HERON ELECTRIC COMPANY LTD

Advanced Options Manual

Mi-4 Mi-8 Mi-12 Mi-16 Mi-144 Controllers

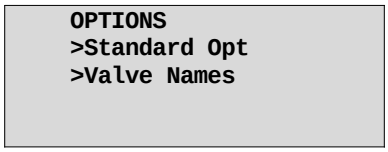
Ti-40 Ti-240 Ti-640 Controllers

MiTiAdvanced.doc
28/10/13
MiTiAdvanced.doc

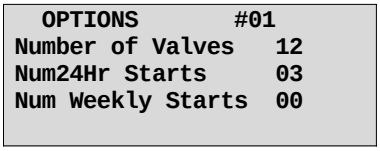
1 Changing Controller Options

To access the controller's configuration options, press and hold the **Advance** button.

The following screen will be displayed.



Select **"Standard Opt".** The following screen lists the controller's basic configuration options.



Use either the number keys of press the **OK/Select** button to set the configuration option to its required value. To access the **Advanced** Options set **option 16** to "**1**".

IMPORTANT: Always fully test any new configuration values after you have changed them to ensure the controller functions as you require.

Note: Your irrigation installer or dealer may have already set the configuration options to the required values for you. If you want Options on the Main Menu set Option 15 to "1".

	Option	Brief Description	Allowed
1	Number of Valves	Set number of valves.	4 –144
2	Num 24hr Starts	Set number of daily automatic starts.	0-60
3	Num Weekly Starts	Set number of weekly automatic starts.	0-60
4	Number of Prog	The number of irrigation programs	1-99
5	Pump Prime Mins	Set pump pressurisation time in minutes.	0-59
6	Pump Prime Secs	Set pump pressurisation time in seconds.	0-59
7	Rain Days	Rain sensor connected and number of historical days to be taken into account when measuring rainfall.	0-4
7	Rain Switch Connected	Rain on/off switch connected.	99
8	Manual Percentage	Display the global percentage adjustment of irrigation programs	Y/N
9	Input1 Stop	Controller does a permanent Stop instead of Freeze	Y/N
10	Input1 Low Tank	Display Low Tank instead of Freeze or Stop	Y/N
11	Autos On/Off	Use 'Disable Automatic Starts' facility	Y/N
12	Use Gallons	Use gallons rather than litres for flow measurements.	Y/N
13	Configure Programs	Enable the changing of valve order within an irrigation program.	Y/N
14	Valve Information on Main Menu	Display **Valve Information** on Main Menu	Y/N
15	Options on Main Menu	Display **Options** on the Main Menu.	Y/N
16	Advanced Options	Display advanced configuration options	0-2

2 Advanced Options

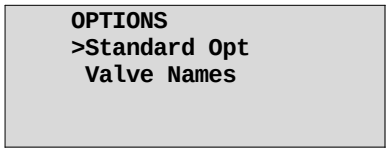
Option	Function	Default Value	Allowed Values	Section
17	Number Cycling Starts	0	0-16	4
18	Skip Day automatic starts	0	0-32	5
19	Maximum number of conventional (i.e. non-cycling) automatic started programs to run together (Conv Para Prog)	0	0-8	9
20	Maximum number of cycling programs to run together	0	0-8	4
21	Back up conventionally started programs	0	1-16	6
22	Back up cycle start programs	0	1-16	4
23	Run valves synchronously	N	N/Y	9
24	Set percentage adjustment for individual programs	N	Y/N	8
25	Set percentage adjustment for a group of valves	N	Y/N	
26	Remote Start Program	1	0-64	9
27	Not Used	0	0	N/A
28	Pressure switch on I3/C2.	0	0-99	
29	Number water meters attached	0	0-5	11
30	Individual flow measurement for valves	N	N/Y	11
31	Not Used	0	0	N/A
32	GSM module connected	N	N/Y	See GSM Manual
33	GSM - Display text shut down faults Only	N	N/Y	See GSM Manual
34	GSM - Send text message on every fault	N	N/Y	See GSM Manual
35	GSM Security	N	N/Y	See GSM Manual
36	Inputs on Additional Input Board trigger text messages	0	Y/N	See Input Board Manual
37	Additional Input Board delay period (seconds)	0	0-99	See Input Board Manual
38	Maximum allowable faults before irrigation stopped	0	99	9
39	Not Used	0	0	N/A
40	Manually advance individual program if more than 1 program is running	N	N/Y	9
41	Manually stop individual program if more than 1 program is running	N	N/Y	9
42	Delay between valves in seconds	0	0-60	0
43	Weather Station Connected	0	Y/N	See Weather Station Manual
44	ET Equivalent value	0	0-100	See Weather Station Manual
45	Number of Programs that use ET	N	32	See Weather Station Manual
46	Time of day to calculate ET	N	0-23	See Weather Station Manual
47	ET Calculate Type	0	4	See Weather Station Manual
48	Wind Speed Calibrate	0	50	See Weather Station Manual

Option	Function	Default Value	Allowed Values	Section
49	Number of Wind Inhibit Directions	0	1-8	See Weather Station Manual
50	Decoder Test (Two Wire Controllers Only)	N	N/Y	
51	Display individual output current	N	N/Y	N/A
52	Display all output currents	N	N/Y	12
53	OL/1 Threshold (Two Wire Controllers Only)	50	1-250	12
54	Not Used	0	0	N/A
55	Controller address – PC option	1	1-5	See PC Manual
56	Baud Rate- PC Option	3	1-3	See PC Manual
57	Keypad security	0	0-99	10
58	Period between logging records for Flow, EC and pH	0	0-60	See Dosing Manual
59	Period between logging records for analogue inputs	0	0-60	See Analogue Manual
60	Number of Back Flush filters	0	12	See BackFlush Manual
61	Filter Delay	0	99	See BackFlush Manual
62	Back Flush priority	N	N/Y	See BackFlush Manual
63	Pressure differential delay	0	99	See BackFlush Manual
64	Pressure differential and time	N	N/Y	See BackFlush Manual
65	Remote start (In2) used with cycling	N	N/Y	See Leaf Interface Manual
66	Cycling programs take priority	N	N/Y	4
67	Program 1 takes priority	N	N/Y	9
68	Number of light integrators	0	0-8	See Light Sensor Manual
69	Use integrator with cycling	N	N/Y	See Sensor Manual
70	Fertigation	N	N/Y	13
71-72	Not Used	0		
73	Temperature Starts	0		
74	Number of Moisture Sensors	0		
75	Minimum moisture rise test	0		
76	Delay before moisture sensor test	0		
77-78	Not Used	0		
79	Number of Light Starts before EC reduction	0		
80	EC reduction	0		
81	Number of Automatic Stops	0		
82	Number of Humidity Sensors	0		
83-84	Not Used	0		
85	Re-program Controller	0		

3 Configuring Valve Names (Option 14)

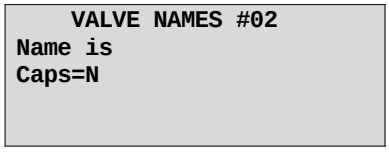
Your Heron controller allows you to change the names of valves. For example, you can use names such as bed, green, tee, plant, or house.

For a multi-wire controller, to add more valve names first set the Valve Information Option (option 14) to **"Y". "Valve Information"** will appear on the **Main Menu** and the '**Valve Names'** will appear on the **Options Menu.**

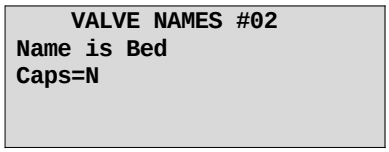


Select '**Valve Names'** on the **Options Menu** and the following page will be displayed.

This is the page for the default name 'Valve'. This page must be left unchanged. Press **Arrow Down** to add a new name. The following page will be displayed.

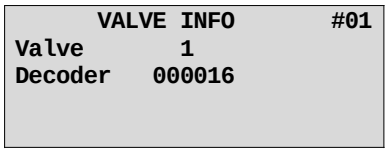


Enter the new name on this page. Text entry on a Heron Controller is identical to the format used on a mobile phone (see table below). In the example below Name #02 has been set up as **'bed'.**

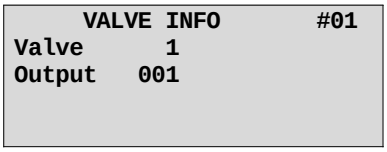


To assign the valve name added to a particular valve, you must go to the **Main Menu** and select **Valve Information**. The following page will be displayed.

Two-Wire Controller



Multi-Wire Controller



With the flashing cursor on the valve name “Valve”, press the **SELECT/OK** button to toggle through the valve names created until the desired name is displayed. Move the flashing cursor on to the valve number, and use the number keys to change the valve number.

The following table shows the function of each key of the Heron controller when editing text.

Key	Function
0	**0 SPACE**
1	**1 .**
2	**A B C 2**
3	**D E F 3**
4	**G H I 4**
5	**J K L 3**
6	**M N O 6**
7	**P Q R S 7**
8	**T U V 8**
9	**W X Y Z 9**
OK/Select	**Upper/Lower Case**

4 Continual Cycling (Option 17)

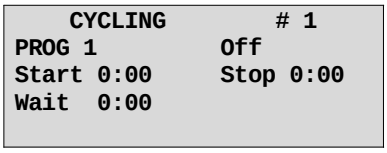
The continual cycling facility allows an irrigation program to continuously cycle. Programs continually cycle between a specified start and stop time, with a programmable delay between cycles. This is normally used for misting or propagation applications.

To set a program to continually cycle you must first set option 17 to the number of cycling starts required. You can have up to 16 continual cycling starts.

Setting Up Continual Cycling

When **Program Starts** is selected from the **Main Menu**, **Cycle Starts** will be displayed on the **Prog Starts Menu.**

If **Cycle Starts** is selected then the following screen is displayed.



On this page you can:

- Select the program to be continually cycled
- Specify the start and stop times for the continual cycling period
- Set the delay period (in hours and minutes) between each cycle
- Disable / Enable the continual cycling program.

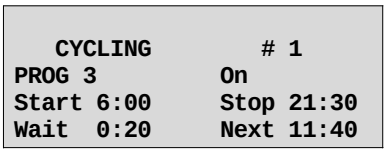
Use the arrow keys to move the cursor over the input fields on this page.

- Enter the number of the program you want to be continually cycling
- Enter the 24 hour start and stop times for continual cycling.
- Enter the delay period between cycles in hours and minutes.

YOU MUST ACTIVATE THE CONTINUAL START. When the cursor is over the "**Off"** field, press the "**Select"** button.

The "**Next**" time the program will run within the cycling range will now be automatically calculated and displayed.

In the example below, program 3 has been set to continually cycle from 6:00 hours to 21:30 hours, with a 20 minute delay between each cycle. The next time this program will run will be at 11:40am.



Disabling Continual Cycling

You can disable a continual cycling start by:

- Placing the cursor over the "**On**" field.
- Pressing the **OK/Select button.**

Other Options You May Want to Set

Maximum Number of Cycling Programs to Run Together (Option 20)

Set option 20 to the maximum number of cycling programs starts you want to run at the same time.

Back-up Cycling Program Starts (Option 22)

If a continual cycling program cannot run because another program is running the controller can remember that a program tried to start. The controller will then run the program when the other program(s) have finished. Option 22 controls whether the cycling program will be backed up.

Set Option 22 to 0 if you do not want any cycling starts remembered. Set Option 22 to '1' for one cycling start to be backed up. Set Option 22 to "2" for two cycling starts to be backed up etc.

Cycling Programs to take Priority Over Auto Start Programs (Option 66)

This option allows any of the continually cycling programs to take priority over any automatically started irrigation program.

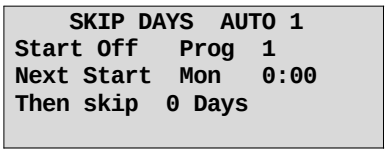
With this option set, if a program is running, the continually cycling program will cut-in if it needs to run. The halted program will then continue from where it was stopped, once the cycling program has completed.

5 Skip Day Automatic Starts (Options 18)

A skip day automatic starts enable a specified number of days to be missed before an irrigation program is run again. Option 18 is set to the number of these types of starts you wish to have.

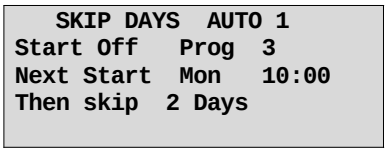
When **Program Starts** is selected from the **Main Menu**, **Skip Day Starts** will be displayed on the **Prog Starts Menu.**

If **Skip Day Starts** is selected then the following screen is displayed.



If option 18 has been set to “2, then there will be 2 of these pages. Two skip day automatic starts can be set up. If option 18 has been set to “3”, then there will be 3 of these pages etc.

- Enter the number of the irrigation program to be started.
- Use the **OK/Select** button to set the next day that the irrigation program should start.
- Enter the 24 hour start time.
- Enter the number of days to be missed before the irrigation program is run again. Up to 6 days can be skipped.

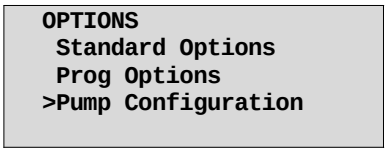


In the example above, program 3 will next start on Tuesday at 10:00am. It will not run for 2 days i.e. it will not run on Wednesday or Thursday. It will run again on Friday at 10:00am.

6 Pump Start Configuration (Option 16)

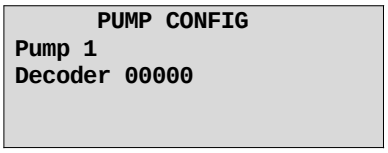
Your Heron controller allows you define up to five pump start outputs. You can then attach these pump starts to different programs. This allows, for example, Program 1 to start Pump 1 and Program 2 to start Pump 2.

To configure Pump Starts set **Option 16** to **"2"** and '**Pump Configuration'** will appear on the **Options Menu.**



Select **'Pump Configuration'** and the following page will be displayed depending upon whether you have a two-wire controller or multi-wire controller:-

For a two-wire controller.

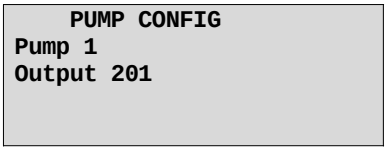


On this page enter the decoder number that you require for the Pump 1 output.

You can now press **Arrow Down** to set up additional pump outputs. Press the **Menu** button to return at any time.

Once a Pump is defined you can now define it to a program as described in the next section.

For a multi-wire controller.



On this page enter the output you require for Pump 1.

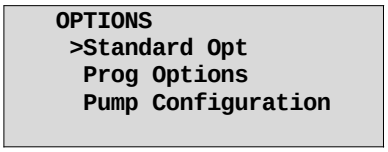
You can now press **Arrow Down** to set up additional pump outputs.

Important: Outputs 201 and 202 are the standard pump outputs that are presented on O1 and O3. By default the controller defines Pump 1 as output 201 (the O1 output) and Pump 2 as output 202 (the O2 Output).

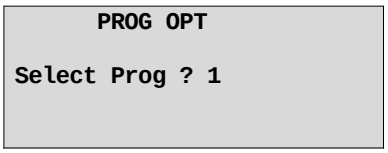
Press the Menu button to return at any time. Once a Pump is defined you can now define the pump to a program as described in the next section.

7 Program Specific Configuration Options

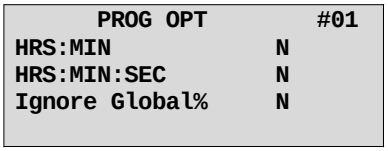
To set program configuration options set **Option 16** to **2** and '**Prog Options'** will appear on the **Options Menu.**



Select '**Prog Options'** and the following page will be displayed:-



Enter the number of the program to be configured. Press **OK/Select** and the following page will be displayed.



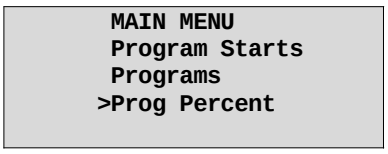
You can Press **Arrow Down** to view and change any of the 14 Pump Configuration Options. The following table describes the function of the Pump Options.

Pump Option	Function
Hrs:Mins	If **Y,** program displays valve run times in Hours and Minutes.
Hrs:Mins:Secs	If **Y, p**rogram displays valve run times in Hours Minutes and Seconds.
Ignore Global %	If **Y,** then this program will not be effected by the Global Percentage adjust setting.
Ignore Rain %	If **Y,** then this program will not be effected by the Rain sensor percentage adjust.
Ignore Freeze	If **Y,** then this program will not freeze or stop if the I1 C2 input is active.
Start Pump 1	If **Y,** then this program will start the Pump 1 output.
Start Pump 2	If **Y,** then this program will start the Pump 2 output.
Start Pump 3	If **Y,** then this program will start the Pump 3 output.
Start Pump 4	If **Y,** then this program will start the Pump 4 output.
Start Pump 5	If **Y,** then this program will start the Pump 5 output.
Program Size	The number of valve entries you want to include in this program. This makes the controller easier to use by setting this to the minimum number of valves you require.
MPD Controller	The address of the Heron MPD Dosing controller that should be started with this program.
MPD Recipe	The fertilizer recipe on the MPD controller defined above which should be started with this program.
No Start if Program	Sets a program which will prevent this program from running. So, for example, if you set this to 2, then if program 2 is running this program will not start.

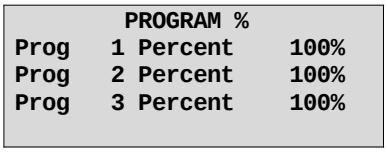
8 Program Percentage Adjustment (Option 24)

This option allows you to adjust the irrigation time for an individual program by a specified percentage.

If option 24 is set to "**Y", Prog Percent** is displayed in the **Main Menu.**



Select **Prog Percent**. The following page is displayed.



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

A percentage adjust value from 1% to 250% can be entered. To reduce irrigation program run times by half, then the percentage adjust value should be set to 50%. To double the irrigation programs run time then this value should be set to 200%.

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

9 Other Irrigation Program Options

Allocate Remote Start input to a Program (Option 26)

The Remote Start Input can be assigned to initiate any irrigation program. Enter the number of the irrigation program you want it to initiate. If this option is not set, the Remote Start Input will trigger irrigation program 1 by default.

Maximum Number of Non-Cycling Programs to Run Together (Option 19)

This specifies the maximum number of non-cycling irrigation programs that can run at the same time. If this option is set to '0', only one irrigation program can run at any time. Setting this option to "2" will allow 2 irrigation programs to run at the same time.

Back-up Non-Cycling Program Starts (Option 21)

If a non-cycling irrigation program cannot run because another program is running the controller can remember that a conventional irrigation program tried to start. The controller will then run the program when the other program(s) have finished. Option 21 controls whether the non-cycling program will be backed up.

Set Option 21 to "0" if you do not want any conventional program starts remembered. Set Option 22 to '1' for one conventional program start to be backed up. Set Option 22 to "2" for two conventional program starts to be backed up etc.

Running In Synchronous Mode for Parallel Valves (Option 23)

To run valves in parallel within the same irrigation program, valves are assigned to different zones. In this case the program is running in an **Asynchronous** mode.

When an asynchronous program runs it effectively runs the zones independently and depending upon your valve times different valves will run together. If you need to guarantee what valves run together you need to set the controller to run in **Synchronous** mode. In Synchronous mode valves are grouped together and the controller will not move onto the next group until all valves have finished their run times in the current group.

To set synchronous mode you need to set Option 23 to "**Y".** When you come out of Options the controller will **convert all your programs to Synchronous operation**. This will take about 60 seconds.

Your programs will now be similar to the following.

```
A  VALVE 01   05:00
B  VALVE 02   10:00
A  VALVE 03   08:00
B  VALVE 04   09:00
```

If we now want the first 2 valves to run together and then the next 2 valves to run together change the program to the following.

```
A  VALVE 01   05:00
A  VALVE 02   10:00
B  VALVE 03   08:00
B  VALVE 04   09:00
```

Now when this program runs it will run all the valves marked with an 'A' until it reaches a valves marked with a 'B'. So in the above program it will run VALVE 01 and VALVE 02 together. The program will then run all valves marked with a 'B' together until it reaches a valve marked with an 'A' again.

The important point is that the program will not move onto the next group until all valves have run the specified time. In the above example VALVE 03 and VALVE 04 will not run until VALVE 02 has finished.

Important: Ensure option 13 – Configure Programs is set to "Y".

Max Faults (Option 38)

Option 38 is the maximum number of faults that are allowed before the controller will switch off all irrigation programs.

Manually Advance an Individual Program (Option 40)

If programs are being run in parallel, this option can be set so that individual programs can be selected and manually advanced.

Manually Stop an Individual Program (Option 41)

If programs are being run in parallel, this option can be set so that individual programs can be selected and manually stopped.

Delay Between Valves (Option 42)

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 60 seconds. Enter the number of seconds delay required. The delay will apply to **all** irrigation programs.

Program 1 will Take Priority (Option 67)

This allows program 1 to take priority over any other automatically started irrigation programs. If you need this facility set Option 67 to '1'. Default is '0'.

With Option 67 set, if a program is running, and program 1 wishes to start, it will cut-in and run. The halted irrigation program will continue from where it was stopped, once program 1 has completed.

10 Security

Keypad Security (Option 57)

If you require a security code to be entered before the controller can be used , then set option 57.

Set option 57 to any number from ‘01’ to ‘99’. This number will become the third and fourth digits of the security code. The first and second digits of the security code will be ‘57’.

For example, if option 57 has been set to ‘15’, then the security code is “5715”. “5715” must be entered to operate the controller.

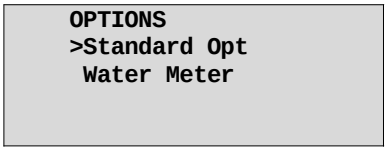
The user must re-enter the security code if the keypad is not used for three minutes.

11 Using Water/Flow Meters

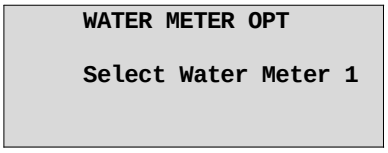
A standard Heron controller can have one water meter connected. Additional water meters can be added by using the input expansion board. This section describes connecting and configuring a single water meter.

A single water meter is connected to the I3, C2 terminals. The input excepts pulse type water meters giving a pulse out every 1 Litre/Gallon, 10Litres/Gallons, or 100Litres/Gallons.

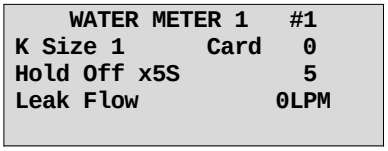
Connect the water meter across the I3,C2 terminals and then set **Option 29** to **"1"** to enable the water meter. '**Water Meter'** will be displayed on the **Options Menu** and "**Flow"** will be displayed on the **Main Menu.**



Select '**Water Meter'** from the **Option Menu** and the flowing page will be displayed.



Now Press **OK/Select** and the following page will be displayed.



Set the K Size of the Water Meter based on the following table:-

Flow Meter Type	Size
1 Pulse per Litre/Gallon	1
1 Pulse per 10 Litres/Gallons	2
1 Pulse per 100Litres/Gallons	3

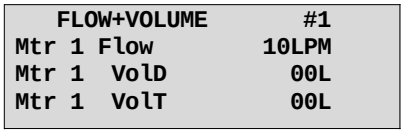
Move the cursor over **"Card"** to define where the water meter is connected to. Press **OK/Select** to choose from available cards. For a single water meter connected to I3, C2 terminals select **2W** if you have a two-wire controller or **MW** if you have a multi-wire controller.

You may also need to set the following 2 parameters, if required. The settings are described in the following table.

Threshold	Description
Hold Off Time	The time to wait (X 5 seconds) before checking the flow rates after a valve has just opened. This gives time for flow to settle down. You may need to set this longer
Leak Flow	The maximum flow rate that is expected when no irrigation programs are running.

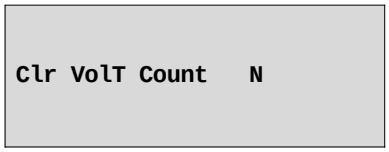
Displaying the Flow and Volume

To display the flow select ' **Flow'** from the **Main Menu**. The following page is displayed.



This page also displays two accumulated volume counts namely VolD and VolT. VolD is the daily volume count and VolT is the total count.

Either of the volume counts can be cleared at any time by moving the cursor down to the appropriate volume row and then pressing **OK/Select** . The following page is displayed.

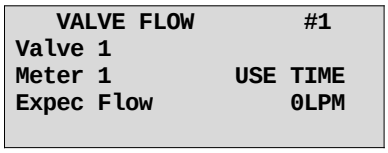


Press **OK/Select** to change the "**N"** to "**Y"** and then press **Menu** button. The count has now been cleared.

Individual Flow Measurement for Valves (Option 30)

To allow flow rates to be set for each individual valve, set Option 30 to "1". "**Valve Flow"** is displayed on the **Main Menu**.

Select '**Valve Flow'** from the main menu. The following page is displayed:



Select the valve. Press **Arrow Down** until the cursor is over the Expected Flow field. Enter the expected flow. The controller will register a fault if the flow deviates by more than 25% from this flow rate for this valve.

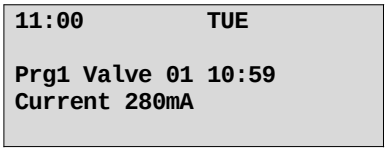
If you leave the expected flow at 0 LPM, the controller will not monitor the valve flow rate.

11.1 Displaying The Output Current

The Heron controller allows you to display the solenoid valve current. This is very useful for diagnostic purposes and proves that a solenoid is connected and working correctly. There are two ways to display the current.

Display Individual Output Currents (Option 51)

With this option set the output current is displayed on the Time Page, under the valve that is running as shown below.

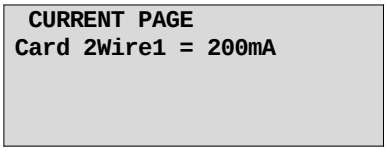


Note: If you are running multiple valves together you may need to press **Arrow Down** to view all the current values.

Display all Output Currents (Option 52)

With this option set '**Current'** appears on the **Main Menu**.

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



If you have multiple two-wire driver cards, the current for each card will be displayed.

12 Fertigation

To run fertigation programs should be set to run synchronously as described in Section 9. Now allocate any valve output on your controller as the fertilizer valve and define this to the irrigation program in every other location. In the example below Valve 16 has been allocated as the fertilizer valve and has been added repeatedly to the program. The fertilizer valve will now run in parallel with irrigation valves.

```
A  VALVE 01  05:00
A  VALVE 16  10:00
B  VALVE 02  8:00
B  VALVE 16  04:00
```

To make the display clearer you can rename 'Valve 16' to, for example, 'FERT 01'. This is described in Valve Names (see Section 3). The program will now look like the display below:-

```
A  VALVE 01  10:00
A  FERT 01   05:00
B  VALVE 02  8:00
B  FERT 01   04:00
```

In the above program, Valve 01 will run with the FERT 01 for 5 minutes, During this period irrigation will be with fertilizer.

Then FERT 01 will switch off and Valve 01 will be left running on its own for the remaining 5 minutes. During this period irrigation will be with plain water.

Valve 01 will then switch off and Valve 2 will open with FERT 01 etc.

Using the fertigation (Option 70)

The fertigation option (Option 70) will:-

- Set the programs to run synchronous as above with AA, BB, AA etc in the left hand column.
- Prevent the fertilizer valve from having a run time greater than the irrigation valve

If you are going to run fertigation it is recommend you set the fertigation option.