

VT500 / Temperature sensor (v2)

Online up-to-date documentation page: <https://vutlan.atlassian.net/wiki/spaces/DEN/pages/1834713171/VT500+Temperature+sensor+v2>

Product page: <https://vutlan.com/digital-output/14-vt500-temperature-sensor.html>



Function and purpose

The sensor is needed for the measurement of temperature indoors.

"VT500 / Temperature sensor" is an analog plug&play temperature sensor for indoor use only. Can be connected to any of the analog ports (A1...A8) of Vutlan monitoring systems.

The accuracy of the sensor is ± 0.15 °C at room temperature. The maximum distance from the monitoring unit (or sensor extension unit) is 100 meters.

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

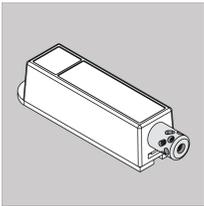
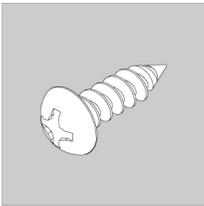
i The sensor can not be used on its own. It must be used together with Vutlan monitoring systems.

Technical specifications

Feature	Description
Type	Analog sensor
Usage	Temperature measurement
Product dimensions	(Length, Width, Height) 60x18x18 mm
Packing weight	70 g
Packing size	(Length, Width, Height) 45x45x120 mm
Cable length	2m (the custom length of the cable is possible)
Power Consumption	60 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	Desktop, Indoor, Rack-mountable, Wall mount
Max. distance from the unit	100 m
Manufactured in (country)	Manufactured in Slovak Republic, E.U.
HS Code	9025 11 800
Accuracy	± 0.15 °C at room temperature
Daisy chain	Not possible
Inputs terminals	RJ-11 / 6P4C

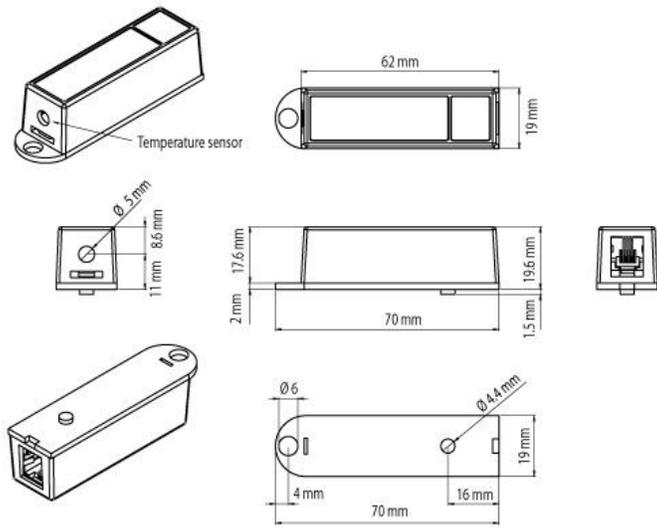
Package includes

	Package content	Description
1		Sensor
2		RJ11 6P4C 2m telephone cable
3		Screw B4,2 x 16
4		Sticker

Feature	Description
Packaging weight	70g

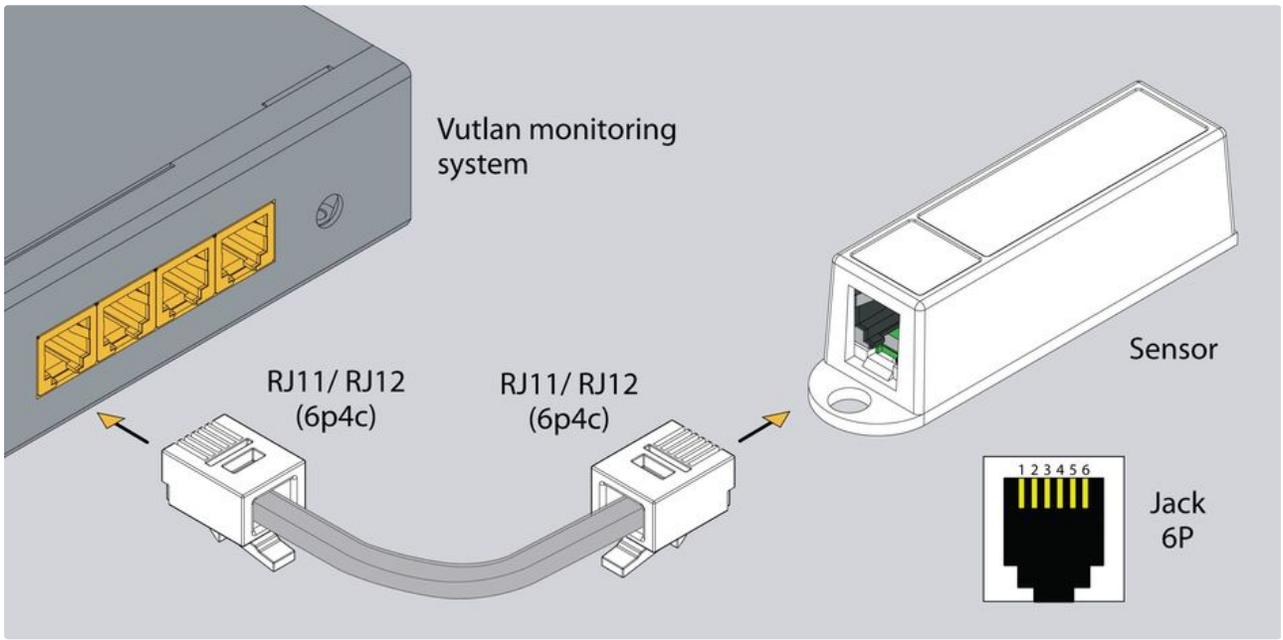
Packaging size	(Length, Width, Height) 45x45x120 mm
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Drawings



Connecting the sensor

The sensor uses a standard Vutlan analog [RJS5 RJ11 sensor cable](#) for connecting to the monitoring unit.



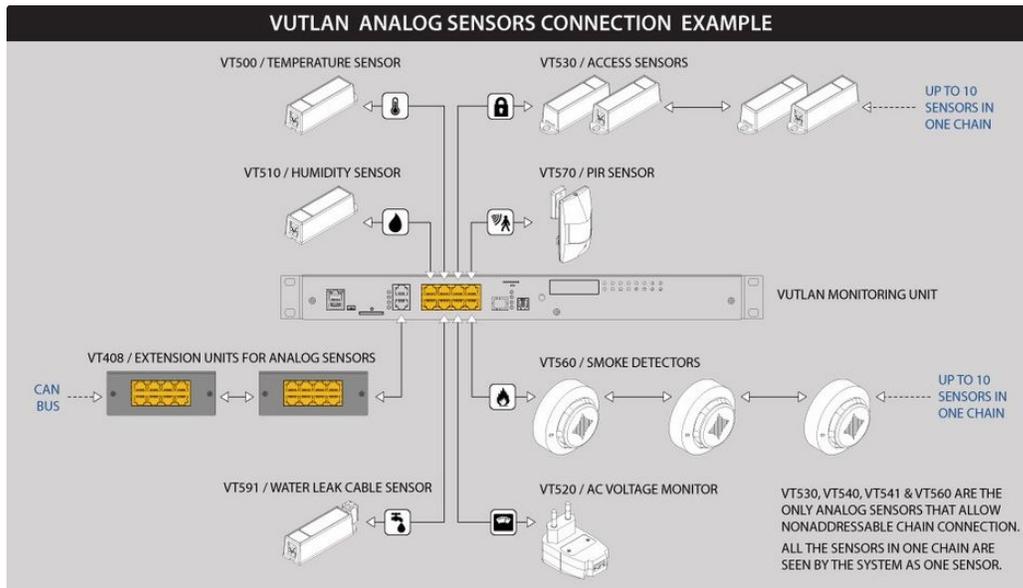
Analog sensor connection

This section includes child pages:

- [VT410 / DC voltage monitor](#)
- [VT420 / Converter 4-20mA](#)
- [VT500 / Temperature sensor \(v2\)](#)
- [VT510 / Humidity sensor](#)
- [VT520 / AC voltage monitor](#)
- [VT520DIN / AC Voltage monitor \(link\)](#)
- [VT530 / Access sensor](#)
- [VT540 / Vibration sensor](#)
- [VT550 / Wind velocity meter](#)
- [VT572 / Radar microwave motion sensor](#)
- [VT560 / Smoke detector](#)
- [VT591 / Leak sensor & WLC / Leak detection cable](#)
- [VT593 / Spot leak sensor](#)
- [Chain connection of analog sensors](#)
- [VT570 / PIR sensor](#)
- [VT501 / Outdoor temperature sensor](#)

Connecting analog sensors

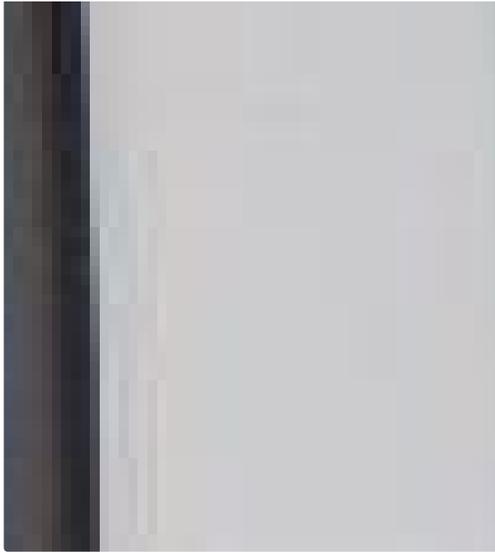
Connect the analog sensor by a supplied RJ-11 (6P4C) cable to any analog port "A1 .. A8" or "Sensor" port. The determination of the sensor type and connection will occur automatically.



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

6P4C RJ11 cable wiring/pinouts

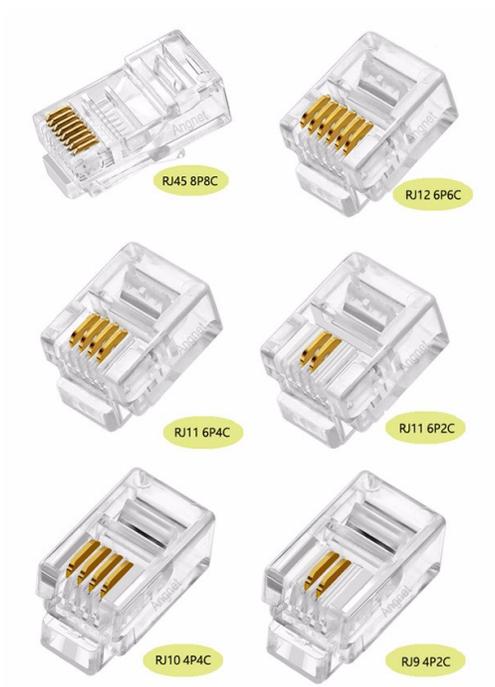


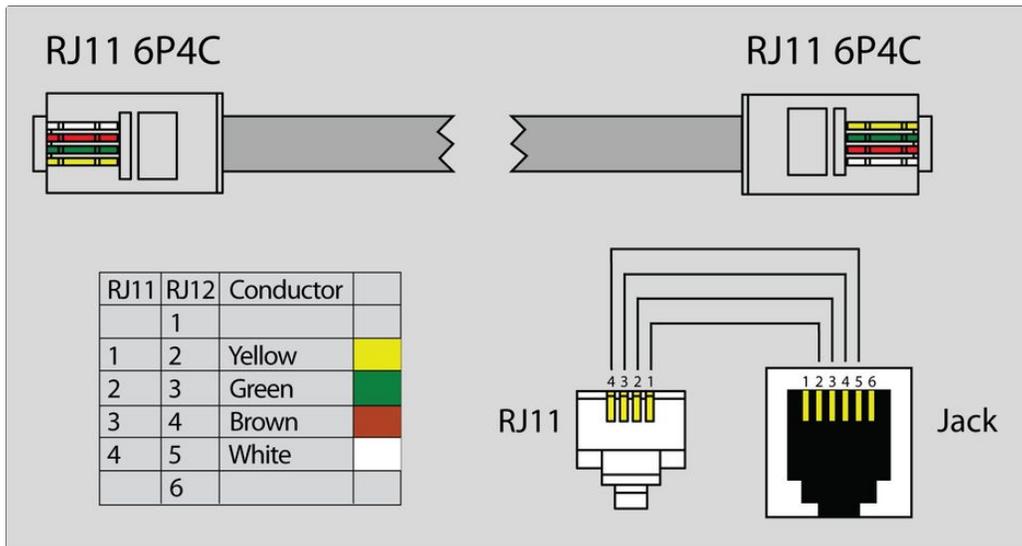


1- Yellow, 2- Green, 3- Red, 4 - Black

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 to a daisy chain. Please refer to the article "[Chain connection of analog sensors](#)".

Maximum cable length test

ok = tested

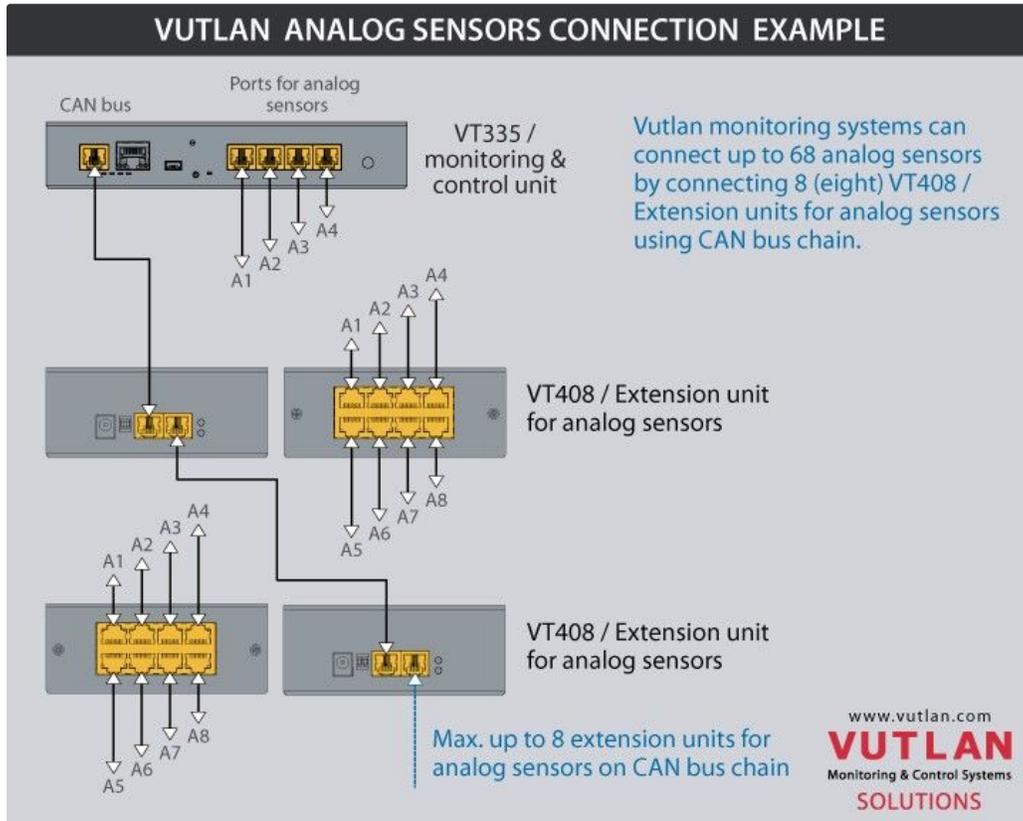
x = failed

Model		50m	100m	120m	150m	200m
VT407	AC current converter	ok recommended	ok			
VT410	DC voltage monitor	ok				
VT420	Converter 4-20mA	ok recommended	ok			
VT500	Temperature sensor	ok	ok			
VT501	Outdoor temperature sensor	ok	ok			
VT510	Humidity sensor	ok	x			
VT530	Access sensor		ok			
VT540	Vibration sensor		ok			
VT550	Wind velocity meter	ok	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.

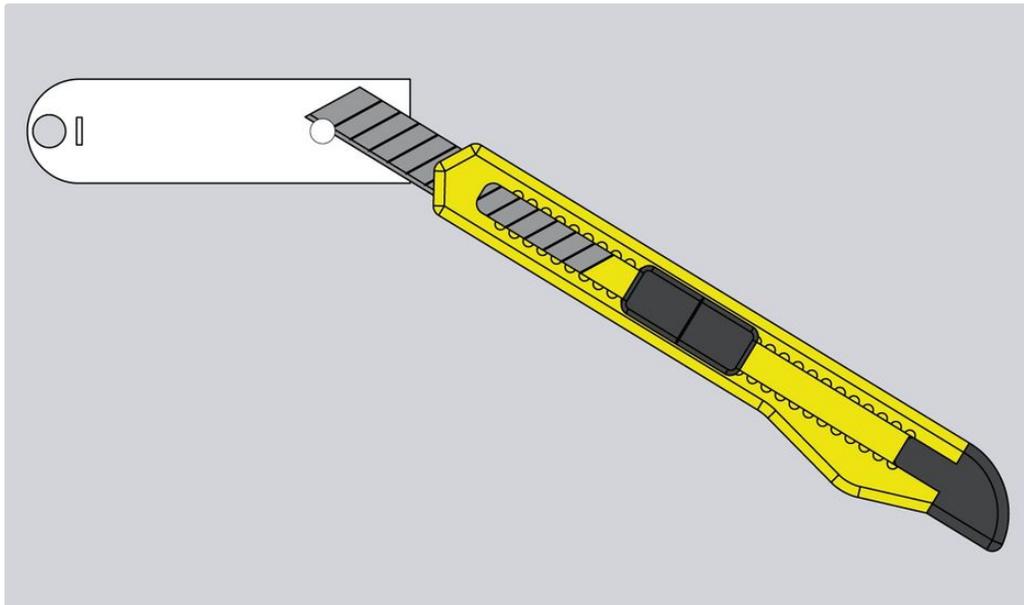


Installation using a sticker and a bracket

Option 1.

There's a round bump at the bottom of the plastic enclosure of the sensor. It is used for fastening when the sensor is mounted on walls using a screw. In the current example, it is not needed. If you are planning to mount a device differently, do not follow this step.

Cut the round bump using a knife so that the bottom of the plastic enclosure will be flat.

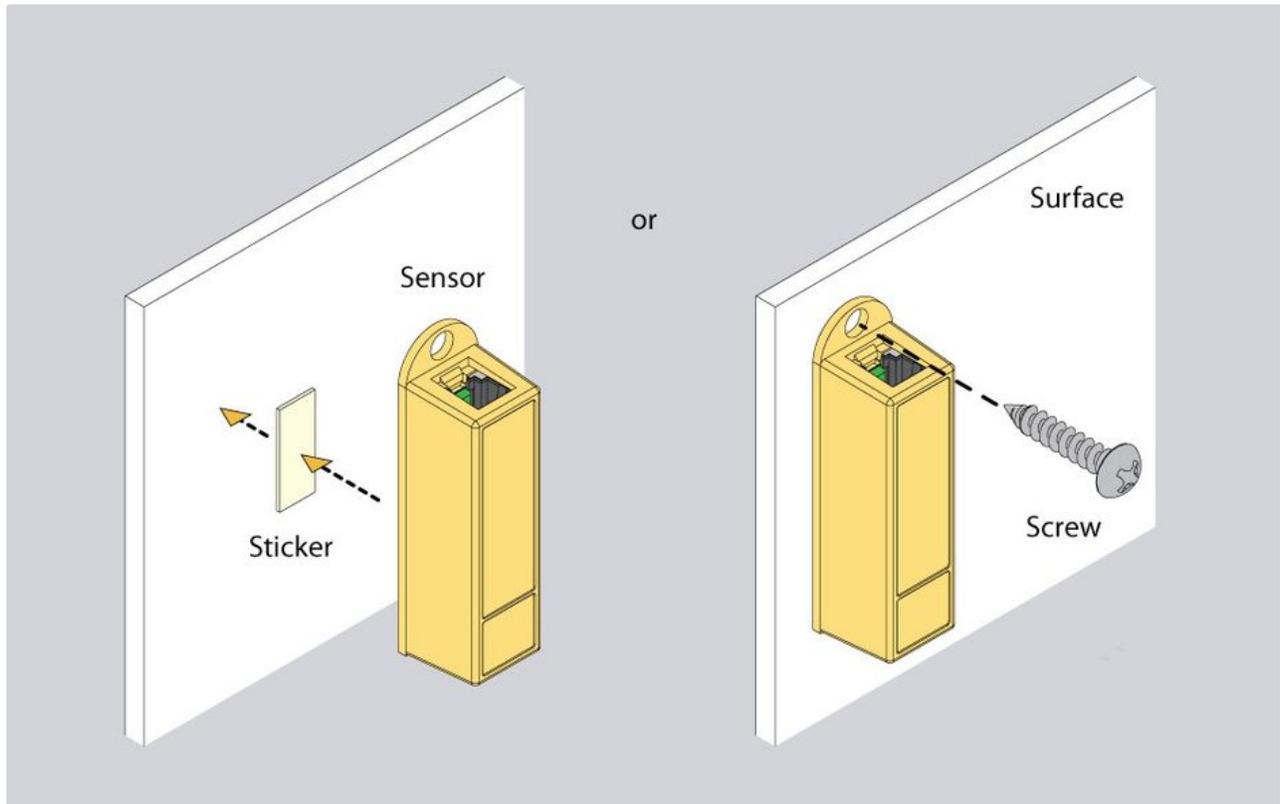


Option 2.

a) Stick the mounting sensor to the surface using the sticker.

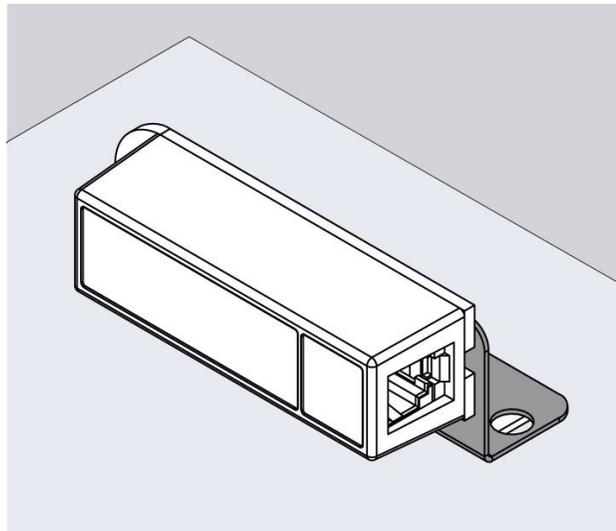
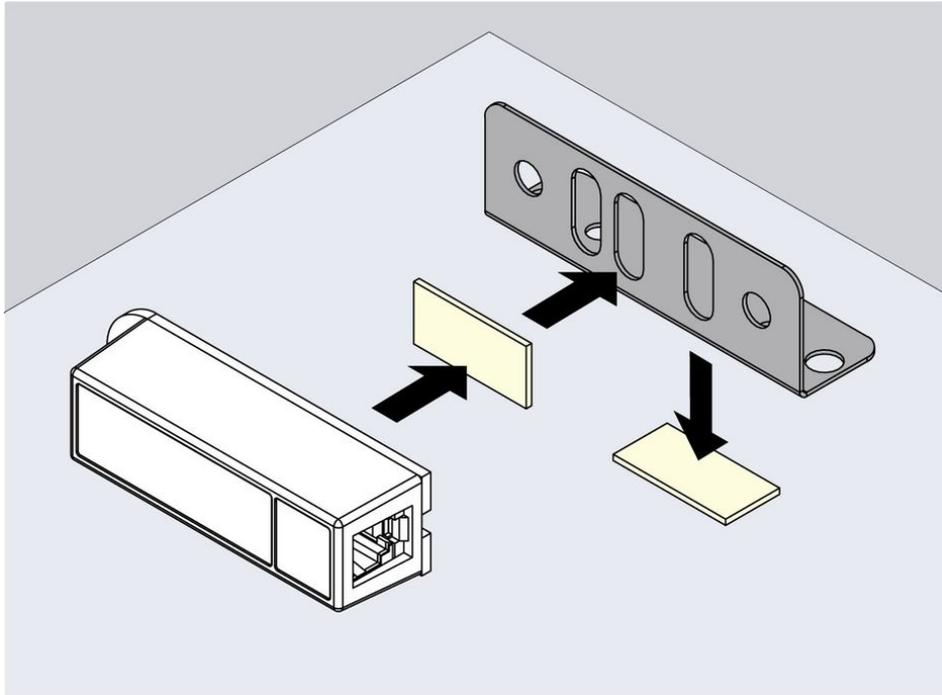
or

b) Stick a sensor to the surface using a screw.



Option 3.

Mount the sensor to the surface using a mounting bracket. The mounting bracket and the sensor can be either attached by the stickers or together with screws and nuts.



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.

Temperature



Settings | Charts | All data

Name: MPU Temperature

ID: 201001

Type: temperature

Class: analog

Current state: Normal

Current value: 41.0 °C

Low alarm level: 0

Low warning level: 5

High warning level: 45

High alarm level: 50

Hysteresis type: value

hysteresis value: 0.30

κ from (k*x + b): 1.000

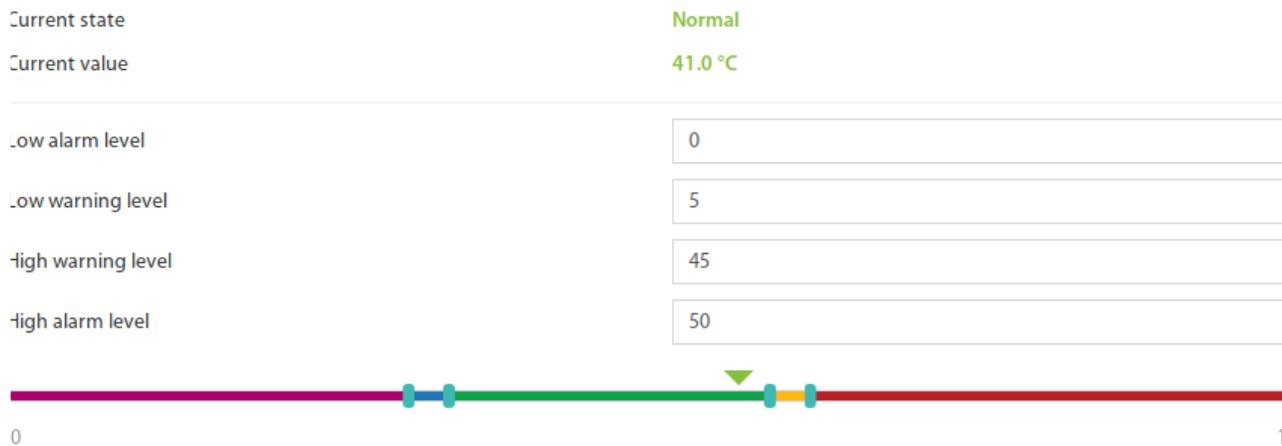
β from (k*x + b): 0.000

OK Apply Cancel

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	Examples: 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 the "Current state" is "Normal". This value is used by the system's "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 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.

Hysteresis type	time
Low alarm	1
Low warning	1
Normal	0
High warning	1
High alarm	1

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.

Hysteresis type	value
Value	0.30

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's 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 tuned 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 shows 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 $20*(x-0.021)$

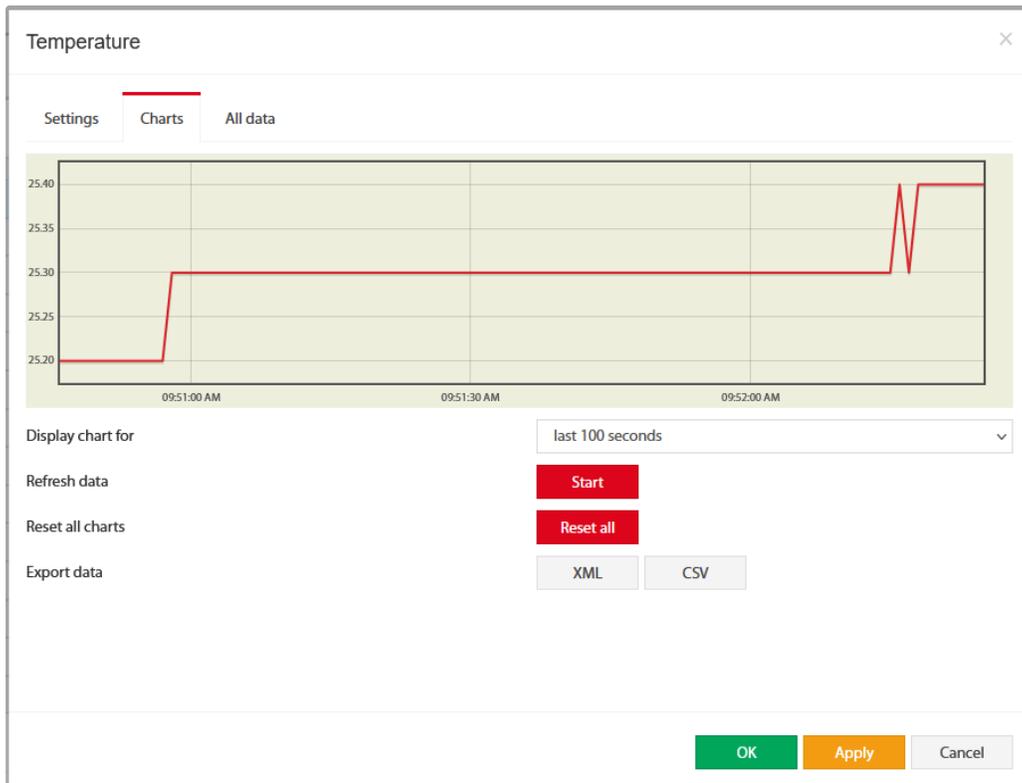
 Point is used as a decimal separator (3.14)

Charts tab

The charts tab shows the following:

Display chart for	<ul style="list-style-type: none">last 100 secondslast 100 minuteslast 100 hourslast 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 .

 Note: Make sure no endpoint security services used in the network are not blocking the download of XML and CSV files.



Reset smoke sensors

If analog sensors like [VT560 / Smoke detector/ sensor](#) detects smoke or fire, it will go into `Alarm` mode. `Alarm` mode can only be switched off manually using the `Reset smoke detectors` panel or using the onboard sensor `Analog sensor power reset` is found in the `System tree >> Onboard`.

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