VT530 / Access sensor

Documentation page: https://vutlan.atlassian.net/wiki/spaces/DEN/pages/1711833089/VT530+Access+sensor

Product page: https://vutlan.com/analog-sensors/18-vt530-access-sensor.html

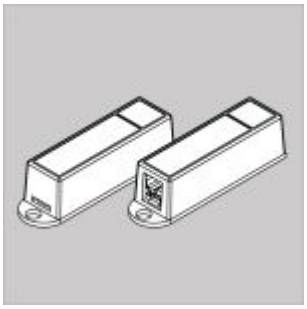
Function and purpose

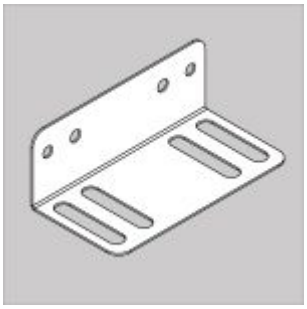
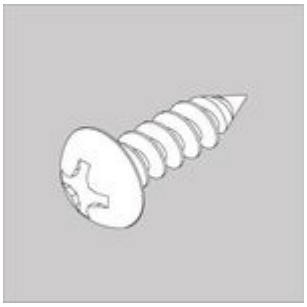
At installation on doors, windows, etc., the sensor controls the status of the door, window: opened, closed. The sensor consists of two parts: magnet and sensor.

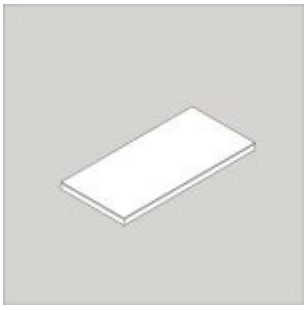
Chain connection is possible.

The sensor can not be used on its own. It must be used together with Vutlan monitoring systems.

Package content

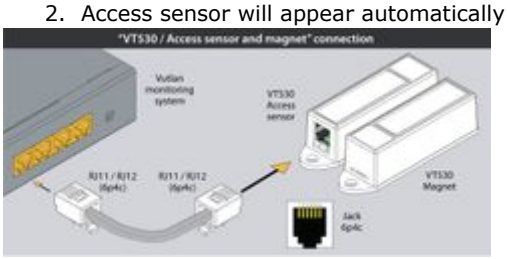
	Package content	Description
1		Reed switch + Magnet
2		Telephone cable 2m

3		Mounting bracket
4		Screws B4,2*16 - 2 pcs
5		Bolt M3.5x10 - 2 pcs
6		Nut M3.5 - 2 pcs
7		M3.5 washers - 2pcs

8		Sticker - 2 pcs

Connecting the sensor

1. Connect one end of RJ11(6p4c) cable to the monitoring unit into any analog ports (A1...A8) and the other end to the "VT530 / Access sensor".
2. Access sensor will appear automatically in a System tree.

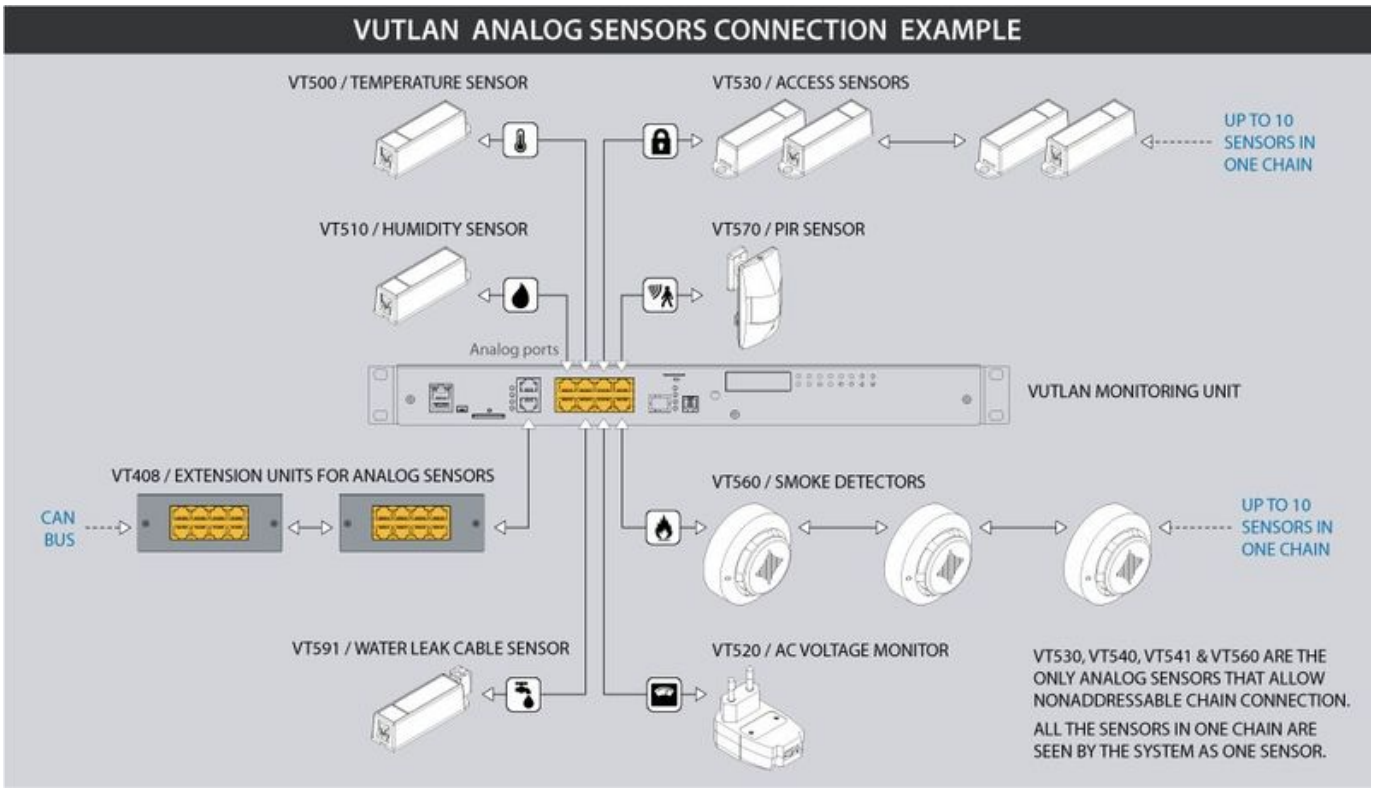


Chain connection of analog sensors

This procedure applies to the following sensors, which are supported by the appliance and are connected to the analog ports:

Analog sensors	Daisy chain
VT500 / Temperature sensor	□
VT501 / Outdoor temperature sensor	□
VT510 / Humidity sensor	□
VT520 / AC Voltage detector	□
VT520DIN / AC Voltmeter	□
VT530 / Access sensor	
VT540 / Vibration sensor	□
VT550/ Wind speed meter	□
VT560 / Smoke sensor	
VT570 / PIR sensor	□
VT590 / Leak sensor	□
VT591 / Cable leak sensor	□

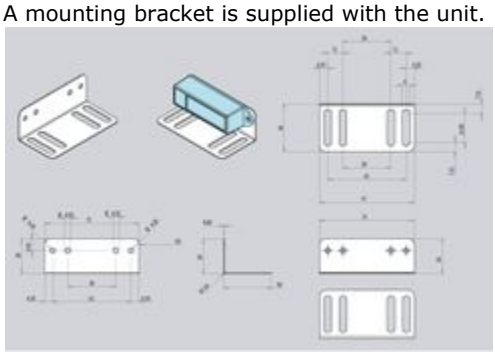
VT530 and VT560 are the only analog sensors that allow non-addressable chain connection. All the sensors in one chain are seen by the system as one sensor. One chain can have up to 10 sensors. Example of such connection:



Installation inside a rack or cabinet using a bracket

Mounting bracket

A mounting bracket is supplied with the unit.

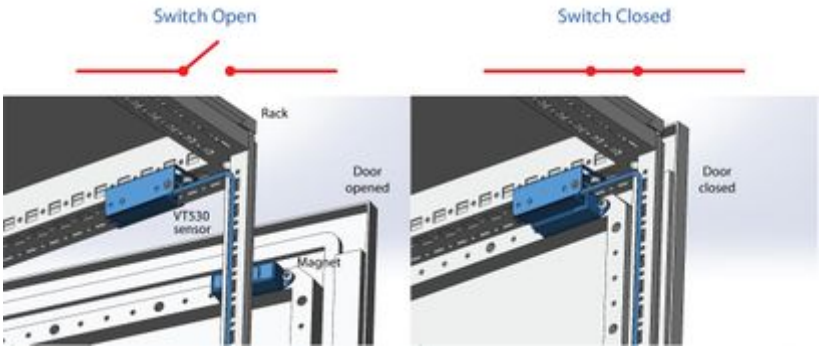


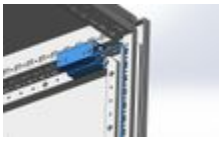
Installation

Example 1

The magnet needs to be mounted on the door or the window. If the door is open, the switch is Open. If the door is closed, the switch is Closed. You can reverse the logic inside the Web UI interface.

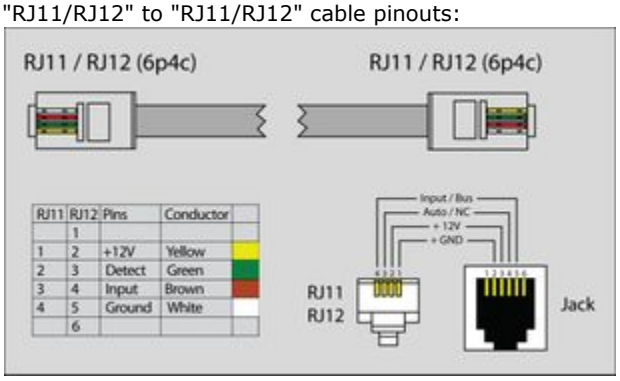
Depending on the construction of the door/window/rack you can use supplied bolts, stickers, or a mounting bracket to mount the sensor and the magnet.





Cable pinouts

"RJ11/RJ12" to "RJ11/RJ12" cable pinouts:



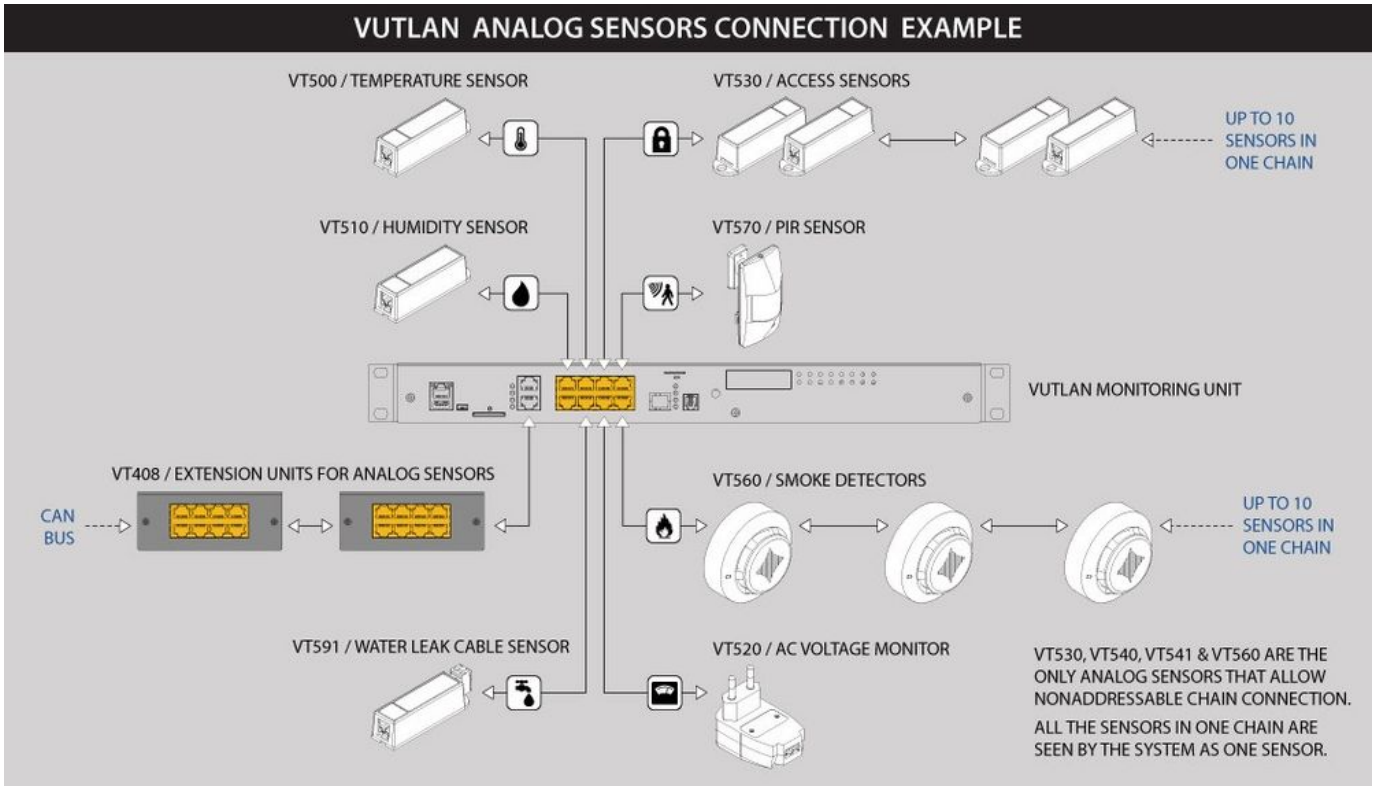
Technical specifications

VT530	
Dimensions	600×18x18 mm
Weight	106 g

Inputs	RJ9 (4p4c)
Outputs	RJ11 / RJ12 (6p4c)
Operating temperature	Min. -10° C, Max.80° C
Operating humidity	Min. 5% - Max. 95% (Non-Condensing)
Mounting	Mounting bracket, bolts, and stickers included for installation inside IT racks and cabinets
Power consumption	60mW
Max. distance m	150 m
HS Code	8531 10 300
Components	Manufactured in E.U.

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.



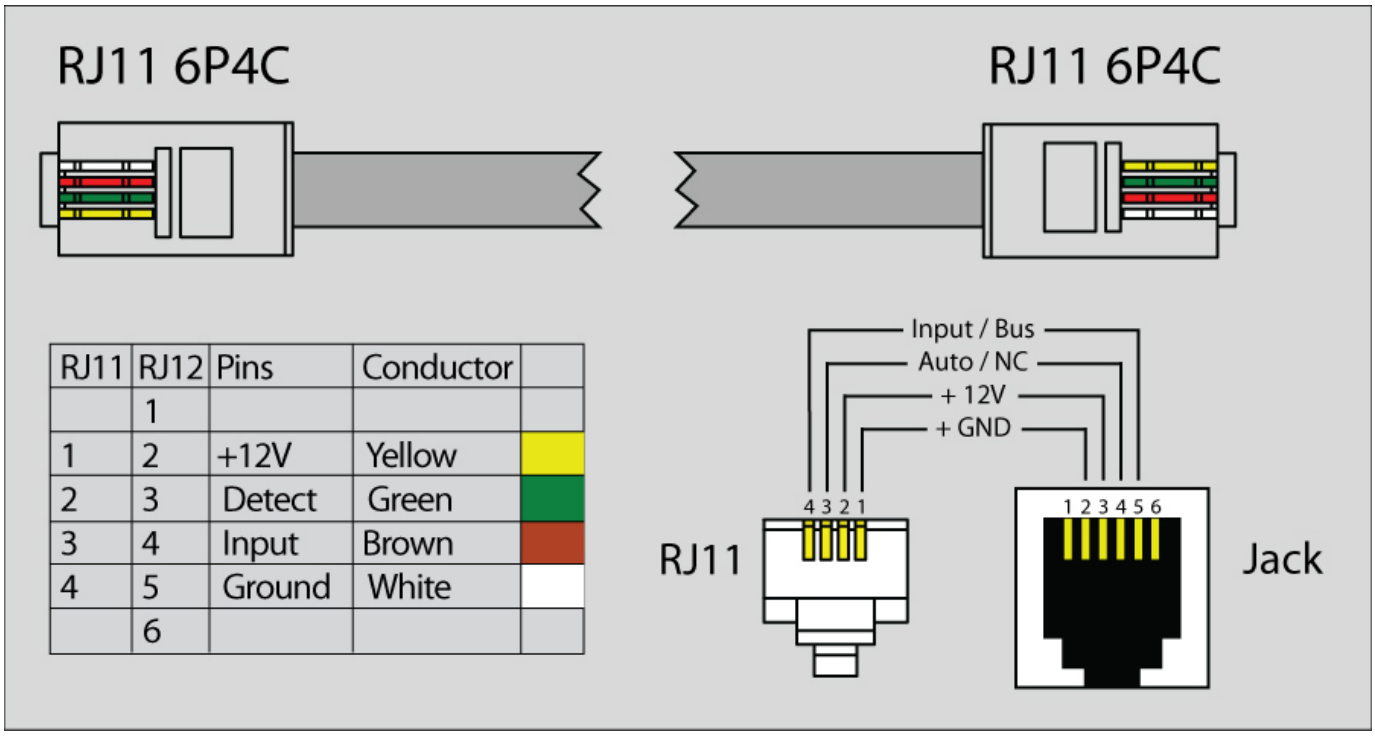
⚠ If strong electromagnetic interference is present, we recommend using a 3-pair cable CAN FTP for sensor connection!

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

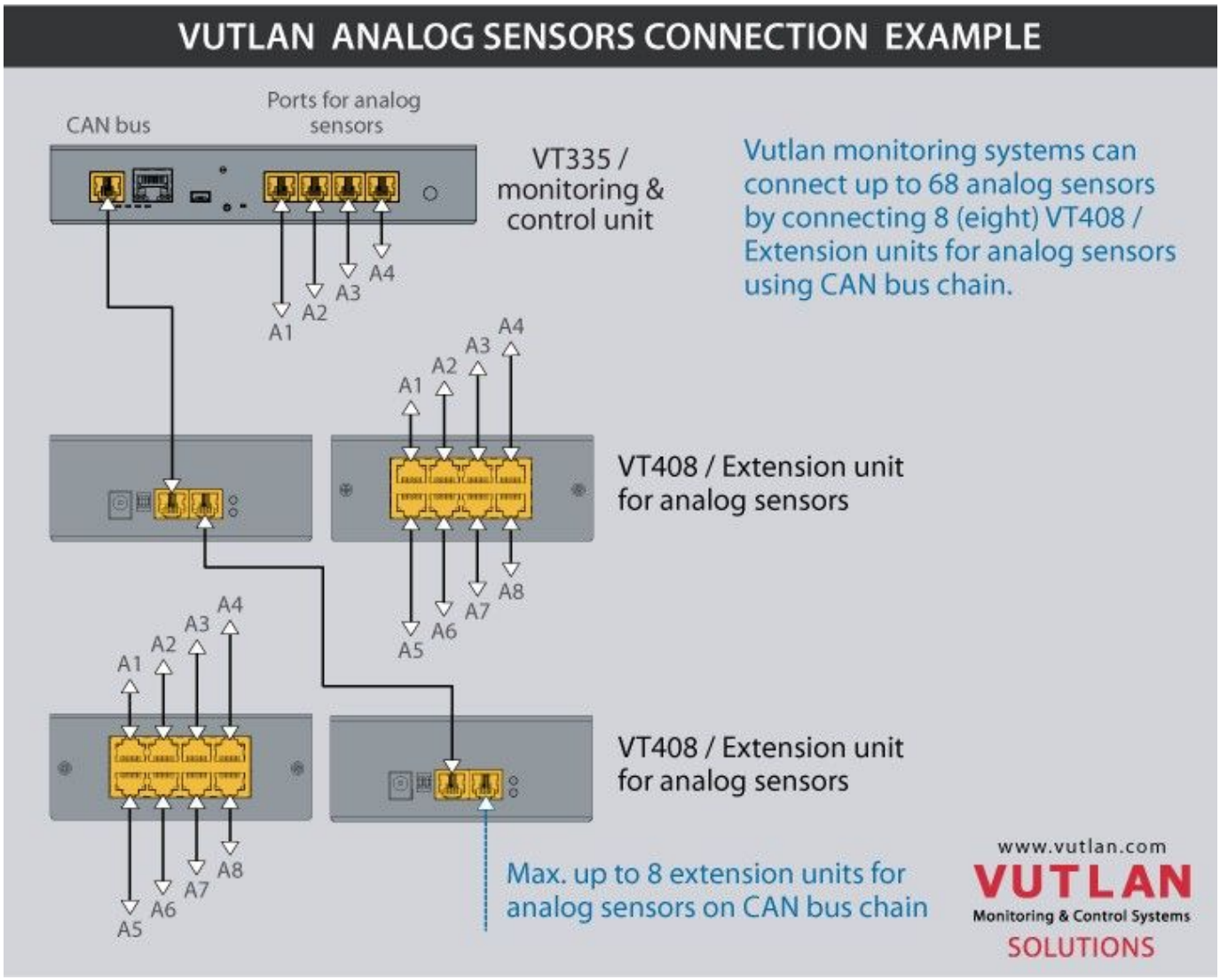
Some of the analog sensors can be connected in a daisy chain. Please refer to the article "Chain connection of analog sensors".

Maximum cable length test

Model		50m	100m	120m	150m	200m
VT407	AC current converter		ok			
VT410	DC voltage monitor					
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

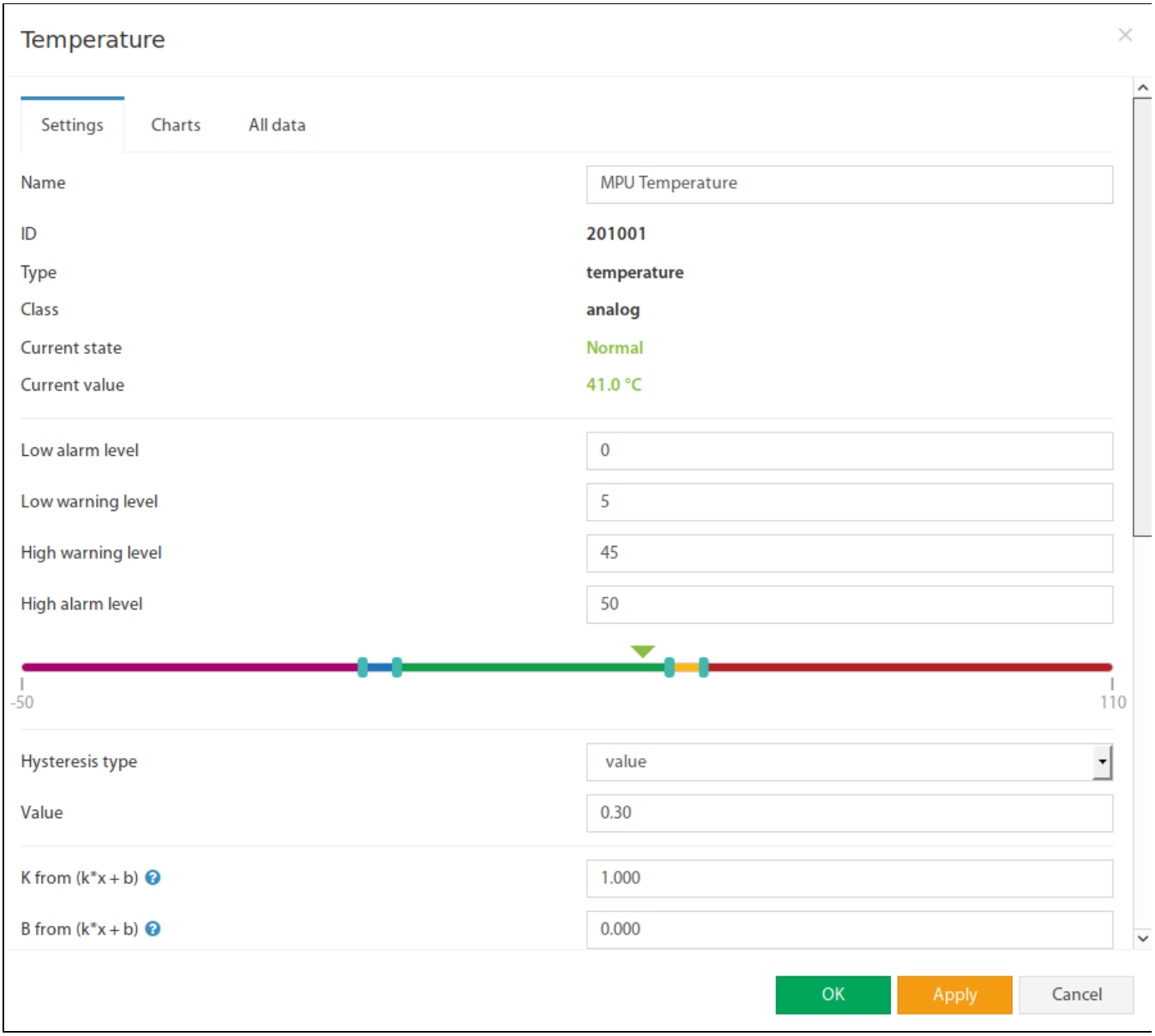
Using CAN extension "VT408 / Sensor extension unit" it is possible to increase the number of analog sensors connected to the monitoring unit up to 80 sensors.



Sensor configuration

Settings tab

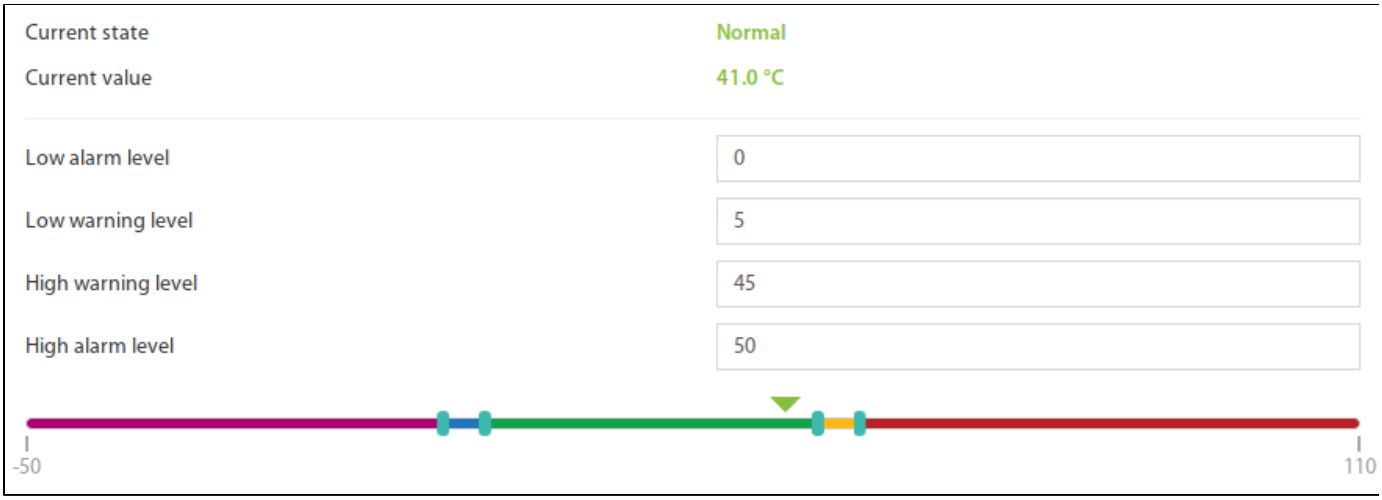
To configure a sensor, go to "Main menu" >> "System tree" and click on the sensor element in the tree. A modal window with sensor properties will pop up. Change the needed settings and click "OK" or "Apply" at the bottom of the "Properties" window.



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:

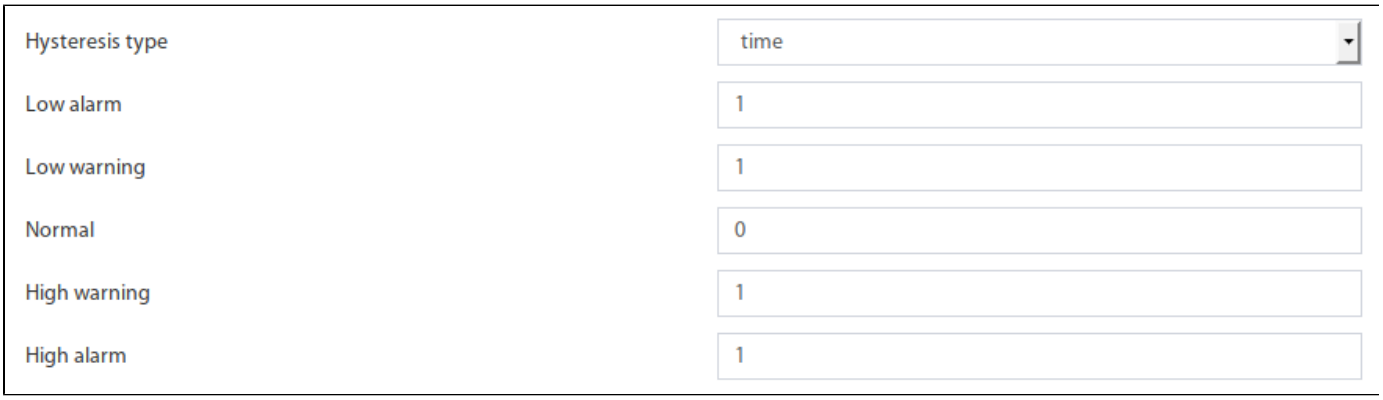


In the picture above, the "Current value" equals 41.0 and is represented by the small triangle. Currently, the triangle is green because it is situated in the "Normal" range. Hence the sensor says that "Current state" is "Normal". This value is used by the system "Logic schemes" menu to notify the administrator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

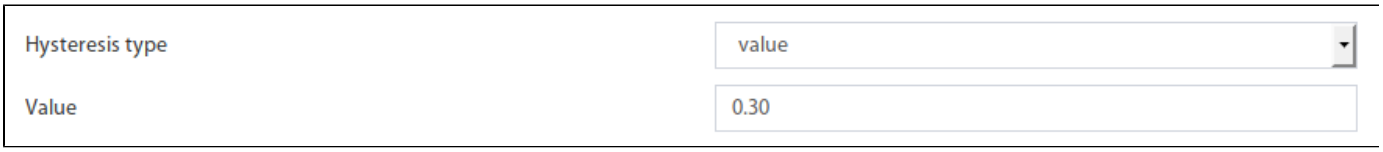
Hysteresis

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)**

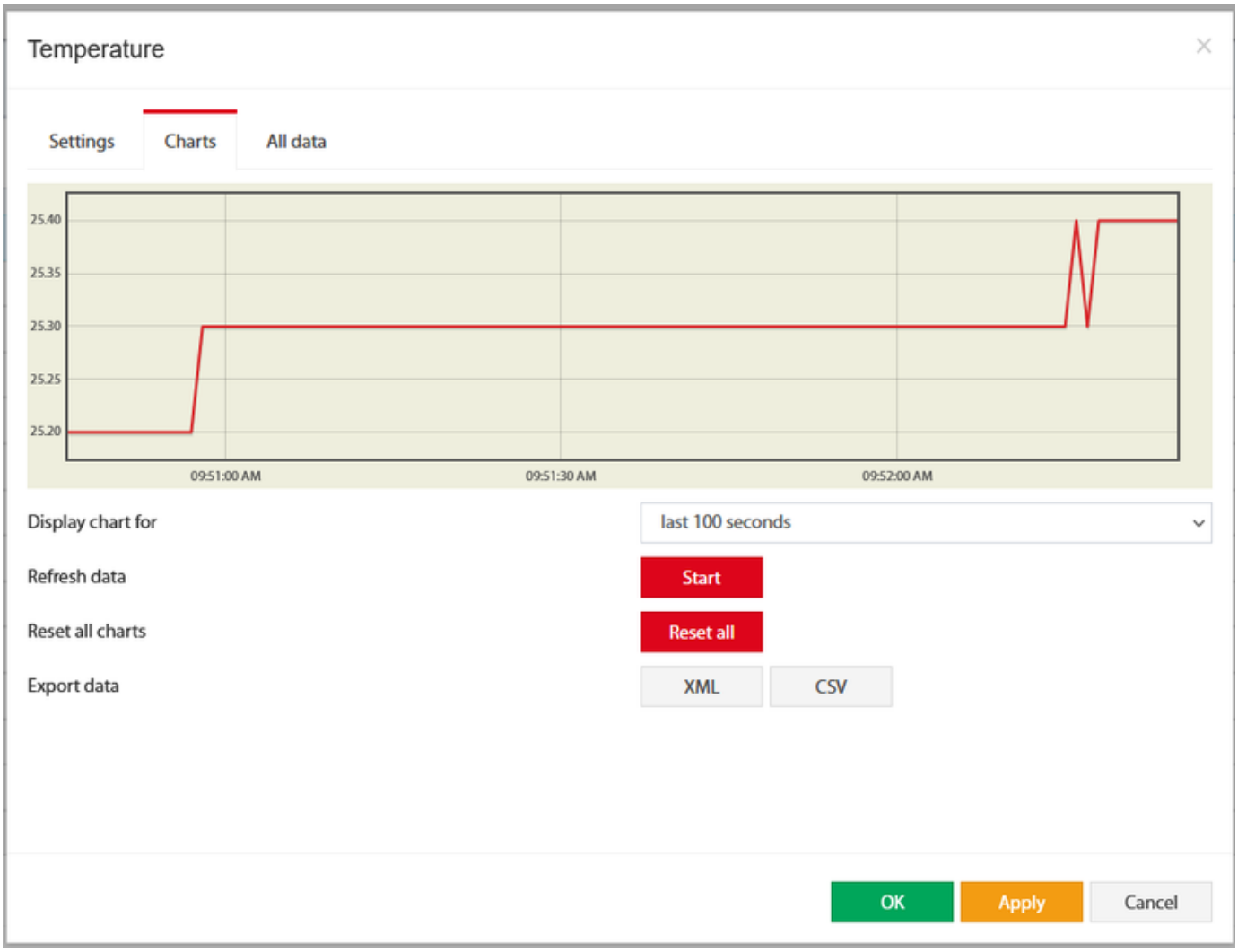
The expression formula would be 20*(x-0.021)

Point is used as decimal separator (3.14)

Charts tab

The charts tab shows the following:

Display chart for	• last 100 seconds • last 100 minutes • last 100 hours • last 100 days	
Refresh data	Start	Poll a sensor
Reset all charts	Reset all	Clears all saved data for the sensor.
Export data	XML or CSV	Exporting data through WebUI does not work for more than a couple of days and is very rough. If you need detailed log data, use the logging of sensor values to the media: Read more at: System Log, Sensors dump files



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.

Drawings