Installation and Operating Manual

IRVWPC-G2 Hardware Version 3.0.2

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IRVWPC Packing List

Quantity	Description
1	IRVWPC-G2 Controller Module Version 3.0.x
1	Pressure sensor fitting assembly
1	½" x ½" MPT male/male coupling
1	12" stainless braided ½"x ½" FPT flex hose
1	Right Angle adapter (90-degree swivel elbow and straight male)
2	Pan head mounting screws
4	WAGO wire connectors
1	10A spare fuse
1	Wiring harness

Installation Videos

Our website has many videos to assist in the installation and wiring connections of the IRVWPC-G2 unit. These are found under ***SUPPORT or VIDEOS page***.

INSTALLATION HELP INSTRUCTIONAL VIDEO is a complete start to finish overview of installation.
INSTALLATION HELP DETAILED PUMP CONNECTION is a detailed step by step showing the exact wiring for a pump and the pressure sensor connection to the pump outlet.
PRODUCT SUPPORT CONTROL MODE CHANGE is a detailed step by step video showing the procedure to change the control to perform better with TANK style water heaters, flow restrictor nozzles, or system accumulators.
Right Angle Adapter Installation shows the proper tightening and repositioning of the connections.
Incorrect Pressure Switch Adjustment shows how to adjust the pump switch if the pump still cycles after your installation.
Loose Pump Housing Screws shows how to tighten these and how they can create extra pump rattling noise.
WAGO Wire Connectors shows how to use these new connectors in the wiring package.
Pressure Sensor Installation CAUTION discusses mounting the pressure sensor on the pump outlet.
These videos are an excellent resource, please have a look.

IMPORTANT

CONNECTION OF THE IRVWPC-G2 DEVICE TO THE PUMP MOTOR MAY VOID THE PUMP MANUFACTURERS WARRANTY.

THE CONTROLLER ENCLOSURE IS NOT WATERPROOF. DO NOT MOUNT THE MODULE IN AN POSITION WHERE ACCIDENTAL WATER OR FLUID SPILLS ARE POSSIBLE. THE MODULE MUST LOCATED WITHIN THE DRY INTERIOR ENVELOPE OF THE RV.

THE CONTROLLER MUST NOT BE LOCATED IN A LP STORAGE AREA.

THE CONTROLLER IS NOT IGNITION PROTECTED AND IS NOT SUITABLE FOR USE IN MARINE ENGINE COMPARTMENTS AND FUEL TANK SPACES.

The RED and BLACK wires from the module are to be matched to the RED and BLACK wires on the pump only. DO NOT SUPPLY POWER TO THESE WIRES. APPLYING POWER TO THE RED AND BLACK WIRES CAN DAMAGE THE MODULE!
PLEASE SEE THE WIRING SCHEMATIC AT THE END OF THIS MANUAL.

DO NOT APPLY ANY LATERAL FORCE TO THE PRESSURE SENSOR CONNECTOR STEM WHEN TIGHTENING THE SENSOR ASSEMBLY. GENTLY HAND TIGHTEN UNTIL CONTACT IS FELT WITH THE RUBBER WASHER AND THEN USING A SMALL WRENCH, TIGHTEN NO MORE THAN 180 DEGREES.

Contact us at: irvwpc@gmail.com with any questions.
Live chat is also possible through our website: www.irvwpc.com

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1.0 Overview

The typical RV water pump operates in a fully ON or OFF cycle, where water flow is controlled by a pressure switch that stops the pump at a maximum pressure and an internal by-pass that allows water to recirculate back to the pump inlet. While this mechanical system to regulate the pressure works, it is inherently inefficient, noise due to intermittent ON and OFF operation (a complaint heard by many RV owners) and can lead to premature failure in the water system components caused by undue mechanical stress.

The IRVWPC is an electronic module that works with a water pressure transducer to prevent RV water pumps from operating in by-pass and cycling modes resulting in improved electrical efficiency, quiet operation along with a consistent regulated water pressure and steady water flow without the use of an additional accumulator tank. The IRVWPC eliminates the required mechanical adjustments found on these pumps.

The IRVWPC uses a dedicated control algorithm designed to regulate the speed of the pump to only operate as required to reach the desired water flowrate. Very low flowrates can now be achieved without the typical pump cycling ON and OFF or the pump operating in by-pass mode. The original pump controls remain functional and can be used as back up to operate the pump. This module is ideally suited for RV Boon-dockers who are constantly trying to conserve battery power and water resources. The regulated pressure which results in steady water flows aids On-Demand hot water heaters in providing a constant regulated water temperature.

Installation is simple and can be performed by the RV dealer or a Licenced RV Technician. Unit comes with the pressure transducer adapter fitting, a right-angle fitting section, a male-male threaded coupler and a 12” stainless braided hose section for easy connection to the water pump’s outlet port. Four flying lead wires make for an easy connection to the pump motor and RV power source.

All water system components and materials have NSF61 approval for potable water. This includes the pressure transducer.

Typical installation can be performed in as little as 15 minutes.

1.1 LED Indicators

The G2 module has a GREEN and RED LEDs for status indicators.
FAULT (RED) - This indicator represents 5 different fault conditions that can occur. These protection features are enabled by turning the appropriate SLIDE SWITCH to the ON position. The SENSOR FAULT is always active and cannot be disabled. There are 5 blinking states. These are detailed below:

- 7 blinks followed by 4 seconds OFF indicates a DRY RUN TIMER Fault state. This fault condition will lock-out the pump and require the RV pump power switch to be turned OFF and then back ON to resume normal operation. A detailed description of the DRY RUN can be found in the PUMP SAFE-GUARD options section.
- 6 blinks followed by 4 seconds OFF indicates a LONG RUN TIMER Fault state. This fault condition will lock-out the pump and require the RV pump power switch to be turned OFF and then back ON to resume normal operation. A detailed description of the LONG RUN can be found in the PUMP SAFE-GUARD options section.
- 5 blinks followed by 4 seconds OFF indicates a LOW FLOW CYCLING Fault state. This fault condition will lock-out the pump and require the RV pump power switch to be turned OFF and then back ON to resume normal operation. A detailed description of the LOW FLOW CYCLING can be found in the PUMP SAFE-GUARD options section.
- 4 blinks followed by 4 seconds OFF indicates a RUN WATCHDOG Fault state. This fault condition will lock-out the pump and require the RV pump power switch to be turned OFF and then back ON to resume normal operation. A detailed description of the RUN WATCHDOG can be found in the PUMP SAFE-GUARD options section.
- 3 blinks followed by 4 seconds OFF indicate a faulty or missing pressure sensor connection. On this condition, the control will turn ON 100% to allow the pump to operate as it did without the IRVWPC module.
- 2 blinks followed by 4 seconds OFF indicate that the module failed to detect the pressure increase to turn off for a period of 30 minutes. On this condition, the control will turn ON 100% to allow the pump to operate as it did without the IRVWPC module. The pump will then turn off using the mechanical pressure within the pump. This requires the RV pump power switch to be turned OFF and then back ON to resume normal operation.

RUN (GREEN) - This indicator has 3 states:
A ½ second ON and ½ second OFF rate when POWER is applied to the control unit indicates the PUMP state is **IDLE** and not running.
When the PUMP is **RUNNING** at variable speed, this RUN indicator will be constantly ON.
When the PUMP is at **FULL SPEED** and cannot run variable, this LED will blink quickly.

2.0 Installation

WARNING: Installation should be performed by a qualified Licensed RV Technician. Failure to do so can result in damaged components or water damage to your RV.

CAUTION: Installation fittings seal with an internal taper and the use of Sealers and Teflon tape are not required, as it may cause stripped threads or cracked fittings due to over-tightening. All fittings are recommended to be firmly HAND tightened only.

Please watch our videos under SUPPORT on the website showing right angle adapter and pressure sensor installation. These videos highlight the importance of not over tightening and damaging the fittings.

After installation the system MUST be pressure tested to ensure no leaks and frequent inspection is recommended to ensure no possible water damage.

The existing piping SHOULD NOT be placed under any stress in order to make the connections. This could cause a cracked or damaged pump housing resulting in water damage and/or pump failure.

IMPORTANT: Following any modification of the plumbing system, proper sanitization of plumbing components MUST be performed. Failure to do so can result in serious personal health conditions. Refer to your vehicles manuals for the proper sanitization recommendations for the plumbing system.

2.1 Initial Installation Procedure

It is recommended that the installer follow all these directions and steps to aid in an easy trouble-free installation.

1) Remove DC power from the pump. This can be either by turning the pump control switch OFF, by turning the RV Master disconnect OFF or removing the pump fuse.
2) Remove pressure from the water system by opening a faucet and turn OFF the water heater.
3) Remove all water from the system by opening the low point drains as would be done in the WINTERIZING procedure. This will prevent excess water leakage when disconnecting the pump outlet line.
4) Have towels/paper towel and possibly a suitable pan or bowl to aid in catching any leaking water during the fitting removal process. This will guard against any water damage.

2.2 Pressure Sensor Installation

The pressure sensor is mounted into an inline fitting with male and female ½"PT threads. Mounting the sensor directly to the pump might not work in some situations, the proper 10 o'clock to 2 o'clock vertical positioning may not be possible to achieve, and over-tightening may result causing pump or fitting damage. In these situations, either the hose or right-angle adapter must be used. These have a swivel ends and allow infinite positioning.
If space does not permit, such as the pump outlet very close to a wall, then the use of the right-angle adapter will work well in this case. The orientation of the right-angle adapter can be adjusted by rotating the PEX fittings within the PEX pipe section. By firmly holding and rotating the fittings any alignment can be achieved.
Some RVs use a flexible hose on the pumps discharge, and it is likely that this can be readjusted in position to reconnect. If this is not possible, then by attaching the supplied braided hose and coupling fitting, it should be possible to achieve an unstressed connection back to the original piping in most applications.
All loose pipes or hoses should be securely fastened with Zip-Ties or plastic pipe clamps to minimize vibrational noise that could be created from piping modifications.
WARNING:

- **Do not stress the piping in any way to make the connection. PEX piping cannot be sharply bent or kinked.**
- **Do not over-tighten fittings to achieve better positioning. It is better to use the extra braided extension hose than to stress fittings to the breaking point.**
- **If you winterize with compressed air only, the sensor must be installed vertical as not to trap any water.**

2.3 Controller Installation and Mounting Locations

The IRVWPC-G2 electronic controller is housed in a Thermoplastic enclosure. The enclosure is **NOT WATERPROOF**. The controller must be mounted above floor level in a dry secure location within the interior envelope of the RV and **MUST NOT BE LOCATED IN A LP STORAGE AREA**. The controller is also **NOT IGNITION PROTECTED** and is not suitable for use in marine engine compartments and fuel tank spaces. The mounting is limited by the length of the sensor cable (18"), the pump motor wires and the RV DC supply wires. The enclosure has mounting tabs that are pre-drilled, using two #8 wood screws will provide plenty of mechanical rigidity. The unit should be mounted in a visible location where the 2 external LEDs can be seen and **NOT IN AN POSITION WHERE ACCIDENTAL WATER OR FLUID SPILLS ARE POSSIBLE**.

It is recommended that the pressure sensor be left unconnected until the water system has been purged from all air introduced during system draining and installation procedures.

The supplied pressure transducer uses an Automotive style water-resistant connector and is mechanically keyed to prevent improper installation. To install the connector, align the locking tab slot with the tab on the sensor body and apply firm pressure to properly latch and seat the connector. A positive CLICK can be heard when the connector latch is engaged.

The RED module wire connects to the PUMP motor RED wire using the supplied WAGO in the parts package.
The BLACK module wire connects to the PUMP motor BLACK wire using the supplied WAGO connector in the parts package.

The WHITE module wire connects to the RV DC NEGATIVE wire which is typically white. If you are unsure of the polarity of the RV wires, then determine correct polarity using a multi-meter. Connect using the WAGO connector supplied.
The YELLOW module wire connects to the RV POSITIVE wire. Typically, the RV positive wire is yellow, orange or red. Again, verify polarity if you are unsure.

DETAILED VIDEOS ARE AVAILABE ON THE WEBSITE UNDER SUPPORT.

2.4 Installation Check Points

1) All piping connections are hand-tightened firmly, and piping is secured, and no stress or strain is on any piping or pump fittings.
2) All electrical connections are properly connected with WAGO connectors.
3) Controller is securely mechanically mounted.
4) Low point drains are properly closed.
5) Bleach solution added for Sanitization as per vehicle Manufacturer's recommendations.

3.0 Start-up

Initial Start-up Procedure:

1) Ensure the pressure sensor connector is disconnected. If not, gently lift the locking tab above the sensor body tab and gently pull the connector. **DO NOT PULL ON THE SENSOR WIRES**. You can push back against the tab to ease the connector back. The silicone rubber sealing ring internal to the connector causes some suction requiring moderate force but should come easily. If the connector cannot be removed to your comfort level, don't force it. The system can be started with the sensor connected but more erratic operation may occur until all air is purged.
2) Restore the power to the pump circuit and observe the LED indicators. They should appear as follows:
    A) FAULT (RED) should be blinking 3 times and then OFF, indicating that the sensor is disconnected. If the sensor is connected to the control, then this LED will be OFF.
    B) RUN (GREEN) should be blinking quickly. This indicates that the power is ON, and the control output is at 100%.

NOTE: When the module detects a disconnected sensor, it will enter a SENSOR FAULT mode and turn the control output to the pump motor fully on, 100%. The pump will operate just as it did previously without the control installed. This is a failsafe condition which allows the pump to operate.

3) Open a nearby faucet to purge all air for the pump. Once the pump settles down and appears to be running normally, turn the pump switch OFF and close the faucet.

4) Turn OFF the pump switch. Connect the pressure sensor wire, align the locking tab slot with the tab on the sensor body and apply firm pressure to properly latch and seat the connector. A positive CLICK can be heard when the connector latch is engaged.

5) Turn the pump switch back ON with all faucets closed, the RUN LED should be blinking slowly.

6) Slowly open a nearby faucet at a low flow rate. Pump should immediately start and regulate the pump speed to match the water flowrate, this is normal operation, and the RUN LED should be solid.

NOTE: The electrical connection to the pump retains the internal mechanical pressure switch and this switch adjustment MUST be set higher than the IRVWPC controlling pressure. Typically, a new pump will be set around 40 PSI. If previous attempts to reduce pump noise have been made, this adjustment may be too low and increasing it may be

required to ensure that the switch remains CLOSED CIRCUIT. A video under SUPPORT called INCORRECT PRESSURE SWITCH ADJUSTMENT demonstrates how this setting affects operation of the IRVWPC.

This completes the procedure and Start-up procedure. Please refer to the troubleshooting section for common installation issues.

IMPORTANT: Sanitizing is required after installation of the pressure sensor and/or any modifications to the plumbing connections in the RV. You can check your Vehicle Owner's Manual for specific instructions. Failure to do so can result in serious personal health conditions.

4.0 User Adjustments

Pressure Setpoint

The G2 controller comes pre-set from the factory on pressure setting #4 (~30 PSI) and has a broad pressure range of 20 to 40 PSI, zero being 20 PSI and nine being 40 PSI. Should adjustment be desired, this pressure can be user adjusted by following these steps:

1) Remove power to the unit by turning the RV PUMP switch OFF.
2) Remove the 4 Phillips head cover retaining screws. ***Be very careful with screwdrivers around the open unprotected circuit board. Surface mounted electronic components are very sensitive and are very easily damaged. Mechanically damaged components will void the warranty.***
3) Using a small flat blade screwdriver (supplied), rotate the pointer slot to the desired position. 0 is 20 PSI with 9 being 40 PSI. This is a rotary switch and has detent stop positions for each value. A higher range of 30 to 50 PSI is available by changing a user adjustable parameter. See setting #7 under Programmable Settings, detailed later in this manual. **NOTE**: You may have to adjust the pump mechanical pressure switch higher. There is a video under the SUPPORT website page.
4) Reinstall the cover and reapply power to the unit.

*** WE RECOMMEND TRYING THE FACTORY PRESSURE SETTING #4 FIRST. THE LOWER WATER PRESSURES OFFER EASIER LOW FLOW CONTROL AND MORE SPEED RANGE ON THE PUMP MOTOR.*

Pump Safe-Guards

The controller also provides timers and counters to protect against conditions that could impact the life of the RV pump and potentially protect against water damage from plumbing system failures. These SAFE-GUARDS cannot guarantee and protect 100% against pump and water system issues but can provide some comfort in potential protection.

1) Remove power to the unit by turning the RV PUMP switch OFF.
2) Remove the 4 Phillips head cover retaining screws. ***Be very careful with screwdrivers around the open unprotected circuit board. Surface mounted electronic components are very sensitive and are very easily damaged. Mechanically damaged components will void the warranty.***
3) Using a toothpick or the supplied screwdriver, slide the small white actuators for the appropriate function toward the outside of the case for OFF, and toward the inside for ON.
4) Reinstall the cover and reapply power to the unit.

IRVWPC units have 4 pump and water system guarding options that can be enabled or disabled by slide switches 3,4,5, and 6. Some users may desire these options depending on certain use situations. **There is no guarantee that these systems can provide 100% protection against all situations. They are provided to offer some peace-of-mind and frequent visual system inspection is always required to detect plumbing system issues or failures.**

Switch #1 – This switch is to be left in the ON position for normal operation. Switch #1 is used to display the RUN LED blinks to indicate the current CONTROL PROFILE of the IRVWPC. In the OFF position the blinks will show when the power is first applied to the unit and for 2 blinking cycles. In the ON position **NO** RUN LED blinks will be displayed. IRVWPC-G2 uses the same blink sequence as the FAULT indicator for the GREEN LED. Factory supplied profile has 3 blinks.

Switch #2 – This switch is to be left OFF. It is used for the FAST CONTROL PROFILE programming. Consult the FACTORY should regarding PROFILE programming. As mentioned earlier, the IRVWPC-G2 units have 1 common profile now. Changing the profile should not be required.

Switch #3 - Run Watchdog Timer

The RUN WATCHDOG TIMER is a timer that measures the length of time that the pump control has been running at the pressure setting, indicated by the RUN LED steady ON. This timer is useful to limit the ON or USE period. It also can be used to protect against plumbing system failures. This timer is reset to zero once the control comes back to an idle state with the pump off. It only accumulates continuous running and is reset to zero at idle. If users choose to use this feature, ensure that the time setting exceeds you continuous showering period, nothing worse than no water in the shower. For example, if the shower is used for a 30 second wet-down, then turned off, the accumulated value is reset. Even if this timer is set as low as 60 seconds, if the pump stops or idles before this 60 second example, the pump starts with a fresh time period. This timer can be set from 10 to 1000 seconds in multiples of 10 seconds. For 60 seconds, a value of 5 is entered for five 10 second periods plus the minimum time of 10 seconds.

The control is shipped from the factory with this option feature turned OFF and a setting of 300 seconds. This shutdown alarm condition is indicated by 4 consecutive flashes of the FAULT LED followed by 4 second OFF period. This continuously repeats and a power OFF and back ON resets the fault.

Switch #4 - Low Flow Cycling Counter

The control is shipped from the factory with this option feature turned OFF. The IRVWPC control has an ability to operate the pump at very flow levels, even as low as a slow dripping condition. Operation at these low flow levels can generate heat within the control power electronics and the pump. This operation is not a practical level of water flow rate. During these low flow levels, the RUN LED will blink as it would with the control at idle and the PRESS LED can be seen to flash at longer periods verses normal running. The LOW FLOW CYCLING if turned ON will accumulate these low cycles and will stop the pump if this value exceeds the setting. These LOW FLOW CYCLES can occur during normal operation such as opening the faucet slowly or throttling the faucet down prior to closing. Once the pump achieves normal running (PRESS LED steady ON), the accumulated value is reset to zero. This allows the control to tolerate brief periods of low cycling but not continuous low cycling.

Factory default setting is 60 cycles. This shutdown alarm condition is indicated by 5 consecutive flashes of the FAULT LED followed by 4 second OFF period. This continuously repeats and a power OFF and back ON resets the fault.

Switch #5 - Long Run Timer

The control is shipped from the factory with this option feature turned OFF. The LONG RUN TIMER is a simple timer that measures the length of time that the pump control has been left on. Some users prefer to NOT to always have the pump operational in their RV and would rather have the control automatically turn OFF. This timer can be adjusted from 10 to 100 minutes and is factory set at 60.

This shutdown alarm condition is indicated by 6 consecutive flashes of the FAULT LED followed by 4 second OFF period. This continuously repeats and a power OFF and back ON resets the fault.

Switch #6 - Dry Run Timer

The control is shipped from the factory with this option feature turned OFF. The DRY RUN timer safeguards the water pump from running at full speed without any water in the system or at a lower than the set-point pressure. This situation can be created by the user improperly positioning water tank fill valves and leaving the water pump turned ON by accident, running out of water or a plumbing system failure which causes the pump to run but not achieve the operating pressure. In a normal system the pump could run for hours if undetected by the user, resulting in over-heating and burning the pump out. Since the IRVWPC module is aware of the pump running and the system water pressure, this DRY RUN timer will immediately stop the pump if the running period exceeds the time setting and the low-pressure level. Factory default setting is 60 seconds of running with the system pressure less than 10 PSI below the set-point pressure. For example, is the set-point is 30 psi then 60 seconds of less than 20 psi continuously running will trigger the alarm. This shutdown alarm condition is indicated by 7 consecutive flashes of the FAULT LED followed by 4 second OFF period. This continuously repeats and a power OFF and back ON resets the fault.

**** Any of the FAULT conditions are easily RESET by simply turning your pump power switch OFF and back ON again.**

**** The IRVWPC-G2 module is shipped from the factory with a new control profile for all types of installations. This profile will work with TANK and TANKLESS applications.**

***** WE RECOMMEND TURNING ON SWITCH #4 AND SWITCH #6. THIS GIVES LOW FLOW CYCLING AND DRY RUN PROTECTION.***

Programmable Settings

IRVWPC units have slide switches and a momentary push button switch to allow the user to customize settings related to these features. A RESTORE TO FACTORY DEFAULTS can also be executed to return all user adjustable settings to their original values.

PROGRAM mode is entered from the RUNNING mode by holding the PUSH BUTTON for a constant 10 seconds, the PRGM LED will light when the button is pressed, and the RUN and PRESS LEDs will alternately blink back and forth to indicate when to release the BUTTON. This blinking pattern will continue for 15 seconds. The RUN LED will be in the fast blink pattern when the unit is ready to be programmed.

A total of 15 permanent memory locations can be accessed and reprogrammed from the supplied factory settings. The first 4 settings are related to the safeguard features and the user should only change these settings. ***The other settings should ONLY be preformed from direct consultation with the factory or a representative. Improper adjustment of these settings can affect proper control operation of the pump and possible damage to the pump.*** This programming feature is easy to use, the rotary selector (0-9) is used as the variable input, slide switches 3,4,5 and 6 are used to select the memory location and the push button enters the value to memory. New data is accepted by momentarily pressing the PUSH BUTTON, the RUN and PRESS LEDs will blink in an alternate pattern and the PRGM LED will light solid. After 10 blink cycles the pattern will stop and the Red PRGM LED will go out. This is the completion of the program process for that specific memory location. Some of the locations require a 2-step process for greater resolution or a larger range of adjustment for the parameter. This process is similar, slide switches select the specific location, rotary selector position generates a value for the first part of the variable and the second step generates an input for the last part. These are multiplied and summed, resulting in a larger input variable. Different variables have different calculations, so refer to the following table for the appropriate calculations.

Upon pressing the PUSH BUTTON for the most significant value, the LEDs will behave as they do for a single-step input, but the PRESS LED will remain ON, indicating that the first part of the process is complete and now the least significant portion must be completed. Once the least significant portion is completed, all LEDs will turn off, leaving the fast-blinking RUN.

Some variables are restricted to a certain range and others start with an offset. The table below shows the variables and their value ranges.

RESTORING TO FACTORY is a simple process of entering the programming mode, setting all 4 slide switches (3,4,5,6) to the ON position, the rotary selector to 1 (default profile) and pressing the programming PUSH BUTTON. **To return the control to normal operation remove power to the unit and then back ON again. The control will start in the normal operating mode. Set switches 3,4,5 and 6 back to the desired functions. The normal 1 second IDLE blink rate of the RUN LED will return.**

NOTE: A SMALL SCREWDRIVER IS SUPPLIED IN THE WIRING PACKAGE.

Programmable Settings Table

	SW3	SW4	SW5	SW6	Function	Setting Calculation	Default
0	OFF	OFF	OFF	OFF	Dry run timer period (seconds)	20-200 range ((0-9)+1) x20) (multiples of 20)	60
1	ON	OFF	OFF	OFF	Long run timer period (minutes)	10-100 range ((0-9)+1) x10	60
2	OFF	ON	OFF	OFF	Low flow cycling counter	20-200 range ((0-9)+1) x20 (multiples of 20)	60
3	ON	ON	OFF	OFF	Run watchdog - # of 10 sec periods	1-100 range (0-9) x 10) +(0-9) +1	29
4	OFF	OFF	ON	OFF	PWMCO	((0-9)+4)x10 consult factory	70
5	ON	OFF	ON	OFF	COTMR	(0-9)x2 consult factory	1
6	OFF	ON	ON	OFF	RMTAR	0,1 consult factory	0
7	ON	ON	ON	OFF	Pressure Range	1,2 1=20 to 40 2=30 to 50PSI	1
8	OFF	OFF	OFF	ON	THMLPM	0-5 consult factory	2
9	ON	OFF	OFF	ON	UDBC	(0-9)+1 consult factory	3
10	OFF	ON	OFF	ON	LDBC	((0-9)x2)+2 consult factory	10
11	ON	ON	OFF	ON	LDBM	(0-5) consult factory	4
12	OFF	OFF	ON	ON	Factory 2 No user	consult factory	
13	ON	OFF	ON	ON	Factory 3 No user	consult factory	
14	OFF	ON	ON	ON	Factory 4 No user	consult factory	
15	ON	ON	ON	ON	RESTORE	Restore Defaults (0,1,2,3,4)	1

NOTE: After programming is complete, return the slide switches to the positions required for the desired ALARM features.

5.0 Troubleshooting

FAQ's:

Q: Pump appears to cycle quickly as it did before the Controller installation on low water flows?
A: Verify no FAULT LED, solid RUN LED with the pump running. It is possible that the pump pressure switch has been previously adjusted to smooth the pump. It is important that this pressure setting be restored close to the factory setting (~45 PSI). Please refer to the pump manual for adjustment of this pressure setting. Video also available under SUPPORT.

Q: I'm in the process of pumping RV antifreeze solution for Winterizing and the pump suddenly stops?
A: This most likely was the DRY RUN PROTECT feature and it stopped the pump due to a pressure loss for more than the set time. Simply, turn the pump switch OFF, and then back ON. This will RESET the lock-out feature and the pump will restart. This cycle may occur a few times during Winterizing but will not damage anything. It is a safety feature.

Q: I've filled my Potable water holding tank and the pump stops while trying to prime the system with water?
A: This most likely was the DRY RUN PROTECT feature and it stopped the pump due to a pressure loss for more than the set time. Most systems should prime within 30 seconds. Reset the power by turning the Pump switch OFF, then back ON. The Pump will restart.
If the system will still not prime and this protection feature keeps turning the Pump OFF, it is likely that some other problem in the system is preventing the prime. Refer to your vehicle's manual for possible solutions.
Immediately after resetting the power observe the FAULT LED, if the pressure sensor is connected and this LED is showing 3 blinks, there could be a sensor fault / failure.

Q: After installation the pump still is noisy on low water flows.
A: It is very possible that the inlet water screen is clogged material. Refer to your RV on removal and cleaning of this screen.

If the IRVWPC module becomes unresponsive or in a fault detected state, a simple cycle of the pump power switch with reboot and reset the module. Possible causes of unresponsiveness are extreme electrical noise or discharge.

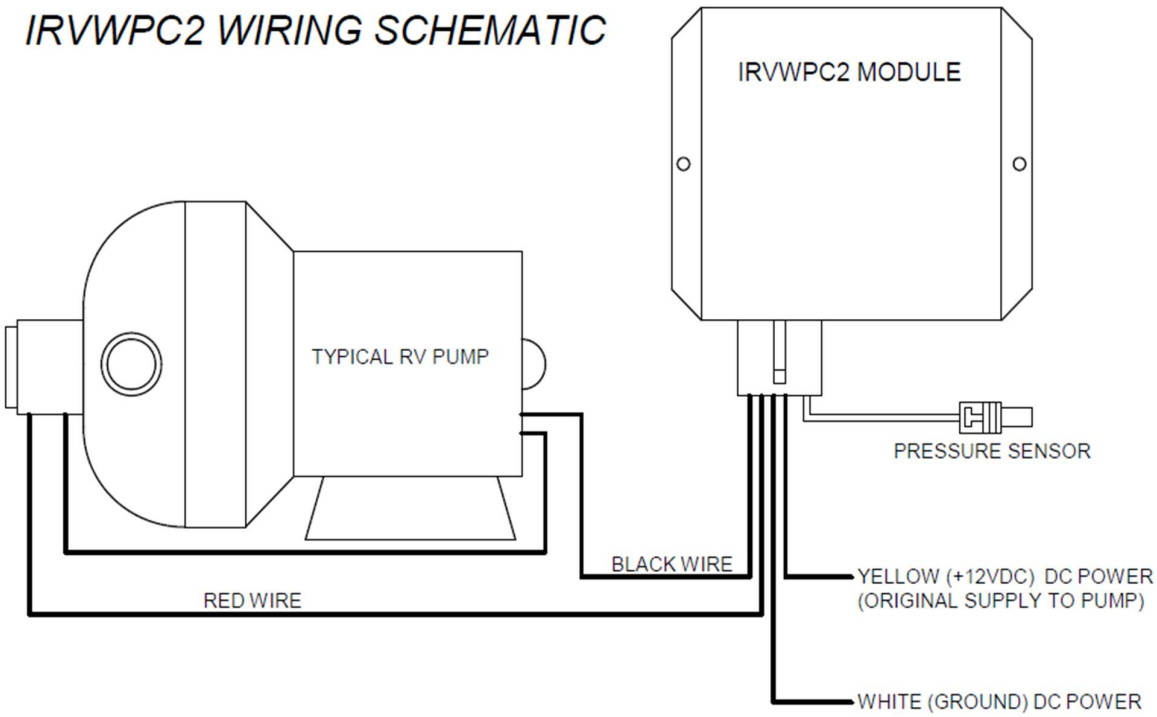
The SUPPORT page on the website has many videos and is updated frequently.

Customers may also email irvwpc@gmail.com with any questions.

6.0 Controller Specifications

Operating voltage: 10-15 VDC
Operating temperature: -25°C to 85°C
Humidity: 10-95% non-condensing
Switching current: MAX 8A (intermittent operation) Internal 10A Fuse
Electronics current consumption: 20mA @ 12VDC with reverse polarity protection
Low current protection: 50mA automatic resettable fuse (not user serviceable)
Enclosure: UL94-5VA rated with mounting tabs
Status LEDs: Internal (FAULT, RUN, PRESS, PRGM) External (FAULT) and (RUN)
Pressure setting range: Approximately 20 to 40 PSI in 10 adjustable steps with a user programmable higher range of 30 to 50 PSI (Setting ADDRESS 7 to enable this higher range)
Dimensions: 8.5 cm (3.5”) H x 10.8 cm (4.25”) W x 3.5 cm (1.375”) D (includes mount tabs)

Pressure Sensor Specifications:
Industrial Grade, 100% stainless steel construction NSF61 rated
Operating temperature: -40°C to 125°C



7.0 Winterization

The Winterization procedure for the RV will be the same as without the IRVWPC controller. We recommend that RV Antifreeze be pumped into the system after all the water is drained. Blow-out methods do work for short term protection, but it is important that Antifreeze get into the pump chambers and pressure sensor. Blow-out can be used for emergency situations, but the water pump and the sensor should be kept above freezing. The surface tension of water droplets can allow water to remain trapped within the sensor and the only sure way to prevent potential sensor damage is either pump Antifreeze or keep the sensor above freezing.

8.0 General Limited Warranty

Sylva Control Systems Inc. warrants that the product described in this Installation and Operating Manual performs according to the features and specifications stated at the point of shipment and that it will be free of defects on materials and workmanship under normal conditions and use. This warranty becomes effective at the time of purchase of the product and remains in effect for a period of 12 months thereafter.

The obligation under this warranty is limited to the repair or replacement of defective parts, components or firmware at the option of Sylva Control Systems Inc. Shipping charges and onsite services if required, are not covered by the warranty and shall be to the customer's account.

Warranty is void if repairs are made by unauthorized third parties.

In no event shall Sylva Control Systems Inc. and/or any of its representatives be liable for consequential damages arising out of the ownership, installation and use of the product.

9.0 Certifications

Canada:
CAN ICES-003(B)/NMB-003(B)

United States:
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTES: