

MULTI WAVE™

Pool & Spa Control System



Programming and User Guide

For Software Version 3.4

Intermatic

7777 Winn Road
Spring Grove, IL 60081
(815) 675-2321

Need Technical help?

Phone: 815-675-2321

Fax: 815-675-7001

(8:00 am through 4:30 pm CT, Monday through Friday)

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Important Safety and Service Information

! WARNING *Risk of Fire or Electric Shock*

- **IMPORTANT SAFETY INSTRUCTIONS, READ AND FOLLOW ALL INSTRUCTIONS, SAVE THESE INSTRUCTIONS**
- Disconnect power at the circuit breaker(s) or disconnect switch(es) before installing or servicing.
- This control must be installed according to the National Electrical Code (NEC) and local code requirements. For Canadian installations, section 10 & 68 of the CEC. **IMPORTANT:** This installation is subject to the approval by the local inspection authority.
- The control panel to be a minimum of 3m (in Canada) or 5ft (in USA) from the inside wall of the pool, spa, or pond, unless separated from the body of water by a fence, wall or other permanent barrier that will make the unit inaccessible to persons in the water.
- Use up to #8 AWG wires, rated at least 90°C - **COPPER Conductors ONLY.**
- The control is not provided with integral GFCI protection for the lighting circuit. When this control is used to power or switch an underwater luminaire, suitable GFCI protection shall be provided in the field.
- This control should not be connected to any equipment which would cause bodily injury or property damage should it be activated unexpectedly.
- For outdoor locations, raintight, or wet locations, conduit hubs that comply with requirements of the UL514B (standard for fitting for conduit and outlet boxes) are to be used.
- Bonding between conduit connections is not automatic and must be provided as part of the installation.
- If the power disconnect point is out of sight, lock it in the "OFF" position and tag it to prevent unexpected application of power.
- This unit is not a safety disconnect. A proper sized fused disconnect or breaker of no more than 125A capacity must be provided in the power supply circuit. Proper gauge wire should be based on local code requirements of amperage and wire length.
- Do NOT exceed the maximum current carrying capacity of this control.
- Receiver must be mounted in a vertical (upright) position on top of the enclosure.
- **KEEP DOOR CLOSED AT ALL TIMES** when not servicing and secure with lock or tie-wrap.

NOTICE

- Do NOT touch circuit board components; contact can create a static discharge, which can damage the microprocessor.

⚠ WARNING ***Risk of Fire or Explosion***

- Non-rechargeable batteries are not to be recharged.
- Rechargeable batteries are to be removed before being recharged.
- Rechargeable batteries are only to be charged under adult supervision.
- Different types of batteries or new and used batteries are not to be mixed.
- Only batteries of the same or equivalent type as recommended are to be used.
- Batteries are to be inserted with correct polarity.
- The supply terminals are not to be short-circuited.
- Do not mix alkaline, standard (carbon-zinc) or rechargeable (nickel-cadmium) batteries.

California's Proposition 65

- Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.
- Batteries also contain other chemicals known to the State of California to cause cancer.
- Wash hands after handling.

Informations importantes sur la sécurité et l'entretien

! AVERTISSEMENT *Risque d'incendie ou de choc électrique*

• INSTRUCTIONS DE SÉCURITÉ IMPORTANTES, LIRE ET RESPECTER TOUTES LES INSTRUCTIONS, CONSERVER CES INSTRUCTIONS

- Débrancher l'alimentation au niveau des disjoncteurs ou des sectionneurs avant de procéder à l'installation ou à l'entretien.
- Ce panneau de commande doit être installé conformément aux codes de l'électricité en vigueur. Pour les installations au Canada, voir les sections 10 et 68 du CCE. **IMPORTANT** : Cette installation est soumise au contrôle et à l'acceptation par les autorités compétentes locales.
- Le panneau de commande doit être à un minimum de 3 m (au Canada) ou de 5 pi (aux États-Unis) de la paroi intérieure de la piscine, du spa ou du bassin, sauf s'il est séparé de l'eau par une clôture, un mur ou autre barrière permanente qui rend l'appareil inaccessible aux personnes se trouvant dans l'eau.
- Utiliser des fils jusqu'au n° 8 AWG, classés 90 °C minimum - **Conducteurs en CUIVRE UNIQUEMENT.**
- La commande n'est pas équipée d'un disjoncteur différentiel (GFCI) intégré pour la protection du circuit d'éclairage. Si la commande est utilisée pour alimenter ou commuter un luminaire immergé, une protection adaptée par GFCI devra être prévue dans l'installation.
- Cette commande ne doit être raccordée à aucun autre matériel susceptible de provoquer des blessures corporelles ou des dommages matériels en cas d'activation inattendue.
- Pour les installations extérieures, utiliser des embouts de raccordement de conduit anti-intempéries ou pour zone humide conformes aux exigences d'UL514B (norme sur les raccords de conduit et les boîtiers de prises).
- La liaison entre les raccordements de conduits n'est pas automatique et doit être prévue dans le cadre de l'installation.
- Si le point de coupure n'est pas visible, le condamner en position ARRÊT et l'étiqueter pour éviter toute remise sous tension imprévue.
- Cet appareil n'est pas un sectionneur de sûreté. Prévoir un sectionneur avec fusible ou un disjoncteur de calibre adapté d'une capacité de 125 A au maximum dans le circuit d'alimentation électrique. Le calibre de fil utilisé doit être conforme aux normes en vigueur concernant l'intensité de courant et la longueur de fil.
- Ne PAS dépasser la capacité maximale d'intensité de courant de cette commande.
- Le récepteur doit être montée en position verticale (debout) sur le dessus du boîtier.
- **GARDER LA PORTE FERMÉE EN PERMANENCE** en-dehors des opérations d'entretien et sécuriser avec un cadenas ou une attache autobloquante.

AVIS

- Ne pas toucher les composants du circuit imprimé ; le contact peut provoquer une décharge d'électricité statique susceptible d'endommager le microprocesseur.

! AVERTISSEMENT ***Risque d'incendie ou d'explosion***

- Ne pas tenter de recharger les piles non rechargeables.
- Retirer les piles rechargeables avant de les recharger.
- Les piles rechargeables devront être chargées uniquement sous la surveillance d'un adulte.
- Ne pas combiner différents types de piles ou des piles neuves et usagées.
- Utiliser exclusivement des piles de type identique ou équivalent conforme aux recommandations.
- Insérer les piles en respectant la polarité.
- Ne pas court-circuiter les bornes d'alimentation.
- Ne pas combiner des piles alcalines, standard (carbone-zinc) ou rechargeables (nickel-cadmium).

Proposition 65 de Californie

- Les cosses des piles, les bornes et les accessoires connexes contiennent du plomb et des composés de plomb, des substances jugées cancérigènes et toxiques pour la reproduction par l'État de Californie.
- Les piles contiennent aussi d'autres substances chimiques jugées cancérigènes par l'État de Californie.
- Veiller à se laver les mains après manipulation.

Chapter 1: System Overview

IMPORTANT: To ensure you have the latest version of the MultiWave software, visit www.intermatic.com to download.

The MultiWave Control System brings wireless control to a new level of simplicity. It features push button control and a clear, easy-to-read backlit display panel. This manual provides guidelines and instructions for using and programming the MultiWave Control System.

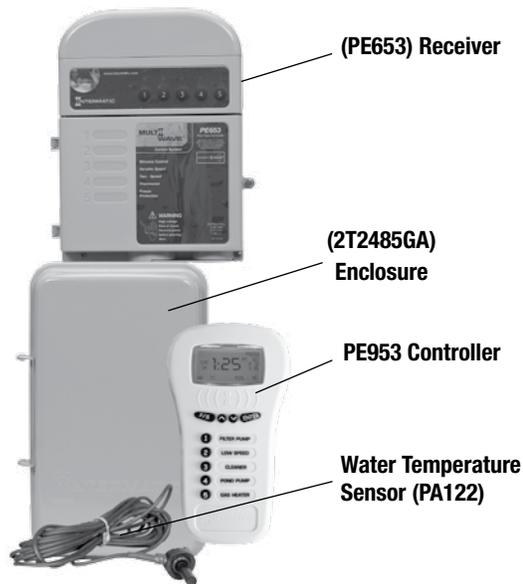


Figure 1-1. MultiWave Control System (PE653RC).

Equipment Overview

(PE653) Receiver



The receiver is the central hub of the MultiWave. It receives commands from the controller to activate circuits. The receiver controls the ON/OFF operation of up to five circuits. It can also communicate with variable speed pumps. The receiver maintains data up to 8 hours in case of power loss.

(PE953) Controller



The hand-held controller transmits user commands to the receiver or Z-Wave home control devices and displays the status of the installed equipment.

The unit, which features a backlit display, is water resistant and shock resistant. It requires three (3) AA batteries with an expected battery life of one year.

When the components of a specific system are linked to a network, unique network ID codes supplied by the receiver prevent unauthorized use of the system by neighboring systems.

(P5043ME) Expansion Module (Optional)



The P5043ME controls up to four 24 VAC water valve actuators. There are two dedicated actuators for the pool and spa, one for a water feature (i.e. waterfall, fountain, slide) and one for the solar heating/cooling feature.

In addition to the actuators, the P5043ME can control up to two heaters (1 heater dedicated to the pool and 1 dedicated to the spa), can control other variable speed pumps (limited to Jandy, Hayward, Century, Marathon or Speck), and can be controlled by a dry contact switch. The USB port allows for MultiWave system updates.

The P5043ME is ideal for those pool and spa combination applications with the additional possibility of a water feature, solar feature, variable speed pump, 1 or 2 heaters and/or a dry contact switch. The dry contact switch can be triggered by any switching device you may provide — light switch, spring wound AUTO/OFF, wireless switch, relay and more.

Chapter 2: Programming – Controller Setup

NOTE TO USERS: If the Pool & Spa Control System is already programmed, proceed to Chapter 13.

Follow the instructions in this chapter to set up the controller:

- Installing Batteries in Controller
- Programming Overview
- Creating a Network
- Testing Z-Wave Reception
- Remoting the Antenna
- Verifying Software Revision Level
- Setting Time of Day

NOTE: If the controller is idle for 1 minute, the display deactivates to save battery life. Press any button to remove the controller from idle. If you leave the controller idle for 1 minute after you started configuring the controller, it will deactivate and not return to the place you left off. Restart the configuration from the beginning.

Installing Batteries in Controller

! WARNING *Risk of Fire or Explosion*

- Non-rechargeable batteries are not to be recharged.
- Rechargeable batteries are to be removed before being recharged.
- Rechargeable batteries are only to be charged under adult supervision.
- Different types of batteries or new and used batteries are not to be mixed.
- Only batteries of the same or equivalent type as recommended are to be used.
- Batteries are to be inserted with correct polarity.
- The supply terminals are not to be short-circuited.
- Do not mix alkaline, standard (carbon-zinc) or rechargeable (nickel-cadmium) batteries.

1. Follow this procedure to install batteries in the controller.
2. With a small Phillips screwdriver, remove the three screws from the back cover of the controller.
3. Install three AA batteries in the controller. Observe proper polarity.
4. Return the cover to the controller and secure with the screws.

NOTE: Be sure to align the gasket correctly to maintain the water-tight seal.

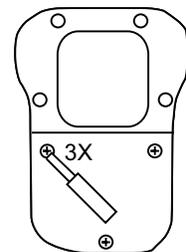


Figure 2-1. Removing screws from controller back cover.

Programming Overview

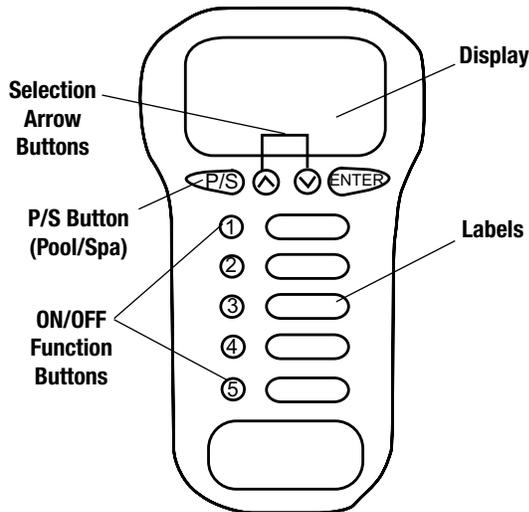


Figure 2-2. Components of hand-held controller.

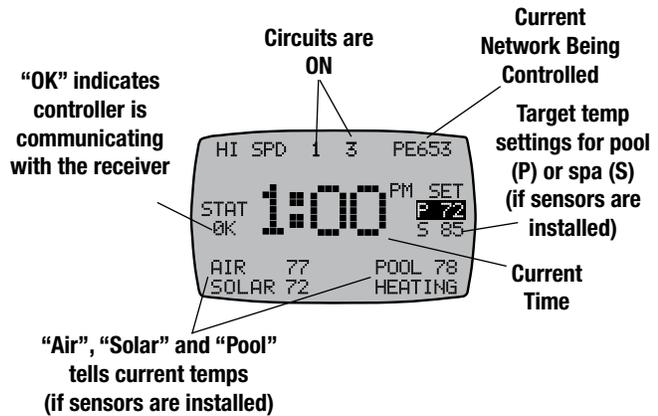
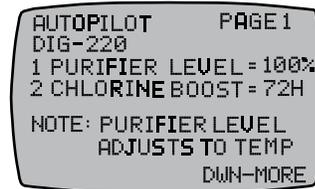
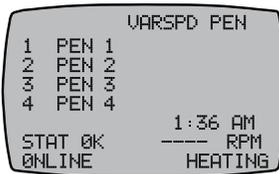
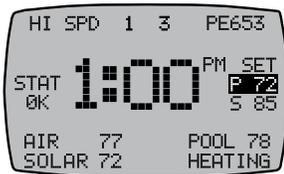


Figure 2-3. Controller main display screen.

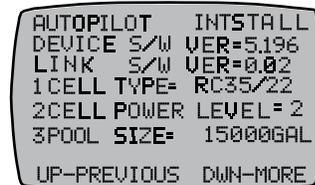
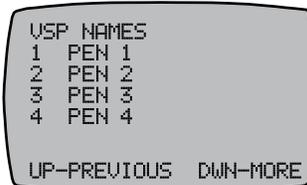
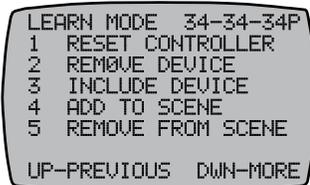
Read through this section to familiarize yourself with the controller’s navigation and the pool/spa control system’s components. Then plan your programming session, using the procedures in Chapter 2 through Chapter 7 and Chapter 10 through Chapter 12 that apply to your installation.

To navigate through the screens of the controller:

1. Press and release any button to activate the controller.
2. Press **ENTER** repeatedly to walk through the main pages available. Each main page will be identified at the top with the component/components it represents.



3. Press **P/S** and **ENTER** simultaneously from any main page to access its **LEARN MODE**.



To identify the pool/spa control system’s components:

1. Locate the “MultiWave Pool & Spa Control System Worksheet for Programming” at the back of the accompanying Installation Guide.

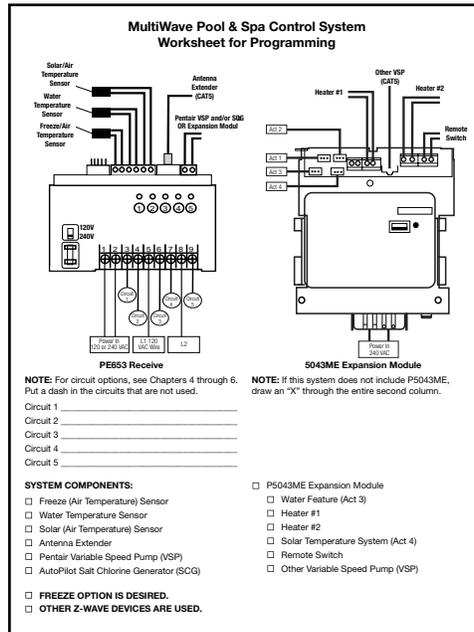


Figure 2-4. MultiWave Pool & Spa Control System Worksheet for Programming.

2. Use this worksheet, filled out by the installer, to identify the system’s installed components, which components are assigned to the circuits, whether the freeze option is desired and whether the controller will be used with other Z-Wave devices.
3. Read through Chapter 2 through Chapter 7 and Chapter 10 through Chapter 12 and check off the sections listed at the beginning of each chapter that you want to include in your programming session. **NOTE:** All sessions should begin with all of this chapter (Chapter 2).

Planning a Programming Session

- In Chapter 3, read through the procedures listed, and decide which of them apply to the components included in your system: 1- or 2-speed pump, sensors, booster pump, spa pump, and/or heaters.
- Include Chapter 4 if your system includes a P5043ME expansion module, and choose procedures according to the components listed under it on the worksheet.
- Include Chapter 5 if the freeze option is checked on the worksheet.
- If the system includes a variable speed pump, determine which procedures in Chapter 6 to follow, based on if it is Pentair or another brand.
- Include all of Chapter 7 if the system includes an AutoPilot Salt Chlorine Generator.
- Chapter 10 procedures need to be included if your system will coordinate with other Z-Wave devices.
- Look through Chapter 11 and Chapter 12 for procedures involving special features, like a PE650 Receiver, secondary controller or third-party network.

Creating a Network

The controller must be synced with the receiver to create a network connection. Be sure to reset the controller and receiver before synchronizing the two devices. Perform the following procedures: Resetting the Controller, Resetting the Receiver, then Linking the Controller to Receiver.

Resetting the Controller

1. Press a button on the controller to activate it from idle.
2. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
3. Press **1** to select **RESET CONTROLLER**. The **RESET CNTRL** screen appears.
4. Press **1** to select **RESET NET AND CFG** to delete existing network connections and any programming entered in the controller.
5. Press **5** to select **CONTINUE**. The screen displays **PLEASE WAIT** followed by **SUCCESSFUL**. The controller is reset.

```
LEARN MODE 34-34-34P
1 RESET CONTROLLER
2 REMOVE DEVICE
3 INCLUDE DEVICE
4 ADD TO SCENE
5 REMOVE FROM SCENE
UP-PREVIOUS DWN-MORE
```

```
RESET CNTRL
1 RESET NET AND CFG
2 RESET NET ONLY
3 RESET CFG ONLY
4 ABORT RESET
```

```
RESET CNTRL
PLEASE PRESS
5 TO CONTINUE
ENTER TO CANCEL
```

```
RESET CNTRL
SUCCESSFUL
```

Resetting the Receiver

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **2** to select **REMOVE DEVICE**.
3. With a blunt object, press the **INCLUDE** button on the receiver. The controller displays **SUCCESSFUL**, and then returns to the **LEARN MODE** screen.
4. Press **3** to select **INCLUDE DEVICE**.
5. With a blunt object, press the **INCLUDE** button again.
6. Controller displays **SUCCESSFUL**, then returns to **LEARN MODE**.

```
LEARN MODE 34-34-34P
2 REMOVE DEVICE
PRESS BUTTON ON
DEVICE TO REMOVE
```

```
LEARN MODE 34-34-34P
2 REMOVE DEVICE
PRESS BUTTON ON
DEVICE TO REMOVE
SUCCESSFUL
```

```
LEARN MODE 34-34-34P
3 INCLUDE DEVICE
PRESS BUTTON ON
DEVICE TO INCLUDE
SUCCESSFUL
```

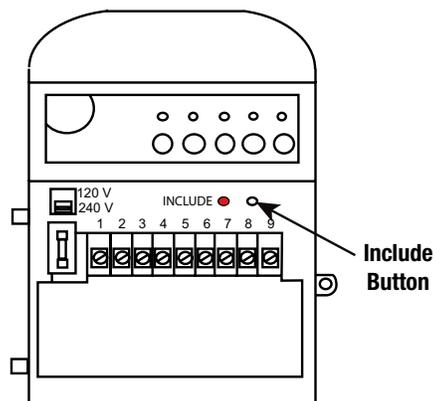


Figure 2-5. Include button on the receiver.

Linking the Controller to Receiver

Follow this procedure to create a network connection between the controller and receiver.

1. If necessary, press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **3 INCLUDE DEVICE**.
3. With a blunt object, press the **INCLUDE** button on the receiver. See Figure 2-5. The controller displays **SUCCESSFUL**, and then returns to the **LEARN MODE** screen.
NOTE: If **FAILURE** appears at the bottom of the screen, repeat the procedures Resetting the Controller and Resetting the Receiver. If the problem persists, contact Intermatic.

Testing Z-Wave® Reception

The MultiWave Control System is compatible with Z-Wave-enabled networks. The controller communicates with the receiver by transmitting an RF signal. You need to make sure that the receiver is receiving the signal from the controller in every area of the pool/spa system.

1. While standing in a position near the receiver, press a button on the controller to activate the screen.
2. Press **1** on the controller and check the receiver to verify that circuit 1 changes states.
3. Move further from the receiver and repeat the test in step 2.

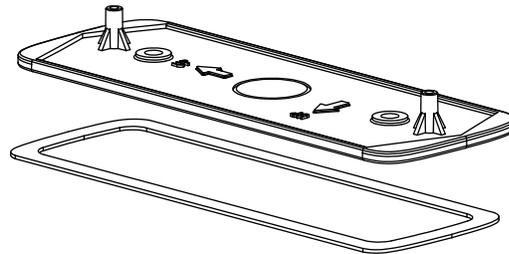
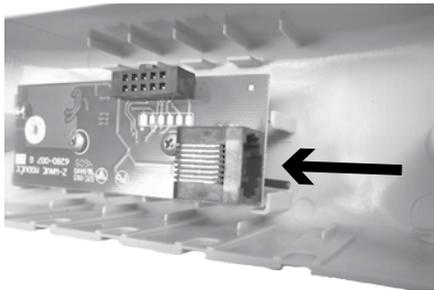
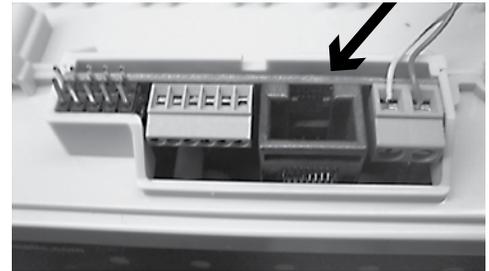
NOTE: If at any point **OUT OF RANGE** appears on the controller, follow the instructions under “Remoting the Antenna” to improve reception.

4. Move around the receiver, working into all areas of the pool/spa system and repeating the test.

Remoting the Antenna

If **OUT OF RANGE** appears on the controller, you must relocate the antenna. Follow this procedure to move the antenna.

1. Remove power at the breaker before removing antenna.
2. Remove the two screws that attach the antenna cover to the receiver. Set aside the screws for re-use.
3. Pull the antenna cover straight away from the receiver.
4. Relocate the antenna assembly to a location that is in direct line of sight from the area of operation and 5-6 feet above ground where the user will operate the hand-held controller.
5. Use a CAT 5 Ethernet cable suitable for outdoor use to connect the antenna to the receiver.
6. Attach the mounting plate on top of the waterproof gasket and then connect the assembly to the wall or post where you plan to relocate the antenna.
7. Remove a knockout to enable the wire to pass through the antenna cover.
8. Screw the antenna cap to the bracket with the screws supplied with the remote kit.
9. Remove a knockout for the wire to pass through the dummy cap.
10. Tighten the dummy cap to the top of the receiver with the screws set aside in step 1.
11. Re-apply power to the unit.



Verifying Firmware Revision Level

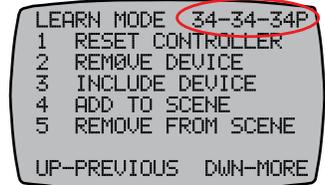
Check to see the latest revision numbers at the website, www.intermatic.com. Then verify the controller is updated.

Follow this procedure to locate the controller’s current firmware revision numbers.

1. Press and release any button to activate the controller.
2. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**. The revision numbers are displayed in the upper right corner.

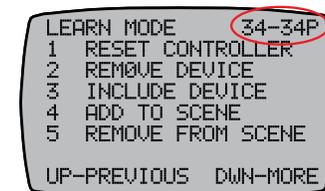
If the system has an expansion module, three revision numbers will display, separated by dashes and followed by a “P” (on primary controllers) or an “S” (on secondary controllers). On systems with expansion modules:

- The first number shows the firmware version installed in the expansion module.
- The second number shows the receiver’s version.
- The third number shows the controller’s version.



On systems with no expansion module, there will be only two revision numbers:

- The first number shows the receiver’s firmware version.
- The second number shows the controller’s version.



Setting the Time of Day

1. From the main display screen, press and hold **P/S** until **SET TIME** appears under the time.
NOTE: If you have a variable speed pump, you can also set the time from the **VARSPD** screen.
2. Press **^** or **v** to select the desired time and press **ENTER** to save.
NOTE: Hold the arrow button for five seconds to rapidly scroll.



Chapter 3: Programming – PE653 Option Screen

Setting Pool Equipment Options

Follow the procedures in this section to configure the pool equipment accessed through the **PE653 OPTION** screen.

- Configuring 1-Speed or 2-Speed Pump
- Calibrating Water, Air, and Solar Temperature Settings
- Configuring the Cleaner (Booster) Pump
- Configuring Pool, Spa, or Both in Controller
- Selecting a Spa Pump Default Speed
- Defining the Cool Down Period for the Heater
- Enabling/Disabling the Heater Safety Feature
- Enabling a Second Heater and Thermostat Control
- Setting up a Solar Temperature System

Configuring 1-Speed or 2-Speed Pump

The controller is configured to control a single speed pump at the factory. If you have a two-speed pump, follow this procedure to program a two-speed pump in the controller.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **PE653 OPTION** screen.
3. Press **1 PUMP**.
4. Press **▲** or **▼** to change from **1SPD** to **2SPD** and then press **ENTER**. The controller displays **SUCCESSFUL** and returns to **LEARN MODE**.

```
PE653 OPTION
1 PUMP          1 SPD
2 CALIBRATE TEMPS
3 CLEANER      OFF
4 POOL/SPA     POOL
5 HEATER       OFF
UP-PREVIOUS   DWN-MORE
```

```
PE653 OPTION
1 PUMP          2SPD
PRESS ▲ ▼ TO CHANGE
PRESS ENTER TO SAVE
```

Calibrating Water, Air, and Solar Temperature Settings

If there is a discrepancy between temperatures shown on the controller and the thermometers used to measure the pool, spa, and air temperature, follow this procedure to calibrate the controller temperature to match or offset the thermometers' temperatures.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **PE653 OPTION** screen.
3. Press **2** to select **CALIBRATE TEMPS**.
4. Press **1 CALIB POOL**, **2 CALIB AIR**, or **3 CALIB SOLAR** to calibrate the temperature setting up to $\pm 5^\circ$ F.
5. Press **▲** or **▼** to adjust the displayed temperature and press **ENTER** to save. The screen displays **SUCCESSFUL**, indicating the temperature adjustment is saved.

```
CALIBRATE TEMP
1 CALIB SPA    0
2 CALIB AIR    0
3 CALIB SOLAR + 1
UP-PREVIOUS   DWN-MORE
```

```
CALIBRATE TEMP
1 CALIB SPA    0
PRESS ▲ ▼ TO CHANGE
PRESS ENTER TO SAVE
```

6. Press **ENTER** to return to the main screen.
7. If necessary, repeat steps 2 through 5 to calibrate another temperature.

Configuring the Cleaner (Booster) Pump

If your pool/spa system includes a booster pump, follow this procedure to configure the booster pump and, if applicable, the pump speed (for VSP) that must be active for the pump to operate.

NOTE: Programming a booster pump into the system ensures the booster pump will not run unless the filter pump is running. This protects your booster pump from running dry.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the to the **PE653 OPTION** screen.
3. Press **3** to select **CLEANER**.
4. Press **▲** or **▼** to change from **OFF** to **CIR1** (circuit or button 1) and press **ENTER**. The screen displays **SUCCESSFUL**, then returns to the programming screen.

NOTE: If you have a variable speed pump, select one of four variable speeds for this function.

```

PE653 OPTION
3 CLEANER OFF
PRESS ▼ ▲ TO CHANGE
PRESS ENTER TO SAVE
  
```

Configuring Pool, Spa, or Both in Controller

NOTE: The “BOTH” option will only be available in pool/spa systems.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **PE653 OPTION** screen.
3. Press **4** to select **POOL/SPA**.
4. Press **4** again to select **POOL/SPA**.
5. Press **▲** or **▼** to select **POOL**, **SPA**, or **BOTH** (for pool/spa systems) and press **ENTER**. The controller displays **SUCCESSFUL** and then returns to the **PE653 OPTION** screen.

```

POOL/SPA OPTION
4 POOL/SPA BOTH
5 SPA PUMP VSP 3
  
```

```

POOL/SPA OPTION
4 POOL/SPA BOTH
PRESS ▼ ▲ TO CHANGE
PRESS ENTER TO SAVE
  
```

Selecting a Spa Pump Default Speed

Follow this procedure to set a default speed to turn on when actuators switch to SPA.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **PE653 OPTION** screen.
3. Press **4** to select **POOL/SPA**.
4. Press **5** to select **SPA PUMP**.
5. Press **▼** to choose the pump speed.
6. Press **ENTER** to save.

```

POOL/SPA OPTION
5 SPA PUMP PEN 4
PRESS ▼ ▲ TO CHANGE
PRESS ENTER TO SAVE
  
```

Configuring a Gas/Electric Heater and/or Solar Temperature System

NOTE: Having both a Gas/Electric Heater and a Solar Heating System will only be available in pool/spa systems with an expansion module.

Defining the Cool Down Period for the Heater

The cool down period is the additional time that the pump runs after the heater circuit is turned off to ensure the heater is cooled down properly before the pump shuts down. Refer to the heater manufacturer's recommendations on specific time intervals. Follow this procedure to set the cool down period.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **PE653 OPTION** screen.
3. Press **5** to select **HEATER**.
4. Press **5** again to select **2WIRE HTR**.
5. Press **▲** or **▼** to set the desired heater cool down period and press **ENTER**. The screen displays **SUCCESSFUL** and returns to the **PE653 OPTION** screen.

```

HEATER CONFIG
5 2 WIRE HTR 2 MIN
PRESS ▼ ▲ TO CHANGE
PRESS ENTER TO SAVE
  
```

NOTE: The **HEATER** must be set to **ENABLED** and the cool down period set to **0** for heat pump applications. Otherwise the control connections on the receiver will not be assigned for heater control and pool and spa setpoints will not be available on the controller.

Enabling/Disabling the Heater Safety Feature

The heater safety feature can be disabled to allow the heater to turn ON without a pump running. This feature is used for heater circulation pumps that are controlled by a non-MultiWave controller.

Follow this procedure to enable or disable the heater safety feature.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **PE653 OPTION** screen.
3. Press **5** to select **HEATER**.
4. Press **4** to select **HTR SAFETY**.
5. Press **▲** or **▼** to choose to enable or disable the feature, and then press **ENTER**.

```

HEATER CONFIG
4 HTR SAFETY DISABLED
PRESS ▼ ▲ TO CHANGE
PRESS ENTER TO SAVE
  
```

Enabling a Second Heater and Thermostat Control

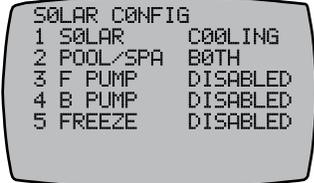
1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **PE653 OPTION** screen.
3. Press **5** to select **HEATER**.
4. Press **3** to select **2ND HTR**.
5. Press **▲** or **▼** to enable or disable a second heater and then press **ENTER**.

```

HEATER CONFIG
3 2ND HTR DISABLED
PRESS ▼ ▲ TO CHANGE
PRESS ENTER TO SAVE
  
```

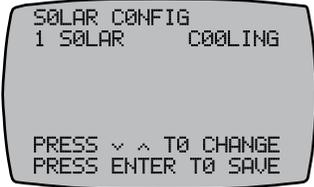
Setting Up a Solar Temperature System

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **PE653 OPTION** screen.
3. Press **5** to select **HEATER**.
4. Press **1** to select **SOLAR**.
5. Press **1** again to select **SOLAR**.
6. Press **▲** or **▼** to choose between **COOLING**, **HEATING**, **DISABLED**, or **BOTH** and press **ENTER**. The screen displays **SUCCESSFUL** and returns to the previous screen.
7. Press **1** to select **SOLAR**.
8. Press **2** to select **POOL/SPA**.
9. Press **3** to select **F PUMP**.
10. Press **4** to select **B PUMP**.
11. Press **5** to select **FREEZE**.
12. Press **▲** or **▼** to choose between **POOL**, **SPA**, or **BOTH** and press **ENTER**. The screen displays **SUCCESSFUL** and returns to the **PE653 OPTION** screen.



```

SOLAR CONFIG
1 SOLAR      COOLING
2 POOL/SPA   BOTH
3 F PUMP     DISABLED
4 B PUMP     DISABLED
5 FREEZE     DISABLED
  
```



```

SOLAR CONFIG
1 SOLAR      COOLING

PRESS ▲ ▼ TO CHANGE
PRESS ENTER TO SAVE
  
```

Chapter 4: Programming – P5043ME Configuration Screen

NOTE: These procedures apply only to pool/spa systems with P5043ME Expansion Modules.

The P5043ME Expansion Module is added to the MultiWave Pool/Spa system to accommodate a water feature (waterfall, fountain, slide, etc.), second heater/solar temperature system, remote switch and/or non-Pentair brand of variable speed pump. Use the P5043ME Configuration Screen for:

- Configuring a Water Feature
- Setting Up a Remote Switch
- Configuring a Variable Speed Pump

Configuring a Water Feature

Follow this procedure to configure an actuator and circuit for a water feature. **NOTE:** Water feature is tied to CIR4 and will only be active when CIR4 is energized.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **P5043ME CONFIG** screen.
3. Press **1** to select **WTRFEATURE**.
4. Press **▲** or **▼** to choose between **CIR 4** or **DISABLED**.
5. Press **ENTER** to save.

```
P5043ME CONFIG
1 WTRFEATURE CIR 4
2 REMOTE SW ENABLED
3 PUMPCONFIG HAV

UP-PREVIOUS DWN-MORE
```

```
P5043ME CONFIG
1 WTRFEATURE CIR 4

PRESS v ^ TO CHANGE
PRESS ENTER TO SAVE
```

Setting Up a Remote Switch

A remote switch may be included in the system as a way of simply using a wall switch to initiate a whole series of activities: turning several circuits and actuators on/off.

Follow this procedure to define a scene that activates from an external remote switching device.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **P5043ME CONFIG** screen.
3. Press **2** to select **REMOTE SW**.
4. Press a button, **1** through **5**, to select a circuit.
5. Press **▲** or **▼** to choose between **ON**, **OFF**, or **DISABLED**.
6. Press **ENTER** to save and return to the **P5043ME CONFIG** screen.
7. To continue setting up the circuits, repeat steps 4 through 6 for each circuit desired.
8. From the **REMOTE SW CONFIG** screen, press **▼** to access more choices for the remote switch.

```
P5043ME CONFIG
1 WTRFEATURE CIR 4
2 REMOTE SW ENABLED
3 PUMPCONFIG HAV

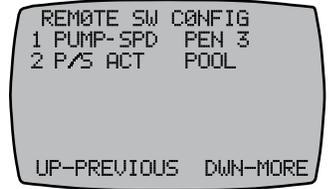
UP-PREVIOUS DWN-MORE
```

```
REMOTE SW CONFIG
1 CIRCUIT 1 ON
2 CIRCUIT 2 ON
3 CIRCUIT 3 ON
4 CIRCUIT 4 ON
5 CIRCUIT 5 ON

UP-PREVIOUS DWN-MORE
```

To include the pump speed:

9. Press **1** to choose **PUMP SPD**.
10. Press **^** or **v** to choose between the pump speed name (**VSP 1**, **PEN 1**, etc.) or **DISABLED**, and then press **ENTER**.

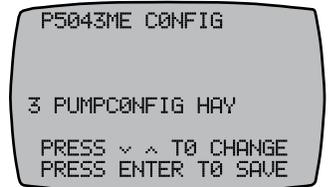
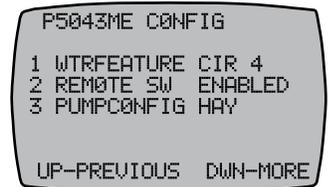
**To include the P/S actuator:**

11. Press **2** to choose **P/S ACT**.
12. Press **^** or **v** to choose between **POOL**, **SPA**, or **DISABLED**, and then press **ENTER**.

Configuring a Variable Speed Pump

Follow this procedure to configure a pump on the expansion module.

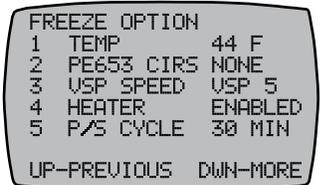
1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **v** to scroll to the **P5043ME CONFIG** screen.
3. Press **3** to select **PUMPCONFIG**.
4. Press **^** or **v** to choose between **HAY** (Hayward), **CEN** (Century), **SPK** (Speck), **MAR** (Marathon), **JAN** (Jandy), or **DISABLED**.
5. Press **ENTER** to save and return to the **P5043ME CONFIG** screen.



Chapter 5: Programming – Freeze Option Screen

The freeze options protect the pool and/or spa from cold temperatures by turning the heater on. Procedures include:

- Configuring the Freeze Temperature
- Defining the Circuits for the Freeze Condition
- Determining Speed During Freeze Condition (with variable speed pump)
- Enabling/Disabling Heater During Freeze Condition (with water probe)
- Defining Actuator Pool/Spa Cycle (with actuator control or expansion module)



```

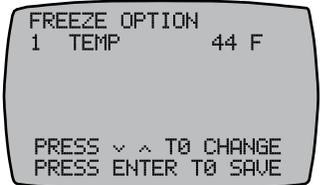
FREEZE OPTION
1 TEMP 44 F
2 PE653 CIRS NONE
3 USP SPEED USP 5
4 HEATER ENABLED
5 P/S CYCLE 30 MIN
UP-PREVIOUS DWN-MORE
  
```

Configuring the Freeze Temperature

NOTE: This procedure applies only to pool/spa systems with the air sensor installed.

Follow this procedure to define the freeze temperature initiation value — the temperature at which the heater turns on.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **✓** to scroll to the **FREEZE OPTION** screen.
3. Press **1** to select **TEMP**.
4. Press **▲** or **▼** to choose the temperature (between 40°F and 44°F).
5. Press **ENTER** to save.



```

FREEZE OPTION
1 TEMP 44 F

PRESS v ^ TO CHANGE
PRESS ENTER TO SAVE
  
```

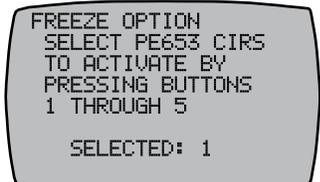
Defining the Circuits for the Freeze Condition

Follow this procedure to define the circuits that activate when the freeze temperature is reached.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **✓** to scroll to the **FREEZE OPTION** screen.
3. Press **2** to select **PE653 CIRS**.
4. Press the applicable buttons (**1** through **5**) on the controller to activate the desired circuits.

NOTE: If you have a 1-speed pump, press 1 to circulate water. If you have a 2-speed pump, press 1 for high speed or 2 for low speed.

5. After the circuits are selected, press **ENTER** to save.



```

FREEZE OPTION
SELECT PE653 CIRS
TO ACTIVATE BY
PRESSING BUTTONS
1 THROUGH 5

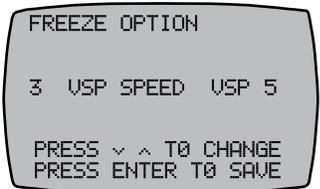
SELECTED: 1
  
```

Determining Speed During Freeze Condition

NOTE: This procedure applies only to systems with a variable speed pump configured.

Follow this procedure to define the speed a variable pump will run when activated for a freeze condition.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **FREEZE OPTION** screen.
3. Press **3** to select **VSP SPEED**.
4. Press **▲** or **▼** to choose the pump speed names (**VSP 1**, **PEN 1**, etc.) or **DISABLED**.
5. Press **ENTER** to save.

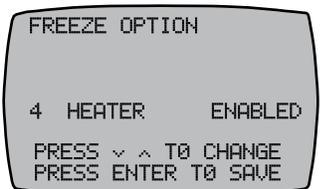


Enabling/Disabling Heater During Freeze Condition

NOTE: This procedure applies only to systems with a heater configured and a water probe installed.

Follow this procedure to enable/disable the heater during a freeze condition.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **FREEZE OPTION** screen.
3. Press **4** to select **HEATER**.
4. Press **▲** or **▼** to choose between **ENABLED** and **DISABLED**.
5. Press **ENTER** to save.

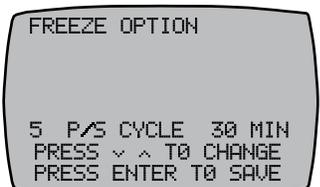


Defining Actuator Pool/Spa Cycle

NOTE: This procedure applies only to pool/spa systems with an actuator control (or an expansion module) and an air sensor installed. The controller must be set to **BOTH** — see Configuring Pool, Spa, or Both in Controller in Chapter 3.

Actuators can be cycled between pool and spa on a cycle timed basis (0 to 30 minutes) to protect both pool and spa plumbing. Follow this procedure to configure an actuator cycle time.

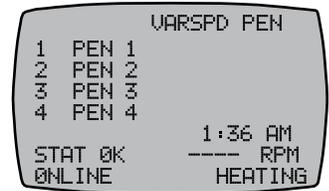
1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **FREEZE OPTION** screen.
3. Press **5** to select **P/S CYCLE**.
4. Press **▲** or **▼** to choose the cycle time (between 0 and 30 minutes).
5. Press **ENTER** to save.



Chapter 6: Programming – Variable Speed Pump Options Screens

If you have a variable speed pump, follow these procedures to set names and speeds for each of the variable speeds and a maximum speed.

- Configuring Pentair Variable Speed Pump Names
- Configuring Pentair Variable Speed Pump Speeds
- Setting a Pentair Variable Speed Pump Maximum Speed
- Configuring Other Variable Speed Pump Names
- Configuring Other Variable Speed Pump Speeds
- Setting an Other Variable Speed Pump Maximum Speed

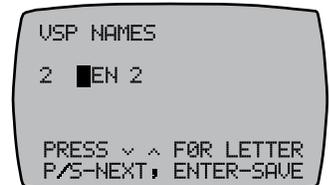
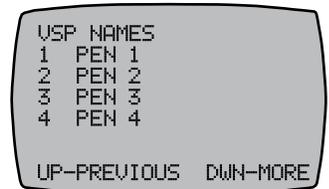


Pentair® Variable Speed Pump Options Screen

Configuring Pentair Variable Speed Pump Names

Follow the procedure below to configure the Pentair variable speed pump name settings in the controller.

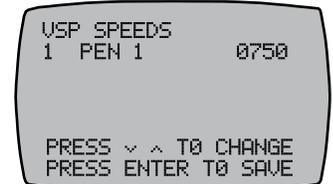
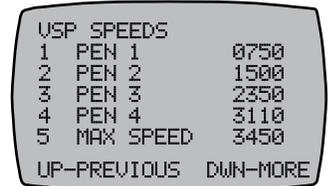
1. Press **ENTER** to display the **VARSPD PEN** screen.
2. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
3. Press **▼** to scroll to the **VSP NAMES** screen.
4. Press a number button (**1-4**) for the speed you want to name. The screen highlights the first letter.
5. Press **▲** or **▼** to adjust the first letter to the desired character (**A-Z**, **1-9**, and **SPACE**) and press **P/S** to move to the next character.
6. Repeat step 5 as necessary to complete the variable speed name.
7. When the name is complete, press **ENTER** to save.
8. Repeat procedure to configure more variable speed names.



Configuring Pentair Variable Speed Pump Speeds

Follow the procedure below to configure the Pentair variable speed pump settings in the controller.

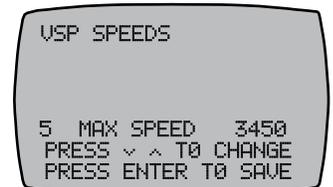
1. Press **ENTER** to display the **VARSPD PEN** screen.
2. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
3. Press **▼** to scroll to the **VSP SPEEDS** screen.
4. Press **1** to set the speed for that button. The screen displays that speed.
NOTE: To set another variable speed, press the applicable button (**2-5**) that you want to add another speed.
5. Press **▲** or **▼** to increase or decrease the speed setting and press **ENTER** to save and return to the **VARSPD PEN** screen.
6. Repeat steps **3** to **6** as necessary to configure a speed for each button.



Setting a Pentair Variable Speed Pump Maximum Speed

Follow the procedure below to set a maximum speed for a Pentair variable speed pump.

1. Press **ENTER** to display the **VARSPD PEN** screen.
2. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
3. Press **▼** to scroll to the **VSP SPEEDS** screen.
4. Press **5** to select **MAX SPEED**.
5. Press **▲** or **▼** to increase or decrease the speed setting.
6. Press **ENTER** to save.

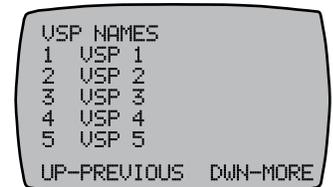


Jandy®, Hayward®, Century®, Marathon®, and Speck® Variable Speed Pump Options Screens

Configuring Other Variable Speed Pump Names

Follow the procedure below to configure the variable speed pump name settings in the controller for Jandy, Hayward, Century, Marathon, and Speck variable speed pumps.

1. Press **ENTER** to display the **VARSPD HAY** (Hayward), **VARSPD CEN** (Century), **VARSPD SPK** (Speck), **VARSPD MAR** (Marathon), or **VARSPD JAN** (Jandy) screen.
2. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
3. Press **▼** to scroll to the **VSP NAMES** screen.
4. Press a number button (**1** through **5**) for the speed you want to name. The screen highlights the first letter.
5. Press **▲** or **▼** to adjust the first letter to the desired character (**A-Z**, **1-9**, and **SPACE**) and press **P/S** to move to the next character.
6. Repeat step 5 as necessary to complete the variable speed name.
7. When the name is complete, press **ENTER** to save.
8. Repeat procedure to configure more variable speed names.



Configuring Other Variable Speed Pump Speeds

For any brand of variable speed pump besides Pentair, refer to the pump manufacturer's manual to configure speeds.

Setting an Other Variable Speed Pump Maximum Speed

For any brand of variable speed pump besides Pentair, refer to the pump manufacturer's manual to set a maximum speed.

Chapter 7: Configuring Salt Chlorine Generator Options

You must have an AutoPilot Salt Chlorine Generator and the manufacturer's manual available to complete this procedure.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **RS485 CONFIG** screen.
3. From the **RS485** screen, make sure **3 AUTOP ADDR** (AutoPilot Salt Chlorine Generator) is set to **80**. If the generator is not set to **80**, press **3** and then press **▲** or **▼** to adjust to **80**.
4. Press **ENTER** to save address setting (Make sure the address matches ADDR on SCG).
5. On the controller, press **ENTER** to scroll to the **AUTOPILOT PAGE 1** screen.
6. Press **▼** to scroll to the **AUTOPILOT INSTALL** screen.
7. Determine the AutoPilot configuration (**1 CELL TYPE**, **2 CELL POWER LEVEL**, **3 POOL SIZE**) that you want to adjust and press the button on the controller to access the setting.
8. Press **▲** or **▼** to adjust the setting and then press **ENTER**. The screen displays **SUCCESSFUL** and returns to the **AUTOPILOT INSTALL** screen.
NOTE: Refer to the AutoPilot manufacturer's manual for further information on adjusting settings.
9. Repeat steps 7 and 8 as necessary to configure additional settings.
10. When you have made the desired adjustments, press **ENTER** to scroll to the main screen.

```
AUTOPILOT    PAGE 1
DIG-220
1 PURIFIER LEVEL = 100%
2 CHLORINE BOOST = 72H
NOTE: PURIFIER LEVEL
      ADJUSTS TO TEMP
      DWN-MORE
```

```
RS485 CONFIG
1 PE653 ADDR 16
2 USP ADDR 1
3 AUTOP ADDR 80
UP-PREVIOUS  DWN-MORE
```

```
AUTOPILOT  INTSTALL
DEVICE S/W VER=5.196
LINK S/W VER=0.02
1 CELL TYPE= RC35/22
2 CELL POWER LEVEL= 2
3 POOL SIZE= 15000GAL
UP-PREVIOUS  DWN-MORE
```

Chapter 8: Labeling Circuits on Controller and Receiver

Labeling the PE953 Controller

The MultiWave Controller is shipped with a peel-and-stick label sheet to adhere to the slots next to the controller function buttons. It is recommended to apply the stickers according to designations on the MultiWave Pool & Spa Control System Worksheet for Programming.

Labeling the PE653 Receiver

Use the peel-and-stick labels from the sheet provided to identify the circuits on the front of the receiver. Refer to the MultiWave Pool & Spa Control System Worksheet for Programming.

Chapter 9: Checking Out and Verifying the System

After you have completed programming, verify the operation of the MultiWave system by performing the verification procedures below.

Verifying the Controller Screen Is Operating Properly

1. Press a button on the controller to activate the screen.
2. Take one of these actions:

If the controller screen...	Then...
Activates,	The controller screen is operating properly. The procedure is complete.
Does not activate,	Replace the batteries. Perform the procedure “Installing Batteries in Controller” on page 33.
	Verify that the PE653 receiver has power. A red illuminating light will appear next to the include button.

3. Press a button on the controller to access the main screen.
4. If the screen does not activate, contact Intermatic support services.

Verifying Current Time of Day Is Configured in the Controller

1. Press a button on the controller to activate the screen.
2. If the PE653 screen is not configured as the main screen, press **ENTER** to scroll to the **PE653** screen.
3. Observe the time of day and then take one of these actions:

If the time of day is ...	Then...
Correct,	The procedure is complete
Incorrect,	Perform the procedure “Setting the Time of Day” on page 21.

Verifying the Controller Is Communicating with the Receiver

1. Press a button on the controller to activate the screen.
2. Press **1** on the controller to verify that circuit 1 activates.
3. Take one of these actions:

If the circuit...	Then...
Activates,	The controller is communicating with the receiver properly. The procedure is complete.
Does not activate,	Perform the procedure "Linking the Controller to Receiver" on page 19.

Verifying the Receiver Is Operating

1. Press the manual circuit buttons on the receiver and verify each circuit light illuminates.
2. Take one of these actions:

If the lights above the circuit buttons...	Then...
Illuminate when the corresponding manual circuit button is pressed,	The procedure is complete.
Do not illuminate when a corresponding circuit button is pressed,	Make sure the voltage selector switch on the receiver is set to the proper voltage.

3. Repeat step 1.
4. If the lights still do not illuminate, replace the F1 fuse — see Chapter 13.
5. Repeat step 1.
6. If the lights do not illuminate, check the circuit wiring. Refer to the wiring diagrams in the Installation Guide.

Verifying Controller Activates Valve Actuators on Command

1. Press a button on the controller to activate the screen.
2. Press **P/S** to activate the actuator valve(s).
3. Take one of these actions:

If the valve actuator...	Then...
Activates,	The procedure is complete.
Does not activate,	Make sure the controller is configured for pool and spa. If necessary, perform the procedure "Configuring Pool, Spa, or Both in Controller" on page 23. Then go to step 4.

4. Press **P/S** to activate the actuator valve(s).
5. If the actuator does not activate, check the wiring. Refer to the wiring diagrams in the Installation Guide.
6. Press **P/S** to activate the actuator valve(s).
7. If the actuator does not activate, contact Intermatic Technical Support.

Verifying Heater Responds to Commands from Controller

1. Press a button on the controller to activate the screen.
2. Make sure the controller screen displays **POOL** or **SPA** in the lower right of the screen.
3. Set the pool or spa temperature to 5 degrees higher than the current reading.
4. Turn the pump ON to activate the heater. The circuit 5 LED on the receiver or HTR1 LED for POOL or HTR2 LED for SPA on the P5043ME Expansion Module will illuminate, indicating the heater is functioning.
5. If the heater does not operate, set the heater thermostat to high or maximum.
6. If the LEDs illuminate, but the heater does not operate, refer to the heater manufacturer's manual for assistance with external temperature controller.

Chapter 10: Programming – Use with Z-Wave Home Control Devices

The MultiWave system controller and PE953 receiver are compatible with Z-Wave enabled networks. Each Z-Wave enabled device is designed to act as a repeater, re-transmitting the RF signal around obstacles and radio dead spots as possible to ensure messages are received by the intended destination device. Follow the steps in this chapter to add Z-Wave devices to your network.

- Including Z-Wave Devices into the Network
- Adding Z-Wave Devices to Scenes
- Configuring Scene Names in Controller
- Controlling Z-Wave Devices
- Removing Z-Wave Devices from Scenes
- Removing Z-Wave Devices from a Network

Including Z-Wave Devices into the Network

Perform this procedure for each Z-Wave device that you want to include in the network:

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **3 INCLUDE DEVICE**. The screen displays **PRESS BUTTON ON DEVICE TO INCLUDE**.
3. Press the button on the Z-Wave device for including the device in a network. See manufacturer's instructions. The controller displays **SUCCESSFUL** and then returns to the programming screen.
4. Repeat this procedure as needed to include additional Z-Wave devices in the network.
5. When all the Z-Wave devices are included in network, press **ENTER** to return to the main screen.

```
LEARN MODE 34-34-34P
3 INCLUDE DEVICE
PRESS BUTTON ON
DEVICE TO INCLUDE
SUCCESSFUL
```

Adding Z-Wave Devices to Scenes

Scenes are groups of Z-Wave devices that act together. Configure scenes in the controller to enable users to activate devices in a Scene by pressing a button on the controller. Up to five Scenes can be configured in the controller.

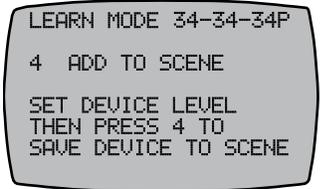
NOTE: If a Z-Wave controlled light is on a dimmer switch, you can preset the dimmer level when adding the light to a Scene.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **4 ADD TO SCENE**. The controller displays **PRESS 1-5 TO CHOOSE A SCENE TO ADD THE DEVICE TO**.
3. Press a controller button (**1, 2, 3, 4, or 5**) to add a device to a Scene. The screen displays **PRESS BUTTON ON DEVICE TO INCLUDE**.
NOTE: The buttons represent the different Scenes.
4. Press the **INCLUDE** button on the Z-Wave device to include the device in a Scene. See manufacturer's instructions.

```
LEARN MODE 34-34-34P
4 ADD TO SCENE
PRESS 1-5 TO CHOOSE
A SCENE TO ADD THE
DEVICE TO
```

```
LEARN MODE 34-34-34P
4 ADD TO SCENE
PRESS BUTTON ON
DEVICE TO INCLUDE
```

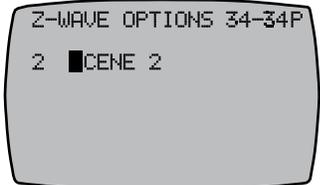
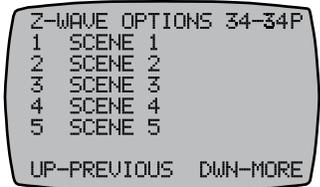
5. When a message appears on the controller instructing you to set the device, adjust the device level as needed.
NOTE: Device levels enable users to configure which devices turn ON/OFF when a Scene is activated.
6. Press the scene number to save the device to the scene. The controller displays **SUCCESSFUL** to indicate the device is included in the scene.
7. Repeat steps 4 through 6 to add another device to a Scene or repeat steps 2 through 6 to add devices to other Scenes.
8. When all the devices are added to the Scenes, press **ENTER** to scroll to the main screen.



Configuring Scene Names in Controller

Configuring Scene names enables users to better describe the function of each scene. Follow this procedure to configure names for each Scene in the controller:

1. Press **ENTER** to scroll to the **SCENE ACTIVATION** screen.
2. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
3. Press **▼** to scroll to the **Z-WAVE OPTIONS 32-32P** screen.
4. Press the Scene number button for the Scene you want to name. The Scene number appears with the first letter of the name highlighted.
5. Press **▲** or **▼** to scroll to the desired number or letter and press **P/S** to scroll to the next character in the name.
6. Repeat step 5 as necessary to complete the desired name and press **ENTER** to save the name and return to the **Z-WAVE OPTIONS** screen.
7. Repeat steps 4 to 6 as necessary to configure a name for each Scene.



Controlling Z-Wave Devices

Once you have included Z-Wave devices in the network and have added them to various Scenes, follow this procedure to control Z-Wave devices:

1. Press **ENTER** to scroll to the **SCENE ACTIVATION** screen.
2. Press the corresponding button for the scene you want to activate. The scene name appears.
3. Take one of these actions:

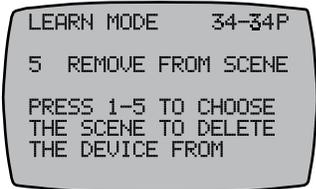
If you want to...	Then...
Activate the scene (ON)	Press ▲ to activate the scene
De-activate the scene (OFF)	Press ▼ to deactivate the scene

NOTE: After you activate or deactivate the scene, the controller screen displays **WORKING** followed by **SUCCESSFUL** when it completes the command, and then returns to the scene screen.

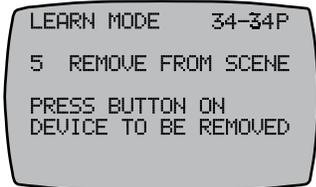
4. Repeat steps 2 and 3 to activate another scene.
5. When all the desired scenes are activated, press **ENTER** to return to the PE653 screen.

Removing Z-Wave Devices from Scenes

1. Follow this procedure to remove a Z-Wave device from a scene:
2. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
3. Press **5 REMOVE FROM SCENE**. The controller displays **PRESS 1-5 TO CHOOSE THE SCENE TO DELETE THE DEVICE FROM**.
4. Press the corresponding number on the controller for the scene you want to remove from the device. The screen displays **PRESS BUTTON ON DEVICE TO BE REMOVED**.
5. Press the button on the Z-Wave device to remove it from the scene. See manufacturer's instructions. The controller screen displays **WORKING** followed by **SUCCESSFUL** to indicate that the device is removed from the Scene.
6. Press **ENTER** to exit and return to the main screen.



```
LEARN MODE 34-34P
5 REMOVE FROM SCENE
PRESS 1-5 TO CHOOSE
THE SCENE TO DELETE
THE DEVICE FROM
```



```
LEARN MODE 34-34P
5 REMOVE FROM SCENE
PRESS BUTTON ON
DEVICE TO BE REMOVED
```

Removing Z-Wave Devices from a Network

Follow this procedure to remove a Z-Wave device from a network:

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **2 REMOVE DEVICE**. The controller screen displays **PRESS BUTTON ON DEVICE TO REMOVE**.
3. Press the **RESET** button on the Z-Wave device. The controller screen displays **WORKING** followed by **SUCCESSFUL** to indicate the device is removed from the network.
4. Press **ENTER** to exit and return to the main screen.



```
LEARN MODE 34-34-34P
2 REMOVE DEVICE
PRESS BUTTON ON
DEVICE TO REMOVE
```

Chapter 11: Controlling a PE650 Receiver

If you are installing a MultiWave to a system that includes a PE650 Receiver, follow the procedure below to link the PE953 Hand-Held Controller with the PE650 Receiver.

Linking the PE953 Controller with PE650 Receiver

This procedure creates a network between the Hand-Held Controller and the PE650 Receiver, making it possible to complete the rest of the setup procedure and operate the system.

1. Press and release any button to activate the controller.
2. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
3. Press the **3** function button to select **INCLUDE DEVICE**. The screen refreshes with instructions to **PRESS BUTTON ON DEVICE TO INCLUDE**, as shown.
4. Press the **BLACK BUTTON** on the base of the antenna of the PE650. The screen displays the word **SUCCESSFUL**, as shown, then returns to the **LEARN MODE** screen.

NOTE: If the two devices are not successfully linked and you are seeing the word **FAILURE** at the bottom of the screen, carefully repeat the procedure. If the problem persists, contact Intermatic Customer Service.

5. Press the **ENTER** button if you wish to return to the main display screen.
6. The circuits wired in the PE650 network (up to five) can now be controlled ON/OFF with the five function buttons on the PE953 Hand-Held Controller.

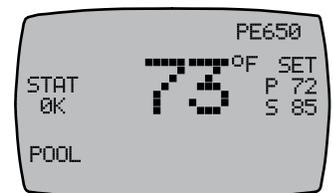


Figure 11-1. PE650 Receiver.

Controlling PE650 Functions

Depending on how the site has been installed with the PE650 Receiving Device, there may be up to five circuits being controlled. The five function buttons on the PE653 Hand-Held Controller will control the five circuits in the PE650 Receiving Device.

1. Press any button to activate the controller.
2. If the PE650 screen (shown at the right) is not displayed, press the **ENTER** button until you see the PE650 screen, as shown.
3. Press the function button for the circuit that you want to turn ON or OFF.



- Buttons 1, 2, and 3 control circuits 1, 2, and 3 on the Three-Circuit Clock Mechanism (P1353ME) that is installed on the left side of the Receiving Device.
- Buttons 4 and 5 control Relay 1 and Relay 2 on the Valve/Pump Switch Control (P4243ME) that is installed on the right side of the Receiving Device.

NOTE: The controller's display shows the circuit number along the top of the screen.

Chapter 12: Advanced Features

The Multi-Wave components can be configured to fit your pool/spa system needs. Follow the instructions in these sections as needed to configure these settings.

- Setting the Controller Main Screen
- Configuring Two or More Controllers
- Changing a Secondary Controller to Primary
- Including a Controller into a Third-Party Network
- Excluding a Controller from a Third-Party Network
- Including Receiver into a Non-MultiWave Controller
- Setting Up Z-Wave Associations with Capable Devices
- Excluding Receiver from a Manufacturer Controller
- Deleting Any Existing Programming
- Removing Z-Wave Devices from an Association

Setting the Controller Main Screen

Depending on which components have been configured in the controller, there are multiple screen options to designate as the main screen. Follow this procedure to set the main screen.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **CONTROL CONFIG** screen.
3. Press **1** to select the **PRIMARY SCREEN SEL** screen.
4. Press **▲** or **▼** to select a main screen. See Figure 12-1 through Figure 12-3 for some of the main screen options.
5. Press **ENTER** to save.

```

CNTRL CONFIG
1 PRIMARY SCREEN SEL
2 CONTROLLER COPY
3 CONTROLLER SHIFT
4 UPGRADE FIRMWARE
5 SETUP ASSOCIATIONS

UP-PREVIOUS  DWN-MORE
  
```

```

CNTRL CONFIG
1 PRIMARY SCREEN SEL

VSP

PRESS ▼ ▲ TO CHANGE
PRESS ENTER TO SAVE
  
```

NOTE: In order for the configured main screen to take effect, allow the controller to move to idle and then re-activate the controller. The new main screen appears.

```

SCENE ACTIVATION
1 SCENE 1
2 SCENE 2
3 SCENE 3
4 SCENE 4
5 SCENE 5
  
```

Figure 12-1. Z-Wave Main Screen.

```

HI SPD 1 3 PE653
STAT 1:00 PM SET
OK P 72 S 85
AIR 77 POOL 78
SOLAR 72 HEATING
  
```

Figure 12-2. PE653 Main Screen.

```

VARSPEED PEN
1 PEN 1
2 PEN 2
3 PEN 3
4 PEN 4

STAT OK 1:36 AM
ONLINE RPM HEATING
  
```

Figure 12-3. Variable Speed Main Screen.

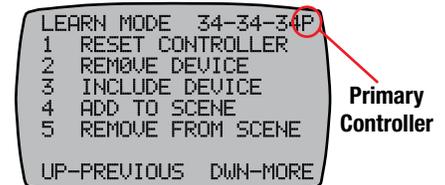
Configuring Two or More Controllers

Multiple controllers can be configured in a MultiWave system. Follow this procedure to configure additional controllers to your MultiWave system.

The first controller that you configure is the **PRIMARY** control and the other controller(s) are **SECONDARY** control(s).

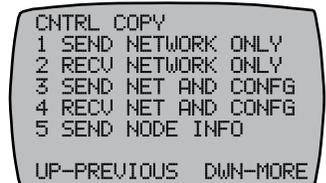
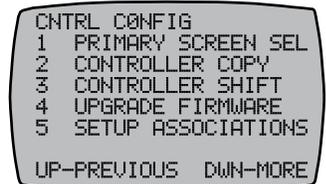
Only the **PRIMARY** controller can be used to add or remove devices from the network.

- **SECONDARY** controllers control devices in the network.
- To determine whether a controller is **PRIMARY** or **SECONDARY**, observe the controller status from the **VER** (version) code at the top right corner of the display on the programming screens: **P** = **PRIMARY** and **S** = **SECONDARY**.
- The **PRIMARY** controller must be used to include additional (**SECONDARY**) controllers.

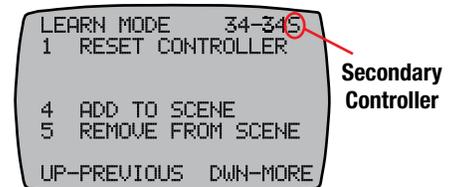


Follow this procedure to configure additional controllers.

1. On the primary controller, press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **✓** to scroll to the **CNTRL CONFIG** screen.
3. Press **2** to select **CONTROLLER COPY**.
4. Press **3** to select **SEND NET AND CONFG**. The screen displays **INCLUDING DEVICE** and then returns to the **CNTRL COPY** screen.
5. On the controller you are adding to the network, repeat steps 1 to 3.
6. On the controller you are adding, press **4** to select **RECV NET AND CONFG**. The screen displays **INCLUDING DEVICE** at the bottom of the **PRIMARY** controller screen. The screen then briefly displays **SENDING NET INFO, SENDING SCENE INFO, SENDING CFG INFO** during the transfer of info to the secondary device. After a few seconds, the controller returns to the **CNTRL COPY** screen. The secondary controller screen displays **WAITING FOR INCLUDE** at the bottom of the screen. After the information is transferred to the secondary controller, **SUCCESSFUL** appears at the bottom of the secondary controller screen and then the main screen appears.



7. On the secondary controller, press **P/S** and **ENTER** simultaneously to access **LEARN MODE**. The following appears:
8. The secondary controller screen displays **S** at the top right corner to indicate it is the secondary controller.



- Selections 2 and 3 are blank so only the options that can be performed by a secondary controller appear.
9. Press **✓** to scroll to the **CNTRL CONFIG** screen. Items 2, 3, and 5 on the screen show the options that the secondary remote can perform.
 10. Repeat steps 1 to 8 as necessary to add another secondary controller.
NOTE: If you are adding another controller(s), be sure to copy the controller to all secondary controllers, if applicable. Repeat steps 1-8 as necessary.
 11. Press **ENTER** on both controllers to scroll to the main screens.

Changing a Secondary Controller to Primary

Follow this procedure to change a secondary remote to primary.

NOTE: There can only be one primary controller in a given network.

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **CNTRL CONFIG** screen.
3. On the primary controller, press **3 CONTROLLER SHIFT**. The controller displays **PRESS BUTTON ON DEVICE TO INCLUDE INCLUDING DEVICE**.
4. On the secondary controller that you want to change to primary, press **3 RECV NET AND CFG**. The primary and secondary controllers restart and then the following notifications appear on the **PRIMARY** and **SECONDARY** controllers:

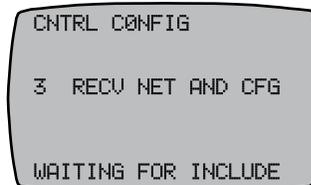
- The **PRIMARY** controller: **INCLUDING DEVICE** appears, followed by **SENDING NET INFO, SENDING SCENE INFO, SENDING CFG INFO**. The controller then returns to the **CNTRL COPY** screen.
- The **SECONDARY** controller: **WAITING FOR INCLUDE** appears. After data is moved from the to the secondary controller, **SUCCESSFUL** appears and the controller returns to the main screen.

5. Make sure both controllers are returned to the main screens. The procedure is complete.



```

CNTRL CONFIG
3 CONTROLLER SHIFT
PRESS BUTTON ON
DEVICE TO INCLUDE
INCLUDING DEVICE
  
```



```

CNTRL CONFIG
3 RECV NET AND CFG
WAITING FOR INCLUDE
  
```

Including a Controller into a Third-Party Network

The MultiWave controller is a Z-Wave compliant device that can be included in networks created by other manufacturer's Z-Wave compliant controllers. If applicable, follow this procedure to include the MultiWave controller in another manufacturer's controller network.

1. Activate the replication function on the third party controller to transmit network information to the MultiWave controller.
NOTE: See the third party manufacturer's instructions for further instructions.
2. On the MultiWave controller, press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
3. Press **▼** to scroll to the **CNTRL CONFIG** screen.
4. Press **2** to display the **CONTROLLER COPY** screen.
5. Press **2** to receive network information for the MultiWave controller. The controller displays **WAITING FOR INCLUDE**, followed by **SUCCESSFUL**. The screen then reboots. The controller is configured as a secondary controller for the third party network.

Excluding a Controller from a Third-Party Network

To exclude a MultiWave controller from a third-party network, reset the MultiWave controller. Perform the procedure Resetting the Controller in Chapter 2 "Programming — Controller Setup".

Including Receiver into a Non-MultiWave Controller

Follow this procedure to include the PE653 receiver into another manufacturer's controller:

1. Activate the manufacturer's controller **INCLUDE** function.
2. Press the **INCLUDE** button on the PE653 receiver. The red flashing LED on the PE653 receiver changes to steady **ON**.

NOTE: The steady **ON** LED flashes when it is communicating with another device.

Setting Up Z-Wave Associations with Capable Devices

An Association is a Z-Wave device other than the MultiWave controller that can be used to control other Z-Wave devices in a MultiWave PE653 or PE953 network. Setting up an association with a Z-Wave device in the PE653/PE953 network makes it possible to turn Circuit 1 ON/OFF along with lighting and other features controlled by another Z-Wave device (not including the MultiWave controller). Follow this procedure to set up an association:

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **✓** to scroll to the **CNTRL CONFIG** screen.
3. Press **5** to select **SETUP ASSOCIATIONS**.
4. Press **1** to select **ADD DEVICE**. The screen displays **PRESS BUTTON ON THE DEVICE CONTROLLING THE ASSOCIATION**.
NOTE: This is the association-capable Z-Wave device you want to use to control the other devices that you plan to add to the association.
5. Press the **INCLUDE** button on the device. See manufacturer's instructions. The MultiWave controller screen displays **PRESS THE BUTTON ON THE DEVICE TO ADD THE ASSOCIATION**.
6. Press the button on the device to add to the association. The screen displays **SET DEVICE LEVEL THEN PRESS 1 TO ADD THE DEVICE TO THE ASSOCIATION**.
7. Configure the device as needed to turn units ON and OFF.
NOTE: There are instances where you may need to turn certain lights ON and other lights OFF when the scene is activated.
NOTE: If you are controlling a light on a dimmer switch, preset the dimmer to the desired brightness at this time.
8. Press **1** on the controller. The screen displays **SUCCESSFUL**. The device is included in the association.
NOTE: Only 1 circuit on the receiver can be controlled with an association.
9. Repeat this procedure as necessary to add other devices to the association.
10. Press **ENTER** to exit and return to the main screen.

```
CNTRL CONFIG
1 PRIMARY SCREEN SEL
2 CONTROLLER COPY
3 CONTROLLER SHIFT
4 UPGRADE FIRMWARE
5 SETUP ASSOCIATIONS
UP-PREVIOUS  DWN-MORE
```

```
ASSOCIATION
1 ADD DEVICE
2 REMOVE DEVICE
UP-PREVIOUS  DWN-MORE
```

```
ASSOCIATION
1 ADD DEVICE
PRESS BUTTON ON
DEVICE CONTROLLING
THE ASSOCIATION
```

```
ASSOCIATION
1 ADD DEVICE
SET DEVICE LEVEL
THEN PRESS 1 TO ADD
DEVICE TO ASSOCIATION
```

Excluding Receiver from a Manufacturer Controller

Follow this procedure to exclude the PE653 receiver from another manufacturer's controller:

1. Activate the manufacturer's controller **EXCLUDE** function. See manufacturer's manual.
2. Press the **INCLUDE** button on the PE653 receiver. The red flashing **LED** on the PE653 receiver changes to steady **ON**.

NOTE: The steady **ON** LED flashes when it is communicating with another device.

Deleting Any Existing Programming

Perform this procedure for each Z-Wave device that you want to include in the network to ensure any existing programming is deleted:

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **2 REMOVE DEVICE**. The screen displays **PRESS BUTTON ON DEVICE TO RESET**.
3. Press the button on the Z-Wave device you want to remove from the network. Refer to the Z-Wave device manufacturer's instructions.
4. Repeat this procedure as needed for additional Z-Wave control devices in the network.

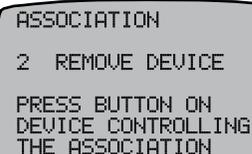


```
LEARN MODE 34-34-34P
2 REMOVE DEVICE
PRESS BUTTON ON
DEVICE TO REMOVE
SUCCESSFUL
```

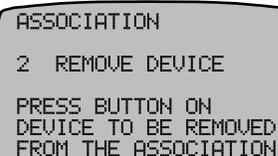
Removing Z-Wave Devices from an Association

Follow this procedure to remove a Z-Wave device from a network:

1. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE**.
2. Press **▼** to scroll to the **CNTRL OPTION** screen.
3. Press **5** to select **SETUP ASSOCIATIONS**. The **ASSOCIATION** screen appears.
4. Press **2** to select **REMOVE DEVICE**. The screen displays **PRESS THE BUTTON ON THE DEVICE CONTROLLING THE ASSOCIATION**.
5. Press the **INCLUDE** button on the Z-Wave device. The controller screen displays the word **SUCCESSFUL** to indicate the device is removed from the association.
6. Repeat steps 3 through 5 as necessary to remove other devices from the association.
7. Press **ENTER** to exit and return to the main screen.



```
ASSOCIATION
2 REMOVE DEVICE
PRESS BUTTON ON
DEVICE CONTROLLING
THE ASSOCIATION
```



```
ASSOCIATION
2 REMOVE DEVICE
PRESS BUTTON ON
DEVICE TO BE REMOVED
FROM THE ASSOCIATION
```

Chapter 13: User Operation

Follow the instructions in this chapter to operate the MultiWave Control System:

- Using Receiver to Turn Circuits ON/OFF
- Using Controller to Turn Circuits ON/OFF
- Viewing and Controlling Pool and Spa Temperatures
- Setting Schedules
- Navigating to Other Controls
- Replacing Fuse F1 on the Receiver

NOTE: If the controller is idle for 1 minute, the display deactivates to save battery life. Press any button to remove the controller from idle.

Using the Receiver to Turn Circuits ON/OFF

The five circuits and pool/spa actuators can be operated manually from the receiver.

To manually operate a circuit, press a circuit button on the receiver to toggle between ON and OFF.

NOTE: Any manual circuit activation at the receiver is also reflected on the controller screen.

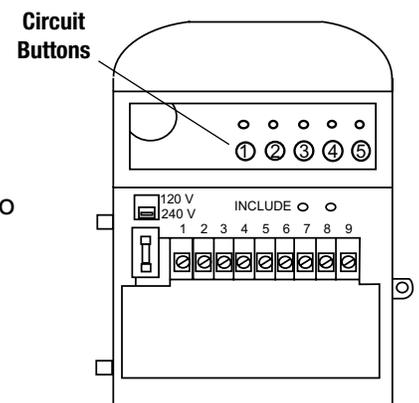


Figure 13-1. Circuit buttons.

Using Controller to Turn Circuits ON/OFF

Depending on how the site has been installed with the receiver, there may be up to five circuits being controlled. The five function buttons on the controller will control the five circuits in the receiver.

1. If necessary, press and release any button on the controller to wake it from sleep.
2. If the display screen (shown at the right) is not displayed, press the **ENTER** button until you see the display screen, as shown.
3. Press the function button for the circuit that you want to turn ON or OFF.

NOTE: The controller's display shows the circuit number along the top of the screen.

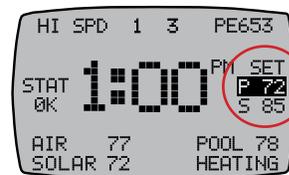


Viewing and Controlling Pool and Spa Temperatures

Changing Between Pool, Spa, or Both in Controller

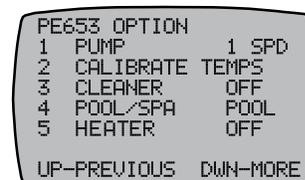
Check to see if the controller is displaying Pool, Spa, or both Pool and Spa in the Target Temps area of the controller's main display screen. If you want to control both the pool and spa temperatures, both Pool and Spa should be shown. If, for example, you want to control only the pool or spa because the other is not being used seasonally, only Pool or Spa should be shown.

Follow this procedure to change the controller's configuration for Pool, Spa, or Both.



Target
Temps

1. If necessary, press and release any button on the controller to wake it from sleep.
2. If the main display screen (shown above) is not displayed, press the **ENTER** button until you see it.
3. Press **P/S** and **ENTER** simultaneously to access **LEARN MODE** (programming mode).
4. Press **▼** to scroll to the **PE653 OPTION** screen.
5. Press **4** to select **POOL/SPA**.
6. Press **4** again, if necessary, to show the on-screen instructions for changing this setting.
7. Press **▼** until your preference (**POOL**, **SPA**, or **BOTH**) displays.
8. Press **ENTER** to save.



Setting Pool/Spa Water Temperature

The heater thermostat temperature can be set to OFF or any temperature between 40°F and 104°F.

Follow this procedure to set the water temperature for your pool or spa.

1. If necessary, press **ENTER** to access the main display screen.
2. Press **▲** or **▼** to adjust the highlighted temperature.
3. If you have a pool and spa combination system, press **P/S** to highlight the other temperature and press **▲** or **▼** to adjust.

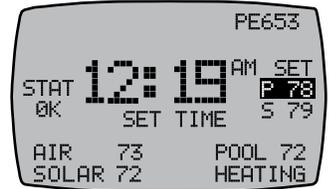


Setting Schedules

Setting Schedules for Circuits

Schedules are time-based events that can be set to turn a circuit on the receiver **ON/OFF** or **OFF** only. The MultiWave enables up to three schedules for each circuit.

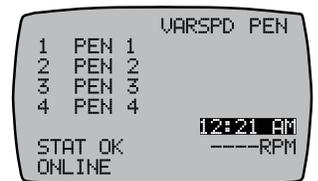
1. Press **ENTER** to access the main display screen.
2. Press and hold **P/S**. When controller displays **SET TIME** under the time, release **P/S**.
3. Press **P/S**. The screen displays the schedules screen.
4. Press **P/S** again to scroll to the desired circuit.
5. Press **1** to select the **ON** time for the first schedule or press **1** again to set an **OFF** time only for the event.
6. Press **^** or **v** to set the starting time for the schedule.
NOTE: A = AM and P = PM.
7. If applicable, press **1** to advance to the **OFF** time for the first schedule, and press **^** or **v** to set the ending time.
8. If you want to set another schedule for the same circuit, press (**2** or **3**) and repeat steps 5 through 7. If all of the schedules for this circuit are set, go to step 4 to program schedules for other circuits.
NOTE: If you need to delete/reset all events for a circuit, press **4**. Follow the instructions on the controller display to delete the schedule.
9. When all schedules are configured, press **ENTER** to return to the main screen.



Setting Schedules for Variable Speeds

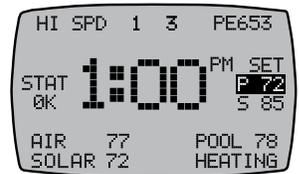
Schedules are time-based events that can be set to turn a speed **ON/OFF** or **OFF** for the variable speed pump at a specified time. The MultiWave enables up to 3 schedules for each speed.

1. Press **ENTER** to access the **VARSPD** screen.
2. Press and hold **P/S**. When controller highlights the time of day, release **P/S**.
3. Press **P/S**. The screen displays the variable speed schedule screen.
4. Press **P/S** again to scroll to the desired speed.
5. Press **1** to select the **ON** time for the first schedule or press **1** again to set an **OFF** time only.
6. Press **^** or **v** to set the starting time for the schedule.
NOTE: A = AM and P = PM.
7. If applicable, press **1** to advance to the **OFF** time for the first schedule, and press **^** or **v** to set the ending time.
8. If you want to set another schedule, press (**2** or **3**) and repeat steps 5 through 7. If all of the schedules for this speed are set, go to step 9.
9. Repeat steps 4 through 7 to set schedules for another speed.
10. When all schedules are configured, press **ENTER** to return to main screen.



Navigating to Other Controls

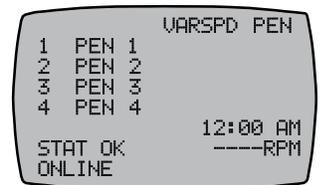
From the main display screen, press the **ENTER** button until you see the screen for the variable speed pump or AutoPilot Salt Chlorine Generator (SCG) configured in your system that you would like to view/control.



Advancing to the Pentair Variable Speed Pump Screen

1. Press and release any button to activate the controller.
2. Press the **ENTER** button until you see the Pentair Variable Pump screen.
3. Press **1** through **4** to activate the desired speed.

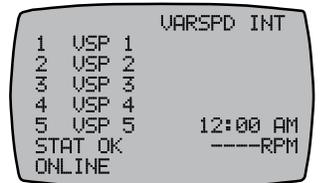
NOTE: Instructions for configuring Pentair Variable Speed Pumps are in Chapter 6.



Advancing to the Configured Variable Speed Pump Screen

1. Press and release any button to activate the controller.
2. Press the **ENTER** button until you see the Variable Pump screen configured in your system.
3. Press **1** through **5** to activate the desired speed.

NOTE: Instructions for configuring Jandy, Hayward, Century, Marathon, and Speck Variable Speed Pumps are in Chapter 6.



Advancing to the AutoPilot® SCG Screen

1. Press and release any button to activate the controller.
2. Press the **ENTER** button until you see the AUTOPILOT PAGE 1 screen.
3. Press **✓** to view more AutoPilot SCG settings.

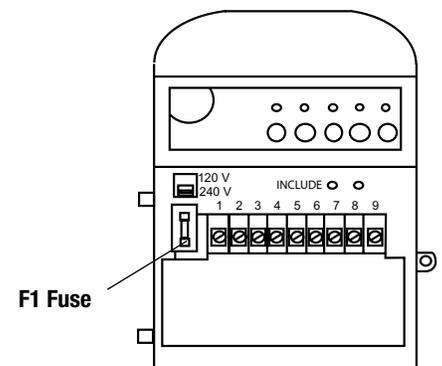
NOTE: Instructions for configuring an AutoPilot SCG are in Chapter 7.



Replacing Fuse F1 on the Receiver

Follow this procedure to replace the 250 VAC, 0.1 amp fuse on the receiver.

1. Shut off the power at the breaker.
2. Remove the F1 fuse from the receiver and dispose of the fuse.
3. Install the new F1 fuse in the receiver.
4. Return power at the breaker.



Chapter 14: Troubleshooting

This chapter provides troubleshooting information for the MultiWave system. Follow these guidelines as needed.

MultiWave Controller Troubleshooting

Symptom	Possible Cause	Corrective Action
The MultiWave controller is not working.	The controller is idle.	Press any button on the controller to remove it from idle.
	The controller batteries need to be replaced.	Replace the batteries. See “Installing Batteries in Controller” on page 15.
	Voltage may not be present at terminals 1 and 2 on the receiver because voltage selector switch is not in proper position.	Verify that voltage is present in terminals 1 and 2 with a voltmeter.
		Flip the voltage selector switch on the receiver to the desired position (120 or 240 VAC).
	Check wiring.	Refer to the wiring diagrams in the Installation Guide to check wiring.
Fuse F1 on the receiver is blown.	Replace the fuse. See “Replacing Fuse F1 on the Receiver” on page 50.	
The controller is not communicating with the receiver.	The controller and receiver are not linked.	Perform the procedure “Linking the Controller to Receiver” on page 19.
The controller is not communicating with the receiver in certain areas on your property.	The antenna needs to be moved to a different area on the property.	Perform the procedure “Remoting the Antenna” on page 20.
On pool/spa combination systems, the controller is not activating the motorized valve.	The controller is not configured for a pool/spa system.	Set the controller to Both. Perform the procedure “Configuring Pool, Spa, or Both in Controller” on page 23.
	Water flow is incorrect.	Adjust the motorized valve synchronization.
Water or moisture is inside the controller screen.	The controller needs to be dried out.	Dry out the controller.
		Make sure the battery gasket is present and not damaged.
The controller screen is locked up.	The batteries need to be replaced.	Replace the batteries. See “Installing Batteries in Controller” on page 15.

MultiWave Receiver Troubleshooting

Symptom	Possible Cause	Corrective Action
The LEDs turn ON and OFF, but the power circuits and attached equipment will not activate.	There is improper voltage at PE653 power terminals 2 and 5.	Check voltage at power terminals with a voltmeter.
The receiver is locked up.	The receiver needs to be reset.	Turn off the breaker that feeds terminals 1 & 2 on the receiver. Return power.
The receiver is not responding to commands from the controller.	The antenna is not properly installed on top of the receiver.	Install the antenna on the receiver.
	Local antenna connector pins on receiver are not properly inserting into plug on the antenna.	Re-install the local antenna connector pins on the receiver.

MultiWave 1- or 2-Speed Pump Troubleshooting

Symptom	Possible Cause	Corrective Action
The 2-speed pump will not operate in 2-speed mode.	Wiring is incorrect.	Check wiring.
	Incorrect voltage.	Check voltage with a voltmeter.
	The controller is not configured for a 2-speed pump.	Reprogram controller for 2-speed operation. Perform the procedure "Configuring 1-Speed or 2-Speed Pump" on page 22.
	The pump is damaged.	Contact the pump manufacturer for assistance.
The high speed and low speed (circuits 1 and 2) turn ON together when power is activated to the pump.	The system is not programmed for 2-speed operations.	Reprogram controller for 2-speed operation. Perform the procedure "Configuring 1-Speed or 2-Speed Pump" on page 22.
The pump circuit breaker trips every time that the pump turns ON.	The system is not programmed for 2-speed operations.	Reprogram controller for 2-speed operation. Perform the procedure "Configuring 1-Speed or 2-Speed Pump" on page 22.
	Pump wiring is incorrect.	Verify pump wiring.

Variable Speed Pump Troubleshooting

If your variable speed pump is not operating properly, please refer to the troubleshooting guide supplied with the variable speed pump.

Heater Troubleshooting

Symptom	Possible Cause	Corrective Action
After the heater and pump turn OFF, the pump remains hot.	The time interval for programmed cool down is not set properly.	Adjust the cool down interval. See “Defining the Cool Down Period for the Heater” on page 24.
The heater is not responding to controller commands.	The heater thermostat is not set for high or maximum.	Set the thermostat to high or maximum. Refer to the heater manufacturer instructions.
	Wiring connections are incorrect or terminal splices are not secure.	Check wiring. Refer to the wiring diagrams in the Installation Guide.
The heater will not turn ON.	The pump is set to run at too low of a speed and may not generate enough flow to turn the heater ON.	Adjust the pump speed.
The target temperature settings do not appear on the controller.	The system is not programmed for heater control.	Perform the procedure “Defining the Cool Down Period for the Heater” on page 24.
		Verify that the water temperature sensor is securely in place. See “Installing the Water Temperature Sensor” in the Installation Guide.

P5043ME Expansion Module Troubleshooting

Symptom	Possible Cause	Corrective Action
USB is stuck in enumeration loop.		Turn off the breaker that powers the expansion module. Turn back on the breaker.
Expansion module is not being displayed on MultiWave controller.	RS485 communication lines wiring is incorrect.	Flip communication lines on P5043ME Expansion Module.
Heater 2 will not turn on in Spa Mode.	Heater 2 is not properly set up.	Perform the procedure “Enabling a Second Heater and Thermostat Control” on page 24.
	Heater 2 wiring is incorrect.	Refer to heater’s owner manual.
Remote switch is not turning on outputs.	Wiring is incorrect.	Refer to wiring on page 24 of the installation manual.
	Incorrect programming.	Perform the procedure “Setting Up a Remote Switch” on page 26.