



## AM-RT4-xxx    AM Transmitter Modules AM-RT5-xxx

### FEATURES

- COMPLETE RF TRANSMITTER
- TRANSMIT RANGE UP TO 250ft
- CMOS/TTL INPUT
- AVAILABLE IN DIL OR SIL PACKAGE
- NO ADJUSTABLE COMPONENTS
- VERY STABLE OPERATING FREQUENCY
- LOW CURRENT CONSUMPTION (TYP 4mA)
- LOW SPURIOUS EMISSIONS (-35dBc)
- WIDE OPERATING VOLTAGE (2-14V)
- AVAILABLE ON 315 MHz OR 433 MHz
- COMPATIBLE WITH OUR AM RECEIVER MODULES

AM-RT4 (TX-4MDIL)



AM-RT5



### APPLICATIONS

- WIRELESS SECURITY SYSTEMS
- CAR ALARMS
- REMOTE GATE CONTROLS
- REMOTE SENSING
- DATA CAPTURE
- SENSOR REPORTING

### DESCRIPTION

Differing in package style, AM-RT4 and AM-RT5 AM hybrid transmitter modules provide complete RF transmitters which can be used to transmit data at up to 4 kHz from any standard CMOS/TTL source.

The modules are very simple to integrate into a design and offer low current consumption (typ. 4 mA). Data can be supplied directly to the data input of the modules from a microprocessor or a data encoding device such as MM53200 (Nat Semi), UM3750 (UMC), MC145026 (Mot), HT12E (Holtek). The modules exhibit extremely stable electronic characteristics due to the use of 'Thick-Film' hybrid technology. They use no adjustable components resulting very reliable operation.

The AM-RT4 and AM-RT5 modules are compatible with all ABACOM Technologies' range of AM receivers to complete the RF data link.

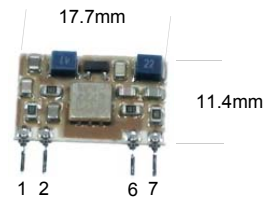
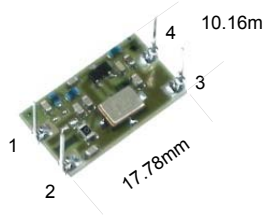
## CONNECTION DETAILS

RT4 (TX-4MDIL)	RT5 Pin	DESCRIPTION
1	1	External Antenna
2	2	Data Input
3	6	Ground, RF Ground
4	7	+V Supply

## MECHANICAL DETAILS

**AM-RT4 (TX-4MDIL)** Pin spacing: 5.08mm (0.2in)

**AM-RT5** Pin spacing: 2.54mm (0.1in)



Characteristic	Minimum	Typical	Maximum	Dimensions
Supply Voltage	2		14	Vdc
Supply Current (Vcc=5V Data=1KHz)		4		mA
Working Frequency	303.8		433.92	MHz
RF Output Power into 50W (Vcc=5V)		0		dBm
Harmonic Spurious Emissions		-30		dBc
Input Voltage High	2		Vcc	V
Max Data Rate			4	KHz
Operating Temperature	-25		+80	°C

## ANTENNA OPTIONS

The following lists three types of integral antenna that can be employed:

A) Helical, fig 4a Wire coil, connected directly to the antenna pin, open circuit at the other end. This antenna is very efficient given its small size (20mm x 4mm dia). The helical is a high Q antenna, trim the wire length or expand the coil for optimum results. The helical de-tunes badly with proximity to other conductive objects.

B) Loop, fig 4b A loop of PCB track tuned by a fixed or variable capacitor to ground at the 'hot' end and fed from the antenna pin at a point 20% from the ground end. Loops have high immunity to proximity de-tuning.

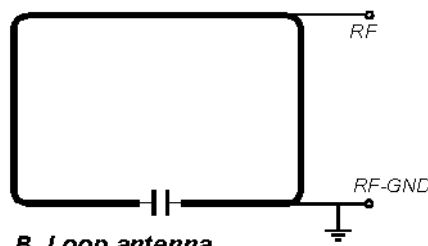
C) Whip, fig 4c This is a wire, rod, PCB track or combination connected directly to the antenna pin of the module. Optimum total length is 17 cm (1/4 wave at 418 MHz) or 16.5cm (1/4 wave at 433.92 MHz). Keep the open circuit (hot) end well away from metal components to prevent serious de-tuning. Whips are ground plane sensitive and will benefit from internal 1/4 wave earthen radial if the product is small and plastic cased.



**A. Helical antenna**

0.5 mm enameled copper wire  
close wound on 3.2 mm diameter former

433MHz = 24 turns



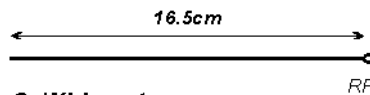
**B. Loop antenna**

feed point 15% to 25% of total loop length

track width = 1mm

4 to 10 cm<sup>2</sup> inside area

capacitor = 1.5 to 5 pF variable or fixed



**C. Whip antenna**

wire, rod, PCB-track or a combination  
of these three

433MHz = 16.5cm from the antenna pin

315MHz = 22.7cm from the antenna pin

## ANTENNA SELECTION CHART

	<b>A Helical</b>	<b>B Loop</b>	<b>C Whip</b>
Ultimate performance	**	*	***
Ease of design setup	**	*	***
Size	***	**	*
Immunity to proximity effects	**	***	*

The antenna choice and position directly controls the system range. Keep it (particularly the 'hot' end) clear of other metal in the system, particularly large ones like transformers, batteries and PCB tracks and any ground plane. The space around the antenna is as important as the antenna itself. The best position by far, is protruding out the top of the product. This is often not desirable for practical/ergonomic reasons thus a compromise may be necessary.

### Disclaimer:

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