RAIN BIRD®

Cluster Control Unit
CCU-28, CCU-6

Safety Information

Warning!

Important safety information and warning messages appear throughout this manual. To ensure correct operation and to avoid additional expense, read this manual thoroughly before you begin installation.

Operating this equipment in a residential area can cause interference to radio and television reception. The radio frequency energy emitted by this device complies with limits for a Class A computing device, described in FCC Rules Part 15, Subpart J.

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Contents

*For Wall-mount installation instructions see the poster included in the controller box.

Contents, continued

Introduction

Welcome to Rain Bird®

Thank you for purchasing your new, state-of-the-art, Rain Bird® Cluster Control Unit (CCU). For more than six decades, Rain Bird® has led the irrigation industry in meeting all of your water management needs by providing the highest quality products and services available. This CCU is designed to give you a lifetime of on-site watering control.

Overview of the MAXICOM Central Control System

This cluster control unit (CCU) is one part of Rain Bird®'s irrigation control system, MAXICOM. (See illustration on next page.) The MAXICOM Central Control System chiefly consists of seven parts:

1. **Central computer**   uses MAXICOM software to control the entire irrigation system.

2. **Computer data path**   transfers information between the central computer and the CCU by telephone, radio, or wire communication.

3. **CCU**   operates field devices by executing commands received from the central computer.

4. **Satellite data path**   transfers information between the CCU and the field devices by a Two-Wire path or by MAXILink radio communication.

5. **Field devices**   include satellite controllers and sensor decoders (sensors):

    Satellite Controllers — send a 24 VAC power signal to each station.

    Sensor Decoders/Sensors — monitor system functions.

6. **Stations**   consist of irrigation valves or switch operated devices.

7. **Weather station**   stores weather conditions and sends information to the central computer.

Introduction, continued

MAXICOM Central Control System

Phone Version   **Serial Port (RS-232)**

1. **Central computer**

Central Computer

2. **Computer data path options**

Cellular Telephone

Fiber-optic Cable

Phone

Point-to-point Radio Link

Hardwire/ Short-haul Modem

3. **CCU**

CCU at site

(OR)

CCU at site

4. **Satellite data path options**

Two-wire Path

MAXILink Radio

5. **Field devices**

Satellite Controller

Decoder

Satellite Controller

6. **Stations**

Valve   Valve

Sensor   Switch

Valve   Valve   Sensor   Switch

7. **Weather station**

Weather Station

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Introduction, continued

CCU Features and Model Descriptions

Your Rain Bird® CCU serves as an interface between the central computer and the irrigation field devices in the MAXICOM system.

The central computer sends information to the CCU. Then, the CCU directs the field devices to execute the computer's commands, such as turning irrigation valves on or off or (in some cases) operating lighting systems, security gates, fountains, etc.

Your CCU has the following special features:

- Stores and executes schedule instructions from the central computer.

- Configurable as either Two-Wire or MAXILink radio.

- Available in 6-channel or 28-channel models.

- Built with an anti-rust, corrosion-resistant design.

- Includes a 10-year lithium battery back-up system.

- UL listed.

Introduction, continued

Types of CCU models

There are two types of CCU models: the **CCU-28** and the **CCU-6**. The CCU-28 and the CCU-6 models have the same features and differ only in the number of field devices each can operate.

- **The CCU-28** operates up to 28 field devices, including satellite controllers, pulse decoders, and sensor decoders. It also has indicator lights that provide current field device status.
- **The CCU-6** operates up to six field devices, including satellite controllers, pulse decoders, and sensor decoders. It also has indicator lights that provide current field device status.

Each CCU model is available as either a Wall-mount unit or a Pedestal-mount unit.

CCU-28

CCU-6

Pedestal-mount Installation

If your CCU is a Pedestal-mount unit, follow the installation instructions in this chapter. If you have a Wall-mount unit, see the poster included in the CCU box.
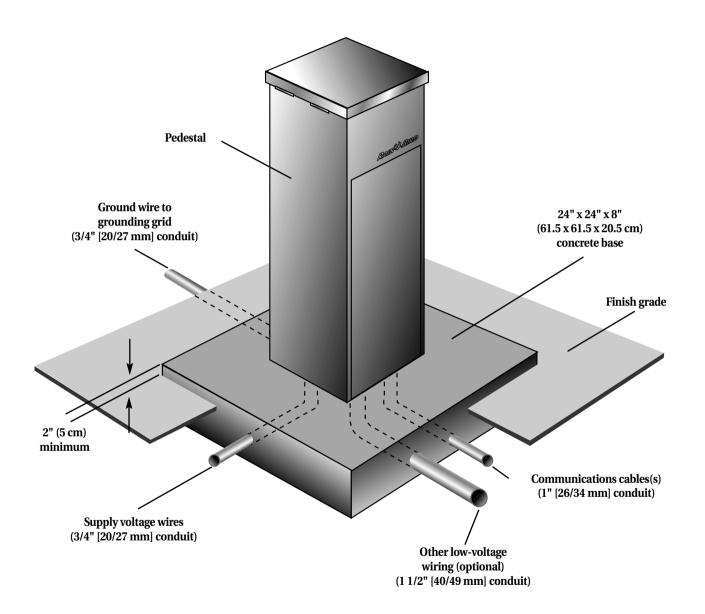
Before You Begin

Choosing a location

When choosing the best location for installing your Pedestal-mount CCU, consider the following:

✔ Select an outdoor area, protected from vandalism, where the user can easily reach the CCU. We recommend surrounding the CCU pedestal with shrubbery to conceal the CCU's location.

✔ Select a location that has access to 120 Volt AC electrical power (or the proper electrical supply voltage outside the United States) and allows access to wire connection or link antennas, if applicable, to the field devices. (See illustration on next page.)

✔ Warning! You must install surge protection for the primary electrical service line leading to the CCU. We strongly recommend you install a Hubbell 5252S surge protection receptacle in the pedestal and that you install the CCU with a grounded, 3-prong plug. Plug the CCU into the Hubbell unit.

✔ **Important: You should install an Uninterruptible Power Supply (UPS) and AC Power Stabilizer and Conditioner for each CCU. A suitable UPS can be purchased from a local computer store. A true sine-wave type UPS is required. See your Authorized Rain Bird® MAXICOM Distributor for more details.**

✔ Allow 14" (36 cm) minimum clearance for the hinged pedestal door to fully swing to the left.

✔ If the computer data path uses serial port (RS-232) communication, locate the CCU pedestal near the central computer by using 50 feet or less of actual serial cable. If you need to use more than 50 feet of serial cable, or if you are installing more than one CCU, use a short-haul modem.

✔ If the computer data path uses phone communication, request a standard phone line from your local phone company and have the phone line run to the CCU pedestal site. (You do not have to do this for cellular phone communication.)

✔ If your CCU uses any type of radio, a suitable FCC license must be obtained before operation. See your Authorized Rain Bird® MAXICOM Distributor for more details.

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Pedestal-mount Installation, continued

Pedestal

Ground wire to
grounding grid
(3/4" [20/27 mm] conduit)

24" x 24" x 8"
(61.5 x 61.5 x 20.5 cm)
concrete base

Finish grade

2" (5 cm)
minimum

Supply voltage wires
(3/4" [20/27 mm] conduit)

Communications cables(s)
(1" [26/34 mm] conduit)

Other low-voltage
wiring (optional)
(1 1/2" [40/49 mm] conduit)

Typical Pedestal-mount Installation

Pedestal-mount Installation, continued

What you will need

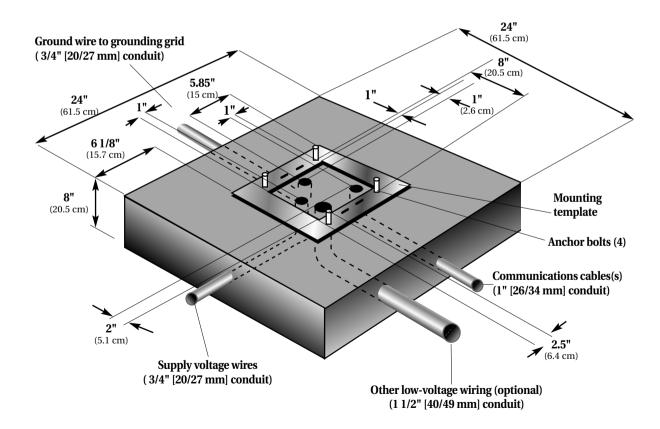Before you begin installation, you may need the following tools and supplies:

√ Phillips Head Screwdriver

√ Slotted Head Screwdriver

√ Slotted Thin Blade Screwdriver

√ Wire Strippers

√ Lineman's Pliers

√ Open End Wrenches (1/2", 9/16")

√ Tape Measure

√ Level

√ Shovel

√ Saw Horse

√ Sledge Hammer

√ Wheelbarrow

√ Trowel for Concrete

√ Wide Sweep Ell Conduit(s)

√ Concrete

√ Wood for Concrete Forms

√ Surge Protection and Grounding Supplies

√ Metal Drill Bit for units with MAXILink radio (pre-drilled stainless steel pedestal lids are available)

√ Antenna and Cable for units with MAXILink radio

Important: If your CCU will have MAXILink radio, your Authorized Rain Bird® MAXICOM Distributor can recommend the best antenna and provide you with antenna mounting instructions. You are required by law to have a current FCC license before operating a MAXILink radio. See your Authorized Rain Bird® MAXICOM Distributor for details.
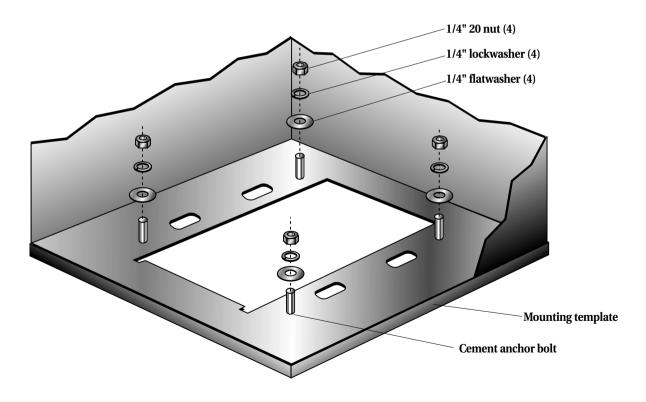
Pedestal-mount Installation, continued

Site Preparation and Mounting the Pedestal

1. Mount the pedestal on a level concrete base with the top of the base at least 2" (5 cm) above grade. The base dimensions are: 24" x 24" x 8" (61.5 x 61.5 x 20.5 cm).

2. Before pouring the concrete, position a 1 1/2" (40/49 mm) sweep elbow for the valve field wiring in the concrete form, along with a 3/4" (20/27 mm) sweep elbow for the 120 Volt (or 230/240 VAC) line input wiring.

3. Thread the four anchor bolts into the plastic mounting template provided. Position the bolts so they are perpendicular to the template. The threaded ends must protrude one to two inches above the template.

Ground wire to grounding grid (3/4" [20/27 mm] conduit)

24" (61.5 cm)

24" (61.5 cm)

5.85" (15 cm)

1"

1"

6 1/8" (15.7 cm)

8" (20.5 cm)

24" (61.5 cm)

8" (20.5 cm)

1"

1" (2.6 cm)

Mounting template

Anchor bolts (4)

Communications cables(s) (1" [26/34 mm] conduit)

2" (5.1 cm)

Supply voltage wires (3/4" [20/27 mm] conduit)

Other low-voltage wiring (optional) (1 1/2" [40/49 mm] conduit)

2.5" (6.4 cm)

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Pedestal-mount Installation, continued

4. Pour the concrete.

5. Before the concrete sets, position the template with the anchor bolts in the base. Make sure the sweeps are centered within the template window. Level the template.

6. If more than one pedestal is required per base, leave six inches or more between the outside edges of each adjoining mounting template.

7. Allow the concrete to set for at least 24 hours before continuing.

8. After the concrete completely sets, position the pedestal over the anchor bolts and on top of the template. In high humidity areas, or locations where excessive moisture may be a concern, allow a small gap between the concrete pad and pedestal for air circulation and drainage.

9. Open the pedestal door, pull up and remove the front access panel. Mount the pedestal to the base with the washers and nuts provided. Tighten all nuts. Make sure the pedestal is vertical and shim if necessary.

1/4" 20 nut (4)
1/4" lockwasher (4)
1/4" flatwasher (4)
Mounting template
Cement anchor bolt

Pedestal-mount Installation, continued
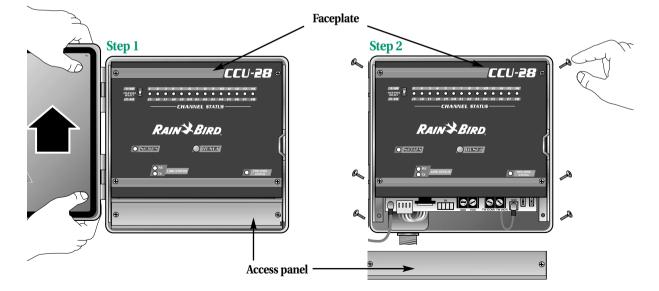
Mounting the CCU

Important: Before installing your CCU, make sure the area around you is free from dirt and dust and that your hands and arms are clean. This will avoid contamination of internal parts.

Warning! Do not let water or other liquids come in contact with any part inside the metal cabinet. To keep static electricity from interfering with the operation of your CCU, ground yourself during installation by touching metal other than your CCU unit. We recommend purchasing a grounding wrist band from your local electrical supply house.
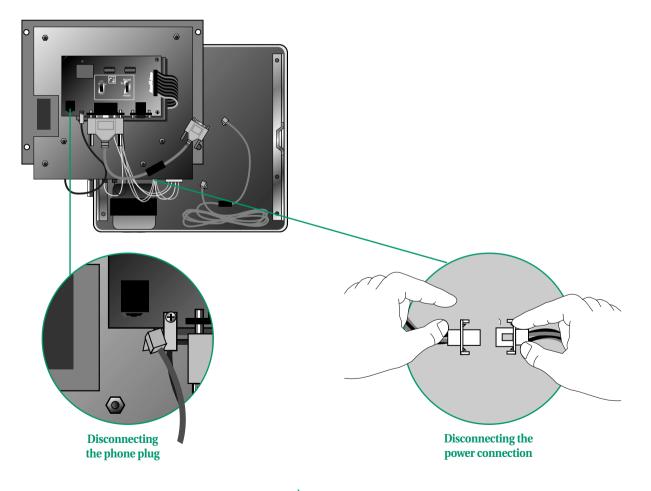
Removing the controller's faceplate

1. Remove the CCU door from its two hinges by holding the bottom of the door and sliding it up.

2. Using a Phillips head screw driver, remove the two screws from the access panel. Then, remove the four corner screws of the metal faceplate. Save the screws.

3. Set aside the access panel. Gently lift the faceplate a few inches out of the cabinet.

4. Tilt the faceplate away from you slightly and locate the J3 connector in the lower-left corner of the circuit board directly beneath the faceplate. An orange and white/blue wire power source with a white plastic connector is plugged into the J3 connector. Gently pull on the white plastic connector to slide the connector off of the four metal prongs.

Faceplate

Step 1

Step 2

CCU-28

CCU-28

Access panel

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Pedestal-mount Installation, continued

5. Carefully turn over the faceplate and gently rest it on the upper left corner of the cabinet.

6. Disconnect the phone plug attached to the lower-left portion of the top circuit board. To do this, lift the small lever underneath the plug, and pull out.

7. Disconnect the orange and blue wire power connection. To do this, grab both sides of the plastic connectors and firmly pull them apart. (Do not pull on the wires themselves; this can pull them out of the plastic connectors.)

8. Leave the 25/9 pin cable attached.

9. Carefully set aside the faceplate.

Disconnecting the phone plug

Disconnecting the power connection

Pedestal-mount Installation, continued

Connecting the Satellite Data Path

There are two ways of connecting the CCU to the satellite data path:

- Two-wire, or
- MAXILink radio (FCC License required)

Two-Wire

Important: If your CCU is set up for Two-Wire communication to the field devices, we recommend using PE-39 or PE-89 telephone-type cable available from most telecommunication supply warehouses. Indoor wire installations may require a different wire type. See your Authorized Rain Bird® MAXICOM Distributor for more information.

Warning! Do not install wire used for these connections in the same conduit used for the 120 Volt AC (or 230/240 VAC) electrical power wire. You must follow local electrical codes. Local codes may require a qualified licensed electrician to install the 120 VAC (or 230/240 VAC) wiring. Check with local authorities for more information.

1. Route the field wire up through the proper holes at the inside base of the pedestal cabinet.
2. Locate the COM-HOT terminal block on the front of the circuit board and connect your field wire. Connect the "common" wire to the COM terminal and the "hot" wire to the HOT terminal.

Warning! When making the Two-Wire connection to the field devices, make sure you connect the same color "common" wire for the COM connection and the same color "hot" wire for the HOT connection.

3. Connect the Ground Wire (GND) to the Grounding Bar on the inside of the cabinet. We highly suggest you connect a Rain Bird® MSP-1 MAXI Surge Pipe for protection against electrical power surges. Connect and mount the MSP-1 Surge Pipe inside the pedestal cabinet.

MAXILink Radio (LINK)

To use the MAXILink radio system, you must obtain a MAXILink radio and install it in the lower-right corner of the CCU cabinet. Then, mount the antenna and run the antenna cable to the CCU MAXILink radio. See your Authorized Rain Bird® MAXICOM Distributor to obtain a MAXILink radio; for information about an FCC license; to obtain the best antenna; and for antenna mounting instructions.

Pedestal-mount Installation, continued

Connecting the Computer Data Path

There are two ways of connecting the CCU to the computer data path:

• Phone, or
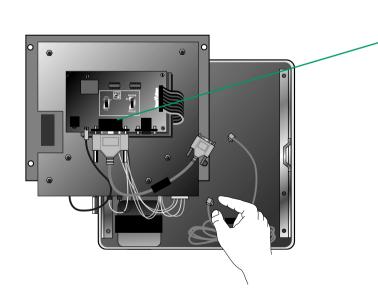
• Serial port (RS-232) (not for MAXILink radio)

Phone

1. Connect the long section of phone wire leading from the top of the pedestal cabinet to the outside phone line (or connect to the cellular phone interface, if applicable).

2. Reconnect the short section of phone wire to the top circuit board on the back of the faceplate panel.

3. Connect the circuit board Ground Wire to the Grounding Bar on the inside of the cabinet.

Important: For additional phone communication information, see "General Rules for FCC Compliance" on page 29. If outside the USA, see local country codes.

4. Set switch S2 to the upper position (PHONE). This is the factory default setting.

Important: Do not set this switch in the middle position; it must be set all the way up.

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Pedestal-mount Installation, continued

Serial port (RS-232) (not for MAXILink Radio)

1. Obtain a modem* and install it. Follow the instructions included with the modem. (These instructions apply to non-Rain Bird® modems, not the MAXILink radio.)

2. Check the top circuit board on the back of the faceplate. You will see a 25-pin female connector, a 9-pin male connector, and a cable with a 25-pin male plug and a 9-pin female plug. These give you four options for connecting a cable between the CCU and your communication line/equipment.

3. Connect either the enclosed 25/9 cable or your own cable to ONE of the terminals on the circuit board. Never connect cables to both terminals.

Important: Do not connect the MAXILink radio to this connection port.

Important: If you do not use the enclosed cable, remove the filter (the small black box) from the enclosed cable and place it on your cable.

4. Feed the cable through the 2 1/2" (6.4 cm) diameter hole, and connect it to the modem.

*Modem: i.e., short-haul modem, radio modem (non-MAXILink), fiber optic modem, other type of telephone modem.
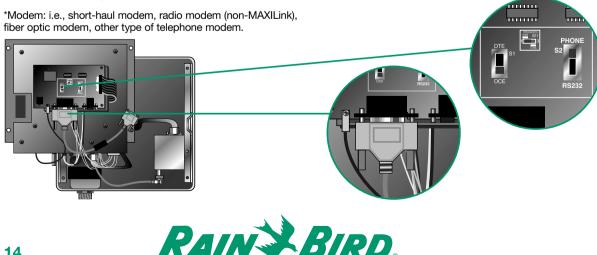
5. Run the communication line and connect it to:
   - the computer, or to
   - a short-haul modem, or radio modem

     (point-to-point, trunking) or fiber-optic modem.

6. If your communication line is connected directly to the computer, or if you're using short-haul modems (point-to-point), set the S1 switch on the back of the faceplate to the "DCE" position.

   If your communication line is connected to one of the non-hardwire or multi-drop short-haul modem options, set the S1 switch on the back of the faceplate to the "DTE" position.

7. Verify that the black, two-pronged W-1 jumper (just above the S-1 switch) is inserted in the DSR position.

Important: Do not change this DSR setting unless advised to do so by your Authorized Rain Bird® MAXICOM Distributor.

8. Set S2 to the lower position (RS-232).

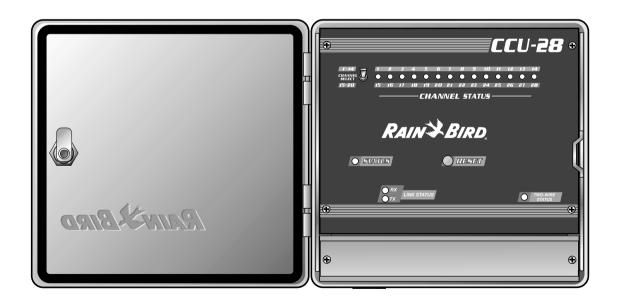# Pedestal-mount Installation, continued

Putting the CCU Back Together

Now that you have made all of your communication connections, it is time to put your CCU back together.

1. Reconnect the orange and blue wire power connection. To do this, firmly push each plastic connector together.

2. Carefully turn over the faceplate so that the Rain Bird® logo is facing you. Locate the J3 connector in the lower-left corner of the circuit board directly beneath the faceplate. Reconnect the orange and white/blue wire power source by pushing the white plastic connector back onto the four metal prongs.

If your CCU has a MAXILink radio, you must also reattach the ribbon cable to the 9-pin connector directly to the right of the white plastic connector.

3. Gently set the faceplate panel back into the CCU pedestal cabinet and line up the four corner holes. Using a Phillips head screwdriver, replace the four corner screws.

4. Set the access panel into the cabinet. Replace the two side screws.

5. Reattach the CCU door onto its hinges.

Pedestal-mount Installation, continued

Electrical Connection

Important: Install all electrical conduits in the CCU pedestal as required. The minimum voltage requirement allows for 120 Volt AC (or 230/240 VAC) electrical supply (or the proper electrical supply voltage outside the U.S.). In addition to connecting surge protection, you must provide suitable grounding for the CCU's primary electrical service line.

Warning! Do not install your 120 Volt AC (or 230/240 VAC) electrical power wire in the same wire conduit used for the communication connections. Follow local electrical codes, which may require a licensed electrician to install the 120 VAC (or 230/240 VAC) wiring. Contact local authorities for information.
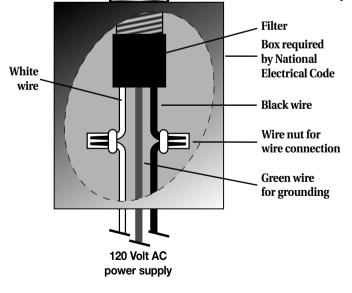
1. Feed the 120 Volt AC (or 230/240 VAC) wires up through the pedestal base and into the conduit housing.

2. Use wire nuts to connect the 120 Volt (or 230/240 VAC) electrical power lines to the wire pigtails leading from the CCU transformer conduit. Connect one side to the white wire and the other side to the black wire. Connect the green ground wire to a ground conductor (i.e., the third prong of a three-prong plug.)

A filter (a small black box) is included on the transformer wires. You MUST leave this on after installation.

Important: You should install an Uninterruptible Power Supply (UPS) and AC Power Stabilizer and Conditioner for each CCU. A suitable UPS can be purchased from a local computer store. A true sine-wave type UPS is required. See your Authorized Rain Bird® MAXICOM Distributor for more details.

The Pedestal-mount CCU is now installed, see "Operating the CCU," on page 17.

Filter

Box required by National Electrical Code

White wire

Black wire

Wire nut for wire connection

Green wire for grounding

120 Volt AC power supply

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Even though the CCU operates the system, there are a few operations that you need perform on the CCU, as well as indications to aid in monitoring CCU status.

Communications Monitoring Status Lights

Both the CCU-6 and the CCU-28 include a feature designed to monitor (supervise) and troubleshoot the communications activity between the CCU and Satellite for both the Two-Wire and LINK operating modes.

The monitoring and troubleshooting is performed by means of three lamps (LED's) on the CCU Front Panel, a slide switch in the PWB, and an auto-resetable circuit breaker as follows:

LINK Mode:

Two LED's combined labeled "LINK STATUS"

- One front-panel LED for Link Path Status and Transmit activity labeled "TX"
- One front-panel LED for Receive activity labeled "RX"

When the CCU is functioning properly:

- The "TX LINK STATUS" LED will flash dim-bright, continuously, showing that the Radio/Modem set-up is correct and the CCU "sees" the radio. The LED will flash to solid bright when the CCU sends data to the Link Radio for transmission.

- The "RX LINK STATUS" LED will flash ON-OFF only when the CCU receives a signal from the Link Radio (a Satellite is responding), indicating that the radio reception activity is occurring correctly.

If the set-up is complete but the "TX LINK STATUS" LED shows Light-OFF, this indicates a possible communications problem. See "Troubleshooting," on page 25.

Two-Wire Mode:

- One lamp for Two-Wire path status labeled "TWO-WIRE STATUS".
- A slide switch "S5 or S5A" on the PWB for opening the Two-Wire path for service.
- An Auto-Resetable Circuit Breaker to protect the CCU from a short condition in the Two-Wire Path.

When the CCU is functioning properly:

- The "TWO-WIRE STATUS" LED will flash dim-bright, continuously, showing that the Two-Wire Path set-up is correct and an AC signal is seen on the lines.

If there is a short on the Two-Wire path (Auto-Resetable Circuit Breaker is open), or slide switch S5 or S5A is "open", the "TWO-WIRE STATUS" LED will indicate Light-OFF.

If the set-up is complete, but the "TWO-WIRE STATUS" LED is Light-OFF or steady (not flashing), this indicates a possible communications problem. See "Troubleshooting,' on page 25.

The slide switch "S5 or S5A" has been added to the front of the circuit board for the purpose of opening the Two-Wire path, allowing for service.

Important! Do not use the Two-Wire path slide switch to turn off irrigation in the field. Opening the Two-Wire path via the slide switch may turn off the irrigation, but it will also disconnect the communication to all of the other devices connected to the CCU, placing them in standby operation.

Important! Do not use the Two-Wire path output voltage as power source to drive a solenoid/valve or other device other than for data communication with the Satellites.

Channel LEDs and Toggle Switch

The CCU-6 has six LEDs across the top of the front panel. The CCU-28 has 14 LEDs and a three-position toggle switch on the front of the panel. Each LED has a number above and below it. These numbers refer to each channel (or field device) available on the CCU.

The toggle switch located to the left of the LEDs has an Up, Middle, and Down position, and is used to monitor the field devices. With the toggle switch in the Up position, each LED that is lit (channels 1-14) indicates that the corresponding device is active in the field. With the toggle switch in the Down position, lit LEDs indicate active devices 15-28.

On Two-Wire CCUs, each LED stays lit as long as the device is in operation. On MAXILink CCUs, each LED will be lit when the device is in operation and will flash when communication is taking place.

If a pulse decoder is used on a CCU, the channel status LED will blink each time a pulse is recorded.

Unless you are monitoring the field devices at the CCU, we recommend that you leave the toggle switch in the Up or the Down position during normal operation. If you move the toggle switch to the Middle position and press the RESET button, this will cancel all active schedules in the CCU and turn off all currently active satellites.

Example: There are two schedules in the CCU that come on at 10:00 a.m. and a schedule that comes on at 10:30 a.m. At 10:15, you move the toggle switch to the Middle position and press the Reset button. This only cancels the two active schedules that started at 10:00 a.m. The 10:30 a.m. schedule will still come on at 10:30 a.m.
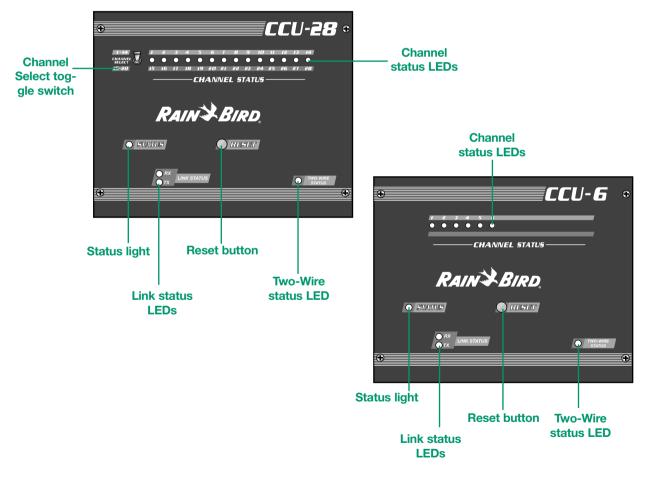
The CCU-6 has no toggle switch — a reset cancels all schedules.

Operating the CCU, continued

Reset Button

In addition to canceling active schedules at the CCU, you can use the Reset button to initialize the call handle of a CCU when using radio or direct-connect communication methods. Refer to your MAXICOM Guide To Operations for further information.

Channel Select toggle switch

Channel status LEDs

Channel status LEDs

Status light

Reset button

Two-Wire status LED

Link status LEDs

Status light

Link status LEDs

Reset button

Two-Wire status LED

Connection Notes

This chapter contains the following information about connecting devices to your CCU:

• Maximum device connections

• Changing settings for MAXILink radio

• Changing the PROM chip in your CCU

Maximum Device Connections

The CCU-28 can accommodate up to 28 total devices, while the CCU-6 can accommodate up to six devices.

Follow these limits when connecting devices to your CCU-28 or CCU-6:

Type of Device	CCU-28		CCU-6	
	Two-Wire	MAXILink	Two-Wire	MAXILink
Pulse Decoders (@ 10 pulses/minute)	Max: 6	N/A	Max: 6	N/A
Multi-Station Satellites	Max: 14*	Max: 14*	Max: 6	Max: 6
Single Station Satellites	Max: 28	Max: 28	Max: 6	Max: 6
Sensor Inputs	N/A	Max: 28	N/A	Max: 6
Sensor Decoders	Max: 28	N/A	Max: 6	N/A

*The total number of multi-station satellites depends upon station cycle times. Please consult your Authorized Rain Bird® MAXICOM Distributor if you have a project that must exceed this limit.

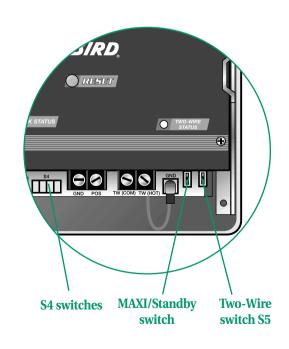# Connection Notes, continued

Changing the MAXILInk Radio Settings

If you install a MAXILink radio, you will need to change some settings on the circuit board of your CCU.

1. On the back of the circuit board, set the W9, W10, W11, and W17 jumpers according to the chart on the circuit board. The chart will resemble this:

	OPTION		
	LINK	2WIRE	U13
W9	B	A	C
W10	A	B	A
W11	A	B	A
W12	B	B	A

2. Set the MAXI/STANDBY switch to MAXI. This switch is located on the lower right portion of the circuit board.

3. Set the S4 switches. The S4 switches are located in the lower-center portion of the circuit board.

    *   Switches 1 and 2 should be set to match the S4 switches on the satellites you wish to control with this CCU.

    *   Switch 3 should be set to OFF if you have a pre-1997 ISC unit connected to the CCU; otherwise, set it to ON.

    *   Switch 4 can be set to any position.

S4 switches   **MAXI/Standby switch**   **Two-Wire switch S5**

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Connection Notes, continued

Changing the CCU's PROM Chip

Important! Before working with the circuit board, turn off all power to the CCU.

Important! Before working with the circuit board, make sure you are grounded and are working in a static-free environment. Static charges can damage the chips.

Important! Do not perform any operations on the circuit board unless advised to do so by an Authorized Rain Bird® Service Technician.
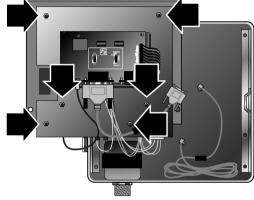
To change the PROM chip, you must remove the face plate from the circuit board. To do this, turn the circuit board over and unscrew the six screws that hold the faceplate to the circuit board. Also, disconnect the board from the circuit breaker.
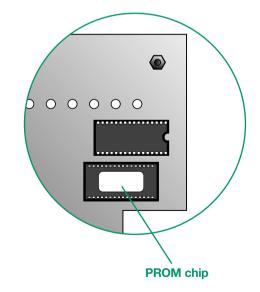
Changing the PROM chip

1. The PROM chip is located directly above the notch in the circuit board. It typically is labeled with a large white sticker.

2. The PROM chip rests inside a plastic cradle. Using the tabs at either end of the PROM chip, gently wiggle the chip and lift it straight up until it comes free.

3. After removing the chip, notice that one end of the chip has one vertical tab, while the other end has two vertical tabs. These tabs fit into corresponding grooves in the cradle.

4. To replace the PROM chip with a new chip, align the vertical tabs with the grooves in the cradle. The chip will not fit in the cradle if the chip is turned the wrong direction.

5. Gently press the chip into place.

Remove six screws

PROM chip

Problem: **The power to the CCU is interrupted for an extended period of time.**

Solution: The CCU has a lithium battery back-up to keep data and instructions. Each schedule stops when the power goes off, and resumes again at the same point in the schedule when the power comes back on.

Important: You should install an Uninterruptible Power Supply (UPS) and AC Power Stabilizer and Conditioner for each CCU. A suitable UPS can be purchased from a local computer store. A true sine-wave type UPS is required. See your Authorized Rain Bird® MAXICOM Distributor for more details.

Problem: **The CCU experiences frequent power outages and is losing schedules and data.**

Solution: Check the battery. To do this, remove the access panel beneath the CCU faceplate. In the lower-left corner, disconnect the orange, white, and blue wire power source by pulling back on the white plastic connector. Wait 20 seconds. Watch the STATUS light and reconnect the power. If the light begins to blink almost immediately, the battery is good. If the light takes 5 – 12 seconds to begin blinking, the battery is dead. CCU lithium batteries last 10 years. If you believe the battery is dead, see your Authorized Rain Bird® MAXICOM Distributor for additional battery tests and for instructions on replacing the battery.

Problem: **The CCU "locks up." (The STATUS light doesn't blink, won't light up, or stays on all the time.)**

Solution: Press the RESET button.

If you have a Two-Wire connection, all 14 (or six) red LED lights on the CCU faceplate panel should light up and turn off, one at a time, as the CCU resets itself. If the STATUS light still does not begin blinking in one second intervals, see your Authorized Rain Bird® MAXICOM Distributor.

If you have a MAXILink radio connection, all the lights flash for a moment, then return to normal MAXILink operation.

Troubleshooting, continued

Communications Path Troubleshooting - Two-Wire

Problem: **The Two-Wire Communications set-up is complete, but the "TWO-WIRE STATUS" LED is steady (not flashing) and the CCU will not communicate with the Satellites.**

Solution: The situation could be related to the following:

- The jumpers W9, W10, W11, W17 on the CCU board are in the incorrect position.

- A defective or damaged CCU board.

Problem: **The Two-Wire Communications set-up is complete, but the "TWO WIRE STATUS" LED is Light-OFF.**

Solution: The indications suggest a possible communications problem. The situation could be related to the following:

- The "Two-Wire" slide switch is set to the OFF position.

- There is a short in the Two-Wire path.

- A defective or damaged CCU board.

   If a short occurs, the "TWO-WIRE STATUS" LED will indicate Light-OFF and any Two-Wire Communication will be cancelled. Under this condition, the Auto-Resetable Circuit Breaker will trip OPEN, disconnecting the Two-Wire output to protect the CCU circuitry. When the short is fixed, the Auto-Resetable Circuit Breaker will reset by itself in a few seconds, then the "TWO-WIRE STATUS" LED will indicate Light-ON immediately.

Communications Path Troubleshooting - LINK

Problem: **The LINK Communications set-up is complete, but the "TX LINK STATUS" LED shows Light-OFF.**

Solution: The indications suggest a possible communications problem. The situation could be related to the following:

- Radio/Modem assembly is not connected, or not connected properly.

- Defective or damaged Radio/Modem/DB9 harness, check lamp DS1 (RX) status (must be Light-OFF) on the Modem board.

Troubleshooting, continued

- A defective or damaged Radio could be defective or damaged.

- A defective or damaged CCU board.

Problem: **A MAXICOM feature appears to operate correctly at the central computer, but will not function when it is sent to the CCU.**

Solution: Sometimes additional features are added to MAXICOM software which require installation of an updated PROM device inside the CCU. See your Authorized Rain Bird® MAXICOM Distributor for assistance.

Problem: **The CCU causes interference to radio or television reception.**

Solution: Turn the power to the CCU off and then back on, to ascertain that it is the CCU causing the interference. If it is the CCU, try moving the radio or television's antenna. If interference persists, relocate the radio or television away from the CCU, or plug the power cord into a different electrical outlet.

Problem: **The CCU (MAXILink) will not communicate with any satellites.**

Solution: a. Check to make sure all radios are on the same frequency.
  b. Check all antennas for proper connections.
  c. Check all cable connections for proper installation.
  d. Check the CCU ID number on both the CCU and all satellites.

Declarations of Compliance

FCC and DOC Compliance

Both the U.S. Federal Communications Commission (FCC) and the Canadian Department of Communication (DOC) require certain notifications to the user of any digital device which can radiate radio frequency energy. There are additional governmental requirements for devices which connect to the public telephone network. This chapter contains the notices required by the FCC and DOC pertaining to your Rain Bird® equipment.

General Rules for FCC Compliance

To comply with the applicable chapters of FCC Rules and Regulations, Parts 68 and 15, the following instructions must be followed:

- You must not connect your telephone modem to a party line or a coin-operated telephone.

- If abnormal circumstances create a problem on the telephone line, the modem should be disconnected from the telephone line until it can be determined if the trouble source is the equipment or some other piece or equipment.

- All necessary repairs to the telephone modem must be made by Rain Bird® Sales, Inc. Other repair methods can alter the equipment's RFI emissions and other pertinent characteristics sufficiently to void your authority to operate the equipment.

- If requested, you must make the information contained in the following box available to the telephone company.

Equipment Manufacturer	Rain Bird® Corporation Commercial Division 6991 East Southpoint Road Tucson, AZ 85706
Model:	See Certification Label on Equipment
FCC Registration Number:	See Certification Label on Equipment
Ringer Equivalency Number (REN):	See Certification Label on Equipment

FCC rules Part 15

This equipment is covered by FCC rules for a Class A computing device. As required by FCC regulations, the following is provided for the information and guidance of the user.

Warning!
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. This equipment generates, uses and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it can cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Declarations of Compliance, continued

Determine if the equipment does cause interference to radio or television, by turning the equipment off and on. The user is encouraged to try to correct the interference by one or more of the following measures:

1. Where it can be done safely, reorient or relocate the receiving antenna.

2. Increase the separation between the equipment and receiver.

3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

4. Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by Rain Bird® Sales, Inc., could void the user's authority to operate the equipment.

FCC rules Part 68

The CCU telephone modem has been granted a registration number by the Federal Communications Commission under Part 68 Rules and Regulations, for direct connection to the telephone lines. In order to comply with these FCC rules, the following instructions must be carefully read, and applicable portions followed completely.

NOTE: This equipment complies with Part 68 of FCC Rules. On the modem component on the communication board is a label that contains, among other information, the FCC registration number and Ringer Equivalence Number (REN) for this equipment. If requested, this information must be provided to the telephone company.

The REN is used to determine the quantity of devices which can be connected to the telephone line. Excessive RENs on a telephone line can result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that can be connected to the line as determined by the totals RENs, contact the telephone company to determine the maximum RENS for your calling area.

This equipment uses the USOC RJ-11C jack.

If the telephone company suspects that a problem with your telephone line is related to an add-on electronic device, such as this equipment, they have the right to temporarily suspend your service. It is your responsibility to remove any malfunctioning electronic communications equipment from the telephone line to avoid damage to the telephone system.

The telephone company should promptly inform you of their actions. They should also inform you of your right to file an FCC complaint if you feel the service suspension is unwarranted. Most often, you will receive notification before service is disrupted.

The telephone company can make changes in its facilities, equipment, operations, or procedures that could affect compatibility and operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications to maintain uninterrupted service.

To maintain continued compliance with the FCC Rules, any repairs or modifications to the telephone modem must be made by the manufacturer. If a problem develops, contact Rain Bird® Sales, Inc., at the address on the back of this manual.

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Declarations of Compliance, continued

This equipment cannot be used on public coin service provided by the telephone company. Connection to party line service is subject to state tariffs. Contact your state Public Utility Commission, Public service Commission, or Corporation Commission for more information.

DOC Compliance Notice

The Canadian Department of Communications requires the following information to be provided in this manual.

Notice

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Réglement sur le brouillage radioélectrique édicté par le ministére des Communication du Canada.

Equipment tested and found to be compliant with FCC Part 15, as a Class A digital device, will be accepted as being compliant with the Canadian DOC standard.

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Declarations of Compliance, continued

RAIN BIRD

Declaration of Conformity

**Application of Council Directives: 89/336/EEC
73/23/EEC**

Standards To Which
Conformity Is Declared
	EN55022 Class A, AS/NZS3548
	EN61000-3-2
	EN61000-3-3
	EN50082-1: 1998
	    EN61000-4-2
	    EN61000-4-3
	    ENV50204
	    EN61000-4-4
	    EN61000-4-5
	    EN61000-4-6
	    EN61000-4-8
	    EN61000-4-11
	EN 60335-1: 1995 Safety of household
	and similar electrical appliances

Manufacturer:	Clemar Manufacturing Corp. - USA 7590 Britannia Court, San Diego, Ca. 92173 (619) 661-4400
Importers:	Rain Bird Europe, S.A.R.L. - France BP72000 13792 Aix-en-Provence Cedex 3 (33) 442 24 44 61 Rain Bird Australia Pty Ltd. ACN 004 644 446 P.O Box 11 Harrisville Qld. 4307
Equipment Description:	Irrigation Controller
Equipment Class:	Generic-Res, Comm, L.I.
Model Number:	CCU-6 and CCU-28
	Wall or Pedestal Mount

I the undersigned, hereby declare that the equipment specified above, conforms to the above Directive(s) and Standard(s).

Place: Tijuana, B. C. Mexico

Signature: *John R. Zwick*

Full Name: John Rafael Zwick

Position: General Manager

RAIN BIRD

Glossary

access code
a telephone number or call handle unique to each CCU in a system.

alarm messages
notices posted in the central computer alerting to certain system areas of concern, i.e., errors in communication, excessive flow, etc.

auto contact
MAXICOM software capability allowing the automatic sending and receiving of information to and from the CCUs.

baud rate
the speed at which a modem sends and receives data. 300, 1200, and 2400 baud modems can be used with MAXICOM.

CCU (cluster control unit)
the "middle manager" of the MAXICOM system. The CCU interfaces between the central computer and the system components in the field. An actual computer itself, the CCU has all the monitoring and control capabilities of the PC with the scope of only one site. The CCU can communicate with up to 28 devices in the field.

cellular telephone
used to communicate between the central computer and the CCU.

central computer
the personal computer you use to control and monitor the MAXICOM irrigation system.

channel
each of the field devices connected to the CCU is assigned a channel. The CCU-28 has 28 channels. The CCU-6 has six channels.

Glossary, continued

communication path

the manner in which information is sent to the different system components. There are two key communication paths in the MAXICOM system. One path is from the central computer to the CCU (computer data path). The second path is from the site CCU to the individual field devices (satellite data path). These two paths have a number of possible methods of communication:

— telephone
— cellular telephone
— direct-connect wire
— short-haul modem
— point-to-point radio
— trunk radio
— fiber-optic cable

computer data path

the communication path between the central computer and the CCU.

COM Satellite

allows any controller to operate as a MAXICOM satellite (12 to 48 stations).

controller

a device that sends a 24 VAC power signal to the field solenoid valves.

data

information entered into or sent between the central computer and field devices, CCU, or the weather station.

database

an organized collection of data that can be used as a resource for schedule maintenance.

decoder (output, pulse, sensor)

a system device that can monitor or control different parts of irrigation, lighting, or security systems.

DMA (Direct Manual Access)

MAXICOM software capability allowing the user to manually operate satellites.

download

to send information from the central computer to the CCU.

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Glossary, continued

ESP satellite

a 12- to 40-station hybrid satellite controller.

FLO-MANAGER™

a program in MAXICOM that chooses which valves to operate during an irrigation cycle to avoid exceeding the system's watering capacity.

FLO-WATCH™

a program in MAXICOM that monitors the actual flow through the irrigation system and reacts if flow is greater than projected.

flow zone

specified portion(s) of an irrigation system's main line system, grouped by valves and monitored by a flow sensor. All valves designated in a flow zone must be downstream of the flow sensor monitoring the flow zone.

GPM

gallons per minute.

hardwire

communication cable used to transmit data between devices.

ISC satellite

a 12- or 24-independent station satellite controller.

limited access

when MAXICOM does not find a CCU.

log

a record of the irrigation system performance.

manual

requires user action, rather than being automatically done by the PC program.

master schedule

a schedule that contains instructions to start and control other schedules.

master valve

an electric valve located on a system's main line that controls the flow of water to all other electric and manual valves downstream.

RAIN BIRD®

Glossary, continued

master valve circuit

a circuit located on many controllers used to control a master valve. Regardless of what station is on at the controller, the master valve circuit produces voltage to control the master valve. When all of the stations on the controller are off, the master valve circuit turns off.

MAXILink

wireless radio communication between the CCU and the field devices.

modem

the PC component used to send data to and from the central computer and field equipment.

monitor

to observe conditions in and around the irrigation system and send the information to the different components in the system for appropriate action.

on-line

when MAXICOM software is on and communicating with a CCU.

output decoder

a field device connected to the CCU's Two-Wire path that produces a low-current, 26 Volt DC output. This DC output is used to control switching relays that control larger current AC or DC devices.

PAR Satellite

a 16- or 24-station solid-state satellite controller.

point-to-point radio

450 MHz radio system communicating between two or more transceivers on designated radio frequencies. Generally regarded as a "short range" type of system.

port

a connection device between a computer and another component such as a printer or modem.

pulse decoder

a field device that registers dry contact pulses and sends them to the CCU. Commonly used on flow and rain sensors.

radio call handle

a name assigned to each CCU in the field when using radio or direct connect to communicate from the central computer to the CCU.

Glossary, continued

satellite
a controller in the field capable of communicating with the CCU.

satellite controller
same as satellite.

satellite data path
the communication path from the CCU to field devices.

SBM satellite
a 12-station electro-mechanical satellite controller.

schedule
a clock, calendar, and condition-sensitive program in the MAXICOM system used to control or monitor irrigation, lighting, and other types of equipment.

SEEF (search and eliminate excess flow)
a MAXICOM utility used to monitor the GPM flow zone and automatically take action if an excessive flow is detected.

sensor decoder
a field device used to interface moisture sensors and other dry contact, switch closure sensors to the CCU.

sensor start
an instruction used in a schedule that is not started on a time basis, but rather on a condition being monitored in the field.

serial cable
a cable used for data communication between two pieces of computer equipment.

short haul modem
a communication device for hardwire communication between the central computer and a weather station or a CCU.

site
a single, remote irrigated area controlled by a CCU. For example, one park may be a site in a city-wide park system.

Glossary, continued

soil infiltration rate
the rate at which soils accept water.

transmit
to manually send data to a CCU.

two-wire path
the wire communication path between the CCU and the field devices.

upload
to retrieve data from the CCU by the central computer.

valve
a manual or electric device used to control flow of water in an irrigation system.

water budget
a feature available in some controllers and central control systems allowing adjustment of water application times without reprogramming each station or irrigation schedule.

water window
a designated time during which irrigation is permitted. The water window is given a beginning and an ending time. All schedules occurring outside the times specified will not water.

Service Information

In the unlikely event this equipment should malfunction, all repairs should be performed by an Authorized Rain Bird® MAXICOM ASC Service Center.

For information on Authorized MAXICOM ASC Service Centers, contact Rain Bird® at:

Rain Bird® Corporation
Commercial Division
6991 East Southpoint Road
Tucson, AZ 85706
Telephone: (520) 741-6100 Fax: (520) 741-6522

Rain Bird® Specifications Hotline
1-800-458-3005

Rain Bird® Technical Services
1-800-247-3782

Rain Bird® International
145 N. Grand Avenue
Glendora, CA 91741
Telephone: (626) 963-9311   Fax: (626) 963-4287

Web Site:
http://www.rainbird.com

E-mail:
centralcontrol@rainbird.com

Warranty

This product is covered by Rain Bird®'s Three-year Trade Warranty. For details, see the Rain Bird® Landscape Irrigation Products Catalog.

RAIN BIRD.®

Rain Bird® Corporation

Contractor Division

970 West Sierra Madre Avenue

Azusa, CA 91702

Phone: (626) 963-9311

Fax: (626) 812-3411

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Rain Bird® International, Inc.

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http://www.rainbird.com