)



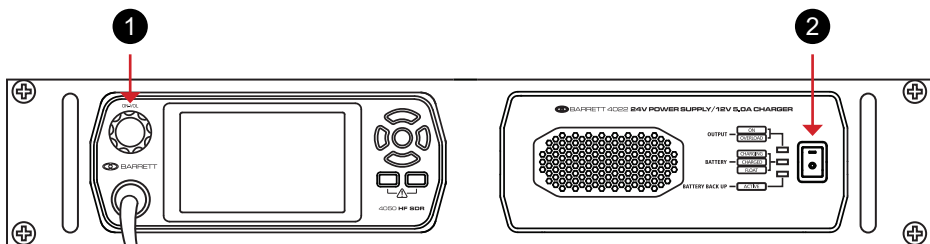
Reference	Description
1	Mains Input Power Isolation ON/OFF switch (shown in the ON configuration)
2	Spare
3	Spare
4	Power Distribution for PSU A
5	Power Distribution for PSU B
6	Power Distribution for PSU C (Spare in 500W configuration)
7	Power Distribution for 4022

Reference	Description
8	Spare
9	Spare or Power Distribution for ATU

Power Distribution Unit - Type 3 (rear mounted)

This PDU is not shown from the front of the rack unit. It will appear as a blanking plate.

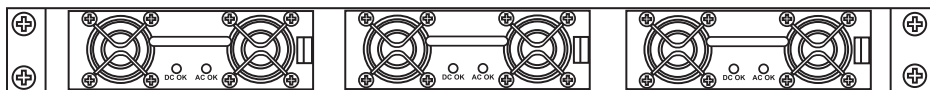
4050 HF SDR Transceiver and 4022 24V Power Supply



Reference	Description
1	4050 On/Off button
2	4022 On/Off switch

For more information concerning the operation of this hardware, please consult the 4050 HF SDR Transceiver Operating Manual (P/N BCM40500) and 4022 24V Power Supply Operating Manual (P/N BCM40220).

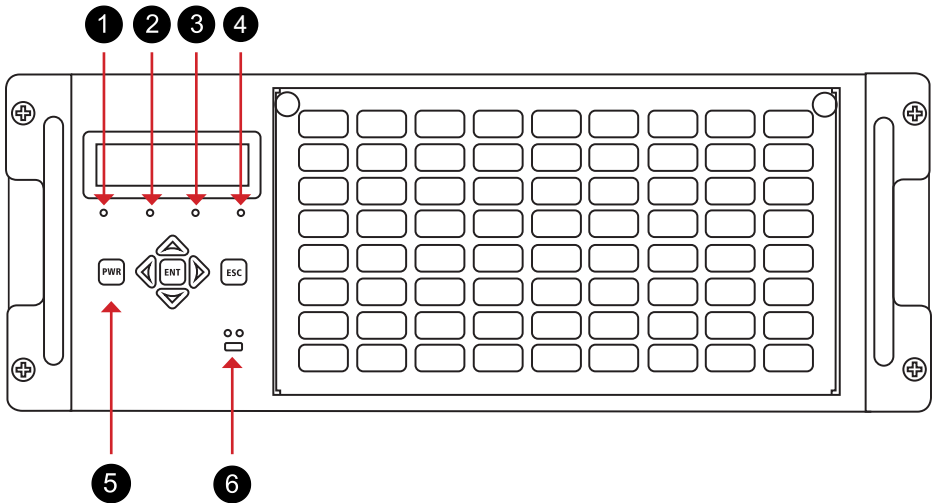
4075 DC Power Supplies (1kW configuration)



Each power supply can be removed individually by sliding it out from the front of the system.

When using a 500W configuration, only two power supplies are required. The additional space will be filled with a blanking plate.

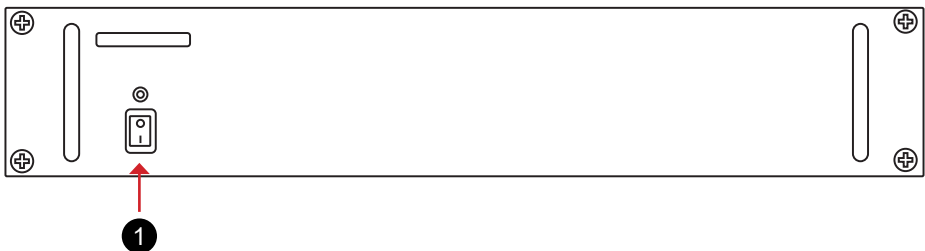
4075 Linear Amplifier



Reference	Description
1	Pwr - indicates if power is supplied to 4075 Linear Amplifier
2	Tx - indicates if in PTT state
3	FLT - the 4075 Linear Amplifier has a fault
4	Log - indicates that the Linear Amplifier has a fault recorded. The log can be cleared through the menus.
5	Power button
6	Micro USB programming interface

Reference	Description
1	Pwr - indicates if power is supplied to 4075 Linear Amplifier
2	Tx - indicates if in PTT state
3	FLT - the 4075 Linear Amplifier has a fault
4	Log - indicates that the Linear Amplifier has a fault recorded. The log can be cleared through the menus.
5	Power button
6	Micro USB programming interface

ATU Interface Box - Optional



Reference	Description
-----------	-------------

1	ATU Power Switch On/Off
---	-------------------------

An ATU Interface Unit (BCA407536) is required for the 1kW ATU to operate. This ATU Interface Unit provides DC power to the 1kW ATU and also provides a control path from the 4075 Linear Amplifier to the 1kW ATU for tune control.

For further information on the ATU Interface box, please see the 4075 1kW ATU manual (BCM407508).

INSTALLATION 2

The new 4075 system is shipped with the Linear Amplifier removed from the rack. All other units are fitted and factory adjusted for optimum operation. All vacant slots are covered.

Requirements

Housing

The ideal housing for the 4075 system is a dedicated radio site in an air-conditioned, secure room connected to mains power. Ideally this room will have its own back-up power source such as solar panels, wind turbines and stand-by batteries.

To avoid water ingress and subsequent damage to the system, the racking system should be mounted atop a wooden plinth approximately 4in high. Any vents should not be situated directly near the system to limit condensation reaching the equipment.

Cable Management

The management of cables will ideally use cable trays to minimise the risk of damage and reduce maintenance.

Take care to note the bend radius of the cables. Over-bending a cable can result in shorting. Ideally, power and data cables should be kept separately and cables should not cross, except at 90° where absolutely necessary.

Rack

Ensure that the rack is positioned with enough space for the front and rear of the system to be accessed safely. Local fire safety guidelines should be adhered to.

Connection to Mains

Once the rack is located in its final position and secured to the floor, unwrap the internally fitted mains cable and feed it out of the cabinet either at the bottom or through the top cable access point and connect to a suitable mains source.

The 4075 high power transmitter systems are usually built into either the 20RU or 39RU racks. Each system includes an AC power distribution box BCA407520. Connection of mains power into this box is via a six metre long

mains cable which is directly terminated into the AC power distribution box. The other end of this cable is left unterminated for hard wire connection to a customer's mains supply through a suitable high current termination. This termination should be performed by a suitably qualified electrician. Barrett Communications recommend that a dedicated RCD is used in this circuit.

Please note that the peak current drawn by the 4075 system exceeds normal wall socket ratings and so connection through a wall socket is not safe and should be avoided.

According to Australian / New Zealand Standards, the mains cable conductor colour code is as follows:

Conductor colour	Designation
Brown	Active
Blue	Neutral
Green/Yellow	Earth

Grounding

The ground (earth) system is a key part of the overall system and consequently of the system performance. An inadequate ground system is the primary cause of poor system performance, noise and lightning damage. When an ATU is fitted, the system ground will include a ground counterpoise which is essential for ATU tuning performance.

Base Station Grounding

The following major aspects should be considered when installing a land based station grounding system:

Rack and equipment ground with respect to the mains supply and personnel safety is paramount. The installation of all electrical equipment should be in accordance with local bylaws, and grounding is a requirement for effective earth leakage protection.

Grounding with respect to EMI (Electro Magnetic Interference):

Due to the high RF fields in the proximity of the transmitter rack, shielding of all equipment and cables is important. Each Rack Mounted main item is connected to the rack vertical ground strip via flexible straps. The supplied system rack and cables have been adequately shielded. The ground point for external connection can be found at the rear bottom of the rack. The rack earth connection should be extended, as directly as possible, to a suitable ground, outside of the building, using preferably, a 50 mm copper earth strap. All signal cables should be shielded and grounded at each end.

Lightning Protection

Lightning protection also requires a good ground connection and should be similarly connected to the building ground. The lightning protection should ideally be located where the coaxial cables enter the building, and coupled to ground as directly as possible.

Linear Amplifier

Unless otherwise specified for special project requirements, all cabling with the exception of the coaxial RF output cable, are installed in the rack and so identification and connection is straightforward.

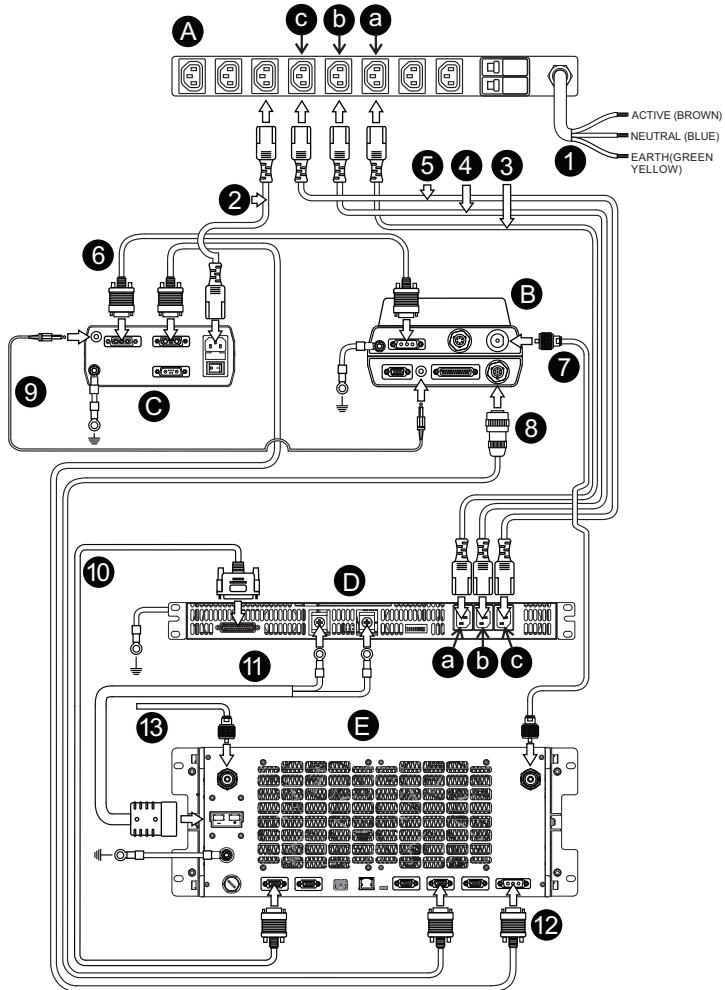
Both the 4075 Linear Amplifier and the 4075 Power Supply units have been factory adjusted for optimum performance.

CAUTION: Linear Amplifiers weigh between 30kg (500W configuration) and 35kg (1kW configuration). Two people are required to safely lift and install the Linear Amplifier.

The rack has two guide rails that will support the Linear Amplifier once installed. Each side of the Linear has a corresponding channel the slide over the guide rails.

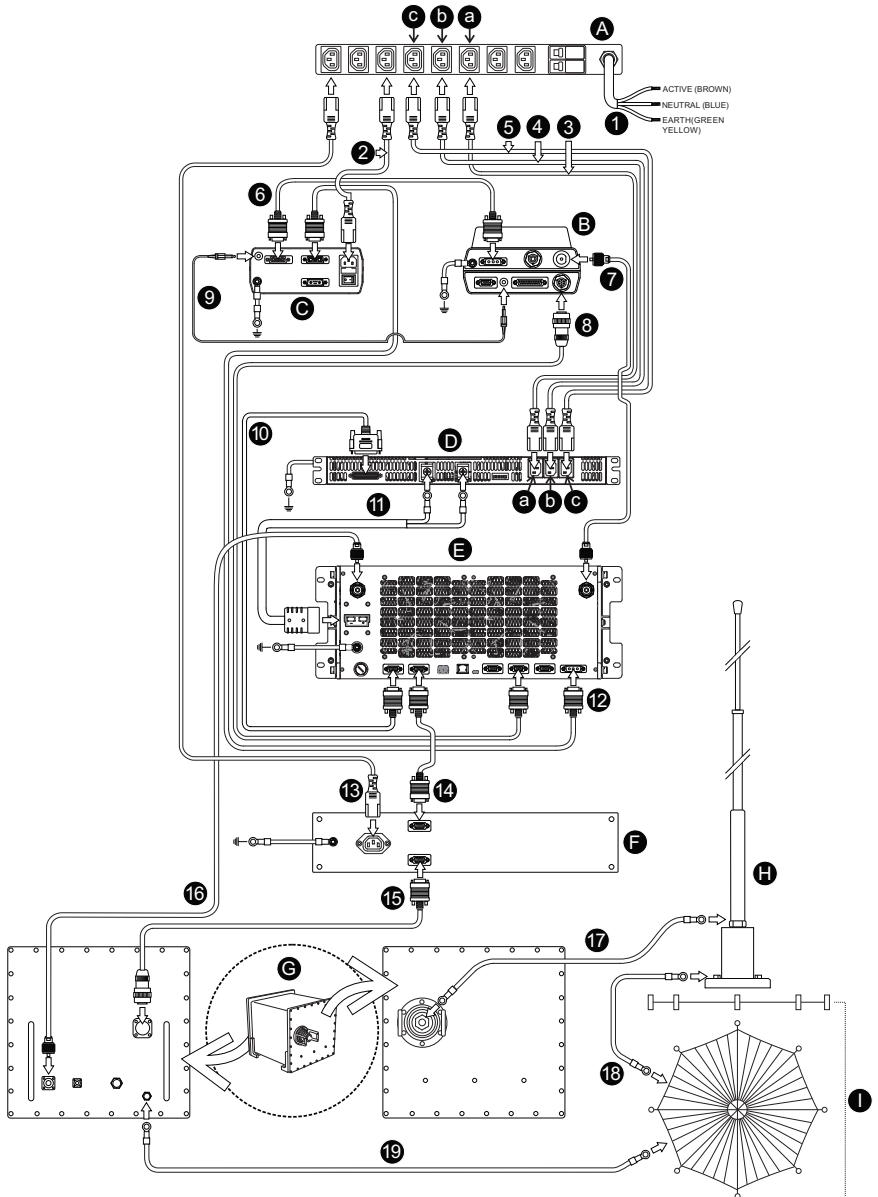
1. Slide the Linear Amplifier into position and secure with the screws provided.
2. Connect cables as per the diagram on the following page.

4075 High Power HF Transmitter - Rear Connections



- A** AC Power Distribution Unit (P/N BCA407520)
- B** Barrett 4050 HF SDR Transceiver (P/N BC405000) with Fan attachment (BCA40002)
- C** 4022 24V HF Power Supply (P/N BC402201)
- D** 4075 Power Supply Unit (P/N 407502)
- E** 4075 Linear Amplifier (1kW P/N BC407501, 500W P/N BC407500)
- 1** Mains Power Cable
- 2** 10A IEC cable (P/N CA-16571)
- 3** 10A IEC cable (P/N CA-16571) (a)
- 4** 10A IEC cable (P/N CA-16571) (b)
- 5** 10A IEC cable (P/N CA-16571) - 1kW configuration only (P/N CA-16571) (c)
- 6** DC Power Cable to 4050 (P/N SA-42020)
- 7** Coaxial cable RG58 (P/N BCA90028 UHF) or (P/N BCA90066 N-type)
- 8** 4050 to Linear Amplifier control cable (P/N BCA40027)
- 9** Speaker Cable (P/N SA-45010)
- 10** 4075 Power Supply Control Cable (P/N SA-475105)
- 11** High Current 48V DC cable (P/N SA-47534)
- 12** 13.8 V DC Power Cable to Linear Amplifier (P/N SA-47538)
- 13** Coaxial RG213 (min) cable to antenna

4075 High Power HF Transmitter - Rear Connections (with ATU)



- A** AC Power Distribution Unit (P/N BCA407520)
- B** Barrett 4050 HF SDR Transceiver (P/N BC405000) with Fan attachment (BCA40002)
- C** 4022 24V HF Power Supply (P/N BC402201)
- D** 4075 Power Supply Unit (P/N BC407502)
- E** 4075 Linear Amplifier (1kW P/N BC407501, 500W P/N BC407500)
- F** ATU Interface Unit (P/N BCA407536)
- G** 1kW ATU (P/N BC407508)
- H** Antenna
- I** Counterpoise (P/N BCA407550)
- 1** Mains Power Cable
- 2** 10A IEC cable (P/N CA-16571)
- 3** 10A IEC cable (P/N CA-16571) (a)
- 4** 10A IEC cable (P/N CA-16571) (b)
- 5** 10A IEC cable (P/N CA-16571) - 1kW configuration only (P/N CA-16571) (c)
- 6** DC Power Cable to 4050 (P/N SA-42020)
- 7** Coaxial cable RG58 (P/N BCA90028 UHF) or (P/N BCA90066 N-type)
- 8** 4050 to Linear Amplifier control cable (P/N BCA40027)
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- 10** 4075 Power Supply Control Cable (P/N SA-475105)
- 11** High Current 48V DC cable (P/N SA-47534)
- 12** 13.8 V DC Power Cable to Linear Amplifier (P/N SA-47538)

- 13 10A IEC cable (P/N CA-16571)
- 14 4075 Linear Amplifier to ATU Interface cable (P/N SA-20767)
- 15 ATU Interface to ATU cable (P/N SA-20767)
- 16 Coaxial RG213 (min) cable to ATU
- 17 High Voltage Antenna Feeder Cable
- 18 Ground (earth) cable
- 19 Ground (earth) cable

Antenna

Please refer to the instruction guide supplied with the antenna type selected.

All antennas connect to the Linear Amplifier via the coaxial socket on the left of the rear panel. This is clearly labelled to avoid confusion.

Please note that a VSWR of $< 2:1$ is desirable for optimum performance of the Linear Amplifier.

We suggest that for high power transmitters, a type RG-213 or better cable is used for all coaxial feeds beyond the Linear Amplifier. For improved coaxial feeder performance over long runs, we suggest the use of a low-loss coaxial cable. Please contact Barrett Communications if further assistance with cable selection is required. The use of a lightning protection module is recommended.

Grounding

When an unbalanced antenna or an ATU is used, the antenna ground, or counterpoise is vitally important. Providing an adequate counterpoise at ground level is difficult, but it is far more difficult when the ATU is placed on a roof top. At ground level, the use of 8 to 12 radial wires of 16 gauge or larger, each of about $1/3$ longer than the length of the antenna, buried to about 150 mm below the surface should be adequate (Radial earth mat / ground plane: Barrett P/N BCA20026). Connection to metal water pipes can also improve the ground. On a roof top, there is usually not enough space for an adequate counterpoise. An effective counterpoise may be achieved by covering the entire roof surface below the antenna with wire mesh which is then connected to the ground as directly as possible. It must be noted however, that the successful tuning of the ATU and the resulting VSWR performance of the antenna, will greatly depend on the effectiveness of the counterpoise provided.

OPERATION 3

Switching On


1. Once connected to Mains power turn the circuit breakers (if fitted) on the rear of the AC power distribution unit (PDU) to the on position.
2. Turn the mains switch on the front of the PDU panel to the “on” position if using a type 1 or 2 PDU. Ensure the other front switches are set to the on position as required if using a type 2 PDU.

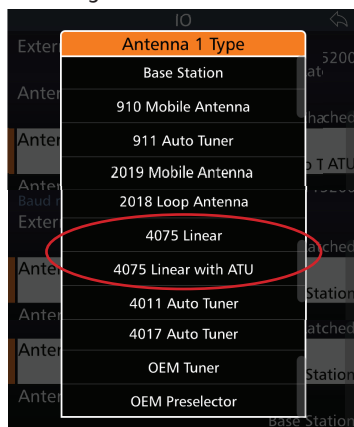
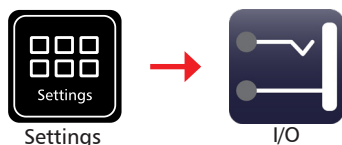
If the 4022 Power Supply, 4050 HF SDR Transceiver and the 4075 Linear Amplifier do not also switch on, follow the steps below:

3. Flip the back and front switches on the 4022 Power Supply.
4. Press the On-Vol knob on the 4050 transceiver
5. Press the Pwr button on the Linear Amplifier.

4050 Antenna Selection

Before any operation is undertaken an antenna type needs to be selected from Settings < IO in the 4050.

1. Open the IO menu from Settings on the swipe screen.
2. Tap **Antenna 1 Type** from the IO screen to display the Antenna 1 Type screen.
3. Navigate to 4075 Linear and 4075 Linear with ATU options by either swiping down on the touch screen or pressing  on the keypad.
4. Select the appropriate option.



If '4075 not detected' appears on the transceiver display (see right) ensure that the following are not responsible before contacting Barrett Communications:

- All cable connections are correct and that none are loose or disconnected
- Check that the Linear is switched on



Linear Amplifier Settings

The 4075 Linear Amplifier is programmed and set up before it is shipped so no further actions are necessary.

DISPLAY 4

This chapter provides a guide to the various status displays that may appear during 4075 operation.

NOTE: The backlight will turn off after 1 minute of inactivity. Any activity, including key presses, transmission or error state, will reawaken the backlight.

Status Displays

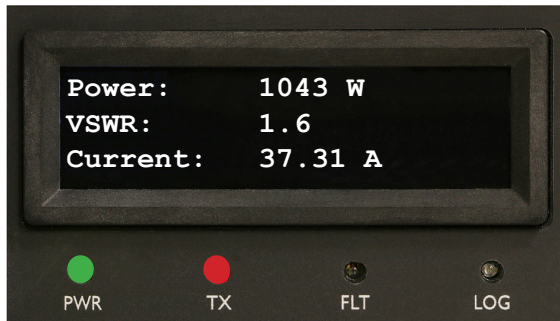
Use the up and down keys to move between the different status screens.

Main Status Display

Receive Mode



Transmit Mode



Current Error Information

This display provides a brief indication of any fault conditions currently present in the system.

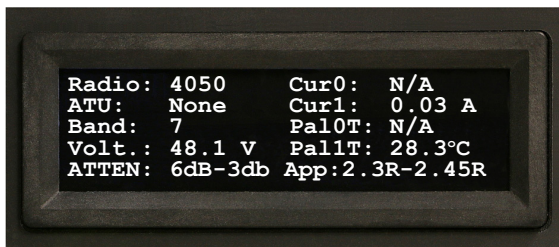


Last Error Information

This display provides a brief indication of any fault conditions most recently present in the system.



Detailed Status Screens





Label	Indication
Radio	The radio connected to the system
ATU	Whether an Antenna Tuning Unit is connected to the Linear Amplifier
Band	Low Pass Filter Band
Volt	The voltage supplied by the Linear Amplifier power supply
ATTEN	Attenuation setting
Cur0	Current drawn by Pallet 0 (only in 1kW configuration)
Cur1	Current drawn by Pallet 1
Pal0T	Pallet 0 Temperature
Pal1T	Pallet 1 Temperature
App	Firmware version number
AmbT	System ambient temperature
Pump	Pump activation
Fan0-3	Fan functionality

Antenna Tuning Unit Status Display

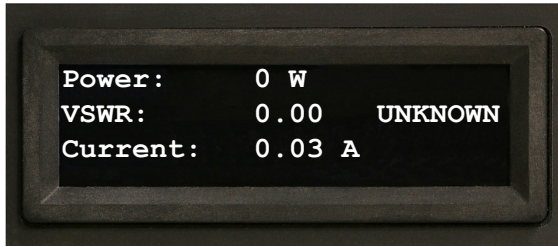
This is only present if an Antenna Tuning Unit (ATU) is connected to the system.

No Tuner

If no ATU is connected to the system, the status menu will remain unchanged (see Receive Mode).

Unknown Tuner

If an active device is connected to the 4075 Linear Amplifier's ATU interface but the Linear has not been configured for an ATU, the following screen will display:



In this state the Linear will not operate when the transceiver begins to transmit. It will signal a fault to the 4050 transceiver and it will keep the Linear in bypass mode in order to protect whatever is connected and it will display the error message.

Missing Tuner

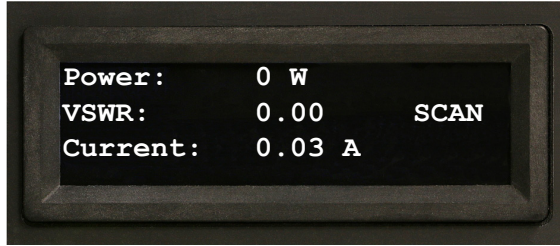
If the Linear settings have been set for an ATU and there is either nothing connected to the ATU interface or the connected ATU controller is not powered on then the following screen is displayed:



As with the Unknown Tuner, if the 4050 transceiver attempts to activate the amplifier with a Missing Tuner, a fault is generated.

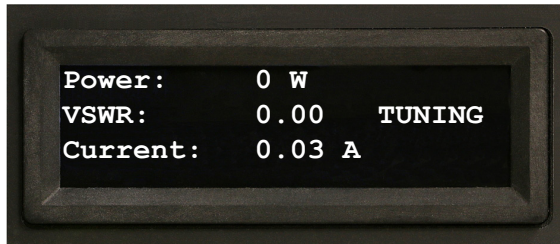
Scan Mode

When the 4050 Transceiver is scanning or a manual channel change occurs, the transceiver signals 'scan mode' to the amplifier and the following screen is displayed:



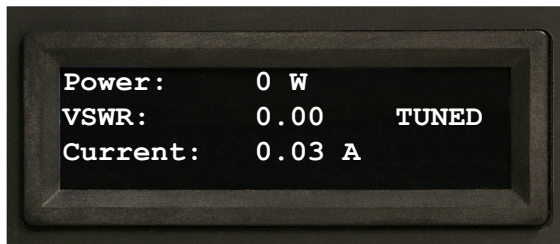
Tuning Mode

When the 4050 Transceiver requests a tune cycle, the amplifier displays the following while the tune process is under way. Please note that a tune cycle can take up to two (2) minutes to complete.



Tuned Mode

If the tune cycle is successful, the amplifier displays the following.



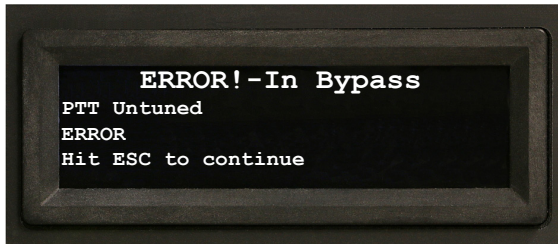
Untuned Mode

From the 'untuned mode', the amplifier can change to either 'scan mode' or 'tuning mode' in response to the operation of the radio. It will move to 'scan mode' if the 4050 changes channel or 'tuning mode' if the operator or controlling system issues a 'manual tune' command.



As with the 'Unknown Tuner' and 'Missing Tuner' modes, if the 4050 Transceiver attempts to operate the amplifier when 'Untuned', the amplifier signals a fault to the 4050, displays the following screen and engages the bypass mode so that the RF output of the 4050 is not amplified in order to protect the attached tuner.

Error Condition



This error condition remains until the transceiver stops activating the amplifier's PTT line, and then clears automatically when the PTT is released.

ADVANCED MENUS 5

Front Panel Operations and Maintenance Menus

The front panel provides menus that access and control the linear settings. These should only be accessed by qualified trained technicians and are not usually accessed in the normal operation of the linear.

Access the menus by pressing the ESC key and using the navigation up and down keys to select the function or setting desired.

Main Menu

After pressing the ESC key the 4075 shows the 'Main Menu'.



Use the navigation keys to select the desired menu and then press the ENT key.

Configuration Menu



Use the navigation keys to select the desired sub-menu and then press the ENT key.

Exciter Menu

The Exciter Menu selects the model of transceiver being used to drive the Linear. There are two choices.



ATU Menu

Use this menu to set the type of ATU. If the system is not using an Antenna Tuner, select 'No ATU'.



Buzzer Control Menu

This menu controls the operation of the audible buzzer when error conditions are present.

Select 'ON' or 'OFF' by using the left and right navigational keys, then press ENT to save the new setting, or ESC to leave the setting unchanged.



Service Menu

From the Main Menu select the Service Menu item and press ENT.



A four-digit key will be requested. Please contact Barrett Communications for this access key.



Use the UP and DOWN navigational keys to select the digit value and the LEFT and RIGHT navigational keys to select the digit being set. Once done, press ENT and the following warning will display:



After the warning has been displayed for 2 seconds, the Service Menu will display.

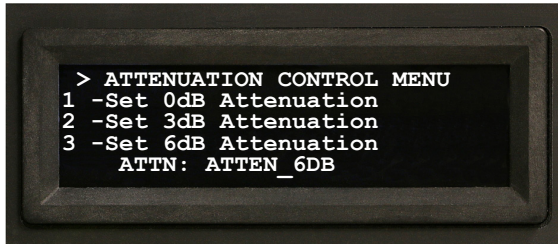


Clear Critical Error

Selecting this entry and then pressing the ENT key clears any current critical error.

Attenuation Control

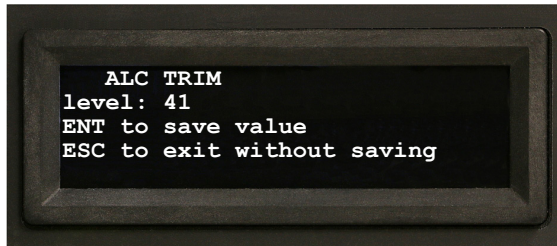
This menu sets the inline attenuation of the of the RF input, ranging from no attenuation '0dB' to a maximum of '19dB'. The current setting is shown on the bottom of the screen. Use the UP and DOWN navigational keys to select the required attenuation, and then press ENT to set the new value or ESC to leave the attenuation setting unchanged.



ALC Trim

This menu allows the adjustment of the ALC level used to signal power level to the transceiver. This setting is normally adjusted in the factory during the manufacturing process and does not normally require changes in the field. Altering this value inappropriately may result in permanent damage to the amplifier. The procedure for use of this adjustment is beyond the scope of this manual.

Selecting the ALC Trim function from the Service Menu displays the following screen.



Use the UP and DOWN navigational keys to change the value which ranges from 0 to 63. Press ENT to save the new value or ESC to exit without changing the setting value.

SPECIFICATIONS 6

General

Frequency coverage	1.5MHz to 30MHz (reduced performance below 1.6MHz)
Power output	1000W PEP or 500W PEP \pm 1.5dB
Duty cycle	100%, Continuous PEP, CW
Exciter	4050 HF SDR transceiver

DC Power Supplies

DC Voltage Output	48V (Nominal)
Rated Current	21A
Current Range	0-21A
Rated Power	1008W
Input Voltage Range	90-264 VAC, 127-370 VDC
AC Current (Input) (typ.)	11 A / 115 VAC, 5.5 A / 230 VAC
Overload Protection	105-125% rated output power, constant current limiting, recovers automatically after fault condition is removed.
Overvoltage protection	52.8 - 64.8V, shut down o/p voltage, re-power to recover
Over temperature protection	Shut down o/p voltage, recovers automatically after fault condition is removed.
Working temp	-20 to +60°C
Working Humidity	20-90% RH non-condensing
Storage temp, humidity	-40 to +85°C, 10-95% RH non-condensing

Dimensions (L x W x H)	350.8mm x 483.6mm x 44mm
Connectors	1x DB-25 female 3x Standard IEC sockets Positive and negative terminals

4075 Linear Amplifier

Power Output CW	1kW or 500W \pm 1.5 dB
Power Gain	+24 dB
Harmonics & Spurious	Less than -55 dB
ALC Voltage (output)	0 ~ 3V
Filter Type	7 Band LPF
Dimensions	178H x 482W x 480D mm (excluding handles and I/O connectors)
Power Requirements	58V DC (Nominal) @ 60A, 12-24V DC @ 5 A max
Rack Height	4RU, 19" Rack mount (Amplifier and 50V power supply only)
Weight	35 kg (77 lbs)
Cooling	Liquid cooled, Water, Propylene Glycol mixture
Temperature	-20°C to +50°C operational, -40°C to +85°C storage
Humidity	95% relative, non condensing
Altitude	3000 m above sea level (not airborne), 9000 m transportation
Output VSWR protection	3:1 nominal all magnitude and phases
Thermal Overload protection	85°C
Fault Log	System events and error reporting
Standards	FCC Part 87 Mil Std 810G

1kW ATU

Frequency Range	Wire (23-46m): 2 - 30 MHz Whip (10 m): 2 - 30 MHz Whip (5 m): 3 - 30 MHz
Duty Cycle	100% Duty Cycle Voice and Data
VSWR	Better than 1.5:1 when tuned
Tune Modes	Fully Automatic and Memory
Tune Time	First tune: 5 secs (typical) From Memory: 500 mSec (typical)
Tune Power	40 W nominal, 50 W max
Memory addresses	Unlimited
Protection	Open circuit antenna Short circuit antenna Over temperature High VSWR Voltage transients
Power Rating	1 kW PEP and Average
Supply Voltage	+13.8 V DC (derived from ATU Interface Unit via the ATU Interface Unit to 1 kW ATU cable)
Supply Current	Tuned – 400 mA (typical) Tuning - <800 mA
Auxiliary Receive Antenna Power	12 V 1 A
Antenna Impedance	50 ohm unbalanced
Weight	25 kg
Dimensions	350 mm (h) x 380 mm (w) x 330 mm (d)
Temperature	Operational: -20°C to +55°C
Construction	Aluminum with marine grade paint

Connectors

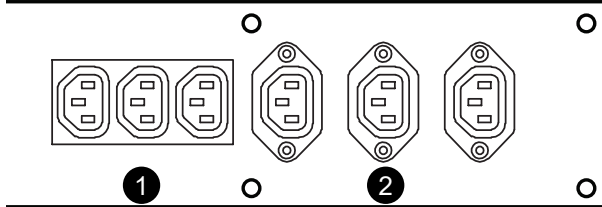
RF: N-type socket

Tune Control: 10 Pin Mil Circular Connector

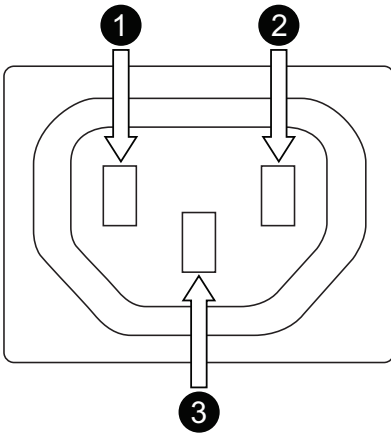
Antenna: TNC

Pin Outs

Power Distribution Unit - Type 1



Designation	Rating
1	5A
2	10A



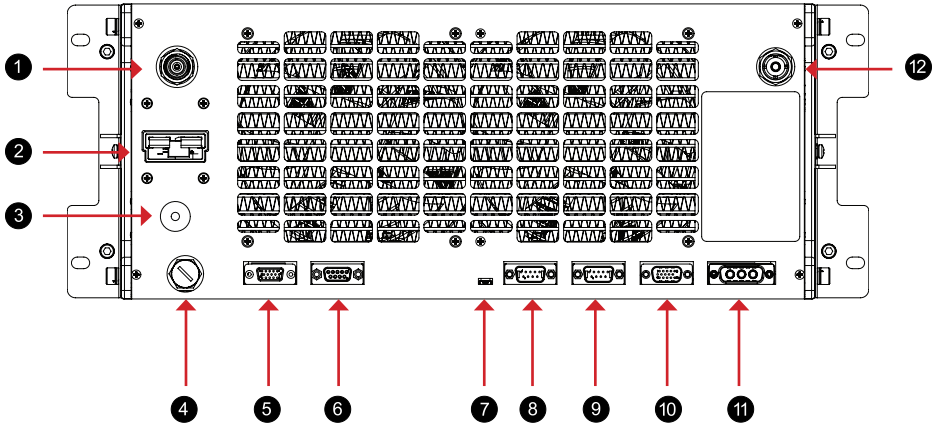
Designation	Polarity	Cable Colour
1	Active	Brown
2	Neutral	Blue
3	Earth	Green/Yellow

Power Distribution Unit - Types 2 and 3



All outlets are 10A IEC C13 sockets as above.

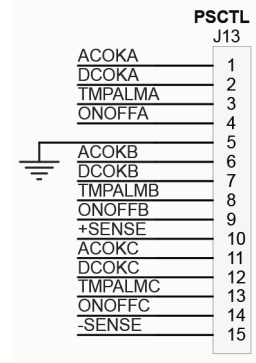
4075 Linear Amplifier



Reference	Description
1	RF Out (N-type connector)
2	48V DC In (Anderson connector)
3	Ground (Earth)
4	Coolant drain plug
5	48 V Power Supply Control
6	ATU Control
7	Micro-USB
8	AUX Control
9	4050 Interface
10	2050 Interface
11	12-24V DC In
12	RF In (UHF or N-type connector)

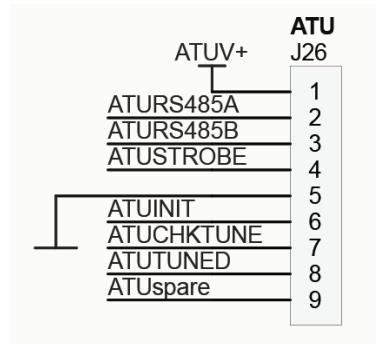
48 V Power Supply

Pin	
1	ACOKA
2	DCOKA
3	TMPALMA
4	ONOFFA
5	GND
6	ACOKB
7	DCOKB
8	TMPALMB
9	ONOFFB
10	+SENSE
11	ACOKC
12	DCOKC
13	TMPALMC
14	ONOFFC
15	-SENSE



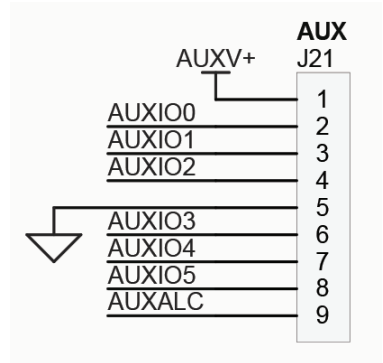
ATU Control

Pin	
1	V+
2	RS485A
3	RS485B
4	Strobe
5	GND
6	INIT
7	CHKTUNE
8	TUNED
9	Reserved



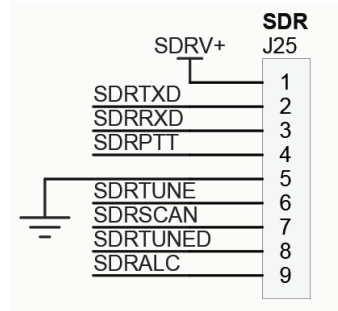
Auxiliary

Pin	
1	Voltage +
2	IO0
3	IO1
4	IO2
5	GND
6	IO3
7	IO4
8	IO5
9	ALC



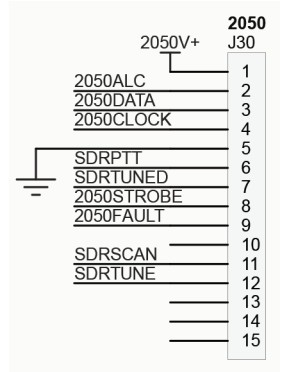
4050 Interface

Pin	
1	Voltage +
2	TXD
3	RXD
4	PTT
5	GND
6	Tune
7	Scan
8	Tuned
9	ALC



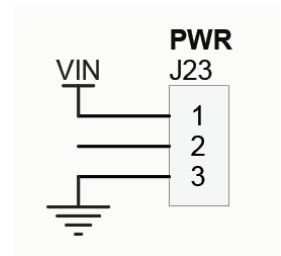
2050 Control

Pin	
1	Voltage +
2	ALC
3	DATA
4	CLOCK
5	GND
6	PTT
7	TUNED
8	STROBE
9	FAULT
10	Reserved
11	SCAN
12	TUNE
13	Reserved
14	Reserved
15	Reserved



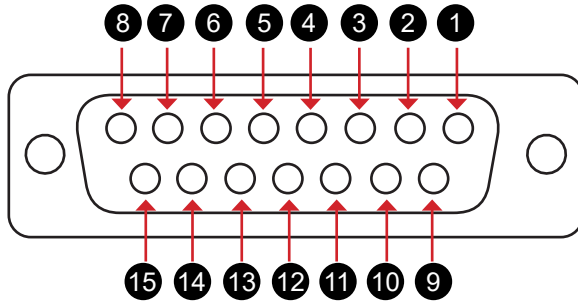
12-24 V DC IN

Pin	
1	Voltage IN
2	Spare
3	GND



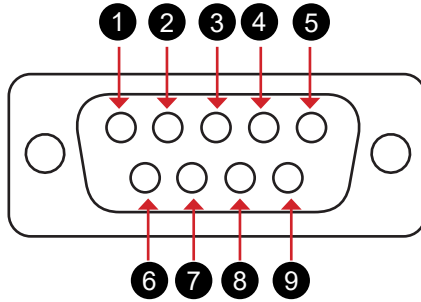
ATU Interface Unit

15 Pin ATU Interface Unit to 1 kW ATU Connector



Pin	Function	Colour
1	GND	BK
2	485Data-	OR
3	SCAN	WH
4	TUNED	BR
5	TUNE IO	SL
6	-	-
7	-	-
8	AC2-+VE	LtGN-BL
9	485Data+	PK
10	-	-
11	ScanAltAnt	YE
12	AltAnt+24V on	VI
13	AC1-GND	GN-R
14	-	-
15	-	-

9 Pin ATU Interface Unit to 4075 Linear Amplifier connector



Pin	Description
1	ATU V+
2	ATU Data
3	ATU Clock
4	ATU Strobe
5	GND
6	ATU Init
7	ATU Chk Tune
8	ATU Tuned
9	GND

Note:

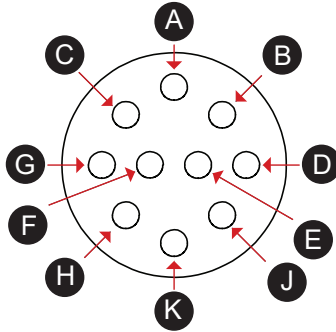
This connector is pin-for-pin the Linear Amplifier 9 pin connector.

IEC AC Power Connector

This connector is a standard IEC 3 pin connector.

1kW ATU

ATU 10 Pin Mil Circular Control Connector



Pin	Function	Colour
A	GND	BK
B	SCAN	WH
C	TUNED	BR
D	ScanAltAnt	YE
E	AC1-GND	GN-R
F	AC2-+VE	LtGN-BL
G	AltAnt+24V on	VI
H	TUNE IO	SL
J	485Data-	OR
K	485Data+	PK

Warranty Statement

Barrett Communications (hereafter referred to as 'Seller') provides a three (3) year warranty on all Barrett products from the date of shipment from the Seller. A one (1) year warranty from the date of shipment from the Seller is provided for all batteries.

Each warranty guarantees acceptable performance of the product under normal recommended conditions for the duration of the warranty period. In cases of accident, abuse, incorrect installation or maintenance by a non-Seller representative, subjection to abnormal environmental conditions, negligence or use other than those in accordance with instructions issued by the Seller, the warranty shall be voided. In addition, this warranty shall not cover low performance – specifically the distance or quality of transmission and reception - due to unfavourable environmental or locational conditions. Nor shall this warranty cover the quality of transmission and reception of transceivers mounted in vehicles or vessels that have not been sufficiently electrically suppressed.

Should any fault due to bad design, workmanship or materials be proven at any time within the warranty period, the Seller will rectify such fault free of charge provided that the equipment is returned, freight paid, to Barrett Communications Pty Ltd head office or to an authorised service centre. The repaired or replaced product will remain covered under and throughout the term of the original warranty period up to its expiration. No repair or replacement will extend the warranty term past the original thirty-six (36) month anniversary of the original date of shipment from the Seller.

Firmware and software (pre-installed, stand-alone or provided as an update), hereafter referred to as 'Software', is guaranteed to perform acceptably within the specifications provided by the Seller, provided that the Software is within the warranty period.

Should Software not perform acceptably, the Seller will use all commercially reasonable efforts to correct such nonconformity as reported to the Seller directly or via a support representative. The Seller is not obliged to update Software under warranty if the nonconformity is caused by a) the use or operation of the Software in an environment other than intended or recommended by the Seller in relevant documentation, or b) modifications made to the Software not authorised or undertaken by the Seller or a representative of said Seller.

Subject to the matters set out in this warranty, no liability, expressed or implied is accepted for any consequential loss, damage or injury arising as a result of a fault in the equipment and, all expressed or implied warranties as to quality or fitness for any purpose are hereby excluded.

This warranty does not extend to products supplied by the Seller which are not designed or manufactured by it. The Seller will however make every

endeavour to ensure that the purchaser receives full benefit on any warranty given by the original equipment manufacturer.

This warranty is restricted to the original purchaser except where the original purchaser is a reseller authorised by the Seller who has purchased for the purpose of resale, warranty shall be extended to the reseller's customer.

Contact Details

Our customer / dealer technical support department can be contacted via land mail, email, telephone or via support ticket on the technical support web page.

<https://www.barrettcommunications.com.au/support/>

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