Nanopod™ sensor installation architecture

Option
Wired

SNMP/IP/Ethernet/Cellular

Computer/Server

Stuttgart™ RX1

2-wire RS485 bus

Up to 4 RX1 can be connected to the RS485 bus

Bluetooth wireless

Bluetooth wireless

Stuttgart Nanopod™

Up to 120 sensors can be connected via Bluetooth to the RX1

Up to 120 sensors can be connected via Bluetooth to the RX1

Acoustic sensor installation architecture

Option
Wireless

SNMP/IP/Ethernet

Stuttgart™ M32

Up to 65 000 Stuttgart M32 can be connected to the Ethernet network

Stuttgart™ RX1

2-wire RS485 bus

Up to 4 RX1 can be connected to the RS485 bus

Bluetooth wireless

Bluetooth wireless

Stuttgart™ Sonar

Up to 120 Sonar sensors can be connected via Bluetooth to the RX1

Up to 120 Sonar sensors can be connected via Bluetooth to the RX1

Nanopod™ sensor installation architecture

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Acoustic sensor installation architecture

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Wired

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Up to 65 000 Stuttgart™ M32 can be connected to the Ethernet network

Stuttgart Sonar

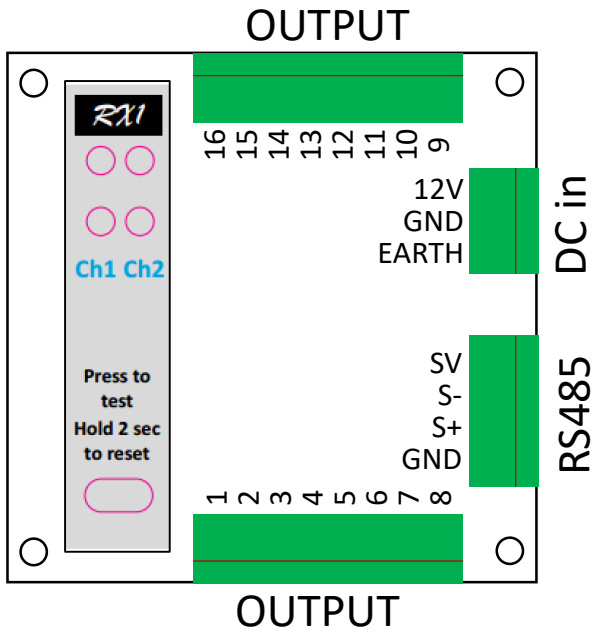
Up to 127 Sonar sensors can be connected via RS485 to the Stuttgart M32

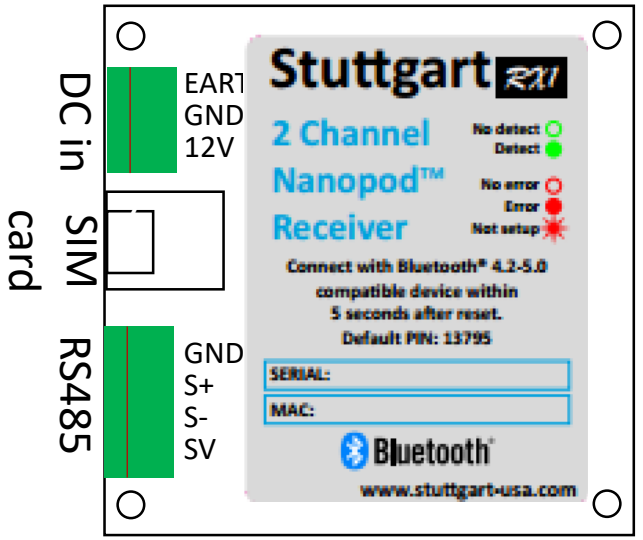
Up to 127 Sonar sensors can be connected via RS485 to the Stuttgart M32

RX1 Connections

Pin	Description
1	RS485 A/+
2	RS485 B/-
3	6-18 Volt
4	Expander Data
5	Expander Clock
6	Output B
7	Output B inverse
8	Output A
9	Not Connected
10	Power and signal ground

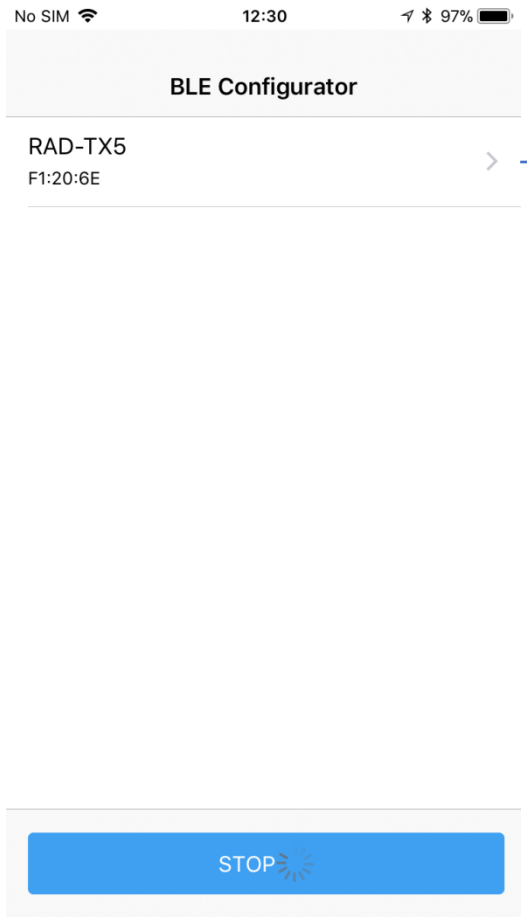
RX1 Relay Board 8ch



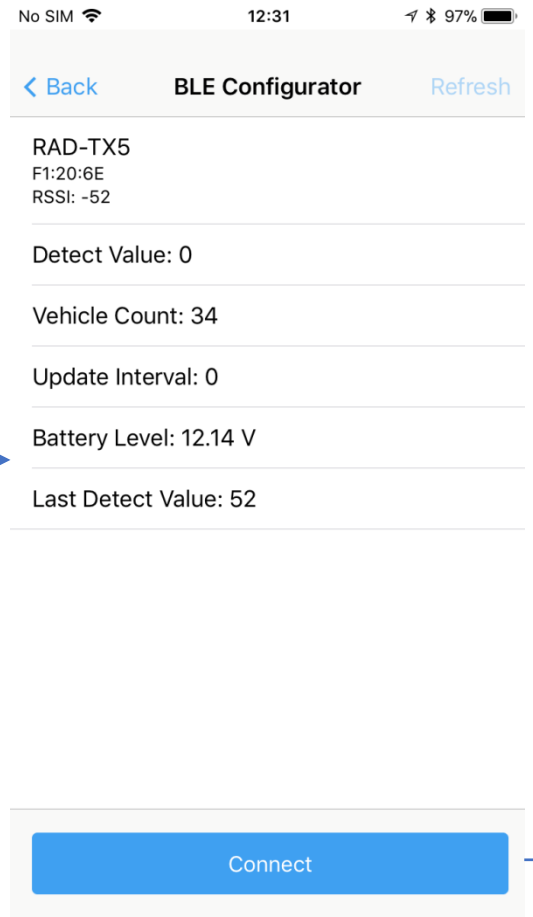


iPhone Setup

Scan



Listen



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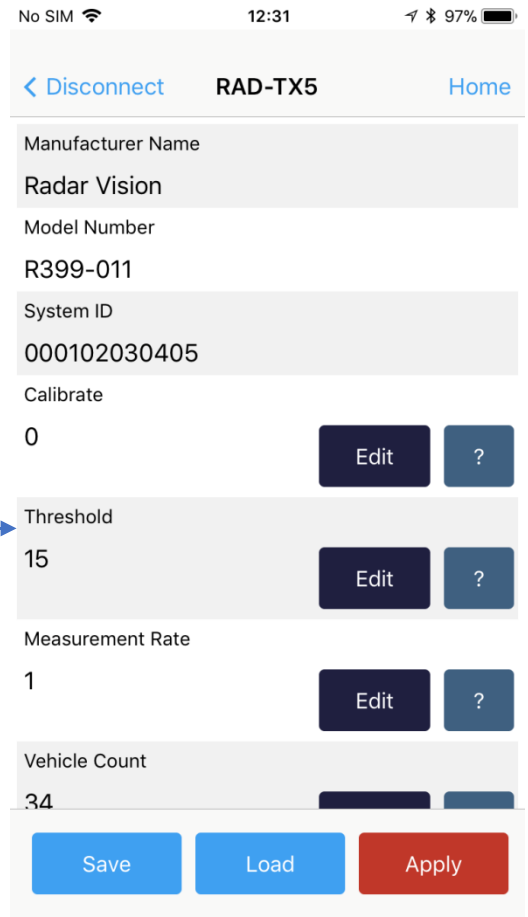
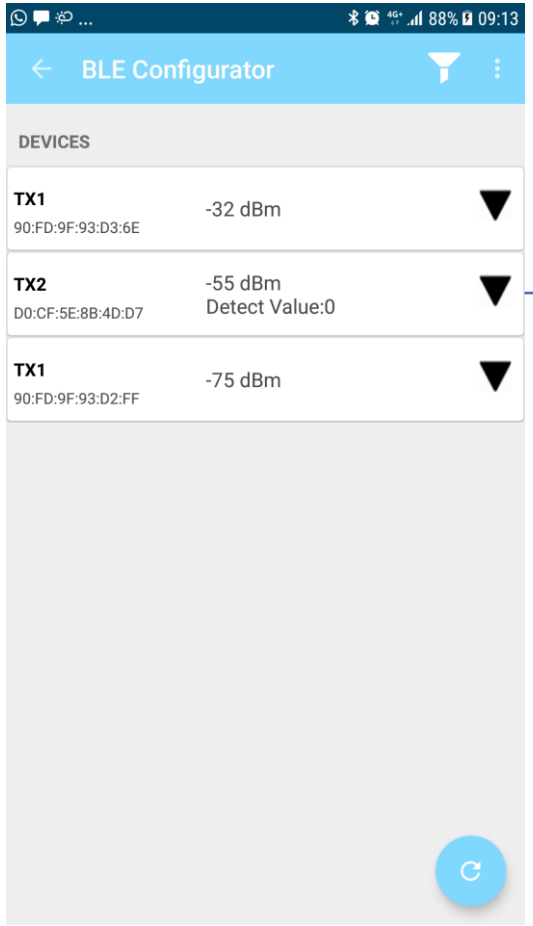


Android Setup

Scan



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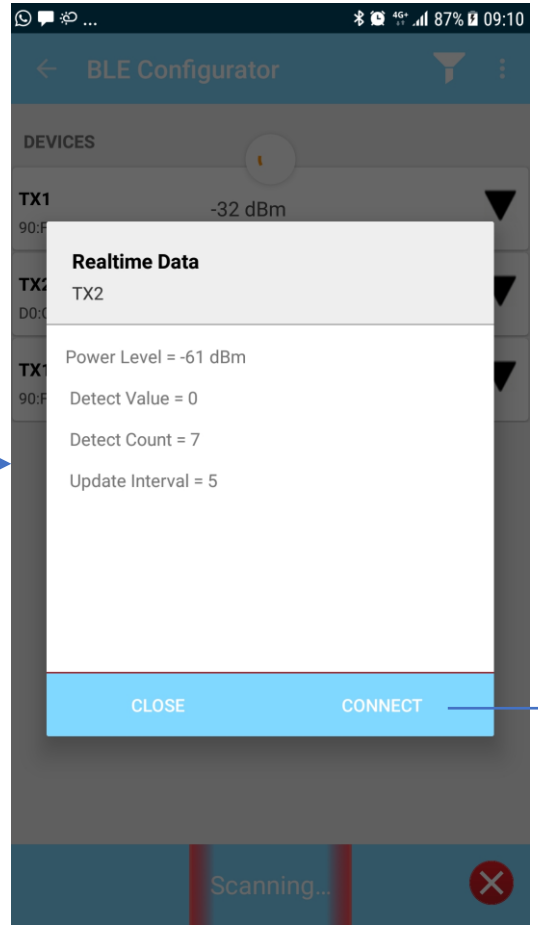

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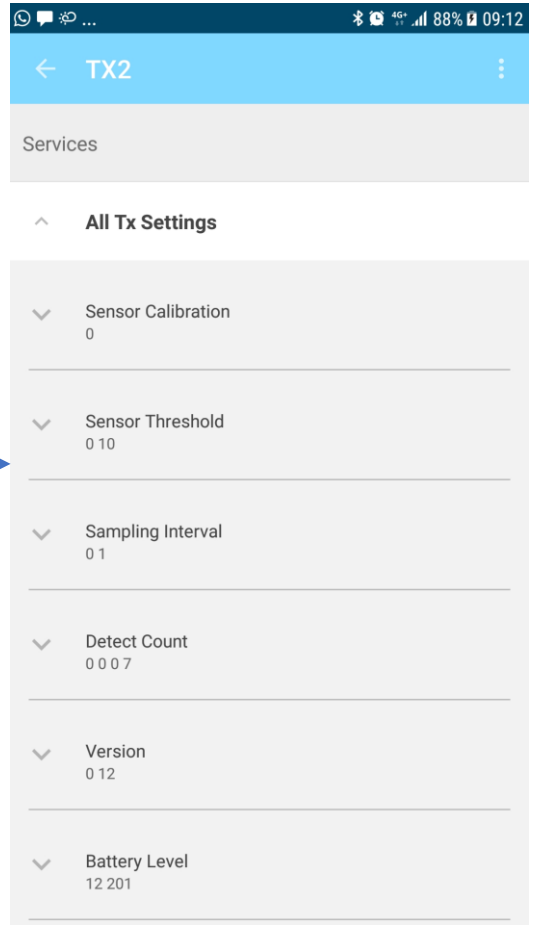


Settings page 1

Sensor Calibration (TX Calibrate)

This variable executes a calibration algorithm for the sensor. Some sensors may have multiple calibration algorithms and the number written to this variable will call the corresponding algorithm.

Sensor Threshold (TX Sensor Threshold)

An absolute value based on the particular sensor employed. A deviation beyond this value will cause a detect. If the device is configured to do multiple samples then this deviation applies to the average, peak or whatever the Mode dictates.

Sampling Interval (TX Sample Interval)

The interval in milliseconds at which the sensor will sample. Maximum 65.535 seconds.

Detect Count (TX Detect Count)

The number of detect events that has occurred. This value increments to 4294967296 and then stops incrementing. This value can be set if the settable factory flag is configured.

Version (TX Version)

This is the software version applicable to this particular hardware version. There could be different version 14 software for different hardware.

Battery Level (TX Battery Level)

This is the current battery status as a percentage

4D Axis Sensitivity (TX 4D Settings)

This is a value of 0-255 (1 byte) for each of the dimensions or axis or multi-sensor devices. A value of 0 will disable the sensor. A value of 255 will maximise (100%) the sensitivity of the detect algorithm to that sensor. On 3-axis sensors for example, the 3-axis correspond to 3 independent sensors.

Transmit Interval (TX Transmit Rate)

The interval at which the device will ordinarily transmit data in seconds. The actual interval can vary depending on operational conditions. For example in certain applications the device can transmit if a detect change occur, irrespective if it is time yet to transmit.

Settings page 2

Mode (TX Operating Mode)

This is the operational mode of the device. Refer to the mode table for each device to see how this will affect the power consumption, transmit interval, detect algorithm, sampling interval, etc.

Debounce Time (TX Debounce)

The time in milliseconds that all subsequent sampling or detecting will be inhibited after a successful detect.

Tuneout (TX Tuneout)

The time in seconds after a detect that the sensor will re-tune to its environment. This is applicable to sensors and/or detect algorithms that track conditions in the environment and auto-adjust. A Tuneout value of 0 will disable tuneout.

Multiple Samples (TX Multiple Samples)

This is the number of sensor samples required before a detect algorithm will be run to determine if a detect has occurred.

Duration Threshold (TX Duration Threshold)

If this value is 0, averaging or peak is used for multiple samples. For a value >0 the detection algorithm will run on each sample. If the number of samples that exceed the Sensor Threshold is more than Duration Threshold, a detection will be generated.

Data Logger Count (TX Data Logger Count)

This is the number of records currently written to the data logger. When the memory is full, this value will become 65535

Data Logger Value (TX Data Logger Value)

This contains the specific value assigned to a record.

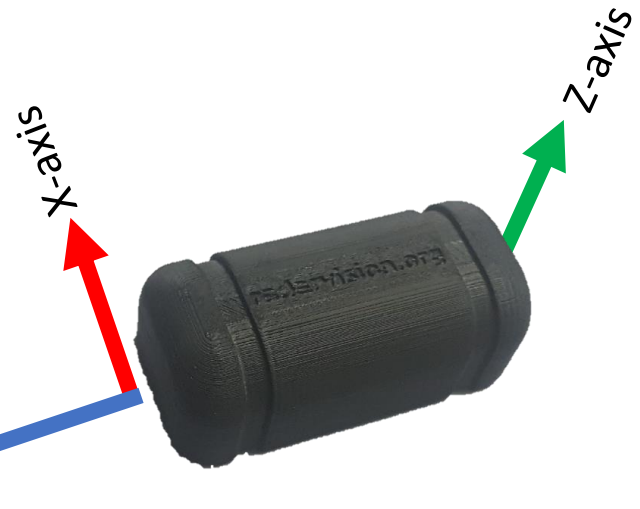
Data Logger Interval (TX Data Logger Interval)

This is the time interval in seconds up to 65535 seconds (18 hours) after which the current count value is written to the Data Logger Memory.

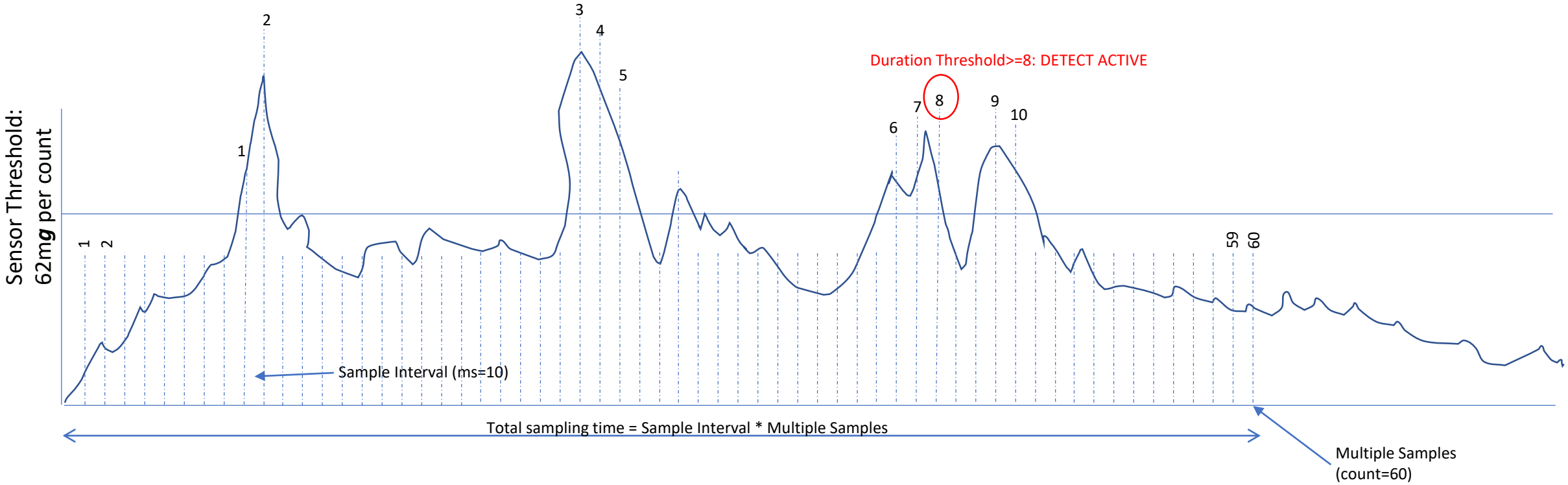
Debug Table

Used by Radar Vision for debugging purposes

TX2 Settings



<u>4D Axis Sensitivity:</u> XX YY ZZ where 00=OFF and 01=ON



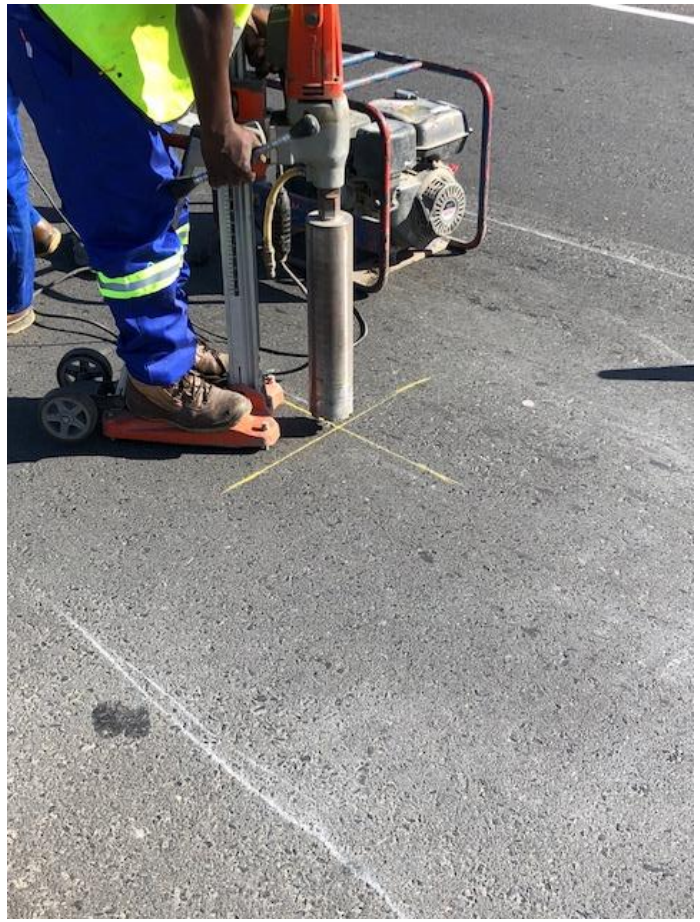
Typical Settings

Hardware	TX1 (compact) Magnetic Sensor	TX1 (compact) Magnetic Sensor	TX2 Accelerometer	TX3 Mechanical Switch
Application	*Boom Access Control*	*Freeway Counting and Logging*	*Fence monitoring for perimeter security*	*Water metering <3000 pulse/hour, <10 pulse/sec*
Sensor Threshold	50	50	10	N/A
Sampling Interval	200	10	20	N/A
4D Axis Sensitivity	00 00 01	00 00 01	00 00 01	N/A
Transmit Interval	8	8	2	8
Mode	3	2	2	5
Debounce Time	2000	1000	1000	100
Tuneout	300	60 000		N/A
Multiple Samples	N/A	N/A	100	N/A
Duration Threshold	N/A	N/A	100	N/A
Data Logger Interval	N/A	300	N/A	300

Mode

Mode	Description	Broadcast String
0	Production (idle)	Factory Mode. Maximum battery saving. Sensor Disabled.
1	Detector	Basic Sensor only transmit detection status. Transmit detect value only on change. Transmits battery level once per hour.
2	High speed detector	Uses more battery power. Sensor do not sleep inbetween measurements. Full speed sensor measurement.
3	Slow speed detector	Same as basic sensor, but transmit the time since last change also.
4	3D location	Allow a magnet to be pre-programmed into sensor in 3D space. It will detect if the magnet is inside or outside this space.
5	Pulse Counter	Count the number of pulses. The sensor sleep and only wake up to transmit the count value during the transmit interval.
6		

Nanopod Installation



RX1 RS485 Protocol

Mode	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9
1									
2									
3									
4	ID1	ID2	ID3	ID4	0x01	Detector	Sensor1	Sensor2	RSSI

IDn = Sensor address where ID1=Most significant byte
Sensor = Sensor value where Sensor1=Most significant byte
RSSI = Signal strength indicator
Detector=Internal detector value (0=no presence, 1=presence)

Sonar Connections

Pin	Description
1	TX data + (tie to pin 3 for 2 wire installations)
2	TX data – (tie to pin 6 for 2 wire installations)
3	RX data +
4	8-28 Volt
5	Connected to pin 4
6	RX data -
7	Automatic addressing signal
8	Power and signal ground

Stuttgart M32 Connections

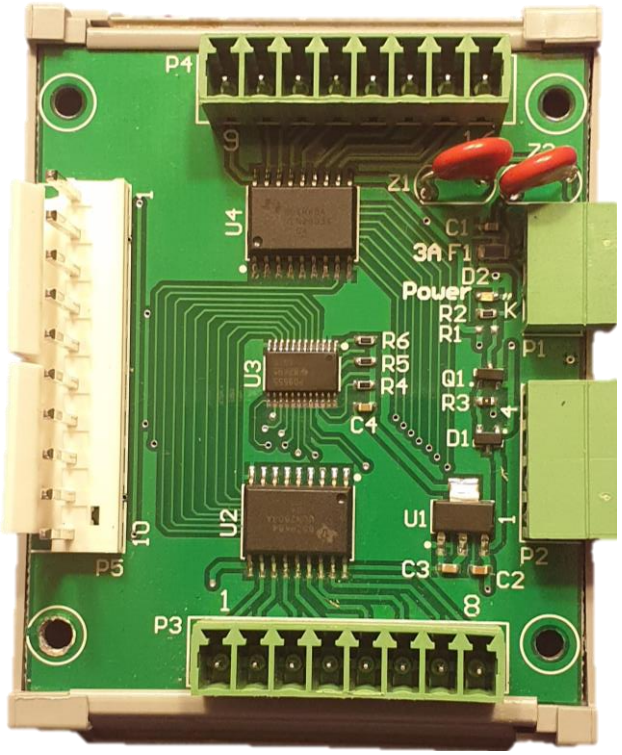
Power	
Pin	**Description**
1	10 – 30 V
2	GND
3	Earth

RS485	
Pin	**Description**
1	RS 485 -
2	RS 485 +
3	GND
4	GND
5	RS 485 -
6	RS 485 +

Relays	
Pin	**Description**
1	Relay 16
2	GND for Relay 15 & 16
3	Relay 15
4	Relay 14
5	GND for Relay 13 & 14
6	Relay 13
7	Relay 12
8	GND for Relay 11 & 12
9	Relay 11
10	Relay 10
11	GND for Relay 9 & 10
12	Relay 9

Power	
Pin	**Description**
13	Relay 8
14	GND for Relay 7 & 8
15	Relay 7
16	Relay 6
17	GND for Relay 5 & 6
18	Relay 5
19	Relay 4
20	GND for Relay 3 & 4
21	Relay 3
22	Relay 2
23	GND for Relay 1 & 2
24	Relay 1

16ch Expander Connections



Pin	Description	RS485 cable
1	5-16V Power	RED
2	GND	BLACK
3	Earth	
1	5V out	
2	RS485 B/-	YELLOW
3	RS485 A/+	ORANGE
8	RS485 COM	

* You can connect GREEN & BROWN (resistor) also to RS485+ & RS485- lines