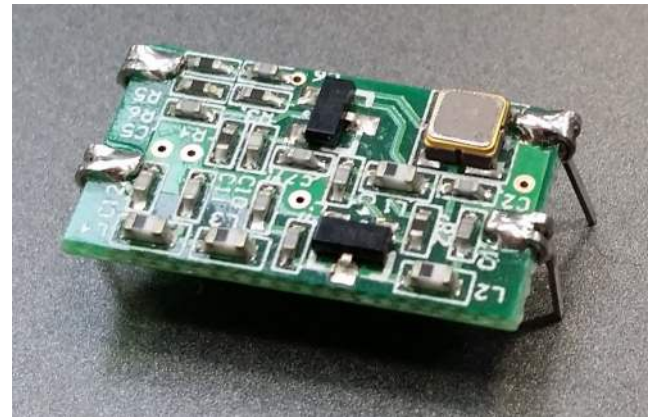




## Long Range AM Transmitter Module

### Features

- Complete RF Transmitter
- CMOS / TTL Input
- No Adjustable Components
- Very Stable Operating Frequency
- Low Current Consumption
- Low Spurious Emissions
- High Output Power
- PLL Design
- Range 100+ metres



### Applications

- Wireless Security Systems
- Car Alarms
- Remote Gate Controls
- Remote Sensing
- Data Capture
- Sensor Reporting

### General Description

The RF Solutions Ltd. AM-RT14 high power AM transmitter module provides a complete RF transmitter which can be used to transmit data at up to 9,600Kbps from any standard CMOS/TTL source.

The module is very simple to operate and offers low current consumption (typ. 8 mA). Data can be supplied directly from a microprocessor or encoding device, thus keeping the component count down and ensuring a low hardware cost.

The module exhibits extremely stable electronic characteristics with no adjustable components and very reliable operation. The modules are compatible with RF Solutions Ltd. range of AM receivers to provide a complete solution.

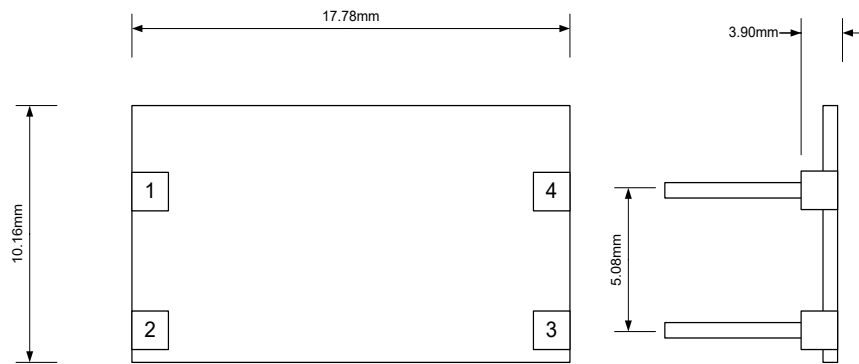
### Ordering Information

Part Number	Description
AM-RT14-433P	DIL AM Transmitter Module 433.92MHz
AM-RT14-433PSO	SMT AM Transmitter Module 433.92MHz
AM-RT14-433PSOTR	SMT Tape & Reel AM Transmitter Module 433.92MHz

# AM-RT14-433P



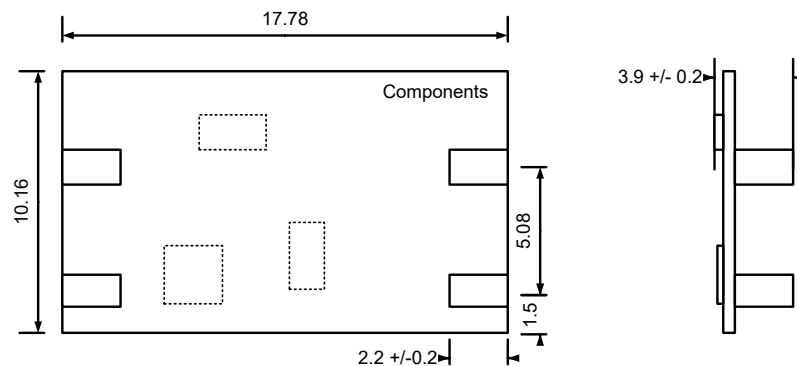
## Transmitter Connection Diagram and Mechanical Dimensions



### Notes

- Pin Dimensions: 0.6 x 0.60mm
- All measurements in mm
- Tolerance: +/- 0.2mm

AM-RT14-433SO



## Pin Description

**Vcc (pin 1) :** +Ve supply pin. The module will generate RF when Vcc is present.

**RF GND (pin 2) :** RF ground pin, internally connected to pin 4 (0v). This pin should ideally be connected to the nearest ground plane (e.g. coax braid, main PCB ground plane etc).

**RF IN (pin 3) :** Data input.

**ANT (pin 4):** 50 Ohm RF antenna output. To achieve best results, the antenna impedance must match that of the module.

Pin No	Name	Description
1	Vcc	Supply Voltage
2	GND	Ground, Connect to RF earth return path
3	IN	Data input
4	ANT	External Antenna

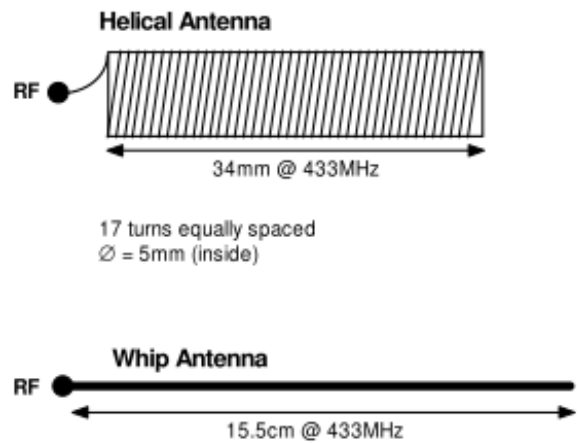
## Antenna Design

The design and positioning of the antenna is as crucial as the module performance itself in achieving a good wireless system range. The following will assist the designer in maximising system performance.

The antenna should be kept as far away from sources of electrical interference as physically possible. If necessary, additional power line decoupling capacitors should be placed close to the module.

The antenna 'hot end' should be kept clear of any objects, especially any metal as this can severely restrict the efficiency of the antenna to receive power. Any earth planes restricting the radiation path to the antenna will also have the same effect.

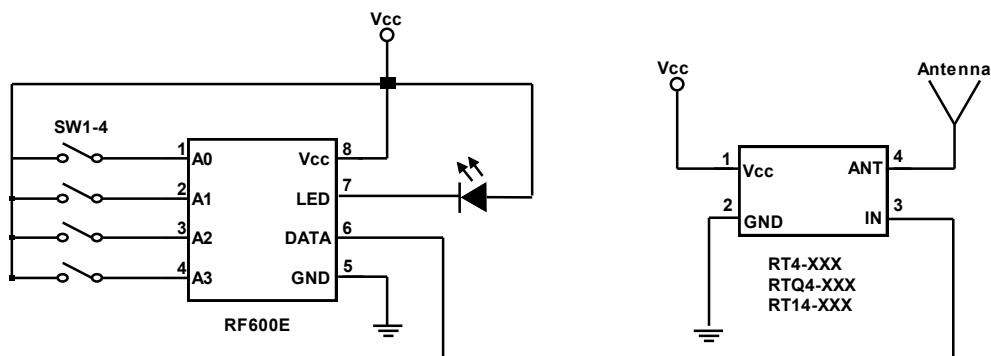
Best range is achieved with either a straight piece of wire, rod or PCB track @  $\frac{1}{4}$  wavelength (~16cm @ 433.92MHz). Further range may be achieved if the  $\frac{1}{4}$  wave antenna is placed perpendicular in the middle of a solid earth plane measuring at least 16cm radius. In this case, the antenna should be connected to the module via some 50 ohm characteristic impedance coax.



## Application Circuit

The application circuits a remote control Schematic, for further Data please see DS600.

Transmitter Circuit



The transmitter application circuits generates a highly secure Keeloq protocol four switch transmitter encoder with LED indication or Transmission.

## Absolute Maximum Ratings: Transmitter (all voltage versions)

Characteristic	Min.	Max.
Operating Temperature	-25°C	+80°C
Storage Temperature	-50°C	+100°C
Supply Voltage	-	24V
Data Input	-	10V

## Electrical Characteristics: Transmitter

Ambient Temp 25 Unless Stated otherwise stated

	Min.	Typ.	Max.	Units	Note
<b>DC Levels</b>					
Supply (5V variants)	2		9	Vdc	
Supply current		8		mA	V <sub>CC</sub> =5V IN=1kHz
<b>RF &amp; Data (All Variants)</b>					
Working Frequency		433.92 868.65		MHz	
RF Output Power	+10	+12		dBm	Measured into a 50W V <sub>CC</sub> =4V.
Harmonic Spurious Emissions		-55		dBc	
Input Voltage High	2			V	
Data Rate	50		9600	Hz	

## Important European compliance information for module datasheets

This RF Solutions radio module meets the essential requirements of the European Radio Equipment Directive 2014/53/EU and has been tested to European Harmonised Standards and CE marked where space allows. A copy of the EU Declaration of Conformity can be located on the RF Solutions Website, [www.rfsolutions.co.uk/certification-i59](http://www.rfsolutions.co.uk/certification-i59).

When using the module in an end product, continued compliance can only be assured by incorporating the module in accordance with RF Solutions specific installation instructions and in accordance with the published information on the RF Solutions product data sheet. The antenna gain specification must be adhered to at all times.

Article 3.1a and 3.1b of the EU Radio Equipment Directive 2014/53/EU should be assessed in the final product.

Failure to follow this guidance may result in a non-compliant product being placed on the European Market, for which RF Solutions cannot accept any responsibility. Guidance may be obtained from RF Solutions Technical Support. Charges may apply to customer specific product evaluation.

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