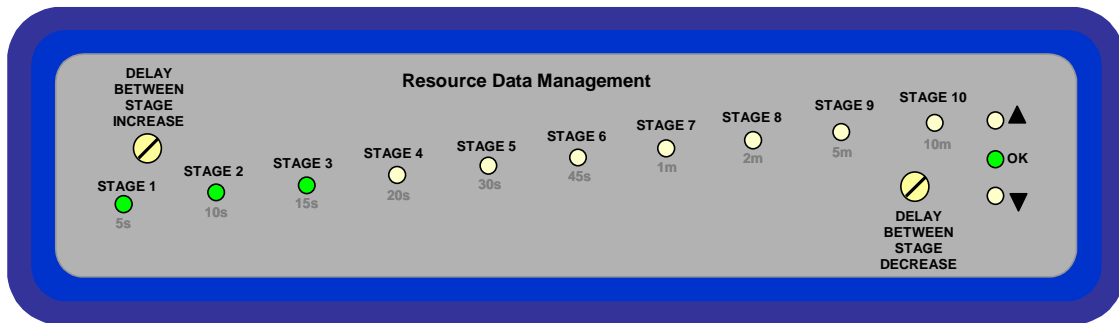
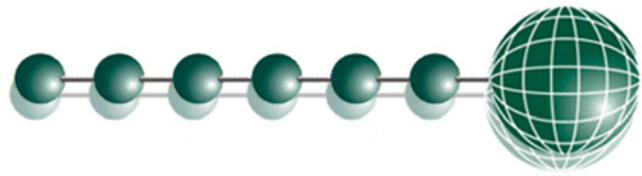


Mercury 6-10 Step Controller Installation & User Guide



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



THE MERCURY RANGE 4

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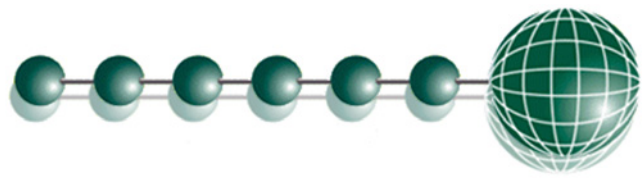
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Ensure that all power is switched off before installing or maintaining this product

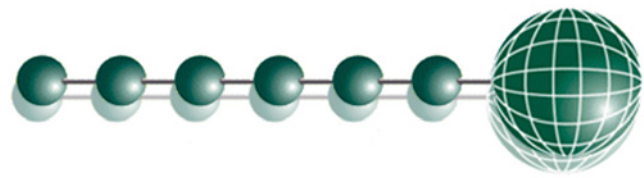


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The Mercury Range

from Resource Data Management

This documentation refers to the 6-input/10-output Step controller.

Type: Mercury 6-10 Step

One type available, with the option of adding a network module.

General Description

This controller will increment or decrement its relays in response to an "increase stage" or "decrease stage" signal. As well as the two run inputs, there are 3 "general fault" inputs that can be used as alarms. The unit has preset increment and decrement timers for stage delays that can be adjusted locally or through a remote network (If the network module is fitted).

The unit has LED indications for all stages, as well as "increase stage", "decrease stage" and run (OK). The LED's also act as the set-up indications. Applying a signal to the set-up input enters set-up mode. Safeguards are made so that during normal operations, set-up mode cannot be entered.

Configuration

The controller is delivered pre-configured: -

- 10 stages active
- Stage increase delay time: 1 minute
- Stage decrease delay time: 1 minute
- General Alarm delay time: 10 seconds
- Capacity Alarm delay time: 10 minutes
- Control Alarm delay time: 10 minutes

Networks

As well as "stand-alone" operation, the controller is capable of connecting to either a TCP/IP local area network or a RS485 network.

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

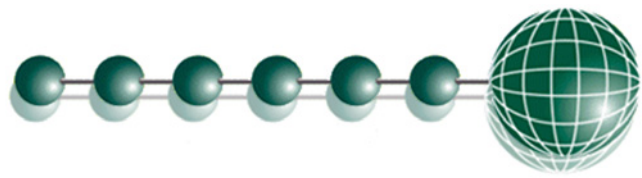
- 485 Legacy module (Part No PR0026)
- IP Futura module* (Part No PR0016)

Connecting to either of these communication modules will automatically be detected on power up.

* Note: On an IP network, this controller is compatible with DHCP server systems only.

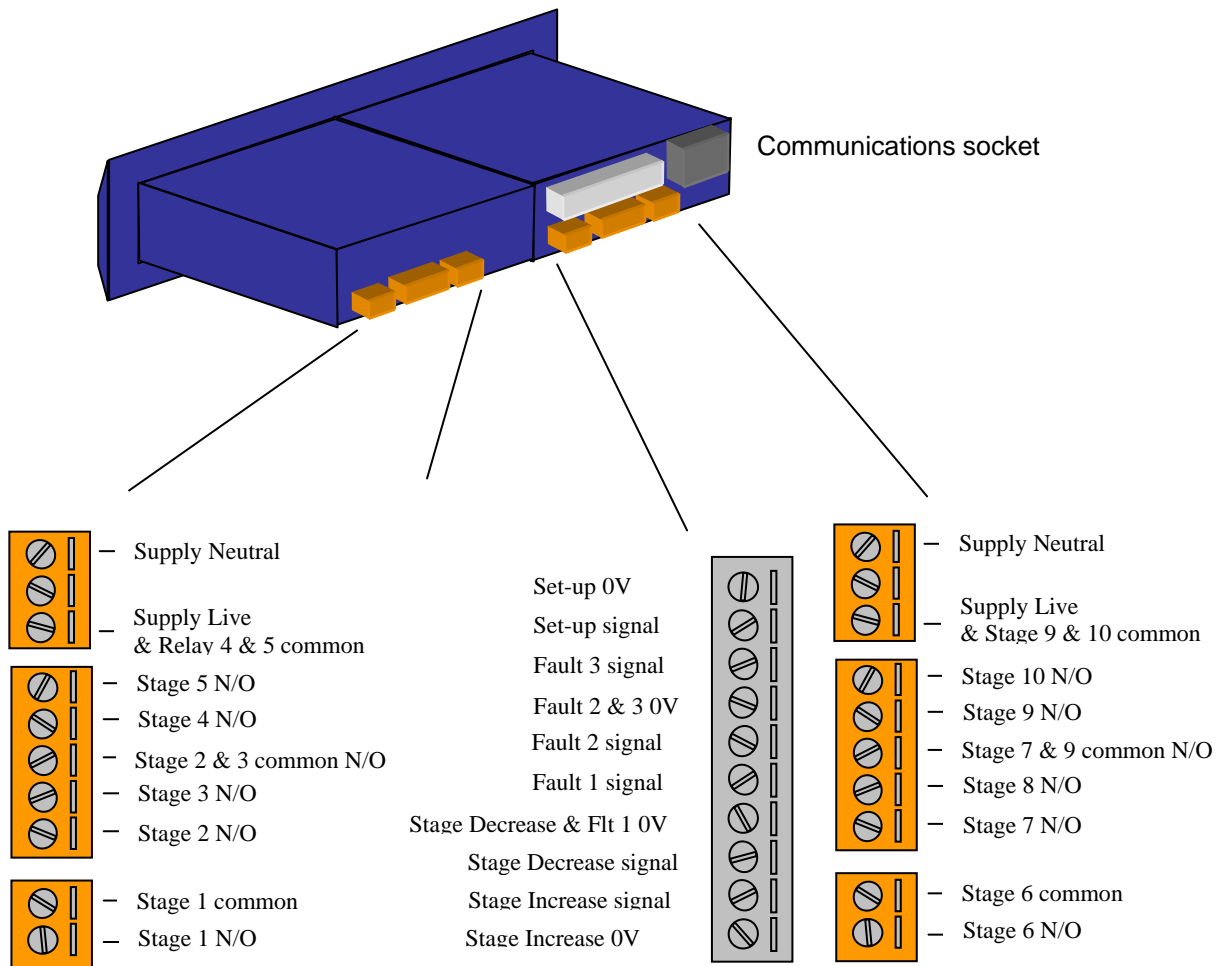


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Connections

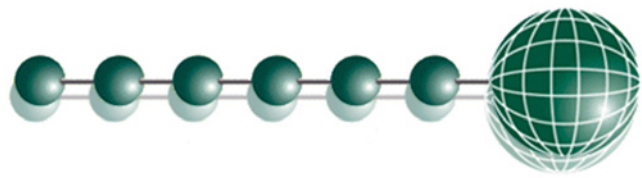
All connections are made to the back of the controller. The diagram below shows the connection detail. See [Specification](#) for further details on connections.



Note: Both supplies need to be present for correct operation.



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



Input/Output Allocation Tables

Step Controller	Description (0volt return)	Alarm Action	Set-up Action
Input 1	Increase Stage	No	Increase delay
Input 2	Decrease Stage	No	Decrease delay
Input 3	General Fault 1	Yes	None
Input 4	General Fault 2	Yes	None
Input 5	General Fault 3	Yes	None
Input 6	Set-up mode	No	Enters set-up mode
Relay 1	Stage 1	N/A	N/O
Relay 2	Stage 2	N/A	N/O
Relay 3	Stage 3	N/A	N/O
Relay 4	Stage 4	N/A	N/O
Relay 5	Stage 5	N/A	N/O
Relay 6	Stage 6	N/A	N/O
Relay 7	Stage 7	N/A	N/O
Relay 8	Stage 8	N/A	N/O
Relay 9	Stage 9	N/A	N/O
Relay 10	Stage 10	N/A	N/O

Setting up the controller

Set up access to the controller can be achieved in two ways

Manual (Via front panel controls)

To enter the set-up mode, both of the run controls, "increase stage" and "decrease stage" need to be inactive.

The set-up input must first be activated by applying a link between the set-up signal (Input 6) and its' 0volt return. Confirmation of this will result in the "OK" LED flashing. Fig 1.

Note: All stage LED's and any active alarms will cease to indicate when the set-up mode is active.

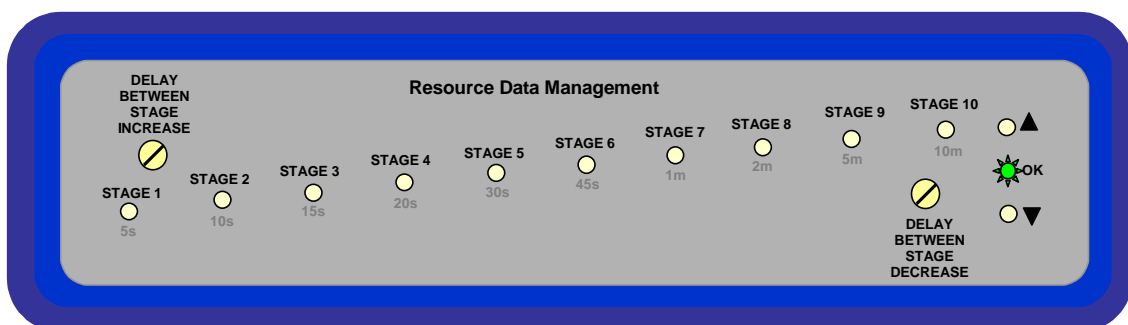
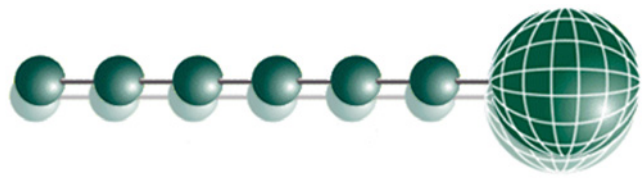


Fig 1. Set-up mode



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



Number of Stages set-up:

(Whilst the set-up mode is active);

To set the number of stages; first apply a link between the "increase stage input" and its' 0volt return, and a link between the "decrease stage input" and its' OV return. Indication of this mode is when the "OK" LED continues to flash and both the "increase" and "decrease" LED's illuminate.

Adjust the "Delay between stage increase" pot until the desired number of stages has been reached; indicated by the illuminated stage LED's. See Fig. 2 (Example shows 5 stages set)

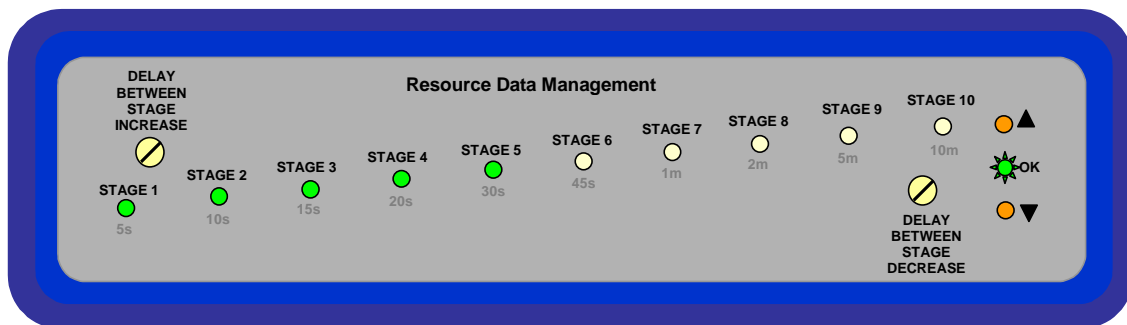


Fig 2. Set-up (Number of stages)

Removing the 0Volt return links on both the "increase stage" and "decrease stage" inputs completes stage set-up. (The action of removing these inputs, locks the new parameter into the controller non-volatile memory) The front panel will indicate just the set-up (Flashing "OK" LED) mode. (Fig 1.)

Stage set-up can be entered again by applying the "increase stage" and "decrease stage" inputs and repeating the above procedure.

To exit the set-up mode at this point without any further changes, remove the 0volt return link on the set-up input.

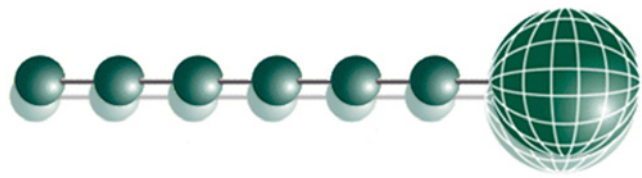
The controller will revert to its' normal operation from the point at which it entered set-up.

If the number of stages selected is less than the previous setting, and those stages were on when set-up was entered; the controller will immediately drop the number of stages to the set level.

To continue with the set-up, leave the 0volt return link on the set-up input and select another parameter to change.



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



Stage Increase Delay Set-up:

(Whilst the set-up mode is active);

Apply a link between the "Stage increase" input and its' 0V return, this mode will be indicated by the "OK" LED flashing and the "increase" LED illuminated.

Using the "Delay between stage increase" pot, adjust until the desired delay is indicated by the LED's. See Fig 3. This shows a stage increase delay of 1 minute.

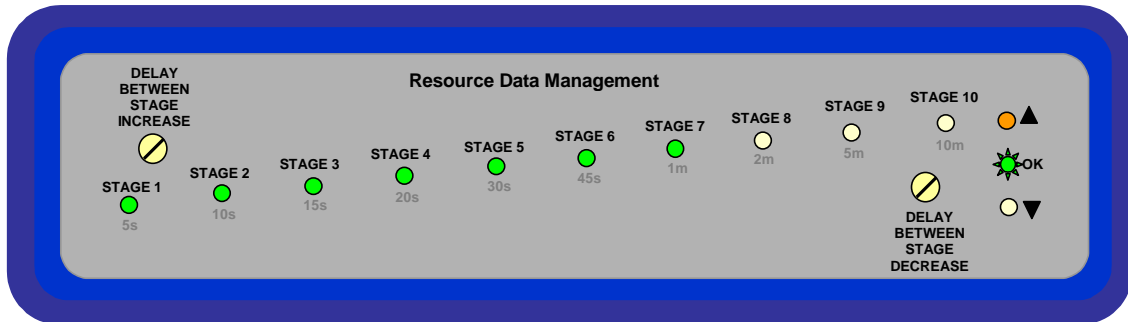


Fig 3. Stage Increase delay

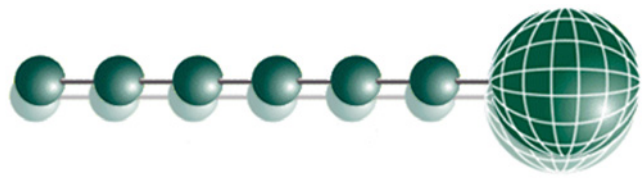
"Increase stage delay" set-up is completed by removing the 0Volt return link on the "increase stage" input.

To exit the set-up mode at this point without any further changes, remove the 0volt return link on the set-up input.

The controller will revert to its' normal operation from the point at which it entered set-up. Otherwise leave the 0volt return on the set-up input and select another parameter to change.



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



Stage Decrease Delay Set-up:

(Whilst the set-up mode is active);

Apply a link between the "Stage decrease" input and its' 0V return, this mode will be indicated by the "OK" LED flashing and the "decrease" LED illuminated.

Using the "Delay between stage decrease" pot, adjust until the LED's indicates the desired delay. See Fig 4. This shows a stage decrease delay of 30 seconds.

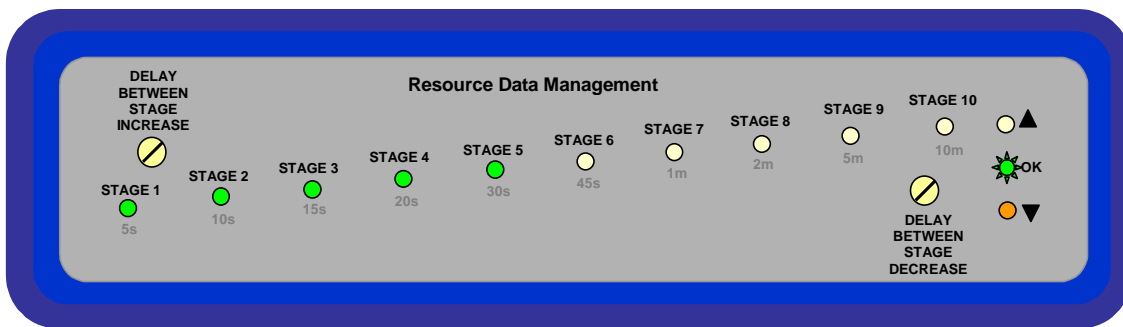


Fig 4. Stage Decrease delay

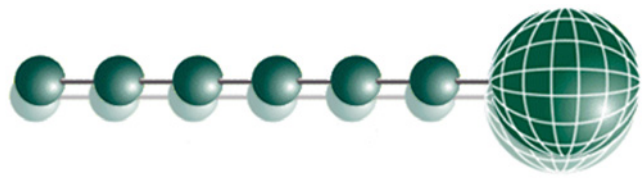
Removing the 0Volt return link on the "decrease stage" input completes "Decrease stage delay" set-up.

To exit the set-up mode at this point without any further changes, remove the 0volt return link on the set-up input.

The controller will revert to its' normal operation from the point at which it entered set-up. Otherwise leave the 0volt return on the set-up input and select another parameter to change.



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



Remote (Network) Set-up

The following parameters can be changed through your network front end: (Refer to your "front end" User Guide)

Parameter Tables:

Parameter	Range	Step	Units	Default Value
Increase Delay	5seconds - 10minute	Table	s or m	1 minute
Decrease delay	5seconds - 10minute	Table	s or m	1 minute
Number of Stages	1 - 10	1		10
Gen Alarm delay*	0 - 15 minutes	1 second	mm:ss	10 seconds
Capacity Alarm delay*	0 - 99 minutes	1 minute	mins	10 minutes
Control Fault delay*	1 - 30minutes	1 minute	mins	10 minutes

*
"General alarm delay", "Capacity delay" and "Control fault delay" can only be changed through the network set-up option.

Operation:

Power On:

After switching power on, the controller runs through an LED check sequence. The LED's will illuminate from "stage 1" through to "decrease" and back to "stage 1"
After this sequence, normal operation will begin: -

Increase Stages:

If the "increase stage" signal is present, the controller will turn on stage 1 (relay 1) after a short delay and then wait for the "increase delay period" to elapse before turning on the next stage. As long as the "increase stage" signal is present, this sequence will continue until the final stage has been reached.

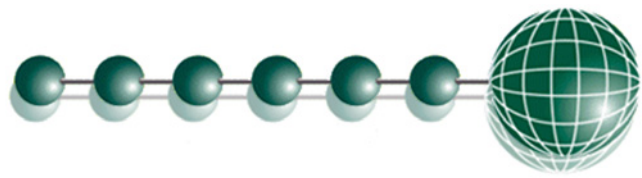
Decrease Stages:

When the "Increase stage" signal is de-activated and the "decrease stage" signal is activated, the controller will decrement the stages obeying the decrease delay times.

Note that in software versions 6.2 and below, there is **no** delay when the controller first starts decreasing. In software versions 6.3 and above, the decrease delay is applied on **all** down steps.



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



Alarms:

General Fault 1:

Input 3 is a "general fault input" a 0volt return on this input indicates a fault condition. The fault is indicated on the front panel; after the "general alarm delay" period by flashing stage 1 LED. If stage 1 is active, the flash rate will increase.

General Fault 2:

Input 4 is a "general fault input" a 0volt return on this input indicates a fault condition. The fault is indicated on the front panel; after the "general alarm delay" period by flashing stage 2 LED. If stage 2 is active, the flash rate will increase.

General Fault 3:

Input 5 is a "general fault input" a 0volt return on this input indicates a fault condition. The fault is indicated on the front panel; after the "general alarm delay" period by flashing stage 3 LED. If stage 3 is active, the flash rate will increase.

Capacity Alarm:

If the "increase stage" signal is not removed when the final stage is reached, a "capacity alarm" will occur after the capacity alarm delay period has lapsed.

The "Capacity alarm" is indicated by the "increase LED" flashing See Fig 5:

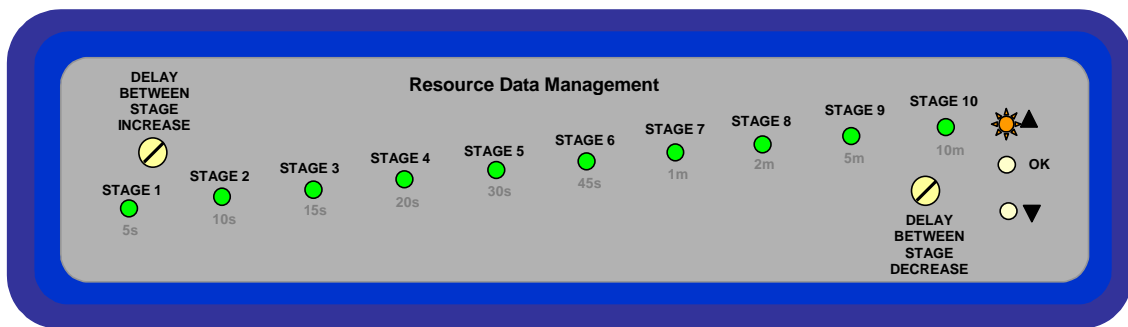
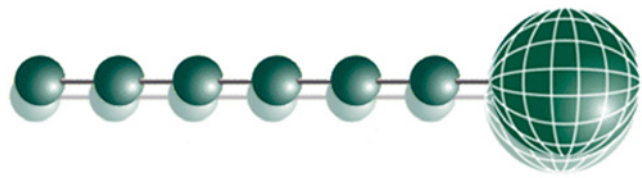


Fig 5. Capacity alarm indication:.. (Number of stages set to 10)



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



Control fault:

If both the "Increase stage" signal and the "decrease stage" signal are activated together, the front panel will indicate a "control fault" and all of the LED's will flash. See Fig 6.

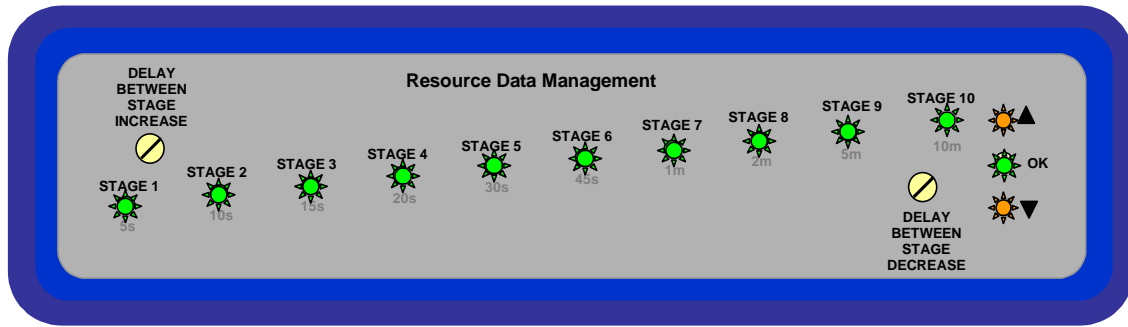


Fig 6. Control Fault (All LED's flashing)

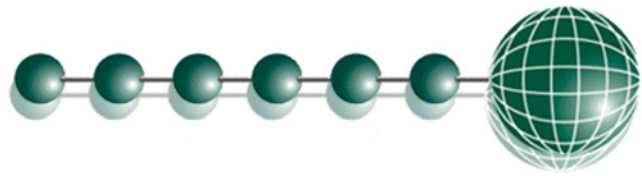
Network Alarms

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
General Alarm 1	20
General Alarm 2	20
General Alarm 3	20
No More Capacity	3
Control Run Fault	15



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



Specification

General

Power requirements:

Supply Voltage Range:	100 - 240 Vac \pm 10%
Supply Frequency:	50 - 60 Hz
Maximum supply current:	8.2 Amps (when relays 4,5,9 & 10 are fully loaded)
Typical supply current:	>3 Amp
Operating temperature range:	+5 ^o C to +50 ^o C
Operating Humidity:	80% maximum
Storage temperature range:	-20 ^o C to +65 ^o 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:	180mm (W) x 68mm (H) x 100mm (D)
Weight:	200 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 adequate protection against contact to hazardous live parts.
The host equipment must provide an external disconnect device and an over-current protection device.

Relays

Max current relay 1 & 6:	6A (non inductive)
Max Voltage relay 1 & 6:	260Vac (external supply)
Max current relay 2 & 7:	3A (non inductive)
Max Voltage relay 2 & 7:	260Vac (external supply)
Max current relay 3 & 8:	3A (non inductive)
Max Voltage relay 3 & 8:	260Vac (external supply)
Max current relay 4 & 9:	2.0A (non inductive)
Max Voltage relay 4 & 9:	260Vac (Internal supply)
Max current relay 5 & 10:	2.0A (non inductive)
Max Voltage relay 5 & 10:	260Vac (Internal supply)

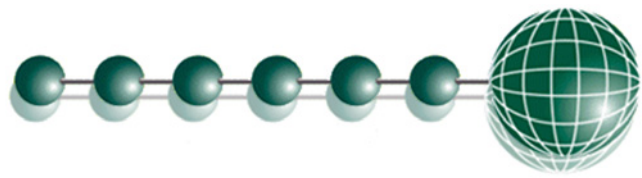
For compliance with the LVD, relays 2,3,7 & 8 common must be at the same potential as the supply voltage.
Relay 1 & 6 can be fed from a lower independent voltage (such as 24 Vac) if required.

Inputs:

Input resistance:	3.01K Ohms
Input type	0 Volt return
Comms:	RS232 with flow control

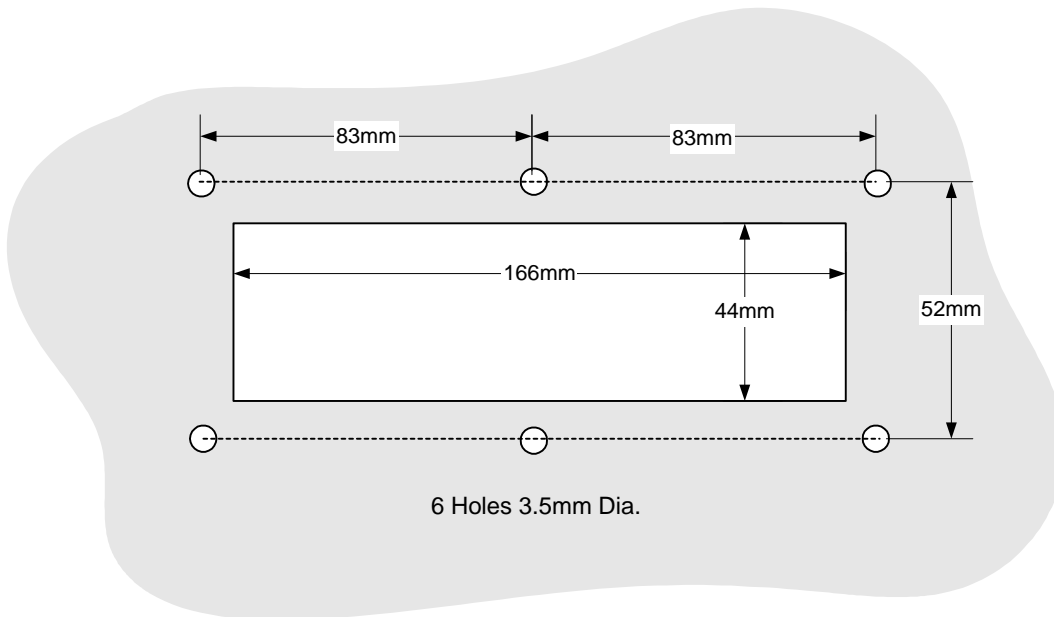


Ensure that all power is switched off before installing or maintaining this product



Installation:

Panel Cut-out:



Fixing:

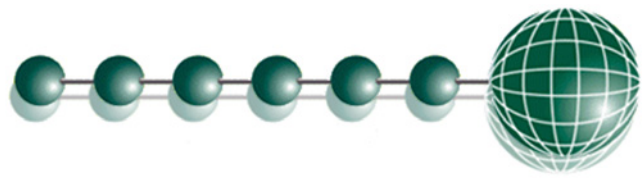
The controller is fixing by using 6 M3 screws at the rear on the panel.

Clearances:

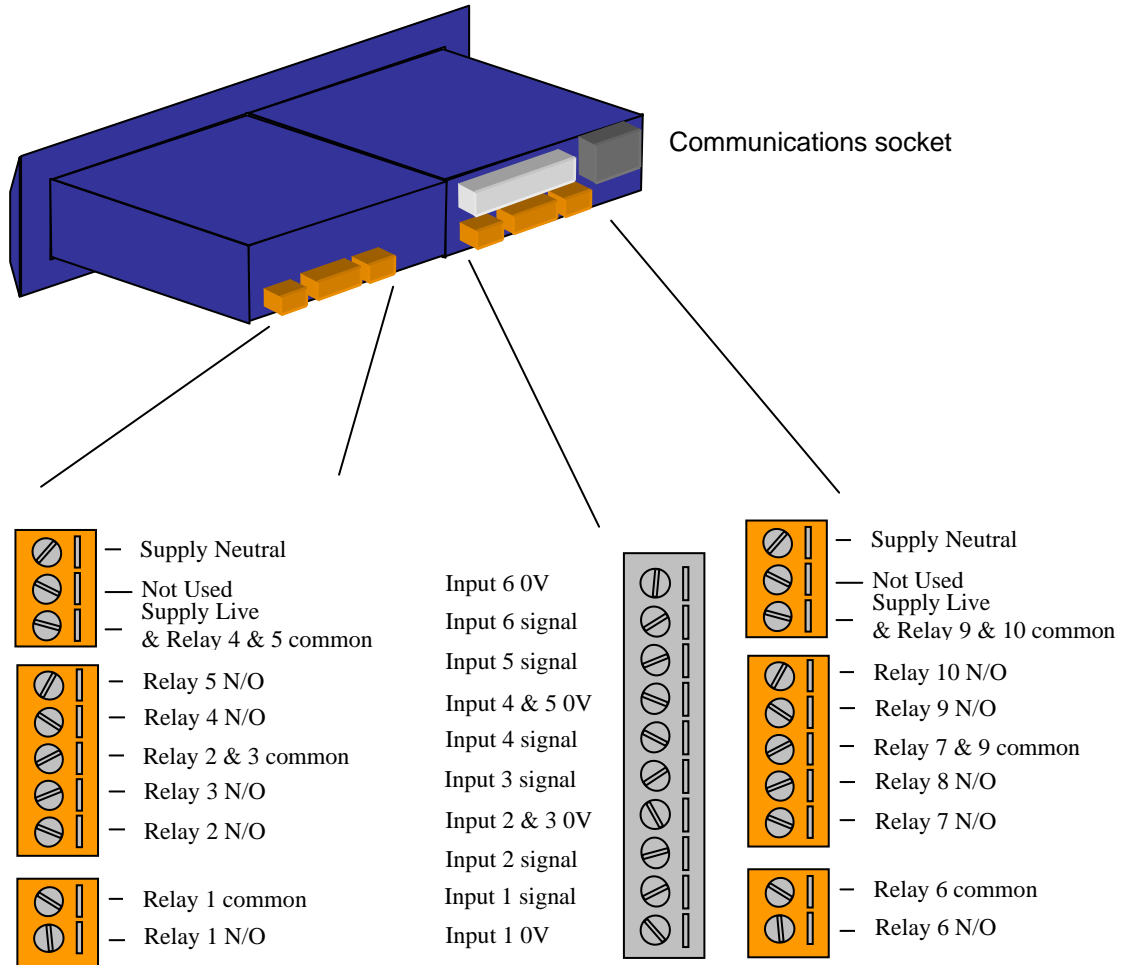
The controller must have 5mm clearance above the top and below bottom, and 25mm clearance from the sides. Clearance at the rear is dependant on the wiring.



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



Wiring:



Note 1. Both supply inputs must be connected.

Note 2

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.

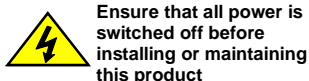
Fuse:

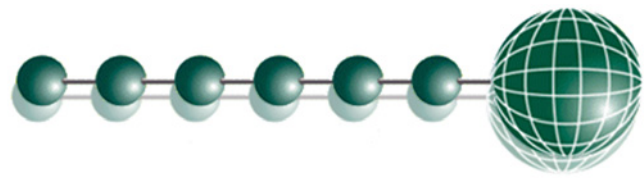
A fuse or other means of over current protection must be fitted to the live supply to this controller. The rating of this protection must be no greater than 6.3A.

Cleaning:

Do not wet the controller when cleaning. Wiping with slightly dampened lint free cloth can clean the front.

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





Appendix 1

Network Screens

The following screens are those that will be seen when using the RDM IP module and Internet Explorer.

Initial screen after connection:

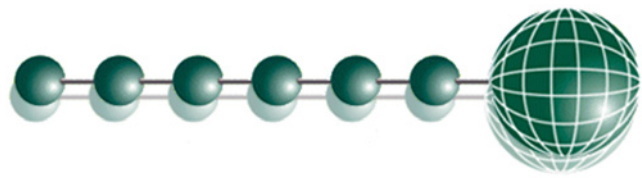


The user has a choice of entering the following pages: -

- Inputs & Outputs
- Parameters
- Alarms
- Logs
- Configuration



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



Inputs & Outputs:

Inputs & Outputs

Inputs	
Step Increase	Off
Step Decrease	Off
General Alarm 1	Off
General Alarm 2	Off
General Alarm 3	Off
Set-Up Mode	Off
Pot 1 Value	4
Pot 2 Value	4

Outputs	
Relay 1	Off
Relay 2	Off
Relay 3	Off
Relay 4	Off
Relay 5	Off
Relay 6	Off
Relay 7	Off
Relay 8	Off
Relay 9	Off
Relay 10	Off

States	
Control State	Normal

This is view only screen and shows the states of the inputs and outputs.

Pot 1 value is an internal unit that indicates the position of the "Delay between stage increase" pot.
Pot 2 value is an internal unit that indicates the position of the "Delay between stage decrease" pot.

Parameters screen:

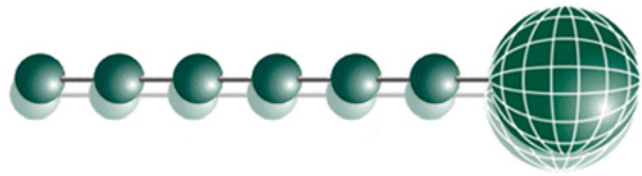
Parameters

Control		
Increase Delay	30 secs	
Decrease Delay	30 secs	
Number of Stages	10	
General Alm Dly	00:10	mm:ss
Capacity Delay	10:00	mm:ss
Cntrl Fault Dly	10:00	mm:ss

This is a view only screen and shows the parameter settings.



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



Alarms screen:

Alarms		
Reason	Occurred	Cleared
General Alarm 1	08:29:58 29/05/02	08:30:25 29/05/02
No More Capacity	15:15:18 29/05/02	15:16:24 29/05/02
No More Capacity	23:36:02 28/05/02	23:38:42 28/05/02
General Alarm 3	23:32:16 28/05/02	23:38:44 28/05/02
General Alarm 2	23:31:51 28/05/02	23:33:33 28/05/02
General Alarm 1	23:25:39 28/05/02	23:33:26 28/05/02
No More Capacity	23:24:50 28/05/02	23:25:25 28/05/02
Control Run Fault	22:58:42 28/05/02	23:23:20 28/05/02
No More Capacity	20:26:52 28/05/02	20:27:37 28/05/02
No More Capacity	20:21:15 28/05/02	20:22:46 28/05/02

This is a view only screen.

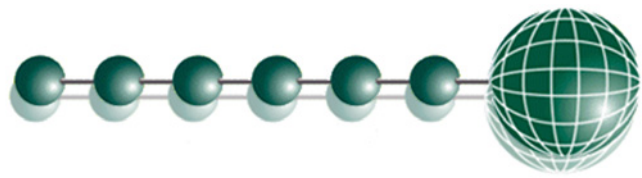
Logs screen:

Logs								
<<< << < > >> >>>								
	10:55:25 29/05/02	10:55:30 29/05/02	10:55:35 29/05/02	10:55:40 29/05/02	10:55:45 29/05/02	10:55:50 29/05/02	10:55:55 29/05/02	10:56:00 29/05/02
Step Increase	Off	Off	Off	Off	Off	Off	Off	Off
Step Decrease	Off	Off	Off	Off	Off	Off	Off	Off
Relay 1	Off	Off	Off	Off	Off	Off	Off	Off
Relay 2	Off	Off	Off	Off	Off	Off	Off	Off
Relay 3	Off	Off	Off	Off	Off	Off	Off	Off
Relay 4	Off	Off	Off	Off	Off	Off	Off	Off
Relay 5	Off	Off	Off	Off	Off	Off	Off	Off
Relay 6	Off	Off	Off	Off	Off	Off	Off	Off
Relay 7	Off	Off	Off	Off	Off	Off	Off	Off
Relay 8	Off	Off	Off	Off	Off	Off	Off	Off
Relay 9	Off	Off	Off	Off	Off	Off	Off	Off
Relay 10	Off	Off	Off	Off	Off	Off	Off	Off
Control State	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal

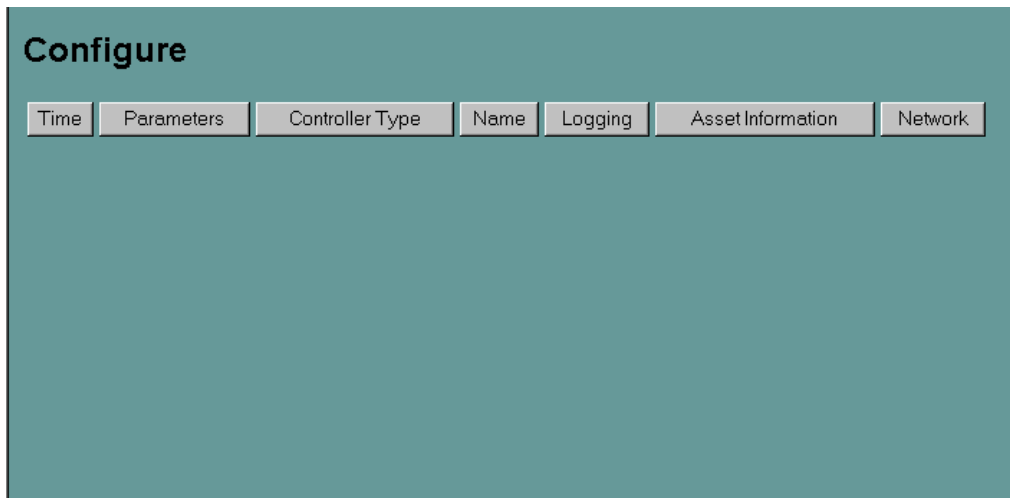
This is a view only screen



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



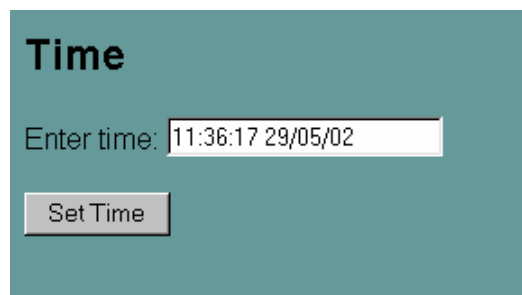
Configure screen:



The user will be prompted for a *username* and *password* to enter this screen. This screen allows the user to configure the controller and set-up the following: -

- Time
- Parameters
- Controller Type
- Name
- Logging
- Asset Information
- Network

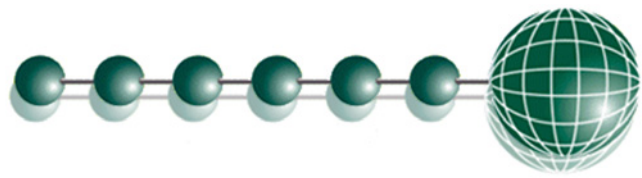
Time Set-up screen:



Enter the time and date in the format displayed and press "Set Time" to update the controller. A screen showing the set time will be displayed, and then revert to the initial (Home) screen.



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Set Parameters screen:

Set Parameters

Parameter Name	Low	High	Default	Value	Units
Increase Delay	5 secs	10 mins	1 min	1 min	
Decrease Delay	5 secs	10 mins	1 min	1 min	
Number of Stages	1	10	10	10	
General Alm Dly	00:00	15:00	00:10	00:10	mm:ss
Capacity Delay	00:00	99:00	10:00	10:00	mm:ss
Cntrl Fault Dly	01:00	30:00	10:00	10:00	mm:ss

This screen allows the parameters to be changed. Once the values are changed, the "Set Parameter" button must be clicked to set the parameters into the controller. A screen will show the number of parameters and the number changed, then revert back to the Home screen.

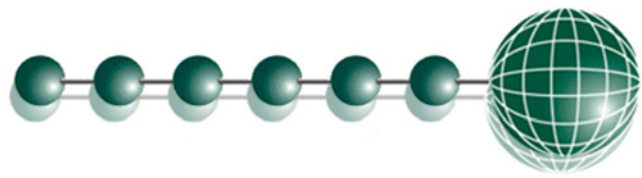
Controller Type screen:

Controller Type

This screen allows the controller type to be changed. For this controller, there is only one type (Stepper). No change can be achieved.



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Name screen:

Name

Enter Name:

This screen allows the user to give the controller a name. Type in a name of your choice (upper or lower case alpha-numeric) up to 32 characters. Click "Set Name" to load into the controller. A screen will show the name has been set and then revert back to the Home screen. (The Home screen will also now show the controller name.)

Logging screen:

Logging

Set 1	Set 2
Log Interval: 5s	Log Interval: None
Step Increase: <input checked="" type="checkbox"/>	Step Increase: <input type="checkbox"/>
Step Decrease: <input checked="" type="checkbox"/>	Step Decrease: <input type="checkbox"/>
Relay 1: <input checked="" type="checkbox"/>	Relay 1: <input type="checkbox"/>
Relay 2: <input checked="" type="checkbox"/>	Relay 2: <input type="checkbox"/>
Relay 3: <input checked="" type="checkbox"/>	Relay 3: <input type="checkbox"/>
Relay 4: <input checked="" type="checkbox"/>	Relay 4: <input type="checkbox"/>
Relay 5: <input checked="" type="checkbox"/>	Relay 5: <input type="checkbox"/>
Relay 6: <input checked="" type="checkbox"/>	Relay 6: <input type="checkbox"/>
Relay 7: <input checked="" type="checkbox"/>	Relay 7: <input type="checkbox"/>
Relay 8: <input checked="" type="checkbox"/>	Relay 8: <input type="checkbox"/>
Relay 9: <input checked="" type="checkbox"/>	Relay 9: <input type="checkbox"/>
Relay 10: <input checked="" type="checkbox"/>	Relay 10: <input type="checkbox"/>
Control State: <input checked="" type="checkbox"/>	Control State: <input type="checkbox"/>

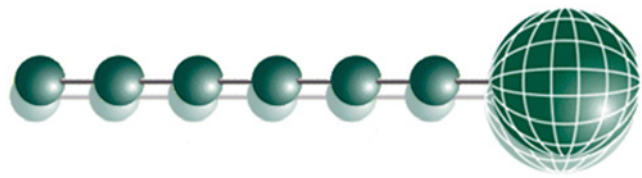
This screen allows the user to set the logging features. There are two sets so that values can have different log intervals.

Set the interval required on set1 and set 2, tick the required values to be logged, then click "Set Values" to load into the controller.

A screen will display "Log configuration set" then revert back to the Home page.



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Asset Information screen:

Controller	
Model	
Serial No	
Date	

Equipment Manufacturer	
Manufacturer	
Model	
Serial No	
Date	

Installed Fixture	
Asset	
Installer	
Date	

Refurbished Fixture	
Refurb By	
Re-Asset	
Installer	
Date	

Set Information

This screen allows the user to set asset information into the controller.

Caution: This is a once only operation.

Click "Set Information" and follow the on screen instructions to set up your asset information.

Network screen:

Enter Genus Address: RC 10-6

Set Address

Clear Address

This screen allows the user to either clear or set the Genus network address.

To set the address, type in the appropriate address in the field, then click "Set Address", a screen will show the address selected and then revert back to the Home screen.

To clear the Genus address, click on "Clear Address", a screen will display "Genus address cleared" and revert back to the Home screen.



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