

### 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 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.*

#### Features

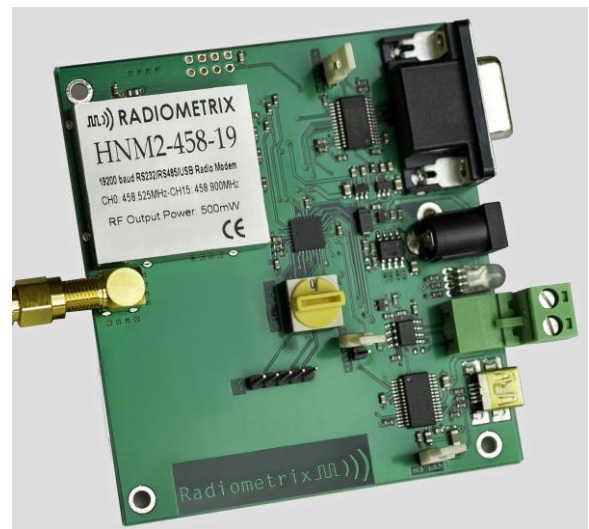
- Standard 458MHz (UK), 869MHz (EU)
- Available from 160MHz to 915MHz
- 12.5/25kHz Narrow Band Multichannel
- Data rates up to 19200kbps
- ETSI EN 300 220-1 Category 1 High performance level receiver
- Point-to-Point, Point-to-Multipoint
- Store and Forward Repeater Mode with Dual Addressing to extend 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

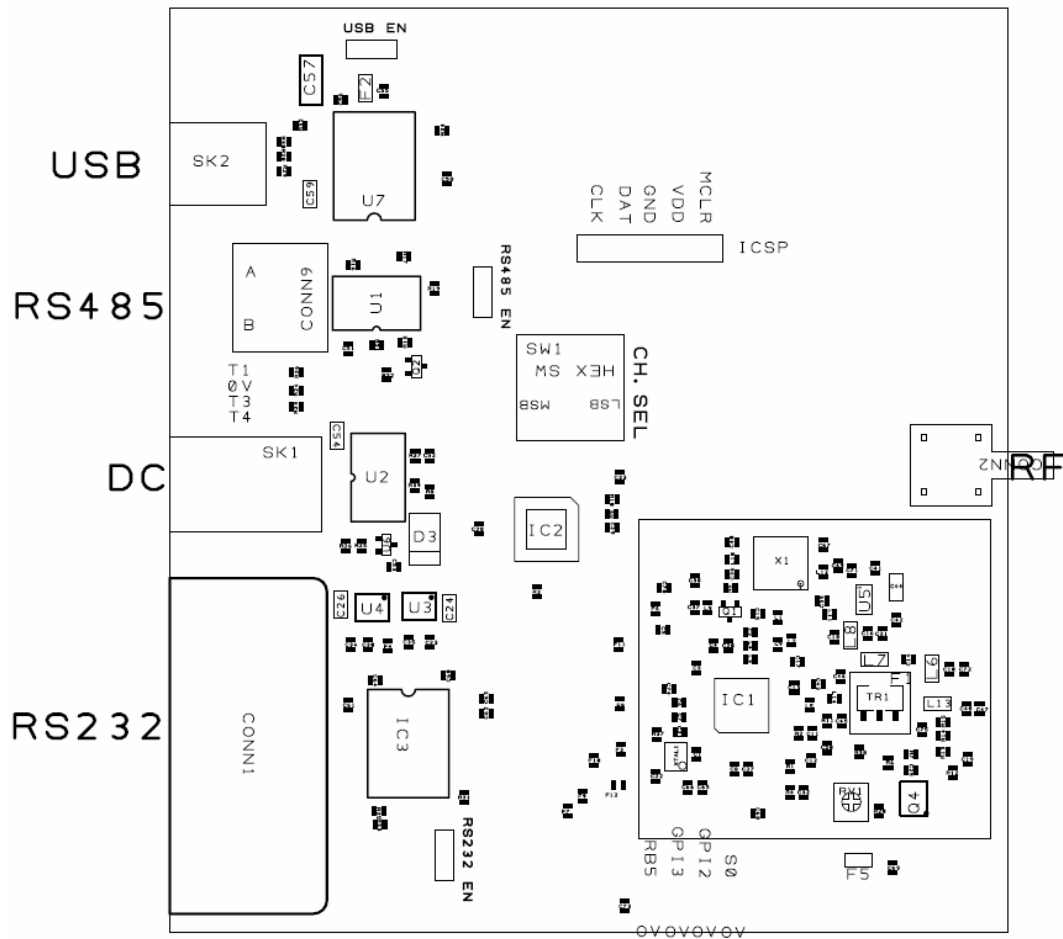
#### Technical Summary

- 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



*Figure 1: HNM 2-458-19*

***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
<b>DC supply</b>						
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
<b>RF</b>						
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
<b>Dynamic timing</b>						
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
<b>DC supply</b>					
Supply voltage	4.8	6.0	16	V	
Supply current		40		mA	
<b>RF/ IF</b>					
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	
<b>DYNAMIC TIMING</b>					
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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### 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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