AGFIRST ENGINEERING .

EFFLUENT CONTROLLER V2

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Instruction & Installer's Manual

Manufactured by
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The AgFirst Effluent Irrigation Controller is a total standalone controller able to automate and protect the components of the effluent system.

INTRODUCTION

The AgFirst Effluent Irrigation Controller consists of a main control cabinet that is normally installed beside the Irrigation Pond. Also available if required, is an optional Remote Station that can be located at an alternative location.

The AgFirst Effluent Irrigation Control System is driven by an Omron cp2e PLC controller, which controls the components of the Effluent System. The programming has been to designed provide a variety of control functions as well as providing protection for both the system and the environment.

The AgFirst Effluent Irrigation Control System has been designed with the intention of being semi universal, such that it can be incorporated into various Farm Effluent designs. Also, the extended features designed into the programming can be added to an end user's system at a later date, without the need to rewire or replace the control cabinet.

The system is C-Tick/RCM Compliant and runs from a Three phase supply (neutral not required).

Additionally, the system may be fitted with a variable speed drive [VSD] for pump motors exceeding 7.5KW. If supplied the system will come with a Danfoss FC 202 Aqua dive.
It is not recommended to connect the unit via an Earth Leakage device (RCD) (but if required to install the unit on an RCD the use of a type A/B RCD is required to avoid nuisance tripping). The controller monitors earth constantly to protect the motors and has an earth leakage of approximately 8 milliamps. Nuisance tripping of the RCD's can be rectified by turning of the internal RFI filter within the drive.

INSTALLATION

Control Cabinet
This should be located out of the weather and readily accessible so that the control buttons can be accessed by the operator.

Remote Station.
An optional Remote Station can be added to the system. Like the Control Cabinet – it should be located out of the weather in an accessible location.

Adjustable Timers

The Time Clock is designed to control the automatic run time of the stir function (channel A) and the disable time of the stir function when the system's green water pump is running (channel B)**.**

Irrigation Timer is designed to control the run time of the Irrigation pump. This enables the user to set the pump run time period to suit their requirements.
The timer has two scales on the lid of the enclosure selectable on the front of the timer to allow a 0-24 or 0-10 hour run time.

Pump Protection

The Kelco Pump Controller is used as a pump protection device.

Wiring the Kelco to the AgFirst Control Box requires 5 cores and typically a 7c+E .75 mm cable is used, refer Pg13/14/15 for wiring connections.

There are two Kelco Pump Controller models available. The model provided depends on where and how the pump is being used.

A Kelco E30 is used as pump protection in iron sand areas. This model detects water pressure only. A priming solenoid valve must therefore be fitted to protect the pump from running dry. The solenoid valve operation is being controlled by the Kelco.

A Kelco F60 is used as pump protection and detects both pressure and flow. This model senses flow and does not have an output for the solenoid. Priming is controlled to fill the pipes by the PLC controller prior to running the pump.

Functional Operation of the Kelco unit.
When the pump is started, the Kelco is powered on by the smart logic controller [PLC]. At this point the Kelco will activate the start-up timer to allow the water system to prime.

During the start-up timer period, the system is attempting to reach the minimum water pressure.
(E30 only) a solenoid will operate to keep the pump lubricated to avoid dry running.
(F60) has a paddle that will detect flow and know the pump is not running dry.

Once the start-up timer has elapsed, if the system has not met the minimum water pressure or received a water flow signal, the system will trip.

The Kelco will also trip on over pressure or loss of water flow during operation (F60 only)

Relay one is programmed as pump protection and will close when the pump is in favourable conditions and open at fault conditions. There is an approximately 3sec delay between the pump switching on and the feedback signal being detected.

Relay two is programmed to close during low pressure when starting-up to operate the Priming Solenoid Valve. This is to prevent the pump running dry and becoming damaged (E30 model only).

The program of the Kelco is dependent on the site but these parameters must be set as follows to work correctly with the AgFirst Irrigation Controller.
The prestart delay should be off.
The run-on timer should be turned off.

WARNING!!!: The Kelco Pump Controller provides protection to the pump. Any modification to the original program could result in severe pump damage. It should therefore only be adjusted by the installer with guidance of AgFirst Engineering. Warranty of the pump may be void.

It is possible to test the operation of the Kelco without running the pump. You may force the power on by using the PLC menu and watch for operation of the run output on the Kelco. Operating the input of the PLC (refer to the CORUZET MILLENNIUM programming section in the manual).

Commissioning of the system is to be done by the pump installer, but it is fine to momentarily start the system to check the wiring is correct.

To avoid accidental modification of the program we suggest the key lock is enabled in the Kelco, see below for more info:

To activate the lock on the keypad press and hold the (∧) and (∨) buttons simultaneously and then press and release the (R) button, after two seconds the display will say lock and you may now release all the buttons, you may do this again to unlock the keypad.

IRRIGATION PUMP VSD

The DANFOSS VSD (if supplied) is designed to run the Irrigation pump offering fine control of pressure and additional safety functions otherwise not available. Circular TPS 3c+E should be used. The motor is to be wired in EMC type screened cable using steel glands to connect the cable screens at both the drive and the terminal box to comply with C-Tick/RCM requirements. The earth conductor MUST also be attached at both ends. The motor must be wired in 400v configuration.
An example of a metal gland shown below.

Installation of metal glands and screened cables is an essential factor in lowering the SCC in the dairy plant from the reduction in stray voltage.
The minimum size of the conductors to the motors should be 1.5mm. Do not undersize cables, larger is better to assist removal of RFI.

The above is also critical if cow ID systems are in use or being contemplated. The screen should be retained over the cable as close as possible to the termination.

The Danfoss drive come's setup programmed ready for operation we recommend the motor name plate data is checked and a motor tune is performed.

The setpoint pressure level pre-set at a low level that will need to be adjusted upon commissioning.

GREEN WATER SOFT STARTER

The Soft starter (if supplied) is used to run the Green Water pump. The system is designed to extend the Control Cabinet with the ability to run a Green Water pump as an optional feature.

CABLING

Mains Wiring

1. A three phase [neutral not required] supply cable is run directly to the Control Cabinet from the supply.

2. Irrigation pump [DOL or VSD] and Stirrer motor cable wire directly into the Control Cabinet. VSD cabling should be circular TPS 3c+E.

3. [optional] Green Water pump Soft-starter cable wires directly into the Control Cabinet.

Control Wiring

We recommend 1.5mm wire over longer cable runs to avoid voltage drop. All the control signals are 24vdc low voltage.
It is advisable to run the cable inside a conduit or Alkathene so this cable can be easily replaced in future. Refer to the wiring diagram provided for wire connections.
Numbering on the terminal connections is used to identify all the connection points.

1. **Microtherm Stirrer Motor –** 2 cores
2. **Microtherm Irrigator Pump –** 2 cores
3. **Microtherm Green Water –** 2 cores

4. **Kelco Pump Controller - Irrigation Pump -** 5 cores
5. **Kelco Pump Controller - Green Water -** 5 cores

6. **Prime Valve - Irrigation Pump –** 5 cores
7. **Prime Valve - Green Water –** 5 cores

8. **VSD Irrigation Pump** [alternative] – 6 cores

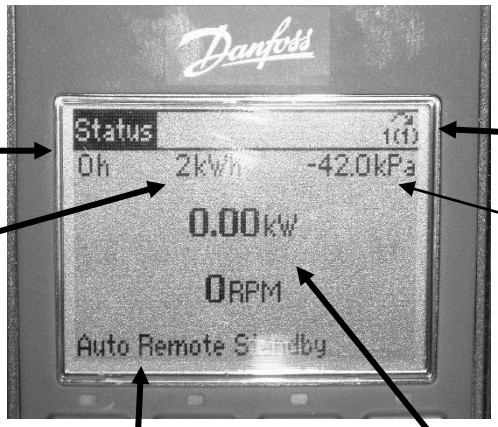
9. **Green Water Soft Starter** [optional] - 5 cores

10. **Remote Station.** – 11 cores / 13 cores
    The Multi-core cable between the Remote Station and the Control Cabinet requires eleven cores for the remote function of the Irrigator, or thirteen cores if including the addition of Green Water function. We recommend the use of 1.5mm wire cable.

11. **Special I/O** – 3 cores
    The remote terminals can be connected to a remote monitoring and control device such as a Harvest ITU terminal.
    This will allow for control of the system from a smart device remotely. The standard wired remote connection and harvest connection diagram is contained within this manual but could be adapted to any remote system.

LCP Keypad Operation and Parameter Editing

Status Display To display the current operation of the drive and all status messages of the Aquaflow press the "*Display Status*" button on the following screen display. If you keep on pressing the status display button it will scroll through the various states of the onboard PLC to check operation of unit for diagnostics.



Running hours

Total Kw used

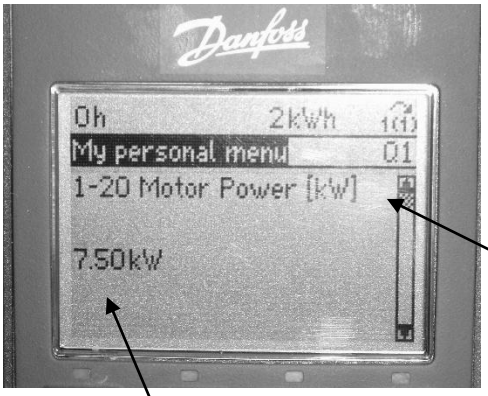
Current setup and setup in edit

Current vacuum set-point

Current operation of drive and warnings

Status display

My personal menu To display the current user modifiable parameters of the drive press the "*Quick Menu*" button on the front of the LCP followed by the "*OK*" key



Current Parameter

Current parameter value

My personal menu These are the user modifiable parameters that are used when setting up the Aquaflow such things as motor power, pressure levels, automatic motor adaptation, motor ramp times, low and high-speed limits etc…
Pressing the up and down button will scroll through the various settings of the controller. These are the settings that are used when commissioning, all the relevant settings are in this menu to make it easy for anyone to install and set up. Pressing the "*OK*" button on any parameter will enable you to be able to change the value of the parameter in edit and press the "*OK*" button when you are finished editing it to store the value.

Motor Set Up and Automatic Motor Tuning

Programming To make program changes press *"Quick menu"* key on the front of the LCP followed by the *"OK"* key, press the *"Display status"* key to exit.

How to stop and start the drive using the LCP for programming to stop unintended starts the drive can be stopped by pressing the *"Off"* key on the front of the LCP pressing the *"Auto on"* key on the front of the LCP will return the unit to run mode

Extended Menu this menu is password protected, if it is necessary to access this menu, please phone Corkill Systems Limited for assistance.

Motor Set Up

With power on to the drive, press "*Off*" then the "*Quick Menu*".

Check and if necessary, set the motor parameters #120 through to #125 as above, all other set ups will automatically update.

turn on Parameter #129 "Auto Motor Adapt". Press "H*and On*"
And the drive will carry out the Auto Tuning function; a message will be displayed when tuning is complete. Press "Auto-on" before pressing *"Reset".* The Aquaflow should be ready to use.

Pressure Level Adjustment

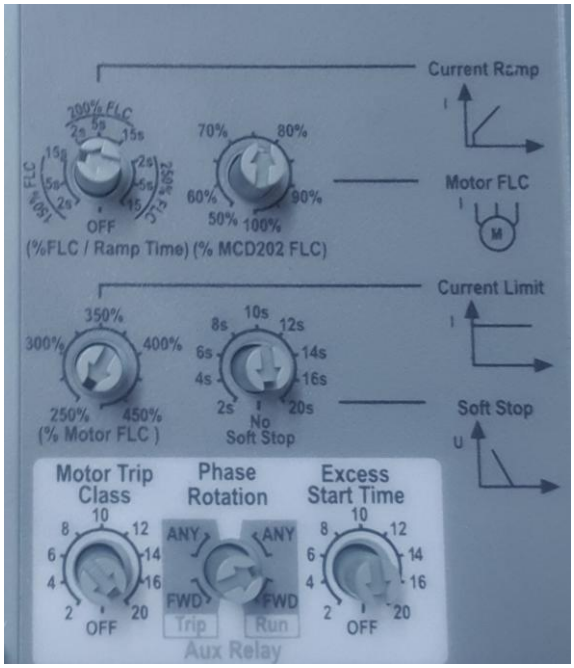
Setting the Aquaflow pressure level

To adjust the pressure from the preset position, scroll through the quick menu list until you find set point 1 and press ok.
The drive will highlight the pressure press the keys to adjust it and press ok to store it in.

The Danfoss soft start (when supplied) Pump Controller is used as a pump protection and current ramp of the greenwater pump.

The soft start should be set with the below settings:

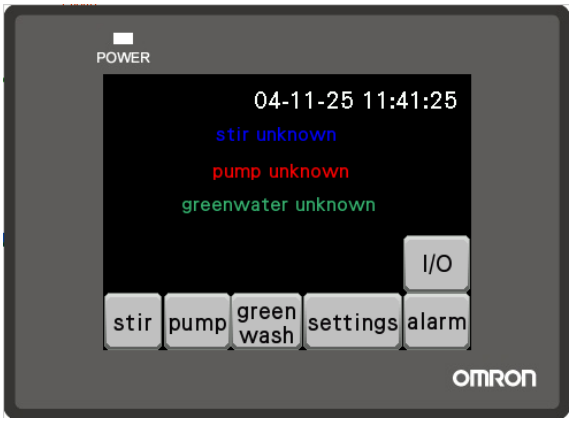
% FLC/ ramp time 15 sec
% FLC (dependent on motor size)
% Motor FLC (250%)
Soft stop No
Motor class trip 20 (will drip within 20 sec as 6* FLC)
Phase rotation/ aux relay any/run (relay operates when the soft start is running)
Excess start time off



The Omron PLC is the heart of the system the PLC operates the system based on the status of the sensors and inputs, controls timing etc. values can all be altered using the front display panel and function buttons of the Omron touch screen display.

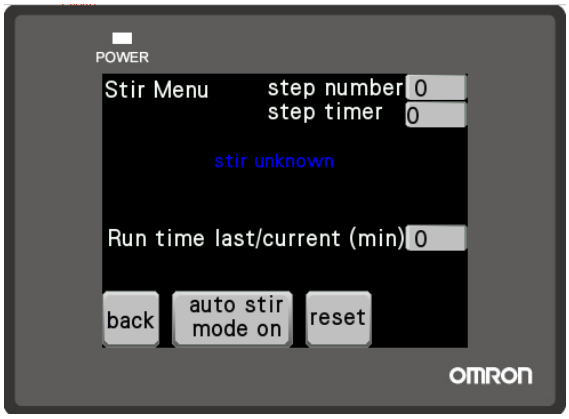
Programming the Omron PLC is accomplished by the Omron Touch screen, a simple menu driven system is present for configuring and controlling the system to suit the site,

Below is the main display showing the main menu items:

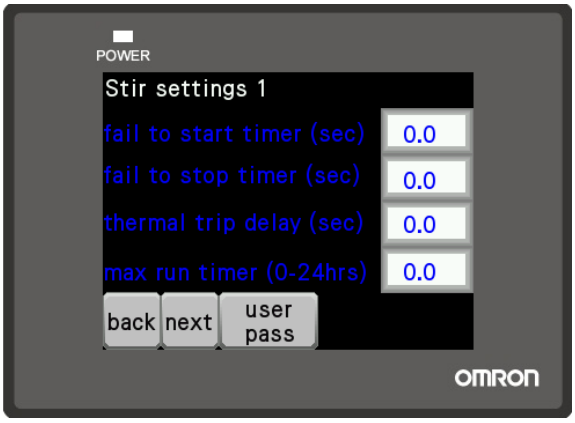


The menu display is used to control and monitor the system and to enable and disable features to suit the site requirements and features the user/ installer requires.

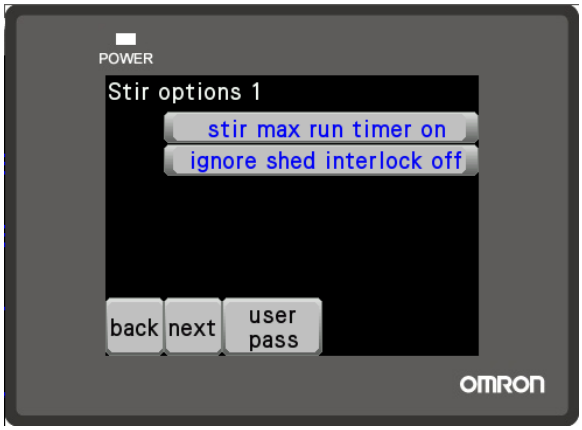
On this display the three statuses of the pump stirrer and greenwater are displayed as a quick reference of what is going on with each system.
The individual stir, pump and greenwater buttons pop up a new menu that goes into greater detail as the example below:



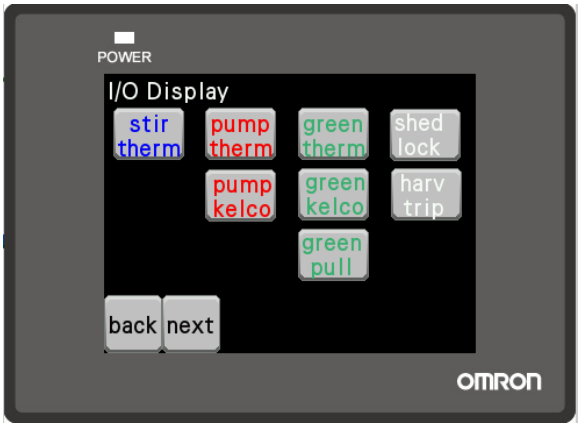
The example stir menu display as above shows the current step in the sequence (stem number) that indicates what part of the sequence the system in in which corresponds to the banner in the center of the display.
The (step timer) indicates the time to remain in the current step before moving onto the new step if conditions suit.
The (run time) indicates how long the stirrer has run so far (this session) or last time it was run giving you an accurate run time of the system.
At the bottom are the buttons or indicators that are used for information or control of the sequence or to return using the back button to the previous menu.



Above is an example display for the numerical settings that can be altered to suit on the right if you click on the box it will pop up a box where the user can enter timer and counter values as they wish currently it is showing the stir settings 1 menu item.



Above displays the feature settings you may tap on the button to turn the feature on or off as required, some settings are locked with a passcode so that only the installer or power user can alter them as they are set when the system is commissioned to suit the site.



In the IO display users can view or control inputs and outputs for testing purposes when manual control is enabled it will stop any running process to avoid conflicts of operation and could allow one to test operation of components over riding all safety controls, as such this is password protected.

Function of operation:

Stir mode:

The stirrer has two modes of operation **auto** and **manual** and just controls the independent stirring of the pond.

Auto operation, with the switch in the auto position the system is controlled by the timeclock the time clock has two relay outputs one to enable the automatic stir function as user specified times **(Channel A)** and one to disable the stirrer during green wash **(Channel B)** as outlined in the greenwash functions of operation further on in this document.

During auto mode one may press the stir button to manually operate the stirrer for a short cycle to stir the pond but not disable the auto mode, this is so the operator can press the stir button before setting up the irrigator to ensure the pond is stirred well before the pump system is started.

During auto mode if the system is running one may stop the running automatic process started from the timeclock by pressing the stop button and the stirrer will automatically restart on the next timer command this gives the ability to skip the process once without disabling auto mode.

Manual Mode, In manual mode the system is controlled by the stir button to manually start and stop the stirrer.

Stir on off switch, the stir on/off switch completely locks out the stirrer from working during pump or stir cycles, this can be used to keep the irrigation system operating if the stirrer is removed for service or faulty.
It can also be used to run the system to empty the pond to protect the stirrer, as when the pond gets low the stirrer may not be covered in water and could burn out as it requires to be submersed for cooling.

Pump mode:

In pump mode the system controls the stirrer and pump and will shut down if any fault occurs to both to protect the pumping system.

The system follows a sequence of steps during startup of the pumping sequence as follows:

1. Test system for faults warns user if something may cause the system to fail to start.
2. Wait for the pump run timer to initialize and allow the system to start.
3. Start the stirrer.
4. Delay to stir pond.
5. Open the priming valve.
6. Delay to prime pump.
7. Power the kelco and wait for it to return a pump ready to operate.
8. Start the pump.

The timer pot on the front of the box or remote box controls how long the irrigation pump will be allowed to run for, if this timer is exceeded the system will stop with no fault as its operation has completed.

Setting up the system, firstly before running the pump one must judge how long the run of the traveling irrigator is and how long it will take to complete its run.
When an expected time is obtained this can be adjusted into the run timer prior to starting the pump.

Starting the system, pressing the pump button will start the system to complete a pump cycle.

Upon startup the system is smart that is the stirrer is already running it will skip the start delay of the stirrer, so the pump starts straight away.

You may also skip the stirrer start delay by holding the pump button for an extended time during startup.

Stopping the system, pressing the pump button with the system running will stop the system.

Interlocks to the pumping system, the cabinet has a few interlocks to stop the system in the event of some other process starting, this is sometimes necessary as the system may be retro fitted in please of an existing system in upgrade reusing the original mains wiring.
This may also be necessary as the on-site transformer may not be able to run the shed and irrigation system at the same time.

Shed interlock if the pump is interlocked with the shed the pumping system will pause and will resume after milking.

Green Water Interlock if the pump is interlocked with the shed, the pumping system will pause and will resume after milking.

Interlock notes: as the system has an external timer, we can't pause this timer so if an interlock is engaged during a pump run it will continue timing during milking as if it were running.
If the timer should time out during the interlock period it will turn off the pump system as expected.

This will enable the system to run for the maximum time permissible without stirring up the pond when using the green water feature

Green Water mode:

In green water mode the system controls the greenwater pump and can be used for a multitude of different functions depending on the plant. Typically, the greenwater pump is used to fill a flood wash tank, supply a drafting gate yard or for washdown turrets/ hoses.

Starting/ stopping the system, the greenwash system is operated by an input on the control cabinet and will run the green water pump while the control signal is in bridged.

Green interlock switch, the green wash system has an interlock switch that can be used to toggle the stirrer interlock with the green wash system.
This switch stops any operation of the stirrer when the greenwater system is to be used, this allows suspended solids to sink in the pond to avoid pumping them back to the yard wash flood wash etc.
Additionally, there is a timeclock that can be programmed to disable the stirrer several hours before the greenwater pumping system is enabled to let the system fully settle before operation Channel B).

When the Green Water system has completed its operation or the time clock is inactive the system will resume normal operation of the stirrer controlled by the stir auto function or pump system.

Lamp Flash Sequences:

The lamp's on the cabinet provide basic feedback to the user to indicate the status of the system, the lamps will illuminate in sequence showing what the system is doing there are four indications the lamp can show:

Flash on / off in one second intervals indicate a fault with the system that requires inspection and reset.

Flash one second on three seconds off indicates the system is ready to start and could start at any time and is waiting either a time clock to start the system or is paused by an interlock waiting to resume operation.

Solid on- the system is in operation/ running

Solid off- the system is disabled/ stopped.

System Faults:

If any of the systems fail an alarm display banner will be shown on the function display and the system will switch to the alarm display window to indicate to the user, the nature of the fault so they can rectify it or call for support.
During a fault all other systems will operate as normal, only the faulted system will stop or interlock parts of the system related to the fault.

In the event of a repeated fault the system will limit the maximum amount of trips that can happen over a period of time that can be reset by a simple reset button press, after this limit has been exceeded the system has to be reset in a special sequence to avoid damming the system from uses ignoring faults causing damage to the system.

In the event of a fault the system won't automatically restart, the system must be reset after this it will resume operation next time the system is started.

Special precautions with reset procedure:
The greenwash system control signal will need to be removed then reenabled if it is held on during the reset procedure this is to avoid the system starting up as soon as the reset button is pressed.
This may be an issue if the if for example if the green wash system is controlled from a float switch in a flood wash tank where the signal can be removed easily, in this case it is recommended to put a second contact on the reset button to remove the greenwash start signal during reset.

Explanation of fault codes:

Fail to start:
The pump/ stirrer has failed to turn on when told to do so

Fail to stop:
The pump/ stirrer has failed to turn on when told to do so

Max run timer:
The pump/ stirrer has triggered the maximum run timer and was stopped/

Thermal fault:
The micro therm has tripped the pump/ stirrer on overtemp.

Kelco trip:
The Kelco detected a fault condition when the pump started and stopped the pump.

Keclo fail to power on:
The Kelco was told to turn on but the pump run contacts did not close.

Kelco fail to open relay contacts when powered off:
The keclo unit is telling the controller that it wants to run the pump, but we have not turned on the Kelco.

Prime valve failed to open:
The prime valve was told to open but it failed to open within a reasonable time

Prime fail to close:
The prime valve was told to close but it failed to close within a reasonable time

Pump timer ended before pump started:

The time clock that controls how long the pump runs for has turned off before the system even started properly.

Too many faults in in one hour:
The control box has had an excessive amounts of faults in a short period.
We recommend that the cause be investigated.

A full run down of the menu numerical stetting items in the menu of the display are as below:

Fail to start timer.
How long should the system wait for the pump / motor should start

Fail to stop timer.
How long should the system wait for the pump / motor should stop

Thermal trip delay.
How long does the system wait for the micro them before tripping the system with fault.
(avoids intermittent tripping from contact bounce and chatter)

Max run timer.
The max time the selected function can run before the system trips with fault.

Manual stir in auto run timer.
Run timer of the stirrer when you press the stir button in auto stir mode for a short stir cycle boost.

Kelco trip delay.
How long does the system delay before the kelco fault signal can trip the system with fault.
(avoids intermittent tripping on power up of the kelco before the kelco stabilizes or due to chatter of the relay)

Prime fail to open timer.
How long does the system wait for the prime valve to open before tripping the system with fault.
(gives time for the valve to open before checking it has opened)

Prime fail to close timer.
How long does the system wait for the prime valve to close before tripping the system with fault.
(gives time for the valve to open before checking it has closed)

Prime taking too long timer.
How long does the system wait for the kelco to close the prime valve at startup before tripping the system with fault.
(gives time for the system to prime but trip if it never primes within a reasonable time)

Kelco fail to start timer.
How long does the system wait for the kelco to return a pump ok signal on power up.

Prime run time before pump start.
How long will the prime valve open before the pump is started (allow pump time to prime before start).

Pump delay after stirrer start.
Delay before the pump starts to give a chance for the stirrer to pre stir the pond.

A full run down of the function setting items in the menu of the display are as below:

Max run timer on/off.
This function disables the max run time function so the pump or motor will be allowed to run uninhibited.

Ignore shed interlock on/off.
Ignore the cow shed interlock so the pump/ stirrer will be allowed to run even if the shed is running.

VSD as pump on/off.
Set the output of the pump to drive a VSD instead of a direct online contactor.
(set this option if you have a variable speed drive for the irrigation pump)

Force power to kelco on/off.
Force power to the kelco so that the user may program/ test it.

Ignore pump run timer on/off.
Ignore the pumps external time clock installed in the remote box or local cabinet, this is to bypass the timer in case of a failure to test the system before the remote is wired, as a safety it is recommended to set the max run timer to a suitable value.

Skip prime valve on/off.
Skip the prime valve to pump start delay, this enables the pump to start ignoring the pre pump priming function. Note: the prime valve will still be operated by the kelco if told to run at startup it will just skip the pre pump start prime function suitable for submersible type pumps

Ignore pump prime fault on/ off.
This will ignore the prime valve position sensors to check if it has opened or closed, this can be used to substitute a prime valve that does not have position feedback or has failed position sensors.

Output set to soft start / pump dol.
This selects the dol pump contactor to be the output for the greenwater pump.
When a variable speed drive is used for the pump allowing the pump dol contactor to be repurposed for greenwater pump.

Green Water interlock on/off. (pump settings)
This function will pause the pump system if the greenwash is started, this feature is enabled if the mains system is not suitably sized to run the pump and greenwater system at the same time, normally this would be interlocked with the shed but in some cases a greenwash system may be added after the pump system is fitted.

Feature disable not fitted on/ off. (greenwater settings)
This function will disable the greenwater function altogether, this will stop the greenwater valve and greenwater interlocks from disabling the stirrer if the system does not have greenwater fitted.

Fault ignore on/off.
This item is only for testing purposes but will ignore all faults from tripping the system, this can be used to diagnose or further or test run the system during commissioning.

Ignore harvest trip on/off.
This function will ignore the harvest or other remote system from tripping the system in the event of a failure of fault.

Reset all settings to suggested values.
This will reset all the timing settings to sane values that will usually cater for most systems.

Time clock programming:

A. If power supply is disconnected press “OK” for one second. The display appears in Automatic-Mode.
B. Press “M”, the time switch is now in the Enter-Mode.
C. Confirm Program with “OK”.
D. Confirm new program with “OK”.
E. Choose the desired channel with “+” and or “- “and confirm with “ok”.
F. For regular switching times choose on or off with “+” and “-” buttons and confirm with “OK”.
G. Within this level you activate the days of the week (1…7) on which the switching time should happen.
With “+” and “-” you activate “yes” or deactivate “no” the corresponding date. Confirm each day with “OK”.
H. Adjustment of the time: you may press “+” and “-” to adjust the hours and Press “OK” to advance to the Minutes and adjust in the same way.
I. Verify the entered switching time: If the flashing summary of the programming step is correct, verify on or off with “OK”. After verification you have the choice between edit/delete and end with “+” and “-”.
J. If you want to proceed with programming, confirm next switching with” OK” To leave the programming menu confirm end

Manual time clock bypass:

By pushing “A” and “B” buttons or “+” and “-” buttons simultaneously manual operation of the channels take place. The resulting switching status is marked
with the hand-symbol and remains until the next programming
step occurs. (temporary over-ride)
Permanent switching status P
By pressing the corresponding channel button for more
than 3 sec. the channel is permanently switched ON or OFF.
The status remains until the next manual switching occurs (> 3
sec.). (permanent over-ride)

Harvest/ remote system:

The harvest option is for integration of a Harvest Remote telemetry system.
Further on in the manual it explains connection of a typical remote system to the AgFirst irrigation controller.

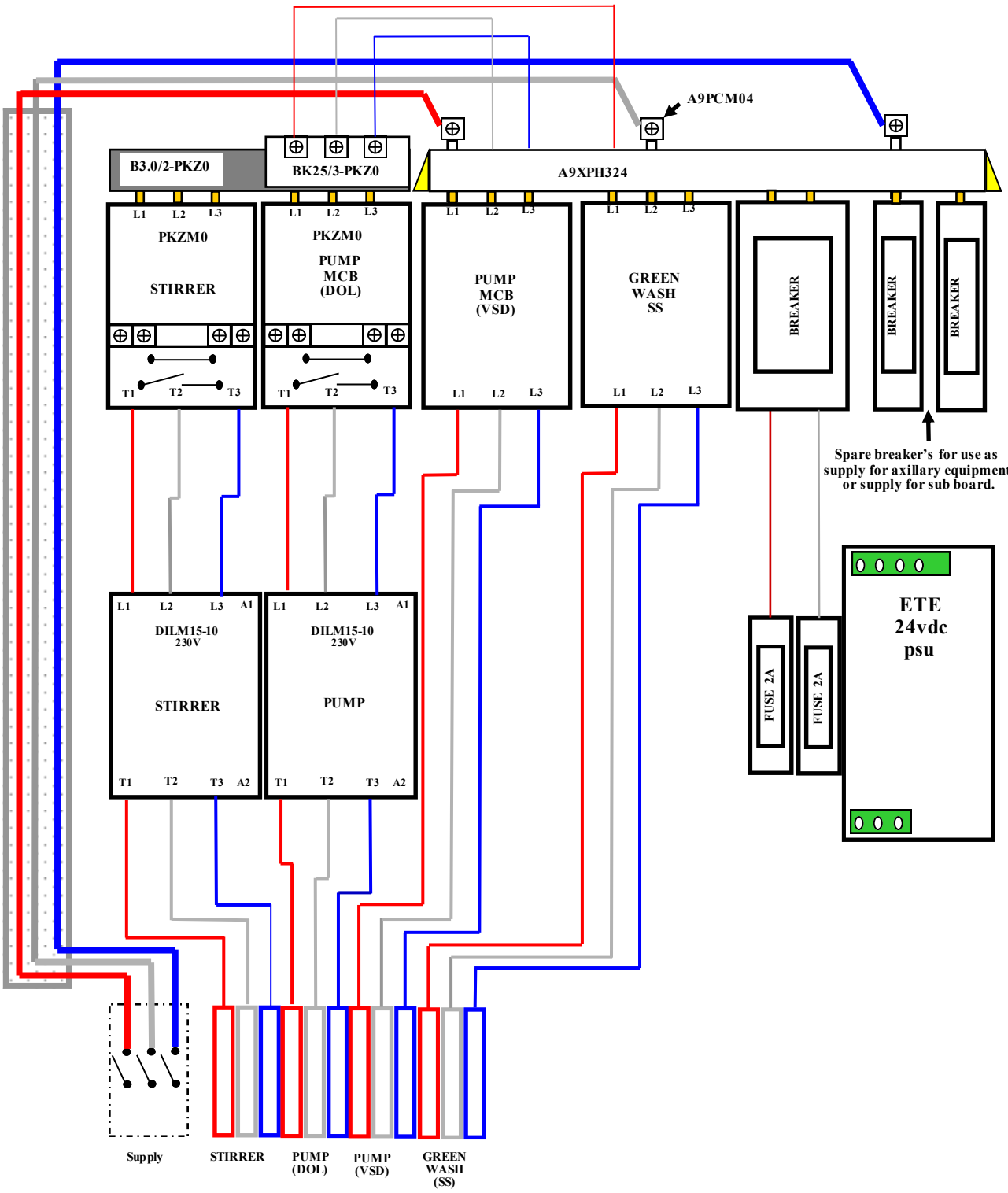
The inputs info the AgFirst Controller operate as follows:

- **Pump start /stop** (pulsed) triggered on diff up
- **Stir start /stop** (pulsed) triggered on diff up
- **Trip** (pulse or latch, expect active in trip condition)
- **Reset** (pulse for normal reset held for 10 seconds for hard reset)

The outputs from the AgFirst Control Box are as follows:

- **Trip indication** (Closed to indicate a trip condition)
- **Pump Indication** (pulse sequence or solid to indicate status)
- **Stir Indication** (pulse sequence or solid to indicate status)
- **Reset indication** (Closed to trigger a reset has been made to the harvest system)

Note: the contactors contained within this unit are rated for 7KW. Please check the overload ratings are of the correct size for the motors prior to installation.



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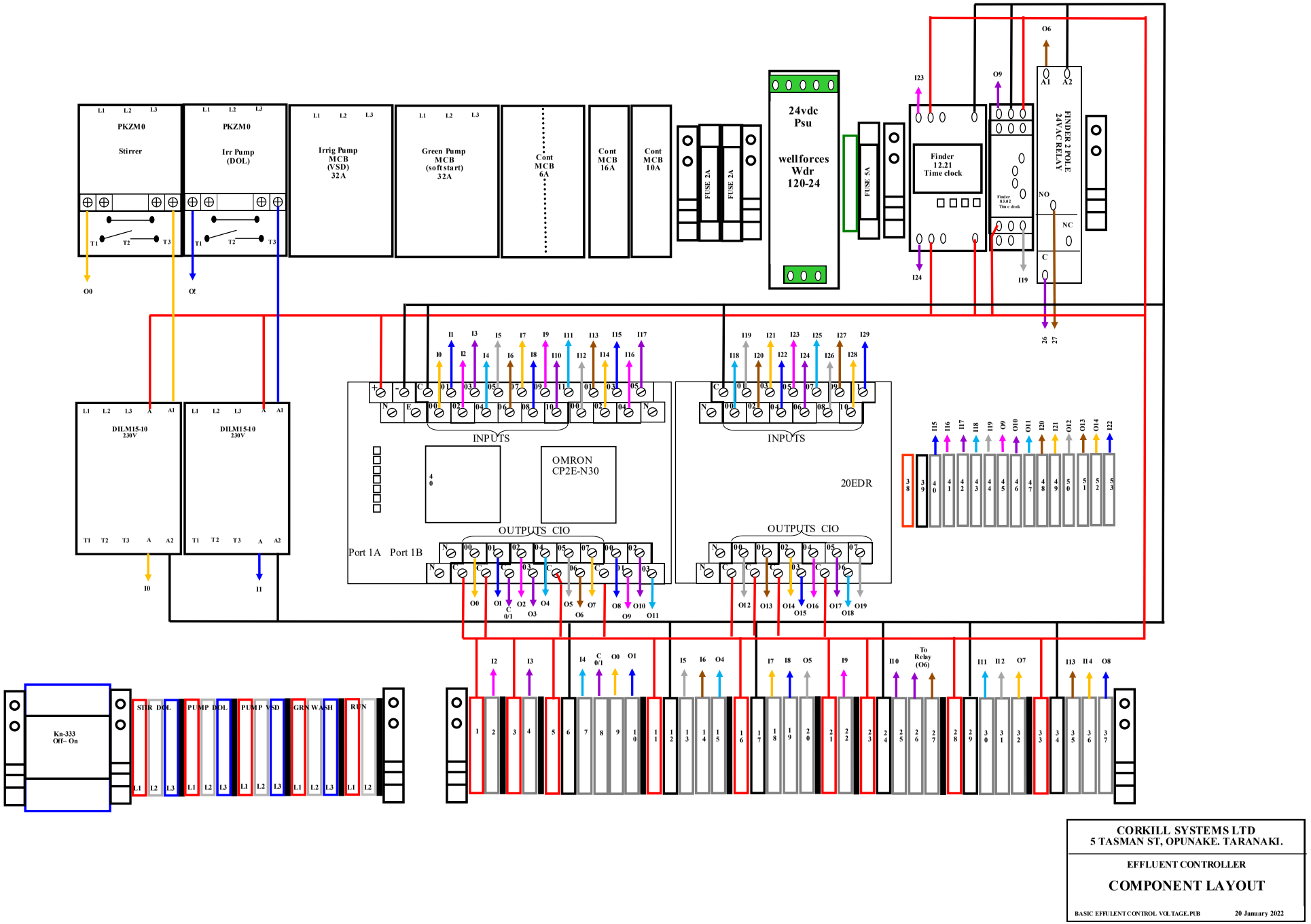
5 TASMAN ST, OPUNAKE. TARANAKI.

CONTROL VOLTAGE WIRING
BASIC EFFULENT
CONTROLLER

Basic effulent control power wiring.PUB

23 November 2021



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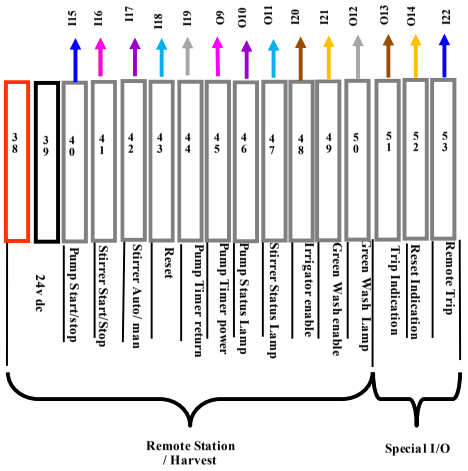
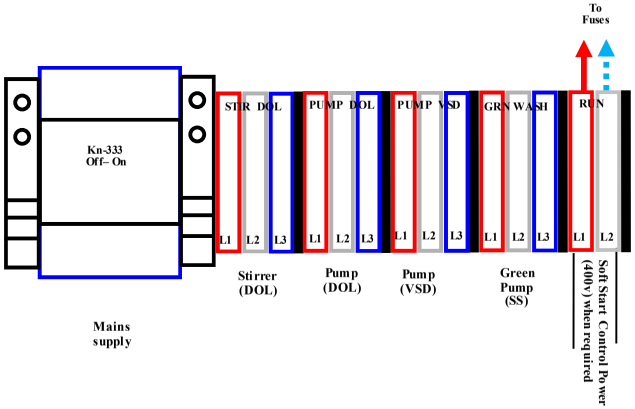
EFFLUENT CONTROLLER

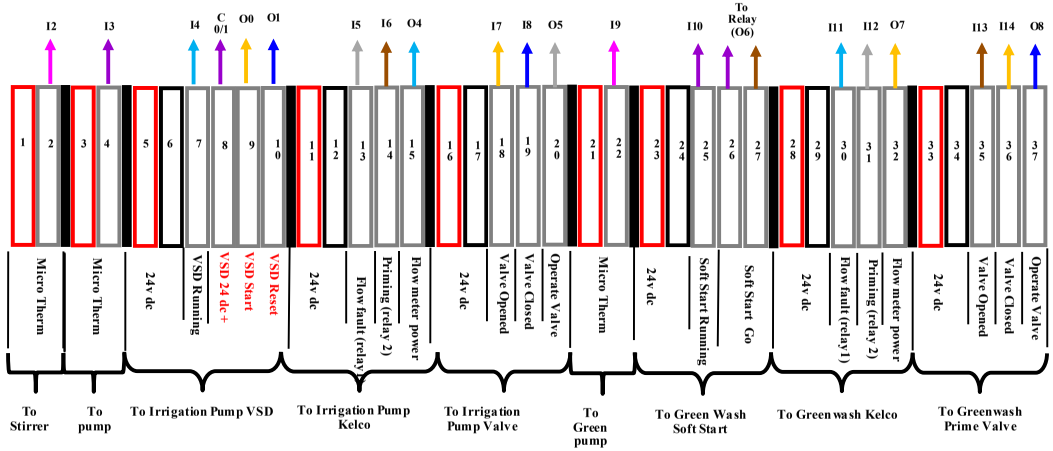
COMPONENT LAYOUT

BASIC EFFULENT CONTROL VOLTAGE.PUB 20 January 2022

Note:
All inputs are PNP active when input is high







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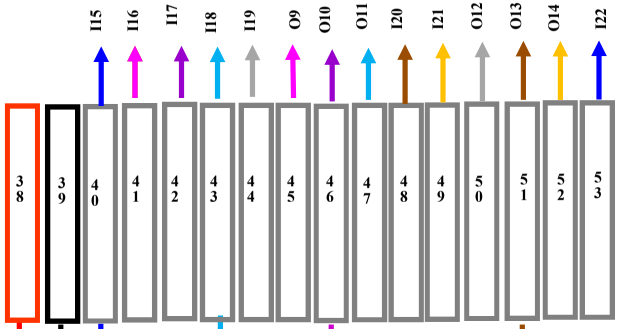
EFFULENT CONTROLLER

INPUTS - OUTPUTS

BASIC EFFULENT CONTROL INPUT– OUTPUT.PUB 16 December 2022



Pump Start/Stop

Remote Reset

Pump is Running

Trip indication

Isolator is to be mounted in the harvest enclosure on the din rail provided on the lid

Note this diagram is for the basic connection of Harvest to the AgFirst irrigation controller

The Harvest unknit must be configured as below:

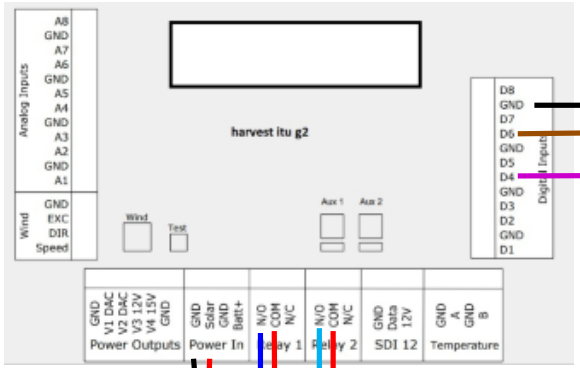
Relay 1 pulse start/stop

Relay 2 pulse reset

Input 4 pump running

Relay 2 trip indication

Advanced setups controlling greenwash, zone valves etc will be custom wiring per job



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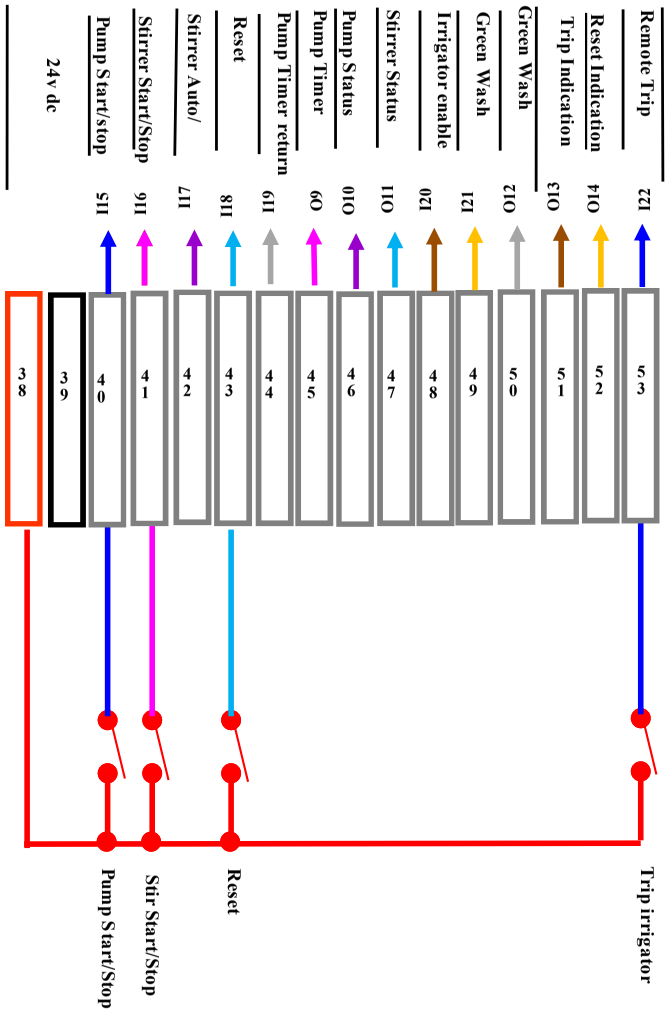
EFFULENT CONTROLLER
Harvest/
Standard Connection Diagram

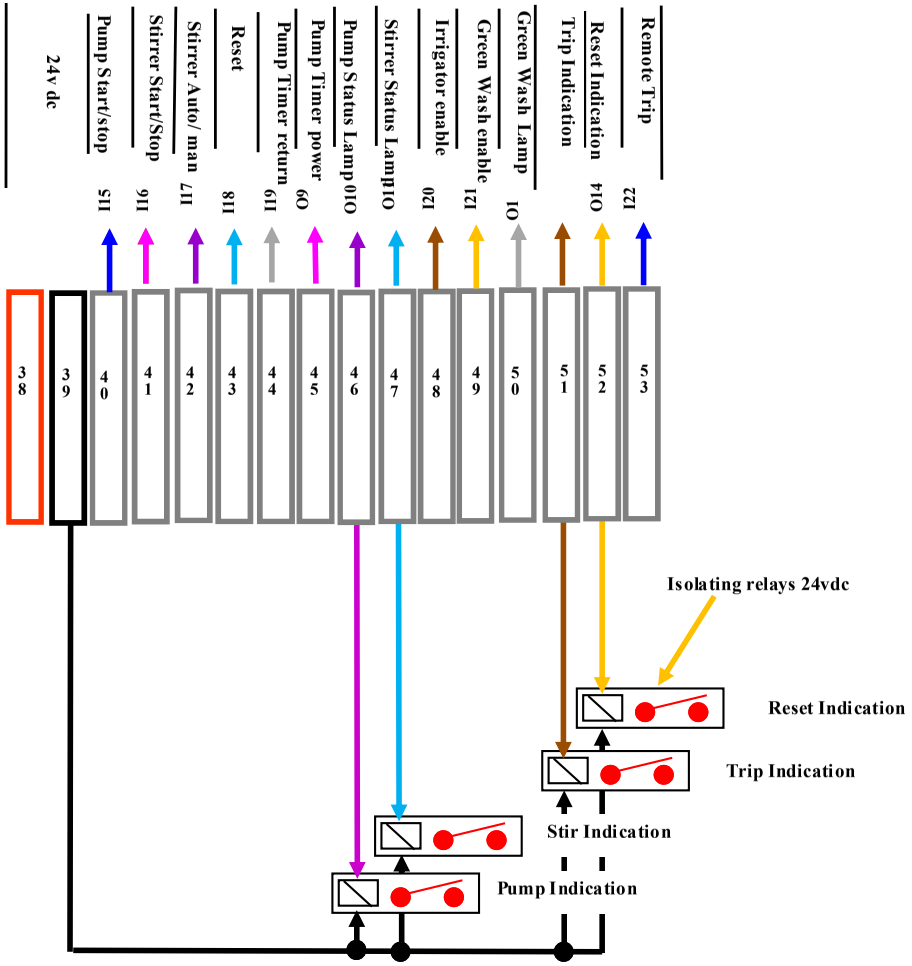
Effluent control- harvest connections.PUB

19 March 2025



connection to isolating relays for remote outputs from radio system

Note:
This is the generic connection for a remote system to the AgFirst irrigation controller



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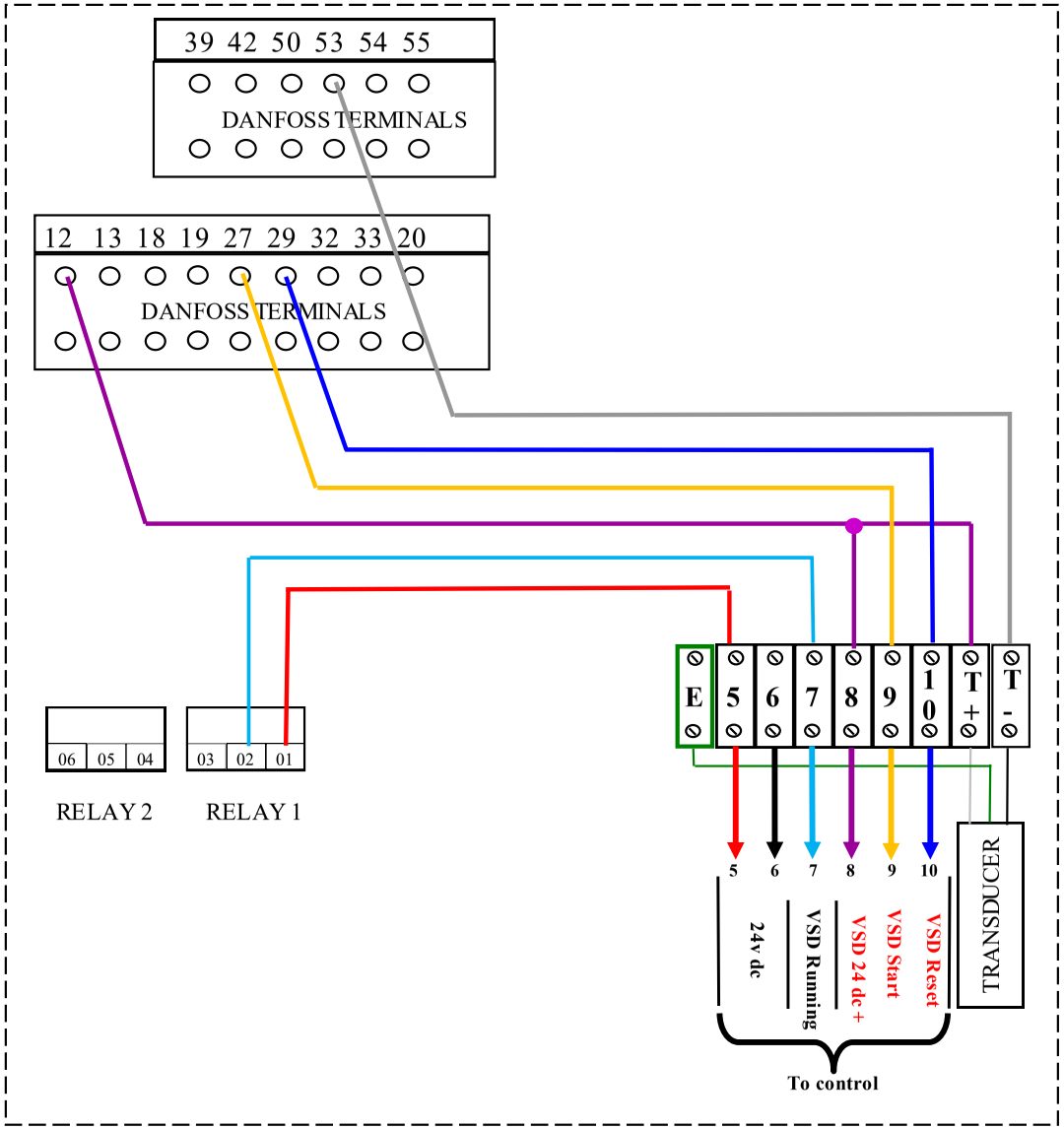
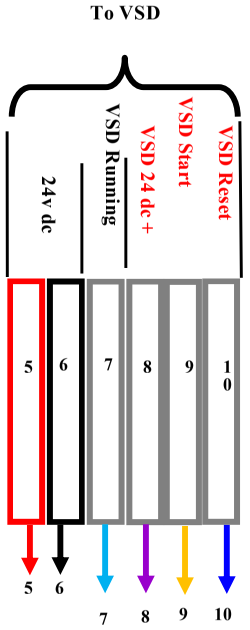
EFFULENT CONTROLLER
Generic Remote
Connection Diagrams

Effluent control– harvest connections.PUB 19 March 2025

AGFIRST EFFLUENT IRRIGATOR PUMP
VSD CONTROL WIRING





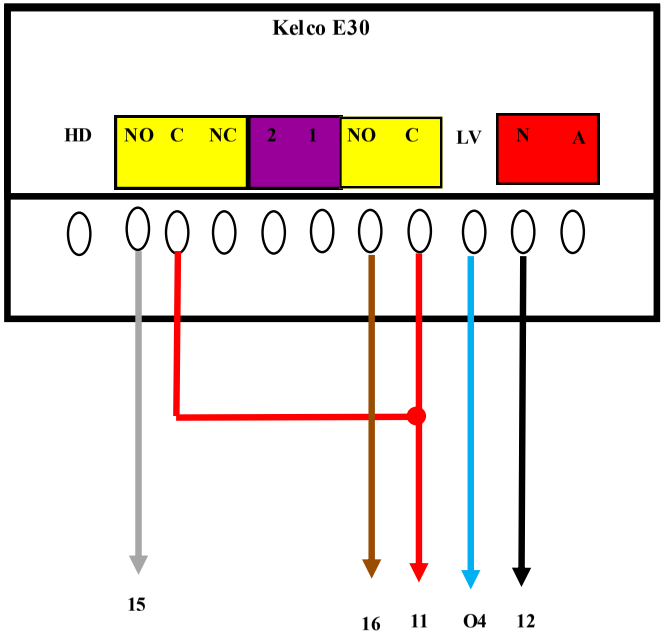
CORKILL SYSTEMS LTD
2 King St, PO Box 16
OPUNAKE, TARANAKI. NEW ZEALAND
Ph (06) 761 7531 Fax (06) 761 7336

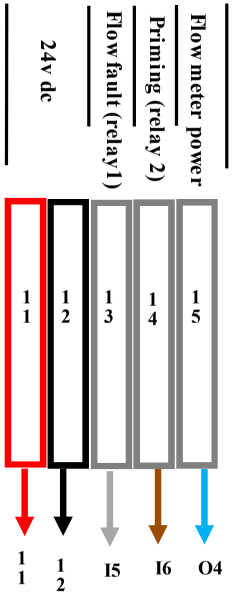
EFFLUENT CONTROLLER

VSD WIRING

AGFIRST-IRRIGATOR-WIRE.PUB January 31, 2022

Kelco E30 wiring for irrigator





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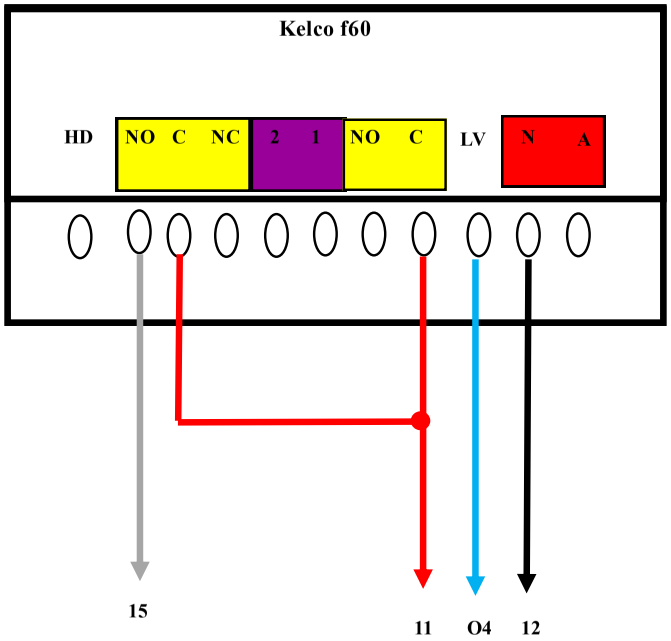
EFFLUENT CONTROLLER

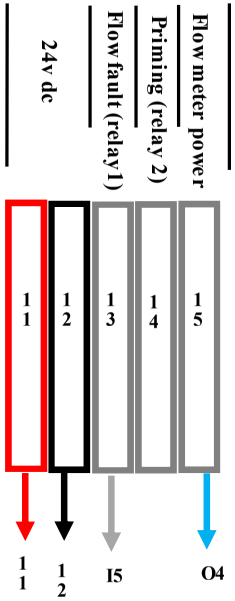
Kelco Wiring for Irrigator

BASIC EFFULENT KELCO.PUB

16 December 2022

Kelco f60 wiring for irrigator





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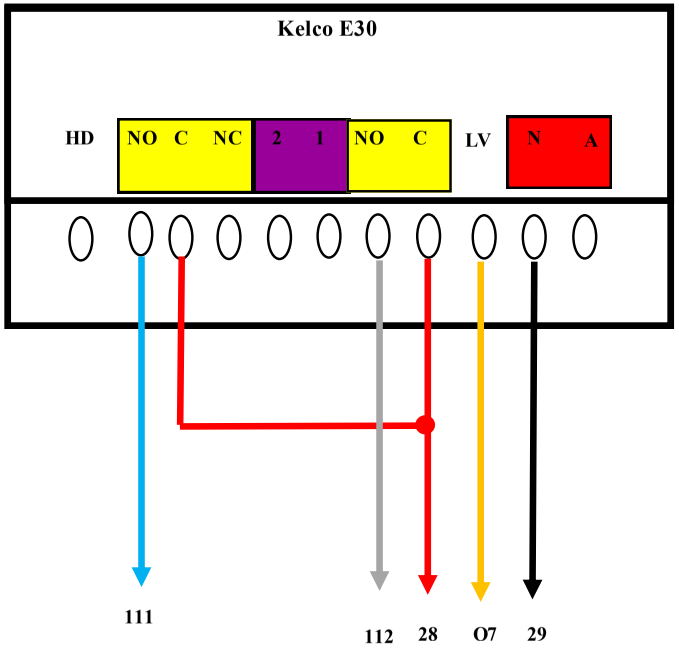
EFFLUENT CONTROLLER

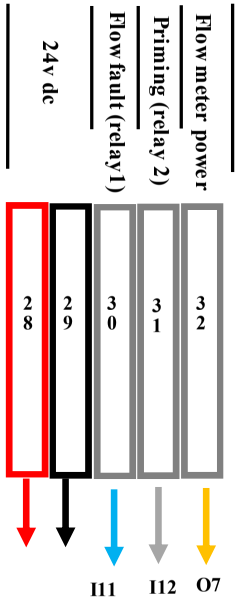
F60 Kelco Wiring for Irrigator

BASIC EFFULENT KELCO.PUB

16 December 2022

Kelco E30 wiring for green wash





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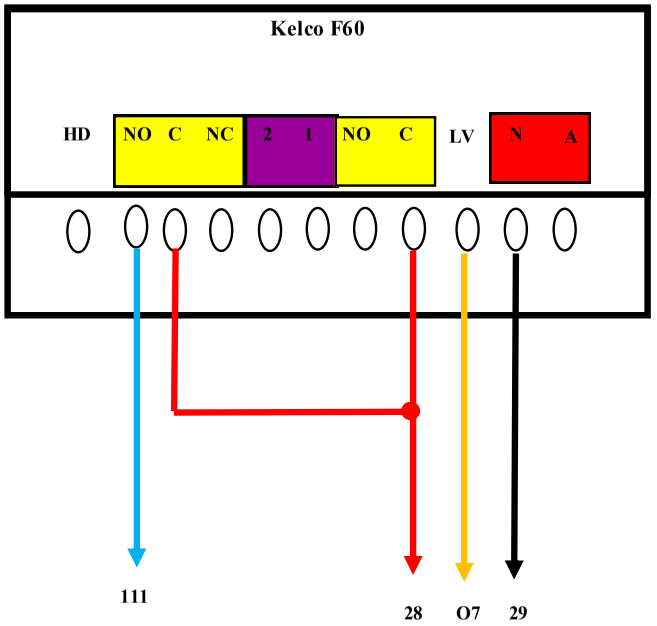
EFFLUENT CONTROLLER

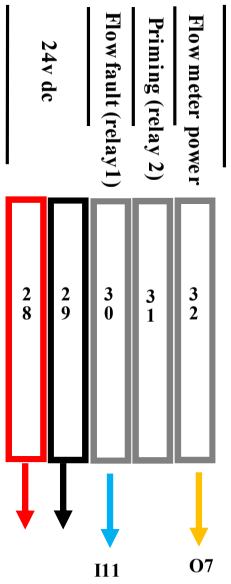
E30 Kelco Wiring for Green Wash

BASIC EFFULENT KELCO.PUB

16 December 2022

Kelco F60 wiring for green wash





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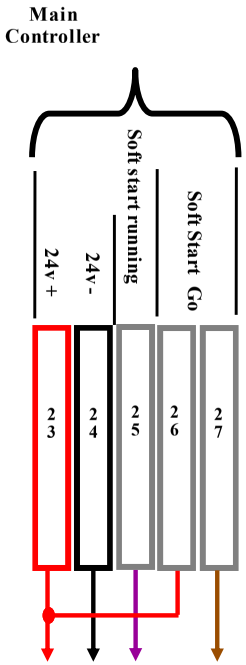
EFFLUENT CONTROLLER

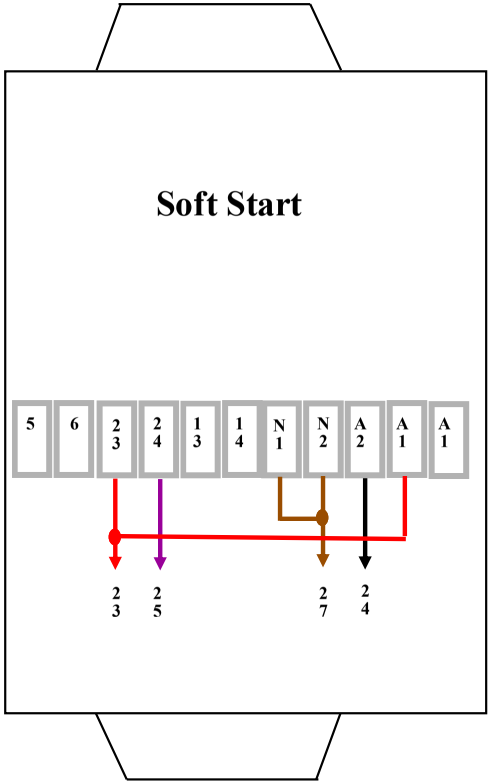
F60 Kelco Wiring for Green Wash

BASIC EFFULENT KELCO.PUB

16 December 2022

Green wash Soft Start Wiring 24v control





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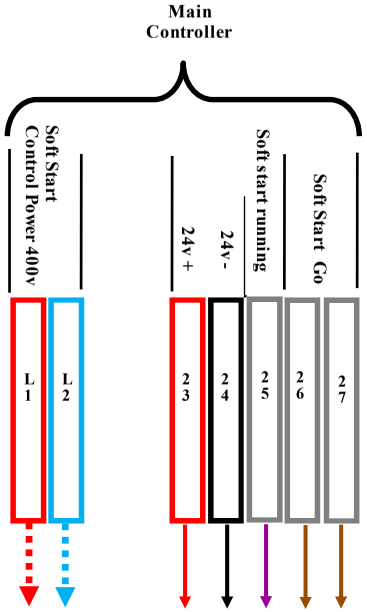
EFFULENT CONTROLLER

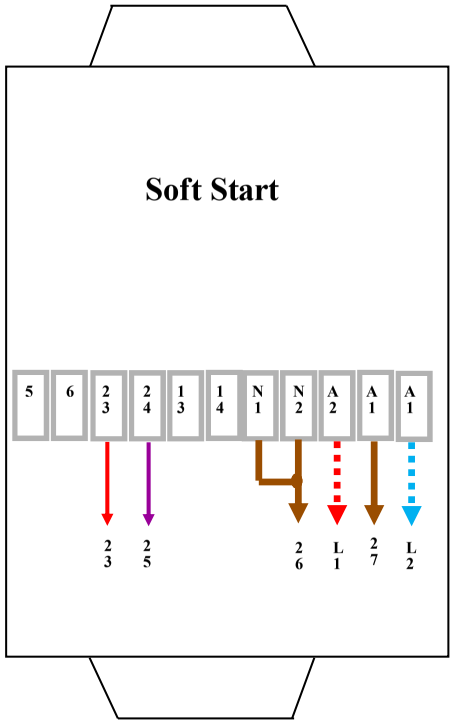
Soft Start Wiring 24v control

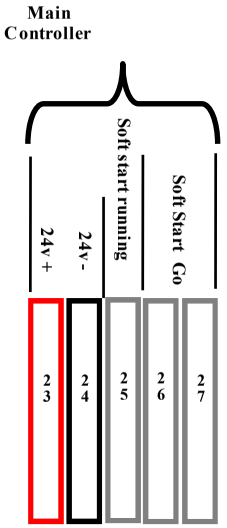
BASIC EFFULENT KELCO.PUB

20 January 2022

Green wash Soft Start Wiring 400v control







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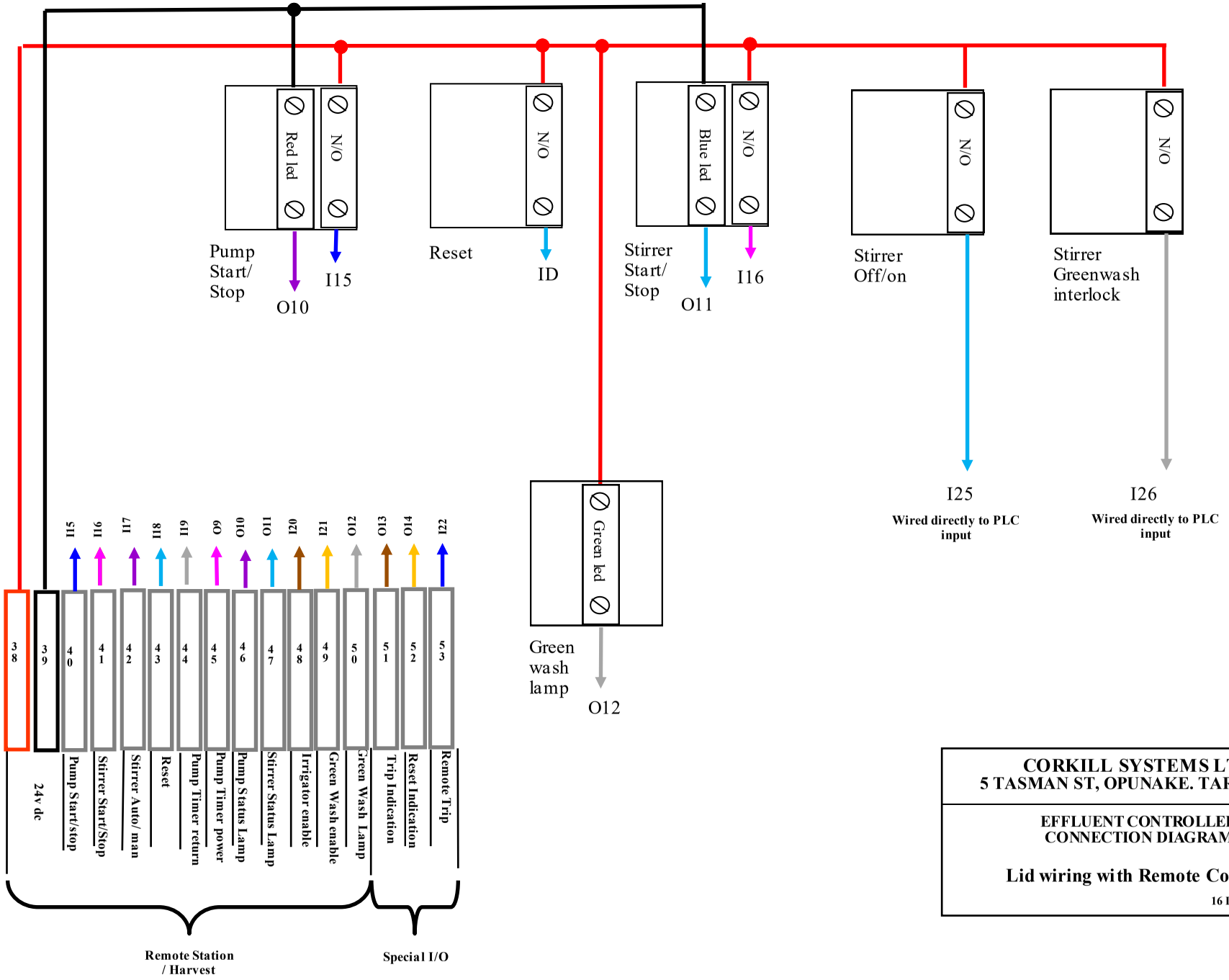
EFFULENT CONTROLLER

Soft Start Wiring of 400v control

BASIC EFFULENT KEL CO.PUB

20 January 2022



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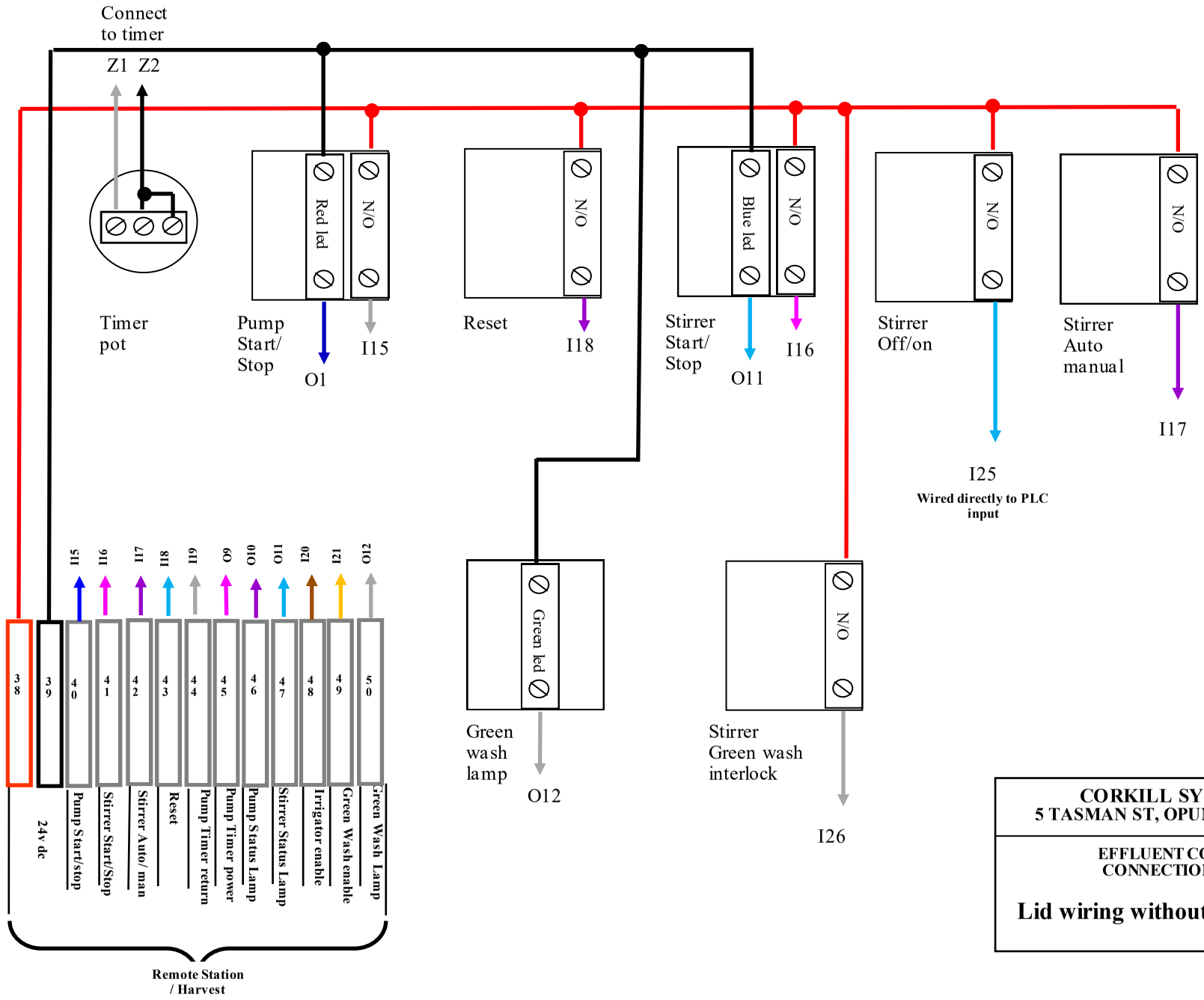
EFFLUENT CONTROLLER CONNECTION DIAGRAM

Lid wiring with Remote Control

16 December 2022



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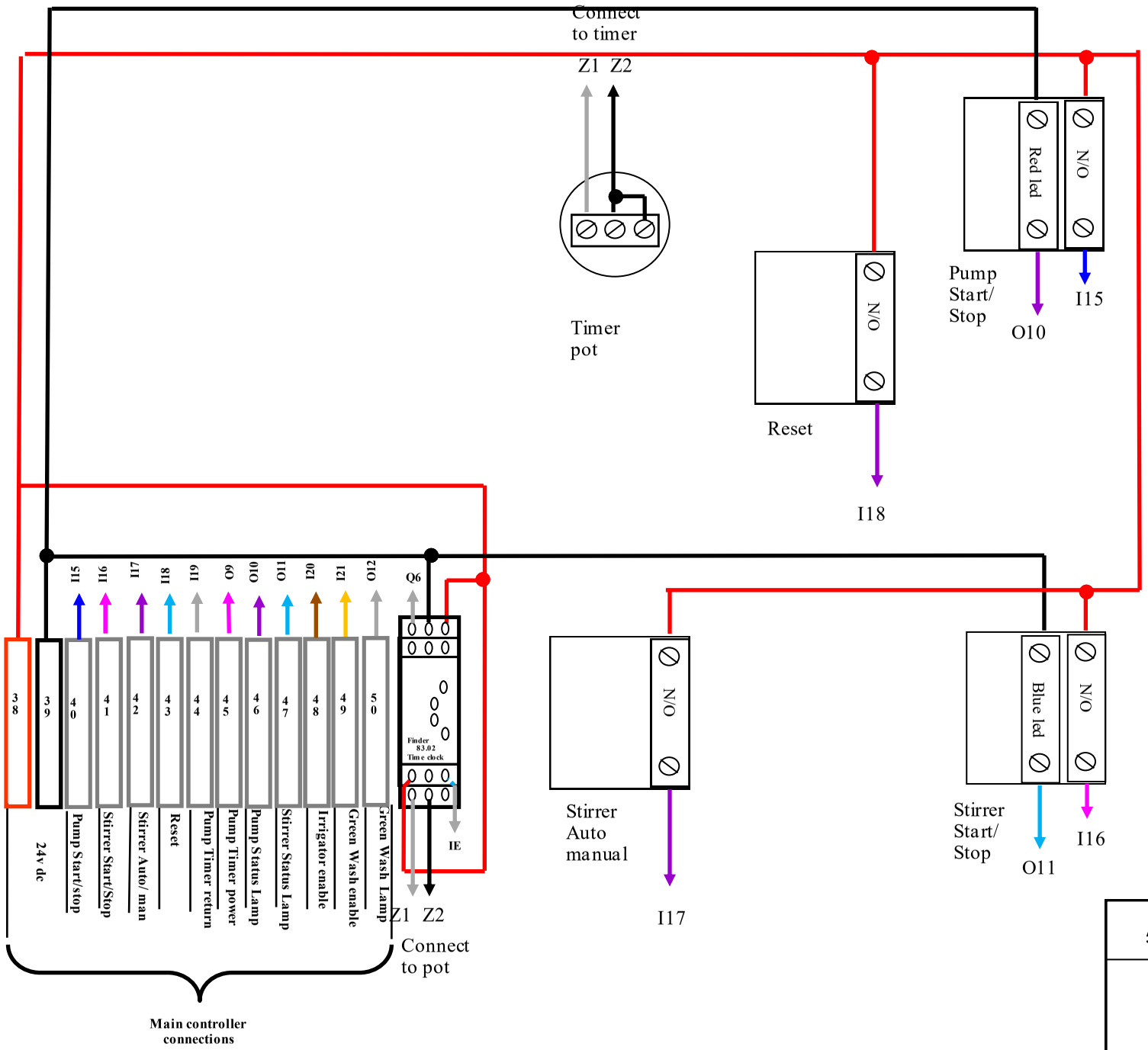
EFFLUENT CONTROLLER
CONNECTION DIAGRAM

Lid wiring without Remote Control

16 December 2022



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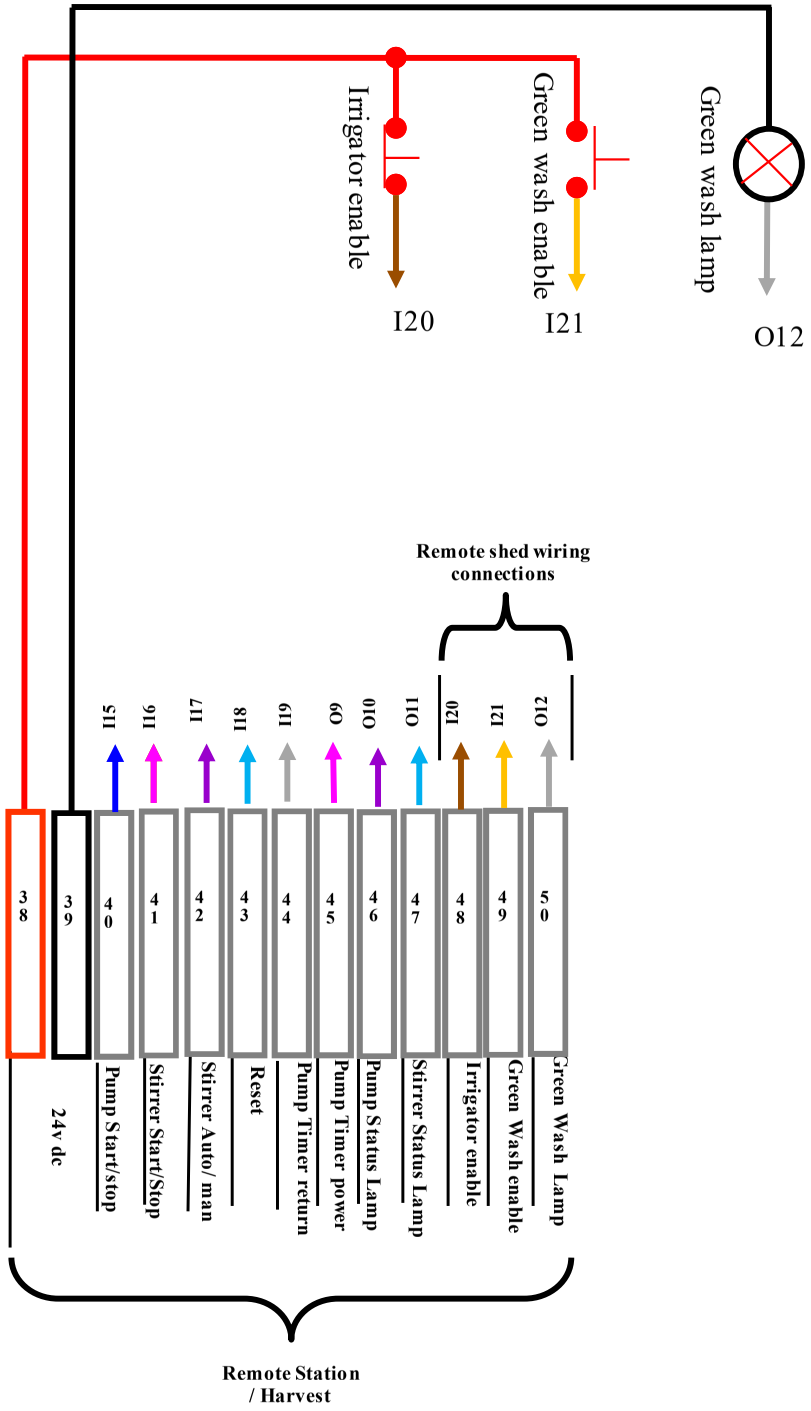
EFFLUENT CONTROLLER

Remote Control Box Wiring

16 December 2022



Note:
These connections can be wired directly from the shed to the remote control or directly to the irrigation controller.

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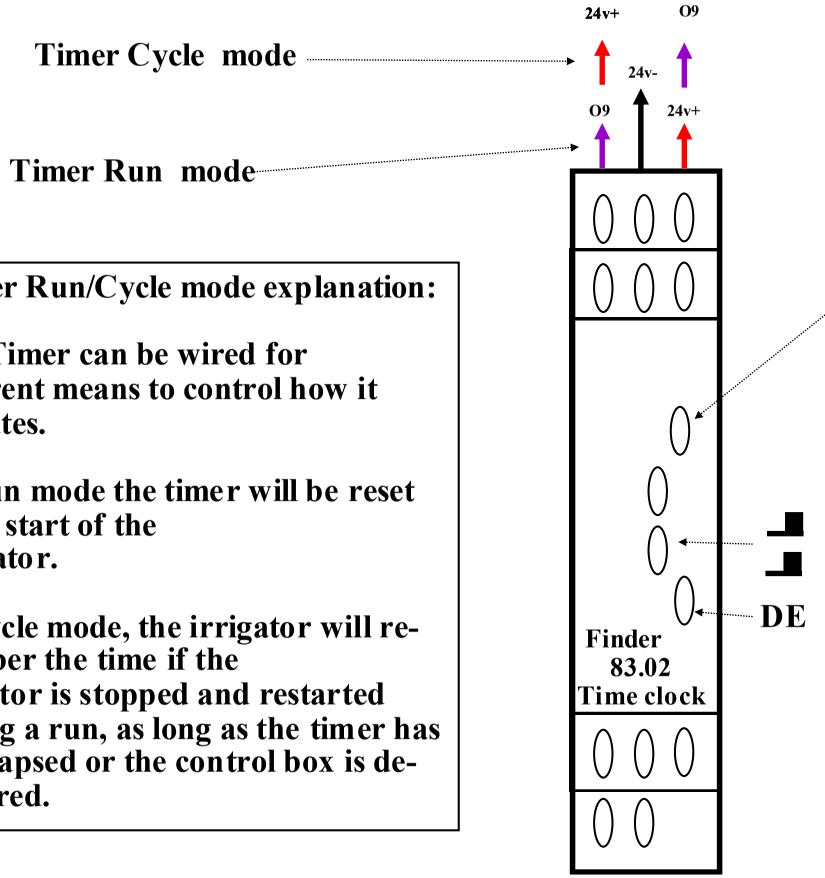
EFFLUENT CONTROLLER
GREEN WASH
SHED WIRING CONNECTIONS

16 December 2022

Irrigator Run Timer setup



Timer Run/Cycle mode explanation:

The Timer can be wired for different means to control how it operates.

In Run mode the timer will be reset every start of the irrigator.

In Cycle mode, the irrigator will remember the time if the irrigator is stopped and restarted during a run, as long as the timer has not elapsed or the control box is de-powered.

Adjust dial to set pump run time.
10h for 0-10 hour or 1D for 0-24 hour

The pot on the lid of the Control Box [or Remote Box] has two scales. Select which is appropriate for the run time of the system.

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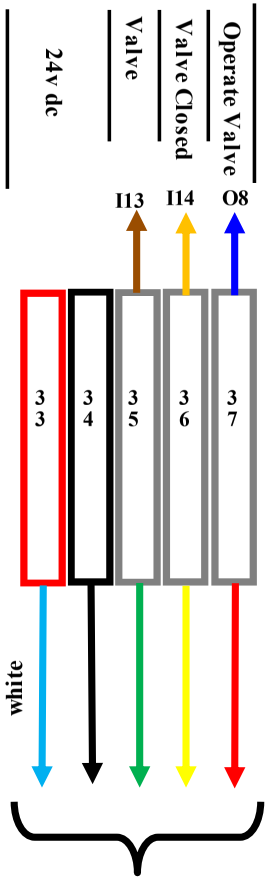
CONNECTION DIAGRAM
BASIC EFFULENT CONTROLLER
Irrigator Run Timer setup

February 2025



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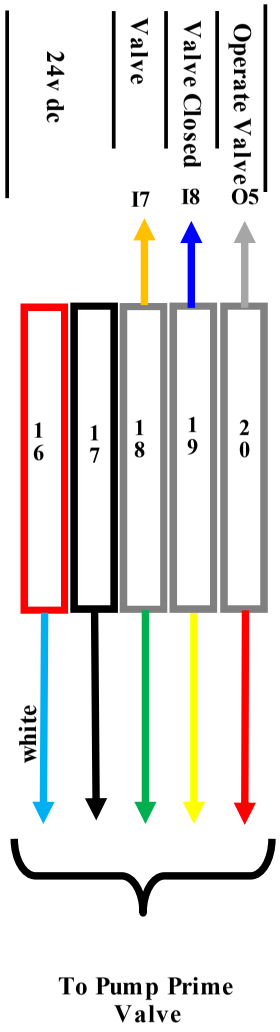
EFFLUENT CONTROLLER

Prime valve Wiring for Green Wash

BASIC EFFULENT primegreen.PUB

16 December 2022



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EFFLUENT CONTROLLER

Prime valve Wiring for irrigator

BASIC EFFULENT primegreen.PUB

16 December 2022