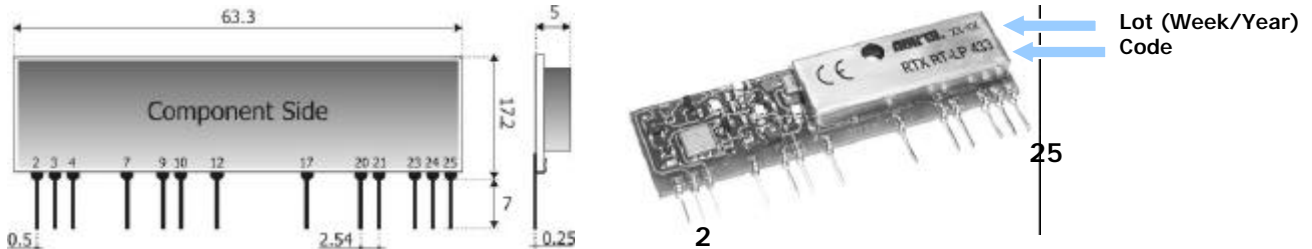


RTX-RTLP 434 Transceiver

RF digital transceiver with very low voltage supply and consumption: ideal for RX-TX half-duplex radio systems with the RX permanently supplied and with no answer delay

Pin-out



Connections

Pin 2-7-9-17-21	Ground	GND Connections. Internally connected to a single ground plate
Pin 3	+V TX	Connection to the supply positive pole (+3V ± 5%) of the transmitting section.
Pin 4	Tx Data In	Transceiver digital input; accepts serial data [0 ÷ 3V] with a 10KΩ load impedance.
Pin 10	Antenna	50Ω impedance antenna connection
Pin 20-25	+V RX	Connection to the supply positive pole (+3V ± 5%) of the receiving section.
Pin 23	Test Point	Analog output of the demodulated signal. By connecting an oscillograph the entity and quality of the received RF signal can be seen.
Pin 24	Rx Data Out.	Transceiver digital output. Apply loads over 10 KΩ

Technical features

	Min	Typical	Max	Unity	Remarks
Working centre frequency		433.92		MHz	
Voltage supply Vs	2.8	3	3.2	V	
Absorbed current [TX ON]	15		17	mA	
Absorbed current [RX ON]	0.07	0.08	0.09	mA	
RF sensitivity		-95		dBm	See note 1
RF passband at -3dB		600		KHz	
Output square wave		2.5		KHz	
TX Power		10		dBm	
Antenna impedance		50		Ω	
Switch-on time			1	s	See note 2
TX-RX commutation time			500	ms	
Working temperature	-20		+80	°C	
Dimensions	63.3 x 17.2 x 5 mm				

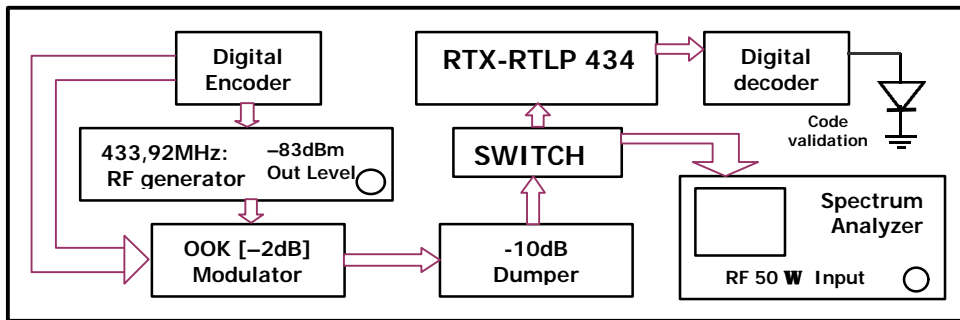
Note1: Values have been obtained by applying the test system as per Fig. 1 and the RX resistance not connected (see Fig. 2).

Note2: By switch-on time is meant the time required by the transceiver to acquire the declared characteristics from the very moment the power supply is applied.

Technical features are subject to change without notice. AUREL S.p.A. does not assume responsibilities for any damages caused by the device's misuse.

The declared technical features have been verified by applying the following test system:

Fig. 1



Squelch threshold setting

The AUREL Transceiver mod. **RTX-RTLP 434**, normally presents, at the data output, 1 and 0 random commutations, corresponding to the noise generated by the transceiver itself. Such characteristic allows to make use of the maximum sensibility of the device. However, in certain application, where a low noise level is required, it is possible to connect a resistance of X value (see table) between transceiver T.P. pin and GND.

The table here below shows for different resistance value, the obtained loss value:

Model	Loss (-1dB)	Loss (-3dB)
RTX-RTLP 434	Rx = 10M	Rx = 5.6M

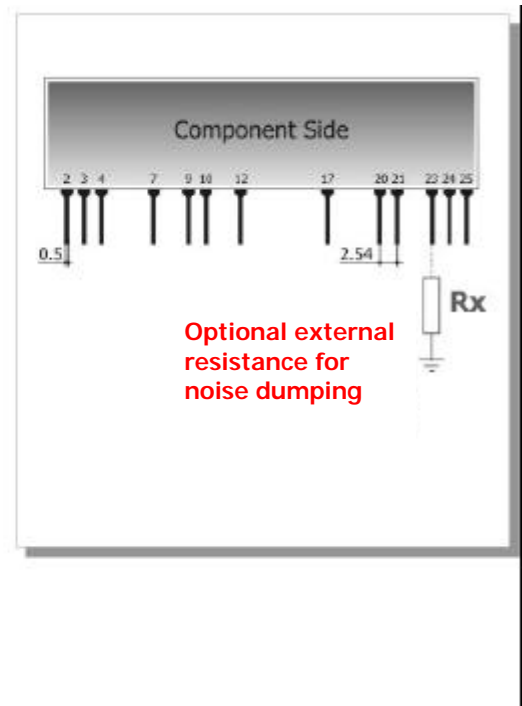
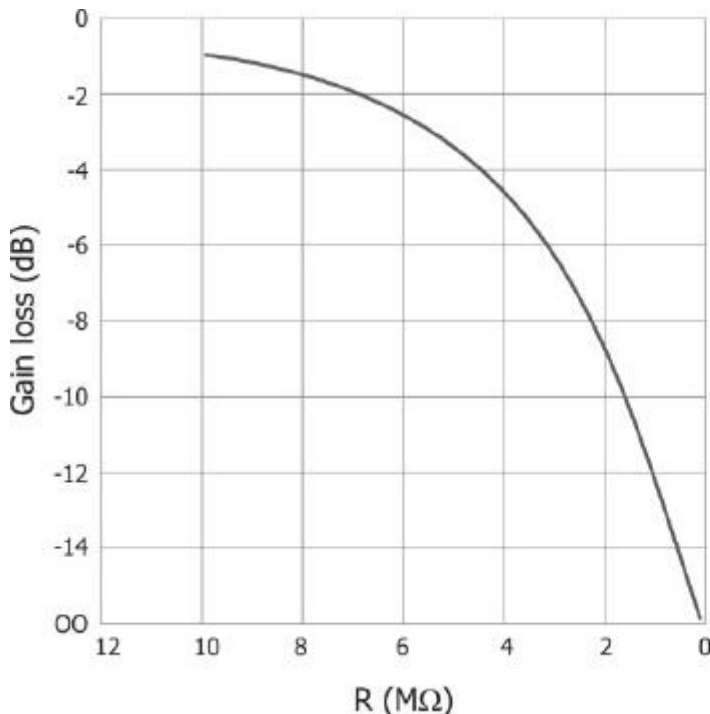


Fig. 2 Attenuation curve according to RX value

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By accepting some commutation on the data output, it suffice to apply a resistance value that determines a 1 dB attenuation; attenuations of 3 dB increase the immunity to the noise till to obtain, to the data output, a logic, low and stable value in lack of RF signal.

Device usage

In order to take advantage of the performances described in the technical specifications and to comply with the operating conditions which characterize the Certification, the transceiver has to be fitted on a printed circuit, considering what follows:

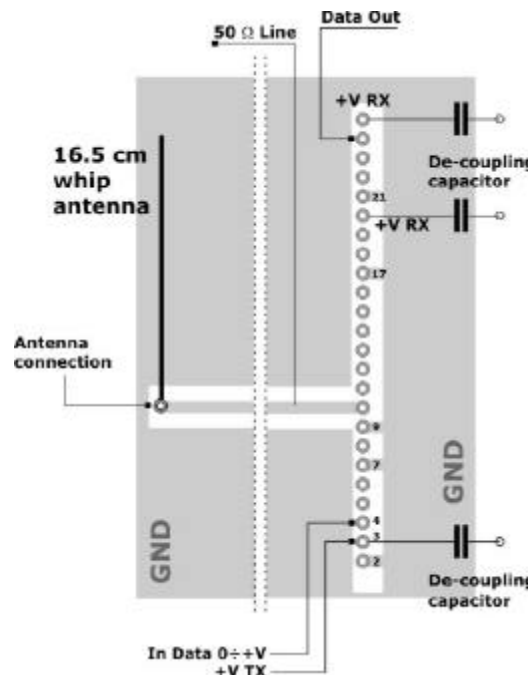
3 V dc supply:

1. The transceiver must be supplied by a very low voltage source, safety protected against short circuits.
2. Maximum voltage variations allowed: $\pm 0,15$ V.
3. De-coupling, next to the transceiver, by means of a minimum 100.000 pF. ceramic capacitor.

Ground:

1. It must surround at the best the welded area of the transceiver. The circuit must be double layer, with throughout vias to the ground planes, approximately each 15 mm.
2. It must be properly dimensioned, specially in the antenna connection area, in case a radiating whip antenna is fitted in it (an area of approximately 50 mm radius is suggested.)

Fig.3 Suggested lay-out for the device correct usage



50 Ohm line:

1. It must be the shortest as possible.
2. 1,8 mm wide for 1 mm thick FR4 printed circuits and 2,9 mm wide for 1,6 mm thick FR4 printed circuits. On the same side, it must be kept 2 mm away from the ground circuit.
3. On the opposite side a ground circuit area must be present.

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Antenna connection:

1. It may be utilized as the direct connection point for the radiating whip antenna.
2. It can bear the connection of the central wire of a 50 Ω coaxial cable. Be sure that the braid is welded to the ground in a close point.

Antenna:

1. A **whip** antenna, 16,5 mm long and approximately 1 mm dia, brass or copper wire made, must be connected to the RF input of the transceiver.
2. The antenna body must be kept straight as much as possible and it must be free from other circuits or metal parts (5 cm minimum suggested distance.)
3. It can be utilized either vertical or horizontal, provided the connection point between antenna and transceiver input, is surrounded by a good ground plane.

N.B: As an alternative to the a.m. antenna it is possible to utilize the whip model manufactured by Aurel (see related Data Sheet and Application Notes).

By fitting whip antennas too different from the described ones, the EC Certification is not assured.

Other components:

1. Keep the transceiver separate from all other components of the circuit (more than 5 mm).
2. Keep particularly far away and shielded all possible microprocessors and their clock circuits.
3. Do not fit components around the 50 Ohm line. At least keep them at 5 mm distance.
4. If the Antenna Connection is directly used for a radiating whip antenna connection, keep at least a 5 cm radius free area. In case of coaxial cable connection then 5 mm radius will suffice.

Reference Rules

The **RTX-RTL 434** transceiver is EC certified and in particular it complies with the European Rules **EN 300 220-3** for class 2, and **EN 300 683** for class 1. The equipment has been tested according to rule **EN 60950** and it can be utilized inside a special insulated housing that assures the compliance with the above mentioned rule. The transceiver must be supplied by a very low voltage safety source protected against short circuits. The use of the transceiver module is foreseen inside housings that assure the overcoming of the rule **EN 61000-4-2** not directly applicable to the module itself. In particular, it is at the user's care the insulation of the external antenna connection, and of the antenna itself since the RF output of the transceiver is not built to directly bear the electrostatic charges foreseen by the a.m. rule.

CEPT 70-03 Recommendations

In order to comply with such rule, the device (strictly for what it concerns the transmission phase) must be used only for a 10% of an hourly duty-cycle, (that means 6 minutes of utilisation over 60).

The device usage inside the Italian territory is governed by the *Codice Postale* and *Telecomunicazioni* rules in force (art. no. 334 and subsequents).

The technical tests and reports have been carried out and obtained by the laboratories of :
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