

ZT-TRX433

Multi-use 8-bit Transceiver

The 8-bit Transceiver is used in the Impact Sensor and the Bedbox to send data. This unit senses when the state of any of the 8 I/O pins change and sends the status of those pins. When any I/O pin's status changes the status of the pins are sent.

Features

- 50ft wireless range
- Adaptable to many applications
- 433MHz wireless radio
- 8 pull-up inputs
- Connected to PIC16F687

Requirements

- 2.3V - 3.6V input
- 20 pin 2mm header connection
- Sending: Avg: 10mA, MAX: 20mA
- Idle Avg < 70uA



Dimensions 65 x 25 x 8 mm
 2.56 x 1.0 x .32 in

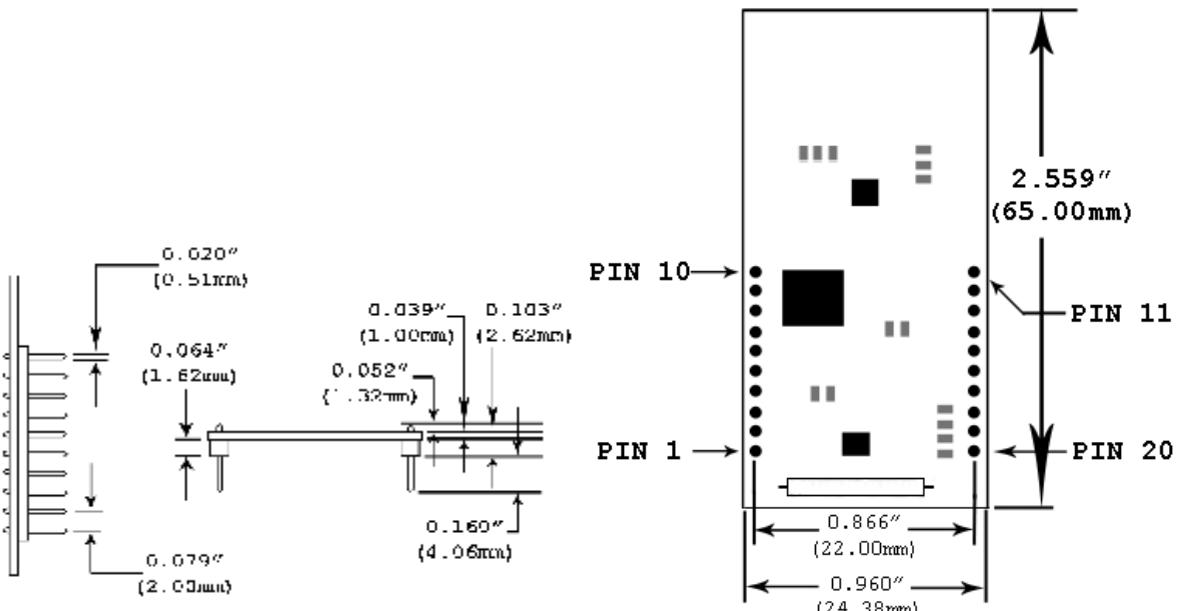
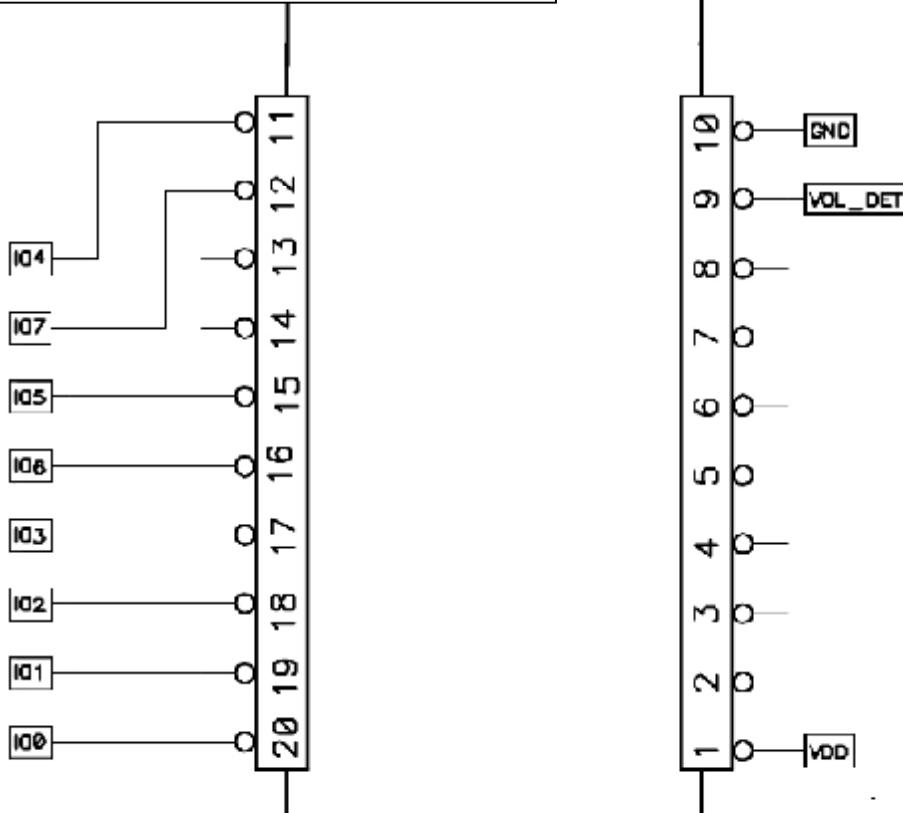


Figure 1: Side View and Bottom View

- TRX transmit
- The TRX waits for an acknowledgement.
- Device sends the RF signal to Controller. Controller decodes the RF signal and relays to PC.
- Device shall receive ACK signal from Controller.
- If Device does not receive ACK signal more than 0.5 second, it will re-send RF signal again.
- PC will check the Device Type and Address. If they match with the data stored in PC, PC will send ACK instruction to the Controller.
- If Device re-sends RF signal additional 2 times and it does not receive the ACK signal, it stops sending any RF signal until next event.



Software Protocol Info (FDT):

Device Type: 0x06

Command	Data	
0x01	0x0000	HeartBeat (once every 4 hours)
0x02	0x8000	Normal Voltage \Leftrightarrow IO is High
	0x0000	Low Voltage \Leftrightarrow IO is Low
0x03	0x0000	Enrolled Signal
0x07	0x0000 – 0x00FF	When one of the eight bits is toggled the TRX sends the data
0xFE	Tx' Address	Acknowledgement

The "HearBeat" signal is transmitted every 4 hours when the sensor is in the idle mode.

The sensor detects the voltage before transmitting RF signal.

The "Low-Voltage" RF signal is sent when the "Low-Voltage" status is detected more than 10 times in succession.

If the voltage status change from "Low-Voltage" into "Normal-Voltage", the sensor will transmit "Normal-Voltage" RF signal.

Fall Detector

The Fall Detector, only offered with the WellAware™ System, is placed on the floor and detects vibrations through the floor. It can detect disabling falls in a fifteen foot radius. The Data Manager uses this data in tandem with the motion sensors to infer whether a fall has happened in the apartment. The Impact Sensor can differentiate between a solid object falling and a person falling hard.

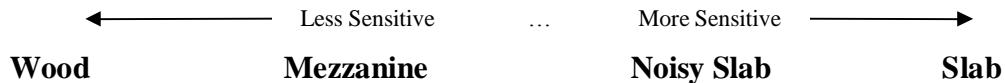


Installation:

The batteries (8 D-cell) are installed by unscrewing the retainer screw on one side of the detector. Pull the battery compartment open. The battery pack comes out of the box.

After the batteries are replaced and reconnected to the box carefully place the battery pack in the box as shown. The top can then be replaced by sliding it straight on and tightening the screws.

First the floor type needs to be determined. There are 4 settings:



These are set by the slide switch near the bottom of the detector. This switch can be changed carefully by simply sliding it from one side to the other. The settings from left to right go from least sensitive to most sensitive. A wooden floor will need a less sensitive setting because the vibrations being detected will show up easily. A concrete slab floor will need a much more sensitive setting since vibrations don't travel as well through it.



Make sure the switch is clicked in place. If it is in between settings the sensor will behave unpredictably.

Set the floor to the one that best describes the where it will be placed, i.e. if it is a 2nd floor of concrete in a building where there is industrial equipment nearby this would be considered noisy mezzanine. The more solid the floor is (concrete etc) the more sensitive the setting will need to be. If the floor is less solid (a 2nd story wood floor) it will need to be set to the less sensitive side. When the Impact Sensor is in place out of the way it can be tested. Test it by walking near it. The LED shouldn't light up. If this is not the case you should use a less sensitive setting. Then stomp three times near it. The LED should light up. If this is not the case try using a more sensitive setting.

Considerations:

This sensor does not detect falls. It detects impacts associated with hard falls within a fifteen foot radius. If the sensor is placed near a wall its range may be limited. However load bearing walls have more of a limiting effect than partitions. In some cases you may be able to place a sensor close to a wall and increase the sensitivity a notch to compensate for the dampening effect of the wall.

The sensor must be placed out of the way and preferably out of sight. If it is in plain sight it may be tampered with resulting in faulty data. Good examples for placement are: under the bed, between a partition and a table etc.

FCC COMPLIANCE :

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

Note:

1. Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.
2. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
 - Reorient or relocate the receiving antenna.
 - Increase the separation between the equipment and receiver.
 - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
 - Consult the dealer or an experienced radio/TV technician for help