

Baseline DC Irrigation Controller

Baseline's DC irrigation controller is a solar powered controller that operates without the need for a new power feed. You will get all the same great features you have come to expect with Baseline controllers.

Compatible Controllers

The following Baseline controllers can be manufactured to operate in DC mode. For more information on the features of these controllers, visit the Resource Library portion of our website at www.baselinesystems.com.

BaseStation 3200™ Irrigation Controller

An advanced smart controller that features patented two-wire technology and conventional wire and retrofit solutions, with advanced soil moisture sensor-based smart watering, weather-based watering, advanced flow management options, and flexible central control communication options.

BaseStation 1000™ Irrigation Controller

An intelligent irrigation controller using Baseline's patented soil moisture technology. Easy to use and program, featuring weather-based watering, a powerful central control, and mobile device compatibility.

AG 1000™ Irrigation Controller

The AG 1000 supports programming measured in seconds, which gives you detailed, specific control to calibrate how it should apply water. Whether you're at the controller or on the go, the programming options of the AG 1000 enable you to control more than just irrigation. You can also control filter flush cycles, lighting, alarms, pumps, and fertigation.

SubStation™

A great solution for difficult retrofitting situations or complex irrigation sites. The SubStation provides access to the industry-leading BaseStation 3200™ controller using a local area network (LAN).

FlowStation™

The FlowStation is a powerful shared flow controller that allows up to 20 BaseStation 3200 irrigation controllers to share water resources. Whether you have one large mainline across a property, or you are combining controllers across multiple mainlines, the FlowStation offers the features and flexibility to tackle the job.



DC System Configurations

The Baseline DC products are available as a package with the DC irrigation controller and solar panels available from Baseline at an additional cost or as the DC irrigation controller with a voltage doubler board for sites where DC power is already available.

DC System Requirements

For all sites, the following DC system requirements apply:

- All DC controllers come with a voltage doubler board that converts the power from 12V to 24V.
- DC controllers operate on two-wire only (no conventional wire is allowed).
- When operating in DC mode, wire length is reduced by half.
 - On 14 gauge wire, the maximum length is 2500 ft.
 - On 12 gauge wire, the maximum length is 4000 ft.

For sites that do not have a DC power feed available, the following additional DC system requirements apply:

- Baseline's stainless steel pedestal enclosure has a built-in shelf for one Group 24 or Group 27 battery.
 - The shelf is 14 inches wide x 7.25 inches deep.
 - If more than one battery is required for a pedestal system, the customer must supply enclosures for the additional batteries.
- Customers who order wall mount cabinets must provide their own enclosure for the batteries.
- Customers will need to purchase a battery from another vendor. Refer to the Battery Requirements on page 4.
- A solar charge controller is factory-installed in Baseline DC irrigation controller systems. For more information, refer to page 4.
- Customers will need to purchase compatible solar panels. For the specifications of the products that Baseline sells, refer to the Solar Panel and Solar Panel Mounting System sections on page 6.

DC System Device Compatibility

Compatible

- Wi-Fi, cell modem module, and Ethernet radio communication modules
- DC latching solenoids
- The following two-wire biCoder products:

BL-5201DC	Single Station biCoder™
BL-5202DC	Two Station biCoder™
BL-5201PR	Pump Start Relay biCoder™
BL-5303	Air Temperature Sensor
BL-5308 or BL-5309	Flow biCoder™
BL-PFS Series Flow Sensor	PVC Flow Sensor
BL-5315 or BL-5311	biSensor™ Soil Moisture Sensor
BL-5401	Coach's Button
BL-5402	Event biCoder™

Not Compatible

- The BHM Hydrometer
Note: Hydrometer should be sourced separately and must include a DC latching solenoid. Pair this hydrometer with the BL-5201DC and BL-5308 biCoders from Baseline.
- BL-5200R Series Powered biCoders

Calculating Battery and Solar Panel Needs

The basic power source for a DC controller is a deep-cycle battery that is charged with a solar panel. The number of solar panels and batteries you will need to power your system depends on a number of factors including the following:

- The Baseline controller you are using
- The type and number of communication modules
- The type and quantity of two-wire devices on the system
- The average solar irradiance for your location during your watering months

Baseline has a [solar worksheet](#) that helps calculate the number of solar panels and batteries you will need. Before you use the solar worksheet, we recommend that you review our [DC Specifier's Guide](#).

DC System Components

Battery

Baseline does not include or sell batteries with the DC controller system. Use the following requirement to purchase a compatible battery. Remember that you may need multiple batteries to operate your DC controller system. Refer to our [DC Specifier's Guide](#) and the [Solar Calculator Worksheet](#) for more information. These documents are available on the Baseline website (www.baselinesystems.com).

Battery Requirement: 12V true deep-cycle flooded battery (if stored inside the controller pedestal, use Group 24 or Group 27). AGM (glassmat) batteries are not compatible with the factory-configured settings on the charge controller.

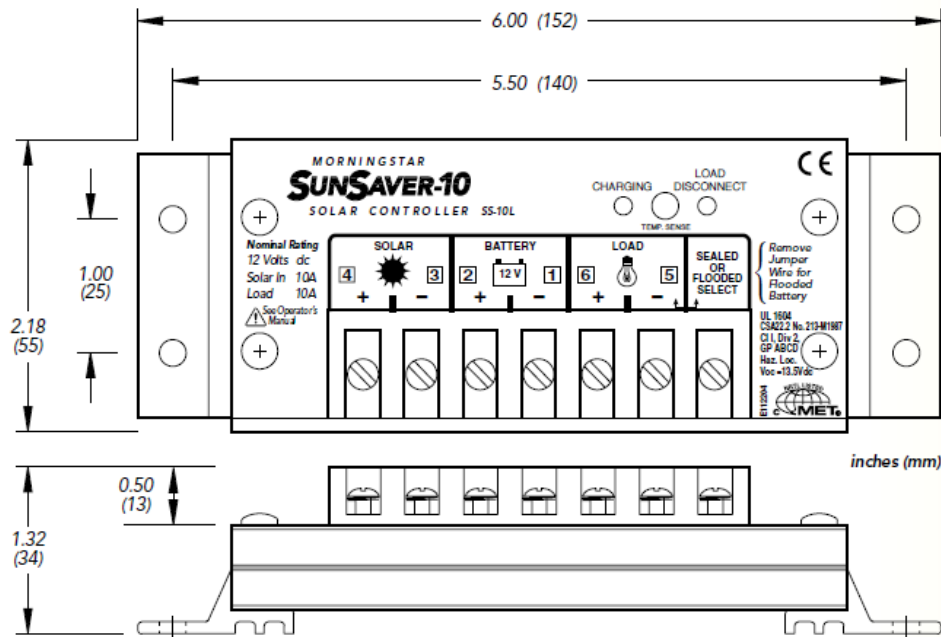
Make sure the battery is fully charged before installing it in the system.

Note: Monitor the fluid levels in the battery frequently to determine how often your batteries need watering.

Solar Charge Controller

A solar charge controller is installed in Baseline DC irrigation controller systems. The charge controller regulates the flow of current to and from the battery to protect the battery from overcharge and over discharge. It also provides self-diagnostics and electronic error protection.

The SunSaver product that Baseline provides allows up to 2 solar panels. If additional panels are required, the customer must purchase and replace the charge controller.



SunSaver SS-10-12V Specifications

Features

- 100% solid state
- Series design (not shunt)
- True 0 to 100% PWM duty cycle
- Setpoint accuracy to 35 mV
- Rated for 25% overloads
- Fully encapsulated in epoxy potting
- Marine rated terminals/anodized case
- Temperature compensation
- Sealed/Flooded battery select
- No need to derate
- Parallel for 40 amps or more
- Green charging/Red LVD indicators
- Approved for use in hazardous locations:
Class 1, Division 2, Groups A, B, C, D

Mechanical Specifications

- Wire size #10 AWG (5.2 mm²)
- Anodized aluminum case
- Marine rated terminals
- Epoxy encapsulated
- Weight is 8 oz (0.23 kg)

Electrical Specifications

- Rated Solar Input: 6.5/10/20A
- Rated Load: 6/10/20A
- 25% Current Overload: 5 minutes
- Regulation Voltage
 - Sealed Battery: 14.1 V
 - Flooded Battery: 14.4 V
- Load Disconnect: 11.5 V
- LVD Reconnect: 12.6 V
- Temp. Comp. (mV/°C): -28
- Self-consumption: 6 to 10mA
- Operating Temperature: -40 to +85°C

Solar Panel

Solar panels are not included in the DC controller system, but Baseline offers the following high-quality panel that is compatible with our system.

Solartech N-Series Module Specifications

Solartech photovoltaic N-Series Modules are constructed with high efficient polycrystalline solar cells and produce higher output per module than others in its class. This industrial grade module is an industry standard among various industry professionals.

Electrical Characteristics

- Max power (Pm): 85W
- Maximum power voltage (Vpm): 17.9V
- Maximum power current (Ipm): 4.84A
- Short circuit current (Isc): 5.17A
- Open circuit voltage (Voc): 21.9V
- Module efficiency: 12.53%
- Tolerance: ±5%
- Nominal voltage: 12V
- Temperature coefficient of Voc: -0.36%/K
- Temperature coefficient of Pm: -0.46%/K
- Temperature coefficient of Isc: 0.05%/K
- NOCT: 48°C ± 2°C
- Maximum series fuse rating: 12A
- Maximum system voltage: 600V

Mechanical Characteristics

- Construction: Tempered glass, silicon cell, EVA, Polyester with Tedlar
- Solar Cells: 36 cells (156mm x 104mm) in a 4x9 matrix connected in series
- Front Cover: High transmission 3.2mm(1/8") glass
- Encapsulant: EVA(Double layers)
- Back Cover: White polyester
- Frame: Anodized aluminum
- Junction Box: IP65, UL94-5VA material
- Diodes: Schottky by-pass diodes
- Dimensions: 39.9in(1014mm) x 26.3in(669mm) x 1.38in(35mm)
- Weight: 19.8lb (9.0kg)
- Operating Temperature: -40°C~90°C
- Storage Humidity: <90%

Qualifications and Certifications

- ETL listed
- UL listed

Solar Panel Mounting System

When you purchase a solar panel from Baseline, we include a pole mount from Tamarack.

Note: The customer must purchase the pole separately.

Tamarack UNI-SP/01A Side of Pole Mount

The UNI-SP/01A Universal Side-of-Pole Mount is a simple and straightforward pole mounting solution for small area solar panel needs. With its user settable angle adjustment, it can support installations in a wide range of locations.

Features of the Tamarack UNI-SP/01A Universal Side-of-Pole Mount:

- Designed to fit pole diameters of 2 to 4.5 inches
- Supports modules up to 27 inches wide with a center-center weight distribution
- Tilt adjustment from 15 to 65 degrees
- Manufactured using heavy-duty, corrosion-resistant 5052-H32 aluminum
- 10-year warranty

Grounding Requirements

- The solar panel frame and the Baseline enclosure (X cabinet or Pedestal) SHOULD BE grounded.
- Most solar systems recommend grounding the negative of the battery. This should NOT be done on Baseline DC controller systems.
- The +/- connections on the solar panel, the charge controller, and the battery should NOT be grounded.

Fuse Requirements

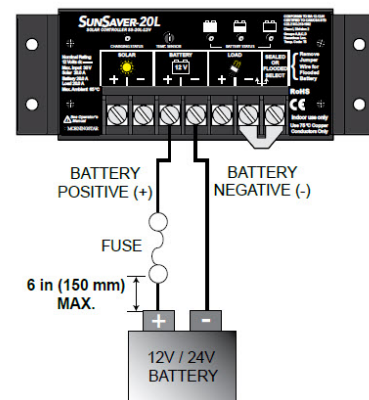
Battery Connection Fuse

Fuse the positive side.

The fuse to the battery must be within 6" of the battery.

IMPORTANT! Leave the fuse out until all is wired.

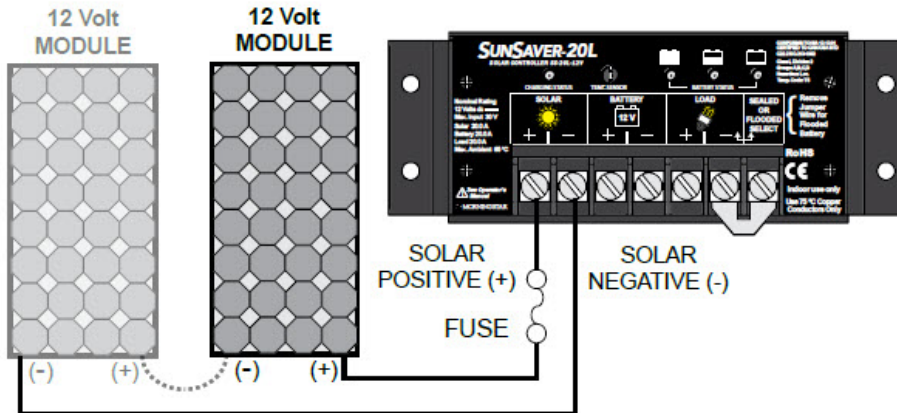
You must purchase the fuse and the fuse holder separately for both the battery fuse and the solar panel fuse.



Solar Panel Connection Fuse

Fuse the positive side.

IMPORTANT! Leave the fuse out until all is wired.



Wire and Cable Requirements

Use 75° C copper wire.

Refer to the wire gauge chart in the SunSaver Manual for the correct wire gauge.

A pair of solar panel cables – one with a male Mc4 connector on one end and bare wire on the other end. The other with a female Mc4 connector on one end and bare wire on the other end.

Enclosure Options for DC Controllers

“X” Cabinet—Wall Mount Enclosure

- Dimensions: 15.50” x 12.38” x 6.40”
- 16 Gauge, powder-coated

“XS” Cabinet—Wall Mount Enclosure

- Dimensions: 15.50” x 12.38” x 6.40”
- 16 Gauge, 304-grade stainless steel

“P” Pedestal Enclosure

- Dimensions: 17.38” x 36.25” x 12.63”
- 16 Gauge, 304-grade stainless steel

“PSS” Super Strong Pedestal Enclosure

- Dimensions: 16” x 38” x 15.5”
- 16 Gauge, 304-grade stainless steel

How to Specify

BaseStation 3200 DC Controllers

Part Number	Description
BL-3200X-DC	DC two-wire controller in 16-gauge powder-coated metal wall mount cabinet. Supports up to 200 zones.
BL-3200XS-DC	DC two-wire controller in 16-gauge stainless-steel wall mount cabinet. Supports up to 200 zones.
BL-3200P-DC	DC two-wire controller in 16-gauge stainless-steel pedestal. Supports up to 200 zones.

BaseStation 1000 DC Controllers

Part Number	Description
BL-1000X-DC	DC two-wire controller in large 16-gauge powder-coated metal wall mount cabinet. Supports 100 zones and is fully compatible with BaseManager.
BL-1000XS-DC	DC two-wire controller in large 16-gauge stainless-steel wall mount cabinet. Supports 100 zones and is fully compatible with BaseManager.
BL-1000P-DC	DC two-wire controller in 16-gauge stainless-steel pedestal. Supports 100 zones and is fully compatible with BaseManager.

AG 1000 DC Controllers

Part Number	Description
AG-1000X-DC	DC two-wire controller in large 16-gauge powder-coated metal wall mount cabinet. Supports 100 zones and is fully compatible with BaseManager.
AG-1000XS-DC	DC two-wire controller in large 16-gauge stainless-steel wall mount cabinet. Supports 100 zones and is fully compatible with BaseManager.
AG-1000P-DC	DC two-wire controller in 16-gauge stainless-steel pedestal. Supports 100 zones and is fully compatible with BaseManager.

SubStation DC Controllers

Part Number	Description
BL-SUBSTNX-DC	DC two-wire only SubStation in large 16-gauge powder-coated metal wall mount cabinet.
BL-SUBSTNXS-DC	DC two-wire only SubStation in large 16-gauge stainless-steel wall mount cabinet.
BL-SUBSTNP-DC	DC two-wire only SubStation in 16-gauge stainless-steel pedestal

FlowStation DC Controllers

Part Number	Description
BL-FLOWSTNX-DC	DC shared flow controller in large 16-gauge powder-coated metal wall mount cabinet.
BL-FLOWSTNXS-DC	DC shared flow controller in large 16-gauge stainless-steel wall mount cabinet.
BL-FLOWSTNP-DC	DC shared flow controller in 16-gauge stainless-steel pedestal

DC biCoders

Part Number	Description
BL-5201DC	1-station direct burial biCoder for use with DC latching solenoids
BL-5202DC	2-station direct burial biCoder for use with DC latching solenoids

Solar Panel

Part Number	Description
BL-DC-85WPANEL	North American Standard 85W Solar Panel Includes 85W solar panel, mounting brackets, installation guide. Requires 3" to 4" galvanized mounting pole or equivalent.