HERON ELECTRIC COMPANY LTD

BASIC USER Manual

MCI-4, MCI-8, MCI-12, MCI-16, and MCI-96

March, 1999

About This Controller

Congratulations, you are now the owner of a Heron MCI irrigation controller.

Your controller will operate 24volt AC[*] solenoid valves. The controller will run the valves for the length of time, and in the order you specify. This sequence of running solenoid valves is known as an **irrigation program.**

Irrigation programs can be started automatically at pre-set start times. Alternatively, an irrigation program, a single solenoid valve or the pump, can be started manually at any time.

PLEASE NOTE

This controller has been supplied to you in its simplest configuration.

That is it is set up to run :-
☒ One irrigation program
☒ With three automatic starts
☒ Valve run times set in minutes and seconds.

Your controller is capable of running more complicated irrigation programs. Section 12 **"More Complicated Matters"** briefly describes some of the more advanced

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[*] DC valves can be operated from a DC controller.

About This User Guide

Section 3 **"Wiring Up"** and **section 4** **"More Inputs and Outputs"** provide instructions for a qualified electrician on how to install your controller.

Section 5 **"Your First Irrigation Program"** will describe to you how to assign run times to valves and so create an irrigation program. Automatically starting the irrigation program at pre-set times of the day is also covered in this section.

Section 6 **"A Couple of Short Cuts"** explains :
- ⊠ How the **"Select All"** key can be used to set a number of valves to the same run time
- ⊠ How to skip through a program using the **"Manual Advance"** key.

Section 7 **"Starting and Stopping"** describes how to manually start and stop a valve, the pump or an irrigation program.

Section 8 **"Resetting the Clock"** describes how to change the controller's clock.

Section 9 **" Fault Messages"** explains the meaning of the common messages your controller may display.

Wiring Up

This section is intended to provide instructions for a qualified electrician on how to mount your controller on a wall and wire it up.

Mounting the Controller

The controller should be mounted on a wall using four screws, one screw through each of the corner lid bolt holes.

WARNING

Additional holes should not be drilled through the back of controller casing.

Ensure mains power is always disconnected **before**

Wiring Up Your Controller

The MCI-96,MCI-16, MCI-12 and all DC controllers should be wired up as shown in Fig 1. below.

The MCI-8 and MCI-4 controllers should be wired up as shown in Fig 2 below .

For an MCI-96 with more than 16 valves, wire up the output expansion box to the connector marked "EX".

Connecting Mains Supply

As with any equipment used in damp conditions, the mains supply should be fused with a **Residual Current Circuit Breaker** (3 amp fuse). Connect the mains supply to the three terminals as shown in Figs 1 and 2, L to Live, N to Neutral E to Earth.

Do not wire other equipment in parallel with the controller supply.

Connecting Solenoid Valves

Connect each solenoid valve to the appropriate output as shown in Figs 1 and 2. The common wire from each solenoid valve should be connected to the "C1" terminal. Valves can be connected in parallel provided the maximum valve output current does **NOT** exceed the output current rating of the controller, see "**Advanced Operation**" Manual.

Connecting Pumps

The MCI-96 has two pump control outputs, namely "Pump-1" and "Pump-2".

The MCI-16, MCI-12, MCI-8 and MCI-4 have one pump control output, "Pump-1".

The "Pump-1" output is across the "O1", "C1" terminals. Connect a suitable 24V relay across these terminals to control the pump.

The "Pump-2" output is across "O3" and "C1". Connect a suitable 24V relay across these terminals to control the second pump.

The second pump start output, "Pump-2", operates with irrigation programs 5 to 7.
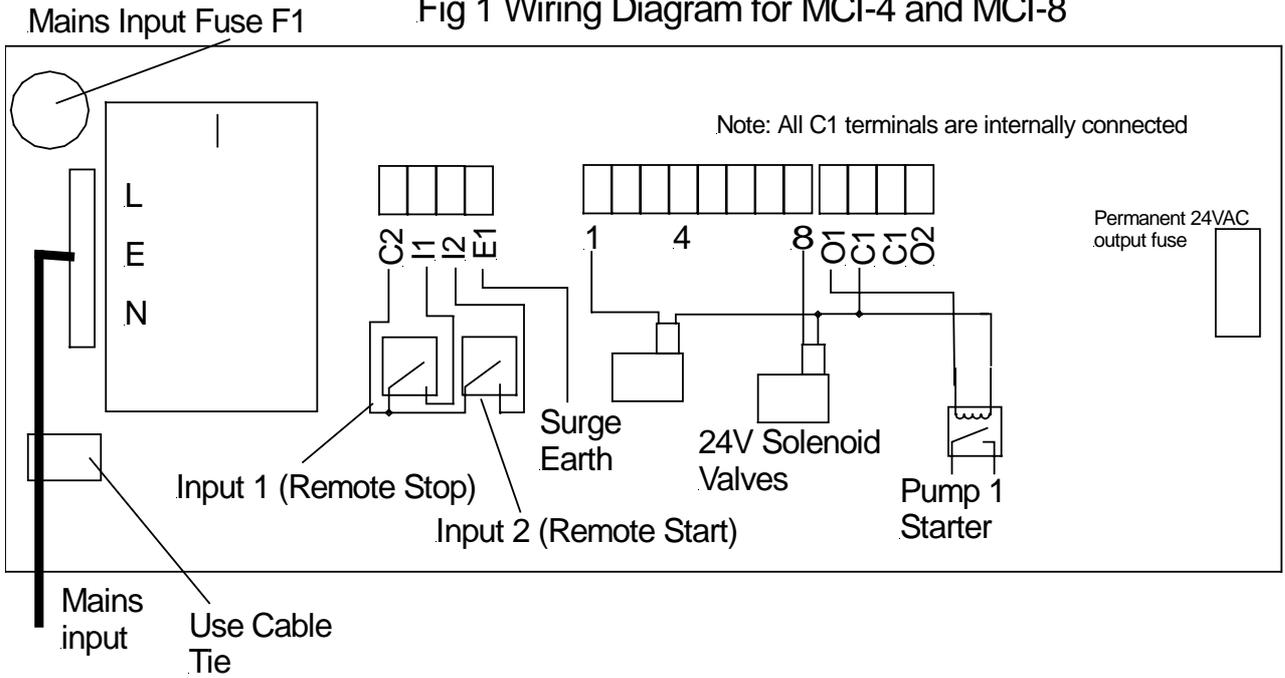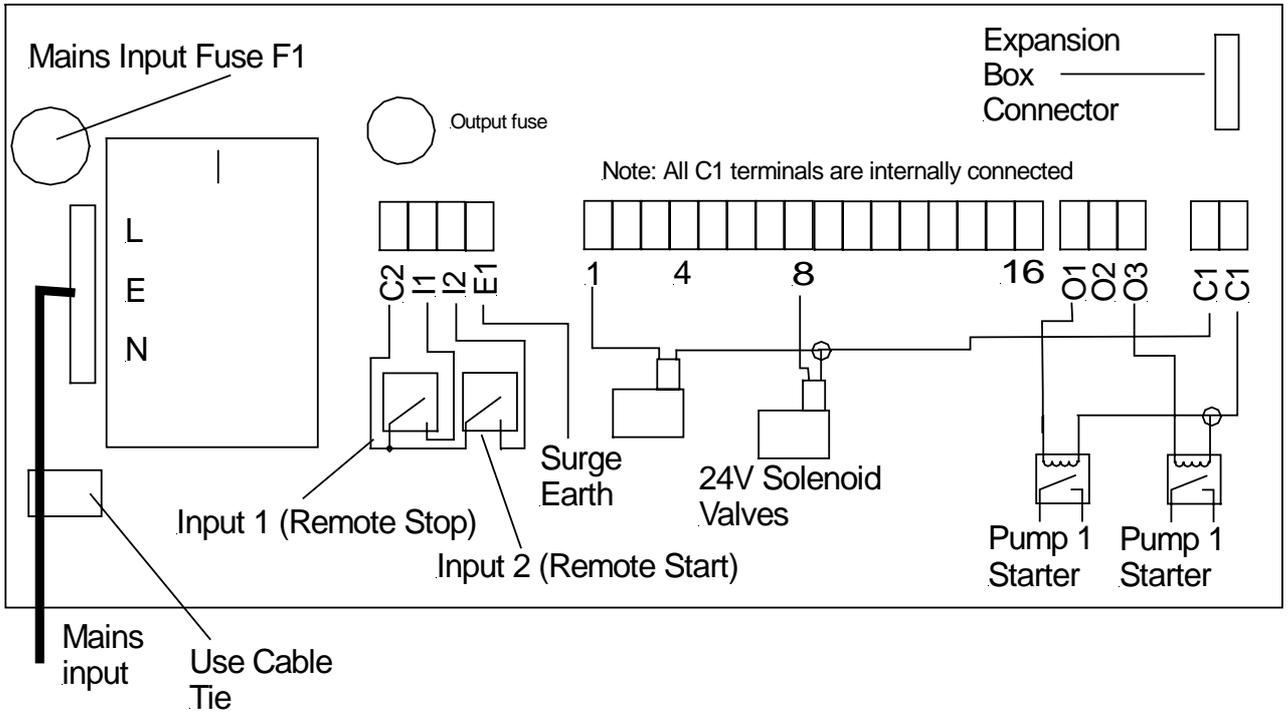
Fig 1 Wiring Diagram for MCI-4 and MCI-8

Mains Input Fuse F1

Note: All C1 terminals are internally connected

Permanent 24VAC output fuse

L E N

C2 I1 I2 E1

1   4   8   O1 C1 C1 O2

Input 1 (Remote Stop)

Input 2 (Remote Start)

Surge Earth

24V Solenoid Valves

Pump 1 Starter

Mains input

Use Cable Tie

Fig 2 Wiring Diagram for MCI-12 MCI-16 and MCI-96

Mains Input Fuse F1

Output fuse

Expansion Box Connector

Note: All C1 terminals are internally connected

L E N

C2 I1 I2 E1

1   4   8   16   O1 O2 O3   C1 C1

Input 1 (Remote Stop)

Input 2 (Remote Start)

Surge Earth

24V Solenoid Valves

Pump 1 Starter

Pump 1 Starter

Mains input

Use Cable Tie

More Inputs and Outputs

This section describes the additional inputs and outputs of the controller that can be used to connect your controller to external sensors.

Remote Start
The remote start input is across "I2" and "C2". Joining these terminals will start program 1. The terminals have to be connected for only a short period, 1 second, to activate the program. If the contacts are left shorted program 1 will continually cycle.

Remote Stop / Low Water Cut Out
The remote stop input is across "I1" and "C2". Joining these inputs halts the irrigation programs. The programs will continue once the short is removed.

This input may be connected to a float switch in the water reservoir so that the irrigation sequence is halted if the water level is low.

24V Output
A 24V supply is permanently available across "O2" and C1".

Your First Irrigation Program

We are going to set an irrigation program with the first valve set to 10 minutes 30 secs and the second valve set to 5 minutes
It will then be set to start at 18:00

The Irrigation Program - The Steps

Press the arrow forward key **">"** until the first **"Enter Valve Time"** page is displayed.

```
VALVE   1       2       3
        10:30  5:00   0:00
```

With the cursor flashing under **"VALVE 1"**, press "1" and then "0" on the keypad to enter 10 minutes for the first valve run time.

Press the arrow forward key ">" once more and you will see the flashing cursor has moved to the other side of the colon ":".

Now press the "3" and the "0" on the keypad to enter the remaining 30 seconds of the first valve run time.

Don't worry if you go too far, you can always press the arrow back "<" key to move back a space.

The first valve in your irrigation program is now set to run for 10 minutes and 30 seconds.

Press the arrow forward key ">" until it is under "**VALVE 2**".

> With the cursor flashing under "**VALVE 2**", press "5" on the keypad to enter 5 minutes for the second valve run time.

```
┌─────────────────────────────┐
│ AUTO ON      OFF   OFF       │
│ 1      6:30  0:00  0:00      │
└─────────────────────────────┘
```

Automatic Start Times - The Steps
Press the arrow forward key "**>**" until the "**Automatic Start Time**" page is displayed.

With the cursor flashing on the first zero, press the "6" on the keypad to enter a 6:00 am start time for your irrigation program.

> Press the arrow forward key ">" once more and you will see the flashing cursor has moved to the other side of the colon ":".

> Now press the "3" and the "0" on the keypad to enter the remaining half past the hour for the start time.

You have entered a 6:30 am start time. **However,** the irrigation program will not start at this time until you **activate the start time**.

This is simply done by pressing the "**Select**" button whilst the flashing cursor is still positioned on the start time to be activated.

> You will see the display above the start time change from "**OFF**" to "**ON**".

> "**ON**" indicates that a start time has been activated as shown above.

To enter a second automatic start time, press the arrow forward key ">" until it is positioned on the first zero of the second start.

> Use the keypad to enter a start time of 18:00hrs.

> Remember to press "**Select**" to activate the start.

Press the arrow forward key ">" to return to the "**Time Page**".

Congratulations....You have now set up your first irrigation program.

Run Time
When the irrigation program starts the "**Time Page**" will change to show the number of the valve running and the time it has left to run.

```
┌─────────────────────────────┐
│ TIME   VALVE   1   ON       │
│  6:31  9:29 LEFT            │
└─────────────────────────────┘
```

In the example above :
It is 6:31am
The first valve in the irrigation program is running
The valve has 9 minutes and 29 seconds left to run.

A Couple of Short Cuts

> The **"Set All"** key can help you to quickly set a number of
> valves to run for the same length of time.
>
> The **"Manual Advance"** key enables you to skip on through an
> irrigation program that is already running.

Set All
When setting up an irrigation program, the '**Set All**' key is a quick method of setting a
number of valves to the same time.

When the **"Enter Valve Time** page is displayed, press the **"Set All"** key. The following
page will be displayed.

```
VALVES   2 > 5
          20:00
```

Using the arrow forward key ">" and the keypad, the range of valves to be set to the same
run time, and the run time itself, can be entered.

In the example shown above, valves 2 through to 5 have all been set to run for 20 minutes
each.

Pressing **"Set All"** again will return you to the **"Enter Valve Time"** page. You will see the
20 minute run time under **"VALVE 2"**, **"3", "4"** and **"5"**.

Manual Advance
When the irrigation program is running, simply pressing the **"Manual Advance"** key will
move the program onto the next valve in the sequence.

This can be useful when testing your system.

Manual Start Stop

This section describes how to manually start and stop :
☒　A valve
☒　The pump
☒　An irrigation program.

The pump, an individual valve or an irrigation program, can be started manually at any time by pressing the "**Start/Stop**" key.

When "**Start/Stop**" is pressed from any of the pages the display below will be shown.

```
START  >PUMP  VALVE
         PROG
```

Pump Start

With the flashing arrow pointing at **"PUMP"** press **"Select"** to start Pump 1. The display below will be shown.

```
 TIME  PUMP ON
10:55
```

Valve Start

To start a valve:-
Press the arrow forward key   **">"** to position the flashing arrow to point at **"VALVE".**
Press **"Select"** and the page below is shown.
Enter the number of the valve to be started.

```
START VALVE 10 TIME 2
```

Press the arrow forward key **">"** and then enter the number of minutes the valve is to run.

In the example above valve 10 has been set to run for 2 minutes.

Now press **"Select"** to start this valve. The **"Time Page"** will be displayed showing the selected valve is running, and the length of time the valve has left to run.

Program Start

To start an irrigation program press the arrow forward key **">"** to move the flashing arrow to point at **"PROG".**

Press **"Select"** to start the irrigation program.

The **"Time Page"** will again be displayed, showing the amount of time the first valve in the program has left to run.

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Manual Stop

Pressing "**Start/Stop**" at any time when a program, valve or pump is running will stop the program, valve or pump immediately.

Resetting th Clock

This section describes how to reset the clock on your controller.

Resetting the Time
To reset the clock on your controller complete the following steps.

Press the arrow forward key **">"** until the **"Time Page"** is shown.

Now Press and hold down the **"Select"** key for five seconds. A black flashing cursor will appear.

Using the keypad numbers the arrow forward key ">" the correct time of day can be entered.

When you have reset the time, press the **"Select"** key again. The black flashing cursor will disappear.

The time has been reset.

Fault Messages

Valve Fault

During the running of an irrigation program a current overload condition may occur. The most common reasons for a current overload condition are:-

☒A short circuit on the solenoid valve wiring
☒Too many valves running at the same time
☒A faulty solenoid valve.

Should a current overload condition occur then the irrigation program will skip to the next valve to be run in the sequence.

Once the irrigation program has finished, the **"Valve Fault"** message will be displayed along with the number of the valve where the fault was detected. In the example below, the second valve in the irrigation program was faulty.

The controller will continue to run irrigation programs until four overload conditions are registered. The **"Valve Fault"** message will continue to be displayed after an irrigation program has run until the **"Start/Stop"** button is pressed.

If four overload conditions are registered then the running of all irrigation programs will cease. Pressing **"Start/Stop"** will reinitiate the running of irrigation programs again.

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Advanced Features Manual

MCI-4, MCI-8, MCI-12, MCI-16, and MCI-96

NOTE: This manual refers to MCI controllers using software version 4B.

Document Reference MCI4-96 4B ADVANCED

1. INTRODUCTION

This manual describes the advanced features of the controller. Advanced features are activated by changing the configuration options of your controller. How to change a configuration option is described in **section 2** below.

Section 3 of this manual lists the configuration options of the controller in numerical order for quick reference, look up, purposes.

Sections 4 to 9 of this document describe the configuration options in detail, explaining both their function and how they should be set up to activate them. The options have been grouped under the following headings :

☒ **Section 4   - Pump Control Options**

☒ **Section 5   - Irrigation Program Options**

☒ **Section 6   - Automatic Start Options**

☒ **Section 7   - Water Saving Options**

☒ **Section 8   - Special Features**

☒ **Section 9   - Installation Options**

Section 10 lists the fuses to be found in your controller.

2. CHANGING CONFIGURATION OPTIONS

To access the configuration options press and hold down the **"Manual Advance"** button or <u>5 seconds.</u>

The following page will be displayed.

```
OPTIONS 1     2     3
        32    4     15
```

The arrow forward key **">"** is used to position the cursor under the option you want to change. Use the keypad to enter the required number, as described below, to activate the option.

In the example above, Option's 1,2 and 3 have been set to 32, 4 and 15. When the required options have been set, press the arrow forward **">"** or arrow backward key **"<"** repeatedly until the 'Time' page is shown.

The configuration options of your controller have now been changed.

> **Note:** You irrigation installer or dealer may have already set the configuration options to the required values for you.

3 CONFIGURATION OPTIONS - LOOK UP (4B Software)

Option	Brief Description	Section	Default Value
Option 1	Set number of valves.	8.1	4-96
Option 2	Set number of automatic starts.	8.2	3
Option 3	Set pump pressurisation time in seconds.	8.3	0
Option 4	Which program to start Pump1	8.4	7
			0
Option 7	Rain sensor	7.6	0
Option 9	Multiple programs	7.1	0
Option 10	Day or Week programming	7.2	0
Option 11	Valve time in hours/mins	8.8	0
Option 12	Continual cycling of program 1	7.4	0
Option 13	Battery fitted	8.1O	1
Option 14	Low current detection	8.11	0
Option 15	Light sensor connected		0
Option 16	Irrigation using volume	7.7	0
Option 18	Wean facility	7.5	0
Option 19	Percentage up and down.	7.3	0
Option 20	Parallel programs	8.16	0
Option 21	Remote stop	8.15	0
			0
Option 23	Priority program	8.17	0
Option 24	Continual cycling using remote start	8.18	0
Option 25	Pump 1 controlled from prog 1	8.19	0
Option 26	EC controller attached	8.2O	0
Option 27	Four programs in parallel	8.21	0
Option 28	Flow meter input selection	8.22	0
			0
			0
			0
			0
			0
			0
			0

* - Set to size of controller / number of valves.

4. PUMP CONTROL OPTIONS

Pump Pressurisation Time in Seconds (Option 3)

The pump pressurisation time (in seconds) can be set with Option 4. (Values between 0 and 99 seconds are allowed).

Pump 1 Control (Option 4)

This option controls which irrigation programs start Pump 1. If option 4 is set to '1', program 1 will start Pump 1. If it is set to '2', programs 1 and 2 will start Pump 1. If it is set to '3', programs 1, 2 and 3 will start Pump 1. Values between 1 and 7 can be used. If option 4 is set to '7', all programs will start Pump 1. Default is '7'

Pump 1 Controlled from Program 1 (Option 25)

Option 25 prevents Pump 1 being started from program 1. Set option 25 '1' if Pump 1 is not required to start with program 1. Default is '0'.

5. IRRIGATION PROGRAM OPTIONS

Number of Valves (Option 1)

If you increase the number of valves on your controller you will need to change Option 1. For example if you have upgraded a 16 valve controller to a 32 valve controller, enter '32' under Option 1. There will be no change to the operation of the controller, just more valve pages will be displayed. (Values between 3 and 96 are allowed).

Minutes or Hours (Option 11)

For program times in minutes and seconds set Option 11 to '0'. For program time in hours and minutes set Option 11 to '1'.

Multiple Programs (Option 9)

For a single program set Option 9' to '0'. For multiple programs set Option 9 to '1'.

When this option is set to '1', the controller will allow up to 7 different irrigation programs to be set up. To set up one of the programs press **">"** until the Time Page is displayed as shown below.

```
TIME VALVES OFF
12:11
```

Press **">"** and the following page will be displayed.

```
        EDIT PROGRAM ?
```

Enter the number (1 to 7) of the irrigation program you wish to set up. Press **">"** again and the first valves of the program will be displayed. The program can now be set up as described in the User Guide.

Now you are using multiple programs you will also need to assign the automatic starts to the correct program. To do this press **">"** until the automatic start pages are displayed, as shown below.

```
AUTO OFF  OFF   OFF
1   0:00  0:00  0:00
```

The automatic start time is entered in the same way as described in the User Guide, but now you must assign the start to the particular irrigation program. With the cursor positioned under the automatic start time press **'Select"** until the correct program number is displayed . In the example below Program 2 is set to start at 12:00.

```
AUTO PRG2  OFF   OFF
1   12:00 0:00 12:00
```

> **Note:** Any automatic start can be assigned to any irrigation program.

If you wish to disable an automatic start, position the cursor under the automatic start and press **"Select"** repeatedly until 'OFF' is displayed above the automatic start time.

Programs Running in Parallel (Option 20)

This allows programs to be run in parallel. If this option is set to '0' then irrigation programs will run sequentially. If this option is set to '1' then up to 4* irrigation programs can be run in parallel by assigning the same automatic start time to irrigation programs.

* - For an MCI-4 or MCI-8 it is recommended that the number of programs running in parallel is limited to 2 due to the maximum current output of the controller (0.6A).

6. AUTOMATIC START OPTIONS

Number of Automatic Starts (Option 2)

If you need to increase or decrease the number of automatic starts change Option 2. Enter the required number under Option 2. There will be no change to the operation of the controller just more automatic start pages will be displayed. (Values between 3 and 42 are allowed).

Day or Week Programming (Option 10)

For daily programming set Option 16 to '0'. For weekly programming set Option 10 to '1'. When weekly programming is selected six automatic starts for each day will be provided.

When weekly programming is first selected you must set the controller to the correct day of the week. To do this Press **">"** until the time page is displayed as shown below.

```
TIME  VALVES  OFF  MON
12:57
```

Now proceed as follows:-

☒ Press and hold down **Select**. The cursor will start flashing.
☒ Press **Manual Advance** and the day of the week shown in the top right hand corner will change.
☒ Press **Manual Advance** until the correct day is displayed.
☒ Press and hold down **Select** again until the cursor stops flashing.

When weekly programming is selected six automatic starts for each day of the week are provided. Once on the automatic start pages, pressing the **">"** button repeatedly will enable you to view and set up the weekly automatic starts.

Three automatic starts for Monday will appear as the first automatic start page, as shown below.

```
MON  OFF   OFF   PRG2
1  10:30  0:00  12:00
```

This is followed by the second set of three automatic starts for Monday, then the first three automatic starts for Tuesday etc. Entering automatic start times is the same as described in the User Guide.

7. WATER SAVING OPTIONS

Percentage Up and Down (Option 19)

Percentage Up and Down allows all irrigation run times to be temporarily adjusted by a specified percentage (0%-600%). With Option 19 set to '1' the following page will be displayed after the Automatic Start pages.

If no increase or decrease is required, then the percentage value must be set to 100%.

If the irrigation run time is to be temporarily increased , for example doubled, then the percentage value should be set to 200%.

If the irrigation run time is to be temporarily be reduced, for example halved, then the percentage value should be set to 50%..

```
SET PROGS 1-7
      00%
```

> **IMPORTANT:** Do not leave the percentage value at 0%. No irrigation will be run.

Limitations to Use
This facility will not work with volume.
This facility is not recommended with valve times less than 15 seconds.

Rain Sensor to Reduce Watering (Option 7)

The Heron rain sensor allows the irrigation program to be reduced depending on the amount of rain that has fallen over the last 24 hours (this is a rolling count accurate to six hours). Two trip points can be set.

If you have a rain sensor, set this option to '1'. Default is '0'.

> **Connecting the Rain Sensor**
> Connect the two terminals inside the rain sensor to "I2" and "C2" (the remote start input). The terminals in the rain sensor are accessed by lifting off the lid and removing the screw at the side of the rain sensor.

Using the Rain Sensor
When option 7 is set to '1' the rain page is displayed after the automatic start pages. Press **">"** or **"<"** to view the page. The quantity of rain that has fallen in the last 24 hours is shown in the bottom left hand corner of the rain page.

```
RAIN    ADJ   66%   33%    00%
2mm    TRIP   4mm   6mm  9mm
```

On the rain page you can set two trip points in mm of rain fall. When these trip points are met irrigation programs will run for either :

☒ 66% of their normal time

☒ 33% of their normal time

☒ or 0% of their normal time (i.e. not run).

To set a trip point move the cursor under the appropriate percentage and enter a number . In the example above trip points have been set at 4 mm 6mm and 9 mm. The value under the "RAIN" heading is the actual count of rainfall within the last 24 hours. That is 2 mm of rain has fallen in the last 24 hours.

Testing the Rain Sensor
The rain sensor can be tested by pressing the spoon down inside the rain sensor. Now press **">"** or **'<'** until the rain page is displayed and you will notice that the rain fall will have incremented by 1 mm. If you press the spoon enough times so that a trip level is reached you will see a reduction in the irrigation watering programs. Note: a minute elapsed time must be allowed between each time the spoon is pressed down in order for the 1 mm in rain fall to register.

> **Note**
> The rain sensor has no effect on a manual valve or manual program start.
>
> The percentage adjustment currently active i.e. 100%, 50% or 0% is displayed on the Time Page.

8. SPECIAL FEATURES

8.1 Continual Cycling

Continual Cycling - Program 1 (Option 12)

This option allows irrigation program 1 to be continuously cycled with a programmable delay at the end of the program. This is normally used for misting/propagation applications.

Set Option 12 to' 1' for program 1 continual cycling. Default is '0'. The time of day through which continuous cycling is active can be specified. For example, continual cycling can be disabled at night.

Setting Up Continual Cycling
With option 12 set to '1', 3 extra pages will be displayed after the Automatic Start Pages, as shown below.

These pages allow you to:-
☒ specify the start and stop times throughout the day for the continual cycling period
☒ set the delay period (in minutes and seconds) between each cycle
☒ Disable / Enable the continual cycling program.

```
START CYCLING  PRG1
           9:00
```

```
 ST0P CYCLING
       20:00
```

```
DELAY  5:00
```

In the example above, program 1 has been set to continually cycle from 9:00 hours to 20:00 hours, with a 5 minute delay between each cycle.

Disabling Continual Cycling
You can disable the continual cycling program by pressing the **Select** button when the start cycling page is displayed. The page will change to the one shown below i.e. OFF will be displayed.

```
START CYCLING  OFF
        9:00
```

To re-enable continual cycling press the **Select** button again on this page.

Other Options you May Want to Set
<u>Using a Remote Start Sensor</u>
You can use a sensor to control the continual cycling program. Connect the sensor to the remote start input and set Option 24 to '1' (a closed contact will start the program) .

The remote start input works by immediately cutting the continual cycling delay time to zero. Therefore, you need to set the delay time to a large value so under normal operation the sensor will initiate the irrigation rather than the delay timer expiring of its own accord.

Continual Cycling Using Remote Start (Option 24)

This option sets Continual Cycling to use the remote start input. Set Option 24 to '1' to allow this facility. If Option 24 is set to '0', continual cycling will ignore the status of the remote start input. Default is '0'.

Priority Program (Option 23)

This allows program 1, the continual cycling program, to take priority over other irrigation programs. With this option set, if another irrigation program is running, program 1 can cut- in and run. The halted irrigation program will then continue from where it was stopped, once program 1 has completed.

If you want this facility set Option 23 to '1'. For normal operation set Option 23 to '0'. Default is '0'.

8.2 Wean Facility (Option 18)

(Option 18 must be set to 1)
The wean facility allows individual beds to be watered at less frequent intervals when running in continual cycling mode by setting valves to skip a specified number of starts.

Running Wean
Initially all the skip values will be set to zero i.e. valves will operate every time the programme starts.

To set the skip value for a valve edit programme 8. This is done in exactly the same way as setting the valve times for an irrigation programme. However, in this case the skip value is entered instead of the run time for each valve. Skip values can be set between 0 and 99 for each valve. The following table shows the valve operation for different skip values.

Skip Value for a valve	Valve Operation
0	valve will operate on every start
1	valve will operate on every start
2	valve will operate every other start
3	valve will operate once in every 3 starts
etc	Etc

Limitations To Use:
Wean can only be used with continual cycling
Wean cannot be used with a controller with more than 16 valves

8.5 Irrigation by Volume (Option 16)

The volume facility will allow you to set programs in litres of water rather than in minutes. The volume facility is designed to operate with flow meters that give a pulse out for every one or ten litres of water. The pulse should be made by the closing of a volt free contact. The minimum open or shut time should not be less than 0.1 seconds.

To use Volume set Option 16 to '1'. Default is '0'.

Connecting the Flow Meter

Option 28 controls which input the flow meter should be connected to.
Connect the flow meter to the Remote Stop input (across C2" and "I1"),
if Option 28 is set to '0'. Connect the flow meter to the Remote Start
Input (across "C2" and "I2"), if Option 28 is set to '1'.

In the example below, valve 1 is set for 11,000 litres and valve two for 5,000 litres with a flow meter giving one pulse per 10 litres

```
VALVE 1      2      3
      1100   0500   0000
```

Flow Meter or Cable Failure

If the controller does not receive a pulse for 15 minutes it will stop the irrigation program.

Flow Meter input (Option 28)

The flow meter used for irrigation by volume is normally connected to the remote stop input. This can be changed to the remote start input by setting Option 28. Set Option 28 to '1' if you want the flow meter to use the remote start Input. Set Option 28 to '0' if you want the flow meter to use the remote stop input.

9. INSTALLATION OPTIONS

Battery Fitted (Option 13)

Option 13 should always be set to '1'. This tells the controller a battery is fitted.

Remote Stop Option (Option 21)

This controls whether irrigation programs should freeze or permanently stop when the remote stop input is activated.

Set option 21 to '0' to freeze irrigation programs. Irrigation programs will start again from the point at which they stopped when the remote stop condition is removed.

Set option 21 to '1' to stop irrigation programs. Irrigation programs will not automatically start again when the remote stop condition is removed.'

Light Sensor Attached (Option 15)

If a light sensor is attached to the controller, then this option should be set to '1'. Default is '0'. See separate 'Light Sensor' manual.

EC Controller Attached (Option 26)

If the Heron MPD5 EC controller is attached to the controller, then this option should be set to '1'. Default is '0'. See separate 'MPD5' manual.

10. FUSES

Controllers are equipped with the following fuses.

Model	Mains Input Fuse	Main 24V SupplyFuse	24V Output Fuse(O2)	Valve Output Fuse
MCI-8AC/ MCI-4AC	0.5A left of transformer	1.0A F2	0.1A F3 on right	0.6A Electronic
MCI-96AC/ MCI-12AC	0.5A left of transformer	2.0A F2	0.1A F3 in middle	1.0A Electronic
MCI-96DC	0.5A left of transformer	2.0A F2	Uses F3	1.0A F3 in middle