

Mercury 6-5M 2 Section Installation Guide



For Products: -

PR0317



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

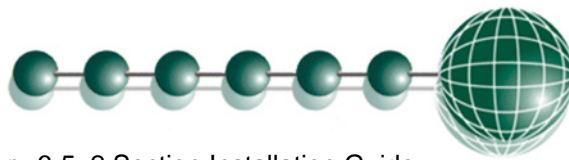


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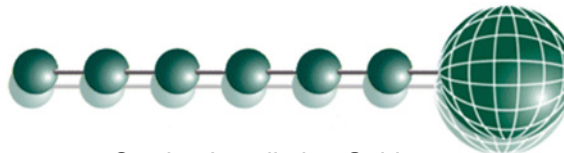
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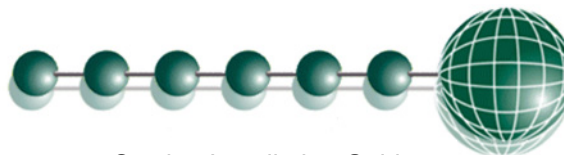


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The Mercury Range

From Resource Data Management

Description:

This controller is intended to be used on a 2 section refrigeration display case. It has 6 different control types to accommodate various display cases such as HT/LT piped and integrals. The controller supports PT1000 and NTC2000 temperature probes (note all 6 inputs are either PT1000 or NTC2000)

Configuration

The controllers are delivered pre-configured as type 1: HT Integral

The controller gives you up to six configuration options: -

Display value	Type
1	Integral controller HT
2	Integral controller LT
3	Remote case controller LT
4	Remote case controller HT
5	Coldroom controller LT
6	Coldroom controller HT

Networks

The controllers are capable of connecting to either a TCP/IP local area network or a RS485 network or controlling in standalone mode with no network output.

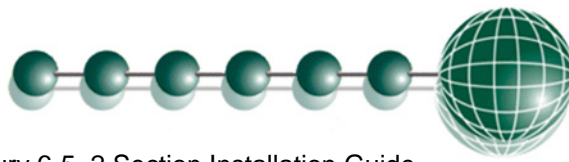
To connect to a network you must add the correct communications module.

- 485 Legacy module (Part No PR0026)
- IP Futura module (Part No PR0016)

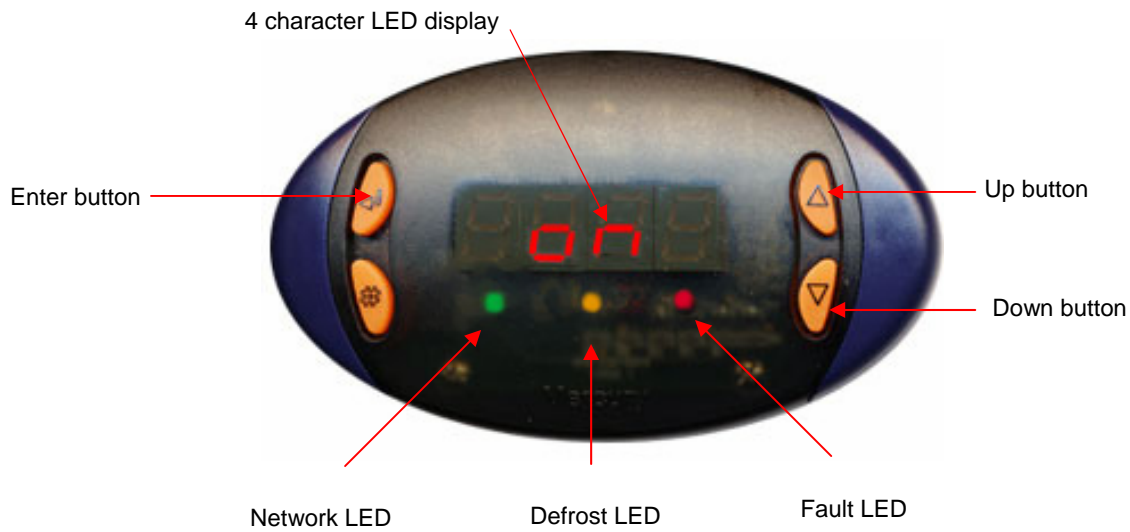
Connecting to either of these communication modules will automatically be detected on power up and this will affect the set up screens made available to you.



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Front Panel Features



Display:

4 character red LED display, used to display temperature and status messages.

Enter Button:

Button used to enter values front the menu system.

Up Button:

Button used to scroll up through the menu items

Down Button:

Button used to scroll down through the menu items

Network LED:

Green LED used to indicate network Status:

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

Defrost LED:

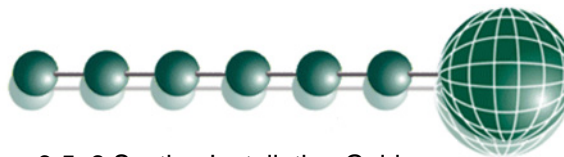
Yellow LED, used to indicate defrost status

Fault LED:

Red LED, used to indicate alarm status

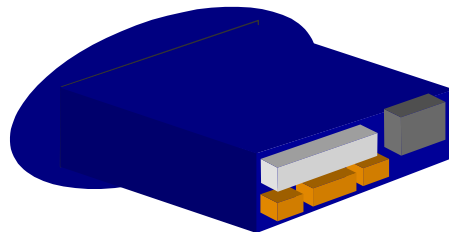


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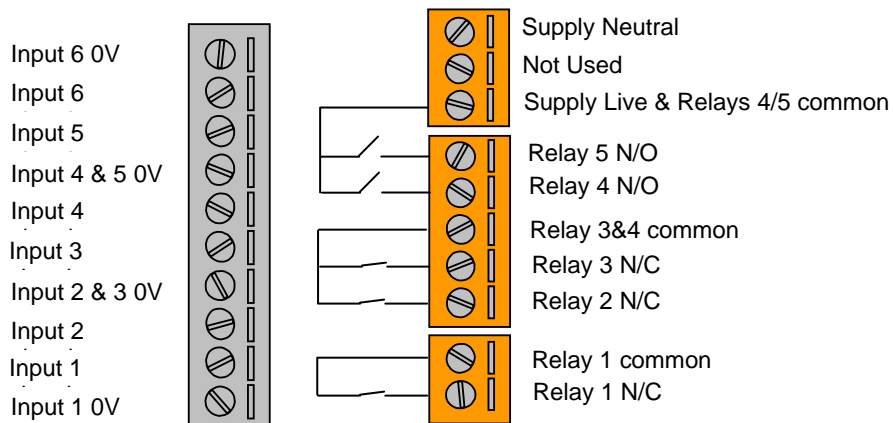


Connections

All connections are made to the back of the controller. The diagram below shows the connection detail. Inputs and outputs are assigned according to the chosen configuration. See [Specification](#) for further details on connections.



Comms connector



Do not connect an earth.

Input/Output Allocation Tables

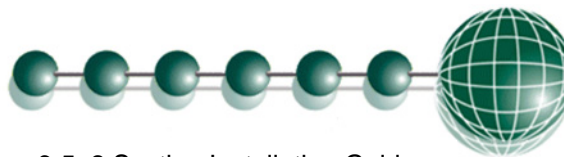
Input / Output allocation tables for the 6-5 Types 3 & 4

Case Controller (Type 3 & 4)	Function	Alarm Action	Plant input (switched resistors *)
Input 1	Air on Temperature Section 1	Yes	
Input 2	Air off Temperature Section 1	Yes	
Input 3	Defrost termination Temperature Section 1	No	Plant fault 1
Input 4	Air on Temperature Section 2	Yes	Case Clean Switch
Input 5	Air off Temperature Section 2	Yes	
Input 6	Defrost termination Temperature Section 2	No	
Relay 1	Liquid Line Valve (N/C)	N/A	
Relay 2	Fans (N/C)	N/A	
Relay 3	Lights (N/C)	N/A	
Relay 4	Defrost Heater Section 1 (N/O)	N/A	
Relay 5	Defrost Heater Section 2 (N/O)	N/A	

* For PT1000 probes, use 820 Ohm switched resistors
For NTC2000 probes, use 590 Ohm switched resistors



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Input / Output allocation tables for the 6-5 Types 5 & 6

Coldroom Controller (Type 5 & 6)	Function	Alarm Action	Plant input (switched resistors*)
Input 1	Air on Temperature Section 1	Yes	
Input 2	Air off Temperature Section 1	Yes	Man trap
Input 3	Defrost termination Temperature Section 1	No	Plant fault 1
Input 4	Air on Temperature Section 2	Yes	Case Clean
Input 5	Air off Temperature Section 2	Yes	Door Switch
Input 6	Defrost termination Temperature Section 2	No	
Relay 1	Liquid Line Valve (N/C)	N/A	
Relay 2	Fans (N/C)	N/A	
Relay 3	Lights (N/C)	N/A	
Relay 4	Defrost Heater Section 1 (N/O)	N/A	
Relay 5	Defrost Heater Section 2 (N/O)	N/A	

* For PT1000 probes, use 820 Ohm switched resistors
 For NTC2000 probes, use 590 Ohm switched resistors

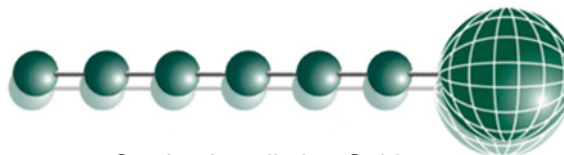
Input / Output allocation tables for the 6-5 Types 1 & 2

Mobile Controller (Type 1 & 2)	Function	Alarm Action	Plant input (switched resistors*)
Input 1	Air on Temperature Section 1	Yes	
Input 2	Air off Temperature Section 1	Yes	
Input 3	Defrost termination Temperature Section 1	No	Plant fault 1
Input 4	Air on Temperature Section 2	Yes	Case Clean
Input 5	Air off Temperature Section 2	Yes	Plant fault 2
Input 6	Defrost termination Temperature Section 2	No	
Relay 1	Compressor (N/C)	N/A	
Relay 2	Fans (N/C)	N/A	
Relay 3	Lights (N/C)	N/A	
Relay 4	Defrost Heater Section 1 (N/O)	N/A	
Relay 5	Defrost Heater Section 2 (N/O)	N/A	

* For PT1000 probes, use 820 Ohm switched resistors
 For NTC2000 probes, use 590 Ohm switched resistors



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Setting up the controller

Access to the controller can be achieved several ways

- Through the front mounted buttons
- Direct access by PC or palm top into the rear comms port. This requires a software package available on the RDM website
- Through legacy front end panels on 485 networks
- Through the RDM Data Director.

Setup Mode

Setup through front buttons



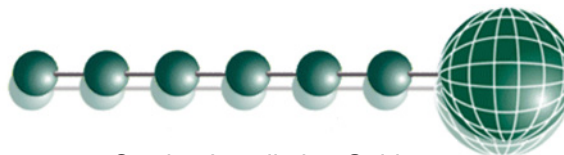
To enter setup mode, hold the Enter and Down buttons together for approximately 3 seconds until the message “Ent” appears on the display. Now press the Enter button again to enter the function menu. IO will be displayed. Scroll up or down to go through the list.

Setup Function Menu

Display	Option	Explained in Paragraph
IO	View Inputs / Outputs and States	Input / output table
PArA	Set/View Parameters	Set view parameters
Unit	Probe type and Celsius/Fahrenheit option	Set View Unit
tyPE	Set/View Controller Type	Set/view controller type
ptyP	Set/View Product Type ('T' variant only)	Set/view product type
rtc	Set/view Clock (rtc = Real Time Clock)	Real Time Clock
nEt	Set/view network configuration	Network Configuration
SoFt	View software version	
dEF	Start Defrost	Defrost
FANS	Toggle Fans Only mode	Fans
CASE	Toggle Case Off mode	Case Off
Lits	Toggle Lights Only mode	Lights
ESC	Exit Setup mode	



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Recommended set-up method

If you are not connecting to a network and want to set up the controller through the buttons we recommend you use the following order from the function menu.

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

type. Set/view controller type

- a. From the function menu scroll to select type, press enter
- b. Use the up/down buttons to scroll through case/coldroom configuration types. (see [configuration table on page 4](#))
- c. Press enter.
- d. Scroll to select “ESC”
- e. Press enter

Controller type configuration is 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 list below 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.

Unit. Set/view temperature unit

From the function menu scroll to select Unit

Press enter and the value will be displayed: -

0 for PT1000 Celsius

1 for PT1000 Fahrenheit

2 for NTC2000 Celsius

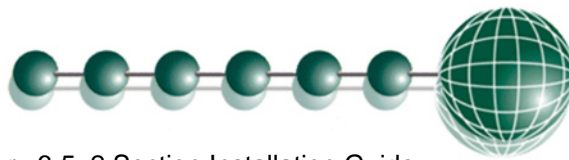
3 for NTC2000 Fahrenheit

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

This function is now complete



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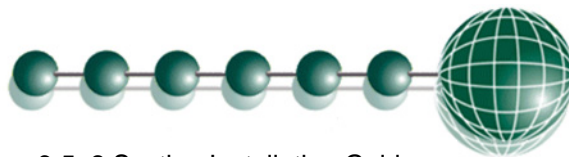
Parameter Tables:

Parameter table for Case Controller (Type 3 and Type 4)

	Parameter	Range °C (°F)	Step	Units	Def. LT °C (°F)	Def. HT °C (°F)
P-01	Cut-in Temp	-42 to 30 (-43.6 to 86)	0.1	Deg	-20 (-4)	0.0 (32)
P-02	Diff	0 to 10 (0 to 18)	0.1	Deg	2 (3.6)	1.5 (2.7)
P-80	Control Type	0 (highest) 1 (average)	1		0	0
P-81	Control Weight Section 1	0 to 100	1	%	50	50
P-82	Display Weight Section 1	0 to 100	1	%	50	50
P-83	Control Weight Section 2	0 to 100	1	%	50	50
P-84	Display Weight Section 2	0 to 100	1	%	50	50
P-20	Alarm Delay	00:00 to 99:00	01:00	mm:ss	20:00	20:00
P-21	UT Alarm	-49 to 60 (-56.2 to 140)	0.1	Deg	-30 (-22)	-2 (28.4)
P-22	OT Alarm	-49 to 60 (-56.2 to 140)	0.1	Deg	-15 (5)	5 (41)
P-40	Defrost Mode	0 (Local), 1 (Remote)			Local	Local
P-41	Defrost Start	00:00 to 23:59	00:01	hh:mm	01:00	01:00
P-42	Defrosts per Day	0 to 8	1		6	6
P-43	No Defrost Time	0 to 25	1	hours	8	8
P-85	Def Terminate Section 1	-42 to 30 (-43.6 to 86)	0.1	Deg	14 (57.2)	10 (50)
P-86	Def Terminate Section 2	-42 to 30 (-43.6 to 86)	0.1	Deg	14 (57.2)	10 (50)
P-45	Def Min Time	00:00 to 99:00	01:00	mm:ss	05:00	05:00
P-46	Def Max Time	00:00 to 99:00	01:00	mm:ss	24:00	24:00
P-47	Drain Down	00:00 to 24:00	00:15	mm:ss	01:30	01:30
P-48	Recovery Time	00:00 to 99:00	01:00	01:00	30:00	30:00
P-49	Fan delay	00:00 to 99:00	01:00	01:00	00:00	00:00
P-50	Fans In Defrost	0 (Off), 1 (On)			On	On
P-60	Lights Mode	0 (Local), 1 (Remote), 2 (Man Off), 3 (Man On)			Local	Local
P-61	Sun Lights On	00:00 to 23:59	00:01	hh:mm	08:00	08:00
P-62	Sun Lights Off	00:00 to 23:59	00:01	hh:mm	20:00	20:00
P-63	Mon Lights On	00:00 to 23:59	00:01	hh:mm	08:00	08:00
P-64	Mon Lights Off	00:00 to 23:59	00:01	hh:mm	20:00	20:00
P-65	Tue Lights On	00:00 to 23:59	00:01	hh:mm	08:00	08:00
P-66	Tue Lights Off	00:00 to 23:59	00:01	hh:mm	20:00	20:00
P-67	Wed Lights On	00:00 to 23:59	00:01	hh:mm	08:00	08:00
P-68	Wed Lights Off	00:00 to 23:59	00:01	hh:mm	20:00	20:00
P-69	Thu Lights On	00:00 to 23:59	00:01	hh:mm	08:00	08:00
P-70	Thu Lights Off	00:00 to 23:59	00:01	hh:mm	20:00	20:00
P-71	Fri Lights On	00:00 to 23:59	00:01	hh:mm	08:00	08:00
P-72	Fri Lights Off	00:00 to 23:59	00:01	hh:mm	20:00	20:00
P-73	Sat Lights On	00:00 to 23:59	00:01	hh:mm	08:00	08:00
P-74	Sat Lights Off	00:00 to 23:59	00:01	hh:mm	20:00	20:00
dFLt	Restore default settings					



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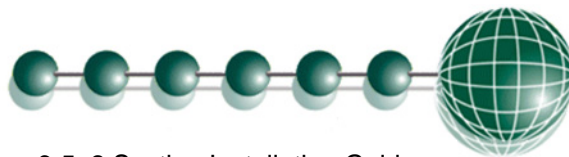


Parameter table for Mobile Controller (Type 1 and Type 2)

	Parameter	Range °C (°F)	Step	Units	Def. LT °C (°F)	Def. HT °C (°F)
P-01	Cut-in Temp	-42 to 30 (-43.6 to 86)	0.1	Deg	-20 (-4)	3.5 (38.3)
P-02	Diff	0 to 10 (0 to 18)	0.1	Deg	2.5 (4.5)	2.5 (4.5)
P-80	Control Type	0 (highest) 1 (average)	1		0	0
P-81	Control Weight Section 1	0 to 100	1	%	40	30
P-82	Display Weight Section 1	0 to 100	1	%	40	30
P-83	Control Weight Section 2	0 to 100	1	%	40	30
P-84	Display Weight Section 2	0 to 100	1	%	40	30
P-06	Anti SC Time	00:00 to 15:00	00:05	mm:ss	03:00	03:00
P-20	Alarm Delay	00:00 to 99:00	01:00	mm:ss	20:00	20:00
P-21	UT Alarm	-49 to 60 (-56.2 to 140)	0.1	Deg	-30 (22)	-2 (28.4)
P-22	OT Alarm	-49 to 60 (-56.2 to 140)	0.1	Deg	-15 (5)	5 (41)
P-40	Defrost Mode	0 (Local), 1 (Remote)			Local	Local
P-41	Defrost Start	00:00 to 23:59	00:01	hh:mm	01:00	01:00
P-42	Defrosts per Day	0 to 8	1		6	6
P-43	No Defrost Time	0 to 25	1	hours	8	5
P-85	Def Terminate Section 1	-42 to 30 (-43.6 to 86)	0.1	Deg	10 (50)	10 (50)
P-86	Def Terminate Section 2	-42 to 30 (-43.6 to 86)	0.1	Deg	10 (50)	10 (50)
P-45	Def Min Time	00:00 to 99:00	01:00	mm:ss	05:00	05:00
P-46	Def Max Time	00:00 to 99:00	01:00	mm:ss	25:00	30:00
P-47	Drain Down	00:00 to 24:00	00:15	mm:ss	01:30	00:30
P-48	Recovery Time	00:00 to 99:00	01:00	mm:ss	30:00	30:00
P-49	Fan delay	00:00 to 99:00	01:00	01:00	00:00	00:00
P-50	Fans In Defrost	0 (Off), 1 (On)			On	On
P-60	Lights Mode	0 (Local), 1 (Remote), 2 (Man Off), 3 (Man On)			Local	Local
P-61	Sun Lights On	00:00 to 23:59	00:01	hh:mm	08:00	08:00
P-62	Sun Lights Off	00:00 to 23:59	00:01	hh:mm	20:00	20:00
P-63	Mon Lights On	00:00 to 23:59	00:01	hh:mm	08:00	08:00
P-64	Mon Lights Off	00:00 to 23:59	00:01	hh:mm	20:00	20:00
P-65	Tue Lights On	00:00 to 23:59	00:01	hh:mm	08:00	08:00
P-66	Tue Lights Off	00:00 to 23:59	00:01	hh:mm	20:00	20:00
P-67	Wed Lights On	00:00 to 23:59	00:01	hh:mm	08:00	08:00
P-68	Wed Lights Off	00:00 to 23:59	00:01	hh:mm	20:00	20:00
P-69	Thu Lights On	00:00 to 23:59	00:01	hh:mm	08:00	08:00
P-70	Thu Lights Off	00:00 to 23:59	00:01	hh:mm	20:00	20:00
P-71	Fri Lights On	00:00 to 23:59	00:01	hh:mm	08:00	08:00
P-72	Fri Lights Off	00:00 to 23:59	00:01	hh:mm	20:00	20:00
P-73	Sat Lights On	00:00 to 23:59	00:01	hh:mm	08:00	08:00
P-74	Sat Lights Off	00:00 to 23:59	00:01	hh:mm	20:00	20:00
dFLt	Restore default settings					



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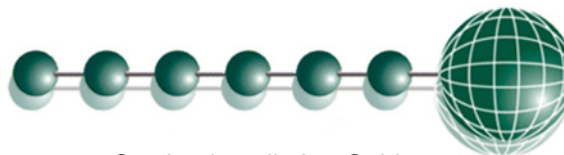


Parameter table for Coldroom Controller (Type 5 and Type 6)

Number	Parameter	Range °C (°F)	Step	Units	Def. LT °C (°F)	Def. HT °C (°F)
P-01	Cut-in Temp	-42 to 30 (-43.6 to 86)	0.1	Deg	-20 (-4)	0.0 (32)
P-02	Diff	0 to 10 (0 to 18)	0.1	Deg	2 (3.6)	1.5 (2.7)
P-80	Control Type	0 (highest) 1 (average)	1		0	0
P-81	Control Weight Section 1	0 to 100	1	%	50	50
P-82	Display Weight Section 1	0 to 100	1	%	50	50
P-83	Control Weight Section 2	0 to 100	1	%	50	50
P-84	Display Weight Section 2	0 to 100	1	%	50	50
P-20	Alarm Delay	00:00 to 99:00	01:00	mm:ss	20:00	20:00
P-21	UT Alarm	-49 to 60 (-56.2 to 140)	0.1	Deg	-30 (22)	-2 (28.4)
P-22	OT Alarm	-49 to 60 (-56.2 to 140)	0.1	Deg	-15 (5)	5 (41)
P-40	Defrost Mode	0 (Local), 1 (Remote)			Local	Local
P-41	Defrost Start	00:00 to 23:59	00:01	hh:mm	01:00	01:00
P-42	Defrosts per Day	0 to 8	1		6	6
P-43	No Defrost Time	0 to 25	1	hours	8	8
P-85	Def Terminate Section 1	-42 to 30 (-43.6 to 86)	0.1	Deg	14 (57.2)	10 (50)
P-86	Def Terminate Section 2	-42 to 30 (-43.6 to 86)	0.1	Deg	14 (57.2)	10 (50)
P-45	Def Min Time	00:00 to 99:00	01:00	mm:ss	05:00	05:00
P-46	Def Max Time	00:00 to 99:00	01:00	mm:ss	24:00	24:00
P-47	Drain Down	00:00 to 24:00	00:15	mm:ss	01:30	01:30
P-48	Recovery Time	00:00 to 99:00	01:00	mm:ss	30:00	30:00
P-49	Fan Delay	00:00 to 99:00	01:00	mm:ss	03:00	03:00
P-50	Fans In Defrost	0 (Off), 1 (On)			Off	Off
P-80	Door alarm dly	00:00 to 99:00	01:00	mm:ss	20:00	20:00
P-81	Door Closes LL	0 (No), 1 (Yes)			No	No
P-82	Door Stops Fan	0 (No), 1 (Yes)			No	No
dFLt	Restore default settings					



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



Network Configuration

The final section to setup is the network address. In all instances, this must be done before the controller is plugged into the site network. The controllers have an auto-initialise function, which will automatically log the device onto the site network. If the wrong address has been entered onto the network, you will have to reset the controller address by setting the address to 00-0, and then re-enter the correct address. (You may have to deregister the wrong address from the home system as well).

To set the controller onto a network you must first connect the controller to a communications module. This is either a: -

- 485 Legacy, or
- IP Futura

485 Legacy module

Connecting a 485 legacy module to the controller will govern which set up screens are made available.

Display	Option
485t	485 Network Type
485A	485 Address/Name
gAdd *	Show underlying network address assigned to controller
rLog *	Re-log the controller back onto the network
CLrA *	Clear the address/name from the controller
ESC	Exit network menu. N.B. this option must be selected to save any changes made in this menu

* These options are only available when the network type is set to Genus compatible.

The 485t option shows a value representing the network type. The possible values are:

Value	Network Type
1	Genus compatible (all versions)

The 485A option shows a value representing either the name of the controller in a Genus compatible network. The value shown is of the form 05-6. This means the controller would try to log onto a Genus compatible network using the name 'RC05-6'.

The following options are only available when the network type is set to Genus compatible.

The gAdd option displays (in hexadecimal format) the underlying network address assigned to the controller when it was logged onto the network.

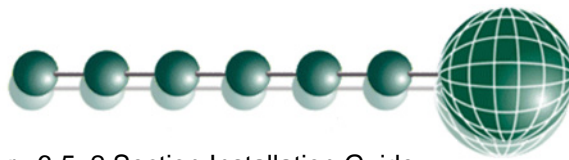
The rLog option allows the controller to be logged back onto the network with its current name. The 'rLog' message will flash for confirmation. Press the Enter button to execute the command, Up or Down buttons to cancel.

Fast Network Address Reset

The CLrA option will clear out the network address and name in the controller. The 'ClrA' message will flash for confirmation. Press the Enter button to execute the command, Up or Down buttons to cancel.



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



To enter this mode, hold the Enter, Up and Down buttons together for approximately 3 seconds until the message `CLrA` appears on the display. `CLrA` is the first option in the menu consisting of the following options:

Display	Option
CLrA	Clear the address/name from the controller
ESC	Exit Setup mode

Pressing the Enter button to select the `CLrA` option will cause the '`CLrA`' message to flash for confirmation, if the network type is set to Genus compatible. Press the Enter button to execute the command, Up or Down buttons to cancel. If the network type is not set to Genus compatible then the `CLrA` message will not flash and the ESC option can be used to exit the menu.

IP Futura module

In an IP system there are two options

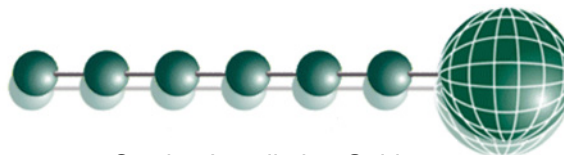
- IP-L
- IP-r

IP-L allows you to fix an IP address into the controller, which you would use when you are connecting the controllers onto a customer's local area network. This would allow the customer to view each controller using Internet Explorer

IP-r allows you to give each controller on the system a unique number. This number is then allocated a dynamic IP address by the system DHCP server (such as the RDM Data Director)



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



IP-L

To configure the communication module for IP-L, set all three rotary switches to zero. The module should then be connected to the controller.

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

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

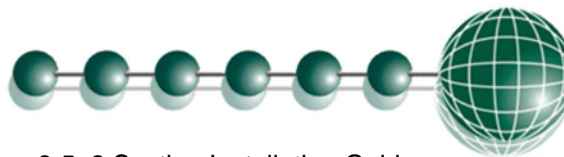
2. nEt. From the function menu you can now select nEt
 - Press enter and the display will show "IP-r", press enter
 - You can now view only the address given by the DHCP server

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



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



Viewing

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

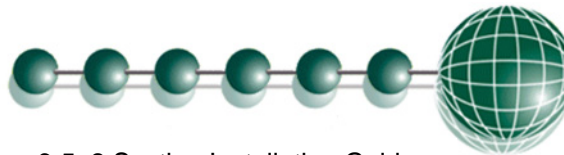
1. IO. View Inputs / Outputs and States
 - a. From the function menu, select "IO", press enter
 - b. You can now scroll through the IO tables as set out below. The tables you view will depend on the controller type configuration.

Input/Output table for Case Controller (Type 3 and Type 4)

Number	IO	Range °C (°F)	Step	Units
I-01	Control Temp.	-42 to 60 (-43.6 to 140)	0.1	Deg
I-10	Plant Fault 1	0 (OK), 1 (Alarm)		
I-11	Case Clean	0 (Off), 1 (On)		
I-30	Section 1 Control temp	-42 to 60 (-43.6 to 140)	0.1	Deg
I-31	Section 1 Display temp	-42 to 60 (-43.6 to 140)	0.1	Deg
I-32	Air on Probe Section 1	-49 to 60 (-56.2 to 140)	0.1	Deg
I-33	Air off Probe Section 1	-49 to 60 (-56.2 to 140)	0.1	Deg
I-34	Defrost term temp Section 1	-42 to 60 (-43.6 to 140)	0.1	Deg
I-35	Section 2 Control temp	-42 to 60 (-43.6 to 140)	0.1	Deg
I-36	Section 2 Display temp	-42 to 60 (-43.6 to 140)	0.1	Deg
I-37	Air on Probe Section 2	-49 to 60 (-56.2 to 140)	0.1	Deg
I-38	Air off Probe Section 2	-49 to 60 (-56.2 to 140)	0.1	Deg
I-39	Defrost term temp Section 2	-42 to 60 (-43.6 to 140)	0.1	Deg
O-01	LLV	0 (Off), 1 (On)		
O-06	Lights	0 (Off), 1 (On)		
O-07	Fans	0 (Off), 1 (On)		
O-10	Last Defrost Time	00:00 to 23:59		hh:mm
O-13	Last defrost Type	0 (None), 1 (Internal) 2 (External), 3 (Network) 4 (Display), 5 (Timed)		
O-31	Section 1 Defrost Heater	0 (Off), 1 (On)		
O-32	Section 2 Defrost Heater	0 (Off), 1 (On)		
O-33	Section 1 Last Defrost Length	00:00 to 03:00		hh:mm
O-34	Section 2 Last Defrost Length	00:00 to 03:00		hh:mm
O-35	Section 1 Last Defrost Temp	-42 to 60 (-43.6 to 140)	0.1	Deg
O-36	Section 2 Last Defrost Temp	-42 to 60 (-43.6 to 140)	0.1	Deg
S-01	Control State	0 (Stabilise), 1 (Normal), 2 (Df_Min), 3 (Df_Max), 4 (Drain_Down), 6 (Recovery), 7 (OT_Alarm), 8 (UT_Alarm), 9 (Fans_Only), 10 (Lights_Only), 11 (Case_Off)		
S-02	Control State	0 (Stabilise), 1 (Normal), 2 (Df_Min), 3 (Df_Max), 4 (Drain_Down), 6 (Recovery), 7 (OT_Alarm), 8 (UT_Alarm), 9 (Fans_Only), 10 (Lights_Only), 11 (Case_Off)		



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

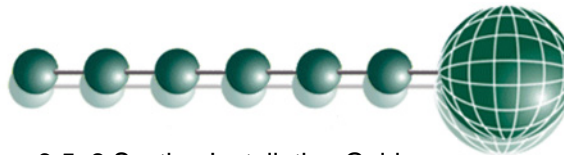


Input/Output table for Coldroom Controller (Type 5 and Type 6)

Number	IO	Range °C (°F)	Step	Units
I-01	Control Temp.	-42 to 60 (-43.6 to 140)	0.1	Deg
I-10	Plant Fault 1	0 (OK), 1 (Alarm)		
I-11	Case Clean	0 (Off), 1 (On)		
I-12	Door Sensor	0 (Closed), 1 (Open)		
I-13	Person Trapped	0 (OK), 1 (Alarm)		
I-30	Section 1 Control temp	-42 to 60 (-43.6 to 140)	0.1	Deg
I-31	Section 1 Display temp	-42 to 60 (-43.6 to 140)	0.1	Deg
I-32	Air on Probe Section 1	-49 to 60 (-56.2 to 140)	0.1	Deg
I-33	Air off Probe Section 1	-49 to 60 (-56.2 to 140)	0.1	Deg
I-34	Defrost term temp Section 1	-42 to 60 (-43.6 to 140)	0.1	Deg
I-35	Section 2 Control temp	-42 to 60 (-43.6 to 140)	0.1	Deg
I-36	Section 2 Display temp	-42 to 60 (-43.6 to 140)	0.1	Deg
I-37	Air on Probe Section 2	-49 to 60 (-56.2 to 140)	0.1	Deg
I-38	Air off Probe Section 2	-49 to 60 (-56.2 to 140)	0.1	Deg
O-01	LLV	0 (Off), 1 (On)		
O-07	Fans	0 (Off), 1 (On)		
O-08	Remote Relay	0 (Off), 1 (On)		
O-10	Last Defrost Time	00:00 to 23:59		hh:mm
O-13	Last defrost Type	0 (None), 1 (Internal) 2 (External), 3 (Network) 4 (Display), 5 (Timed)		
O-20	Door Open Time	00:00 to 23:59		hh:mm
O-21	Door Open Length	00:00 to 03:00		hh:mm
O-31	Section 1 Defrost Heater	0 (Off), 1 (On)		
O-32	Section 2 Defrost Heater	0 (Off), 1 (On)		
O-33	Section 1 Last Defrost Length	00:00 to 03:00		hh:mm
O-34	Section 2 Last Defrost Length	00:00 to 03:00		hh:mm
O-35	Section 1 Last Defrost Temp	-42 to 60 (-43.6 to 140)	0.1	Deg
O-36	Section 2 Last Defrost Temp	-42 to 60 (-43.6 to 140)	0.1	Deg
S-01	Control State	0 (Stabilise), 1 (Normal), 2 (Df_Min), 3 (Df_Max), 4 (Drain_Down), 5 (Fan_Delay), 6 (Recovery), 7 (OT_Alarm), 8 (UT_Alarm), 9 (Fans_Only), 10 (Lights_Only), 11 (Case_Off)		
S-02	Control State	0 (Stabilise), 1 (Normal), 2 (Df_Min), 3 (Df_Max), 4 (Drain_Down), 6 (Recovery), 7 (OT_Alarm), 8 (UT_Alarm), 9 (Fans_Only), 10 (Lights_Only), 11 (Case_Off)		



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

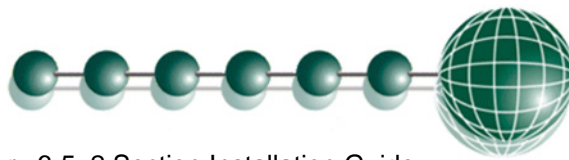


Input/Output table for Mobile Controller M & MT (Type 1 and Type 2)

Number	IO	Range °C (°F)	Step	Units
I-01	Control Temp.	-42 to 60 (-43.6 to 140)	0.1	Deg
I-10	Plant Fault 1	0 (OK), 1 (Alarm)		
I-11	Case Clean	0 (Off), 1 (On)		
I-14	Plant Fault 2	0 (OK), 1 (Alarm)		Deg
I-30	Section 1 Control temp	-42 to 60 (-43.6 to 140)	0.1	Deg
I-31	Section 1 Display temp	-42 to 60 (-43.6 to 140)	0.1	Deg
I-32	Air on Probe Section 1	-49 to 60 (-56.2 to 140)	0.1	Deg
I-33	Air off Probe Section 1	-49 to 60 (-56.2 to 140)	0.1	Deg
I-34	Defrost term temp Section 1	-42 to 60 (-43.6 to 140)	0.1	Deg
I-35	Section 2 Control temp	-42 to 60 (-43.6 to 140)	0.1	Deg
I-36	Section 2 Display temp	-42 to 60 (-43.6 to 140)	0.1	Deg
I-37	Air on Probe Section 2	-49 to 60 (-56.2 to 140)	0.1	Deg
I-38	Air off Probe Section 2	-49 to 60 (-56.2 to 140)	0.1	Deg
I-39	Defrost term temp Section 2	-42 to 60 (-43.6 to 140)	0.1	Deg
O-03	Compressor	0 (Off), 1 (On)		
O-06	Lights	0 (Off), 1 (On)		
O-07	Fans	0 (Off), 1 (On)		
O-10	Last Defrost Time	00:00 to 23:59		hh:mm
O-13	Last defrost Type	0 (None), 1 (Internal) 2 (External), 3 (Network) 4 (Display), 5 (Timed)		
O-31	Section 1 Defrost Heater	0 (Off), 1 (On)		
O-32	Section 2 Defrost Heater	0 (Off), 1 (On)		
O-33	Section 1 Last Defrost Length	00:00 to 03:00		hh:mm
O-34	Section 2 Last Defrost Length	00:00 to 03:00		hh:mm
O-35	Section 1 Last Defrost Temp	-42 to 60 (-43.6 to 140)	0.1	Deg
O-36	Section 2 Last Defrost Temp	-42 to 60 (-43.6 to 140)	0.1	Deg
S-01	Control State	0 (Stabilise), 1 (Normal), 2 (Df_Min), 3 (Df_Max), 4 (Drain_Down), 6 (Recovery), 7 (OT_Alarm), 8 (UT_Alarm), 9 (Fans_Only), 10 (Lights_Only), 11 (Case_Off)		
S-02	Control State	0 (Stabilise), 1 (Normal), 2 (Df_Min), 3 (Df_Max), 4 (Drain_Down), 6 (Recovery), 7 (OT_Alarm), 8 (UT_Alarm), 9 (Fans_Only), 10 (Lights_Only), 11 (Case_Off)		



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



Alarm Messages

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

Display Message	System status
Ft	Control Fault
Prb1	Probe 1 Fault
Prb2	Probe 2 Fault
Prb3	Probe 3 Fault
Prb4	Probe 4 Fault
Prb5	Probe 5 Fault
Prb6	Probe 6 Fault
Pd	Control State in Recovery
dEF	Control Sate in Defrost
AL	Control State in Alarm
FAnS ONLY	Controller in Fans Only
LitS ONLY	Controller in Lights Only
CASE OFF	Controller in Case Off
Ot	Over Temperature Alarm
Ut	Under Temperature Alarm
door	Door Open Alarm
TrAP	Person Trapped Alarm
PLnt	Plant Fault
LgOt	Log Probe Over Temperature
LgUt	Log Probe Under Temperature

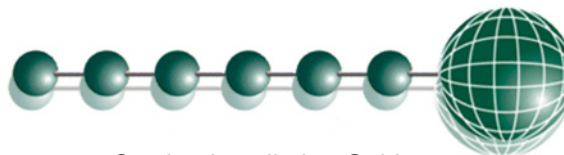
Network Alarms

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)
Missed defrost	15
Plant Fault 1	3
Case over temperature	4
Case under temperature	5
Probe 1 Faulty	6
Probe 2 Faulty	6
Probe 3 Faulty	6
Probe 4 Faulty	6
Probe 5 Faulty	6
Probe 6 Faulty	6
Door Left Open	2
Person Trapped	1
Plant Fault 2	3



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



Modifying controller states

During normal operation you can change the following states from the function menu

Defrost “dEF”

Selecting the defrost option starts a defrost cycle. Selecting this option will exit the setup menu automatically. The display will show “dEF”

There is also a remote defrost command which starts a defrost cycle from the network front end or remote system.

Fans Only “FAnS”

Selecting the Fans Only option will put the controller into the Fans Only state if the current state is not Fans Only. If the current state is Fans Only then the controller will change to the Normal state. Selecting this option will exit the setup menu automatically. The display will show “CASE OnLy”

Case Off “CASE”

Selecting the Case Off option will put the controller into the Case Off state if the current state is not Case Off. If the current state is Case Off then the controller will change to the Normal state. Selecting this option will exit the setup menu automatically. The display will show “CASE OFF”

Lights Only “LitS”

Selecting the Lights Only option will put the controller into the Lights Only state if the current state is not Lights Only. If the current state is Lights Only then the controller will change to the Normal state. Selecting this option will exit the setup menu automatically. The display will show “LitS OnLy”

Note. When lights are being used in “Remote” mode with a timing channel: -

If the controller goes offline, the lights are turned ON after a delay of 5 minutes. The lights will stay on until the controller comes back on-line where they will revert to the state of the timing channel being used.

Operation

The LLV (or compressor) relay will operate a thermostatic function based on values of the air probes of the 2 sections. If "Highest" is set, then the relay will operate on the greater of the 2 section values. If "Average" is selected, then it will operate on the combined average of the 2 sections.

Note

The section control temperature is the summation of the section air-on and air-off temperatures, weighted by the value set by the section control weight parameter.

Example: If 30% weighting is selected, the control temperature will be: - (30% of air-on + 70% of air-off)

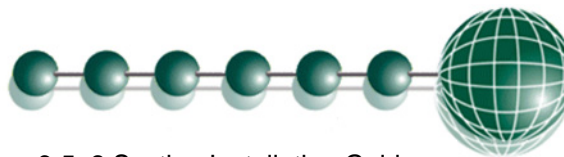
The display temperature of each section can be weighted similarly.

The display indication will be either the highest or average of the 2 sections, depending on the parameter P-80.

Once a defrost has been initiated, the normal defrost states will apply to both sections, although both sections must terminate before a drain down occurs.



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:	5.2 Amps (when relays 4 and 5 are fully loaded)
Typical supply current:	<1 Amp
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:	110mm (W) x 60mm (H) x 100mm (D)
Weight:	150 Grams
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: 6.3A 240 Vac Antisurge (T) HRC conforming to IEC 60127
 Or MCB: 6A, 240 VAC Type C conforming to BS EN 60898

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

Relays

Max current relay 1:	6A (non inductive)	M & MT version
Max Voltage relay 1:	260Vac (external supply)	M & MT version
Exclusive common		
Max current relay 1:	1.5A	E & ET version
Max Voltage relay 1:	280Vac (external supply)	E & ET version
Exclusive common		
Max current relay 2:	4A (non inductive)	Relays 2 and 3 share a common supply line and the loads can have a combined total of 8A. Relay 2 or 3 can switch a maximum of 6A provided the other is at 2A or lower.
Max Voltage relay 2:	260Vac (external supply)	
Shared common with relay 3		
Max current relay 3:	4A (non inductive)	Relays 2 and 3 share a common supply line and the loads can have a combined total of 8A. Relay 2 or 3 can switch a maximum of 6A provided the other is at 2A or lower.
Max Voltage relay 3:	260Vac (external supply)	
Shared common with relay 2		
Max current relay 4:	3A (non inductive)	
Max Voltage relay 4:	260Vac (Internal supply)	
Common connected to Input "live"		
Max current relay 5:	3A (non inductive)	
Max Voltage relay 5:	260Vac (Internal supply)	
Common connected to Input "live"		

For compliance with the LVD, relays 2 and 3 common must be at the same potential as the supply voltage.

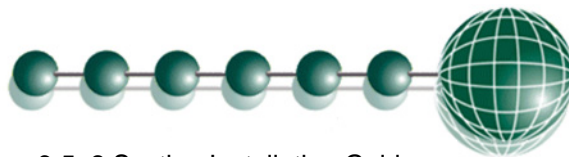


Warning:

Relays 4 and 5 outputs have hazardous voltages (Supply input voltage potential).



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



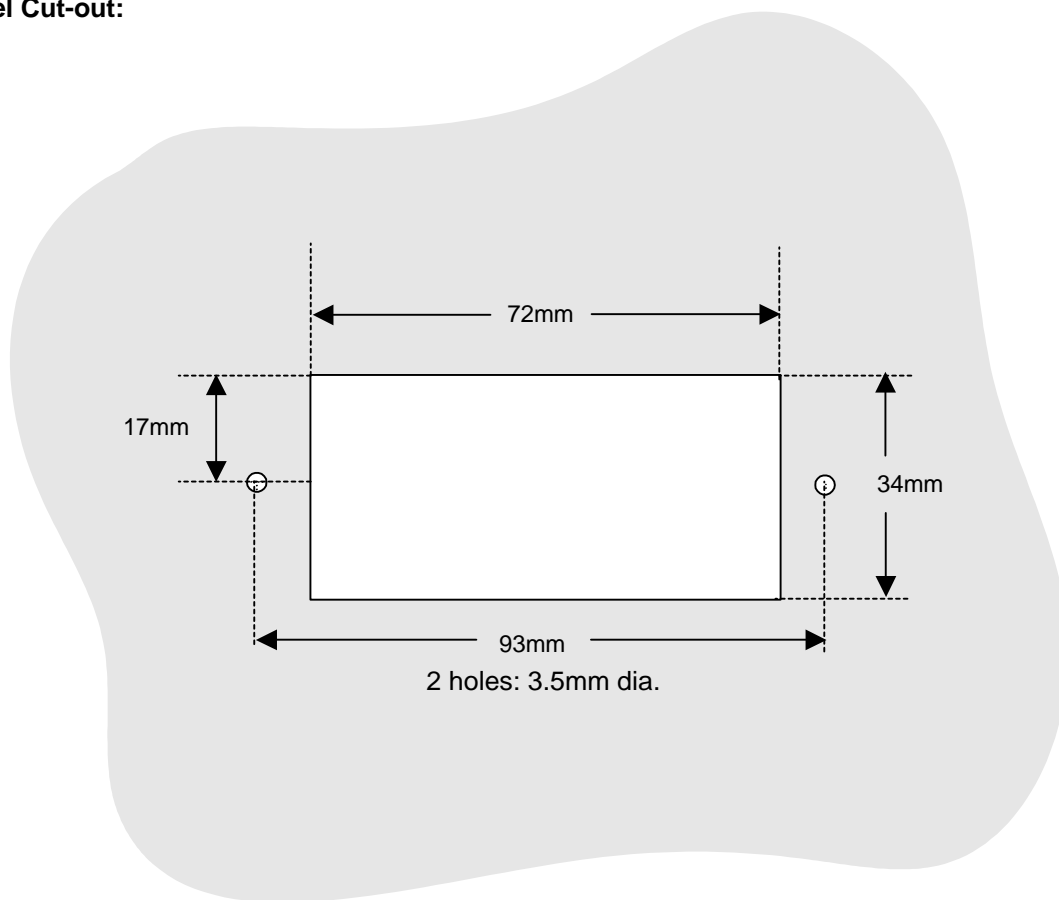
Inputs:

Input resistance: 3.01K Ohms (for PTC or NTC type probes)
Input type PT1000 or NTC2000 (selectable)

Comms: RS232 with flow control

Installation:

Panel Cut-out:



Fixing:

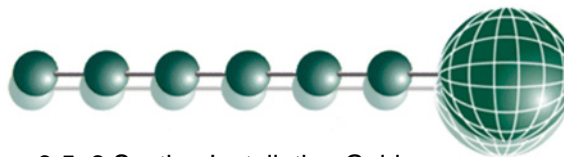
The controller can be fixed either by 2 X M3 screws from the rear or by the plastic retaining device (PR0329), obtainable from RDM.

Clearances:

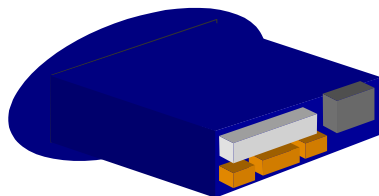
The controller must have 5mm clearance above the top and below bottom, and 25mm clearance from the sides. Clearance at the rear is dependant on the wiring.
There is no requirement for forced cooling ventilation



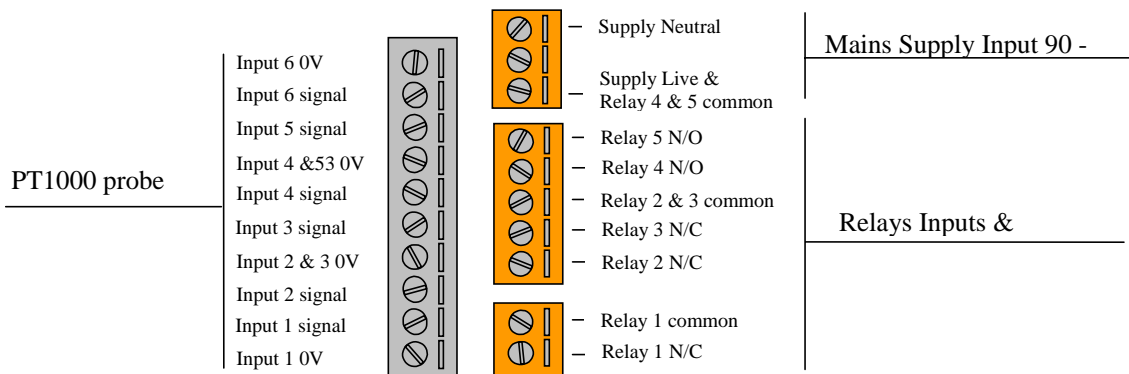
Ensure that all power is switched off before installing or maintaining this product



Wiring:



Communications socket

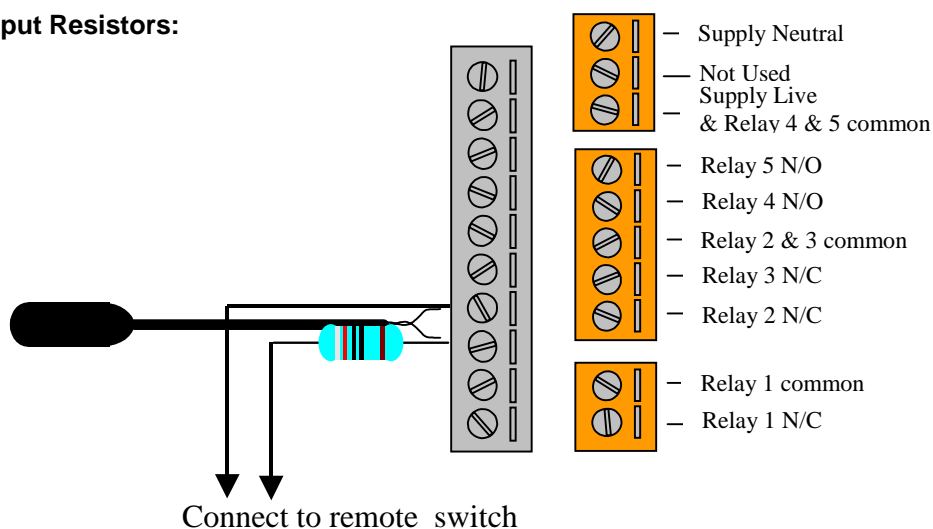


Relay 4 and 5 N/O are fed from the supply input

Note:

Suitable mechanical restraints on the wiring to the controller may be required; dependant on cable types, to prevent undue stress or distortion on the controller connectors.

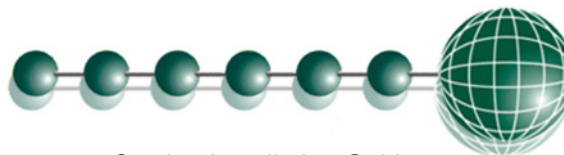
Plant Input Resistors:



Example of resistor fitted on Air Off probe



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: 6.3A 240 Vac Antisurge (T) HRC conforming to IEC 60127

Or MCB: 6A, 240 VAC Type C conforming to BS EN 60898

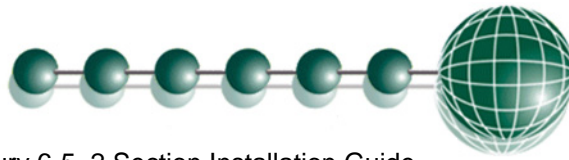
Cleaning:

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

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



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



Appendix 1

Controller with Remote Display

The following Mercury controllers have support for remote display and remote display with key-switch:

Remote Display Options:

Remote Display: Part Number: PR0325 (includes 5 metre connection cable)
Remote Display with Key-switch: Part Number: PR0326 (includes 5 metre connection cable)

Panel cut-out:- the same as the Mercury controller. Depth required behind panel is: -30mm

Operation:

The above controllers with remote display operate in exactly the same way as the equivalent integrated controller.

The display with key-switch provides the user with a "Case Off" function by turning the key to the on position. The controller will remain in this state; irrespective of local or network settings, until the key-switch is returned to the normal position.



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