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HNM2-458-19   PRELIMINARY   Issue B, 10 November 2017

High Power Narrow Band Category 1 Radio Modem

The HNM2 radio modem offers a 500mW RF output 19200 data link with RS232, RS485 or USB interface. It meet meets the ETSI Category 1 high performance receiver specification to be used where the operation of a SRD may have inherent safety of human life implications.

Figure 1: HNM 2-458-19

Features

- Standard 458MHz (UK), 869MHz (EU)
- Available from 160MHz to 915MHz
- 12.5/25kHz Narrow Band Multichannel
- Data rates up to 19200kbps
- ETSI EN 300 220-1 Category 1 High performance level receiver
- Point-to-Point, Point-to-Multipoint
- Store and Forward Repeater Mode with Dual Addressing to extend operating range
- Mini USB Type B, RS232 DE9F sockets, RS485 Terminal Block and SPI interfaces
- Range Test Mode

Applications

- Safety-critical wireless applications such as social alarms and healthcare monitoring
- High-end security and fire alarms
- Lone Worker Alarms
- Industrial/Commercial Telemetry and Telecommand or Non-specific SRD usage
- In-building environmental monitoring and control

Technical Summary

- Size: 80 x 86 x 15mm
- Operating frequencies: CH0:458.525, CH1:458.550,…CH15:458.900MHz
- Supply range: 6V to 16V DC
- Current consumption: 280mA TX
- Current consumption: 40mA RX
- RF baud rate: 1200, 2400, 4800, 9600 (default), 19200bps.
- User baud rate: 600, 1200, 2400, 4800, 9600, 19200, 38400bps.
- Hardware flow control: RTS/CTS
- Modulation: 2, 4-level GFSK (default)
- Transmit power: +27dBm (500mW) nominal
- SAW front end filter
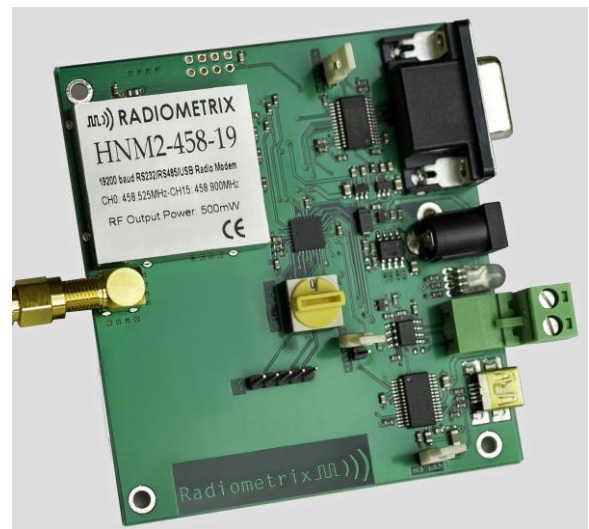- Digital RSSI
- Can be USB powered or external supply

PCB Layout and connections

Figure 2: HNM2 Connections
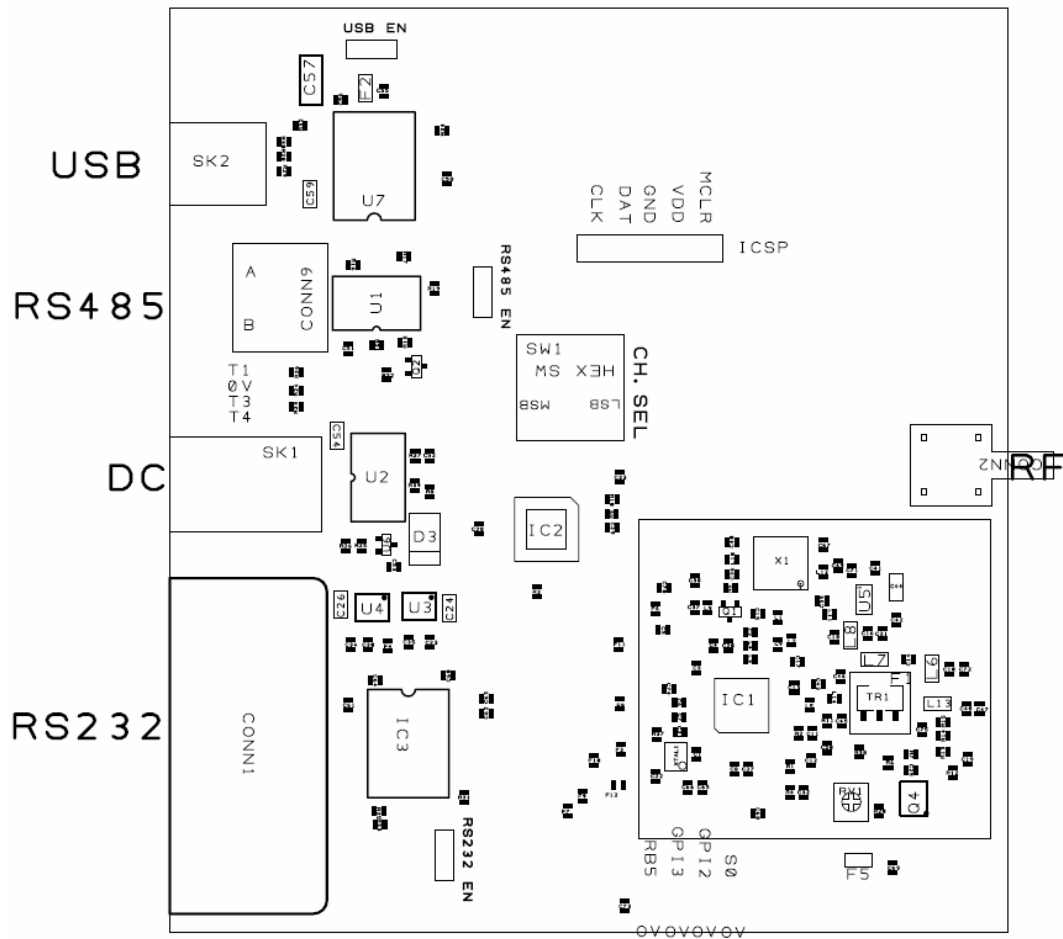
NOTE	Name	Function
	RS232	DE9F serial connection
	DC	2.1mm External DC power input (centre pin +)
	RS485	2 pin screw terminal RS485 connection
	USB	Mini-USB Type B connection
	RF	50Ω SMA antenna socket
	CH.SEL	Manual 16-channel select Hex switch (0 to F)
1	USB EN	USB jumper link enable
1	RS232 EN	RS232 jumper link enable
1	RS485	RS485 jumper link enable

NOTES:
    1. Only one jumper link should be fitted at any time

Absolute maximum ratings

Exceeding the values given below may cause permanent damage to the module.

Operating temperature	-20°C to +60°C
Storage temperature	-30°C to +70°C
RF	±50V @ <10MHz, +13dBm @ >10MHz
All other pins	-0.3V to +5.5V

Performance specifications Transmitter:
(Vcc = 6V / temperature = 20°C unless stated)

General	pin	min.	typ.	max.	units	notes
DC supply						
Supply voltage		4.8	6	16	V	6
TX Supply current @ 500mW			280mA		mA	
Antenna pin impedance			50		Ω	
Channel spacing			25		kHz	
Number of manual channels			16			5
RF						
RF power output		+25	+27		dBm	1
Spurious emissions					dBm	4
Adjacent channel TX power				-36	dBm	
Frequency accuracy		-1.5	0	+1.5	kHz	2
FM deviation (peak)					kHz	3
Dynamic timing						
TX select to full RF	2		2		ms	

Notes:
1. Measured into 50Ω resistive load, USB powered reduces output power.
2. Total over full supply and temperature range.
3. Dependant on data rate selected
4. Meets EN300-220
5. Programmable frequency through AT command and selected using on board switch.
6. Below 6v the TX output power will decrease.

Performance specifications Receiver:
(Vcc = 5V / temperature = 20°C unless stated)

	min.	typ.	max.	units	notes
DC supply					
Supply voltage	4.8	6.0	16	V	
Supply current		40		mA	
RF/ IF					
RF sensitivity for 1ppm BER	-	-117	-	dBm	1
RSSI range	-	TBD	-	dB	
LO leakage, conducted	-54	-95		dBm	
Adjacent channel rejection		TBD		dB	
Blocking		TBD		dB	
DYNAMIC TIMING					
Power up to stable data	-	2		ms	

Notes: 1. Dependant on data rate and modulation used.

Received Signal Strength Indicator (RSSI)

The module incorporates a wide range RSSI which measures the strength of an incoming signal which can be appended to the incoming data, (ATRA command see below).

Variants and ordering information

The HNM MODEM is manufactured in several variants:

HNM1-169-19	500mW	EU
HNM2-433-19-DE	500mW	Germany
HNM2-458-19	500mW	UK
HNM3-869-19	400mW	EU

For other variants please contact the factory.

Other variants can be supplied to individual customer requirements at frequencies from 160MHz to 915MHz

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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/*

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