# AVALON RF

**Wireless Solutions**
**For Audio & Video Links**



# RT423 - Wireless UHF Transceiver

# User's Guide & Operating Manual

# REV. X1 - 25 Nov 2003

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http://www.avalonrf.com/

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## 1.    General

The RT423 rugged RF transceivers are intended for use in short range wireless data transmission for control & monitoring applications. The RF output power is approx. 250mW.

The RT423 works as a pair. It is a Wireless UHF Data Transceiver that will transport RS485 (or RS232C with an external adaptor) data in either direction. The wireless link is Half-Duplex, meaning it can only transmit or receive at a given time. The default data rate is 9600 Baud, although the user may specifically request other baud rates.

The Transceivers offer the following features:

- A bi-directional data channel with short delay.
- Two Alarms and three Telemetry data inputs – optional (if ordered).
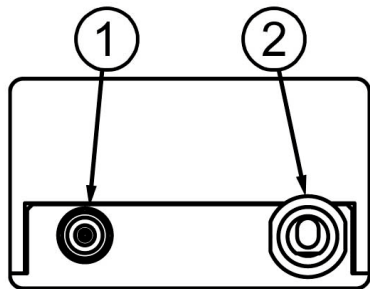
| Top View | |
| --- | --- |
| 1 | Antenna - MCX |
| 2 | Power On/Off |

| Bottom View | |
| --- | --- |
| 3 | Power/Data Input |
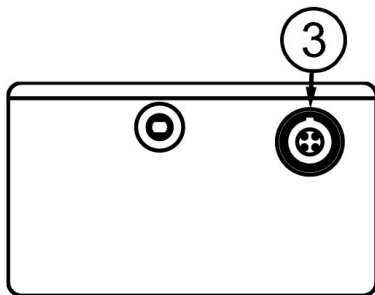
**Figure A – RT423 Series Controls and Connectors**

### 1.1 Data

The data interface is a RS485-2 wire interface. It is half duplex at the default factory setting of 9600 baud, 8 data bits, 1 stop bit.

### 1.2 RF Output

The RT423 has a 50 Ohm RF output through a MCX jack. An antenna is included for each unit.

## 2.    Specifications

**2.1    User Interface -** On/Off Switch.

The RT423 transceiver has an on/off switch. This shuts off power to the entire transmitter.

**2.2    Setup.**

Since the RT423 works as a pair, the pair is shipped with the suffix indicating the operating frequency e.g- RT423-650 indicates the unit is programmed for 650 MHz. If you have ordered multiple sets, please ensure the correct pair is used. The user has to connect the antennas, power & data cables & the link is ready to work. There is no specific setup procedure.

**2.3    Electrical Interface**.

The transmitter has the following interfaces:

2.3.1 Power Input

   a) The transmitters operate off a 7Vdc-16Vdc unregulated voltage source.

   a) This input is switched and protected against reverse polarity.

   b) Typical power input current consumption is 180mA when receiving and 300 mA when transmitting.

2.3.2 Data Input.

   a) The data input accepts RS485 signals.
   b) Input signal is differential & complies to RS485 specifications.
   c) The input interface is 2 wire, labeled 'A' (also called -) and 'B' (also called +).

2.3.3   RF output to antenna.

a) The RF output connector is a 50 $\Omega$ (ohm) MCX receptacle.

b) The RF output power is approx. 250 mW (transmit).

## 2.4   Interconnecting.

The interface to/from the transmitter is:

Power/Data Input.

LEMO  ECG.00B.304.CLN
or Equivalent

| Pin Number | Function |
|---|---|
| 1 | Power Return (-) |
| 2 | RS485 Input 'B' or '+' |
| 3 | RS485 Input 'A' or '-' |
| 4 | Power Input |

**Figure B – Power/Data**

### 2.5    Mechanical

2.5.1 Mounting.

Mounting can be done in one of the following methods:

a) Clamping.

Clamping (or hard mounting) is the recommended method and the only method of mounting in all fixed installations or when operating from >10V.

Clamping is also the preferred method of mounting in mobile installations where most electrical interfaces are used.

b) Clip on.

Avalon RF offers a clip on kit. This method is acceptable when operating from a 9V battery and only one or two interfaces are in use.

c) Velcro$^{®}$ to a flat surface.

The RT423 may be mounted using Velcro$^{®}$ if it is required to be detached frequently. However, in this case it must be operated from a 9V battery.

2.5.2 Mechanical Data.

a) Size                2.37" x 1.68" x 0.97 (see Figure D)
                            60mm x 43mm x 25mm

b) Weight            <5.6 oz.
                            <158 gram

c) Shipping weight    <32 oz.
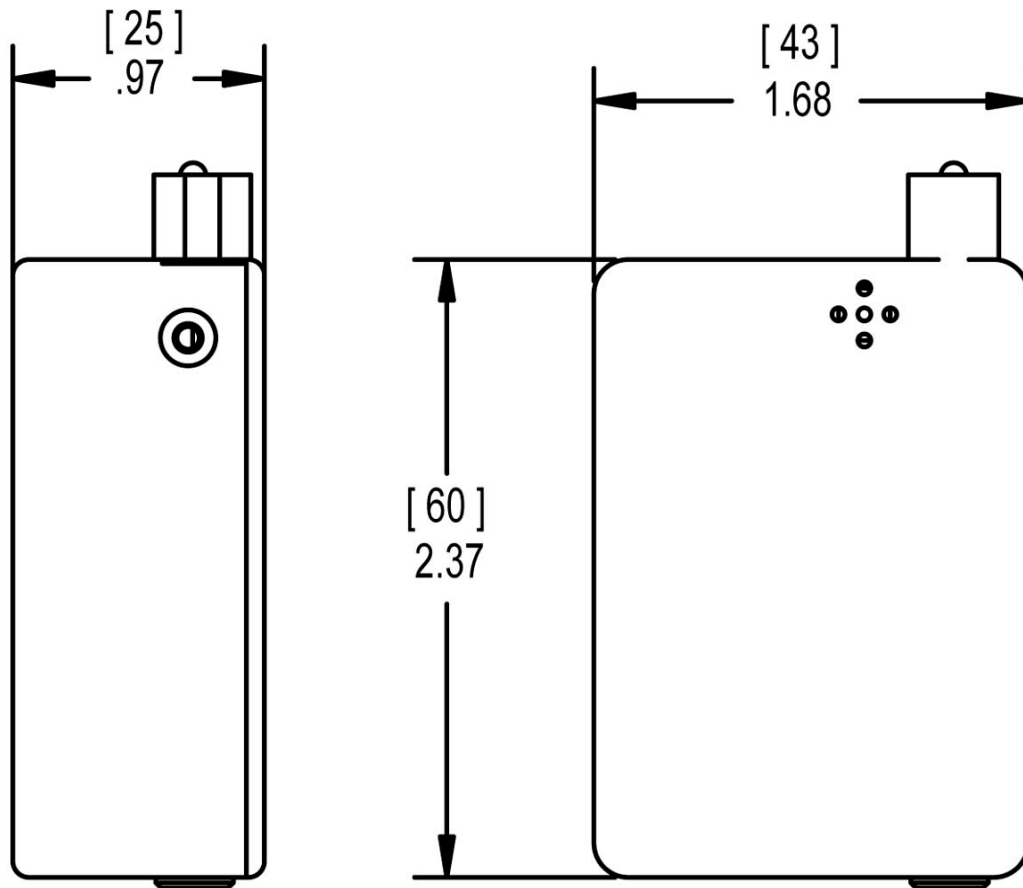                            <900 gram

Figure C – RT423 Mechanical Outline

### 2.6    Environmental Conditions.

The RT423 is designed to meet the following environmental conditions:

2.6.1 Operating temperature -4° to 122° F
                            -20° to 50° C

2.6.2 Storage temperature   -13° to 150° F
                            -25° to 65° C

2.6.3 Vibration             1.5G, from 10Hz to 2KHz, sine wave, 3 axis

2.6.4 Shock                 15G, 25msec, half sine wave, three axis

2.6.5 Humidity              5 to 95%, non-condensing

2.6.6 Inclination           Any

2.6.7 Altitude              -1500 feet to 15,000 feet
                            -450 meter to 4,500 meters

## 3.    **Operating the transceiver.**

Before applying power, make sure all connectors and all antennas
are hooked up.

### NOTE

**The transmitter will not transmit unless it has an antenna.**

3.1   The transmitter has only 1 operator control and no indicators:

a) On/Off
The unit has a on/off switch for power. The 'on' position is marked.

## 4.     Ordering information

4.1     **Base model.**

**RT423- xxx**

The user may order this set with a allocated frequency by specifically requesting it or the unit will be shipped with a frequency in the ISM band.

All units come with the following standard accessories:

4.1.1 Omni directional ¼ wavelength whip antenna

4.1.2 A 3-foot power cord with flying leads to connect to a customer specific battery pack and flying leads for the RS485 data.

4.1.3 User guide & operating manual (this manual).

**4.2    Options.**

4.2.1   Option 41 – Alarm inputs (Two)

4.2.2   Option 51 – Telemetry Inputs (Three)


4.3    Recommended accessories.

4.3.1 Antennas

AX410LP -  10 dBi UHF Log Periodic antenna for receive/transmit for fixed installation or if the direction of the mobile unit will be known.

4.3.2 Cables

T.B.D.

4.3.3 Battery packs

a) BAT80 – 14.4V/80WH Li-Ion battery pack with charger and power cable to transceiver. It will run a RT423 for 16 hours.

b) BAT92 – 14.4V/92WH Li-Ion battery pack with charger and power cable to transceiver. It will run a RT423 for 20 hours.

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