NEW
查询HVR2供应商
捷多邦，专业PCB打样工厂，24小时加急出货

Radiometrix

Hartcran House, 231 Kenton Lane, Harrow, HA3 8RP, England
Tel: +44 (0) 20 8909 9595, Fax: +44 (0) 20 8909 2233

Issue 3, 27 April 2007

HVR2

UHF Narrow Band FM Vibration Resistant Multi Channel Receiver

The HVR2 receiver is the high vibratio resistant version of the low cost RLC receiver. Its unique local oscillator desig makes the unit almost immune to mechanica vibrations below 500Hz. This makes the HVR (with the matching TLC2H-433-5 transmitte to be used in mechanically troublesome area such as crane and machine tool control, an remote operated vehicles.

Figure 1: HVR2-433-5 receiver

Features

- 433MHz version conforms to EN 300 220-3 and EN 301 489-3
- High performance double superhet. PLL synthesizer with TCXO
- DDC local oscillator
- SAW front-end filter
- Data rates up to 5 kbps for standard module
- Usable range over 500m
- Fully screened. Low profile
- Feature-rich interface (RSSI, analogue and digital baseband)
- Re-programmable via RS232 interface
- Low power requirements
- Immune to mechanical vibration up to 500Hz

Applications

- Heavy vehicle/machinery (e.g. crane) controls
- Handheld terminals
- EPOS equipment, barcode scanners
- Data loggers
- Industrial telemetry and telecommand
- In-building environmental monitoring and control
- High-end security and fire alarms
- DGPS systems
- Vehicle data up/download

Technical Summary

- Operating frequency: 433.05 - 434.775MHz
- 32 channels
- Supply voltage: 3.7 – 15V
- Current consumption: 30mA (receive)
- Data bit rate: 5kbps max.
- Receiver sensitivity: -120dBm (for 12 dB SINAD)
- Serial configuration by inverted RS232 at 3V CMOS level

找PDF 维库一下 pdf.dzsc.com

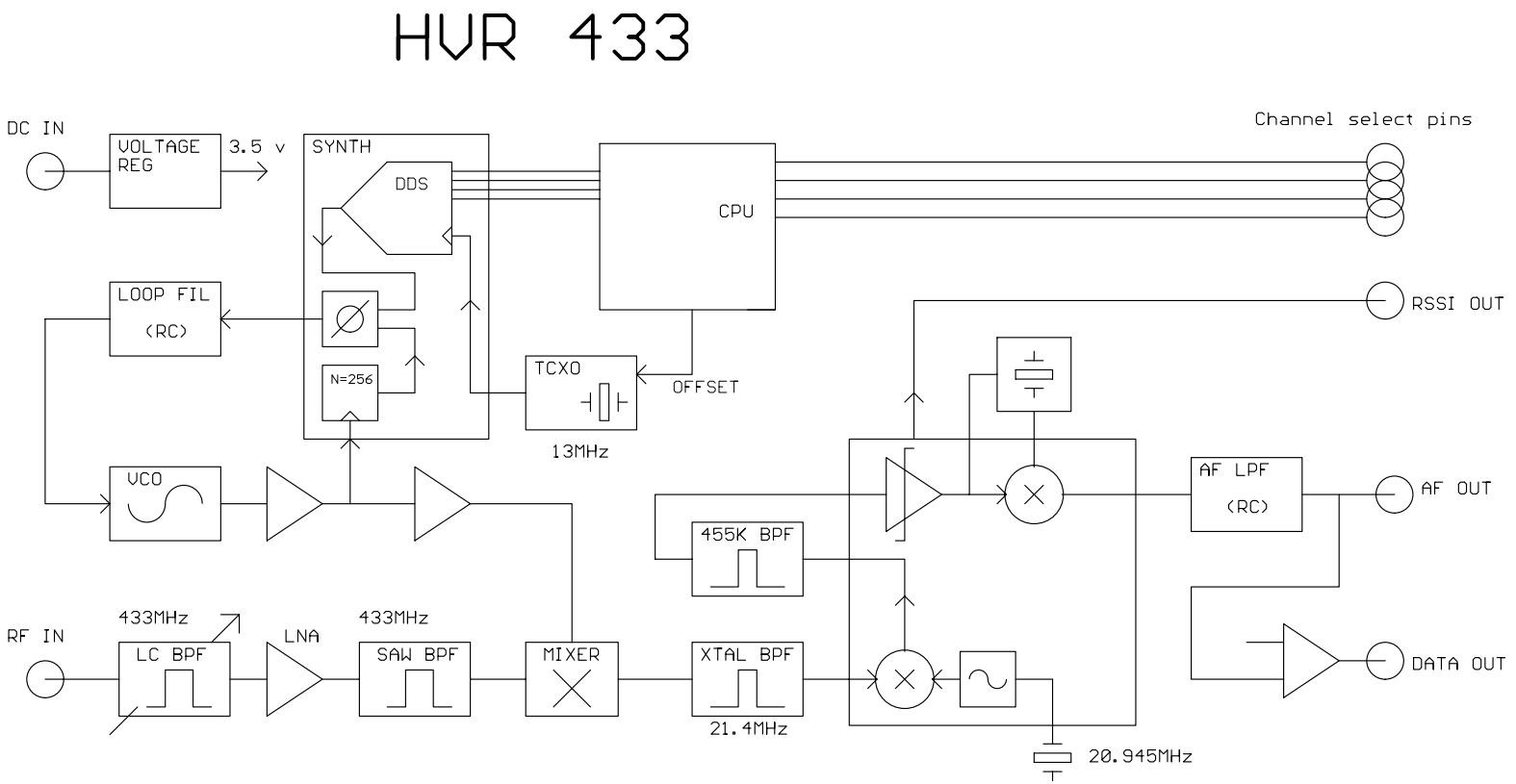

Figure 4: HVR2 block diagram

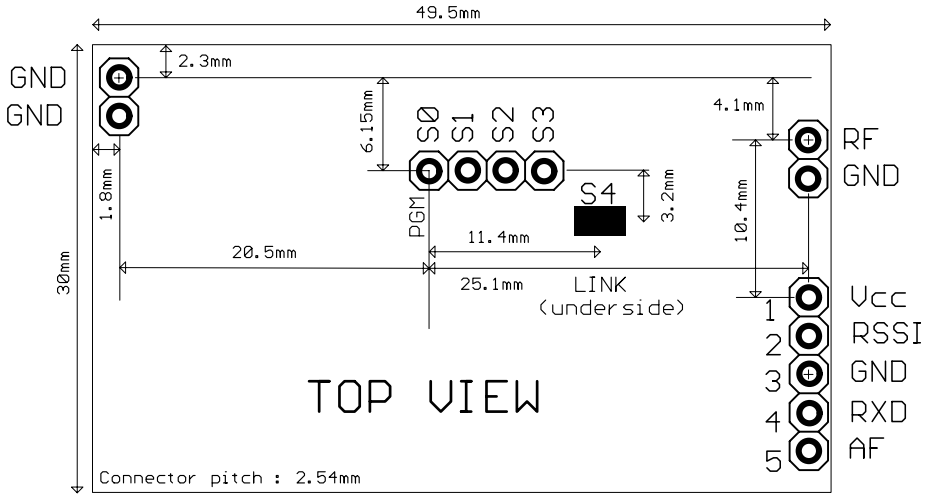

Figure 5: HVR2 footpint (top view)

Pin description

Pin	Name	Function
1	Vcc	DC supply (3.7V to 15V, at 30mA).
2	RSSI	0.5V-2.5V DC level. 60dB dynamic range. 40kΩ output impedance
3	0V	Ground
4	RXD	Open collector digital data output with internal 47kΩ pull-up to Vcc
5	AF	600mV $_{pk-pk}$ audio. DC coupled, approx 0.8V bias.
S0/PGM	Parallel channel select, bit 0	True logic (0V = low). Weak pullup to 3.5V Serial frequency programming / configuration[1]
S1	Parallel channel select, bit 1	True logic (0V = low). Weak pullup to 3.5V
S2	Parallel channel select, bit 2	True logic (0V = low). Weak pullup to 3.5V
S3	Parallel channel select, bit 3	True logic (0V = low). Weak pullup to 3.5V
Jumper S4	Parallel channel select, bit 4	Jumper is soldered (S4=0), Selects Channel 16 to Channel 31 at 50kHz step.

NOTES:

1. Serial programming is by a 2400 baud inverted 'RS232' (3V CMOS levels) datastream applied to the S0 pin. If connection to a true RS232 port is desired, then a suitable inverting level shifter / buffer (MAX232 or NPN switch transistor) is needed.
2. Parallel channel select is by a 4 pin parallel input (MSB selected by jumper). 3V CMOS levels should be used.
3. As supplied the frequency table is thus: ch 16-31 433.9 - 434.65 MHz (50KHz steps)
   ch 0-15 433.875 - 434.625 MHz (50KHz steps)

   Channels 00-15 cannot be accessed by the parallel port , only by a serial GOCHAN command.

   This format maintains compatibility with the low cost RLC2 receivers (which are supplied with their S4 jumpers unfitted therefore accessing channels 00-15).
   If no connection is made to the ports, the unit operates on channel 31 (434.65MHz).

Serial interface commands

HVR2 frequency/channel can be serially configured using HyperTerminal or any other terminal program configured with following setup:

2400 baud RS232. 8 bit data, no parity, 1 start bit, 1 or 2 stop bits.

Serial data is sent to the unit on one of the parallel channel select pins (S0). It is very important that the unit does not 'decode' switch bounce in ordinary operation as a command string, or spurious re-writing of the EEPROM will result. For this reason the user must send the 16 character string ENABLESERIALMODE to fully enable the serial command mode before sending any of the command strings listed below. Command mode is disabled on power down, or on reception of a # character.

Owing to the complex nature of the DDS programming in the HVR2, the user does not have direct access to the synthesizer registers (as is the case in the simpler RLC2). Instead, the user has a table of 32 channels (accessible by parallel port, or by the GOCHAN command). Each of these channels can be assigned to one of the HVR2's pre-set frequencies (433.05 - 434.775MHz)
(note: the parallel port accesses the higher 16 channels, from 16-31, as if a '5th parallel select bit' is always 'low').

GOCHAN aa	Serial select of channel aa (0 to 31) (stored in non-volatile EEPROM)
HOPPER nn	Temporary select of frequency number nn (0 to 69)
LOAD aa nn	Set a frequency (nn) for channel aa (channels 0 to 31)
SETPAR	Channel selected by 5 bit parallel inputs (4pins S0-S3 + S4 always high)
SETSER	Channel selected by most recent GOCHAN operation
<cr>	Process entry
/	Clear all buffers
#	Disable command mode

aa = a two digit channel number from 00 to 31 (values 00-15 can only be selected by a GOCHAN command)
nn= abstract 'frequency number' relating to one of the pre-set operating frequency

Channel frequency = 433.05 + (nn x 0.025) MHz

For example: nn = 01 relates to a channel frequency of 433.075MHz, and the commnd:
LOAD 00 01 will set channel number 0 to 433.075MHz

Note: *A pause of at least 25ms must be allowed between command strings (EEPROM programming time).*
The HVR2 has no equivalent to the RLC2 'SINGLE' command. The 'HOPPER' command provides some similarity, but on power up (or SETPAR, SETSER or GOCHAN command) the radio reverts to ordinary operation.

Condensed specifications

Frequency	433.05-434.775MHz
Frequency stability	±1.5kHz
Channel spacing	25kHz
Number of channels	32 channels selected via RS232 interface or 16 channels by parallel port
Operating temperature	-10□C to +60□C (Storage -30□C to +70 □C)
Spurious radiations	Compliant with ETSI EN 300 220-3 and EN 301 489-3
Interface	
User	5pin 0.1" pitch molex
Channel	4pin 0.1" pitch molex
RF	2pin 0.1" pitch molex
Sensitivity	-112dBm for 1 part per 1000 BER
	-120dBm for 12 dB SINAD
S/N ratio	25dB (min), 30dB (typ) on AF output
AF bandwidth (-3dB)	4kHz
image / spurious / adjacent channel	<-55dB
Blocking	<-85dB
LO re-radiation	<-60dBm
Supply	
Voltage	3.7V – 15V
Current	30mA
Outputs	RSSI, audio, data
Size	50 x 30 x 10mm
Channel to channel hop	<5ms
Power on to valid audio	<10ms
Power on to stable data out (50:50 mark / space)	<10ms

Notes:

1. The data slicer cannot be depended upon for data waveform frequencies below 250Hz
2. When RX is on and a transmitter keys up, again a 10ms period is required to stabilise data output mark/space. i.e. allow at least 10ms of preamble

The high vibration resistant HVR2 receiver differ from the Low Cost RLC2 receiver in the following key features:

	HVR2	**RLC2**
Footprint	Industry standard	Industry standard
Frequency band	433.05 – 434.775MHz	433 - 435 MHz
Channels	32 serial, 16 parallel	32 parallel/serial
Parallel channel select	4 pins	4 pins (and 1 jumper link)
SAW front end filter	Yes	Yes
Supply	3.7V-15, 30mA	3.7V-15, 18mA
Spurii	<-55dB	<-60dB
Sensitivity	-120dBm	-120dBm
Ultimate S/N	25dB (min), 30dB (typical)	35dB (min), 40dB (typical)
Start up time (preamble)	<10ms	~50ms
Channel to channel hop	<5ms	~25ms
Reprogramming (frequency)	Limited	Full
Vibration resistant	High, up to 500Hz	Limited
Local Oscillator	Direct Digital Synthesiser (DDS)	Voltage controlled (VCO)

Antenna requirements

Three types of integral antenna are recommended and approved for use with the module:

A) ***Whip*** This is a wire, rod ,PCB track or combination connected directly to RF pin of the module. Optimum total length is 16.4cm (1/4 wave @ 433MHz). Keep the open circuit (hot) end well away from metal components to prevent serious de-tuning. Whips are ground plane sensitive and will benefit from internal 1/4 wave earthed radial(s) if the product is small and plastic cased

B) ***Helical*** Wire coil, connected directly to RF pin, open circuit at other end. This antenna is very efficient given it's small size (20mm x 4mm dia.). The helical is a high Q antenna, trim the wire length or expand the coil for optimum results. The helical de-tunes badly with proximity to other conductive objects.

C) ***Loop*** A loop of PCB track tuned by a fixed or variable capacitor to ground at the 'hot' end and fed from RF pin at a point 20% from the ground end. Loops have high immunity to proximity de-tuning.

	A	B	C
	whip	***helical***	***loop***
Ultimate performance	***	**	*
Easy of design set-up	***	**	*
Size	*	***	**
Immunity proximity effects	*	**	***
Range open ground to similar antenna	500m	200	100

The antenna choice and position directly controls the system range. Keep it clear of other metal in the system, particularly the 'hot' end. The best position by far, is sticking out the top of the product. This is often not desirable for practical/ergonomic reasons thus a compromise may need to be reached. If an internal antenna must be used, try to keep it away from other metal components, particularly large ones like transformers, batteries and PCB tracks/earth plane. The space around the antenna is as important as the antenna itself.

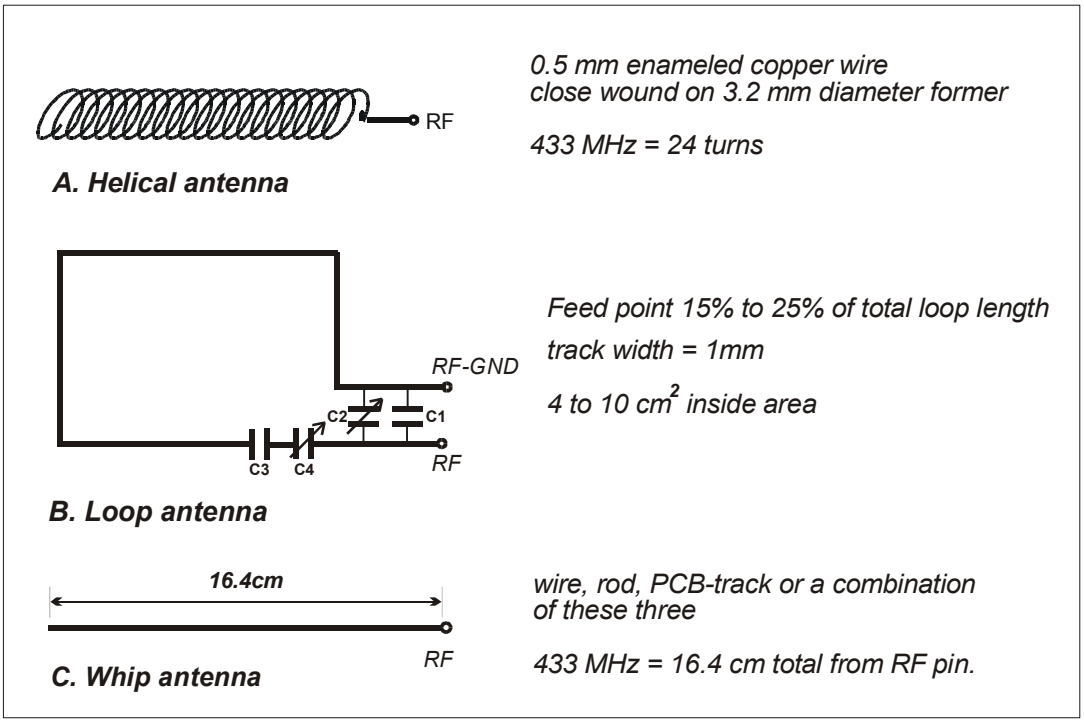

Figure 6: Antenna types

Radiometrix Ltd

Hartcran House
231 Kenton Lane
Harrow, Middlesex
HA3 8RP
ENGLAND
Tel: +44 (0) 20 8909 9595
Fax: +44 (0) 20 8909 2233
sales@radiometrix.com
www.radiometrix.com

Copyright notice

This product data sheet is the original work and copyrighted property of Radiometrix Ltd. Reproduction in whole or in part must give clear acknowledgement to the copyright owner.

Limitation of liability

The information furnished by Radiometrix Ltd is believed to be accurate and reliable. Radiometrix Ltd reserves the right to make changes or improvements in the design, specification or manufacture of its subassembly products without notice. Radiometrix Ltd does not assume any liability arising from the application or use of any product or circuit described herein, nor for any infringements of patents or other rights of third parties which may result from the use of its products. This data sheet neither states nor implies warranty of any kind, including fitness for any particular application. These radio devices may be subject to radio interference and may not function as intended if interference is present. We do NOT recommend their use for life critical applications.
The Intrastat commodity code for all our modules is: 8542 6000.

R&TTE Directive

After 7 April 2001 the manufacturer can only place finished product on the market under the provisions of the R&TTE Directive. Equipment within the scope of the R&TTE Directive may demonstrate compliance to the essential requirements specified in Article 3 of the Directive, as appropriate to the particular equipment.
Further details are available on The Office of Communications (Ofcom) web site:
http://www.ofcom.org.uk/radiocomms/ifi/licensing/licensing_policy_manual/

Information Requests
Ofcom
Riverside House
2a Southwark Bridge Road
London SE1 9HA
Tel: +44 (0)845 456 3000 or 020 7981 3040
Fax: +44 (0)20 7783 4033
information.requests@ofcom.org.uk

European Radiocommunications Office (ERO)
Peblingehus
Nansensgade 19
DK 1366 Copenhagen
Tel. +45 33896300
Fax +45 33896330
ero@ero.dk
www.ero.dk