



ATR2-xxx AM Superhet Receiver Module

The ATR2-xxx miniature UHF radio receiver module enables the implementation of a simple telemetry link at data rates of up to 10Kbit/s when used with the compatible QFMT1/ATMT1 transmitter modules.

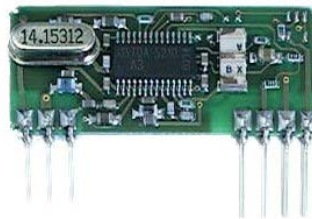
Available for operation on 433MHz, 868MHz or 916MHz, these modules are able to receive at distances of up to 250m. The ATR2 module will suit one-to-one and multi-node wireless links in applications including building and car security, remote industrial process monitoring and computer networking. Because of its small size and low power requirements, the module is ideal for use in portable battery powered wireless applications.

Features

- Miniature SIL package. Replaces QMR1-433 receiver
- Single conversion AM superhet
- 10.7 MHz high rejection if filter
- Data rates up to 10kbits/s
- 433.92MHz, 868.35 & 916.5MHz versions
- Very high sensitivity (-107 dBm)
- Very low current consumption
- Single 5V supply
- Digital, audio & RSSI output

Applications

- Vehicle alarm systems
- Remote gate controls
- Garage door openers
- Domestic and commercial security
- Remote process monitoring
- Remote data transferring



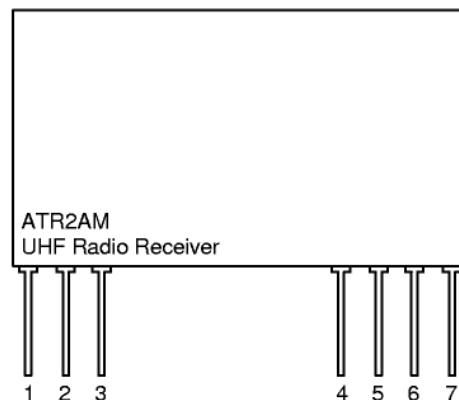
Absolute Maximum Ratings: Receiver

Operating temperature:	-10°C to +55°C
Storage temperature:	-40°C to +100°C
Supply Voltage (pin 1):	+5V
RF Input (pin 3):	±50V @ < 10MHz , +20dBm @ > 10MHz

Electrical Characteristics

PARAMETER	pin	min.	typ.	max.	units
DC LEVELS					
Supply voltage		4.5	5	5.5	V
Supply current			4.8		mA
Supply ripple		-	-	10	mVP-P
Data output high			4.0		V
Data output low			<= 0.5		V
RF					
RF sensitivity @ 868.35 MHz			-107		dBm
RF sensitivity @ 916.5 MHz			-109		dBm
IF Bandwidth			230		KHz
Initial frequency accuracy			±30		KHz
Max R.F. input			-5		dBm
E.M.C.					
Spurious responses upto 1GHz			<60		dB
LO leakage, conducted			<60		dBm
LO leakage, radiated			<60		dBm
DYNAMIC TIMING					
Power up with signal present					
Power up to stable data			tba		mS
Signal applied with supply on					
Signal to stable data			tba		mS
Time between data transitions					mS
Mark:space ratio					mS
Bit rate		200		10000	bps

Connection Details

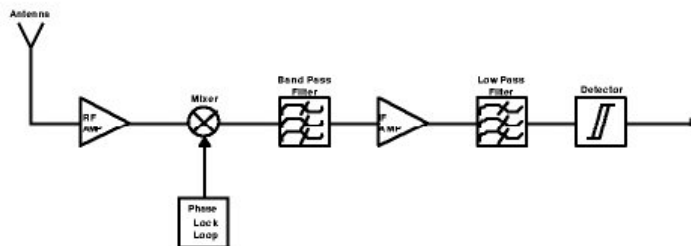


Pin Description

<i>VCC (pin 1):</i>	+Ve supply pin. Operation from a 5V supply able to source 10mA at less than 10mV _{P-P} ripple.
<i>GND (pin 2)</i>	Supply ground connection, preferably connected to a solid ground plane.
<i>RF IN (pin 3)</i>	50Ω RF input from antenna, connect using shortest possible route. Capacitively isolated from internal circuit.
<i>N/A (pin 4)</i>	Extra SIL pin for additional mechanical retention.
<i>AF(PIN 5)</i>	Audio frequency output. Note source current is limited to 40uA. In most applications a buffer may be required to interface to this pin.
<i>RSSI (pin 6)</i>	This is a dc output voltage that is proportional to the RF signal strength applied to pin 3.
<i>DATA OUT (pin 7)</i>	CMOS compatible output. This may be used to drive external decoders.

General Information

Block Diagram



The ATR2AM receiver module is an AM single conversion superhet receiver capable of handling data rates of up to 10Kbits/s. With an on board data buffer, phase locked loop and a high quality front end RF stage a -107 dBm sensitivity is achieved. Utilizing the latest phase locked loop receiver technology with one of the compatible AT transmitter modules will yield a highly efficient wireless link.

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 maximizing 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 (8cm @ 916.5MHz). 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.

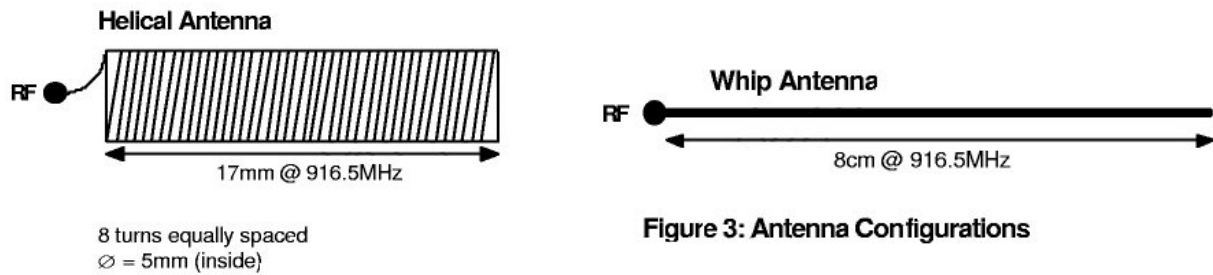


Figure 3: Antenna Configurations

Ordering Information

Part No	Description
ATR2-868	AM SIL Receiver 868.35 MHz
ATR2-916	AM SIL RECEIVER 916.5 MHz

Disclaimer:

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