



H2FLOW CONTROLS

3545 Silica Rd

Sylvania OH 43560

ECOFLOW C Fountain

NEMA 12

VERSION 2.0

**Read and understand this manual
Before Installing, Operating, or
Servicing your Fountain Controller**



Safety Instructions

This Eco-Flow - C variable speed pool pump drive is intended for professional incorporation into complete equipment or systems. If installed incorrectly it may present a safety hazard.

The Eco-Flow - C uses high voltages and currents and carries a high level of stored electrical energy.

Close attention is required to system design and electrical installation to avoid hazards in either normal operation or in the event of equipment malfunction.

System design, installation, commissioning, and maintenance must be carried out only by personnel who have the necessary training and experience. They must carefully read this safety information and the instructions in this Guide and follow all information regarding transportation, storage, installation, and use of the Eco-Flow - C, including the specified environmental limitations.

WARNING

Installation of the Eco-flow - C must comply with all local Electrical codes and standards

To prevent injury and property damage, follow these instructions during the installation and operation of the Eco-Flow - C. Incorrect operation due to ignoring these instructions may cause harm or damage.

Do not remove the cover while power is applied or the unit is in operation, electric shock could occur.

Do not operate the Eco-Flow - C with the front cover removed, electric shock could occur due to the exposed terminals and bus bars.

Do not remove the cover except for periodic inspections or wiring, even if the input power is not applied, electric shock can occur due to accessing capacitor banks.

Wiring and periodic inspections should be performed at least 5 minutes after disconnecting the input power, electric shock could occur.

Operate the switches with dry hands. Otherwise, electric shock could occur.

Install the Eco-Flow - C on a non-flammable surface. Do not place flammable materials nearby, fire could occur.

Disconnect the input power if the Eco-Flow - C has been damaged, it could result in a secondary accident and/or fire.

Do not touch the Eco-Flow - C after shutting down or disconnecting it. It will remain hot for a couple of minutes, bodily injuries such as skin-burn or damage could occur.

Do not apply power to a damaged Eco-Flow - C or to an Eco-Flow - C with parts missing even if the installation is complete. Otherwise, electric shock could occur.

Do not allow lint, paper, wood chips, dust, metallic chips, or other foreign material into the Eco-Flow - C, fire or accidents could occur.

Install the Eco-Flow - C according to instructions specified in this manual.

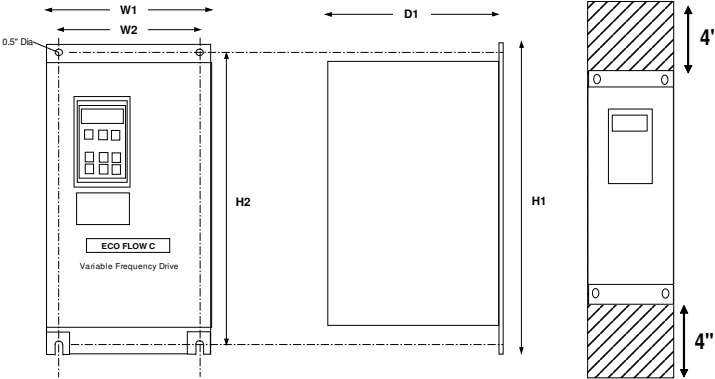
The connection orientation of the motor output cables U, V, W will affect the direction of rotation of the motor. Verify correct wiring before starting Eco-Flow - C.

Always install the Eco-Flow - C before wiring, otherwise, electric shock or bodily injury can occur.

Always apply voltage within the permissible range of each terminal as indicated in this manual. Otherwise damage may result.

Mechanical Installation

Eco-Flow - C Dimensions



Allow 4.00" above and below the Eco-Flow - C for air circulation

Model	W1	W2	H1	H2	D1
EF-C-04-12-x EF-C-08-12-x EF-C-13-12-x	8.0"	5.0"	16.4"	N/A	8.0"
EF-C-26-12-x EF-C-31-12-x EF-C-46-12-x	7.0"	5.0"	20.1"	19.4	11.5"
EF-C-60-12-x EF-C-73-12-x	8.67"	6.3"	23.2"	22.4"	10.6

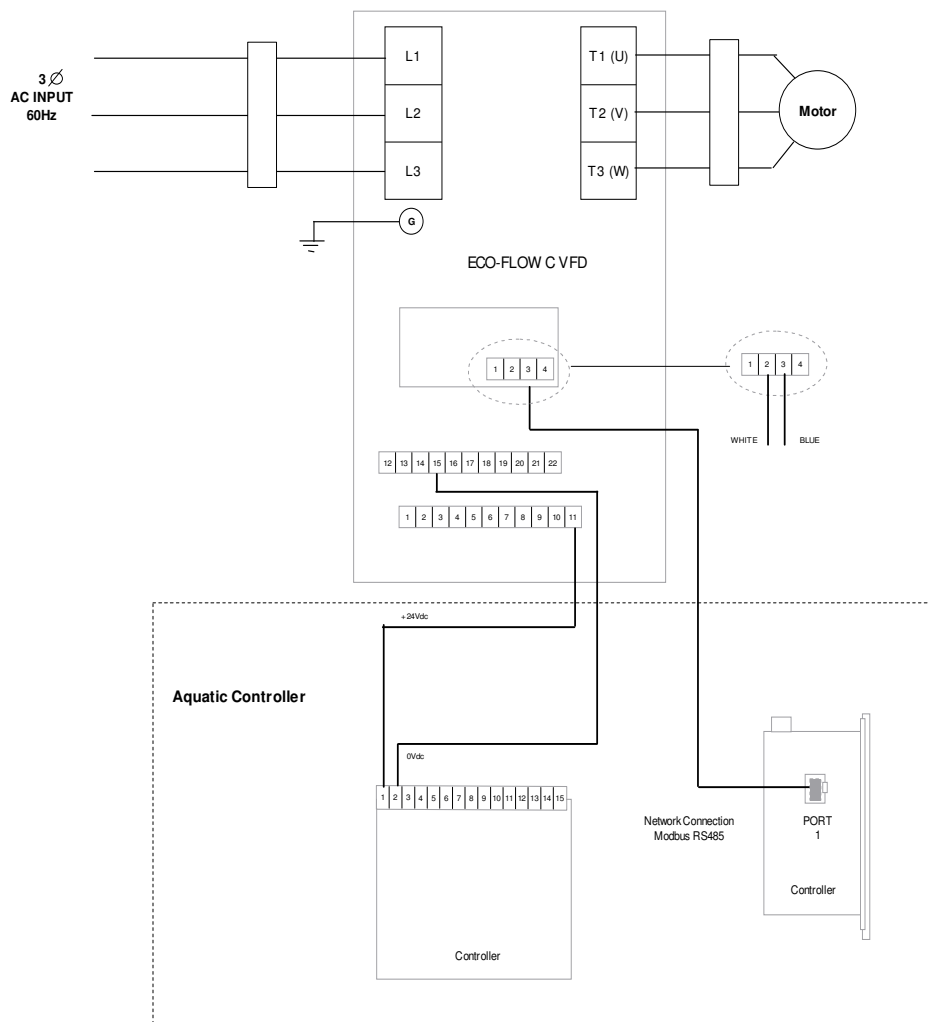
Electrical Installation: Eco-Flow - C and Fountain Controller

Installation drawings for your application will have been provided with the system when shipped.

Any specific installation requirements that are required for your install for inputs and outputs will be shown throughout this manual in the relevant sections.

Basic install

A simple controller installation consists of the controller connecting directly to the Ecoflow Drive without a bypass panel.



Bypass Panel install

The following diagram shows an Ecoflow drive installed with a bypass panel.

The bypass panel may consist of:

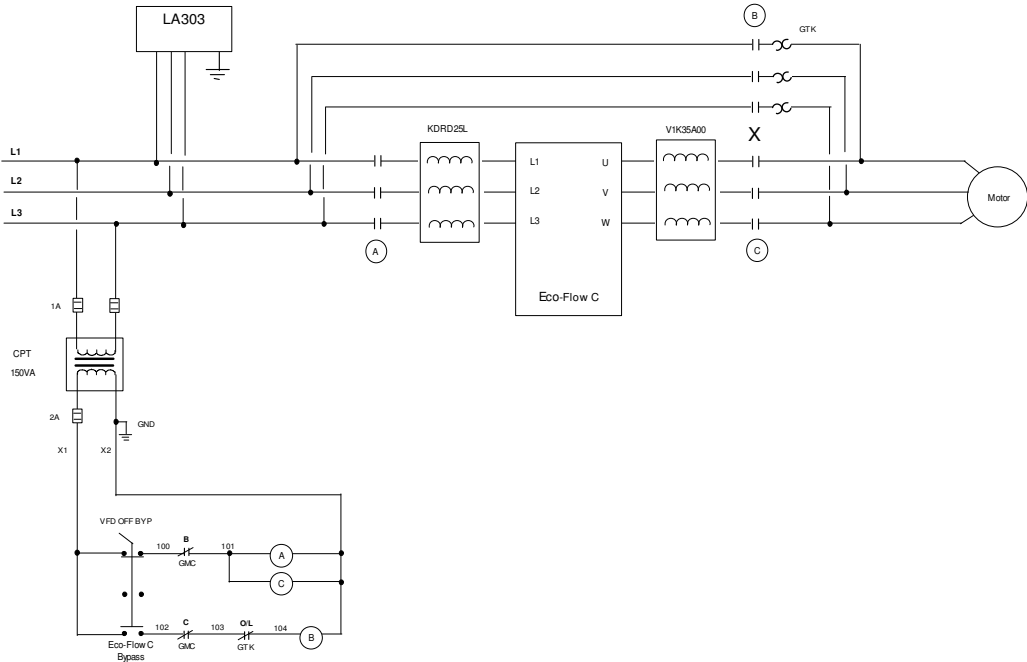
Lightening arrestor

Line reactor

Load reactor

VFD / Bypass Contactors

Control circuitry

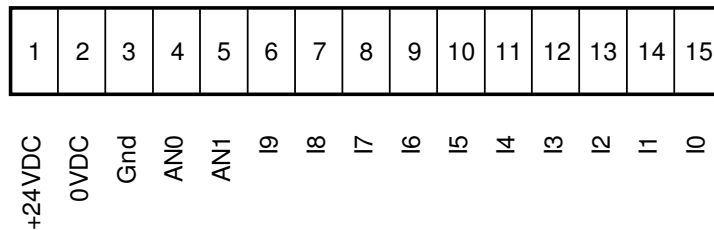


Controller Inputs and Outputs

Inputs

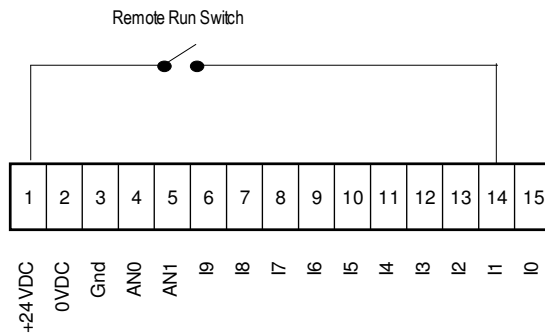
Top Plug		
Terminal Number		Description
1	24V	24Vdc Supply
2	0V	24Vdc Common
3	Ground	Not Used
4	AN0	Not Used
5	AN1	Not Used
6	I9	Not Used
7	I8	Not Used
8	I7	Not Used
9	I6	Not Used
10	I5	Not Used
11	I4	Not Used
12	I3	Not Used
13	I2	Anemometer Speed 2
14	I1	Anemometer Speed 1
15	I0	Remote Run Start Stop

TOP PLUG



Input activation.

To activate an input, connect terminal (24Vdc to the input through a volt free contact



Example:

Input # 0

Remote Run / Stop

This input can be used to control the running and stopping of the pump when in normal operation.

Input # 1

Anemometer Speed 1

This input is used in conjunction with an anemometer system to override the Fountain controller program and run the pump at a fixed speed

Input # 2

Anemometer Speed 2

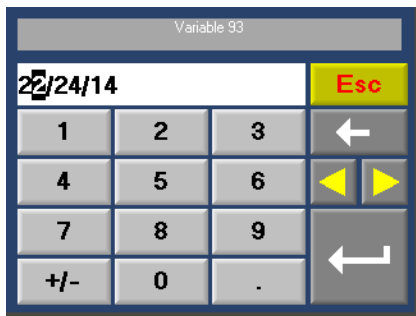
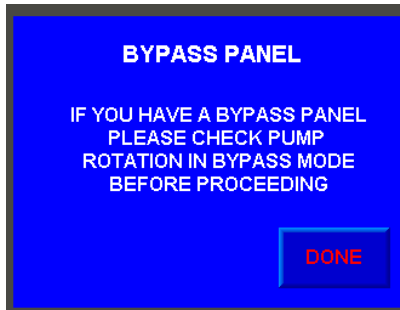
Certain Anemometer systems have two separate outputs for two different fixed speeds dependent upon the wind force. This second input is for the second speed.

Outputs

Bottom Plug		
Terminal Number		Description
1	0V	24Vdc Common
2	O7	Not Used
3	O6	Not Used
4	O5	Not Used
5	O5	Not Used
6	O4	Not Used
7	O4	Not Used
8	O3	Not Used
9	O3	Not Used
10	O2	Not Used
11	O2	Not Used
12	O1	Not Used
13	O1	Not Used
14	O0	Not Used
15	O0	Not Used

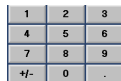
Touch Screen Operation

During Set Up to select a feature or move to the next screen touch the screen push button



For adding data such as 'Time' and 'Date' or, for entering a 'Password' if required, the following screen will appear.

Use the number keys to enter data

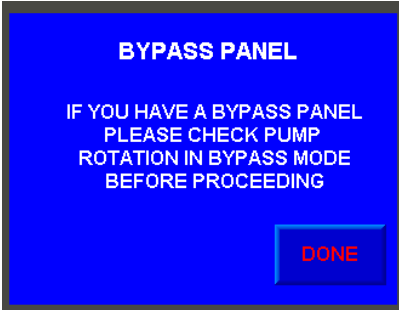


Use the Enter key to accept data



Initial Setup

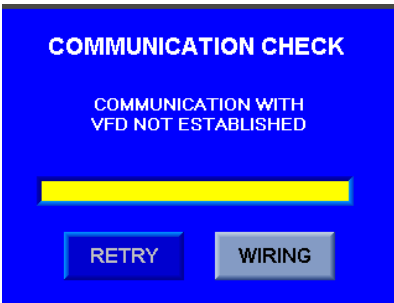
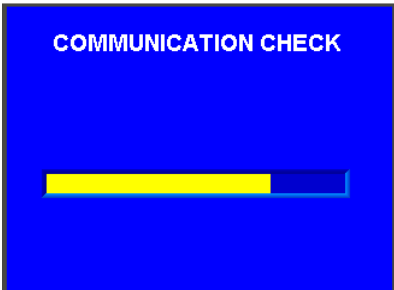
Bypass Panel



If you have a bypass panel, to ensure correct rotation of the pump, switch the panel to Bypass Mode and check the pump is rotating in the correct direction before proceeding. After completing this action select:



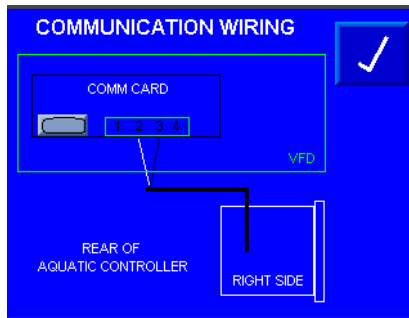
Communication



The controller will now check communications with the Ecoflow Drive

WIRING

Pressing the Wiring button will bring up the schematic of how the communications should be connected



Note: If communications are not established and the wiring has been checked against the schematic and is correct, please contact H2flow Controls for assistance

Once communication has been established between the controller and the Ecoflow Drive the screen will automatically progress

Time



Program the current time for your time zone

15:48:06



Time format is 24hr (Military Time)

Motor Details

Using the details on the 'motor nameplate' please enter the requested information:

Motor Voltage

SELECT THE SYSTEM
SUPPLY VOLTAGE

208VAC	230VAC	480VAC
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Motor Horse Power

PLEASE SELECT MOTOR RATED HP

1.0	1.5	2.0	3.0
5.0	7.5	10	15
20	25	30	MORE

PLEASE SELECT MOTOR RATED HP

40	50	60	75
100	125	150	
BACK			

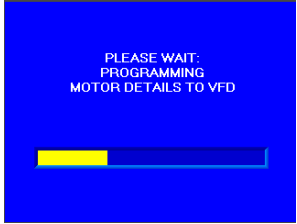
Motor RPM

PLEASE ENTER THE
MOTOR NAMEPLATE RPM

3580 RPM

DONE

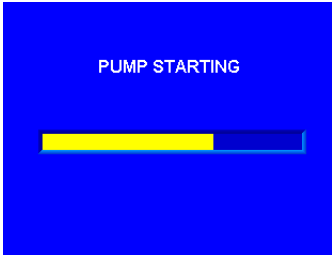




The programmed information is now sent to the Ecoflow Drive

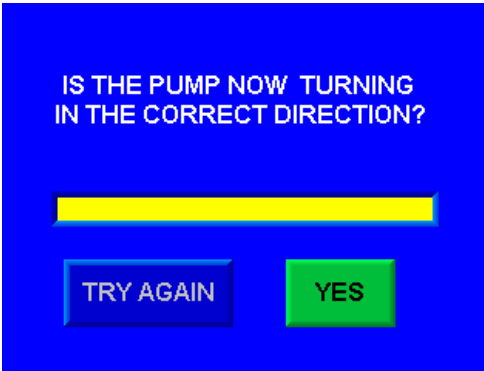
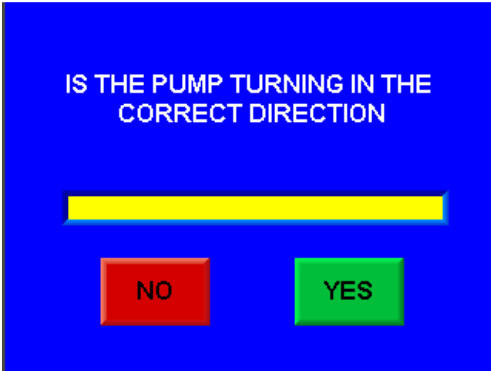
Motor Rotation

It is important to ensure that the motor is turning in the correct direction.



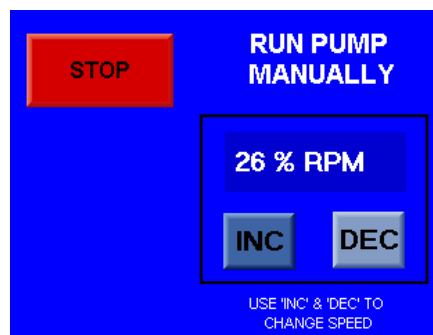
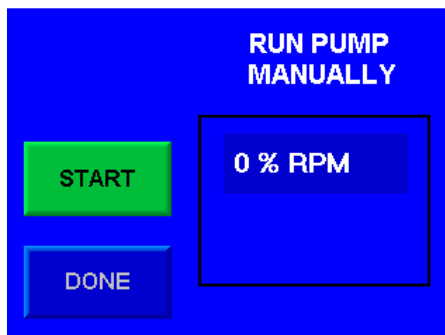
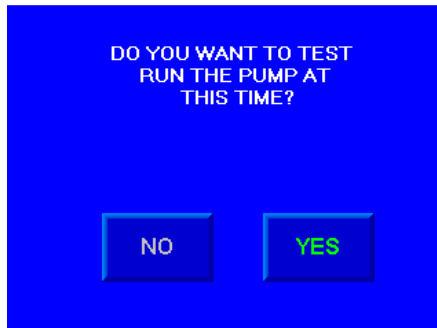
If the motor is turning in the correct direction press YES

If the motor is turning in the wrong direction press NO



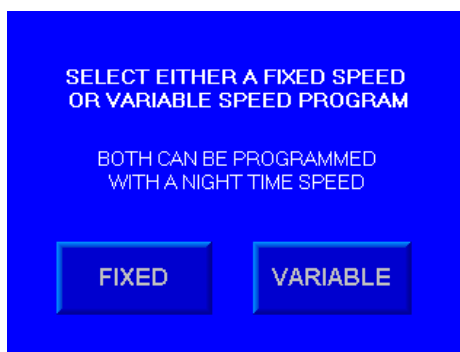
Manual Run Pump

At this time, you can manually run the pump from 0 – 100% speed to review the fountain and determine the correct flow rate(s) that you need to produce the desired effect



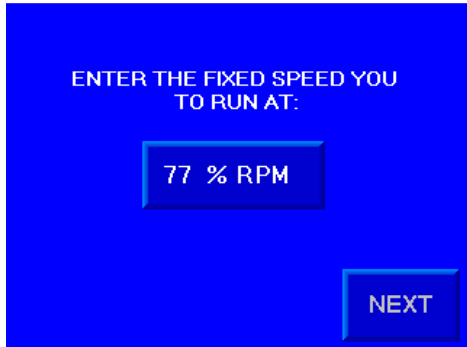
Application Customization

In this section you will answer several questions regarding your application requirements.



Fixed

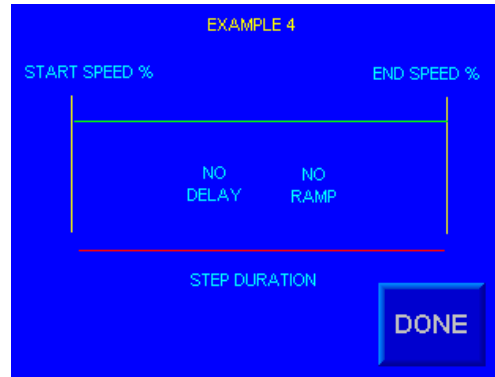
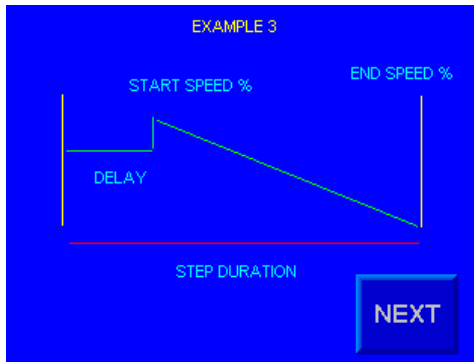
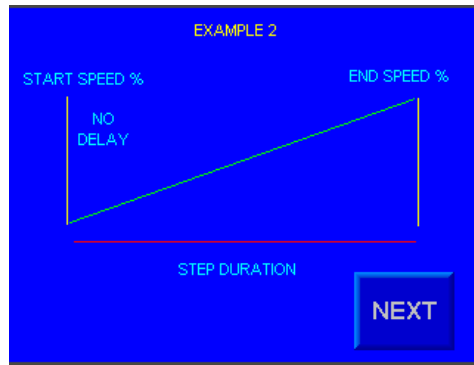
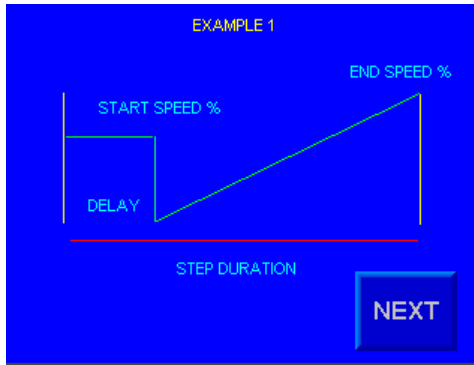
In a fixed speed program, the pump will be set to run at a fixed speed for 24hrs (Note: A separate night time speed can also be programmed if required).



Variable

In a variable speed program the pump is programmed to run six step programs. Each step has a start speed, end speed, duration and delay start. All six steps have to be programmed (Note: A separate night time speed can also be programmed if required).





1

STEP DURATION	START SPEED
10 SECS	10 % RPM
DELAY RAMP FOR *	END SPEED
0 SECS	100 % RPM

NEXT

2

STEP DURATION	START SPEED
25 SECS	80 % RPM
DELAY RAMP FOR *	END SPEED
5 SECS	50 % RPM

NEXT

3

STEP DURATION	START SPEED
50 SECS	60 % RPM
DELAY RAMP FOR *	END SPEED
0 SECS	50 % RPM

NEXT

4

STEP DURATION	START SPEED
10 SECS	50 % RPM
DELAY RAMP FOR *	END SPEED
0 SECS	90 % RPM

NEXT

5

STEP DURATION	START SPEED
20 SECS	60 % RPM
DELAY RAMP FOR *	END SPEED
0 SECS	60 % RPM

NEXT

6

STEP DURATION	START SPEED
50 SECS	10 % RPM
DELAY RAMP FOR *	END SPEED
10 SECS	100 % RPM

NEXT

The maximum Step Duration is 999 Seconds

All the above screens show the steps and speeds are 0. All six steps have to have values for Step Duration as well as Start and End Speeds. The delay speed can be 0.

In the event that a value has not been programmed the following screen will appear.

**THERE IS A
PROGRAMMING ERROR**

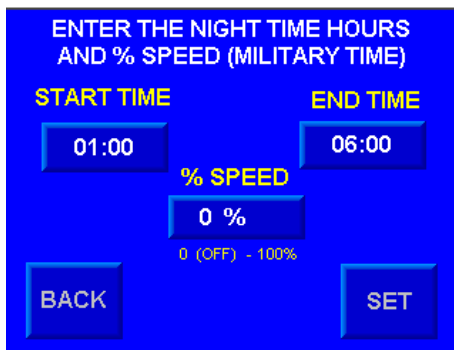
SPEEDS MUST BE:
1% OR GREATER

STEP DURATIONS MUST BE:
1 SECOND OR GREATER

BACK

Night Time

In certain situations, it may be required that the fountain still operate at night but at a reduced speed for quietness or even at zero speed.



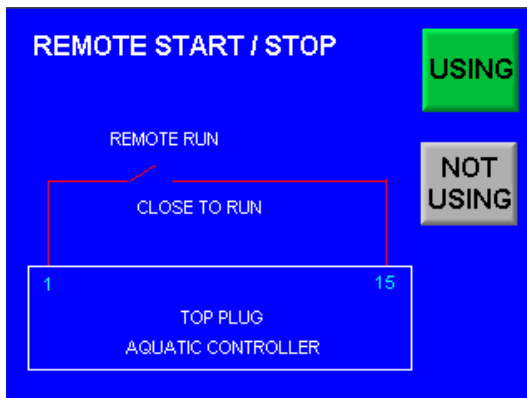
If you require the pump to stop at night, then program a 0 % speed value.

Operation



Remote switch

If a remote switch is to be used to start and stop the fountain, then it should be wired as follows:



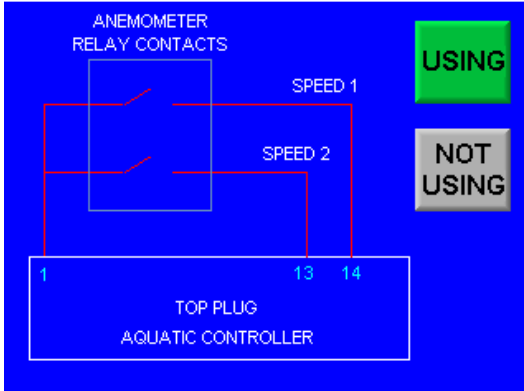
High Wind Speed Presets

If it is required that high winds switch the pump to a specified speed then up to two speeds can be programmed of inputs from an anemometer circuit.

Note: These are fixed speeds. If a Night time program has been set and the night time program speed is less than the wind speeds, then the night time program will still run. If the wind speed, speed is less than the night time speed, then the wind speed overrides the night time speed.

DO YOU WANT TO OVERRIDE
THE RUNNING PROGRAM
WITH SIGNALS FROM AN
ANEMOMETER

NO YES



ENTER THE % SPEED TO RUN AT
WHEN ANEMOMETER INPUTS
RECEIVED

INPUT 1 **INPUT 2**

0 % 0 %

ONLY SPEED OR HIGHER SPEED LOWER SPEED

BACK SET



Note a value of 0% will stop the pump

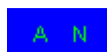
Programming Complete

Once this point has been reached the programming of the Ecoflow Fountain Controller is complete. If Run (or the Run Input is ON if selected) the pump will start and run the program. If a night time speed has been programmed it can be tested by touching the clock on the screen and changing the time to be within the programmed night time, time.

Touchscreen Operation

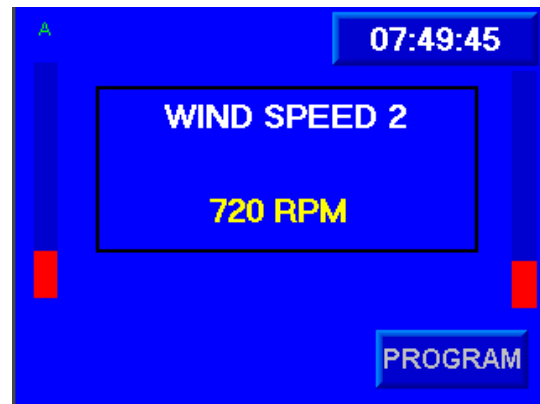
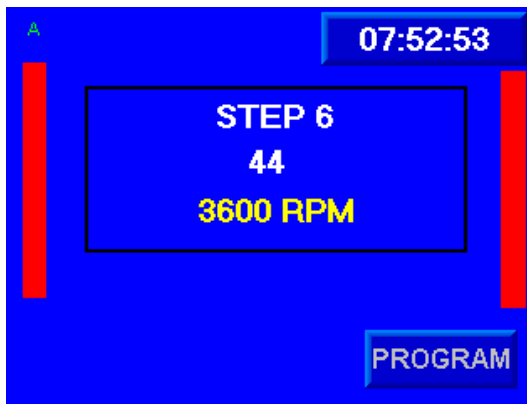
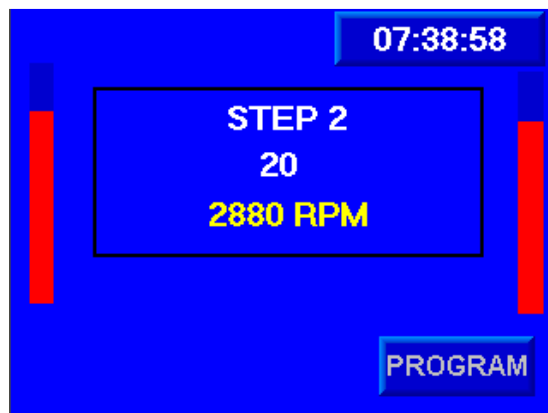
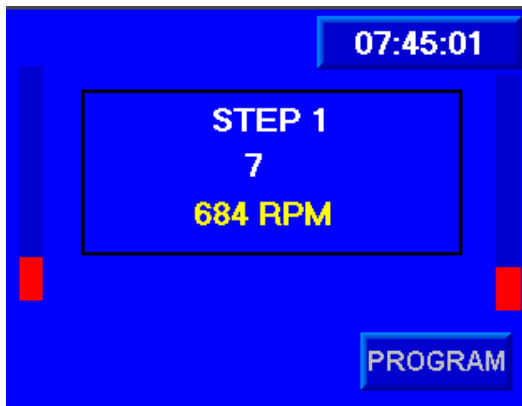
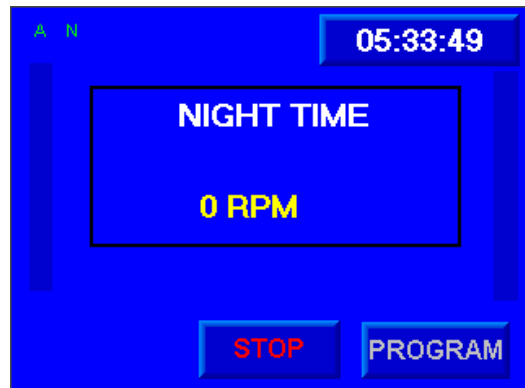
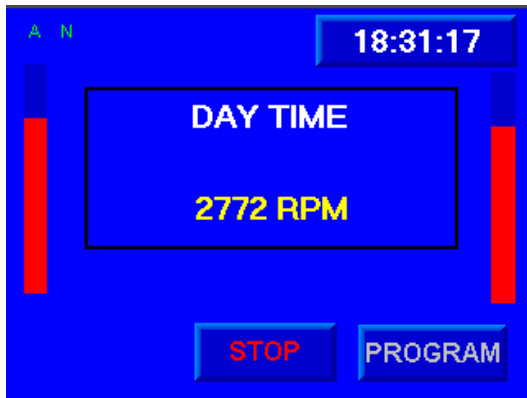


Remote Start / Stop

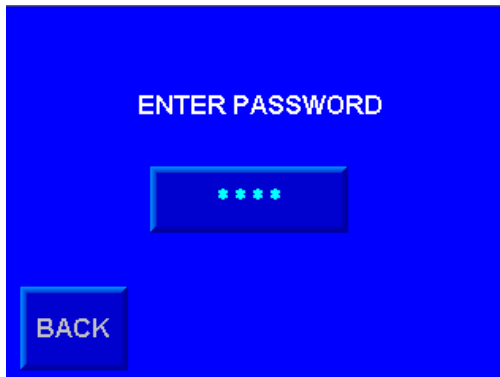


An A or an N on the screen indicates that the controller has been programmed with an Anemometer input and or a Night time program.

Examples of Run Screens that you may see



Program Modifications



Entering the Password 6535 will enable access to the program features



Depending on the initial programming certain features are not available and will appear grayed out. In the above example the fountain was programmed for a fixed speed with a night time speed. The step buttons are grayed out as they are not used in this situation.

From this screen you can make modifications to values that were set in the initial commissioning.

The RESET function allows you to return to factory defaults. A password is required to use this feature. Please contact H2flow Controls for the password..