



## RF-AD-TX Analog to Digital Transmitter

This wireless RF transmitter module is used in conjunction with the RF-AD-RX receiver module. The RF-AD-TX analog to digital RF transmitter will accept up to four analog input signals, convert the signals to digital and transmit the data. The number of inputs that are enabled is determined by the configuration of two jumpers. Each of these inputs can be configured for either a voltage input (0-5V) or a current input (0-20mA or 4-20mA), and is set by installing or removing the appropriate jumper. The A/D conversion is performed by an 8 bit A/D converter. Once the digital data representing each input has been acquired, it is encoded and transmitted to the RF-AD-RX. Decoding the data and D/A conversion is performed by the companion RF-AD-RX digital to analog RF receiver module.

### Features

#### A/D

- 8 bit conversion
- 19.531mV step size
- Four channel analog to digital transmitter
- Four selectable inputs
- 0-5V, 4-20mA or 0-20mA inputs which can be selected for each individual input
- Sample time:  $4.5 \cdot n$  ms (where  $n$  is the number of inputs enabled)
- Maximum analog input frequency:  $60/n$  Hz (where  $n$  is the number of inputs enabled)
- Optional over/under voltage protection on the adaptor board
- I/O lines: DB9 connector (standard), or screw terminals via adaptor board)

#### Transmitter

- 10dBm RF Output Power
- PLL Controlled
- 433.92, 868 or 914.5MHz
- RP-SMA Antenna Connector
- 12-24Vdc operation, 50mA

**WARNING:** Before connecting inputs, ensure the unit is powered. Any sensors connected to the inputs may be powered up at the same time as the unit but not before.

### Typical Applications

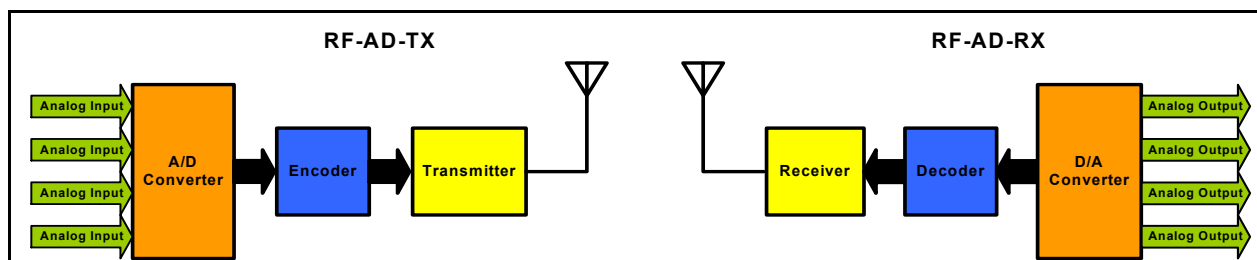
- Replacement of a long hard wired links
- Wireless Analog Bridge
- Remote Sensor Implementation
- Data Acquisition
- Pulse Counting
- Process Control



Adaptor board



Optional Packaged Version



## Connections

Connections can be made using a DB9 connector or an adaptor board which plugs into the on-board DB9 connector. Using the adaptor board will allow for the connection of wires to a screw terminal rather than using a DB9 cable. The pinouts for the DB9 connector and for the adaptor board are given below:

PIN	DB9	ADAPTOR BOARD
1	V+	V+
2	GND	CH1 IN
3	GND	CH2 IN
4	GND	CH3 IN
5	GND	CH4 IN
6	CH1 IN	GND
7	CH2 IN	GND
8	CH3 IN	GND
9	CH4 IN	

## Pin Descriptions

V+ — Positive voltage input and will accept 12-24V

GND — Ground

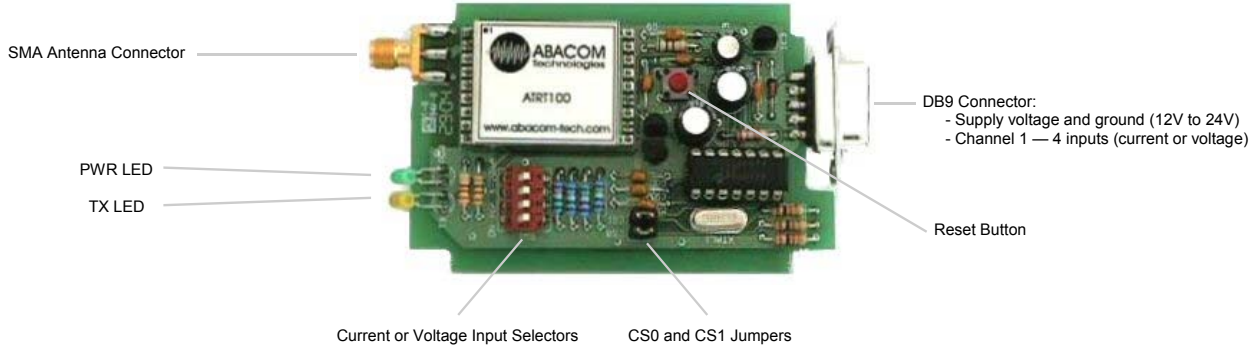
CHX IN — Voltage or current inputs. For a 0-5V voltage input on channel X, the CHX jumper must not be installed. Conversely, for a 4-20mA or 0-20mA input on channel X, the CHX jumper must be installed. For accurate signal reconstruction on the output, the highest frequency present on any of these inputs must not be more than  $60/n$  Hz, where  $n$  is the number of channels that are enabled. The approximate input impedance of the inputs is approximately 10K $\Omega$ .

## Configuration Jumpers/DIP Switches

The set of jumpers located on the circuit board are the “channel select” jumpers CS0 and CS1. The status of these two jumpers determines the number of input channels that are enabled. If the status of CS0 or CS1 are changed while the unit is powered up and operating, a reset must be performed by pressing the reset button before the new number of channels will be enabled. The following truth table shows the different combinations of CS0 and CS1: (where I is installed and N is not installed)

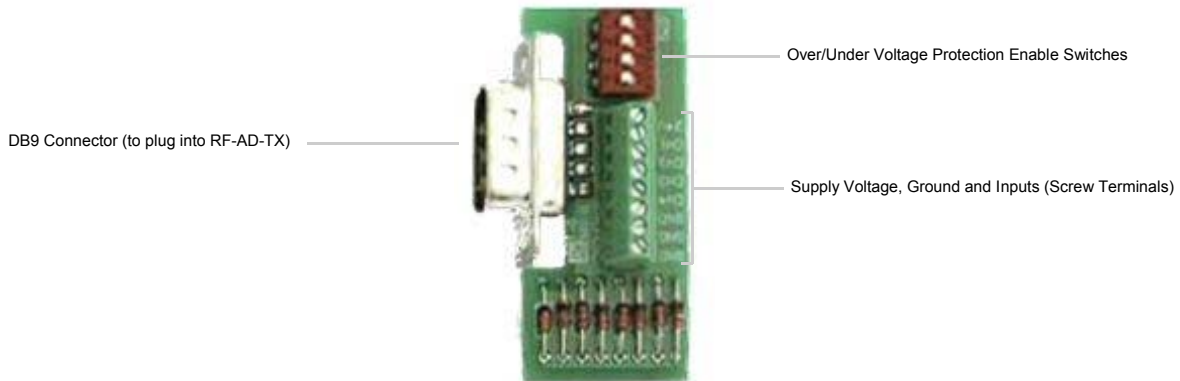
CS1	CS0	Channels selected
N	N	CH1, CH2, CH3, CH4
N	I	CH1, CH2, CH3
I	N	CH1, CH2
I	I	CH1

The DIP switches are for selecting what type of input will be present. Switch 1 corresponds with CH1, switch 2 with CH2 etc... When the switch is ON, the corresponding channel will be configured for a current input (4-20mA or 0-20mA), and when the switch is OFF, the corresponding channel will be configured for a voltage input (0-5V).



## Adaptor Board

The adaptor board allows the conversion from a DB9 connector to screw terminals and can provide optional over/under voltage protection on the inputs. To enable the voltage clamp which provides the protection, the DIP switch must be in the ON position. However, if the inputs are configured for a current input, no protection is required, and the DIP switches that correspond to the channels with current inputs must be OFF in order to assure an accurate measurement of the input signal. Note that switch 1 corresponds to CH1, switch 2 corresponds to CH2, etc...



## Antenna

The RF-AD-TX and the RF-AD-RX require an antenna with an SMA connector (male). Antenna part numbers are as follows:

**1/4-xxx-RPSMA** where **xxx** is replaced with the required frequency of **433MHz, 868MHz or 915MHz**.

### Disclaimer:

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