

**USER AND INSTALLATION MANUAL
MCI-100S**

Heron Electric Company Ltd

WARNING: This unit should be installed by a competent electrician.
Input Supply - See Inside controller Output Voltage - **30V AC**

May 2000
Document Reference

1. The MCI-100S

The MCI-100S is a sequential irrigation controller which operates 24V AC solenoid valves via "decoders". Up to 100 decoders can be connected to the controller via a common 2-core cable.

Testing The Controller

The controller can be tested by installing the 4 C Size Batteries and then switching on the LCD display.

The LCD display is switched on by pressing and holding down the **Set All** key for 2 seconds.

You can do this

without the mains power connected.

Care of YOUR CONTROLLER

Never use sharp objects to press the buttons on your controller and avoid pressing the buttons with your finger nails.

Always ensure the lid screws are screwed down tight so the inside of the controller is kept dry and to reduce exposure to high humidity.

What You Should Read

If your controller is already installed you can go to Section 3.

2. INSTALLATION

WARNING Installation should be carried out by a Competent Electrician.

.1Mounting the MCI-100S Controller

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

Warning: Additional holes should not be drilled through the controller casing.

.1Connecting Mains Supply

IMPORTANT SAFETY CHECK. Check that the mains supply voltage IS the SAME AS the VOLTAGE OF the CONTROLLER. The controller voltage is displayed on the inside the controller casing. The mains supply should be fused with a 3 amp fuse and be connected via a Residual Current Circuit Breaker as per any equipment used in damp conditions. Connect the mains supply to the three terminals as shown in Fig 1, L to Live, N to Neutral, E to Earth.

.1Connecting Decoders

Connect decoders as per diagram Fig 1.

It is recommended that a 2-core water proof cable eg. polythene cable or similar, is used to connect the decoders. The cable must **NOT** be installed near mains voltage cables. Interference may result from externally induced voltages. All cable joints must be sealed to minimise water ingress.

The controller gives out 30VAC to power 24VAC solenoids. This larger voltage allows for voltage drop in the 2 core cable. If you are connecting solenoids close to the controller (less than 200m) there will be little voltage drop and you should check that the solenoids are capable of withstanding a voltage as high as 30VAC.

.1Two output decoders

Two output decoders have two serial numbers and two outputs.

	1st Serial No.	2nd Serial No.
Serial No. controls decoder output on	YELLOW	WHITE wire

The return wire from the solenoid valves are wired to either of the red wires.

Cable Earth Points

Cable earth points should be wired to the cable with earthing rods as also shown in Fig 2. A minimum of 3 should be installed for a looped cable and a minimum of 2 for a straight cable. Additional cable earthing points should be wired every 1000 m if necessary. Failure to wire these

earthing points will make the controller liable to surges caused by lightning which may causes serious damage.

.1Battery Supply

The processor board is powered from 4xC size alkaline batteries. These batteries will last between 2 to 4 years. When the batteries run low the controller will display “LOW BATTERY”.

.1Pump Start (24VAC)

The pump start output is across the terminals marked ‘Pump’. This output is rated at 24VAC 0.5A.

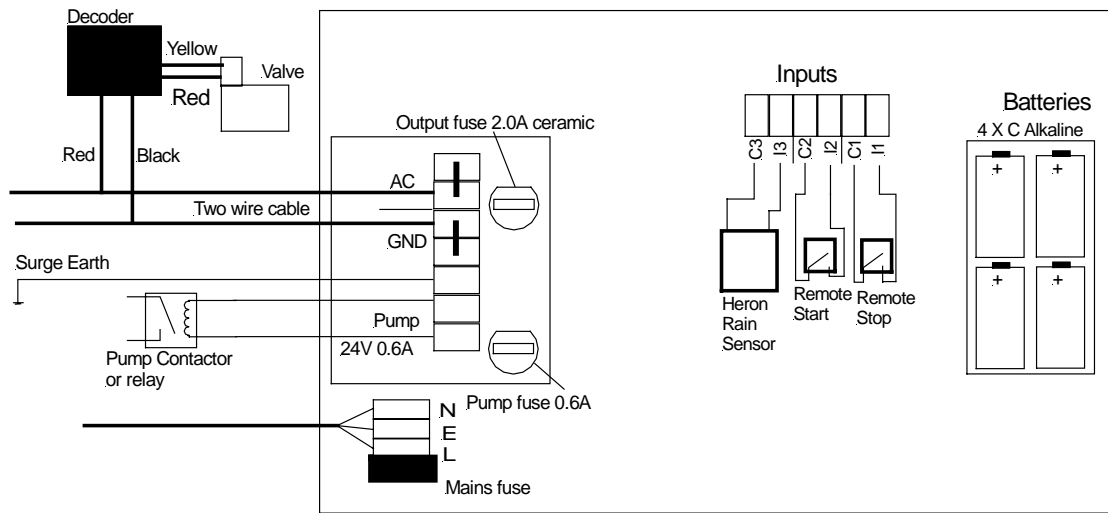
.1Infra Red Link

The processor board (mounted in the lid of the controller) is completely isolated from the 2-wire line driver.

The processor board communicates with the line driver via an optical link. Nothing should be placed in the way of this link or in the isolation zone as shown on Fig 1.

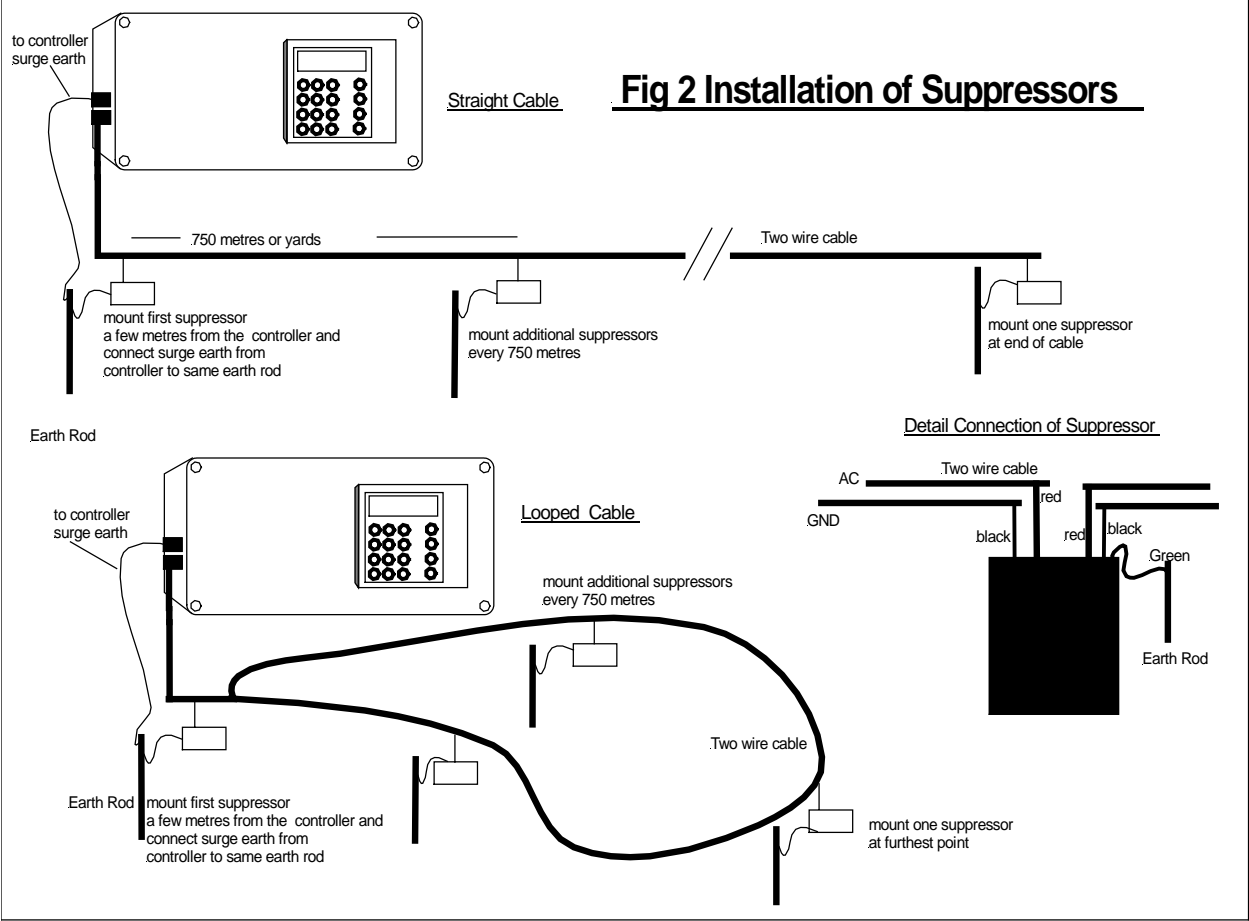
Fig 1 Output Wiring

Note: Two red wires are internally connected in the decoder



Warranty void if wrong fuses fitted !

Fig 2 Installation of Suppressors



.1Setting Decoder Serial Numbers

If you are installing the system you need to set the Decoder Serial Number of each irrigation valve .

The decoder serial number is shown on the side of each decoder. Any decoder serial number can be assigned to any valve. For example, if you have a decoder with serial number 02345 and you wish this to be valve 1 you must assign 02345 to valve 1. Proceed as follows

Press '>' until the following page is displayed

```
ENTER S/N
```

Press '**Select**' and the following page will be displayed

```
EDIT S/N    001
EXIT
VALVE  1    02345
```

Now enter the required Serial Number for valve 1, for example to 02345.

Press '>' to enter the serial numbers of other valves

Move the cursor over the EXIT position and press **Select** when you have finished

.1Assigning Cable Driver Number (Two-Cable Drivers Controllers Only)

If your controller has two cable drivers you need to define which cable the decoder and valve are attached to.

A controller with two cable drivers will show the cable number for each valve after the serial number. In the example below it is set to 1 which is the default value. To change this number press '>' after you have entered the serial number. Then press 1 or 2 for cable driver 1 or 2 respectively.

```
EDIT S/N    001
EXIT
VALVE  1    02345
```

NOTE: If the cable number is not displayed you should set Option 46 to 1, see advanced manual.

1. USING THE CONTROLLER

The LCD display will switch off after 3 minutes to save battery power . To switch the LCD display back on press and hold down the **Set All** key for 2 seconds.

Your controller is supplied in its simplest configuration. How to change this configuration is described in the Advanced Feature Manual. The description given in this section assumes the controller is in its simplest configuration. When the controller is switched on, the Time page is displayed as shown below.

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

Other pages are displayed by pressing the cursor forward key ">" as described in the next section.

Basic Operation Pages

The Time Page

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

From the time page pressing ">" will show

```
ENTER PROG ?
```

The 'Enter Programme' Menu Page

Now pressing ">" will show

```
ENTER AUTO
STARTS
```

The 'Enter Automatic Start ' Menu Page

Now pressing ">" will show

The 'Enter Serial Number Menu' Page

```
ENTER S/N
```

Now pressing '>' will return you to the Time Page at the top.

2. Setting up an Irrigation Program

Press ">" to display the 'Enter Program Page' as shown below.

```
ENTER PROG 1?
```

Now press '**Select**' to edit program 1 and a page similar to the following page will be displayed.

```
1 VALVE 01 10:30
EX
2 VALVE 02 00:00
3 VALVE 03 00:00
. . . . .
```

The time in minutes and seconds can now be entered for each valve by moving the cursor and entering the time. In the example above VALVE 01 has been set to run for 10 minutes 30 seconds. Now move the cursor forward using the ">" key and enter the remaining required valve run times.

To return to the 'Time Page' press '>' until the cursor is positioned over EX. press '**Select**'.

Note: The numbers on the left column are the sequence numbers These indicate what valves, if any, run together. If any valves have the same sequence number then these valves would run together. In the above example all valves have different sequence numbers so they will run sequentially in the sequence indicated above ie 1, 2, 3, 4.

3. Setting Automatic Start Times

Press ">" to display the 'Enter Automatic Start' Page as shown below.

```
ENTER AUTO
STARTS
```

Press '**Select**' and the following page will be displayed.

```
          AUTO
1         2         3
EXIT
PRG1     OFF      OFF
```

Enter the start time for each required automatic start . Now you must assign the start time to a particular irrigation program. With the cursor positioned under the automatic start time press '**Select**' until the correct program is displayed. In the example above Program 1 is set to start at 10:30.

If you wish to disable an automatic start, position the cursor under the automatic start and press "**Select**" until 'OFF' is displayed. In the example above all other automatic starts are off.

Note: Any automatic start can be set to start any irrigation program.

To return to the 'Time Page' move the cursor to 'EXIT' by pressing '>'. When the cursor is over EXIT press '**Select**'.

4. MANUAL START/STOPS

Manual Start

The pump, an individual valve or an irrigation program, can be started manually by pressing "**Start/Stop**". When "**Start/Stop**" is pressed the display below will be shown.

```
START  >PUMP
VALVE
          PROG
```

Pump Start

With the flashing arrow pointing at 'PUMP' press "**Select**" to start the pump. The display below is shown.

```
TIME 12:11
          PUMP ON
```

Valve Start

To start a valve:-

Press ">" to move the flashing arrow to point at "VALVE"

Press "**Select**" and the page below is shown.

```
          START VALVE 10
2
```

Now Enter the number of the valve to be started

Press ">" and enter the run time for the valve.

In the example above, the valve 10 has been set to run for 2 minutes. Now press "**Select**" to start this valve and the following page is displayed.

```
TIME 12:11
          VALVE 10
1:59
```

Program Start

To start an irrigation program
Press ">" to move the flashing arrow to point at PROG.
Press **Select** and then enter the number of the program to be started.
Press **Select** to start the irrigation program

The following page will be displayed.

TIME 12:11
PROG 1 VALVE 1
10:29

Manual Stop

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

5. OTHER KEYS

Cursor back key <

The cursor back key "<" is used to go backwards through the pages.

Manual Advance

When the irrigation program is running, pressing **Manual Advance** will move a program onto the next valve in the program. This can be used for testing.

Set All

The **Set All** key is a quick method of setting a range of valves to the same time when setting up an irrigation program. Pressing **Set All** will display the following page. The range of valves and the required run time can be entered on this page.

The range of valves is entered as a range of sequence numbers. The sequence number is shown on the far left column when editing an irrigation program.

SEQ NO.	10 >
15	
	20:00

In the example shown above, valves with a sequence numbers between 10 and 15 have all been set to run for 20 minutes each.

Pressing **Set All** again will return you to the normal irrigation program page.

6. FAULT DETECTION

If a fault occurs whilst the controller is running a watering program, for example a cable breaks, then the following display is shown.

```

TIME 12:11

          FAULT
    
```

The nature of the fault is displayed by pressing '>' to view the 'Fault Page'. An example fault page is shown below.

```

          FAULT
N12 O/L 6
N16 O/L 6
    
```

IMPORTANT: In the example above the faults are on **valve numbers 12 and 16**.

The following eight fault types can be detected:-

	Fault	Controller Displays
1	2 core cable line loading not OK	CAB O/L 1
2	Remote Short on 2 core cable (more than 1.6 amps)	CAB O/L 2
3	Direct Short on main 2 core cable (more than 6 amps)	CAB O/L 3
4	Current over load when valves running (more than 1.6	CAB O/L 4
5	Large Current overload when valves running (more than	CAB O/L 5
6	Decoder output overload (more than 0.6 Amps from	Vn O/L 1
7	No acknowledgement from decoder when switching on	Vn DECO (n=valve
8	No acknowledgement from decoder when switching off	Vn OFF (n=valve

In the example above the fault page indicates that current overload fault number '6' has occurred on both valves number 12 and 16

The controller takes the following action depending upon the fault:-

Faults 1 to 3

If faults '1' to '3' occur all irrigation programmes will be immediately stopped as it is impossible for the controller to communicate with decoders.

Faults 4 to 6

If faults 4 to 6 occur the current and subsequent irrigation programmes will continue as normal. However if a total of six occurrences of faults '4' to '6' are reported all irrigation programmes will be suspended .

Faults 7 and 8

If a decoder fault is reported, the current and subsequent irrigation programmes will continue as normal. However if a total of six occurrences of the faults are reported all irrigation programmes will be suspended .

Clearing Fault Conditions

The fault page is cleared by manually starting and stopping an irrigation program.

.1POWER FAULTS

The controller will display 'OPTICAL FAULT' when there is no mains power or when the optical link is not working correctly.

The controller will display 'LOW BATTERY' when the battery power is low. Replace the 4 x C size alkaline batteries.

1. MISCELLANEOUS

changing the time

Press ">" until the time page is displayed as shown below. Now press and hold down "Select" for five seconds and the cursor will appear as shown below. Now change the Hours and Minutes using the number keys. When you have set the time press "Select" again for five seconds until the flashing cursor disappears.

```
TIME 1□:10
          VALVES OFF
```

RESETTING THE CONTROLLER

The controller is reset by disconnecting the battery connection for 5 seconds. The line driver can be reset by disconnecting the mains power for at least 5 seconds and then switching it back on again.

2. ADDITIONAL INPUTS AND OUTPUTS

.1 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.

.1 Remote Stop

The remote stop input is across "I1" and "C1". Joining these inputs halts the irrigation programmes. The programmes will continue once the short is removed. This input may be connected to a float switch in the water reservoir so that the watering sequence is halted if the water level is low.

.1 Rain Input

The rain input is across "I3" and "C3". Only a Heron rain sensor can be connected to these terminals.

HERON ELECTRIC COMPANY LTD

Advanced Features Manual

MCI100S

NOTE: This manual refers to MCI controllers using software version 7471F.

Document Reference MCI100 7471F 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 purposes.

Section 4 of this manual shows how to name valves and customise irrigation programs. **This section is optional.**

Sections 5 to 9 of this manual 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 - Assigning Valve Names and Customising Programs

Section 5 - Pump Control Options

Section 6 Irrigation Program Options

Section 7 Automatic Start Options

Section 8 - Water Saving Options

Section 9 - Installation Options

2. Configuration Options

To access the configuration options press and hold down the "**Manual Advance**" button for 3 seconds.

After holding the key down for 5 seconds the display will go blank. A countdown of the remaining 3 seconds will then be displayed.

The following page will be displayed.

OPTIONS		
1	2	3
28	4	30

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, Options 1,2 and 3 have been set to 28, 4 and 30. 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 (7471 Software)

Option	Brief Description	Section	Default Value
Option 1	Set number of valves.	Section6	50
Option 2	Set number of Daily automatic starts.	Section 7	3
Option 3	Set number of Weekly or Variable period automatic starts.	Section 7	0
Option 4	The number of programs	Section 6	1
Option 5	Set Pump pressurisation time in minutes.	Section 5	0
Option 6	Set Pump pressurisation time in seconds.	Section 5	4
Option 8	Allocate the remote start input to a specific program.	Section 6	1
Option 12	The Day of the week (1 = Monday, 2 = Tuesday)	Section 7	1-7
Option 14	Valves Run Synchronously in a program	Section 6	1
Option 15	Valves Run Asynchronously in a program	Section 6	0
Option 16	Use Variable Period automatic starts instead of weekly starts	Section 7	0
Option 17	Programs to be set in hours and minutes.	Section 6	0
Option 20	Demonstration Option	N/A	0
Option 23	Display Serial Number Page on Controller	Section 10	1
Option 25	Manual Percentage increase or decrease of irrigation programs	Section 8	0
Option 27	Remote stop option.	Section 9	0
Option 33	Display a second Time page for parallel programs	Section 6	0
Option 35	Percentage reduction limited to programs 7-16 only	Section 8	0
Option 37	Rain sensor to reduce watering.	Section 8	0
Option 42	Disable all automatic starts.	Section 7	0
Option 43	Display the 'Low Tank' message.	Section 9	0
Option 44	Put Controller In Configuration Mode	Section 9	0
Option 45	Put Controller In Test Mode	Section 10	0
Option 46	Two cable drivers being used	Section 10	0
Option 47	Valves Names use a letter ie GREEN 10a	Section 4	0
Option 48	Display Diagnostic Information	Section 10	0
Option 51	Current Measurement	Section 10	0
Option 81	Minimum Current	N/A	5
Option 82	Controller Address	N/A	1

All other option should be set to zero.

1. ASSIGNING VALVES NAMES AND CUSTOMISING IRRIGATION PROGRAMS

This section describes how to :-

- assign names to valves
- how to customise your irrigation programs to use named valves
- set whether valves run in parallel in a program
- change the order in which valves run in a program

Assigning Valve Names

Valves can be named individually rather than using VALVE 1, VALVE 2 etc. Your controller is supplied with a number of standard name prefixes to which you can add a number and a letter. The standard prefixes are :-

VALVE
GREEN
TEE
FWAY
APRCH

You can create valve names such as Green 01, Tee 01a, APRCH02a etc. **Additional prefixes can be added with the aid of a PC and Ground Control Software.**

The valve name is assigned with the valve serial number. Therefore, to change a valve name go into the serial number pages. For example if you wish to change the name of 'VALVE 1' to 'GREEN 10' proceed as follows:-

Go to the Serial Number page for Valve 1 as shown below (see User and Installation manual)

```
EDIT S/N 001      EXIT
  
VALVE 1  02345
```

- Move the cursor over 'VALVE '
- Now press 'Select' to display GREEN.
- Press '>' to move the cursor over the valve number (1 in the above example)
- Enter '10' for GREEN 10.
- Now Press '>' to enter the serial number of the valve

In the example below a valve called 'GREEN 10' has been defined with a serial number of 2334.

```
EDIT S/N 001      EXIT
  
GREEN 10 2334
```

IMPORTANT The **Name Reference Number** is shown on the top line (number 001 in the above example). You will need to use the Name Reference Number to set up your irrigation programs as described in the next section. Furthermore, any valve errors are reported using the Name Reference Number.

Valves Names Use a Letter (OPTION 47)

If you need more than one valve with the name GREEN10, for example, you can increase the length of the name by adding a letter as a suffix. To enable this you must set Option 47 to 0. The MC1100S will then allow names such as:-

GREEN10a
GREEN10b
GREEN10c

Manual Valve Start With Named Valves

The operation of a manual valve start will change with named valves as you will need to select the correct name. For example if you wish to manually start 'GREEN10a' proceed as follows:-

To start a valve:-

Press '**Start**'

Press ">" to move the flashing arrow to point at "VALVE"

Press "**Select**" and the page below is shown.

Now press "**Select**" to display the correct valve name, ie GREEN

Now enter the valve number.

Press ">" to move the flashing arrow to the right

Now enter the optional letter ie 'a' by repeatedly pressing '**Select**'.

Press ">" and enter the run time for the valve.

In the example below GREEN10a as been set to run for 2 minutes.

```
START      GREEN 10a  2
```

Now press "**Select**" to start this valve and the following page is displayed.

```
TIME 12:11  
GREEN 10a  1:59
```

Customising Programs

You only need to do this if:-

- you wish to vary the number of valves that run in parallel.
- you wish to vary the order in which valves run in the program
- you wish to change valve names

First you need to select the configuration mode by setting **Option 44 to 1**. **When you have finished you should now set Option 44 back to 0**. This prevents the sequence number and the valve names being changed.

Now you need to enter the program, you wish to customise. Press ">" to display the 'Enter Program Page' as shown below.

```
ENTER PROG 1?
```

Now press **'Select'** to edit program 1 and the first page of Program 1 will be displayed. If the controller is new it will be the default configuration as shown below.

```
1 VALVE 01 00:00 EX
2 VALVE 02 00:00
3 VALVE 03 00:00
4 VALVE 04 00:00
```

Changing the Sequence Number

In the example above, there are four valves displayed called VALVE 01 , VALVE 02 VALVE 03 and VALVE 04.

The number on the left is the sequence number which indicates what valves, if any, will run together. In the example above, all valves have different sequence numbers so they will run sequentially in the sequence 1 2 3 4.

If, for example, you wanted VALVE 01 and VALVE 02 to run together you would need to change the page to the following:-

```
1 VALVE 01 00:00 EX
1 VALVE 02 00:00
2 VALVE 03 00:00
3 VALVE 04 00:00
```

Now VALVE 01 and VALVE 02 have the same sequence number so they will run together. To do this move the cursor over the sequence number for VALVE 02 and change it to 1. Now you must change the sequence number for all the other valves so the list of sequence numbers is continuous ie it follows the sequence 1 1 2 3.

Changing the Valve Order

If, for example, you wanted VALVE 04 to run before VALVE 03 then you would need to change the page to the following:-

```
1 VALVE 01 00:00 EX
1 VALVE 02 00:00
2 VALVE 04 00:00
3 VALVE 03 00:00
```

Now VALVE 04 appears before VALVE 03 in the list so VALVE 04 will run first.

To do this move the cursor so it is over VALVE 03 and the page will automatically ask you to enter the Name Reference Number. In the example below it is currently at 003 which is the reference for VALVE 03.

```
1 VALVE 01 00:00 EX
1 VALVE 02 00:00
2 NAME 003
3 VALVE 04 00:00
```

Now change **Name Reference Number** to 004 which will be the **Name Reference Number** for VALVE 04. as shown below.

```
1 VALVE 01 00:00 EX
1 VALVE 02 00:00
2 NAME 004
3 VALVE 04 00:00
```

Now press '>' and VALVE 04 will be in sequence position 3.

Changing the Valve Name (if you are using named valves)

If you are using named valves you can change the valve name in the same way as changing the valve order. For example, if we want to add the name GREEN 10 to the first position in the program above proceed as follows:-

Enter Program 1 and move the cursor over VALVE 01 and the page will automatically display NAME 001 as shown below :-

```
1 NAME 001 00:00 EX
1 VALVE 02 00:00
2 VALVE 03 00:00
3 VALVE 04 00:00
```

Now enter the new **Name Reference Number** . The **Name Reference Number** is shown on the Serial Number Page for this valve. For example, if the **Name Reference Number** is '007' for this valve type in 7 as shown below.

```
1 NAME 007 00:00 EX
1 VALVE 02 00:00
2 VALVE 03 00:00
3 VALVE 04 00:00
```

Now press '>' and the page will show GREEN10 in the first position.

1	GREEN	10	00:00	EX
1	VALVE	02	00:00	
2	VALVE	03	00:00	
3	VALVE	04	00:00	

IMPORTANT

When you have finished you should now set the Configuration Option 44 back to 0. This prevents the sequence number and the valve names being changed.

2. PUMP CONTROL OPTIONS

Pump Pressurisation Time in Minutes (Option 5)

The pump pressurisation time (in minutes) can be set with Option 5. (Values between 0 and 99 minutes are allowed).

Pump Pressurisation Time in Seconds (Option 6)

The pump pressurisation time (in seconds) can be set with Option 6. (Values between 0 and 99 seconds are allowed).

3. Irrigation Program Options

Number of Valves (Option 1)

If you increase the number of valves on your controller you might need to change Option 1. For example if you add an additional decoder. There will be no change to the operation of the controller, just more serial number pages will be displayed.

Minutes or Hours (Option 17)

For program times in minutes and seconds set Option 17 to '0'. For program time in hours and minutes set Option 17 to '1'.

Multiple Programs (Option 4)

Set option 4 to the number of irrigation programs you need. A maximum of 16 irrigation programs are allowed. If this option is not set the controller will use just one irrigation program.

Display Second Run Time page (Option 33)

If more than 4 valves are running in parallel this option will allow you to view the run time information for the 5th 6th, 7th and 8th valves. By setting option 33 to '1' the second run time page will be displayed. Default is '0'.

Allocate Remote Start to a Specific Program (Option 8)

The remote start input can be assigned to initiate irrigation programs 1 to 16. Simply enter the number of the irrigation program you want the remote start input to initiate. If this option is not set the remote start input will trigger irrigation program 1 by default.

Delay Between Valves (Option 11)

A delay between the operation of the valves within an irrigation program can be introduced using this option. The delay can be set from 1 to 99 seconds. Enter the number of seconds delay required. The delay will apply to all irrigation programs. Delay between valves does not apply if you are running valves in parallel with Asynchronous operation (Option 15). Always use Synchronous operation if you need this facility (Option 14).

Synchronous and Asynchronous Operation (Option 14 and 15)

These two options apply only to valves running in parallel within a program.

If the **asynchronous** option is set each irrigation zone will run independently within a program. This will result in programs running quicker but you will have less control over what valves run together.

If the **synchronous** option is selected all irrigation zones will run together but when a valve in an irrigation zone has finished, the next valve in the irrigation zone will not start until all the valves in all the other irrigation zones have finished. Synchronous operation gives precise control over what valves run together but may result in programs taking longer to run.

Set Option 14 to 1 for **Synchronous** operation and set Option 15 to 1 for **Asynchronous** operation. Option 14 and 15 apply across all programs.

4. AUTOMATIC START OPTIONS

The controller allows Daily and Weekly automatic starts to be set. You can specify the number of each type automatic start you wish to use. You can specify up to **51 Daily** automatic starts and/or up to **48 Weekly** automatic starts.

Furthermore, you can specify that you want to use variable period automatic starts instead of weekly automatic starts. For example, you can specify that one program starts every **three** days and another program starts every **four** days.

Number of Daily Automatic Starts (Option 2)

If you need to increase or decrease the number of Daily 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 daily automatic start pages will be displayed. (Values between 0 and 51 are allowed).

Number of Weekly Automatic Starts (Option 3)

If you need to increase or decrease the number of Weekly automatic starts change Option 3. Enter the required number under Option 3. Values between 0 and 48 are allowed.

Using Weekly Automatic Starts

When weekly programming is selected an additional page will be displayed for each automatic start. An example is shown below. Press the “>” button repeatedly to view and change the weekly automatic starts.

AUTO4				EXIT
OFF	MON	AT	0:00	

To enable the automatic start move the cursor under ‘OFF’. Now press the **Select** button to select the program.

To set the day of the week move the cursor under **MON**. Now press the **Select button** repeatedly to change the day of the week.

To set the time of day move the cursor under the time by pressing the “>” button and change the time using the number buttons as described in the User Guide. In the example below automatic start 4 will start program 1 on Tuesday at 12:00.

AUTO4				EXIT
PROG1	TUE	AT	12:00	

Variable Period Automatic Starts (Option 16)

Weekly automatic starts only allow programs to be started every 7 days. If you need programs to start at differing intervals set Option 16 to '1' to allow 'Variable Period' automatic starts. For example, 'Variable Period' automatic starts allow one program to start every two days and another program to start every 3 days. The maximum interval for a variable period automatic start is 9 days.

When option 16 is set to 1 the Weekly Automatic start pages change to the following format.

```
AUTO4                      EXIT
                            TODAY=1st
OFF  1stDay AT  00:00
```

Setting a variable automatic start is very similar to a weekly automatic start except that you must specify **what day** it is today for **each automatic start**. This is described in the following example.

Suppose you need Program 1 to start every 2 days at 12:00 starting tomorrow and Program 2 to start at 9:00 every three days starting today.

For program 1 set a variable automatic start page as shown below. Note, use the number keys to enter the 1st 2nd Day etc.

```
AUTO4                      EXIT
                            TODAY=1st
PROG1 2nd Day AT  12:00
```

In the example above, Program 1 is set to operate on the 2nd Day. This means that when ever 'TODAY' equals the 2nd day the program will start. As 'TODAY' is showing that it is the 1st Day, Program 1 will not start today, but will start tomorrow. This is what you want so you do not need to do any other entry.

Now you can set the automatic start for Program 2. To do this press the '>' button to move to the next variable automatic start and change the page to the one shown below

```
AUTO5                      EXIT
                            TODAY=1st
PROG2 3rd Day AT  09:00
```

In the example above Program 2 is set to come on the 3rd day. This means that when ever 'TODAY' equals the 3rd day the program will start. The problem is that 'TODAY' will equal the 3rd day in two days time because TODAY is equal to the 1st. You want Program 2 to start today not in 2 days time. To make this happen you must manually set 'TODAY' to the 3rd Day.

To set TODAY to the 3rd move the cursor under the '1st' by pressing the '>' button. Then press the '3' button to change TODAY to the 3rd. The page will be as shown below.

```
AUTO5                      EXIT
                            TODAY=3rd
PROG2 3rd Day AT  09:00
```

Setting the Day of the Week (Option 12)

The current day of the week for weekly automatic starts should not normally need changing. If you do need to change the day of the week set Option 12 to 1 for Monday, 2 for Tuesday 3 for Wednesday etc.

Automatic Start disable (Option 42)

Option 42 allows all automatic starts to be disabled by pressing the **Set All** key when on the Time page. When automatic starts are active the controller will display the following:-

TIME	12:11	MON
AUTOS ON		

If the **Set All** key is pressed the controller will then display the following and all automatic starts will be disabled until the **Set All** key is pressed again.

TIME	12:11	MON
AUTOS OFF		

5. WATER SAVING OPTIONS

Percentage Up and Down (Option 25)

Percentage Up and Down allows all irrigation run times to be temporarily adjusted by a specified percentage (0%-250%). With Option 25 set to '1' the following page will be displayed after the 'Enter Autos Page'.

MAN ADJUST
050%

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 reduced, for example halved, then the percentage value should be set to 50% as per the example above.

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

Rain Sensor to Reduce Watering (Option 37)

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 "I3" and "C3". The terminals in the rain sensor are accessed by removing the bottom of the rain sensor. Only a Heron rain sensor can be connected to these terminals.

Using the Rain Sensor

When option 37 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 FALL 2mm		
%ADJ	50	0
TRIP	4	9

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 :

50% (half) 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 (50%, or 0%) and enter a number . In the example above trip points have been set at 4 mm 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.

If option 35 is set to '0', then all irrigation programs will be reduced by the specified trip levels.

Testing the Rain Sensor

The rain sensor can be tested by pressing the spoon down inside the rain sensor . Pressing the spoon down every 10 seconds will increment the rain fall 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: One minute must elapse before the percentage reduction will be registered after the threshold is reached.

Clearing the Rain Fall Count

If you need to clear the rain fall count set the Option 37 to 0 and exit options. Then go back into options and set Option 37 back to 1.

Rain Sensor and Manual Percentage to Reduce Watering for Programs 7-16 only (Option 35)

This option limits the effect of the percentage reduction to programs 7 to 16 only. This option applies to manual percentage up and down and to the rain sensor percentage reduction.

6. Installation Options

Remote Stop Option (Option 27)

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

Set option 27 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 27 to '1' to stop irrigation programs. Irrigation programs will not automatically start again when the remote stop condition is removed.'

'Low Tank' Display (Option 43)

Option '43' changes the remote stop input message to 'Low Tank'. To display 'Low tank' instead of 'Freeze' set option '43' to '1'. Default is '0'.

Put Controller In Configuration Mode (Option 44)

Option '44' puts the controller in configuration mode. In Configuration mode irrigation programs can be customised Set option '44' to '1' for configuration mode. **For normal operation this should always be set to 0.** Default is '0'.

Two cable drivers being used (Option 46)

Option '46' tells the controller that two cable drivers are being used. Set option '46' to '1' for two cable drivers Default is '0' ie 1 cable driver.

7. DIAGNOSTIC AND TEST OPTIONS

Display Serial Number Page (Option 23)

This option prevents the Serial Number Page from being displayed. Set Option 23 to 0 to prevent the Serial Number Page from being displayed.

Display Valve Current (Option 51)

To display the current in amps that is being drawn from the controller set option 51 to 1 and 48 to 1.

Put Controller in Test Mode (Option 45)

The test mode allows each valve within a program to be started for one second. Simply set option 45 to 1 and then start the program of interest and then check to see if there are any decoder errors at the end of the program. When you have finished set Option 45 back to 0.

Note: In test mode only one valve at a time will be run regardless of whether the program is set to run parallel valves.