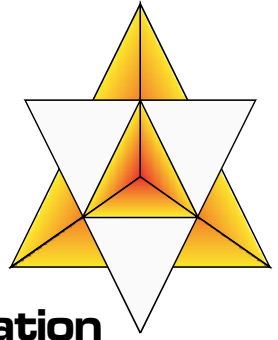


Techsys

Corporation



MINNOW

DUAL FIXED SPEED PUMP

SUMP PUMP

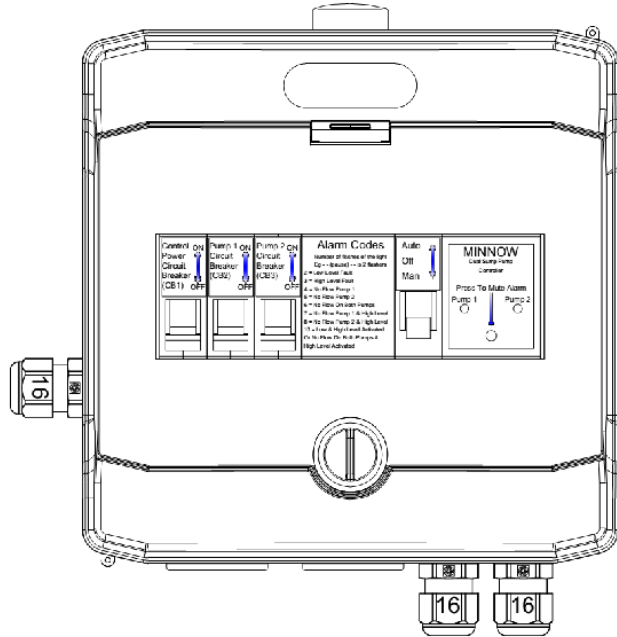
CONTROL SYSTEM

Version 2.01

November 2014

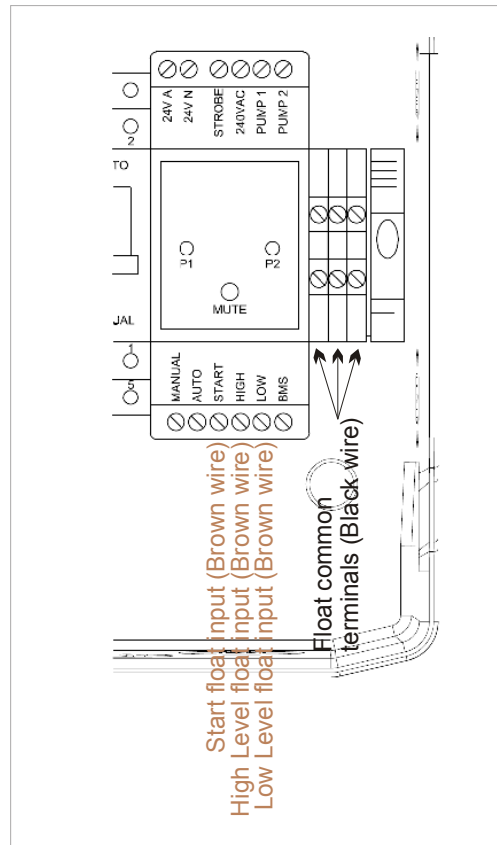
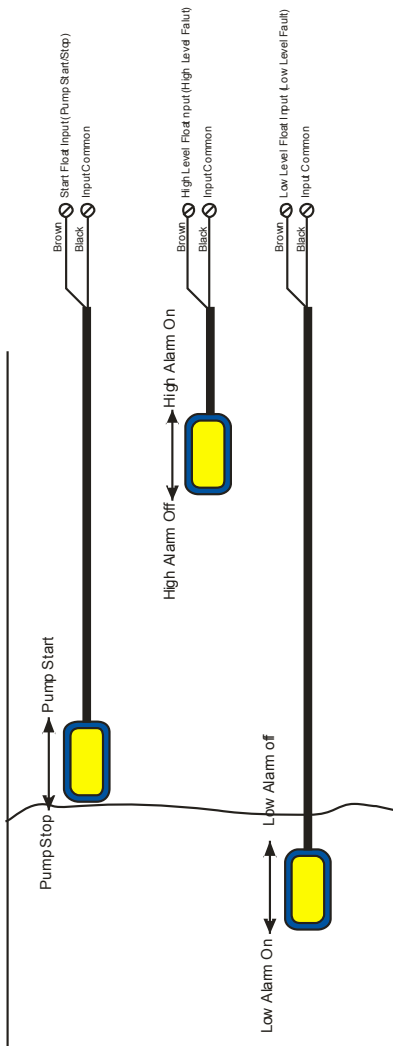
Introduction

The 'Dual Sump Pump' controller operates two pumps in order to maintain a desired level within your system. After every cycle the lead pump is rotated. In order to safeguard the life of your pumps a number of protection features are built in. If a fault has occurred the user will be alerted by the buzzer, external alarm light and (optional) BMS output.

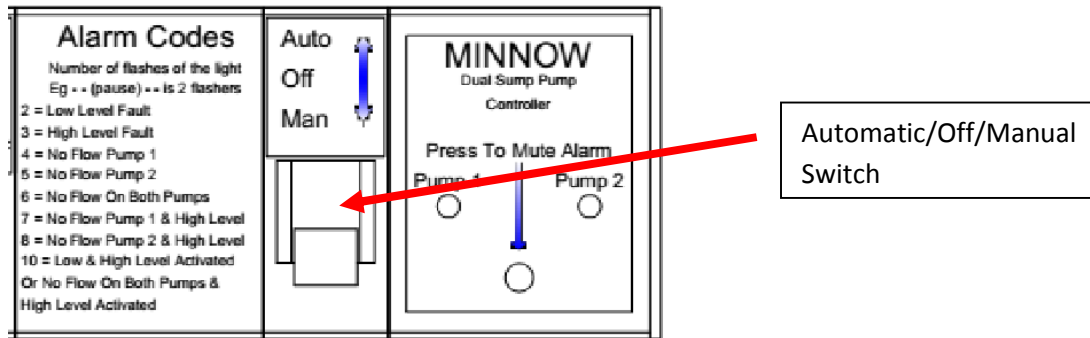


Connection of Floats

For correct operation the floats have to be in the correct position in the tank and connected to the correct terminals on the control panel. Failure to complete this task correctly will result in the controller to not operate or operate erratically.



Operational Instructions



Start Pump/s float input

When the 'Auto/Off/Manual' switch is in the 'Auto' position, and the 'Start Pump/s' float input is activated the lead pump will start, followed by the lag pump. The delay between starting the lead pump and the lag pump is known as the 'lag pump' delay.

The input needs to stay continually on, as when the input deactivates both pumps will be turned off.

The 'lag pump' delay time is adjustable. (See Installation Instructions for more information).

Manual

When the 'Auto/Off/Manual' switch is in the 'Manual' position, the lead pump will start followed by the lag pump with a fixed 2 second delay between.

All the pump protection features are still available in 'Manual' mode.

Off

When the 'Auto/Off/Manual' switch is in the 'Off' position, the pumps will not operate.

All outputs including pumps, buzzers, alarm outputs, alarm conditions will also be cleared / reset.

Alarms

There are three types of alarms; High Level, Low Level, and No Flow. The behaviours of alarms 'Low Level' and 'No Flow' differ depending on whether the Dual Sump Pump is running in 'Low Level Float' or 'Flow Switch' mode. (See step 6 in installation instructions for information on how to change modes)

High Level

'High Level' fault will activate when the high level input is on for a continuous period of 1 second.

If the controller is in 'Auto' and the pumps are not running, the lead pump will be turned on followed by the lag pump 2 seconds later.

If the level falls and the high level float input deactivates, the pumps will turn off and continue to behave as normal.

Low Level

In 'Low Level Float' mode; a Low Level fault will be registered when at least one pump is running and the low level input is on for a continuous period of 5 seconds. Both pumps will be switched off. The pumps will stay off whilst the 'low level' condition is active, if the level rises and the 'low level' float is deactivated the pumps will again become available.

No Flow

- In 'Low Level Float' mode; 'No Flow' fault is not present.
- In 'Flow Switch' mode; When a pump is started the flow switch input should be activated. If it is not activated before the lag pump being turned on then the pump is automatically disabled and a 'no flow' fault is displayed. If flow is found the lag pump will continue to operate. The Alarm light on the top of the unit will flash to indicate that the pump has been disabled.
If both pumps are running and no flow is detected, both pumps will be shut down and assigned 'no flow' faults.

All alarms will activate the Alarm light, buzzer and BMS output. The Alarm light will flash different codes depending on the status of the alarms (see section 'Alarm Codes' for more information).

These alarms are not active when the 'Auto/Off/Manual' switch is in the 'Off' position.

These alarms are not available when the 'Auto/Off/Manual' switch is in the 'Off' position. Once an alarm has been activated it will stay on until cleared. To clear an alarm set the 'Auto/Off/Manual' switch to 'Off'.

Alarm Codes

When an alarm has been activated the alarm light will flash. The alarm light will flash a different code depending on which alarm/s have been activated. The table below describes the codes and possible scenarios. (9 is not used)

Description	No of flashes	Pattern
Low Level Fault Only	2	•• •• •• etc
High Level Fault Only	3	••• ••• ••• etc
No Flow Fault Pump 1 Only	4	•••• •••• •••• etc
No Flow Fault Pump 2 Only	5	••••• ••••• ••••• etc
Both pumps No Flow Fault	6	•••••• •••••• etc
No Flow Fault Pump 1 and High Level activated	7	••••••• ••••••• etc
No Flow Fault Pump 2 and High Level activated	8	•••••••• •••••••• etc
-	9	••••••••• ••••••••• etc
Low and High Level activated or Both pumps No Flow Fault and High Level activated	10	•••••••••• •••••••••• etc

Low Level Only

The 'Low Level' alarm has been tripped.

High Level Only

The 'High Level' alarm has been tripped.

No Flow Fault Pump 1 Only

A 'No Flow' fault has been found on pump 1. A 'No Flow' fault could occur if something got lodged in the impeller and the pump overloaded or if the pump loses prime.

No Flow Fault Pump 2 Only

A 'No Flow' fault has been found on pump 2. A 'No Flow' fault could occur if something got lodged in the impeller and the pump overloaded or if the pump loses prime.

Both pumps No Flow Fault

Both pump 1 and pump 2 have registered a 'No Flow' fault. It is likely that the 'Start Pump/s' float input has failed to turn off and the pumps are dry running.

No Flow Fault Pump 1 and High Level activated

There has been a 'No Flow' fault on pump 1 and a 'High Level' alarm has been activated.

No Flow Fault Pump 2 and High Level activated

There has been a 'No Flow' fault on pump 2 and a 'High Level' alarm has been activated.

Low and High Level activated OR both pumps No Flow Fault and High Level activated

Both 'Low Level' and 'High Level' alarms have been activated. This may happen if the 'Start Pump/s' float input is stuck in the off position. If both pumps register 'No Flow' then it is inevitable that the 'High Level' alarm will get tripped.

Delays

All inputs have inbuilt delay timers.

- Start Pump/s input - 1 second. (Fixed)
- Start Pump/s input off (pumps stop) - 0.5 seconds. (Fixed)
- Low Level alarm - 5 seconds. (Fixed)
- High Level alarm - 1 second. (Fixed)
- Lag pump start delay - programmable (see step 5 in installation instructions).
- Flow switch alarm – programmable, equivalent to lag pump start delay.

LEDs

There are two LEDs located in the unit which display information about the status of the pumps.

- When a pump is on the corresponding LED will be solid ON.
- When the 'Auto/Off/Manual' switch is in 'Auto' and both pumps are available but not running (neither has been shut down due to a 'no flow' fault), the LEDs will alternate.

Description	Led Action
Auto (pumps available)	Alternate LEDs On
Pump On	Solid On
Pump Off	Solid Off

Test Mode

There is a test mode to enable the checking of the peripherals. Enable the test mode by placing the 'Auto/Off/Manual' switch into 'Off' position and holding the program button down.

- After 5 seconds the internal buzzer and alarm light will turn on.
- After a further 2 seconds the BMS relay will turn on.
- After a further 1 second the Pump 1 LED will begin to flash.
- After a further 2 seconds the Pump 1 output will turn on and Pump 1 LED will stay on.
- After a further 1 second the Pump 2 LED will begin to flash.
- After a further 2 seconds the Pump 2 output will turn on and Pump 2 LED will stay on.

Releasing the program button at any time stops the test and turns off all outputs.

Start Up LED Sequence

On power up the present mode of the unit will be indicated by flashing both LEDs together.

The first block indicates whether the unit is in 'Low Level Float' or 'Flow Switch' mode.

Two flashes represent 'Low Level Float', and five flashes 'Flow Switch'.

The second block indicates the 'lag pump' delay in seconds (x10).

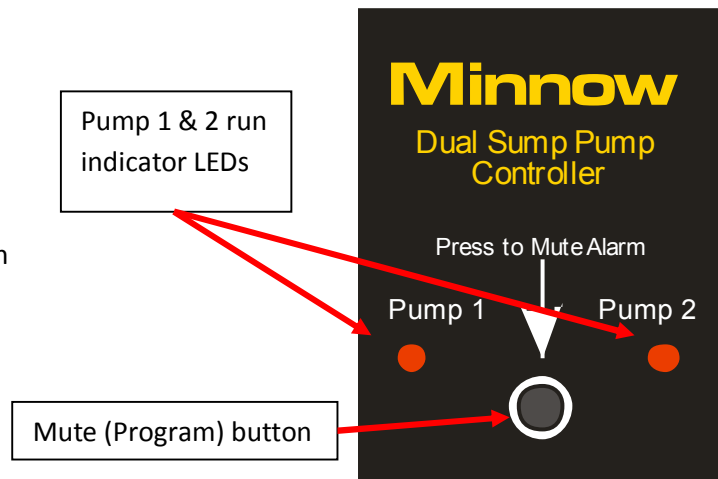
Between the first and second block is a break of approximately 3 seconds.

For example;

- • • First block - 2 ('Low Level Float' mode), second block - 1 ('lag pump' delay = 10 secs)
- • • • • • • First block - 5 ('Flow Switch' mode), second block - 2 ('lag pump' delay = 20 secs).

Installation Instructions

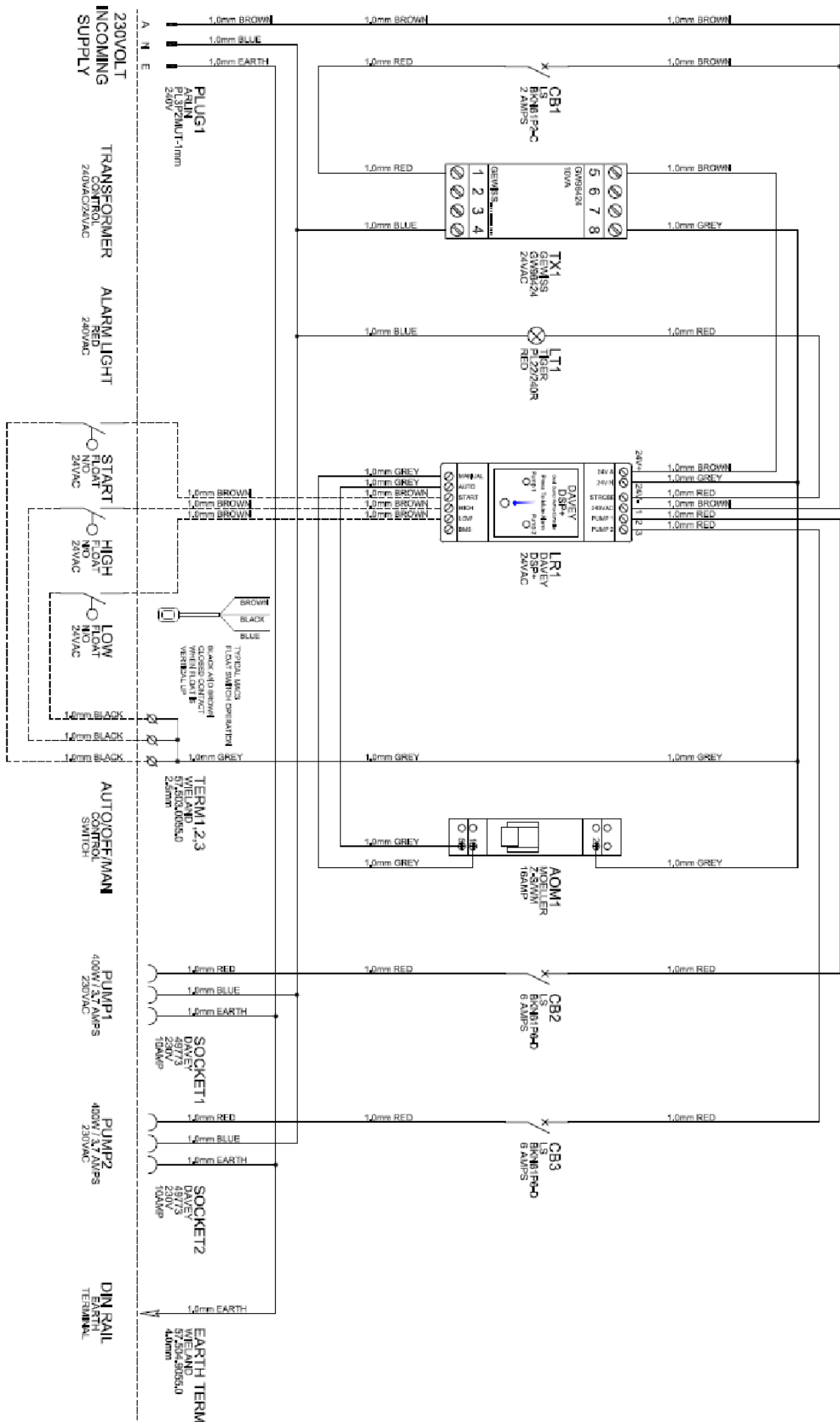
1. Mount the unit securely to a wall.
2. Connect up floats (Start Pump/s, High Level, Low Level floats). However if you are using a flow switch for protection, connect the normally closed (N.C.), contact of the flow switch to the 'Low Level' input.
3. Connect pump leads into the three pin sockets on the unit.
4. Ensure floats and flow sensor (if used), are placed in the correct position and operate with fouling.



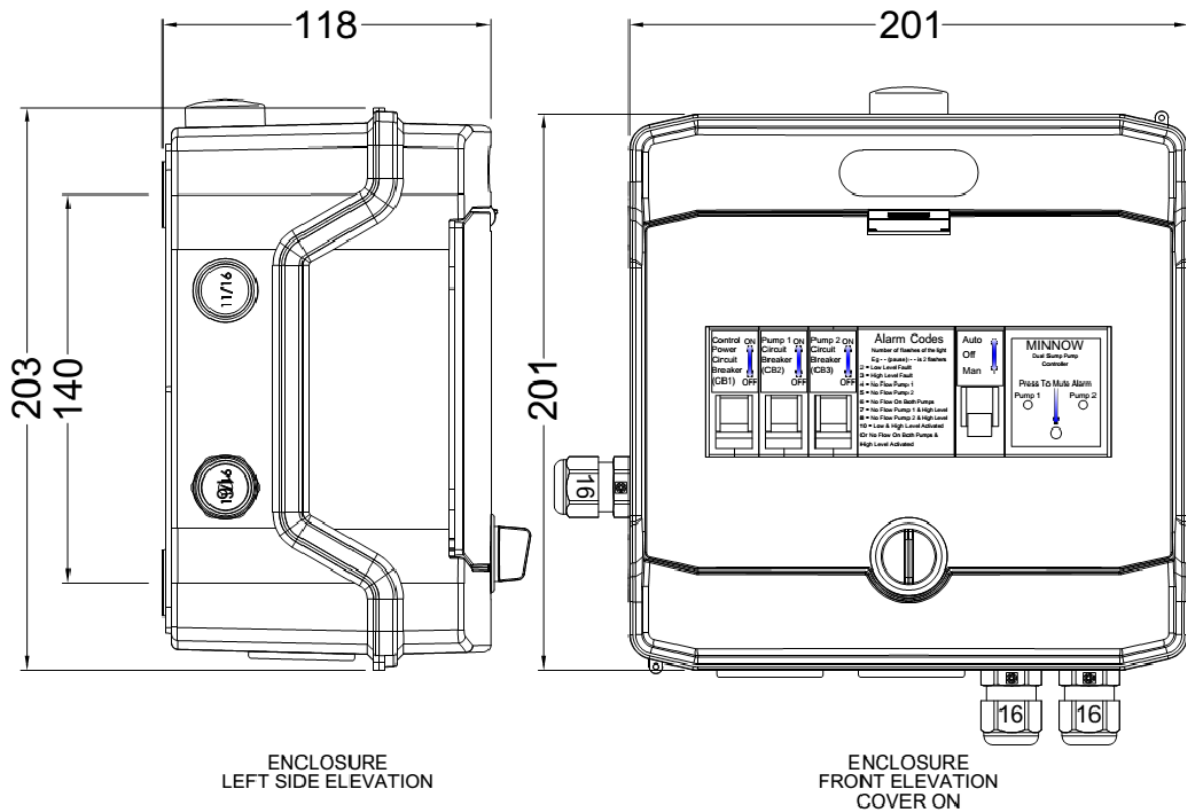
5. Turn both Pump circuit breakers to the OFF position.
6. Place the Auto/Off/Man switch in the Off position.
7. Power up the unit by plugging in the 3 pin plug and turning on the power switch.
8. Configuring the 'lag pump' delay.
 - a. The 'lag pump' delay can be configured as follows;
If the 'program' button is held when the power is applied (use the control circuit breakers to turn the power on & off) the buzzer will beep approximately every two seconds, each beep represents a 10 second increment for the lag pump delay, release the button when the required number of seconds has been reached.
Eg. Three beeps = 30 seconds.
After releasing the 'program' button the power up routine will acknowledge the change.
The factory default for the 'lag pump' delay is 30 seconds.
9. Configure 'Low Level Float' or 'Flow Switch' mode (see Alarms for more information).
The power up routine will flash the LEDs in order to display the present mode the unit is operating in.
 - a. The unit can be put into 'Low Level Float' or 'Flow Switch' mode as follows.
With the 'Auto/Off/Manual' switch in the 'Off' position:
 - To change from 'Low Level Float' to 'Flow Switch' mode, press the 'program' button 5 times in quick succession (within 5 seconds), the buzzer will beep for each button press.
 - To change from 'Flow Switch' to 'Low Level Float' mode, press the 'program' button 2 times in quick succession (within 5 seconds), the buzzer will beep for each button press.
 - No change will occur if already in the same mode.
 - The controller will then flash the Start Up sequence to acknowledge the change. (See Start Up LED Sequence for more information)

The factory default mode is for 'Low Level Float' operation.

10. Turn on both pump circuit breakers.
11. Place the Auto/Off/Man switch in the Auto position, the pumps will now run when the start float is activated.



Dimension



Specifications

10A and 15A models

Item	Description
EMC/ EMI filtering	Designed to minimise conducted and radiated emissions.
Time based functions	±5% of real time
Switched inputs	Voltage free - internal supply 24Vac - read threshold - 2mA
Operating temperature	0 to 50 degC
Enclosure	IP53
Motor circuit breakers	Standard - IEC947 – Start current 10x FLC
Wiring	Standard - AS3000
Input supply Voltage - 1 phase	230Vac
Control	24 Vac- 20mA min 120mA max
Input supply tolerance - 1 phase	-20% + 10%
Input frequency range	48 to 62 Hz
Enclosure size	201W x 205H x 125D (mm)
Output. 10A 3 Pin Plug version	2x 240VAC 5A maximum
Output. 15A 3 Pin Plug version	2x 240VAC 7.5A maximum
Output relay life expectancy	50,000+ starts