

**QUICK INSTALLATION MANUAL
SENSOR ZED-TID
PRODUCT CODE: ZED-TID-M
SENSOR FOR ZB-CONNECTION RADIO NETWORK**

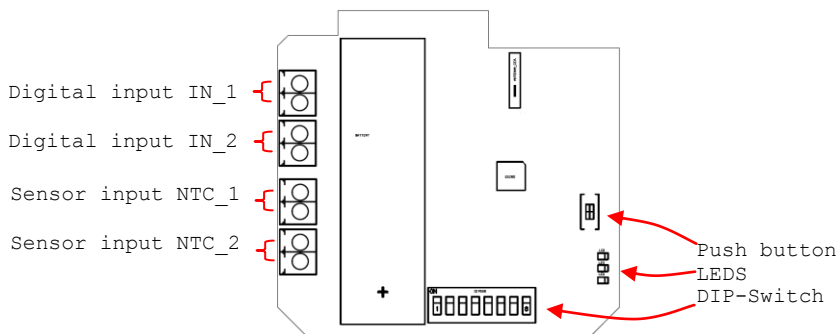
1) GENERAL DEVICE CHARACTERISTICS

Sensor ZED-TID Modbus (ZED-TID-M) is part of the family of wireless radio devices ZB-CONNECTION. It has two inputs for temperature sensors and two digital inputs. It has the fundamental task of acquiring its inputs, and sending the data it acquires and generates at regular intervals, to a compatible Gateway. The device must be supplied with a 3.6V battery. Its role in the network is End-Device.

2) DEVICE ELECTRICAL CHARACTERISTICS

POWER SUPPLY: 3.6V battery
 WIRELESS CHARACTERISTICS: 2405 MHz ÷ 2480 MHz
 DSSS Modulation
 Nominal transmission Power 0 dBm
 IEEE 802.15.4 compliant
 Stack EmberZNet3.5.0
 Stack version 0
 Proprietary profile ID
 Proprietary encryption key
 TEMPERATURE SENSOR INPUT: NTC SENSOR TYPE 103AT
 (10K a 25°C; beta=3435K)
 Measurement range -50°C ÷ +100°C
 Reading resolution 0,1°C Reading accuracy ±0,5°C
 DIGITAL INPUT FEATURES: electronic type not insulated inputs for clean contact (low current reed switch).
 OPERATING CONDITIONS: -20÷+55 °C
 +10÷30°C for nominal battery duration
 BATTERY DURATION: > 3 years (+10°C÷30°C transmission time > 3 minutes).
 CONNECTIONS: Pull-out terminals (3,81 mm pitch)
 PROTECTION DEGREE: IP 55

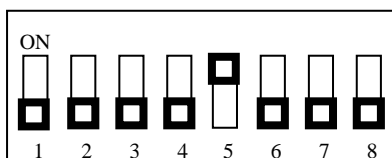
3) CIRCUIT BOARD AND CONNECTION LAYOUT



4) DEVICE ADDRESSING

The device can be addressed by DipSwitch. Valid addresses range from 16 and 127. The DipSwitch is read only when switching the circuit board on; a modification in the Dipswitch's position is taken into consideration only after that device has been reset. In order to reset the device, remove the battery from the device, press the pushbutton so that to make the residual energy in the circuit run out, then install the battery.

Set the DipSwitch before switching the circuit board on and before it has gone onto the network.



Address =16

DIP1	DIP2	DIP3	DIP4	DIP5	DIP6	DIP7	DIP8	ADR
OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	16
ON	OFF	OFF	OFF	ON	OFF	OFF	OFF	17
OFF	ON	OFF	OFF	ON	OFF	OFF	OFF	18
ON	ON	OFF	OFF	ON	OFF	OFF	OFF	19
...
...
OFF	OFF	ON	ON	ON	ON	ON	OFF	124
ON	OFF	ON	ON	ON	ON	ON	OFF	125
OFF	ON	ON	ON	ON	ON	ON	OFF	126
ON	ON	ON	ON	ON	ON	ON	OFF	127

5) ASSOCIATING THE DEVICE TO A COMPATIBLE NETWORK

The process to follow when join ZED-TID node to a network is the same as for all types of ZB-CONNECTION network end-devices.

The association process is activated by pressing the push button.

The association process is enabling only if the device is not already part of a network, i.e. if it is a new device or if it has been voluntarily disassociated.

- 4.1) Press the push button, led LD2 turns on and node starts the scanning process of all 16 radio channels in order to find an "open" compatible network (i.e. the ZB-CONNECTION). The scan process takes about 20 seconds; if the device detects an available network, all 3 leds flash quickly and afterward they turn off (network opening is performed by suitably stimulating the Gateway, for more information refer to the Gateway document);
- 4.2) otherwise, if the scan process ends without having found any available network, the device goes in a power-safe mode waiting for new push-button stimulating.

6) DISASSOCIATING THE DEVICE FROM THE NETWORK

Disassociating the device involves losing the network parameters and consequently leaving the network of which it had been a part.

Moreover device loads to the default value all of its operating parameters (HoldingRegister).

Disassociation can be commanded in two ways:

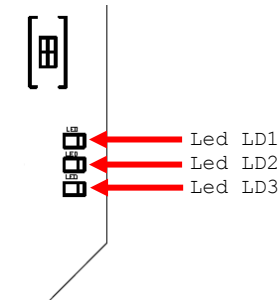
- 1) Receipt of the appropriate command password.
- 2) Holding the pushbutton on the card down for at least 6 seconds. Disassociation using the push-button is only possible within 20 seconds from when the device is switched on.

7) DEVICE LED/PUSH BUTTON INTERFACE

ZED-TID has three leds through which it shows information about its operating state.

The device has also a push button which is used to activate the joining process, to activate disassociation and to stimulate the device in order to send data to the Gateway.

Nomenclature of ZED-TID leds:



Behaviour of leds at the start-up:

At the reset of ZED-TID all leds lighted for 2 seconds, then all leds flash fast for another half seconds.

At the end of flashing device starts the normal functioning.

How leds work when ZED-TID is NOT joined with a network:

All leds off

How leds work when ZED-TID is joined with a network:

Usually all leds off.

Led LD1 briefly switched on at acquisition of the probes and at transmission of a message towards the gateway.

LD2 LED briefly switched on at receiving of an answer from the gateway.

Behaviour of leds during joining process

Led LD1 switched on for whole joining process.

Fast blinking of all leds at the successful association with a network.

Radio Link Quality Analysis

The device has a functional mode that permits to know the radio link quality, counting the number of blink of led LD3.

This functional mode is activate by pressing the button (only if node is joined to a network).

This functional mode continues for 60 seconds.

When this mode is active node ignores normal transmit time and transmits a message each 5 seconds.

When this mode is active, after the successful communication process node analyzes the signal strength (Rssi) associated to the message received from Gateway.

Based on this value node performs one, two or three flashes of LED LD3.

3 flashes of LD3 --> Rssi of received message \geq -65dB (optimal level)

2 flashes of LD3 --> Rssi of received message \geq -85dB (medium level)

1 flash of LD3 --> Rssi of received message $<$ -85dB (low level)