

HERON ELECTRIC COMPANY LTD

---

# Advanced Features and Options

HM8 and HM4 Irrigation Controllers

---



# 1. About This Manual

This manual describes the Advanced Controller options and the following advanced features:-

- Configuring Programs.
- Pump Configuration
- Adding additional cards
- Reprogramming to factory default

# 2. Changing Controller Options

This section describes the configuration options you can set on your controller. Your controller has 13 basic configuration options which are described in the installation manual, the remaining more advanced options are described here.

### WARNING

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

Your Installer may have already set your controller to the required values.

To access the controller's Configuration Options, select **OPTIONS** from the **Main Menu**.

```
OPTION MENU
>Standard
Prog Option
Reprog General
```

Now select "**STANDARD**" from the **Options Menu** and the following screen will be displayed.

```
OPTIONS #01
Number of Valves 08
Num 24Hr Starts 06
Num Weekly Starts 00
```

Use the arrow keys to scroll through the options. Pressing the **Menu** key will exit and save.

The table below lists the Configuration Options.

No.	Standard Option	Brief Description	Allowed values
1	NUMBER OF ZONES	Set number of zones (see basic manual)	1-40
2	NUMBER 24HR STARTS	Set number of Daily auto starts.	0-64
3	NUMBER WEEKLY STARTS	Set number of Weekly auto starts.	0-64
4	SKIP DAY STARTS	Set number of skip day starts	1 - 32
5	NUMBER AUTO STOPS	Set number of automatic stops	1 - 64
6	NUMBER OF PROG	Set number of programs.	1-28
7	USE RAIN GAUGE	Rain gauge connected.	YES/NO
8	MANUAL PERCENT	Manual percentage adjustment of irrigation programs	YES/NO
9	INPUT 1 USE	Controller suspends irrigation programs or permanently stops irrigation programs.	0-2
10	INPUT 1 MESSAGE	Display Low Tank instead of Suspend or Stop.	YES/NO
11	AUTO DISABLE	Use 'Disable Automatic Starts' facility	YES/NO
12	Not used		
13	ZONE INFORMATION	Turn Zone Information display on /off	YES/NO
14	CONFIG PROGRAM	Allows zones within a program to be changed.	YES/NO
15	PROGRAM PERCENT	Increase or decrease an irrigation program run time by a specified percentage	YES/NO
16	Not Used		
17	NUMBER OF CYCLING STARTS	Set the number of cycling starts required, i.e. the cycling of programs between specified times of the day.	0-32
18-19	Not Used		
20	PARALLEL PROGRAMS	Specify the maximum number of programs that can be run in parallel.	0-6
21	PARALLEL MANUAL ZONES	Specifies the maximum number of zones that can run in parallel whilst an irrigation program is running.	0-4
22	PRIORITY PROGRAM	Set the program that overrides existing programs that may be running	0-28
23	Not Used		
24	ENG OPTION ENABLE	See Engineering Options Manual	N/A
25	GSM/LAN	See GSM Manual	N/A
26-27	Not Used		
28	NUMBER OF FLOW METERS	Specify the number of flow meters attached to the controller.	0-9
29	FLOW TEST ENABLED	Send a text alert if zone flow falls outside of its specified flow volume range.	YES/NO
30	ADVANCE LOW FLOW	Advance to the next zone if low flow fault detected.	YES/NO
31	ADVANCE HIGH FLOW	Advance to the next zone if high flow fault detected.	YES/NO
32	MAX FLOW FAULTS	Specify maximum number of flow faults before a program is stopped.	0-99
33	Not Used		
34	ZONE VOLUME LOG	Set	YES/No
35	WEEK AUTO EXTRA	Set to YES to display daily, odd day, even day, 5 day and weekend program start options	YES/NO Default NO

36	Not Used		NA
37	FLOW FAULT FILTER	Set time that flow a fault is re-tested before logging real flow fault. Time in seconds	0-99
38	PROGRAM LOCK	Set 4 digit security to stop unauthorised keypad Use	0000-9999
39	Not used		
40	REMOTE START PROG	Specify which program to initiate when contact closed on remote input.	0-28
41	REMOTE START TYPE	Caution – allows specified program to continuously run until remote input contact opens.	0-1
42	FERTIGATION TYPE	See Fertigation Manual	0-2
43	USE WEATHER STATION	See Weather Station manual	N/A
44	USE ET CALCULATION	See Weather Station Manual	N/A
45	ET REFERENCE	See Weather Station Manual	
46	LIGHT INTERGRATION	See Weather Station Manual	N/A
47	GROUP PERCENT	Adjust a group of zones by a given percentage.	YES/NO
48	BACK UP PROG	The number of programs that can be delayed when program run times overlap.	0-4
49	STOP INPUT ACTIVE	Stop input active on one zone only	0
50-51	Not Used		
52	EXTRA INFO	Displays additional parameters to be displayed on Time screen. Pumps, Flow rate etc	YES/NO
53-57	Not Used		
58	FLOW LOG RATE x10S	Irrigation Flow log rate x10S	0-99
59	Not Used		
60	WEATHER LOG RATE	Weather station log rate (minutes)	0-99
61-64	Not Used		
65	PRESSURE INPUT	Sets the type of Pressure input	
66	PRESSURE DELAY	The delay before the pressure is read (S)	
67	PRSSURE MINIMUM	The pressure fault threshold (Bar)	
68	PRESSURE FILTER	The pressure filter delay (S)	
69	PRESSURE CONFIGURATION	The pressure range of the pressure sensor	
70	PRESSURE LOG RATE	Set the logging rate for the pressure sensor Log rate x10 seconds	0-99
70-80	Not used		

## 14. Configure Program

This option permits programs to be configured by allowing the cursor to move freely over the program screen. Set this option to Yes before you configure programs. Configuration of programs is described in Section 3.

## 15. Program Percentage

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**.

```
MAIN MENU
Program Starts
Programs
>Prog Percent
```

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

```
PROGRAM %
Prog 1 Percent 100%
Prog 2 Percent 100%
Prog 3 Percent 100%
```

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.

## 17. Number of Cycling Starts

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

Select **Program Starts** from the **Main Menu** to display the Program Starts menu.

```
PROG STARTS
24hr Starts
>Cycle Starts
```

Now select **Cycle Starts** and the following screen is displayed.

```
CYCLING # 1
PROG 1 Off
Start 0:00 Stop 0:00
Delay 0:00 Invalid
```

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 to activate the start.

The time delay before the next start is displayed in the bottom right of the screen.

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 program will run again in 11minutes and 40 seconds.

```
CYCLING # 1
PROG 3   On
Start 6:00 Stop 21:30
Delay 0:20 11:40
```

### Disabling Continual Cycling

You can disable a continual cycling start by placing the cursor over the "On" field and pressing the **OK/Select** button.

## 20. Parallel Programs

Set this option from 1 to 4 to specify the maximum number programs to run in parallel. The controller can run up to 4 programs in parallel.

## 21. Parallel Manual Starts

Set this option from 1 to 4 to specify the maximum number of zones that can be manually started together.

## 22. Priority Programs Starts

Set this option from 1 to 28 to specify the program that has priority over other programs.

## 28. Number of Flow Meters

A standard controller can have one flow meter connected. Up to 9 flow meters can be added with the addition of expansion cards. A single flow meter is connected across the "+V F G" terminals as shown in Fig 1 of the installation manual.

Set this option to one for a single flow meter. Now configure the flowmeter. Select "**Flow Meter**" from the **Option Menu**.

```
OPTIONS
Standard Opt
Prog Option
>Flow Meter
```

The following page will be displayed.

```
Meter 1
Type 1   Card MW1
K 00.00  Delay 000
Leak Flow 0000
```



You need to configure the following fields:-

### METER TYPE

With the cursor on the **METER TYPE** field press the **OK/SELECT** to set the meter type.

Meter Type	Flow/Volume meter type installed
VOL 1L	Pulse meter. 1 pulse per litre
VOL 10L	Pulse meter. 1 pulse per 10 litre
VOL 100L	Pulse meter. 1 pulse per 100 litre
VOL 1000L	Pulse meter. 1 pulse per 1000 litre
ROTOR	Paddle Wheel/Rotor Type (K Factor must be set)

### CONNECTION CARD

Select where the flow meter is connected in the next field. This will be **MW1** for a HM8 or HM4.

### K-FACTOR

If the flow meter is a paddle wheel type (Rotor type) set the K-FACTOR.

### DELAY BEFORE TEST

If required, set the delay before the flow is tested after a valve has opened. The delay is in seconds.

### LEAK FLOW

The LEAK FLOW field can be set to a flow that is considered to be a leak from the irrigation system. A leak flow fault will then be generated.

You can view the irrigation flow by selecting "**Flow Volume**" from the **Main Menu** then select "**Display Flow**". The following screen will be displayed.

<b>FLOW VOLUME</b>	<b>1</b>
<b>Flow</b>	<b>30.1 LPM</b>
<b>Vol Daily</b>	<b>100L</b>
<b>Vol Total</b>	<b>130L</b>

If the irrigation is running the real-time flow will be displayed.

The daily volume and the total volume is also displayed. The daily volume is reset at midnight.

The volume totals can be manually reset from “**Clear VolDaily**” or “**Clear VolTotal**” on the **Flow Menu**.

## 29. Flow Test Enabled

This option enables flow testing on each zone. The high and low limits for each zone can be specified in “**ZONE INFO**”. If the high or low limit is set to zero, the irrigation flow rate will not be tested for that particular zone.

## 30. Advance Low Flow

This option controls what happens to the irrigation sequence on a low flow fault. If set, the irrigation sequence will advance to the next zone. If it is not set then the controller will continue to run the zone in fault until the time expires in the normal way.

## 31. Advance High Flow

This option controls what happens to the irrigation sequence on a high flow fault. If set, the irrigation sequence will advance to the next zone. If it is not set, then the controller will continue to run the zone in fault until the time expires in the normal way.

## 32. Max Flow Faults

This option specifies the number of flow faults to be detected before the irrigation is stopped.

## 34. Zone Volume Log

Volume logs for each zone can either be created using the real measured volume or using the expected flow per valve. The real volume log is more accurate but is only appropriate if you running one valve at a time.

If you require real volume logs rather than using the expected flow set this to Yes.

## 35. Week Auto Extra

This option adds an additional two options to the weekly starts. By default, weekly starts can be set as Week Day Odd Even or Daily. This option adds ‘Monday to Friday’ and ‘Weekend’.

## 37. Flow Fault Filter

The flow fault filter sets an additional delay after a flow error has been detected before the flow is tested again. Only if the flow rate fails the second test, will a flow fault be generated. The timer is in seconds.

## 38. Program Lock

This option sets a 4 digit security code to prevent unauthorised access to the controller. If this option is 0, there is no security lock.

## 40. Remote Start Prog

This option specifies the program that is to be started by the remote start input. The remote start input is across “C2-I2”. A closed contact will start the program.

## 41. Remote Start Type

This option defines alternative uses for the remote start input as per the table below. The remote start input is across "C2-12".

Remote Start Type	Use
0 / 1	Remote start of program defined in Option 40
2	Remote start is used with cycling. A closed contact will reduce the delay time of the current cycling program to zero and the program will start immediately.

## 47. Group Percent

This option allows a percentage adjust to be set for a group of zones. You can assign Zones to a particular group in "ZONE INFO".

If this option is activated then "Group Percent" will appear as an additional item on the **Main Menu**. Select **Group Percent** to display the Group Percent screen as shown below.

Group Percent	
Group 01	100%
Group 02	100%
Group 03	100%

**WARNING: If the percentage is at 0%, this group of valves will not run.**

## 48. Back Up Program Starts

If irrigation programs overlap the controller will remember the automatic start and then run the program when the original program has finished. This option sets the maximum number of programs starts that will be backed up.

A maximum of 4 programs can be backed up. If this option is set to zero then any overlapping programs will not run.

## 52. Extra Info

This option allows another screen to be displayed to view additional information.

## 58. Flow Log Rate (x10S)

This option sets the Irrigation Flow Log rate when the irrigation is running. The rate is in seconds x 10. For example, if this option is set to 6, then the flow rate will be logged every 60 seconds. The log flow rate when irrigation is not running is set in Engineering Option 31.

## 60. Weather Data Log Rate (minutes)

This option sets the weather data log rate in minutes.

## 65. Pressure Input Type

One pressure sensor can be connected to the irrigation controller. The pressure sensor can then be used to test correct pressure when the irrigation is running. The pressure sensor can be a switch type or an analogue sensor. The analogue sensor pressure value can be displayed and logged.

Pressure sensor Type	Use
0	Not used, pressure faults will be disabled
1	Switch pressure sensor. A closed contact is good pressure
2	Analog sensor type. The pressure range is set in Option70 and the pressure fault threshold in option 67

## 66. Pressure Delay

Sets the pressure delay before the pressure is tested after an irrigation program starts. If the pressure is not at a level set in Option 67, then a fault is created. The pressure delay is in seconds.

## 67. Pressure Threshold (analogue pressure sensor only)

Sets the pressure threshold for pressure faults. If the pressure is below this threshold a fault is generated. The threshold is tested after the pressure delay (Option 66) and optionally re-tested after an additional time set in Option 68. The pressure threshold is in Bars.

## 68. Pressure Filter Delay

Sets the pressure filter delay. This is an additional delay before a second test of the pressure is made to verify whether the pressure is at the desired level. This delay is optional. The delay is in seconds.

## 70 Pressure Range Configuration (analogue pressure sensor only)

Sets the pressure range of the analogue pressure sensor as below:-

<b>Allowable Value</b>	<b>Pressure sensor range</b>
0	Not used pressure faults will be disabled
6	Pressure range is 0-6 bar
10	Pressure range is 0-10 bar
16	Pressure range is 0-16 bar

### 3. Configuring Programs

The HM controllers allow any zones to be arranged in any order in an irrigation program. You can customize your programs so only the zones that are needed appear in the program in the correct running order. Furthermore, configuration of programs allows you to set what zones run in parallel.

#### Changing a Zone

First you must set the Configure Program Option (Option 14), see previous section to allow the cursor to move freely over the program screen. Now enter the program that you want to configure. The following screen will be displayed.

<b>PROGRAM 1</b>	<b>#01</b>
1 Area 1	0:30
2 Area 2	1:00
3 Area 3	0:00

For example, if you want to remove Area 2 and run Area 8 in its place, proceed as follows. Move the cursor over 2 next to Area2 as shown below.

<b>PROGRAM 1</b>	<b>#01</b>
1 Area 1	0:30
2 Area 2	1:00
3 Area 3	0:00

Now press the 8 key and the irrigation zone will change to Area 8 as shown below.

<b>PROGRAM 1</b>	<b>#01</b>
1 Area 1	0:30
8 Area 8	1:00
3 Area 3	0:00

## Setting The Number of Rows

The number of rows a program contains is set in Program Options (see Basic Manual). For example, if you want the above program to contain just two irrigation zones, Set **Program Option 2** to **2**. Now if you return to Program 1 it will just have two irrigation zones, Area 1 and Area 2, as shown below:-

<b>PROGRAM 1</b>	<b>#01</b>
<b>1 Area 1 0:30</b>	
<b>8 Area 8 0:00</b>	

## Setting Irrigation Zones to Run in Parallel

To set zones to run in parallel within a program, set the "Parallel Number" Option in "Program Options" (option number 3). If the Parallel Option is set to 2 for program 1, Program 1 is as below:-

PROGRAM 2		#01
1	1	Area 1 0:00
1	2	Area 2 0:00
1	3	Area 3 0:00

The number on the left is the parallel number. The parallel numbers are all set to 1 for all irrigation zones. Therefore, all irrigation zones will run sequentially. No irrigation zones will run together.

If, for example, you wanted Area 1 and Area 2 to run together, set Area 2 to parallel number 2.

To do this move the cursor over the parallel number for Area 2 and change it to 2 as shown below.

PROGRAM 2		#01
1	1	Area 1 3:00
2	1	Area 2 1:30
1	1	Area 3 2:00



## 4. Pump Configuration

This section describes how to set the pump prime time and assign pumps to zones.

A pump prime time can be set for each of the pumps connected to your controller. Select **"Pump Config"** from the **Main Menu** and then **'Pump Prime'**.

Pump Prime	
Pump 1	0:10
Pump 2	1:30

Pump prime times are set in minutes and seconds.

Press the **MENU** key to return to the **Pump Menu** screen.

### Assign Pumps to Zones

The basic manual described how to attach pumps to programs in Programs Options. This is the simplest and quickest way to define pumps. For greater flexibility you can also define pumps to irrigation zones. This is more complicated to set up but means the right pump will always be started even if you are running an irrigation zone manually.

To assign a pump to a particular irrigation zone select **"Assign Zone"** from the **Pump Menu**.

Assign Zone				
Zn1	P1	Y	P2	N
ZN2	P1	N	P2	Y
ZN3	P1	N	P2	N

To assign a pump to a particular zone, position the cursor over the relevant field and press the **"OK/Select"** key. **"N"** will change to **"Y"**.

Press the **MENU** key to return to the **Pump Menu**.

## 5. Re-programming Back to Factory Settings

To reset either individual functions of your controller or the whole controller to factory default settings use the **"Reprog General"** option from the **Option Menu**. You can now select whether the whole controller, the automatic starts, or the zone configuration settings are set back to factory default. Use the Select Key to change "N" to "Y" to enable the particular reprogramming.

To reprogram individual programs select **"Reprog Programs"**. Select the program you wish to set back to factory default by changing "N" to "Y" using the Select Key.

## 6. Adding Additional Cards to the Controller

You can add additional cards to your controller. The following cards can be added:-

- Pressure sensor card
- Additional flow meter card
- Input card

To define a card Standard Option 24 must be set to "138" to display '**Card Options**' on the **Options Menu**.

Select **Card Option** from the Options menu. The following screen will be displayed:-

CARD OPT	#01
Card Type TW1	0
Card Type TW2	0
Card Type TW3	0

Now scroll down to enter the card you require. In the example below, a flow meter card (type FM1) has been added.

CARD OPT	#15
Card Type FM1	1
Card Type FM2	0
Card Type FM3	0

## Appendix 1 Engineering Options

The following table list the engineering options. These should not be changed unless instructed to do so by Heron or your distributor.

No.	Engineering Option	Brief Description	Allowed values	
1	Not Used		N/A	
2	Number of M-Wire	Number of multi wire cards fitted	N/A	Display only
3	Not Used		N/A	
4	Number of Flow	Number of flow meter cards fitted	N/A	Display only
5	Number of Input	Number of input cards only	N/A	Display only
6	Number of pressure	Number of pressure cards fitted	N/A	Display only
7	Number of sensors	Number of sensor cards fitted	N/A	Display only
8-10	Not used			
11	Controller Size	Sets controller size	-	Heron Only
12	Controller Size	Sets controller size	-	Heron Only
13	Controller Size	Controller Size	N/A	Display only
14	Reset Default Type	Either Factory defaults or Test default	1/0	Heron Only
15-17	Not used			
18	Reset log	Reset general log	0/1	
19	Parallel zones	Maximum Number of Parallel zones	12	Heron Only
20	Edit program	Parallel valves using single column	0	Heron Only
21	Test socket	Test TCP/IP sockets as part of login	0	
22	Back up Timer	Back up time (minutes)	5	
23-24	Not Used			
25	Light calibration	Light Calibration %	100	
26	Rain calibration	Rain calibration 20 = 0.2mm	20	
27	Not used			
28	Backflush	Backflush input pressure filter (S)	10	
29	Log Volume	Set volume log rate (m)	0	
30	Pump Over Load	Pump O/P over load current (2-Wire only)		
31	Log Volume off	Log Volume at end of program (S)	10	
32-34	Not Used			
35	Zero Flow time	Time to Zero flow for water meter (m)	2	
36-37	Not Used			
38	4G	4G Comms wait time	30	
39	Not used			
40	LAN	No reset	0	
41-42	Not Used			
43	Weather Simulation	Enable Weather Simulation	0	
44	Light Simulation	Light Simulation		
45	Light Simulation ET	Light Simulation		
46	ET Percent	ET multiplier for percent > 100		
47-50	Not used			
51	Low Flow Mater	Water meter pulse is 0.1L		
52	Volume Special			
53-54	Not Used			
55	Invert Input	Invert Rx Internal		Heron Only
56	Invert Input	Invert Rx External		Heron Only
57	Not Used		30	
58	Man Valve Flo test	Perform Low flow test with manual valve	0	
59	Current Calibration	Calibration of displayed 2-Wire current		
60	Current Calibration	Calibration of displayed Multi-wire current		
61-66	Not Used			
67	Add Info page 1	Parameter to display	0	

<b>68</b>	Add Info page 2	Parameter to display	0	
<b>69</b>	Add Info page 3	Parameter to display	0	
<b>70</b>	Add Info page 4	Parameter to display	0	
<b>71</b>	Add Info page 5	Parameter to display	0	
<b>72</b>	Add Info page 6	Parameter to display	0	
<b>73</b>	Add Info page 7	Parameter to display	0	
<b>74</b>	Add Info page 8	Parameter to display	0	
<b>75</b>	Add Info page 9	Parameter to display	0	
<b>76</b>	Add Info page 10	Parameter to display	0	
<b>77-80</b>	Not used			
<b>81</b>	Special O/P card	Define card for special outputs	0,1,2	
<b>82</b>	Fertigation Output	Fertigation On Output	0	
<b>83</b>	Backflush output	Backflush On Output	0	
<b>84</b>	Alarm Output	Alarm On Output	0	

The following table lists the irrigation parameters that can be optionally displayed on the Additional Information Page. Each parameter has an associated number. This number should be entered in one of the Engineering Options 67 to 76 to display the parameter.

Parameter to display	Number	Comment
Blank	0	
Pump 1 On/Off	1	
Pump 2 On/Off	2	
Current on Card 1	3	
Pressure reading	7	
Flow meter 1 Reading	8	
Flow meter 2 Reading	9	
Flow meter 3 Reading	10	
Flow meter 4 Reading	11	
Flow meter 5 Reading	12	
Flow meter 6 Reading	13	
Flow meter 7 Reading	14	
Flow meter 8 Reading	15	
Flow meter 9 Reading	16	
Fertigation On/Off	18	
Input 1 status	26	
Input 2 status	27	
ET percentage	52	



