VT570 / PIR sensor

Documentation page: https://vutlan.atlassian.net/wiki/spaces/DEN/pages/698384388/VT570+PIR+sensor

Product page: https://vutlan.com/analog-sensors/21-vt570-pir.html

Function and purpose

The sensor is needed for control of movement over an infra-red range.

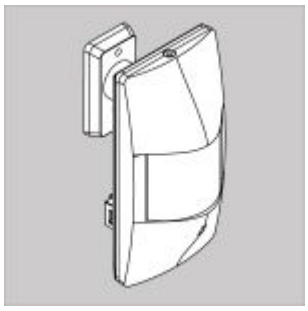
The maximum amount of sensors and maximum length can be extended using "VT408 / Sensor extension unit".

Technical specifications

Feature	Description
Type:	Analog sensor
Usage:	PIR detector
Cable length:	2m
Power Consumption:	100 mW
Operating temperature:	Optimal temperature range: -10° C to +80° C Extended temperature range: -40° C to +100° C
Operating humidity:	0 to 95 %
Storage temperature:	-40° C to +100° C
Storage humidity:	0 to 95 %
Mounting possibilities:	Wall or ceiling mount
Max. distance from the unit:	100 m
Manufactured in (country):	Manufactured in Slovak Republic, E.U.
HS Code:	8531 80 950
IR detection angle:	110°
Max. IR detection distance:	12
Daisy chain:	Not possible
Inputs terminals:	RJ-11 / 6P4C

Package includes

	Package content	Description	Quantity

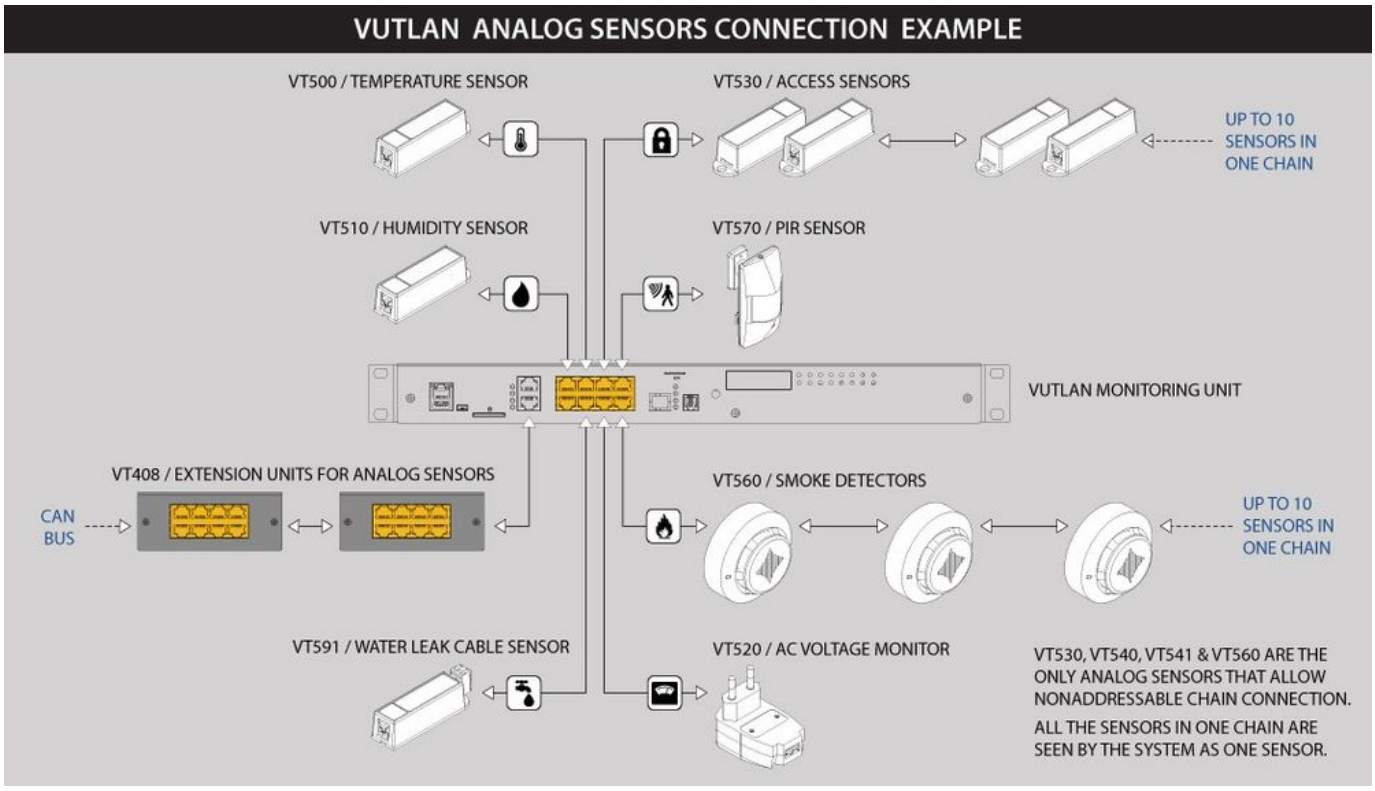
1		**1.** Smoke detector **2.** Wall/ceiling holder **3.** RJ11 6P4C 2m cable	1 pc
2		Screws M3.5mm, length 23mm	2 pc
3		Bowels, length 27.5mm	2pcs

Drawings

Analog sensor connection

Analog sensors connection

Connect the analog sensor by a supplied RJ-11 (6P4C) cable to any analog port "A1 .. A8" or "Sensor" port. The determination of the sensor type and connection will occur automatically.



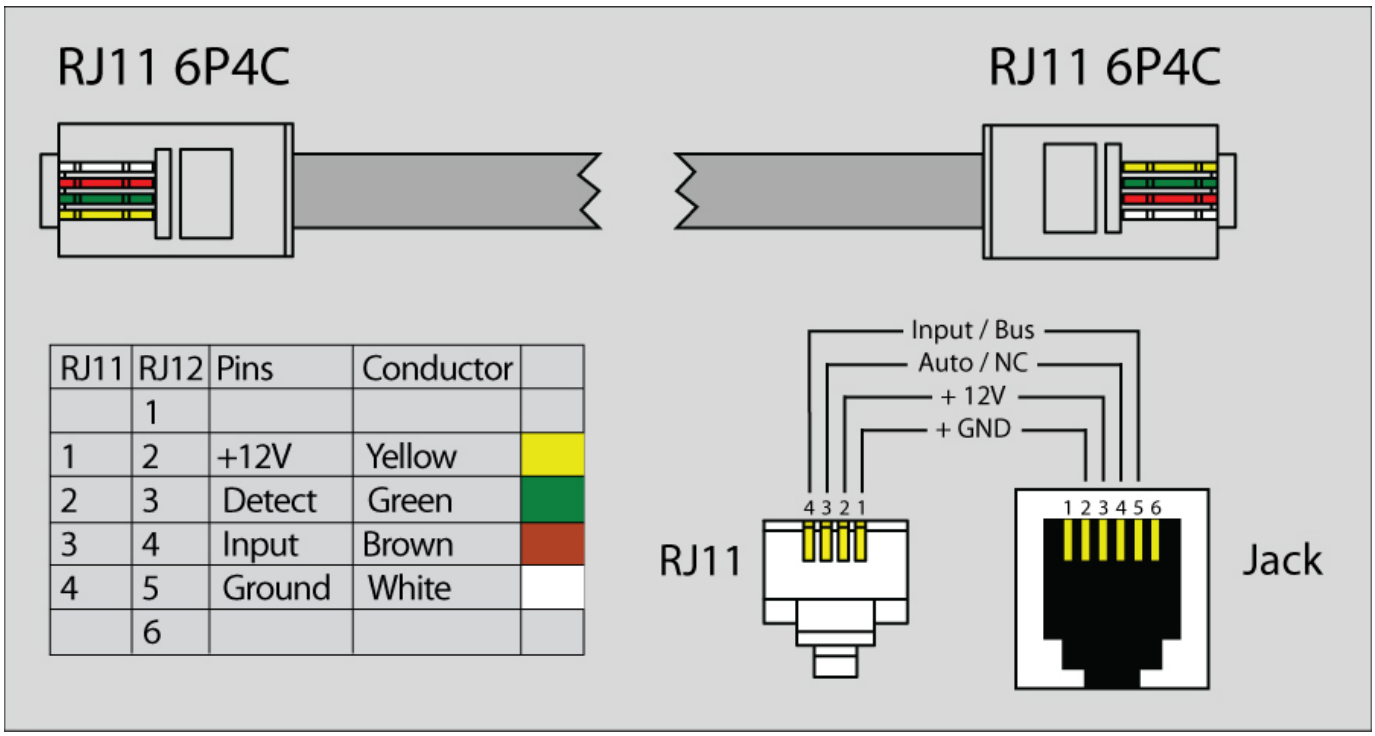
If strong electromagnetic interference is present, we recommend using a 3-pair cable CAN FTP for sensor connection!

6P4C RJ11 cable wiring/pinouts

1- Yellow, 2- Green, 3- Red, 4 - Black

Colors are true for this telephone cable. Both ends match the colors and pinouts (identical).

Please refer to the RJ connectors comparison table:



Daisy chain connection

Some of the analog sensors can be connected in a daisy chain. Please refer to the article "Chain connection of analog sensors".

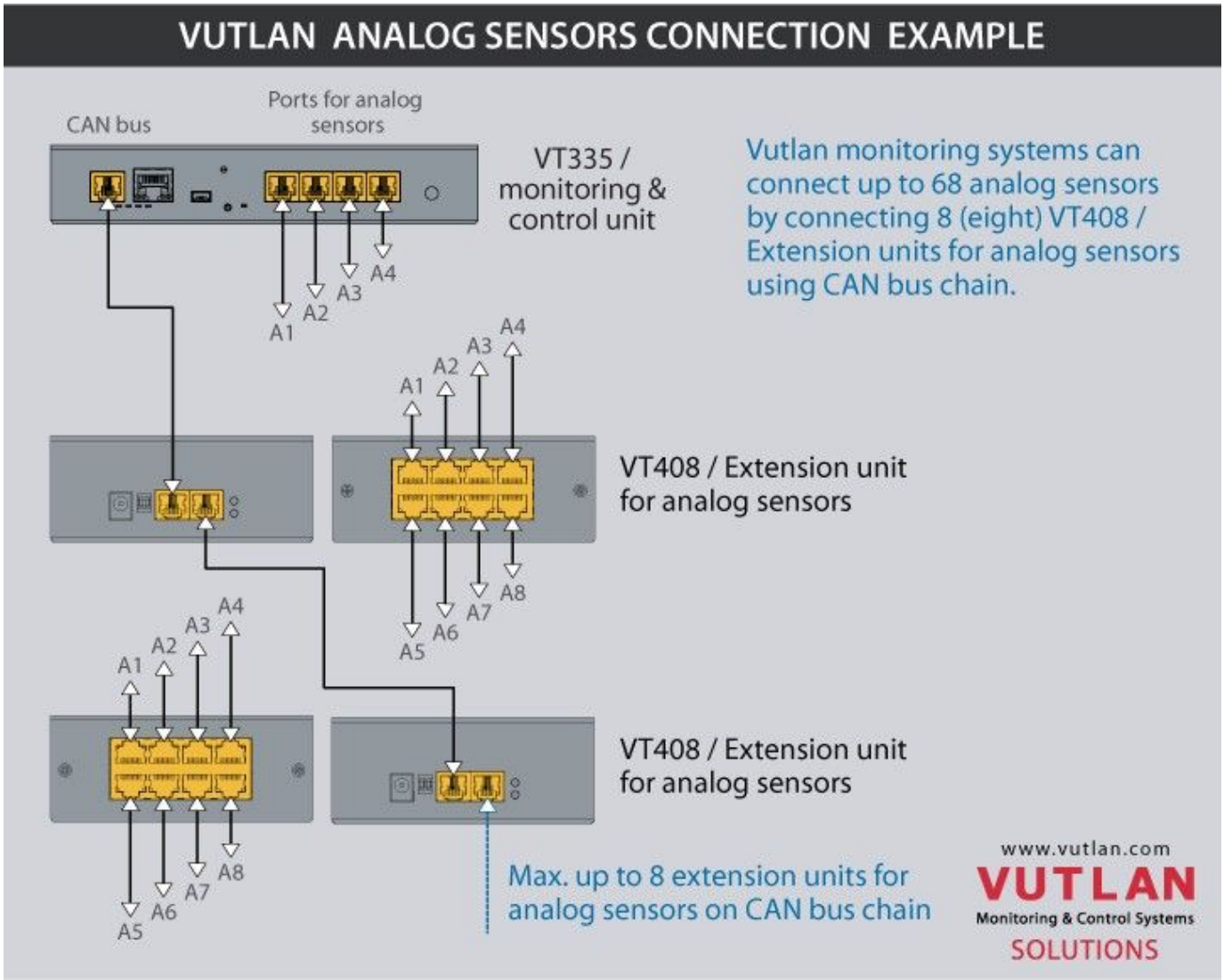
Maximum cable length test

Model		50m	100m	120m	150m	200m
VT406	DC current converter		ok			
VT407	AC current converter		ok			
VT410	DC voltage monitor					
VT416	DC ampere meter		ok			
VT417	AC ampere meter 16A					
VT420	Converter 4-20mA		ok			

VT500	Temperature sensor		ok			
VT501	Outdoor temperature sensor		ok			
VT510	Humidity sensor		x			
VT530	Access sensor		ok			
VT540	Vibration sensor		ok			
VT550	Wind velocity meter		x			
VT560	Smoke detector		ok			
VT570	PIR sensor		ok			
VT590	Spot water detector		ok			
VT591	Water leak sensor		ok			

Extending the number of analog sensors

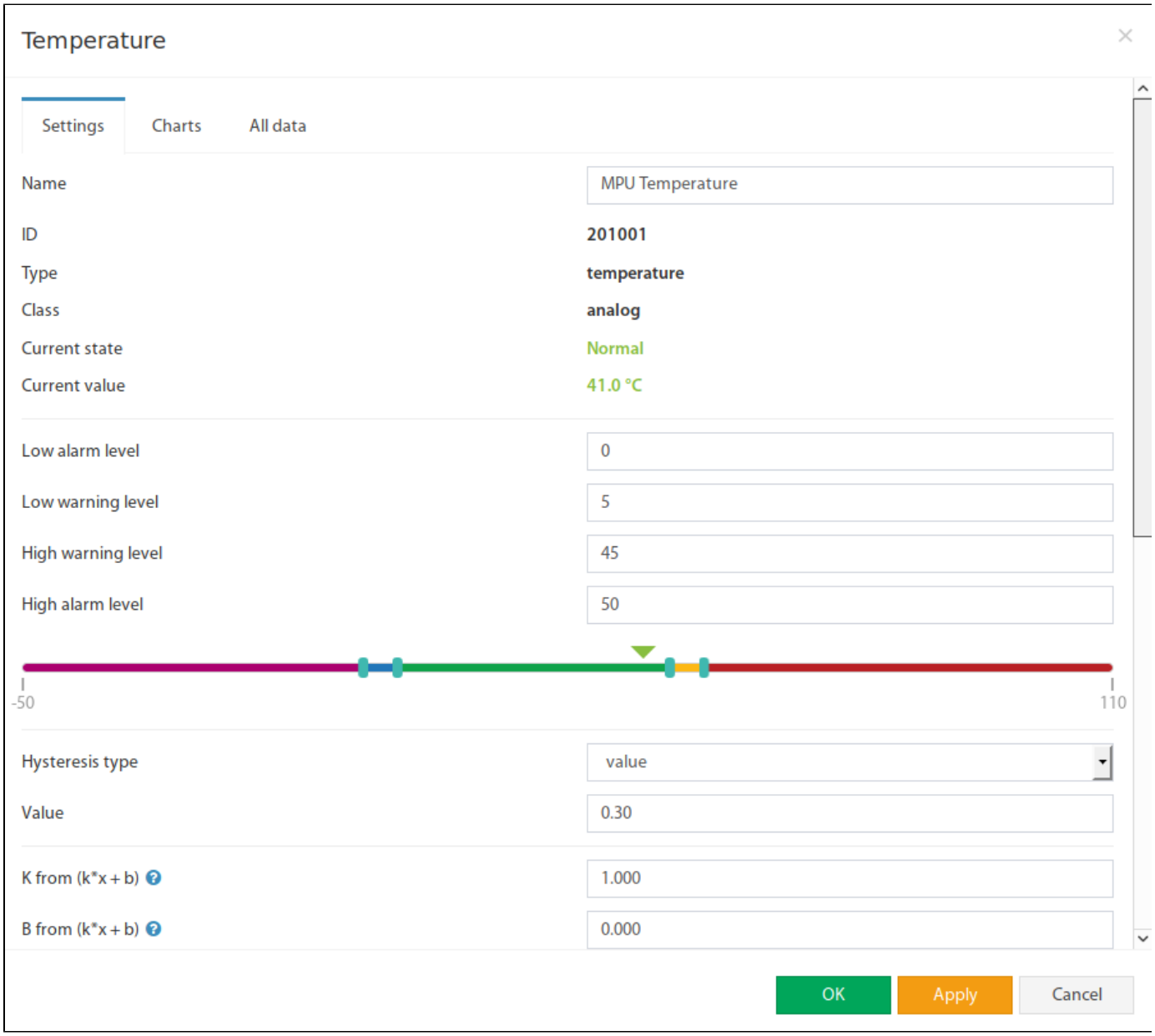
Using CAN extension "VT408 / Sensor extension unit" it is possible to increase the number of analog sensors connected to the monitoring unit up to 80 sensors.



Sensor configuration

Sensor configurations

To configure a sensor, go to "Main menu" >> "System tree" and click on the sensor element in the tree. A modal window with sensor properties will pop up. Change the needed settings and click "OK" or "Apply" at the bottom of the "Properties" window.

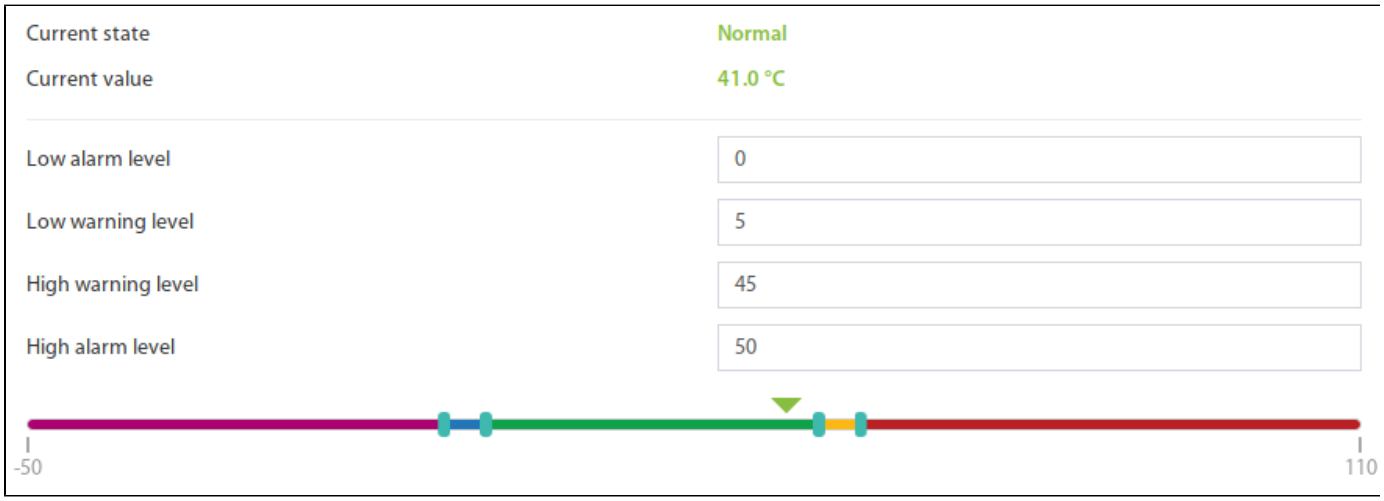


All sensors include:

1	Name	The name is given by the system automatically. You can change it to anything you want.
3	ID	System ID of the element.
4	Type	Example: temperature, humidity, vibration.
5	Class	Examples: analog, CAN, switch, discrete.

6	Hardware port	The external port number on the device panel to which the sensor is connected (if the sensor is external).

All sensors have threshold controls:

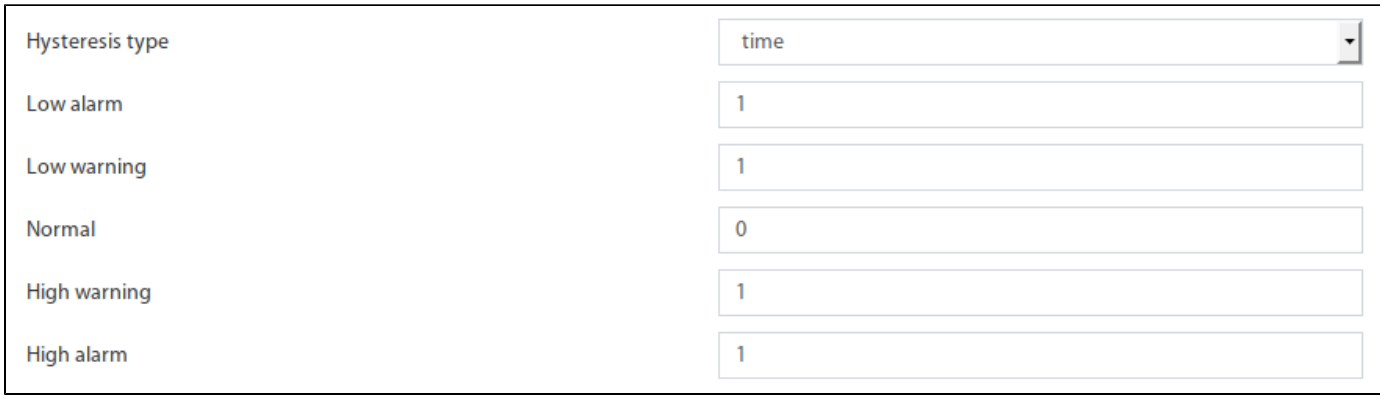


In the picture above, the "Current value" equals 41.0 and is represented by the small triangle. Currently, the triangle is green because it is situated in the "Normal" range. Hence the sensor says that "Current state" is "Normal". This value is used by the system "Logic schemes" menu to notify the administrator or take action.

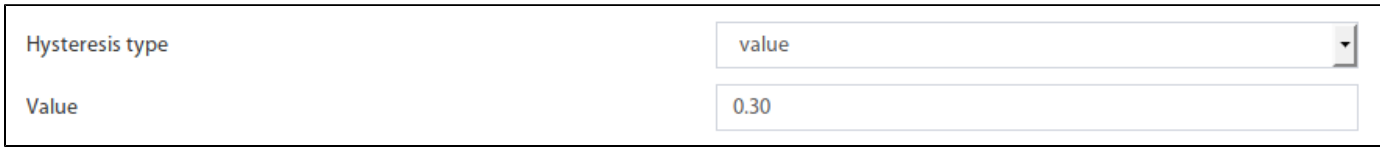
Hysteresis

Sensors have the option of setting the hysteresis state. Hysteresis can be a time, a value or it can be disabled.

If the hysteresis is set in a time, the sensor will transmit to a new state with a delay of the specified number of seconds in the corresponding field. The time counting will begin from the moment when the measured value of the sensor has left the current range.
Each state has its own field. Which determines the time that the sensor value must continuously hold for the state to change to the specified.



If you set the hysteresis by value, the sensor transition to a new state will occur when the measured value of the sensor exits beyond the current range, adjusted for the specified hysteresis value.



You can calibrate the sensors. Use K and B coefficients. After the calibration, please, save the values in flash memory.

To save sensor properties in the device flash memory press " " then "OK" to confirm.

Example: Why do we need to use Hysteresis
Let's say that we have a temperature sensor. Let's say that we have set up threshold values.

We have set the value 25.5 °C to be a threshold value between Normal/Alarm states.

If the temperature drops just below 25.5 °C You will have a “Normal” state.

If the temperature goes just above 25.5 °C You will have a “Warning” state.

Sometimes the temperature may stay at 25.5 °C and jump up and down by 0.1-0.3 °C. In this case, You will get too many notifications that the sensor is showing a Warning or Normal state.

In this case, we need to use a Hysteresis.

If the type “time” is chosen, the system will wait for a specified time before the State of the sensor is declared.

If type “value” is used, unless the temperature drops by a larger amount than specified, the sensor state will not be declared.

Tuning the sensor value

Sensor readings can be tunned by a linear formula "y = k * x - b"

Example VT407 + HAT-100Q1 / AC current converter:

Metered current for HAT: from 0 to 100A (This means that the range equals 100, **k = 100**)

The output of VT407 is 0-5V (That means that the range is equal to 5)

"**b**" = the value that the sensor shown in WebUI when there's no current. Let's say that **b = + 0.021**

You should use the following formula for HAT: **100/5*(x-y)**

The expression formula would be 20*(x-0.021)

Point is used as decimal separator (3.14)

Example: Using fuel tanks.

Each fuel tank has its own formula for volume vs height. Please see this useful resource for finding out such a formula.

https://www.calculatorsoup.com/calculators/construction/tank.php

In this can, You need to use non-linear formula.