VT450 / Pressure, humidity and temperature sensor

Documentation page: https://vutlan.atlassian.net/wiki/spaces/DEN/pages/2175664130/VT450+Pressure+humidity+and+temperature+sensor

Product page: https://vutlan.com/can-sensors/152-vt450-pressure-humidity-and-temperature-sensor.html

Function and purpose

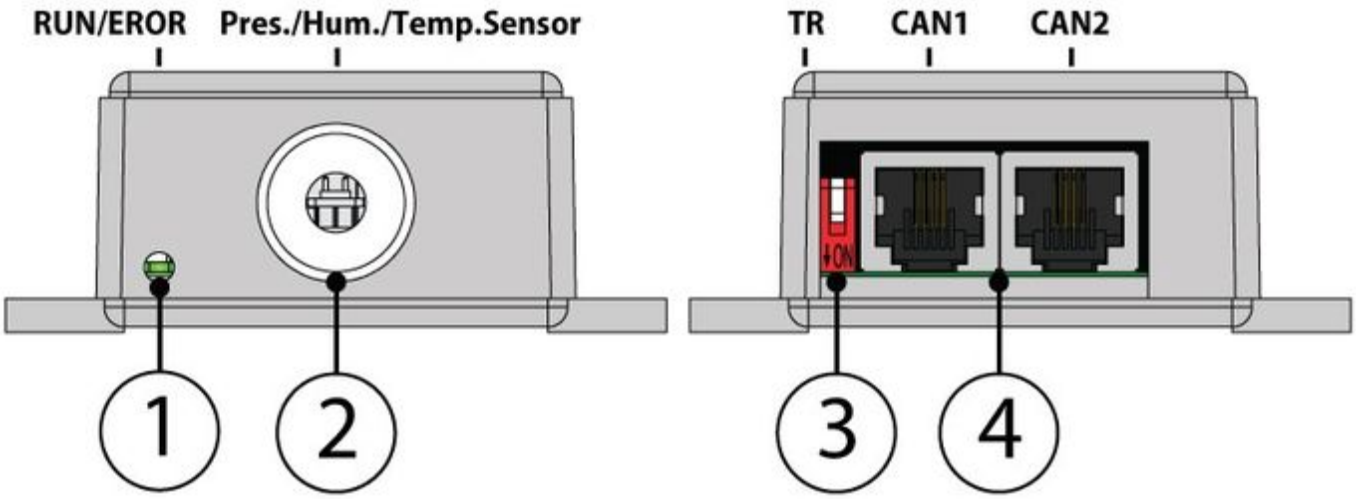
High-quality pressure, humidity, and temperature sensor with a reliable price.

Technical specifications

Communications	Description
Sensor type	CAN digital sensor
Inputs/Outputs	x2 RJ11 6P4C ports
Daisy chain	Yes, a daisy chain is possible for all CAN sensors.

Max. distance from the monitoring unit:	225m
LED indicators:	Red / Green (RUN/ERROR)
Accuracy	
Pressure RMS noise:	0.2Pa (equivalent to 1.7cm)
Pressure error:	±0.25% (equivalent to 1m at 400m height change)
Pressure from °C:	±1.5Pa/K (equivalent to ±12.6cm at 1 °C temperature change)
RH accuracy:	± 3% RH (max)
Hysteresis:	≤2% RH
Response time	1 s
Temperature:	1.5°C
Environmental	
Pressure range:	300 to 1100 hPa
Working temperature range:	−40 to +85 °C
Humidity operating range:	0 to 95% RH
Power Requirement	
Power input:	12V DC, 1A (power supplied on a CAN bus chain)
Current consumption:	1 Watt
Mechanics	
Dimensions:	68x47x26 mm
Packaging weight:	160 g
Mounting options:	Desktop, Wall mount
General	
Manufactured in:	Slovak Republic, European Union
Manufactured by:	Vutlan s.r.o.
HS code:	9025 11 800
Warranty:	90 days

Physical description



1. LEDs: "**RUN**" **(green)** - indicates that the appliance is correctly connected to the main module, "**ERROR or ERR**" **(red)** - indicates an error, the appliance lost connection to the main module.

2. "**Pressure, humidity & temperature sensor**" - The sensor is located outside of the enclosure for better measurement and precision.

3. "**TR**" - This switch should be turned to **"ON" (down)** position if the sensor is the last one in the CAN chain. Otherwise, the switch should be turned to "**OFF**" (**up**) position.

Example 1: We have 1 CAN sensor connected to the main module VT8101 on the CAN bus. In this case, this sensor is the only one and the last one in the CAN chain, and its 2nd "**TR**" switch should be in the "**ON**" **(down)** position.

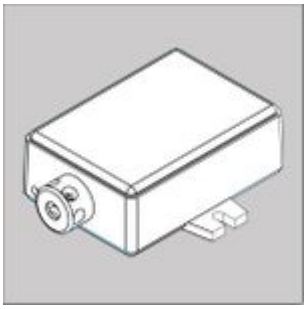
Example 2: We have 5 sensors or modules connected to the main module via the CAN bus. The sensor is ***not the last sensor*** in a chain, for example, it is located in the middle of the chain. In this case, the "**TR**" switch must be in the "**OFF**" **(up)** position.

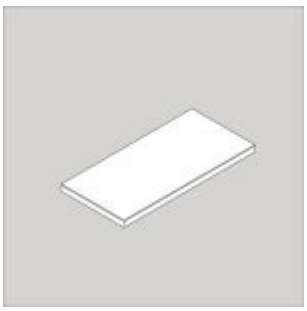
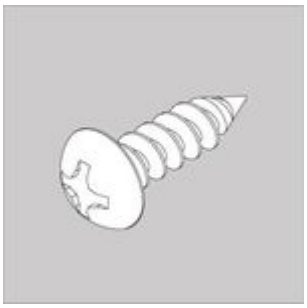
Example 2: We have 5 sensors or modules connected to the main module via the CAN bus. The sensor is ***the last sensor*** in a chain. The "**TR**" switch must be in the "**ON**" **(down)** position.

4. "**CAN**" - two equivalent digital connectors RJ11 6P4C for the connection to the master module, CAN sensors, or CAN extensions on a CAN bus, with auto-sensing.

Packaging includes

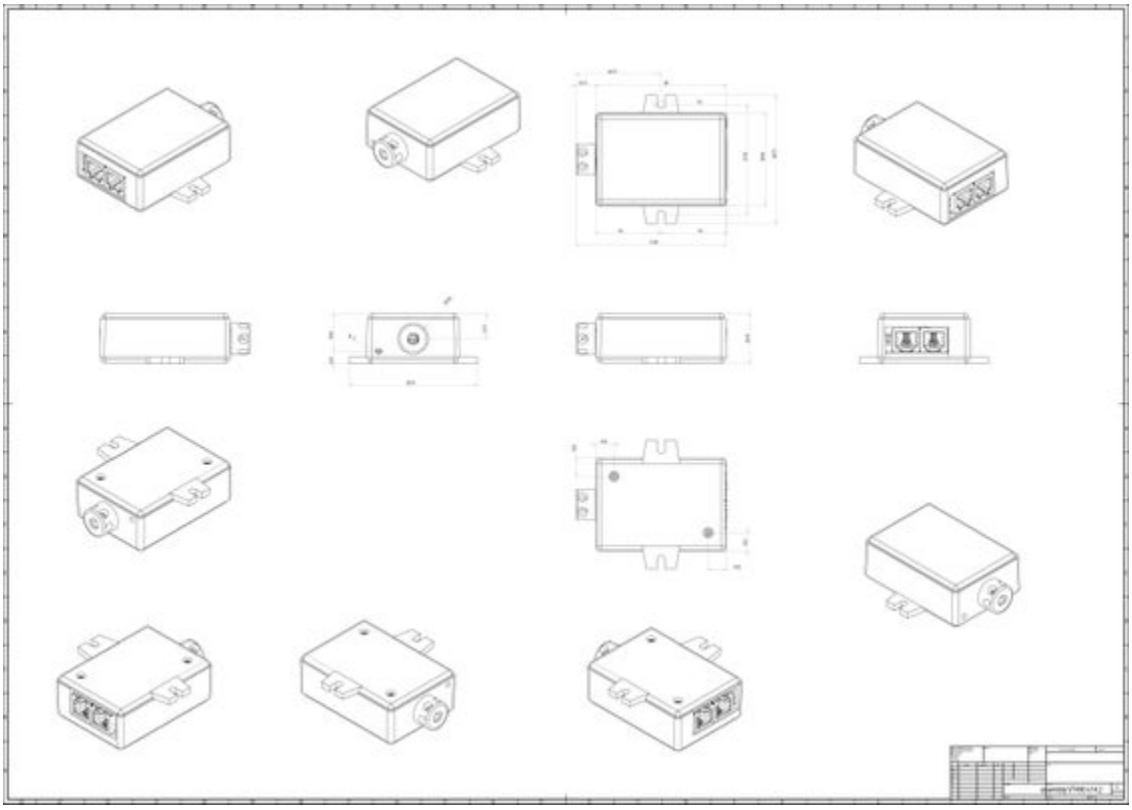
Make sure that the contents of the delivery meet the following configuration. Report a missing or damaged component to your supplier. If damage occurred during transportation, contact the appropriate delivery service.

	Package content	Description
1		x1 pc, Sensor

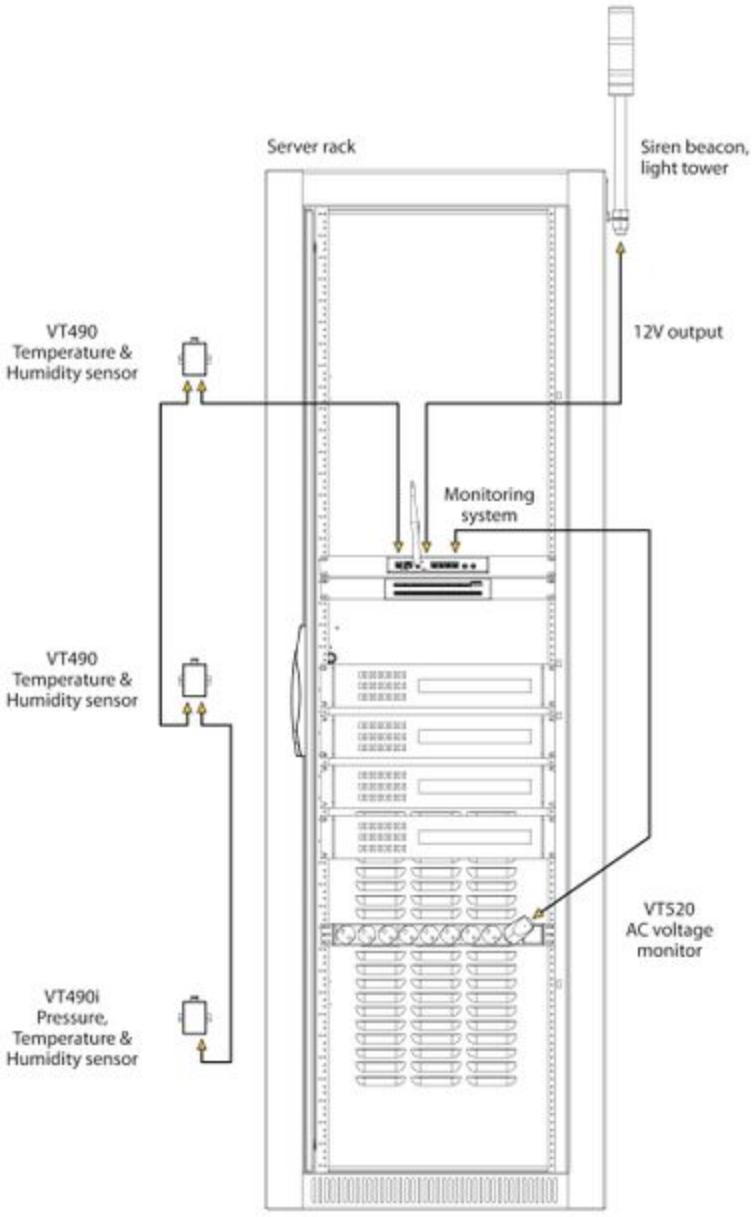
2		x1 pc, RJ11 6P4C 2m phone cable
3		x2 pcs, Self-adhesive sticker
4		x2 pcs, Screws M3.5 10mm
5		x2 pcs, Screws M3,5 13,5mm
6		x2 pcs, Nuts M3.5

7		x2 pcs, M3.5 washers

Drawings



Example connection



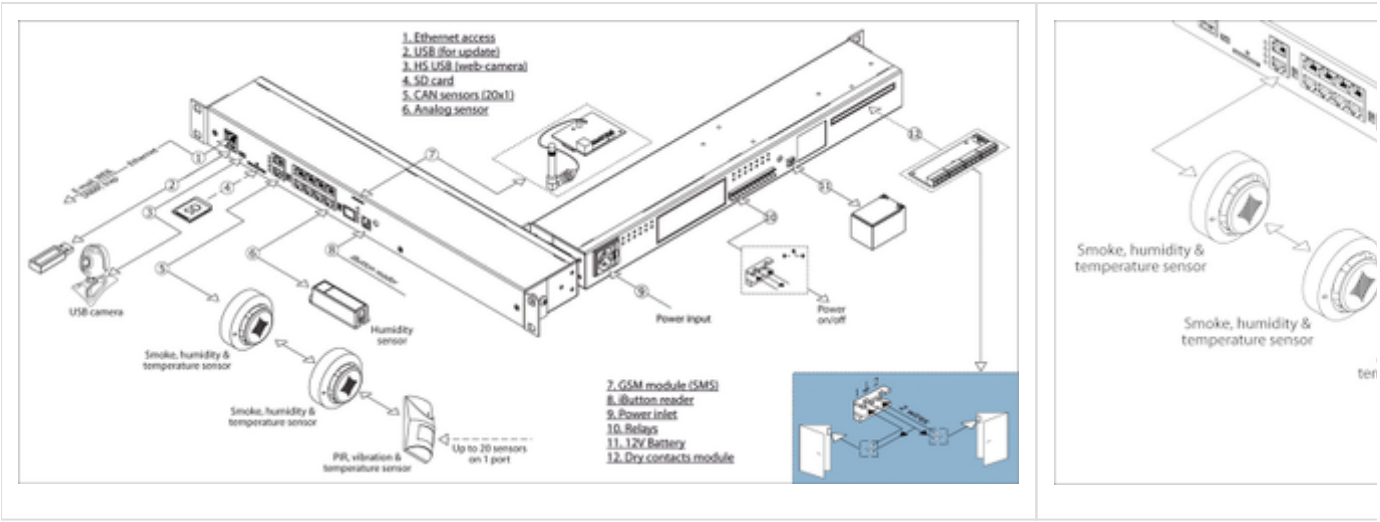
Connecting CAN devices

CAN sensors and CAN units connection

1. Connect CAN devices to any port CAN1 or CAN2 on the monitoring system using a cable supplied. CAN sensors can also be connected to the port of another CAN sensor or CAN unit which is connected to the CAN bus. Determination of the devices and their connection is done through a web interface.

   > You can connect up to a maximum of x12 CAN sensors and CAN devices together on one CAN bus (approximately)!
   >
   > If you want to connect more than x12 CAN units, you need to use CAN-12V-1A / CAN Power Supply

2. The TR should be "ON" for the last sensor on each bus "CAN 1" and "CAN 2". See section "TR" below.



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

CAN sensors, modules:

- VT408 / Extension unit
- VT430 / Rack control unit
- VT440 / Dry contacts unit
- VT460 / Smoke, humidity, and temperature...
- VT470 / PIR, vibration and temperature sensor
- VT490 / Humidity and temperature sensor
- and other...

CAN extension unit:

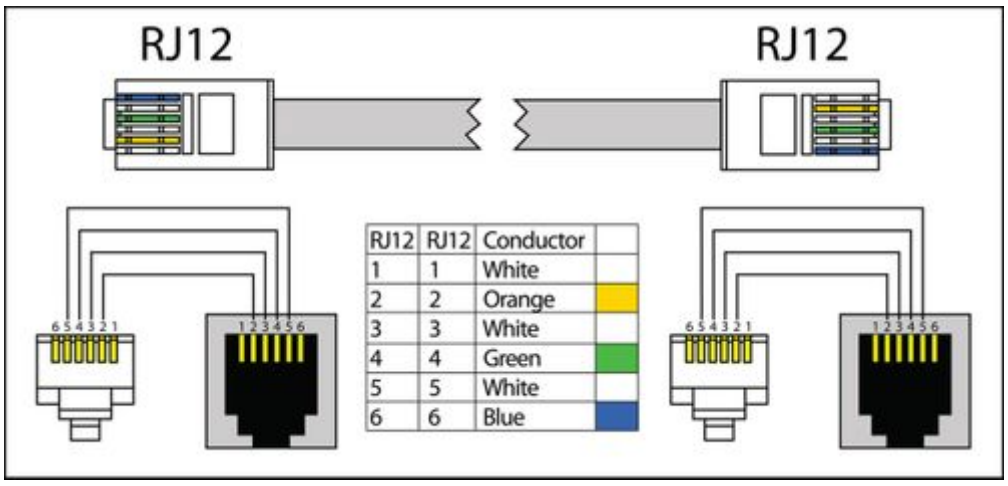
- VT408 / Extension unit

> Read more about Setting up CAN sensors.

Used cable and limit line length

The maximum length of the CAN line in Vutlan monitoring systems is **225 m** due to limitations on the ohmic resistance of cables with RJ12 connectors.

It is advisable to use two or three pairs of cables such as UTP Cat3.5.6 with 24AWG with a copper core. It is possible to use a 4-wire or 6-wire TRONIC or UTP CCA cable, but the maximum CAN line length will be reduced.



RJ12	RJ12	Conductor	
1	1	White	
2	2	Orange	
3	3	White	
4	4	Green	
5	5	White	
6	6	Blue	

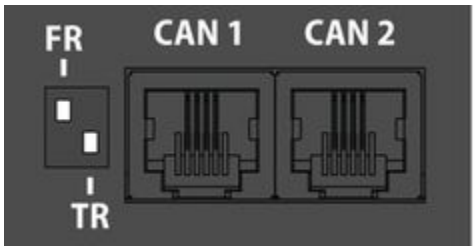
TR termination switch

The last sensor TR switch on a CAN chain must always be terminated, (switched ON). Sensors on a CAN bus that is in the middle should have TR switched OFF.

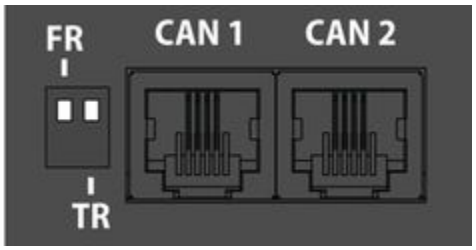
FR should always be OFF.

TR switch is always the DP switch nearest to the CAN bus.

Only older Vutlan models have an FR switch.



pic.1.1: FR is OFF, TR is ON.



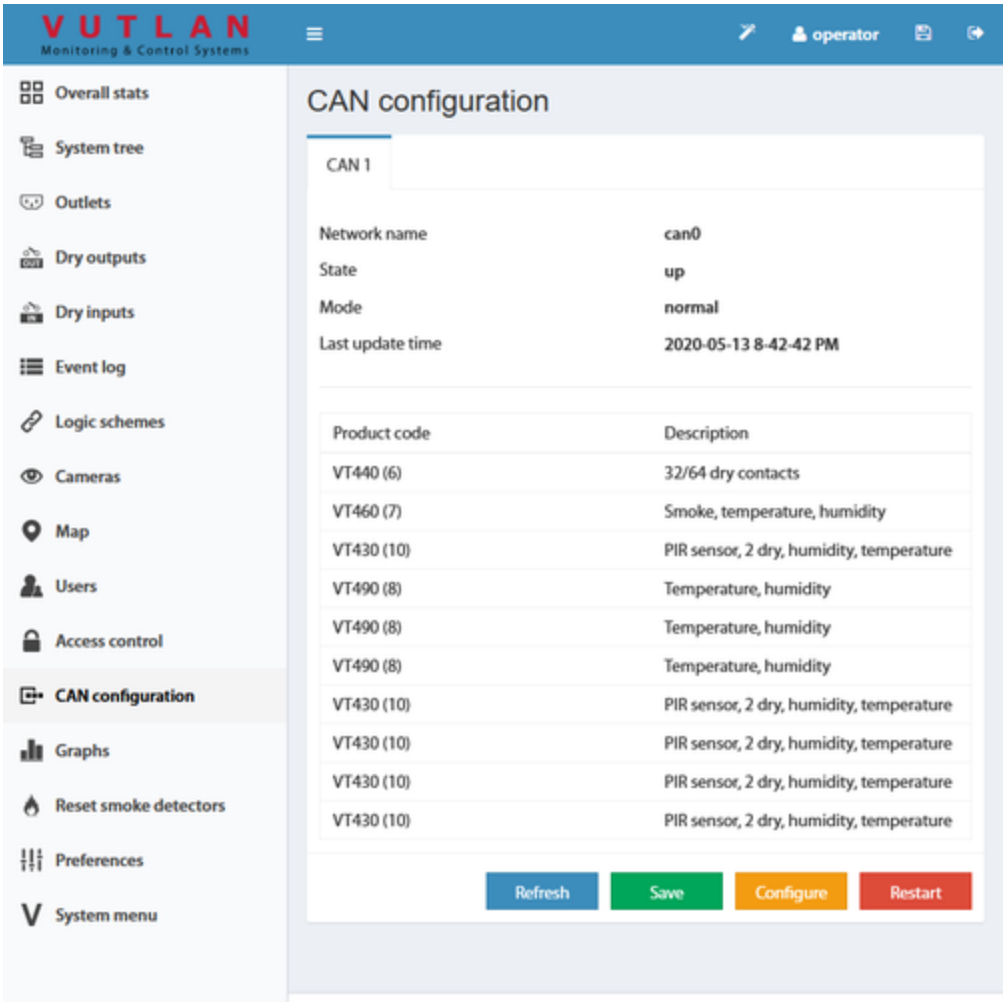
pic.1.2: FR is OFF, TR is OFF.

Adding CAN modules and sensors

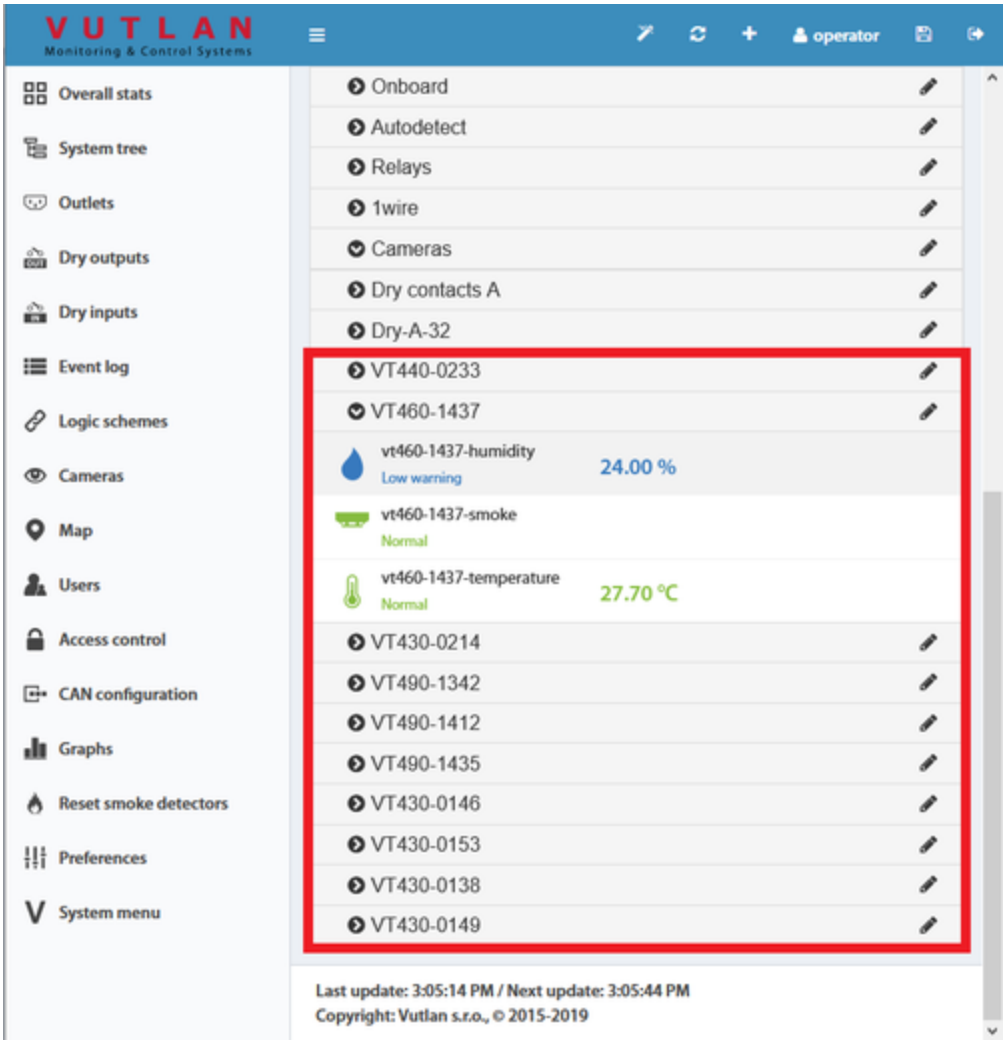
To connect the CAN module or CAN sensor to the CAN bus of the system, go to the interface >> CAN configuration panel >> Select the CAN1 or CAN2 tab (select the connected physical CAN1 or CAN2 port on the master module).

Click the "Configure" button and wait. The system will start CAN bus polling, soon it will display the data lines and write “Done!”. The modules and sensors connected to the CAN input will appear in a tab in the list. Click the Apply button and then Restart.

The green LED "**CAN status**" of the device will light up.



Go to panel "System Tree" to see the new devices or new sensors. The article numbers for CAN devices are VT4xx. If they do not appear, wait, or refresh.



If after clicking the "Configure" button the poll is reset to the phrase "Update", then the line is not connected or the terminators on the bus are not agreed. It is necessary to check and change the condition of the **TR terminators** (See "TR termination switch" section above) on the modules or check and possibly change the **connection cables**.

Warning: If the bus is not matched, that is, there are bad contacts or bad cables, or the TR terminator is in the"**ON**" position on the intermediate devices (position 2 on the VT408), or the line is too short for matching on both CAN end devices, CAN on this line can work malfunctioning or the line as a whole may not function. (CAN line failure may occur if the parallel CR switch is in state 1, must be in OFF).

LEDs

CAN sensors have LEDs that indicate the following states:

- Red continuous light, green flickers - no communication with the master module
- Red continuous light, green is off - there is a connection with the master unit, but is not included in the monitoring system (not configured)
- Red is off, Green continuously light - work as part of a monitoring system
- All LEDs are off: no power or sensor is defective.

Maximum cable length test

Model	Description	50m	100m	150m	200m

VT408	Sensor extension unit		ok		
VT408DIN			ok		
VT430	Rack control unit		ok		
VT440	Dry contacts unit		ok		
VT460	Smoke, humidity, temperature		ok		
VT490 / VT490i	Dual humidity and temperature sensor / Pressure, humidity & temperature sensor		ok		

see also:

- VT408 / Extension unit
- VT408DIN / Extension unit
- VT430 / Rack control unit
- VT440 / Dry contacts unit
- VT460 / Smoke, humidity, temperature sensor
- VT490 / Humidity and temperature sensor
- VT450 / Pressure, humidity and temperature sensor
- CAN-12V-1A / CAN Power Supply

CAN configuration

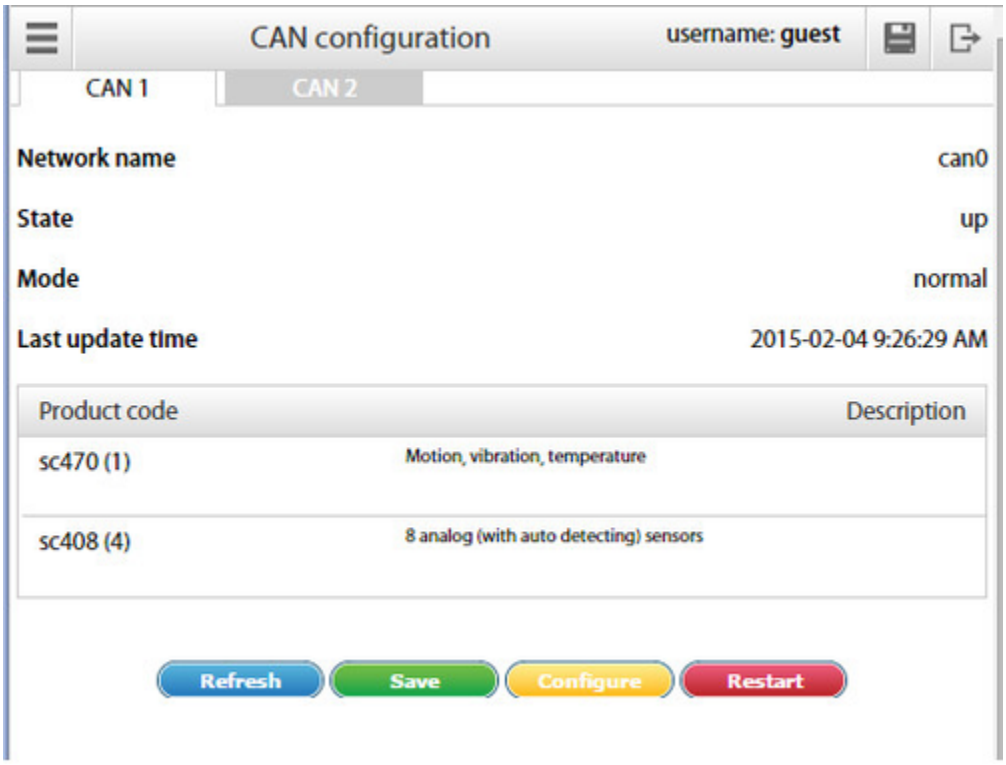
Enable CAN

Inside the web interface of the system go to >> Preferences menu >> Network tab >> Enable CAN >> Save >> Save settings to flash (An icon in the top right corner of the web interface)

Configuration

CAN bus is used for connection of CAN sensors and CAN modules. The device has two independent CAN nodes: CAN1 and AN2.

Before using CAN sensor module, CAN bus must be configured to operate with this CAN sensor module. To configure CAN bus go to "Main menu" >> "CAN" menu, which in turn has two identical tabs - one for each node.

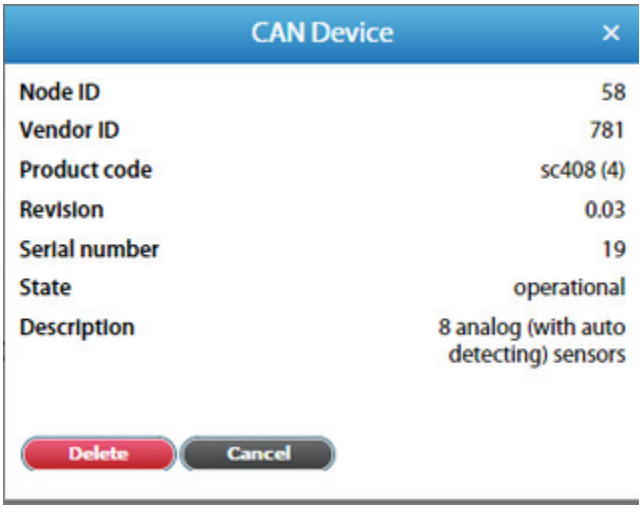


Each station tab contains current information on the status of the node and a list of CAN sensor modules connected to this node.

The following operations can be carried out on the CAN bus node:

- Refresh - updates the current information on the status of the node;
- Configure - launches configuration process of the nodes for CAN sensor modules connected to it, the old configuration is lost
- Save - saves the list of CAN sensor modules in flash memory;
- Restart - restarts the CAN bus node.

To delete a CAN sensor module, click on the desired module. A modal window will pop up. Press "Delete" and confirm.



To set up a CAN bus node for operation with the CAN sensor module, connect CAN module to CAN network and run corresponding configuration procedure in the web interface using the command "Configure". The configuration process is displayed at the bottom of the tab and lasts approx. 2 minutes. Detected modules will be added to the list of modules during the configuration process. After completing configuration the node return s to its normal operation. Sensors of detected CAN modules are added to the tree of elements.

The names of the sensors are automatically set in the form {module name}{serial number}-{type of sensor} and can be edited.

If you need to remove CAN sensor module from the configuration list use command Delete, then use command "Save" to apply the changes you made and restart the node using the command Restart.

- Configuring VT408

API: managing system elements by 3rd party Software

Vutlan has an open API. Read more at:

https://vutlan.atlassian.net/wiki/spaces/API/pages/335740995/Managing+system+elements