BaseManager™ Central Control Software

BaseManager™ is a central control software application that allows any BaseStation 3200™ or BaseStation 1000™ irrigation controller to be fully programmed and operated remotely from a computer or other mobile device. BaseManager also allows the user to add zone descriptions, automate text message and email alerts, and generate reports.

BaseManager is available as a cloud-based application over the Internet or on a self-hosted server.

Compatibility Features

- Connects with any of the following communication options: Ethernet connection, GPRS cellular modem, Wi-Fi, or Ethernet radio.

- Compatible with all BaseStation 3200 and BaseStation 1000 controllers

- BaseManager communicates with a controller via a secure WebSocket over an Internet connection with the most current version of the following web browsers:
    - Mozilla Firefox
    - Google Chrome
    - Safari

BaseManager Subscriptions

A subscription determines what BaseManager and Mobile Access features a controller has access to.

The subscription is associated with a controller and all controllers belonging to a company will be set to the same subscription level.

New BaseStation 3200 controllers and BaseStation 1000 controllers with an MEXP-BM expansion module receive a free BaseManager Plus subscription for six months. If a paid subscription is not set up following the six-month trial period, the first controller added to a company's account will be assigned a Lite subscription and only the first authorized user will have access. All other controllers on the company's account will be set to inactive.

Subscription Term and Renewal

- When you purchase a subscription, it is valid for one year.

- If you add a controller to an existing company, the new controller subscription renewal fee will be prorated in order to put all controllers on the same renewal schedule.

- The renewal date determines when you will be charged for your subscription.

- If all the controllers' subscriptions expire in an account, the first controller in the list will be set to Lite, and all other controllers will be set to Inactive.

End User Features Available in BaseManager Basic

- A map-based interface provides the following functionality:

  – Check the status of any controller, device, or zone
  – Find the location of your controllers, devices, and zones
  – Start/stop a zone
  – Test devices and zones
  – Display a graph for devices and zones
  – Set a rain delay
  – Zoom in/out and move the map view
  – Switch between a street map view, satellite view, and terrain view
  – Set geo-location for any controller, zone, or other device

- Two levels of user access

  – Company admin user
  – Default user

- A quick view of the status of all zones with color-coded statuses and descriptions, including:

  – Real-time color-coded status for all zones and programs
  – Complete list of current alarms and messages
  – Ability to delete/clear any current alarm or message
  – Current status and value for all sensing devices

- View soil moisture and run-time graphs for any/all zones and soil moisture sensors

- Schedule rain delays and pause events

- Clear rain delays and pause conditions

- Update controller firmware

- Add and fully configure all zones and programs, including:

  – Enable/disable zones
  – Change zone type
  – Assign a program
  – Adjust water time
  – Adjust cycle and soak times
  – Program soil moisture sensors
  – Program master valves
  – Program flow sensors
  – Configure mainlines
  – Set all program schedules
  – Set all program configurations including per-program configuration of:
    * Program stop/start conditions
    * Smart watering based on soil moisture sensors
    * Water sources
    * Master valves
    * Water days
    * Water windows

- Add textual descriptions for all controllers, zones, sensors, flow devices, master valves, points of connection, and mainlines.

  – All descriptions that are set through BaseManager are saved and displayed in the controller.
  – These descriptions are visible in all appropriate displays and reports, including on the front panel of controllers.

- Perform the following manual operations:

  – Learn flow
  – Calibrate soil moisture sensors
  – Run zones and programs
  – Test devices

Additional End User Features Available in BaseManager Plus

BaseManager Plus users have access to all BaseManager Basic features and the following WeatherAccess™ features:

- Connect a weather station and assign it to a controller

- Configure hydrozone properties

- Enable zones on the BaseStation 3200 to use weather-based watering

- Configure programs on the BaseStation 1000 to use weather-based watering

- Check the calculated ETo amount in Quick View

- Display weather station information from the map

Alerts, Alarms, & Reports

- Generates the following alerts/reports as an email or in PDF format for any date range:
    - Water Usage
    - Zones Activity
    - Zone Run Time
    - Moisture Levels
    - Flow Meter Totals
- Alerts, alarms, and reports are available by subscription.

    - Users can have alerts, alarms, and reports sent by text message, email, or both.
    - Users can subscribe on a priority basis.
    - Users can configure what time(s) of day the alerts are received.
    - The company admin can configure subscriptions for all users.

BaseManager Self-hosted Server

- The BaseManager software is available on a self-hosted server in the following configurations:

  - Pre-installed on solid state server module hardware
    * Intel™ Next Unit of Computing™ (NUC) box
    * Fully web manageable after initial configuration
  - As a virtual machine image suitable for installation in rack mount server environments
    * Requires a minimum of 4GB of RAM, 120GB of disk space, and an Intel i3 class processor or equivalent
    * Fully web manageable after initial configuration

- BaseManager map data is loaded from a third-party. This data transfer requires general access from the client to the Internet and from the Internet back to the client. The client makes requests and downloads data over an Internet connection.

- The BaseManager server must have an externally accessible static IP address or hostname if external access is desired:

  - To allow remote desktop and laptop users to access the system, or
  - To allow mobile devices to access the server

- Software updates and technical support are available for a yearly fee.

- The BaseManager server enables users to operate their controllers through a web-based (browser-based) interface, and the controllers are connected through web-based ports (HTML-5 standard, WebSocket Protocol).

  - All traffic is TCP/IP with varying media types (cell, wireless, packet-radio) as needed along the route.
  - The server routes communication, performs maintenance tasks, stores watering logs and information, and enables remote updating and configuration.

Networking

- All communication to/from clients (browsers) and controllers is done securely over SSL port 443.

  - Controllers are required to talk to the server on that port and be allowed to use SSLv3.
  - There is no requirement for opening firewall pinholes or configuring port mapping at an off-site facility, unless outgoing connections on port 443 are specifically blocked.
  - No special configuration is required on the controller side when the controller is connected to an Ethernet port that can get out to the Internet.

BaseManager Security

Security measures common to cloud-based BaseManager and self-hosted BaseManager

- All IP traffic between the web-browser client and the BaseManager server is SSL-encrypted.
- Firewall is established by Linux kernel IPTABLES (statewise). The only port essential to be opened is 443. Although, if remote administration is desired, port 22 should be opened.
- Clients (browsers) are allowed to remain connected indefinitely or can be logged off and dropped.
- Controllers are able to connect to the IP address of a single assigned BaseManager server (programmable).

Security measures specific to cloud-based BaseManager

- All data is stored on a database server (mySQL) that is not externally accessible other than through activities and reports available through SSL-encrypted web access.
- External access to the server is available using pre-shared keys by Baseline administrative employees only from known IP addresses.
- Controllers initiate all connections to the server and will not accept any external connections.
- The BaseManager server requires controllers to be authorized in order to connect to the server.
- The BaseManager server tracks and manages controller connections using the unique MAC address of each controller.

- The BaseManager server generates authorization PINs for controllers that are attempting to connect.
    - The authorization PIN is displayed on the controller's front panel.
    - Company admins shall use the authorization PIN to connect controllers to their company.

Security measures specific to self-hosted BaseManager

- All data is stored on a local database server (mySQL). Traffic is internal only to local drive. There is no database access from external connections.
- Industry standard Apache web security is employed. Further access controls is supported to manage access via IP, network, or MAC address through the .htaccess facility of Apache.
- Controllers only listen to the assigned server, only over the secure WebSocket Protocol (not HTTP), and only through encrypted traffic.
- Controllers/clients need not respond over the same Ethernet device on the server. In some standalone situations, it may be preferable to have controllers on their own Internet-isolated network.
- Webmin (a web-based system configuration and management tool) is enabled by default on a specified SSL (https) port 10001. Webmin access can be disabled from external access (i.e., localhost only) or disabled entirely.

LiveView™

LiveView provides a virtual view of the BaseStation controller and enables the user to operate the controller just as if he/she were standing in front of it. LiveView is available through BaseManager.

- LiveView matches the controller's display screen in real-time or near real-time as supported by the controller's connection speed.
- LiveView supports all buttons and/or dial positions available at the controller.
- LiveView honors controller PIN security as if the user were at the controller.

- Multiple simultaneous LiveView users to the same controller are supported.
- LiveView supports Baseline access to any controller when authorized by the customer for customer support purposes.

WeatherAccess™

With a BaseManager Plus account, you can operate your Baseline irrigation controllers using WeatherAccess™. WeatherAccess applies real-time weather data from a weather station in your area (available in Weather Underground's weather station network), and configurable zone properties to a standardized evapotranspiration (ET) equation. This calculation estimates the loss of moisture from the root zone, and then the irrigation controller uses the calculated value to adjust the runtime in order to apply just enough water to replace that lost moisture.

Mobile Access Basic™

- Software plugin for BaseManager
- Allows any web-enabled mobile phone or other mobile device to function as a remote control
- Perform manual operations including turning zones on and off, starting and stopping programs, and initiating rain delays

Mobile Access Advanced™

- Has all the functionality of Mobile Access and includes the following advanced features:
  - Provides real-time access to soil moisture and flow sensor readings
  - Perform valve diagnostics
  - Geo-locate all devices
  - Uses SSL/TSL security encryption

How to Specify

Cloud-based Options

Part Number	Description
BL-BMW2-1	1 year of BaseManager Basic service for 1 controller, includes Mobile Access Basic service
BL-BMW2-PLUS	1 year of BaseManager Plus service for 1 controller, includes WeatherAccess and Mobile Access Advanced service

Note: For information about Baseline's Mobile Access that turns your phone into the ultimate remote control, refer to the Mobile Access product information on Baseline's website.

Self-hosted Options

Part Number	Description
BL-BM2-VM	BaseManager software as a virtual machine image that can be installed on a customer's server
BL-BM2-COM	BaseManager software pre-installed on a server
BL-BM2-MAA	Mobile Access Advanced Plugin for self-hosted BaseManager

Note: For information about Baseline's BACnet plugin that connects BaseManager and your irrigation controllers to a Building Management System, refer to the BACnet product information on Baseline's website.