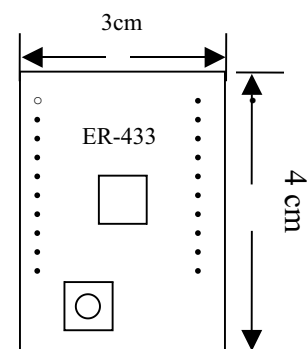


## UHF/FSK Transceiver

Embedded Radio wireless module reduces the effort required to get started with your wireless applications. It dramatically cuts development time and cost, speeding up time-to-market. This allows developers to create integrated application board for end user products, thus saving time to concentrate on core competencies. Embedded Radio ER-433 is a short range OOK/ASK, FSK and GFSK Transceiver. It is designed to operate in the Frequency range 402 MHz - 470 MHz and 804 MHz - 940 MHz ISM (Industrial, Scientific and Medical) frequency band. It features FSK/OOK/ASK modulation and demodulation capability. Embedded Radio operates at bit rates up to 153.6 kBaud. Transmit power can be adjusted to a maximum of 10dBm. It features a differential antenna interface and an external transmit/receive switch. Embedded Radio operates from a single +3V DC supply.



### Features

- High sensitivity (up to - 121.5 dbm)
  - Programmable output power
  - Low current consumption (RX: 17 mA)
  - Low supply voltage (2.3 V to 3.6 V)
  - Data rate up to 153.6 kBaud
  - OOK/ASK, FSK and GFSK data modulation
  - Suitable for frequency hopping systems
  - Digital RSSI and carrier sense indicator
- Complies with EN 300 220, FC CFR47 part 15, and ARIB STD T-67

### Applications

- Narrowband low power UHF wireless data transmitters and receivers
- 402 / 426 / 429 / 433 / 868 and 915 MHz ISM/SRD band systems
- AMR Automatic Meter Reading
- Wireless alarm and security systems
- Home automation
- Low power telemetry.

**Pin Description:****Pin no 1, 8,10,11,13 and 20 (Gnd):** Ground connection**Pin no 2 (DCLK):** Clock for data in both receive and transmit mode.**Pin no 3(DIO):** Data input in transmit mode, data output in receive mode**Pin no 4 (LOCK):** PLL Lock indicator, active low. Output is asserted (low) when PLL is in lock.**Pin no 5(VCC):** Power supply (3 V typical) for digital modules and digital I/O**Pin no 6(LNA\_EN):** General digital output. Can be used for controlling an external LNA if higher sensitivity is needed.**Pin no 7(PA\_EN):** General digital output. Can be used for controlling an external PA if higher output power is needed.**Pin no 9, 12, 14, and 15(NC):** No connection**Pin no 16(PDO):** Programming data output for SPI configuration interface.**Pin no 17(PDI):** Programming data input for SPI configuration interface.**Pin no 18(PCLK):** Programming clock for SPI configuration interface**Pin no 19(PSEL):** Programming chip select, active low, for configuration interface. Internal pull-up resistor

Parameter	Min.	Typ.	Max.	Unit	Condition / Note
<b>Overall</b>					
RF Frequency Range	402 804		470 940	MHz MHz	Programmable in <300 Hz steps Programmable in <600 Hz steps
Operating ambient temperature range	-40		85	°C	
Supply voltage	2.3	3.0	3.6	V	Note: The same supply voltage should be used for digital (DVDD) and analogue (AVDD) power.
<b>Transmit Section</b>					
Transmit data rate	0.45		153.6	kBaud	Data rate is programmable. NRZ or Manchester encoding can be used. 153.6 kBaud equals 153.6 kbps using NRZ coding. Minimum data rate for OOK/ASK is 2.4 kBaud
Binary FSK frequency separation	0 0		108 216	kHz kHz	in 402 - 470 MHz range in 804 - 940 MHz range  The frequency separation is programmable in 250 Hz steps. 108/216 kHz is the maximum guaranteed separation at 1.84 MHz reference frequency. Larger separations can be achieved at higher reference frequencies.
Output power 433 MHz 868 MHz	-20 -20		10 5	dBm dBm	Delivered to 50 Ohm load. The output power is programmable.
<b>Receive Section</b>					
Receiver Sensitivity, 433 MHz, FSK					Sensitivity is measured with PN9 sequence at BER = 10 <sup>-3</sup>
12.5 kHz channel width, optimized Selectivity. ±2.0 kHz freq. deviation		-117		dBm	12.5 kHz channel width: 2.4 kBaud, Manchester coded Data.
12.5 kHz channel width, optimized Sensitivity. ±2.4 kHz freq. deviation		-121		dBm	25 kHz channel width: 4.8 kBaud, NRZ coded data, ±2.4 KHz frequency deviation.
25 kHz channel width		-115		dBm	
500 kHz channel width		-97		dBm	500 kHz channel width: 153.6 kBaud, NRZ, ±76.8 kHz frequency deviation.
Receiver Sensitivity, 868 MHz, FSK					
12.5 kHz channel width		-116		dBm	
25 kHz channel width		-112		dBm	
500 kHz channel width		-94		dBm	

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