

# RAMOS Ultra Virtual sensor: COOLTEG Plus Units Configuration

# Manual

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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 <u>Setting up Touch Display "AC-DISP-PGDT04"</u>

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".



IP Address Name Servers		<u></u>								
An IP address can be	O Obtain an IP address via DHCP									
computer. If your network	Specify an IP address									
does not automatically assign IP addresses, ask your network	IP <u>A</u> ddress:									
administrator for an address,	Subnet Mask:									
provided.	Default Gateway:									

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

Inpu	nput Panel												
Esc	F1	F2 F	-3 F	4 F5	5 F6	F7	F8	F9	F10 F	11 F	12 Hom	ne End	Prop
•	1	2	3	4	5	6	7	8	9	0	-	=	BS
Tab	q	w	е	r	t	у	u	i	0	р	]	]	1
Caps Lock	a	s	d	f	g	h	j	k	1 7 1		ret	return	
Shift	z	×	С	۷	b	n	m	1	•	1	up		pgup
Ctrl	win	Alt						ins	del	lt	dn	rt	pgdn

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.

User name: Password:	  	When touch on windows for fill the details the keypad will pop up
User name: Password:	admin *****	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".

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The touch display is now ready to communicate.

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.



#### 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".

Location: Prague				_														Curr	ent Syste	m Time:	5/05/2014 15:46	j:54
Summary Map Sound Log			Sensors			Notification Access Control							Settings				Applications					
							_				Virtual	Senso	rs									
Sensors Menu					rtual Sen	SOF POR	4	-			40		40	40				47	40	40	20	
Sensor Ports		1	2	3	4	c	0		8	9	10	11	12	13	14	15	10	17	18	19	20	
Expansion Boards		(7)			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Sound Detector				-	-	-	_	-	-	-	_	-	-	-	_	-	-	-	_	-	-	
Dower Hoter		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
Virtual Sensors SNMP OID		1	Ĩ	1	1	1	1	1	I	1	1	1	1	1	1	1	I	1	1	1	1	
Get SNMP OID		41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
Help		1	P	P	P	P	P	1	1	1	1	ĩ	1	1	1	1	1	1	1	1	1	
This page shows the Remote Se The Remote Sensors are virtual	ensor ports. sensors that	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	
can run SNMP get commands, F addresses, run Custom Scripts, MODBUS equipment, perform Br functions and receive SNMP Tray Trap Receiver.	Ping IP , integrate oolean ps with the	1	1	1	1	1	I	I	I	1	1	1	I	I	1	1	1	1	1	1	I	
For Example you can write bash scripts to perform certain functio	and perl ns.											Configura	tion	ן								

#### Then select source options "Modbus" and click "Next".

Summary	Map	Sc	ound Log			Sensors			Notificatio	л		Access	Control		5	iettings			Applicatio	ns		Help
											Virtua	l Senso	rs									
Sensors Me	enu	1	2	3		5	6	7		0	10	11	12	13	14	15	16	17	10	10	20	
Sensor Ports			6	ő	~	5				3	10		12	15	1.4	15	10		10	10	20	
Expansion Boards		((1))	(1)	(1)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Sound Detector																						
Power Meter		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
Virtual Sensors		$(\mathbf{\hat{n}})$	8	1	1	8	8	1	1	1	1	8	1	8	8	1	8	1	1	8	8	
SNMP OID	)	-																				
Get SNMP C	DID	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	
Help		()	1	1	$\bigcirc$	$\bigcirc$	1	1	1	2	2	1	1	1	1	2	2	1	1	2	8	
This page shows the Remot The Remote Sensors are vir	te Sensor ports. rtual sensors that	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	
can run SNMP get command	ds, Ping IP																					
MODBUS equipment, perform	npts, integrate m Boolean	A	A.,			A	A	A .		A		4							4			
functions and receive SNMP Tran Receiver	Traps with the																					
The Recence.										Sou	irce 🚺	NODBUS	•									
For Example you can write b scripts to perform certain fun	ash and perl nctions.										1	None	r									
											F	Ping		_								
												Custom Sa	cript					Cance	el Ne	xt		
											1	rap Rece	iver									

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

Sensor Name	Virtual Sensor Port 61		
Medhus Protocol	Madhua DTU 💌		
Modbus Protocol	MOUDUS RTU Y		
Serial Port	RS485 V		
Serial Port Speed	9600 🔻		
Serial Port Parity	None <b>T</b>		
Serial Port Stop Bits	1 7		
Modbus ID		1	
Modbusilb			
Modbus Command	(0x01) Read Coil Status	•	
Modbus Register Address		0xNAN	
Sensor Style	Switch V		
Normal State Value	0		
Description of Status When Normal	Normal		
Description of Status When Critical	Critical	,	
Description of Status When Chuca	chucai		
			Canaal Baak
			Calicer Back

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



Sensor Name	Coolteg+ (1) - Status		
Modbus Protocol			
Modbus ID Address	102 169 161 150		
Modbus IP Address	192.100.101.100		
Modulus TCP Port	902	_	
Modbus Command	(0x04) Read Input Registers	•	
Data Ordering	High Byte First, High Word First	t 🔻	
Data Type	16bits signed int	·	
Modbus Register Address	2 0x	2	
Sensor Style	Switch 🔻		
Normal State Value	1		
Description of Status When Normal	ON		
Departmention of Status When Critical	OFF		

Then enter an IP address from touch display.

Sensor Name	Coolteg+ (1) - Status
Modbus Protocol	Modbus TCP V
Modbus IP Address	192.168.161.150
Modbus TCP Port	502
Modbus Command	(0x04) Read Input Registers 🔹
Data Ordering	High Byte First, High Word First 🔻
Data Type	16bits signed int
Modbus Register Address	2 0x2
Sensor Style	Switch <b>v</b>
Normal State Value	1
Description of Status When Normal	ON
Description of Status When Critical	OFF
	Cancel Back Next

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	Coolteg+ (1) - Status
Modbus Protocol	Modbus TCP
Modbus ID Address	192 168 161 150
Modbus TCP Port	502
Moubus ICF Fort	302
Modbus Command	(0x04) Read Input Registers 🔻
Data Ordering	High Byte First, High Word First 🔻
Data Type	16bits signed int
Modbus Register Address	2 0x2
Sensor Style	Switch T
Normal State Value	1
Description of Status When Normal	ON
Description of Status When Critical	OFF
	Can

## 4 <u>Configuration Tables (1<sup>st</sup> part of configuration)</u>

#### 4.1 Status of each cooling unit

• Modbus Command:

(0x04) Read Input Registers

Data Ordering:

Low Byte First, Low Word First 16bits signed int

Data Type:Modbus Register Address:

Modbus Register Address
2
3
4
5
6
7
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

Analog

°C

- 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:
- Value Factor: 10
- Value Text:
- Value Range for Slider Bar: 0 100

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 Registe	rs 🔻
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	€°F
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

°C

- 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:
- Value Range for Slider Bar: 0 100

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 Registe	ers 🔻
Data Ordering	Low Byte First, Low Word	I First 🔻
Data Type	16bits signed int	T
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

Analog

%RH

- 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:
- Value Factor: 10
- Value Text:
- Value Range for Slider Bar: 0 100

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 Registe	ers 🔻
Data Ordering	Low Byte First, Low Word	I First 🔻
Data Type	16bits signed int	T
Modbus Register Address	26	0x1A
Sensor Style	Analog 🔻	
Value Factor	10 (x0.1)	
Unit Text	RH	€°F
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:Description of status when critical:

Normal Critical

Sensor Name	Coolteg U1 - Common Fault			
Modbus Protocol	Modbus TCP V			
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 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:Description of status when critical:

Normal Critical

#### 4.7 Warming of each cooling unit

- Modbus Command: (0x03) Read Holding Registers
- Data Ordering: Low Byte First, Low Word First

16bits signed int.

- Data Type:
- 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:
- Description of status when critical:

Normal Warming



### 5 <u>Thresholds and reading settings (2<sup>nd</sup> part of configuration)</u>

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:

<u> </u>						
Low Critical	10 ow Wa	20 rning	30 <b>35 H</b> i High War	<b>gh Critical</b> ning		
Low Crit	ical	Low	Warning	High Warning	High Critical	
40	_	20	0	30	35	

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		
	r			
				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	e Settings	Minimum Time S	ettings		
	Sensor Name Source Status Sensor Currently No Description of Sta	Coolteg U1 - Status MODBUS <u>Change</u> ON ON ON Online	s Configurations 1 DN				
	Description of Sta	ave Reset	)FF				

Coolteg U1 - Temp. Out					
Normal Settings	Advanced Settings	Continuous Time Settings	Minimum Time Settings		
	Sensor Name Source Current Reading Status	Coolteg U1 - Temp. Out MODBUS <u>Change Configuration</u> 26.1 °C Normal	ons		
-	26.1 °C	Unine			
Low Criti	cal 10 20 30 40 Low Warning High Wa Critical Low Warning 20	High Critical rning High Warning Hig 30 40	h Critical		
Save Reset					

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	2 O Enable • Disable			
	Enable Graph	On Off Click here to view graph			
	Sensors URL	Popup Windows on Sensor Name	-		
	Open link in	Current Windows O New Windo	ws		
	Filter Status	Enable Oisable			
	Enable Calendar	◯ On . ● Off			
Save Reset					

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.



