

## SubStation™

The SubStation™ with V2.3 firmware is the perfect 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) or using cloud based communication. This wireless functionality means you can consolidate multiple existing controllers into a single BaseStation 3200 controller without running expensive wire across long distances. You can also establish new irrigation zones in areas separated from the main controller by obstacles such as driveways or parking lots.

After the SubStation is connected, you can take full advantage of the powerful BaseStation 3200 capabilities to program the SubStation's zones from any location.

### Display Features

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- High contrast 3.25" backlit mono LCD screen
- Screen resolution 128x64 pixels
- Screen LCD brightness of 250 lumens for easy viewing in direct sunlight

### SubStation Features

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- Supports up to 100 zones in any combination of two-wire and conventional wire
  - Normally open or normally closed master valves and pump starts are included in the zone count
- Supports up to 20 biSensor soil moisture sensors
- Supports up to 3 event switches
- Supports up to 3 flow sensors or meters
- Supports up to 3 temperature sensors
- Supports Baseline's documented two-wire run lengths. See Baseline's Two-Wire Technical Specification for details.
- Provides a simple interface for networking setup
- Displays status of devices and the connected BaseStation 3200

## BaseStation 3200 Features

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- The BaseStation 3200 has 8 available addresses for TCP/IP-based performance components. Each SubStation connection uses one of these addresses.
- Total device counts, including the devices connected to all SubStations must remain within the BaseStation 3200 specifications.
- SubStation devices that exceed the BaseStation 3200 limits are ignored.
- All search and assign operations for SubStation devices are performed from the BaseStation 3200 or from BaseManager.
- All programming operations for SubStation devices are performed from the BaseStation 3200 or from BaseManager.
- All test operations for SubStation devices are performed from the BaseStation 3200 or from BaseManager.
- Displays status of the SubStation connection and reports the number of each type of device from last search.
- For SubStation compatibility, ensure that the BaseStation 3200 is running firmware version 12.32 or greater.

## Communication Requirements

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- The SubStation requires an IP address on the Local Area Network (LAN) or a cellular network to communicate with a BaseStation 3200.
- The SubStation shall be capable of communicating with a BaseStation 3200 using a LAN or using a cloud-based option. The SubStation and the BaseStation 3200 shall be on the same subnet when configured for LAN communication.
- A SubStation is assigned to the BaseStation 3200 by programming the IP address of the SubStation into the controller at the controller interface or remotely in the cloud.
- The SubStation can be assigned a static IP address or it can operate in DHCP mode.
- The BaseStation 3200 has 8 available addresses for TCP/IP-based performance components. Each SubStation connection uses one of these addresses.
- A single BaseStation 3200 can communicate with SubStations using a Local Area Network (LAN) or using cloud-based communication or it can do both simultaneously.
- Where an existing network is not available, a radio network can be set up using Baseline Ethernet Radios or Wi-Fi communication modules. Access to the Internet is not required. Please see the Ethernet Radio Technical Specification and the Wi-Fi Module Technical Specification for more information.

## Information Security Controls

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The SubStation includes information security controls that enable secure networking with other Baseline products.

To learn more about the SubStation security controls, refer to the Baseline Security Controls Technical Specification available on the Baseline website.

## Communication Options

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### Ethernet Cable

Every SubStation has a built-in Ethernet port. No additional hardware is required for Ethernet-based communication.

### Wi-Fi Communication Modules

The SubStation is compatible with Baseline's Wi-Fi module.

### Ethernet Radio (Spread Spectrum) Communication Modules

The SubStation is compatible with Baseline's Ethernet Radio modules.

Every Ethernet radio configuration requires at least one radio that is configured as a gateway. The BL-ER-C is an Ethernet radio in a "C" series enclosure with factory default settings as a gateway. It can also be configured as a repeater. One repeater may be inserted between a gateway and endpoint if required.

### Ethernet Switch

When there are multiple devices that require an Ethernet connection, an Ethernet switch should be specified along with the BaseStation 3200 or the SubStation. To determine whether an Ethernet switch is required, count the number of devices in an enclosure that have an Ethernet Port. If more than one device has an Ethernet port and only one Ethernet connection is available, an Ethernet switch is required. The SubStation, BaseStation 3200 controllers, Ethernet Radios, and Wi-Fi modules all have Ethernet ports.

## Electrical Specifications

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### Transformer Input

- Requires 120 VAC, 50 Hz to 60 Hz and a minimum of a 5 amp breaker
- Requires a certified electrician for hard-wire installation

## Power Output

- Station Output: 30 VAC RMS over two-wire
- Supports up to 1.45 amp output
- The controller powers down the two-wire after one minute of idle time
- Drive current to a decoder is 100 to 250 milliamps (depending on the solenoid)
- Supports up to 110 device loads on a two-wire path
  - 1, 2, and 4 station biCoders = 1/2 load
  - 12 to 24 station Powered biCoder = 2 loads
  - Soil Moisture Sensor = 1 load
  - Flow biCoder or Flow Sensor = 3 loads

## Solenoid Specification

- Requires a typical solenoid with approximately 400 milliamps of inrush current and approximately 200 milliamps holding current

## Surge

- 10 levels of surge protection
- Up to 5 levels of surge protection built into the controller boards
- Minimum surge response time of 1 picosecond

## Enclosure Options

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### **“X” Cabinet—Wall Mount Enclosure**

- Dimensions: 15.50” x 12.38” x 6.40”
- Powder-coated, 16 gauge steel

### **“XS” Cabinet—Wall Mount Enclosure**

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

### **“P” Standard 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

### ***Enclosure Notes***

SubStations in the “X” and “XS” enclosures are large enough to hold the controller and a communication module. The communication module will be built into the enclosure by the factory when ordered together.

Baseline recommends that “X” or “XS” enclosures be specified when a wall-mount enclosure and communication modules are required.

The SubStation is available as a stand-alone unit in a pedestal enclosure.

## Device Options

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Compatible with all Baseline two-wire devices, including:

- BL-5200R Powered Retrofit biCoder™
- BL-5201, BL-5202, and BL-5204 Valve biCoder™
- BL-5201PR Pump Start/Relay biCoder™
- BL-5201DC and BL-5202DC DC-Latching Valve biCoder™
- BL-5303 Air Temperature Sensor
- BL-530x Flow biCoder™
- BL-PFS, BL-BFM Flow Sensor & BL-BHM Hydrometer
- BL-540x Pause and Event biCoder™
- BL-5315B biSensor™ Soil Moisture Sensor
- BL-LA01 Lightning/Surge Arrestor

## Warranty

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The controller and installed equipment carry a standard warranty of 5 years from the date of installation.

Please review the Baseline Warranty Statement available on the Baseline website ([www.baselinesystems.com](http://www.baselinesystems.com)).

The user can apply for an extended warranty of 10 years from the date of installation. Approval of the extended warranty is based on:

- Fully completed extended warranty application
- Successful site inspection completed by an authorized Baseline representative

The extended warranty shall include coverage of surge damage, even from a direct lightning strike. However, surge protection equipment must be installed according to specification.

## How to Specify

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**Start with the SubStation:**

BL-SUBSTN

**Designate the enclosure for the SubStation with one of the following codes:**

'-X', '-XS', '-P', '-PSS'

**If needed, add conventional-wire zones:**

12 Zones      '-R12'

24 Zones      '-R24'

36 Zones      '-R36'

48 Zones      '-R48'

**4G LTE CELL MODEM**

BL-CLOUD-LTE-AT-X  
BL-CLOUD-LTE-VZ-X  
BL-CLOUD-LTE-AT-P  
BL-CLOUD-LTE-VZ-P  
BL-CLOUD-LTE-AT-PSS  
BL-CLOUD-LTE-VZ-PSS

**2.4GHz Wi-Fi**

BL-CLOUD-WFE-X  
BL-CLOUD-WFE-P  
BL-CLOUD-WFE-PSS

**Ethernet Radio**

BL-ER-X  
BL-ER-P

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