AQUAMONIX
Measure. Monitor. Master.

OPERATION AND CONFIGURATION MANUAL

MP SEQUENTIAL CONTROLLER

TABLE OF CONTENTS

1 QUICK START

1.1 QUICK TIPS ABOUT KEYS

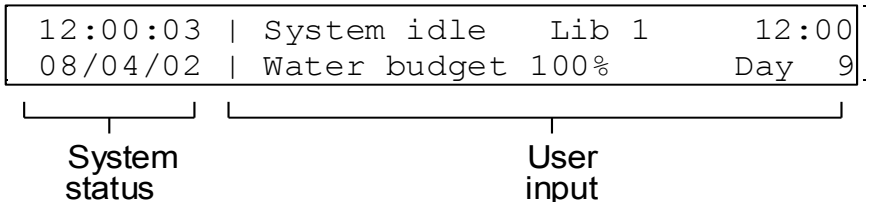
If you are familiar with computers and irrigation controllers or you are just keen to get started here are a few tips about the keys to get you started.

	First you need to enter a password.
	The SYSTEM STATUS key changes only the left hand side of the display and does not affect the screen that you're currently using.
	The EXIT key takes you back to the default status screen (on older keypads this key is called the CANCEL key).
	Function keys, indicated by the grey keys on the controller keypad, will jump you straight to the function that they select. Pressing the same function key again allows you to navigate through a function.
	You can also navigate using the NEXT and PREV keys in most cases.
	The ENTER key is required to confirm everything you type.
	Use the CLEAR key if you make a mistake.
	The IRRIGATION STOP key is an emergency stop button that turns off all stations and pumps / master valves.
	To minimise possibility of error (am/pm), all times are in 24-hour format.
	The DONE key is used to go to the next step on multiple entry screens.

2 THE BASICS

2.1 THE SPLIT DISPLAY

The display is split into two parts as shown below.



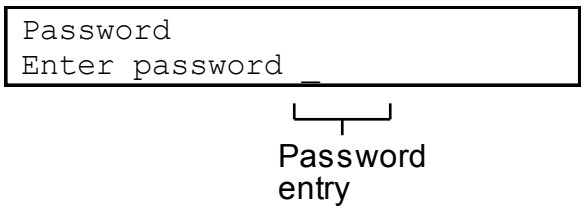
- System status – the left hand side of the screen is used for System Status and operated by the SYSTEM STATUS key *(see 2.4 System status key).*
- User input – the right hand side of the display is used for user input and operates with all other keys.

2.2 PASSWORD KEY

The RAINMAN Mp controller uses multi-level password security to prevent unauthorised access. Until you have gained access to the controller the display backlight will turn on for only five seconds after each key press.

To get to the password screen press the PASSWORD key as shown.

The password entry screen is shown below.



- Password entry – as the password is entered, a * will appear for each number key that is pressed. If you make a mistake you can press the CLEAR key.

For example, if your password is 1234, press the following keys.

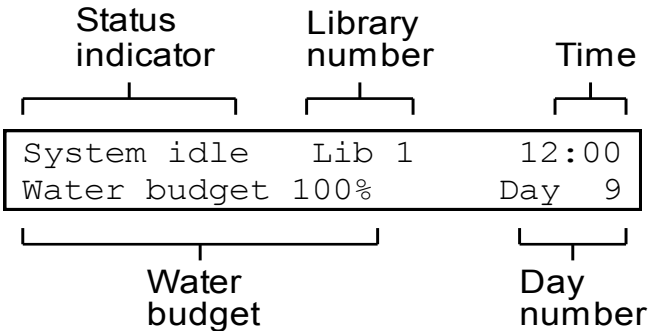
When you have been granted access the display back light will remain on. Once you stop using the controller for more than 10 minutes it will automatically turn the display back light off and you will require a password to gain access again.

2.3 EXIT / CANCEL KEY (STATUS SCREEN)

The EXIT key (on older keypads this key is called the CANCEL key) takes you out of any other function and brings you to Status Screen.

2.3.1 IDLE STATUS

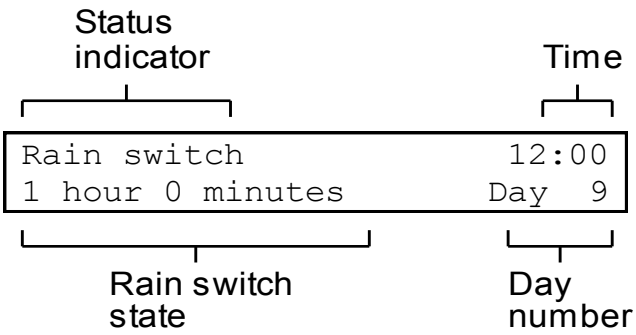
When no programs are running and the rain switch is not activated the display will look similar to the display below.



- Status indicator – `System idle` shows that the system is idle.
- Library number – `Lib 1` shows that the current library number is 1
- Time – `12:00` shows the current time of day.
- Day number – `Day 9` shows the current day is Monday in the second week. The day number is from a 14-day cycle where day 1 is Sunday of the first week and day 14 is Saturday of the second week.

2.3.2 RAIN SWITCH STATUS

The following is displayed when the rain switch is in operation.

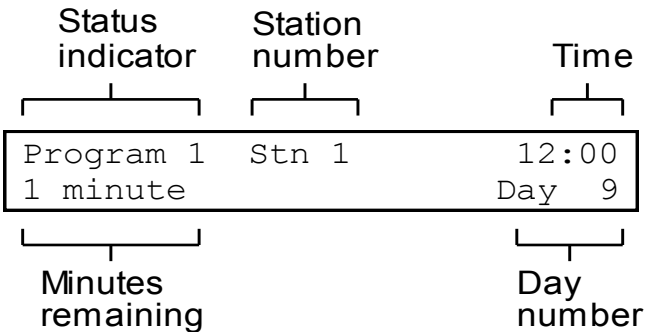


- Status indicator – `Rain switch` indicates that the Rain Switch function is activated.
- Rain switch state – `1 hour 0 minutes` indicates that the rain switch has been manually operated and has 1 hour remaining time to run. The rain switch state can display any of the following:
  1. `Sensor` – indicates the rain sensor switch has activated the rain switch operation.
  2. `On` – indicates the rain switch has manually been enabled indefinitely.

(see 4.4 Rain switch for more information about operating the rain switch).

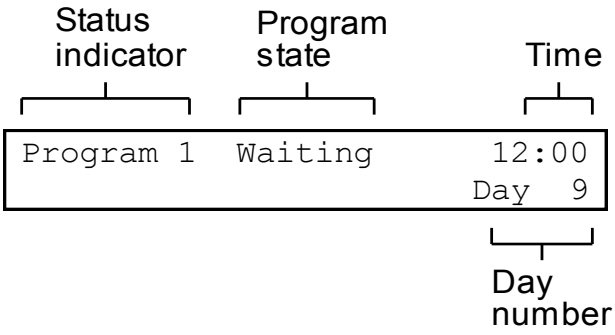
2.3.3 PROGRAM STATUS

The following is displayed when a program is running.



- Status indicator – `Program 1` indicates that program 1 is running. The status indicator may also display `Test` to indicate valve test operation or `Manual` to indicate manual station on operation.
- Station number – `Stn 1` indicates that station number 1 is on.
- Minutes remaining – `1` minute indicates that there is one minute remaining on the current station (station 1).

2.3.4 PROGRAM WAITING



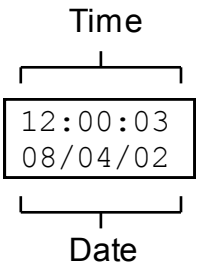
- Status indicator – `Program 1` indicates that program 1 is running.
- Program state – `Waiting` indicates that although the current program is running there are no stations operating at present. This is caused by either a semi auto start operation waiting for the start of a new minute *(see 6.3 Semi auto key)* or by optional programs needing to wait for a certain amount of time *(see 5.2 Optional programs key).*

2.4 SYSTEM STATUS KEY

The SYSTEM STATUS key allows the operator to select different aspects of the System Status. It starts at the time and date then cycles through all the sensor inputs. It only displays sensors that have been configured so which sensors are shown may vary from controller to controller.

2.4.1 TIME AND DATE

Time and date is the initial state of the System Status and is shown below.



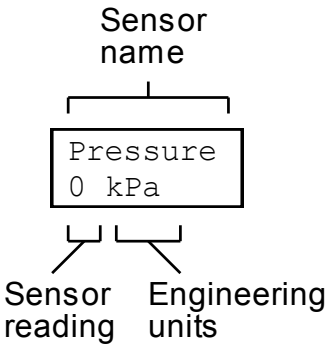
- Time – `12:00:03` is the time current time in 24-hour format.
- Date – `08/04/02` is the current date in the format DD/MM/YY so the date is the 8th of April '02.

2.4.2 PRESSURE, CURRENT, MOISTURE, FLOW AND CURRENT SENSE

To select the next System Status item press the SYSTEM STATUS key.

NOTE: Pressing this key will only display the status of pre-configured sensors. To configure sensors, *see* 8 *System Configuration*.

This will display the next system status item shown below.



- Sensor name – `Pressure` indicates that it is displaying the reading from the water pressure sensor.
- Sensor reading – `0` indicates that the water pressure is currently 0 kPa.
- Engineering units – `kPa` indicates that the sensor reading is shown in kPa.

2.5 STATUS SCREEN KEYS

2.5.1 NEXT

To skip to the next station in a program, manual station, valve test or syringe cycle press the NEXT key as shown.

2.5.2 PREVIOUS

To move back to the previous station in a program, manual station, valve test or syringe cycle press the PREV key as shown.

2.5.3 PAUSE

To temporarily turn off all stations and pumps / master valves (pause operation) press the OFF key as shown.

2.5.4 RESUME

To resume after a pause operation (or to update the program display) press the ON key as shown.

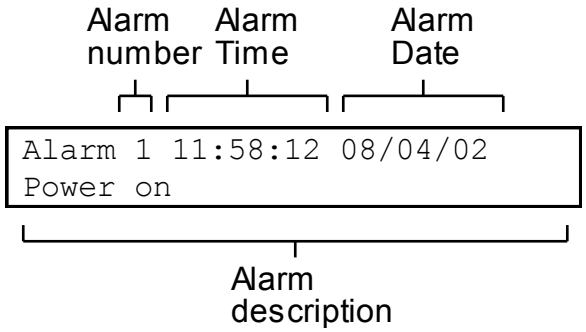
2.6 ALARM LIST KEY

The alarm list shows a list of events which may indicate a problem with the irrigation system. The alarm list records:

- power on and off times,
- events that cause the irrigation system to skip to the next station,
- events that cause irrigation to stop immediately, and
- other events that may indicate a potential problem.

There are up to 10 alarms numbered 1 through 10. Alarm 1 is the most recent alarm and alarm 10 is the least recent alarm

Pressing the ALARM LIST key at any time will jump you straight to the alarm list screen from any other screen.



- Alarm number – `1` indicates the most recent alarm.
- Alarm time – `11:58:12` indicates that the alarm occurred at 11:58:12 am. The time is shown in 24-hour format.
- Alarm date – `08/04/02` indicates that the alarm occurred on the 8th of April '02.
- Alarm description – `Power on` indicates that the alarm has been caused by the power being turned on.

To see the next alarm, press the ALARM LIST key as shown.

You can also use the PREV and NEXT keys to navigate through the alarms.

2.7 ENVIRONMENT STATUS KEY (MpS ONLY)

The Environment Status shows a list of sensor readings from the Campbell Scientific ET-107. This feature is only available on the MpS controller (not the Mp8). The list consists of current readings and daily readings.

Current Readings:

Description	*Symbol*	*Unit*
Air Temperature	AirTmp	DegC
Wind Speed	WndSpd	Km/h
Wind Direction	WndDir	Deg
Solar Radiation	SolRad	W/m^2
Relative Humidity	RelHum	%
Today's Rainfall	RnFall	mm

Yesterday's Daily Readings:

Description	*Symbol*	*Unit*
Average Air Temperature	AvgTmp	DegC
Maximum Air Temperature	MaxTmp	DegC
Minimum Air Temperature	MinTmp	DegC
Maximum Wind Speed	MxWSpd	Km/h
Average Wind Direction	WndDir	Deg
Maximum Solar Radiation	MxSRad	W/m^2
Maximum Relative Humidity	MaxHum	%

Description	*Symbol*	*Unit*
Minimum Relative Humidity	MinHum	%
Total Rainfall	RnFall	mm
Ave Evaporation	AvEvap	mm

Pressing the ENVIRON STATUS key at any time will jump you straight to the Environment Status list screen from any other screen.


```
      AirTmp WndSpd WndDir SolRad

        21.1   10.0   46.0  724.0
```

- Symbol – indicate which reading is shown.
- Data – shows the readings with ± 0.1 accuracy

To see the next batch of readings, use the ENVIRON STATUS key. You can also use the PREV and NEXT keys to navigate through the readings.

3 STATIONS

The STATIONS key is used to set up the station configuration of the controller. The MpS can operate 2 irrigation systems and can have any mix of conventional, RIC or TWIN stations. The Mp8 can only operate 1 irrigation system and can only have conventional stations.

Using the STATIONS key the following settings can be accessed.

3.1 PUMP ENABLE/DISABLE (Mp8 ONLY)

This setting enables or disables the pump start / master valve output on the Mp8.

If the pump start / master valve output is enabled, one of the outputs is used for the pump start / master valve and the remaining 7 outputs are available for stations. If the pump start / master valve output is disabled, all eight outputs can be used for stations.

3.2 LOCAL STATIONS

This setting is the number of local stations connected to the controller. Local stations are the conventionally wired stations that are connected to the controller by a single common and a separate active for each station. These are usually 24VAC solenoids.

3.3 TWIN STATIONS (MpS ONLY)

A TWIN (Two Wire Irrigation Network) system allows up to 95 stations to be connected to the controller using only two wires. TWIN systems are only supported on the MpS controller (not the Mp8).

This setting is the number of TWIN stations connected to the controller via the TWIN translator. This setting is only displayed if the TWIN port is set up in the System Config *(see* 8 *System Configuration)*.

The controller will access these stations immediately after the local stations. This means that the first TWIN station will be addressed by the controller as the station number directly after the last local station.

For example, if there are 5 local stations and 10 TWIN stations, the first TWIN station would be station 6 to the controller and the last TWIN station would be station 15.

3.4 RIC STATIONS (MpS ONLY)

The Remote Irrigation Controller (RIC) is a device that offers cable free links for control of irrigation valves. RICs are only supported on the MpS controller (not the Mp8).

This setting is used to set the number of stations connected to each RIC (Remote Irrigation Controller). There can be a maximum of 15 RICs with a maximum of 8 stations per RIC. This setting is only displayed if the RIC port is set up in the System Config *(see* 8 *System Configuration)*.

A RIC stations entry is only displayed if the previous RIC has an entry for the number of stations. For example, RIC 2 number of stations will only be displayed if RIC 1 has stations set.

The controller will access these stations immediately after the local stations and the TWIN stations. This means that the first RIC station will be addressed by the controller as the station number directly after the last local plus TWIN station.

For example, if there are 5 local stations and 10 TWIN stations, the first RIC station would be station 16 to the controller.

3.5 SYSTEM 1 STATIONS

This setting assigns stations to system 1. Stations in system 1 run with the first pump start / master valve.

Press the ENTER key to select system 1. Now pressing the ON key will scroll through the following entries:

`Stations`	The number of stations (from station 1 onwards) that are part of system 1. Select with the ENTER key, then enter then number of stations with the numeric keys, and then confirm with the ENTER key.
`ALL`	All the stations are part of system 1. Select with the ENTER key.

3.6 SYSTEM 2 STATIONS (MpS ONLY)

This setting assigns stations to system 2. Stations in system 2 run with the second pump start / master valve.

Press the ENTER key to select system 2. Now pressing the ON key will scroll through the following entries:

`Stations`	The number of stations that are part of system 2. Select with the ENTER key, then enter then number of stations with the numeric keys, and then confirm with the ENTER key.
`Remaining`	All the stations which are not part of system 1 are assigned to system 2.
`Combined`	System 2 has the same stations as System 1. Each station will run with both pump start / master valves together.

3.7 SKIP FAULTY STATIONS (MpS ONLY)

This feature only affects stations connected to slave cards and hence is only used on systems with slave cards attached.

If `Skip Faulty Stations` is set to `Yes`, then any stations connected to a faulty slave card will be skipped.

A slave card is considered faulty when it is not detected by the controller. If a slave card develops a fault that cannot be detected by the controller then the stations will not be skipped.

3.8 RADIO REMOTE ENABLE

This setting is used when the pump / master valve (water source) is not connected to the local controller but located elsewhere connected to a RAINMAN Mp controller.

When this feature is turned on it will ask for a controller address. This is the address of the controller that is connected to the pump / master valve. Whenever a local

station is turned on or off, a message will be sent to the pump controller to turn the pump / master valve on or off.

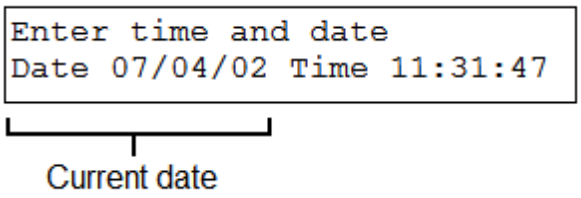
4 SETTINGS

4.1 SET TIME / DATE KEY

The SET TIME / DATE key allows you to set the time and date.

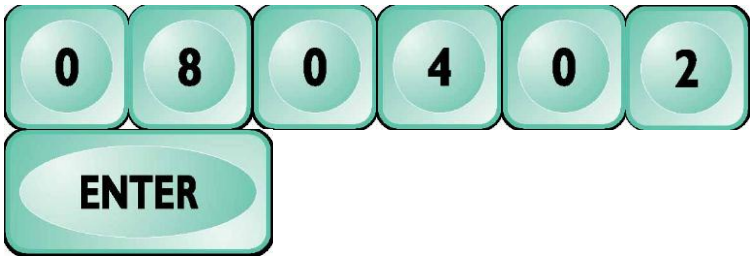
Pressing the SET TIME / DATE key at any time (except when you are already in the set time / date function) will jump you straight to the set time / date function from any other screen.

The set time / date screen is similar to the one shown below.

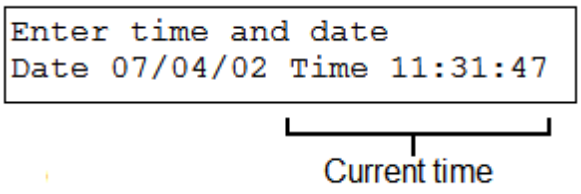


- Current date – `07/04/02` indicates that current time is the 7th of April '02.

For example, if you wish to set the date to 08/04/02 then press the keys shown below.

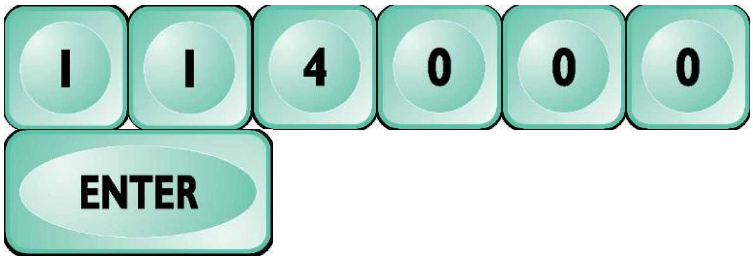


After you press ENTER you will move to set the time.



- Current time – `11:31:47` indicates that current time is 11:31:47.

For example, if you wish to set the clock to 11:40:00 then press the keys shown below.

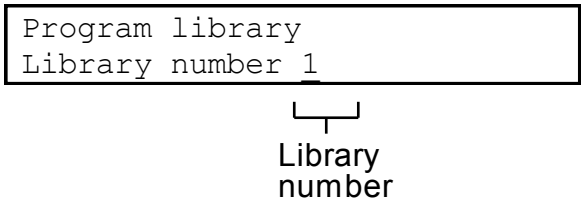


4.2 PROGRAM LIBRARY KEY

The PROGRAM LIBRARY key selects between four completely separate program areas. There are four program libraries numbered 1 through 4. The PROGRAMS, OPTIONAL PROGRAMS and CLEAR PROGRAMS keys act on the currently selected library. Only programs in the currently selected program library will run.

Pressing the PROGRAM LIBRARY key at any time will jump you straight to the program library screen from any other screen.

The program library screen will be similar to the display below.



- Library number – 1 indicates that the current library number is 1. To change the library number, enter in the new library number.

For example, if you want to change to program library 2 then press the following keys.

After pressing ENTER you will return to the status screen.

4.3 % WATER BOOST KEY

The water budget (also known as the water boost) acts as a multiplier to change the amount of water used when running any program. The water budget can be any value from 0% to 999%. Here are some example water budgets.

Water budget	Result
100%	all programs run as normal.
0%	no programs will run any stations.

50%	all programs run each station for half the run time set up in the program. Note that numbers are rounded so a program set for a 9 minute run time with a 50% water budget would actually run for 5 minutes.
200%	all programs run each station for twice the run time set up in the program.

Pressing the % WATER BOOST key at any time will jump you straight to the water budget screen from any other screen.

The water budget screen will be similar to the display below.

```
Water budget
Enter water budget 100%
```

Water budget

- Water budget – 100% indicates that the current water budget is 100%. The water budget is applied to all programs.

For example, if you wish to change the water budget to 50% press the following keys.

4.4 RAIN SWITCH KEY

The rain switch prevents any programs from automatically starting for a specified number of hours.

Pressing the RAIN SWITCH key at any time will jump you straight to the rain switch screen from any other screen.

The rain switch screen will be similar to the display below.

```
Rain switch
Hours OFF
```

Rain switch setting

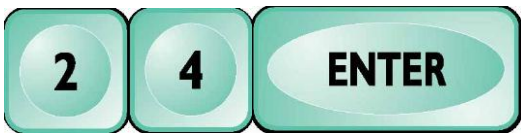
- Rain switch setting – `OFF` indicates that the rain switch timer is off. If a number is displayed then this is the number of hours that the rain switch will run for.

If you want turn the rain switch on until you manually turn it off, press the following keys.

The status will show that the rain switch has been activated.

If you want to manually turn the rain switch timer off then press the following keys.

If for example you wish to turn the rain switch on for 24 hours (i.e. until the same time the following day) then press the following keys.



The status will show the number of hours and minutes remaining for the rain switch operation.

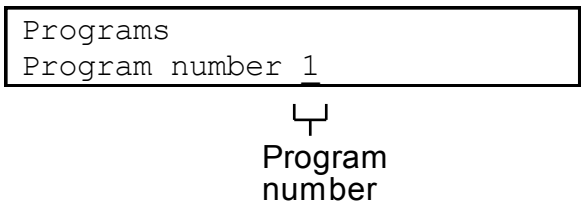
5 PROGRAMS

5.1 PROGRAMS KEY

Standard programs are accessed through the PROGRAMS key. There are thirteen standard programs numbered 1 through 13 in each program library. Each program has a start time, a day table and a run time for each station.

Pressing the PROGRAMS key at any time (except when you are already in the programs function) will jump you straight to the programs function from any other screen.

The programs screen is shown below.



- Program number – 1 indicates that pressing ENTER will allow you to edit program number 1 of the currently selected library.

5.1.1 SELECTING A PROGRAM

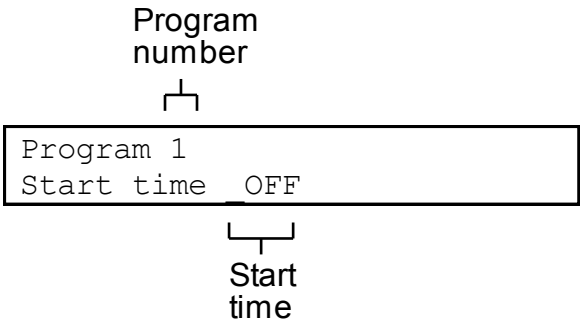
If for example you want to view or change program number 2, then press the following keys.

To select program 2 using the NEXT key, press the following keys.

You can press the NEXT key several times to select other programs. You can also use the PREV key to assist with selecting in this way.

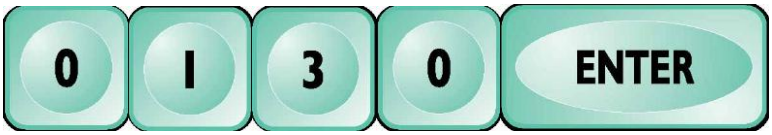
5.1.2 START TIME

After you have chosen the program to view or change you will see the start time screen which looks similar to the display below.



- Program number – `1` indicates that you are accessing program number 1 of the currently selected library.
- Start time – `OFF` indicates that the program is not scheduled to run automatically at a specified time. It may still be started by the semi auto start function *(see 6.3 Semi auto key)*. The start time will display a time 24-hour format.

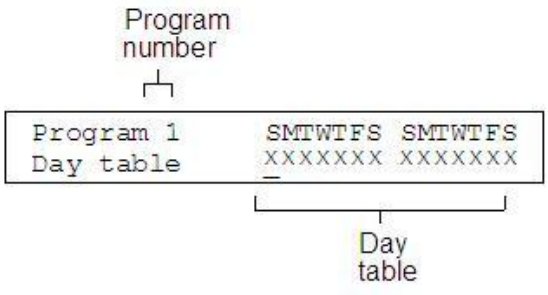
If for example you want to start the program at 1:30am you would press the following keys.



All times are in 24-hour format so if you wish to start a program at 11:15pm then you would press the following keys.

5.1.3 DAY SELECTION

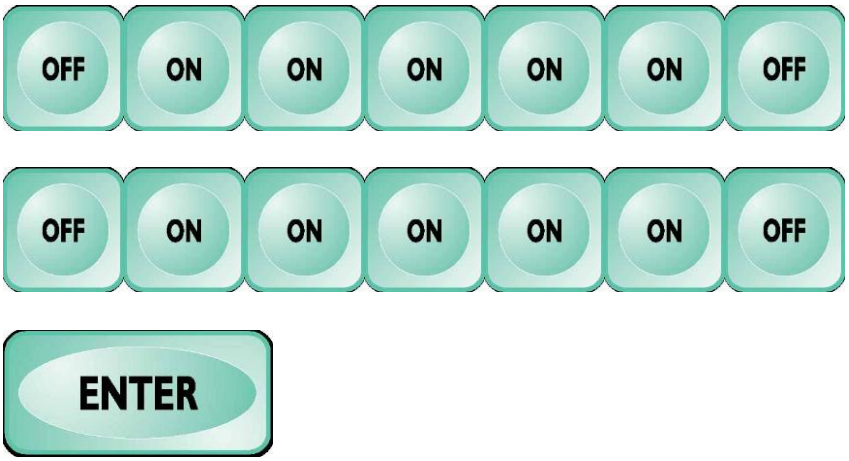
After you have chosen the program to view or change you will see the start time screen which looks similar to the display below.



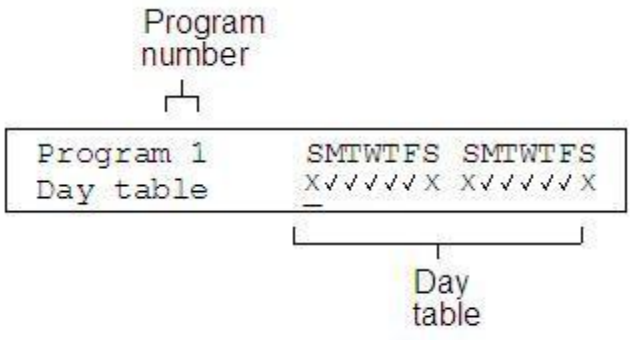
- Program number – `1` indicates that you are accessing program number 1 of the currently selected library.
- Day table – `XXXXXXX XXXXXXX` indicates that the program is not scheduled to run automatically on any specified time. It may still be started by the semi auto start function *(see 6.3 Semi auto key)*. The first digit corresponds to day 1 (Sunday of week 1) and the second digit corresponds to

day 2 and so on. If a ✓ is shown instead of a X this would indicate that the program is scheduled to run on the corresponding day.

If for example you want run a program from Monday to Friday every week then you press the following keys.



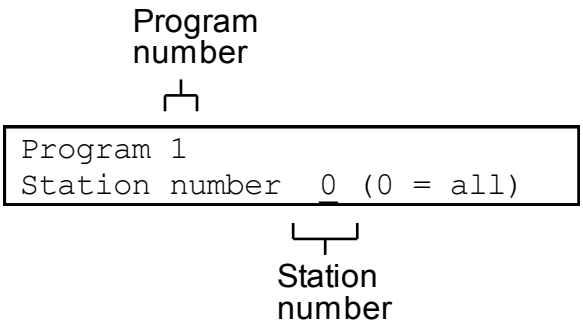
This would show a display as follows.



The 1 key and the ON key are equivalent. Similarly the 0 key and the OFF key are also equivalent. You can also use the NEXT and PREV keys to navigate across.

5.1.4 STATION SELECTION

After you have chosen the program to view or change you will see the station selection screen which looks similar to the display below.



- Program number – 1 indicates that you are accessing program number 1 of the currently selected library.

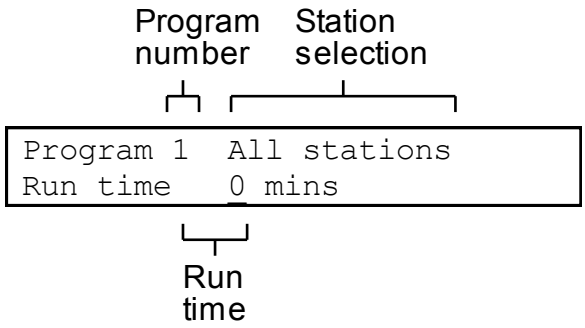
- Station number – `0` indicates that the default selection is for all stations.

To select all stations press the ENTER key.

If for example you want to select station 1 then the keys as shown.

5.1.5 ALL STATIONS

If you have selected all stations then it will show an all stations screen similar to the display below.



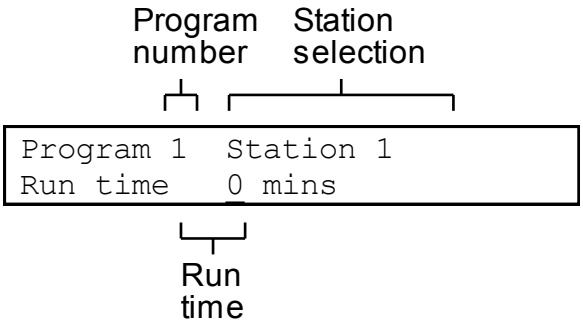
- Program number – `1` indicates that you are accessing program number 1 of the currently selected library.
- Station selection – `All stations` indicates that all stations have been selected.
- Run time – `0` indicates that all stations are currently set to 0 minutes. If the run time is blank then this indicates that some stations are currently set to different values than others.

If for example you wish to set all stations to 5 minutes then press the keys as shown.

After you press enter you will go to the summary *(see 5.1.7 Summary)*.

5.1.6 SINGLE STATION

If you have selected a single station, then it will show a single stations screen similar to the display below.



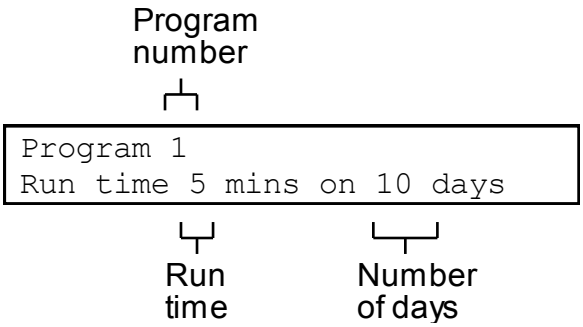
- Program number – 1 indicates that you are accessing program number 1 of the currently selected library.
- Station selection – Station 1 indicates that station 1 has been selected.
- Run time – 0 indicates that all stations are currently set to 0 minutes. If the run time is blank then this indicates that some stations are currently set to different values than others.

If for example you wish to set station 1 to 5 minutes then press the keys as shown.

5.1.7 SUMMARY

If you press the EXIT / CANCEL key after selecting a program then it will show you the program summary before taking you back to the Status Screen.

The program summary screen will look similar to the display below.



- Program number – 1 indicates that you are accessing program number 1 of the currently selected library.
- Run time – 5 indicates that the total of all station settings is 5 minutes.
- Number of days – 10 indicates that the day table is scheduled to run the program for 10 days out of the 14-day cycle.

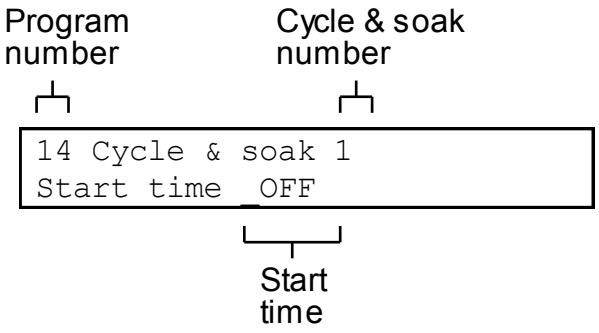
5.2 OPTIONAL PROGRAMS KEY

Optional programs are accessed through the OPTIONAL PROGRAMS key. There are three optional standard programs numbered 14 through 16 in each program library.

The first two programs (14 and 15) are for cycle and soak operation and the last program (16) is the looping program.

Pressing the OPTIONAL PROGRAMS key at any time (except when you are already in the optional programs function) will jump you straight to the programs function from any other screen.

The optional programs screen is similar to the one shown below.



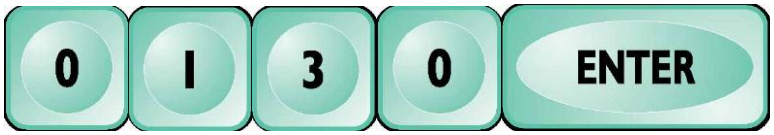
- Program number – `14` indicates that you are accessing program number 14 of the currently selected library.
- Cycle and soak number – `1` indicates that this is the first of the cycle and soak programs.
- Start time – `OFF` indicates that the program is not scheduled to run automatically at a specified time. It may still be started by the semi auto start function *(see Semi auto key)*. The start time may also display a time (24-hour format).

If you wish to select the next program press the OPTIONAL PROGRAMS key again as shown below.

This will take you to the second cycle and soak program and pressing the OPTIONAL PROGRAMS key again will take you to the looping program. You can also use PREV and NEXT to navigate through these programs.

From this screen you can enter in the start time.

If for example you want to start the program at 1:30am you would press the following keys.



After pressing ENTER you will move to the cycle time screen *(see Cycle* time*)*.

5.3 CYCLE AND SOAK

The programming of the cycle and soak is the same as the programming of the standard programs *(see Programs key)* except it has two additional settings. The additional settings are cycle time and soak time. The operation of the cycle and soak is different from the normal programs.

When the cycle and soak operation is running, each station operates by the following rules.

1. The program run time indicates the total number of minutes the station will run.
2. After a station has watered for the cycle time it must wait for the soak time before watering again.
3. When choosing the next station it will choose the one with the highest number of minutes remaining which has been soaking long enough.

So if for example we have the following program.

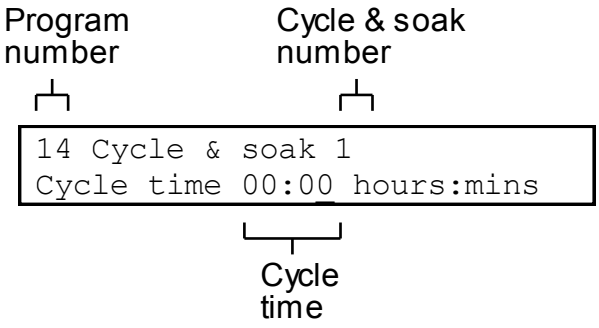
Cycle time	2 minutes
Soak time	4 minutes
Station 1	4 minutes
Station 2	6 minutes
Station 3	5 minutes

It would run as shown below.

Minute	Station 1		Station 2		Station 3	
	4 mins left		6 mins left		5 mins left	
1		Wait	Watering	Cycle		Wait
2			Watering			
3			4 mins left	Soak	Watering	Cycle
4					Watering	
5	Watering	Cycle			3 mins left	Soak
6	Watering					
7	2 mins left	Soak	Watering	Cycle		
8			Watering			
9			2 mins left	Soak	Watering	Cycle
10					Watering	
11	Watering	Cycle			1 min left	Soak
12	Watering					
13	0 mins left	Finish	Watering	Cycle		
14			Watering			
15			0 mins left	Finish	Watering	Cycle
					0 mins left	Finish

5.3.1 CYCLE TIME

Once you have selected the cycle and soak program and entered the start time, the cycle time screen that is similar to the one below appears.

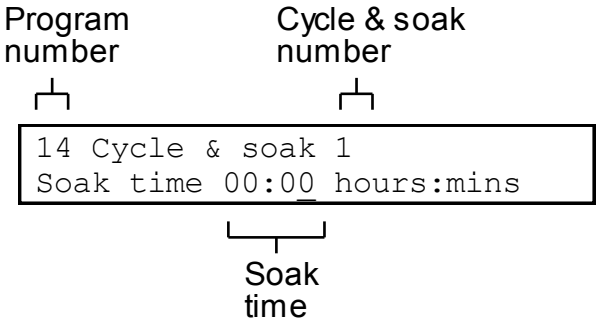


- Program number – 14 indicates that you are accessing program number 14 of the currently selected library.
- Cycle and soak number – 1 indicates that this is the first of the cycle and soak programs.
- Cycle time – 00:00 indicates that the cycle time is 0 hours and 0 minutes.

If for example you want to enter a cycle time of two minutes press the following keys.

5.3.2 SOAK TIME

After pressing ENTER on the cycle time screen you move to the soak time screen. The soak time screen is similar to the one shown below.



- Program number – 14 indicates that you are accessing program number 14 of the currently selected library.
- Cycle and soak number – 1 indicates that this is the first of the cycle and soak programs.
- Soak time – 00:00 indicates that the soak time is 0 hours and 0 minutes.

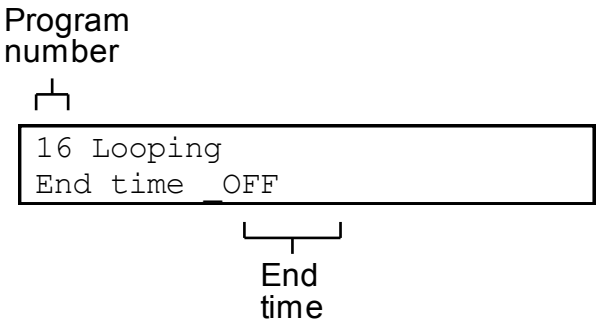
If for example you want to enter a soak time of four minutes press the following keys.

5.4 LOOPING

The programming of the looping program is the same as the programming of the standard programs *(see Programs key)* except it has two additional settings. The additional settings are loop time and end time. The operation of the looping program is different from the normal programs in that the watering restarts each time the loop time has expired and does not cease until it reaches the end time.

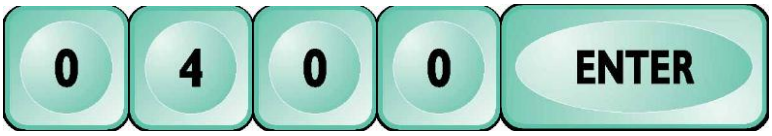
5.4.1 END TIME

Once you have selected the looping program the end time screen that is similar to the one below appears after the entering the start time.



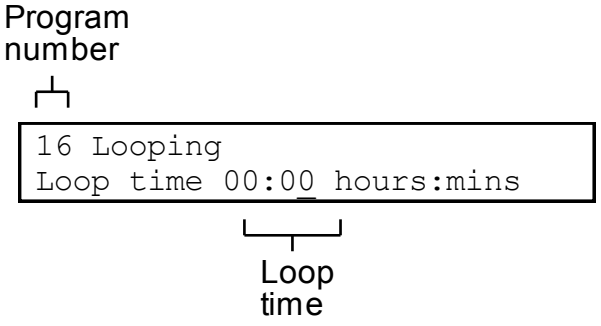
- Program number – `1` indicates that you are accessing program number 1 of the currently selected library.
- End time – `OFF` indicates that the program will run indefinitely. The end time may also display a time 24-hour format.

If for example you want the program to end at 4:00am you would press the following keys.



5.4.2 LOOP TIME

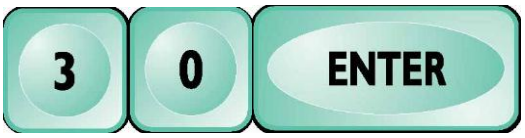
After pressing ENTER on the end time screen you move to the loop time screen. The loop time screen is similar to the one shown below.



- Program number – `14` indicates that you are accessing program number 14 of the currently selected library.

- Loop time – 00:00 indicates that the loop time is 0 hours and 0 minutes and the looping program will restart immediately after watering the last station.

If for example you want to enter a cycle time of 30 minutes press the following keys.



6 MANUAL OPERATION

6.1 TEST OUTPUTS KEY

The valve test function turns on a station without turning on the pump / master valve. This is used for testing valves. To run a valve test press the TEST OUTPUTS key shown below.

The valve test screen is shown below.

```
Valve test
Station number  1
```

Station number

- Station number – 1 indicate that the default station to test is station 1.

If you want to test station number 1 simply press ENTER as shown.

If for example you want to test station number 2 then, press the keys shown.

After pressing ENTER it will confirm the station you have selected with a display similar to the one below.

```
Valve test
Valve 1 on
```

Station number

- Station number – 1 indicates that the station 1 valves have been opened.

After a short delay it will return to the status screen

6.2 MANUAL CONTROL KEY

The manual control function turns on a station (it also turns on pumps / master valves if applicable). To turn a station on, press the MANUAL CONTROL key shown below.

To check the health of your coils, press the SYSTEM STATUS key until `Sense 'no.' mA` is displayed on the left hand side of the screen. A healthy coil should read between 100-180mA. In the case of excessive current draw (over 180mA) the offending coil should be replaced. A low current draw may indicate there is a wiring problem or a loose connection.

The manual control screen is shown below.

```
Station on
Station number  1
```

Station number

- Station number – `1` indicate that the default station to turn on is station 1.

If you want to turn station number 1 on, simply press ENTER as shown.

If for example you want to turn station number 2 on, then press the keys shown.

After pressing ENTER, it will confirm the station you have selected with a display similar to the one below.

```
Station on
Station 1 on
```

Station number

- Station number – `1` indicates that the station 1 has been turned on.

After a short delay it will return to the status screen.

6.3 SEMI AUTO KEY

The semi auto start function is used to manually start programs. To operate the semi auto start press the SEMI AUTO key shown below.

The semi auto screen is shown below.

```
Semi auto
Program number  1
```

Program number

- Program number – 1 indicates that the default program to start is program 1.

If you want to start program number 1 simply press ENTER as shown.

If for example you want to start program number 2, then press the keys shown.

After pressing ENTER it will confirm the program you have selected with a display similar to the one below.

```
Semi auto
Program 1 starts next minute
```

Program number

- Program number – 1 indicates that program number 1 will start at the beginning of the next minute.

After a short delay it will return to the status screen

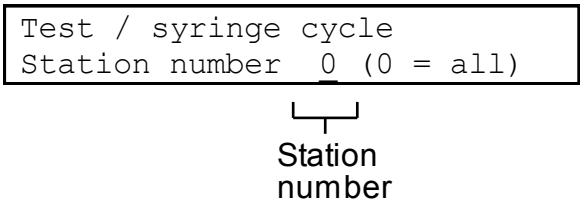
6.4 TEST / SYRINGE CYCLE

The test / syringe cycle is similar to running a program except that is not stored, it runs immediately and it ignores the water budget.

Pressing the TEST SYRINGE CYCLE key at any time (except when you are already in the test / syringe cycle function) will jump you straight to the test / syringe cycle function from any other screen.

6.4.1 STATION SELECTION

After pressing the TEST SYRINGE CYCLE key you will see the station selection screen shown below.



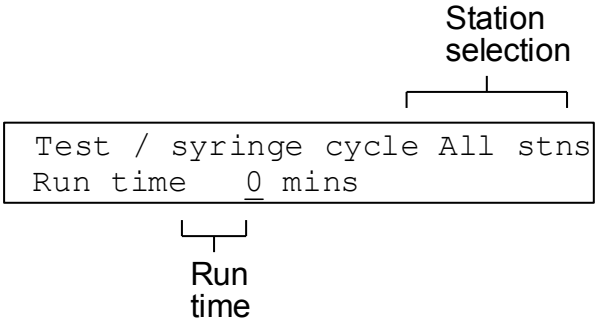
- Station number – 0 indicates that the default selection is for all stations.

To select all stations press the ENTER key.

If for example you want to select station 1 then the keys as shown.

6.4.2 ALL STATIONS

If you have selected all stations then it will show an all stations screen similar to the display below.



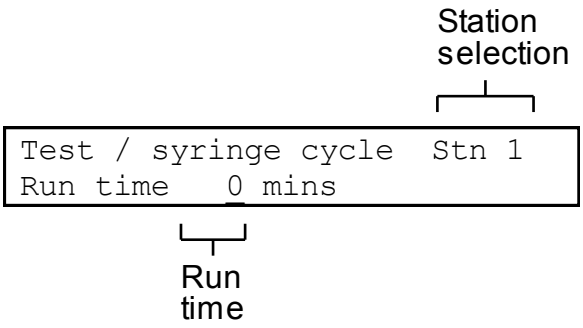
- Station selection – All stations indicates that all stations have been selected.
- Run time – 0 indicates that all stations are currently set to 0 minutes. If the run time is blank then this indicates that some stations are currently set to different values than others.

If for example you wish to set all stations to 5 minutes then press the keys as shown.

After you press ENTER you will go to the summary *(see Summary)*.

6.4.3 SINGLE STATION

If you have selected a single station it will show an all stations screen similar to the display below.



- Station selection – `Stn 1` indicates that station 1 has been selected.
- Run time – `0` indicates that all stations are currently set to 0 minutes. If the run time is blank then this indicates that some stations are currently set to different values than others.

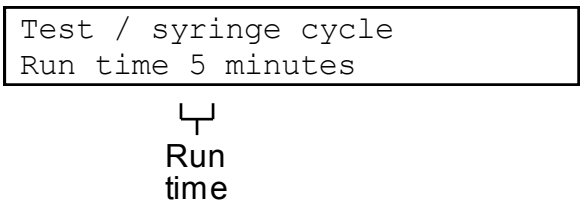
If for example you wish to set station 1 to 5 minutes then press the keys as shown.

After you press ENTER you will go to back to the station the summary *(see Station selection)*.

6.4.4 SUMMARY

If you press EXIT / CANCEL after selecting a program then it will show you the program summary before taking you back to the Status Screen.

The program summary screen will look similar to the display below.



- Run time – `5` indicates that the total of all station settings is 5 minutes.

7 ALARMS

Alarms are used to prevent damage to equipment as well as informing the user that something has changed in the system. When used correctly, alarms are a very useful tool in determining faults in the irrigation system. If an alarm is triggered, a message will be displayed on the screen and will remain there until a key has been pressed.

If a controller is connected to a Central Control System (CCS), then all alarms are reported to the central.

For a complete list of the alarms supported by the controller, see *Appendix A: Alarms and Alarm Setpoints.*

7.1 ALARM ACTIONS

When an alarm is triggered the controller responds depending on the severity of the alarm.

The most severe alarms cause the controller to stop all irrigation including any programs/manual controls that are running.

For less severe alarms, the controller will initially assume that a problem only exists with the currently running station and will try and continue irrigating by skipping the current station. However, if skipping stations does not prevent the alarm from being triggered, then the controller will stop all irrigation.

Some alarms do not trigger any action from the controller. This may be because the controller can not take any suitable action, or that the alarm is an information only alarm.

The three different actions the controller may take.

1. **Shutdown** – Immediately stop all irrigation.
2. **Skip, skip, skip, shutdown** – Skip the currently running station. If the same alarm is triggered three times in a row, then stop all irrigation.
3. **None –** Take no action.

7.2 ALARM LIST

When pressed, the ALARM LIST key will display a description of any recent alarms along with the time the alarm occured.

Using the NEXT and PREV keys will scroll you through the ten most recent alarms.

7.3 ALARM SETPOINTS

Alarms Setpoints determine under what conditions an alarm is triggered and so must be configured before alarms will be triggered. Pressing the ALARM SETPOINTS key displays the Alarm Setpoints for the controller. Alarm setpoints only appear if the corresponding sensor has been set up in the System Config *(see* 8 *System Configuration)*.

Pressing the ALARM SETPOINTS key repeatedly scrolls through the Alarm Setpoints. The NEXT and PREV keys can also be used to scroll. For a complete list of the Alarm Setpoints available, see *Appendix A: Alarms and* Alarm Setpoints.

7.3.1 CONFIGURING SETPOINTS

1. Scroll through the setpoints until you reach the one you want to edit.
2. If the screen displays only `off` below the setpoint name then the setpoint is disabled and you must press the ON key to enable the setpoint.
3. Enter the value for the setpoint using the numeric keys and then press the ENTER key to confirm.
4. There may be more than one value needed to configure the setpoint. If this is the case, simply repeat step 3. You will notice that the cursor automatically moves to the next field when you press the ENTER key.
5. The OFF key can be used to disable most Alarm Setpoints (and hence also disable the alarms).

Analogue Sensors

Alarm Setpoints for analogue sensors have both a setpoint and a timeout that must be configured.

- **Setpoint** – The sensor reading required to trigger the alarm condition.
- **Timeout** – How long (in minutes and seconds) the sensor must remain in the alarm condition before the alarm is triggered.

Digital Sensors

Alarm Setpoints for digital sensors have only a timeout.

- **Timeout** – How long (in minutes and seconds) the sensor must remain in the alarm condition before the alarm is triggered.

8 SYSTEM CONFIGURATION

The SYSTEM CONFIG key will enter the System Config menu where you can change the configuration of the controller. This menu sets up what is connected to the controller and how the controller will operate. Do not adjust these values unless you are authorised to do so as damage to the irrigation system is possible with incorrect settings. The amount of settings that are accessible will vary depending on the access level of the current user.

For a complete list of the settings that can be changed using the SYSTEM CONFIG key, see *Appendix B: System Config menu items*.

9 MP SYSTEM CONFIGURATION RECORDS

NOTE: Enter in the Mp configuration settings for future reference.

System Configuration	*Settings*	*Settings*	*Settings*	*Settings*
COMMENTS (date)				
Cancel When Power Out				
Water End				
High Pressure Error sw Sys 1				
High Pressure Error sw Sys 2				
Int Pressure Warning sw Sys 1				
Int Pressure Warning sw Sys 2				
Low Pressure Warning sw Sys 1				
Low Pressure Warning sw Sys 2				
Bore Draw Down Error sw Sys 1				
Bore Draw Down Error sw Sys 2				
Phase Failure Error sw Sys 1				
Phase Failure Error sw Sys 2				
Aux Fault Error sw Sys 1				
Aux Fault Error sw Sys 2				
Rain Switch				
Remote Start sw				
Door sw				
Pause sw				
Pressure Sys 1 input				
Pressure Sys 2 input				
Current Sys 1 Input				
Current Sys 2 Input				
Moisture Sys 1 Input				
Moisture Sys 2 Input				
Flow Sys 1 Input				
Flow Sys 2 Input				
Slave Cards				
TWIN Serial Port				
Use TWIN Master Valve				
RIC Serial Port				
RIC Status interval				
Weather Station Serial Port				
Station Delay				
Last Station Hold				
System 2 Pump Delay				
System 1 Relief				
System 2 Relief				
Clear Monthly Volumes				
DNP Master				

Appendix A: ALARMS AND ALARM SETPOINTS

The following is a list of all the Alarms supported by the controller. Also listed are the Alarm Setpoints (accessed through the ALARM SETPOINTS key) that must be configured for the alarms to be triggered. Alarm setpoints are only configurable if the corresponding sensor has been set up in the System Config *(see* 8 *System Configuration)*.

ALARM ACTIONS

When an alarm is triggered the controller responds depending on the severity of the alarm.

The most severe alarms cause the controller to stop all irrigation including any programs/manual controls that are running.

For less severe alarms, the controller will initially assume that a problem only exists with the currently running station and will try and continue irrigating by skipping the current station. However, if skipping stations does not prevent the alarm from being triggered, then the controller will stop all irrigation.

Some alarms do not trigger any action from the controller. This may be because the controller can not take any suitable action, or that the alarm is an information only alarm.

The three different actions the controller may take.

1. **Shutdown** – Immediately stop all irrigation.
2. **Skip, skip, skip, shutdown** – Skip the currently running station. If the same alarm is triggered three times in a row, then stop all irrigation.
3. **None** – Take no action.

ANALOGUE SENSORS

Analogue sensors have both a setpoint and a timeout that must be configured.

- **Setpoint** – The sensor reading required to trigger the alarm condition.
- **Timeout** – How long (in minutes and seconds) the sensor must remain in the alarm condition before the alarm is triggered.

DIGITAL SENSORS

Digital sensors have only a timeout.

- **Timeout** – How long (in minutes and seconds) the sensor must remain in the alarm condition before the alarm is triggered.

The OFF key can be used to disable most alarm setpoints (and hence also disable the alarm).

Alarm	Alarm Use	Alarm Action	Sensor (System Config setting)	Sensor Type	Alarm Setpoint	*Setpoint Desc (Analogue Only)*
High Pressure 1	When the pressure in the system 1 line reaches a critical level.	Shutdown	Pressure transducer for system 1 (`Pressure Sys 1 input`)	`Analogue`	`High pressure 1 error`	*The pressure the system should not exceed (in kPa).*
			High pressure error switch for system 1 (`High press err sw Sys 1 input`)	`Digital`	`High press err sw 1`	*N/A*
Intermediate Pressure 1	When the pressure in the system 1 line reaches a high level.	Skip, skip, skip, shutdown	Pressure transducer for system 1 (`Pressure Sys 1 input`)	`Analogue`	`Int pressure 1 warning`	*The pressure the system should not exceed (in Kpa).*
			Intermediate Pressure Error sw 1 (`Int press err sw Sys 1 input`)	`Digital`	`Int press warn sw 1`	*N/A*
Low Pressure 1	When the pressure in the system 1 line is too low to run the system properly.	Skip, skip, skip, shutdown	Pressure transducer for system 1 (`Pressure Sys 1 input`)	`Analogue`	`Low pressure 1 warning`	*The pressure the system should not run below (in Kpa).*
			Low Pressure Error sw 1 (`Low press err sw Sys 2 input`)	`Digital`	`Low press warn sw 1`	*N/A*
High Pressure 2	Same as system 1 pressure alarms but for system 2.	Shutdown	Pressure transducer for system 2 (`Pressure Sys 2 input`)	`Analogue`	`High pressure 2 error`	*Same as system 1 pressure alarms.*
			High pressure error switch for system 2 (`High press err sw Sys 2 input`)	`Digital`	`High press err sw 2`	
Intermediate Pressure 2		Skip, skip, skip, shutdown	Pressure transducer for system 2 (`Pressure Sys 2 input`)	`Analogue`	`Int pressure 2 warning`	
			Intermediate Pressure Error sw 2 (`Int press err sw Sys 2 input`)	`Digital`	`Int press warn sw 2`	
Low Pressure 2		Skip, skip, skip, shutdown	Pressure transducer for system 2 (`Pressure Sys 2 input`)	`Analogue`	`Low pressure 2 warning`	
			Low Pressure Error sw 2 (`Low press err sw Sys 2 input`)	`Digital`	`Low press warn sw 2`	
High Current 1	When the motor draws too much current and must be shut down for protection.	Shutdown	Current transducer for system 1 (`Current Sys 1 input`)	`Analogue`	`High current 1 error`	*The current the motor should not exceed (in Amps).*
High Current 2		Shutdown	Current transducer for system 2 (`Current Sys 2 input`)	`Analogue`	`High current 2 error`	

High Flow 1	When the flow in the system 1 line is higher than expected.	Skip, skip, skip, shutdown	Flow meter for system 1 (Flow Sys 1 input)	Analogue	High flow 1 warning	*The flow the system should not exceed (in L/min).*
Low Flow 1	When the flow in the system 1 line is lower than expected.	Skip, skip, skip, shutdown		Analogue	Low flow 1 warning	*The flow the system should run below (in L/min).*
Unscheduled Flow 1	When there is a flow recorded while no irrigation is taking place on either system.	None		Analogue	Unscheduled flow 1	*The flow the system should not exceed while no irrigation is occurring (in L/min).*
High Flow 2	Same as system 1 flow alarms but for system 2.	Skip, skip, skip, shutdown	Flow meter for system 2 (Flow Sys 2 input)	Analogue	High flow 2 warning	*Same as system 1 flow alarms.*
Low Flow 2		Skip, skip, skip, shutdown		Analogue	Low flow 2 warning	
Unscheduled Flow 2		None		Analogue	Unscheduled flow 2	
Bore Draw Down 1	When the water level in a bore is too low for pumping.	Shutdown	Bore draw down error switch for system 1 (Bore DD err sw Sys 1 input)	Digital	Bore dd err sw 1	*N/A*
Bore Draw Down 2		Shutdown	Bore draw down error switch for system 2 (Bore DD err sw Sys 2 input)	Digital	Bore dd err sw 2	*N/A*
Phase Failure 1	When one of the three phases is out.	Shutdown	Phase failure error switch for system 1 (Phase fail err sw Sys 1 input)	Digital	Phase fail err sw 1	*N/A*
Phase Failure 2		Shutdown	Phase failure error switch for system 2 (Phase fail err sw Sys 2 input)	Digital	Phase fail err sw 2	*N/A*
Auxiliary Fault 1	When a fault occurs.	Shutdown	Auxiliary fault error switch for system 1 (Aux fault err sw Sys 1 input)	Digital	Aux fault err sw 1	*N/A*
Auxiliary Fault 2		Shutdown	Auxiliary fault error switch for system 2 (Aux fault err sw Sys 2 input)	Digital	Aux fault err sw 2	*N/A*
High Local Current Sense Error	When the current draw of the local stations reaches a critical level.	Shutdown	Local current Sense (built in)	Analogue	High current sense error	*The current draw the local stations should not exceed (in mA).*

High Local Current Sense Warning	When the current draw of the local stations reaches a high level.	Skip, skip, skip, shutdown		Analogue	`High current sense warning`	*The current draw the local stations should not exceed (in mA).*
Low Local Current Sense	When the current draw of the local stations is less than expected.	Skip, skip, skip, shutdown		Analogue	`Low Current Sense Error`	*The current draw the local stations should not run below (in mA).*
High TWIN Current Sense Error	When the current draw of the TWIN stations reaches a critical level.	Shutdown	TWIN current sense (built in to TWIN interface translator)	Analogue	`High twin curr error`	*The current draw the TWIN stations should not exceed (in mA).*
High TWIN Current Sense Warning	When the current draw of the TWIN stations reaches a high level.	Skip, skip, skip, shutdown		Analogue	`High twin curr warning`	*The current draw the TWIN stations should not exceed (in mA).*
Low TWIN Current Sense	When the current draw of the TWIN stations is less than expected.	Skip, skip, skip, shutdown		Analogue	`Low twin curr error`	*The current draw the TWIN stations should not run below (in mA).*
RIC High Flow	When the average RIC flow is higher than expected.	None (the flow calculations, and hence the alarms, are only calculated at the end of the irrigation on the RIC)	Flow meter for RIC (connected to RIC)		`RIC High flow`	*The flow rate that the average flow rate on the last RIC irrigation cycle should not exceed (in L/min).*
RIC Low Flow	When the average RIC flow is lower than expected.				`RIC Low flow`	*The flow rate that the average flow rate on the last RIC irrigation cycle should not run below (in L/min).*
TWIN Board Current Overload	TWIN line current is higher than 1.6A	Skip	TWIN board communication (built in to TWIN interface translator)			
TWIN Board Line Fused	TWIN path wires are joined in dead short	Skips all Twin Stations				

Twin Board Comms Error	When master card fails to poll TWIN card	Skips all Twin Stations				
Twin Board Checksum Error	Corrupt response from TWIN card during communication	Skips all Twin Stations				
Twin Decoder Failed	Twin Board returned failed to switch on / off a decoder	Skip				
Twin Decoder Timeout	No response from TWIN card for station on / off command	Skip				
Twin Port Busy	Serial Port is configured incorrectly	Skip				
Twin Board Command Failed	Decoder being activated is already on OR Greater than 6 TWIN station are being operated simultaneously	Skip				

Appendix B: SYSTEM CONFIG MENU ITEMS

The System Config is a series of menu items that allow the settings and functions of the controller to be changed. Some menu items are dependent and will only be available if other functions have been configured.

To change a setting, enter a new value using the numeric, ON and OFF keys and then press the ENTER key to confirm. If you enter the wrong value, you can use the CLEAR key to clear the value and start again. The OFF key can be used to disable most functions in the System Config. The ON key is needed to enable or toggle some functions in the System Config.

Menu Item	Submenu	Access Level	Description
Cancel when power out		Supervisor	The controller has the ability to resume any irrigation programs during power up that were running when power was lost to the controller. The Cancel When Power Out setting is the maximum amount of time the power can be off for to resume programs. If the power is off for longer than this time no programs will be resumed.
Watering end		Operator	The Watering End time is a time of day at which no automatic irrigation is to take place. If an irrigation program is running and this time of day is reached, the program will be stopped and an alarm logged.
Station on delay		Supervisor	Station on delay is the time after the last station closed before the current station opens. This is used on systems which require the pressure to build up to close the current station or open the next station. The time is in minutes and seconds.
Station off delay		Supervisor	Station off delay is the time after the current station opened before the last station closes. This is used to avoid pressure spikes between stations when using slow valves. The station off delay is the opposite of the station on delay so there is no need to use them together. The time is in minutes and seconds.
Last station hold		Supervisor	This is the time the last station will remain open after the pump / master valve has been given the signal to stop. This is used on systems where the pressure in the line is to be drained. The time is in minutes and seconds.

Menu Item	Submenu	Access Level	Description
System 2 pump delay		Supervisor	If the controller is set up to run two systems and the stations are set to Combined, the starting of the second pump / master valve can be delayed using this setpoint. The delay is used when starting a second pump for electrical reasons to reduce the starting current into the panel. The time is in minutes and seconds. (MpS Only)
System 1 relief		Supervisor	The System 1 Relief station is used to reduce the pressure in the line by opening the relief station. If the pressure reaches the intermediate level and the System 1 Relief station is set then this station will open until the pressure drops below the intermediate level.
System 2 relief		Supervisor	Same as System 1 Relief but for System 2. (MpS Only)
High press err sw Sys 1 input	DIGITAL SENSORS	Technician	The High Pressure Error Switch is a pressure switch that will activate when the pressure in the line reaches a critical level and must be shut down. If a high pressure switch is fitted in system 1 then the digital input number it is connected to must be set up in this menu. Once configured, the switch will be enabled and the High Pressure Error sw 1 alarm setpoint will be activated.
High press err sw Sys 2 input	DIGITAL SENSORS	Technician	Same as High Pressure Error Sw 1 but for system 2. (MpS Only)
Int press warn sw Sys 1 input	DIGITAL SENSORS	Technician	The Int Pressure Error Switch is a pressure switch that will activate when the pressure in the line reaches a high level and the current station skipped to reduce the pressure in the line. If an intermediate pressure switch is fitted in system 1 then the digital input number it is connected to must be set up in this menu. Once configured, the switch will be enabled and the Int Pressure Error sw 1 alarm setpoint will be activated.
Int press warn sw Sys 2 input	DIGITAL SENSORS	Technician	Same as Int Pressure Error Sw 1 but for System 2. (MpS Only)

Menu Item	Submenu	Access Level	Description
Low press warn sw Sys 1 input	DIGITAL SENSORS	Technician	The Low Pressure Error Switch is a pressure switch which is active when the pressure in the line is to low and the current station skipped to increase the pressure in the line. If a low pressure switch is fitted in system 1 then the digital input number it is connected to must be set up in this menu. Once configured, the switch will be enabled and the Low Pressure Error sw 1 alarm setpoint will be activated.
Low press warn sw Sys 2 input	DIGITAL SENSORS	Technician	Same as Low Pressure Warning Sw 2 but for System 2. (MpS Only)
Bore DD err sw Sys 1 input	DIGITAL SENSORS	Technician	Bore draw down is a sensor which is used to determine when the water level in a bore is too low for pumping and will shut the system down. If this sensor is installed in system 1 then the digital input number it is connected to must be set up in this menu. Once configured, the switch will be enabled and the Bore Draw Down Error sw 1 alarm setpoint will be activated.
Bore DD err sw Sys 2 input	DIGITAL SENSORS	Technician	Same as Bore Draw Down Error Sw 1 but for System 2. (MpS Only)
Phase fail err sw Sys 1 input	DIGITAL SENSORS	Technician	The Phase Failure sensor detects when one of the three phases is out, this means that the pumps should not run to prevent damage. If this sensor is installed in system 1 then the digital input number it is connected to must be set up in this menu. Once configured, the switch will be enabled and the Phase Failure Error sw 1 alarm setpoint will be activated.
Phase fail err sw Sys 2 input	DIGITAL SENSORS	Technician	Same as Phase failure Error Sw 1 but for System 2. (MpS Only)
Aux fault err sw Sys 1 input	DIGITAL SENSORS	Technician	The Aux Fault is a spare fault input that will shut the system down. If this sensor is installed in system 1 then the digital input number it is connected to must be set up in this menu. Once configured, the switch will be enabled and the Aux Fault Error sw 1 alarm setpoint will be activated.
Aux fault err sw Sys 2 input	DIGITAL SENSORS	Technician	Same as Aux Fault Error Sw 1 but for System 2. (MpS Only)

Menu Item	Submenu	Access Level	Description
Rain switch input	DIGITAL SENSORS	Technician	The Rain switch is a sensor which will activate when a certain amount of rain has fallen. When the sensor is activated, it will stop any programs which are running and display “Rain Switch Sensor” in the Idle Status display. If this sensor is installed then the digital input number it is connected to must be set up in this menu.
Remote start sw input	DIGITAL SENSORS	Technician	The Remote start is an input which when activated can start an irrigation program or a special remote start output. The start action is specified in the **Remote Start Action** menu item explained below. This function can be used for a truck fill or tank fill facility. If this facility is required then the digital input number to be used must be set up in this menu. Note: The low pressure and high flow alarms are not active while running in remote start mode.
Door sw input	DIGITAL SENSORS	Technician	The Door input is connected to the cubical door and is used for information only. It will notify the central every time the cubical is accessed. This information is not available at the controller. If this sensor is installed then the digital input number it is connected to must be set up in this menu.
Pause switch input	DIGITAL SENSORS	Technician	The Pause input is used to pause irrigation. While the input is active it will pause irrigation. If this feature is required then the digital input number it is to be connected to must be set up in this menu.
Remote Start Action	DIGITAL SENSORS	Technician	The Remote Start Action sets what program / outputs will be run while the **remote start sw input** is active. The options are: • A standard irrigation program (1-5) • A cycle & soak program (1-2) • The looping program • The first pump / master valve together with the next available output of the controller (if there are no available outputs then only the pump / master valve is started) The program / outputs are stopped once the **remote start sw input** is no longer active. Note: The low pressure and high flow alarms are not active while running in remote start mode.

Menu Item	Submenu	Access Level	Description
Pressure Sys 1 input	ANALOGUE SENSORS	Technician	This is the pressure transducer setup for system 1. If a pressure transducer is installed press the ON key and two entries will appear. The first entry (4-20mA) is the analogue input number that the pressure transducer is connected to. The second entry (Full scale) is the maximum scale of the pressure transducer in kPa (usually located on the transducer. Once configured, this will enable a high, intermediate and low pressure alarm setpoints.
Pressure Sys 2 input	ANALOGUE SENSORS	Technician	Same as Pressure 1 Input but for System 2. (MpS Only)
Current Sys 1 input	ANALOGUE SENSORS	Technician	This is the current transducer setup for system 1. If a current transducer is installed press the ON key and two entries will appear. The first entry (4-20mA) is the analogue input number that the current transducer is connected to. The second entry (Full scale) is the maximum scale of the current transducer in Amps. Once configured, this will enable the high current alarm setpoint.
Current Sys 2 input	ANALOGUE SENSORS	Technician	Same as Current 1 Input but for System 2. (MpS Only)
Moisture Sys 1 input	ANALOGUE SENSORS	Technician	This input is for a 4 – 20mA moisture sensor. If you whish to connect a moisture sensor to the controller press the ON key and two entries will appear. The first entry (4-20mA) is the analogue input number that the moisture sensor is connected to. The second entry (Full scale) is the maximum scale of the moisture sensor in %.
Moisture Sys 2 input	ANALOGUE SENSORS	Technician	Same as Moisture 1 Input but for System 2. (MpS Only)

Menu Item	Submenu	Access Level	Description
Flow Sys 1 input	ANALOGUE SENSORS	Technician	Flow 1 input is the setup for the flow meter. There is three different methods to measure the flow which can be toggled through using the ON key, they are: • Analogue – This is for a flow meter that has a 4-20mA output, usually Mag flow meters. There are two entries required for this type of flow meter. The first entry (4-20mA) is the analogue input number that the flow meter is connected to. The second entry (Full scale) is the maximum scale of the flow meter in L/min. • Frequency – This is for a flow meter with a high pulse rate, usually used on insertion paddle wheel type flow meters. There are two entries are required for this type of flow meter. The first entry (Frequency) is the digital input number that the flow meter is connected to. The second entry (Pulse) is the litres per pulse of the flow meter. • Period – This is for a flow meter with a low pulse rate, usually used on inline type flow meters. There are two entries are required for this type of flow meter. The first entry (Period) is the digital input number that the flow meter is connected to. The second entry (Pulse) is the litres per pulse of the flow meter.
Flow Sys 2 input	ANALOGUE SENSORS	Technician	Same as Flow 1 Input but for System 2. (MpS Only)
Rain Gauge input	ANALOGUE SENSORS	Technician	
Controller Address	COMMUNICATIONS	Technician	This is the address of the controller when connected to a central system and should not be changed unless instructed to by a commissioning engineer.
DNP Master station	COMMUNICATIONS	Technician	This is the address of the central system. This is usually set to 43690 (0xAAAA) and should not be changed unless instructed to by a commissioning engineer.
DNP serial port	COMMUNICATIONS	Technician	The serial port on the controller used to communicate to the central (usually via a radio network, dial up modem, or data modem).

Menu Item	Submenu	Access Level	Description
DNP baud rate	COMMUNICATIONS	Technician	The baud rate for communications over the DNP serial port. This should match the baud rate of the communications equipment (usually radio or modem).
DNP connection type	COMMUNICATIONS	Technician	The DNP connection type can be `direct`, used for radios and persistent data modems, or `dialup`, used for dial up modems.
Slave cards	COMMUNICATIONS	Technician	This entry is to activate any slave cards a controller is connected to (MpS Only). Pressing the ON key will toggle through all the card types. Once a slave card is configured, a new menu for the next stave card will appear. The types of cards available are : • `16 DO/ 8 DI / 4 AI` – This card has 16 Outputs, 8 Digital inputs and 4 Analogue inputs • `8 DO/ 16 DI / 4 AI` – This card has 8 Outputs, 16 Digital inputs and 4 Analogue inputs • `32 DO` – This card has 32 Outputs • `32 DI` – This card has 32 Digital inputs
Slave serial port	COMMUNICATIONS	Technician	The serial port on the controller used to communicate to the first slave card. This setting is only available if a slave card is configured. (MpS Only)
Slave baud rate	COMMUNICATIONS	Technician	The baud rate for communications over the slave serial port. This should match the baud rate of the slave cards. This setting is only available if a slave card is configured. (MpS Only)
TWIN serial port	COMMUNICATIONS	Technician	The serial port on the controller used to communicate to the Two-Wire interface translator. Valid ports are `1 – Port B` and `2 – Port C`. Configuring this port will activate all the features of the TWIN system including high and low TWIN current alarm setpoints, Number of TWIN stations, and TWIN Curr System Status. (MpS Only)
Use TWIN Master Valve	COMMUNICATIONS	Technician	You can set up the controller to activate the master valve using the TWIN system. Decoder address 100 is reserved for this master valve. The ON key will toggle between `Yes` and `No`. This setting is only available if the TWIN serial port is configured. (MpS Only)

Menu Item	Submenu	Access Level	Description
RIC serial port	COMMUNICATIONS	Technician	The serial port on the controller used to communicate to the Remote Irrigation Controller radio. Valid ports are 1 – Port B and 2 – Port C. Configuring this port will activate all the features of the RIC system including Number of RIC stations, and RIC System Status displays. (MpS Only)
RIC status interval	COMMUNICATIONS	Technician	The RIC status interval sets the period of time between RIC status polls while no irrigation is running. A lower time keeps RIC status information at the controller more up to date, but a higher time helps conserve battery at the RIC. The time is in hours and minutes. This setting is only available if the RIC serial port is configured. (default: 0:30) (MpS Only)
RIC 1 (flow meter setting)	COMMUNICATIONS	Technician	This configures the pulse flow meters supported by the RICs. To enable the flow meter, enter the number of litres per pulse of the flow meter. This setting is only available if the RIC serial port is configured. (MpS Only)
Weather station serial port	COMMUNICATIONS	Technician	The serial port on the controller used to communicate to the Weather Station. Valid ports are 1 – Port B. Configuring this port will activate all the features of the Weather Station system including Environmental Status display. (MpS Only)

Appendix C: RAINMAN MP BOARD OUTPUT CONFIGURATIONS

RAINMAN MP - 16 OUTPUT CONFIGURATION

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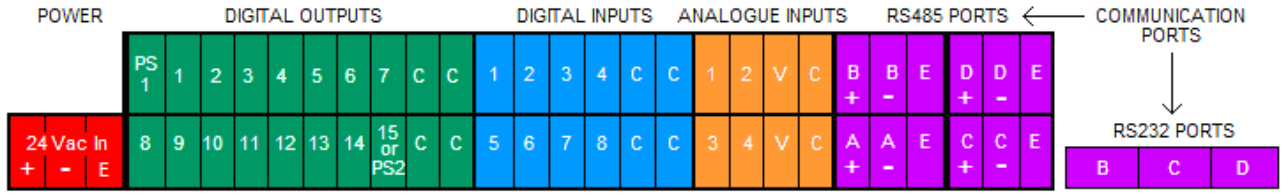
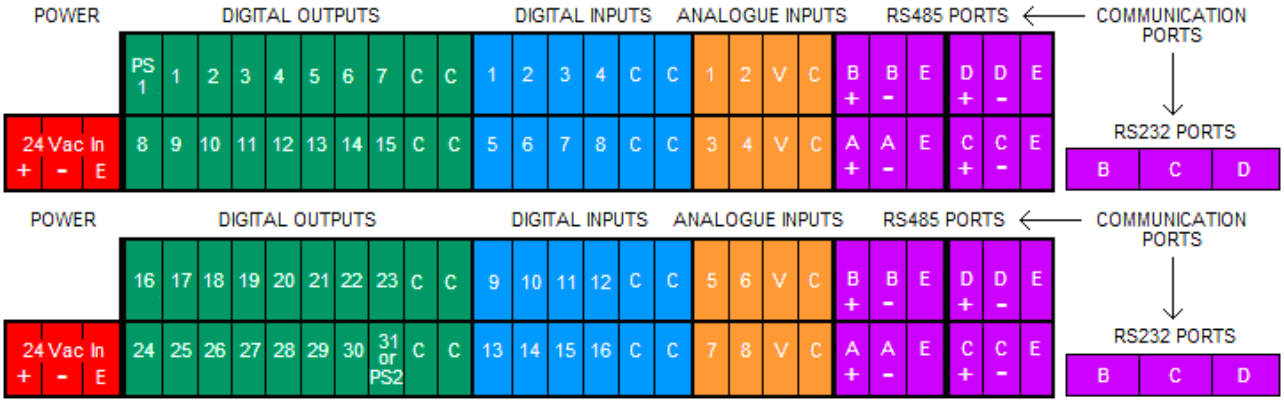
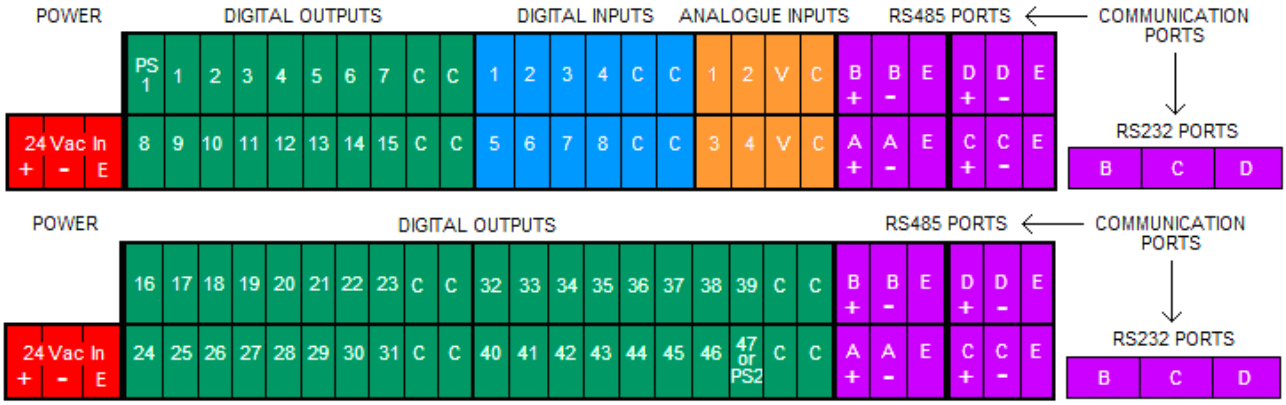


RAINMAN MP – 32 OUTPUT CONFIGURATION

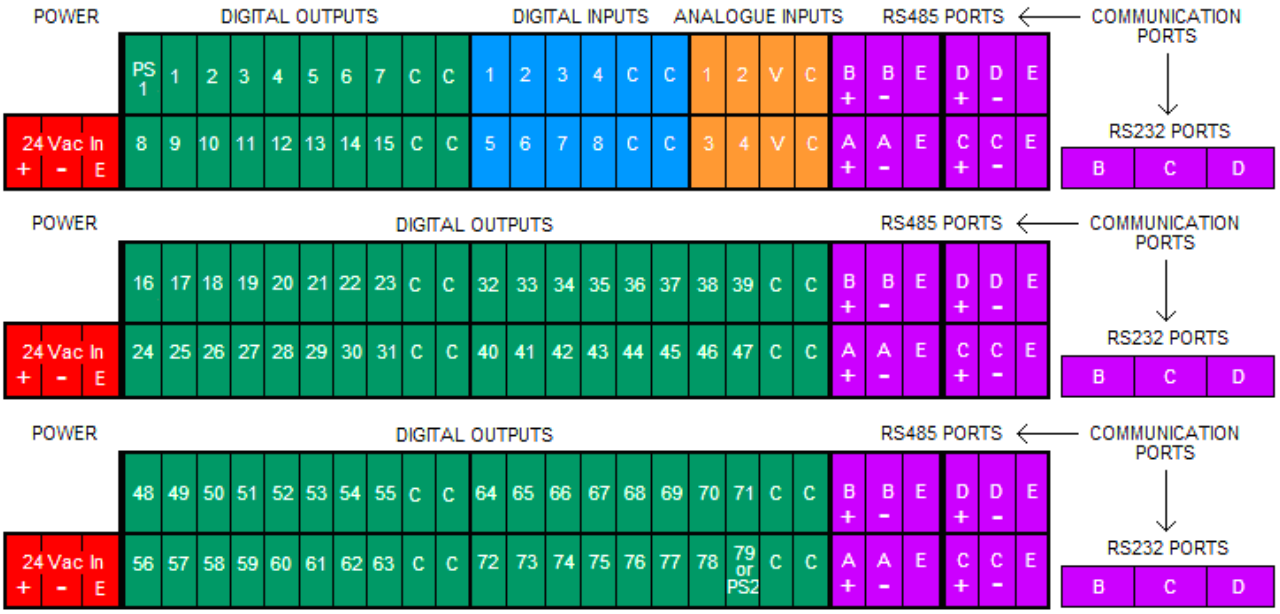


RAINMAN MP – 48 OUTPUT CONFIGURATION

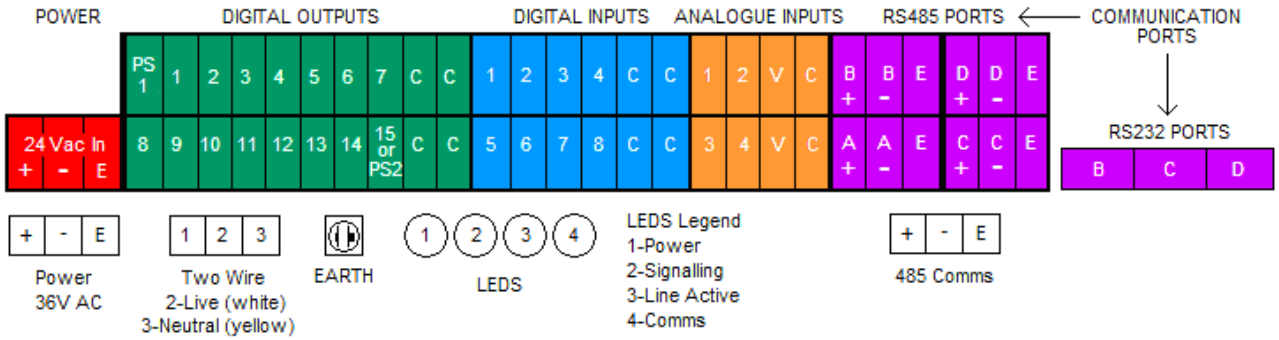


RAINMAN MP – 64 OUTPUT CONFIGURATION

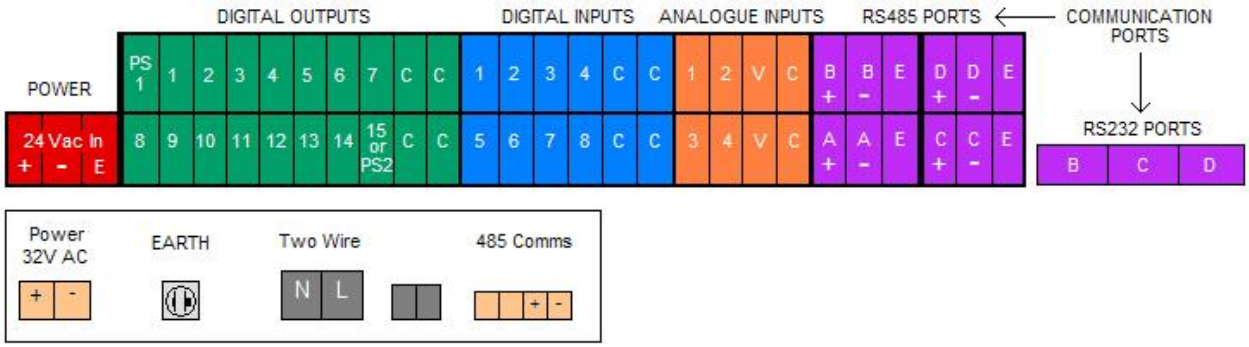
RAINMAN MP – 80 OUTPUT CONFIGURATION



RAINMAN MP – 16 OUTPUT CONFIGURATION WITH TWIN



RAINMAN MP – 16 OUTPUT CONFIGURATION WITH BT2 TWIN



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www.aquamonix.com.au **Ph: 1300 797 246**

New South Wales:
Ph: 1300 797 246
268 Milperra Rd,
Milperra, NSW 2214

Victoria:
Ph: (03) 5821 4044
19a New Dookie Rd,
Shepparton, VIC 3630

Western Australia:
Ph: (08) 9477 1188
1/30 Oxleigh St,
Malaga, WA 6090