

# INTERMATIC®

## RC4000 SERIES REMOTE CONTROLS

## SPECIFICATIONS SUPPLEMENT AND OWNERS MANUAL

EFFECTIVE JUNE 1992

### Model: RC4401-FOUR CIRCUIT POOL OR SPA CONTROL

POWER SUPPLY - CONTROL CIRCUITS: 110/125 VOLT - 60 HZ. 3 AMP MAX.

CONTROL CIRCUITS (CLASS 2): ELECTRONICS - 24 V.DC; VALVE ACTUATOR - 24 V.A.C.

RELAY CONTACTS - ALL CIRCUITS: DOUBLE POLE SINGLE THROW.

RELAY CONTACT RATINGS: 30 AMP. RESISTIVE - 120 TO 240 V.A.C.; 1500 WATT TUNGSTEN - 120 V.A.C.;

1.5 HP - 120 V.A.C.; 3 HP - 240 V.A.C. MAXIMUM TOTAL CURRENT NOT TO EXCEED 80 AMPERES.



#### DANGER! To Reduce the Risk of Injury:

... do not permit children to operate the Control Unit or use the spa unless they are closely supervised at all times.  
...test GROUND FAULT protection regularly. If it fails to reset, DO NOT USE THE POOL or SPA! Contact a qualified service technician.

### OPERATING INSTRUCTIONS

This device is designed to automatically control the Filter Pump, Heater, and Pool Cleaner operation of a Pool or Spa. In addition, it will provide wireless (remote) control of Spa Jets, Air Blower and Lights. The following instructions are for the factory wired, standard installation. The Control, however, can be wired to accommodate special requirements, and the operation of your System may be different from what is described herein. To understand your System, please contact the installer and/or refer to **SELECTABLE OPTIONS** on page 3.

#### FILTER PUMP OPERATION

The Filter Pump is turned ON/OFF for automatic daily filtration of water by the FILTER TIMER. In addition, there are also manual switches to operate the Filter Pump.

**TO SET TIMER** refer to instructions inside the Control Panel cover.

**TO OPERATE MANUALLY** the Filter Pump, slide SERVICE SWITCH No. 1 inside Control Panel from AUTO to MANUAL (ON) or OFF.

**NOTE: Manual operation of Filter Pump will override Timer operation but will not allow the heater to fire.**

**TO OPERATE SEMI-AUTOMATIC** the Filter Pump, rotate manual knob on FILTER TIMER counter clockwise. This will turn ON the pump (and the heater if so set) for 30 minutes.

**NOTE: To protect the heater and plumbing, the Filter Pump will always run for an additional 5 minutes after the heater is turned OFF. This cool down delay, however, may be cancelled by moving the Filter Pump SERVICE SWITCH from AUTO to OFF then back to AUTO. CAUTION: Cancelling delay may cause damage to equipment.**

#### HEATER OPERATION

The Heater is controlled by one or two thermostats, located on the heater and by the HEATER CONTROL SWITCH at the Control Panel. For the heater to operate:

1. The Filter Pump must be ON.
2. The HEATER CONTROL SWITCH must be in AUTO position.
3. The water temperature must be below the setting of the thermostat.
4. The manual switch on heater must be set as described under Heater Connections.

To set or change water temperature(s), first adjust thermostat(s) as desired, then set HEATER CONTROL SWITCH to AUTO. The heater will automatically fire and heat the

water, controlled by the FILTER TIMER. To heat the water on demand, press PAD 1 on Wireless Remote.

#### THE WIRELESS REMOTE (Transmitter)

The push-pads on the face of the Transmitter, will activate the assigned equipment and functions when pressed and deactivate them when pressed again.

For proper operation, one pad should be pressed at a time, for at least one second and should not be pressed again for at least 5 seconds.

##### PAD 1

This pad controls the Filter Pump and Heater on demand. By pressing the pad once: (1) the Filter Pump turns ON and (2) the heater may fire (See Selectable Options).

##### PAD 2, 3, and 4.

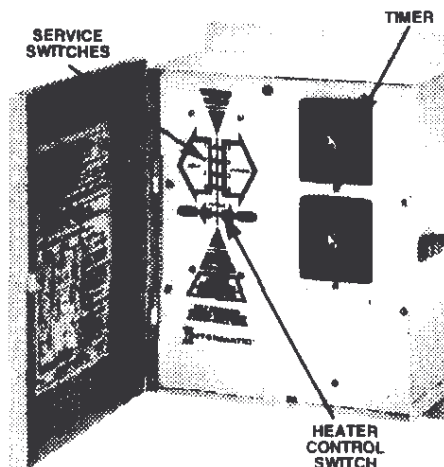
These pads can be assigned to perform any other functions. They are typically used to control the Spa Jets, Air Blower, Waterfall, Pool, Spa lights or Garden Lights. The specific functions assigned to each pad should have been labeled by the installer.

#### SERVICE SWITCHES

These switches are located inside the Control Panel and are used for testing and servicing the System. The switches have three positions, AUTO (automatic), OFF and MANUAL. For normal operation these switches must be in the AUTO position. The installer should have labeled the switches. The numbers next to the switches may or may not agree with the numbers on the transmitter.

##### NOTES:

1. The Wireless Remote (and other optional remotes) will not operate unless these switches are set to AUTO.
2. Safety features are not in effect when SERVICE SWITCHES are in MANUAL position.



## OPTIONAL EQUIPMENT

### POOL CLEANER TIMER

If your System includes a Pool Cleaner with Booster Pump, you may have a timer installed in the Control Panel. Set POOL CLEANER TIMER to operate within the operating schedule of the Filter Pump. To protect equipment, however, the Pool Cleaner Timer will always turn ON both pumps.

### STATUS PANEL

Your System may include a Status Panel. It is a hard wired Remote Control with indicator lights and may also display the water temperature. It can be indoors or outdoors. The operation of the Status Panel is identical to the Wireless Remote and you may turn ON/OFF the equipment using either one of the controls.

### SPA SIDE CONTROL

The hard wired Spa Side Control has four push-pads, it is designed to be installed within reach from the spa and performs the same functions as the Wireless Remote.

### FREEZE PROTECTION

Your System may include a thermostat, located inside the Control Panel, which will turn ON the Filter Pump if freeze conditions exist. Make sure the power is turned OFF to the Control Panel before resetting the device. For testing, immerse capillary bulb, outside bottom of Control Panel into ice water.

## HEATER CONNECTIONS

**CAUTION: DO NOT DISCONNECT OR BYPASS THE FLOW, PRESSURE OR LIMIT SWITCHES.**

### SINGLE THERMOSTAT GAS HEATER CONNECTION (Millivolt or Electronic Ignition)

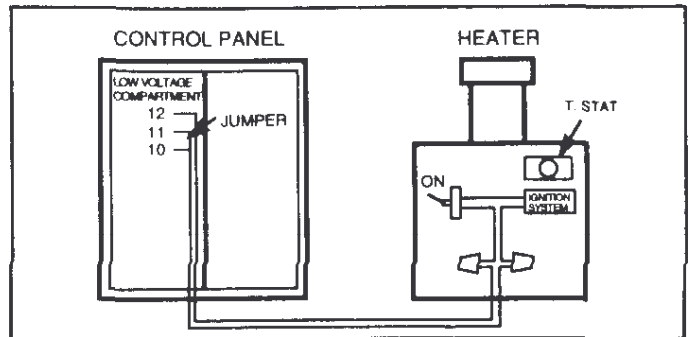
#### At the Heater:

Connect two 18 AWG wires in **series** with the heater circuitry.

Place the heater toggle switch in the ON position and set the thermostat to the desired temperature.

#### At the Control Panel:

Connect the two wires from the heater to terminals 11 and 12 of the 14 pin terminal bar. Connect a jumper between terminals 10 and 11 of the 14 pin terminal bar.



### DUAL THERMOSTAT GAS HEATER CONNECTION\* (Millivolt or Electronic Ignition)

#### At the Heater:

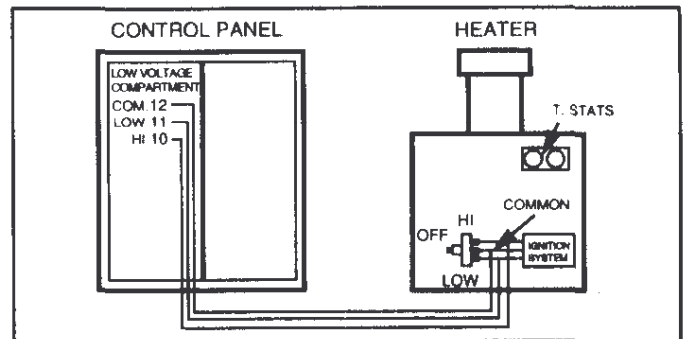
Connect three 18 AWG wires in **parallel** with the heater toggle switch.

Place the heater toggle switch in the OFF position and set the thermostats to desired temperatures.

#### At the Control Panel:

Connect the three wires from the heater into the 14 pin terminal bar as follows: Common of heater thermostat into terminal 12; Low thermostat into terminal 11; and high thermostat into terminal 10.

\* NOTE: Some heaters require a remote wiring harness, check with the heater manufacturer to determine if this is needed.



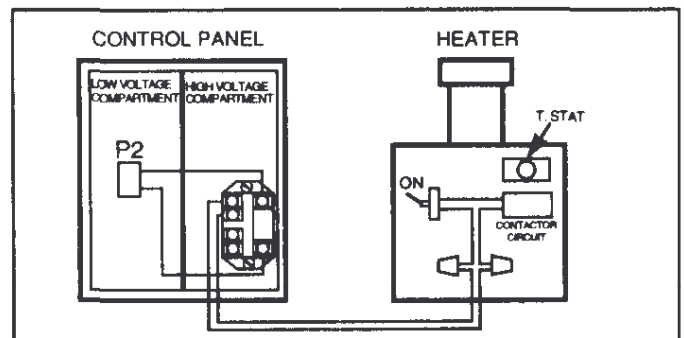
### SINGLE THERMOSTAT ELECTRIC HEATER OR HEAT PUMP (120 or 240 Volt AC.)

#### At the Heater:

Connect two 14 AWG wires in **series** with the heater thermostat circuitry. Place the heater toggle switch in the ON position and set the thermostat to the desired temperature.

#### At the Control Panel:

Connect one of the wires from the heater to a **LINE** terminal of a free high voltage relay (or add one) and the other wire to the **LOAD** of that same relay. Plug the coil wires of this relay into the **HIGH VOLTAGE THERMOSTAT HEATER SOCKET (P2)** of the low voltage Control Board. (See wiring diagram for locations.)



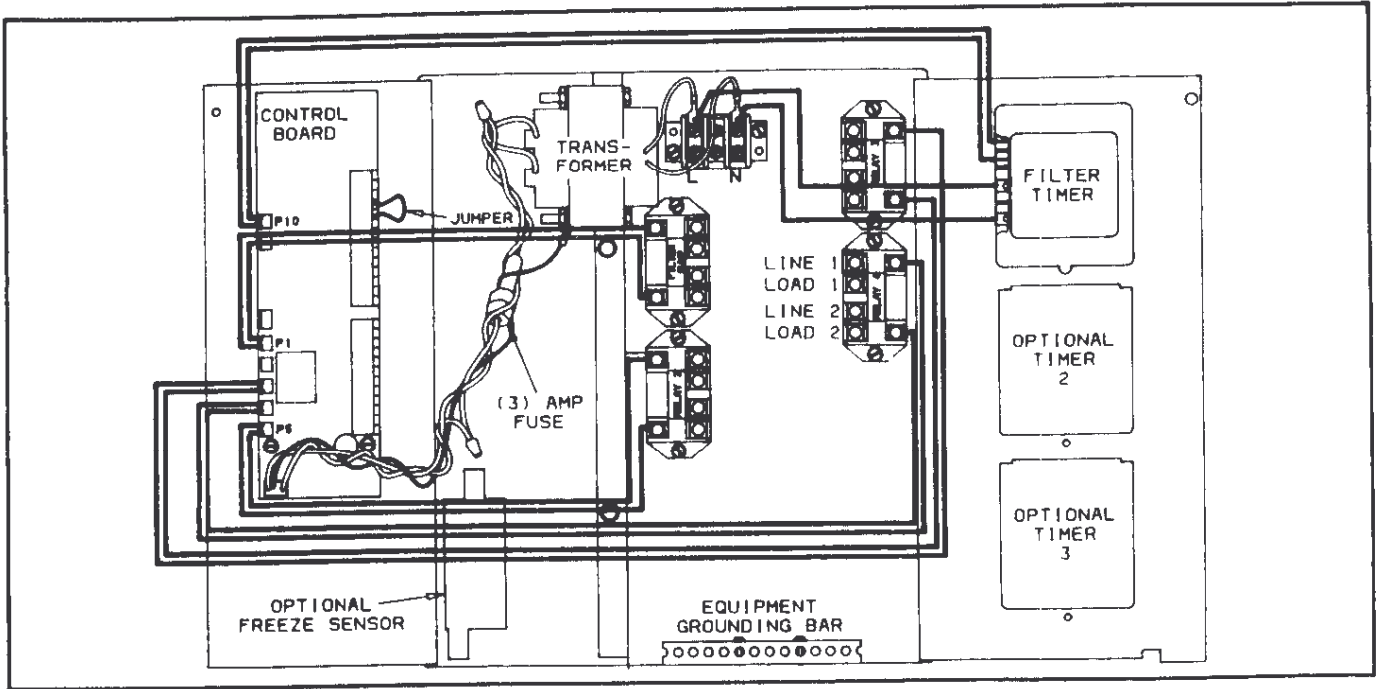
## WIRING

This Control Panel is factory wired to suit standard Spa Installation. The Filter Pump is controlled by the FILTER TIMER and also by Push Pad No. 1. The Heater will automatically fire, if the Filter Pump is operating. HEATER SELECTOR SWITCH is in AUTO position and the thermostat on heater is set above water temperature. The rest of the spa functions like Jets, Air Blower and Lights are controlled by the Wireless Remote. See

Selectable Options below for other variations.

If this product is used for controlling Pool Equipment without a Booster Pump and heater operation automatically controlled by the FILTER TIMER, follow wiring diagram below (factory wiring). For installation with Booster Pump and/or for Wireless Control of Heater operations refer to Selectable Options on page 3.

# WIRING



## SELECTABLE OPTIONS

The installer of this Control has several options available for optimizing the performance of the System. Simply, by moving "jumpers" on the Control Board the following changes in operation will take effect:

**EXTENDED FREEZE PROTECTION:** By moving Jumper JP1 from pins 2 and 3 to pins 1 and 2 the freeze sensor, in addition to the Filter Pump, will also turn ON the equipment, for example the Jet , Booster or Fountain Pump, connect to Relay No. 4.

**TIMER CONTROLLED RELAY NO. 4:** By plugging the leads of a (optional) Timer into timer socket P9, the equipment, for example the Lights connected to Relay No. 4, will be controlled by the Timer in addition to the Remote Control(s).

**NOTE:** This option is not available if a booster pump type pool cleaner is part of the System.

**NOTE:** Remote control can not override Timer and vice versa.

**HEATER CONTROL:** To control heater independent from filter operation, move Jumpers JP2, 3,4, and 8 from pins 1-2 to pins 2-3. To activate heater, press Pad No. 1 (to start Filter Pump) and Pad No. 2 to fire the heater.

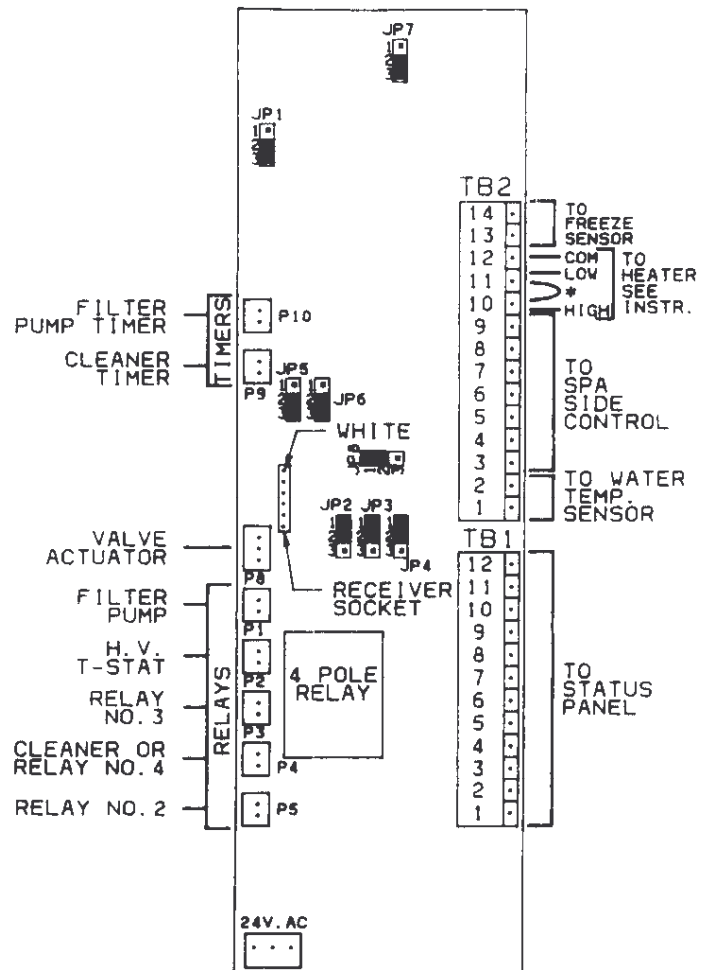
**NOTE:** For gas heaters, Relay No. 2 is not used. For electric heaters, move Relay No. 2 leads from P5 socket to P2 and wire thermostat leads to Relay No. 2

**AUTOMATIC POOL CLEANER:** Install a second Timer in the Control Panel. Plug timer leads into P9 socket and move Jumpers JP5 and 6 from pins 2 and 3 to pins 1 and 2. Connect Booster Pump conductors to Relay No. 4. Set Cleaner Timer to operate **within** the operation of the Filter Pump. To operate cleaner on demand, press Pad No. 4 on your Wireless Remote. Both Booster and Filter Pumps will turn ON.

**MOTORIZED VALVE OPERATION:** For the remote operation of a motorized valve, plug its leads into P8 socket and press on Pad No. 4. Relay No. 4 will close and valve turn.

**CANCEL HEATER COOL DOWN:** Move Jumper JP7 from pins 2-3 to pins 1-2.

## CONTROL BOARD (BACK VIEW)



\* INSTALL JUMPER FOR SINGLE THERMOSTAT HEATER

## TROUBLE SHOOTING CHART

SYMPTOM	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Control Panel Power ON: 1. No response to Transmitter signal at any time	1A. Blown fuse in low voltage compartment	Disconnect power. Check for short. Replace fuse in Control Panel <b>See Wiring</b>
	1B. Equipment breaker(s) in main panel is/are OFF	Turn power ON (lightning may have tripped GFCI type breaker)
	1C. Service Switch(es) is/are OFF	Turn switch(es) to AUTO
	1D. Loose cable connection(s) on control board	Disconnect power, check connection(s)
	1E. Transmitter battery dead	Replace battery
	1F. Receiver and Transmitter are on two different codes	Change code settings - <b>See Manual</b> "Changing the Radio Code" section
	1G. Faulty Transmitter	Check battery connections, Replace Transmitter
	1H. Faulty Receiver	Replace Receiver Module
	1I. Faulty Control Board	Replace Control Board
2. No response to Transmitter signal some of the time	2A. Weak battery	Replace battery
	2B. Appliance with brush type motor is in use	Relocate appliance and/or Receiver Module
	2C. Other radio transmitter (police, etc.) is operating nearby	Change code settings - <b>See Manual</b> "Changing the Radio Code" section
3. Insufficient range of Transmitter	3A. Weak battery	Replace battery
	3B. Antenna too close to ground	Relocate Receiver Module, 6 ft. high minimum
	3C. Transmitter is held too close to ground	Hold Transmitter at least 1 ft. above ground
	3D. Weak signal due to obstruction	Remove/relocate Receiver Module

## START-UP SEQUENCE

1. Check/replace battery in Transmitter.
2. Turn OFF all circuit breakers in subpanel.
3. Move all SERVICE SWITCHES to OFF position in Control Panel.
4. Check all equipment; look for damage, corrosion, loose connections, etc. Clean out skimmer basket, pipes, etc.
5. Service Filter, follow manufacturer's instructions.
6. Service Heater, follow manufacturer's instructions.
7. Service Valves and Valve Actuators, follow manufacturer's instructions.
8. Prime pumps, if required.
9. Set heater switches at Heater and Control Panel as per instructions.
10. Turn ON circuit breakers.
11. Moving SERVICE SWITCHES in Control Panel to MANUAL, one at a time, check the operation of each equipment.
12. Test Ground Fault Circuit Interrupter(s) (GFCI). **DANGER: If it fails to reset, DO NOT USE THE POOL OR SPA. Contact a qualified service technician.**
13. Check and replace, if necessary, underwater bulbs.
14. Move SERVICE SWITCHES to AUTO and test Wireless Remote.
15. Test Freeze Protection - if any.
16. Set Timers.
17. Close and securely latch the cover of the Control Panel.
18. Review the operation of the System and the Safety Rules regarding Pool/Spa use with other members of the household.

## SERVICE PARTS

DESCRIPTION	MODEL/PART NO.	DESCRIPTION	MODEL/PART NO.
24 Hour Timer	PB813M61	Status Panel with Temperature Display	RC840
7 Day Timer	PB873M61	DPST Relay	143RC128A
Radio Receiver	RC641PB	DPDT Relay	143RC129A
Radio Transmitter	RC979P	Freeze Protection Thermostat	178RC18A
Spa Side Control with 100 foot Cable	RC740	Temperature Sensor	178RC19A
Status Panel	RC740L	Control Board	188RC791A

## WARRANTY

If within one (1) year from the date of installation, this product fails due to a defect in material or workmanship, Intermatic Incorporated will repair or replace it free of charge.

The warranty does not cover labor for removal or reinstallation and does not apply to: (a) damage caused by accident, abuse, mishandling, or dropping; (b) a unit which has been subject to unauthorized repair; (c) units not used in accordance with directions; (d) damages exceeding the cost of the product.

Some states do not allow a limitation of damages so the foregoing warranty may not apply to you. This warranty gives you specific legal rights and you may have other rights which vary from state to state.

This warranty service is available, if the defective product or its defective component is returned with proof of purchase and date of installation, either (a) to the dealer from whom the unit was purchased or (b) by shipping prepaid to Intermatic, Inc. 4720 W. Montrose Avenue, Chicago, IL 60641.

**INTERMATIC INCORPORATED**  
Intermatic Plaza, Spring Grove, IL 60081-9698