

BaseStation 3200 Irrigation Controller Setting Up Water Source Priorities

With Baseline’s BaseStation 3200 irrigation controller, you can use water from multiple sources to run your irrigation programs. When an irrigation system is connected to multiple water sources, the water manager usually wants to use the water from each source in a prioritized manner – typically based on the cost of the water from each source.

The BaseStation 3200 controller supports 8 water sources. If you have control points (with flow devices and master valves) associated with each water source, the controller can manage each one independently based on the priorities that you set up.

In order to draw water from separate sources based on priority, your piping structure must be designed so that your separate water sources feed into the mainline where your valves are attached and you must have a flow device such as Baseline’s BHM series hydrometer with a normally closed master valve assigned to the control point.

The BaseStation 3200 controller accommodates many ways of configuring water sources, control points, and mainlines.

You can also configure the BaseStation 3200 irrigation controller to shut down watering based on the amount water left in a reservoir. Refer to the following documents:

[BaseStation 3200 – Stop Watering Based on a Water Source Empty Condition](#)

[BaseStation 3200 – Shutting Down Irrigation Due to Low Water in a Pond or Cistern](#)

Overview of the Steps for Setting Up Water Source Priorities

Step 1 – Install the flow devices.

Step 2 – Search for and assign the flow devices.

Step 3 – Search for and assign the master valves.

Step 4 – Assign the master valves and flow devices to the control points.

Step 5 – Set up your control points.

Step 6 – Set up and prioritize your water sources.

Step 7 – Assign water sources to the downstream hydraulic components.

Step 8 – Assign zones to their appropriate mainlines.

Step 9 – Consider the mainline operating limits.

Step 1 – Install the Flow Devices

Follow the instructions that came with your flow devices to install them in the proper locations for monitoring the flow from your water sources.

Create a diagram that shows your control points by number and the serial numbers of the associated flow devices.

Step 2 – Search For and Assign the Flow Devices

The BaseStation 3200 supports up to 8 flow sensors or meters, which manage and monitor flow across a site when associated with a control point.

In addition to finding flow biCoders, this search finds two-wire flow meters with integrated master valves.

1. On the BaseStation 3200 controller, turn the dial to the **Assign** position.
2. Press the **Next** or **Previous** button to select **Assign biCoders to Flow Meters**, and then press the **Enter** button.
3. Press the **+** or **-** button to select **Search** in the biCoders column.
4. Press the **Enter** button to search for flow meters. The display shows the serial numbers of the devices found in the left column and the numbered ports or addresses available in the right column.
5. Press the **+** or **-** button to select the flow meter that you want to assign.
6. Press the **Next** or **Previous** button to move to the **Flow Assignments** column and select an available number.
7. Press the **Enter** button to assign the selected flow meter to that number.
8. When you have finished making changes, turn the dial to the **RUN** position.

Step 3 – Search For and Assign the Master Valves

1. Turn the dial to the **Assign** position.
2. Press the **Next** or **Previous** button to select **Assign biCoders to Master Valves**, and then press the **Enter** button.
3. Press the **+** or **-** button to select **Search** in the biCoders column.
4. Press the **Enter** button to search for flow meters. The display shows the serial numbers of the devices found in the left column and the numbered ports or addresses available in the right column.
5. Press the **+** or **-** button to select the flow meter that you want to assign.
6. Press the **Next** or **Previous** button to move to the **MV Assignments** column and select an available number.
7. Press the **Enter** button to assign the selected master valve to that number.
8. When you have finished making changes, turn the dial to the **RUN** position.

Step 4 – Assign the Master Valves and Flow Devices to the Control Points

1. Turn the dial to the **Water Sources** position.
2. Press the **Next** button to highlight the **Assign Devices to Control Points** option.
3. Press the **Enter** button. The Devices → CP screen displays.

4. In the **Control Point** field, press the + or – button to select the control point that you want to assign devices to.

IMPORTANT! A device can only be assigned to one control point.

Devices → CP		Water Sources	
		Control Point {Control Point 1}	CP1
Master Valve Enabled	Normally Open		
MV 2	Y	NO	
Pump	Enabled		
-			
Flow biCoder Enabled	K-Value	Pulses/Gal	
FM 2	Y	0.311	193
Pressure	Enabled	4 ma value	20 ma value
PR 1	Y	0.00	150.00
			Help

5. Press the **Next** button to move to the **Master Valve** field, and then press the + button to find the device that you want to assign.
6. Press the **Next** button to move to the **Enabled** field. By default, the master valve is enabled. Press the + or – button to change the setting to disabled as needed.
7. Press the **Next** button to move to the **Normally Open** field, and then press the + or – button to toggle the value in the field between **YES** and **NO**.
8. Press the **Next** button to move to the **Pump** field, and then perform the following optional steps as needed:
 - a. Press the + button to find the device that you want to assign.
 - b. Press the **Next** button to move to the **Enabled** field. By default, the pump is enabled. Press the + or – button to change the setting to disabled as needed.
9. Press the **Next** button to move to the **Flow biCoder** field, and then press the + button to find the device that you want to assign.
10. Press the **Next** button to move to the **Enabled** field. By default, the flow biCoder is enabled. Press the + or – button to change the setting to disabled as needed.
11. Press the **Next** button to move to the **K-Value** field. Press the + or – button to enter the calibration factor for the flow device that this flow biCoder is connected to.
12. Press the **Next** button to move to the **Pulses/Gal** field. Press the + or – button to enter the calibration factor for the flow device that this flow biCoder is connected to.
13. Press the **Next** button to move to the **Pressure** field, and then perform the following optional steps as needed:
 - a. Press the + button to find the device that you want to assign.
 - b. Press the **Next** button to move to the **Enabled** field. By default, the pressure biCoder is enabled. Press the + or – button to change the setting to disabled as needed.
 - c. Press the **Next** button to move to the **4 ma** value field. Press the + or – button to set the value in this field to the minimum reading when the sensor is at 4mA.
 - d. Press the **Next** button to move to the **20 ma** value field. Press the + or – button to set the value in this field to the maximum reading when the sensor is at 20mA.
14. When you have finished making changes, turn the dial to the **RUN** position.

Step 5 – Set Up Your Control Points

When you have a control point assigned to the mainline that is the output from your reservoir, you can set up flow limits and budgets for the water flowing through this control point. The fields on the CP Settings screen are described as follows:

- **Design Flow** – In this field, you can enter the specified gallons per minute (GPM) for the water running through the flow device to the connected mainline. The BaseStation 3200 uses this value to manage the number of concurrent zones so that the water is used as efficiently as possible. If you set this value to zero, you cannot use this GPM amount to control zone concurrency.
- **High Flow Limit** – The system uses the GPM value in this field as a critical limit. When this value is greater than zero, the system compares the limit against the measured reading from the flow device every minute. If the flow rate reading exceeds the limit for 3 or 4 minutes in a row, the system generates an alert.

If you set the Shut Down field to Y (yes), then zones (valves) assigned to this control point's mainline will be stopped and corresponding master valves (MVs) will be shut off when the flow rate exceeds the limit.

If the flow device is a Flow+NOMV (normally open master valve) type, the flow limit is programmed into the flow device. The system monitors the high flow limit and the NOMV shuts off when the flow limit is exceeded. When a flow device is connected to external power, the NOMV will shut off even when the controller off or powered down.

- **Unscheduled Flow Limit** – When this limit is set to greater than zero, the system monitors the flow 24x7 for any flow that does not correspond to running programs.

When you have a NOMV, you can set this limit to allow some flow that is off schedule, such as from manual taps or hose bibs.

If the flow exceeds the limit for several minutes, the system generates an alert. If you set the Shut Down field to Y (yes), then the associated MVs will turn off.

- **Pressure Limits** – If you have a pressure sensor and pressure biCoder associated with this control point, you can set operating limits based on pressure readings.

To set up a control point

1. Turn the dial to the **Water Sources** position.
2. Press the **Next** or **Previous** button to select the **Control Point Setup** option.
3. Press the **Enter** button. The CP Settings screen displays.
4. In the **Control Point** field, press the + or – button to designate a number for the control point that you want to set up.
5. Press the **Next** button to move to the **Use this CP** field. Press the + or – button to toggle between **YES** and **NO** as needed.
6. Press the **Next** button to move to the **Design Flow GPM** field, and then press the + or – button to enter the amount of flow in gallons per minute (GPM) that is allowed through this control point for the irrigation system.
7. Press the **Next** button to move to the **High Flow Limit GPM** field, and then press the + or – button to enter the maximum amount of flow in gallons per minute.
8. Press the **Next** button to move to the **Shut Down** field. If you want zones (valves) assigned to this control point’s mainline to be stopped and corresponding MVs shut off when the flow rate exceeds the limit, press the + button to enter a **Y** (yes) in the field. If you do not want excessive flow to shut down the system, enter an **N** (no) in the field.
9. Press the **Next** button to move to the **Unscheduled Flow Limit GPM** field, and then press the + or – button to enter the maximum amount of unscheduled flow in gallons per minute.
10. Press the **Next** button to move to the **Shut Down** field. If you want the associated MVs to turn off when an unscheduled flow exceeds this limit, press the + button to enter a **Y** (yes) in the field. If you do not want excessive flow to shut down the system, enter an **N** (no) in the field.
11. Press the **Next** button to move to the **High Pressure Limit PSI** field, and then press the + or – button to enter the maximum amount of pressure in PSI.
12. Press the **Next** button to move to the **Shut Down** field. If you want the associated MVs to turn off when the pressure exceeds this limit, press the + button to enter a **Y** (yes) in the field. If you do not want excessive pressure to shut down the system, enter an **N** (no) in the field.
13. Press the **Next** button to move to the **Low Pressure Limit PSI** field, and then press the + or – button to enter the minimum amount of pressure in PSI.
14. Press the **Next** button to move to the **Shut Down** field. If you want the associated MVs to turn off when the pressure drops below this limit, press the + button to enter a **Y** (yes) in the field. If you do not want low pressure to shut down the system, enter an **N** (no) in the field.

CP Settings	Water Sources	
Control Point {Control Point 1}	CP1	
Use this CP	YES	
Design Flow GPM	20.0	Shut Down
High Flow Limit GPM	0.0	-
Unscheduled Flow GPM	0.0	-
High Pressure Limit PSI	0.00	-
Low Pressure Limit PSI	1.00	NO
[WS1] --> [CP1] --> [ML1]		
Help		

Step 6 – Set Up and Prioritize Your Water Sources

1. Turn the dial to the **Water Sources** position.
2. If the **Water Sources Setup** option is not highlighted, press the **Next** or **Previous** button to select it.
3. Press the **Enter** button. The WS Settings screen displays.

WS Settings	Water Sources
Water Source {Well}	WS1
Use this WS	YES
Priority (1=High)	1
Monthly Budget GAL	100.0
Daily Water Rationing	NO
	Shut Down YES
[WS1] --> [CP1] --> [ML1]	
Help	

4. In the **Water Source** field, press the + or – button to designate a number for the water source that you want to set up.
5. Press the **Next** button to move to the **Use this WS** field. Press the + or – button to toggle the setting between **YES** and **NO** as needed.
6. Press the **Next** button to move to the **Priority** field. Press the + or – button to change the value in the field to a number between 1 and 10 where 1 is the highest priority. When an irrigation system has more than one water source with different priorities, water from the source with the highest priority is used first until the monthly budget limit is reached. Then the system switches to the water source with the next highest priority.
7. Press the **Next** button to move to the **Monthly Budget GAL** field. Press the + or – button to change the value in the field to show the number of gallons that can be used from this water source during a month. The value increases in increments of 250 gallons.

Note: When the value in the Monthly Budget field is greater than zero, the system monitors the total water used during a single month. If the monthly water used exceeds this number, an alert is generated. If you set the Shut Down field to YES, then the water is stopped until the first of the next month.

8. Press the **Next** button to move to the **Shut Down** field. Press the + or – button to toggle the value in the field between **YES** and **NO**. This setting indicates whether the water source will shut down when the monthly budget amount has been exceeded.
9. Press the **Next** button to move to the **Daily Water Rationing** field. Press the + or – button to toggle the value in the field between **YES** and **NO**. When you enable water rationing, the system determines the daily water ration by dividing the number of gallons in the Monthly Budget field by the number of days in the month. The system will use only the ration amount for daily watering. If a day is skipped, that water ration is available the next day.

Step 7 – Assign Water Sources to the Downstream Hydraulic Components

The BaseStation 3200 supports 8 separate water sources. From the factory, the controller has water source 1 (WS1) enabled and connected to control point 1 (CP1). CP1 is enabled and connected to mainline 1 (ML1). No other water sources are connected or enabled.

Connecting a Water Source to a Control Point

Each water source must be connected to at least one control point.

1. Turn the dial to the **Water Sources** position.
2. Press the **Next** button to select the **Assign Water Sources to Control Points** option.

3. Press the **Enter** button. The WS→CP screen displays.
4. Press the **+** or **-** button to select any available water source in the left column.

Note: If you don't see any water sources in the left column, press the **+** button to move down in the list.

5. Press the **Next** or **Previous** button to move to the **Control Points** column and select an available control point.

WS→CP		Water Sources	
Water Sources		Control Points	
-		CP1	WS1
-		CP2	WS2
-	Press Enter	CP3	WS3
WS4	←-----→	CP4	-
WS5		CP5	-
WS6		CP6	-
- or + Key		Previous or Next Key	

6. Press the **Enter** button to connect the water source to that control point.
7. Perform one of the following options:
 - If you want to connect another water source to a control point, repeat steps 4 – 6.
 - If you have finished making changes, turn the dial to the **RUN** position.

Connecting a Control Point to a Mainline

1. Turn the dial to the **Water Sources** or **Flow** position.
2. Press the **Next** or **Previous** button to select the **Assign Control Points to Mainlines** option.
3. Press the **Enter** button. The CP →ML screen displays.

4. Press the **+** or **-** button to select any control point in the left column.
5. Press the **Next** or **Previous** button to move to the **Mainline Assignment** column.
6. Press the **+** or **-** button to select the mainline that you want the control point to be connected to.

CP→ML		Water Sources	
Control Point		Mainline Assignment	
CP1		ML-1	
CP2		ML-2	
CP3		ML-3	
CP4		None	
CP5		None	
CP6		None	
[WS3] --> [CP3] --> [ML3]			
			Help

7. Perform one of the following options:
 - If you want to connect another control point to a mainline, press the **Previous** button to return to the left column, and then repeat steps 4 – 6.
 - If you have finished making changes, turn the dial to the **RUN** position.

Step 8 – Assign Zones to Their Appropriate Mainlines

1. Turn the dial to the **Flow** position.
2. Press the **Next** or **Previous** button to select the **Assign Zones to Mainlines** option.
3. Press the **Enter** button. The Zones →ML screen displays.
4. Press the **+** or **-** button to select any zone in the left column.
5. Press the **Next** button to move to the **Mainline** column.
6. Press the **+** or **-** button to select the mainline that you want the zone to be assigned to.

Zones --> ML		Flow	
Zones	Mainline	Zone Flow	
-	-	-	
-	-	-	
ZN 1	ML1	20.5	
ZN 2	ML2	20.5	
ZN 3	ML3	20.5	
-	-	-	
{Zone 1}			
{Mainline 1}			
			Help

7. Press the **Next** button to move to the **Zone Flow** column.
8. Press the **+** or **-** button to set the value of the GPM flow for this zone.
9. Perform one of the following options:
 - If you want to assign another zone to a mainline, press the **Previous** button to return to the left column, and then repeat steps 4 – 8.
 - If you have finished making changes, turn the dial to the **RUN** position.

Step 9 – Consider the Mainline Operating Limits

After you have configured your control points, devices, and water source priorities, you need to consider the mainline operating limits to ensure that your irrigation system behaves as expected.

To set up the mainline, turn the dial to the **Flow** position, and then press the **Next** button to highlight the **Mainline Setup** option.

- **Design Flow GPM** – This field is the flow rating for the mainline in gallons per minute (GPM). This flow is likely different from the design flow of the flow device assigned to the control point.
- **Managed by Flow** – When you set up the design flow for the mainline and then set this field to YES, the controller will use the design flow of the individual zones (or learned flow) and will turn on zones that are waiting to water until their design flow is equal to or less than the available flow on the mainline.
- **Flow Variance Zone Detect** – Flow variance is the actual flow compared to the expected flow. Both above and below expected flow conditions can be detected and then acted upon.
- **Flow Variance Shutdown** – If you enable the shutdown option for flow variance, the mainline turns off when the flow variance exceeds the limit.