



RAMOS Ultra Virtual sensor: COOLTEG Plus Units Configuration

Manual

11.5.2014 V1.1

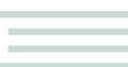
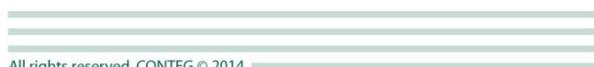
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1 Introduction

The new displays for the cooling unit “CoolTeg Plus” can communicate by Modbus TCP/IP and this protocol is supported by Ramos Ultra via “virtual sensors”. When the virtual sensors are set properly, it’s possible to monitor information from the cooling units. Each touch display can monitor up to eight CoolTeg Plus units (from firmware version 3.4). The virtual sensor can send out notifications, which can inform about alarm via SMS, email, relay output and so on.

1.1 Compatibility / Limitation

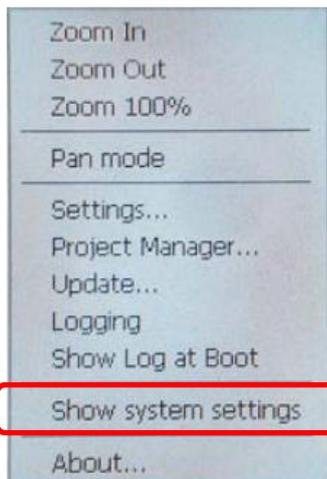
- Supported touch displays are only “AC-DISP-PGDT04” and must have firmware from version 3.4 and higher
- The virtual sensors are only on RAMOS Ultra devices.

2 Setting up Touch Display “AC-DISP-PGDT04”

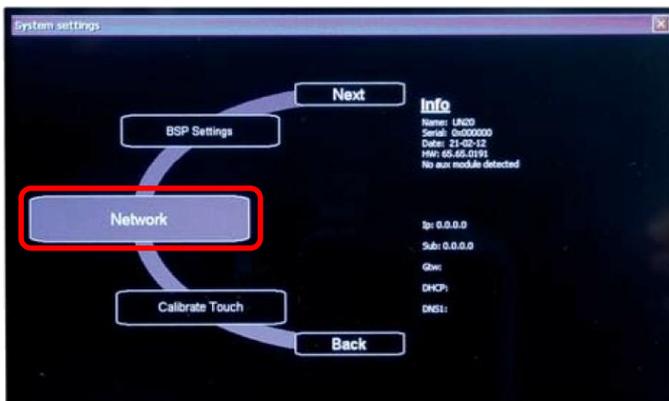
The setting of the touch display is shown in CoolTeg Plus manual. This part will focus on the IP address identification and enabling communication protocol.

2.1 IP address identification / Settings

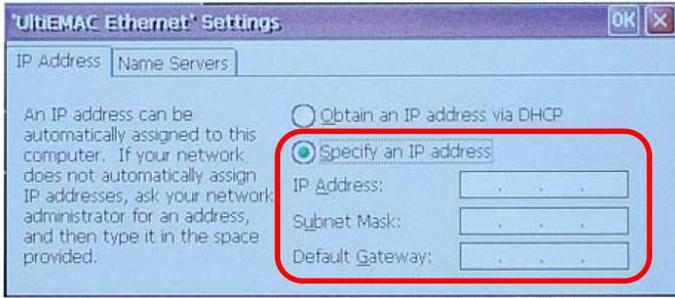
Touch and press an inactive area of the screen for a few seconds.



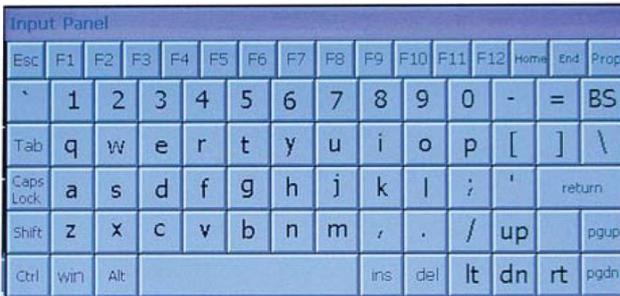
A pop-up menu will be displayed. Select “Show system settings”.



The rotating “Systems settings” menu will open. Select “Network”.



The keypad and Ethernet settings menu will be displayed. Select "Specify an IP address".



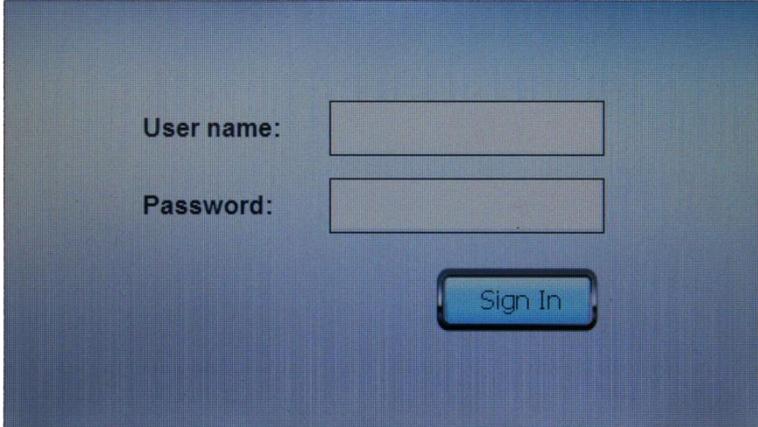
Enter an IP address for the terminal, such as:
 IP address: 192.168.0.2
 Subnet mask: 255.255.255.0

The "Systems settings" menu will then be displayed again, where the device's IP network address will be shown.

2.2 Touch Display Software Settings

It is now necessary to set the Conteg Touch Display Software to communicate.

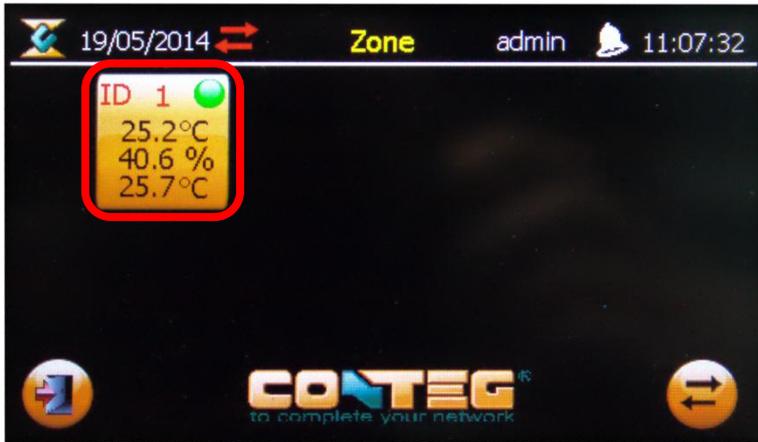
To start, it is necessary to be logged in.



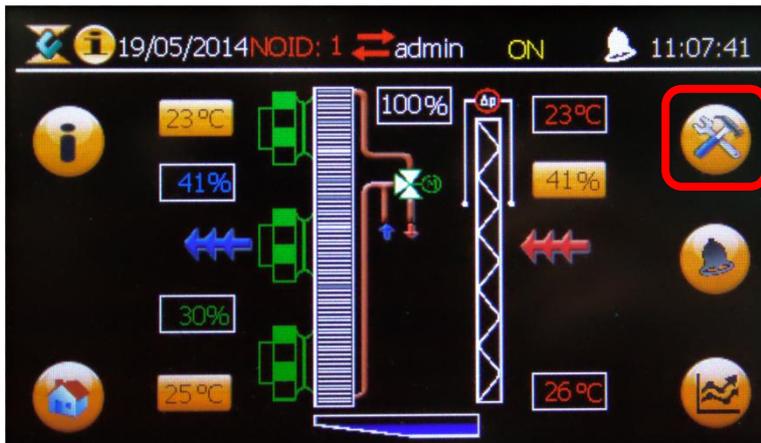
When touch on windows for fill the details the keypad will pop up



Log in as "admin". The default admin password is "admin".



Now click/touch on the CoolTeg Plus unit symbol.



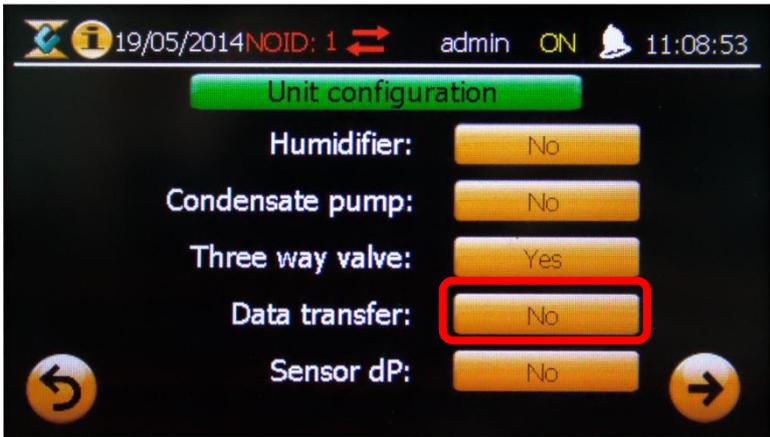
Now click/touch on the setting symbol.



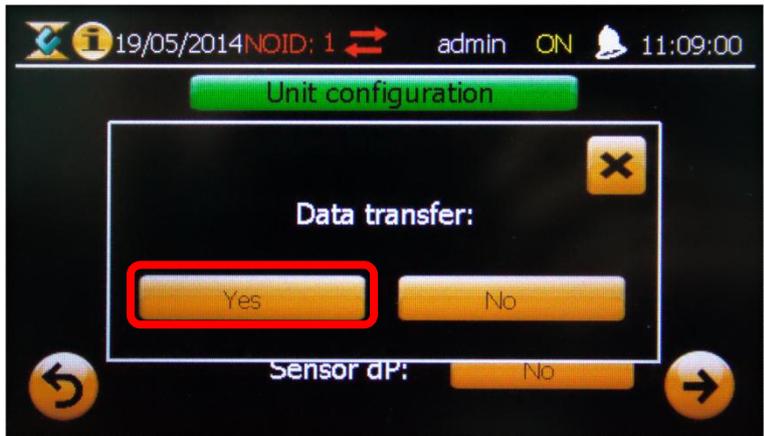
Click/Touch on the "Service menu".



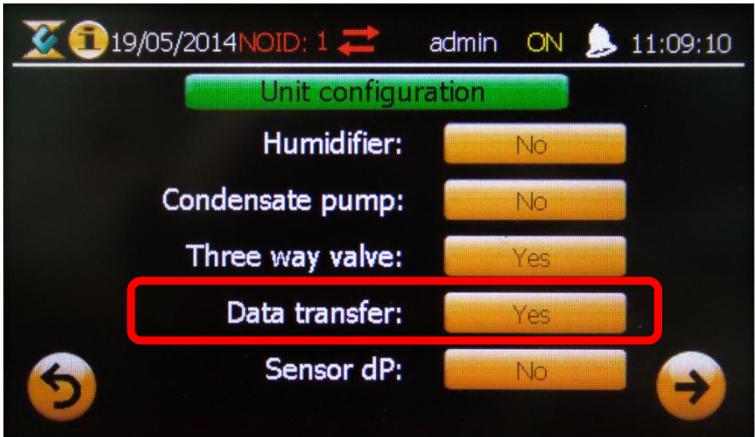
Click/Touch on "Configuration".



Click/Touch on the “Data Transfer” button.



Click/Touch on the “Yes” button to enable the data transfer mode.



The “data transfer” mode is now enabled and ready to use.

When unit No. 1 enables the data transfer mode, it's enabled for all other units connected on this touch display.

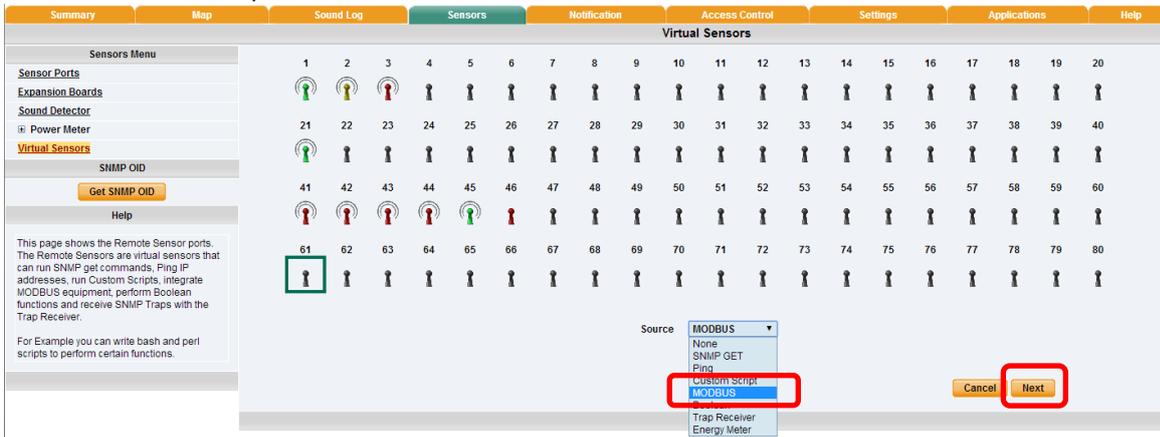
The touch display is now ready to communicate.

3 Setting up virtual sensors

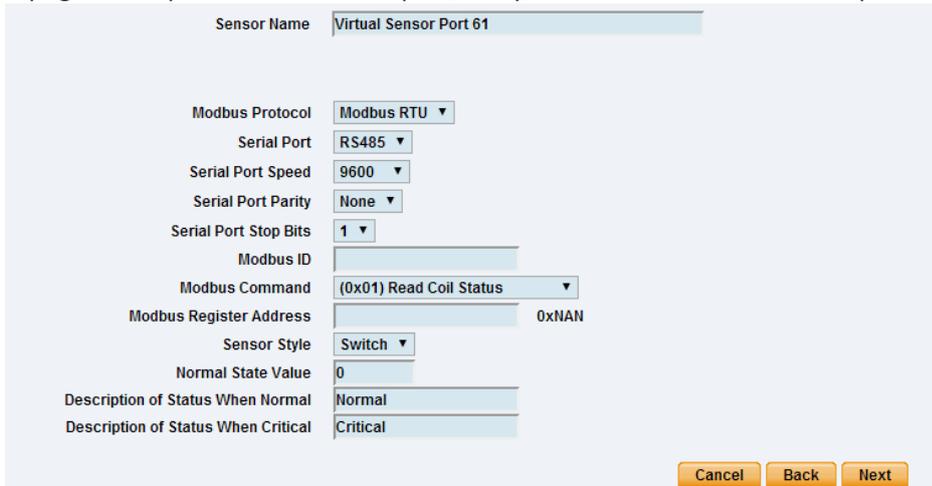
Open the web interface of RAMOS Ultra, and log in as an administrator. Then click on the “Sensors” tab. On the left side column is the “Virtual sensor” button. After clicking this button, you will be redirected to a page with 80 virtual sensors. Click on a non-configured (free) sensor and press “Configuration”.



Then select source options “Modbus” and click “Next”.



A page for a specific sensor will open, and you will need to set Modbus parameters.



Now it is necessary to configure the parameters. First name the sensor and select “Modbus TCP” under the Modbus protocol options.

Sensor Name	<input type="text" value="Coolteg+ (1) - Status"/>	
Modbus Protocol	<input type="text" value="Modbus TCP"/>	
Modbus IP Address	<input type="text" value="192.168.161.150"/>	
Modbus TCP Port	<input type="text" value="502"/>	
Modbus Command	<input type="text" value="(0x04) Read Input Registers"/>	
Data Ordering	<input type="text" value="High Byte First, High Word First"/>	
Data Type	<input type="text" value="16bits signed int"/>	
Modbus Register Address	<input type="text" value="2"/>	<input type="text" value="0x2"/>
Sensor Style	<input type="text" value="Switch"/>	
Normal State Value	<input type="text" value="1"/>	
Description of Status When Normal	<input type="text" value="ON"/>	
Description of Status When Critical	<input type="text" value="OFF"/>	

Then enter an IP address from touch display.

Sensor Name	<input type="text" value="Coolteg+ (1) - Status"/>	
Modbus Protocol	<input type="text" value="Modbus TCP"/>	
Modbus IP Address	<input type="text" value="192.168.161.150"/>	
Modbus TCP Port	<input type="text" value="502"/>	
Modbus Command	<input type="text" value="(0x04) Read Input Registers"/>	
Data Ordering	<input type="text" value="High Byte First, High Word First"/>	
Data Type	<input type="text" value="16bits signed int"/>	
Modbus Register Address	<input type="text" value="2"/>	<input type="text" value="0x2"/>
Sensor Style	<input type="text" value="Switch"/>	
Normal State Value	<input type="text" value="1"/>	
Description of Status When Normal	<input type="text" value="ON"/>	
Description of Status When Critical	<input type="text" value="OFF"/>	

The Modbus TCP Port must always be set on "502".

It is necessary to customize the following details for each sensor/information via the following tabs.

Sensor Name

Modbus Protocol

Modbus IP Address

Modbus TCP Port

Modbus Command

Data Ordering

Data Type

Modbus Register Address 0x2

Sensor Style

Normal State Value

Description of Status When Normal

Description of Status When Critical

4 Configuration Tables (1st part of configuration)

4.1 Status of each cooling unit

- Modbus Command: **(0x04) Read Input Registers**
- Data Ordering: **Low Byte First, Low Word First**
- Data Type: **16bits signed int**
- Modbus Register Address:

	Modbus Register Address
Status of unit No.1	2
Status of unit No.2	3
Status of unit No.3	4
Status of unit No.4	5
Status of unit No.5	6
Status of unit No.6	7
Status of unit No.7	8
Status of unit No.8	9

- Sensor Style: **Switch**
- Normal State Value: **1**
- Description of status when normal: **ON**
- Description of status when critical: **OFF**

4.2 Outlet Temperature of each cooling unit

- Modbus Command: **(0x04) Read Input Registers**
- Data Ordering: **Low Byte First, Low Word First**
- Data Type: **16bits signed int.**
- Modbus Register Address:

	Modbus Register Address
Outlet Temperature of unit No.1	10
Outlet Temperature of unit No.2	11
Outlet Temperature of unit No.3	12
Outlet Temperature of unit No.4	13
Outlet Temperature of unit No.5	14
Outlet Temperature of unit No.6	15
Outlet Temperature of unit No.7	16
Outlet Temperature of unit No.8	17

- Sensor Style: **Analog**
- Value Factor: **10**
- Value Text: **°C**
- Value Range for Slider Bar: **0 – 100**

Picture with example:

Sensor Name: Coolteg U1 - Temp. Out

Modbus Protocol: Modbus TCP

Modbus IP Address: 192.168.161.151

Modbus TCP Port: 502

Modbus Command: (0x04) Read Input Registers

Data Ordering: Low Byte First, Low Word First

Data Type: 16bits signed int

Modbus Register Address: 10 0xA

Sensor Style: Analog

Value Factor: 10 (x0.1)

Unit Text: °C

Value Range for Slider Bar: 0 To 100

4.3 Inlet Temperature of each cooling unit

- Modbus Command: **(0x04) Read Input Registers**
- Data Ordering: **Low Byte First, Low Word First**
- Data Type: **16bits signed int.**
- Modbus Register Address:

	Modbus Register Address
Inlet Temperature of unit No.1	18
Inlet Temperature of unit No.2	19
Inlet Temperature of unit No.3	20
Inlet Temperature of unit No.4	21
Inlet Temperature of unit No.5	22
Inlet Temperature of unit No.6	23
Inlet Temperature of unit No.7	24
Inlet Temperature of unit No.8	25

- Sensor Style: **Analog**
- Value Factor: **10**
- Value Text: **°C**
- Value Range for Slider Bar: **0 – 100**

Picture with example:

Sensor Name: Coolteg U1 - Temp. In

Modbus Protocol: Modbus TCP

Modbus IP Address: 192.168.161.151

Modbus TCP Port: 502

Modbus Command: (0x04) Read Input Registers

Data Ordering: Low Byte First, Low Word First

Data Type: 16bits signed int

Modbus Register Address: 18 0x12

Sensor Style: Analog

Value Factor: 10 (x0.1)

Unit Text: °C +°F

Value Range for Slider Bar: 0 To 100

4.4 Inlet Humidity of each cooling unit

- Modbus Command: **(0x04) Read Input Registers**
- Data Ordering: **Low Byte First, Low Word First**
- Data Type: **16bits signed int.**
- Modbus Register Address:

	Modbus Register Address
Inlet Humidity of unit No.1	26
Inlet Humidity of unit No.2	27
Inlet Humidity of unit No.3	28
Inlet Humidity of unit No.4	29
Inlet Humidity of unit No.5	30
Inlet Humidity of unit No.6	31
Inlet Humidity of unit No.7	32
Inlet Humidity of unit No.8	33

- Sensor Style: **Analog**
- Value Factor: **10**
- Value Text: **%RH**
- Value Range for Slider Bar: **0 – 100**

Picture with example:

The screenshot shows a configuration form for a sensor. The settings are as follows:

- Sensor Name:** Coolteg U1 - Hum. In
- Modbus Protocol:** Modbus TCP
- Modbus IP Address:** 192.168.161.151
- Modbus TCP Port:** 502
- Modbus Command:** (0x04) Read Input Registers
- Data Ordering:** Low Byte First, Low Word First
- Data Type:** 16bits signed int
- Modbus Register Address:** 26 (hex: 0x1A)
- Sensor Style:** Analog
- Value Factor:** 10 (x0.1)
- Unit Text:** RH (with a temperature unit icon)
- Value Range for Slider Bar:** 0 To 100

4.5 Common Fault of each cooling unit

- Modbus Command: **(0x03) Read Holding Registers**
- Data Ordering: **Low Byte First, Low Word First**
- Data Type: **16bits signed int.**
- Modbus Register Address:

	Modbus Register Address
Common Fault of unit No.1	3
Common Fault of unit No.2	4
Common Fault of unit No.3	5
Common Fault of unit No.4	6
Common Fault of unit No.5	7
Common Fault of unit No.6	8
Common Fault of unit No.7	9
Common Fault of unit No.8	10

- Sensor Style: **Switch**
- Normal State Value: **0**
- Description of status when normal: **Normal**
- Description of status when critical: **Critical**

Picture with example:

The screenshot shows a configuration form for a sensor. The fields are as follows:

- Sensor Name:** Coolteg U1 - Common Fault
- Modbus Protocol:** Modbus TCP
- Modbus IP Address:** 192.168.161.151
- Modbus TCP Port:** 502
- Modbus Command:** (0x03) Read Holding Registers
- Data Ordering:** Low Byte First, Low Word First
- Data Type:** 16bits signed int
- Modbus Register Address:** 3 (with a multiplier of 0x3)
- Sensor Style:** Switch
- Normal State Value:** 0
- Description of Status When Normal:** Normal
- Description of Status When Critical:** Critical

4.6 All temperature high of each cooling unit

- Modbus Command: **(0x03) Read Holding Registers**
- Data Ordering: **Low Byte First, Low Word First**
- Data Type: **16bits signed int.**
- Modbus Register Address:

	Modbus Register Address
All temperature high of unit No.1	11
All temperature high of unit No.2	12
All temperature high of unit No.3	13
All temperature high of unit No.4	14
All temperature high of unit No.5	15
All temperature high of unit No.6	16
All temperature high of unit No.7	17
All temperature high of unit No.8	18

- Sensor Style: **Switch**
- Normal State Value: **0**
- Description of status when normal: **Normal**
- Description of status when critical: **Critical**

4.7 Warming of each cooling unit

- Modbus Command: **(0x03) Read Holding Registers**
- Data Ordering: **Low Byte First, Low Word First**
- Data Type: **16bits signed int.**
- Modbus Register Address:

	Modbus Register Address
Warming of unit No.1	19
Warming of unit No.2	20
Warming of unit No.3	21
Warming of unit No.4	22
Warming of unit No.5	23
Warming of unit No.6	24
Warming of unit No.7	25
Warming of unit No.8	26

- Sensor Style: **Switch**
- Normal State Value: **0**
- Description of status when normal: **Normal**
- Description of status when critical: **Warming**

5 Thresholds and reading settings (2nd part of configuration)

When the configure parameters are shown, as discussed in section above, press next. You will be directed to the following configuration part. To configure analog values (e.g. temperature, humidity ...) are necessary to set thresholds on this page, as shown in picture below:

0 °C

Low Critical 10 20 30 35 High Critical
Low Warning High Warning

Low Critical Low Warning High Warning High Critical
10 20 30 35

Cancel Back Next

The following part is the same for the analog or status values (e.g. On, Off, ...). First set the interval for reading information. The standard is 30s. Then set the timeout, which will determine how long RAMOS Ultra will wait for a response from the touchscreen display. Finally, set how many times RAMOS Ultra tries to get information from the touchscreen display.

Polling Interval 30 30 secs
Execute Time Out 15 15 secs
Retry 5 Times

Cancel Back Finish

Press “Finish”. Your virtual sensor is now configured and the reading values are set.

Examples:

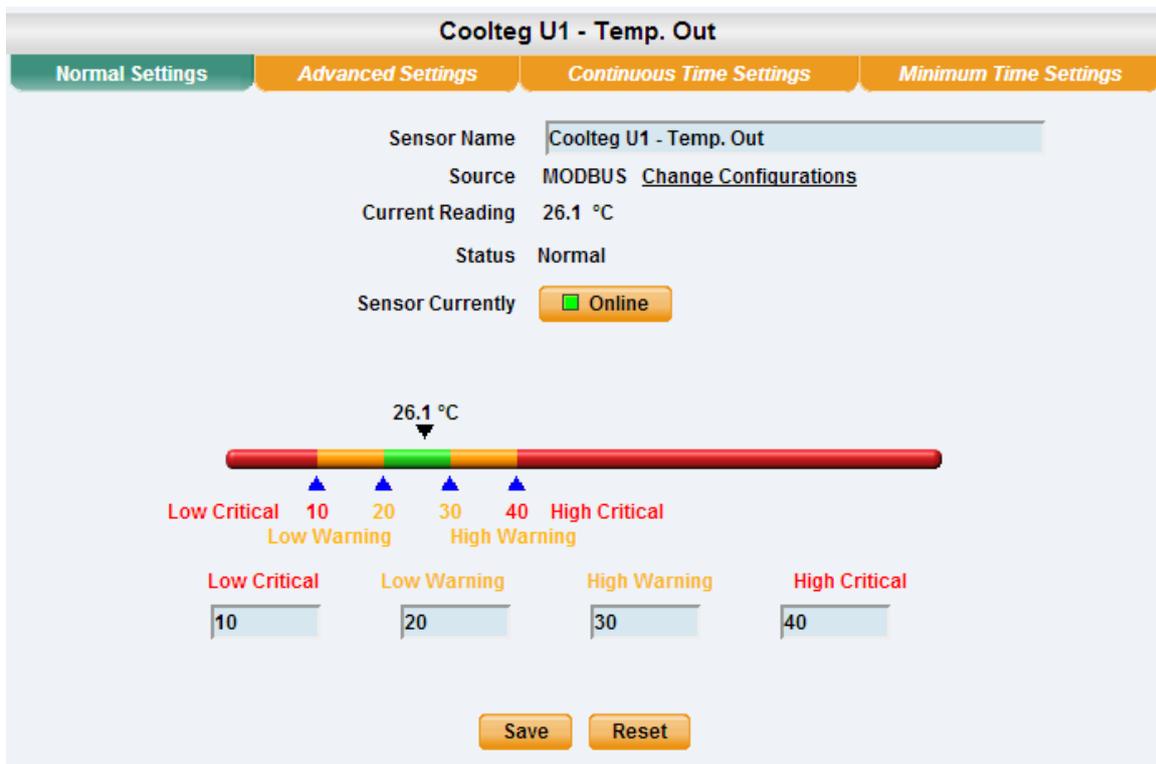
Coolteg U1 - Status

Normal Settings Advanced Settings Continuous Time Settings Minimum Time Settings

Sensor Name Coolteg U1 - Status
Source MODBUS [Change Configurations](#)
Status ON
Sensor Currently Online

Normal State Value 1
Description of Status When Normal ON
Description of Status When Critical OFF

Save Reset
Online Time Tracking



In the “Advanced Setting” tab, there is an option to enable the graph, which is shown in picture below.

Coolteg U1 - Temp. Out

Normal Settings | **Advanced Settings** | Continuous Time Settings | Minimum Time Settings

Rearm:
 Check rate of change: Enable Disable
Enable Graph: On Off
[Click here to view graph](#)
 Popup Windows on Sensor Name
 Sensors URL:
 Open link in: Current Windows New Windows
 Filter Status: Enable Disable
 Enable Calendar: On Off

Now the main information from the CoolTeg Plus unit can be read via virtual sensors and any notification can be set, to stay inform.

An example of a notification is shown in the standard manual for RAMOS Ultra.