RFDataTech

PRX
Paging Receiver

SETUP, INSTALLATION
&
OPERATING MANUAL

CONTENTS

1   INTRODUCTION

1.1   PRODUCTS COVERED

This manual covers the PRX series of high performance paging receivers which feature an RS232 interface and a number of switched outputs controlled by paging messages. They are designed for commercial and industrial systems.

Information is provided to assist with configuration, installation, and operation of the products.

Component level servicing is not covered in this document; if the product fails its first line testing it should be returned to a service centre.

1.2   IMPORTANT NOTICES

1.2.1   Copyright
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1.2.2   Right To Change
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1.2.4   Safety Critical Applications
The PRX has not been designed for, nor is it intended for, use in safety critical or life support applications. No functional warranty is given if the product is used in such applications.

1.2.5   Use
The PRX receivers have been designed to work on various licensed and license-free frequency bands in use around the world. The user must ensure that the unit is used under the terms & conditions applicable to the use of the bands concerned.

2   PRODUCT OVERVIEW

2.1   GENERAL

The PRX paging receivers have been designed as a range of high specification, low cost radio receivers for stand alone applications or for integration into OEM products.

They are compatible with industry standard POCSAG paging transmissions from national paging network operators or from on-site paging systems. Specifically, they are compatible with our own ART400TP Paging transmitters.

The PRX Series of receivers have been designed to exceed the base station requirements of ETSI EN300-224 for applications where high performance and error free reception of critical data are required in areas of high interference and low signal level. Particular attention has been given to the sensitivity, selectivity, intermodulation, blocking and spurious response parameters to ensure the product will perform in even the worst areas..

Applications include sign control, remote control of plant by paging messages, monitoring or logging transmissions from your own transmitter and reception of off-air paging signals for onward re-transmission as part of a repeater.

The unit features 4 programmable switched outputs supporting changeover, momentary or timed switching for telemetry applications such as utility, building & lighting control.
In addition, a full RS232 port supports data for LED displays, electronic billboards, logging and general information gathering. The unit can also be configured to pass the raw un-decoded POCSAG signal from a received message to the serial interface for onward transmission.

Built into a small, tough aluminium housing the units should provide years of trouble free use in tough industrial applications.

2.2   PERFORMANCE

The receiver is a low current double conversion superheterodyne with a high level solid state mixer to give very good intermodulation performance with low current consumption. Careful attention to spurious response, adjacent channel and blocking performance, makes the product ideal for operation in crowded frequency bands.
SAW filters are used in the RF stages to achieve the high performance required and full details of the sub-bands available are in the technical specification section. IF filtering is achieved by a four pole crystal filter at 45MHz and a further 4 pole low group delay ceramic filter at 455kHz. Frequency stability is +1.5ppm over the range -30degC to +60degC.

2.3   SERIAL INTERFACE

Full RS232 presentation of received data. There is a programmable option to allow only the message content to appear on the serial port or to prefix this with the address to which the message was sent, in which case, the format is:-
>xxxxxxx:n>message CR LF
Where the xxxxxxx is received capcode/address and n=group.

For example:-

>1234567:A>This is a test message to pager 1234567 with group set as A

The serial output can be used for sign control or as an interface to a PC or other display system. It can also be used with a serial printer for message logging.

The data rates and data format on the serial port can be set independently of the over-air POCSAG data rate.

2.4   PROGRAMMABLE SWITCHED OUTPUTS

The PRX receivers have 4 programmable outputs that can be controlled by unique addressed messages for stand alone remote switch operation within a paging scheme. The switched outputs can be operated in an On/Off, Momentary or Timed mode making it ideal for sign control or remote switch operation.

The outputs can also be configured to pulse on for a configurable time every time a message is received on one of the addresses which pass data to the serial port. This allows the outputs to be used to alert an operator to the receipt of an incoming message.

The four digital outputs are open drain mosfet outputs referenced to ground. They are rated at 30V maximum switching voltage and 100mA current. Switching of inductive loads should be avoided.

2.5   MONITOR MODE

The PRX can be configured to pass all messages received on the selected frequency to the serial port. This allows the unit to be used as a monitor for checking or logging transmissions from a paging transmitter.

2.6   AUDIO OUTPUT

Although the PRX has an internal POCSAG decoder to allow received messages to be passed in ASCII format to the serial port, the PRX also has an audio output which allows audio monitoring of the frequency and which can also be optionally used for connection of an external POCSAG decoder.

2.7   RSSI OUTPUT

A DC voltage in the range 0-5V indicating the received signal level is available on the D-Connector to assist with antenna alignment or to monitor the performance of a remote transmitter. This voltage output is not calibrated. A calibrated digital reading of the receive signal level can be obtained using the configuration software if required.

2.8   PROGRAMMING & CONFIGURATION

The parameters of the PRX are PC programmable via the serial port using DOS software. Full details of all the programmable parameters are covered in Section 5 of this manual. Details of cables and adaptors needed are given in Section 4.

2.9   STATUS LEDS:

The PRX Receivers have three front panel LED's to enable the operator to see the operational status at a glance. The LEDS provided are:
- Busy   which indicates that an RF signal has been detected on the channel.
- SYS   which indicates when unit is in programming mode and also displays alarm messages.

- RXD   which shows that data is being passed to the serial port.

3   SPECIFICATIONS

3.1   TECHNICAL SPECIFICATIONS

3.1.1   General

Frequency Range: PRX170   138 - 172MHz in 6 x 6MHz wide sub-bands:-
                                 138-142, 142-148, 148-154, 154-160, 160-166 or 166-172
                   PRX470   402 - 470MHz in 4 sub-bands:-
                                 402-416, 415-433, 432-450 or 450-470.

Power Requirements: 12VDC (9.5V – 15.5DC)   Receiving: <75mA

Channels: 1 frequency (programmable using supplied software)

Min. Channel Step: 6.25kHz or 5kHz
                     (selected frequencies must be an exact multiple of one of these values)

Channel Spacing: 12.5kHz, 20kHz, 25kHz or 30kHz

Operating Temp.
Stability: 1.5ppm   –30 to +60ºC

Construction: Aluminium extrusion with aluminium end caps.

Size: 75mm W x 134mm L x 28mm H (including brackets)

Mounting: Screws to a flat surface.

Weight: 230g

Connectors: Data & Power   25-way D-Type Male
                     RF   BNC (50 ohm)

LED Indicators: Busy, System, RXD

3.1.2   Receiver Performance

Sensitivity: 0.25uV   (-119dBm) for 12dB SINAD de-emphasised
                     0.35uV (-117dBm) for 12dB SINAD flat

Audio Output: 250mV peak to peak

RSSI Output: 0-5VDC for -120dBm to -40dBm

Spurious Response: > 70dB

Blocking: > 90dBuV

Intermodulation: > 70dB

Adjacent Channel: > 65dB at 12.5kHz

IF Frequencies: 45MHz and 455kHz

Spurious Emissions: In accordance with EN300-086, EN300-220 and EN300-224

Mute Response Time: < 3msec

3.1.3   Decoder & Switched Outputs

Serial Interface: RS232 (DCE) with:-
                       Data Rates from 150bps to 38400bps
                       7 or 8 Data bits
                       Odd, Even or No Parity
                       1 or 2 Stop bits

Over-Air Protocol: POCSAG @ 512bps, 1200bps or 2400bps

POCSAG Error Rate: Better than -120dBm for 99% correct decodes.

Paging Addresses   4 addresses which can pass messages to the serial output and optionally trigger pulsed closure of the Switch outputs. A fifth address can be used for special messages to fully control the switched outputs.

Switched Outputs   4 open drain mosfet outputs referenced to ground. They are rated at 30V maximum switching voltage and 100mA current. Switching of inductive loads should be avoided.

In the interest of improvement the above specifications are subject to change without notice.

3.2   APPROVALS AND LICENSING

The PRX has been designed to meet the relevant standards outlined below. Should other approvals be required, please contact the sales office.

3.2.1   European Approvals

EN 300-224   The PRX Series of receivers have been designed to exceed the base station requirements of ETSI EN300-224 for applications where high performance and error free reception of critical data are required in areas of high interference and low signal level..

ETS 301-489:   The units meet the required CE specification and carry a CE Mark.

EN60950   The units meet the relevant requirements of this Safety specification.

3.2.2   European Declaration of Conformance

Hereby, RF DataTech declares that the PRX Series of Paging Receivers is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
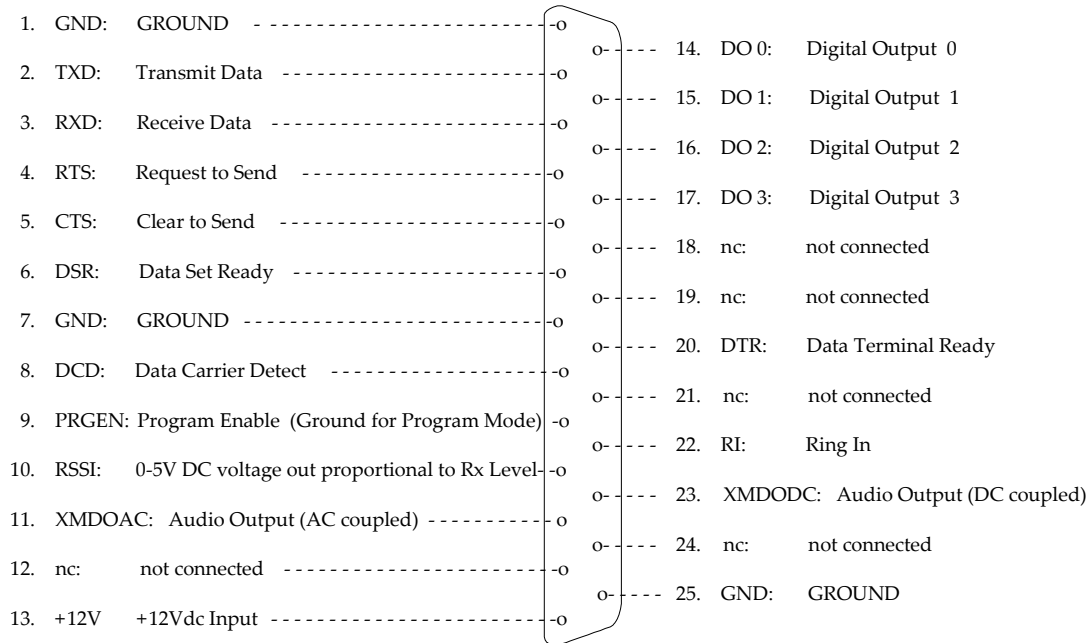
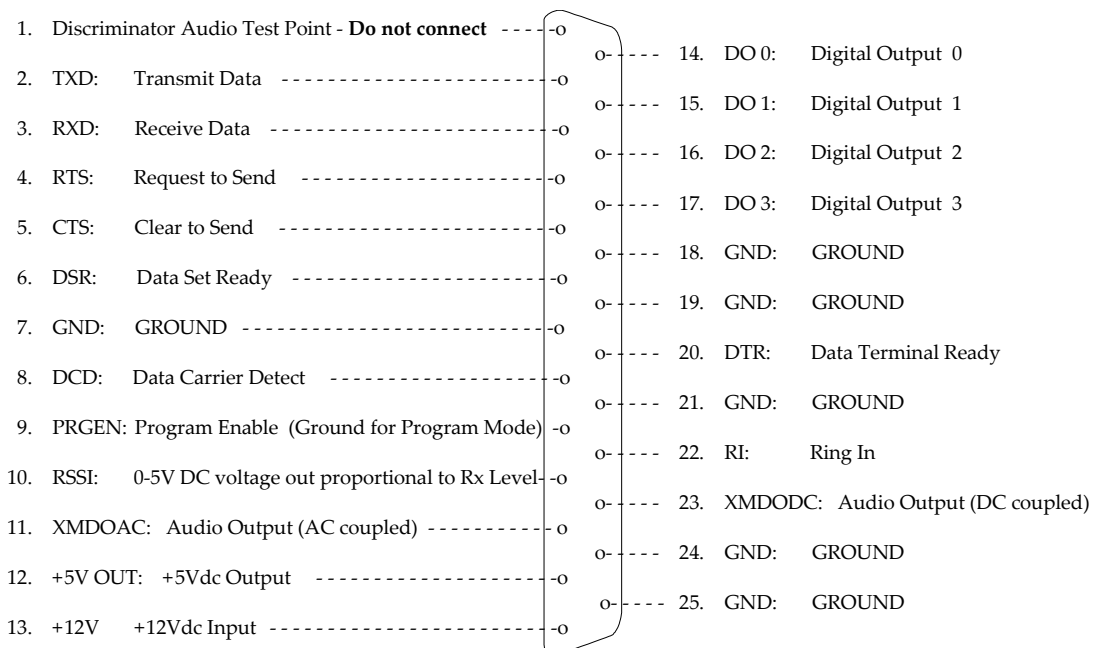$C\epsilon$

4 CABLES & INTERFACING

4.1 INTERFACE PORT PIN CONNECTIONS

The PRX Series receivers are equipped with a 25 way male D connector for all the traffic interfaces and power connections.

The pins of this connector for all versions of the **PRX470** and for versions of the **PRX170** supplied **before March 2011** (Ser. No. <28550) are allocated as follows:-

Left	Right
1. GND: GROUND	14. DO 0: Digital Output 0
2. TXD: Transmit Data	15. DO 1: Digital Output 1
3. RXD: Receive Data	16. DO 2: Digital Output 2
4. RTS: Request to Send	17. DO 3: Digital Output 3
5. CTS: Clear to Send	18. nc: not connected
6. DSR: Data Set Ready	19. nc: not connected
7. GND: GROUND	20. DTR: Data Terminal Ready
8. DCD: Data Carrier Detect	21. nc: not connected
9. PRGEN: Program Enable (Ground for Program Mode)	22. RI: Ring In
10. RSSI: 0-5V DC voltage out proportional to Rx Level	23. XMDODC: Audio Output (DC coupled)
11. XMDOAC: Audio Output (AC coupled)	24. nc: not connected
12. nc: not connected	25. GND: GROUND
13. +12V +12Vdc Input	

Pin allocations for versions of the **PRX170** (**VHF** product ONLY) supplied **during or after March 2011** (Ser. No. >28550) are allocated as follows:-

Left	Right
1. Discriminator Audio Test Point - **Do not connect**	14. DO 0: Digital Output 0
2. TXD: Transmit Data	15. DO 1: Digital Output 1
3. RXD: Receive Data	16. DO 2: Digital Output 2
4. RTS: Request to Send	17. DO 3: Digital Output 3
5. CTS: Clear to Send	18. GND: GROUND
6. DSR: Data Set Ready	19. GND: GROUND
7. GND: GROUND	20. DTR: Data Terminal Ready
8. DCD: Data Carrier Detect	21. GND: GROUND
9. PRGEN: Program Enable (Ground for Program Mode)	22. RI: Ring In
10. RSSI: 0-5V DC voltage out proportional to Rx Level	23. XMDODC: Audio Output (DC coupled)
11. XMDOAC: Audio Output (AC coupled)	24. GND: GROUND
12. +5V OUT: +5Vdc Output	25. GND: GROUND
13. +12V +12Vdc Input	

For normal receive mode, it is only necessary to wire pin 2 (RXD), pin 7 (Ground) and pin 13 (+12Vdc). All the rest are optional and can be left open circuit.

In programming mode, you need to connect pins 2, 3 & 7 to the programming PC. You also need to ground pin 9 to select programming mode and connect pin 13 to +12V & pin 25 to the 0V line of the power supply.

The 12VDC (9.5 – 15.5Vdc) input on pin 13 is protected against reverse polarity by internal diodes and an internal 1A fuse.

Note that the newer versions of the VHF PRX170 have additional ground connections available which make wiring the connector easier.

4.2   ANTENNA PORT
The antenna connection is a 50 ohm BNC connector.

4.3   PROGRAMMING CABLE
The parameters of the PRX can be programmed via the serial port using the supplied DOS based software, P4R. Full details of all the programmable parameters are covered later in this manual.

The following table shows the connections for a suitable external cable for programming the unit.

```
25way  Female          9way Female          Power          Switch
to PRX Receiver        to PC                Supply         (to select program mode)


Pin 1
Pin 2 ---------------------- Pin 3   (TXD)
Pin 3 ---------------------- Pin 2   (RXD)
Pin 4
Pin 5
Pin 6
Pin 7 ---------------------- Pin 5   (GND) ------------------------------  Side 1 (Ground)
Pin 8
Pin 9 ------------------------------------------------------------------------  Side 2  (Program)
Pin 10
Pin 11
Pin 12
Pin 13 -------------------------------------------------RED   (+12V)
Pin 14
Pin 15
Pin 16
Pin 17
Pin 18
Pin 19
Pin 20
Pin 21
```

Pin 22
Pin 23
Pin 24
Pin 25 --BLACK   (GND)

4.4   STATUS LEDS

The PRX receiver has a number of LEDs to enable the operator to see at a glance the status of the product and the serial port:-

RX   RF Carrier Detect/Busy
SYS   System
RXD   Receive Data

4.4.1   System LED

With the Exception of the System LED the remainder are self explanatory. The System LED lights when the radio is being programmed and is also used as a quick check as to the status of the unit.   If any alarms are detected it will flash out an Error number.

4.4.2   Error Number

The modem reports errors in two ways, firstly the BUSY led will come on and the SYS led will flash a number of times, the BUSY led will then go out again and if the fault persists the procedure will be repeated. An error number can be determined by counting the number of times the SYS led flashes while the BUSY led is on.

ERROR No	FAULT
1	Position of the channel switches has changed.
2	A channel has been loaded that has no RX frequency programmed.
4	The receiver synthesiser phase locked loop has failed to lock due to bad channel data or programming of an out range frequency.
6	The contents of the microprocessor's EEPROM are corrupted (failed checksum) in the general program area.
8	The contents of the microprocessor's EEPROM are corrupted (failed checksum) in the calibration area.
9	The contents of the microprocessor's EEPROM are corrupted (failed checksum) in the factory program area.
11	Rotary channel switch position overridden by software.
13	Packet Mode cycle pointer invalid.
14	Bad routing table area EEPROM checksum.
15	I^2C Bus initialisation error.

5   PROGRAMMING

5.1   INTRODUCTION

The parameters of the PRX can be programmed via the serial port using the supplied DOS based software, P4R.   Pin 9 must be grounded to put the radio into configuration mode to allow programming (see Section 4.3).   The individual configuration files for any radio (or batch of radios) can be stored on disc for future use or printed.

5.2   INSTALLATION OF THE P4R SOFTWARE

The configuration software is normally supplied as a .zip file. Extract the three files included within the .zip archive to the same directory. The three files required are P4R.EXE, DEFAULTS.DAT and RP.CFG.

To run the programme normally, run the P4R.EXE executable file.
On starting, the programme will load and display the opening menu.

By default, the software is set to use the COM1 serial port but, if required, this can be changed to COM2 by running the .exe file with the switch /C added. To do this you should navigate to the relevant directory where you save the files and then type:-
P4R /C
e.g D:\P4Rfiles\P4R /C   (Note that there is a space before the /C)

The /C extension causes the configuration mode to be entered. The programme provides the user with instructions about what to do and allows set up for the type of screen in use and then the selection of either COM1 or COM2 for programming.

Note that the programme can be run in a Command Shell (DOS Box) on Windows 95, 98, Me, 2000 and some Windows XP machines.   Just double clicking on the P4R.EXE file name (or desktop shortcut) will open the DOS box and start the programme running.

Windows XP does not fully support serial port connectivity for DOS, so on some XP machines it may not be possible to use this software in a normal command prompt.   The DOS program will also not operate correctly under Microsoft Vista or Windows 7.   For these operating systems it may be necessary to run the software under a DOS emulator such as DOSBox. This also allows mapping of Serial Port 1 in the P4R software to a USB port to help cope with the fact that most modern PCs do not have a physical RS232 port. DOSBox is free software available from http://www.dosbox.com .   Please contact us for support if you are having problems installing or running the P4R software on your machine

5.3   USING THE P4R SOFTWARE

The up/down arrow keys are used to move the cursor round the fields on the screen. DOS programs will not respond to any attempts to use a standard mouse. To change a data field press the RETURN key and then select the data by scrolling through the options with the left/right arrow keys.   Some fields will require you to type in data e.g. the Notes field. After confirming the selected data is correct press the RETURN key to enter. If you want to change the data once it's been entered, just move the cursor to the desired field again and press RETURN. You can then repeat the operation.

Once all the desired changes have been made, the radio needs to be reprogrammed with the amended configuration.

It is important to note that changing parameters in the configuration program only changes the configuration data held within the computer and does not affect the radio unless you specifically upload the changed configuration into the radio. If you exit the program without saving the configuration file or without actively programming the new data into the radio, the changes will be lost and the radio will remain as it originally was.

5.4 OPENING MENU
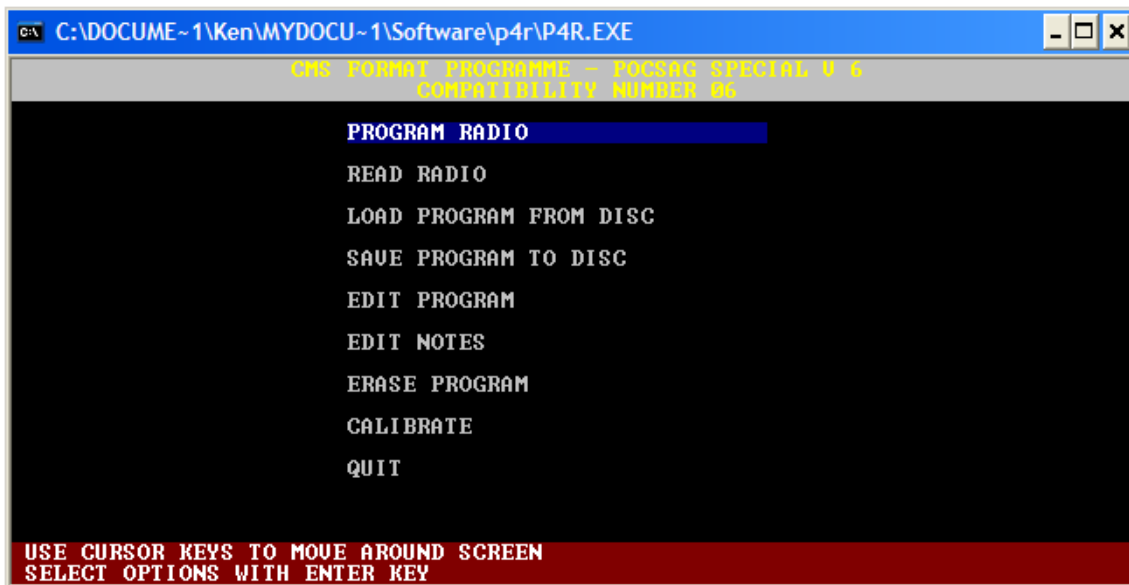
5.4.1 Program Radio

Selecting this entry will load the current configuration file into the radio. Any configuration data already held within the radio will be overwritten.

5.4.2 Read Radio

Reads the configuration file from the radio to allow it to be viewed or edited.

5.4.3 Load Program from Disc

When "Load Program from Disc" is selected it is possible to display the directory containing the relevant programs by following the prompt at the bottom of the screen. CTRL "D" is used to select the required directory and pressing "ESCAPE" returns the Opening Menu screen.

5.4.4 Save Program to Disc

Enables the operator to save the configuration file to disc for future use.

5.4.5 Edit Program

Selecting "Edit Program" will open the main configuration editing screen (see section 5.4) which allows you to view and change the radio configuration settings.

5.4.6 Edit Notes

The program allows the user to enter notes if required. These are saved as part of the configuration file.

5.4.7 Erase Program
Erases the parameters selected by the user and returns to the default program settings

5.4.8 Calibrate
Allows access to a calibration menu for calibration of RSSI (Receive Signal Level) readings against known receive levels and to gain access to a digital reading of the actual receive level.

5.4.9 Quit
This closes the program and returns the user to the DOS prompt.

5.5 EDIT MENU

5.5.1 Frequency Range
The frequency range must be set to encompass the band of frequencies that the receiver has been physically aligned for at the factory.

5.5.2 RX Frequency
The required RX frequency can be entered in MHz. This frequency must be within the sub-band to which the radio was tuned at the factory. This sub-band will typically be only 5 to 10MHz wide.

5.5.3 Channel Resolution
The operating frequency of the receiver must be an integer multiple of the channel resolution. The resolution can be set to either 5.00kz or 6.25kHz.   If the wanted operating frequency is an exact multiple of both of these values, then we recommend using the value 6.25kHz.

5.5.4 Power Save Options
The save on, save off and resume time are programmable parameters to provide power saving features on certain radios, but these are not currently supported on the PRX receivers. Changes to these settings for a PRX receiver will have no effect and will not be saved.

5.5.5 Operating Mode
Allows the selection of one of three different operating modes:-

5.5.5.1 POCSAG
In this mode, the receivers internal decoder is active and the received POCSAG signals are decoded back to ASCII text. This mode should also be selected if the switched outputs are to be used.

5.5.5.2 Direct FSK
This mode is for use when you do not need to decode the signal, but just want the received POCSAG signal to be passed to the serial interface (possibly for connection to an external decoder or another transmitter). As the internal decoder is not in circuit, the unit cannot check addresses or take any other action based on the content of the incoming signal. For this reason, the switched outputs do not function in this mode. The serial output is a squared up and re-timed version of the raw received POCSAG signal

5.5.5.3 External Audio
In this mode the decoder is again not in circuit and the receiver just behaves as an a basic audio receiver. The received audio appears on the output connector as an un-balanced 600 ohm signal. AC coupled and DC coupled versions of the signal are both available on the connector.

5.5.6 POCSAG Baud Rate
This field is only visible in POCSAG and Direct FSK modes and must be set to match the baud rate of the incoming POCSAG paging signal. Settings of 512, 1200 or 2400 baud are available.

5.5.7 Tx Signal Polarity
This field is only visible when the Operating Mode is set to Direct FSK. The value can be set to "True" or "Inverse" and determines whether or not the radio will invert the recovered POCSAG signal before passing it to the output.

5.5.8 Serial Baud Rate, Data Bits, Parity & Stop Bits
The format of the serial port signal is set with these options, note that a setting of 7 data bits with no parity will always result in 2 stop bits being output regardless of the setting of the "STOP BITS" option.

5.5.9 Text Mode
Allows selection of "Alpha" for Alphanumeric message, "Numeric" for purely numeric messages and "Auto".
When set for Auto, messages sent as Group A will be treated as Numeric while those sent as Groups B, C, or D will be treated as Alphanumeric.

5.5.10 Output Address
This option is only applicable to the POCSAG operating mode.
If set to "No", then only the content of the paging message is passed to the serial output.
If set to "Yes", then the output is in the format:-
>address:group>message content

for example:-
>1234567:A>This is a test message to pager 1234567 with group set as A

5.5.11 Monitor Mode

This option is only applicable to the POCSAG operating mode.

If set to "No", then the only messages passed to the serial port will be those which are addressed to one of the 4 addresses programmed into the unit.

If set to "Yes", then all received messages for any address will be passed to the output. This allows the unit to be used as a monitor for logging transmissions from a paging system.

5.5.12 Pulse Time

When a message is received on one of the four programmed Pager Text Addresses, the message is presented on the serial port, but for each address you can optionally configure one or more of the digital outputs to pulse on for a set time each time a message is received. In the "Pulse Time" field, you can set how long the outputs pulse "on" for when message is received. This is settable in 1s steps from 1s to 31s. If you do not want the output to pulse on, then just ensure that there are no "Y" entries in the relevant column of the mapping table against the pager text addresses. (see 5.4.4 below).

5.5.13 Digital Output Mode

The four digital outputs are not isolated relay contacts but open drain mosfet outputs referenced to ground, they are rated at 30V maximum switching voltage and 100mA current. Switching of inductive loads should be avoided.

5.5.14 Pager Text Address 1 – 4

The receiver will output text for any of the four text addresses programmed. An address is disabled by setting it to zero.

For each address, the radio can be set so that the received text is passed to the serial output for any group code (beep type) if "*" is entered in the "GP" column or for only a specific group code if a group letter (A, B, C or D) is put in the "GP" column.

For each address, you can also put a "Y" under any digital outputs that you want to pulse "On" when a message to that address is received. The pulse time is set as explained in 5.4.12 above. A single address can be mapped to no pulsed outputs, a single pulsed output or to multiple pulsed outputs. Each output can be triggered by any or all the addresses, depending on how the table is completed. It is a "Many to Many" mapping.

This simple pulsing of the switched outputs on receipt of messages to the programmed addresses is in addition to the precise control of the switched outputs by specially formatted messages described below.

5.5.15 Pager Dig OP Address

Commands for precise control of the digital outputs can be encoded using special text messages. The address to which the special messages must be sent is set by this field. Note that this address must be different from the text addresses.

As with normal paging messages the receiver can be programmed to respond to a specific group code or to all group codes.

5.5.16 Switched Output Control Messages

In addition to being able to pulse the switched outputrs when a message is received to one of the PRX receivers programmed text addesses, it is also possible to control the switched outputs more precisely by sending specially formatted paging messages to the "Pager Digital Output Address".

The switched digital outputs are controlled using two character messages.

The first character selects the output to be controlled and should be ascii "0", "1", "2" or "3" (hex 30, hex 31, hex 32 or hex 33) to control outputs 0,1,2 or 3 respectively.

The second character determines the action required on that output as tabulated below. Note

that the outputs are open drain mosfets referenced to ground. Where the table indicates that an output is ON the output will be conducting producing a logical "low", to see a logical "high" the output must be OFF and pulled up (to no more than 30V) using a suitable pull up resistor.

In summary all characters in the range 00 to 3F hex will turn an output off, the character 40 will turn it on indefinitely.

Characters in the range 41 to 5F will pulse an output on for 10ms times the value of the 5 lowest significant binary bits of the character, characters in the range 61 to 7F will pulse an output on for 1s times the value of the 5 lowest significant binary bits of the character.

Note that POCSAG text messages use 7 bit characters, and therefore the binary form shown below does not have an 8th bit.

It is permissible to string commands together to control multiple outputs simultaneously, for example the ASCII message   0@1?3T   (hex 30,40,31,3F,33,54)   turns on output 0, turns off output 1 and pulses output 3 on for 200ms.

HEX	BINARY	ASCII	ACTION
00	000 0000	<NUL> OFF	
.	.		
to	.		All characters in the range 00 to 3F hex
.	.		turn output OFF.
.	.		
3F	011 1111	?	OFF
40	100 0000	@	ON Permanently
41	100 0001	A	ON for 10ms
42	100 0010	B	ON for 20ms
43	100 0011	C	ON for 30ms
44	100 0100	D	ON for 40ms
45	100 0101	E	ON for 50ms
46	100 0110	F	ON for 60ms
47	100 0111	G	ON for 70ms
48	100 1000	H	ON for 80ms
49	100 1001	I	ON for 90ms
4A	100 1010	J	ON for 100ms
4B	100 1011	K	ON for 110ms
4C	100 1100	L	ON for 120ms
4D	100 1101	M	ON for 130ms
4E	100 1110	N	ON for 140ms
4F	100 1111	O	ON for 150ms
50	101 0000	P	ON for 160ms
51	101 0001	Q	ON for 170ms
52	101 0010	R	ON for 180ms
53	101 0011	S	ON for 190ms
54	101 0100	T	ON for 200ms
55	101 0101	U	ON for 210ms
56	101 0110	V	ON for 220ms
57	101 0111	W	ON for 230ms
58	101 1000	X	ON for 240ms
59	101 1001	Y	ON for 250ms
5A	101 1010	Z	ON for 260ms
5B	101 1011	[	ON for 270ms
5C	101 1100	\	ON for 280ms
5D	101 1101	]	ON for 290ms
5E	101 1110	^	ON for 300ms
5F	101 1111	_	ON for 310ms
60	110 0000	`	ON for 0s (DO NOT USE)
61	110 0001	a	ON for 1s

62	110 0010	b	ON for 2s
63	110 0011	c	ON for 3s
64	110 0100	d	ON for 4s
65	110 0101	e	ON for 5s
66	110 0110	f	ON for 6s
67	110 0111	g	ON for 7s
68	110 1000	h	ON for 8s
69	110 1001	i	ON for 9s
6A	110 1010	j	ON for 10s
6B	110 1011	k	ON for 11s
6C	110 1100	l	ON for 12s
6D	110 1101	m	ON for 13s
6E	110 1110	n	ON for 14s
6F	110 1111	o	ON for 15s
70	111 0000	p	ON for 16s
71	111 0001	q	ON for 17s
72	111 0010	r	ON for 18s
73	111 0011	s	ON for 19s
74	111 0100	t	ON for 20s
75	111 0101	u	ON for 21s
76	111 0110	v	ON for 22s
57	111 0111	w	ON for 23s
78	111 1000	x	ON for 24s
79	111 1001	y	ON for 25s
7A	111 1010	z	ON for 26s
7B	111 1011	{	ON for 27s
7C	111 1100	¦	ON for 28s
7D	111 1101	}	ON for 29s
7E	111 1110	~	ON for 30s
7F	111 1111	<DEL>	ON for 31s

5.5.17 POCSAG SOT Character / POCSAG SOT Mode

This field allows various operations on a start of text character, the SOT MODE field only appears if a SOT character has been entered. The SOT character must be entered as a hex value.

If the SOT mode is set to "keep" or "delete" no text is output until the first occurrence of the SOT character in a received message. If the mode is "keep" the SOT character and the following text are output, if the mode is "delete" only the following text (and not the SOT character itself) is output.

If the mode is set to "insert" the specified SOT character is inserted at the start of each received text message.

5.5.18 POCSAG EOT Character / POCSAG EOT Mode

This field operates similarly to the SOT options for an end of text character. If the mode is keep or delete all text is output until the EOT character is encountered, if the mode is keep the EOT character is output, if the mode is delete it is not. If the mode is insert the EOT character is inserted at the end of each text message.

5.5.19 Suppress POCSAG Nulls

Unused spaces in POCSAG messages are padded with null characters, if this option is set to YES these null characters are suppressed in the serial output.

6 INSTALLATION

6.1   INTRODUCTION

Correct installation of the PRX receivers should ensure reliable data communications for many years.   The most important installation points to remember are:-

- Suitable antenna system mounted at the correct height & polarisation to achieve the required distance.
- Reliable power supply capable of supplying the correct voltage and current.
- Correct installation for the environment.
- Correct interface and set-up.

Assuming the unit has been correctly installed and tested at the correct data speed, other factors that may affect the performance include the RF power of the transmitter (normally specified by the regulating authority), the local topography and the weather.

6.2   MOUNTING & INSTALLATION

The PRX is built into a tough durable aluminium enclosure that can be mounted in any plane, but should not be exposed to rain etc..

6.3   FIXING DETAILS

34mm

PRX170 CE

110mm

134mm

125mm

RX   SYS   RXD

46mm

75mm

28mm
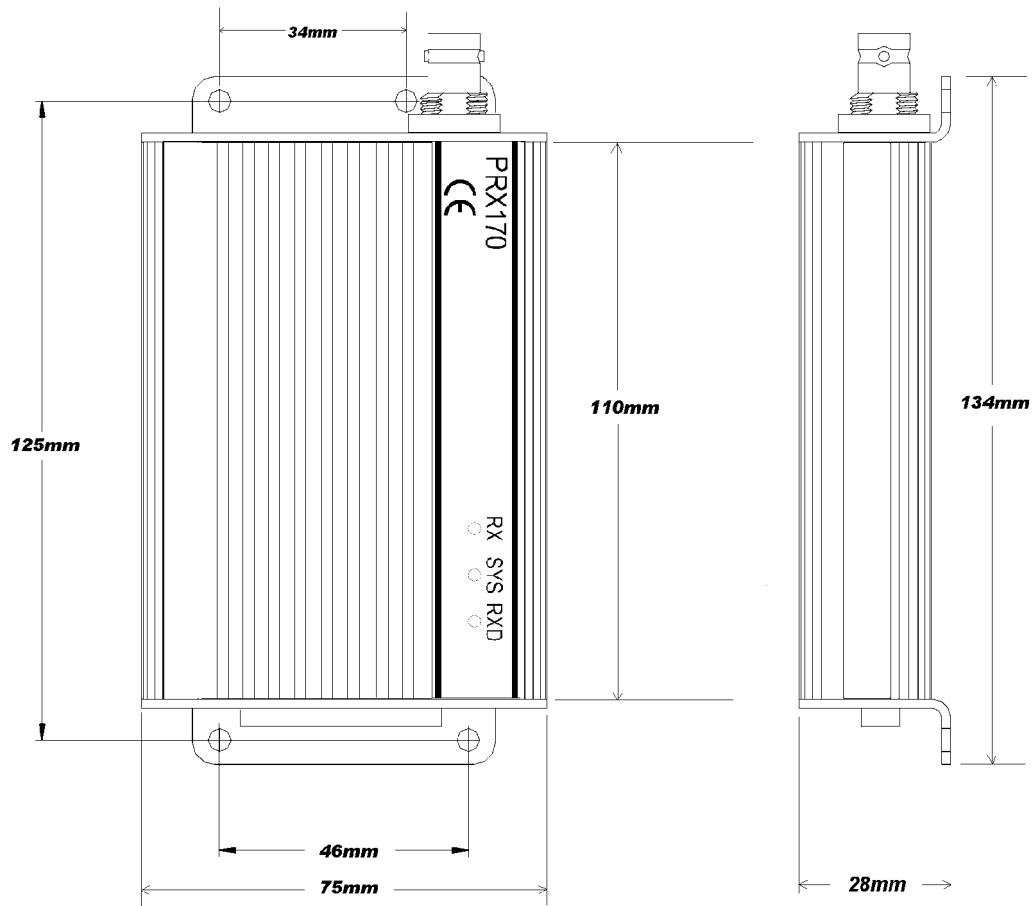
PRX170 Receiver

RF DataTech
is a trading division of:-

R.F. Technologies Ltd
Zeal House
8 Deer Park Road
Wimbledon
London
SW19 6UU

Tel: +44 (0) 1322 614 313
Fax: +44 (0) 208 543 5048

E-Mail: info@rfdatatech.co.uk

ADDITIONAL PRODUCT DATA
www.rfdatatech.co.uk