

Resource  
Data Management

# Intuitive Mercury Trim Heater Optimiser

## Installation & User Guide

Revision 3.0



PR0442

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Please ensure all power is switched off before installing or maintaining this product.

# The Mercury Intuitive Range

## From Resource Data Management

**For Version 3.0, applies only to products manufactured after August 2019.**

## Description

The Intuitive Mercury Trim Heater Optimiser is designed to control trim heaters in refrigerated cabinets and coldrooms by measuring the local humidity level and adjusting the output to a trim heater(s) accordingly. The controller has up to 3 independent channels and can accept humidity readings from up to 3 different humidity sources such as the integrated display sensor or a remote sensor. The trim heater(s) will be pulsed on and off to a calculated percentage, the pulse on/off time is calculated over a 5 minute period, if for example the trim percentage is calculated to be 60% then the trim heater(s) would be on for 3 minutes and off for 2 minutes. An additional energy saving feature of the controller is the inclusion of a timer. This allows the user to further limit the power the trim heaters use or it can completely disable the heaters when the store is not trading.

There are 3 relays which can be configured to switch, using any one of the 3 possible humidity sensors attached to the system.

The Intuitive Mercury range is designed to be used in a control panel or electrical tray, the controller has benefits such as higher rated relays each protected by an integral fuse and fuse protection for the incoming power supply, all connections are plug and socket.

The controller also has 6 temperature probe inputs for monitoring purposes or Dewpoint calculation, probe types supported are PT1000, NTC2K, 470R, 700R, 3K, 5K, 6K, NTC2K25, NTC10K or NTC10K(2) USA temperature probes.

**Note:** probe types cannot be mixed.

## Variants

Description	Part Number
Intuitive Mercury Trim Heater Optimiser Controller	PR0442

## Configuration

There is only one type of configuration in the Intuitive Mercury Trim Heater Optimiser.

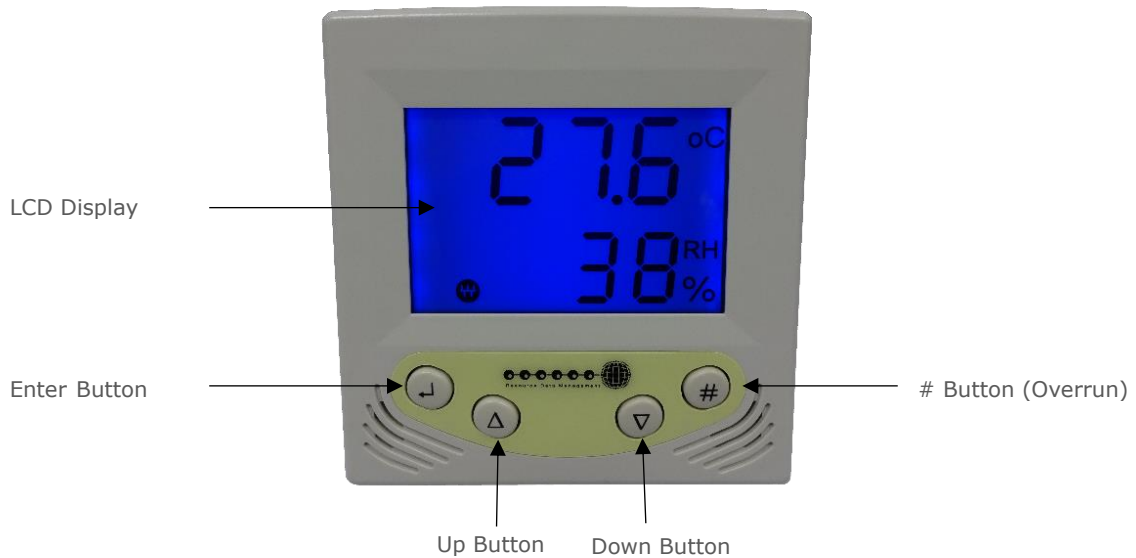
## Compatible Network Interfaces

The Intuitive Mercury Trim Heater Optimiser has a built-in Ethernet interface and is capable of connecting to a TCP/IP local area network.



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## Display Features



**Note:** The maximum cable length is 5 meters.

### Display

The display fits a standard UK single socket pattress. The display values can be selected by changing the “display” parameter. The display has an integrated temperature probe and humidity sensor.

### 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 hours of “on” time, if the timer is off, or if the timer is on, extend its time by up to 6 hours. The overrun function will switch off the amber LED if it’s on, or keep it off for the extra hours. Press and hold the # button until “run 1” appears. Use the up button to select between a run on of 1 to 6 hours. Press the enter button to confirm the desired run on hours. Press the # button during an overrun period to cancel the overrun and turn the relay(s) off.

### Icons

#### Network



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

#### Alarm



The alarm bell icon is used to indicate a probe fault or alarm.

#### Timer



The defrost Icon indicates the current state of the Timer. If the icon is off, the Timer is in the ‘on’ state. If the icon is on, the Timer is in the ‘off’ state.

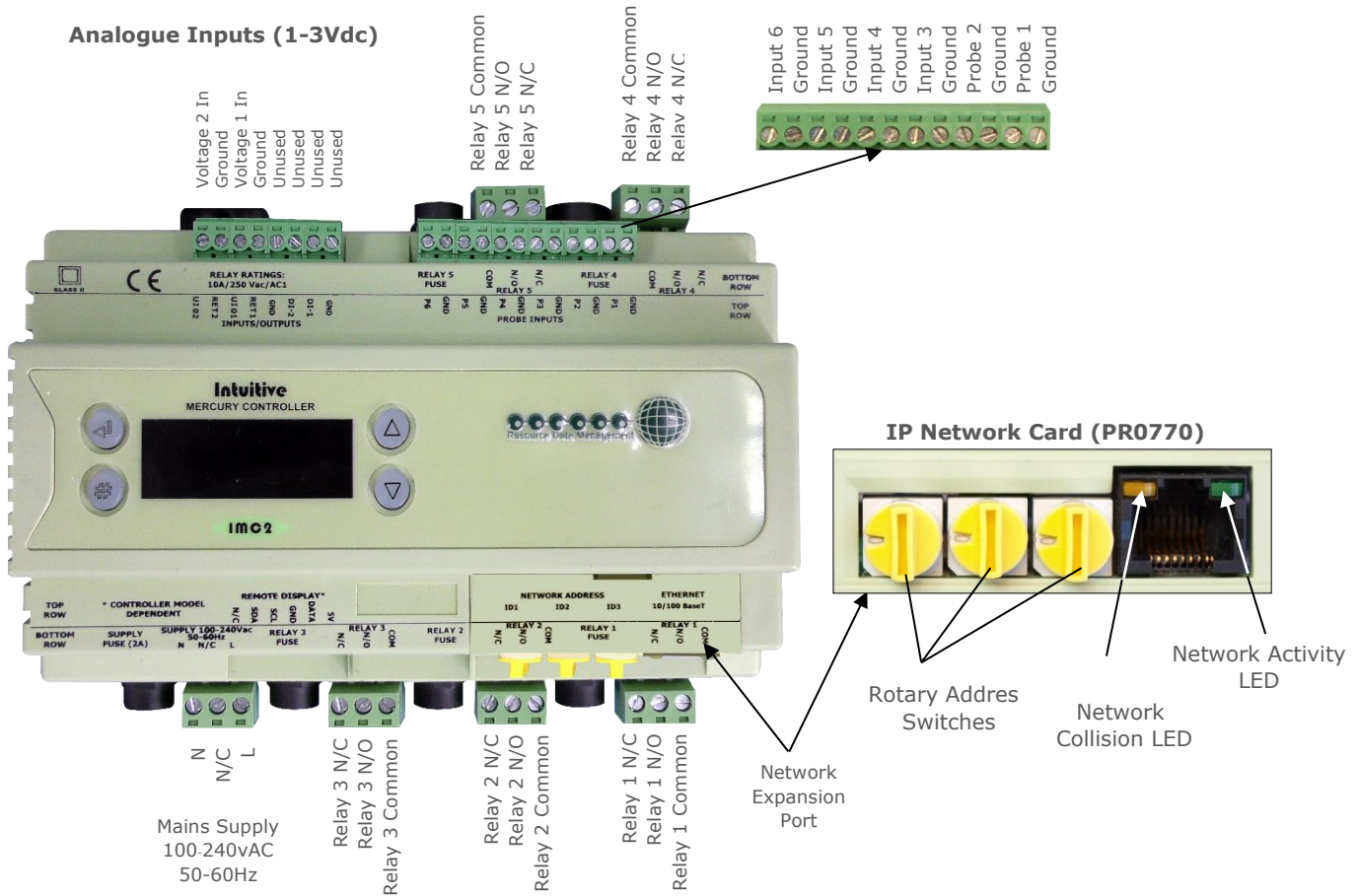


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## Display Connection

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

## Connections



**Do not connect an earth**

**Note:** N/C in supply connection is 'No Connection'.

All inputs and outputs are plug and socket. The supply voltage and each relay output have individual fuse protection.



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## Input / Output allocation table

Input / Output	Description	Alarm Action	Comments
Probe 1	Temperature Input	Yes*	
Probe 2	Temperature Input	Yes*	
Probe 3	Temperature Input	Yes*	
Probe 4	Temperature Input	Yes*	
Probe 5	Temperature Input	Yes*	
Probe 6	Temperature Input	Yes*	
Vin 1	External Humidity Sensor	Yes	
Vin 2	External Humidity Sensor	Yes	
Relay 1	Trim 1	N/A	See "Relay Contacts" Below
Relay 2	Trim 2	N/A	See "Relay Contacts" Below
Relay 3	Trim 3	N/A	See "Relay Contacts" Below
Relay 4	Alarm Relay**	Yes	See "Relay Contacts" Below
Relay 5	Not Used	N/A	

\* When configured for use with the Dewpoint control strategy.

\*\* The alarm relay is energised for no alarm. Use the NC and Common for "Loop make" on alarm or use the NO and Common for "Loop break" on alarm.

**Note:** This product has been designed to drive contactors with coil currents of less than 2 Amps at 230 Vac. It must **NOT** be used to switch the heaters directly unless they have an inductive load rating of less than 2A.

## Setting up the controller

Access to the controller can be achieved several ways

- Through the front mounted buttons
- Direct access by PC or Laptop into the rear comms port. This requires a software package available on the RDM website
- Through the RDM Data Manager.
- Across an IP network or directly through the controller built in IP interface. (Current controller IP address required)

### 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	Display	Option	Explained in Paragraph
IO	View Inputs / Outputs and States	<a href="#">Input / output table</a>	nEt	Set/view network configuration	<a href="#">Network Configuration</a>
PArA	Set/View Parameters	<a href="#">Set view parameters</a>	SoFt	View software version	
Unit	Probe type and Celsius/Fahrenheit option	<a href="#">Set View Unit</a>	OFSt	Probe Offset	<a href="#">Probe Offset</a>
tyPE	Set/View Controller Type	<a href="#">Set/view controller type</a>	ESC	Exit Setup mode	
rtc	Set/view Clock (rtc = Real Time Clock)	<a href="#">Real Time Clock</a>			



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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)

- Use the up or down buttons to scroll through the display until the display reads "rtc"
- Press enter. The display will show "t-1". press enter again
- Scroll hours up or down (0 – 23) press enter
- Use up button to select "t-2", press enter
- Scroll minutes up or down (0 – 59) press enter
- Repeat for t-3 (seconds 0 – 59)
- Repeat for t -4 (Days up to 31)
- Repeat for t -5 (months up to 12)
- Repeat for t -6 (Year up to 99)
- Use up button to display "ESC", press enter to display "rtc"

**Timeclock is now set**

### type. Set/view controller type.

The controller type is pre-set at the factory and cannot be changed.

- From the function menu scroll to select "type", press enter
- View type 1
- Press enter to return to the software menu.

### Unit. Set/ view temperature unit and Probe type

From the function menu scroll to select "Unit". Press enter and the value will be displayed: -

Unit Number	Probe Type	Units	Unit Number	Probe Type	Units
0	Probes not used				
1	PT1000	°C	12	NTC2K25	°F
2	PT1000	°F	13	NTC100K	°C
3	NTC2K	°C	14	NTC100K	°F
4	NTC2K	°F	15	NTC5K	°C
5	NTC470R	°C	16	NTC5K	°F
6	NTC470R	°F	17	NTC6K	°C
7	NTC700R	°C	18	NTC6K	°F
8	NTC700R	°F	19	NTC10K	°C
9	NTC3K	°C	20	NTC10K	°F
10	NTC3K	°F	21	NTC10K(2) (USA NTC10K)	°C
11	NTC2K25	°C	22	NTC10K(2) (USA NTC10K)	°F

Use the up or down keys to select the units and press enter. This function is now complete



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## PArA. Set/view parameters

This can be achieved at the network front end

- From the function menu scroll to and select "PArA".
- Pressing the Enter button 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 the associated 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 controller type.

## Parameter Table for Control Thermostat

Number	Parameter	Range °C ( °F )	Step	Units	Default
P-01	Humidity 1 Input	0 = Display sensor 1 = Sensor channel 1 2 = Sensor channel 2	1		0
P-02	Humidity 1 Low	0 to 100	1	rH	20
P-03	Humidity 1 High	0 to 100	1	rH	60
P-04	Trim 1 Low	0 to 100	1	%	30
P-05	Trim 1 High	0 to 100	1	%	100
P-06	Timer 1 Off Level	0 to 100	1	%	30
P-07	Ctrl Type 1	0 = Off 1 = Humidity 2 = Dewpoint	1		1
P-08	Temp 1 Input	0 = Display 1 = Probe 1 2 = Probe 2 3 = Probe 3 4 = Probe 4 5 = Probe 5 6 = Probe 6	1		0
P-09	Dewpoint 1 Low	-59.0 to 128.0°C (-74.2 to 262.4°F)	0.1	Deg	4
P-10	Dewpoint 1 High	-59.0 to 128.0°C (-74.2 to 262.4°F)	0.1	Deg	8
P-11	Humidity 2 Input	0 = Display sensor 1 = Sensor channel 1 2 = Sensor channel 2	1		0
P-12	Humidity 2 Low	0 to 100	1	rH	20
P-13	Humidity 2 High	0 to 100	1	rH	60
P-14	Trim 2 Low	0 to 100	1	%	30
P-15	Trim 2 High	0 to 100	1	%	100
P-16	Timer 2 Off Level	0 to 100	1	%	30
P-17	Ctrl Type 2	0 = Off 1 = Humidity 2 = Dewpoint	1		1
P-18	Temp 2 Input	0 = Display 1 = Probe 1 2 = Probe 2 3 = Probe 3 4 = Probe 4 5 = Probe 5 6 = Probe 6	1		0
P-19	Dewpoint 2 Low	-59.0 to 128.0°C (-74.2 to 262.4°F)	0.1	Deg	4
P-20	Dewpoint 2 High	-59.0 to 128.0°C (-74.2 to 262.4°F)	0.1	Deg	8
P-21	Humidity 3 Input	0 = Display sensor 1 = Sensor channel 1 2 = Sensor channel 2	1		0
P-22	Humidity 3 Low	0 to 100	1	rH	20
P-23	Humidity 3 High	0 to 100	1	rH	60
P-24	Trim 3 Low	0 to 100	1	%	30
P-25	Trim 3 High	0 to 100	1	%	100
P-26	Timer 3 Off Level	0 to 100	1	%	30
P-27	Ctrl Type 3	0 = Off 1 = Humidity	1		1



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		2 = Dewpoint			
P-28	Temp 3 Input	0 = Display 1 = Probe 1 2 = Probe 2 3 = Probe 3 4 = Probe 4 5 = Probe 5 6 = Probe 6	1		0
P-29	Dewpoint 3 Low	-59.0 to 128.0°C (-74.2 to 262.4°F)	0.1	Deg	4
P-30	Dewpoint 3 High	-59.0 to 128.0°C (-74.2 to 262.4°F)	0.1	Deg	8
P-70	Timer Mode	0 = Local 1 = Remote 2 = Manual off 3 = Manual on	1		0
P-71	Sunday On Time 1	00:00 to 23:59	00:01		08:00
P-72	Sunday Off Time 1	00:00 to 23:59	00:01		20:00
P-73	Sunday On Time 2	00:00 to 23:59	00:01		08:00
P-74	Sunday Off Time 2	00:00 to 23:59	00:01		20:00
P-75	Monday On Time 1	00:00 to 23:59	00:01		08:00
P-76	Monday Off Time 1	00:00 to 23:59	00:01		20:00
P-77	Monday On Time 2	00:00 to 23:59	00:01		08:00
P-78	Monday Off Time 2	00:00 to 23:59	00:01		20:00
P-79	Tuesday On Time 1	00:00 to 23:59	00:01		08:00
P-80	Tuesday Off Time 1	00:00 to 23:59	00:01		20:00
P-81	Tuesday On Time 2	00:00 to 23:59	00:01		08:00
P-82	Tuesday Off Time 2	00:00 to 23:59	00:01		20:00
P-83	Wednesday On Time 1	00:00 to 23:59	00:01		08:00
P-84	Wednesday Off Time 1	00:00 to 23:59	00:01		20:00
P-85	Wednesday On Time 2	00:00 to 23:59	00:01		08:00
P-86	Wednesday Off Time 2	00:00 to 23:59	00:01		20:00
P-87	Thursday On Time 1	00:00 to 23:59	00:01		08:00
P-88	Thursday Off Time 1	00:00 to 23:59	00:01		20:00
P-89	Thursday On Time 2	00:00 to 23:59	00:01		08:00
P-90	Thursday Off Time 2	00:00 to 23:59	00:01		20:00
P-91	Friday On Time 1	00:00 to 23:59	00:01		08:00
P-92	Friday Off Time 1	00:00 to 23:59	00:01		20:00
P-93	Friday On Time 2	00:00 to 23:59	00:01		08:00
P-94	Friday Off Time 2	00:00 to 23:59	00:01		20:00
P-95	Saturday On Time 1	00:00 to 23:59	00:01		08:00
P-96	Saturday Off Time 1	00:00 to 23:59	00:01		20:00
P-97	Saturday On Time 2	00:00 to 23:59	00:01		08:00
P-98	Saturday Off Time 2	00:00 to 23:59	00:01		20:00
dFLt	Factory Defaults				



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## Parameter Descriptions

Number	Parameter	Description
P-01	Humidity 1 Input	Select the source of the Humidity reading used in the control strategy for Trim 1.
P-02	Humidity 1 Low	When the rH is below "Humidity 1 Low", the relay will pulse to a duration set by the "Trim 1 Low" parameter.
P-03	Humidity 1 High	When the rH is above "Humidity 1 High", the relay will pulse to a duration set by the "Trim 1 High" parameter.
P-04	Trim 1 Low	Set the minimum pulse duration.
P-05	Trim 1 High	Set the maximum pulse duration.
P-06	Timer 1 Off Level	The pulse duration whilst the timer is in the 'Off' state.
P-07	Ctrl Type 1	Disable trim control strategy for Trim 1, or select between Humidity or Dewpoint control.
P-08	Temp 1 Input	Select the source of the Temperature reading used to calculate the Dewpoint.
P-09	Dewpoint 1 Low	When the Dewpoint temperature is below "Dewpoint 1 Low", the relay will pulse to a duration set by the "Trim 1 Low" parameter.
P-10	Dewpoint 1 High	When the Dewpoint temperature is above "Dewpoint 1 High", the relay will pulse to a duration set by the "Trim 1 High" parameter.
P-11	Humidity 2 Input	Select the source of the Humidity reading used in the control strategy for Trim 2.
P-12	Humidity 2 Low	When the rH is below "Humidity 1 Low", the relay will pulse to a duration set by the "Trim 2 Low" parameter.
P-13	Humidity 2 High	When the rH is above "Humidity 1 High", the relay will pulse to a duration set by the "Trim 2 High" parameter.
P-14	Trim 2 Low	Set the minimum pulse duration.
P-15	Trim 2 High	Set the maximum pulse duration.
P-16	Timer 2 Off Level	The pulse duration whilst the timer is in the 'Off' state.
P-17	Ctrl Type 2	Disable trim control strategy for Trim 2, or select between Humidity or Dewpoint control.
P-18	Temp 2 Input	Select the source of the Temperature reading used to calculate the Dewpoint.
P-19	Dewpoint 2 Low	When the Dewpoint temperature is below "Dewpoint 2 Low", the relay will pulse to a duration set by the "Trim 2 Low" parameter.
P-20	Dewpoint 2 High	When the Dewpoint temperature is above "Dewpoint 2 High", the relay will pulse to a duration set by the "Trim 2 High" parameter.
P-21	Humidity 3 Input	Select the source of the Humidity reading used in the control strategy for Trim 3.
P-22	Humidity 3 Low	When the rH is below "Humidity 3 Low", the relay will pulse to a duration set by the "Trim 3 Low" parameter.
P-23	Humidity 3 High	When the rH is above "Humidity 3 High", the relay will pulse to a duration set by the "Trim 3 High" parameter.
P-24	Trim 3 Low	Set the minimum pulse duration.
P-25	Trim 3 High	Set the maximum pulse duration.
P-26	Timer 3 Off Level	The pulse duration whilst the timer is in the 'Off' state.
P-27	Ctrl Type 3	Disable trim control strategy for Trim 3, or select between Humidity or Dewpoint control.
P-28	Temp 3 Input	Select the source of the Temperature reading used to calculate the Dewpoint.
P-29	Dewpoint 3 Low	When the Dewpoint temperature is below "Dewpoint 3 Low", the relay will pulse to a duration set by the "Trim 3 Low" parameter.
P-30	Dewpoint 3 High	When the Dewpoint temperature is above "Dewpoint 3 High", the relay will pulse to a duration set by the "Trim 3 High" parameter.
P-70	Timer Mode	<ul style="list-style-type: none"> <li>➤ Use a local schedule following the controller RTC (P-71 to P-98)</li> <li>➤ Use a remote schedule (Set up in the system front end)</li> <li>➤ Always Off</li> <li>➤ Always On</li> </ul>
P-71	Sunday On Time 1	When P-70 is set to Local, Sunday on time 1
P-72	Sunday Off Time 1	When P-70 is set to Local, Sunday off time 1
P-73	Sunday On Time 2	When P-70 is set to Local, Sunday on time 2
P-74	Sunday Off Time 2	When P-70 is set to Local, Sunday off time 2
↓	↓	↓
P-95	Saturday On Time 1	When P-70 is set to Local, Saturday on time 1
P-96	Saturday Off Time 1	When P-70 is set to Local, Saturday off time 1



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P-97	Saturday On Time 2	When P-70 is set to Local, Saturday on time 2
P-98	Saturday Off Time 2	When P-70 is set to Local, Saturday off time 2
dFLt	Factory Defaults	Restores all of the parameters to their default values

## Net - Network Configuration

The Intuitive Mercury Trim Heater Optimiser comes as standard with a built-in Ethernet TCP/IP network interface.

### Network Options

In an IP system there are two options;

- IP-L
- IP-r

IP-L allows the user to assign a fixed IP address to the controller. This address would be used when connecting the controller to a customer's local area network (LAN). This allows the customer to view each controller using a compatible web browser such as Google chrome.

IP-r allows the user to assign each controller on the system a unique 3 digit network identifier. The controllers have an auto-initialise function, which will automatically log the device onto the site network, using the 3 digit identifier, and the Intuitive Mercury is allocated a dynamic IP address by the system DHCP server (such as the RDM Data Manager).

### IP-L

To configure the device for IP-L mode the controller should be powered off, all three rotary switches set to zero and the controller powered back on.

1. nEt - From the function menu, select nEt
  - Press enter and the display will show "IP-L", press enter once more
  - 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. <b>N.B.</b> this option <b>must</b> be selected to save any changes made in this menu

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



Please ensure all power is switched off before installing or maintaining this product.

## IP-r

To configure the device for IP-r, set the rotary switches to give each controller on the network a unique identifier. The three rotary switches must be set when the controller is powered off; the controller should then be powered on and connected to the network.

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

## IO - Viewing Inputs & Outputs

Apart from setting up the controller, you can also view the status of the inputs and outputs and controller states. From the function menu, select "I/O", press enter. You can now scroll through the IO table as set out below

### Input / Output Table

Number	IO	Range oC (oF)	Step	Units
I-01	Display Temp	-59.0 to 128.0°C (-74.2 to 262.4°F)	0.1	Deg
I-02	Display Humidity	-59.0 to 128.0°C (-74.2 to 262.4°F)	0.1	Deg
I-10	Humidity 1	0 to 100%	1	rH
I-11	Humidity 2	0 to 100%	1	rH
I-12	Humidity 3	0 to 100%	1	rH
I-20	Temp 1	-59.0 to 128.0°C (-74.2 to 262.4°F)	0.1	Deg
I-21	Temp 2	-59.0 to 128.0°C (-74.2 to 262.4°F)	0.1	Deg
I-22	Temp 3	-59.0 to 128.0°C (-74.2 to 262.4°F)	0.1	Deg
I-30	Dewpoint 1	-59.0 to 128.0°C (-74.2 to 262.4°F)	0.1	Deg
I-31	Dewpoint 2	-59.0 to 128.0°C (-74.2 to 262.4°F)	0.1	Deg
I-32	Dewpoint 3	-59.0 to 128.0°C (-74.2 to 262.4°F)	0.1	Deg
O-01	Relay 1	0 (Off), 1 (On)		
O-02	Relay 2	0 (Off), 1 (On)		
O-03	Relay 3	0 (Off), 1 (On)		
O-04	Relay 4	0 (Off), 1 (On)		
O-05	Relay 5	Not Used		
O-11	Pulse 1	0 to 100%	1	%
O-12	Pulse 2	0 to 100%	1	%
O-13	Pulse 3	0 to 100%	1	%
O-21	Timer State	0 (Off), 1 (On)		
O-22	Overrun	0 to 6	1	Hrs
S-01	Control State 1	0 (Off), 1 (Stabilise), 2 (Normal)	1	
S-02	Control State 2	0 (Off), 1 (Stabilise), 2 (Normal)	1	
S-03	Control State 3	0 (Off), 1 (Stabilise), 2 (Normal)	1	

## Display Messages

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

Display Message	System status
rhFt	Humidity sensor fault
Ft	Temperature probe 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.

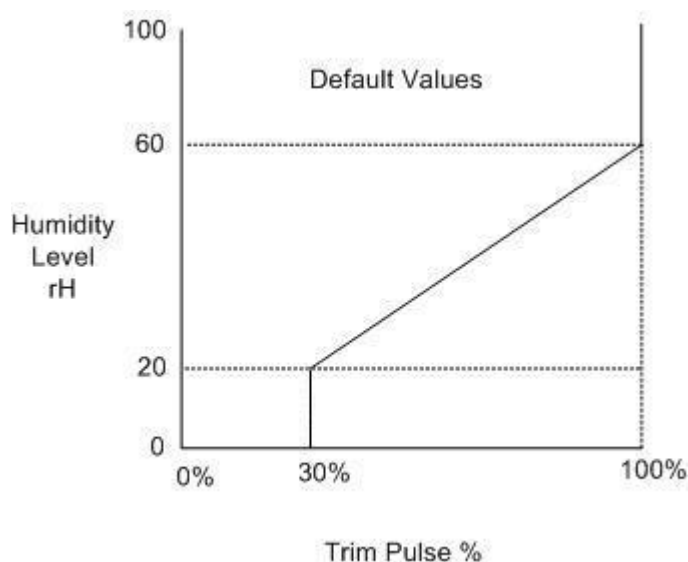
Alarm text	Type # (index)
Display Probe Fault	6
Display Sensor Fault	6
Humidity 1, 2 or 3 Fault	6
Temperature 1, 2 or 3 Fault	6



Please ensure all power is switched off before installing or maintaining this product.

## Normal Operation

There are three channels in this controller each channel will switch its associated relay in accordance with the setup parameters. When rH is below the "rH Min level", the relay will pulse to a duration set by the "Trim Min" parameter. When rH is above the "rH Min" level, but below the "rH Max" level, the relay will pulse the relay in proportion to the line drawn between the min and max levels (see the example below). When rH goes above the "rH Max" level, the trims will remain at the "Trim Max" setting. The default sensor is in the display, and this will switch relay 1, relay 2 and 3 can be switched by selecting the sensor. 2 more external sensors can be used or all 3 relays can use the same sensor.



Similarly, Dewpoint can be used instead of Humidity, select this option from the parameters. If Dewpoint control is selected, the Y axis on the graph is Dewpoint Temperature, not %rH. During normal operation, the controller display will show the display temperature and humidity, if there are no alarms. If there is a current alarm then an alarm message will be shown on the display.

## Faults

If a fault is detected, the Control Stat will indicate the fault on the display and the red alarm LED will come on

## OFSt - Probe Offset

This feature allows each probe value to be modified by an "offset". Offset values are from  $-10^{\circ}\text{C}$  ( $-18^{\circ}\text{F}$ ) to  $+10^{\circ}\text{C}$  ( $+18^{\circ}\text{F}$ ) and on a channel basis. Example C1 = Probe 1.

## GP Timer Set-up

It is possible to set the Control Stat timer for remote operation ( $P70 = 1$ ). A GP Timer must be set up to control the timer on/off period. For GP Timer set up, please refer to the Data Manager User guide found on the RDM website. The following settings should be followed:

- Output Type: This should be set to "General".
- Output Mask: This should match the "Controller Name".
- Output Channel: Set this to "8". This will allow the GP Timer to control the state of the controller timer.



Please ensure all power is switched off before installing or maintaining this product.

## Trim Heater Pulse Module (PR0723)

Energy savings via the Mercury range of case controllers can be achieved in a number of ways. One of which is pulsing the trim heater relay off for a given period of time. This can be achieved by utilising the Trim Heater Control energy feature in the Data Manager or by the Intuitive Mercury Trim Optimiser controller. RDM recommend that the Trim Heater Pulse Module (PR0723) is used in all instances of trim control. This module is fitted in between the trim heater of the case and the relay output of the Mercury case controller or the Intuitive Mercury Trim Optimiser which is pulsing the trim heater.

The trim heater module output provides a smoother power distribution, compared to using the Mercury case controller trim relay output or Intuitive Mercury Trim Optimiser controller direct, as it switches at the zero voltage crossover point. Switching the trim heater on and off via a normal relay, without using the RDM trim heater pulse module, may damage the trim heater and reduce the operational life of the heater\*. Please see the Trim Heater Pulse Module user guide for further details.

\*Please check with trim heater manufacturer as the Trim heater Pulse Module may not be required.

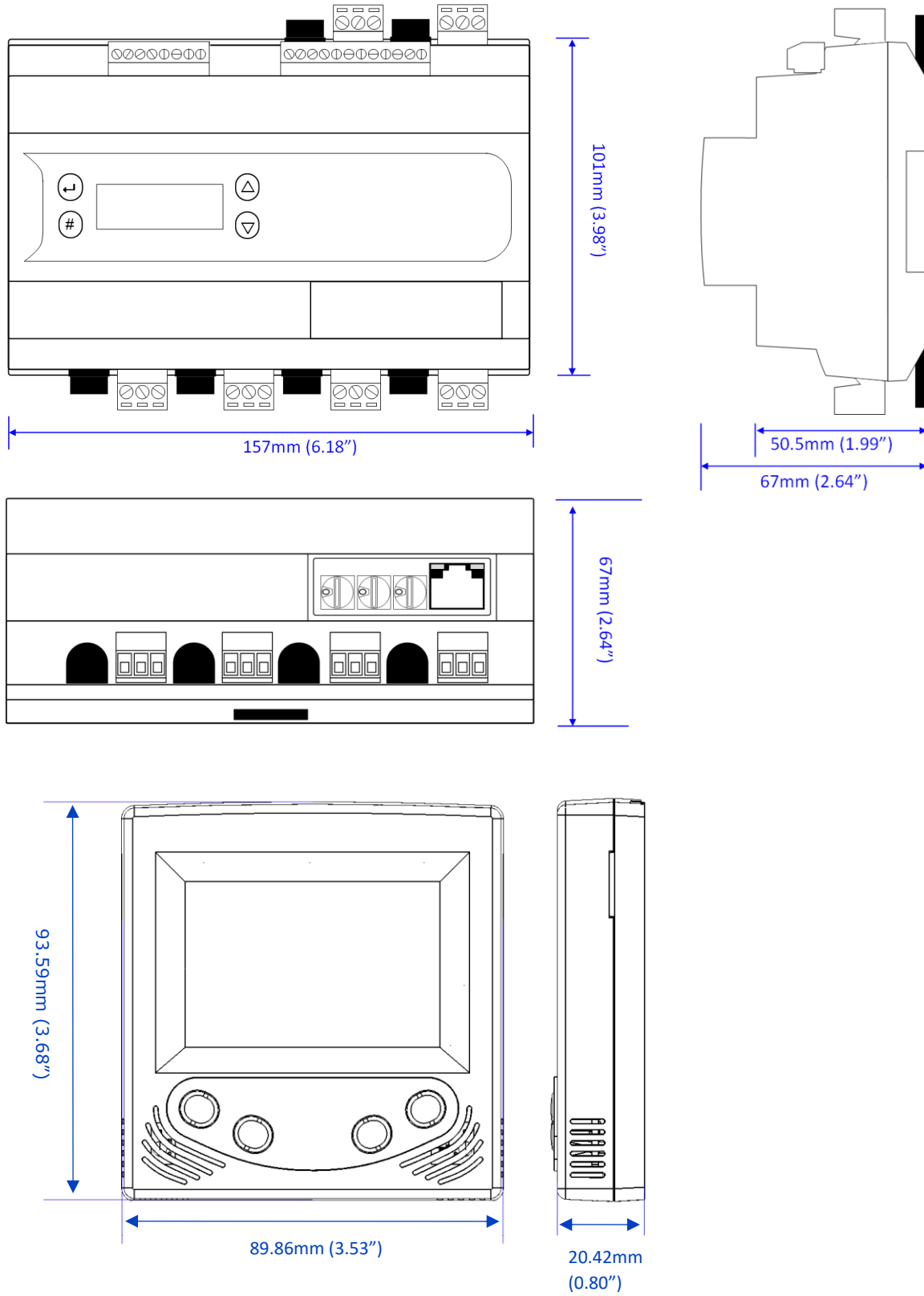
## Specification

Power Requirements	
Supply Voltage Range	100 – 240 Vac $\pm$ 10%
Supply Frequency	50 – 60 Hz
Typical Supply Current	<1 Amp
Maximum Supply Current	2 Amps
General	
Operating Temperature Range	-10°C to +60°C
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	157mm (W) x 67mm (H) x 120 (D)
Weight	500 grams
Safety	EN61010
EMC	EN61326-1 : 2013
Class 2 Insulation	<b>No</b> protective Earth is required and <b>none</b> should be fitted
Supply Fuse	The controller has a built in fuse. Fuse type 2A 240Vac Anti-surge (T) HRC conforming to IEC60127, 32 x 6.3mm
MCB	2A, 240 VAC Type C conforming to BS EN 60898 (Note: controller has integral 2A fuse)
Relay Output Fuse	10A 240Vac Anti-surge (T) HRC conforming to IEC60127, 32 x 6.3mm
Comms	IP Network
Relay Specification	
Relays Exclusive Common	
Max current	10A Resistive (Cos $\phi$ = 1) 2A Inductive (Cos $\phi$ = 0.4)
Max voltage	250Vac. 30V dc
Relay Fuse	10A 240Vac Anti-surge (T) HRC conforming to IEC60127, 32 x 6.3mm
Relay Life Expectancy	For trim heater control applications (inductive load) a maximum switchable current of 2A is allowed during operation. This will provide a relay life expectancy greater than 5 years. If the current switched is more than 2A the relay life expectancy will be below 5 years and the controller warranty will become invalid. Warning if the full current of 10A is switched the relay life expectancy is less than 6 months.
Inputs	
Probe Inputs	3.01K Ohms - 0V Return
1-3 Vdc Input	This is for use with a 3rd party Humidity sensor (Farnell Part 2070548 or equivalent). Connect sensor which provides a 1 to 3 Vdc signal, a 5V supply is provided to feed the sensor. 1V equates to 0% rH and 3V equates to 100% rH.
Display Sensor Accuracy (PR0445)	
Temperature Range	+5°C to +50°C Accuracy $\pm$ 0.4 Degrees Celsius
Humidity Range	20% to 80% Accuracy $\pm$ 3% rH



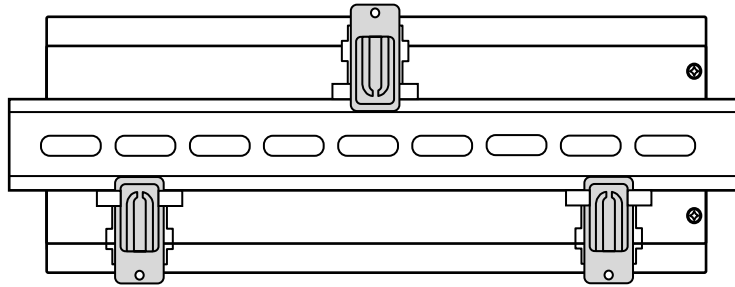
Please ensure all power is switched off before installing or maintaining this product.

## Installation



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### Mounting Instructions - Intuitive

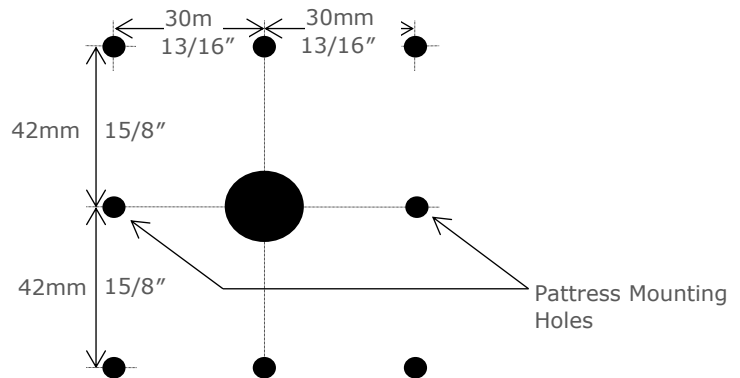


Three clips fix the Intuitive Mercury securely to DIN rail. Pull each clip until it “clicks” to remove the controller. Each clip has a mounting hole to provide an alternative fixing mechanism to DIN mounting.

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

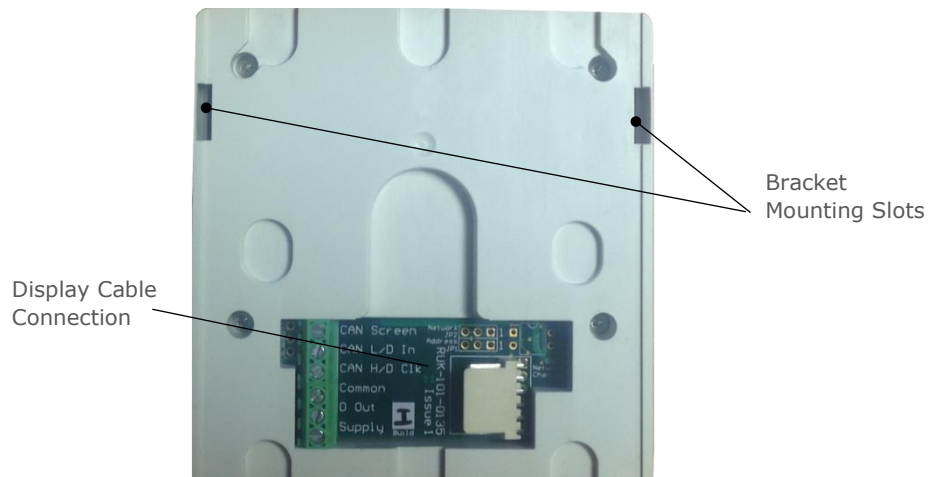
### Mounting Instructions - Display

The screen display is supplied with a mounting bracket. The bracket is removed from the display by removing the two screws on the underside of the display and sliding the bracket downwards and then away from the display. The mounting plate can then be fitted to the desired surface using the mounting holes shown below. Two of the mounting holes match the position of the threaded inserts on a standard UK pattress box, providing another mounting option.



### Fitting the Display to the Mounting Bracket

Care should be taken with regards to plug orientation when re-connecting.



The display should be positioned on the bracket so that the two mounting lugs on the bracket locate in the two slots in the back of the display. The display is then moved down so that the two screw holes at the bottom of the bracket meet up with the two threaded inserts at the bottom of the display. The two mounted screws are then fitted to secure the display onto the bracket.



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## 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.

## Revision History

Revision	Date	Changes
2.0	11/07/13	First Release. Note document revision matches controller application software
2.0a	19/06/14	Relay Inductive rating amended.
2.0b	05/01/15	Operating temperature range increased.
2.1	28/07/16	New Display support added.
2.1a	09/03/18	New documentation format.
3.0	02/09/19	New Intuitive Mercury Hardware



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