

Humidistat for CT's Installation & User Guide



**For Products: -
PR0441
PR0445 (Display)**



Authorised User No. 00181



Ensure that all power is switched off before installing or maintaining this product

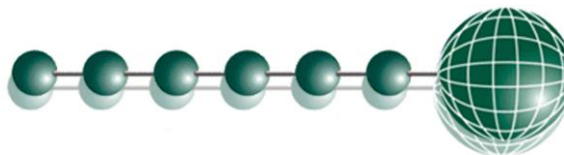


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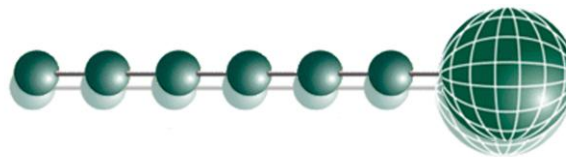
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Humidistat CT

From Resource Data Management

Types

There is 1 type of controller embedded in the Humidistat CT controller: -

Display value	Type
1	Thermostat and Humidistat with Timer and CT's

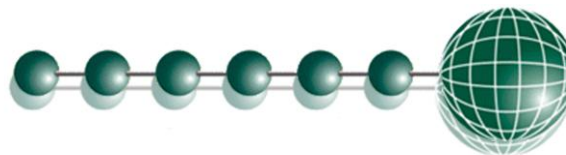
Type Description:

Type 1: Temp and Humidity Thermostat with timer and CT's

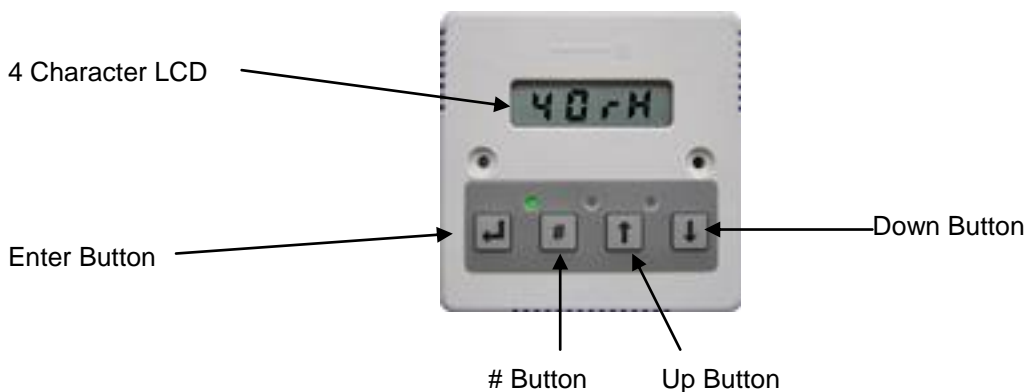
This controller has a thermostat function which uses the display temperature sensor, a humidistat function that uses the display humidity sensor, a seven day 2 on/2 off timer and support for up to 4 CT's (Voltage output type 0- 5 Volt dc)



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Front Panel Features



Display:

The display fits a standard UK single socket patress. The display values can be selected by changing the “display” parameter.

Enter Button:

Button used to enter values after a change.

Up Button:

Normally the up button will increment the setpoint. When in the menu, the up button is used to scroll up through the menu items.

Down Button:

Normally the down button will decrement the setpoint. When in the menu, the down button is used to scroll down through the menu items

Button:

Overrun function. Use this button to provide up to 6 extra hours of “on” time. The overrun function will switch off the amber LED if it’s on, or keep it off for the extra hours. Press the # button during an overrun period to cancel the overrun and turn the stat(s) off.

Network LED:

Green LED used to indicate network Status:

- Off No network attached
- Flashing Attempting to Log on to network
- Steady On-line

Timer LED:

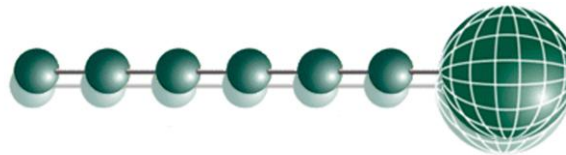
Amber LED, Indicates when the timer is **out** of its operational times.

Fault LED:

Red LED, used to indicate an alarm status.



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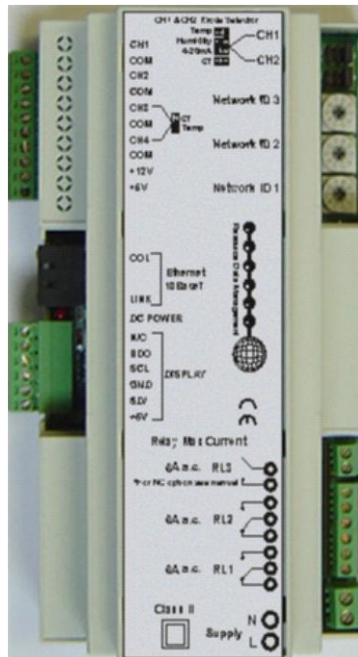
Connections

Analogue Inputs

- Channel 1 Input
- Channel 1 Ground
- Channel 2 Input
- Channel 2 Ground
- Channel 3 Input
- Channel 3 Ground
- Channel 4 Input
- Channel 4 Ground

Display Connector

- Not Connected
- SDO (serial Data Out)
- SCL (serial Clock)
- GND
- SDI (Serial data In)
- +5V (Vcc)



- Network ID Switch 3
- Network ID Switch 2
- Network ID Switch 1

Relays

- Relay 3 Normally Open
- Relay 3 Common
- Relay 2 Normally Open
- Relay 2 Common
- Relay 2 Normally Closed
- Relay 1 Normally Open
- Relay 1 Common
- Relay 1 Normally Closed

- Mains Neutral
- Mains Live

Do not connect an earth.

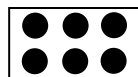
Display Connections

Controller	Display
SDO (Serial Data Out)	Data In
SCL (Serial Clock)	Clock
GND	GND
SDI (Serial Data In)	Data Out
+5V (Vcc)	Vcc

Inputs Jumper Settings:

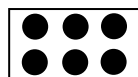
The unit is factory set for all inputs to be CT's.

Channel 1 Input selection Jumper



Channel 1 showing CT selected

Channel 2 Input selection Jumper

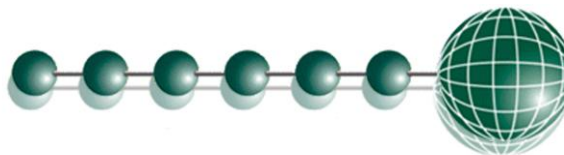


Channel 2 showing CT selected

Note: It is very important for the normal operation of the Humidistat controller that these jumpers are set to the correct position for the inputs being used.



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Input/Output Allocation Tables

Temp and Humidity Thermostat with timer and CT's

Input/Output	Description	Alarm Action
Display Temperature	Fixed Sensor in the display	yes
Display Humidity	Fixed sensor in the display	yes
Input 1	CT 1	yes
Input 2	CT 2	yes
Input 3	CT 3	yes
Input 4	CT 4	yes
Relay 1	Thermostat control	N/A
Relay 2	Humidistat control	N/A
Relay 3	Timer output	N/A

Setting up the controller

Access to the controller can be achieved by 2 ways

- Through the front mounted buttons on the display
- Through the RDM Data Director or Data Manager

Setup Mode

Setup through front buttons



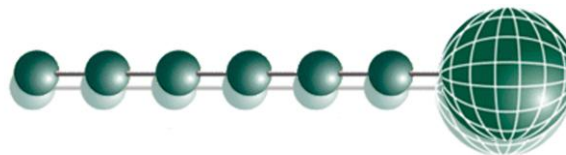
To enter the setup mode, hold the **Enter** and **Down** buttons together for approximately 3 seconds until the message “Ent” appears on the display. Now press the Enter button again to enter the function menu. IO will be displayed. Scroll up or down to go through the menu items.

Setup Function Menu

Display	Option	Explained in Paragraph
IO	View Input and Output States	I/O
PArA	View or change Parameters	Para
Unit	View or change Units	Unit
tyPE	View or change controller type	Type can not be changed
rtc	View or change the Real Time Clock	rtc
nEt	View or change the network settings	Network
SoFt	View the Software version	
ESC	Escape the menu	



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Recommended set-up method

Unit. Set/view temperature unit

From the function menu scroll to select Unit

Press enter and the value will be displayed: -

Probe Units

0 = °C
1 = °F

Use the up or down keys to select the units and press enter.

Probe units are now set

PArA. Set/view parameters (This can be achieved at the network front end)

- a. From the function menu scroll to select PArA
- b. Pressing Enter while PArA is displayed will enter the parameter menu. The first parameter option will be displayed as P-01. Pressing the Up or Down button will present the other parameter options P-02, P-03 etc. See the parameter tables to find what parameter number corresponds to which actual parameter. Pressing the Enter button will show the current value of the selected parameter. Press Up or Down to modify the value and press Enter again to save the value. The parameter list number will be displayed again. Two other options are present in the parameter menu – dFLt and ESC. Selecting ESC will exit setup mode. Selecting dFLt will reset all parameters back to the default values for the current type of controller.

rtc. Real time clock (This will automatically synchronise on network systems)

- a. Use the up or down buttons to scroll through the display until the display reads “rtc”
- b. Press enter. The display will show “t-1”. press enter again
- c. Scroll hours up or down (0 – 23) press enter
- d. Use up button to select “t-2”, press enter
- e. Scroll minutes up or down (0 – 59) press enter
- f. Repeat for t-3 (seconds 0 – 59)
- g. Repeat for t-4 (Days up to 31)
- h. Repeat for t-5 (months up to 12)
- i. Repeat for t-6 (Year up to 99)
- j. Use up button to display “ESC”, press enter to display “rtc”

Time clock is now set

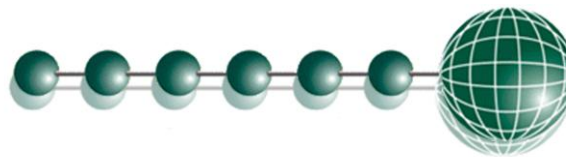
Network Configuration

The final section to setup is the network ID. In all instances, this must be done before the controller is connected to the site network. Set the 3 rotary network switches to an appropriate setting, the controllers have an auto-initialise function, which will automatically log the device onto the site network. If the wrong ID has been entered onto the network, you will have to reset the controller ID by setting the ID to 0-0-0, power cycle and then re-enter the correct ID.

This controller does not require an external communications module.



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IP-L (Local IP Address)

For manual selection of IP Address

To configure the controller for IP-L, set all three rotary switches to zero.

1. nEt. From the function menu you can now select nEt
 - Press enter and the display will show "IP-L", press enter
 - You can now set the address using the table below

Display	Option
IP-1	IP Address byte 1
IP-2	IP Address byte 2
IP-3	IP Address byte 3
IP-4	IP Address byte 4
nL	Network Mask Length
gt-1	Gateway Address byte 1
gt-2	Gateway Address byte 2
gt-3	Gateway Address byte 3
gt-4	Gateway Address byte 4
ESC	Exit network menu. N.B. this option must be selected to save any changes made in this menu

IP-r (IP Address issued by the DHCP server)

To configure the controller for IP-r, set the three rotary switches to give each controller a unique identifier. The controller should then be connected to the network.

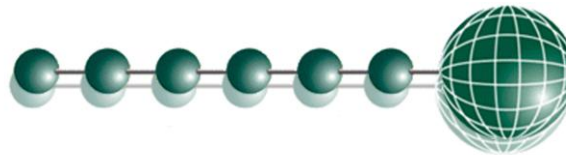
2. nEt. From the function menu you can now select nEt
 - Press enter and the display will show "IP-r", press enter
 - You can now view only the address given by the DHCP server

To ease setup, a single network mask length value is used. If the address has been specified with a network mask value in dotted IP format e.g. 255.255.255.0 then the table below gives the conversion:

Mask	Length	Mask	Length	Mask	Length
		255.255.254.0	23	255.254.0.0	15
255.255.255.252	30	255.255.252.0	22	255.252.0.0	14
255.255.255.248	29	255.255.248.0	21	255.248.0.0	13
255.255.255.240	28	255.255.240.0	20	255.240.0.0	12
255.255.255.224	27	255.255.224.0	19	255.224.0.0	11
255.255.255.192	26	255.255.192.0	18	255.192.0.0	10
255.255.255.128	25	255.255.128.0	17	255.128.0.0	09
255.255.255.0	24	255.255.0.0	16	255.0.0.0	08



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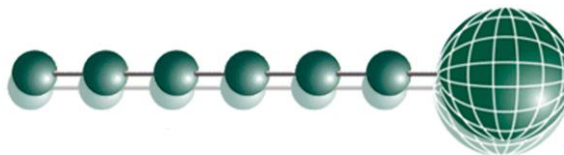


Parameter Table:

Number	Parameter	Range °C (°F)	Step	Units	Def. °C (°F)
P01	Stat Temp setpoint	-42 to 60 (-43 to 140)	0.1	°C (°F)	15 (59)
P02	Stat Temp diff	0 to 20 (32 to 68)	0.1	°C (°F)	5 (41)
P04	Stat Temp type	0 = Cooling 1 = Heating	1		1
P05	Stat Temp min set	-42 to 60 (-43 to 140)	1	°C (°F)	-5 (-9)
P06	Stat Temp max set	-42 to 60 (-43 to 140)	1	°C (°F)	5 (9)
P07	Stat Comfort Index	0 = No 1 = Yes	1		0
P10	Stat Temp High Alarm	-42 to 60 (-43 to 140)	1	°C (°F)	25 (77)
P11	Stat Temp Low Alarm	-42 to 60 (-43 to 140)	1	°C (°F)	-5 (23)
P12	Stat Temp Alarm Delay	00 to 99	1	mins	20
P21	Humidity Stat setpoint	0 to 100	1	% rH	30
P22	Humidity Stat diff	0 to 20	1	% rH	5
P24	Humidity Stat type	0 = Heating 1 = Cooling	1		0
P25	Humidity Stat min set	0 to 100	1	% rH	20
P26	Humidity Stat max set	0 to 100	1	% rH	40
P30	Humidity Stat High Alarm	0 to 100	1	% rH	50
P31	Humidity Stat Low Alarm	0 to 100	1	% rH	10
P32	Hum. Stat Alarm Delay	00 to 99	1	mins	20
P40	CT 1 Range Select	0 - 500 (0 = channel off)	1	Amps	60
P41	CT 2 Range Select	0 - 500 (0 = channel off)	1	Amps	60
P42	CT 3 Range Select	0 - 500 (0 = channel off)	1	Amps	60
P43	CT 4 Range Select	0 - 500 (0 = channel off)	1	Amps	60
P44	CT 1 Low Amps Alarm	0 - 500	1	Amps	5
P45	CT 1 High Amps Alarm	0 - 500	1	Amps	60
P46	CT 2 Low Amps Alarm	0 - 500	1	Amps	5
P47	CT 2 High Amps Alarm	0 - 500	1	Amps	60
P48	CT 3 Low Amps Alarm	0 - 500	1	Amps	5
P49	CT 3 High Amps Alarm	0 - 500	1	Amps	60
P50	CT 4 Low Amps Alarm	0 - 500	1	Amps	5
P51	CT 4 High Amps Alarm	0 - 500	1	Amps	60
P52	CT 1 Alarm delay	00 to 99	1	mins	20
P53	CT 2 Alarm delay	00 to 99	1	mins	20
P54	CT 3 Alarm delay	00 to 99	1	mins	20
P55	CT 4 Alarm delay	00 to 99	1	mins	20
P60	Display	0 = Cycle Temp/Hum 1 = Thermostat 2 = Humidity Stat	1		0
P70	Timer Mode	0 = local 1 = Remote 2 = force on 3 = force off	1		0
P71	Sunday On Time 1	00:00 to 23:59	00:01	mins:secs	08:00
P72	Sunday Off Time 1	00:00 to 23:59	00:01	mins:secs	20:00



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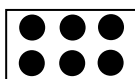


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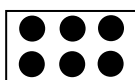
P73	Sunday On Time 2	00:00 to 23:59	00:01	mins:secs	08:00
P74	Sunday Off Time 2	00:00 to 23:59	00:01	mins:secs	20:00
P75	Monday On Time 1	00:00 to 23:59	00:01	mins:secs	08:00
P76	Monday Off Time 1	00:00 to 23:59	00:01	mins:secs	20:00
P77	Monday On Time 2	00:00 to 23:59	00:01	mins:secs	08:00
P78	Monday Off Time 2	00:00 to 23:59	00:01	mins:secs	20:00
P79	Tuesday On Time 1	00:00 to 23:59	00:01	mins:secs	08:00
P80	Tuesday Off Time 1	00:00 to 23:59	00:01	mins:secs	20:00
P81	Tuesday On Time 2	00:00 to 23:59	00:01	mins:secs	08:00
P82	Tuesday Off Time 2	00:00 to 23:59	00:01	mins:secs	20:00
P83	Wednesday On Time 1	00:00 to 23:59	00:01	mins:secs	08:00
P84	Wednesday Off Time 1	00:00 to 23:59	00:01	mins:secs	20:00
P85	Wednesday On Time 2	00:00 to 23:59	00:01	mins:secs	08:00
P86	Wednesday Off Time 2	00:00 to 23:59	00:01	mins:secs	20:00
P87	Thursday On Time 1	00:00 to 23:59	00:01	mins:secs	08:00
P88	Thursday Off Time 1	00:00 to 23:59	00:01	mins:secs	20:00
P89	Thursday On Time 2	00:00 to 23:59	00:01	mins:secs	08:00
P90	Thursday Off Time 2	00:00 to 23:59	00:01	mins:secs	20:00
P91	Friday On Time 1	00:00 to 23:59	00:01	mins:secs	08:00
P92	Friday Off Time 1	00:00 to 23:59	00:01	mins:secs	20:00
P93	Friday On Time 2	00:00 to 23:59	00:01	mins:secs	08:00
P94	Friday Off Time 2	00:00 to 23:59	00:01	mins:secs	20:00
P95	Saturday On Time 1	00:00 to 23:59	00:01	mins:secs	08:00
P96	Saturday Off Time 1	00:00 to 23:59	00:01	mins:secs	20:00
P97	Saturday On Time 2	00:00 to 23:59	00:01	mins:secs	08:00
P98	Saturday Off Time 2	00:00 to 23:59	00:01	mins:secs	20:00

All input selection jumpers should be off for CT operation

Channel 1 Input selection Jumper



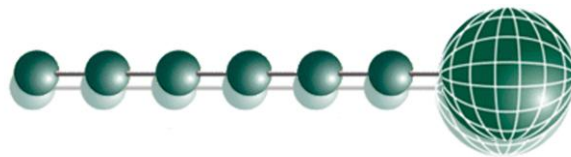
Channel 2 Input selection Jumper



Channel 3 and 4: - jumper off for CT



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Operation:

Type 1: Temp and Humidity Thermostat with timer and CT's

This controller has 2 stat functions; a thermostat that switches relay 1, and a humidistat that switches relay 2. Both stat functions have their own diff, and can be set for cooling mode (diff is below the set-point) or heating mode (diff is above the set-point).

If comfort index is enabled, the control temp is offset by a value according to the humidity value (see appendix 1; Humidity/Temperature chart) The Display temperature is also similarly adjusted. (The decimal point on the display comes on to indicate an offset temperature value.)

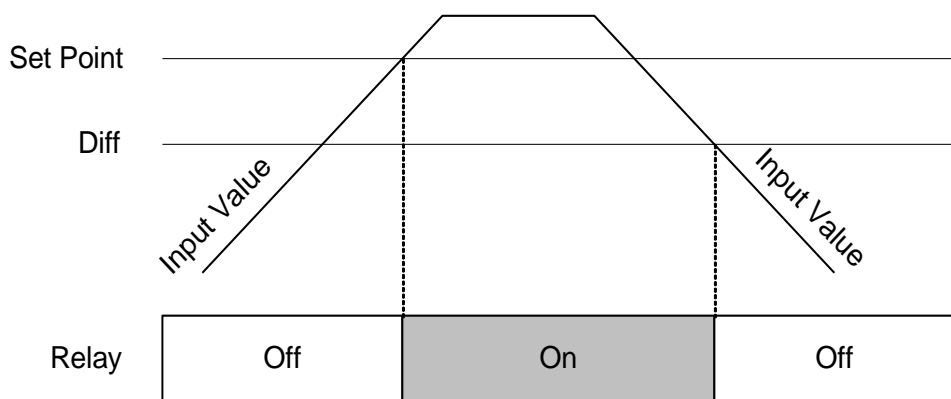
High and Low alarm limits can be set for each stat

Set-points can be changed by the user by pressing the "up and down" buttons together for about 3 seconds. The controller will indicate the temperature set point which can be changed by the up/down buttons. Pressing enter saves the settings and moves to the humidity stat setpoint. This is changed in the same way.

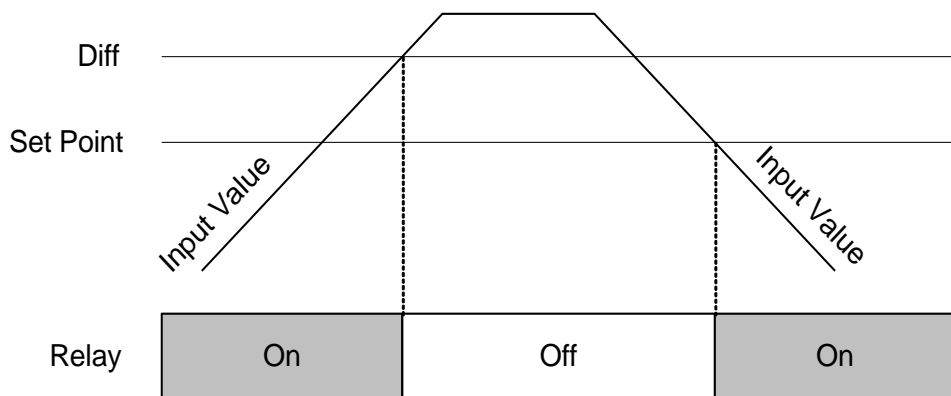
The controller has a build in 2 on/2 off seven day timer. The controller will continue to display outside of the set times, but the control relays will not function. Relay 3 energises when within the selected times, the amber LED indicates when outside of the set times.

There are 4 channels that can accept voltage output (0-5V dc) CT's, the controller can be configured to have Low Amps and High Amps alarms.

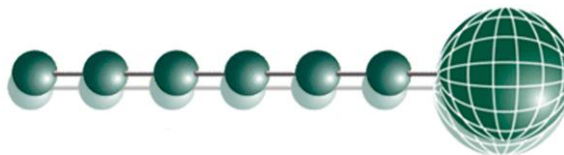
Cooling Thermostat graph



Heating Thermostat graph



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Viewing

Apart from setting up the controller, you can also view the status of the inputs and outputs.

1. IO. View Inputs / Outputs and States
 - a. From the function menu, select "IO", press enter
 - b. You can now scroll through the IO tables as set out below. The tables you view will depend on the controller type configuration.

Input/Output table

Number	IO	Range (dependant on probe type) °C (°F)	Step	Units
I-01	Stat temperature	-59 - +120 (-74 - +248)	1	Deg
I-02	Humidity	0 – 99	1	% rH
I-10	Temperature	-40 - +120 (-40 - +248)	1	Deg
I-41	CT 1	0 - 500	1	Amps
I-42	CT 2	0 - 500	1	Amps
I-43	CT 3	0 - 500	1	Amps
I-44	CT 4	0 - 500	1	Amps
O-01	Relay 1	0 = off, 1 = on	1	-
O-02	Relay 2	0 = off, 1 = on	1	-
O-03	Relay 3	0 = off, 1 = on	1	-
O-11	Timer	0 = off, 1 = on	1	-
S-01	State	0 = off 1 = Stabilise 2 = Normal 3 = High Alarm 4 = Low Alarm		

Alarm Messages

The following alarms and messages can appear on the Humidistat display.

Display Message	System status
Ft	Probe or sensor fault

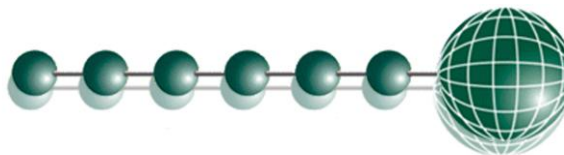
Network Alarms

The table below shows the text and associated type number that is sent to the system "front end". The type number is normally used to provide different alarm actions.

Alarm text	Type # (index)
Display Probe fault	6
Display Sensor fault	6
Stat Over Temperature	4
Stat Under Temperature	5
High Humidity Alarm	8
Low Humidity Alarm	9
CT 1 Low Amp	5
CT 2 Low Amp	5



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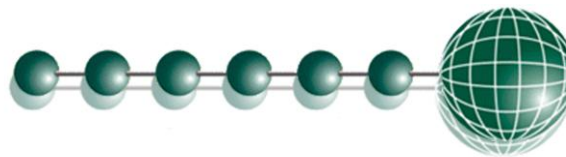


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CT 3 Low Amp	5
CT 4 Low Amp	5
CT 1 High Amp	4
CT 2 High Amp	4
CT 3 High Amp	4
CT 4 High Amp	4
CT 1 Fault	6
CT 2 Fault	6
CT 3 Fault	6
CT 4 Fault	6



Ensure that all power is switched off before installing or maintaining this product



Specification

Power requirements:

Supply Voltage Range:	100 - 240 Vac \pm 10%
Supply Frequency:	50 - 60 Hz
Maximum supply current:	1 Amp (excluding relay loads)
Typical supply current:	<1 Amp (excluding relay loads)
Operating temperature range:	+5°C to +50°C
Operating Humidity:	80% maximum
Storage temperature range:	-20°C to +65°C
Environmental:	Indoor use at altitudes up to 2000m, Pollution Degree 1, Installation Category II. Voltage fluctuations not to exceed \pm 10% of nominal voltage
Size:	90mm (W) x 58mm (H) x 160mm (D)
Weight:	
Safety:	EN61010
EMC:	EN61326; 1997 +Amdt. A1; 1998
Ventilation:	There is no requirement for forced cooling ventilation
Class 2 Insulation:	No protective Earth is required and none should be fitted.

The host equipment must provide a suitable external over-current protection device such as: -

Fuse:	3A 240 Vac Antisurge (T) HRC conforming to IEC 60127
Or MCB:	3A, 240 VAC Type C conforming to BS EN 60898

The host equipment must provide adequate protection against contact to hazardous live parts.

Relays

Relay 1: contacts: - N/C, N/O and Common

Max current relay 1:	6A (non inductive)
Max Voltage relay 1:	260Vac (external supply)
Exclusive common	

Relay 2: contacts: - N/C, N/O and Common

Max current relay 2:	6A (non inductive)
Max Voltage relay 2:	260Vac (external supply)

Relay 3: contacts: - N/O and Common

Max current relay 3:	6A (non inductive)
Max Voltage relay 3:	260Vac (external supply)

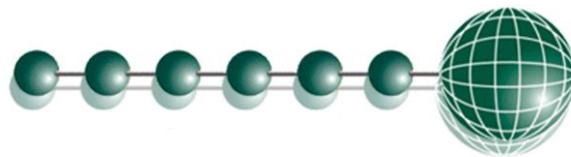
For compliance with the LVD, supplies to all three relays must be the same voltage.

Inputs:

CH1:	CT, Voltage output type 0- 5 Volts DC
CH2:	CT, Voltage output type 0- 5 Volts DC
CH3:	CT, Voltage output type 0- 5 Volts DC
CH4:	CT, Voltage output type 0- 5 Volts DC

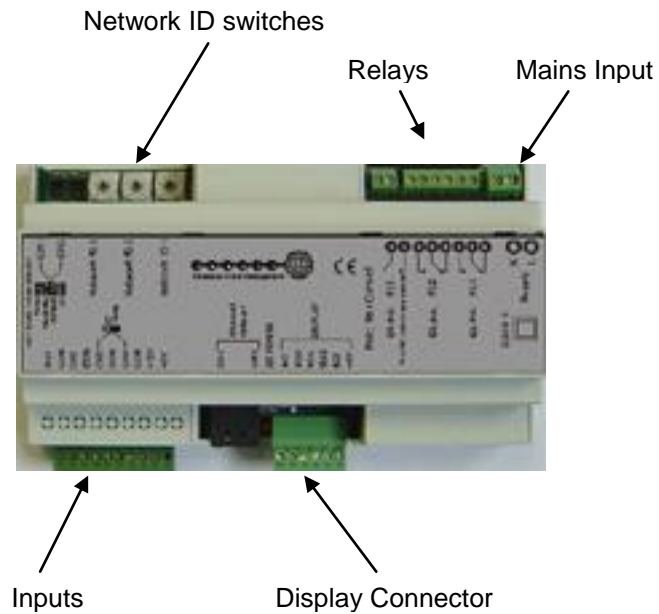


Ensure that all power is switched off before installing or maintaining this product



Installation:

Wiring:



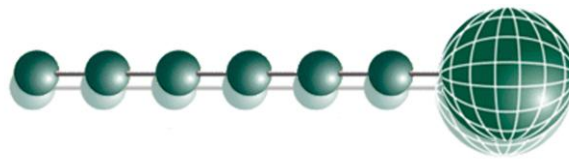
Fixing:

The Humidistat Display is designed to fix on to a single socket patress, either wall or flush mount.

The Humidistat Controller fits a standard DIN rail, or the clips can be extended to allow for a surface screw fixing.



Ensure that all power is switched off before installing or maintaining this product



Fuse:

The host equipment must provide a suitable external over-current protection device such as: -

Fuse: 3A 240 Vac Antisurge (T) HRC conforming to IEC 60127
Or MCB: 3A, 240 VAC Type C conforming to BS EN 60898

Cleaning:

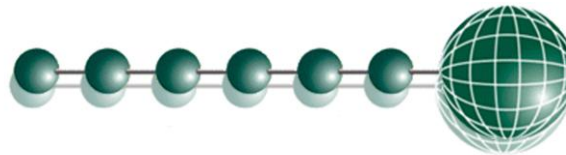
Do not wet the controller when cleaning. Clean the front by wiping with slightly dampened lint free cloth.

Disclaimer:

The specifications of the product detailed in this document may change without notice. RDM Ltd shall not be liable for errors or omissions, for incidental or consequential damages, directly or indirectly, in connection with the furnishing, performance or misuse of this product or document.



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Appendix 1

Apparent Temperature for Values of Room Temperature and Relative Humidity

	Humidity										
	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
15	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0
16	11.2	12.2	13.2	14.2	15.2	16.2	17.2	18.2	19.2	20.2	21.2
17	12.4	13.4	14.4	15.4	16.4	17.4	18.4	19.4	20.4	21.4	22.4
18	13.6	14.6	15.6	16.6	17.6	18.6	19.6	20.6	21.6	22.6	23.6
19	14.8	15.8	16.8	17.8	18.8	19.8	20.8	21.8	22.8	23.8	24.8
20	16.0	17.0	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0
21	17.2	18.2	19.2	20.2	21.2	22.2	23.2	24.2	25.2	26.2	27.2
22	18.4	19.4	20.4	21.4	22.4	23.4	24.4	25.4	26.4	27.4	28.4
23	19.6	20.6	21.6	22.6	23.6	24.6	25.6	26.6	27.6	28.6	29.6
24	20.8	21.8	22.8	23.8	24.8	25.8	26.8	27.8	28.8	29.8	30.8
25	22.0	23.0	24.0	25.0	26.0	27.0	28.0	29.0	30.0	31.0	32.0
26	23.2	24.2	25.2	26.2	27.2	28.2	29.2	30.2	31.2	32.2	33.2
27	24.4	25.4	26.4	27.4	28.4	29.4	30.4	31.4	32.4	33.4	34.4
28	25.6	26.6	27.6	28.6	29.6	30.6	31.6	32.6	33.6	34.6	35.6
29	26.8	27.8	28.8	29.8	30.8	31.8	32.8	33.8	34.8	35.8	36.8
30	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0	36.0	37.0	38.0
31	29.2	30.2	31.2	32.2	33.2	34.2	35.2	36.2	37.2	38.2	39.2
32	30.4	31.4	32.4	33.4	34.4	35.4	36.4	37.4	38.4	39.4	40.4
33	31.6	32.6	33.6	34.6	35.6	36.6	37.6	38.6	39.6	40.6	41.6
34	32.8	33.8	34.8	35.8	36.8	37.8	38.8	39.8	40.8	41.8	42.8
35	34.0	35.0	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0
36	35.2	36.2	37.2	38.2	39.2	40.2	41.2	42.2	43.2	44.2	45.2



Ensure that all power is switched off before installing or maintaining this product