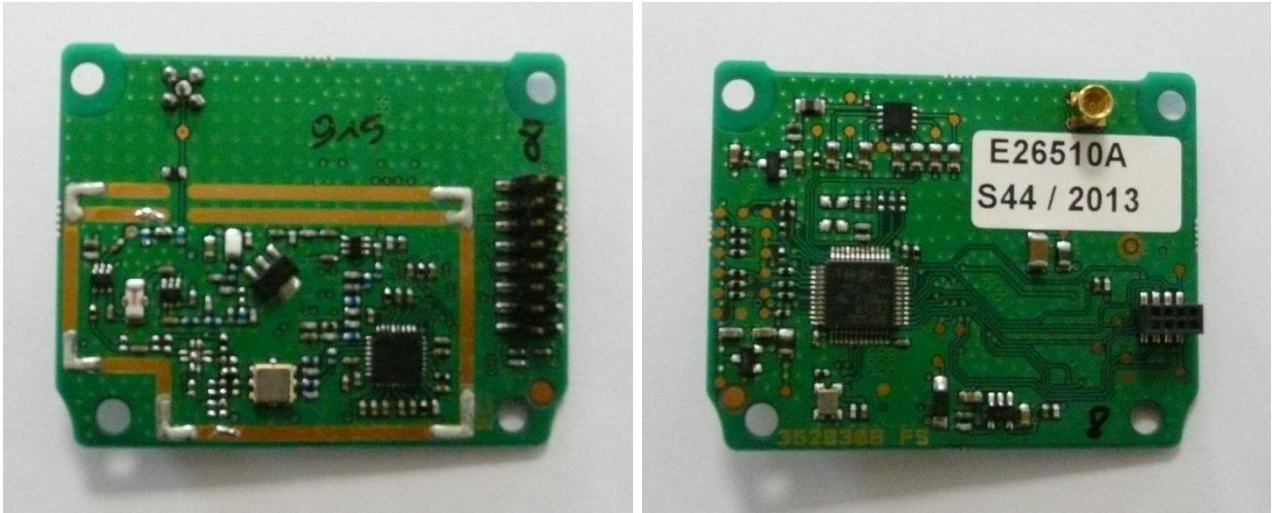


Module integration manual



Product Description

The RF module with the FCCID number *OQMSA* is a compact high performance module for 25 kHz narrow band 2-FSK operation with embedded proprietary protocol.

The modules are completely shielded and certified for operation under the US radio regulations for license-free use.

Applications

Remote controlled machines
Cranes

Features

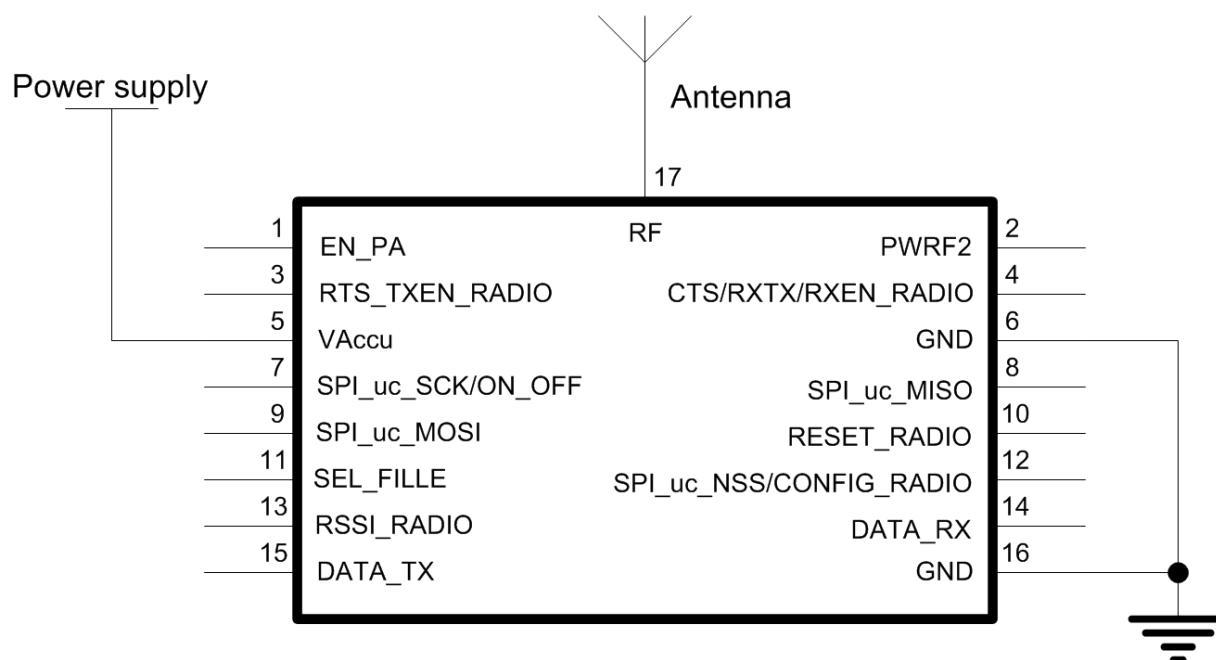
- Smallest in the world (50 x 39 x 0.7 mm)
- 25 kHz narrow band multi-channel operation
- Very low current consumption
- Addressing and Error check
- No external components
- Easy to use data interface
- Wide supply voltage range, 2.8 – 5.5 V
- Conforms with FCC CFR 47 part 15

Quick Reference Data

Parameter	Jay RF Module	Units
Frequency band	911.8 – 918.2	MHz
Number of channels	64	
Channel bandwidth	25	kHz
Data rate	4.8	kbits/s
Max output power (typ.)	-8	dBm
Sensitivity	-114	dBm
Supply voltage	2.8 – 5.5	Volts
Current consumption, RX	31	mA
Current consumption, TX	37	mA

* Programmable. Maximum allowed radiated power under FCC CFR 47, part 15 is -1 dBm ERP.

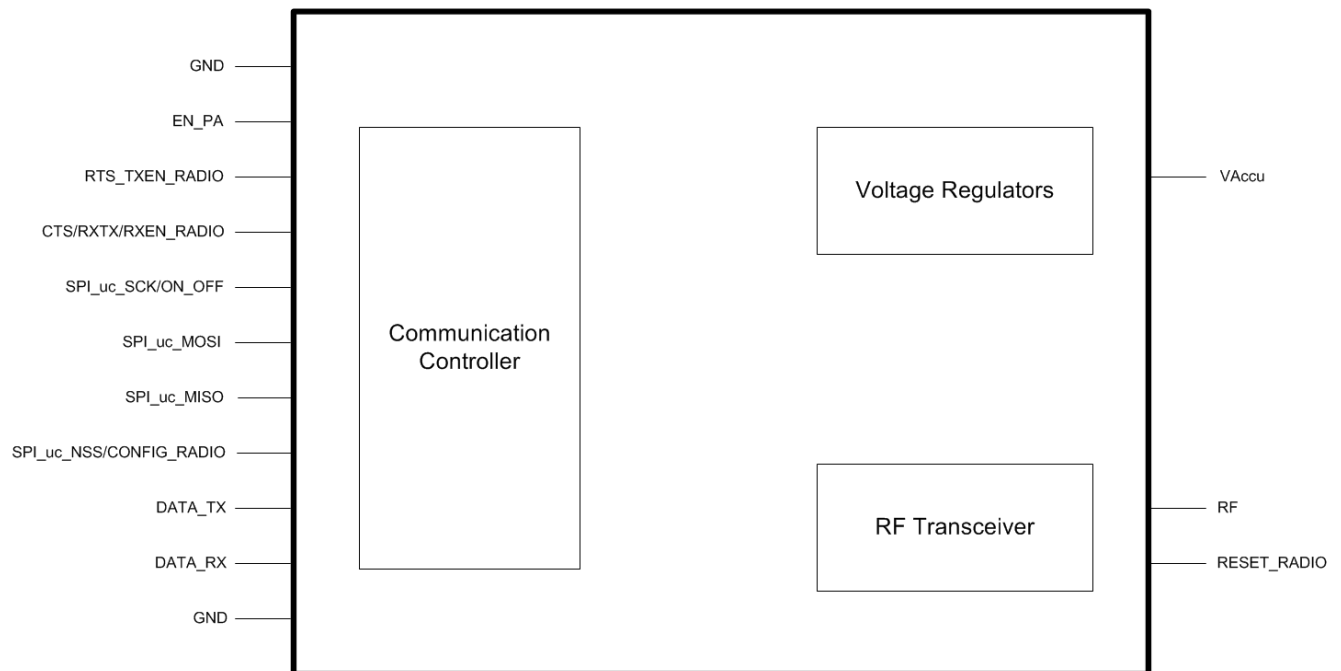
Typical Application Circuit



Pin Description

Pin no	Pin name	Description
1	EN_PA	PA enable input, active high
2	PWRF2	Not used
3	RTS_TXEN_RADIO	Not used
4	CTS/RXTX/RXEN_RADIO	UART Clear to Send
5	VAccu	Supply voltage input
6	GND	System ground
7	SPI_uc_SCK/ON_OFF	SPI Clock
8	SPI_uc_MISO	SPI MISO
9	SPI_uc_MOSI	SPI MOSI
10	RESET_RADIO	Reset
11	SEL_FILLE	Not used
12	SPI_uc_NSS/CONFIG_RADIO	SPI Chip Select
13	RSSI_RADIO	Not used
14	DATA_RX	UART RX Data
15	DATA_TX	UART TX Data
16	GND	System ground
17	RF	RF I/O connection to antenna

Block Diagram



The module contains a communication controller with embedded proprietary protocol software, a narrow band high performance RF transceiver and three internal voltage regulators.

The communication controller handles the radio packet protocol. Data to be sent by the host is received at the DATA_RX pin and buffered in the communication controller. The data packet is then assembled with preamble, synchronization word and data with CRC check sum before it is transmitted on RF.

The asynchronous UART interface consists of DATA_TX, DATA_RX and CTS/RXTX/RXEN_RADIO signals and it is used for hardware handshake flow control.

The RF transceiver modulates the data to be transmitted on RF frequency, and demodulates data that are received. Narrow band technology is used to enhance sensitivity and selectivity.

The supply voltage is connected to the VAccu pin. The module contains three internal voltage regulators and can therefore operate over a wide supply voltage range.



Authorized antennas

- *External antenna:*

Product reference: **VUB884**.

This antenna is designed by Jay Electronique.

Antenna gain: 0 dBi @ 915 MHz



- *Printed antenna:*

Product reference: **FR05-S1-R-0-105**.

Brand name: Fractus

Frequency Range: 902 - 928 MHz

Antenna gain: > 0 dBi

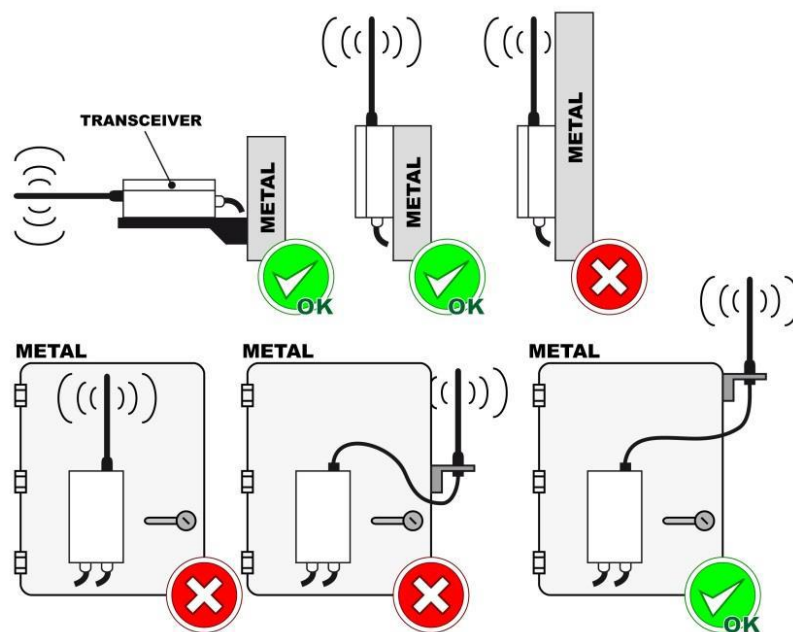


External antenna installation requirements

The external antenna must be installed at a distance from the class 3 cables and power components (power supply, motor, variable speed drives ...) while remaining in an area which is favourable to radio reception.

It must be located at a certain height.

No metal object which could form a screen should be located in front of the external antenna (risk of communication cut-out).



Labelling

!! Warning !!

“This transmitter module is authorized to be used in other devices only by OEM integrators under the following conditions:

- 1. The antenna(s) must be installed such that a minimum separation distance of 20cm is maintained between the radiator (antenna) & user’s/nearby person’s body at all times.*
- 2. The transmitter module must not be co-located with any other antenna or transmitter.”*

Moreover, the host equipment must be labelled as follows:

“Contains Transmitter Module FCC ID: OQMSA”

Finally, the host equipment must precise the following warning:

“This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.”

Information Note

This modular is used exclusively by Jay Electronique.


The OEM integrators are responsible for ensuring that the end-user has no manual instructions to remove or install module.

This module and the antennas must be professionally installed.

A specific ferrite must be attached to the AC line; here its characteristics below:

- Brand name: Laird Technologies
- Product reference: 28B0686-200
- Number of turns: 2

“THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER’S AUTHORITY TO OPERATE THE EQUIPMENT.” According to FCC Part 15.21

 The logo for Jay Electronique, featuring the word "JAY" in a bold, blue, sans-serif font above the word "électronique" in a red, lowercase, sans-serif font. To the right of the text is a blue square containing a white atomic symbol with three red dots representing electrons.	T940-HOM-004-Module integration manual_Rev3.docx	Date: April 24 th 2014 24-04-2014
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