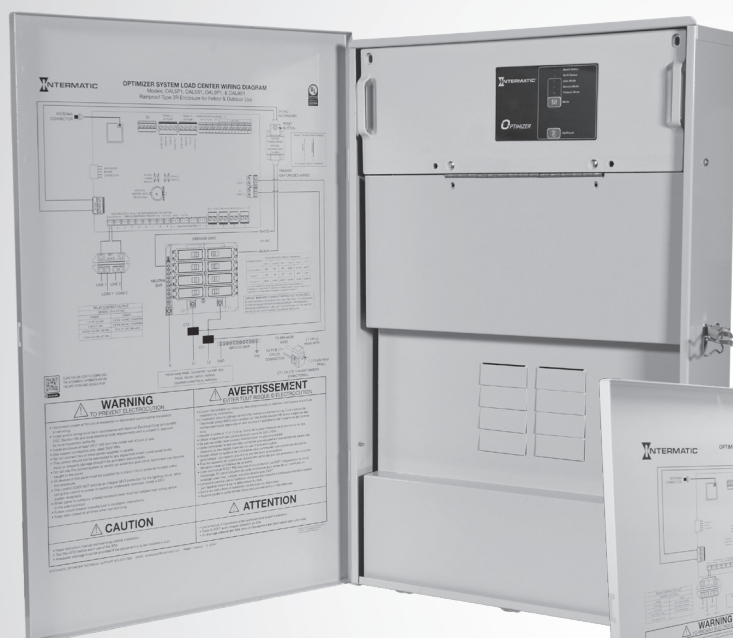
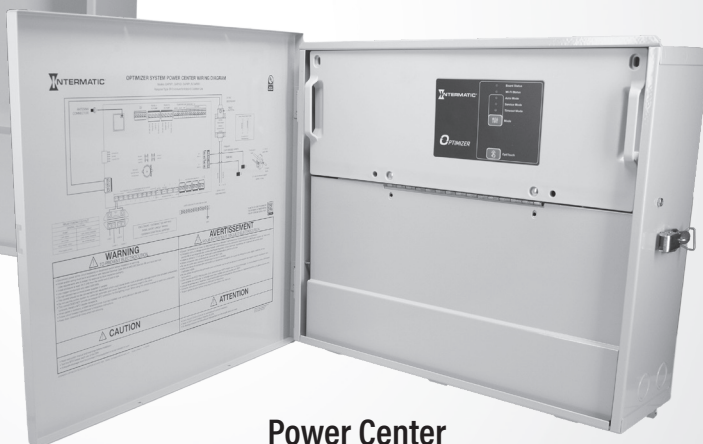




Optimizer System For Pool & Spa



Load Center



Power Center

INSTALLATION GUIDE

**IMPORTANT SAFETY INSTRUCTIONS.
READ AND FOLLOW ALL INSTRUCTIONS.**

SAVE THESE INSTRUCTIONS.

IMPORTANT WARNINGS SAFETY INSTRUCTIONS

POOL SAFETY AND EQUIPMENT REQUIREMENTS

RESPONSIBLE ADULT SUPERVISION

Constant and responsible adult supervision is mandatory in the pool or spa environment. DO NOT allow children to operate the Optimizer system. Please read the following safety and warning guidelines carefully.



ATTENTION USER AND INSTALLER: This manual provides important installation, operation, and safe use of the Optimizer system and how to maintain all associated pool equipment including the pool circulating system. Please retain it at the pool installation site for future reference. The pool builder/installer should give this manual to the owner and/or operator of the pool equipment. Please follow all safety precautions when installing and using electrical pool equipment, basic safety precautions should always be followed.

- The Optimizer pool and spa system is designed and made for safe and reliable years of service when installed, operated and maintained according to the information herein. Please follow and comply with all state and local codes referred to in this manual.
- This manual contains valuable information about the installation, operation, and safe use of this product. The pool installer should give the owner this information and/or operator of this equipment. When installing and using this electrical equipment, basic safety precautions should always be followed.



This safety signal alert symbol shown in this manual indicates one of the signal words: **DANGER, WARNING, CAUTION and NOTICE**, which you must comply with the signal word information and be alert to the potential hazard. **READ AND COMPLY WITH ALL WARNINGS AND SAFETY CAUTIONS IN THIS MANUAL.**

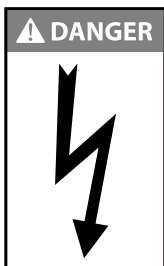
WARNING

- READ ALL RELATED warning labels before installing or attempting to use, service or adjust the Optimizer system and the system pumps and heater. Failure to follow all safety and warnings and instructions can result in severe injury, death, or property damage.
- Do not use the Optimizer system to control an automatic pool cover. Pool users may become entrapped underneath the cover.
- Install nonmetallic plumbing at least 5 feet (1.5 m) from inside wall of hot tub or spa.

- **All pool and spa electrical equipment controls (power on/off switches, timers, and control systems etc.) located at the equipment pad must allow the operation (start-up, shut-down, maintenance or servicing) of any pump or filter without hindrance so that you do not have to place your body near or over the pool filter lid, pump strainer lid, or valve mechanical closures at the equipment pad, there must be ample space to stand clear of the filter and pump during the Optimizer system start-up, shut down or servicing.**
- This manual provides important installation and operation instructions. If the Optimizer system is not installed and operated correctly, serious bodily injury or death can occur. Installers, pool operators and pool owners must read all warnings and all instructions before using the Optimizer system. If you have any questions about the Intermatic Optimizer system and accessories, please call **815.675.7000**, or email: techsupport@intermatic.com. Also, visit www.Intermatic.com
- **VIRGINIA GRAEME BAKER POOL AND SPA SAFETY ACT:** Contact the Consumer Product Safety Commission at (301) 504-7908 or visit www.cpsc.gov. NOTE: Always turn off all power to the pool filter pump before installing a pool cover or working on any pool suction outlet.

SAVE THIS INSTALLATION GUIDE FOR FUTURE REFERENCE

IMPORTANT WARNINGS SAFETY INSTRUCTIONS



RISK OF ELECTRICAL SHOCK OR ELECTROCUTION! ALWAYS disconnect power at the MAIN circuit breaker before servicing the Optimizer Load Center or Power Center. Improper Load Center or Power Center installation can cause an electrical shock hazard that can result in death or serious injury.

The Optimizer system must be installed by a licensed or certified electrician or a qualified pool professional in accordance with US state, local ordinances, installation codes and current National Electrical Codes (NEC), NFPA 70 or the Canadian Electrical Codes (CEC), CSA C22.1. Improper installation of the Optimizer system and accessories can create an electrical hazard which could result in death or serious injury to pool users, installers or others due to electrocution and may also cause damage to pool equipment and property. **Note: BEFORE SERVICING the Optimizer system and lights, ALWAYS disconnect power at the main circuit breaker. Failure to do so could result in death or serious injury to pool service personnel, pool users or others due to electrical shock.**

- The electrical supply for the Intermatic Optimizer system MUST include a suitably rated switch or circuit breaker to open all ungrounded supply conductors that complies with the current National Electrical Code (NEC), NFPA 70 or the Canadian Electrical Code (CEC), CSA C22.1, and must also adhere to all applicable local installation codes and ordinances. The spa or hot tub electrical disconnecting means MUST BE installed at least five 5 ft. (1.52 m), (Canada 3 m (9.75 ft) from the inside wall of the pool and be readily accessible to the occupant.
- **RISK OF ELECTRIC SHOCK! Only qualified, licensed personnel should install wiring to the Load Center and Power Center enclosures. A trained professional familiar with pool/spa and equipment must perform all pool/spa equipment installation, including pumps, lights, and other wiring connections.**
- **BEFORE WORKING ON POOL/SPA ELECTRICAL EQUIPMENT:** To avoid dangerous or fatal electrical shock, turn all pumps OFF, disconnect the power at its source, and place a tag on the dedicated GFCI circuit breaker indicating the power is to remain OFF before working on electrical connections. If you are not familiar with the pool filtering system and heater operations, DO NOT adjust or service the Optimizer system and pool equipment without consulting a pool dealer or a qualified pool technician.

Important Safety Instructions

When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

1. READ AND FOLLOW ALL INSTRUCTIONS

2. **WARNING** - To reduce risk of injury, do not permit children to use this product unless they are closely supervised at all times.

3. **WARNING** - Risk of Electrical Shock. Connect only to a branch circuit protected by a ground-fault circuit-interrupter (GFCI). Contact a qualified electrician if you cannot verify that the receptacle is protected by a GFCI.

4. **WARNING** - To reduce the risk of electric shock, replace damaged cord immediately.

5. SAVE THESE INSTRUCTIONS

WARNINGS AND SAFETY PRECAUTIONS



WARNING

READ AND FOLLOW ALL INSTRUCTIONS.

- Use only copper supply conductors rated for minimum 90°C sized based on ampacity to support all loads. Load center input supply to be protected by 125 Amp Maximum, 240 VAC Main Circuit Breaker.
- This control (Optimizer system) is not provided with integral GFCI protection for the lighting circuit. When this control is used to power or switch an underwater luminaire, a suitable GFCI protection shall be provided in the field or equivalent. A control that has terminals on the load side of a ground-fault circuit-interrupter is provided to protect the field-installed conductors of an underwater lighting circuit.
- **LOAD CENTER & POWER CENTER REQUIRED (GFCI):** A Ground Fault Circuit Interrupter (GFCI) is mandatory and must be installed in the provided GFCI/GFCB knockout panel on the side of the Load Center and Power Center. Tripping GFCI indicates an electrical problem. If the GFCI trips, determine the reason for tripping. If you are uncertain, have a qualified electrician inspect and repair the electrical system. Verify that the supply voltage to the Load Center and/or Power Center is correct. Incorrect voltage can cause fire or seriously damage to pool/spa equipment.
- **BEFORE WORKING ON POOL/SPA ELECTRICAL EQUIPMENT:** To avoid a dangerous or fatal electrical shock, turn all pumps OFF, disconnect the power at its source, and place a tag on the dedicated GFCI circuit breaker indicating the power is to remain OFF before working on electrical connections. If you are not familiar with the pool filtering system and heater operations, DO NOT adjust or service the Optimizer system and pool equipment without consulting a pool dealer or a qualified pool technician.
- **LOAD CENTER AND POWER CENTER INPUT AC VOLTAGE:** Refer to the Load Center and Power Center wiring diagram located on the inside door of the enclosures. Verify voltage (120 VAC or 240 VAC) is correct before applying power. If the voltage does not fall within the specified range during operation, consult your local power company.
- **USING THE OPTIMIZER SYSTEM FOR OTHER THAN A SINGLE-FAMILY DWELLING:** A clearly labeled emergency shut-off switch for the spa or hot tub must be provided as part of the pool system installation. The shut-off switch must be readily accessible to the spa or hot tub occupants and must be installed at least five (5) feet (1.52 m) adjacent to the inside wall of the pool and spa and within sight of the unit. Note: Except for listed spa-side remote controls, install a minimum of five (5) feet (1.52 m) from the inside wall of the pool and spa.
- Adequate drainage must be provided if the equipment is to be installed in a pit.
- Wiring connected in this box must be rated at least 300 v.

BONDING GROUNDING LUGS (LOAD CENTER AND POWER CENTER)

A terminal bar is located inside the high voltage compartment of the Load Center and Power Center. To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electric supply service panel with a continuous copper wire equivalent in size to the circuit conductors supplying this equipment (no smaller than 12 AWG or 3.3 mm).

Bonding lugs are provided on the Intermatic Optimizer system Load Center and Power Center.

Install a ground bonding wire according to local or National Electrical Code (NEC) requirements. Connect a minimum of one No. 8 AWG (8.4 sq. mm) solid copper bonding conductor to the bonding lugs provided on Load Center and Power Center (see pages 9 and 10) between the Optimizer system enclosure and to all metal parts of the swimming pool, spa, or hot tub and to all electrical equipment, metal piping or conduit within 5 feet (1.5 m) of the inside walls of swimming pool, spa, or hot tub.

A GROUND FAULT CIRCUIT INTERRUPTER (GFCI) is required in the circuit. For size of GFCI required see the GFCI manufacturer's instructions.

A GROUND BUS SCREW TERMINAL is provided in the Intermatic Optimizer system Load Center and Power Center enclosure for grounding all pool and spa equipment. All equipment including the Load Center and Power Center must be bonded to earth ground.

GENERAL SAFETY PRECAUTIONS

- The Intermatic® Optimizer system Load Center or Power Center must be installed at the equipment pad.
- The Optimizer system is for use in swimming pool and spa applications only.
- AC power for the enclosure must be provided from the main circuit breaker panel located at the house.
- All electrical equipment, except for UL Listed spa-side remote switches, must be installed no less than five (5) feet (1.5 m), (Canada, 3 m (9.75 ft) from pool and/or spa, and comply with all national, state, and local codes (UL Listed spa-side remote switches may be installed at near pool waterline).
- Install the Optimizer Load Center or Power Center no less than five (5) feet (1.5 m) from pool, spa and hot tub. Be sure there is enough room for the user and pool service personnel to stand clear of the filter and pump during system start-up.
- The Optimizer system Load Center and Power Center can be mounted outside or inside of a pool equipment shed or in other enclosures.
- Most US states and local codes regulate residential construction, installation, and operation which also include public pools and spas. It is important to comply with ALL of these codes that directly regulate the installation and use of the Optimizer system. For more information, please consult your local health and building.
- Before choosing the final location for the Optimizer Load Center or Power Center, consider the length of all of the conductors that will have be connected to the enclosure, also consider cable lengths for the sensors to the enclosure location. The air temperature sensor cable is three (3) feet (91.44 cm) long and the water temperature sensor cable is 25 feet (7.62 m) long.
- Mount the enclosure vertically on a flat vertical surface so the conduit knockouts are located at the bottom of the enclosure. Upper and lower brackets are provided to mount the enclosure.
- DO NOT mount the enclosure horizontally. Water can enter the conduit knockouts and cause damage to the system and an electrical shock hazard. Install with conduit knockouts down.
- Be aware of the enclosure location when routing conduit carrying the AC power to the enclosure and the conduit that will be run to the high voltage equipment.
- Motors for pump and other pool/spa equipment must be listed for pool and spa applications and have built-in thermal protection.
- Allow at least 5 ft (1.5 m) of unobstructed access to the front of the Load Center or Power Center.
- Consider the enclosure location when routing conduit carrying the AC power to the enclosure and the conduit that will be run to the high voltage equipment.

PATENTS

The Optimizer™ pool/spa automation system and associated smartphone application are protected under one or more U.S. patents, including U.S. Patent No. 12,609,847. Other patents may be pending.

EMI/EMC Compliance Statements

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

To comply with the FCC RF exposure compliance requirements, no change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void the user's authority to operate this equipment.

To comply with FCC RF Exposure compliance requirements, a minimum separation distance of 8 in (20 cm) must be maintained between the equipment and all persons during normal operation.

Contains FCC ID: 2AC7Z-ESPWROOM32U

ISED Canada Compliance Statement

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS. Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. L'appareil ne doit pas produire de brouillage ;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

To comply with ISED RF Exposure requirements, this device must be installed to provide at least 20 cm separation from the human body at all times.

Afin de se conformer aux exigences d'exposition RF ISED, cet appareil doit être installé pour fournir au moins 20 cm de séparation du corps humain en tout temps.

This Class B digital apparatus complies with ICES-003 of Canada. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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

IC: 21098-ESPWROOMUE

Technical Support
8:00 AM - 4:30 PM CST [Monday-Friday]

815.675.7000

email: techsupport@Intermatic.com
www.Intermatic.com

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Visit **www.Intermatic.com** to download Intermatic Optimizer System manuals, or scan the QR code.



Scan this QR code to access the Optimizer product page at **www.Intermatic.com**

Intermatic Optimizer System Manuals:

Intermatic Optimizer System App User's Guide

Intermatic Optimizer System Installation Guide

Intermatic Optimizer System Quick Start Guide

Intermatic I-Pure Salt Chlorinator Installation and User's Guide

Optimizer System Overview

Your Intermatic® Optimizer system for pool/spa is a powerful pool and spa control system that offers anytime, anywhere remote access to control your in-ground or above-ground pool and spa. From your iPhone®, iPad® mobile digital device or an Android® wireless device, you can monitor and track your daily, weekly and monthly pool equipment energy usage. Control multiple pools and spas and easily switch between them with advanced iOS and Android interfaces.

Wallet - This innovative app feature can capture all of your pool related equipment pictures, receipts, and water tests. Conveniently use your smart phone to take pictures and then store them in a secure location on your Intermatic Optimizer app.

The Optimizer system pool and spa system is compatible with all popular variable speed pumps and color LED pool and spa lights and includes real-time pump speed (RPM) control for custom filtration modes.

One-Touch Control for pool lights: Color show and fixed color palette compatible with leading pool/spa light manufacturers.

FEATURES

- Wallet - Stores pool-related equipment pictures, receipts, and water tests
- Supports 120/240 VAC (60 Hz)
- AUX Relays, five (5) or nine (9) depending on system model
- System Transformer: 100 VA
- Four (4) Valve Actuators
- WiFi/Bluetooth® Connectivity
- UL certified for US and Canada
- Three (3) Temperature Sensor Inputs (10 K), water, solar and air.
- Two (2) RS485 COM Ports
- Four (4) dedicated relay heater outputs (low voltage dry contacts).
- External Antenna Connector
- WiFi Status LED, Auto Mode, Service Mode, Timeout Mode
- Factory Reset button
- Mode Switching Key
- Removable high voltage dead front panel
- Large low-voltage raceway for wiring
- Door spring latch (lockable)
- Ample knockouts on bottom, side, and rear of enclosures
- NEMA 3R-rated rainproof enclosures

LOAD CENTER

- Dimensions: 26" H x 17" W x 5" D
- 125 AMP breaker base

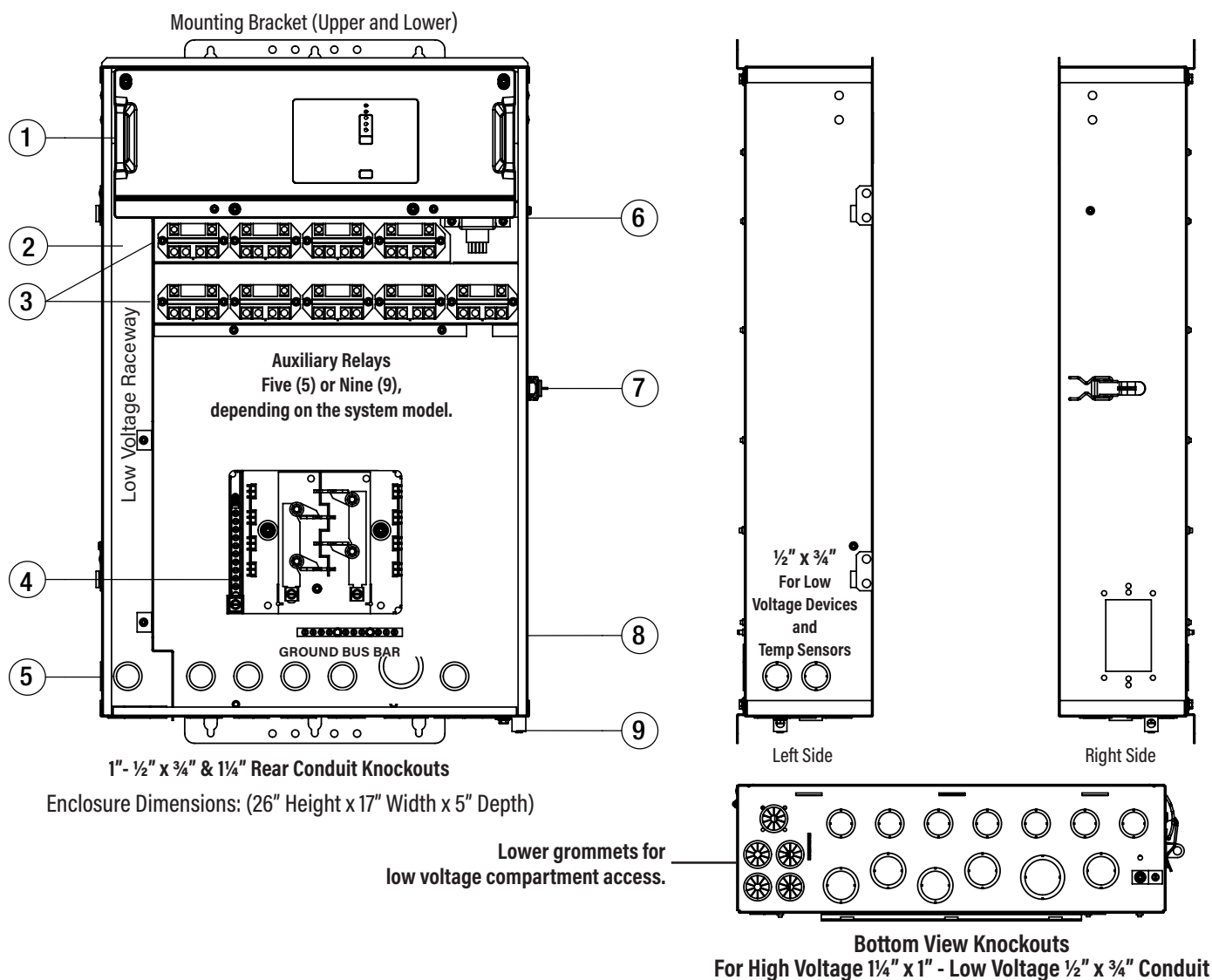
POWER CENTER

- Dimensions: 15" H x 17" W x 5" D

Load Center (with Breaker Base)

Optimizer System Load Center (with Sub-Panel) Specifications

Provide AC Power to the enclosure from the main-panel house circuit breaker. Mount the Load center at the pool equipment pad.



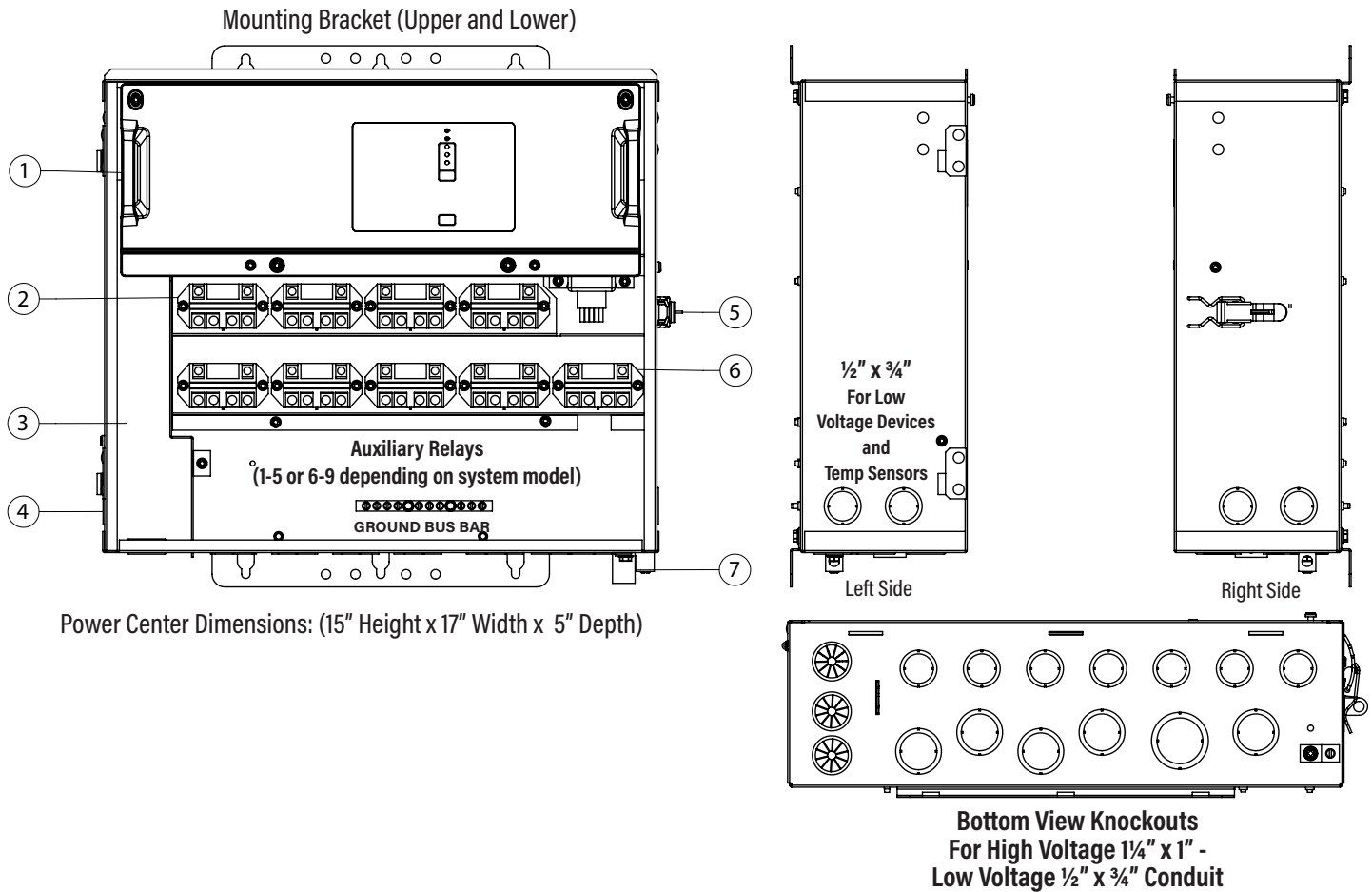
- ① Low Voltage Compartment: Water, Solar and Air Temperature Sensors, Motorized Actuator Valves and Control Panel
- ② Low Voltage Raceway
- ③ Auxiliary Relays: Five (5) or Nine (9), depending on the system model
- ④ Circuit Breaker Base: 125 Amp (Sub-Panel)
- ⑤ Enclosure Conduit Knockouts
- ⑥ System Transformer with Circuit Breaker Factory Reset Button (not shown): 120/240 VAC, 60 Hz. Output Voltage 100 VAC
- ⑦ Door Spring Latch (Padlock Optional)
- ⑧ GFCI/GFCB Knockout: UL Required, Rainproof Cover Single Gang Box
- ⑨ Bonding Lug: No.8 AWG (US), No.6 AWG (Canada)

Note: Use 14 AWG minimum copper conductors for relays and other equipment sized according to ampacity load.

Power Center (without Breaker Base)

Optimizer System Power Center (without Breaker Base) Specifications

Mount the Power Center at the pool equipment pad. Provide AC Power to the enclosure from the main-panel house circuit breaker.



- ① Low Voltage Compartment: Water, Solar and Air Temperature Sensors, Motorized Actuator Valves and Control Panel
- ② Auxiliary Relays: Five (5) or Nine (9), depending on the system model
- ③ Low Voltage Raceway: Air and Water Temperature Sensors, Motorized Actuator Valves
- ④ Enclosure Conduit Knockouts
- ⑤ Door Spring Latch (Padlock Optional)
- ⑥ System Transformer with Reset Circuit Breaker Button (not shown): 120/240 VAC, 50/60 Hz, 60 Hz. Output Voltage 100 VAC
- ⑦ Bonding Lug: No.8 AWG (US), No.6 AWG (Canada)

Note: Use 14 AWG minimum copper conductors for relays and other equipment sized according to ampacity load.

Note: Connect Power Center to external circuit breaker enclosure.

Load Center and Power Center Knockouts

INSTALLING CONDUCTORS AND CONDUIT

Please read the following guidelines before wiring and installing conduit to the Optimizer system Load Center or Power Center:

NOTICE: ELECTRICAL INSTALLATION AND WIRING METHODS, INCLUDING WIRING MATERIALS USED TO INSTALL THE OPTIMIZER SYSTEM LOAD CENTER AND POWER CENTER MUST BE PERFORMED BY A PROFESSIONAL QUALIFIED ELECTRICIAN AND/OR UNDER DIRECT SUPERVISION OF A QUALIFIED ELECTRICIAN. All electrical installation MUST be in accordance with the National Electrical Code or the Canadian Electric Code, which includes all local electrical codes in effect at the time of installation. Refer to NEC 680 (b) or CEC 687-060, 062, and 066 for details.

- Before installing the Load Center or the Power Center, determine how many low and high-voltage circuits will be used in the Load Center or Power Center. The number and size of conductors in the conduit determine the conduit length.
- Use copper conductors 14 AWG minimum to 6 AWG maximum Cu 90°C (Canada #3 R90 AWG) for relay circuits, depending on the load requirement. Always follow all NEC regulation safety codes for the number and size of conductors that can be installed in various sizes of conduit. **DO NOT RUN HIGH-VOLTAGE AND LOW-VOLTAGE CONDUCTORS IN THE SAME CONDUIT.**
- Electrical rating: 120/240 VAC, 125 AMP, Single Phase 2 wire.
- Supply conductor must be sized to support all loads. The maximum supply current must NOT exceed 125 AMP at 120 VAC or 240 VAC.
- *NOTICE: Supply circuit must be protected by suitable breaker rated no higher than 125 AMP. If one relay is used for more than one device, verify that the total current draw (all equipment) does not exceed the current rating of the circuit.*
- To avoid obstruction into the Load Center or Power Center, when using electrical conduit complete the installation of the conduit before concrete is poured. Also, underground conduit should be positioned in well compacted soil. Be sure that all conduit joints are well sealed and watertight.
- The bonding lug (No. 8 AWG (US), No. 6 AWG (Canada) is located on the lower right side of the Load Center and Power Center marked "BONDING LUG".
- Install a GFCI duplex receptacle in the Optimizer system enclosure side opening when using pool or landscape lights.
- Install the Optimizer system enclosure with conduit knockouts facing downward.
- Circuit Breakers: See Circuit Breaker table on the inside of the front door of the Load Center and Power Center.
- **DO NOT** power on the Load Center or Power Center without the HIGH VOLTAGE front panel installed.



CAUTION: ADEQUATE DRAINAGE MUST BE PROVIDED IF THE EQUIPMENT IS TO BE INSTALLED IN A PIT.



CAUTION: WIRING CONNECTED IN THIS BOX MUST BE RATED AT LEAST 300 V.



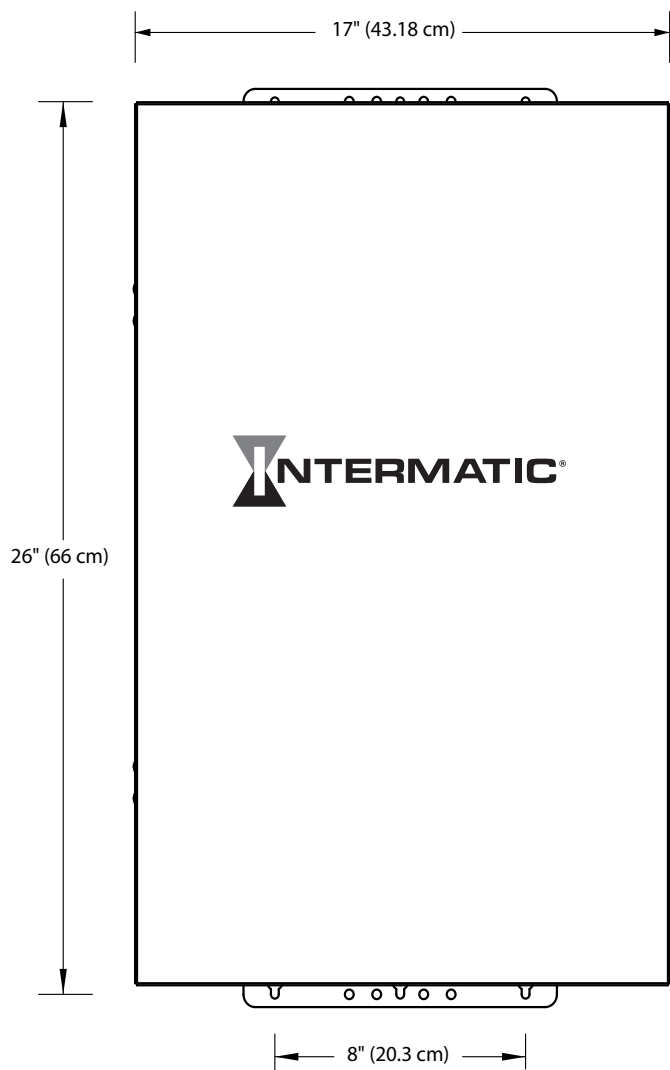
CAUTION: THE EQUIPMENT AND CONTROLS SHALL BE LOCATED NOT LESS THAN 3.3 ft (1 M) HORIZONTALLY FROM THE SPA OR HOT TUB

Mounting the Load Center and Power Center

Mount the Optimizer system Load Center or Power Center enclosure on a wall, post or flat vertical surface at eye level, at least 5 ft. (1.5 m), (Canada 3 m (9.75 ft)) from the pool, spa or hot tub location. *Note: Mount the enclosure located away from corrosive or flammable chemicals.*

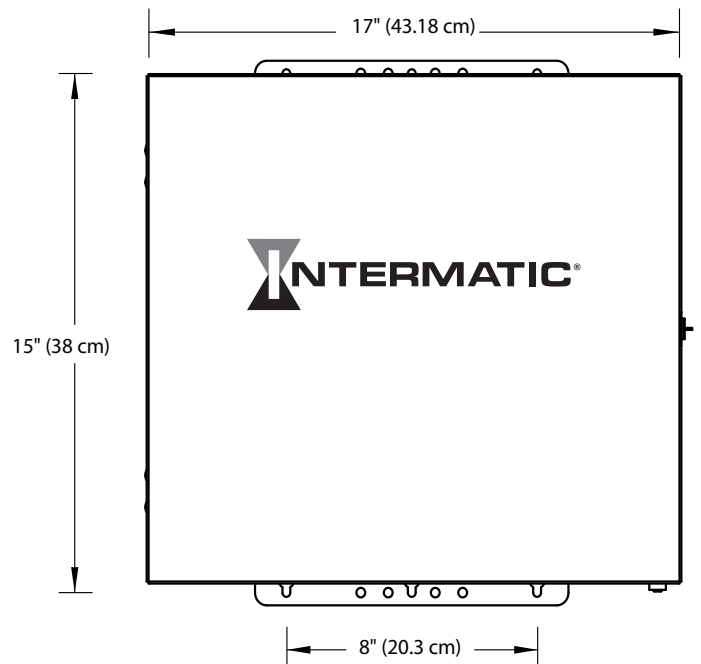
Mount the Load Center or Power Center as follows:

1. Position the Load Center or Power Center on a vertical flat surface, and mark the top and lower bracket screw holes.
Note: If necessary use wall anchors to support the enclosure in position horizontally level and square.
2. Align the bracket screw holes and mount the Load Center on to the vertical surface. Secure with three (3) screws in the top and lower mounting bracket holes. If wall anchors are being used, drill and set the anchors and secure the Load Center with screws.



Optimizer System Load Center

Dimensions: 26" (66 cm) H, 17" (43.18) W, 5" (12.7) D



Optimizer System Power Center

Dimensions: 15" (38 cm) H, 17" (43.18) W, 5" (12.7) D

Load Center: Accessing the Circuit Board Connections

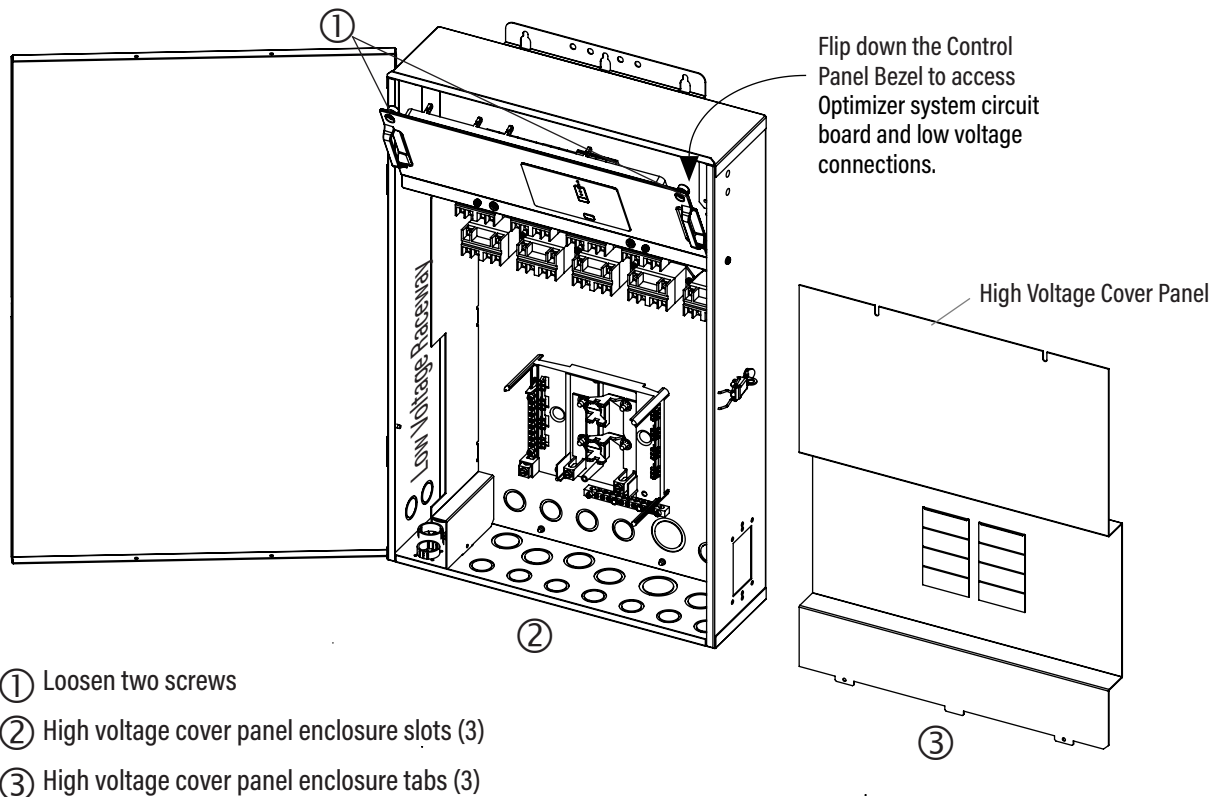


WARNING

SWITCH OFF AC POWER TO THE Optimizer SYSTEM LOAD CENTER BEFORE MAKING ANY CONNECTIONS.
BEFORE REMOVING THE HIGH VOLTAGE COVER PANEL FROM THE LOAD CENTER, SWITCH OFF THE POWER AT THE MAIN CIRCUIT BREAKER.

To access the Load Center circuit breaker base, power relays and the circuit board connections:

1. Turn OFF the main AC power to the Load Center.
2. Unlatch the front door. Open the front door.
3. Remove the two screws securing the HIGH VOLTAGE COVER PANEL. Set the panel aside.
4. Loosen the two screws securing the control panel bezel. Flip the control panel bezel down to access the Optimizer system circuit board and the low voltage compartment.
5. When finished, close the control panel bezel and secure in place with the two retaining screws.
6. Replace the HIGH VOLTAGE COVER PANEL and secure in place with the two retaining screws. Close the front door, and latch.



Optimizer System Load Center (High Voltage Cover Panel removed)

Power Center: Accessing the Circuit Board Connections

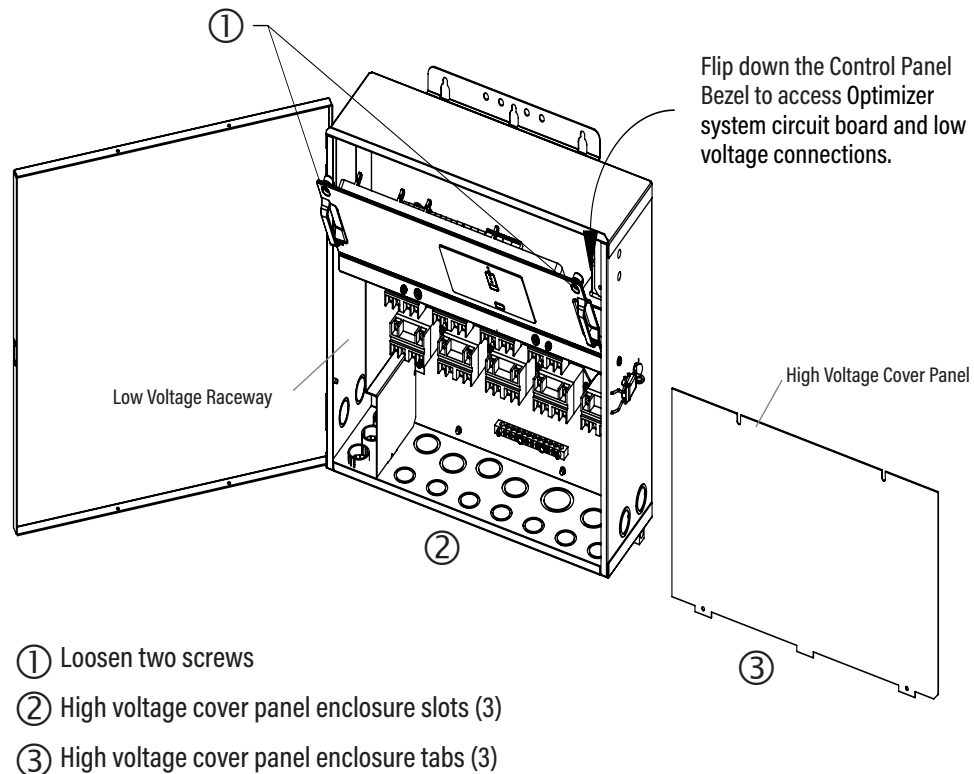


WARNING

SWITCH OFF AC POWER TO THE Optimizer SYSTEM POWER CENTER BEFORE MAKING ANY CONNECTIONS. BEFORE REMOVING THE HIGH VOLTAGE COVER PANEL FROM THE POWER CENTER, SWITCH OFF THE POWER AT THE MAIN CIRCUIT BREAKER.

To access the Power Center power relays and the circuit board connections:

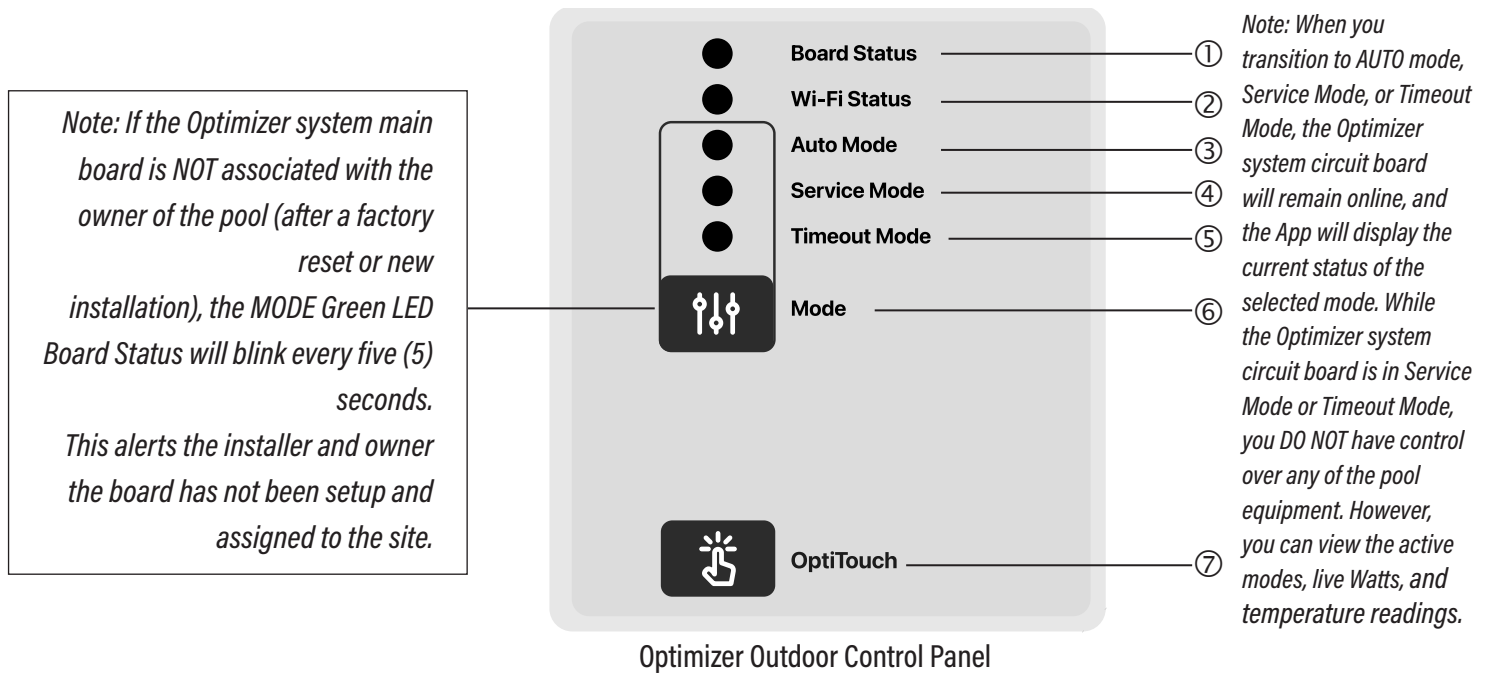
1. Turn OFF the main AC power to the Power Center.
2. Unlatch the front door. Open the front door.
3. Remove the two screws securing the HIGH VOLTAGE COVER PANEL. Set the panel aside.
4. Loosen the two screws securing the control panel bezel. Flip the control panel bezel down to access the circuit board and the low voltage compartment.
5. When finished, close the control panel bezel and secure in place with the two retaining screws.
6. Replace the HIGH VOLTAGE COVER PANEL and secure in place with the two retaining screws. Close the front door, and latch.



Intermatic Optimizer Power Center (High Voltage Cover Panel removed)

Outdoor Control Panel LED Indicators and Buttons

The Optimizer system control panel status LEDs are located on the Load Center and Power Center control panel.



- ① **Board Status (LED):** Green indicates the system is operating normally.
- ② **WiFi Status: (Blue LED):** See WiFi Status table below. Indicates the system WiFi is connected to home router.
- ③ **Auto Mode (Blue LED):** Indicates the system is in its normal operating mode and following daily schedules.
- ④ **Service (Red LED):** For service and maintenance purposes, select Service Mode which will cause all connected equipment to stop.
- ⑤ **Timeout Mode (Red LED):** For service and maintenance purposes, select Timeout mode which operates exactly like Service Mode but it will automatically return the system to Auto mode after 3 hours.
- ⑥ **Mode Button (Green LED):** Press this button to change between Auto, Service, and Timeout.
- ⑦ **OptiTouch button:** Press this button to turn the filter pump on or off for service.

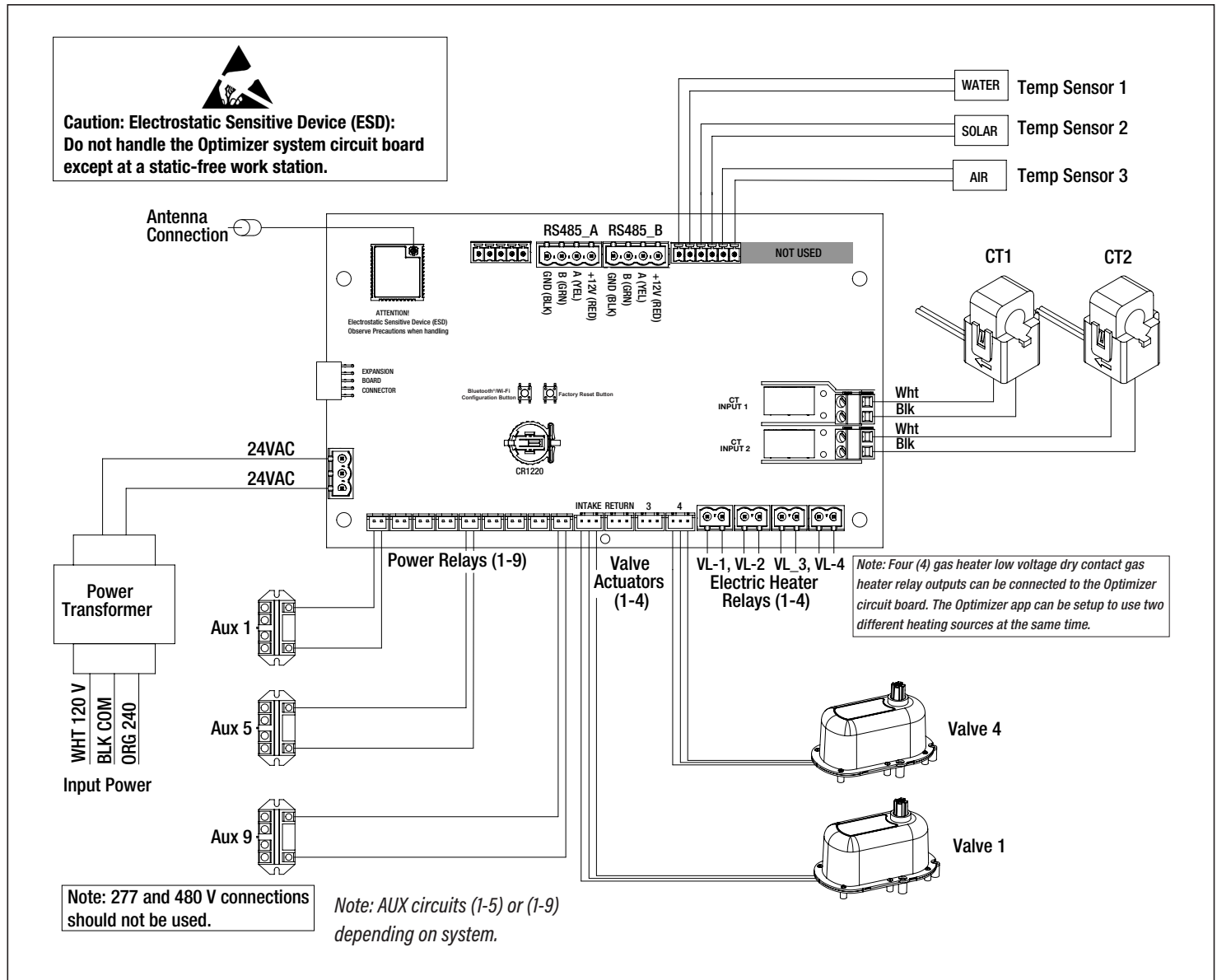
Note: For more information about assigning additional pool equipment functions to the OptiTouch button, see the Optimizer system App User's Guide.

WiFi Status (Blue LED Pattern) Table

WiFi Status Description	WiFi Status (Blue LED Pattern)
Optimizer system circuit board is not connected to the WiFi router.	WiFi is disconnected - LED blinking with 1 second delay.
Optimizer system circuit board is connected to the WiFi router, but not able to access the Internet.	Internet is not available or Cloud Server not able to connect (LED blinking with OFF-3 times fast blink - OFF).
Optimizer system circuit board is connected to the WiFi router, Internet access, but not to the Cloud Server.	
When ALL conditions are good...	Both WiFi and Cloud Server are connected successfully (LED blinking with 2 second delay).
Board MCU Status Description	Board MCU Status (Blue LED Pattern)
Optimizer system board not assigned to user. MCU is good.	LED blinks every 5 seconds
Optimizer system board assigned to user. MCU is good.	LED blinks every 5 seconds

Electrical Wiring and High and Low Voltage Connections

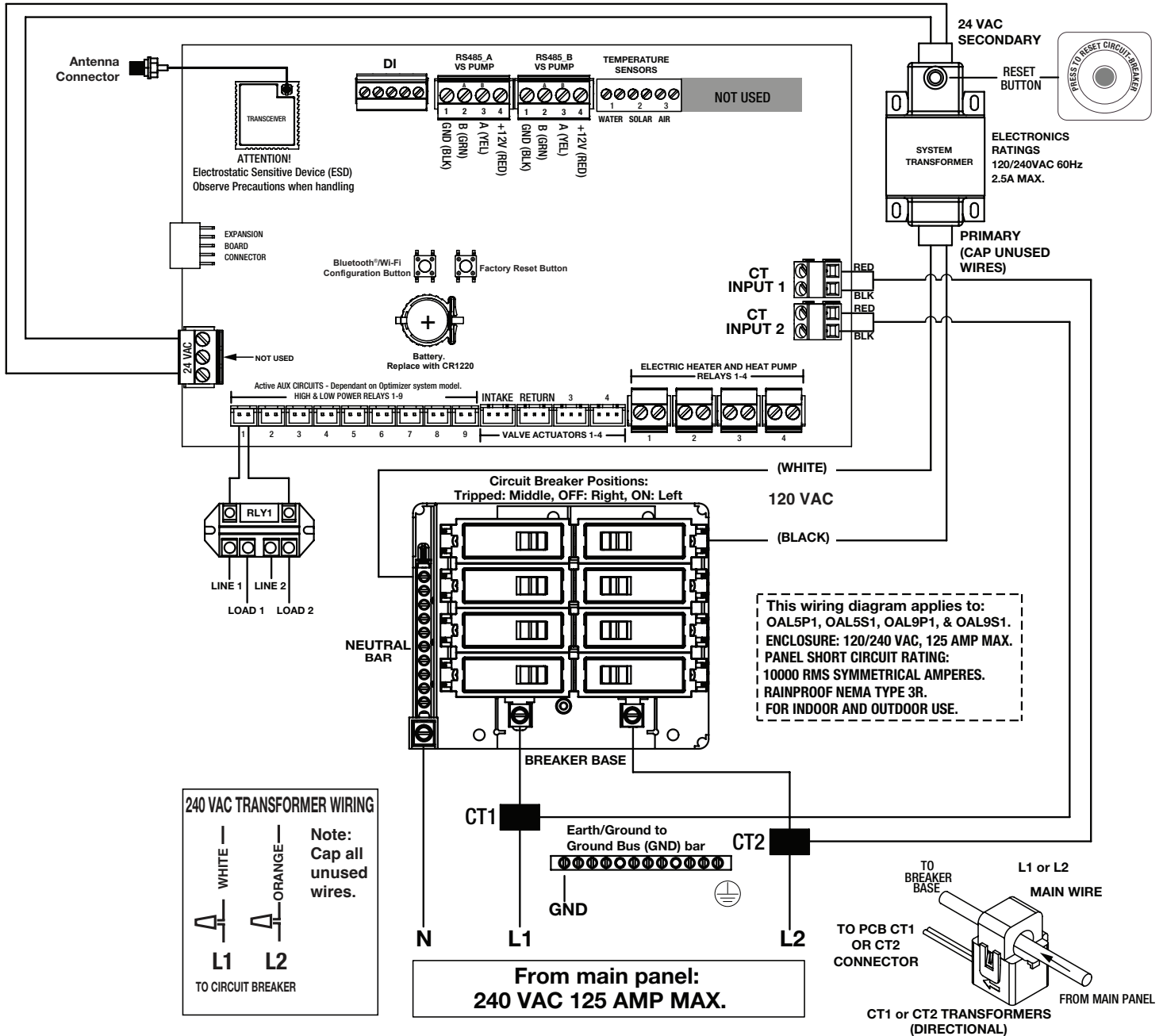
Optimizer system circuit board connections.



120/240 VAC Load Center Wiring Connections

LOAD CENTER (BUILT-IN CIRCUIT BREAKER BASE): The following Optimizer system wiring diagram shows how to wire the input 120/240 VAC (L1 and L2) from the main panel to the Load Center breaker base and to the Optimizer system transformer.

Note: See page 19, for CT1 and CT2 installation instructions. Note: See page 13 for Optimizer system circuit board access and connections.



MANUFACTURER	RECOMMENDED CIRCUIT BREAKERS					FILLER PLATE
	SINGLE	DOUBLE	TWIN	QUAD	GFCB	
CUTLER-HAMMER *1	BR	BR	BR	BQC	GFCB	BRFP
SIEMENS *2	QP	QP	QT	QT	QPF	QF3
SQUARE D *3	HOM	HOM	HOMT	HOMT	HOM	HOMFP

CIRCUIT BREAKER CURRENT RATING NOT TO EXCEED:
80 AMP MAXIMUM FOR SINGLE POLE AND TWO POLE TYPE BREAKERS.
50 AMP MAXIMUM FOR DUPLEX AND QUADPLEX TYPE BREAKERS.
MAXIMUM CONTINUOUS LOAD NOT TO EXCEED 80% OF THE AMPERE RATING OF ANY OVER CURRENT EQUIPMENT INSTALLED.

Load Center
(with Sub-Panel Breaker Base)
120 VAC input power

Circuit Breakers:

Standard Circuit Breaker: No ground fault protection. Can be used to provide power to the 120/240 VAC system transformer.

GFI/GFCI Breaker: Has ground fault protection. The pigtail wire connects to the load center neutral bar. GFI/GFCI breakers provides a neutral connection for 120/240 VAC.

*1 CUTLER-HAMMER IS A REGISTERED TRADEMARK OF CUTLER-HAMMER INC.

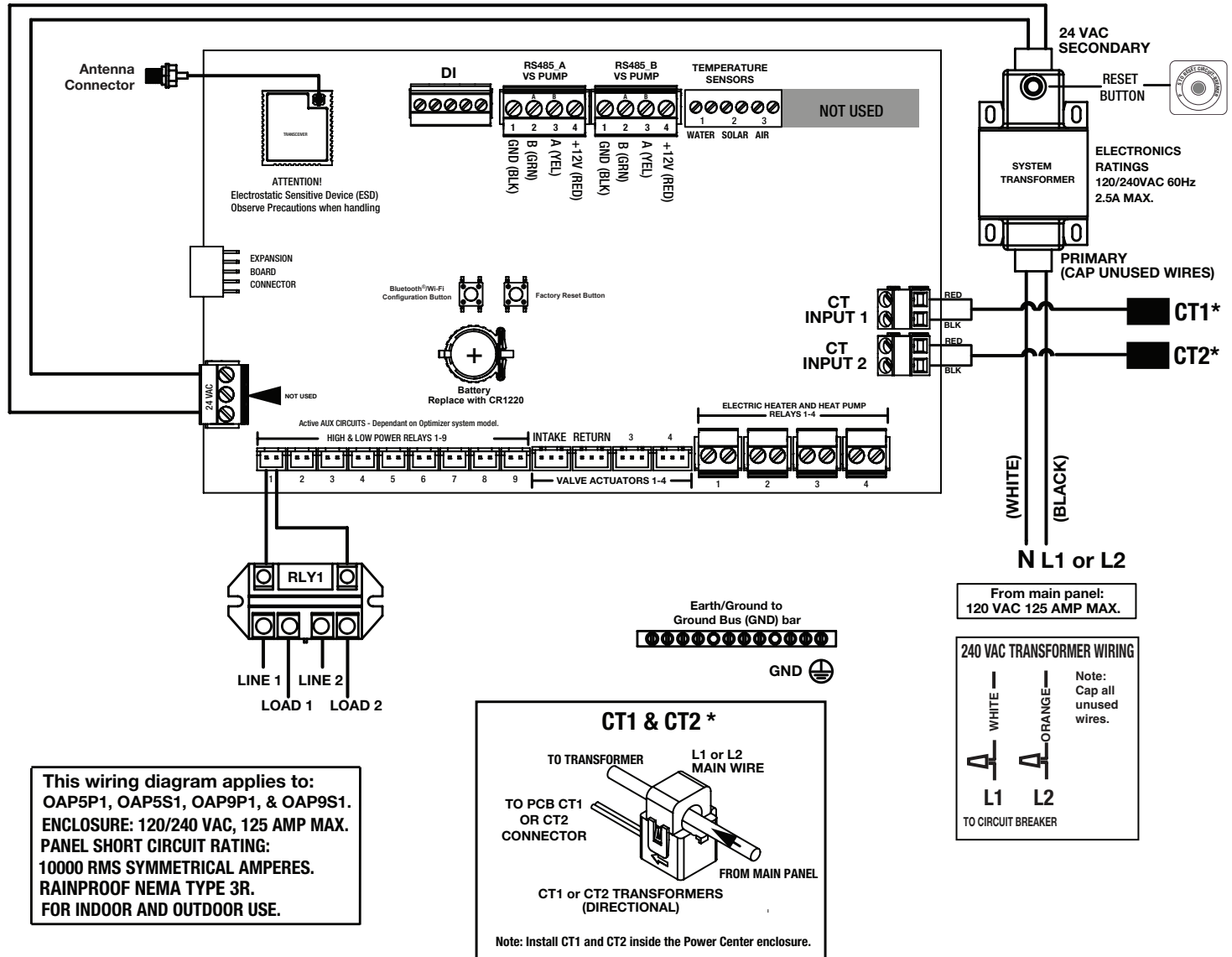
*2 SIEMENS IS A REGISTERED TRADEMARK OF SIEMENS ENERGY AND AUTOMATION INC.

*3 SQUARE D IS A REGISTERED TRADEMARK OF SQUARE D COMPANY.

120/240 VAC Power Center Wiring Connections

POWER CENTER (WITHOUT BUILT-IN CIRCUIT BREAKER BASE): The following Optimizer system wiring diagram shows how to wire the input 120/240 VAC (L1 and L2) from the main panel to the Power Center Optimizer system transformer.

Note: See page 19, for CT1 and CT2 installation instructions. Note: See page 13 and 14 for Optimizer circuit board access and connections.



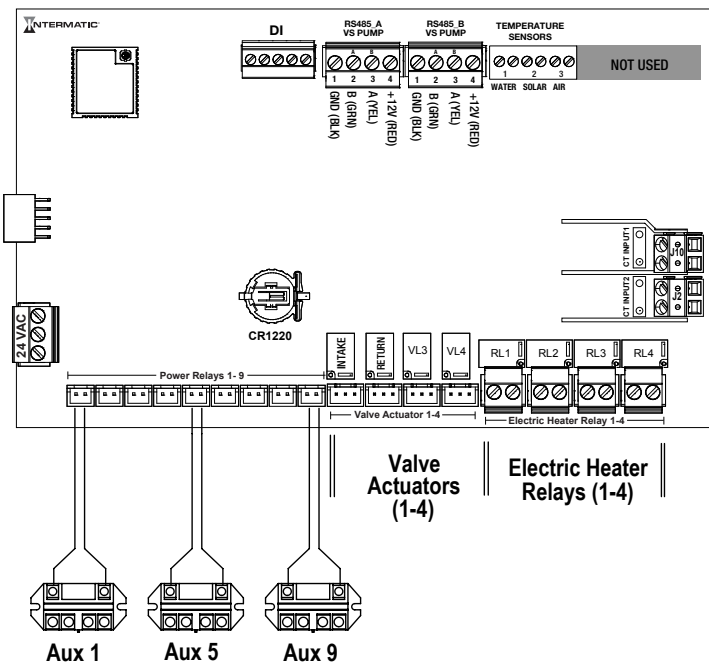
Power Relay AUX Connections

There are auxiliary 120/240 power relays (5 or 9 depending on the system). The power relays can be used for 120 VAC pool lights and other 240 VAC equipment such as the pool filter variable speed pump.

Note: See page 13 and 14 for Optimizer system circuit board access and power relay connections.

IMPORTANT: WIRING THE POOL FILTER VARIABLE SPEED PUMP (VSP) AUX RELAY AND THE SALT CHLORINATOR, CO2 or UV EQUIPMENT ASSOCIATED RELAY:

When adding a pump, wire the pump to the assigned AUX relay or RS485 connection. When adding a Salt Chlorinator to the Optimizer system, as part of the Salt Chlorinator configuration within the Optimizer system, select an AUX circuit to wire the Salt Chlorinator to, this ensures the Salt Chlorinator associated AUX is controlled by the ON/OFF state of the filter pump so that the Salt Chlorinator is not ON and producing chlorine when the filter pump is OFF. The Salt Chlorinator AC power wires must be wired to the associated AUX relay. *Note: DO NOT wire the Salt Chlorinator to an AUX relay that has NOT been associated with the filter pump.*

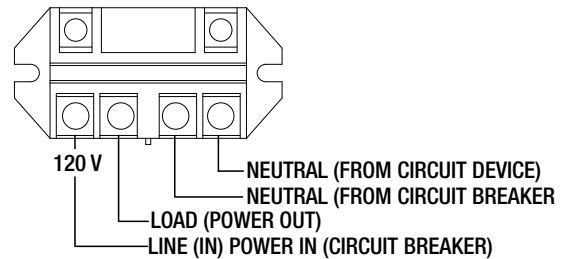


Optimizer Circuit Board AUX Power Relays

Note: AUX relay circuits, five (5) or (9) depending on the system.

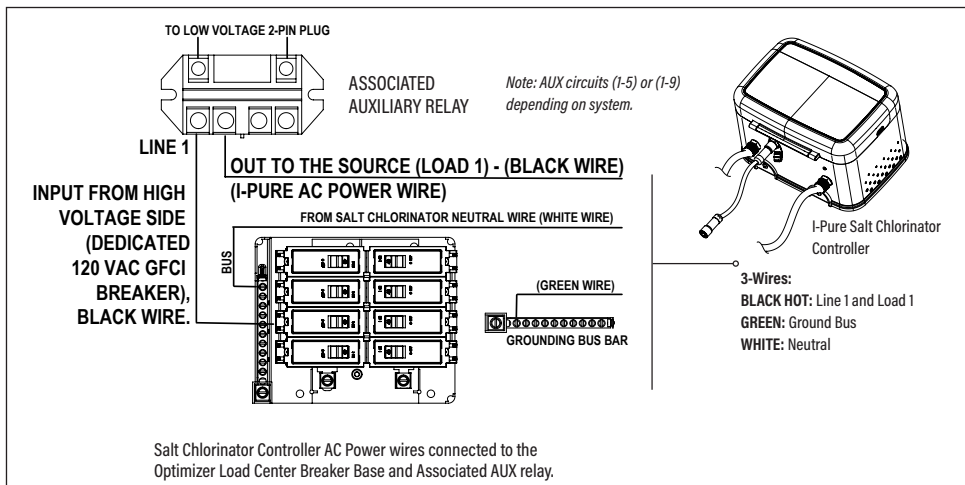
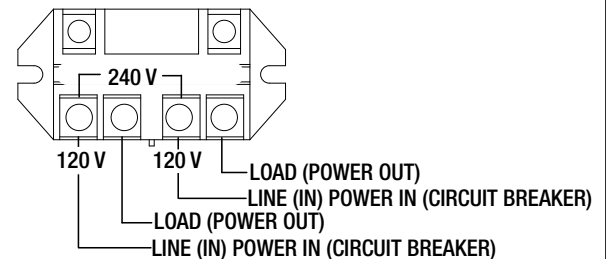
120 VAC POWER RELAY CONNECTION

LOW VOLTAGE FROM CIRCUIT BOARD



240 VAC POWER RELAY CONNECTION

LOW VOLTAGE FROM CIRCUIT BOARD



Power Relay and Circuit Breaker Specifications

There are auxiliary 120/240 power relays (5 or 9 depending on the system). The power relays can be used for 120 VAC pool lights and other 240 VAC equipment such as the pool filter variable speed pump.

Manufacturer	RECOMMENDED CIRCUIT BREAKERS					Filler Plate
	Single	Double	Twin	Quad	GFCB	
Cutler-Hammer ® 1	BR	BR	BR	BQC	GFCB	BRFP
*Siemens ® 2	QP	QP	QT	QT	QPF	QF3
Square D ® 3	HOM	HOM	HOMT	HOMT	HOM	HOMFP

RELAY CONTACT OUTPUT	
General: 25A, 277VAC	
PUMP	LIGHT
1.5 HP 120 VAC	1.5 KW 120 VAC TUNGSTEN
3 HP 277 VAC	4.8 KW 240 VAC TUNGSTEN
20 FLA/120 LRA, 120 VAC	20A, 277 VAC BALLAST
17 FLA/102 LRA, 277 VAC	

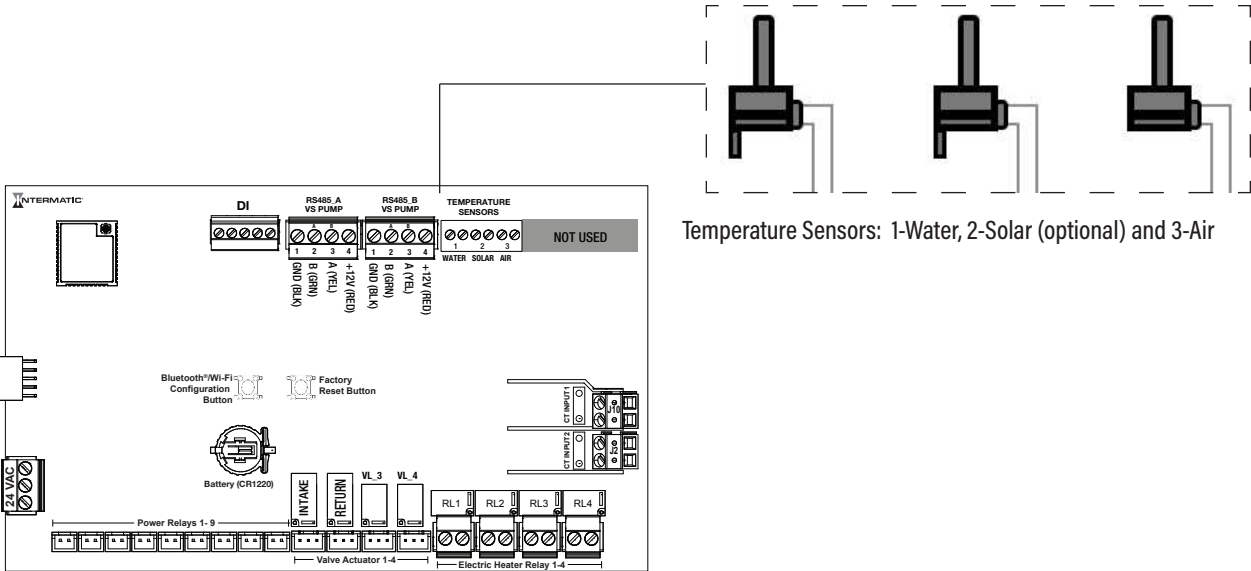
- 1. Cutler-Hammer is a registered trademark of Cutler-Hammer, Inc.
- 2. Siemens is a registered trademark of Siemens Energy and Automation, Inc.
- 3. Square D is a registered trademark of Square D Company.

CIRCUIT BREAKER CURRENT RATING NOT TO EXCEED:
80 AMP maximum for Single (one) Pole and Twin (two) Pole TYPE breakers.50 AMP maximum for Duplex and Quadplex TYPE breakers (2 circuits per space).
Maximum continuous load not to exceed 80% of the Ampere rating of any of over current equipment installed.
Recommended for use with variable speed pumps.

Temperature Sensors: Water, Solar (optional) and Air

There are three 2-pin temperature sensor connectors (1-3) for WATER (plumbed in line before the heater), Solar (optional), and AIR (located outside the enclosure in the shade). See page 35 for sensor installation information.

Note: See page 13 and 14 for Optimizer system circuit board access and Temperature Sensor connections.



Optimizer Circuit Board Temperature Sensor Connectors

Temperature Sensors: 1-Water, 2-Solar (optional) and 3-Air

Optimizer Valve Actuators Setup

⚠ WARNING! Risk of Electrical Shock

ALL WIRING MUST COMPLY WITH ALL STATE AND LOCAL ELECTRICAL CODES INCLUDING THE NATIONAL ELECTRICAL CODE AND/OR CANADIAN ELECTRICAL CODE

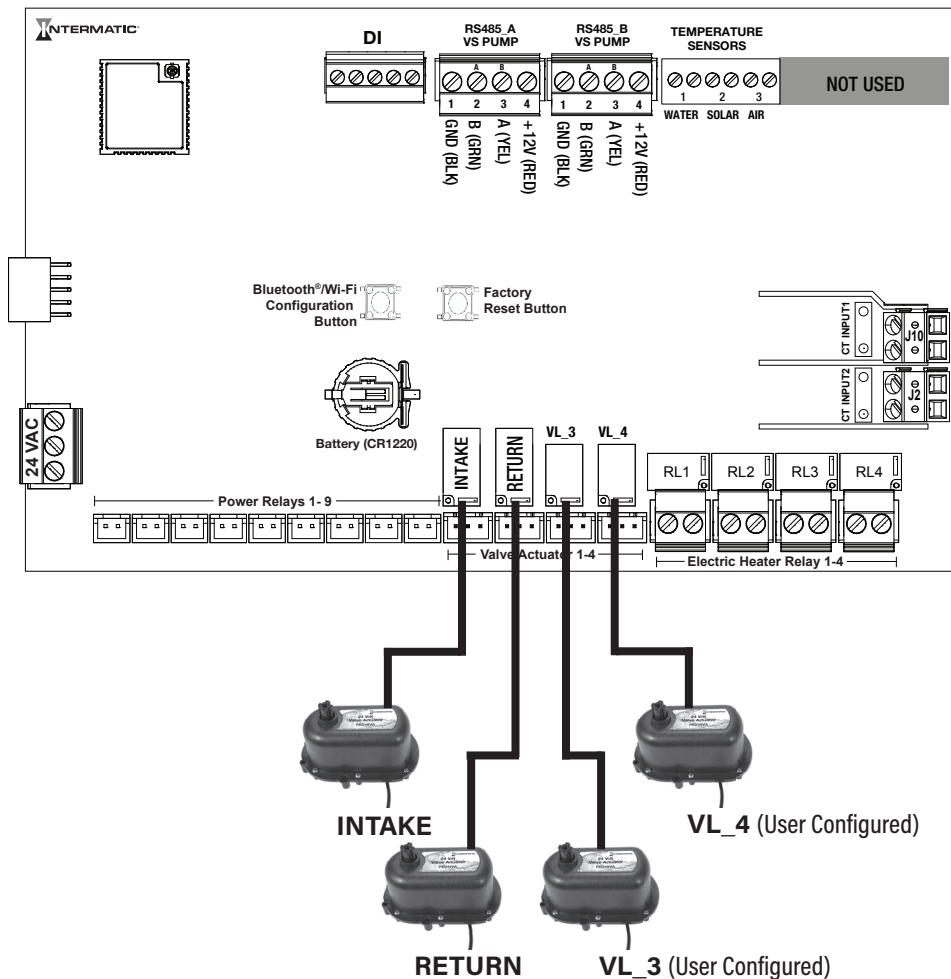
Electrical Ratings: 24 Volts, 60 Hz, 0.75 Amps - Normal operation Duty Cycle: 1 (minimum) ON (maximum), 8 mins. OFF (minimum). These values may be temporarily exceeded during installation testing and adjustment.

24-Volt Valve Actuators provides control of 2-way and 3-way diverter valves for a pool/spa combination (single equipment) and water features. The pool water flow rate can be adjusted for certain applications using the valve actuator adjustable cam, which rotates the diverter valves to multiple degree settings. The cam settings can be easily adjusted by removing the valve actuator lid.

There are four 3-Pin valve connectors (VL_1- VL_4) on the Optimizer circuit board for the low voltage valve actuators.

Note: See page 13 and 14 for Optimizer circuit board access and valve actuator relay connections.

Note: For Intermatic valve actuator installation information, please refer to the Intermatic Valve Actuator manual.



Optimizer System Circuit Board Valve Actuators Valve Connectors

Connecting a VS Pump Using the Optimizer App

The following describes how to connect and setup a Variable Speed Pump (VSP) to the Optimizer system.

To add a pool pump in the Optimizer app:

Home > Settings > Equipment Configuration > System Configuration (tap + to add the pump)

(Assign the pump address 1-16 - Default Address is 1.

To add a pool pump in the Optimizer app Setup Wizard:

To access System Setup Wizard, from the Home page, tap > Settings > System Setup Wizard (Step 5).

Note: Optimizer system installed pool equipment can be viewed in the Optimizer app: From the Home page, tap > Settings > Equipment Configuration > Configuration Info.

Variable Speed Pump (VSP): When adding a VSP, make sure to select the address the pump is set to.

Single Speed Pump: To add a single speed pump, wire the pump to a selected available AUX circuit.

Adding a Salt Chlorinator: When adding a Salt Chlorinator to the Optimizer system, as part of the Salt Chlorinator configuration within the Optimizer system, select an AUX circuit to wire the Salt Chlorinator to, this ensures the Salt Chlorinator associated AUX is controlled by the ON/OFF state of the filter pump so that the Salt Chlorinator is not ON and producing chlorine when the filter pump is OFF. The Salt Chlorinator AC power wires must be wired to the associated AUX relay. *Note: DO NOT wire the Salt Chlorinator to an AUX relay that has NOT been associated with the filter pump.*

Wiring a Variable Speed Pump (VSP) to the Optimizer system circuit board:

Connect the VSP to one of the RS485 COM ports (RS485_A and RS485_B. A = YELLOW WIRE, B=GREEN WIRE) on the Optimizer system circuit board. The pump AC power wires can be connected to a 240 VAC GFCI located in the Load Center or to the main breaker of the Power Center.

Note: See page 13 and 14 for Optimizer circuit board access and RS485 COM ports and the AUX power relay connections.

Variable Speed (VS) Pump Using Water Features

IMPORTANT! A Variable Speed (VS) Pump has a self-priming feature which, on start-up, can cause problems for water features since the pump briefly runs up to its maximum speed. For example, if a water feature is installed, such as laminars, as the pump starts up and briefly primes itself, and water is ejected out of the water feature at maximum speed. When using a variable speed pump with water features (such as laminars) it is recommended to **DISABLE** the pump's automatic "Priming" cycle feature. **Note:** The pump Priming setting is set to "on" by default.

Cleaning the filter basket

To clean the pump's filter basket, place the Optimizer system in Service Mode from its front panel. Next, disconnect the communication cable on the side of the pump.

To disable the pump's priming feature while connected to the Optimizer system.

Pentair IntelliFlo® variable speed pump

- With power on to the pump. Disconnect the RS485 COM port (A (YELLOW), B (GREEN), communication cable from the pump. Press Menu on the key pad, press the either arrow button to scroll though the selections until "Priming" is displayed. Select "Disabled" (the factory default is "Enabled"). Press Back to exit the Menu. Reconnect the RS485 communication cable to the pump.

For more information, refer to the Pentair Variable Speed Pump Installation manual.

Hayward® variable speed pump

- With power on to the pump, press Menu on the keypad. Hold down both arrow buttons. Press the right arrow to scroll though the selections until "Pump Duration" is displayed. Set the Pump Duration to 0:00 minutes. This will DISABLE priming. Press the right arrow until **Reset all settings> + yes or - no** is displayed. Press + to save the settings.

For more information, refer to the Hayward Variable Speed Pump Installation manual.

Jandy® variable speed pump

- The default priming speed is 2750 RPM. The pump will take approximately 15 minutes to prime at this priming speed when the pump is located 10 feet above the pool water.

Priming Speed and Duration: The controller will command the Jandy variable-speed pump to operate at the priming speed for the priming duration specified (except during timer program overlaps or follow-on commands where the pump is not stopped before changing speeds).

Adjust the Priming speed: Power on to the pump, from the service setup menu, select PRIMING using the arrow keys. Press MENU. Prime within 8 minutes at 10 feet above the water level.

To set priming speed: Select PRIMING SPEED using the arrow keys. Press MENU. Using the arrow keys, set the priming speed to the desired value. Press MENU to save.

To set priming duration: Select PRIMING DURATION: Using the arrow keys. Press MENU. Using the arrow keys, set the priming speed to the desired value in minutes from one (1) to five (5) minutes. Press MENU to save.

For more information, refer to the manufactures VS pump manual.

Jandy® (VS) Pump Installation

Note: Auxiliary (AUX) relays 1-5 or 6-9 depend on the Optimizer system model. For more information, please refer to the Optimizer system App User's Guide.

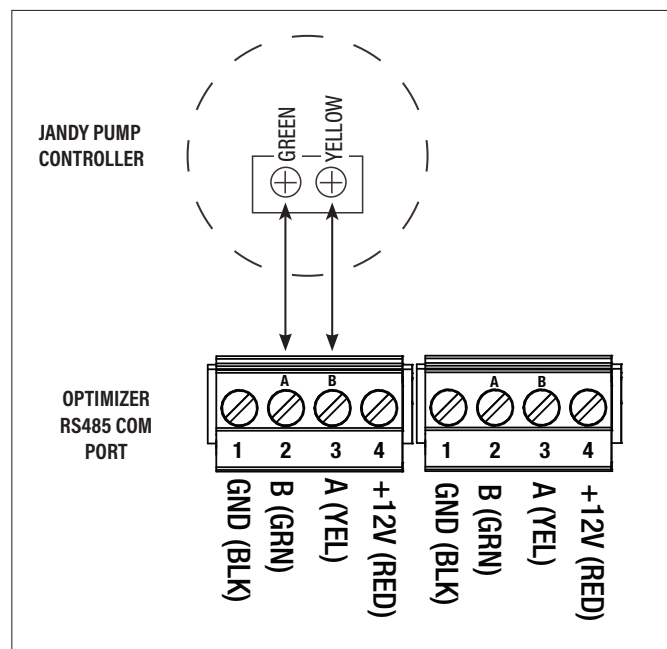
CONNECTING A JANDY® FLOPRO VARIABLE SPEED (VS) PUMP WITH A SPEEDSET CONTROLLER TO THE OPTIMIZER SYSTEM:

Note: See page 13 and 14 for Optimizer system circuit board access and RS485 COM port connections.

Install the Jandy FloPro VS Pump to the Optimizer system RS485 COM port:

1. Lift the SpeedSet Controller off the pump. Locate the RS485 COM port screw terminal on the underside of the controller.
2. Insert the two Optimizer system RS485 wires (Yellow and Green) through the wire restraint on the SpeedSet Controller. Connect the A (YELLOW) and B (GREEN) wires to the SpeedSet RS484 COM port YELLOW AND GREEN screw terminals.
3. Set the SpeedSet Controller on to the pump.
4. Connect the Jandy pump wires to the Optimizer system RS485 COM port screw terminal: GREEN - PIN 2, YELLOW PIN 3.

Note: The Jandy SpeedSet Controller replaces the Jandy JEP-R Controller.



Add the Jandy VS pump in the Optimizer app:

1. Power on the pump. Make sure the pump DIP switches are all OFF and the pump's communication cable is connected to the pump and the Optimizer RS485 COM port.
2. In the Optimizer app, go to: **Home > Settings > Equipment Configuration > System Configuration (tap + to add the pump)**. Enter the pump information. Note: Assign the pump address from 1-16 (Default address is 1). Note: If needed, reset the pump: Press and hold the STOP and OVERRIDE buttons for three (3) seconds to reset the pump the factory default settings.

For more information, refer to the Jandy VS pump Installation manual.

Hayward® (VS) Pump Installation

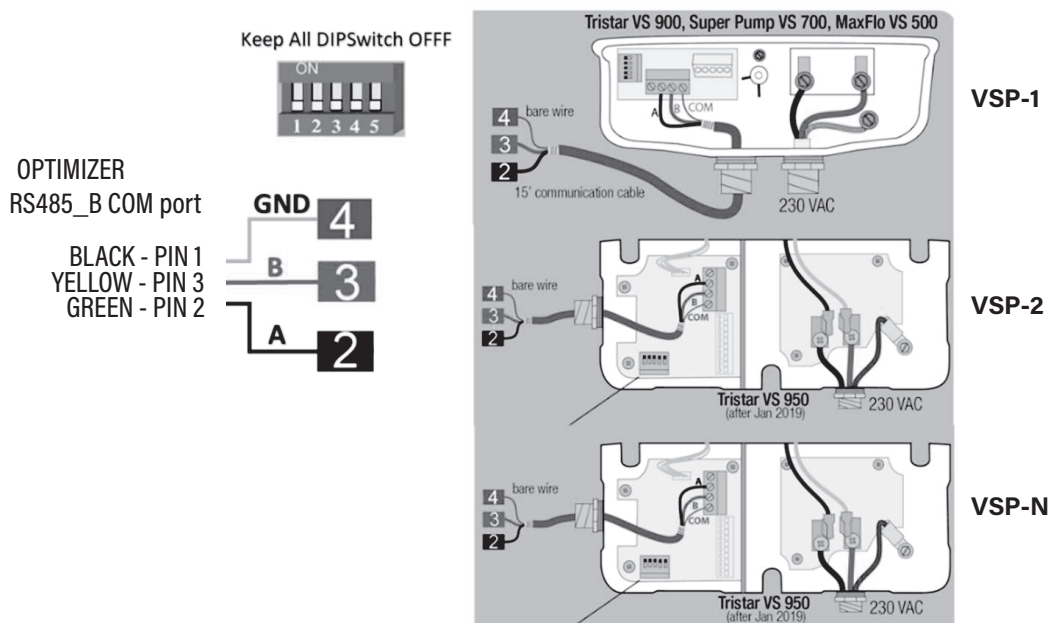
Note: Auxiliary (AUX) relays 1-5 or 1-9 depend on the Optimizer model. For more information, please refer to the Optimizer App User's Guide.

CONNECTING A HAYWARD® VARIABLE SPEED (VS) PUMP TO THE OPTIMIZER SYSTEM:

To connect a Hayward (VSP) to the Optimizer system RS485 COM port:

1. Disconnect the pump's onboard display and set all of the DIP-Switches to OFF. Remove the display cable. Use the spare connector taped to the display cable for the communication cable connection.
2. Connect the three (3) wires (A, B, GND) from the pump to the Optimizer system circuit board RS485 COM port:

Note: See page 13 and 14 for Optimizer system circuit board access and RS485 COM port connectors.



To setup the Hayward VSP RS485 COM port address:

Note: The Hayward VSP uses a HAU (Hayward Unique) address protocol for RS485 COM Port communications.

- Power on the pump. Make sure the pump DIP switches are all OFF and the pump's communication cable is connected to the RS485 COM port on the Optimizer system circuit board.

Note: Pump Factory Reset: Press and hold the STOP and OVERRIDE buttons for three (3) seconds to reset the pump the factory default settings.

Add the Hayward pump in the Optimizer system app:

In the Optimizer app, go to: **Home > Settings > Equipment Configuration > System Configuration (tap + to add the pump)**. Enter the pump information. **Note:** Assign the pump address from 1-16 (Default address is 1).

For more information, refer to the Hayward Variable Speed Pump Installation manual.

Pentair® (VS) Pump Installation

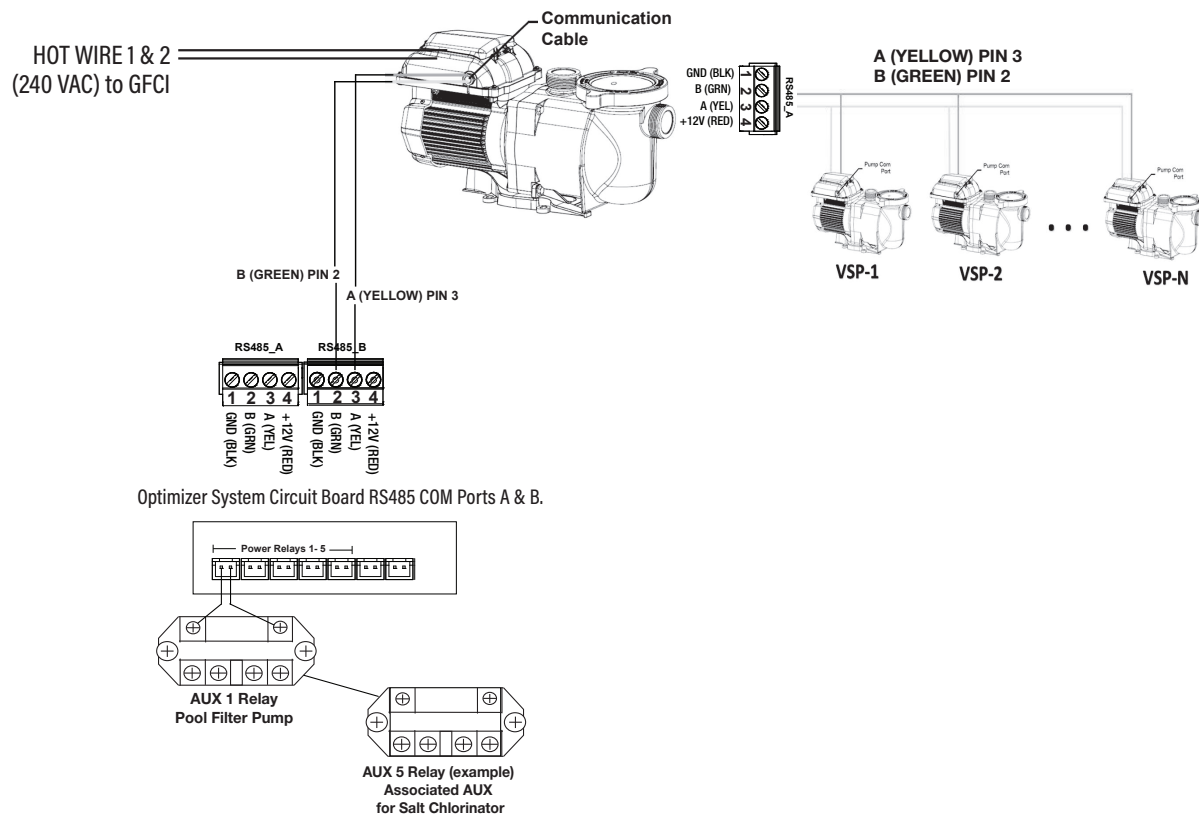
CONNECTING A PENTAIR INTELIFLO® VARIABLE SPEED PUMP (VS) PUMP TO THE OPTIMIZER SYSTEM:

Connect the Pentair VSP to one of the RS485 COM ports (RS485_A and RS485_B) on the Optimizer system circuit board. The pump AC power wires can be connected to a 240 VAC GFCI located in the Load Center or to the main breaker of the Power Center.

Note: See page 13 and 14 for Optimizer system circuit board access and RS485 COM port and AUX relay connectors.

To connect the Pentair IntelliFlo® to the Optimizer system circuit board:

- Connect the 2-wire pump communication cable to the RS485 COM port on the Optimizer system main circuit board. Connect the A (YELLOW) wire to PIN 3 and B (GREEN) wire to PIN 2 of the RS485 COM port.



Assign a Pentair VSP an RS485 COM Port Address (A-YELLOW - PIN3, B-GREEN - PIN 2)

Note: Make sure to use the same pump address assigned to the IntelliFlo VS pump and the Optimizer app.

To change the pump's address in the IntelliFlo pump menu:

MENU > SETTINGS > PUMP ADDRESS (Assign the pump address 1-16 - Default Address is 1).

Note: For multiple pumps, make sure each pump has its own address (1-16).

To add the IntelliFlo pump in the Optimizer app:

In the Optimizer app, go to: **Home > Settings > Equipment Configuration > System Configuration** (tap + to add the pump). Enter the pump information. Note: Assign the pump address from 1-16 (Default address is 1).

For more information, see the Intermatic Optimizer App Guide.

Heat Source Overview Using the Optimizer App

HEAT CONTROL USING THE OPTIMIZER SYSTEM APP:

Note: Up to four (4) gas heaters can be connected to the Optimizer system circuit board gas relays VL-1,2,3,4 (low voltage dry contacts). The Optimizer system app can be setup to use two different heating sources at the same time.

Heat Source Choices: Gas, Solar, Heat Pump, Heat and Cool Pump, Chiller

When heat control is enabled, and the filter pump is active, the heating source is controlled using a water temperature sensor. If the system is in Pool Mode, the Pool Water Temperature Set point is used to control the heater. If the system is in Spa Mode, the Spa Water Temperature Set point is used to control the heater.

Heater Only (Required Equipment):

Water Temperature Sensor (Temp Input), Heater (Relay wired to Heater's Fireman's Switch), Gas, Heat Pump and Filtration Pump (AUX). *Note: Prerequisite, heater is enabled, and the filter pump is active.*

Sequence of operation: If the system requests heating is needed, water temperature is below the desired temperature set point, the heater relay (RL_1-4 output) is activated. The heater relay will remain activated until the water temperature is greater than the water temperature set point plus the hysteresis (1F) or the heater is disabled, or the filtration pump is shut off.

Solar Only (Required Equipment):

Water Temperature Sensor (Temp Input), Solar Temperature Sensor (Temp Input), Filtration Pump (AUX), Solar Booster (Optional) (AUX), Solar Actuator (Valve). *Note: Prerequisite, heater is enabled, and the filter pump is active.*

Sequence of operation: When the system requests heating is necessary (heater is enabled and water temperature is below the desired set point), the system checks the delta between solar air temperature and water temperature. If the delta is greater than 6°F, the solar actuator is opened. This valve action diverts the water flow to the solar panel and feeds the water stored in the solar panel to the pool. If a solar booster pump is installed, its activated for the duration while the solar actuator is opened (or while solar heating is active). When the temperature delta between the solar air temp sensor and water temp sensor is 3°F, the solar booster pump is shut off (if installed) and solar diverting valve is closed.

Solar (Primary) + Heater (Secondary) Required Equipment:

Water Temperature Sensor (Temp Input), Solar Temperature Sensor (Temp Input), Filtration Pump (AUX), Solar Booster (Optional) (AUX), Solar Actuator (Valve). *Note: Prerequisite, heater is enabled, and the filter pump is active.*

Sequence of operation: When the system requests heating is necessary, the system first checks the delta between solar air temperature and water temperature. If the delta is greater than 6°F, and there is a call for heat (heater enabled), the solar actuator is opened. If a solar booster pump is installed, its activated for the duration while the solar actuator is opened. When the temperature delta drops less than 3°F between the solar air temperature and the water temperature, the solar valve is closed and if a solar booster pump if installed, it is turned off. The gas heater is then activated if the water temperature hasn't reached desired set point. If the delta between solar air temperature and water temperature exceeds 6°F while gas heat is active, the system will revert back to solar heating.

Heat Pump

If Solar is the primary heat source is used in conjunction with a Heat Pump, typically, either the gas heater or heat pump (heat pumps more common in Florida). Using a Heat Pump, the Solar Preferred option can choose gas heater or heat pump.

Heat and Cool Pump: There are two types of heat pumps: Heat only and Heat/Cool units. Heat pumps can be run in reverse to cool pools. This is popular in very hot climates like Arizona where the water temp of pools can get in the upper 90°F just from sun exposure. This allows pool you to set a desired temperature to cool the pool to.

Chiller: Chillers can be used to cool off pools as mentioned above or even to chill a spa to make it a "cold plunge" which are slowly getting more popular. Chillers would just be connected to either an AUX relay for no temp control or to our RLY 1-4 on the Optimizer system circuit board and usually control the chiller via dry contact/fireman's switch (like how gas heaters are told to fire by the Optimizer system).

Hayward® Heater Connection

CONNECTING A HAYWARD HEATER TO THE Optimizer SYSTEM:

Note: The Optimizer system app can be setup to use two different heating sources at the same time.

To connect a Hayward heater to the Intermatic system main circuit board for Remote Control: *Note: Refer to the Hayward Heater Installation manual for wiring instructions for connecting to an external control, such as the Intermatic system.*

A Hayward heater can be connected to the Intermatic system using a 2 or 3-wire RS485 cable to remotely control the POOL or SPA temperature. Connect RS485 COM port 2 or 3 wire cable to only **one** of the terminal block located in the lower compartment inside the junction box. *Note: Use 22 AWG wire for runs less than 30 feet or 20 AWG wire for runs over 30 feet. The maximum length is 200 feet. A separate conduit should be used for RS485 COM port remote wiring.*

1. Turn the power OFF to the Hayward heater and the Intermatic system.
2. Remove the rear cover to access the Junction box.
3. Route a RS485 22 gauge 2-conductor cable from the heater's eight position connector to the Intermatic Optimizer system circuit board RS485 COM port screw terminal as show below.

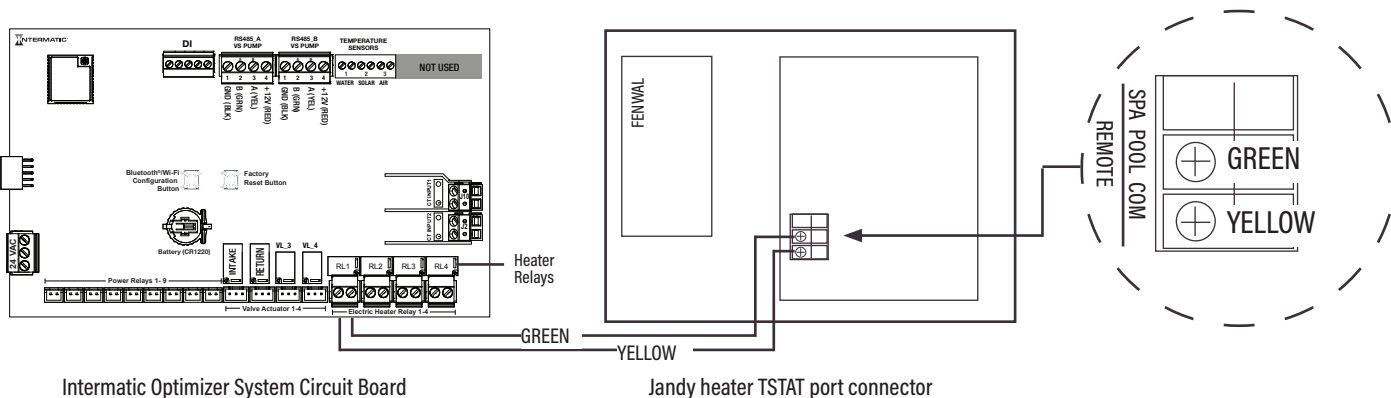
Note: See page 13 and 14 for Optimizer system circuit board access, RS485 COM port and the heater relay connector.

2-Wire RS485 Connection for remote thermostat control

1. Use the heater MODE key to change the control to STANDBY mode. (LED on) Press and hold both the DOWN and MODE keys for 3 seconds until the Code "bo" displays.
2. On the remote control wiring terminal block (Figure 22), connect the appropriate wires from the remote control to the terminals adjacent to the ORANGE wire ("POOL") and WHITE wire ("24V").
3. Set the heater in POOL (LED on) or SPA (LED on) mode. The display will show "bo". The remote thermostat will operate the heater (104°F. maximum).

3-Wire RS485 Connection for remote thermostat control

1. On the remote control wiring terminal block (Figure 22), connect the appropriate wires from the remote control to the terminals adjacent to the ORANGE wire ("POOL"), WHITE wire ("24V"), and RED wire ("SPA").
2. Use the heater MODE key to change the control to STANDBY mode (LED on). Press and hold both the DOWN and MODE keys for 3 seconds until the Code "bo" displays.
3. When the Intermatic system is set to Pool/Low (or Spa/High) the POOL (or SPA) LED will be on and the water temperature is displayed. The heater will use its internal thermostat to regulate the water temperature to the desired temperature set point.



Pentair® MasterTemp®/Max-E-Therm® Heater Connection

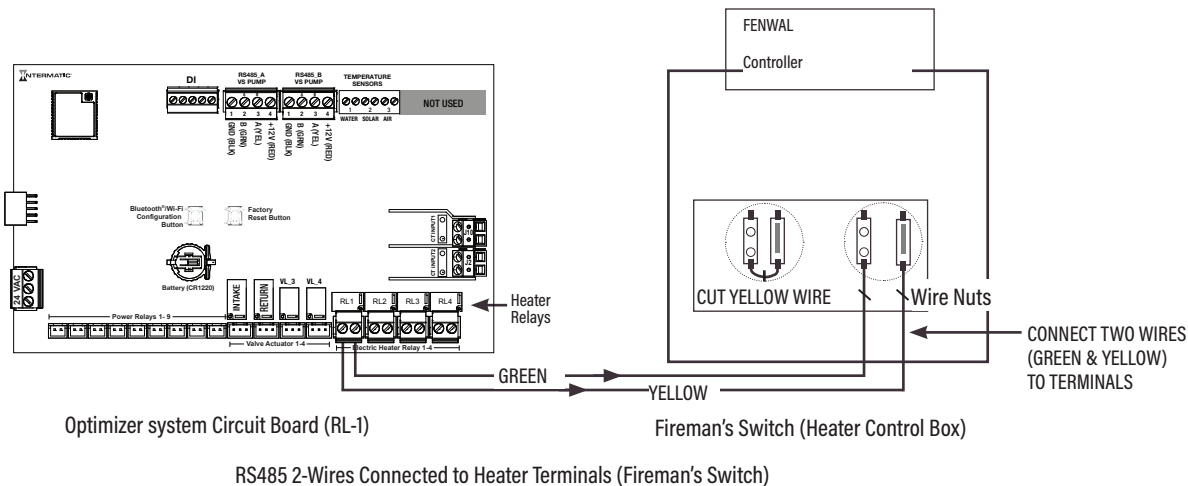
CONNECTING A PENTAIR MASTERTEMP AND MAX-E-THERM HEATER TO THE Optimizer SYSTEM:

Note: The Optimizer system app can be setup to use two different heating sources at the same time.

To connect a Pentair heater to the Optimizer system circuit board for remote control: *Note: Refer to the Pentair Heater Installation manual for wiring instructions to connect to an external control, such as the Intermatic system. Note: Use 22 AWG wire for runs less than 30 feet or 20 AWG wire for runs over 30 feet. The maximum length is 200 feet. A separate conduit should be used for RS485 remote wiring.*

Note: See page 13 and 14 for Optimizer system circuit board access, RS485 COM port and the heater relay connector.

1. Turn the power OFF to the Pentair heater and the Intermatic system.
2. Loosen the two outdoor panel retaining screws on the control panel. Fold down the panel to access the low voltage compartment. See page 13.
3. Remove the heater panel to access the Fireman's Switch terminals located in the Control box. Open the Control box cover.
4. **2-Wire RS485 Connection (Fireman's Switch):** Remove the YELLOW JUMPERED WIRE from the Control board. Cut the Yellow wire in half (reuse each of the blade connectors), as shown below.
5. Connect each of the RS485 wires (using wire nuts) to each of the two Yellow wires.
6. Connect the RS485 2-wires to the heater's Terminal board connectors, where the Yellow jumpered wire was.
7. Route RS485 cable from heater to the Intermatic system circuit board RL-1 screw terminal as show below.
8. Close the Control box cover. Reinstall the heater panel.



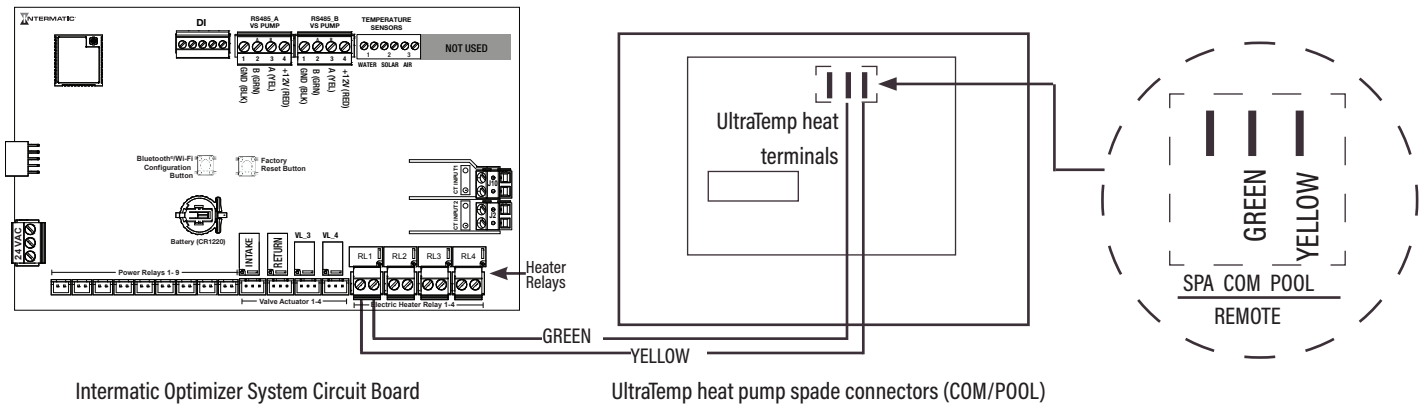
9. Turn the power ON to the Pentair heater and the Optimizer system.
10. **Optimizer System Control Panel:** Press the Mode button to put the system in SERVICE mode, see page 15. The Heater Service LED will be on.
11. **Test the Heater:** Press the Pool or Spa button to activate the heater. The heater will turn on.
12. Close the Optimizer system control panel. Tight the two retaining screws.

Pentair® UltraTemp® Heat Pump Connection

CONNECTING A PENTAIR ULTRATEMP HEAT PUMP TO THE Optimizer SYSTEM:

To connect a Pentair heat pump to the Optimizer system circuit board for remote control: *Note: Refer to the Pentair Heater Installation manual for wiring instructions to connect to an external control, such as the Intermatic system. Note: Use 22 AWG wire for runs less than 30 feet or 20 AWG wire for runs over 30 feet. The maximum length is 200 feet. A separate conduit should be used for RS485 remote wiring.*

1. Turn the power OFF to the Pentair heat pump and the Intermatic system.
2. Loosen the two outdoor panel retaining screws on the control panel. Fold down the panel to access the low voltage compartment. *Note: See page 13 and 14 for Optimizer system circuit board access, RS485 COM port and the heater relay connector.*
3. Remove the heat pump front cover. Remove the screws securing the control panel to access the control panel circuit board.
4. **2-Wire Heat Pump Control Panel Connectors:** Connect 2-wires (GREEN and YELLOW) to the each of the spade connectors. *Note: Route the cable through the low voltage compartment to the control panel.*
5. Route the cable from heat pump to the Optimizer system circuit board RL-1 screw terminal as show below.
6. Reinstall heat pump control panel screws and the front cover.



7. Turn the power ON to the Pentair heat pump and the Optimizer system.
8. **Heat pump:** Set the control panel to REMOTE MODE "RELAY ". The Green LED will be illuminated (solid Green). The heat pump can now be controlled from the Optimizer system app.
9. **Optimizer System Control Panel:** Press the Mode button to put the system in SERVICE mode, see page 12. The Heater Service LED will be on.
10. Close the Optimizer system control panel. Tight the two retaining screws. See pages 13 and 14.

Jandy® Heat Pump Connection

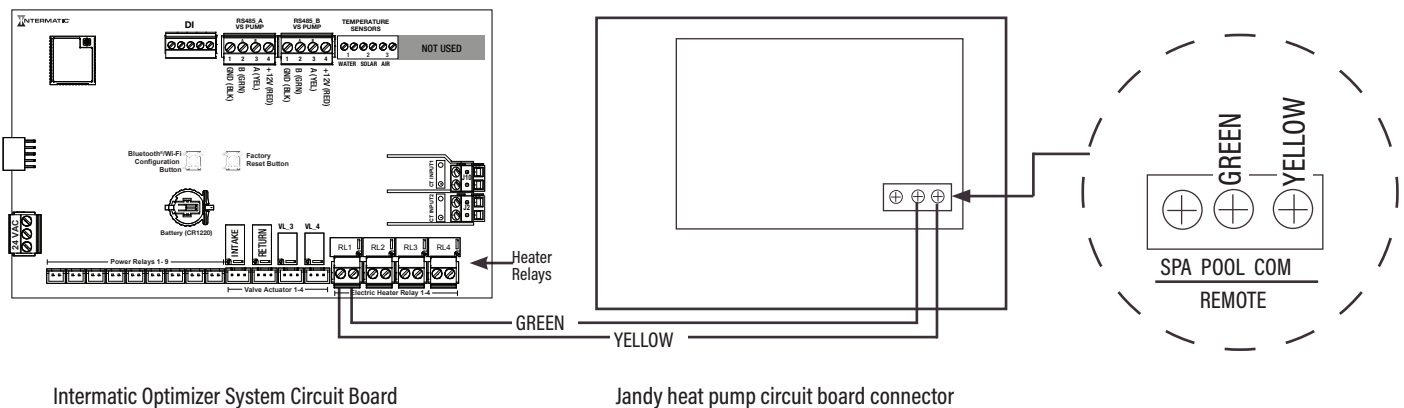
CONNECTING A JANDY HEAT PUMP TO THE INTERMATIC Optimizer SYSTEM:

To connect a Jandy heat pump to the Intermatic Optimizer system circuit board for remote control:

Note: Refer to the Jandy Heater Installation manual for wiring instructions to connect to an external control, such as the Intermatic system.

Note: Use 22 AWG wire for runs less than 30 feet or 20 AWG wire for runs over 30 feet. The maximum length is 200 feet. A separate conduit should be used for RS485 remote wiring.

1. Turn the power OFF to the Jandy heat pump and the Intermatic Optimizer system.
2. Loosen the two outdoor panel retaining screws on the control panel. Fold down the panel to access the low voltage compartment.
Note: See page 13 and 14 for Optimizer system circuit board access, RS485 COM port and the heater relay connector.
3. Remove the heat pump front cover to access the control panel circuit board.
4. **2-Wire Heat Pump Control Panel Connectors:** Connect 2-wires, A (YELLOW), B (GREEN) to the each of the spade connectors. *Note: Route the cable through the low voltage compartment to the control panel.*
5. Route the cable from heat pump to the Intermatic Optimizer system circuit board RL-1 screw terminal as show below.
6. Reinstall heat pump front cover.



7. Turn the power ON to the Jandy heat pump and the Optimizer system.
8. **Heat pump:** Set the control panel to REMOTE MODE "RELAY ". The Green LED will be illuminated (solid Green). The heat pump can now be controlled from the Intermatic app.
9. **Optimizer System Control Panel:** Press the Mode button to put the system in SERVICE mode, see page 15. The Heater Service LED will be on.
10. Close the Optimizer system control panel. Tight the two retaining screws.

Salt Chlorinator Installation

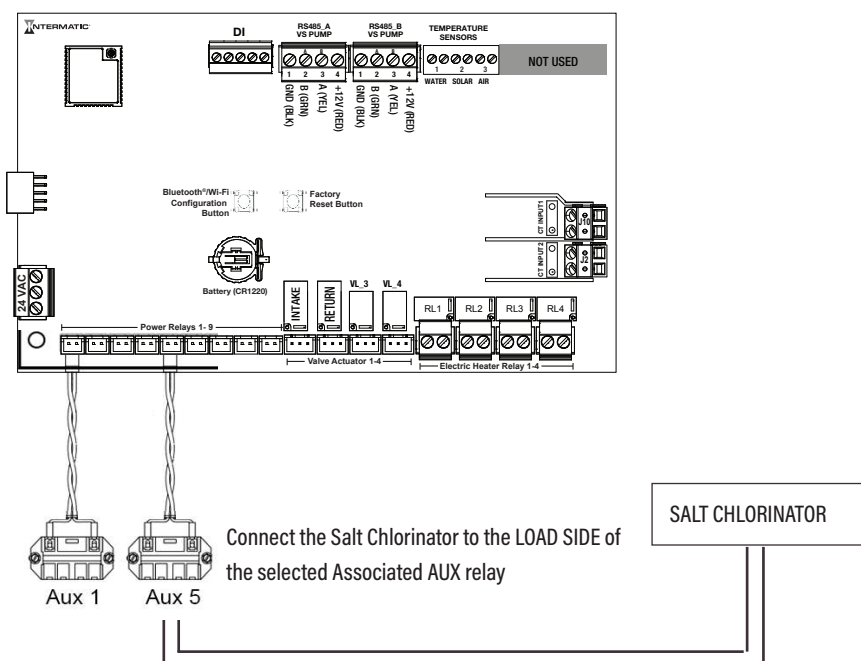
WARNING: IF THE SALT CHLORINATOR IS NOT CONNECTED CORRECTLY TO THE INTERMATIC Optimizer SYSTEM, HAZARDOUS CHLORINE GAS CAN BUILDUP AND CAUSE PERSONAL INJURY.

Connecting a Salt Chlorinator (Stand Alone) to the Optimizer system. See page 34.

NOTICE: The Chlorinator Power Supply **MUST BE** connected to the **LOAD SIDE** of the Load Center associated **AUX RELAY** to ensure the Chlorinator receives power **ONLY WHEN THE FILTER PUMP IS ON**.

Note: NEVER power on the Chlorinator when the pool filter pump is OFF and water is not flowing through the unit.

Note: A ground fault circuit interrupter (GFCI) is not required to protect the circuit.



Intermatic Optimizer System Circuit Board (Stand Alone Chlorinator connection)

Any one of the available auxiliary outputs (AUX 1-5 or 1-9 depending on the system model) can be assigned as an ASSOCIATED AUX to control the following optional equipment while: Note: Only one (1) Salt Chlorinator can be used by the Optimizer system. Note: See page 13 and 14 for Optimizer system circuit board access, RS485 COM port and relay connectors.

- **Salt Chlorinator, Ozone Generator, or a UV system:** For example, the selected associated AUX assigned for the Salt Chlorinator is controlled by the pool filter pump On/Off state to ensure the chlorinator is not producing chlorine when the filter pump is not on.

Salt Chlorinator Associated AUX Setup

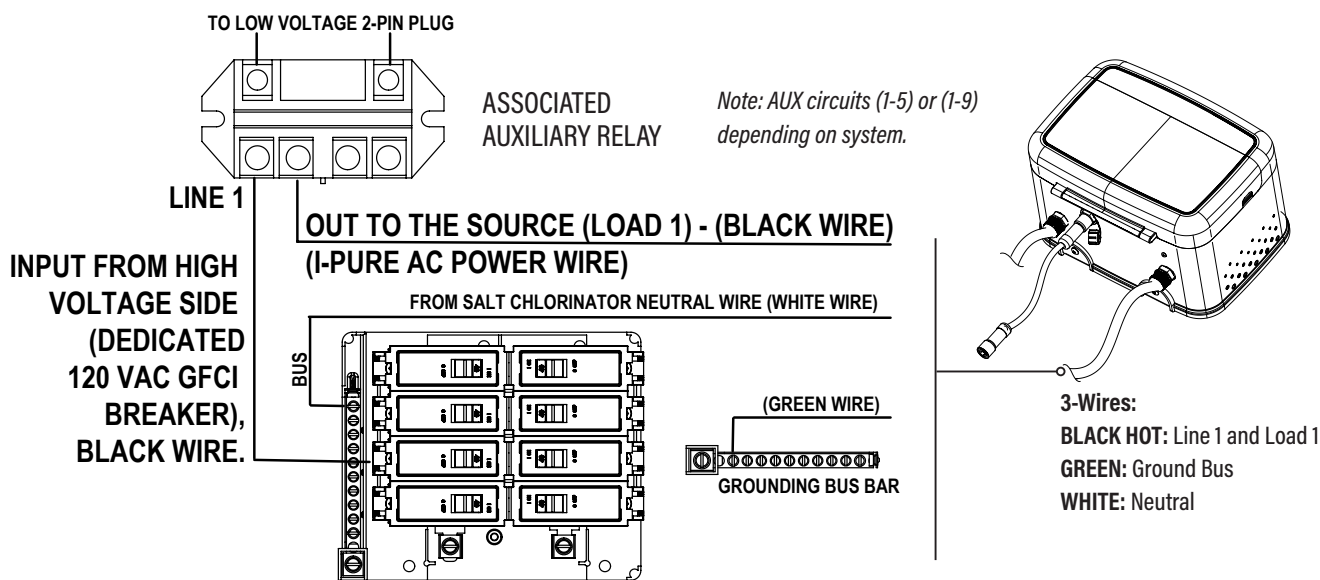
⚠ WARNING: IF THE SALT CHLORINATOR IS NOT CONNECTED CORRECTLY TO THE INTERMATIC Optimizer SYSTEM, HAZARDOUS CHLORINE GAS CAN BUILDUP AND CAUSE PERSONAL INJURY.

IMPORTANT: The Controller power wires **MUST BE** connected to the **LOAD SIDE** of the **ASSOCIATED AUX RELAY** located in the Optimizer system Load Center or Power Center to ensure the chlorinator cell receives power **ONLY WHEN THE FILTER PUMP IS ON**. See illustration below.

CAUTION: NEVER power on the chlorinator when the pool filter pump is OFF, and water is not flowing through the cell which can damage the cell.

Connect the Salt Chlorinator Controller AC power wires to the Optimizer Load Center Associated AUX relay as follows:

1. ACCESS THE OPTIMIZER LOAD CENTER BREAKER BASE AND POWER RELAYS: To access the Optimizer Load Center and Power Center circuit breaker and power auxiliary relays, refer to page 13 and 14 for details.
2. Route the Salt Chlorinator Controller AC power wires through a grommet located on the bottom of the Load Center to the circuit breaker base and power auxiliary relays.
3. Connect the Salt Chlorinator Controller AC power wires to the **LOAD SIDE** of the associated AUX relay as shown below.



Salt Chlorinator Controller AC Power wires connected to the Optimizer Load Center Breaker Base and Associated AUX relay.

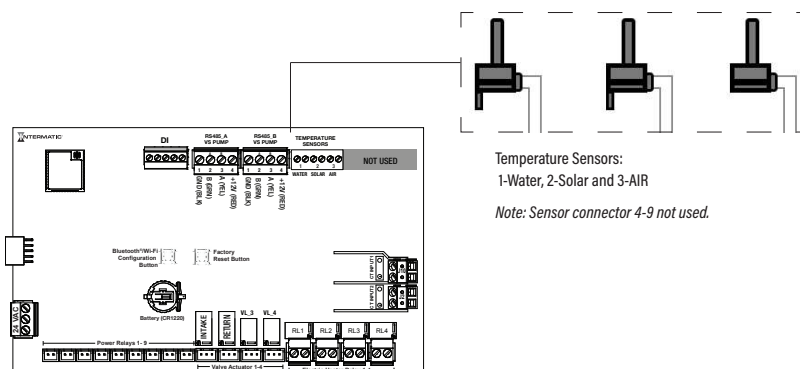
NOTE: POWER CENTER WITHOUT CIRCUIT BREAKER BASE: Connect the Salt Chlorinator Controller AC power wires to Power Center Associated AUX relay as described above, with exception of an external GFCI which is located outside the Power Center. Wire the Salt Chlorinator AC power wires from the GFCI to the Optimizer Associated AUX relay.

Water and Air Sensor Installation

Optimizer System Circuit Board Air, Water and Water Out Sensor Connections

There are three 2-pin temperature sensor connectors (1-Water, 2-Solar and 3-Air). The Optimizer system ships with two 10K ohm temperature sensors.

- Air Sensor (dangling below the enclosure in the shade)
- Water Sensor (plumbed in-line before the heater)
- Solar Sensor (Optional): see next page.



Optimizer Circuit Board Temperature Sensor Connectors

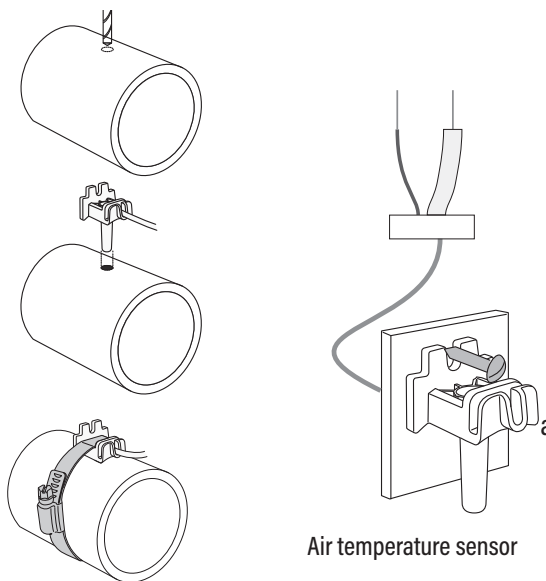
CONVENTIONAL HEAT (GAS) AND SOLAR HEAT SOURCE

Note: If both solar heat and a conventional heater (gas) is being used, the conventional heater will only operate when solar heat is NOT available. (Solar Preferred heat mode)

Note: See page 13 and 14 for Optimizer system circuit board access. Note: See page 16 for Temperature Sensor location.

Water Sensor (10k ohm) Installation

1. Install the water sensor between the filter pump and the filter.
2. Drill a 3/8th inch hole in the water pipe on exit side of the heater. Insert the sensor into the hole in the pipe. Place the hose clamp over the sensor. Tighten the clamp around pipe.
3. Run the sensor cable up into the low voltage raceway of the Load Center or Power Center to the Optimizer system circuit board. Connect the sensor wires to screw terminals for the water sensor. See below for sensor locations.



Water temperature sensor

Air Sensor Installation (For freeze Protection)

1. Mount and secure the air sensor in an open air location, in shaded area, not near the air conditioner or heat pump.
2. Run the sensor cable up into the low voltage channel of the Load Center or Power Center to the main circuit board. Connect the sensor wires to screw terminals for the air sensor. See below for sensor locations.

Solar Air Sensor Installation

Roof Air Temperature Sensor Installation

The Optimizer system is a fully functioning solar heating controller. An additional 10K ohm air temperature sensor is required when using a solar system (PN: PA122). To control the solar valve actuator, connect the roof solar temperature to the Intermatic Optimizer system main circuit board. See page 16. Choose a location for the air sensor that is close to the solar collectors. This provides the most accurate temperature conditions of the solar system.

Note: Before installing a solar heater, a solar valve and solar air temperature sensor must be installed.

1. Attach the solar air sensor temperature sensor to a piece of rubber, silicone onto solar collector using a silicone-based adhesive. *Note: Be sure it is not in direct contact or with any steel roofing material.*

Note: Do not mount the solar air sensor in direct contact with the roof or in shade, this can result in inaccurate temperature readings. Do not over tighten terminal screws. The solar air sensor is not polarity sensitive, so it does not matter which way the wires are connected.

2. Loosen the two outdoor control panel retaining screws. Fold down the control panel to access the low voltage compartment. *Note: See page 13 and 14 for Optimizer system circuit board access and Temperature Sensors (1-3) connectors.*
3. Run the solar air sensor cable up into the low voltage raceway of the Load Center or Power Center to the Optimizer system circuit board.
4. Connect the solar air sensor wires to screw terminals. See page 16 for sensor connection locations.

Solar Heating Booster pump

The solar booster pump will turn on when the filter pump is running and solar heat is available and the pool/spa water is less than the desired temperature setting.

Filter/Booster Pump

The main pool filler pump can be used with a 3-Way Solar Valve to recirculate water through the solar system if a separate filter/booster solar pump is not available.

Booster Pump

A separate solar booster pump can be used to pull water from the suction line and divert it to the roof solar collectors.

The pool filter pump operates in conjunction with the solar booster pump.

Any of the auxiliary outputs (AUX 1-5 or 1-9 depending on the system model) can be assigned to control a booster pump.

- A separate Solar booster pump uses its own suction and return lines and which works independently of the main filter pump.
- Any of the auxiliary outputs (AUX 1-9 depending on the system model) can be assigned to control a solar booster pump.
- Be sure the pump power requirements do not exceed the maximum ratings of the auxiliary outputs.
- Setup the Optimizer system application AUX number to match the physical AUX number on the main circuit board.

Optimizer System Battery Replacement

⚠ CAUTION: TURN OFF POWER TO THE OPTIMIZER SYSTEM AT THE HOUSE CIRCUIT BREAKERS BEFORE PROCEEDING WITH THE BATTERY REPLACEMENT.

ELECTROSTATIC SENSITIVE DEVICE (ESD): USE AN ATTACHED STATIC-FREE GROUNDING WRIST STRAP BEFORE REPLACING THE BATTERY.

Note: Powering down the system and removing the battery from the Optimizer system circuit board does not affect the system configuration. The system configuration is stored and retained in non-volatile memory. After battery replacement and powering up the system, the system clock will reset to the internet time for the current location.

Remove the circuit board battery:

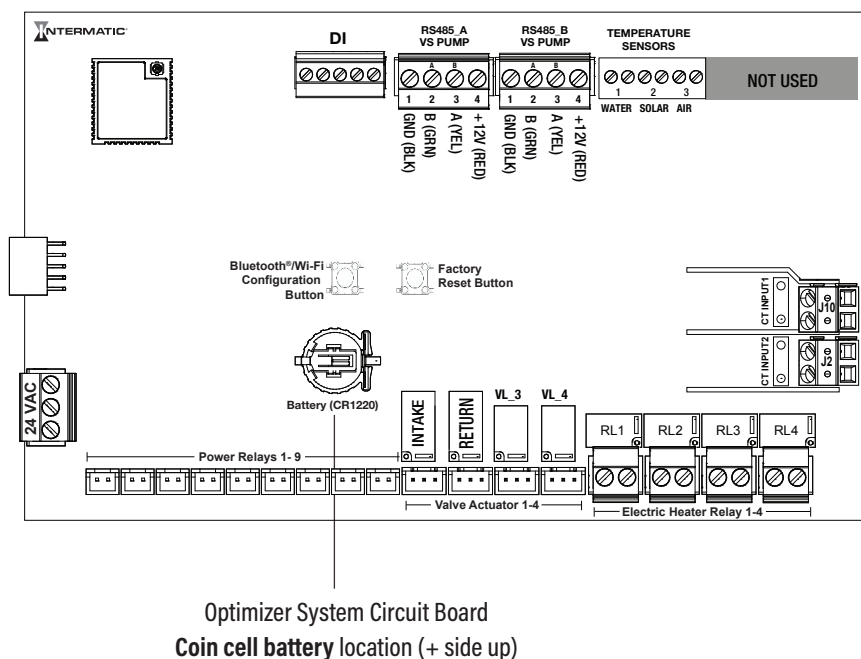
1. Loosen the two outdoor control panel retaining screws. Fold down the control panel to access the low voltage compartment.

Note: See page 13 and 14 for Optimizer system circuit board battery location.

2. Locate the system battery on the main circuit board.
3. Using a small flat blade screwdriver, pry the battery from its socket. Properly dispose of the battery.

Install the new battery (CR1220 coin cell battery):

4. Insert the battery in the socket (+ side visible). Press the battery into the socket.
5. Close the Optimizer outdoor control panel.



Factory Reset Button

Important Notice: Performing an Optimizer system Factory Reset will delete the following system information and settings from the Optimizer system main circuit board:

- All Equipment information.
- All Equipment Optimizer system Run Min information
- All Energy data
- All stored schedules.

TO PERFORM A FACTORY RESET:

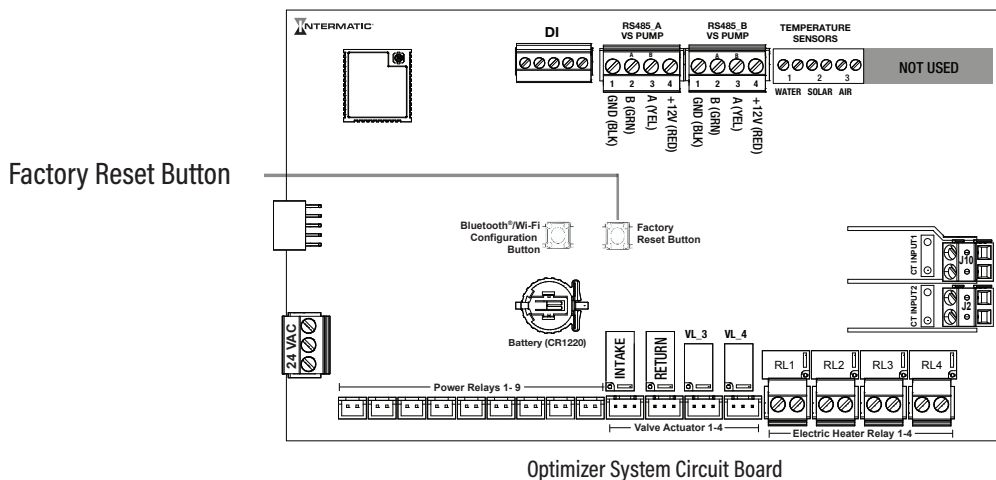
1. At the location of the Optimizer system Load Center, Power Center enclosure:
- Loosen the two outdoor control panel retaining screws. Fold down the control panel to access the low voltage compartment.

Note: See page 13 and 14 for Optimizer system circuit board access and Factory Reset Button location. For more information, refer to the Optimizer system App User's Guide.

2. On the back of the main circuit board locate the **Factory Reset Button**, press and hold the button for 10 seconds, listen for the long beeps, then release the button.

Note: The Optimizer system circuit board reset can take up to 10 minutes to complete. The Optimizer system circuit board cannot be reconfigured by the Optimizer system app until the reset process is complete.

3. The Optimizer system circuit board is successfully reset to the default factory settings.
4. The Optimizer system will reboot.



Optimizer System Replacement Parts List

Description	Part Number
Optimizer System Automation Power Center, 5 relays. Pool only.	P/N OAP5P1
Optimizer System Automation Power Center, 5 relays. Pool & Spa.	P/N OAP5S1
Optimizer System Automation Power Center, 9 relays. Pool only.	P/N OAP9P1
Optimizer System Automation Power Center, 9 relays. Pool & Spa.	P/N OAP9S1
Optimizer System Automation Load Center, 5 relays. Pool only.	P/N OAL5P1
Optimizer System Automation Load Center, 5 relays. Pool & Spa.	P/N OAL5S1
Optimizer System Automation Load Center, 9 relays. Pool only.	P/N OAL9P1
Optimizer System Automation Load Center, 9 relays. Pool & Spa.	P/N OAL9S1
System Transformer	P/N OPTITXFMR
Current Transformer	P/N OPTICT
Intermatic Valve Actuator	P/N PE24GVA
Temperature Sensor Kit	P/N PA122
Replacement Board (For Power Center, 5 relay. Pool only systems)	P/N OAP5P1-REPL
Replacement Board (For Power Center, 5 relay. Pool & Spa systems)	P/N OAP5S1-REPL
Replacement Board (For Power Center, 5 relay. Pool only systems)	P/N OAP9P1-REPL
Replacement Board (For Power Center, 5 relay. Pool only systems)	P/N OAP9S1-REPL
Replacement Board (For Power Center, 5 relay. Pool only systems)	P/N OAL5P1-REPL
Replacement Board (For Power Center, 5 relay. Pool only systems)	P/N OAL5S1 REPL
Replacement Board (For Power Center, 5 relay. Pool only systems)	P/N OAL9P1-REPL
Replacement Board (For Power Center, 5 relay. Pool only systems)	P/N OAL9S1-REPL
Connector (10 pin)	P/N OPTI10PIN
Connector (2 pin)	P/N OPTI2PIN
Connector (4 pin RS485)	P/N OPTIRS485
Connector (4 pin Digital Input)	P/N OPTIDIGITAL
Wireless Antenna	P/N OPTIANTENNA
Relay with wiring	P/N OPTIRELAY

Equipment Compatibility

Scan the QR code to access a current Equipment Compatibility List:



Limited Warranty

This warranty service is available by either (a) returning the product to the point of purchase or (b) by completing a warranty claim online at www.Intermatic.com. You are required to provide a receipt, the model number and/or serial number when exercising this limited warranty.

This warranty is made by: Intermatic, 1950 Innovation Way, Suite 300, Libertyville, IL 60048. For warranty service go to:
<http://www.Intermatic.com> or call 815-675-7000.

Technical Support
8 AM - 4.30 PM CST [Monday-Friday]
815.675.7000
email: techsupport@intermatic.com
www.Intermatic.com



Scan this QR code to access the Optimizer
product page at www.Intermatic.com

Customer Service: 815.675.7000

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www.Intermatic.com



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