



Flowserve FlowSync

AI10M001036-00 03/23

USERINSTRUCTIONS

Bluetooth Diagnostics
App for Smart Devices





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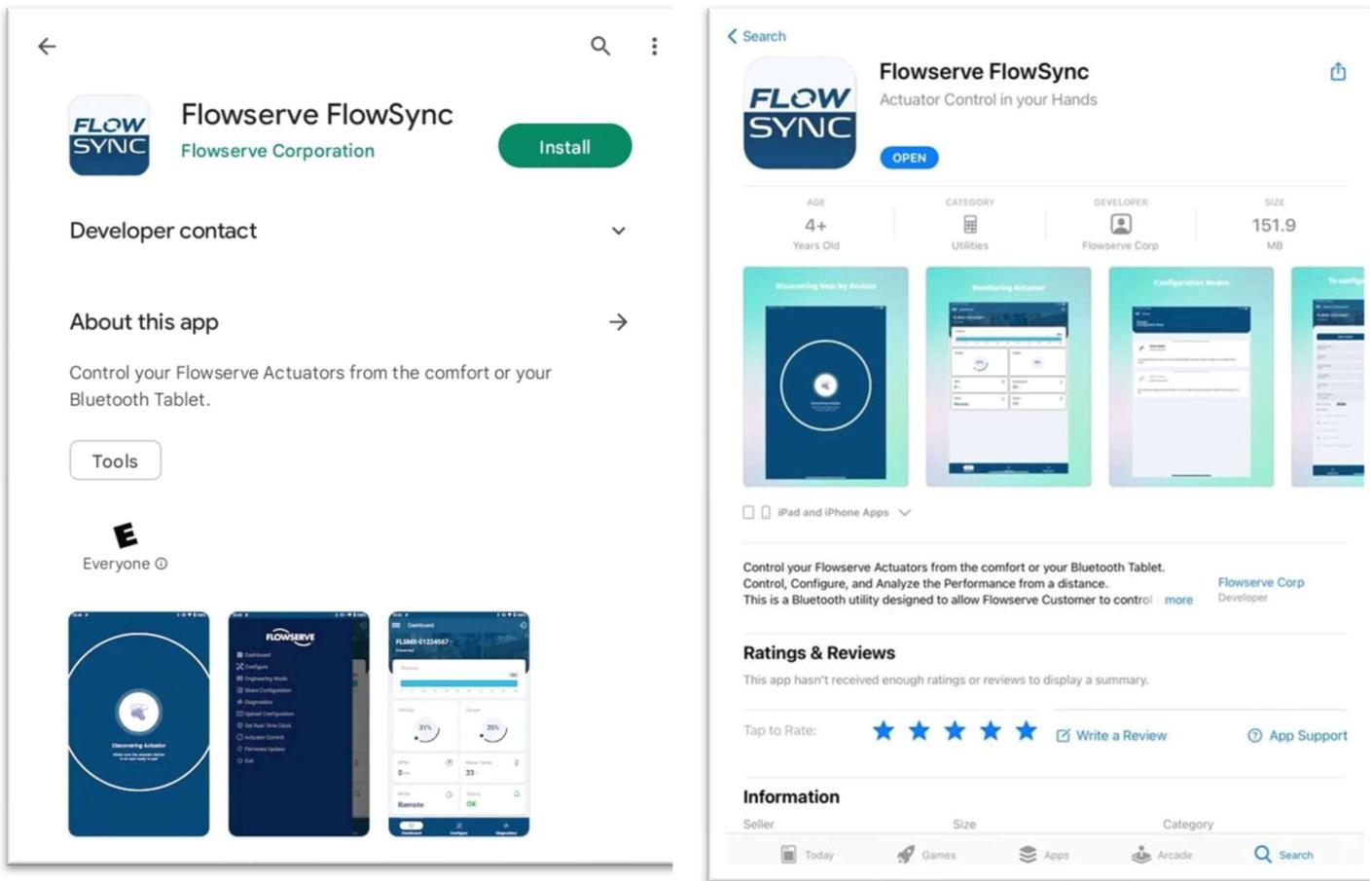


1. Preface

The MX/QX Series B are non-intrusive intelligent actuators with industry leading diagnostics capabilities. Flowserve Limatorque’s commitment to technology leadership is continued through the development of FlowSync. Flowserve’s FlowSync, an advancement on Limatorque’s 2007 Dashboard App, is a configuration, control, and diagnostics app developed for use on IOS, Android, and Windows equipped devices over BLE (Bluetooth Low Energy). FlowSync can be used to communicate with the MX/QX Series B actuator from a remote distance as if the user was in front of the actuator controlling the knobs by hand. FlowSync can be used in Online (connected) or Offline (disconnect) to set up configuration of actuators. Configuration files generated come in the form of an easy-to-read PDF, that the end user can save for future use, and an actuator binary file that can be used to push to other units for faster commissioning or replacement of failed actuator. This document outlines the features and flexibility of the FlowSync Software.

2. Installation & Requirements

Flowserve FlowSync is a free Bluetooth application that is available on Android and Apple devices via the Google Play and Apple Stores. No license key or registration is required.



The Android Version of this app is available on the Google Play Store and requires Android Version 11 or later.



The Apple Version of the app is available on the Apple Store and requires IOS 9.0 or later. Works on iPad Air or later and iPhone5s or later and macOS 11.0 or later.

Tablets, Phones and Computers must support BLE (Bluetooth Low Energy). Most devices built since 2012 will support BLE. If your computer does not have Bluetooth or does not support BLE, we recommend a USB Bluetooth dongle.

3. Connecting to the Actuator

3.1. Setting up the Actuator for Bluetooth

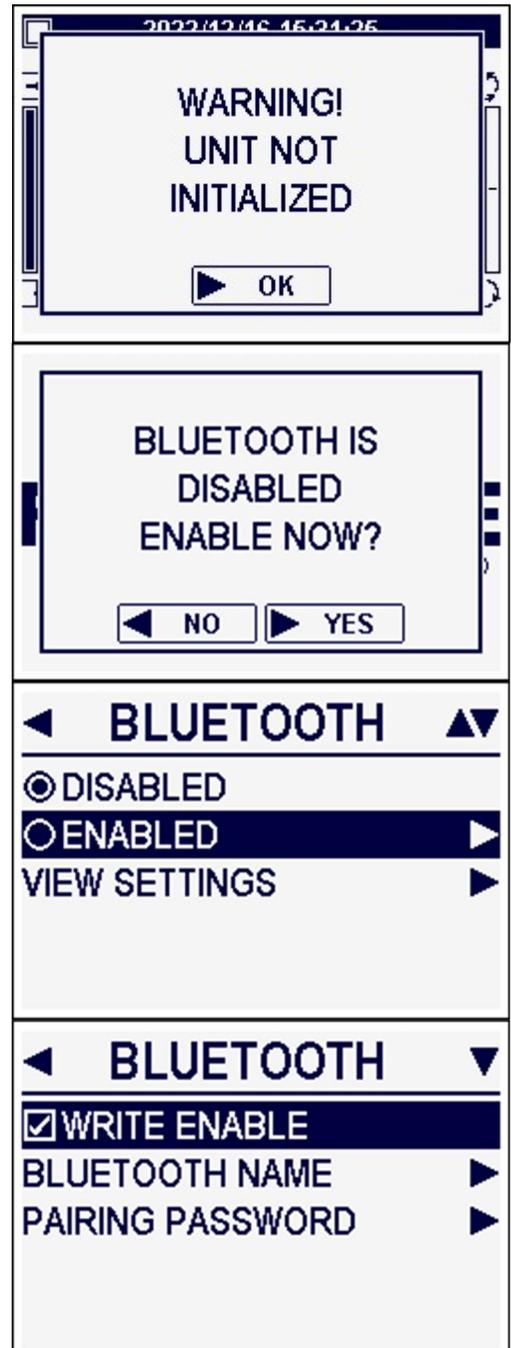
3.1.1. Setup on New Units

Turn on the power to the unit for the first time. You will see this screen...

Follow the normal initialization steps until the limits have been set and you see this screen...

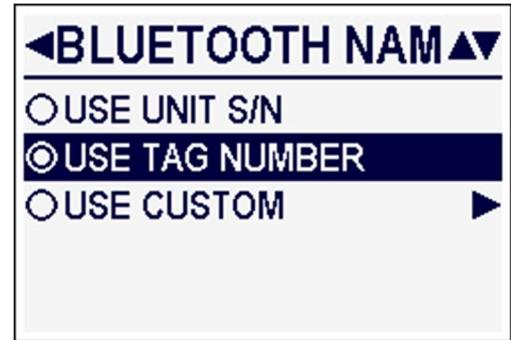
Select "YES" then select the "ENABLED" option...

This will open another menu. From here, check the "WRITE ENABLED" option then open the "BLUETOOTH NAME" menu...





The default Bluetooth Name of the device is the Serial Number that is set during the first phase of initialization. If you would like to use a custom name to help distinguish multiple units when connecting, then select either “USE CUSTOM” or “USE TAG NUMBER” and then set the Tag Number once the unit is initialized.



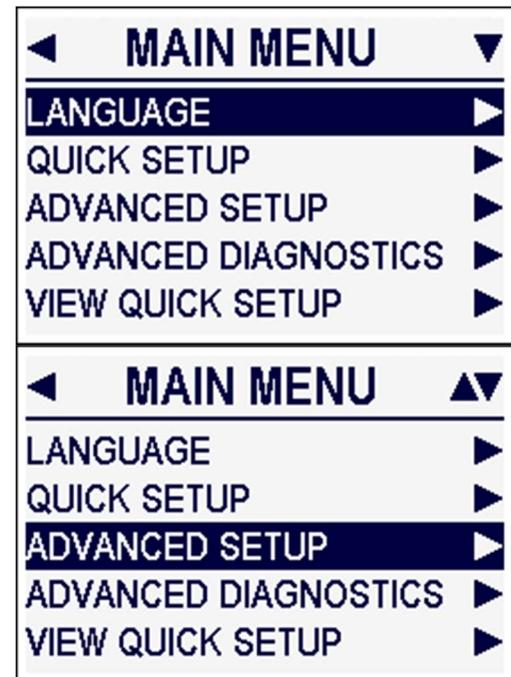
Use the Right Knob to return to the Bluetooth Menu then select the “Pairing Password” option. If you are using an Actuator with UI version V2212M00 or later, the default pairing password is the last 6 digits of the Unit’s QA Stamp.

For instructions on checking UI version, see MXb User Instructions VAIOM000071 or QXb AIIOM000517 section 6.2.6.

WARNING: To protect against cybersecurity attacks, the pairing password must be changed during initial configuration and periodically afterwards.

3.1.2. SETUP ON EXISTING UNITS

From the main screen, move the Right Knob to “OPEN”, “CLOSE”, “OPEN” to go to the Main Menu



Open the "ADVANCED SETUP" Menu and enter the Actuator’s password



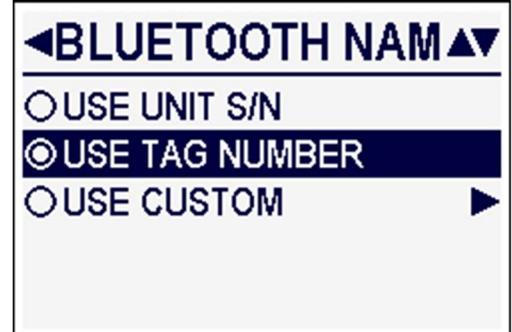
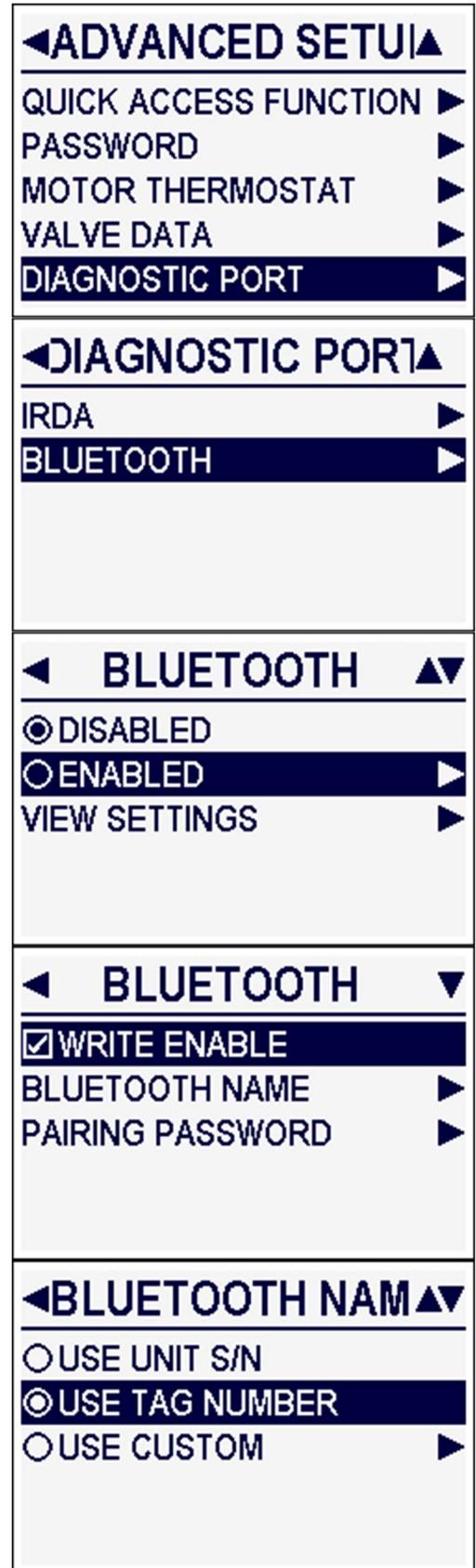
Scroll to the bottom of this list and open the “DIAGNOSTIC PORT” menu

Open the “BLUETOOTH” menu

Select the “ENABLED” option

This will open another menu. From here, check the “WRITE ENABLED” option then open the “BLUETOOTH NAME” menu...

The default Bluetooth Name of the device is the Serial Number that is set during the first phase of initialization. If you would like to use a custom name to help distinguish multiple units when connecting, then select either “USE CUSTOM” or “USE TAG NUMBER” and then set the Tag Number once the unit is initialized.





Use the Right Knob to return to the Bluetooth Menu then select the “Pairing Password” option. If you are using an Actuator with UI version V2212M00 or later, the default pairing password is the last 6 digits of the Unit’s QA Stamp.

WARNING: To protect against cybersecurity attacks, the pairing password must be changed during initial configuration and periodically afterwards.

3.1.3. DEFAULT BLUETOOTH PASSWORD

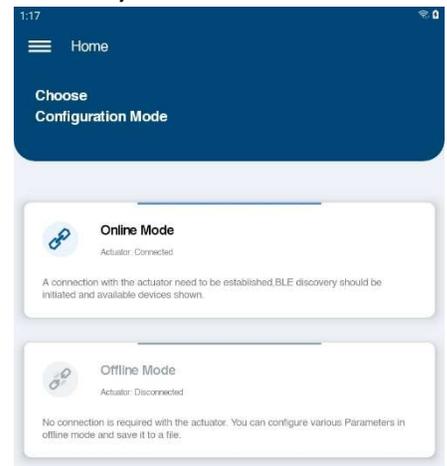
WARNING: To protect against cybersecurity attacks, the pairing password must be changed during initial configuration and periodically afterwards.

For Actuators running UI Firmware version V2212M00 or later, the default Bluetooth Pairing Password is the last 6 Digits of the QA Stamp which is unique to each Actuator.

To check what the Bluetooth Pairing Password is, Go to MAIN MENU -> ADVANCED SETUP -> DIAGNOSTIC PORT -> BLUETOOTH -> ENABLED -> PAIRING PASSWORD

3.2. Connecting FlowSync to the Actuator (Online Mode)

To connect the Flowserve FlowSync application to an Actuator, open the app and you will see this screen



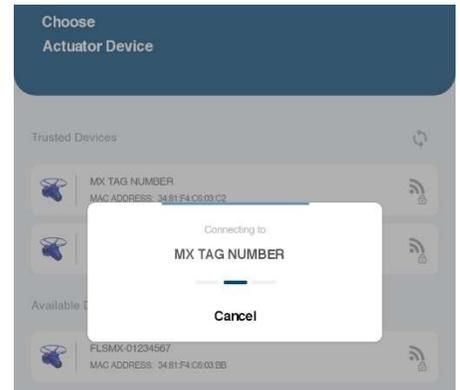
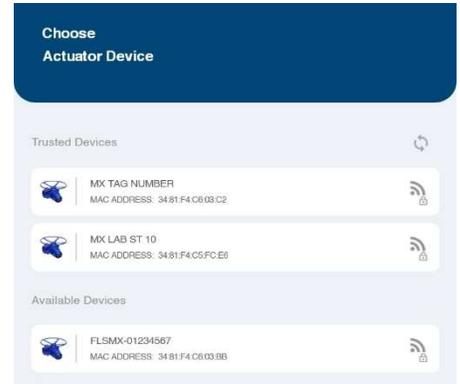
Select “Online Mode” and FlowSync will begin searching for any nearby Flowserve Actuator’s that have their Bluetooth Enabled. If you see notifications asking for Location Permissions or Bluetooth Permissions, accept them. FlowSync needs permission to use your devices Bluetooth and to search for nearby devices.





When FlowSync is done searching, it will show you a list of nearby Flowserve Actuators. Actuators that your device has connected to before will appear in the “Trusted Devices” list on top. Actuators that have not been connected to will show in the “Available Devices” list.

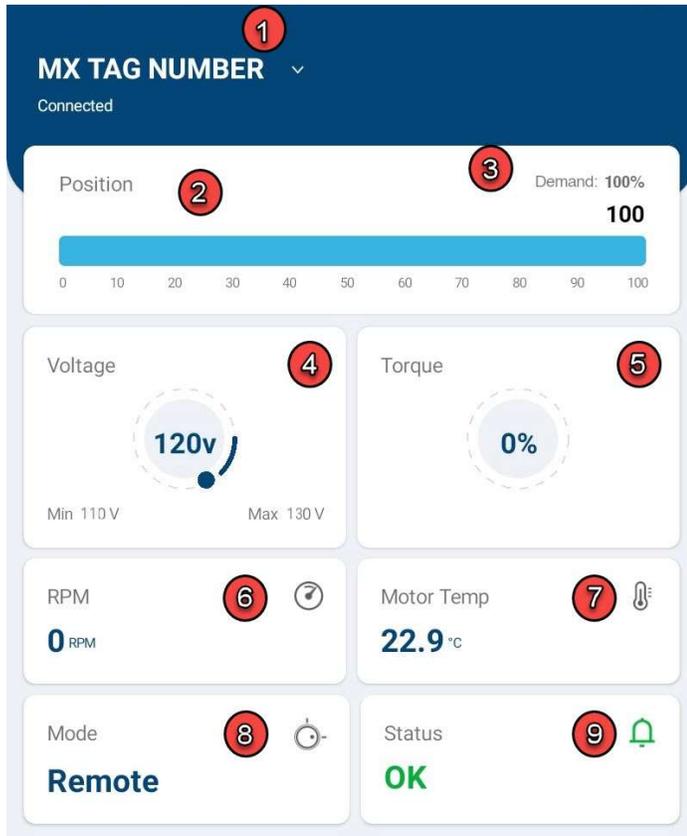
Selecting one of the Trusted Devices will automatically connect FlowSync to the Actuator and bring you to the Dashboard. To connect to one of the “Available Devices” you will have to enter the Bluetooth Password before FlowSync will connect to the Actuator



4. Dashboard

4.1. Basic Information

The FlowSync Dashboard is the first page that is shown once the app is connected to a Flowserve Actuator. It provides immediate identification and status information.



Data present on this page includes

1. Bluetooth Name and Unit ID
2. Position
3. Target Position
4. Voltage
5. Torque
6. RPM
7. Motor Temperature
8. Mode (Position of Left Knob)
9. Status

4.2. Refresh Rate

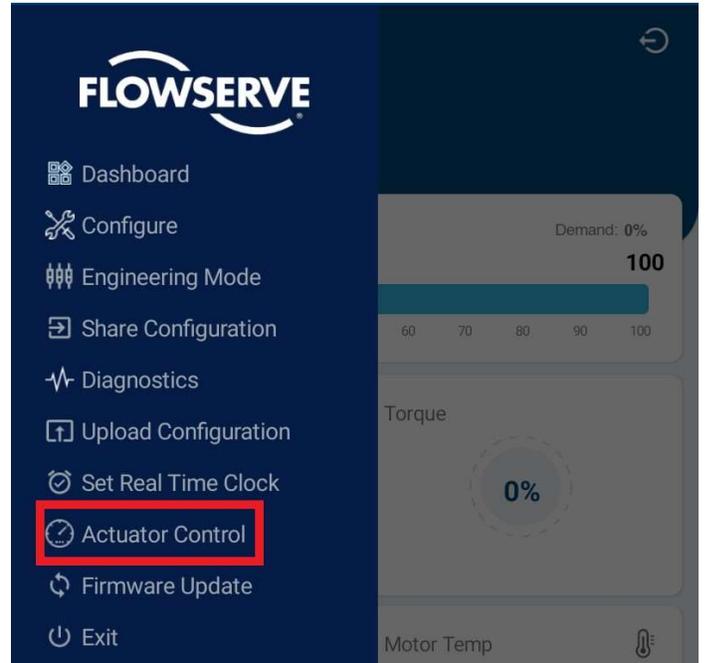
This page is updated with live data every 10 seconds. If the actuator is currently moving, you may not see the actual Position and Torque values until the next 10 second update.

4.3. Warning Widget

The widget on the bottom right of the Dashboard is tied to the Diagnostic Indicators. If one of these indicators is triggered, the widget will show “Warning” and change to red. If this happens, you should either check the status of the user indicators using the Diagnostics Menus in FlowSync or you should walk to the Actuator and diagnose the issue there.

5. Actuator Controls

FlowSync offers a few methods of controlling the actuator’s movement. Firstly, make sure the actuator is in Remote Mode by turning the Red Knob to Remote, then tap on the “hamburger” menu then select the “Actuator Control” option



When the page opens, the user will be prompted to enter the 3-digit actuator password to access the actuator controls.

WARNING: To protect against cybersecurity attacks, the pairing password must be changed during initial configuration and periodically afterwards.

5.1. Operation

The operation menu will allow the user to Open, Close, and Stop the actuator.

There is an extra button on this page called “Release Actuator Control.” This is for certain units that include Network controls because these Bluetooth Commands will interfere with the Network’s Controls. When a Bluetooth command is sent to the actuator, it will overrule any Network commands that are received. Pressing the “Release Actuator Control” button will allow a Network to regain control over the actuator’s movement.



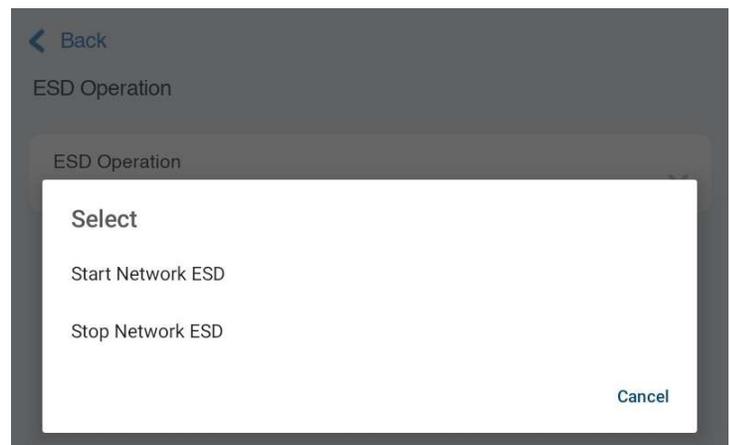
5.2. Move to Operation

The “Move To” Operation menu allows users to move the actuator to a specific position. To use the control, the user may use either the + and – symbols on the input box or they may tap on the number to open the device keyboard and type in the desired position. Valid positions are between 0 and 100% with up to 1 decimal place. Ex. 45.2%. Once the input box is showing the desired position, press the “Submit” button at the top of the page to execute the “Move To” command.



5.3. ESD Operation

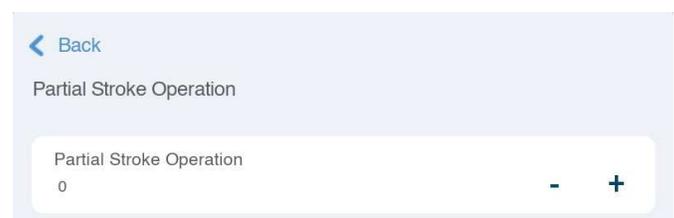
The ESD Operation menu allows users to Activate and Deactivate a Network Emergency Shutdown. To use the menu, users must select “Start Network ESD” or “Stop Network ESD” from the dropdown input then press the “Submit” button at the top of the screen. **Note:** This does not target the standard discrete ESD.



5.4. Partial Stroke Test

The Partial Stroke Test menu allows users to conduct a partial stroke test by entering the target position in the dialog box then pressing the “Submit” button at the top of the screen.

A partial stroke test works by moving the actuator to the target position and then back to the original position, allowing users to inspect if the actuator is functional.

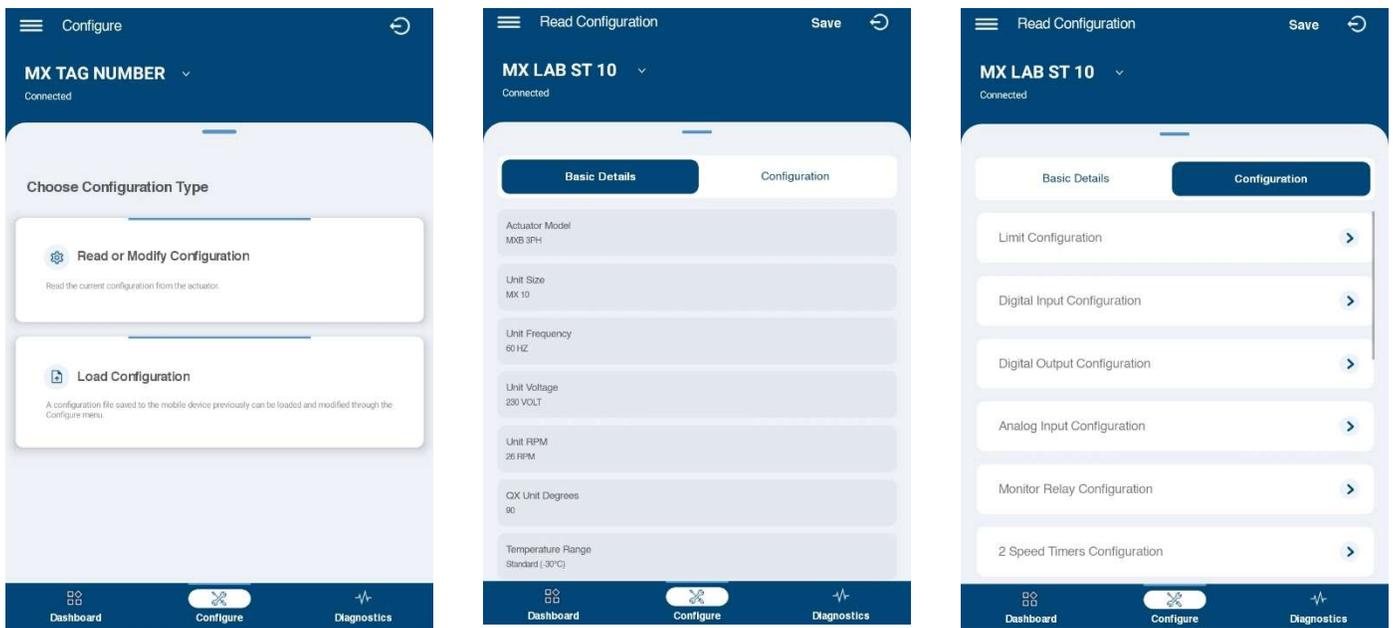


6. Configuration

Flowserve FlowSync offers users the ability to read and change the configuration options of Flowserve B Series Smart Actuators. All Configurations are handled using paired PDF and CSV files that save a configuration to the device's storage. Both files contain the same configuration information. The PDF is the human-readable reference file that is used to check what options are configured in the CSV. The CSV gets loaded into the FlowSync so that it can be uploaded to the actuator.

6.1. Reading the Actuator's Configuration

To read an Actuator's current configuration, open the configuration menu and select "Read or Modify Configuration." This will pull in all configuration data from the actuator and bring the user to the Basic Details Page.



6.2. Basic Details

The Basic Details Page shows identification data for the actuator. At the bottom of the page, it shows the enabled options that cannot be configured without restricted access. This data is important because in order to upload a configuration file to an actuator, the identification data must match. Any attempted uploads will fail and tell the user to change those settings.



6.3. Configurations Options

To read and make changes to the actuator's configuration, begin on the Basic Details Page then click on the Configuration Tab. Most configuration options are available on all units while a few are only available on units that include optional hardware or software options.

Configuration Options and Details

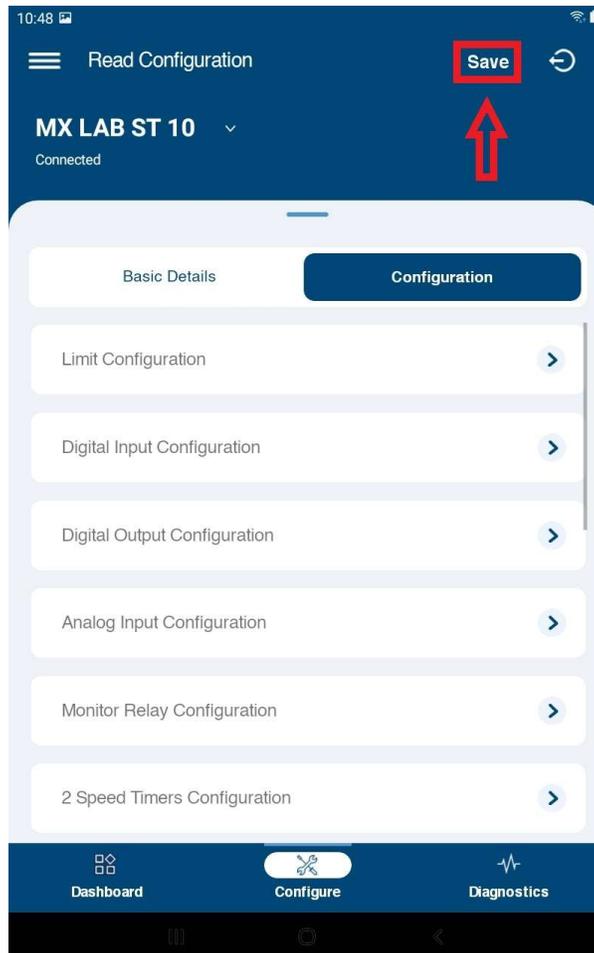
- Limits (excluding torque and position limits)
- Digital Inputs
- Digital Outputs
- Monitor Relay
- ESD Overrides
- Remote Mode
- Local Mode
- Tag
- Display Options
- Quick Access Function
- Motor Thermostat
- Valve Data
- Profibus PA (Network Hardware Required)
- Profibus DP (Network Hardware Required)
- DeviceNet (Network Hardware Required)
- DDC (Network Hardware Required)
- Foundation Fieldbus (Network Hardware Required)
- Hart (Network Hardware Required)
- Analog Input (Software Option)
- Analog Outputs (Network Hardware Required)
- 2 Speed Timers (Software Option)

6.4. Making Changes to the Configuration File

Configuration changes can be made by either loading an existing configuration file or by reading the configuration from the actuator. To load or read a configuration, please refer to the corresponding section.

Once a configuration has been loaded from either source, changes can be made using the configuration menus and their user input fields.

When the user is done making changes, they must return to the top of the configuration menu then press the “Save” button at the top of the screen. If this button is not pressed, the new configuration file will not be saved, and any changes will be lost.



Saving the files requires access to the device's file system. If a confirmation box pops up, please allow access.

Once the files have been saved, you will see a confirmation window that has the names of the new files. The default filename is the actuator type followed by the datetime (Year-Day-Mon-Hour-Min-Sec)

These filenames can be changed later with no impact on FlowSync.

NOTE: SAVING THE CONFIGURATION FILE DOES NOT WRITE ANY CHANGES TO THE ACTUATOR.



6.5. Uploading a Configuration

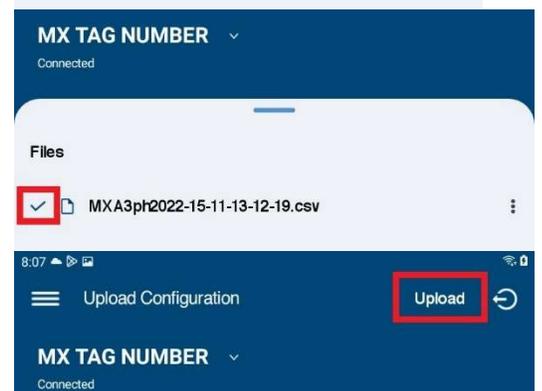
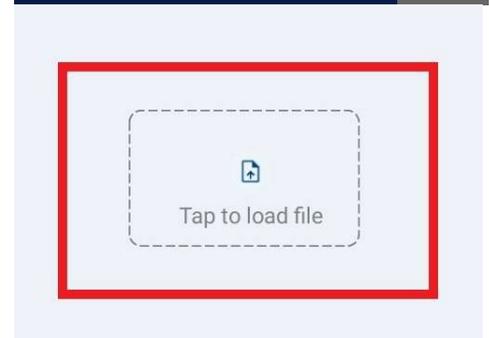
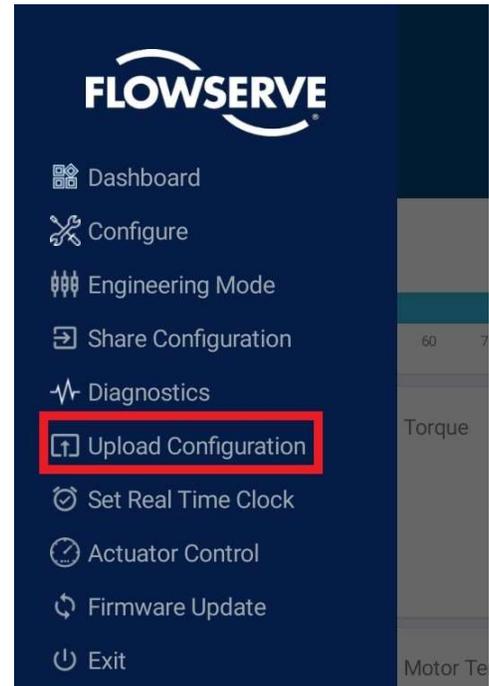
Note: To upload a configuration to an actuator, the user needs an existing configuration file.

Open the Upload Configuration Page which can be found inside the collapsible side menu.

Press the center button to select your configuration file. The default location for configuration files is Downloads->FlowServeDoc

Once your file is loaded, tap on the filename to confirm your selection. A checkmark will show that the file is confirmed.

To begin the upload, press the upload button at the top right of the screen. This will begin the upload which will normally take at least a minute to complete. Once the upload is finished, the actuator will reset which results in FlowSync being disconnected. Once the actuator is reset, reconnect FlowSync.





6.6. Creating and Modifying Configurations in Offline Mode

For users who want to design their actuator configuration before moving to be within the Bluetooth range. FlowSync offers an Offline configuration option.

Additionally, users can download an existing configuration using ONLINE MODE then modify it away from the unit by going to OFFLINE MODE and selecting "Load Configuration." Once loaded, users will see the same menu options that they saw in ONLINE MODE.

Users can also choose to create a brand-new configuration, by selecting "Create Configuration."

The user will be asked which actuator type they would like to configure. FlowSync currently supports MXb 3 phase. Single phase will be added in a later release.

This will begin a configuration for a MX10 460volt 60Hz 40rpm unit.

NOTE: Initialization options can be changed, but they must match any actuator that the configuration will be uploaded to.

In Offline mode, options that are normally not configurable are available. Users can change the network board option along with special software options such as 2-speed timer and Custom Digital Inputs. **However**, these options still require the additional hardware or restricted access in order to upload these configurations. Ex. Creating a configuration in Offline mode that has Profibus Network and 2-Speed Timers enabled CANNOT be uploaded to an actuator that is missing the Profibus Network Board or does not have the 2-Speed Timers option.

Once your offline configuration is ready, the file can be uploaded to the actuator using the same process outlined in the previous section.

6.7. Getting help with your Configuration

For users who are experiencing problems or have questions about their configuration options, Flowserve offers a support line where operators can send their configuration files. Flowserve support will review your files and if needed, they can return a new configuration file that can then be uploaded to the actuator. For questions on FlowSync contact Flowserve at LimitorqueService@flowserve.com or by calling 434-528-4400.

7. Diagnostics

A major feature of using Smart Actuators is the ability to collect diagnostic information to help identify problems and gain insight on performance. FlowSync takes these diagnostics and presents them in a useful format that can be easily read on a personal device.

The Diagnostics Menus provide access to:

- Identification Data – Firmware versions and QA codes of boards.
- Status and Information – Fault Status of functionality and features.
 - Standard Alarms and Warnings
 - Operation Statistics
 - Networks
 - RTC Battery Voltage
 - Digital Inputs
 - PST
 - Vibration Information
 - Digital Outputs
 - Temperature Stats
 - Torque Information
 - Analog Inputs
 - Power Supply Stats
 - Position Information
 - Analog Outputs
 - QA Data Identification Information
- Analytics

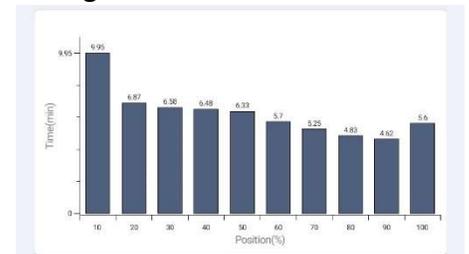
Time Graphs



Profile Graphs



Histograms



- Logs – Time Stamped historical logs.
 - Event Logs
 - Actuator Movement Logs
- User Indicator Status – User configurable deviations.
 - View Indicators
 - Total Indicator Status
 - Vibration Indicator
 - Position Indicator
 - Torque Indicator
 - Operation Indicator
 - Configured Indicators
 - Enabled User Indicators
 - Vibration Indicator
 - Position Indicator
 - Torque Indicator
 - Service/Operation Indicator

NOTE: User Indicators can ONLY be configured and cleared locally at the actuator.

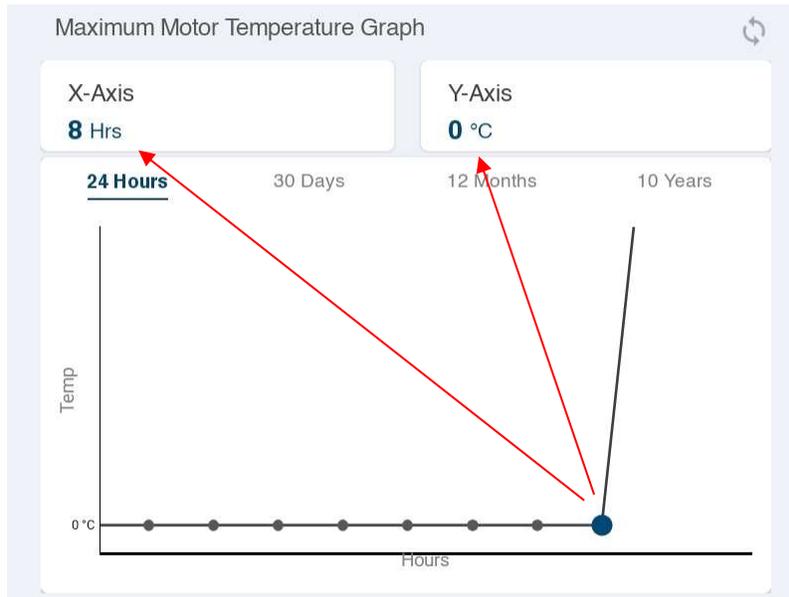
NOTE: For more information on the actuator's diagnostics see User Instructions MXb VAIOM000071 or QXb AIIOM000517 section 7.

7.1. Graph Controls

Some of the graphs provide touch controls for users to view different details of the data.

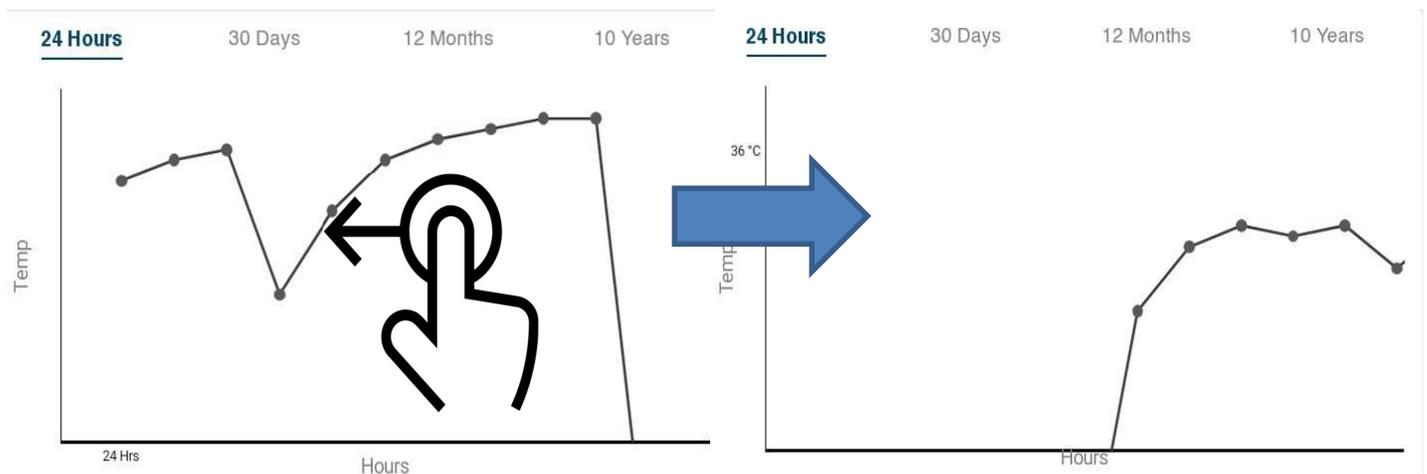
7.1.1. Points

Lines graphs are made up of multiple data points. By clicking on an individual data point, the user can see the exact values at that point in the spaces above the graph.



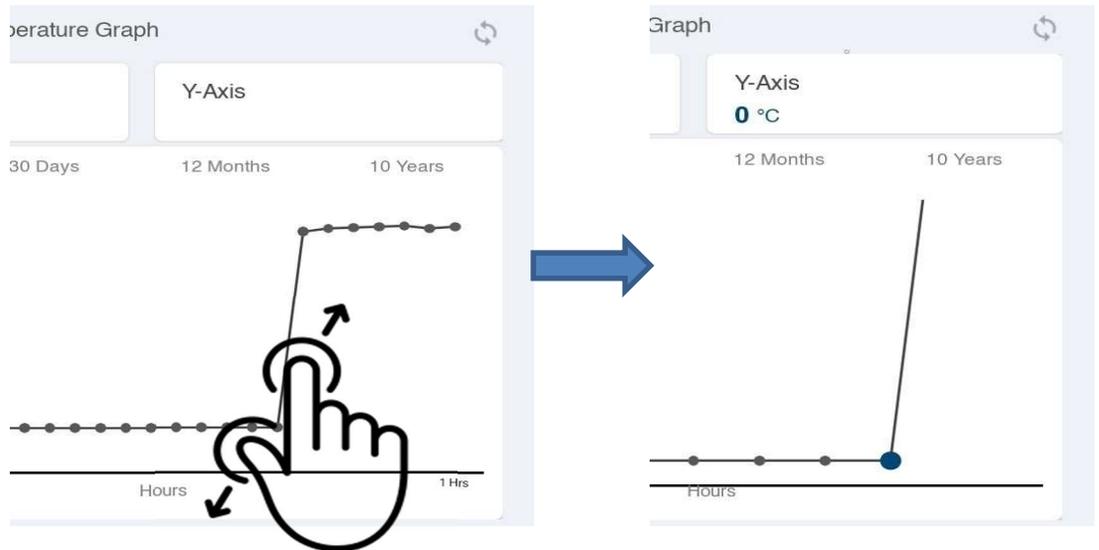
7.1.2. Scrolling

To move the graph data around inside the graph window, place your finger on the screen and drag it in the direction that you want the graph to move.



7.1.3. Zoom

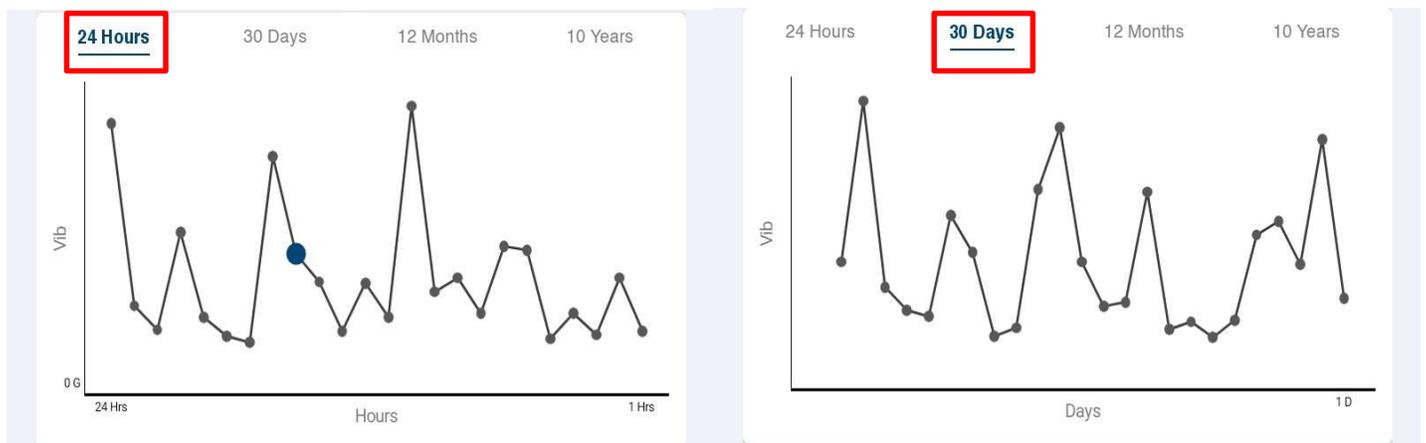
Using two fingers, place them around the point you would like to focus on them spread your fingers apart to see that area closer.



7.1.4. Tabs

Some graphs divide the same type of data between different time spans. Such vibration levels over the past 24 Hours, 30 Days, 12 Months, or 10 Years.

These time spans can be switched by selecting the tabs at the top of the graph.





7.1.5. Exporting

Some graphs allow users to export the graph's data to a CSV file that is saved on the device's memory. These graphs will have an "Export" button in the top right corner of the screen.



7.2. Logs

The event logs and actuator movement logs show the entries from latest to earliest. To manage the large amount of log data, entries are loaded 18 at a time from Newest to Oldest instance. To load more entries, scroll to the bottom of the list and tap "See More"

8. Engineering Mode

Engineering Mode offers users access to Modbus Terminal controls and Restricted setup options.

8.1. Modbus Terminal

The Modbus Terminal allows users to read and write to the Actuator's Data Registers. These controls are intended for Service Technicians and Flowserve Associates.

WARNING: Use of these controls by untrained individuals can result in disabling your Limitorque actuator or other unintended consequences.

8.2. Restricted Setup

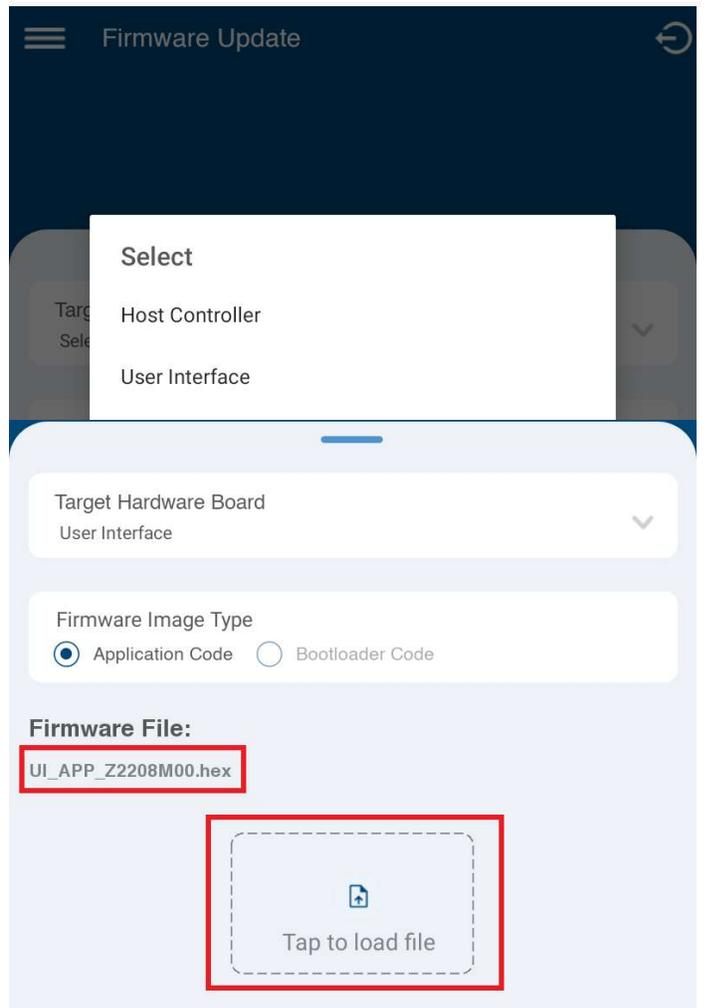
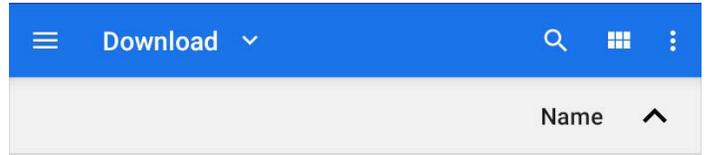
The Restricted Setup menu allows users to enable special configuration options. Many of these require an additional charge to be paid. To use these menus, contact a Flowserve Service Representative at LimitorqueService@flowserve.com or by calling 434-528-4400 and they will request the unique serial number at the top of this page. Once access has been granted, the Representative will provide a unique 8-digit code that will enable the configuration.

9. Firmware Updater

As Flowserve continues to offer high quality products and services, we are constantly improving the capabilities of your smart actuators. These improvements require existing actuators to be updated as new firmware is released.

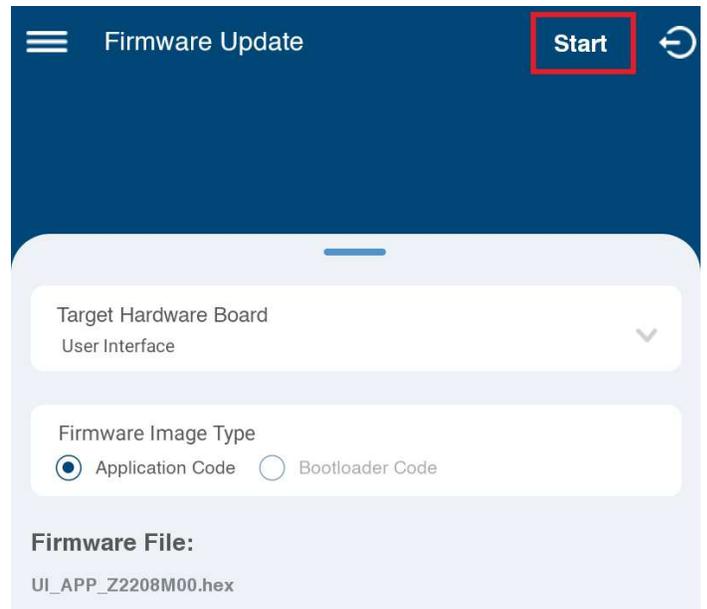
The Firmware Updater allows users to upload the distributed .hex files to the actuator’s mainboard. To begin the upload, check your .hex filename for either a “HC” or “UI” prefix.

The mainboard is divided into a “Host Controller” side and a “User Interface” side. On the Firmware Updater page, use the dropdown menu to select the correct board then use the center button to select the file from the device’s storage. The file name will show under the dropdown menus





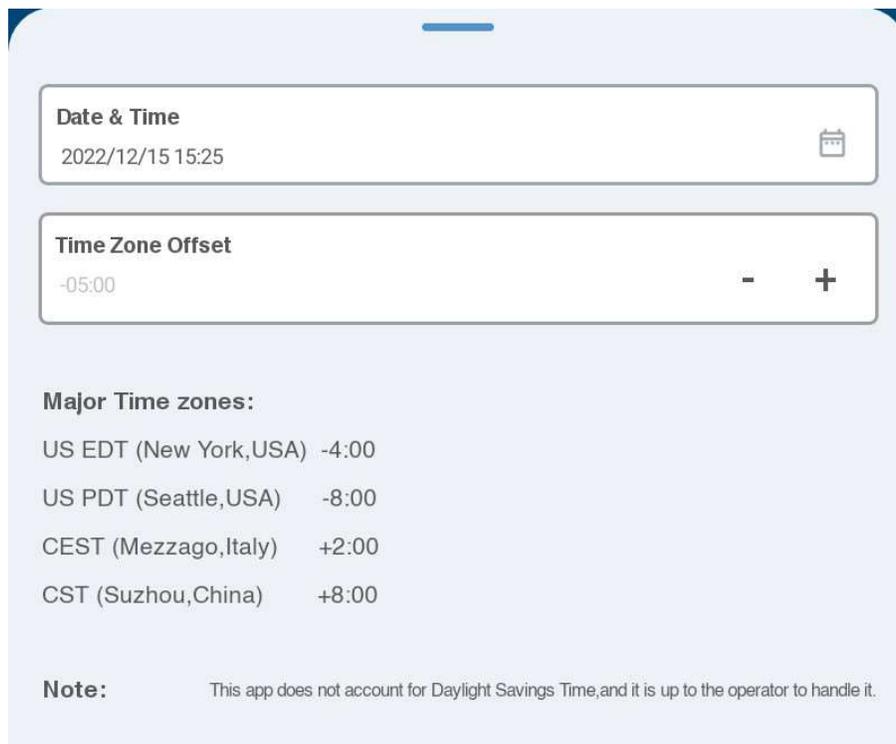
To begin the update, press the “Start” button at the top right of the screen to begin to update.



Note: This firmware update erases and writes the critical code needed for the actuator’s operation. During upload, maintain a strong Bluetooth connection by standing as close as possible to the actuator with no objects between the device and the front glass panel of the actuator.

10. Real Time Clock

This control allows the operator to set the Date, Time, and Time Zone of the actuator.



Note: For locations that observe yearly Daylight Savings Time, Flowserve Actuators DO NOT account for DST so time changes must be made by the operator.



11. Troubleshooting

11.1. The App keeps disconnecting

Due to hardware limitations and the nature of Bluetooth connections, the app may disconnect without warning. If this happens, we recommend holding your device within line of sight of the actuator's glass window and closer than 1.5 meters (5 feet) if possible.

11.2. My Configuration Wont Upload

To prevent mismatched configuration files from being uploaded and disabling your actuator, the app ensures that the unit specifications and network controls that were saved to the file match the actuator you are uploading to. If these items don't match, you will have to create a new configuration using the current actuator. See section 6.1

11.3. Where are my configuration files?

The files are saved on the device's local storage. To find the files, open either the Files App (Apple) or My Files (Android) then open the Downloads folder and open the FlowServeDoc folder.

11.4. Using FlowSync to move the actuator causes issues with our network control

Due to how network protocols are designed, when an actuator control is sent from the app to the actuator, the actuator may block communication from other networks so that they don't interrupt the current move command. To allow the network to regain control of the actuator, open the Actuator Controls menu and select "Release Actuator Control."

11.5. Dashboard information is inaccurate

Unfortunately, due to how much information is being sent over Bluetooth to populate the dashboard, some of this data may be lost (especially during initial connection to the actuator). Usually, the data will be corrected on the next update which happens every 10 seconds.

**United States****Flowserve Limitorque**

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Phone: 86-10-5921-0606
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