

# **Installation and Operating Handbook**

## **PTR Series Tracking Receiver**

**Covers software version 5.10 and above**

Handbook Issue 1.19, 12<sup>th</sup> August 2016



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**IMPORTANT NOTE: THE INFORMATION AND SPECIFICATIONS  
CONTAINED IN THESE DOCUMENTS SUPERSEDE ALL PREVIOUSLY  
PUBLISHED INFORMATION CONCERNING THESE PRODUCTS**

# Table of Contents

|  |           |
|--|-----------|
| <b>PRODUCT COMPLIANCE</b> .....  | <b>5</b>  |
| <b>Safety</b> .....  | <b>5</b>  |
| <b>EMC</b> .....   | <b>5</b>  |
| <b>1. INTRODUCTION</b> .....   | <b>6</b>  |
| <b>1.1 General product overview</b> .....                              | <b>6</b>  |
| <b>1.2 Functional description</b> .....                                | <b>7</b>  |
| 1.2.1 Initial set-up/ Operating suggestions .....                      | 7         |
| <b>1.3 PTR Specifications</b> .....                                    | <b>8</b>  |
| 1.3.1 Tracking Function.....   | 8         |
| 1.3.2 Video Function .....   | 9         |
| 1.3.3 General.....   | 9         |
| <b>1.4 Review of PTR Specification parameters</b> .....                | <b>9</b>  |
| 1.4.1.1 DownConverter Input .....                                      | 9         |
| 1.4.1.2 DownConverter resolution.....                                  | 9         |
| 1.4.1.3 DownConverter Conversion Gain.....                             | 10        |
| 1.4.1.4 Auxiliary DC output.....                                       | 10        |
| 1.4.1.5 10MHz reference output.....                                    | 10        |
| 1.4.1.6 Tracking Output.....   | 10        |
| 1.4.1.7 Tracking Level.....  | 11        |
| 1.4.1.8 Search Range .....   | 12        |
| 1.4.1.9 Sweep Rate .....   | 12        |
| 1.4.1.10 Post Detection Time Constant .....                            | 12        |
| 1.4.1.11 Log Output Scale.....   | 12        |
| 1.4.1.12 DC output adjustment .....                                    | 12        |
| 1.4.1.13 PLL Noise Bandwidth .....                                     | 12        |
| 1.4.1.14 Threshold for Reacquisition .....                             | 12        |
| 1.4.1.15 ASB Sweep Rate.....   | 13        |
| 1.4.1.16 ASB Threshold .....   | 13        |
| 1.4.1.17 Video Input .....   | 13        |
| 1.4.1.18 Video Resolution .....  | 14        |
| 1.4.1.19 Vertical Resolution .....                                     | 14        |
| 1.4.1.20 Video Section Attenuator.....                                 | 14        |
| 1.4.1.21 Reference frequency.....                                      | 14        |
| <b>1.5 Mechanical description</b> .....                                | <b>15</b> |
| <b>1.6 Front panel description</b> .....                               | <b>15</b> |
| <b>1.7 Rear panel description</b> .....                                | <b>16</b> |
| 1.7.1 Chassis Earth stud .....   | 17        |
| 1.7.2 Rx In .....  | 17        |
| 1.7.3 Rx Out .....   | 17        |
| 1.7.4 L-Band Monitor (optional, primarily for SHF input versions)..... | 17        |
| 1.7.5 Ext Ref.....   | 17        |
| 1.7.6 Alarms connector .....   | 17        |
| 1.7.7 RS232/RS485 Remote Control connector .....                       | 17        |
| 1.7.8 Redundancy .....   | 17        |
| <b>1.8 Fault philosophy</b> .....                                      | <b>17</b> |
| <b>2. INSTALLATION</b> .....   | <b>19</b> |
| <b>2.1 Care of Your Product</b> .....                                  | <b>19</b> |
| 2.1.1 Handling .....   | 19        |
| 2.1.2 Unpacking and Inspection.....                                    | 19        |
| 2.1.3 Storage.....   | 19        |
| 2.1.4 Cleaning & Maintenance .....                                     | 20        |
| <b>2.2 Mechanical Installation Considerations</b> .....                | <b>20</b> |
| 2.2.1 Mounting.....  | 20        |
| 2.2.2 Cooling .....  | 20        |
| <b>2.3 Prime Power Supply &amp; Connection</b> .....                   | <b>21</b> |
| 2.3.1 Fuses.....   | 21        |
| 2.3.2 Earthing.....  | 22        |

|   |           |
|---|-----------|
| <b>2.4 Other Interface Connections</b> .....  | <b>22</b> |
| 2.4.1 L-band Connections .....  | 22        |
| 2.4.2 L-band Monitor Output Connections (optional, primarily for SHF input options) ..... | 22        |
| 2.4.3 IF Connections .....  | 22        |
| 2.4.4 External Reference Input Connections .....  | 23        |
| 2.4.5 Alarms Interface Connection .....   | 23        |
| 2.4.6 Remote Serial Communications Interface (RS-232/RS-485).....                         | 23        |
| 2.4.7 Redundancy Interface Connector.....   | 24        |
| 2.4.8 Ethernet Port (Optional) .....  | 24        |
| <b>3. EQUIPMENT OPERATION</b> .....   | <b>25</b> |
| <b>3.1 Menu structure overview</b> .....  | <b>25</b> |
| 3.1.1 LCD display contrast .....  | 25        |
| <b>3.2 Home Menu</b> .....  | <b>25</b> |
| 3.2.1 Operating Screen .....  | 26        |
| 3.2.2 Tracking Status .....   | 26        |
| 3.2.3 Configure.....  | 27        |
| 3.2.4 Log .....   | 27        |
| 3.2.5 Memory .....  | 27        |
| 3.2.6 Service .....   | 27        |
| 3.2.7 Setup.....  | 28        |
| <b>3.3 Configuration menu</b> .....   | <b>28</b> |
| 3.3.1 Tracking Configuration .....  | 28        |
| 3.3.1.1 Video Configuration .....   | 29        |
| 3.3.1.2 Beacon.....   | 30        |
| 3.3.2 Down Converter Configuration .....  | 31        |
| 3.3.2.1 Frequency.....  | 32        |
| 3.3.2.2 Gain .....  | 32        |
| 3.3.2.3 SHF.....  | 33        |
| 3.3.3 Remote Control .....  | 33        |
| 3.3.3.1 Set remote mode .....   | 34        |
| 3.3.3.2 Setup RS485 .....   | 34        |
| 3.3.3.3 Setup RS232 .....   | 34        |
| 3.3.3.4 Set Protocol .....  | 34        |
| 3.3.3.5 Ethernet (Optional) .....   | 34        |
| 3.3.4 Redundancy .....  | 35        |
| 3.3.4.1 Identifier .....  | 35        |
| 3.3.4.2 Priority.....   | 35        |
| 3.3.4.3 Type.....   | 35        |
| 3.3.4.4 Change Over .....   | 35        |
| 3.3.4.5 Mode.....   | 35        |
| 3.3.4.6 System.....   | 36        |
| 3.3.4.7 System Number .....   | 36        |
| 3.3.4.8 List units in system .....  | 36        |
| 3.3.4.9 CANBUS for Passive Redundancy Systems .....                                       | 36        |
| <b>4. REAR PANEL CONNECTOR PINOUTS</b> .....  | <b>37</b> |
| <b>4.1 Alarms</b> .....   | <b>37</b> |
| <b>4.2 Remote</b> .....   | <b>37</b> |
| <b>5. REDUNDANCY</b> .....  | <b>38</b> |
| <b>5.1 1 for 1 Redundancy (switched &amp; passive)</b> .....                              | <b>38</b> |
| <b>6. REMOTE CONTROL</b> .....  | <b>38</b> |
| <b>6.1 Ethernet remote control (Optional)</b> .....                                       | <b>48</b> |

## CUSTOMER CARE

Contact the Peak Communications support department for:

- ✚ Product operation, application support or training requests
- ✚ Information for returning or upgrading a product
- ✚ Comments or suggestions on any supplied literature

### Contact Information

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E-mail [support@peakcom.co.uk](mailto:support@peakcom.co.uk)

You can also contact us via our website at [www.peakcom.co.uk](http://www.peakcom.co.uk)

To return a Peak Communications product for repair:

1. Contact the Peak Communications support department and request a Return Material Authorisation (RMA) number.
2. You will be required to provide to our support representative the model number, serial number and a detailed description of the problem.
3. To prevent any damage to the product during shipment we recommend that the unit is returned in its original packaging or if this is not available the packaging used must be of an equal standard.
4. Return the product back to Peak Communications and advise shipment details to support representative for tracking purposes. (Any shipping charges should be prepaid)

## **PRODUCT COMPLIANCE**

### **Safety**

To ensure safety of operator the PTR series of Receivers have been designed to comply with the following safety standard;

EN 60950: Safety of information technology equipment, including electrical business machines.

Operation of the equipment in a non standard manner will invalidate compliance to this standard.

The equipment **MUST BE OPERATED WITH ITS LID ON AT ALL TIMES**. If it is necessary to remove the lid for any purpose then it is essential that the lid is fitted back correctly before normal operation.

**DANGEROUS VOLTAGES ARE PRESENT AROUND THE POWER SUPPLY AND PRECAUTIONS MUST BE TAKEN.**

### **EMC**

The PTR series of Receivers have been designed to comply with the following standards;

Emissions: EN 55022 Class B; Limits and methods of measurement of radio interference characteristics of Information Technology Equipment.

Immunity EN 50082 Part 1; Generic immunity standard, part 1: Domestic, commercial and light industrial environment.

Damage to the keyboard membrane or mechanical damage to the chassis will also invalidate compliance; please contact the factory under these circumstances for advice on continued operation.

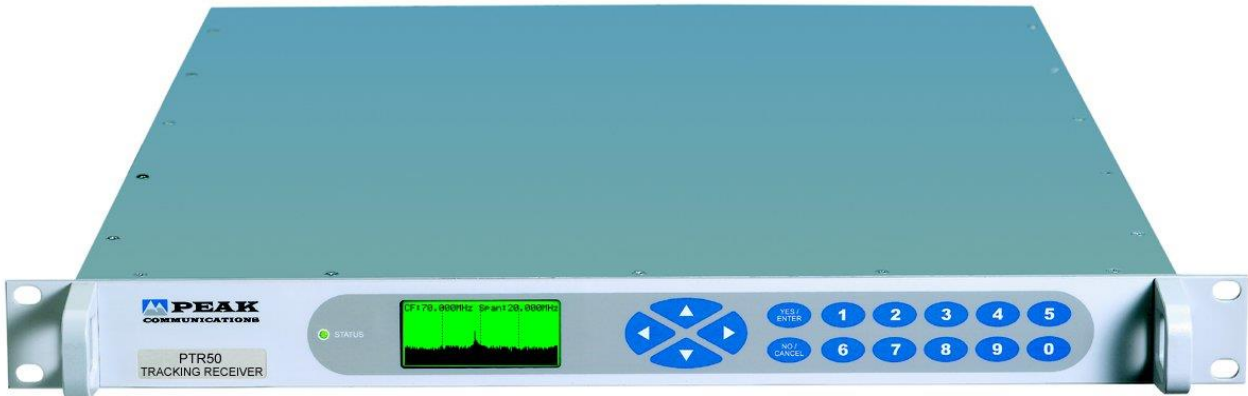
Interfaces to the PTR Series of converters must be made with suitably screened connectors and double screened coaxial cable. Data cables must be double screened.

All 'D' type connectors must have grounding fingers on the plug shell to guarantee continuous shielding. The back-shells must comply to the requirements of VDE 0871 and FCC 20708, providing at least 40 dB of attenuation from 30 MHz to 1 GHz.

Installations which do not comply with this requirement will invalidate the EMC specifications.

# 1. INTRODUCTION

## 1.1 General product overview



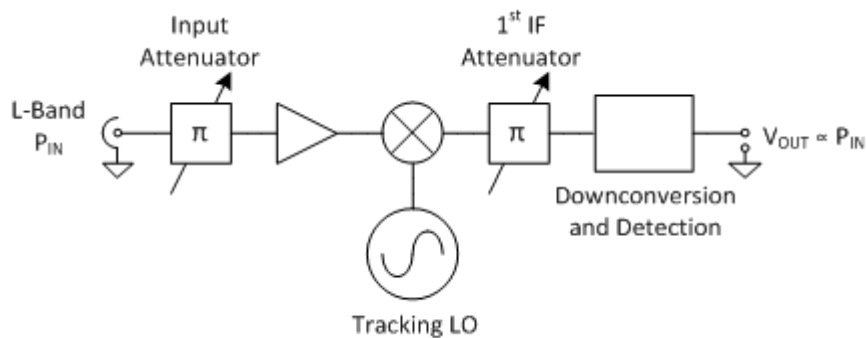
**PTR50 L-band Tracking Receiver**

This manual covers the installation and operation of the PTR family of tracking receiver units. A specification for the PTR50 L band tracking receiver is incorporated in this manual but is not guaranteed to be the latest specification so please visit our website [www.peakcom.co.uk](http://www.peakcom.co.uk) for up to date specifications.

All PTR series receivers are housed in a 1U high 19" rack mount chassis and are designed to provide a DC voltage proportional to the size of the beacon signal being received.

The PTR units provide a high stability 10MHz reference signal and 22.5V DC to power an external Block DownConverter. The PTR series of converters will interface with the Peak CANBUS redundancy units for 1+1 systems.

## 1.2 Functional description



The PTR50 will down convert an L-Band (SHF input options are available with the addition of a Block Down Converter before the L-band input) signal to an IF of  $70 \pm 18\text{MHz}$ , the signal is then split between the tracking function and the video display function, The tracking function then uses a coherent detector to lock to the CW beacon and measure the power of the beacon signal. The video function also uses a detector with switchable IF filters to display the required band on the front panel display allowing a required signal to be monitored. The unit also incorporates a switchable, single sweep digital anti sideband detector to prevent the unit locking to beacon sidebands (the video function is only available when the ASB function has finished). The unit features a large graphic LCD display, membrane keyboard and menu driven software for control and configuration of the unit. The units have built in 1+1 redundancy control and can be remotely controlled via a RS232/485 port.

The PTR is fully software controlled; there are no links or switches used to configure the unit. This enables all control and configuration to be programmed either locally or by remote control. All the configuration parameters are stored in non-volatile memory that will retain data for a minimum of 5 years with no power applied.

### 1.2.1 Initial set-up/ Operating suggestions

The following are suggested set points to enable the customer to get the best use out of the unit within the minimal time;

- Tracking search range of  $\pm 50\text{KHz}$
- Sweep rate of  $5\text{KHz/s}$
- Log output of  $2\text{dB/V}$
- The Coherent detector operates ideally with a post DownConverter level of between  $-60\text{dBm}$  to  $-90\text{dBm}$ , so by using the variable gain of the DownConverter section the optimum level can be achieved i.e. with an expected signal of  $-100\text{dBm}$  the DownConverter should be set towards its maximum gain of  $30\text{dB}$  and with an expected signal of  $-70\text{dBm}$  the gain should be set towards the minimum of  $0\text{dBm}$ .
- When the expected signal exceeds  $-80\text{dBm}$  then it is suggested that the optional video  $10\text{dB}$  pad is turned on, to prevent compression of the video section (this does not affect the tracking section).

Note; For SHF input versions (20dB lower input level) or higher input level options, the above levels will need to be adjusted accordingly.

- The ASB function is active for a single sweep when the unit has first locked, the downconverted spectrum is swept and monitored for a higher signal and if one is found then the main receiver is forced to check the rest of the spectrum. This results in the unit locking to the highest-level signal in its search range. Due to the digital analysis of the bandwidth the ASB will take around 10 minutes to complete a full sweep. It is suggested that when the unit is used on a non sideband beacon the ASB function should remain off.

### 1.3 PTR Specifications

This specification is provided to show typical values and explain the parameters involved. The specification may change so please refer to our website [www.peakcom.co.uk](http://www.peakcom.co.uk) for the latest up to date specifications shown on the datasheets.

#### 1.3.1 Tracking Function

|                              |  |
|------------------------------|--|
| Input                        | L-Band 950-2150 MHz, SHF versions available with internal BDC.   |
| Connector                    | N-Type Female  |
| Frequency resolution         | 1KHz   |
| Input Level Max              | -60dBm, -80dBm for SHF input version (options available to increase power level).  |
| Search Range                 | User selectable $\pm 20\text{KHz}$ , $\pm 50\text{KHz}$ , $\pm 100\text{KHz}$ , $\pm 200\text{KHz}$ , $\pm 500\text{KHz}$ .  |
| Sweep Rate                   | User Selectable 2.5KHz/s, 5KHz/s, 10KHz/s*, 20KHz/s*, 40KHz/s*, 80KHz/s*, 120KHz/s* & 240KHz/s* (* only applicable to Fast acquisition units)  |
| Output                       | $\pm 10\text{VDC}$ , other options available.  |
| Post Detection Time Constant | 150ms  |
| Connector                    | BNC Female   |
| Scale                        | User selectable, 0.5dB/V, 1dB/V, 2dB/V, 5dB/V, 10dB/V.   |
| Impedance                    | $0\Omega$ ideal voltage source max current 5mA   |
| Adjustment Range             | Output adjustable to 0V DC for input power levels from $-60\text{dBm}$ to $-100\text{dBm}$ at 2dB/V. For SHF input versions (20dB additional loss) and higher input power options the above levels will need to be adjusted accordingly. |
| PLL Noise (IF) Bandwidth     | 2KHz   |
| Threshold for Reacquisition  | 35dBc/Hz   |
| Average Search Time          | 3s ( for search range $\pm 20\text{KHz}$ ). Options available for fast lock acquisition to 1s (for search range of $\pm 100\text{KHz}$ ).  |
| ASB Threshold                | 3dB  |
| ASB sweep Rate               | 80Hz/s   |



### 1.3.2 Video Function

|                       |   |
|-----------------------|---|
| Input                 | Selected Beacon frequency $\pm 25\text{MHz}$ ( lower limit of 950MHz upper limit 2150MHz) |
| Output                | Front panel graphical display   |
| Resolution Bandwidth  | 6kHz  |
| Switchable Attenuator | 10dB  |
| Vertical resolution   | 5dB/division  |

### 1.3.3 General

|                           |   |
|---------------------------|---|
| Reference frequency       | Internal 10 MHz frequency trimmed by software   |
| External reference input  | Factory Selectable 5 or 10MHz   |
| Stability                 | $<5 \times 10^{-10}$ over 1 second, $<5 \times 10^{-9}$ over 12 hrs, ageing $<5 \times 10^{-7}$ per year, temperature stability $<5 \times 10^{-8}$ over 0 to +40deg.C. |
| Block DownConverter Drive |   |
| Reference                 | 10MHz at 0dBm switchable.   |
| DC                        | 22.5V @ 0.5Amp switchable.  |
| Mechanical                | 1U stainless steel chassis - 534mm deep, weight approx 8kg dependant on options   |
| Environmental             | Operating temperature range 0 to 50°C   |
| Compliance                | EMC to EN 55022 part B and EN 50082-1, safety to EN 60950   |
| Power supply              | 90 to 264VAC, 47-63Hz, 50W max.   |
| Remote Control            | RS232/ RS485 port, Ethernet optional.   |
| Redundancy features       | In-built 1:1 CANBUS® system   |

## 1.4 Review of PTR Specification parameters

### DownConverter section

#### 1.4.1.1 DownConverter Input

950MHz to 2150MHz full L-Band down conversion. The selected frequency is passed to the Tracking section with a bandwidth of  $\pm 2.5\text{MHz}$  and to the Video section with  $\pm 25\text{MHz}$ .

#### 1.4.1.2 DownConverter resolution

1 KHz Tracking frequency step size. On the LCD screen this is shown as 0.001MHz for standard L-Band input frequency versions. For SHF input versions the SHF LO addition feature can be switched on and thus on the LCD screen this will be shown as 0.000001GHz.

#### 1.4.1.3 DownConverter Conversion Gain

Adjustable down conversion gain is available for best noise performance  
0 to 30dB  $\pm$  2dB min stepped 0.1dB

The gain of the converter can be set to have no gain at 0dB or a gain of 30dB. The finite gain set is specified to be within 2dB of the setting and the step size is 0.1dB. The tolerance of the step size is not specified but should not exceed 0.05dB per step.

#### 1.4.1.4 Auxiliary DC output

22.5Volts regulated @ 0.5Amp, software switchable

This facility is used for driving an external SHF Block Down Converter or an LNB. This voltage is integrated with the L-Band signal (and 10MHz). This voltage is out of a regulator and will pull down to zero without damage however the internal fuse may be damaged if this happens.

#### 1.4.1.5 10MHz reference output

0dBm nominal, software switchable.

This facility is used for stabilising the output frequency of an external L-Band to SHF Block Down Converter. This signal is integrated with the L-Band output signal. An outdoor BDC/ LNB will drift in frequency due to ambient temperature changes causing changes to the BDC locking crystal inside the unit. Inside Peak BDC's the facility is made to pick up the 10MHz locking signal sent by the PTR50 and lock to the internal crystal. With the BDC locked to the indoor unit the stability of the BDC unit is as good as the internal PTR50 crystal. With very long cables caution should be taken not to attenuate the 10MHz (and DC) too much.

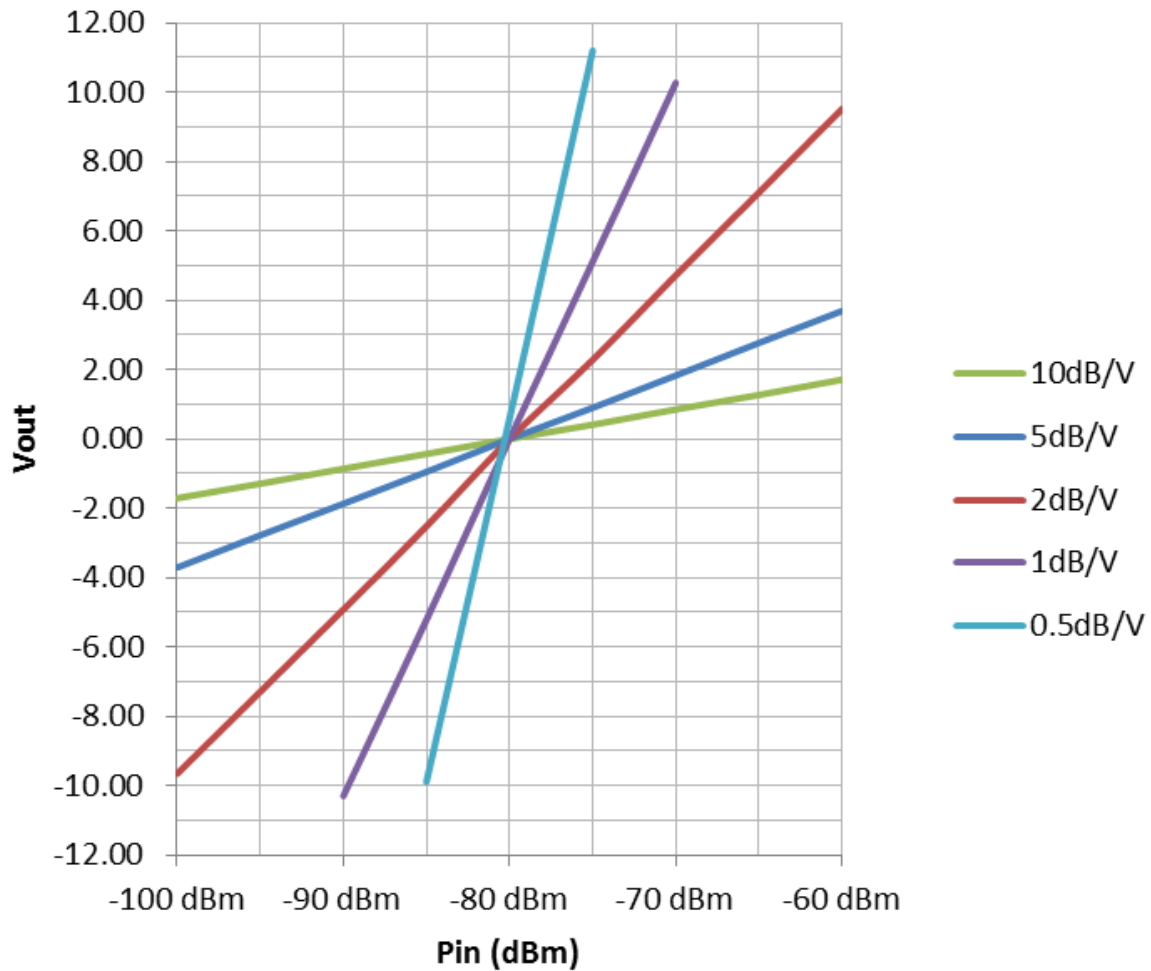
### Tracking Section

#### 1.4.1.6 Tracking Output

A DC voltage proportional to the received signal strength at the required dB/V and offset using the DC offset menu to between  $-10V$  to  $+10V$  DC.

Note; other output voltage range options are available, including 0-10VDC &  $\pm 5VDC$ .

The internal attenuation settings, log-offset and slope settings can all be used to optimise the dynamic range of the output.



Note; Typical L-Band input levels shown. For SHF input versions (20dB lower input level) or higher input level options the above levels will need to be adjusted accordingly.

#### 1.4.1.7 Tracking Level

Tracking signal input level is  $-60\text{dBm}$  maximum,  $-70\text{dBm}$  nominal and the minimum is determined by the noise level on the carrier, although the unit will become nonlinear below  $-110\text{dBm}$ .

The maximum aggregate input power is  $-20\text{dBm}$ , which is the power spectral density across the receiver bandwidth (rather than the CW beacon signal power).

Note; Typical L-Band input version levels shown. For SHF input versions (20dB lower input level) or higher input level options, the above levels will need to be adjusted accordingly.

#### 1.4.1.8 Search Range

5 user selectable sweep widths to allow for drifts on the required signal whilst searching it is suggested to leave on the narrower settings as this will speed up acquisition of lock.

The settings available are;  $\pm 20\text{KHz}$ ,  $\pm 50\text{KHz}$ ,  $\pm 100\text{KHz}$ ,  $\pm 200\text{KHz}$  &  $\pm 500\text{KHz}$ . It is suggested to use the narrowest setting if possible

#### 1.4.1.9 Sweep Rate

Up to 8 user selectable sweep rates allow the user the choice to speed up the acquisition of lock. The user must be aware that the lower the signal to noise ratio the slower the sweep rate needs to be to guarantee lock detection.

The settings available are;  $2.5\text{KHz/s}$ ,  $5\text{KHz/s}$  on standard units, on fast acquisition units the extra sweep rates are;  $10\text{KHz/s}$ ,  $20\text{KHz/s}$ ,  $40\text{KHz/s}$ ,  $80\text{KHz/s}$ ,  $120\text{KHz/s}$ ,  $240\text{KHz/s}$ . It is suggested to use  $5\text{KHz/s}$  as a starting point.

#### 1.4.1.10 Post Detection Time Constant

This is the smoothing on the DC output and is factory set to the value of 150ms.

#### 1.4.1.11 Log Output Scale

User selectable settings for the DC Logarithmic output voltage.

The settings available are  $0.5\text{dB/V}$ ,  $1\text{dB/V}$ ,  $2\text{dB/V}$ ,  $5\text{dB/V}$  &  $10\text{dB/V}$ .

#### 1.4.1.12 DC output adjustment

Offset of the Log output is user adjustable to 0V DC for input power levels from  $-60\text{dBm}$  to  $-100\text{dBm}$  at  $2\text{dB/V}$ .

Note; For SHF input versions (20dB lower input level) or higher input level options the above levels will need to be adjusted accordingly.

#### 1.4.1.13 PLL Noise Bandwidth

This is factory set to  $2\text{KHz}$ .

#### 1.4.1.14 Threshold for Reacquisition

The unit will lock with a threshold of  $35\text{dBc/Hz}$  (unit must be on slowest sweep rate setting for these figures).

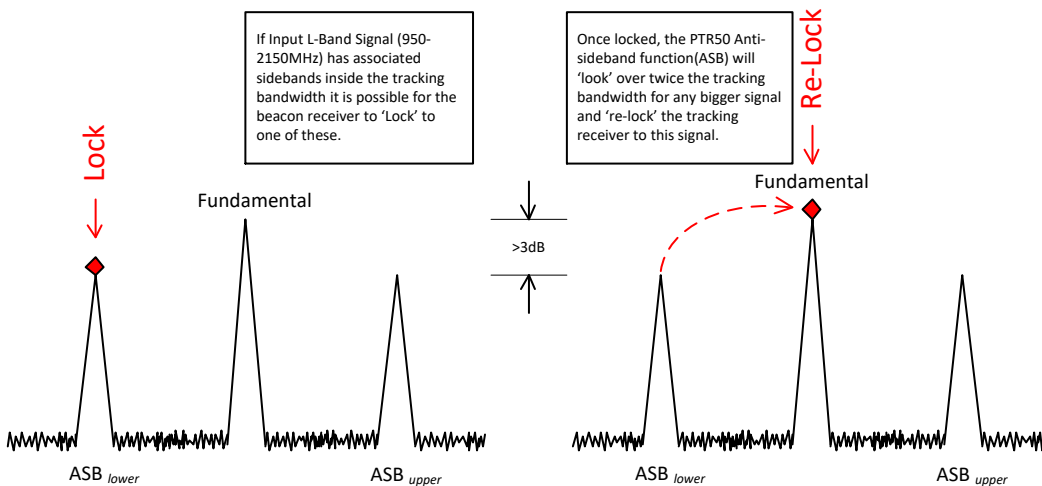
### 1.4.1.15 ASB Sweep Rate

The ASB when enabled will analyse the tracking band searching for a higher signal and if one is detected will enable the tracking lock circuit to release lock and search for this higher signal.

The ASB function is active for a single sweep when the unit has first locked, the downconverted spectrum is swept and monitored for a higher signal and if one is found then the main receiver is forced to check the rest of the spectrum. This results in the unit locking to the highest-level signal in its sweep range.

The sweep rate on the ASB is around 80Hz/s.

Due to the digital analysis of the bandwidth the ASB will take around 10 minutes to complete a full sweep.



Note; if system level sideband interference is unlikely then ASB function should remain OFF.

### 1.4.1.16 ASB Threshold

When the ASB is searching it is looking for a signal which is at least 3 dB higher than the current locked signal level

### Video Section

#### 1.4.1.17 Video Input

Selected Beacon frequency  $\pm 25\text{MHz}$  max (lower limit of 950MHz upper limit 2150MHz) is available to display on the front panel.

The minimum setting for span is set by the resolution i.e. with wide resolution the display can be 160 pixels of  $(6\text{KHz}/2) = 480\text{KHz}$  and with the narrow resolution a minimum span of 80KHz is available.

#### 1.4.1.18 Video Resolution

The resolution band width is fixed at 6KHz.

#### 1.4.1.19 Vertical Resolution

The display vertically axis is set to 5dB/division.

#### 1.4.1.20 Video Section Attenuator

It is Possible to switch in a 10dB pad to allow measurements to be better made if the unit has a high aggregate input level.

#### 1.4.1.21 Reference frequency

Internal 10MHz frequency, trimmed in software.

Unit incorporates a 10MHz, high grade, OCXO crystal offering the ultimate in stability.

External reference input: Will accept either 5 or 10MHz.

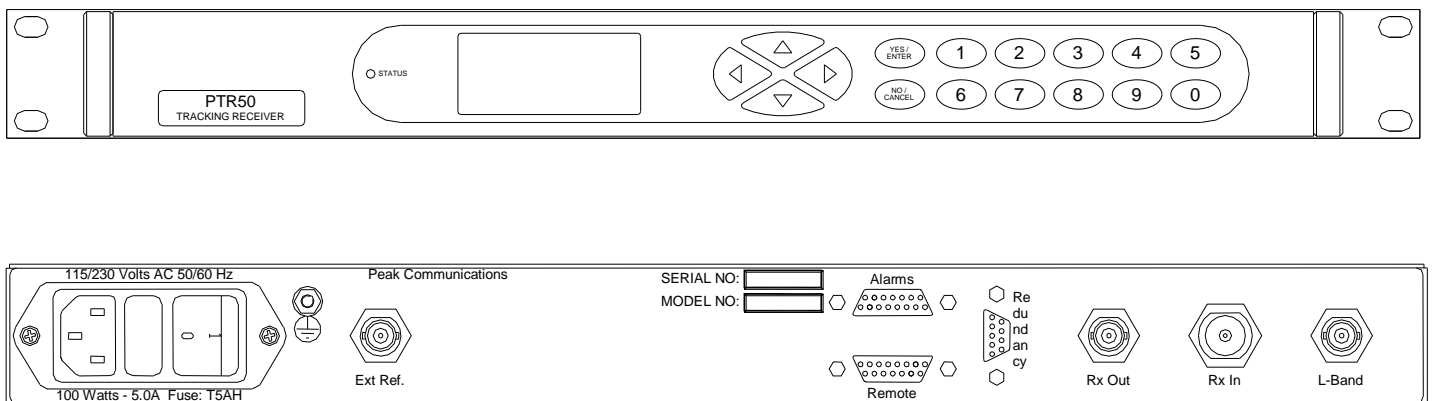
Stability;  $<5 \times 10^{-10}$  over 1 second,  $<5 \times 10^{-9}$  over 12 hrs, ageing  $<5 \times 10^{-7}$  per year, temperature stability  $<5 \times 10^{-8}$  over 0 to +40deg.C.

## 1.5 Mechanical description

The PTR Series of converters are housed in a 19 inch 1U high chassis, suitable for rack mounting. It is 534 mm deep and may be fitted with rack slides if required. Figure 2 shows views of the front and rear panels of the PTR series Tracking Receivers.

On the front of the unit is the keyboard, LCD display and LED indicators. The operator is prompted by messages displayed on the LCD to enter data via the keyboard. In this way the PTR may be configured for use, and the set up changed, if necessary. The LEDs provide a quick visual indication of the operational status of the unit.

**FIG 2. Front and rear panel views**



## 1.6 Front panel description

### Keyboard

The keyboard is of the membrane type and is an integral part of the front panel assembly. The front panel overlay and is completely sealed against penetration of liquids but caution should be taken especially with solvents which may damage the front screen.

There are 16 keys in total - number keys in the range 0 to 9, YES/ENTER and NO/CANCEL and a 4 way arrow block of keys

### LCD display

The backlit display is a graphic display and characters are scaled to incorporate as much information as possible on the screen. It provides detailed information about the status and configuration of the unit, and when appropriate, prompts the user to enter data via the keypad.

### LED Indicator

Only one tricolour LED is present marked STATUS. This shows GREEN when the unit is OK, RED when an internal fault is present and AMBER when in STANDBY (Redundancy operation)

## 1.7 Rear panel description

All of the connectors necessary for the user to interface the PTR series to other equipment are located at the rear of the unit. Depending on the model the connection may include some of the following

|                    |  |
|--------------------|--|
| Receive IF         | Marked RX Out for the PTR always a BNC connector     |
| L Band interfaces  | Marked RX In for the PTR always an N connector       |
| L-Band monitor     | Marked L-Band monitor and are always a BNC connector |
| External Reference | Marked Ext Ref and is always a BNC connector         |

Alarms, Remote Control, Redundancy      All 'D' type connections

### EC mains power connector/switch/fuse

The PTR series of converters are designed to operate from a mains AC supply from 100 - 230 VAC. The Input connector incorporates a mains switch and 2 input fuses. Access to the fuses is also provided under the removable cover. ALWAYS REPLACE THE FUSE WITH ONE OF THE SAME TYPE AND RATING.



### 1.7.1 Chassis Earth stud

To provide the correct level of safety to the operator this must be connected to a suitable safety earth provided in the rack installation. See the Safety and EMC comments in section 1.

### 1.7.2 Rx In

On a PTR this is a 50 Ohm N-type female connector. The input frequency should be in the range 950 to 2150MHz for L-Band input versions (SHF input options are available with the addition of a Block Down Converter before the L-band input).

### 1.7.3 Rx Out

This connector is a 50 Ohm BNC female connector. CAUTION DC is present on this connector at all times within the range of  $-10V$  to  $+10V$ .

### 1.7.4 L-Band Monitor (optional, primarily for SHF input versions)

On the PTR the connector next to the RX IN is the  $-20dBc$  L-Band input monitor.

### 1.7.5 Ext Ref.

On the PTR series of converters this is the input for the 10MHz station clock input. The internal reference is locked to this external reference.

### 1.7.6 Alarms connector

This is a 15 pin male 'D' type connector, which provides access to the various form 'C' relay contacts which indicate alarm conditions.

### 1.7.7 RS232/RS485 Remote Control connector

This is a 15 pin female 'D' type connector. The PTR provides both an RS232 port for remote control, and an RS485 port for 'multi-drop' applications.

### 1.7.8 Redundancy

This is a 9 pin male 'D' type connector. The PTR has a built-in 1+1 redundancy controller. A pair of PTR units is required for correct operation plus a PTR1000 unit.

## 1.8 Fault philosophy

Fault conditions are divided into two categories;

- a) MAIN UNIT COMMON FAULTS; Faults with internal items that on a PTR are common to all sections of the unit (Main power supply assembly etc).
- b) DEVICE SPECIFIC FAULTS; Faults that are specific to the Tracking section or DownConverter or video assembly. These can include external fault inputs.

Most faults as shown below activate the summary ALARM, this will force a change-over if used in a normal redundant system.

The only fault that does not cause the unit to go into ALARM is the 'External Mute'. All faults shown below are reported on the front panel LCD and turn the tri-colour fault LED to red.

|       |   |                 |
|-------|---|-----------------|
| Green | – | No faults       |
| Amber | – | Unit in standby |
| Red   | – | Fault condition |

The MUTED column shows if the output is muted when the ALARM is active.

*MAIN UNIT COMMON FAULTS:*

| <b>Fault Name</b>      | <b>MUTED</b> | <b>SUMMARY ALARM</b> |
|------------------------|--------------|----------------------|
| 5 VDC Power Supply     | Yes          | Yes                  |
| +15 VDC Power Supply   | Yes          | Yes                  |
| -15 VDC Power Supply   | Yes          | Yes                  |
| +36 VDC Power Supply   | Yes          | Yes                  |
| Over/Under Temperature | Yes          | Yes                  |
| Over Humidity          | Yes          | Yes                  |
| General Fault          | Yes          | Yes                  |
| 100MHz Fault           | Yes          | Yes                  |
| Redundancy Coax Switch | Yes          | Yes                  |

*DEVICE SPECIFIC FAULTS;*

| <b>Fault Name</b>        | <b>MUTED</b> | <b>SUMMARY ALARM</b> |
|--------------------------|--------------|----------------------|
|                          |              |                      |
| +3 VDC Power Supply      | No           | Yes                  |
| DC Feed Power Supply     | No           | Yes                  |
| +5 VDC Power Supply      | No           | Yes                  |
| 1 <sup>st</sup> LO Fault | Yes          | Yes                  |
| 2 <sup>nd</sup> LO Fault | Yes          | Yes                  |
| Internal Block Fault     | No           | Yes                  |
| External Fault           | No           | Yes                  |
| Internal SHF Fault       | Yes          | Yes                  |
| External Mute            | Yes          | No                   |

## 2. INSTALLATION

### 2.1 Care of Your Product

#### 2.1.1 Handling

Single products, when fully packaged for transport can weigh in excess of 12kg's. When multiple Converters are to be delivered at the same time, to the same customer, occasionally two Converters are packaged in the same outer carton, the overall weight can then exceed 20kg's. Care must be taken when attempting to lift or carry these packages.

The shipping carton is qualified for transit of these products and has been used successfully for many years. It will protect against shock and vibration encountered during normal carrier transportation.

PLEASE RETAIN ALL PACKING MATERIALS, including the foam insets. Should the unit need to be returned, return to the address on the front of the manual USING THE ORIGINAL PACKING CARTON, unless it has been seriously damaged.

Avoid subjecting the packaged or unpackaged product to severe shocks.

#### 2.1.2 Unpacking and Inspection

When the product is first received, the outer pack should be inspected for signs of damage. If damage to the outer pack is evident, contact the Carrier immediately and submit a damage report. The equipment should then be removed and inspected for signs of damage, retaining all packing materials. Any visible signs of damage to the equipment should be reported immediately to Peak Communications (electronic photos of the pack and equipment can help with any subsequent insurance claims). If the equipment appears undamaged, it should be tested for correct operation and again any abnormalities reported to Peak Communications.

When first removing the product from its transit pack, take care to retain all documentation and associated hardware. These products are typically provided with the following items;

- PTR series product.
- Operation Manual.
- Test Results.
- Mains Lead (suitable for use in country of operation).
- Spares Kit.

If you suspect that any item is missing, please contact Peak Communications immediately.

#### 2.1.3 Storage

Store the product in the normal horizontal orientation, in its outer carton until it is required for use. Do not use the products to support the weight of other items whilst in storage.

Storage temperature range is typically from -40°C to +80°C, avoid exceeding these extremes otherwise damage may result.

Avoid exposing the packaged or unpackaged product to extremes of humidity or moisture (including condensation). In the event that this does occur, the product

should be left at room temperature for in excess of 5 hours to dry naturally before application of prime power.

## 2.1.4 Cleaning & Maintenance

The product is designed to be installed and operated in a clean air environment. Apart from occasional cleaning of the front panel, no regular cleaning &/or maintenance is necessary.

Always ensure that the product is off-air and that the mains supply is isolated before attempting to clean the front panel. Cleaning of the front panel can be accomplished with a damp cloth. Do not use excessive amounts of water & do not use detergents or other cleaning agents without first consulting Peak Communications.

## 2.2 Mechanical Installation Considerations

### 2.2.1 Mounting

This product has been designed to mount in a standard IEC 19 inch racking system, but can also be used free standing or mounted in a standard IEC flight case.

The product is of standard 1U height (1.75 inch) and depth of 534mm (21 inches). Standard connector mating parts with cable bend radii, plus space to uncouple connectors, can add a further 80mm (3.15Inches) to this depth & should be considered when designing the installation.

The product is provided with standard 19 inch rack front panel fixing points, however these should not be solely relied upon to support the entire weight of the unit. Four (two on each side) additional M3 mounting points are provided along the sides of the unit, These can be used to support the unit from rack slide rails or other side support mechanisms, alternatively shelving brackets can be used to provide rest support for the units.

Cooling slots are provided on the sides of the unit, care should be taken to avoid blocking these when designing the installation (see Cooling section below).

When several products are to be mounted on top of one another in a rack system, they should not be stacked without individual support. Stacking of units without adequate mechanical support and isolation can degrade microphonic performance of the overall system and hamper maintenance activities.

### 2.2.2 Cooling

These products dissipate <100W internally and contain an internal forced air cooling system. Air intake and exhaust apertures are provided on the side panels of the chassis, care should be taken to avoid blocking these when designing the installation

Although these products have been designed to operate with a full rack packing density in an ambient of 50°C, for operational reasons it may be necessary to allow extra space if the unit is sandwiched between two longer chassis, or if the rack ambient increases above 50 degrees C. This will be necessary if adjacent equipments

transfer significant heat to the Converter surfaces, through either conduction or convection.

A thermal sensor is fitted to the unit which provides an over temperature alarm

## 2.3 Prime Power Supply & Connection

The safety notes provided in the product compliance section of this handbook should be read before connecting this product to the mains supply.

This product can be operated from mains supplies of 100-132Va.c. or 200-230V a.c. (50/60Hz), the appropriate voltage range is automatically selected by the unit and requires no user intervention. The IEC standard mains inlet on the rear of the unit includes a double pole switch.

The typical power requirement of these units is <100W.

The equipment is classified in EN 60950 as 'pluggable equipment, class A' for connection to the mains supply, as such it is provided with a mains inlet cord suitable for use in the country of operation. In normal circumstances this will be of an adequate length for installation in the rack. If the mains cord proves to be too short, then any replacement must have a similar fuse type (if fitted) and be manufactured to similar specifications: check for HAR, BASEC or HOXXX-X ratings on the cable. The connector ends should be marked with one of the following : BS1636A (UK free plug 13 amp); BSI, VDE, NF-USE, UL, CSA, OVE, CEBEC, NEMKO, DEMKO, SETI, IMQ, SEV and KEMA-KEUR for the IEC 6 amp free socket. Schuko and North American free plugs must have similar markings.

The installation of the equipment and the connection to the mains supply must be made in compliance to local or national wiring regulations for a category II impulse over voltage installation. The positioning of the equipment must be such that the mains supply socket outlet for the equipment should be near the equipment and easily accessible or that there should be another suitable means of disconnection from the mains supply.

### 2.3.1 Fuses

The equipment is provided with short circuit fuse protection of both the Live and Neutral conductors, both fuses must be functional before the unit will operate. The fuses are accessible from the rear of the unit and are fitted into the IEC mains inlet. To check or replace a fuse, switch off and isolate the mains supply before removing the fuse cover. If a replacement fuse is required, then an equivalent type and rating must be used. The fuse size is 5 x 20 mm, rated at 5A anti-surge (T5A).

## 2.3.2 Earthing

The equipment is designed to operate from a TN type power supply system as specified in EN 60950. This is a system that has separate earth, line and neutral conductors. The equipment is not designed to operate with an IT power system which has no direct connection to earth.

An external protective earth, providing protection against RF and transient currents, should be connected between the rear panel earth stud (adjacent to the prime power inlet point and fitted with an M4 nut) and a local system earth point.

## 2.4 Other Interface Connections

### 2.4.1 L-band Connections

These are provided on the rear panel and have the following characteristics;

| Converter Type | Connection Type | Panel Label | Impedance |
|----------------|-----------------|-------------|-----------|
| PTR            | N-type (F)      | Rx In       | 50Ω       |

The use of high quality cables and connectors for L-band (or optional SHF input) signals is strongly recommended. Cables and connectors should be rated for operation up to 2200MHz (use appropriate rating for SHF connection options). Care should be taken when handling these cables, avoiding stress to connections, tight bend radii and damage from sharp objects, all of which can degrade system performance.

These connections can also be used to interface the 10 MHz reference signal (at a nominal 0dBm level) and the DC power (22.5V @ 0.5A) to the external Block DownConverter.

### 2.4.2 L-band Monitor Output Connections (optional, primarily for SHF input options)

These are provided on the rear panel and have the following characteristics;

| Converter Type | Connection Type | Panel Label | Impedance | Notes.                              |
|----------------|-----------------|-------------|-----------|-------------------------------------|
| PTR            | BNC (F)         | L-Band      | 50Ω       | Monitors L-band Input from LNB/BDC. |

Monitor signal levels are typically -20dBc ±3dB.

### 2.4.3 IF Connections

These are provided on the rear panel and have the following characteristics;

| Converter Type | Connection Type | Panel Label | Impedance | Notes.  |
|----------------|-----------------|-------------|-----------|---------|
| PTR            | BNC (F)         | Rx Out      | 0Ω        | 5mA max |

## 2.4.4 External Reference Input Connections

These are provided on the rear panel and have the following characteristics;

| Converter Type | Connection Type | Panel Label | Impedance | Notes.              |
|----------------|-----------------|-------------|-----------|---------------------|
| All            | BNC (F)         | Ext Ref.    | 50Ω       | Accepts 5 or 10MHz. |

## 2.4.5 Alarms Interface Connection

This is provided on the rear panel and is a standard 'D' type 15-pin (Male).

The connections provide access to the various form 'C' relay contacts which indicate alarm conditions.

A pin configuration is given below;

|                    |   |    |                    |
|--------------------|---|----|--------------------|
| Unit fault (1) COM | 1 | 9  | Unit fault (1) N/O |
| Unit fault (1) N/C | 2 | 10 | Ext. Alarm (2)     |
| Ext. Mute (1)      | 3 | 11 | Ext. Alarm (1)     |
| Unit fault (2) COM | 4 | 12 | Unit fault (2) N/O |
| Unit fault (2) N/C | 5 | 13 | Not used           |
| Ext. Mute (2)      | 6 | 14 | Not used           |
| Not used           | 7 | 15 | GROUND             |
| Not used           | 8 |    |                    |

Note : N/O indicates 'normally open' in the non fail state, with STATUS LED Green.

## 2.4.6 Remote Serial Communications Interface (RS-232/RS-485)

This is provided on the rear panel and is a standard 'D' type 15-pin (Female). The units provide both an RS232 port for simple two way remote control, and an RS485 port for asynchronous, 'multi-drop' remote control applications.

A pin configuration is given below;

|             |   |    |              |
|-------------|---|----|--------------|
| RS485 Rx +  | 1 | 9  | RS485 Rx -   |
| RS485 Tx +  | 2 | 10 | RS485 Tx -   |
| Not used    | 3 | 11 | Not used     |
| Not used    | 4 | 12 | Not used     |
| Not used    | 5 | 13 | Not used     |
| Not used    | 6 | 14 | GROUND       |
| RS232 Rx In | 7 | 15 | RS232 Tx Out |
| Not used    | 8 |    |              |

When using this product with the serial communications interface, a 120Ω bus termination should be fitted externally between the Rx + (pin 1) and Rx – (pin 9) connections of the 15-way 'remote' connector. If used in conjunction with other equipment on a multi-drop system, the bus termination is only required on one unit, typically the furthest from the master device.

A screened cable, terminated to the back-shell of the 'remote' connector should be used to prevent RF interference from adversely affecting operation. When connecting the cable screen to the back-shell, ideally a full 360° contact should be made.

For short cable runs (up to 10m), a cable containing a twin twisted pair conductor arrangement is ideal. Typical conductor characteristics would be size 24 AWG, screened with an overall tinned copper braid. For cable runs above 10m, an insulated signal return connection should also be made.

#### 2.4.7 Redundancy Interface Connector

This is provided on the rear panel and is a standard 'D' type 9-pin (Male).

The redundancy interface is a standard feature of these units and can be easily configured so that the converters communicate with each other for 1+1 redundancy systems. The units communicate using the CANBUS® interface system.

A pin configuration is given below;

|             |   |   |              |
|-------------|---|---|--------------|
| Not used    | 1 | 6 | GND          |
| CANBUS® Low | 2 | 7 | CANBUS® High |
| GND         | 3 | 8 | Tellback A   |
| Power A     | 4 | 9 | Tellback B   |
| Power B     | 5 |   |              |

#### 2.4.8 Ethernet Port (Optional)

The Ethernet option for the PTR series products adds the ability to control the unit by Ethernet as well as by the existing standard RS232 or RS485, this is achieved via a separate module within the unit. See 6.1 for more details.



### 3. EQUIPMENT OPERATION

The PTR models are L-Band based and have additional features for integration with SHF Block converters.

A typical simple DownConverter system incorporating a PTR could consist of a PTR50 connected directly to a remote outdoor Block Down converter. The PTR50 powers and controls the Block converter by supplying DC Power, a Locking frequency for the BDC internal oscillator. The PTR50 monitors the alarm status of the Block converter to give the operator indication of the state of the outdoor unit. In these situations the DC and 10MHz signals can be switched on and off and the frequency on the PTR50 unit can be set to include the frequency of the remote Block converter so input at SHF is possible.

#### 3.1 Menu structure overview

All facilities are accessed from the front panel, via the menu system. The remote control can interrogate the unit whilst the menu is in use.

The keyboard consists of 16 keys. The block of 4 arrowed keys are used for jumping to associated menus and moving along character strings.

The YES/ENTER is the general confirmation button and the NO/CANCEL is the general abort/step back button.

The 0 to 9 keys are used to set values or to select a menu option. Only one push of the number button is required to select an item

You can change the contrast on the screen by holding in the YES button and pressing arrow UP or arrow DOWN

A short audible beep designates a valid key and a short buzz an invalid key

##### 3.1.1 LCD display contrast

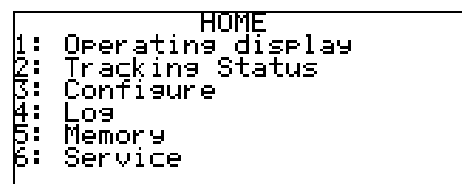
The contrast of the LCD can be changed via the front panel.

To change the contrast press and hold the YES/ENTER key, while holding down this key either press the UP arrow (to lighten the screen) or the down arrow (to darken the screen).

#### 3.2 Home Menu

The HOME menu is the base menu from which to perform any function. For this manual to cover all models the following describes the basic operation of a PTR and this is typical of all the equipment in the PTR range. The HOME menu displays items which are particular to the converter being used.

There is also a 'hidden' SETUP menu that can be accessed by pressing key '9' from this menu.



```
HOME
1: Operative display
2: Tracking Status
3: Configure
4: Log
5: Memory
6: Service
```

Figure 3.2.0.1 HOME menu.

### 3.2.1 Operating Screen

The Operation screen gives you access to two menu items that is specific for the tracking unit see (Figure 3.2.1.1).

Press key “1” to choose menu one which will display the operational display see picture (Figure 3.2.1.2). The screen shows the Rx frequency and the level of the beacon found in dBm.

Key press “2” takes you to menu item two see picture (Figure 3.2.1.3). This screen display the power of the frequencies inside the video frequency span (VS) where the video centre frequency (CF) is at half the video frequency span of the frequency span. RL is the Reference Level of the incoming signals in dBm.

The video centre frequency and video frequency span can be changed in the Video Display menu. To change the VS press the arrow up to increase the frequency span and array key down to decrease it. The centre frequency can be changed with 1/10<sup>th</sup> of the current video frequency span. Increase the video centre frequency by pressing arrow key right and decrease it by pressing arrow key left.

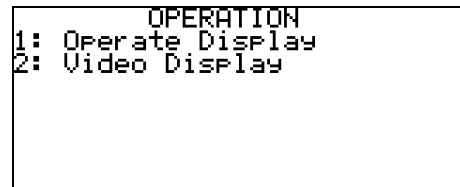


Figure 3.2.1.1 OPERATION menu screen.

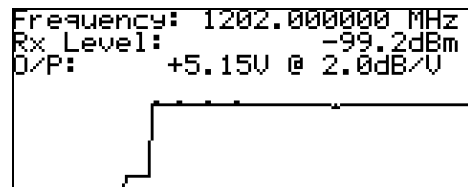


Figure 3.2.1.2 Operation Display menu choice 1.

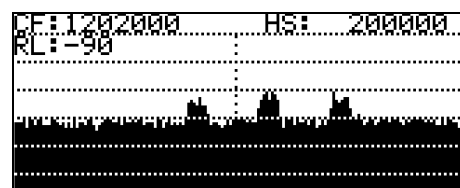


Figure 3.2.1.3 Video Display menu screen choice 2.

### 3.2.2 Tracking Status

The Tracking Status screen shows several setup values (see Figure 3.2.2.1), arranged into the following sections: Video, Beacon, Down Converter, and Alarms. The screen can be scrolled up and down using the arrows keys up and down.

While viewing the tracking status screen, the option to press the left or right arrow keys is available. Either key will take you to the Unit status screen which is show in the picture (Figure 3.2.2.2). The Unit status screen shows you software version, unit type, serial number, alarm summary and several other settings that affect the entire unit. To see the entire setup scroll do using the arrow key down.

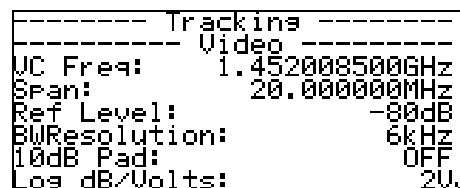


Figure 3.2.2.1 Tracking status menu screen.

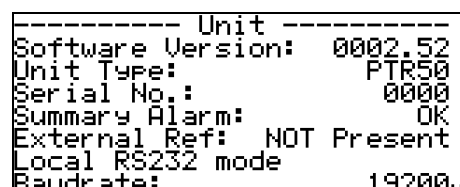


Figure 3.2.2.2 Unit statuses menu screen.

### 3.2.3 Configure

The Configure menu allows you to choose the areas of the unit you wish to change the configuration off. This menu gives you access to a menu screen specific for the Tracking and Rx part. It also gives you access to the remote control setup and redundancy unit setup. For more information about configuration of the unit see chapter 3.3 Configuration Menu.

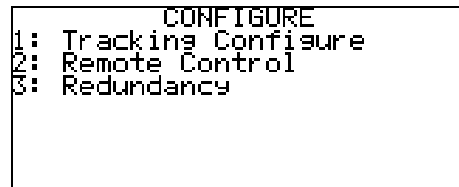


Figure 3.2.3.1 CONFIGURE menu screen.

### 3.2.4 Log

The log menu contains three submenus View, Clear and View graphs, see picture (Figure 3.2.4.1). Press key “1” on the key pad to view the event log that shows any errors, alarms or events that has happened to the unit. Picture (Figure 3.2.4.2) shows the view menu screen. It is possible to page through the log items but pressing the arrow keys up and down.

To clear the log press key “2”. A confirmation menu screen will appear. Press key “YES” to clear the log or “NO” to cancel.

The View Graphs submenu, key press “3”, shows various voltage graphs of levels within the unit. You can scroll through the various graphs using the UP & DOWN arrows.

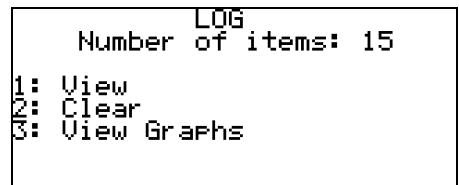


Figure 3.2.4.1 Log menu screen.

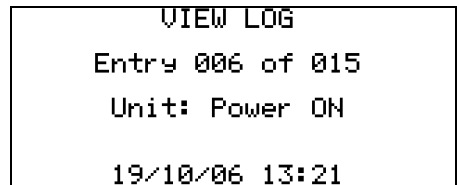


Figure 3.2.4.2 VIEW LOG menu screen.

### 3.2.5 Memory

The Memory menu (Figure 3.2.5.1) allows the user to store, delete or restore store configurations into the device.

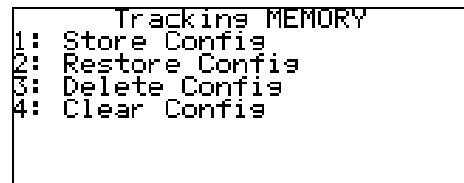


Figure 3.2.5.1 MEMORY menu screen.

### 3.2.6 Service

This menu is for maintenance personnel only and allows setting of the date and time, LOs inside the unit can be manually changed, fans switched on and off and the 10MHz internal reference frequency can be trimmed. This menu is factory set and it is not recommended that the user changes parameters within this menu without consulting the factory.

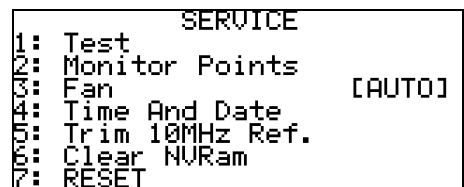


Figure 3.2.6.1 SERVICE menu screen.

Fan:

The PTR series of converters are fitted with two fans. One fan operates all the time the prime power is applied the second fan can be set to [ON] [OFF] or [AUTO]. In auto mode the fan will operate when the unit internal temperature rises above the set point.

### 3.2.7 Setup

This menu is 'hidden' and is intended for maintenance personnel only. It allows setting of the unit type, serial number, modification of parameters & factory setup of the internal operation. This menu is factory set and it is not recommended that the user changes parameters within this menu without consulting the factory.

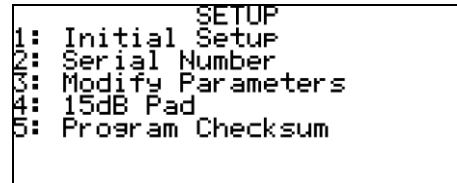


Figure 3.2.7.1 SETUP hidden menu screen.

### 3.3 Configuration menu

As shown in chapter 3.2.4, selecting Configure from the HOME menu displays a new screen, see picture (Figure 3.3.1). The configuration menu allows the following submenus to be chosen, Tracking and RX configuration, Remote control and Redundancy.

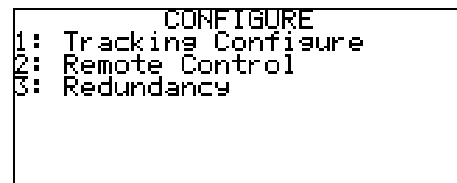


Figure 3.3.1 CONFIGURE menu screen.

#### 3.3.1 Tracking Configuration

The tracking menu screen displays two submenu options, Video and Beacon.

Pressing key "1" accesses the video configuration. The settings in the video configuration submenu changes settings for the video display screen mentioned in chapter 3.2.1. For more information about the video configuration see chapter 3.3.1.1 Video Configuration.

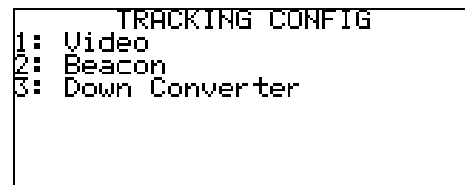


Figure 3.3.1 Tracking Configuration menu screen.

By pressing key "2" the beacon settings are entered.

Here the configuration for the tracking beacon can be set. For more information about the beacon configuration go to chapter 3.3.1.2 Beacon Configuration.

Pressing key "3" the down converter settings are entered. Here the configuration for the tracking down converter can be set. For more information about the DownConverter configuration please see chapter 3.3.2 DownConverter Configuration.

### 3.3.1.1 Video Configuration

The Video Configuration screen shows 5 menu options. Option one to three will display other menu screens and allow for changing the setting. The chapters 3.3.1.1.1 to 3.3.1.1.3 will explain these.

Pressing key “5” toggles a 10dB attenuation pad on or off affecting the incoming signal to the video display screen.

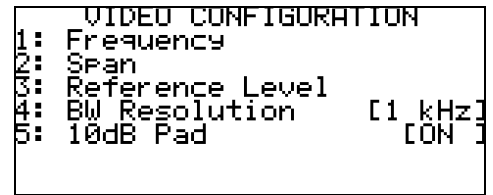


Figure 3.3.1.1.1 Video Configuration menu screen.

#### 3.3.1.1.1 Frequency

The Video Centre Frequency can be changed in the menu screen, see picture (Figure 3.3.1.1.1.1) for an example of the menu screen. The two numbers on the third line in the display is the range the video centre frequency can be within. The maximum deviation from the Rx frequency is 25 MHz. Changing the video frequency will affect the Video Frequency span.

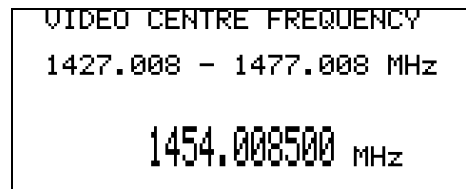


Figure 3.3.1.1.1.1 Video Centre Frequency menu screen.

The cursor is blinking over the number that is currently changeable. The number can be changed in several ways.

Pressing a number key “0” - “9” change the number to value of the key press and move the cursor to next position.

Pressing the arrow keys up and down increment or decrement the number the cursor is currently over. Pressing the arrows keys left and right changes the position of the cursor without changing the number it is on.

To make the change permanent the change has to be confirmed by pressing the “YES” key. Pressing key “NO” the change will be cancelled.

#### 3.3.1.1.2 Span

The Tracking Video Span is the frequency span shown on the video display screen chosen in the operation menu chapter 3.2.1. Picture (Figure 3.3.1.1.2.1) shows a Tracking Video Span menu screen.



Figure 3.3.1.1.2.1 Tracking Video Span menu screen.

The video span is dependent upon the video centre frequency for its maximum limit. When it video centre frequency is equal the Rx frequency, the video has a maximum of 50 MHz centred on the Rx frequency, so  $\pm 25$  MHz. If the video centre frequency is changed in such a way that the video span frequency is too large, the video span will be changed accordingly to only display the new maximum frequency range. The video span frequency can be changed in the same way as the video centre frequency.

### 3.3.1.1.3 Reference Level

The reference level menu screen in the video configuration menu is used to displace the signals on the video display menu. The Reference Level is the top line in the video display screen just above the RF value, see picture (Figure 3.3.1.1.3.1). The range is -80 dB to -100 dB. To change the Reference Level use the arrow keys up and down, 5 dB per step.

Press “YES” to accept the change, “NO” to cancel.



Figure 3.3.1.1.3.1 Reference Level menu screen.

### 3.3.1.2 Beacon

The beacon configuration menu screen is the menu that is used to configure the beacon tracking. There are five menu options. The first four will take you to submenus the last choice, choice five ASB, toggles the ASB (Anti Side Band) on and off.

Note: If system level sideband interference is unlikely then ASB function should remain OFF (see section 1.4).

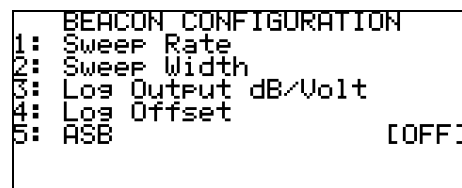


Figure 3.3.1.2.1 Beacon Configuration menu screen.

#### 3.3.1.2.1 Sweep Rate

The sweep rate is the frequencies the tracking system covers per second inside the frequency range set by the sweep width, see chapter 3.3.1.2.2 for more information on sweep width. In this case the sweep rate is 5 kHz/s, see picture (Figure 3.3.1.2.1.1).

To change the sweep rate use the arrow keys up and down. Press key “YES” to accept change, key “NO” to cancel.



Figure 3.3.1.2.1.1 Sweep Rate menu screen.

### 3.3.1.2.2 Sweep Width

The sweep width is the frequency range in which the beacon tracking system is looking for a tracking beacon. The sweep width centred on the Rx frequency being  $\pm 20$  kHz in this case, see picture (Figure 3.3.1.2.2.1), given a total frequency span of 40 kHz starting at the frequency  $Rx_{frequency} - 20$  kHz.



Figure 3.3.1.2.2.1 Sweep Width menu screen.

To change the sweep width use the arrow keys up and down. Press key “YES” to accept the change, “NO” to cancel change.

### 3.3.1.2.3 Log Output dB/Volt

The Log Output dB/Volt signal is dependent on the receive signal. Picture (Figure 3.3.1.2.3.1) shows the Log Output dB/Volt screen. Notice the line under the title is the actual output voltage.

To change the Output dB/Volt signal use the arrow keys up and down. Press key “YES” to accept change, “NO” to cancel.



Figure 3.3.1.2.3.1 Log Output dB/Volt menu screen.

### 3.3.1.2.4 Log Offset

The Log Offset makes it possible to offset the voltage output. Picture (Figure 3.3.1.2.4.1) shows the Log Offset screen. Notice the line under the title is the actual output voltage.

To change the Log Offset voltage use the arrow keys up and down. Press key “YES” to accept change, “NO” to cancel.



Figure 3.3.1.2.4.1 Log Offset menu screen.

## 3.3.2 Down Converter Configuration

The Down Converter Configuration screen displays 5 options, see picture (Figure 3.3.2.1). Options 1 to 3 are submenus of their own.

To change the Rx frequency press key “1”. A new menu screen will be displayed where it is possible to change the frequency. This frequency is the frequency the tracking part will try to find a beacon around.

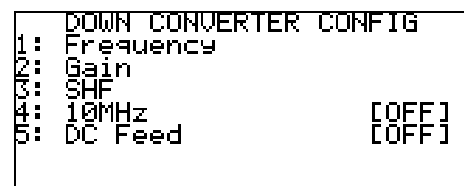


Figure 3.3.2.1 Rx Configuration menu screen.

Key press “2” will enter a new menu screen where changing of the signal gain is possible.

To enter the SHF menu press key “3”.

By pressing key “4” it is possible to toggle the 10 MHz on and off.

Pressing key “5” toggles the DC Feed on and off.

The 10MHz and DC are sent up the L-Band connection to lock and power the outside block converter. Note that it may take a few minutes after switching on power and Reference for the outside unit to stabilise and the alarm to clear.

### 3.3.2.1 Frequency

The Rx Frequency menu screen, picture (Figure 3.3.2.1.1), enables the user to change the receive frequency.

Just below the screen title is the frequency range frequency can be set within.

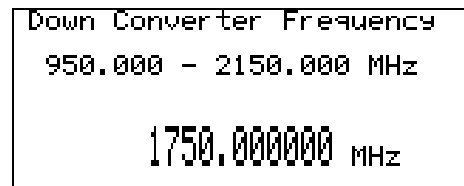


Figure 3.3.2.1.1 Rx Frequency menu screen.

A cursor should be flashing over the first cipher of the large numbers that shows the frequency at the bottom. Pressing any of the number keys “0” to “9” will set the cipher the cursor is over to that number and move the cursor to the next number. It is possible to increment and decrement the number using the arrow keys up and down. The cursor can be moved left and right by using the arrow keys left or right. If the frequency is out of range the display will display an “!!!!!! Out of Range !!!!!!” message.

To store a selected frequency that is in range use key “YES”. Key press “NO” will cancel and move the screen to previous menu.

### 3.3.2.2 Gain

Picture (Figure 3.3.2.2.1) shows the Rx gain menu screen.

The range for the gain is from 0 to 20 dB as show on the line just below the screen title.

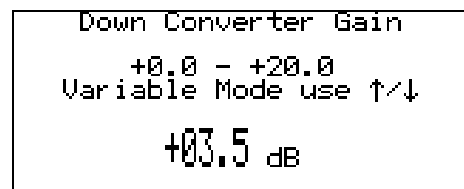


Figure 3.3.2.2.1 Rx Gain menu screen.

To change the gain use the arrow keys up and down to increment or decrement that actual gain. To accept the change in gain press key “YES”, press “NO” to cancel and return to previous menu screen.



### 3.3.2.3 SHF

SHF stands for SUPER HIGH FREQUENCY and in this context refers the SHF stage which is following this L-Band unit.

This feature does not change any controls inside the unit but is a convenience to mathematically add the effect of the following converter on the downlink chain.



Figure 3.3.2.3.1 SHF menu screen.

For a block down converter or an LNB the local oscillator should be determined. This is the number which is added in this menu. To apply this value the SHF has to be switched ON

With Peak Communications equipment the following Local Oscillators apply

|                |                       |                            |
|----------------|-----------------------|----------------------------|
| PBD725, IBD725 | X Band DownConverter  | 6.30GHz                    |
| L510           | C-Band DownConverter  | 5.15GHz (inverts spectrum) |
| L520           | Ku Band DownConverter | 10.0GHz                    |
| L521           | Ku Band DownConverter | 10.75GHz                   |
| L522           | Ku Band DownConverter | 11.30GHz                   |

Use of this feature allows the user to manipulate the unit to show the overall SYSTEM frequency. This is achieved by selecting both the Local Oscillator frequencies of the external SHF Block DownConverter.

Example: If a PTR50 down converter L-Band unit is connected to a PBD725 the PTR display can be set to show the actual X Band input frequency. The Block converter calculation in this case is simply the addition of the BDC Local Oscillator value to the L-Band frequency.

For example, if the input is set to 1200MHz (1.2GHz) and the LO is 6.30GHz the output is simply the sum of the two.

$$1.2 + 6.3 = 7.50\text{GHz}$$

If the 6.30 value is entered as an SHF LO and the feature switched on with SHF ON/OFF you will see that any frequency shown on the unit is at X Band, this also means you have to input any new frequency at X Band.

### 3.3.3 Remote Control

This screen provides access to all setup parameters for the remote interface.

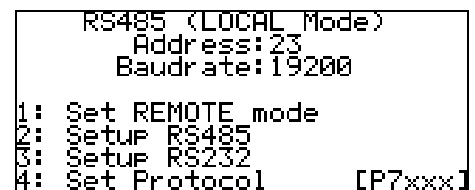


Figure 3.3.3.1 Remote Control screen.

### 3.3.3.1 Set remote mode

Pressing 1 will toggle the unit into either local or remote mode.

Note: In remote mode if you try to access the configuration menu while in remote the screen shown below will be displayed.

```
CONFIGURE
1: Remote Control

Unit in REMOTE mode
no Configuration available
Change to LOCAL mode for
Configuration changes
```

Figure 3.3.3.1.1 Configuration screen in remote mode.

### 3.3.3.2 Setup RS485

The RS485 bus address can be set by entering in the number using the numeric keypad. After entering the unit address, the baud rate to be used is selected.

### 3.3.3.3 Setup RS232

The procedure for setting up the RS232 is the same as shown above for the RS485.

### 3.3.3.4 Set Protocol

The PTR Series of converters only currently supports the P7xxx protocol specified in this manual.

### 3.3.3.5 Ethernet (Optional)

If the unit has been fitted with the Ethernet option, the remote control menus are modified as follows:

To set communications between RS232/RS485 or Ethernet menu, option 2 must be selected (Figure 3.3.3.5.2).

```
REMOTE CONTROL
Ethernet (LOCAL Mode)
Address: N/A Baudrate: 19200
Confis Port: RS485

1: Set REMOTE mode
2: Set Communications
3: Set Protocol [P7xxx]
```

Figure 3.3.3.5.1 Remote Control Configuration screen in Ethernet mode.

The Setup RS485 and Setup RS232 menu options are the same as described previously. Set Ethernet menu option allows the Ethernet port to be used rather than the RS232/RS485 for remote control.

```
COMMUNICATIONS

1: Setup RS485
2: Setup RS232
3: Setup Ethernet
```

Figure 3.3.3.5.2 Communications screen.

The menu choices (1-4) shown in Figure 3.3.3.5.3 allow the user to change the relevant Ethernet settings of the unit.

```
ETHERNET OPTIONS 1/2
1: DHCP [Enabled]
2: IPv4 Address
3: Subnet Mask
4: Gateway
5: TCP Port
6: SNMP [Disabled]
7: SNMP Trap Address
```

Figure 3.3.3.5.3 Ethernet Options screen 1 of 2.

5 *TCP Port* – Sets the TCP port number used that allows serial communications messages to be sent, via TCP, to the unit.

6 *SNMP* – Allows the SNMP protocol to be turned Disabled/Enabled.

7 *SNMP Trap Address* – Sets the IP address of the device that will receive any SNMP trap error messages from the unit.

Set Options in Figure 3.3.3.5.4 is used to set the Ethernet data all at once on the device, this must be used when trying to change the Ethernet settings.

See section 6.1 for more details on the Ethernet option.

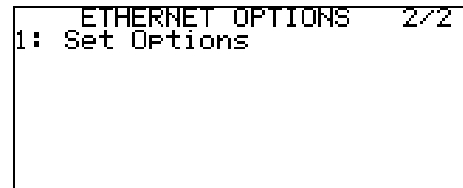


Figure 3.3.3.5.4 Ethernet Options screen 2 of 2.

### 3.3.4 Redundancy

Picture (Figure 3.3.4.1) shows the redundancy menu screen.

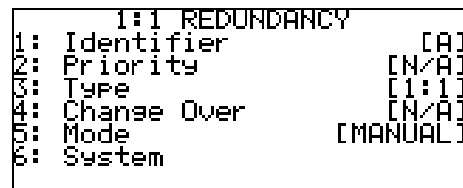


Figure 3.3.4.1 Redundancy menu screen.

#### 3.3.4.1 Identifier

The identifier for each converter can be either [A] or [B] in a 1+1 redundant system or [A], [B] or [STANDBY] in a 2+1 system.

#### 3.3.4.2 Priority

The priority of an individual converter in a redundancy system can be set via this option. The converter with the higher priority will command the standby if it alarms.

Note: Priority is not applicable [N/A] in a 1+1 redundancy system.

#### 3.3.4.3 Type

The type of redundancy system that the converter is to be used with is set by pressing 3 and scrolling through 1+1, 2+1 or N+1.

#### 3.3.4.4 Change Over

This sets the converter to be either an online unit or offline (standby) unit.

#### 3.3.4.5 Mode

This sets the 1:1 and 1:2 redundancy to be manual or automatic.

### 3.3.4.6 System

This brings up the following screen:

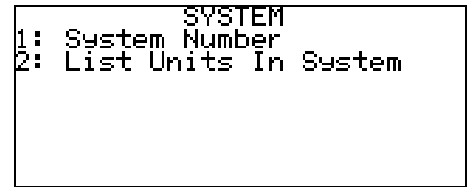


Figure 3.3.4.6.1 System menu screen.

### 3.3.4.7 System Number

This allows the user to select which system the units are attached to. This allows different redundancy controllers and their associated units to all use the same redundancy cable. In normal operation this should be 0, however if the redundancy system is part of a UPC system then this system number should be something other than 0. All units attached to the same redundancy controller should have the same system number, and it should be unique from any other redundancy controllers attached. This is a new addition in version 4.0 software and newer, all older units are essentially on system 0 permanently.

### 3.3.4.8 List units in system

This displays a menu screen showing the other units that can be seen on the same system as this unit.

### 3.3.4.9 CANBUS for Passive Redundancy Systems

If a simple 1+1 'passive' redundant system is required, the converter units can still be connected via the CANBUS interface. This will result in the units monitoring each other and the off-line unit un-muting if the on-line unit fails.

As a passive system has no tell-back facility (from relay contacts), this normal feature has to be disabled to allow the passive redundant system to function correctly, this is done as follows;

From the HOME menu, press '9' to access the 'hidden' SETUP menu.

Note; This menu and all sub-menus are factory set and it is not recommended that the user changes other parameters within this menu without consulting the factory.

From the SETUP menu, select the MODIFY PARAMETERS screen.

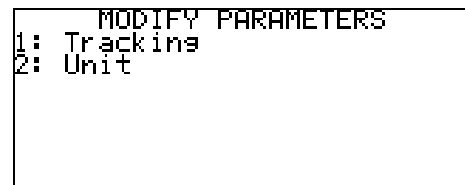
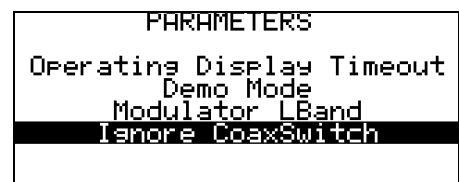


Figure 3.3.4.9.1 Modify parameters screen in the hidden menu.

From the MODIFY PARAMETERS screen, select UNIT and a PARAMETERS screen will be shown.

Select IGNORE COAXIALSWITCH.



## 4. REAR PANEL CONNECTOR PINOUTS

### 4.1 Alarms

15 Way D type male with connections as follows

There are 2 independent relays controlled together designated (1) and (2) as follows.  
Important note: N/O means 'normally open' in the non fail state with STATUS LED Green

Unit (1) = Tx, Unit (2) = Rx for a PTR unit

|                    |   |    |                    |
|--------------------|---|----|--------------------|
| Unit fault (1) COM | 1 | 9  | Unit fault (1) N/O |
| Unit fault (1) N/C | 2 | 10 | Ext. Alarm (2)     |
| Ext Mute (1)       | 3 | 11 | Ext Alarm (1)      |
| Unit fault (2) COM | 4 | 12 | Unit fault (2) N/O |
| Unit fault (2) N/C | 5 | 13 | Not used           |
| Ext Mute (2)       | 6 | 14 | Not used           |
| Not used           | 7 | 15 | GROUND             |
| Not used           | 8 |    |                    |

### 4.2 Remote

15 Way D type Female with connections as follows

|             |   |    |              |
|-------------|---|----|--------------|
| RS485 Rx +  | 1 | 9  | RS485 Rx -   |
| RS485 Tx +  | 2 | 10 | RS485 Tx -   |
| Not used    | 3 | 11 | Not used     |
| Not used    | 4 | 12 | Not used     |
| Not used    | 5 | 13 | Not used     |
| Not used    | 6 | 14 | GROUND       |
| RS232 Rx In | 7 | 15 | RS232 Tx Out |
| Not used    | 8 |    |              |

## 5. REDUNDANCY

The PTR series of beacon receivers interface with the Peak CANBUS system for 1+1 redundancy.

### 5.1 1 for 1 Redundancy (switched & passive)

For 1+1 switched redundant operation a pair of PTR units is required along with a B1000.

In use, the redundancy type on the 'configure / redundancy' menu is set to 1+1 and one unit is set to identifier "A" and the other to identifier "B". The B1000 is connected to the rear panel 9 way connector with the supplied cables and the units will self detect and set one unit to online and the other will be set to standby. A changeover will be caused by an alarm detected in the online unit or changeover (keypad 4) being selected, this will result in the configuration of the online unit being taken over by the standby and then the standby will take over the RF + DC path, making itself the online unit.

9 Way D type Male with connections as follows

|          |   |   |            |
|----------|---|---|------------|
| Not used | 1 | 6 | GND        |
| CAN® Low | 2 | 7 | CAN® High  |
| GND      | 3 | 8 | Tellback A |
| Power A  | 4 | 9 | Tellback B |
| Power B  | 5 |   |            |

## 6. REMOTE CONTROL

The unit transmits and receives data serially in an asynchronous format using the standard ASCII character set. The serial data consists of message frames composed of the following message characters: STX, BYTE COUNT, DEVICE ADDRESS, INSTRUCTION, BODY, CHECKSUM, ETX. All characters are compulsory except for the message body. The presence of a message body is determined by the message type (INSTRUCTION). The total number of message characters in a message frame may range from a minimum of 6 to a maximum of 255.

The remote control follows the following protocol: (in byte form)

[STX] start of message character #02.

[B] char defining how many characters are in the message including the STX & ETX parts.

[A] **Address of unit.** Address ranges from ASCII character 001 to 255.

[I] **Instruction number.**  
See List below

[MESSAGE]

Numerous characters from length 0 upwards.

[CHKSUM]

The checksum is used to verify the accuracy of the message frame. The checksum is defined as the summation of all the bytes in the message, **beginning** with the 3rd byte (DEVICE ADDRESS) and extending through the body of the message, **ending** with the last byte before the checksum. The total of the bytes is then ANDed with 255 so that the checksum is truncated to a single byte.

[ETX] End of transmission character #03

All message to and from the unit follow the above protocol with a character format of 8 data bits, one stop bit, no parity, baud rate 19200, 9600, 4800, 2400, 1200 or 300. Note; all numeric values are shown as decimal.

**Instruction Number List: (in decimal)**

| To P7XXX unit | From P7XXX unit | Description                                      |
|---------------|-----------------|--|
| 20            |                 | Requests Tracking Status                         |
|               | 21              | Responds with Tracking Status                    |
| 22            |                 | Requests Tracking setting changes                |
| 24            |                 | Set Remote/Local Mode request                    |
| 30            |                 | Requests the number of unread alarm log entries  |
|               | 31              | Responds with number of unread alarm log entries |
| 32            |                 | Requests alarm log entry                         |
|               | 33              | Responds with alarm log                          |
| 34            |                 | Requests alarm log clear                         |
| 36            |                 | Requests next unread alarm log entry             |
|               | 37              | Responds with next unread alarm log entry        |
| 40            |                 | Asks for the main Unit settings                  |
|               | 41              | Replies with the Unit Settings                   |
| 45            |                 | Requests redundancy status                       |
|               | 46              | Responds with redundancy status                  |
| 47            |                 | Requests redundancy changes                      |
| 58            |                 | Requests the tracking receiver spectrum          |
|               | 59              | Responds with the tracking receiver spectrum.    |

**Instruction 20 (Tracking Status Request):**

| Message Byte No. | Set Value / (example) | Length (bytes) | Description   |
|------------------|-----------------------|----------------|---|
| 1                | 02                    | 1              | STX   |
| 2                | ?                     | 1              | No of bytes in message  |
| 3                | ?                     | 1              | Address   |
| 4                | 20                    | 1              | Message instruction   |
| 5                | ('K')                 | 1              | Device we are asking the information on:<br>'K' = Tracking Receiver |
| 6                | ?                     | 1              | Checksum  |
| 7                | 03                    | 1              | ETX   |

**Instruction 21 (Tracking Status Request Reply):**

| Message Byte No. | Set Value / (example)              | Length (bytes) | Description   |
|------------------|------------------------------------|----------------|---|
| 1                | 02                                 | 1              | STX   |
| 2                | ?                                  | 1              | No of bytes in message  |
| 3                | ?                                  | 1              | Address   |
| 4                | 21                                 | 1              | Message instruction   |
| 5                | ('K')                              | 1              | Device we are asking the information on:<br>'K' = Tracking  |
| 6                | ('01202000000' = 01.202000000 Ghz) | 11             | Video Centre Frequency in Hz  |
| 17               | ('20000000' = 20MHz)               | 8              | Frequency Span in Hz<br>Span max 25 MHz.  |
| 25               | (' -080' = -80dB)                  | 4              | Video Reference Level in dB   |
| 29               | ('1')                              | 1              | Band Width Resolution in kHz<br>1 = 1 kHz, 6 = 6 kHz  |
| 30               | ('1')                              | 1              | 10 dB Pad ON/OFF<br>'0' = OFF '1' = ON  |
| 31               | ('1')                              | 1              | Sweep Rate<br>Index 0 – 7<br>0 = "2.5 kHz/s"<br>1 = "5 kHz/s",<br>2 = "10 kHz/s",<br>3 = "20 kHz/s",<br>4 = "40 kHz/s",<br>5 = "80 kHz/s"<br>6 = "120 kHz/s"<br>7 = "240 kHz/s" |
| 32               | ('1')                              | 1              | Sweep Width<br>Index 0 – 4<br>0 = "+/- 20 kHz"<br>1 = "+/- 50 kHz"<br>2 = "+/- 100 kHz"<br>3 = "+/- 200 kHz"<br>4 = "+/- 500 kHz"   |
| 33               | ('1')                              | 1              | Log dB/Volt<br>Index 0 – 4<br>0 = 0.5 dB/Volt<br>1 = 1 dB/Volt<br>2 = 2 dB/Volt<br>3 = 5 dB/Volt<br>4 = 10 dB/Volt  |
| 34               | ('080')                            | 3              | Log Offset 000 – 100.   |
| 37               | ('0')                              | 1              | ASB ON/OFF<br>'0' = OFF '1' = ON  |
| 38               | ('+0467')                          | 5              | DC Output.<br>Divide by 100 to get the actual voltage.  |
| 43               | ('+0467')                          | 5              | Rx Level in 0.1dB steps   |
| 48               | ('10123456789' = 10.123456789)     | 11             | Frequency in Hz   |



|     |                                    |    |   |
|-----|------------------------------------|----|---|
|     | Ghz)                               |    | The Lband Frequency of the unit.  |
| 59  | (' +0123' = 12.3 dB)               | 5  | Gain in 0.1dB steps   |
| 64  | ('x')                              | 1  | N/A   |
| 65  | ('1')                              | 1  | 10MHz ON/OFF<br>'0' = OFF '1' = ON  |
| 66  | ('1')                              | 1  | DC Feed ON/OFF<br>'0' = OFF '1' = ON  |
| 67  | ('1')                              | 1  | SHF LO ON/OFF<br>'0' = OFF '1' = ON   |
| 68  | ('20123456789' = 20.123456789 Ghz) | 11 | SHF Frequency in Hz   |
| 79  | ('1')                              | 1  | SHF Spectrum Invert ON/OFF<br>'0' = OFF '1' = ON  |
| 80  | ('0')                              | 1  | Tracking Out of Lock<br>'0' = OK '1' = FAULT  |
| 81  | ('0')                              | 1  | 2ND LO Fault<br>'0' = OK '1' = FAULT  |
| 82  | ('23/12/02 12:34:56')              | 17 | OK Since time/date string, if there is a fault with this part of the unit then the string is blank. |
| 99  | ?                                  | 1  | Checksum  |
| 100 | 03                                 | 1  | ETX   |

**Instruction 22 (Tracking Reconfiguration Request):**

The unit MUST be in remote mode to allow reconfiguration of parameters via the remote control. Setting the unit in Remote mode can be done either by the front panel or remotely using the following command:

**Instruction 22 (Tracking Reconfiguration Request):**

| Message Byte No. | Set Value / (example)              | Length (bytes) | Description   |
|------------------|------------------------------------|----------------|---|
| 1                | 02                                 | 1              | STX   |
| 2                | ?                                  | 1              | No of bytes in message  |
| 3                | ?                                  | 1              | Address   |
| 4                | 21                                 | 1              | Message instruction   |
| 5                | ('K')                              | 1              | Device we are asking the information on:<br>'K' = Tracking  |
| 6                | ('01202000000' = 01.202000000 Ghz) | 11             | Video Centre Frequency in Hz  |
| 17               | ('20000000' = 20MHz)               | 8              | Frequency Span in Hz<br>Span max 25 MHz.  |
| 25               | (' -080' = -80dB)                  | 4              | Video Reference Level in dB.<br>Range: -80dB to -100dB in 5dB steps   |
| 29               | ('1')                              | 1              | Band Width Resolution in kHz<br>1 = 1 kHz, 6 = 6 kHz  |
| 30               | ('1')                              | 1              | 10 dB Pad ON/OFF<br>'0' = OFF '1' = ON  |
| 31               | ('1')                              | 1              | Sweep Rate<br>Index 0 – 7<br>0 = "2.5 kHz/s"<br>1 = "5 kHz/s",<br>2 = "10 kHz/s",<br>3 = "20 kHz/s",<br>4 = "40 kHz/s",<br>5 = "80 kHz/s"<br>6 = "120 kHz/s"<br>7 = "240 kHz/s" |
| 32               | ('1')                              | 1              | Sweep Width<br>Index 0 – 4<br>0 = "+/- 20 kHz"<br>1 = "+/- 50 kHz"<br>2 = "+/- 100 kHz"   |

|    |                                       |    |  |
|----|---------------------------------------|----|--|
|    |                                       |    | 3 = "+/- 200 kHz"<br>4 = "+/- 500 kHz"   |
| 33 | ('1')                                 | 1  | Log dB/Volt<br>Index 0 – 4<br>0 = 0.5 dB/Volt<br>1 = 1 dB/Volt<br>2 = 2 dB/Volt<br>3 = 5 dB/Volt<br>4 = 10 dB/Volt |
| 34 | ('080')                               | 3  | Log Offset 000 – 100.  |
| 37 | ('0')                                 | 1  | ASB ON/OFF<br>'0' = OFF '1' = ON   |
| 38 | ('10123456789' = 10.123456789<br>Ghz) | 11 | Frequency in Hz<br>The Lband Frequency of the unit.  |
| 49 | (' +0123' = 12.3 dB)                  | 5  | Gain in 0.1dB steps  |
| 54 | ('x')                                 | 1  | Not used   |
| 55 | ('1')                                 | 1  | 10MHz ON/OFF<br>'0' = OFF '1' = ON   |
| 56 | ('1')                                 | 1  | DC Feed ON/OFF<br>'0' = OFF '1' = ON   |
| 57 | ('1')                                 | 1  | SHF LO ON/OFF<br>'0' = OFF '1' = ON  |
| 58 | ('20123456789' = 20.123456789<br>Ghz) | 11 | SHF Frequency in Hz  |
| 69 | ('1')                                 | 1  | SHF Spectrum Invert ON/OFF<br>'0' = OFF '1' = ON   |
| 70 | ?                                     | 1  | Checksum   |
| 71 | 03                                    | 1  | ETX  |

**Instruction 24 (Set Remote/Local Mode):**

| Message<br>Byte No. | Set Value /<br>(example) | Length<br>(bytes) | Description                           |
|---------------------|--------------------------|-------------------|---------------------------------------|
| 1                   | 02                       | 1                 | STX                                   |
| 2                   | ?                        | 1                 | No of bytes in message                |
| 3                   | ?                        | 1                 | Address                               |
| 4                   | 20                       | 1                 | Message instruction                   |
| 5                   | ('R')                    | 1                 | 'R' = Remote Mode<br>'L' = Local Mode |
| 6                   | ?                        | 1                 | Checksum                              |
| 7                   | 03                       | 1                 | ETX                                   |

## Alarm Log message routines & Remote Interrogation of the Alarms log.

The unit will remember the number of new LOG entries that have been added since the user last requested LOG entry status.

If instruction 30 is sent, it will respond with the number of new LOG items since the last request.

Instruction 36 can be sent to get the list of currently unread LOG items, when there are no more unread LOG items the unit will respond with \*!END!\*.

Alternatively the user can ask for LOG item [n] using instruction 32.

### Instruction 30 (Alarm Log Entry Status Request):

| Message Byte No. | Set Value / (example) | Length (bytes) | Description            |
|------------------|-----------------------|----------------|------------------------|
| 1                | 02                    | 1              | STX                    |
| 2                | ?                     | 1              | No of bytes in message |
| 3                | ?                     | 1              | Address                |
| 4                | 30                    | 1              | Message instruction    |
| 5                | ?                     | 1              | Checksum               |
| 6                | 03                    | 1              | ETX                    |

### Instruction 31 (Alarm Log Entry Status Response):

| Message Byte No. | Set Value / (example) | Length (bytes) | Description   |
|------------------|-----------------------|----------------|---|
| 1                | 02                    | 1              | STX   |
| 2                | ?                     | 1              | No of bytes in message  |
| 3                | ?                     | 1              | Address   |
| 4                | 31                    | 1              | Message instruction   |
| 5                | ('010')               | 3              | No. of Log entries  |
| 8                | ('001')               | 3              | No of Log entries that are NEW since the last Log Entry Status Request. |
| 11               | ?                     | 1              | Checksum  |
| 12               | 03                    | 1              | ETX   |

### Instruction 32 (Alarm Log Entry Request):

| Message Byte No. | Set Value / (example)         | Length (bytes) | Description                         |
|------------------|-------------------------------|----------------|-------------------------------------|
| 1                | 02                            | 1              | STX                                 |
| 2                | ?                             | 1              | No of bytes in message              |
| 3                | ?                             | 1              | Address                             |
| 4                | 32                            | 1              | Message instruction                 |
| 5                | ('002' = ask for log entry 2) | 3              | No. of the LOG entry to be returned |
| 8                | ?                             | 1              | Checksum                            |
| 9                | 03                            | 1              | ETX                                 |

### Instruction 33 (Alarm Log Entry Response):

| Message Byte No. | Set Value / (example)  | Length (bytes) | Description  |
|------------------|--|----------------|--|
| 1                | 02   | 1              | STX  |
| 2                | ?  | 1              | No of bytes in message   |
| 3                | ?  | 1              | Address  |
| 4                | 33   | 1              | Message instruction  |
| 5                | ("LOG Entry 001 of 124*Unit: +36V Fault*31.6V*23/12/04 12:23:45*") | ?              | Details of the LOG message<br>Should be the same as what is displayed on screen, each line is ended with a *.<br>LOG entry number x of n*<br>Unit: Fault type*<br>Extra Fault details*<br>Date and Time* |
| ?                | ?  | 1              | Checksum   |
| ?                | 03   | 1              | ETX  |

**Instruction 34 (Clear Alarm Log Request):**

| Message Byte No. | Set Value / (example) | Length (bytes) | Description            |
|------------------|-----------------------|----------------|------------------------|
| 1                | 02                    | 1              | STX                    |
| 2                | ?                     | 1              | No of bytes in message |
| 3                | ?                     | 1              | Address                |
| 4                | 34                    | 1              | Message instruction    |
| 5                | ?                     | 1              | Checksum               |
| 6                | 03                    | 1              | ETX                    |

**Instruction 36 (Next Unread Alarm Log Item Request):**

| Message Byte No. | Set Value / (example) | Length (bytes) | Description            |
|------------------|-----------------------|----------------|------------------------|
| 1                | 02                    | 1              | STX                    |
| 2                | ?                     | 1              | No of bytes in message |
| 3                | ?                     | 1              | Address                |
| 4                | 36                    | 1              | Message instruction    |
| 5                | ?                     | 1              | Checksum               |
| 6                | 03                    | 1              | ETX                    |

**Instruction 37 (Next Unread Alarm Log Item Response):**

| Message Byte No. | Set Value / (example)  | Length (bytes) | Description  |
|------------------|--|----------------|--|
| 1                | 02   | 1              | STX  |
| 2                | ?  | 1              | No of bytes in message   |
| 3                | ?  | 1              | Address  |
| 4                | 37   | 1              | Message instruction  |
| 5                | ("LOG Entry 001 of 124*Unit: +36V Fault*31.6V*23/12/04 12:23:45*") | ?              | Details of the NEXT previously unread LOG message.<br>Should be the same as what is displayed on screen, each line is ended with a *.<br>LOG entry number x of n*<br>Unit: Fault type*<br>Extra Fault details*<br>Date and Time*<br>If no more unread LOG message the text sent back is "*!END*" |
| ?                | ?  | 1              | Checksum   |
| ?                | 03   | 1              | ETX  |

**Instruction 40 (Unit Status Request):**

| Message Byte No. | Set Value / (example) | Length (bytes) | Description            |
|------------------|-----------------------|----------------|------------------------|
| 1                | 02                    | 1              | STX                    |
| 2                | ?                     | 1              | No of bytes in message |
| 3                | ?                     | 1              | Address                |
| 4                | 40                    | 1              | Message instruction    |
| 5                | ?                     | 1              | Checksum               |
| 7                | 03                    | 1              | ETX                    |

**Instruction 41 (Unit Status Request Reply):**

| Message Byte No. | Set Value / (example)       | Length (bytes) | Description  |
|------------------|-----------------------------|----------------|--|
| 1                | 02                          | 1              | STX  |
| 2                | ?                           | 1              | No of bytes in message   |
| 3                | ?                           | 1              | Address  |
| 4                | 41                          | 1              | Message instruction  |
| 5                | ('PTR')                     | 27             | Type of unit this is: PTR, P7001 etc   |
| 32               | ('01234' = Serial No 01234) | 5              | Serial Number  |
| 37               | ('01.1234')                 | 7              | Software Version Number  |
| 44               | ('0' = OK)                  | 1              | Summary Alarm OK/FAULT<br>'0' = OK '1' = FAULT   |
| 45               | ('0')                       | 1              | +5V voltage out of range fault<br>'0' = OK '1' = FAULT   |
| 46               | ('0')                       | 1              | +15V voltage out of range fault<br>'0' = OK '1' = FAULT  |
| 47               | ('0')                       | 1              | -15V voltage out of range fault<br>'0' = OK '1' = FAULT  |
| 48               | ('0')                       | 1              | +36V voltage out of range fault<br>'0' = OK '1' = FAULT  |
| 49               | ('0')                       | 1              | Temperature out of range fault<br>'0' = OK '1' = FAULT   |
| 50               | ('0')                       | 1              | Humidity out of range fault<br>'0' = OK '1' = FAULT  |
| 51               | ('0')                       | 1              | External Reference fault<br>'0' = OK '1' = FAULT   |
| 52               | ('0')                       | 1              | 100MHz fault<br>'0' = OK '1' = FAULT   |
| 53               | ('0')                       | 1              | Coax Switch Fault<br>'0' = OK '1' = FAULT  |
| 54               | ('23/12/02 12:34:56')       | 17             | OK Since time/date string, if there is a fault with this down/up part of the converter then the string is blank. |
| 71               | ('0')                       | 1              | 1:1 Status<br>'0' = Offline '1' = Online   |
| 72               | ('0')                       | 1              | Remote mode<br>'0' = Local '1' = Remote  |
| 73               | ('0')                       | 1              | External Reference<br>'0' = Off '1' = On   |
| 74               | ?                           | 1              | Checksum   |
| 75               | 03                          | 1              | ETX  |

**Instruction 45 (Redundancy Status Request):**

| Message Byte No. | Set Value / (example) | Length (bytes) | Description            |
|------------------|-----------------------|----------------|------------------------|
| 1                | 02                    | 1              | STX                    |
| 2                | ?                     | 1              | No of bytes in message |
| 3                | ?                     | 1              | Address                |
| 4                | 45                    | 1              | Message instruction    |
| 5                | ?                     | 1              | Checksum               |
| 7                | 03                    | 1              | ETX                    |

**Instruction 46 (Redundancy Status Request Reply):**

| Message Byte No. | Set Value / (example) | Length (bytes) | Description  |
|------------------|-----------------------|----------------|--|
| 1                | 02                    | 1              | STX  |
| 2                | ?                     | 1              | No of bytes in message   |
| 3                | ?                     | 1              | Address  |
| 4                | 46                    | 1              | Message instruction  |
| 5                | ('1')                 | 1              | Redundancy Type Configuration<br>'1' = 1 for 1<br>'2' = 1 for 2<br>'N' = 1 for N   |
| 6                | ('M')                 | 1              | Redundancy Manual Mode<br>'M' = Manual<br>'A' = Auto<br>'X' = Units setup as 1 for 1 type  |
| 7                | ('0')                 | 1              | Online Status<br>'0' = Offline '1' = Online  |
| 8                | ('A')                 | 1              | Unit Identifier<br>'A' or 'B' when in 1 or 1 configuration<br>'A' or 'B' or 'S' when in 1 or 2 configuration   |
| 9                | ('1')                 | 1              | Unit Priority<br>'X' when in 1 for 1 configuration or if units are selected as standby<br>'1' or '2' when in 1 for 2 configuration   |
| 10               | ('A')                 | 1              | Unit Online<br>'A' or 'B' when in 1 for 1 configuration.<br>'A' or 'B' or 'S' when in 1 for 2 configuration and the unit selected as standby otherwise 'X'<br>'@' means no redundant controller attached, unit online not known. |
| 11               | ('1')                 | 1              | Coax Switch Position<br>'1' or '2'<br>'@' means no redundant controller attached , position not known  |
| 12               | ?                     | 1              | Checksum   |
| 13               | 03                    | 1              | ETX  |

**Instruction 47 (Redundancy Change Request):**

When a unit is in a 1 for 1 configuration only the “Unit To Go Online” parameter in the message below can be manipulated on either unit in the configuration.

When a unit is in a 1 for 2 configuration if the unit is selected as standby then all the parameters can be modified apart from the unit priority. However, if the unit is selected as either A or B, then only the priority can be changed for that particular unit.

| Message Byte No. | Set Value / (example) | Length (bytes) | Description  |
|------------------|-----------------------|----------------|--|
| 1                | 02                    | 1              | STX  |
| 2                | ?                     | 1              | No of bytes in message   |
| 3                | ?                     | 1              | Address  |
| 4                | 47                    | 1              | Message instruction  |
| 5                | ('M')                 | 1              | Redundancy Manual Mode<br>'M' = Manual<br>'A' = Auto   |
| 6                | ('S')                 | 1              | Unit To Go Online<br>'A' or 'B' when in 1 for 1 configuration.<br>'A' or 'B' or 'S' when in 1 for 2 configuration and the unit selected as standby |
| 7                | ('1')                 | 1              | Unit Priority<br>'1' or '2' when in 1 for 2 configuration<br>'1' .. '8' when in 1 for n configuration  |
| 8                | ?                     | 1              | Checksum   |
| 9                | 03                    | 1              | ETX  |

The tracking receivers have the ability to return to the user the basic spectrum as, seen on the front panel. To request this information the following instruction, 58, is sent to the tracking receiver.

The tracking receiver returns with instruction 59, this contains the spectrum data in an array of 160 bytes. Each byte of this data represents the height in pixels of the spectrum on the screen, starting at x=0, the origin (x=0, y=0) being the bottom left hand corner of the screen.

**Instruction 58 (Tracking Receiver Spectrum Request):**

| Message Byte No. | Set Value / (example) | Length (bytes) | Description             |
|------------------|-----------------------|----------------|-------------------------|
| 1                | 02                    | 1              | STX                     |
| 2                | ?                     | 1              | No. of bytes in message |
| 3                | ?                     | 1              | Address                 |
| 4                | 58                    | 1              | Message instruction     |
| 5                | ('0')                 | 1              | Sub-instruction         |
| 6                | ?                     | 1              | Checksum                |
| 7                | 03                    | 1              | ETX                     |

**Instruction 59 (Tracking Receiver Spectrum Request Reply):**

| Message Byte No. | Set Value / (example) | Length (bytes) | Description                 |
|------------------|-----------------------|----------------|-----------------------------|
| 1                | 02                    | 1              | STX                         |
| 2                | ?                     | 1              | No. of bytes in message     |
| 3                | ?                     | 1              | Address                     |
| 4                | 59                    | 1              | Message instruction         |
| 5                | ('0')                 | 1              | Sub-instruction             |
| 6                | ("0101000.....")      | 160            | 160 bytes of Spectrum Data. |
| 166              | ?                     | 1              | Checksum                    |
| 167              | 03                    | 1              | ETX                         |

## 6.1 Ethernet remote control (Optional)

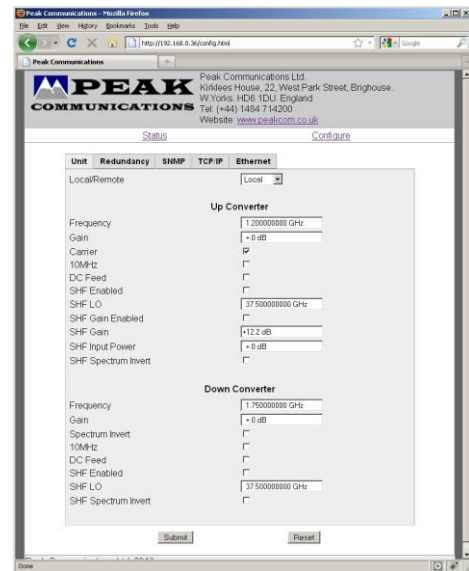
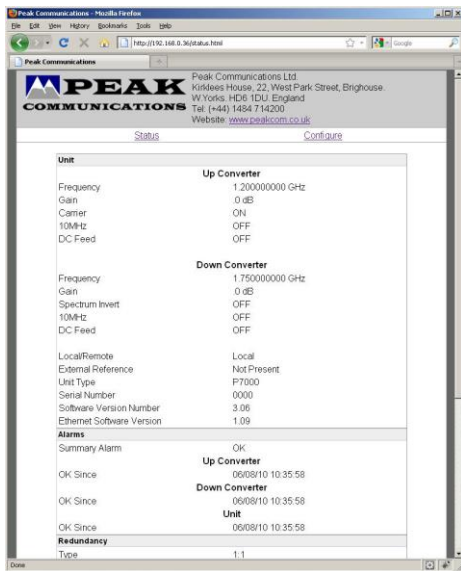
The unit can be controlled through the Ethernet port using three different approaches.

### TCP Port

The unit can be controlled using the serial remote control messages as described earlier sent through the TCP port set in the Ethernet menu option. The unit address is fixed at 32 (Decimal).

### Web Page

The unit can be controlled via the in-built web server's web page. There are two pages, Status and Configure. Hopefully both of which are self explanatory.



### SNMP

The PTR series units fitted with Ethernet, have built-in SNMP (Simple Network Management Protocol) agent software.

It supports SNMP Trap, RFC1155, 1157, 1212, 1213, 1901 & 1906, as well as the Peak MIBS.

The Peak SNMPv2 MIB files are supplied by Peak Communications Ltd, below is a quick overview of them.

The Peak Enterprises node is essentially split into three main areas:

**Converters** - In this node there are numerous nodes:

Including peakTrackingReceiverModule showing a table of Tracking Receiver module(s). This table show the current settings of the Tracking Receiver module and allows their reconfiguration.

**Unit** – This node allows the unit status to be checked as well as the Ethernet and redundancy settings.

**PeakFaultsModule** – This node contains the unit summary alarm as well as a table showing all the faults currently on the unit.



## CUSTOMER CARE

Contact the Peak Communications support department for:

- ✚ Product operation, application support or training requests
- ✚ Information for returning or upgrading a product
- ✚ Comments or suggestions on any supplied literature

### Contact Information

Peak Communications Ltd  
Attention: Support Department  
Unit 1, The Woodvale Centre  
Woodvale Road  
Brighouse  
HD6 4AB  
United Kingdom  
Tel. +44 (0) 1484 714200  
Fax +44 (0) 1484 723666  
E-mail [support@peakcom.co.uk](mailto:support@peakcom.co.uk)

You can also contact us via our website at [www.peakcom.co.uk](http://www.peakcom.co.uk)

To return a Peak Communications product for repair:

5. Contact the Peak Communications support department and request a Return Material Authorisation (RMA) number.
6. You will be required to provide to our support representative the model number, serial number and a detailed description of the problem.
7. To prevent any damage to the product during shipment we recommend that the unit is returned in its original packaging or if this is not available the packaging used must be of an equal standard.
8. Return the product back to Peak Communications and advise shipment details to support representative for tracking purposes. (Any shipping charges should be prepaid)