Inveo Sp. z o.o.

Nano TC Sensor

Instruction Manual

Overview

> **Warning**
>
> **This manual applies only to the firmware version v1.16 onwards. Inveo does not guarantee that the information contained in this document applies to previous firmware revisions.**



Purpose of the device

Nano TC Sensor PoE forwards the thermocouple's temperature measurements via LAN, enabling easy access to the measurements thanks to the built-in www page and various communication protocols, such as HTTP GET, Modbus TCP, SNMP and MQTT, and allowing for RS485 Modbus RTU communication. The device can send the condition of an exceeded threshold to other Inveo modules, allowing for remote control of other devices depending on the measured parameters, such as activation of relays.

Changelog

1.0 27th of June 2025

- Firmware revision v1.16

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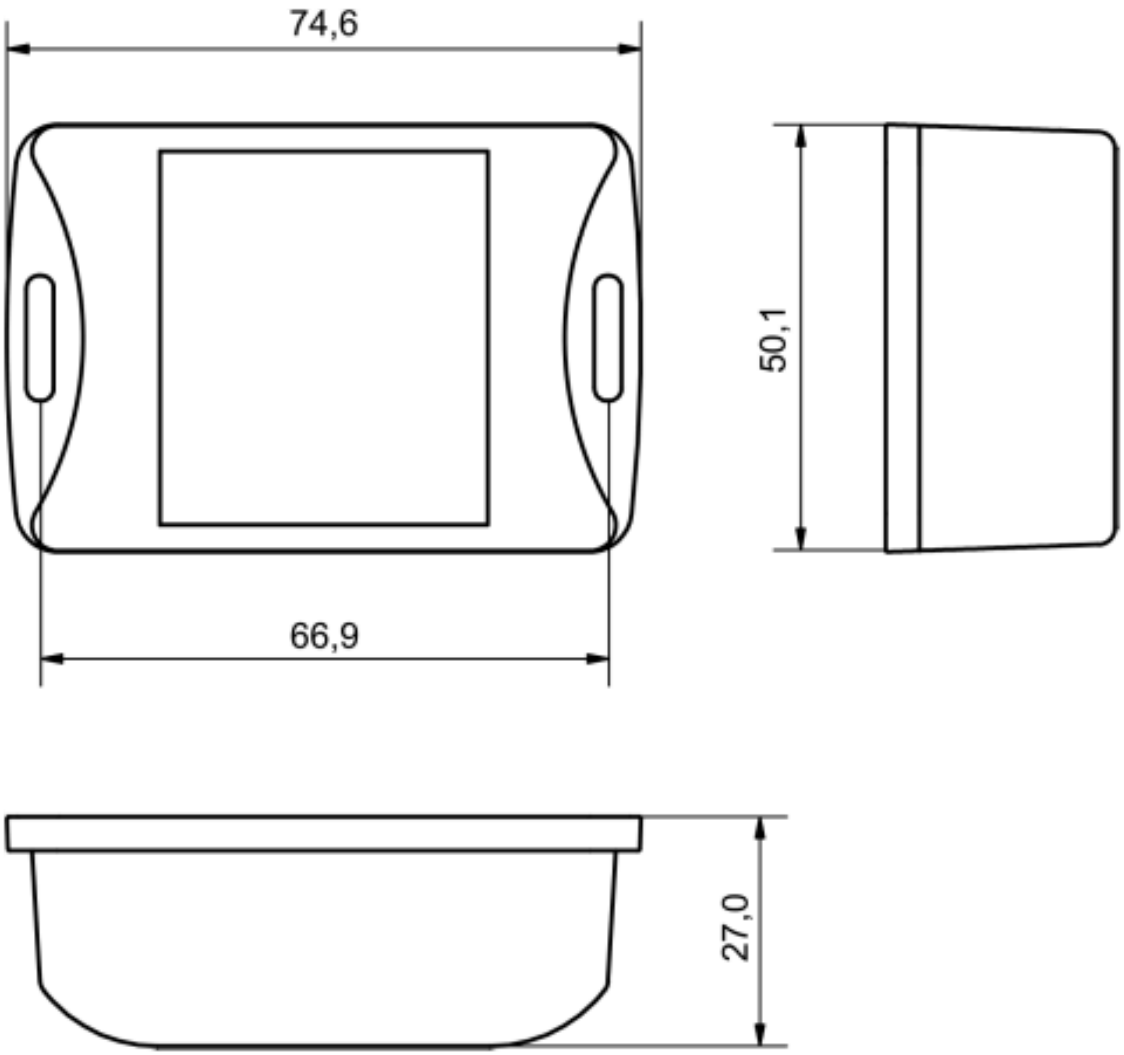
Device construction

Technical characteristics:

Parameter	Details
Power supply	Two power supply methods are available: **10-24V DC:** with a 3,5mm pluggable terminal block **PoE:** 33-57V PoE IEEE 802.3af
Power consumption	1,5W
Input	1 input for PT100 or PT1000 sensor connection to get a reference temperature (the reference temperature can be software-defined as a constant value) 1 input for connecting a type E, J, K, N, T, B, R, S thermocouple **Measurement frequency:** 4Hz **Converter resolution:** 17 bit
Communication	**Ethernet** 10Mbps Half Duplex, RJ45 port **RS-485 port**, Modbus RTU **Transmission speed:** 1200, 2400, 4800, 9600, 19200, 38400, 57600bps **Parity:** None, Odd, Even, Mark, Space, 2 Stops
Enclosure ingress protection	IP30
Weight	ca. 67g (2,4oz)

Dimensions



Information

All dimensions are in millimeters.

General characteristics



The device supports the following RTD (reference temperature) sensors:

- PT100,
- PT1000.

The module supports E, J, K, N, T, B, R, S thermocouples.

The user can configure an offset, sensor types, measurement units and alarms.

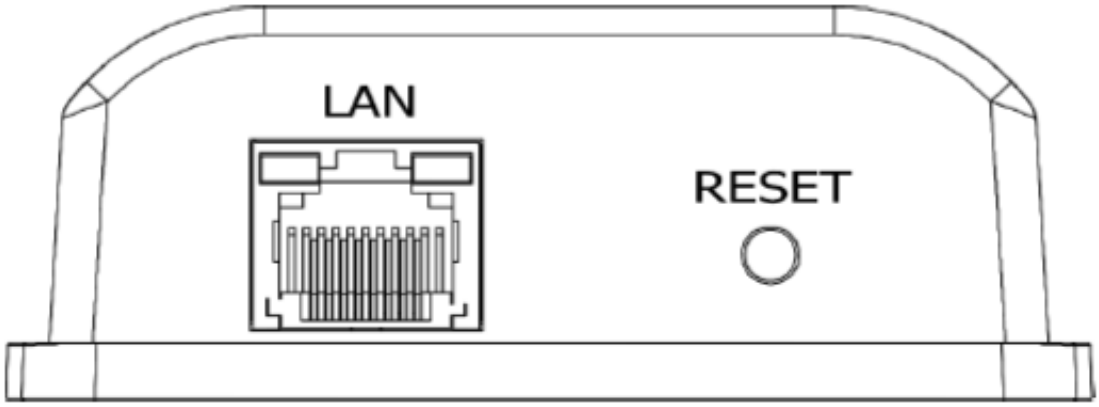
Module communications are carried over LAN or RS485 (Modbus RTU).

The following communication options are available:

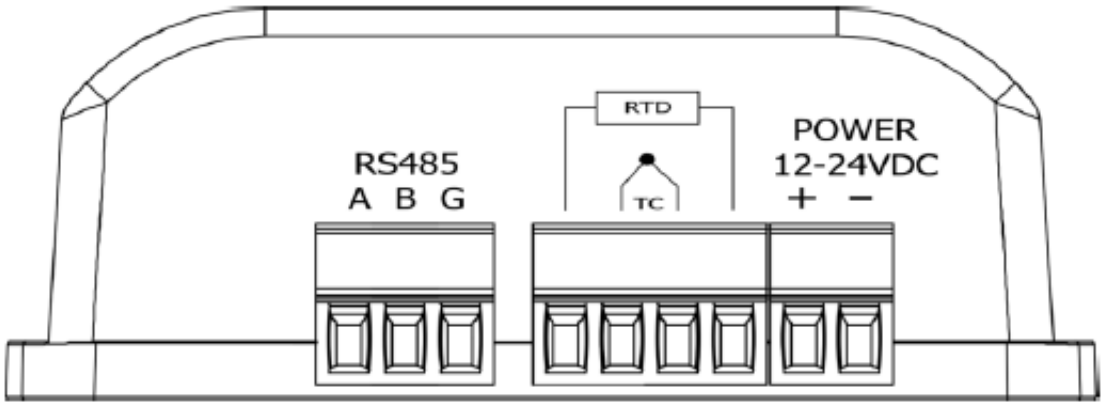
- Built-in WWW server, available from a standard web browser (Mozilla Firefox, Opera, Google Chrome preferred),
- Windows/Linux command line programs,
- HTTP GET,
- Modbus TCP,
- Modbus RTU,
- SNMP,
- Own application via TCP (shared protocol),
- Inveo MQTT protocol.

The device is equipped with a 7-segment LED display, on which the current value measured by the RTD or thermocouple is shown (configured by the user).

Module connectors description



- **LAN** – LAN and PoE IEEE 802.3af,
- **RESET** – Button used to enable DHCP, check the current IP address and restore the module to factory settings.

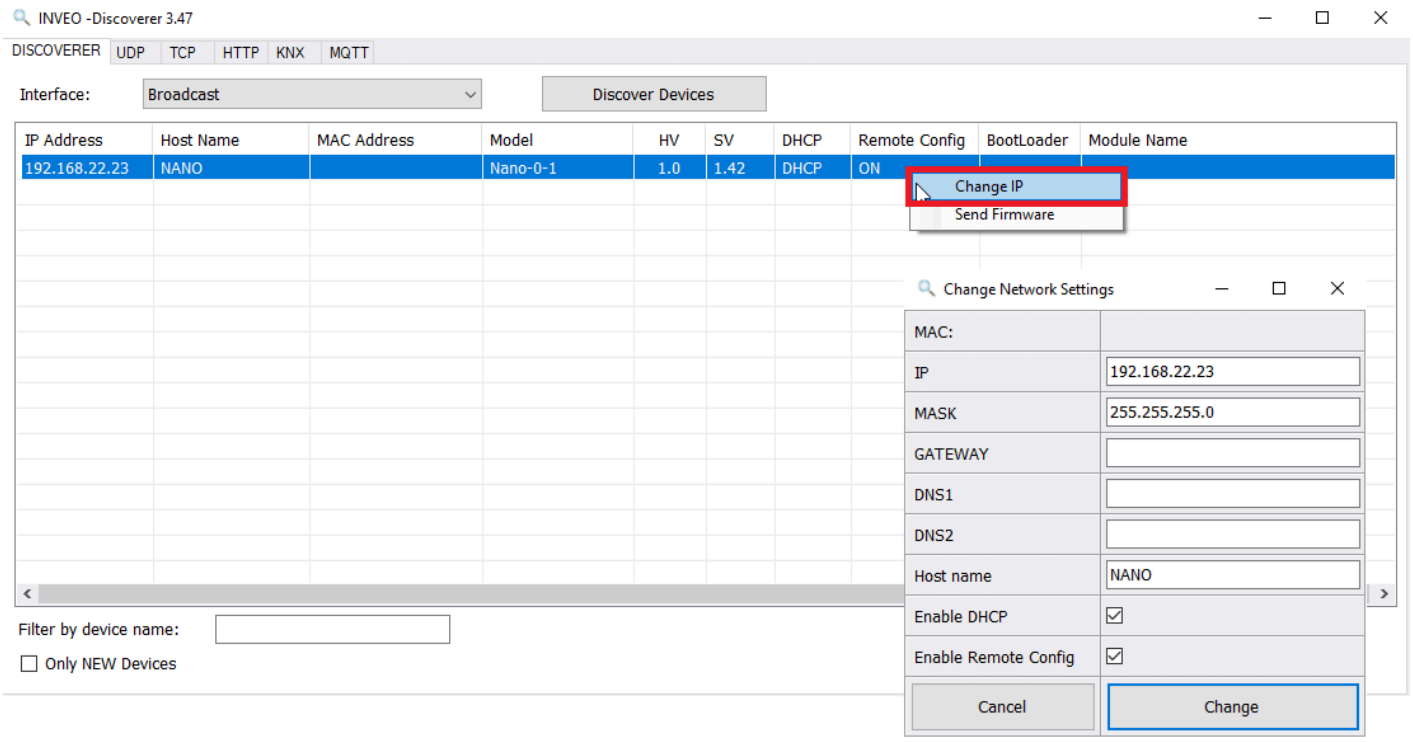


- **SENSOR** – Sensor connector,
- **RS485** – Modbus RTU communication connector,
- **POWER** – Additional power connector when PoE is unavailable. Power supply voltage: 12-24V DC.

Network configuration

> **Warning**
>
> **After the initial power-up, it's needed to configure the device. It can be done in two ways, the simplest method is to use the Inveo Discoverer programme.**

Changing the device's IP address - Discoverer programme



After running the **Discoverer** programme and searching for the appropriate device:

1. Right-click the device,
2. Click the **Change** button.

After the dialogue window is opened you can:

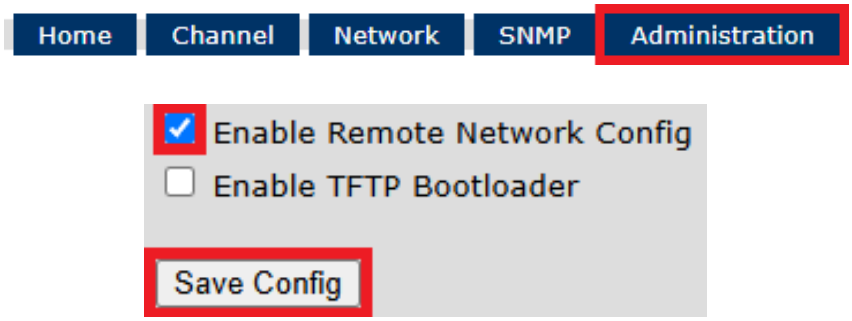
- Set the IP address, mask, gateway, DNS1/DNS2.
- Change the Host name.

> **Note**
>
> **The device will be configured after the Change button is pressed.**

If **Remote Config** is disabled (enabled by default), the device needs to be configured by changing the computer's subnet:

To enable remote configuration:

1. Go to the **Administration** tab,
2. Select **Enable Remote Config**.



> **Tip**
>
> **After making changes, apply them using the Save button**

Changing the computer's subnet address for configuration

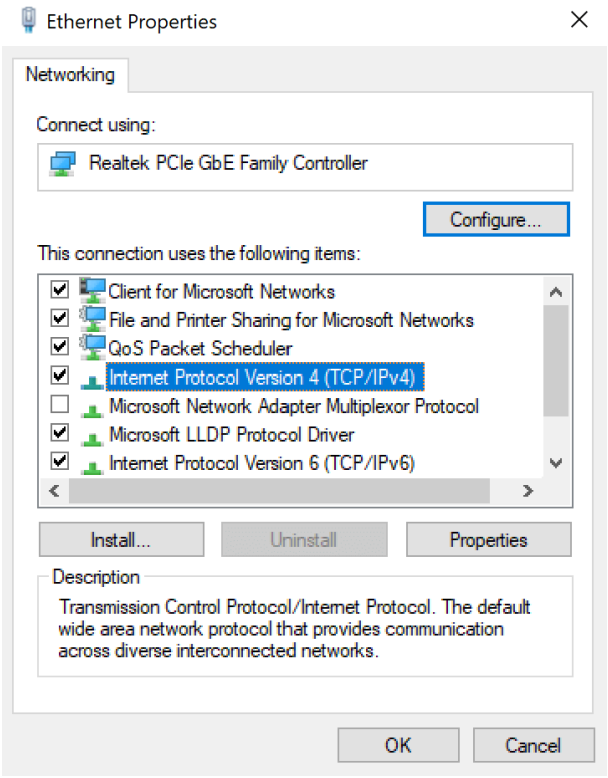
During configuration without **Discoverer** programme, it's needed to change the subnet address of the computer on the same network.

To access the computer's network configuration, do one of the following:

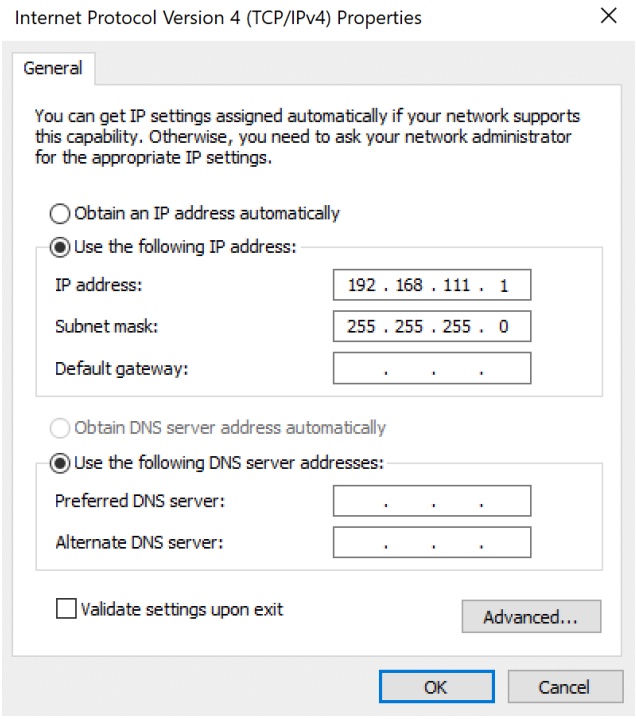
- Press **Win + R**, type in `ncpa.cpl`, and then press **Enter**.
- Alternatively, go to: **Start** → **Control Panel** → **Network and Internet** → **Network and sharing center** → **Change adapter settings**.

Then:

1. Select the network connection.
2. Right-click it and select **Properties**.
3. After selecting this option, network connection configuration screen will appear.



Select **Internet protocol version 4 (TCP/IPv4)** and type in the following parameters:

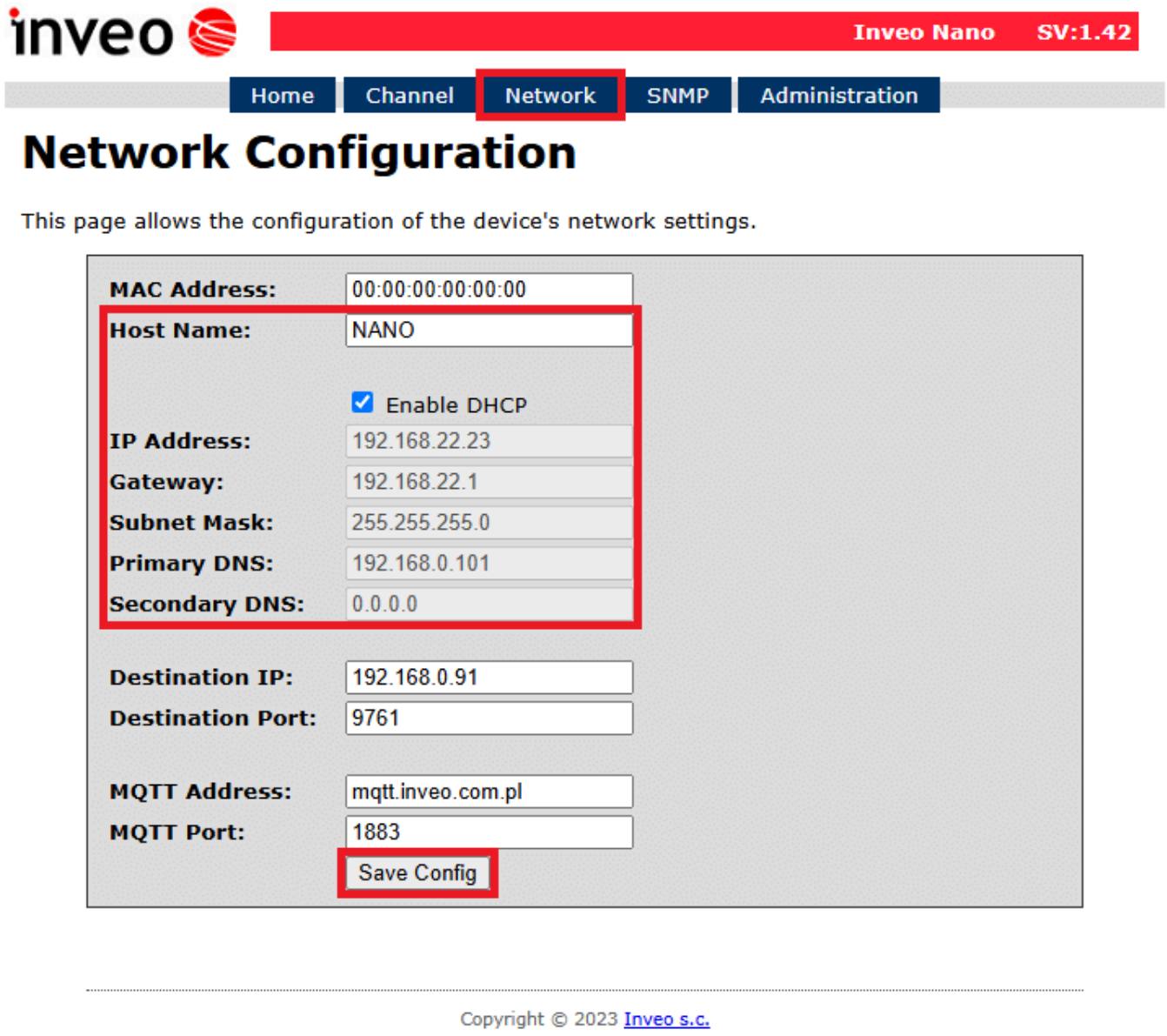


Note

After applying the configuration with OK, start a web browser and type in the following address: 192.168.111.15. (Default user and password: admin/admin00)

Network settings configuration

The **Network** tab allows the user to change LAN settings.



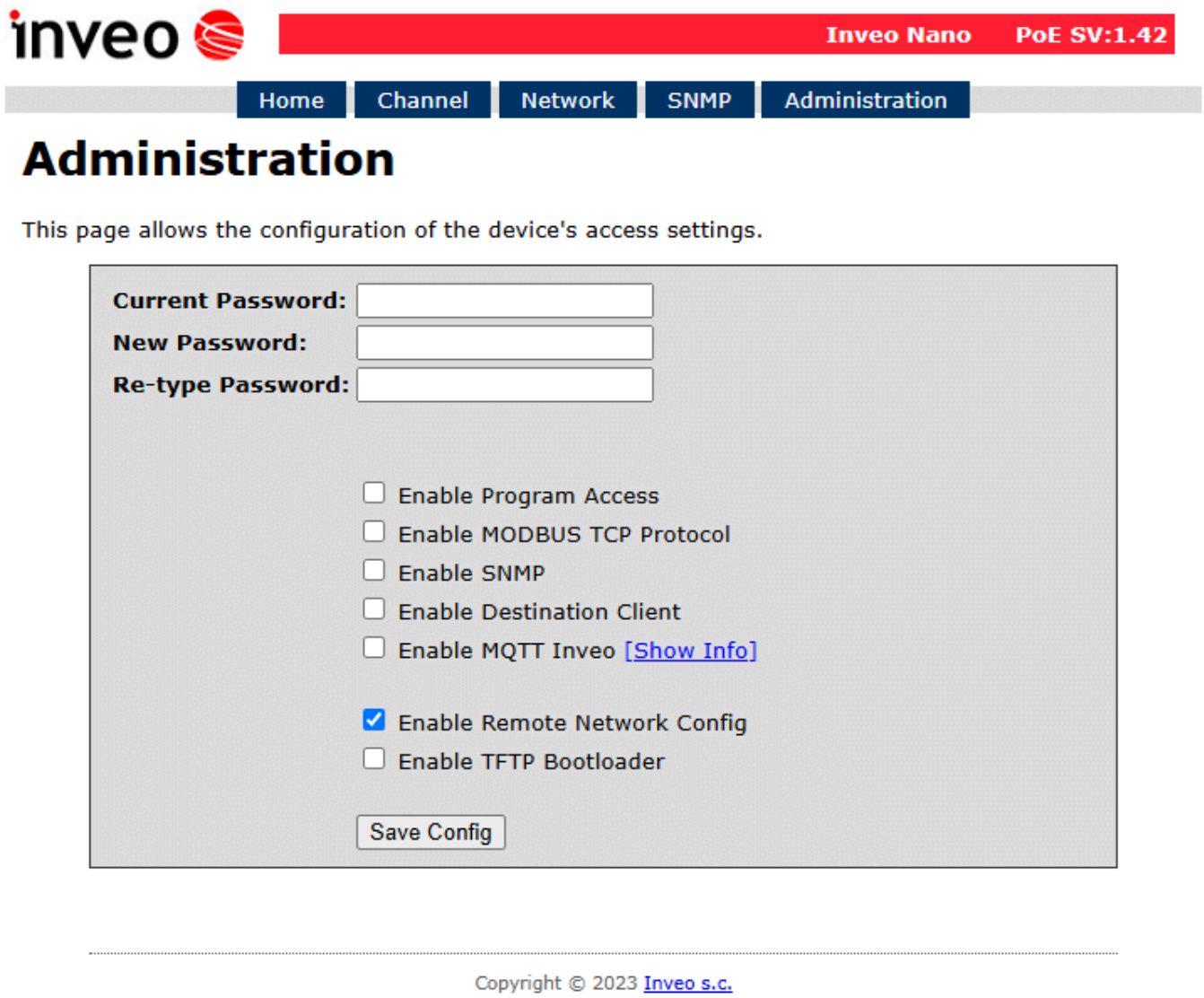
- **Host Name** – NetBios name,
- **DHCP** – Enable the DHCP client; selecting this option forces the use of DHCP assigned IP address,
- **IP Address** – Module IP address,
- **Gateway** – Network gateway,
- **Subnet Mask** – IP subnet mask,
- **DNS1, DNS2** – DNS addresses,
- **Destination IP** – IP address of the module, the input state should be routed to when using M2M communication,
- **Destination Port** – Port, on which the remote device is listening.

Tip

After making changes, apply them using the Save button

Security and services configuration

In **Administration**, active device services and access password can be selected and/or changed.



Changing the password:

To change the password, enter the **Current Password**. Next, type in the new password into the **New Password** and **Re-type Password** fields. Apply the changes with **Save Config**. If you want to remove the password altogether, leave **New Password** empty.

> **Information**
>
> **The maximum password length is 15 characters.**

Services settings:

The device allows selection of services that should be available. To activate the service, select the field next to its name.

- **Enable Program Access** – Enable access by external programs (Windows, Linux) and TCP/IP on port 9761,
- **Enable Modbus TCP Protocol**
- **Enable SNMP**
- **Enable Destination Client** – Forwarding of the input/output states to other modules,
- **Enable MQTT Inveo** – Activate MQTT protocol,
- **Enable Remote Network Config** – (Discoverer programme),
- **Enable TFTP Bootloader**.

> ⚠ **Warning**
>
> **TFTP Bootloader and Remote Network Config should be disabled during normal operation. The settings should only be enabled before firmware update.**

Communication with a module from an external network

If the module is located in a different LAN, port forwarding is required. Depending on the communication method utilized, contact with the network administrator and forwarding of certain ports is needed.

WWW webpage and HTTP protocol:

- TCP port 80

Computer programme or own application:

- TCP port 9761

Modbus TCP:

- TCP port 502

SNMP protocol:

- UDP port 161

Checking the IP address

To check the current device IP address (Nano PoE only):

1. Press and hold the **RESET** button. The screen will display the four groups of an IP address in sequence: eg. 192 168 111 15..
2. After the full address is displayed, release the **RESET** button.

DHCP

To enable or disable DHCP support:

1. Press and hold the **RESET** button for a time between 5 and 10 seconds.

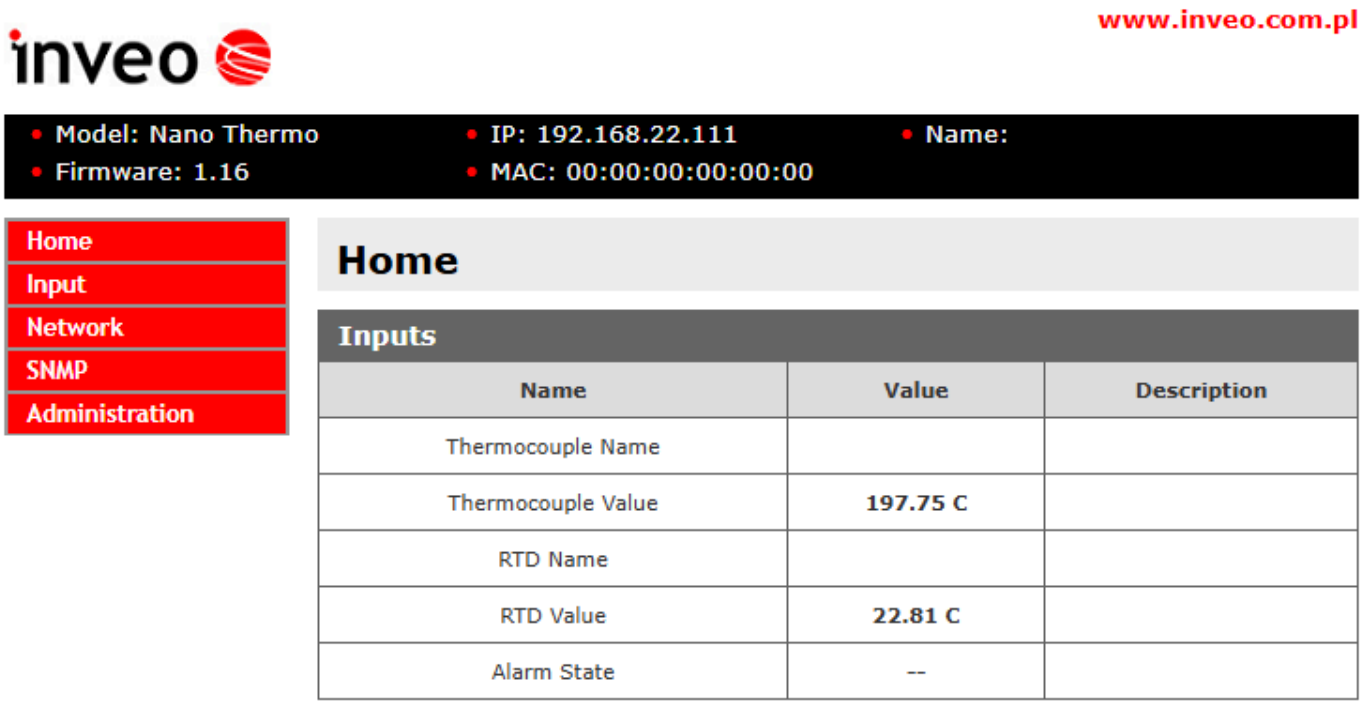
2. The LED will blink about 2 times per second (Nano), the display will show `dhcp` (Nano PoE).
3. Release the **RESET** button.
4. The current DHCP status will be displayed: **On** (enabled) or **Off** (disabled).

DHCP can also be enabled or disabled in the network settings. Access the **Network** tab or use the Discoverer programme.

Device functions

Device status

In the **Home** tab, the current sensor data is displayed.



- **Thermocouple Name** – Assigned in the **Input** tab,
- **Thermocouple Value** – Current value measured by the termocouple after all correction operations,
- **RTD Name** – PT100 or PT1000 sensor name defined by the user,
- **RTD Value** – Current temperature value measured by the sensor after all correction operations,
- **Alarm State** – Indicates that a specified alarm threshold has been exceeded.

Input configuration

The thermocouple and RTD sensor type can be set in the **Input** tab.

The user can specify the measurement offset and unit that the measured temperature will be displayed with.

Thermocouple configuration

Thermocouple Setup		
Name	**Value**	**Description**
Input Name	Piec	0..15 characters
Type	J ▼	
Correction Offset	0.0	Value added to measured value
Cold Junction Mode	Constans ▼	Cold Junction source temperature
Cold Junction Const	30.00	Cold Junction value for Constans mode

- **Input Name** – Name assigned to the thermocouple,
- **Type** – Thermocouple type (types: E, J, K, N, T),
- **Correction Offset** – Value that will be added to the measured temperature,
- **Cold Junction Mode** – Reference source:
  - **Constans** – Constant reference temperature,
  - **RTD Sensor** – The RTD sensor's measured value is used as a reference value.
- **Cold Junction Const** – **Constans** mode temperature reference value.

Reference sensor configuration

RTD Setup		
Name	**Value**	**Description**
Input Name	Zero	0..15 characters
Type	Pt1000 ▼	
Correction Offset	0.0	Value added to measured value

- **Input Name** – Name assigned to the sensor,
- **Type** – Sensor type (PT100 or PT1000),
- **Correction Offset** – Value that will be added to the measured temperature.

Main sensor and measurement unit selection

Setup		
Unit	C ▼	
Main sensor	Thermocouple ▼	Display and alarm sensor

The device can display the measured temperature with three units: Celsius, Fahrenheit and Kelvin.

The thermocouple or RTD can be used as the main measurement device. Selection of the main sensor is tied with the currently displayed temperature and alarm settings.

Alarms

The device can compare the measured value with the thresholds set by the user. Exceeding of a value is treated as an alarm. The alarm state is available as a virtual input for the majority of communication protocols.

Alarm		
Name	**Value**	**Description**
Alarm Low Value	0.0	0.0 format
Alarm High Value	0.0	0.0 format
Alarm mode	Disabled ▼	

The alarm can be configured for the following conditions (**Alarm Mode**):

- **Off** – Alarm disabled,
- **Low** – Alarm is activated when the measured temperature is lower than **Alarm Low**,
- **High** – Alarm is activated when the measured temperature is higher than **Alarm High**,
- **Low or High** – Alarm is activated when the measured temperature exceeds the value in **Alarm High** or drops below **Alarm Low**.

Presence of an alarm state is indicated by blinking of the LED display and activation of virtual output 1 (`<on>00000001</on>`) in the `status.xml` `http://192.168.111.15/status.xml` resource.

Services settings

The device allows selection of services that should be available in the **Administration/Services** tab. Selecting the field next to the service's name will activate it.

Services

Name	Value	Description
Enable Program Access	☐	Is needed by TCPrel and 1 to 1 TCP connection.
Enable MODBUS TCP	☐	
Enable MODBUS RTU	☐	
Enable SNMP	☐	
Enable Destination Client	☐	Allow module to send data to other device (1 to 1 TCP connection)
EnableMQTT Client	☐	[Show Info]
Enable Remote Network Config	☑	
Enable TFTP Bootloader	☐	Allow remote upgrade firmware by TFTP. For safety reasons, the option should be disabled.

- **Enable Program Access** – Enable access by external programs (Windows, Linux) and TCP/IP on port 9761,
- **Enable Modbus TCP**
- **Enable Modbus RTU**
- **Enable SNMP**
- **Enable Destination Client** – Remote host connection service,
- **Enable MQTT Inveo** – Enable Inveo MQTT protocol,
- **Enable Remote Network Config** – (Discoverer programme),
- **Enable TFTP Bootloader**.

Warning

TFTP Bootloader and Remote Network Config should be disabled during normal operation. The settings should only be enabled before firmware update.

Destination Client (M2M)

Inveo devices shuch as Lantick, Nano Temperature Sensor, Nano Digital Input, Nano Relay Output etc. can send the data to a server or other module equipped with outputs using TCP or UDP. Thanks to this, the remote module can receive sensor readings, react to channel activation and activate/deactivate relay outputs in real-time if an alarm occurs. The messages are sent after each change of state and every 5 seconds.

Configuration for receiving modules (target devices):

Step 1: Enable the service In **Administration**, select **Enable Program access** and **Save config**.

Configuration for messaging modules (alarm state, output status):

Step 1: Enable Destination Client

In **Administration**, select **Enable Destination Client** and **Save config** to activate the service.

Step 2: Network settings

In the **Administration/Destination Client Settings** tab, fill in the fields:

- **Destination IP** – Target device or server IP address,
- **Destination Port** – Port, on which the remote device is listening. 9761 by default.

Step 3: In the **Input** tab, select which output in the remote device will be activated or what information will be sent to the server the moment an alarm condition occurs.

The following options are available:

- **Off**
- **Dest: 1..8** – Sending TCP frames in format #1
  This format is compatible with other Inveo devices, which allows the module to control relay outputs in another module equipped with them when an alarm is activated and deactivate them after normal operation is resumed. For example, this can be used to control a fan or a heating element,
- **Status** – Sending TCP frames in format #2,
- **MAC+Status** – Sending TCP frames in format #3.

Client Setup

Name	Value	Description
Client Mode	Dest:1 ▼	Select destintation channel in 1 to 1 TCP connection

TCP frames format (Destination Client)

Format 1:

The format #1 frame is sent in decimal form. Example TCP frame sent while an alarm is active and Dest:5 is set:

SOF	CMD	CH	F_ID	ALARM	!ALARM	Val0 (LSB)	Val1
0x0F	0x01	0x04	0xFF	0x01	0xFE	0x0F	0x00

Example TCP frame sent while an alarm is inactive and Dest:5 is set:

SOF	CMD	CH	F_ID	ALARM	!ALARM	Val0 (LSB)	Val1
0x0F	0x01	0x04	0xFF	0x00	0xFF	0x0F	0x00

Val0-Val3 values are the 32-bit **Final_Val** value multiplied * 1000.

Calculating CRC:

```
CRC = (BYTE) SUM (SOF+CMD+CH+F_ID+ALARM+!ALARM+Val0 (LSB)+Val1+Val2+Val3 (MSB))
```

Format 2:

The format #2 frame is sent in the form of a character string.

```
<ALARM>[SPACE]<Final_Val>
```

- **ALARM** – 01 – alarm active, 00 – alarm inactive,
- **Final_Val**.

HEX value	STRING
30 20 33 39 2E 35	0 39.5

Format 3:

The format #3 frame is sent in the form of a character string.

```
<MAC>[SPACE]<ALARM>[SPACE]<Final_Val>
```

- **MAC** – Module MAC address,
- **ALARM** – 01 – alarm active, 00 – alarm inactive,
- **Final_Val**.

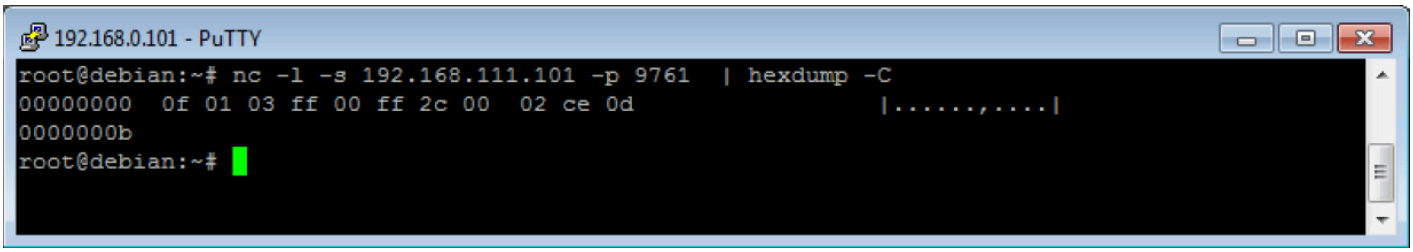
HEX value	STRING

35 34 31 30 45 43 36 35 35 30 32 31 20 30 20 34 36 2E 39	5410EC655021 0 46.9

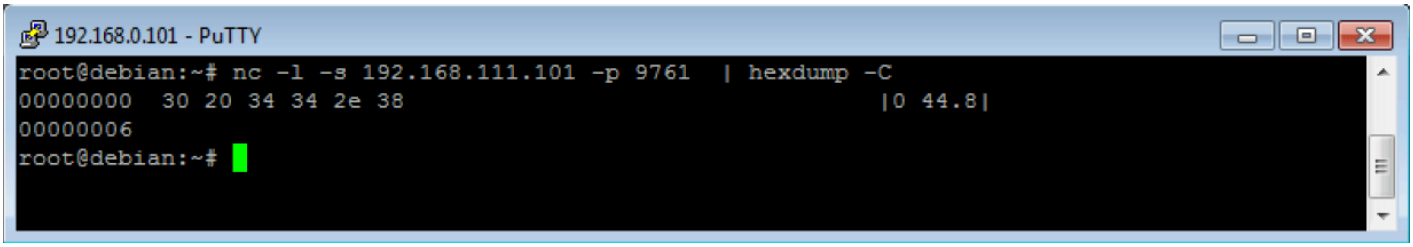
The TCP frame can be handled by own software.

Example of using the netcat command for Linux:

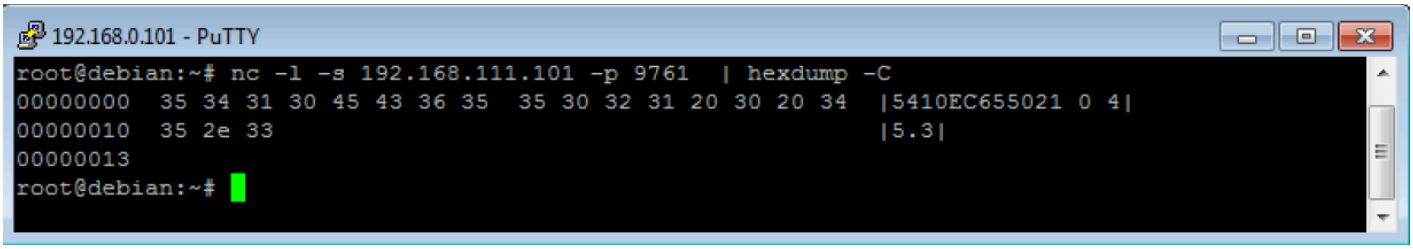
Format 1:



Format 2:



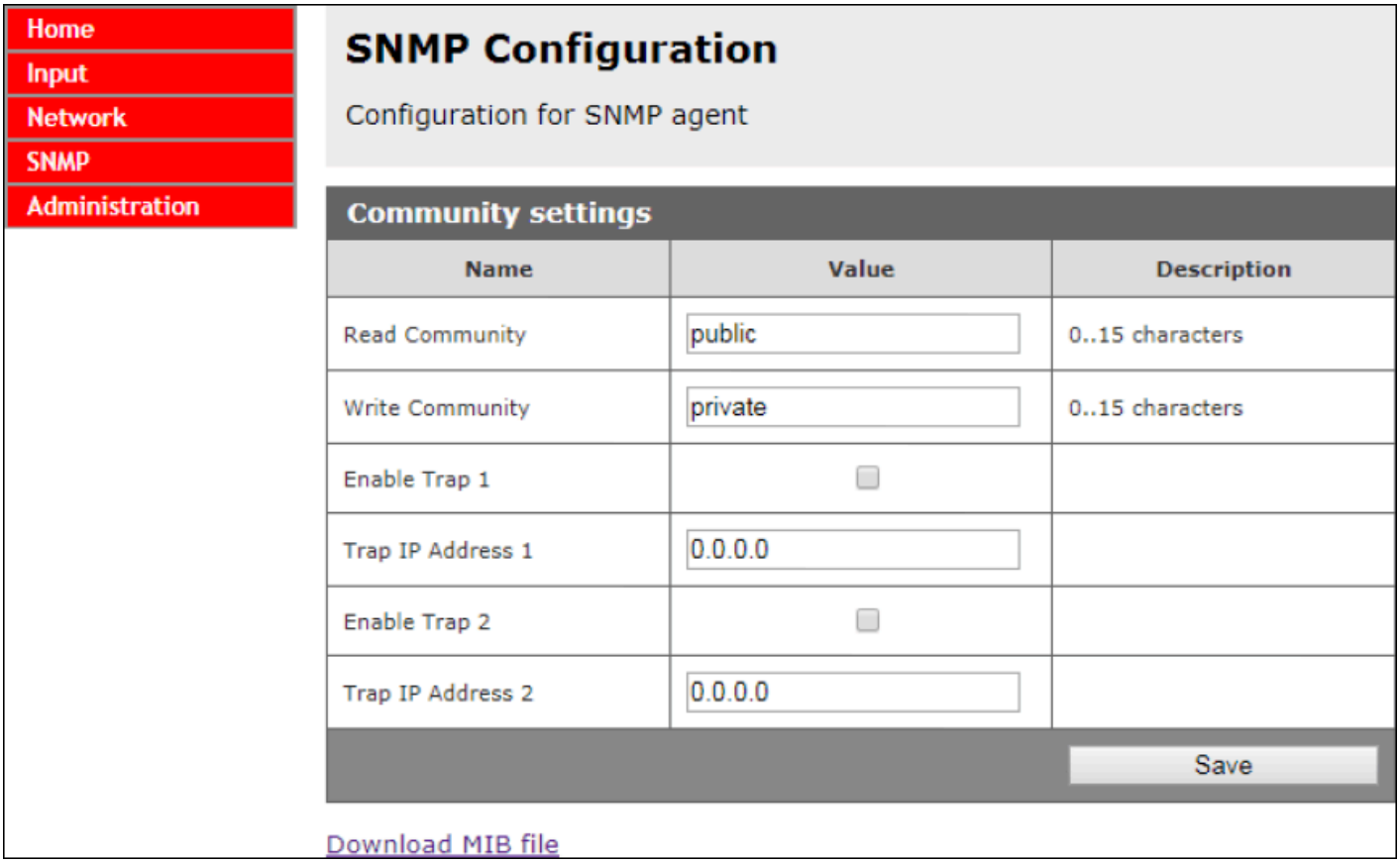
Format 3:



SNMP configuration

Nano Temperature Sensor is equipped with an SNMP v2c server, making remote readout of input state possible. To **Enable SNMP**, go to the **Administration** tab.

Configuration options are located in the **SNMP** tab:



SNMP allows readout of module parameters. To use this function, download the MIB file (describing the data structure) first. To do that, right-click **Download MIB file** and select **Save link as**. Import the downloaded MIB file into the MIB Browser programme.

The basic parameters that can be read from the module are displayed in the following table:

Name	Format	OID
CH1_TEMP	STRING	.1.3.6.1.4.1.42814.14.3.5.1.0
CH1_TEMPINT	INTEGER	.1.3.6.1.4.1.42814.14.3.5.2.0
CH1_TEMPINT x10	INTEGER	.1.3.6.1.4.1.42814.14.3.5.3.0
Alarm inactive	INTEGER	.1.3.6.1.4.1.42814.14.3.1.1.0

The module also has the ability to send TRAP notifications if the temperature exceeds a certain threshold. To configure the destination addresses for those notifications, input them into **Trap IP Address 1** and **Trap IP Address**

2.

Windows command line control programme

When controlling the module from the command line, the cURL program can be used. First, enable **Program Access** in the **Administration** tab.

Example

Read current temperature, module IP address 192.168.0.231:
To read the current temperature, recall the `temp1.txt` resource: `http://192.168.0.231/temp1.txt`, the temperature will be displayed in text form.

```
curl http://192.168.0.231/temp1.txt
```

Access to `stat.php` requires authentication. In this case, we precede the command with `-u login:password`. `curl –u admin:admin00 http://192.168.0.231/stat.php`

In response, the device will send the following information:

```
<response>
    <prod_name>Nano-TC</prod_name>
    <sv>0.9</sv>
    <mac>00:00:00:00:00:00</mac>
    <on>00000000</on>
    <valFinal0>3.13</valFinal0>
    <unitFinal0>C</unitFinal0>
    <valFinal1>22.99</valFinal1>
    <unitFinal1>C</unitFinal1>
</response>
```

Section	Description
`<prod_name>Nano-TC</prod_name>`	Module type
`<sv>0.9</sv>`	Firmware version
`<mac>00:00:00:00:00:00</mac>`	Module's MAC address
`<on>00000000</on>`	Virtual outputs state: 00000001 indicates an alarm
`<valFinal0>3.3</valFinal0>`	Thermocouple measurement **Final_Value**
`<unitFinal0>C</unitFinal0>`	Measurement unit
`<valFinal1>22.99</valFinal1>`	PT100 or PT1000's measurement **Final_Value**
`<unitFinal1>C</unitFinal1>`	Measurement unit

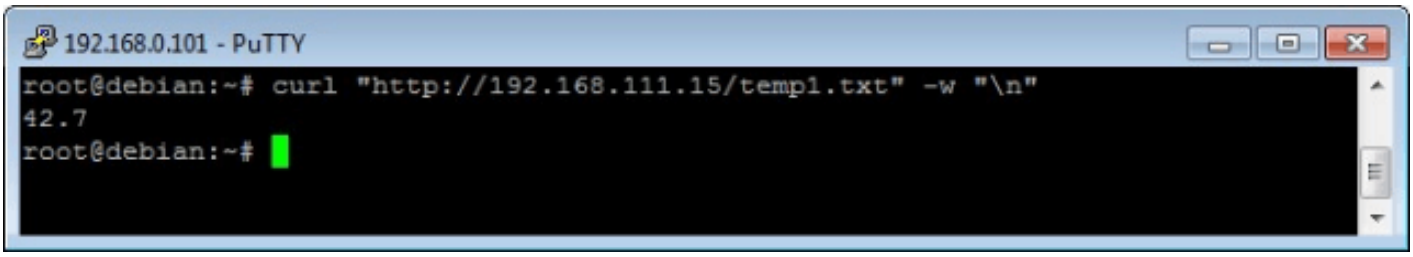
Linux control programme

cURL can be used in Linux:

> **Tip**
>
> **Access to `stat.php` requires authentication.**
> **Access to `status.xml` does not require authentication.**

```
curl "http://192.168.111.15/temp1.txt" -w "\n"
```


```
curl "http://192.168.111.15/temp1.txt" -w "\n"
```

Communication with the module via Modbus protocol

The device supports Modbus RTU and Modbus TCP protocols. The Modbus TCP server is available via LAN an listens on port 502. Modbus RTU is available via RS485.

Modbus configuration is available in the **Administration** tab:

Services

Name	Value	Description
Enable Program Access	☐	Is needed by TCPrel and 1 to 1 TCP connection.
Enable MODBUS TCP	☑	
Enable MODBUS RTU	☐	
Enable SNMP	☑	
Enable Destination Client	☐	Allow module to send data to other device (1 to 1 TCP connection)
Enable MQTT Client	☐	[Show Info]
Enable Remote Network Config	☑	
Enable TFTP Bootloader	☑	Allow remote upgrade firmware by TFTP. For safety reasons, the option should be disabled.

Destination Client Settings

Name	Value	Description
Destination IP	0.0.0.0	Address of other device to communicate (1 to 1 TCP connection)
Destination Port	0	Port to communicate

RS485 Parameters (Modbus RTU)

Name	Value	Description
PDU	1	
Baudrate	9600	bps
Parity	None	

Modbus data mode

Name	Value	Description
Long (32bit) byte order	CD AB	

To activate Modbus, select **Enable Modbus TCP** or **Enable Modbus RTU**.

RS485 port configuration:

- **PDU** – Address of the device,
- **Baudrate** – Transmission speed selection: 1200, 2400, 4800, 9600, 19200, 38400, 57600 bps,
- **Parity** – Parity: None, Odd, Even, Mark, Space, 2 Stops.

Byte order for Long and Float

To ensure compatibility with non-standard Modbus Master devices, the module is equipped with 32-bit value representation options.
The 32-bit values are read as 2 subsequent 16-bit Holding Registers. Each 16-bit register consists of 2 bytes.
Devices on the market interpret those 4-byte numbers in different ways.
Sometimes it is needed to change the order of bytes of a 32-bit value.
Nano Analog has all possible 4 modes, separate for Long (integral) and Floar (floating-point) values.

For example, for a Long value, the decimal number 512002 is 00 07 D0 02 in HEX.

Representation of the number in various formats will look like this:

Order	**A**	**B**	**C**	**D**	**HoldingRegister**	**HoldingRegister + 1**
AB CD	00	07	D2	02	0007	D202
CD AB	D2	02	07	00	D202	0700
DC BA	02	D2	00	07	02D2	0007
BA DC	07	00	02	D2	0700	02D2

The most commonly used modes are AB CD and CD AB.

The device supports the following Modbus functions:

- 0x01 Read Coils
- 0x03 Read Holding Register
- 0x06 Write Single Register
- 0x0F Write Multiple Coils
- 0x10 Write Multiple Registers

Coils addressing

Register No.	**Name**	**R/W**	**Description**
1	Alarm	R	Alarm flag (1 – alarm, 0 – no alarm)

Holding Registers addressing

16-bit integral values:

Register No.	Name	R/W	Description
1	Final_Value_Tc	R	Thermocouple measurement final value, integer
2	Final_Value_Tc x10	R	Thermocouple measurement final value x10
3	Final_Value_RTD	R	RTD sensor measurement final value, integer
4	Final_Value_RTD x10	R	RTD sensor measurement final value x10

Long values (32-bit):

Register No.	Name	R/W	Description
10	ADC_Value_Tc	R	Value from the thermocouple converter
11			
12	Final_Value_Tc x1000	R	Thermocouple measurement final value x1000
13			
14	ADC_Value_RTDx1000	R	Value from the RTD converter
15			
16	Final_Value_RTD x1000	R	RTD measurement final value x1000
17			

Float values (32-bit):

Register No.	Name	R/W	Description
20	ADC_Value	R	Value from the thermocouple converter
21			
22	Final_Value_Tc	R	Thermocouple measurement final value

23			
24	Voltage_Value_Tc	R	Thermocouple voltage value
25			
26	ADC_Value_RTD x1000	R	Value from the RTD converter x1000
27			
28	Final_Value_RTD	R	RTD measurement final value
29			
30	Resistance_Value	R	RTD resistance value
31			

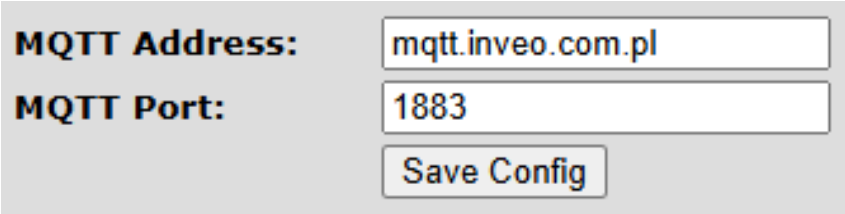
MQTT Inveo protocol communication

The device supports MQTT protocol. Data from the device is sent to the server every minute and after each value change. The data is not encrypted. The user subscribes the device data after connecting with the broker. The amount of users that can receive the data from a single device is unlimited.

In addition to the default Inveo MQTT broker, the user can specify their own MQTT server for temperature monitoring purposes.

Configuration:

Firstly, **Enable MQTT Inveo** in **Administration**. In the **Network** tab, MQTT broker address and port can be configured:



Application configuration – MQTT client:

- **Address:** mqtt.inveo.com.pl
- **Port:** 1883
- **User name:** nano
- **User password:** DeV876
- **Topic TC:** `/nanoTC/<MAC>/tc`
- **Topic RTD:** `/nanoTC/<MAC>/rtd`

Clicking **[Show Info]** will display the MQTT client information:

Enable MQTT Client	☐	[Show Info] **MQTT Client Configuration:** • Server: mqtt.inveo.com.pl • Port: 1883 • Username: nano • Password: DeV876 • Topic TC: /nanoTC/000000000000/tc • Topic RTD: /nanoTC/000000000000/rtd Go to Network settings if own server address required.

Many Android/IOS applications support MQTT, enabling the user to receive the data on their telephone (eg. MQTT dash) and PC (MQTT explorer).

HTTP protocol control

The modules can download data via HTTP GET.

- `status.xml` – Resource containing basic information about the module,
- `value.txt` – **Final_Value** presented in text form.

To read the current module status, recall the `http://192.168.111.15/status.xml` resource.

The module will display all important information in the form of an XML file:

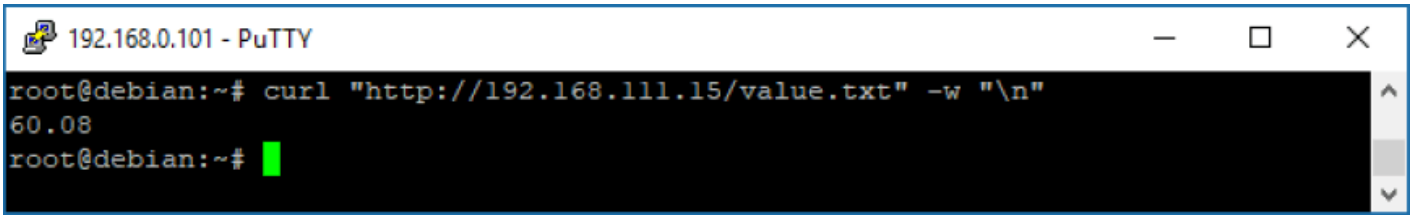
```
<response>
    <prod_name>Nano-TC</prod_name>
    <sv>0.9</sv>
    <mac>00:00:00:00:00:00</mac>
    <on>00000000</on>
    <valFinal0>3.13</valFinal0>
    <unitFinal0>C</unitFinal0>
    <valFinal1>22.99</valFinal1>
    <unitFinal1>C</unitFinal1>
</response>
```

Section	Description
`<prod_name>Nano-TC</prod_name>`	Module type
`<sv>0.9</sv>`	Firmware version
`<mac>00:00:00:00:00:00</mac>`	Module's MAC address
`<on>00000000</on>`	Virtual outputs state: 00000001 indicates an alarm
`<valFinal0>3.3</valFinal0>`	Thermocouple measurement **Final_Value**
`<unitFinal0>C</unitFinal0>`	Measurement unit
`<valFinal1>22.99</valFinal1>`	PT100 or PT1000's measurement **Final_Value**
`<unitFinal1>C</unitFinal1>`	Measurement unit

Example of data readout using the CURL command

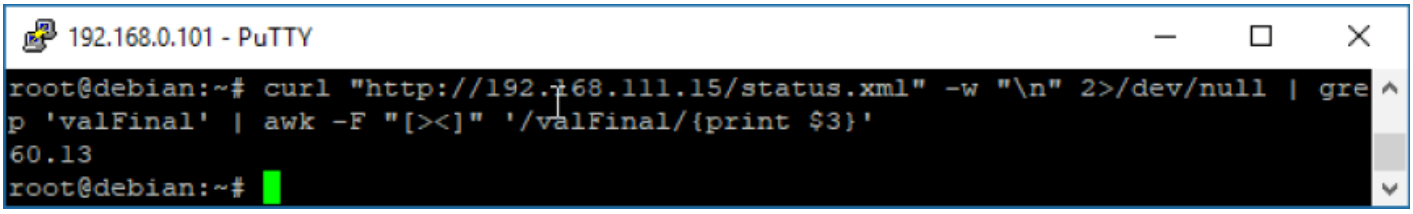
Access to `status.xml` and `value.txt` does not require authentication. Reading values from `value.txt`:

```
curl "http://192.168.111.15/value.txt" -w "\n"
```



Reading Final_Value from `status.xml`:

```
curl "http://192.168.111.15/status.xml" -w "\n" 2>/dev/null | grep 'valFinal' | awk -F "[><]" '/valFinal/{print $3}'
```



TCP communication protocol description

Nano TC data frame:

Command name	Byte No.	1	2	3	4	5	6
	Byte name	SOF	CMD	Channel	Data1	Data2	Data
Temperature readout	dec	15	13	0	X	X	X
	hex	0x0F	0x0D	0x00	X	X	X

The module listens on TCP port 9761 by default.

Read current value from Nano TC:

SOF	CMD	CH	D1	D2	D3	D4	D5
0x0F	0x0D	0x00	0x00	0x00	0x00	0x00	0x00

```
CRC = (BYTE) SUM (SOF+CMD+CH+D1..D7)
```

The request will return 4 bytes (current reading) and CRC (sum of 4 previous bytes).

Factory settings

Restoring factory settings

To restore the factory settings:

- Power up the device,
- Press the **RESET** button for a time period between 10 and 15 seconds,
- The **TAG** LED will start flashing about 4 times a second (Nano, Nano RFID PoE), `rSt` will appear on the display (Nano In/Out/Temp PoE),
- Release the **RESET** button.

Once the above steps have been completed, the device will be set to the following parameters:

- **IP address:** 192.168.111.15
- **IP mask:** 255.255.255.0
- **User:** admin
- **Password:** admin00

Warranty and manufacturer's liability

> **Warning**
>
> **The manufacturer provides a two-year warranty for the device and post-warranty service for a period of 10 years from the date of introduction of the device to the market. The warranty covers all material and production defects.**

The manufacturer undertakes to respect the warranty agreement, if the following conditions are met:

- All repairs, changes, expansions and device calibrations are carried out by the manufacturer or an authorized service center,
- The power supply system meets the applicable standards,
- The device is operated in accordance with the suggestions presented in this manual,
- The device is operated in accordance with its intended purpose.

The manufacturer assumes no responsibility for consequences resulting from improper installation, improper use of the device, failure to comply with the instruction manual, and repairs made by unauthorized personnel.

> **Warning**
>
> **The device contains no user serviceable parts inside.**

Storage, operation and transport conditions

The device should be stored in enclosed rooms, where the atmosphere is free from vapours and corrosive substances:

- Environment temperature from -30°C to +60°C (-22°F - 140°F),
- Humidity from 25% to 90% (condensation unacceptable),
- Atmospheric pressure from 700 to 1060 hPa.

The device is intended to operate in the following conditions:

- Environment temperature from -10°C do +55°C (14°F - 131°F),
- Humidity from 30% to 75%,
- Atmospheric pressure from 700 to 1060 hPa.

Recommended transport conditions:

- Environment temperature from -40°C do +85°C (-40°F - 185°F),
- Humidity from 5% to 95%,
- Atmospheric pressure from 700 to 1060 hPa.

Installation and device operation:

- The module should be operated in accordance with recommendations provided later in this manual.

Disposal and decommissioning

In an event the device needs to be decommissioned (eg. after its intended life period is surpassed), it is recommended to contact the manufacturer or his representative, who are responsible to respond appropriately, i.e., to collect the device from the user. The user can alternatively contact companies specializing in electronic device or computer equipment disposal and/or decommissioning. Under no condition should the device be placed with other waste.