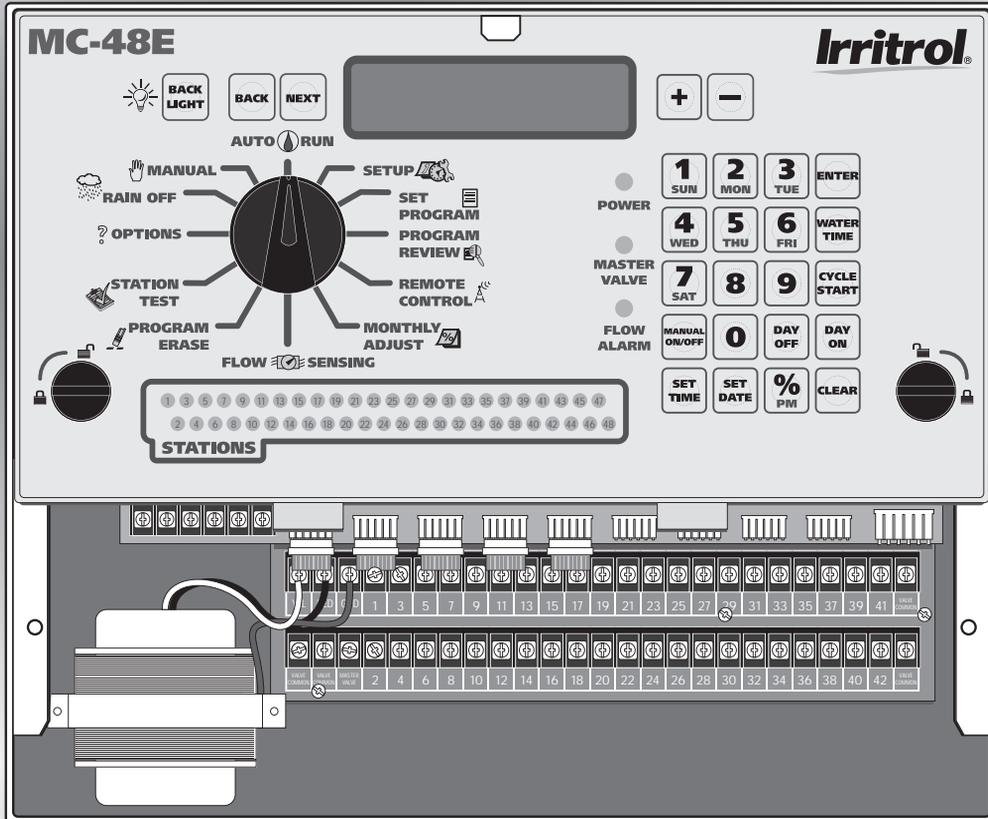


MC-E

Installation and Programming Guide



For Controller Models: MC-4E, MC-6E, MC-8E, MC-12E, MC-18E, MC-24E, MC-30E, MC-36E, MC-42E & MC-48E

Irritrol

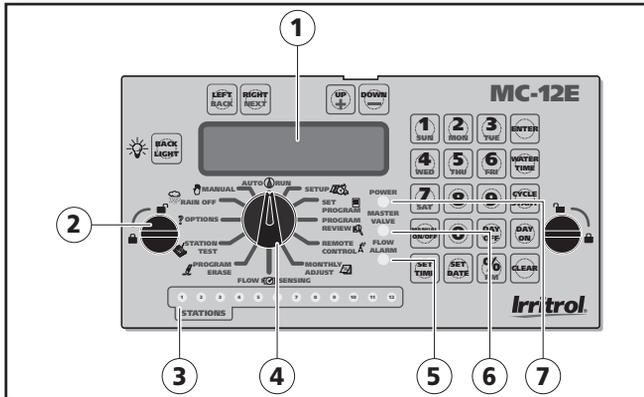
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Introduction

The MC-E controller is a solid-state controller, capable of storing eight independent programs designed to meet the needs of commercial and contractor applications. The MC-E is an enhancement to the existing MC controller with many more functions and display features. The new MC-E is designed to be compatible with the current MC Plus B cabinets and wiring connections.

Parts Diagram



- 1 - 32-Character Dot Matrix LCD
- 2 - Timing Mechanism Quick Release
- 3 - Active Station Indicator Display
- 4 - Function Dial
- 5 - Flow Alarm Indicator LED (Future Upgrade)
- 6 - Master Valve Active Indicator LED
- 7 - Power Supply Indicator LED

BACK LIGHT - Activates the LCD Display Backlight

BACK - Use to navigate through the menu options

NEXT - Use to navigate through the menu options

+ - Use to navigate through the menu selections or options

- - Use to navigate through the menu selections or options

ENTER - Finalize and save entered parameters

WATER TIME - SETUP - Assigns Station and Station Runtime to a program

CYCLE START - SETUP - Assign Start Times to a program

DAY OFF - SETUP - Assign Event Days

DAY ON - SETUP - Remove Event Days

MANUAL ON/OFF - MANUAL - Activate stations or programs manually

SET TIME - SETUP / SET PROGRAM - Modify the current time

SET DATE - SETUP / SET PROGRAM - Modify current date

% PM - MONTHLY ADJUST - Adjust water budget percentage.

CLEAR - Clear / Delete selection / Revert back to the main menu of the current dial position

Cabinet Installation

Step 1 – Selecting the proper installation site for the MC-E controller is essential to safe and reliable operation. The controller features a weather resistant cabinet designed for indoor and outdoor installation. The controller should be installed on a vertical wall or other sturdy structure near a grounded power source. Select a location that provides as much protection from direct sunlight, rain, snow and irrigation spray as possible.

Step 2 – Drive a wood screw (provided) into the wall at eye level.

(For Large Cabinet Unit - 18 Stations or more) Drive another wood screw 8" (20.3 cm) directly below the first screw.

(For Small Cabinet Unit - 12 Stations or less) Drive another wood screw 5 3/4" (14.5 cm) directly below the first screw.

Leave approximately 1/4" (6.5 mm) of the screw extended from the wall to accommodate the cabinet.

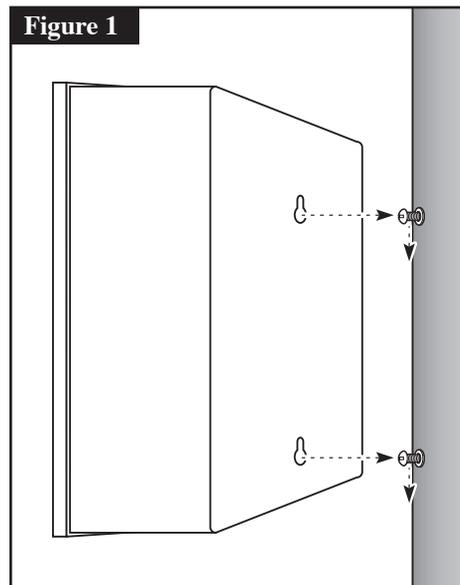
NOTE: For drywall and masonry installation, use proper screw anchors to prevent the screws from loosening.

Step 3 – Place the controller cabinet on the screws using the keyhole slots on the back panel. Ensure that the cabinet is installed securely on the screws. See **Figure 2**.

Step 4 – Open the controller door and the bottom panel door. Locate the bottom screw and tighten it securely.

The MC-E series has two available lockable, weather and vandal resistant steel pedestals for free standing applications. For MC-E controllers with 12 stations or less, use the Irritrol P-2B pedestal. For MC-E controllers with 18 stations or more, use the Irritrol P-6B pedestal. Follow the installation and mounting instructions that are provided with the pedestal.

Figure 1



Electrical Conduit Installation

Electrical conduit and adapters are not supplied with the controller but may be required for installations in your area. Check with your local electrical codes and install conduit according to requirements.

For power wires, install a 1/2" (13 mm) NPT threaded conduit access body to the transformer assembly threaded nipple. From the access body, install conduit to the power source.

For station valve wiring, install a 2" (5 cm) conduit adapter and conduit.

Control Wires Installation

Step 1 – Route the valve control wires between the valves and the MC-E controller.

NOTE: For wire runs up to 1000' between the controller and the valves, it is recommended to use an 18 AWG (1.0 mm²) multi-wire sprinkler valve connection cable. This cable is insulated for direct burial and is color coded to simplify installation.

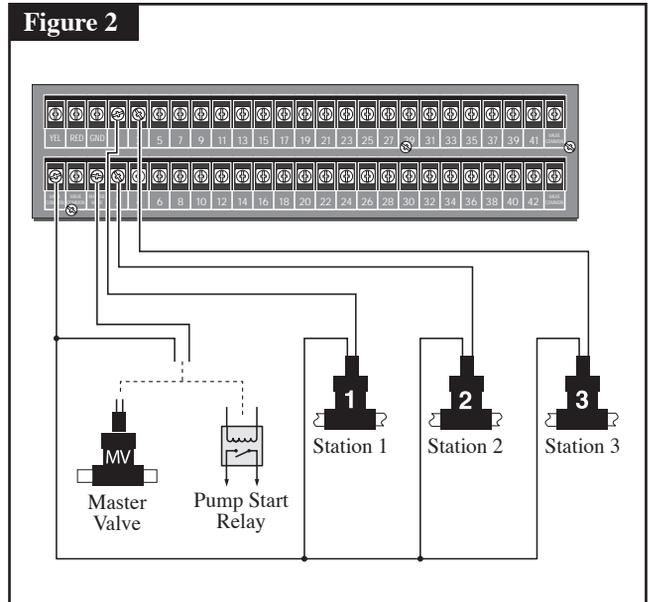
Step 2 – Attach one wire from each valve solenoid to the white color-coded wire from the cable. (Since the valve solenoid has no polarity, either wire can be used for this connection.) Designate this connection as the Valve Common.

Step 3 – Attach a separate cable wire to each of the remaining valve solenoid wire. Take note of the wire color being used for each valve as well as the watering zone/area it is designated. This information will be important when connecting the valve wires to the controller's station terminals.

Step 4 – Use wire nut fasteners to secure the valve solenoid wire connection. Waterproof all connections with grease caps or similar insulation method.

Step 5 – Route the other end of the control wires into the provided conduit hole at the bottom of the cabinet. Leave about 8" of cable remaining in the cabinet. Expose about 3/8" of bare wire from the station and the valve common wires.

Step 6 – Secure the valve common wire to one of the three terminals labeled "VALVE COMMON" and each valve wire to its appropriate station terminal designation.

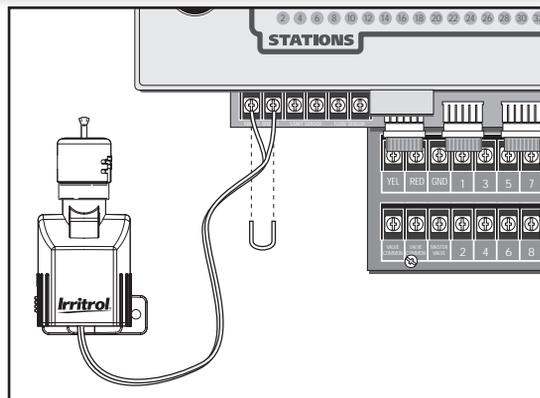


Rain Sensor Installation (Purchased Separately)

IMPORTANT! The INHIBIT SENSOR is designed for a normally closed rain sensor. The wire jumper must be present at the terminals if a sensor is not connected.

- Step 1 – Route the rain sensor cable into the controller terminals.
- Step 2 – Remove the wire jumper from the INHIBIT SENSOR terminals (INHI+ and INHI- for the 18 stations or more models and INHIBIT+ and SENSOR- for the 12 stations or less models). Refer to the provided rain sensor installation guide for wiring instructions and connect accordingly.

NOTE: The INHIBIT SENSOR will operate on any Function Dial position settings.

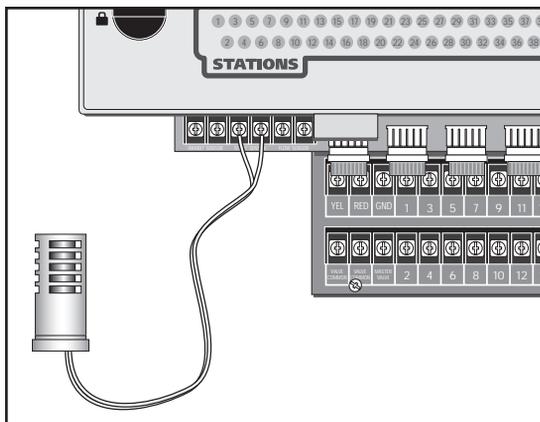


Start Sensor Installation (Purchased Separately)

IMPORTANT! The START SENSOR input is designed for a normally open sensor and works in conjunction with Option 10. When the start sensor is activated, the MC-E controller will immediately activate Program 1 providing Option 10 is activated. Program 1 will continue to repeat the cycle until the start sensor is deactivated. The activation of the start sensor will not affect any other programs.

- Step 1 – Route the sensor connection cable through the bottom of the controller cabinet and into the controller terminals.
- Step 2 – Refer to the provided sensor installation guide for wiring instructions.

NOTE: The START SENSOR will operate on any Function Dial position except for RAIN OFF.

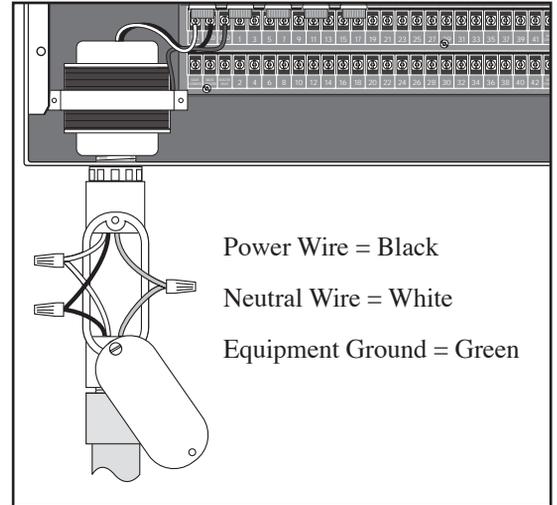


Power Source Installation

⚠ WARNING: All electrical components and installation practices must meet applicable national and local electrical codes including installation by a qualified personnel. These codes may require an external junction box mounted on the cabinet and a circuit breaker in the main wiring having a contact separation of at least 0.120" in the line and neutral poles.

The 120 VAC power source must be turned OFF prior to servicing. The power cable used for connection to the controller must have an insulation rating of 221°F minimum.

- Step 1 – For power source connection, install a 1/2" electrical conduit from the 120 VAC power source to the MC-E controller cabinet.
- Step 2 – Install an electrical junction box at the transformer to allow access for future servicing.
- Step 3 – Confirm that power has been disconnected at the power source using a volt meter or voltage detector.
- Step 4 – Route 14-AWG insulated solid copper wires for Power (Black), Neutral (White) and Equipment Ground (Green) through the conduit and into the junction box.
- Step 5 – Strip back 3/8" of insulation from each wire. Using wire connectors, connect the wires with similar colors together (Black with Black, White with White, etc.).
- Step 6 – Tuck the wires inside the junction box and replace the cover.
- Step 7 – Apply power to the controller.



Power On / Reset Mode

MC-E will initiate the operating system and reload all saved data in the memory for stable operation every time the controller is powered up. Turn the Function Dial in the Auto/Run position for normal operation.

Initial Display

```
IRRITROL MC_48E
Loadin9.....
```

Auto Run Mode Display

```
FRI 02-24-2006
10:21:03 AM
```

System SETUP

The SETUP  function allows you to modify the following MC-E parameters:

```
Press SETTIME,
SETDATE or NEXT
```

- Current Date
- Current Time
- Security Password
- Event Days
- Enable/Disable Master Valve

SETUP – Current Date

Set Current Date

Step 1 – Turn the Function dial to the SETUP  position.

Step 2 – Press the  or the  button to access the date setup screen.

Step 3 – Enter the Month, Date and Year in **MM DD YY** format. If the MC-E is operating in International format, enter the Date first, the Month second and the year last (**DD MM YY**).

Example: For February 20, 2006, press the **022006** buttons.

```
SET MM DD YY
DATE ■ - -
```

Step 4 – Press the  button to accept the changes. The display will now reflect the new date.

```
MON 02-20-2006
10:21:03 AM
```

NOTE: While in SET DATE mode, you can advance to the SET TIME mode by pressing the NEXT  button.

Step 5 – Return the Function dial to the Auto Run  position to exit SETUP.

SETUP – Current Time

Set Current Time

Step 1 – Turn the Function dial to the SETUP  position.

Step 2 – Set the time mode if necessary. To set the time to International format (24-hour), press  .
To return to the default U.S. format, press  .

Step 3 – Press  or press the  button until the time setup screen is displayed.

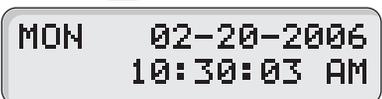


SET HH MM AM/PM
TIME ■ : AM

Step 4 – Enter the Hour, Minutes and Seconds in **HH MM** format. Enter the **HH MM**  for PM time.
International setting follows the 24-hour format.

Example: For 10:30am, enter **1030**.

Step 5 – Press the  button to accept the changes. The display will now reflect the new time.



MON 02-20-2006
10:30:03 AM

NOTE: While in SET TIME mode, you can advance to the SET LANGUAGE screen by pressing the NEXT  button or go back to SET DATE by pressing the BACK  button.

Step 6 – Return the Function dial to the Auto Run  position to exit SETUP.

SETUP – Security Password

The MC-E can be secured with a security password to ensure that unauthorized users are not able to modify the programs.

Enable Security Password

Step 1 – Turn the Function dial to the SETUP  position.

Step 2 – Press the  button. The screen will display the following:



Step 3 – Enter a four-digit (0000–9999) security password and press the  button.

NOTE: Once a security password is established, all menu functions will require you to enter the four-digit security password before gaining access. However, manual operations are allowed.

Once the security password is verified, the MC-E will allow access to the menu functions for 1-hour. Within that hour, you will be able to navigate through all the function dial positions without re-entering the security password. After the 1-hour time limit expires, you will need to re-enter the password to gain access to the menu functions.

In the event that you have forgotten the four-digit security password, press , ,  and  to disable the password verification process. To reestablish password security to the controller, you must repeat Steps 1–3.

Step 4 – Return the Function dial to the Auto Run  position to exit SETUP.

SETUP – Event Days

The MC-E allows you to pre-program ten event days throughout the year. During an event day, the controller will suspend automatic watering. Event days will reoccur every year unless deleted.

Example: If December 25 is set as an event day, the controller will ignore watering every December 25 of each year until it is deleted from the Event Days.

Set Event Day:

Step 1 – Turn the Function dial to the SETUP  position.

Step 2 – Press the  button. The screen will display the following:

```
0 EVENT DAY SET
PRESS DAYOFF
```

Press the  button to review the day off events or enter new events. The screen will display the following:

```
SET EVENT MM DD
EVENT#01 00/00
```

NOTE: Use the  or  button to review the programmed events.

Step 3 – Enter the Event number (1–10), then press the  button.

NOTE: MC-E will re-number the event day if the newly created event is out of sequence or if an event is deleted.

Step 4 – Enter the Month and Date (MM DD) of the event day being programmed and press the  button. When the controller is in International mode, enter the Date first before the Month (DD MM). The controller will increment the total event day and display the following:

```
1 EVENT DAY SET
PRESS DAYOFF
```

Step 5 – Repeat Steps 2–3 for additional event days.

Step 6 – To delete an event, scroll through the event number to select it. Once the event is displayed, enter     and press the  button to delete.

Step 7 – Return the Function dial to the Auto Run  position to exit SETUP.

SETUP – Master Valve

Set Master Valve

NOTE: As factory default, the Master valve is Enabled for all stations. The master valve will activate whenever a station is activated.

In situations that a station does not require the master valve to activate, use the following procedure to select the station and Disable or Enable the master valve.

Step 1 – Turn the Function dial to the SETUP  position.

Step 2 – Press the  button. The following display will be shown on the screen.



MV SET UP
STN 1 MV=ON

Step 3 – Press the  or  buttons to select the station number you want to edit. Use the  or  button to toggle MV (Master Valve) from ON or OFF.

Step 4 – Repeat Step 3 for additional stations.

Step 5 – Return the Function dial to the Auto Run  position to exit SETUP.

Program SETUP

For a watering program to operate properly, it must have a station(s) with a runtime and a specific date and time to activate. The following program parameters can be defined and/or modified in the SET PROGRAM  function:

- Assign Station and Runtime to a Program
- Assign Station Delay Time
- Assign Program Start Time
- Assign Looping Start Time
- Assign Watering Day Schedule
 - Exclusion Day
 - Odd Day
 - Even Day
 - Interval Day
- Assign Water Budget

Set Program – Assign Station and Runtime to a Program

Assign Station and Runtime to a Program

Step 1 – Turn the Function dial to the SET PROGRAM  position.

Enter PROGRAM#
& Press ENTER

Step 2 – Enter the program number (1–8) you want to create or modify. Press  to activate your selection.

Step 3 – Enter the station number being added or modified in the program and press the  button.

NOTE: Entering a station number that exceeds the controller's station count will return an error message.

PROGRAM 1
STN 1 No RunTime

Step 4 – Enter the station runtime in MM (Minutes) or HH MM (Hours:Minutes) and press .

PROGRAM 1
STN 1 0h30m 0s

Repeat Steps 3–4 for additional stations and runtimes.

To assign similar runtimes to all the available stations in the program, press  , , Length of runtime, then . This procedure will replace all station runtimes to the new runtime.

NOTE: Delete a station from the program by assigning 00 runtime.

Step 5 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

Enter/Modify/Delete - Single or Multiple Stations

Step 1 – Turn the Function dial to the SET PROGRAM  position.

Enter PROGRAM#
& Press ENTER

Step 2 – Enter the program number (1–8) being modified. Press  to activate the selection.

Step 3 – Enter the station number you want to create, modify or delete from the program and press the  button.
Select multiple stations by entering the first station number (two digits), then enter the last station in the sequence (two digits) and press the  button.

NOTE: Entering a station number that is not assigned to the program will return a “No Runtime” message.

Step 4 – Assign the station runtime and press the  button. If the station has a previous runtime, the newly entered runtime will overwrite the previous value. Enter a runtime value of 0 minutes to delete.

Step 5 – Repeat Steps 3–4 to enter/modify/delete additional station(s) from the program.

Step 6 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

Review Program Runtimes

Review the program’s cumulative runtime – Press the  button once.

Review individual station’s runtime in the program – Press the  button twice. The controller will sequentially scroll through the program’s active stations along with their corresponding runtime.

Set Program – Program Start Time

Set Program Start Times

Each MC-E program can have up to eight start times.

Step 1 – Turn the Function dial to the SET PROGRAM  position.

Step 2 – Enter the program number (1–8) being modified. Press  to activate the selection.

Step 3 – Press the  button to review all start times. Each programmed start times will be displayed momentarily until the last start time is shown.

Step 4 – Enter the start time number (1–8) being created/modified and press the  button. Enter the start time in **HH MM** (Hours and Minutes) and press .

NOTE: Enter HH MM  for PM time. (U.S. Time Mode)

The start time number will adjust according to the start time sequence. If assigning start time 4 with 6:00am and currently, the earliest start time is at 7:30am, 6:00am will automatically become start time number 1 and adjust the start time numbers accordingly.

Example: Assign 5:30am to start time number 1 for program 1 by entering **0530** .



FGM 1 Start 1
05:30AM 05:55AM

NOTE: The 05:55am time indicated on the display is the end time. This is calculated by adding the sum of all the station runtimes and station delays to the start time.

If the assigned start time will result with an end time past midnight, the controller will Beep twice to indicate that end time will run to the next watering day schedule.

The following screen will display momentarily:



FGM 1 Start 1
Over 24h EndTime

Then followed by:



FGM 1 Start 1
05:30AM *05:55AM

Step 5 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

Delete Program Start Time

Step 1 – Turn the Function dial to the SET PROGRAM  position.

Step 2 – Enter the program number (1–8) being modified. Press the  to activate the selection.

Step 3 – Press the  button to review all start times. Each programmed start times will be displayed momentarily until the last start time is shown.

Step 4 – Enter the start time number (1–8) being deleted and press the  button. Assign a start time of **0** and press  to finalize.



PROGRAM 1
Start 1 Erased.

Step 5 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

Set Program – Station Delay Time

Station delay time is the adjustable delay period between station operations. The controller's default station delay is 0 seconds. The maximum delay time you can set between station operation is 4 hours.

Assign Station Delay Time

Step 1 – Turn the Function dial to the SET PROGRAM  position.

Step 2 – Enter the program number (1–8) being modified. Press the  to activate the selection.

Step 3 – Press the  and  buttons to access the station delay function.

```
PROGRAM 1
D1ySTN  0h 0m 0s
```

Step 4 – Enter the station delay duration in H MM SS (Hours, Minutes and Seconds) and press .

NOTE: To disable the station delay, assign 0 for the time duration.

Example: To assign a 30-second station delay to program 1, enter **0 00 30**.

```
PROGRAM 1
D1ySTN  0h 0m30s
```

Step 5 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

Set Program – Looping Start Time

The MC-E has the capability to loop a program. When a program is set to loop, the program will repeat after the loop delay time is satisfied. The program will continue to repeat beginning from the start time until the designated end time. To initiate the program to loop, you must assign a start time, end time and a loop delay to the program.

Set a Looping Start Time

Step 1 – Establish a start time to the program. (See **Set Program – Program Start Time** section.)

Step 2 – Assign a program End time. Turn the function dial to the SET PROGRAM  position. Enter the program number being modified. Enter **8** **8**  to access the loop function.



PGM1 LF_D1y 0h00

Enter the program end time in **HH MM** format and press . Use the  button for PM.

Example: Enter 6:00am start time and 10:00pm end time.



PGM1 LF_D1y 0h00
06:00AM 10:00PM

Step 3 – Assign loop delay by entering **8** **8** . Enter the delay time in **H MM** or **MM** and press .

Example: Assign a 30-minute loop delay. Enter **3** **0** .



PGM1 LF_D1y 0h30
06:00AM 10:00PM

NOTE: After establishing a loop, any additional program start time(s) will be deleted.

Step 4 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

Modify a Looping Start Time

Step 1 – Turn the Function dial to the SET PROGRAM  position.

Step 2 – Enter the program number (1–8) being modified. Press the  to activate the selection.

Step 3 – Press   to enter a new loop start time in HH MM format (Hours, Minutes and  for PM) and press  to accept.

Step 4 – Press    to enter a new loop end time in HH MM format (Hours, Minutes and  for PM) and press  to accept.

Step 5 – Press    to enter a new loop delay time in HH MM format (Hours, Minutes and  for PM) and press  to accept.

Step 6 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

Delete a Looping Start Time

Step 1 – Turn the Function dial to the SET PROGRAM  position.

Step 2 – Enter the program number (1–8) being modified. Press the  to activate the selection.

Step 3 – Enter     and press  to clear the looping start time. (The start time and end time are automatically deleted.)



PROGRAM 1
Loop Erased.....

Step 4 – You must re-enter a start time to reactivate the program. (See **Set Program – Program Start Time** section.)

Step 5 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

Set Program – Watering Day Schedule

The MC-E offers you several options to schedule your watering programs. Having multiple options will allow you to optimize your watering need while practicing water conservation.

Each of the eight controller programs can be set to one of the following schedule options:

- Days of the Week / Exclusion Days
- Odd Days Watering w/ Exclusion Days
- Even Days Watering w/ Exclusion Days
- Skip Days

Set Program Schedule to Days of the Week / Exclusion Days

Step 1 – Turn the Function dial to the SET PROGRAM  position.

Step 2 – Enter the program number (1–8) being modified. Press the  to activate the selection.

Step 3 – Press the  button to review the program schedule. The Weekdays scheduling is the factory default. If Odd or Even scheduling is activated, press    to reestablish Weekdays scheduling.



PGM 1 WeekDaysOn
SuMoTuWeThFrSa█

Step 4 – To exclude a day, enter the day designation number and press the  button.
Su = 1, Mo = 2, Tu = 3, We = 4, Th = 5, Fr = 6 and Sa = 7

Example: Deactivate Sunday (Su) and Wednesday (We) to the Weekdays schedule. Press   to deactivate Sunday and   buttons to deactivate Wednesday.



PGM 1 WeekDaysOn
MoTu ThFrSa█

The remaining days, Monday, Tuesday, Thursday, Friday and Saturday are all active days. The program will run only on these days.

NOTE: To deactivate all the days of the week, press   .

Step 5 – To re-activate a day, enter the day designation number and press the  button.

Step 6 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

Odd Days watering schedule will activate the program on the odd-numbered days in the calendar month (1, 3, 5, ..., 29). However, the controller will treat all the 31st of the month and the 29th of February in leap years as a non-watering day.

Set Program Schedule to Odd Days

Step 1 – Turn the Function dial to the SET PROGRAM  position.

Step 2 – Enter the program number (1–8) being modified. Press the **ENTER** to activate the selection.

Step 3 – Press the **1** **1** **DAY ON** button to activate Odd days watering schedule.



PGM 1 OddDaysOn
No ExclusionDays

Step 4 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

In conjunction to setting your irrigation schedule to Odd Days of the calendar schedule, you can also deactivate any day of the week.

Set Program Schedule to Odd Days with Excluded Days

Step 1 – Set watering schedule to Odd days. (See section on how to set schedule to Odd Days.)



PGM 1 OddDaysOn
No ExclusionDays

Step 2 – To exclude a day, enter the day designation number and press the **DAY OFF** button.
Su = 1, Mo = 2, Tu = 3, We = 4, Th = 5, Fr = 6 and Sa = 7

Example: Deactivate Wednesday (We) and Saturday (Sa) to the Weekdays schedule. Press **4** **DAY OFF** to deactivate Wednesday and **7** **DAY OFF** buttons to deactivate Saturday.



PGM 1 OddDaysOn
SuMoTu ThFr ■

NOTE: To return the program's scheduling to Weekdays, press the **7** **7** **DAY ON** buttons.

Step 4 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

Even Days watering schedule will activate the program on the Even-numbered days in the calendar month (2, 4, 6, ..., 30).

Set Program Schedule to Even Days

Step 1 – Turn the Function dial to the SET PROGRAM  position.

Step 2 – Enter the program number (1–8) being modified. Press the  to activate the selection.

Step 3 – Press the    button to activate Even days watering schedule.



PGM 1 EvenDaysOn
No ExclusionDays

Step 4 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

In conjunction to setting your irrigation schedule to Even Days of the calendar schedule, you can also deactivate any day of the week.

Set Program Schedule to Even Days with Excluded Days

Step 1 – Set watering schedule to Even days. (See section on how to set schedule to Even Days.)



PGM 1 EvenDaysOn
No ExclusionDays

Step 2 – To exclude a day, enter the day designation number and press the  button.
Su = 1, Mo = 2, Tu = 3, We = 4, Th = 5, Fr = 6 and Sa = 7

Example: Deactivate Sundays (Su) and Fridays (Fr) to the Weekdays schedule. Press   to deactivate Sundays and   buttons to deactivate Fridays.



PGM 1 EvenDaysOn
MoTuWeTh Sa

NOTE: To return the program's scheduling to Weekdays, press the    buttons.

Step 4 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

Skip Days watering schedule will activate the program within the specified interval. You can designate skip days from 1 through 59 days. The entered value will be the number of days the controller will skip until an active watering day. If you enter a value of 3, MC-E skip watering for 3 consecutive days and water on the fourth day. MC-E will repeat the schedule after the active day.

Set Skip Days Program Schedule

Step 1 – Turn the Function dial to the SET PROGRAM  position.

Step 2 – Enter the program number (1–8) being modified. Press the  to activate the selection.

Step 3 – Press the    button to activate Skip days watering schedule.



PGM 1 SkipDaysOn
0 Days Today= 0

Step 4 – Enter the designated Skip day number and press the  button. (1 = skip 1 day then water the next day, 2 = skip 2 days then water the next day, etc.)

Example: Set the program to skip 4 days before activating. Press  .



PGM 1 SkipDaysOn
4 Days Today= 0

Step 5 – Enter today's designation number and press the  button. This number represents the current day's position within the schedule interval. This number will increment on a daily basis starting from 0 (zero) until the skip day number designation is met, then the controller will regard that day as a watering day.

Example: With skip day set to 4, the program is set to water on the 5th day. Set today so that the controller will water the next day. Enter  and press the  button.



PGM 1 SkipDaysOn
4 Days Today= 2

NOTE: To return the program's scheduling to Weekdays, press the    buttons.

Step 6 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

Monthly Adjust / Water Budget

The MC-E water budget  feature maximizes water conservation by allowing you to micro-adjust watering on a monthly basis. By adjusting your irrigation during dry seasons, wet seasons, etc., you can be sure that your landscape areas are receiving the optimum irrigation while conserving water resource.

Adjust the Monthly Water Budget

Step 1 – Turn the Function dial to the MONTHLY ADJUST  position.

NOTE: To review all monthly adjustments, simply press the  button twice while in the MONTHLY ADJUST  position. Each monthly percent budget will display momentarily.

Step 2 – Use the  or  buttons to scroll and select the month being adjusted. You can also enter the Month's designation number and press the  button to select a specific month.

Example: Select December to adjust. Press   .



A rectangular LCD display with a light gray background. The text is in a black, monospaced font. The top line reads "MONTHLY ADJUST". The second line reads "DEC" on the left and "100%" on the right.

Step 3 – Use the  or  buttons to adjust the watering percentage. The  or  buttons will increment/decrement the percentage by 10%. Press  to save any changes.

In addition, you can adjust the percentage by entering the percentage number using the key pad and pressing the  button to accept.

Example: Adjust December's watering to 85%. Press   .



A rectangular LCD display with a light gray background. The text is in a black, monospaced font. The top line reads "MONTHLY ADJUST". The second line reads "DEC" on the left and "85%" on the right.

NOTE: You can adjust the monthly watering budget down to 10% and up to 200%.

Step 4 – Repeat Steps 2 and 3 to adjust additional monthly water budget.

Step 5 – Return the Function dial to the Auto Run  position to exit MONTHLY ADJUST.

Set Water Budget per Program

Step 1 – Turn the Function dial to the SET PROGRAM  position.

Step 2 – Enter the program number (1–8) being modified. Press the  to activate the selection.

Step 3 – Press the  button.

PROGRAM 1
Water Budget=100

Step 4 – Enter the desired water budget percentage for the selected program. You can decrease the program's watering to 0% (no watering) or increase it up to 200%. Press the  button to accept the water budget modification.

Example: Increase Program 1's watering budget to 150%. Press the  button and enter    to set budget at 150%. Press  to accept.

PROGRAM 1
Water Budget=150

Step 5 – Repeat steps 2–4 to modify additional program water budgets.

NOTE: The Monthly percent adjustment and the water budget percentage will multiply together to get the net increase or decrease of the watering cycle.

Step 6 – Return the Function dial to the Auto Run  position to exit SET PROGRAM.

Program Review

Use this function to review program parameters. Parameter modification is not allowed while in review mode.

Review the Program's Parameters

Step 1 – Turn the Function dial to the Program Review  position.

Step 2 – Enter the program number being reviewed.

Step 3 – Press the following buttons to review the parameters:

 - Review the stations and the corresponding runtimes that are assigned to the selected program. When pressed twice, MC-E will sequentially display all activated stations and their runtimes. To review individual stations, enter the station number and press the  button.

 - Review all assigned start times in the program. When pressed, the MC-E will sequentially display all start times beginning from the earliest. Review a specific start time by entering the start time number and pressing the  button.

 - Review the program schedule. The  button can also be used to review the program's schedule.

 - Review the program's water budget for the current month.

Step 4 – Return the Function dial to the Auto Run  position to exit Program Review.

Program Erase – Single Program

Erase Single Program

Step 1 – Turn the Function dial to the Program Erase  position.

```
PROGRAM Erase
Enter Prog #
```

Step 2 – Enter the program number being erased and press  to process.

Example: Erase program 8 by pressing the   buttons.

```
PROGRAM Erase
Erase PGM#8 . . . . .
```

Step 3 – After the deletion, the display will show the following.

```
PROGRAM ERASE
P1P2P3P4P5P6P7
```

Repeat Step 2 to delete additional programs.

NOTE: Erasing a program will revert it back to default. Program default will have no station and runtime assigned but it will have all **Days of the Week** (Sunday through Saturday) active.

Step 4 – Return the Function dial to the Auto Run  position to exit Program Erase.

Program Erase – Complete Program Reset

Activating this function will erase all saved irrigation programs in the MC-E controller. However, it will not erase the current time, date or any **Option** settings.

Reset All Programs

Step 1 – Turn the Function dial to the Program Erase  position.

PROGRAM Erase
Enter Prog #

Step 2 – Enter **1** **3** **7** **9** and press **ENTER**.

Erase PGM 1 to 8
ARE YOU SERIOUS?

Press the **CLEAR** button to exit or press **ENTER** to accept.

Step 3 – Return the Function dial to the Auto Run  position to exit Program Erase.

Program Erase – Complete Controller Reset

Activating this function will erase all data settings in the MC-E controller. The firmware will revert back to factory default settings.

Reset the Controller

Step 1 – Turn the Function dial to the Program Erase  position.

PROGRAM Erase
Enter Prog #

Step 2 – Enter **9** **7** **3** **1** and press **ENTER**.

COMPLETE RESET
ARE YOU SERIOUS?

Press the **CLEAR** button to exit or press **ENTER** to accept.

Step 3 – Return the Function dial to the Auto Run  position to exit Program Erase.

Station Test

The MC-E provides the Station Test to allow you to activate all stations whether they are assigned to a program or not. When a Station Test is performed, the controller will sequence through all the stations and activate them for the specified duration.

Perform Station Test

Step 1 – Turn the Function dial to the Station Test  position.

Set TEST TIME &
Press MAN ON/OFF

Step 2 – Enter the station runtime from 01 second to 30 minutes (seconds must be entered with 0 first, i.e. 45 seconds, enter 045) and press the  to initiate the test.

NOTE: If no runtime is entered before pressing the  button, the controller will test each station for two minutes.

Example: Test each station by activating them for one minute. Press the   buttons.

STATION TEST
STN 1 0m59s

Press the  button to advance to the next station.

Press the  button to Pause the Station Testing procedure.

Turn the Function Dial to  (RAIN OFF) position to Cancel the procedure.

Step 3 – Return the Function dial to the Auto Run  position to exit Station Test.

Options

The Option function allows you to make modifications to the controller's operation.

- Allows program 1–8 to utilize Station 1 as a secondary Master Valve.
- Allows sensor feedback to activate Program 1.
- Allows you to activate or deactivate the Master Valve during station delays.

Options 1–8

Select Program to use Station 1 as a secondary Master Valve.

Activate Option 1–8 to Activate Secondary Master Valve (Station 1)

Step 1 – Turn the Function dial to the Options  position.



```
OPTION# 1
PGM 1  Mv=Master
```

Step 2 – Use the  and  buttons to select the program to modify. Use the  and  buttons to set the Master Valve to Master or Station 1.

Example: Set Program 2 to use Station 1 as a secondary master valve. Press the  or  button until Option# 2 is displayed. Press the  or  button to toggle the Master Valve option to STN 1.



```
OPTION# 2
PGM 2  Mv=STN 1
```

Step 3 – Repeat Step 2 to modify additional programs.

Step 4 – Return the Function dial to the Auto Run  position to exit Options.

Option 10

Option 10 is used in conjunction with the Start Sensor and Program 1. Whenever the Start Sensor is triggered, Program 1 will activate immediately. Program 1 will repeat the cycle continuously until the start sensor is deactivated. All other programs will not be affected and will activate as scheduled.

Activate Option 10

Step 1 – Turn the Function dial to the Options  position. Press the  or  button until Option 10 is displayed.



```
OPTION#10
PGM 1 Start=OFF
```

Step 2 – Use the  or  button to activate or deactivate Option 10. When activated, program 1 will start when the start sensor is triggered.

NOTE: If program 1 has no value, the controller will function normally.

Step 3 – Return the Function dial to the Auto Run  position to exit Options.

Option 11

Option 11 is used to activate or deactivate the master valve during station delays.

Activate Option 11

Step 1 – Turn the Function dial to the Options  position. Press the  or  button until Option 11 is displayed.



```
OPTION#11
StnDelay MV =OFF
```

Step 2 – Use the  or  button to toggle Master Valve function from ON or OFF during station delays.

Step 3 – Return the Function dial to the Auto Run  position to exit Options.

Rain Off

The MC-E provides Rain Off to temporarily suspend the controller's automatic watering. When Rain Off is activated, automatic watering cycles are halted until the Rain Off duration has elapsed. Rain Off can be programmed from 0 (Rain Off deactivated) to 14 days.

Activate Rain Off

Step 1 – Turn the Function dial to the Rain Off  position.

Step 2 – The MC-E will countdown execute a 3-second countdown to cancel any active watering. In this function dial position, all automatic watering will halt until it is returned to Auto Run position.



```
RAIN OFF
All Off:  0 Days
```

Step 3 – You can also set a specific rain delay duration in days.

Example: Place the controller in Rain Off for three days. Enter the desired days off, in this case **3** , and press the  button to accept.



```
RAIN OFF
All Off:  3 Days
```

NOTE: **3 Days** indicate that the current day is day number 3. The controller will countdown at day change until day 0 is met. At day 0, all automatic watering is restored. Disable the Rain Off feature by entering a Rain Off value of 0 day.

Step 3 – Return the Function dial to the Auto Run  position to exit Rain Off.

Manual Operation

The MC-E provides True Manual operation feature for unscheduled station activation. With True Manual, the selected station will then water until you turn it off or until the controller's current time reaches midnight. As a safety precaution, the controller is programmed to halt Manual watering at midnight. When Manual is in operation, MC-E will beep every 30 seconds to indicate active operation.

Activate Station Manually

Step 1 – Turn the Function dial to the Manual  position.



```
Set Station# &
Press MAN ON/OFF
```

Step 2 – Enter the station number (1–48) you want to activate or enter 0 if you only want the master valve to activate. Press the  button to activate.

Example: Activate Station 5. Enter  and press the  button.



```
MANUAL MODE
STN# 5 12h30m05
```

IMPORTANT! The MC-E “True Manual” feature requires you to turn it off once activated. Otherwise, the manual operation is designed to activate until midnight. Notice that the displayed manual operation runtime will always end at midnight.

You can move the station number back or forward by pressing the  or  button.

Step 3 – Return the Function dial to the Auto Run  position to deactivate manual operation and place the controller back to Auto Run mode.

NOTE: Manual watering has the least priority. If a scheduled program activated the maximum available active stations, then Manual operation will not run. When the maximum allowed active stations is reached while manual operation and scheduled program are running, the Manually activated stations will deactivate to accommodate the stations in the automatic program.

Remote Control (Purchased Separately)

The MC-E is equipped with two remote control ports to be used with the Toro Sentinel™ Remote Central System and hand-held maintenance remote controls.

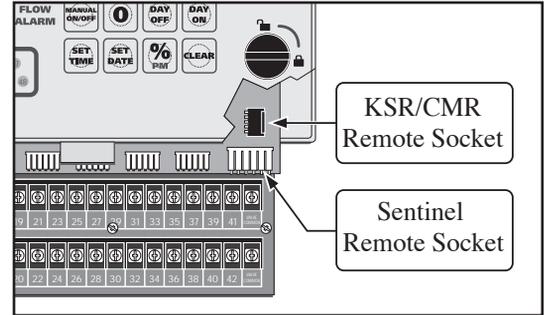
Maintenance Remote Controls

The MC-E can be remotely operated using any of the following remote control systems:

- KwikStart® Remote (KSR-KIT-K) Control System
- Contractor Maintenance Remote (CMR-KIT) Control System
- Eicon's Maintenance Remote Control System
- Remote Control Technology's Remote Control System

Step 1 – Verify that the Function dial is in the Auto Run  position.

Step 2 – Secure the remote control system's receiver cable to the MC-E KSR/CMR remote socket. Remote system such as the KwikStart will require an adapter cable to install. Refer to the remote control system's installation and operation instructions for additional information.



Activate Sentinel Remote Central System

The Toro Sentinel™ Remote Central System is designed to communicate with the MC-E controller using the Toro MC Link remote device.

When the function dial is placed in the Remote Control position, MC-E will immediately stop all activities and it will start receiving Sentinel commands. As long as the function dial is in the Remote Control position, all scheduled programs are ignored and the 5-pin KwikStart Remote (KSR)/Contractor Maintenance Remote (CMR) port is disabled. The MC-E will only operate based on commands received from the Sentinel central.

Step 1 – Secure the 6-Pin ribbon data cable from the MC Link remote device to the MC-E Sentinel remote socket.

Step 2 – Turn the Function dial to the Remote Control  position. Leave the dial at the remote control position to keep the MC-E under Sentinel control.

**Sentinel Control
Start Receiving**

Step 3 – Return the Function dial to the Auto Run  position to exit Sentinel's Remote Control communication.

Notes:

Notes:

Notes:

Specifications

Cabinet Dimensions:

Small Metal Cabinet Unit: (9.71" H) x (10.68" W) x (4.25" D) [(24.66 cm H) x (27.13 cm W) x (10.79 cm D)]

Large Metal Cabinet Unit: (12.37" H) x (14.32" W) x (4.75" D) [(31.42 cm H) x (36.37 cm W) x (12.06 cm D)]

Input Voltage:

Domestic:

Primary - 115 VAC, 50/60 Hz; Secondary - 24 VAC, 50/60 Hz, 50VA Class 2 Transformer, UL and CSA Listed.

Export:

Primary - 250 VAC, 50/60 Hz; Secondary - 24 VAC, 50/60 Hz, 50VA Class 2 Transformer, CE and TUV Listed.

Output Voltage:

Station Output Voltage: 24 VAC

Station Output Current including Master Valve/Pump Start: 1.24 Amps Max. @ 24VAC

Total Output Current to Valves: 1.80 Amps including Master Valve/Pump Start

Storage Temperature:

4° F to 140° F (-20° C to 60° C)

Operating Temperature:

32° F to 160° F (0° C to 60° C)

Humidity:

95% RH, Non Condensing, @ 100° F (37.8° C)

Electromagnetic Compatibility

Radio complies with FCC Part 22 and Part 90 of the FCC Rules

Domestic: This equipment has been tested and found to comply with the limits for a FCC Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. The equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to the radio communications. Operation in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

