User Manual

BERMAD™

BIC 2/4/6

Landscape Irrigation Controller

Drip Irrigation | Micro Sprinklers | Sprinklers

Table of Contents

General

Thank you for purchasing BERMAD's BIC 2/4/6 Irrigation Controller.
This manual describes how to get the BIC 2/4/6 Controller up and running quickly.
After reading this manual and becoming familiar with the Controller's basic functionality the user may further use this manual as a reference for the controller's less common features and operations.

1. Components Identification

About the Controller

The BIC 2/4/6 control a two, four or six irrigation stations (according to the specific model purchased). To each station the user can assign an irrigation program that defines the start time and the irrigation duration. The controller is powered by two AA Alkaline batteries that can last for up to 3 years. The controller includes a rain sensor connection for efficient and economical water usage.
The controller enclosed in a compact, outdoor waterproof housing that protects it from the elements.

1. Controller's Cover
2. Quick reference sticker
3. LCD display with icon based functions
4. 7 buttons keypad used for programming, system on/off, manual run and reviewing programs.
5. Batteries compartment cover for two AA alkaline batteries (not included).
6. Controllers model sticker

Typical Irrigation System

The controller is integrated in the irrigation system head (not supplied with the controller) that includes:

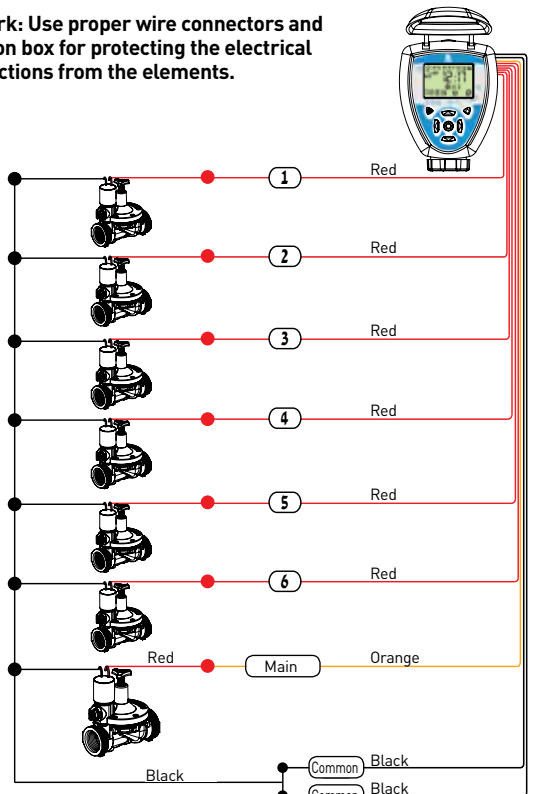
1. Irrigation valves
2. Connection box for wiring the valves
3. BIC 2/4/6 Controller
4. Optional Main valve that opens before the first irrigation valve and closes after the last valve completed its irrigation duration.
5. Wiring conduit for connecting the valves and the rain sensor
6. Additional components for regulation, filtration and air release from the flowing water.

Controller's Wiring

The controller is supplied with bundle of labeled wires.

1. Connect the Red wire of the valve to the Red wire of the controller that is labeled with the corresponding valve number.
2. Connect the Red wire of the main valve to the Orange wire of the controller that is labeled "Main".
3. Connect the Black wires of all the valves to the two controller Black wires labeled "Common".

Remark: Use proper wire connectors and junction box for protecting the electrical connections from the elements.



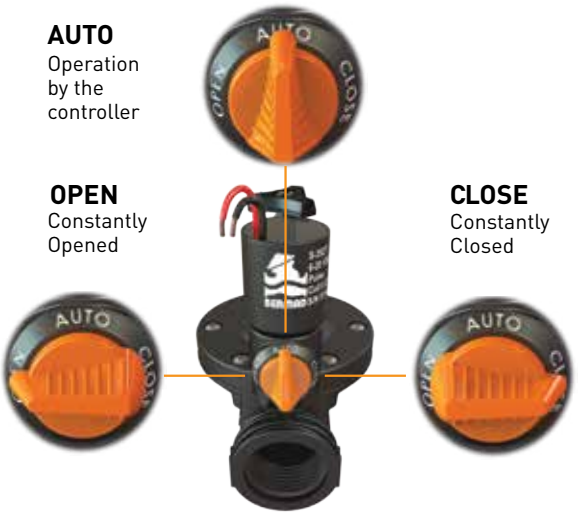
Valve Operation Handle

The valve includes an operation handle that allows the user to:

- Manually operate the valve - OPEN or CLOSE positions
- Automatically operate the valve - AUTO position

Remark: for operating the valve via the controller the handle must be in the AUTO position.

IMPORTENT: In order to shift back from manually "Open" to "Auto" you must first turn the selector to "Close" position and then back to "Auto".



2. LCD Display and Keypad

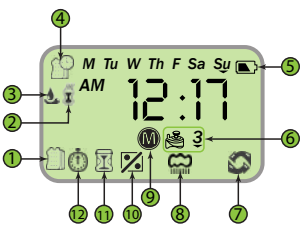
Keypad

The Keypad is used for programming and operating the controller. The following Icons appear at the various sections of this user manual, they represent the various actual keys of the controller's keypad.

Button	Description
⊙	ENTER/EXIT Adjustment Mode
◀▶	Left/Right
▼▲	Increase/Decrease the selected value
⏻	Run ON/OFF Program
💧	Start/Stop manual irrigation

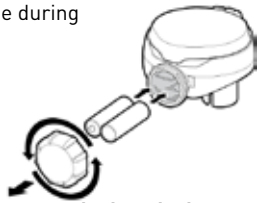
LCD

1. **Set Irrigation Days Icon –** Select specific irrigation days, odd/even days or irrigation in up to every 30 days interval.
2. **Rain Delay Icon –** Appears during rainfall or when the Yellow cable loop is cut; the irrigation is suspended.
3. **Irrigation Status Icon –** Appears when the controller is irrigating.
4. **Time and Date Icon -** appears when the current time and date are displayed in the middle of the screen.
5. **Battery Level Indicator –** Flashes when the batteries are low and need to be replaced.
6. **Valve Number Icon -** During operation displays the irrigating valve number. During programming displays the number of the valve to be programmed.
7. **Manual Start Icon –** Appears when the manual start button is pressed.
8. **Rain Delay Icon –** Enables irrigation delay from 1 to 99 days, irrigation resumes automatically.
9. **Main Valve Icon -** Appears when the main valve is defined.
10. **Irrigation Percentage Icon -** Appears during setting irrigation as a percentage of the regular program.
11. **Run-time Icon –** Select irrigation duration from 1 minute up to 5 hours and 59 minutes.
12. **Start-time Icon –** Set up to 5 start times per day.



3. Initialization

This chapter describes the operations to be done during the first start-up of the controller.



Installing the Batteries

1. Open the batteries compartment cover by turning it counter-clockwise.
2. Install two, fresh, brand name, AA alkaline batteries (not included).

Attention: note for the proper polarity direction as marked on the bottom of the controller's housing.

3. Insert and screw the batteries cover clockwise. Tighten the cover firmly with hand force only. The controller display starts with the day, PM, and the hour digit flashing. The controller is ready for programming.

Setting the current Time and Date

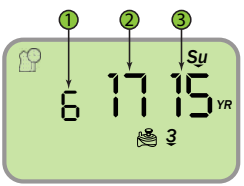
Perform the following actions when the Time/Date display is flashing:

1. Use the ▼ and ▲ buttons to set the Time.
   Please note the AM/PM labels as they changed after the hour 12.
2. Press the ▶ button

   The minutes digits start flashing
3. Use the ▼ and ▲ buttons to set the Minutes.
4. Press the ▶ button to move to the Date values display

Please note that the date format is American; Month, Day and finally the Year. The day of the week is automatically set according to the date set.

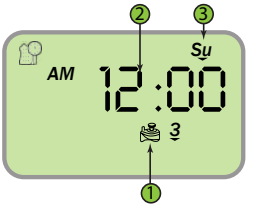
5. Use the ▼ and ▲ buttons to set the Month (1).
6. Press the ▶ button to move to the Day value display (2).
7. Use the ▼ and ▲ buttons to set the Day.
8. Press the ▶ button to move to the Year value display (3).
9. Use the ▼ and ▲ buttons to set the Year.



10. Press the ⊙ Icon to return to the main screen.

Remark: In order to ensure proper operation make sure that the controller time and date are matching the actual current time and date.
For setting the Time/Date press the ⊙ Icon at the main screen.

The Main Screen



The main screen is displayed during the controller's regular operation and is used as a start point for the programming process as described in the following paragraphs.

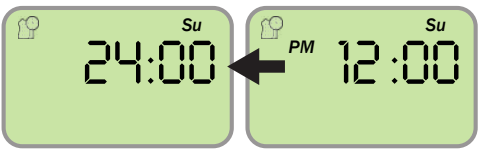
The main screen displays the following:

- Day of the week (3).
- System Time (2)
- Information about the irrigating valves (1) or to be irrigating today.

Setting the Time format

In order to change the time format from the main screen:

1. At the main screen press the ▼ button for three seconds until the Time/Date icon switches the time format. (The AM/PM label disappears at the 24h format).



Main Valve Definition

Whenever the main valve is defined as active, its icon will appear on the screen. The main valve will open automatically with the opening of any valve.

To define the main valve as active, at the main screen press the ▲ button for 3 seconds until the main valve icon Ⓜ appears on the screen.

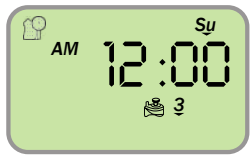
4. Setting Irrigation Programs

This chapter describes the programming process of automatic irrigation programs:

The BIC controller allows different irrigation program per each system valve.

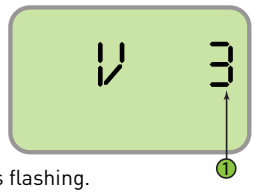
The Main Screen

Make sure that the main screen is displayed The system time appears in the middle of the screen and the day of the week is displayed on the screen's upper part.



Selecting a Valve

For selecting the valve to be programmed:



1. At the main screen press the ▶ button
   The number of the valve appears (umber 1 on the figure).
2. Press the ⊙ button, the valve number starts flashing.
3. Use the ▼ and ▲ buttons to select the relevant valve number.
4. Press the ⊙ button to confirm your selection.
5. Press the ▶ button to move to the next step "setting the irrigation days".

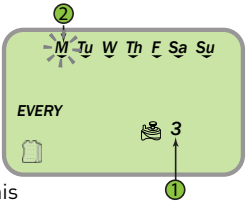
Setting the Irrigation Days

A screen with the valve number and the label OFF appears.

This indicates that no irrigation program is set for this valve.

Important: this screen does not appear when this valve has an irrigation program already.

Press the ⊙ button

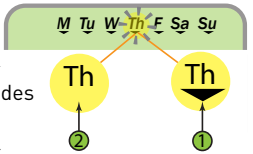


The screen displays the days of the week and the valve number to be programmed.

The first day of the week (Monday) is flashing (2).

The arrow under the day symbol indicates that this day is assigned for irrigation (see number 1 in the picture).

As default all the days of the week are assigned for irrigation.

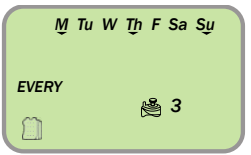


1. Press the ▼ button (2) until the arrow under the day symbol disappears. This action excludes this day from the irrigation days.
2. Press the ▲ button (1) until the arrow under the day symbol appears. This action set this day for irrigation.
3. Use the ▶ button to move to another day, the selected day starts flashing.

Important: Pressing the Y button while M is flushing or pressing the W button while Su is flushing shifts the controller to irrigation by days-interval mode. Press the opposite arrow to return to days of the week mode.

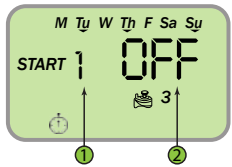
4. Select the required irrigation days for the selected valve.

Example: The screen on the right displays irrigation setting for valve number 3 on Monday, Thursday and Sunday.



5. Press the ⊙ button
6. Press the ▶ button to move to the next stage "setting the irrigation start time".

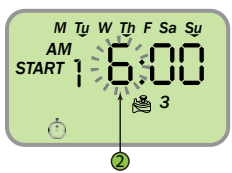
Setting the Irrigation Start Time



To each valve can be assigned with up to five different start times per irrigation day.

For setting start time for the first daily cycle at the selected day (START 1) press the ⊙ button for setting the required start time. The value (2) starts flashing.

Remark: The value OFF indicates that no start time is set.



1. Use the ▼ and ▲ buttons to set the required start hour (2).

   Remark - To cancel an irrigation start time press the ▲ button when the hour digits are flashing until you pass the midnight digits.
2. Use the ▶ button to move to the minutes setting.
3. Use the ▼ and ▲ buttons to set the required minute.
4. Press the ⊙ button to end the process.

   For setting additional start times for this day:
5. Use the ▼ and ▲ buttons to select the second start time (START 2).
6. Repeat steps 1-5 for setting the required start time.
7. Repeat these steps for each one of the start times you need to set.
8. Press the ▶ button to move to the next stage "setting the irrigation duration".

Setting the Irrigation Duration

The irrigation duration is defined in hours and minutes. The irrigation takes place on each day and start time as set in the previous programming steps.

The ⌛ Icon appears on screen.

For setting the irrigation duration:

Press the ⊙ button the hours digits start flashing

Use the ▼ and ▲ buttons to set the flashing value.

Use the ◀ and ▶ buttons to move from the hours to the minute's digits and set the desired value.

Press the ⊙ button

Remark: The programming steps for the selected valve are completed. In order to return to the main screen press three times on the ▶ button.

From the main screen you may repeat the above described steps in order to set the irrigation program for the rest of the system's valves.

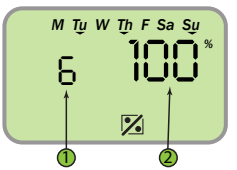
For additional programming options and for irrigating percentage of an existing program press the ▶ button.

Irrigating a percentage of an existing program

When there is a need to change the irrigation duration for every month of the year it is possible to set the percentage irrigation feature of the controller (5% - 200%).

This feature helps to set the irrigation during weather changes without changing the basic irrigation program.

Remark: These settings applied for all the controller's valves.



The screen displays the ⊠ icon, the month (1) and the irrigation percentage (2).

Example: the figure depicts a setting for irrigating 100% of the program during the month of June.

1. For changing the settings press ⊙ The percentage value starts flashing.
2. Use the ▼ and ▲ buttons to set the required percentage for the displayed month.
3. Use the ◀ and ▶ buttons to move to a deferent month and set the desired percentage.
4. Press the ⊙ button to end the programming process.
5. Press the ▶ button to move to the "Setting rain delay" settings.

Setting the Rain Delay

This option is used to suspend the irrigation programs for a predefined number of days when a signal is received from the rain sensor. For example, during rainy weather regularly scheduled programs can be suspended for duration of 1-99 days. At the end of the designated period, regularly scheduled programming resume operation automatically.

The screen displays the Icon and the delay days value. The label OFF indicates that no rain delay is set.

For Setting rain delay:

1. For changing the settings press ⊙. The value starts flashing.
2. Use the ▼ and the ▲ buttons for setting the maximal rain suspension days between 1 to 99 days.

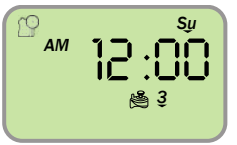
Remark: The value OFF appears between the 99 and the 1 values.

3. Press the ⊙ button to end the programming process.
4. Press the ▶ button to return to the main screen.

5. Irrigating by Days Interval

For setting irrigation in pre-defined days interval:

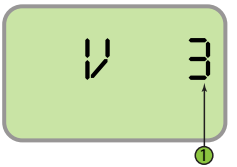
The System's Main Screen



Make sure that the main screen is displayed

The system time appears in the middle of the screen and the day of the week is displayed on the screen's upper part.

Selecting a Valve

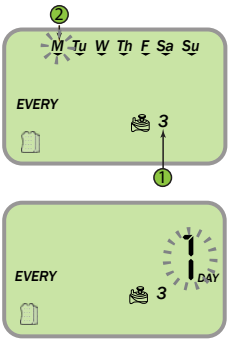


1. At the main screen press the ▶ button.
   The number of the valve appears.
2. Use the ▼ and ▲ buttons to select the valve to be programmed.
3. Press ▶ button to move to the next step.

Setting the Irrigation Days

The screen displays the days of the week and the valve to be programmed number (1).

Remark: The label OFF indicates that no program is assigned to this valve.

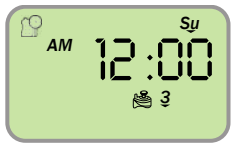


1. Press the ⊙ button, the first day of the week (Monday) starts flashing (2)
2. Press the ◀ button to move to irrigation by days' interval.
   The icon appears and the number of days starts flashing.
3. Use the ▼ and ▲ buttons to set the required interval.
4. Press the ⊙ button to end the programming process.
5. Press the ▶ button to move to the "Start time's settings" (see page 12).
6. Press the ▶ button again to move to the "Set the irrigation duration settings" (see page 13).

6. Irrigating on EVEN/ODD Days

For setting the irrigation programs for Even or Odd days of the month:

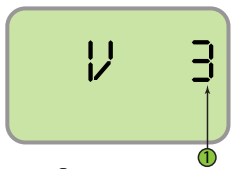
The System's Main Screen.



Make sure that the main screen is displayed

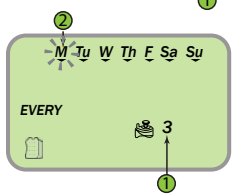
The system time appears in the middle of the screen and the day of the week is displayed on the screen's upper part.

Selecting a Valve



1. At the main screen press the ▶ button.
   The number of the valve appears.
2. Use the ▼ and ▲ buttons to select the valve to be programmed.
3. Press ▶ button to move to the next step.

Setting the Irrigation Days



The screen displays the days of the week and the valve to be programmed number (1).

Remark: The label OFF indicates that no program is assigned to this valve.

1. Press the ⊙ button, the first day of the week (Monday) starts flashing (2)
2. Press the ◀ button to move to irrigation by days› interval.
3. Press the ◀ button again to move to irrigation on EVEN/ODD days.
   The icon appears and the irrigation method starts flashing.
4. Use the ▼ and ▲ buttons to select the desired method.
   - EVEN - every even day of the month (2, 4, 6....)
   - ODD - every odd day of the month (1, 3, 5....)
5. Press the ⊙ button to end the programming process.

6. Press the ▶ button to move to the "Start time›s settings" (see page 12).
7. Press the ▶ button again to move to the "Set the irrigation duration settings" (see page 13).

7. Operating Group of Valves

As default each valve operates separately according to its designated irrigation program. For operating together two or more valves they should be joined to a group. Valve can be connected to its previous valve only, e.g. valve 3 to valve 2.

For setting a valves group:

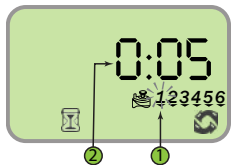
1. in the "Set irrigation duration screen (Page 13) use the ▼ button to lower the irrigation duration to less than 00:05, the label GRP appears.
2. Press the ⊙ button
   The valve is grouped now.

For example: the above screen shot shows that valve number 3 operates together with valve 2 and according to the irrigation program of valve 2.

8. Manual Irrigation

It is possible to operate a valve for a preset time separated from its regular irrigation program.

Selecting the Valve:



For manual operation of one of the valves:

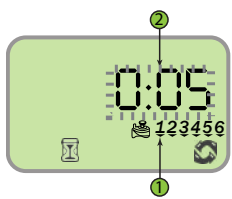
1. From any screen press the ♦ button.
   - The screen displays the list of the controller's valve and the time for the manual operation (2).
   - The selected valve starts flashing.
2. Use the ◀ and ▶ buttons to select the desired valve.

Operating the Valve

Press the ⊙ button to operate the selected valve.

The valve opens. The label ON and the valve number appear for short time.

Setting/monitoring the irrigation duration



When the valve is ON:

- The time left for the manual operation is flashing (2).
- The arrow under the opened valve is flushing (1).

1. As needed use the ▼ and ▲ buttons to change the irrigation duration.
2. Press the ♦ button to end the manual irrigation.

   The controller displays the label OFF and after 5 seconds returns to the main screen.

9. Resetting or Suspending the Controller

To reset the controller to its factory default settings:

From the "Set irrigation days screen" (see page 11) press the ▲ button for 3 seconds.

- The main screen appears
- All values return to their default settings.
- The current Time and Date settings remain

Suspending the system operation

For suspending the controller and stopping the irrigation:

Press the ⏻ button

The controller displays the OFF label and the system is suspended.

10. Connecting the Rain Sensor

Most "normally closed" rain sensors can be connected to the BIC 1 Controller. The function of the sensor is to suspend automatic irrigation during rainfall.

To connect the sensor to the controller, please follow these steps:

1. Cut in the middle the yellow wire loop that hangs out of the controller's housing lower side.
2. Strip approximately ½" of the insulation from the ends of the cut yellow wire.
   Connect the two yellow wires to the wires of the rain sensor. Use waterproof wire connectors to secure the connections.
3. When the sensor is active and automatic irrigation is suspended, the icon appears on the screen.
   Remark: the icon appears when the sensor is active or when the yellow wire loop is cut opened.
   Attention:

- The rain sensor is not part of this product and it is not supplied with it.
- Recommended rain sensors are supplies by Rain Bird RSD or Hunter Mini-Clik

11. Replacing the Batteries

The BIC controllers' batteries can last up to 3 years when using good quality AA alkaline batteries.

Actual battery life depends on the batteries sensitivity to temperature variations the controller is exposed to, and to the number of valve operations per day.

To ensure proper operation, it is recommended to regularly check the batteries and replace them once the low battery indication starts flashing.

For replacing the batteries instructions see page??

In order not to reset the time and date settings the BIC controller is designed to retain the current time settings for up to 60 seconds with the batteries removed.

To change the batteries, see section 5.

Remark - in case the batteries are completely empty it is possible to operate the valves manually (see the valve›s operating handle on page 5).

12. Maintenance, Troubleshooting and Repairs

Symptom: **The valve fails to open automatically or manually.**
Possible cause - Too low water pressure
Solution - Open the main valve of the water supply line

Symptom: **The valve operates manually but not automatically**
Possible cause - The controller is in OFF mode
Solution - make sure that the word OFF is not displayed instead of the current Time and Date
Possible cause - The AM/PM setting is not set correctly
Solution - check the start time and if needed change the AM/PM setting
Possible cause - The rain sensor is suspending the irrigation
Solution - set the rain sensor to OFF mode
Possible cause - The yellow wire is cut
Solution - reconnect the yellow wire with water proof connectors.
Possible cause - The rain sensor is connected and suspends the irrigation
Solution - check the rain sensor and its connections. Make sure it is of NC (Normally closed) type.

Symptom: **The screen is blank**
Possible cause - No key was pressed during the last 15 minutes
Solution - Press any key on the keypad.

Symptom: **The rain sensor dose not suspend the irrigation**
Possible cause - The sensor id of NO (Normally Open) type, the sensor is faulty or incorrectly wired.
Solution - Make sure that the Rain Icon appears on screen when the sensor is manually set to rain detection mode. Check the sensor connections.

Symptom: **The controller irrigates more that once a day**
Possible cause - The controller is programmed for more than one start time per day
Solution - Set the 2, 3, 4 and 5 start times› settings to OFF.

BERMAD Standard International Warranty

BERMAD manufactured products are guaranteed to be free from defect in material and/or workmanship and to perform as advertised when properly installed, used and maintained in accordance with current instructions, written or verbal.

Should any item prove defective within the period set forth for that item, but in any case not later than within 12 (twelve) months from the time that product left BERMAD's premises, and shall be received by BERMAD or its authorized representative, or written notice thereof from the purchaser within 30 days of discovery of such failure – BERMAD will repair or replace any item proven defective in workmanship or material, or will refund the purchase price, at its sole option.

BERMAD will not be responsible for, nor does this warranty extend to, any consequential or incidental damages or expenses of any kind or nature, of any kind, regardless of the nature thereof, including without limitation injury to persons or property, loss of use of the products, loss of goodwill, loss of profits, or any other contingent liabilities of any kind or character alleged to be the cause of loss or damage to the purchaser.

This warranty does not cover damage or failure caused by misuse, abuse or negligence, nor shall it apply to our products upon which repairs or alternations have been made by other than an authorized BERMAD representative.

This warranty does not extend to components, parts or raw materials used by BERMAD but manufactured by others, which shall be covered only to the extent warranted by the manufacturer's warranty.

There are no warranties, express or implied, except this warranty, which is given in lieu of any other warranties, express or implied, including any implied warranty of fitness for a particular purpose.

info@BERMAD.com • www.BERMAD.com

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