

FEATURES

- Type approved for licensed and licence free use.
- Conforms to ETSI 300-220, ETSI 300-113, ETSI 300-683, MPT1329, MPT1411.
- 17 selectable radio channels.
- Range 10Km to 20Km line of sight and 1Km to 3Km in buildings for ERP of 500mW.
- RS232/RS485 serial Interface with baud rates of 1200 to 19200.
- Two data transmission speeds.
- 4K of buffer memory.
- Two data repeater modes to extend range.
- Addressable individually and globally.
- On-line AT commands for modem dial-up operation and RF channel change.
- Predictor/Corrector error checking mode.
- Transmitter keying for site surveys and antenna alignment.
- Standby mode.



DESCRIPTION

The X7200 Radio Modem transmits and receives half duplex serial data at baud rates of 1200 to 19200 by means of a FM Radio Transceiver operating on the UK and European licence except bands and most other world wide data frequencies.

A 4K buffer memory is provided so that data can be passed asynchronously between the host and modem without the need for handshaking. The CTS output signal can be used for flow control in duplex applications. The over air data speed can be configured at either 5K bits/sec or 10K bits/sec. This is independent of the baud rate and should be set to a lower value were possible for the best radio propagation.

All the parameters on the X7200 radio modem can be set by means of a dumb terminal or PC running hyperterminal. The internal menu is selected by connecting pin 6 on the 9 way D Connector to 0v or typing \$ ESC directly after the power has been applied. The menu configuration is permanently stored on EEPROM.

On-line "AT" commands can be sent to the modem to change the address configuration during normal operation so that any modem can "dial up" any other modem. The RF channel can be changed in the same way.

A forward error-correcting algorithm can be configured to increase the integrity of the data transmission at high speed or over long distances.

The modem can be configured in two repeater modes for echo back testing or to extend range.

The X7200 radio modem is powered from a regulated DC source of between 8.5v to 14V. In receive mode it will take 80mA and in transmit 350mA. Taking DTR low will switch the modem into a power saving stand-by mode. In this state it will consume approximately 0.1 mA. It will take approximately 20mSec for the modem to become fully operational after DTR is taken high or power is applied. The modem power supply is protected by an internal diode.

SPECIFICATION

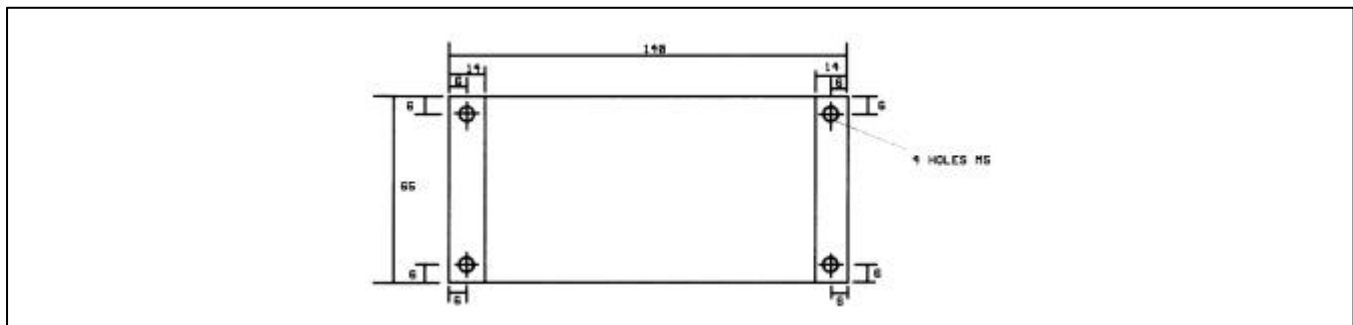
ABSOLUTE MAXIMUM RATINGS

Storage Temperature..... -30 to +85 Celsius
 Operating Temperature..... -10 to +55 Celsius

DIMENSIONS: Length = 114mm Width = 65mm Height = 26mm

ELECTRICAL CHARACTERISTICS	MIN	TYPICAL	MAX	DIMENSION	NOTE
Frequency Range	458.500		458.950	MHz	UK
	400.000		480.000	MHz	World
	147.000		174.000	MHz	
Channels		17			
Channel Separation	12.5	25.0	25.0	KHz	
Start up Time	5.0	10.0	30.0	mSecs	With \$ Selected
Modulation		F3D, F1D			
Power Supply	8.5	12	14	V	
TRANSMITTER					
RF Power X7200	5		500	mW	
RF Power X7200HP	0.5		5	W	
Data Input RS232	-10		10	V	
Data Input RS485	0		5	V	
Frequency Deviation		+/- 3.0		KHz	25KHz Channel
Modulation Rate	DC		10.0	Kbps	
Supply Current	330	340	360	mA	at 500mW
RECEIVER					
IF Frequencies		45/455		MHz	
Sensitivity		0.9		µV	
Bandwidth	+/- 7.5	KHz			
Data Output RS232	-10		10	V	
Data Output RS485	0		5	V	
Carrier Detect	-10		10	V	
Supply Current	80	90	105	mA	
Supply Current Standby	0.005	0.007	0.01	mA	

MECHANICAL DETAILS



CONNECTIONS

9 Way D Type Connector RS232

1		+12V	INPUT
	6	CONFIGURATION MODE	INPUT
2		RD DATA	INPUT
	7	RTS REQUEST TO SEND	INPUT
3		TD DATA	OUTPUT
	8	CTS CLEAR TO SEND	OUTPUT
4		DTR (STANDBY)	INPUT
	9	RSSI	OUTPUT
5		0v	INPUT

- PIN 1+VE 12V regulated power supply, rated at 1A.
- PIN 2 RD Receive serial data from host
- PIN 3 TD Transmit serial data to host.
- PIN 4 DTR A signal of between 0v to -15v will switch the modem into standby power mode.
- PIN 5 0V Power supply and common for host.
- PIN 6 CON Configuration input. Connecting 0V to this input will send the configuration menu to the host when the power is applied. It is left open circuit for normal operation
- PIN 7 RTS Used in curtain applications to inhibit data from the TD output of the modem.
- PIN 8 CTS Brought low by the modem when a RF carrier is detected or the receiver buffer memory is full. This can be connected to RTS on the host to inhibit data from the host in duplex operations.
- PIN 9 RSSI The relative signal strength indication provides a voltage which is logarithmically proportional to the receiver signal strength. When no RF is detected RSSI = 0V

9 Way D Type Connector RS485

1		+12V	INPUT
	6	CONFIGURATION MODE	INPUT
2		-Ve DATA IN RS485 IN	INPUT
	7	+VeDATA IN RS485 IN	INPUT
3		-Ve DATA OUT RS485 OUT	OUTPUT
	8	+VeDATA OUT RS485 OUT	OUTPUT
4		DTR (STANDBY)	INPUT
	9	CD CARRIER DETECT	OUTPUT
5		0v	INPUT

LED Indicators

Three LED on the front of the modem indicate the following states:

- TX Green On when modem is transmitting data.
- RX Green On when a RF carrier of greater than 0.9uV is detected by the modem. This threshold can be adjusted by a potentiometer inside the modem.
- POWER Red On when power is applied to the modem

CONFIGURATION MENU

BAUD **PARY** **OE** **REPT** **ERR** **ADDR** **TXAD** **RXAD** **RFC** **TXON** **F/S** **?**
B **N** **O** **N** **N** **N** **00** **00** **Q** **N** **F** **Y/N**

RADIO TRANSMISSION

Radio Frequency for the UK Licence Exempt Band

HEX CHANNEL	RFC	RF FREQUENCY MHZ	SW5	SW3	SW2	SW1	NOTES
02H	A	458.525	ON	ON	ON	ON	
04H	B	458.550	ON	ON	OFF	OFF	
06H	C	458.575	ON	ON	OFF	ON	
08H	D	458.600	ON	OFF	ON	OFF	
0AH	E	458.625	ON	ON	ON	ON	
0CH	F	458.650	ON	ON	OFF	OFF	
0EH	G	458.675	ON	ON	OFF	ON	
10H	H	458.700	ON	OFF	ON	OFF	
12H	I	458.725	ON	OFF	ON	ON	
14H	J	458.750	ON	OFF	OFF	OFF	
16H	K	458.775	ON	OFF	OFF	ON	
18H	L	458.800	ON	OFF	ON	OFF	
1AH	M	458.825	ON	OFF	ON	ON	NOT USED
1CH	N	458.850	ON	OFF	OFF	OFF	
1EH	O	458.875	ON	OFF	OFF	ON	
20H	P	458.900	ON	OFF	ON	OFF	NOT USED
22H	Q	458.925	OFF	ON	ON	ON	

Note: SW1,SW2,SW3,SW4 and SW5 refer to the DIL switches located inside the RF Module

Radio Propagation

When installing a X7200 Radio Modem there are a number of factors that should be considered as they will affect the performance of the radio link. These are:

- Transmitter power output.
- Sensitivity of the receiver.
- Height of transmitter and receiver antenna.
- Length and type of the coaxial feeder cables to the antenna.
- Type of antenna used.
- Surrounding topography.
- Interference for other networks operating on the same frequency.
- The weather.

Site Survey

A site survey can be carried out by configuring a base station Radio Modem to continuously transmit by setting TxON in the menu to Y. A second Radio Modem can be used to move around the site observing the Rx Led. If the Led is lit then there is a good signal path .

For more information or general enquiries, please call;

**R. F. Solutions Ltd.,
Unit 21, Cliffe Industrial Estate,
South Street,
Lewes,
E Sussex, BN8 6JL. England.**

Tel +44 (0)1273 898 000. Fax +44 (0)1273 480 661.

**Email : sales@rfsolutions.co.uk
http://www.rfsolutions.co.uk**



RF Solutions is a member of the Low Power Radio Association.