

Irritrol[®]

CMR-KIT Maintenance Remote User's Guide

- **Installation**
- **Setup**
- **Operation**
- **Service**



Table of Contents	Page
CMR-KIT System Overview	1
Transmitter Components	2–3
Receiver Components	4–5
Receiver Installation	6–9
♦ Indoor Installation	7
♦ Outdoor Installation	8–9
Remote Control Operations	10
♦ Control Options During Operation	11
♦ ASC Operation	12
CMR-KIT Setup Features	13
♦ Reset Receiver Address Code	14
♦ Adjust Station Number Range	15
Transmitter Battery Service	16–17
♦ Charging the Batteries	16
♦ Replacing the Batteries	17
Troubleshooting	18–19
Specifications	20
Warranty Information	21
Site Reference Record	Back Cover

CMR-KIT System Overview

The CMR-KIT Irritrol Maintenance Remote is an advanced VHF digital radio providing innovative irrigation system remote control capabilities at extended range of operation. Built to work in the toughest commercial and municipal applications, the CMR-KIT is also right at home in large and small residential systems as well.

The CMR-KIT kit is comprised of a high-efficiency handheld remote transmitter, portable receiver, quick-release receiver mounting assembly and a dual-rate battery charger.

The CMR-KIT kit adapts to several models of Irritrol and Toro brand remote-ready controllers, enabling single-person system operation for ease of maintenance, startup, winterization and troubleshooting.

Refer to “Specifications” on page 20 for controller model compatibility details.

CMR-KIT Features and Benefits

- ❖ *Programmable handheld transmitter retains up to 999 unique receiver address codes.*
- ❖ *Ready for future, high station-count controllers — provides control of up to 512 individual stations.*
- ❖ *Quick-connect/release receiver mounting system — receiver easily moved from site to site.*
- ❖ *Rechargeable NiMH batteries and dual-rate charger included—keeps batteries at peak efficiency*
- ❖ *Handheld remote controls include: start, pause/resume, skip, restart and stop functions of selected stations and fully automatic ASC (All Station Cycle) for quick-check system operation.*

 *The CMR-KIT remote control system is designed for years easy, trouble-free operation. To gain the maximum benefit from your remote system, it is important to read and comply with all recommended installation, operating and safety procedures provided within this manual.*

Handheld Transmitter Components

- 1 - **Antenna** - Screw-mount, flexible whip.
- 2 - **LCD Display Symbols:**
 - A - Transmit** - Indicates signal transmission
 - B - Pause** - Indicates watering on hold
 - C - Water On** - Indicates station watering on
 - D - Time** - Indicates run time is displayed
 - E - Station** - Indicates station number is displayed
 - F - Numeric Display Characters**
 - G - Address** - Indicates address function is displayed
 - H - Battery Status**- Indicates battery charge status
- 3 - **Address Key** - Accesses receiver address code function
- 4 - **Cursor Keys** - Up/Down arrow keys select station number. Left/Right arrow keys step through station sequence during operation.
- 5 - **Function Keys** - Accesses On, Pause and Off functions
- 6 - **Battery Charger Receptacle**
- 7 - **Belt Clip Attachment Points** (belt clip not shown)
- 8 - **NiMH Battery Stack**
- 9 - **115 VAC/7.5 VDC Battery Charger**



Receiver Components

- 1 - **Antenna**
- 2 - **Receiver Lock** - Sliding latch secures the receiver to the plug assembly.
- 3 - **Activity Monitor LED** - Flashes Green while power is applied; Red when receiving a valid signal from the transmitter.
- 4 - **Receiver Plug Receptacle**
- 5 - **Receiver Plug Mounting Bracket** - Enables simple wall-mount installation. Easily removed enabling receiver plug installation in threaded ½" PVC.
- 6 - **Receiver Plug Assembly**
- 7 - **Modular RJ-11 Plug and Cable Assembly** - Connects the receiver to a compatible, remote-ready controller.
- 8 - **Receiver Power Wires** - Connects the receiver to the controller's 24 VAC power terminals.
- 9 - **Receiver Plug Cover** - Covers and protects the plug assembly when the receiver is not installed. Prevents damage due to prolonged exposure to moisture, sun and dust.



Receiver Installation

Before using your CMR-KIT remote control system for the first time, the following procedures must be completed:

- ♦ Charge the transmitter batteries for a minimum of 8 hours.
- ♦ Install and connect the receiver plug assembly and receiver unit per the instructions provided.
- ♦ Test the installation to confirm proper signal reception and remote operation.

For maximum remote control performance and operating range, select an installation site for the receiver using the following guidelines:

- ♦ The mounting location wall is constructed primarily of wood or other non-metallic materials.
- ♦ Stuccoed walls, metal buildings and large metal objects are avoided.
- ♦ The receiver is located as high above the controller as possible.
- ♦ The antenna is free of contact and aligned perpendicular to the horizon.

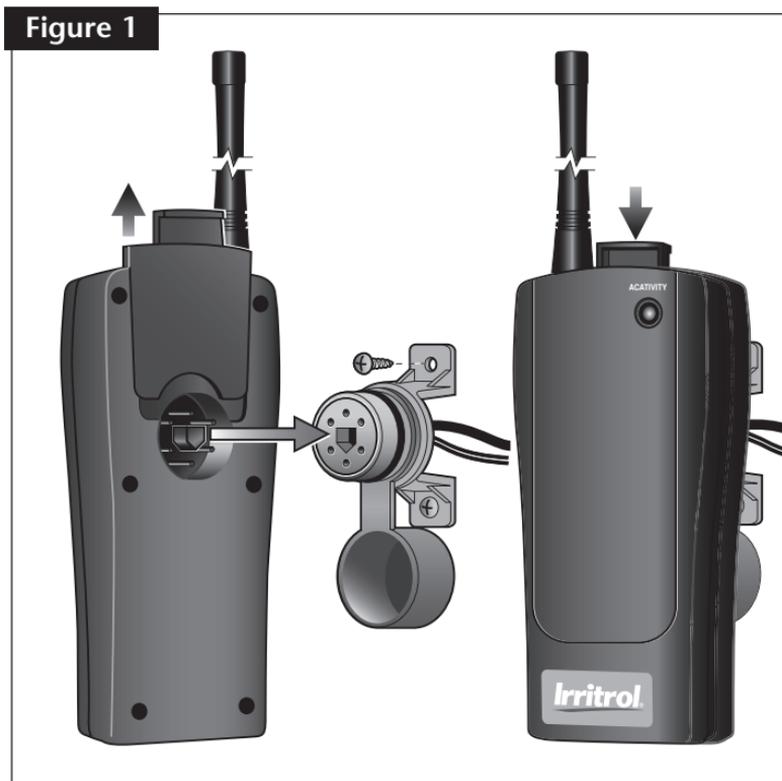
 *The receiver plug provided in this kit is specifically designed for the CMR-KIT receiver. The Irritrol KwikStart® Remote receiver plug is similar in design, but is not compatible.*

The receiver plug mounting bracket should be secured to an inside wall within 4' of the controller (the connecting cable is approximately 6' in length). Alternately, when an outdoor installation is preferred, the receiver plug can be removed from the mounting bracket and installed into a threaded ½" PVC pipe fitting.

Indoor Installation

- 1 – Position the receiver plug assembly on the wall within 4' of the controller, as high as practical. *The alignment hole in the center of the plug must be pointing down.*

- 2 – Using the provided wood screws (or other appropriate fasteners), secure the bracket to the wall as high as possible. *If installing the plug assembly bracket onto drywall or masonry, screw anchors must be used.*
 - 3 – With the receiver lock pulled up, align and install the receiver onto the plug assembly. Push the lock down to engage the groove in the plug assembly. See Figure 1.
- ⚠ CAUTION: Never connect the remote control power wires to any voltage source greater than 24 VAC. Failure to comply will result in severe equipment damage and voided warranty.**
- 4 – Disconnect power to the controller.
 - 5 – Route the receiver plug wiring through the base of the controller cabinet.



- 6 – Locate the controller's remote RJ-11 jack and insert the modular connector. See Figure 2.



The controller illustrated in Figure 2 is shown for reference only. Refer to the controller user's guide for specific installation information.

- 7 – Locate the controller's 24 VAC connection terminals and attach the receiver power wires. *Connect either wire to either terminal.*
- 8 – Apply power to the controller. The receiver Activity monitor should begin flashing Green. If the Activity monitor does not illuminate, confirm the receiver is properly installed and plug assembly is wired correctly.

Outdoor Installation

▲ CAUTION: The receiver plug is weather resistant only when installed in PVC conduit and the plug cover is in place. The receiver unit is not weather resistant and should only be installed outdoors for temporary use. Do not allow irrigation spray to contact the receiver during sprinkler operation.

- 1 – At the selected installation site, bore a $\frac{3}{4}$ " hole through the wall for $\frac{1}{2}$ " PVC pipe access.
- 2 – Install a length of PVC pipe through the wall, leaving about 1" of pipe on both sides.
- 3 – Inside, install a 90° elbow and a 3" section of pipe. Use a conduit clamp to secure the pipe assembly to the wall. See Figure 3.
- 4 – Remove the mounting bracket from the plug assembly.
- 5 – Insert the receiver plug wiring through the threaded end of a $\frac{1}{2}$ " thread/slip PVC fitting. Thread the receiver plug into the PVC fitting tighten by hand.
- 6 – Route the wiring through the conduit. Install the plug/fitting assembly to the pipe, orienting the plug alignment hole pointing straight down.
- 7 – Connect the receiver plug wiring as described above.

Figure 2

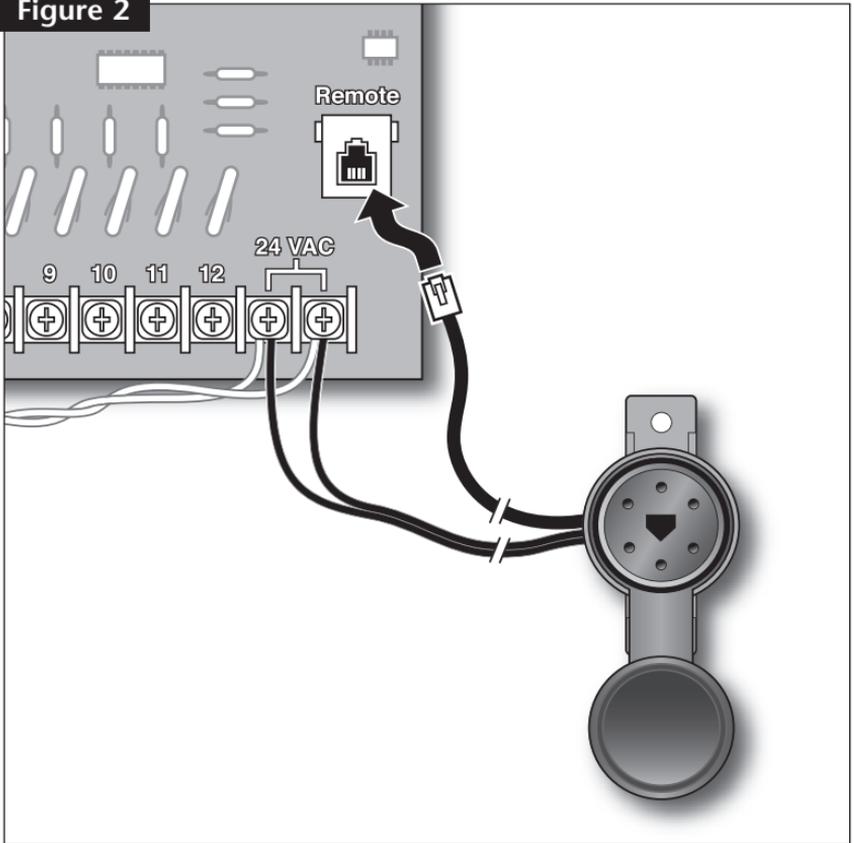
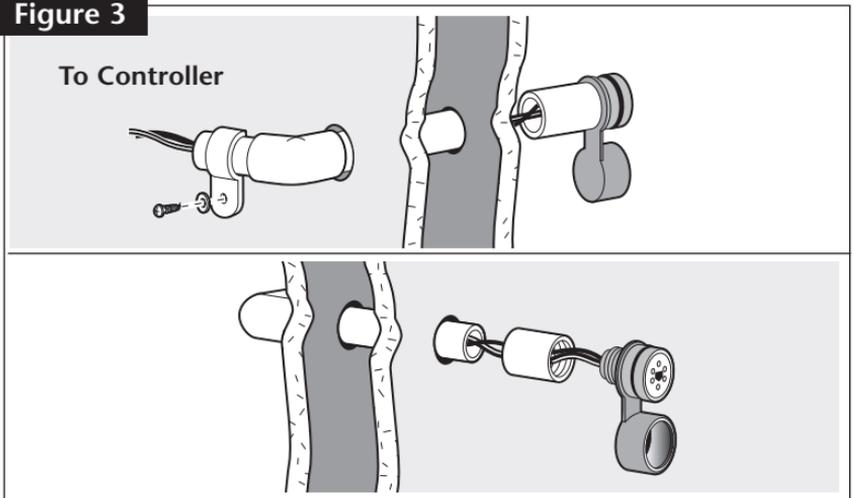


Figure 3



Remote Control Operations

 *For the best results, please note the following CMR-KIT remote system operating characteristics:*

- ♦ The transmitter batteries must be fully charged prior to operation. *Refer to battery charging procedure on page 16.*
- ♦ For maximum signal range, hold the transmitter vertically, at shoulder level, facing toward the receiver when sending a command. *Operating the transmitter in a horizontal plane and/or contacting the antenna during transmission can significantly reduce signal range.*
- ♦ The highest station number that can be selected is 24 (by default), but is easily adjusted from 1 to 512 as preferred. *To adjust the station number range, refer to the procedure on page 15.*

Basic Station Operation

- 1 – Press and hold the  ON button until the transmitter powers up. *The last station number operated will be displayed on the initial start up screen. The valve symbol indicates a station number is shown.*
- 2 – Press the  up or  down arrow button to select a station number. *For rapid scrolling, press and hold the button.*
- 3 – Press the  ON button. *The receiver Activity monitor will flash Red to indicate a valid signal is received. The selected station will turn on and the timer will begin counting down from 10 minutes in one-second increments. The water droplet indicates watering activity and the hour glass indicates run time remaining. Every 15 seconds, the display will alternate to show the currently operating station number.*

 *The station run time is fixed at 10 minutes and cannot be adjusted.*



Operating Controls

After selecting and starting a station, the following operating controls become available:

- ◆ **Stop operation**

Press the  OFF button.

- ◆ **Select a different station number**

Press the  left or  right arrow button to select the station number. *The previous station will turn off as the selected station starts.*



- ◆ **Pause operation**

Press the  pause button. *The pause symbol will be displayed with the station number. Every 15 seconds the display will alternate to show the run time remaining when operation resumes.*



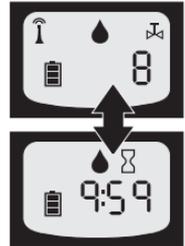
Press the  pause button again to release resume operation.



...If the pause function is not released within 10 minutes, the station operation will be terminated.

- ◆ **Reset the countdown timer**

Press the  ON button. *The run time for the operating station will be reset to 10 minutes. This control function does not apply to ASC operation.*



- ◆ **Turn off transmitter**

Press and hold the  OFF button until the display is blank.



The transmitter will shut off automatically after 30 minutes of inactivity.

ASC (All Station Cycle) Operation

The ASC feature enables all stations to be automatically operated in numeric sequence for a two-minute run time.

 **The station run time used during ASC operation is fixed at two minutes and cannot be adjusted.**

When the ASC operation is initiated, a start command is sent to station number 1. The station runs for two minutes and shuts off. All subsequent stations will then operate automatically in numeric sequence. *To adjust the station number range, refer to the procedure on page 15.*

Initiate ASC Operation

1 – Press and hold the  ON button until the transmitter powers up. *The last station number operated will be displayed.*



2 – To select the ASC function, press the  up arrow button one step past the highest station number, or press the  down arrow button one step past the lowest station number. *For rapid scrolling, press and hold the button.*



3 – Press the  ON button. *Station 1 will turn on and the timer will begin counting down from two minutes, in one-second intervals. Every 15 seconds, the display will alternate to show the operating station number.*



 **The receiver plug is specifically designed for the CMR-KIT receiver and must be installed. Irritrol KwikStart® Remote receiver plug is similar, but is not compatible CMR-KIT.**



CMR-KIT Setup Options

About Communication Address Codes

The handheld transmitter and receiver provided in the CMR-KIT kit are programmed by default with the same three-digit communication address code ranging from 001 to 999 and requires no additional adjustments for initial remote control operation.

Due to the long-range capability of the CMR-KIT transmitter, cross talk to more than one receiver is possible if the receivers are located within the transmitter's broadcast radius. So, it is generally good practice to assign a unique address to each receiver when operating multiple remote control irrigation systems with a single CMR-KIT handheld transmitter. *The transmitter and receiver address code is accessed and set through the transmitter keypad.*

Set Transmitter to Receiver's Address Code

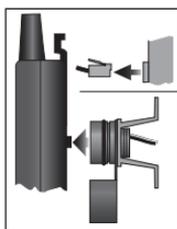
- 1 – Press and hold the  ON button until the transmitter powers up.
- 2 – Press and the  Address button to access the address code function. The current address code will be displayed.
- 3 – Press and hold the  Address button until the word ADDRESS and the third digit of the address code begin flashing, then release. *The display will automatically revert to the initial power-up screen after 30 seconds of inactivity.*
- 4 – To adjust the digit, press the  up or  down arrow button. To select another digit, press the  left or  right arrow button. Repeat in the same manner to select the desired address number
- 5 – When finished setting the address code, press the  Address button.



Reset Receiver Address Code

When the receiver is initially powered up through the plug assembly, its address code can be accessed and adjusted for period of 30 seconds through the handheld transmitter keypad. To perform this task, you must have access to the receiver, receiver plug assembly and the modular cable connection to controller.

- 1 – Unlock and remove the receiver from the plug assembly.
- 2 – Remove the modular cable connection from the controller's remote receiver jack.
- 3 – Press and hold the  ON button until the transmitter powers up.
- 4 – Press the  Address button to access the address code function. The current address code in the transmitter will be displayed.
- 5 – Press and hold the  Address button until the word ADDRESS and the third digit of the address code begin flashing, then release.



 ***The address code selected in the following procedure will be entered into the transmitter and the receiver.***

- 6 – To adjust the digit, press the  up or  down arrow button. To select another digit, press the  left or  right arrow button. Repeat in the same manner to select the desired address number
- 7 – When the receiver address code is displayed correctly and flashing, reinstall the receiver. The receiver Activity monitor should begin flashing Green.
- 8 – Press and hold the  Address button. When the receiver Activity monitor momentarily flashes Red release the button.



! Important: The receiver Activity monitor will momentarily flash Red when the receiver acquires a valid signal from the handheld transmitter. If the Activity monitor continues to only flash Green, the signal was not received. Repeat this procedure as necessary until the signal reception is confirmed. See Troubleshooting on page 18.

9 – Connect the receiver modular cable to the controller.

10 – Run a basic station operation using the handheld transmitter to confirm established communications and proper controller operation.

Adjust Station Number Range

When selecting a station number to operate, the display numbers will scroll continuously from 1 to 24 (factory default). To suit various controller applications and setups, the maximum number is easily reset from 1 to 512 using the following procedure.

1 – Press and hold the  ON button until the transmitter powers up.

2 – Press and hold the  left and  right arrow buttons at the same time. The current station range value will be displayed (flashing).

3 – To adjust the value, press the  up or  down arrow button. *For rapid scrolling, press and hold the button.*

4 – Press and hold the  left and  right arrow buttons at the same time to exit the adjustment mode.



Transmitter Battery Service

The NiMH batteries supplied with the handheld transmitter are capable of several hundred charge/discharge cycles and a long service life when properly maintained.

The transmitter batteries will have a slight charge when shipped from the factory. Before using the remote system for the first time, charge the batteries 8 hours.

The battery charger provided in the CMR-KIT kit supplies a dual-rate charge cycle that will initially bring the batteries to full capacity at a high rate, then switch automatically to a trickle charge to maintain the batteries at peak capacity. The batteries can be charged indefinitely without risk of overcharging with the provided charger.

The battery symbol on the transmitter display indicates the current charge state of the batteries.

The display symbol will change to indicate the following battery charge conditions:



Charging the Batteries

- 1 – Plug the battery charger into a 110 VAC outlet.
- 2 – Lift the end of the rubber cover located on the bottom of the transmitter to access the charger receptacle.
- 3 – Insert the charger plug into the transmitter receptacle. See Figure 4.

 *The length of time required to recharge the batteries to full capacity will vary and is determined by the state of discharge.*

- 4 – When charging is complete, remove the charger plug and close the rubber cover.

 *The transmitter can be turned on or off while charging the batteries. When the transmitter is on, the battery symbol flashes to indicate charging.*

Figure 4

To 115 VAC
Receptacle ←



Replacing the Batteries

When battery replacement is required, any conventional NiMH or Alkaline size AA battery with a capacity of 1000–2000 mAh can be used.

⚠ CAUTION: Never connect the battery charger to the transmitter when Alkaline batteries are installed. Failure to comply can result in severe equipment damage and a voided warranty.

- 1 – Confirm the transmitter is off and the battery charger is disconnected.
- 2 – Remove the optional belt clip if installed.
- 3 – Remove the phillips head screw from the battery cover. Slide the cover downward to remove.
- 4 – Carefully remove and replace the batteries, maintaining the correct polarity as shown in Figure 5.
- 5 – Reinstall the battery cover and optional belt clip.

Figure 5



 **Properly dispose all used batteries in accordance with the manufacturer's recommendations.**

Troubleshooting

The following troubleshooting symptoms and solutions are provided to help resolve basic problems that may arise during setup and initial operation of the CMR-KIT remote control system. If the problem cannot be resolved using this information, contact a Irritrol Customer Service representative at 1-800-634-TURF (8873) for assistance. Normal office hours are Monday–Friday, 7:30 a.m.– 4:00 p.m., PST.

The controller station does not turn on.

Solution

- ❖ Verify the handheld transmitter and receiver are set to the same address code. Confirm the receiver Activity monitor momentarily flashes Red when a command is sent from the transmitter. If the Activity monitor continues to flash only Green, communication is not established. Refer to pages 13–15 for address code setup information.

The controller station number is higher than can be selected on the transmitter.

Solution

- ❖ The transmitter station number range is adjusted too low for your controller application. Refer to page 15 the adjustment procedure.

The communication range is very short.

Solution 1 of 2

- ❖ Change the receiver location slightly. Try increasing the installed height and/or moving the receiver slightly left or right. Sometimes small changes can result in substantial increases in reception range. Make sure the receiver is not located within 3' of any large metal objects or metal studs. Metal objects below the receiver are ok; metal objects near or above the receiver antenna height may decrease reception performance.

Solution 2 of 2

- ❖ Relocate the receiver beyond the constraints of the 6' connection cable and power wire supplied in the CMR-KIT kit. Use a conventional RJ-11 extension cord and additional 18-gauge power wire to install and connect the receiver in an optimal reception location, within 30' of the controller.

The transmitter batteries discharge quickly

Solution 1 of 3

- ❖ Protect the handheld transmitter keypad. Pressing the buttons on the hand-held cause it to transmit a signal which uses battery power. If the transmitter is carried in a toolbox or any place where the buttons may be accidentally pressed will cause the batteries to discharge. Storing the transmitter in its foam-lined carrying case is recommended.

Solution 2 of 3

- ❖ Bring the batteries up to full charge. Allow the batteries to charge continuously for at least 8 hours. The battery charger supplied in the CMR-KIT kit can remain connected to the transmitter whenever the transmitter is not in use.

Solution 3 of 3

- ❖ Replace the batteries. NiMH batteries, as used in the hand-held transmitter are good for many hundreds of charge cycles, but eventually they will need to be replaced when they no longer hold a charge. Refer to page 17 for battery replacement procedure.

Specifications

Handheld Transmitter

- ❖ Dimensions: 3" W x 1.25" D x 6" H (12" with Antenna)
- ❖ Operating voltage: 4–6 VDC
- ❖ Maximum RF power output: 27 dBm
- ❖ Batteries: Four, Size AA, NiMH (included)
- ❖ Battery Charger: Input – 115 VAC 60 Hz, 4 W
 Output – 7.5 VDC, 100 mA
- ❖ Operating temperature range: 14°–140°F (-30°–60°C)
- ❖ Storage temperature range: -22°–149°F (-30°–65°C)

Receiver

- ❖ Dimensions: 3" W x 1.25" D x 6" H (12" with Antenna)
- ❖ Operating temperature range: 14°–140°F (-30°–60°C)
- ❖ Storage temperature range: -22°–149°F (-30°–65°C)
- ❖ Maximum current draw: 75 mA VAC
- ❖ MURS channel frequencies: 151.82 MHz, 151.88 MHz, 151.94 MHz, 154.57 MHz and 154.60 MHz
- ❖ Designed communication range: 1.5 miles (line-of-sight with typical obstructions)
- ❖ Controller model compatibility: (Irritrol) Rain Dial®-Plus and MC-E – (Toro) TMC-212, TMC-424, and Greenkeeper® 212
Note: Controller model compatibility is subject to change without notice. Contact an authorized Irritrol or Toro irrigation equipment distributor for current information.

CMR-KIT Remote Components

Description	Model Number
❖ Handheld Transmitter Assembly	CMR-TX
❖ Receiver Assembly	CMR-RX
❖ Connector Plug Assembly	CMR-CC
❖ Antenna	CMR-ANT
❖ Battery Charger Assembly	CMR-CHG

FCC Compliance Information

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a FCC Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient the receiving antenna, relocate the irrigation controller with respect to the receiver, move the irrigation controller away from the receiver, plug the irrigation controller into a different outlet. If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions.

Site Reference Record

Owner/Site Name: _____

Site Address: _____

Contact Phone #: _____

Controller Make/Model: _____

Receiver Address Code: _____

Active Station Count: _____

Notes: _____



Owner/Site Name: _____

Site Address: _____

Contact Phone #: _____

Controller Make/Model: _____

Receiver Address Code: _____

Active Station Count: _____

Notes: _____



Owner/Site Name: _____

Site Address: _____

Contact Phone #: _____

Controller Make/Model: _____

Receiver Address Code: _____

Active Station Count: _____

Notes: _____



Owner/Site Name: _____

Site Address: _____

Contact Phone #: _____

Controller Make/Model: _____

Receiver Address Code: _____

Active Station Count: _____

Notes: _____