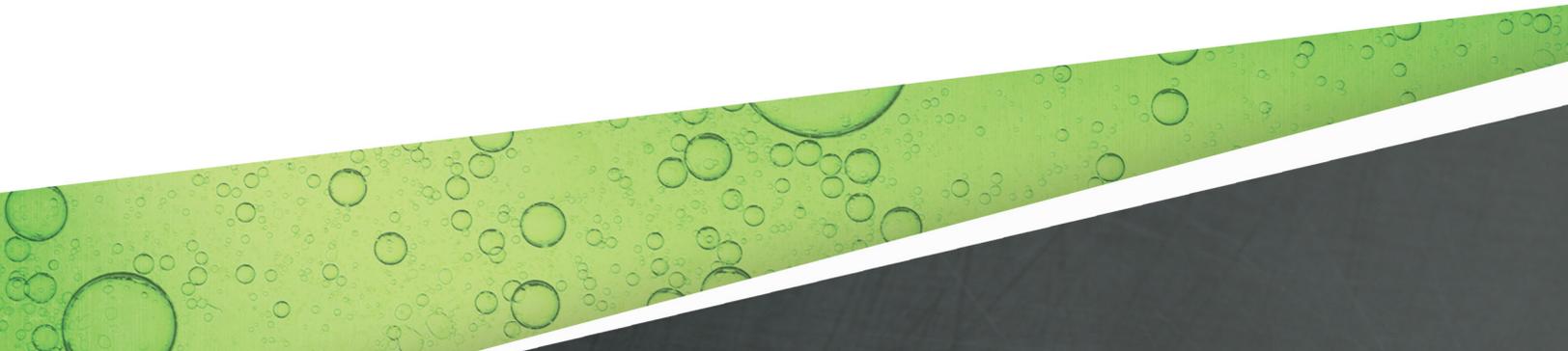


EVO™ 200 AND EVO™ 400 AUTOMATIC TANK GAUGES

OPERATION GUIDE



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Contents

| | |
|---------------------------------------|----|
| Introduction | 1 |
| User interface | 1 |
| Questions and concerns | 2 |
| Conventions used in this manual | 2 |
| Operating precautions | 3 |
| Programming and Navigation | 5 |
| Console navigation..... | 5 |
| Text entry | 6 |
| Number entry | 6 |
| Alarms and warnings | 6 |
| User roles and access control..... | 7 |
| User roles | 7 |
| Users | 7 |
| Quick Jump Menu | 8 |
| Applications tab | 8 |
| Tanks | 8 |
| Manifolds | 9 |
| Sensors..... | 9 |
| Conditions..... | 10 |
| Pumps | 10 |
| Reports..... | 11 |
| Compliance | 12 |
| Alarms | 12 |
| System tab | 13 |
| Configuration | 13 |
| System Information | 14 |
| Reboot System..... | 14 |
| Factory Defaults..... | 14 |
| Erase Archives..... | 14 |
| Tools tab..... | 14 |
| Printing Reports | 14 |
| External Printers | 14 |
| Network Printers..... | 15 |
| Print Button..... | 15 |
| Reports Options..... | 15 |
| Reports..... | 15 |
| Tank Testing..... | 17 |

| | |
|--|----|
| Static tests..... | 17 |
| SCALD® tests | 17 |
| Why Test the Integrity of a Tank? | 17 |
| Static Testing | 18 |
| Terms | 18 |
| Tank Test Requirements..... | 18 |
| Test Types..... | 18 |
| Ideal Test Conditions..... | 19 |
| Starting static tests manually..... | 19 |
| Static Test Results | 20 |
| SCALD® | 20 |
| Why Continuously Test Tank Integrity? | 20 |
| Terms | 21 |
| Testing Requirements | 21 |
| Test Scheduling | 21 |
| Test Results | 22 |
| Reasons why the test might not complete..... | 22 |
| Viewing results..... | 22 |
| Tank Leak Test Reports..... | 23 |
| Printing Tank Leak Test Reports | 23 |
| Sample Tank Leak Test Report | 24 |
| Web Browser Interface | 25 |
| Using the Web Interface..... | 25 |
| Navigation Bar..... | 26 |
| HOME..... | 26 |
| REPORTS | 26 |
| MONITORING..... | 26 |
| TOOLS..... | 27 |
| SETTINGS | 28 |
| How to Manually Start Leak Tests Using the Console Interface | 28 |
| Maintenance | 29 |
| Console Care | 29 |
| LCD Touch Screen | 29 |
| Calibration..... | 29 |
| Alarms and Troubleshooting..... | 31 |
| System Alarms..... | 31 |
| FMS Alarms | 32 |
| Liquid Sensor Alarms | 36 |
| TPI Alarms | 38 |

Introduction

The purpose of this manual is to guide installers, operators and technicians through the operation of EVO™ 200 and EVO™ 400 automatic tank gauges (ATGs). EVO™ 200 and EVO™ 400 ATGs incorporate the monitoring and alarm capabilities of preceding automatic tank gauges with advanced technologies to supply tank and level data more accurately and efficiently. This manual is also designed to introduce technicians to the optional LCD Graphical User Interface, which is used as an input device to program system configuration and maintain all applications from the front panel of the console. Overall safety issues, troubleshooting information, start-up procedures, warranty, service and return policies, as defined in this manual, must be followed.

EVO™ 200 and EVO™ 400 ATGs consist of an open architecture console that can run multiple Fuel Management Applications simultaneously. It typically contains a color LCD touch screen user interface, but it can also be operated by a web-based remote interface. Magnetostrictive Liquid Level Probes inside of the tanks provide the console with inventory and leak detection information. A variety of optional sensors can be used to monitor containment spaces.

User interface

LED Indicators: Three LEDs below the front panel give an “at-a-glance” indication of the system status. These LEDs are standard on all systems. The green Power LED indicates that the system power is on. The yellow Warning LED gives indication that the console has detected a malfunction or condition that has been deemed a Warning. The red Alarm LED indicates that the system has detected an alarm condition.

LCD Touch Screen: The color LCD touch screen is the most commonly used user interface for the Fuel Management System. This bright and colorful display allows easy viewing in any lighting condition. Touching certain buttons or segments of the screen will allow access to menus or more detailed information. Do not use sharp or pointed objects to operate the touch screen or damage may result. If improper operation of the touch screen is noted, it may be necessary to calibrate the touch screen. Please refer to the Routine Maintenance chapter of this manual for calibration procedures.

Questions and concerns

In case of emergency, follow the procedures established by your facility. If you have questions or concerns about safety or need assistance, use the information below to contact Franklin Fueling Systems:

Web: franklinfueling.com

Telephone:

USA and Canada: +1.608.838.8786, +1.800.225.9787

USA Technical Support: 1.800.984.6266

UK: +44 (0) 1473.243300

Mexico: 001.800.738.7610

China: +86.10.8565.4566

Conventions used in this manual

This manual includes safety precautions and other important information presented in the following format:

NOTE: This provides helpful supplementary information.

IMPORTANT: This provides instructions to avoid damaging hardware or a potential hazard to the environment, for example: fuel leakage from equipment that could harm the environment.

⚠ CAUTION: This indicates a potentially hazardous situation that could result in minor or moderate injury if not avoided. This may also be used to alert against unsafe practices.

⚠ WARNING: This indicates a potentially hazardous situation that could result in severe injury or death if not avoided.

⚠ DANGER: This indicates an imminently hazardous situation that will result in death if not avoided.

🔴 This indicates an alarm has activated and provides details so you can correct the problem. You can custom program system hardware failure warnings, as well as leak detection sensor, line leak, and tank-related alarms. Events denoted below with an asterisk "*" are ones you must program:

- The red alarm light or yellow warning light flashes.
- The console annunciator alarm horn sounds.*
- Internal output relays for external alarm devices activate.*
- Alarm reports print automatically, either locally through direct interface or remotely through USB.*
- Alarm and test reports are sent to a specified e-mail address.*
- Reports are sent to remote location(s) through an internal data/fax modem.*

Operating precautions

Franklin Fueling Systems (FFS) equipment is designed to be installed in areas where volatile liquids such as gasoline and diesel fuel are present. Working in such a hazardous environment presents a risk of severe injury or death if you do not follow standard industry practices and the instructions in this manual. Before you work with or install the equipment covered in this manual, or any related equipment, read this entire manual, particularly the following precautions:

IMPORTANT: When you move the drop tube inside the tank riser pipe, do so slowly and carefully to help prevent the drop tube from impacting the riser pipe.

IMPORTANT: To help prevent spillage from an underground storage tank, make sure the delivery equipment is well-maintained, that there is a proper connection, and that the fill adaptor is tight. Delivery personnel should inspect delivery elbows and hoses for damage and missing parts.

⚠ CAUTION: Use only original FFS parts. Substituting non-FFS parts could cause the device to fail, which could create a hazardous condition and/or harm the environment.

⚠ WARNING: Follow all codes that govern how you install and service this product and the entire system. Always lock out and tag electrical circuit breakers while installing or servicing this equipment and related equipment. A potentially lethal electrical shock hazard and the possibility of an explosion or fire from a spark can result if the electrical circuit breakers are accidentally turned on while you are installing or servicing this product. Refer to this manual (and documentation for related equipment) for complete installation and safety information.

⚠ WARNING: Before you enter a containment sump, check for the presence of hydrocarbon vapors. Inhaling these vapors can make you dizzy or unconscious, and if ignited, they can explode and cause serious injury or death. Containment sumps are designed to trap hazardous liquid spills and prevent environmental contamination, so they can accumulate dangerous amounts of hydrocarbon vapors. Check the atmosphere in the sump regularly while you are working in it. If vapors reach unsafe levels, exit the sump and ventilate it with fresh air before you resume working. Always have another person standing by for assistance.

⚠ WARNING: Follow all federal, state, and local laws governing the installation of this product and its associated systems. When no other regulations apply, follow NFPA codes 30, 30A, and 70 from the National Fire Protection Association. Failure to follow these codes could result in severe injury, death, serious property damage, and/or environmental contamination.

⚠ WARNING: Always secure the work area from moving vehicles. The equipment in this manual is usually mounted underground, so reduced visibility puts service personnel working on it in danger from moving vehicles that enter the work area. To help prevent this safety hazard, secure the area by using a service truck (or some other vehicle) to block access to the work area.

⚠ WARNING: Discharge static electricity from the splice kit to ground before you install it, and make sure it is properly grounded while in service.

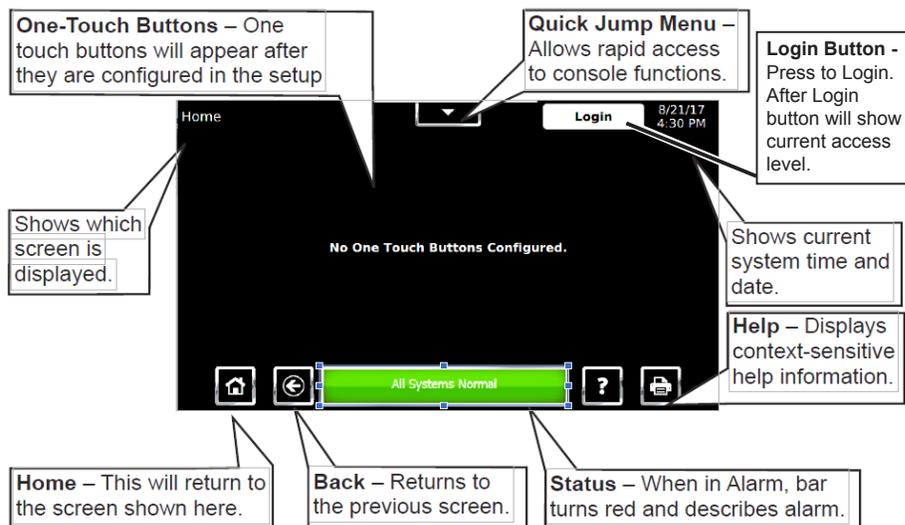
⚠ DANGER: Make sure you check the installation location for potential ignition sources such as flames, sparks, radio waves, ionizing radiation, and ultrasound sonic waves. If you identify any potential ignition sources, you must make sure safety measures are implemented.

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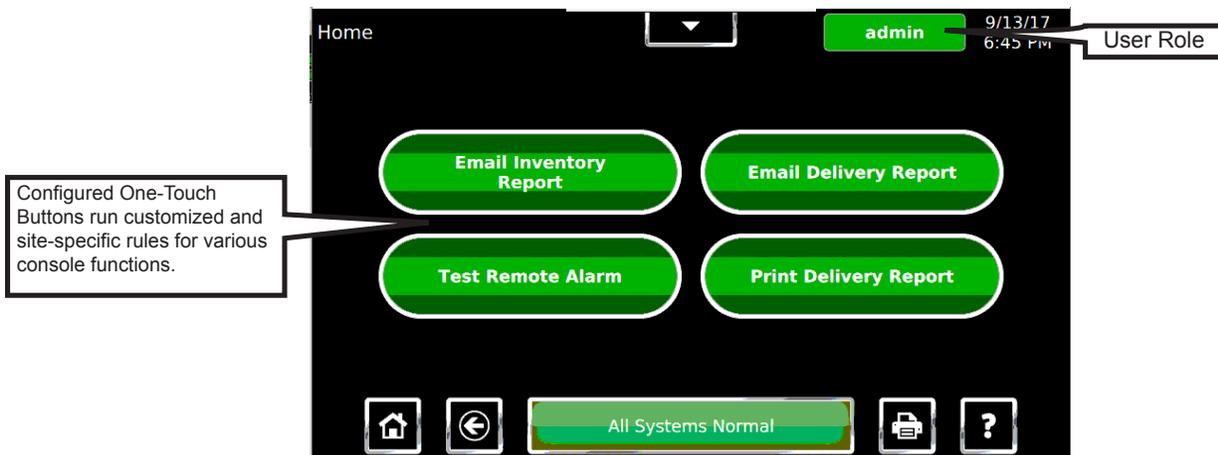
Programming and Navigation

Console navigation

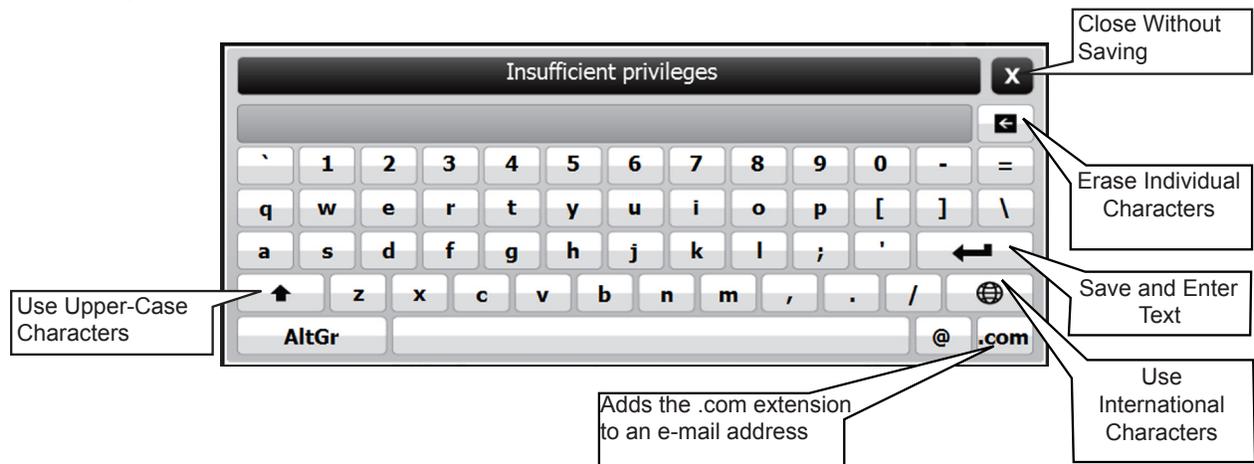
The operating system is designed for easy navigation. Applications allow the user to modify programming options by responding to on-screen commands. The following instructions show various operating system functions, so that issues can be corrected efficiently without interrupting dispensing or sales.



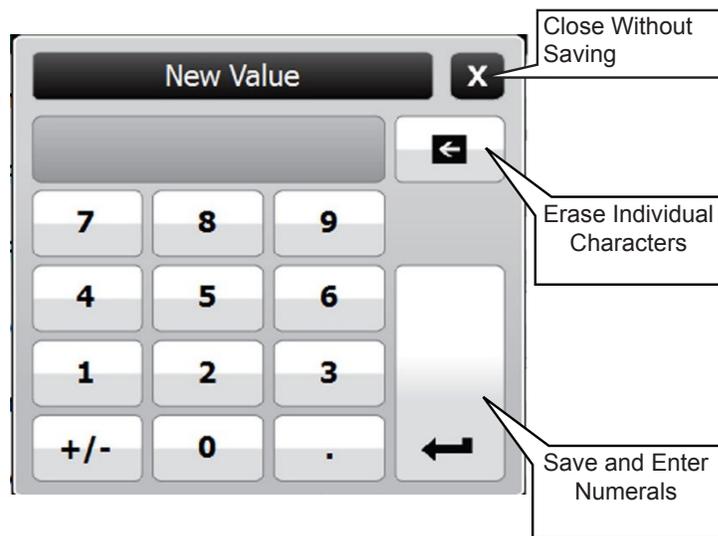
The following is an example of console interface with One Touch Buttons configured:



Text entry



Number entry



Alarms and warnings

Alarms and warnings alert you to problems and provide details about those problems so that you can take corrective action. System hardware failure warnings, tank related alarms, and leak detection sensor alarms always notify you in certain ways (other notification options are programmable). When no problems have been detected, the status indicator is green:

All Systems Normal

When there is an alarm condition, the status indicator changes to red:

TS-DTU 1 Remote DTU is offline

Optionally, on alarm, the system can:

- Sound the console's internal alarm horn.
- Activate relay outputs and sound external alarm devices.
- Print alarm reports.
- E-mail alarm reports to a specified destination.
- Notify remote monitoring software via optional internal modem or Ethernet.

For help with troubleshooting alarms, refer to the Troubleshooting chapter of the *EVO™ 200 and EVO™ 400 Automatic Tank Gauges Programming Guide* (FFS p/n 228180015).

User roles and access control

When you start up an EVO™ 200 or EVO™ 400 ATG, the system asks for an administrator password. This password is used to gain administrator access to all functions and set up the configuration. The administrator can then define user roles for all individuals who may need to interface with the ATG. The administrator implements the access control by configuring two sections in the setup configuration.

User roles

The administrator names each potential user role and selects the permissions for these roles. Each user role has the Custom permissions setting, which allows the Administrator to select specific information and functionality access.

Users

The administrator configures the password and the system preferences for each user role.

Custom: Each level allows an operator to access different console features. This security feature prevents unauthorized access to critical information and settings. The password for each access level can be adjusted by the administrator. The administrator level is typically reserved for an FFS certified technician. Users are prompted for a password to access or change data.

The Login button in the upper left hand corner of the display allows you to log into the console. This displays the user role access level.

Admin: This level grants access to all areas of programming and setup configuration. This privilege is usually reserved for FFS certified technicians.

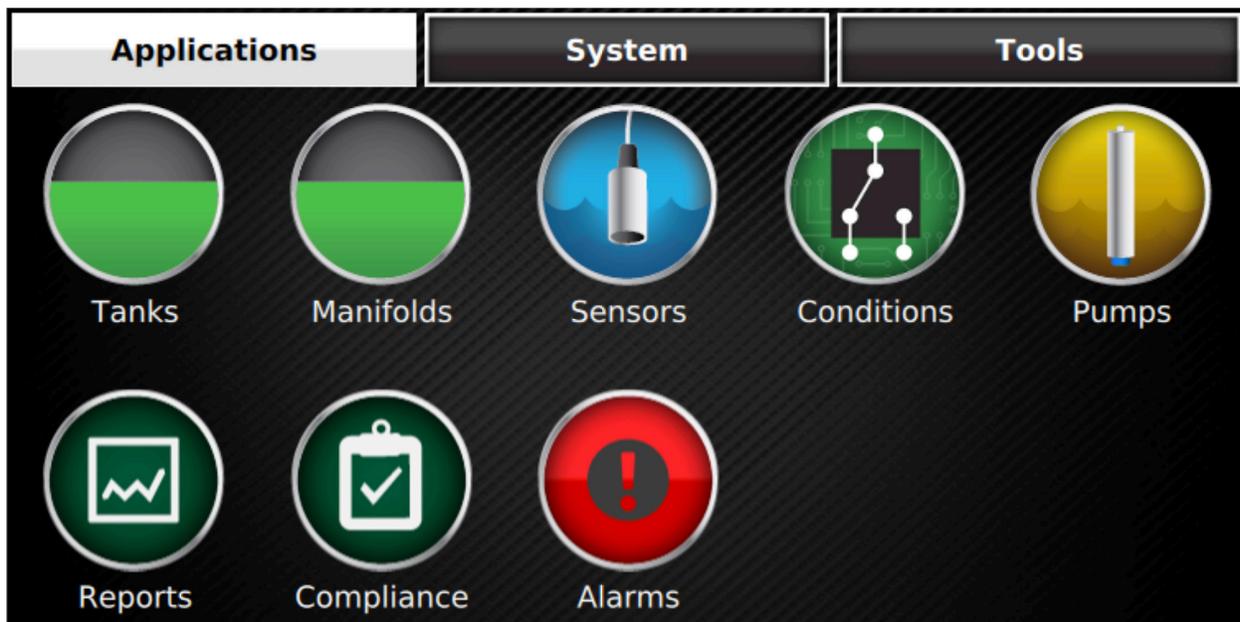
Diagnostic: This level is only used for advanced troubleshooting and diagnostics. Contact FFS Technical Support.

Quick Jump Menu

The Quick Jump Menu (QJM) provides quick access to the different parts of the console interface. There are three tabs in the QJM:

- Applications
- System
- Tools

Applications tab



The Applications tab provides inventory management and leak detection for tanks and sensors as well as tank and sensor control. This application also allows users to print reports and tank tests. A broad range of hydrocarbon products can be leak-tested and inventory-monitored using magnetostrictive liquid level probes. These probes come in a variety of lengths and typically contain two floats for indicating both product and water levels inside the of tank. Programmable limits can be set to indicate high and low conditions. Containment sumps, interstitial spaces, monitoring wells and other areas can be monitored for water and hydrocarbon intrusion using a wide range of optional Standard and BRITESENSORS®. These 2-wire sensors come in discriminating and non-discriminating versions. These sensors can be used in any combination depending on site specifications. See "Sensors" for more information.

Tanks

To open the Tanks screen, click the QJM button>Applications>Tanks. This screen shows alarms, product and water levels in the tanks, the product name, and the current volume. To print an inventory report, click the printer icon.

Tanks detail screen:

This screen provides details about product volume, level, temperature, and ullage space available in a tank. The level and volume of water is also be shown. The hash marks on the graphic indicate the various programmed high and low alarm limits. Alarms, if there are any, are also shown. This screen also provides details regarding the tanks Static Leak Test status, Autocalibration status, and Delivery history with the tabs in the top left column. Click Print button to print an Inventory Report for this tank. To open this screen, select a tank from the Tanks screen.

Tank 5

Unleaded

Unleaded

Control

| Inventory | Delivery | Static Leak Test | Autocalibration |
|---------------|----------|------------------|-----------------|
| Gross Volume | | | 9,585.9 gal |
| Net Volume | | | 9,682.6 gal |
| Ullage Volume | | | 1,814.1 gal |
| Product Level | | | 71.51 in |
| Temperature | | | 45.7 °F |
| Max Capacity | | | 12,000.0 gal |
| Capacity % | | | 84 % |
| Water Volume | | | 0.0 gal |
| Water Level | | | 0.00 in |

The tank controls feature can be accessed using the Control button on the Tank Inventory Detail screen. This allows authorized users and technicians to start tank tests or autocalibration when applicable.

Select

X

Start Monthly Test

Start Annual Test

Manifolds

To open the Manifolds screen, click the QJM button>Applications>Manifolds. This screen shows alarms, product and water levels in the manifolded tanks, the product name, and the current volume. To print an inventory report, click the printer icon.

Sensors

This screen displays a graphical representation of a sensor, the name of the sensor and will indicate any alarm conditions. Pressing the print button from the screen will print a sensor status report for all of the sensors. To access the sensor status summary screen click the QJM button>Applications>Sensors.

Standard Sensors:

Standard sensors do not discriminate between liquid and hydrocarbons and are 2-wire sensors:

- FMP-EIS-U: Electro-optic Interstitial Sensors (infrared, liquid sensor)
- FMP-UHS: Universal Hydrostatic Sensor (float switch, liquid level sensor)
- FMP-ULS: Universal Liquid Sensor (float switch, liquid level sensor)

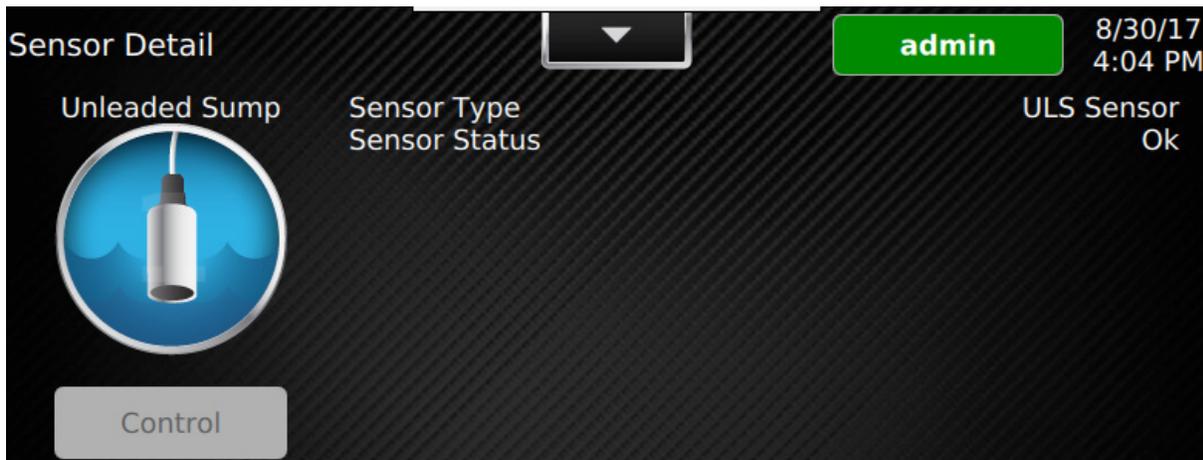
BRITSENSORS®:

BRITSENSORS® are discriminating sensors (many of which may generate multiple alarms):

- FMP-DIS-U: Discriminating Interstitial Sensor (Electro-optic and conductivity, liquid sensor)
- FMP-HIS-U and FMP-HIS-XL-U: Hydrostatic Interstitial Sensor (float switches, Brine sensor)
- FMP-DDS-U: Discriminating Dispenser sump Sensor
- FMP-DTS-U: Discriminating Turbine sump Senso (conductivity strip and floats, liquid and vapor sensor)
- TSP-DMS: Discriminating Magnetostrictive Sensor (position sensitive)

Sensors detail screen:

This screen provides details on the sensor type and the sensors current status. Any alarm condition on the sensor is also indicated here, if present. Pressing the print button from this screen will print a sensor report for that tank. To access the sensor status detail screen, select a sensor from the sensor status summary screen.

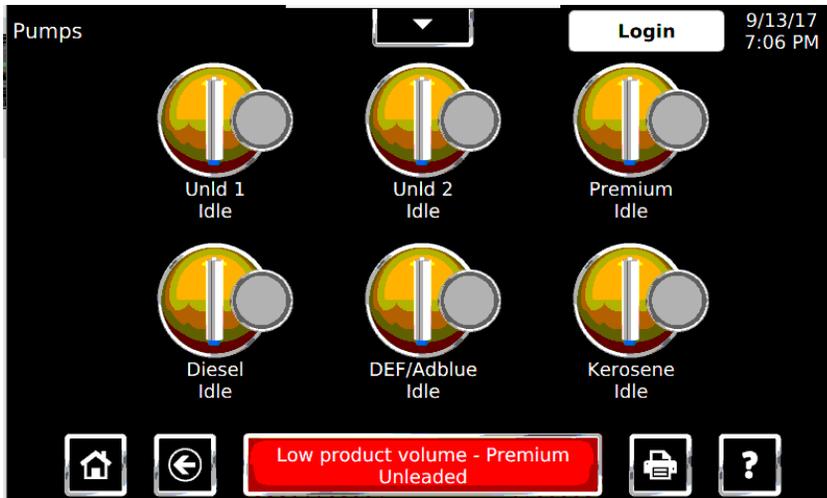


Conditions

To open the Tanks screen, click the QJM button>Applications>Conditions. This screen allows you to check the current status of the programmed conditions.

Pumps

This screen displays a graphical representation of the submersible pumps, the name of the pump, and an indication whether the pump is running or not. An alarm condition on the pump is also indicated here, if present. Pressing the print button on this screen prints a pump status report for all Pumps. To access this screen, click the QJM button>Applications>Pumps.



Pumps detail screen:

This screen provides a variety of information regarding the pump and its settings. Information including: Pump Name, Enabled/Disabled, Controller Type, Controller Address, the tank the pump is installed in, and the pump group. The screen also includes status information such as Pump Running, has the pump been forced off, and if a hook signal is present. Clicking the print button while on the page will print a pump status report for your selected tank.



The pump controls feature can be accessed using the Control button on the screen. This allows authorized users and technicians to reset the pump hardware and software.

Reports

This screen is used to create a variety of reports. The report options available depend on software options and system configuration. The available reports include: Alarm History, Event History, Setup, Inventory, Deliveries, Tank Test, SCALD®, Pump Status, Reconciliation, Regulatory, and Sensor Status. To access this screen, click the QJM button>Applications>Reports.

Compliance

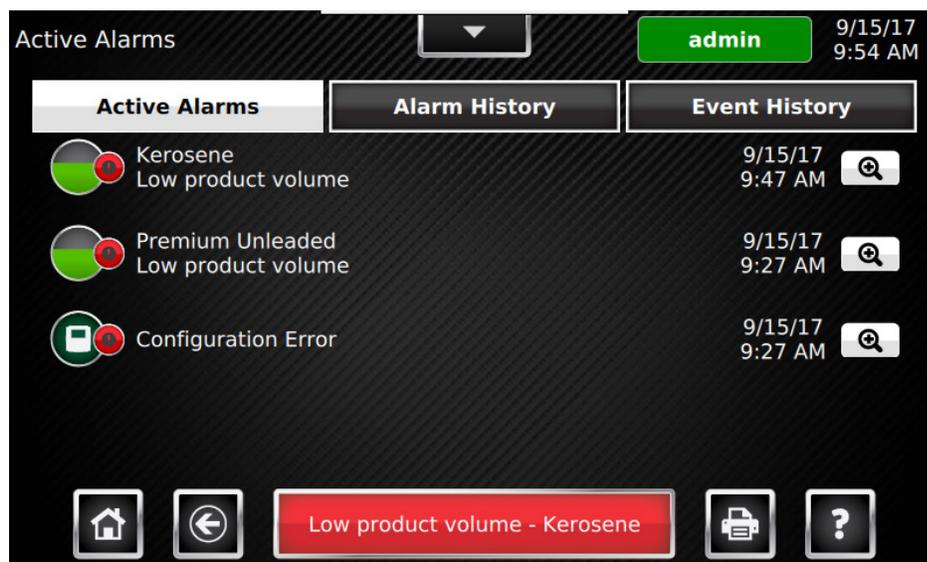
This screen displays regulatory status information for tanks, manifolds, and sensors. Each page lists every device, the number of days remaining, and the date when the device will be out of compliance. The screen indicates compliance concerns with a color coded status indicator. To access this screen, click the QJM button>Applications>Compliance. Click Tanks (Monthly), Tanks (Annual), Manifolds, or Sensors for the associated device.

Compliance status:

- Compliant – The device is in compliance.
- Compliance Alert – The device will be out of compliance in 8 to 14 days.
- Compliance Warning – The device will be out of compliance in 1 to 7 days.
- Compliance Alarm – The device is out of compliance.

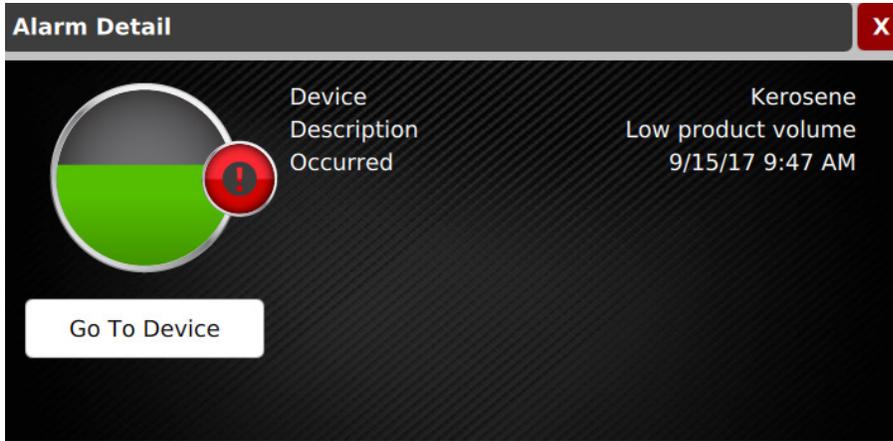
Alarms

This screen displays active alarms, an alarm history, and an event history. From the alarm summary screen, users can view currently active alarms, review alarm and event histories, and obtain details about active alarms. To access this screen, click the QJM button>Applications>Alarms.

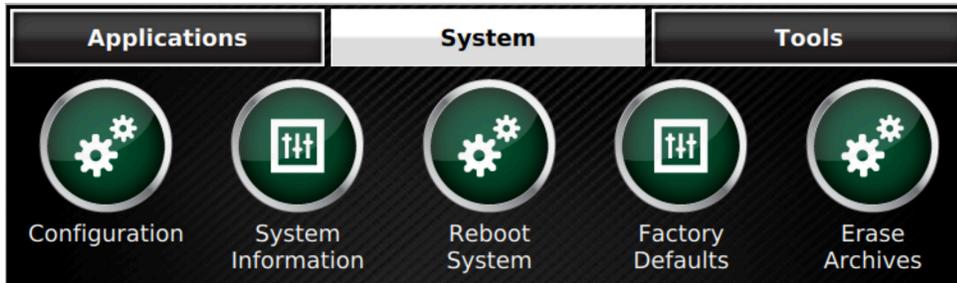


Alarm Detail screen:

This screen provides detailed information regarding an active alarm. These details include the device, the date and time the alarm occurred, and a description of the alarm. It will also provide hints for recommended actions and precautions. Many alarms will also have a “Go To Device” link which directs users straight to the device to allow users to perform corrective actions. Pressing help from this screen will provide further details regarding the specific alarm. To access this screen, select an alarm from the list of active alarms.



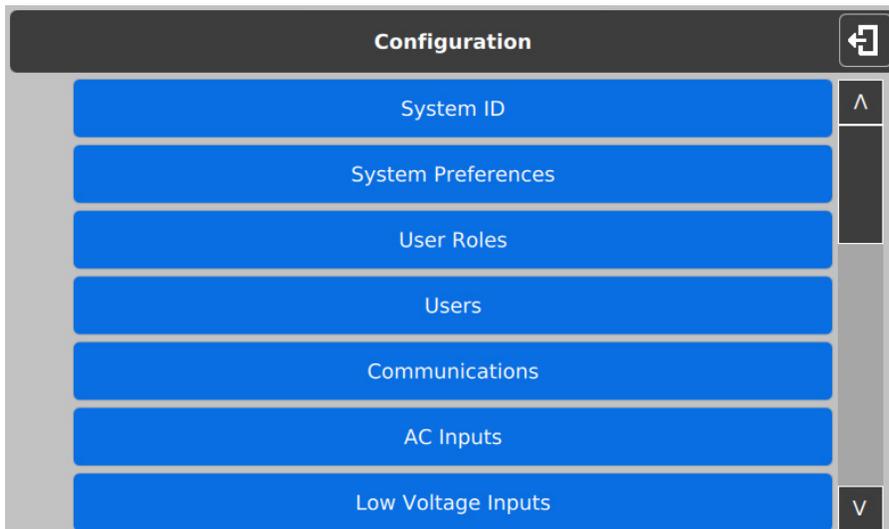
System tab



The System tab monitors the console’s operational status and manages software options and upgrades. All preferences and configuration settings are controlled by this application (e.g., display options, clock and calendar). The system application is standard on every console.

Configuration

The Configuration screen allows users and technicians to change console configuration, setup, and preferences. To access the Configuration screen click the QJM button>System>Configuration



System Information

- Identification: This displays system identification information including: System Serial Number, Ethernet Address, Controller Serial Number, and the system creation date.
- Software Options: This displays a list of optional software and whether they are activated.
- About: This displays contact information for Franklin Fueling Systems and a note regarding Open Source software.

Reboot System

This will perform a system software reboot and requires an administrator password. To access the Reboot System tab click the QJM button>System>Reboot System

Factory Defaults

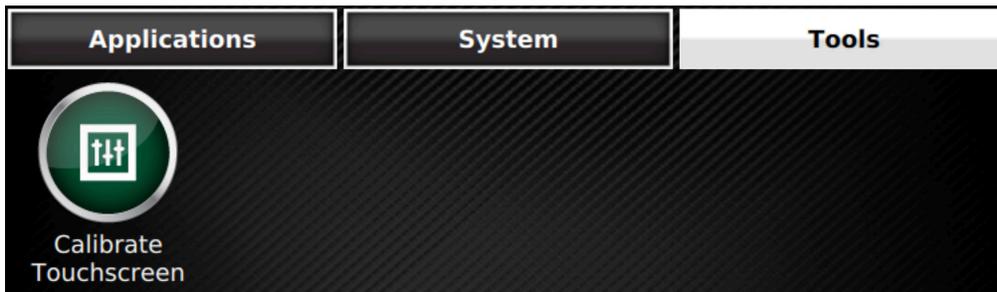
Reset system configuration to factory defaults. To access the Factory Defaults tab click the QJM button>System>Factory Defaults

Erase Archives

Delete all system configuration and historical information. To access the Factory Defaults tab click the QJM button>System>Factory Defaults.

Tools tab

This section allows the user to calibrate the LCD Touchscreen.



Printing Reports

External Printers

External printing is accomplished via USB. No software drivers need to be installed to print via USB. Connect the USB cable to the printer and the USB port on the console. The unit is now ready to print. Approved printer are updated regularly, please see our web page for details.

NOTE: The setup will need to be changed so the printer option is 0, save the configuration, connect the printer and cycle the power of the tank gauge.

Network Printers

EVO™ 200 and EVO™ 400 ATGs can be configured to utilize a printer on a network shared with it.

1. Select QJM>System>Configuration>Printing.
2. Choose the  in the upper right-hand corner to add a printer.
3. Enter the Name, URI, Make and Model/Driver information for the printer.

Print Button

The Print Button will print the data displayed on the LCD when available.

Reports Options

The following reports are available for the different optional Applications. Each report allows you to select the date range of data you wish that report to contain.

Reports

| Report | Description |
|---------------|--|
| Alarm History | A history of the Alarms that have occurred. |
| Event History | A history of the Application Events that have occurred. |
| Setup | A printout of the system programming. |
| Inventory | Complete level, volume, temperature and ullage info for each tank. |
| Deliveries | Start and ending level and volume information and total amount delivered. |
| Tank Test | Annual and monthly static tank testing results. (tank testing option required) |
| SCALD® | 24 hr continuous monthly tank testing results. (tank testing option required) |
| Regulatory | Complete compliance report for all tanks and sensors. |
| Sensor | Alarm status of all monitoring sensors. |

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Tank Testing

The two types of tank tests available for your ATG are Static and Statistical Continuous Automatic Leak Detection (SCALD®).

Static tests

Static tests are run during quiet times when the tank is thermally stable and the site is closed so that no dispensing or deliveries will occur. The two types of Static tests are:

- Monthly (0.2 gph)
- Annual (0.1 gph)

Static tests can be scheduled to run on a Daily, Weekly or Monthly basis in the Setup menu (if you have administrator privileges). They can also be started on demand from the Tanks detail screen. Make sure all testing conditions are met before starting a Static Tank Test.

SCALD® tests

SCALD® tests run 24 hours a day and look for periods of quiet time when the tank is thermally stable and no dispensing or deliveries are occurring. These quiet periods are collected and analyzed, and the tightness of the tank is determined.

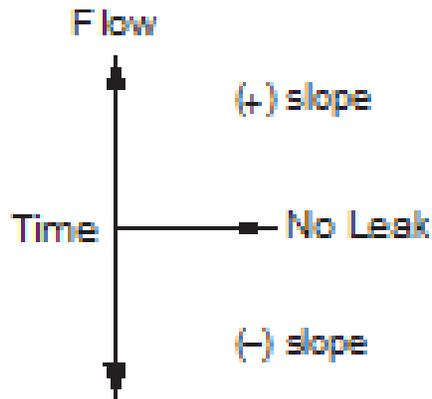
These tests update whenever possible and can be setup to print automatically. A common method is to schedule the latest test to print out once a week. This method requires less paper because tests can be generated multiple times a day on a quiet tank. Static and SCALD® tests run independently of each other and can be run at the same time. A SCALD® test will likely complete during the time the Static test is running.

All FFS ATGs meet the requirements of the U.S. Environmental Protection Agency (EPA/530/UST-90/006 test protocol) for ATGs. The system(s) also meet the requirements for Annual Tank Tightness Testing for 0.1 gal/hr leaks of the National Work Group on Leak Detection Evaluations (NWGLDE). Third Party Testing Laboratory test results (for standard static tank leak tests) are also available at <http://nwglde.org/>.

Why Test the Integrity of a Tank?

In compliance with federal, state and local regulatory policies, all tanks must be monitored for leaks due to environmental and public safety/health concerns. Tank tightness testing determines if there is a leak.

Static Testing



Terms

Threshold: Test results must be within these programmable limits to pass a leak test. There are Monthly, Annual and Sentinel Mode Thresholds.

Sentinel Mode: Sentinel mode is designed to monitor the product levels in your tank(s) when there isn't supposed to be any dispensing.

Confidence: Level of testing sensitivity indicating the probability that the test will detect a leak. Higher confidence percentages will produce more sensitive test results. Check local regulations to verify acceptable confidence levels.

Slope (Tank Testing Reports): A ratio of the calculated rate of change to the time the rate is measured. Slope is affected by leaks and by many other sources of interference. A negative slope or decrease indicates loss of product volume. A positive slope or increase indicates a rise in product volume.

Tank Test Requirements

Static Tank Testing is a standard feature of your ATG. SCALD® is an option you can order when you purchase the console or after initial purchase by using the part number TS-TT.

Test Types

This system is designed to perform two types of static tests to comply with regulatory policies.

- 0.1 GPH Annual Leak Test - Detects a rate increase or decrease of product in the tank, other than dispensing (no testing during dispensing), at a rate greater than 0.1 gallons per hour.
- 0.2 GPH Monthly Leak Test — Detects a rate increase or decrease of product in the tank, other than dispensing (no testing during dispensing), at a rate greater than 0.2 gallons per hour.

Ideal Test Conditions

Tank and environmental conditions play an important role in passing results. Consider the following items when scheduling or manually forcing a static leak test:

| Variable | Explanation |
|-----------------------|--|
| Product Level | The level in the tank must submerge at least the lowest RTD (temperature sensor) inside the probe shaft. |
| Temperature Stability | A tank with more product inside is likely to be stable thermally and allow for higher quality results |
| Time of Day | This variable ties in with temperature stability. Though not likely, product in the tank may dramatically rise and fall in temperature from dawn to afternoon and then from dusk to night. Typically, thermal issues affect aboveground storage tanks more often than Underground Storage Tanks |
| Deliveries | A period of time is required to wait without a delivery between the last delivery and testing. The time to wait is 4 hr 9 min for a 0.2 GPH and 5 hr 18 min for a 0.1 GPH after a delivery (in accordance with third party testing). This time will allow the product to settle. If the wait time is not observed, then the test may abort or fail. |
| Dispensing | If dispensing occurs during a test, that test will be aborted. |
| Test Time | The test should be scheduled or manually forced when the test will not exceed the maximum leak test time. If the maximum time is surpassed, an Incomplete result is likely to occur. If scheduling or manually forcing a test, take into account what the sites hours of operation are to avoid a dispense during testing. Doing this will prevent aborted and incomplete tests. |

Starting static tests manually



NOTE: This procedure requires User level privileges.

1. Open the Quick Jump menu.
2. Under Applications, select Tanks, and then click the tank you want to test.
3. Click Control.
4. Click Test Type, and choose either Monthly or Annual.

Static Test Results

Pass: This result confirms the integrity of the tank.

Fail: This result is indicated by a warning light and/or annunciator. (A report may print if the console is programmed to do so. For more information, see the *EVO™ 200 and EVO™ 400 Automatic Tank Gauges Programming Guide* (FFS p/n 228180015).

Abort: The result has been stopped due to variations in float level and/or product temperature that are outside of the leak test threshold. This may be caused by:

- Dispensing
- Loss of Probe Signal
- Delivery
- Rapid Temperature Change
- Theft
- Product Lower than the lowest RTD
- Pump Started

Incomplete – When the test does not collect enough data before the programmed time limit ends, the test will be Incomplete. When it's necessary to obtain valid results for compliance reasons, start the test manually.

SCALD®

SCALD® runs 24 hours a day performing 0.2 GPH tests on tanks at sites that do not have enough quiet time to complete static tests (some static tests may take up to eight hours to complete).

This test is available only if the option for Tank Testing is enabled. This option can be ordered when initially purchasing the console or afterwards. The part number for this option is TS-TT for the EVO™ 200 and EVO™ 400 ATGs.

Why Continuously Test Tank Integrity?

In compliance with federal, state and local regulatory policies, all tanks must be monitored for leaks due to environmental and public safety/health concerns. Tank Integrity Tests determine whether there is a leak.

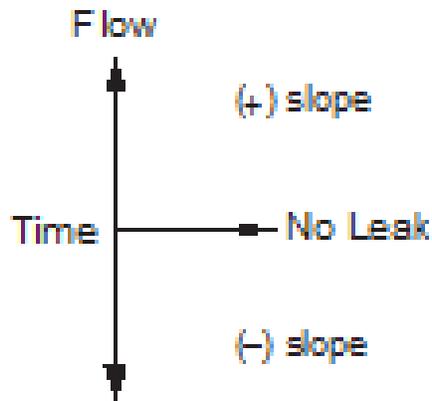
Since SCALD® continuously runs statistical tank leak tests during the inactive periods between product deliveries and dispensing, it is particularly useful for:

- Operations that are open for business on a continuous (24 hours, 7 days a week) schedule
- Operations that are open for business on a two-shift schedule and where deliveries may occur at any time during non-business hours (normally schedule tank leak tests may require up to 8 hours of inactivity).

Terms

Qualify: The percentage of product that the tank is required to contain prior to testing according to the programmed “Qualify” parameter.

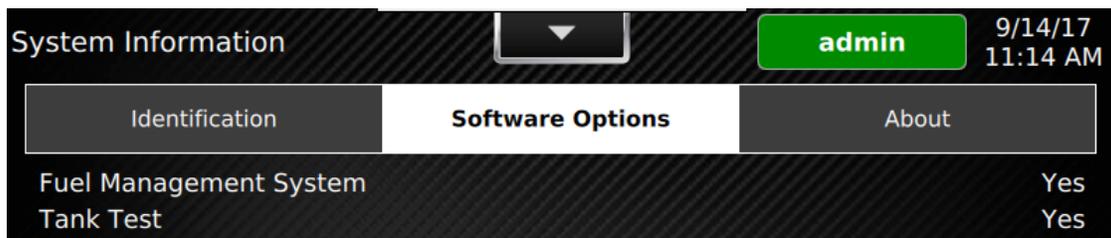
Slope (Tank Testing Reports): A ratio of the calculated rate of change to the time the rate is measured. Slope is affected by leaks and by many other sources of interference. A negative slope or decrease indicates loss of product volume. A positive slope or increase indicates a rise in product volume.



Testing Requirements

To perform this test, the SCALD® software must be enabled. To verify that the software is enabled:

1. Starting at the Home screen, open the Quick Jump Menu.
2. Click System>System Information>Software Options.
3. Under Software Options, Tank Testing will appear. A “yes” in the Enabled column indicates that the software has been purchased and is enabled.



Test Scheduling

SCALD® works by collecting quiet intervals in-between dispensing. A “QI” is obtained when a thermally stable tank is idle for 20 minutes with no dispensing, no deliveries and no other movement of the probe floats. Once four QIs are collected, the console will analyze the data and either Pass, Fail, Incomplete, or Abort that test. The four QIs can be collected over a period of several days or weeks.

Test Results

Pass: A passing result ensures the integrity of the tank is good.

Fail: Test failure will be indicated by a Warning light and/ or annunciator. Additionally, a report may print (if the console is programmed to do so, see the *EVO™ 200 and EVO™ 400 Automatic Tank Gauges Programming Guide* (FFS p/n 228180015).

Abort: The result is due to variations in float level and/ or product temperature that are outside the leak test threshold. This may be caused by:

- Dispensing
- Rapid Temperature Change
- Delivery
- Product Lower than the lowest RTD (Resistance Temperature Detector)
- Theft
- Pump Started
- Loss of Probe Signal

Incomplete:– When the test does not collect enough data before the programmed time limit, the test is Incomplete. When it is necessary to obtain valid results for compliance reasons, start the test manually.

Reasons why the test might not complete

- No Quiet Time.
- SCALD® needs four 20 minute QIs in order to complete a test. These QIs are normally found in the early morning hours. If the site is so busy that there are no 20 minute periods of no dispensing, then SCALD® will not be able to complete a test.
- Temperature Instability.
- If a site is receiving deliveries frequently and the temperature of the fuel being delivered is several degrees hotter/colder than the fuel in the tank, SCALD® will not be able to collect data due to thermal instability interrupting quiet time. The temperature of the fuel cannot change more than .01° F during a 20 minute QI.
- If a pump control relay is stuck closed and the pump is running all of the time, the temperature in the tank may be much higher than in the other tanks. Due to this high temperature and the fact that the pump is running, no QIs will be collected.

NOTE: On rare occasions, conditions can arise that prevent SCALD® from getting enough QIs to complete a test.

Viewing results

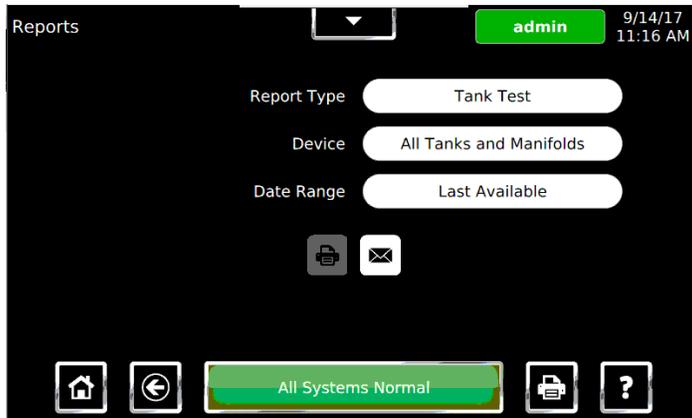
From the Quick Jump menu, click Applications>Compliance>Tanks (Monthly).

Tank Leak Test Reports

Reports that contain leak testing data and results may be printed from the console or generated and printed using TSA.

Printing Tank Leak Test Reports

1. Open the QJM, and click Applications>Reports.



2. From the Report Type menu select either the Tank Test (for static reports) or SCALD® for continuous reports.
3. For Device, select a specific Tank or Manifold, or All Tanks and Manifolds.
4. Select the Date Range desired.
5. Select the printer button to print.

Sample Tank Leak Test Report

The following is an example of an External Tank Leak Test Report from Web Browser Interface:

Example External Tank Leak Test Report from Web Browser Interface

| | | | | | | | | | |
|-----------|--|--|--|-------------------------|--|--|--|--|-----------|
| Site ID 1 | | | | | | | | | |
| Site ID 2 | | | | Last Available | | | | | Date Time |
| Site ID 3 | | | | | | | | | |
| Site ID 4 | | | | Tank Test Report | | | | | |
| Site ID 5 | | | | | | | | | |

| STATIC TEST | | | | | | | | | |
|-------------|--------------|----------------------|------------|------------------|------------|------------------|-------------|---------------|--------------|
| TANKS | | | | | | | | | |
| Name | Max Capacity | | Time | Gross Volume | Net Volume | Product Level | Temperature | Water Level | Water Volume |
| Tank # | ### | | | | | | | | |
| | | Started | Date Time | ## | ## | ## | ## | ## | ## |
| | | Ended | Date Time | ## | ## | ## | ## | ## | ## |
| | | Last Delivery | Date Time | Test Type | (Monthly) | Leak Rate | ### | Result | (Pass) |
| | | Threshold | Programmed | Capacity | ### | | | | |
| | | Net Volume | | Temperature | | Level | | Time | |
| | | ### | | ### | | ### | | Date Time | |
| | | ### | | ### | | ### | | Date Time | |
| | | ### | | ### | | ### | | Date Time | |

| | | | | | | | | | |
|-----------|--|--|--|-------------------------|--|--|--|--|-----------|
| Site ID 1 | | | | | | | | | |
| Site ID 2 | | | | Last Available | | | | | Date Time |
| Site ID 3 | | | | | | | | | |
| Site ID 4 | | | | Tank Test Report | | | | | |
| Site ID 5 | | | | | | | | | |

| SCALD TEST | | | | | | | | | | |
|------------|-----------|--------------|----------------|-----------|------------------------|--------|------------------|-----------|---------------|-----|
| TANKS | | | | | | | | | | |
| Name | Product | Max Capacity | | | | | | | | |
| Tank # | Product # | ### | | | | | | | | |
| | | | Started | Date Time | Result | (Pass) | Slope | ## | Status | ### |
| | | | Ended | Date Time | Volume Quality Percent | ## | Test Type | (Monthly) | | |

Web Browser Interface

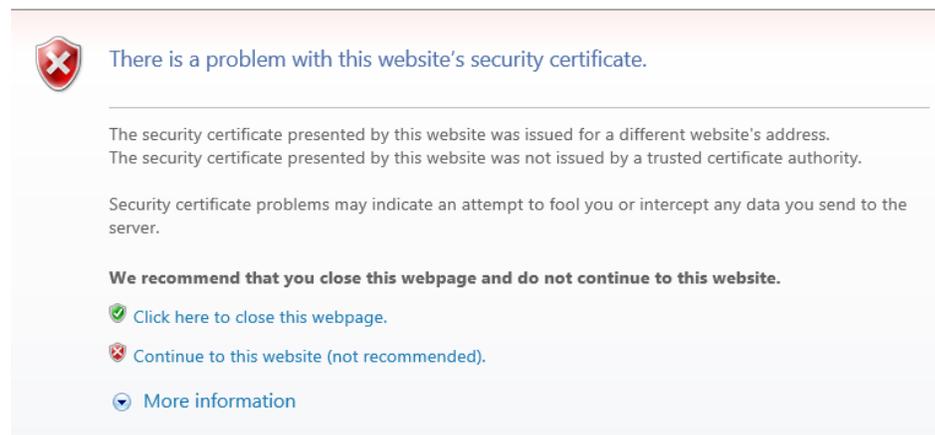
One of the most powerful advantages of an EVO™ 200 or EVO™ 400 ATG is its standard Ethernet port and ability to communicate with web browsers through web pages using standard XML (eXtensible Markup Language) protocols. The Web Browser Interface (FFS PRO CONNECT) allows the ATG to directly connect to a computer through a local area network or high speed internet connection. Using the Web Browser Interface, your console can be accessed from a computer with a web browser program. Contact your local FFS distributor for more information if you are not using this feature.

Using the Web Interface

IMPORTANT: Enter "https://" before you enter an IP address.

To access the console using a remote computer, you will need to know the IP address that has been assigned to it. This address should be provided by the installer. For direct connections not part of a network, the default IP address is "https://192.168.168.168." Open your internet browser, and in the address bar, enter "https://" and the IP address of the console. (You should bookmark or add this page to your favorites in your browser.)

When logging into your console you may receive a website security certificate message. Choose the option of Continue to this website when necessary.



The screenshot shows a security warning dialog box with a red shield icon containing a white 'X'. The text reads: "There is a problem with this website's security certificate." Below this, it states: "The security certificate presented by this website was issued for a different website's address. The security certificate presented by this website was not issued by a trusted certificate authority." It further explains: "Security certificate problems may indicate an attempt to fool you or intercept any data you send to the server." At the bottom, it says: "We recommend that you close this webpage and do not continue to this website." There are three options: "Click here to close this webpage." (with a green checkmark icon), "Continue to this website (not recommended)." (with a red 'X' icon), and "More information" (with a blue downward arrow icon).

NOTE: The above message may appear differently depending on the web browser being used.

You will be prompted to enter information for User and Password. Administrative access is required for full functionality within the web interface.

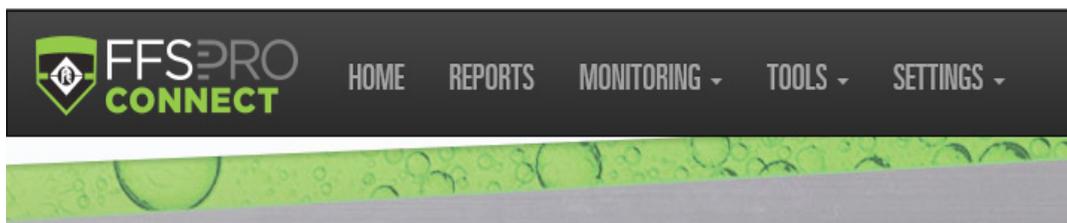
User

Password

LOGIN

Once the home page is loaded, you can navigate through the various web pages created by the console to view fuel management and compliance data, generate reports that can be printed from your PC and access control functions for starting tank and tests and dealing with alarms. The information found in FFS PRO CONNECT is the same data that can be accessed from the LCD touch screen.

Navigation Bar



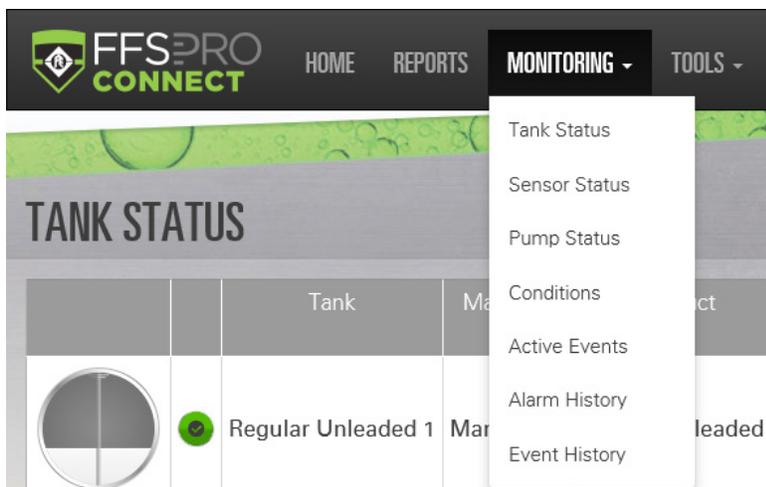
HOME

Click HOME to open the HOME page defined in the configuration for the User. Each User can select the HOME page of their choice.

REPORTS

Click REPORTS to choose and generate reports you can download.

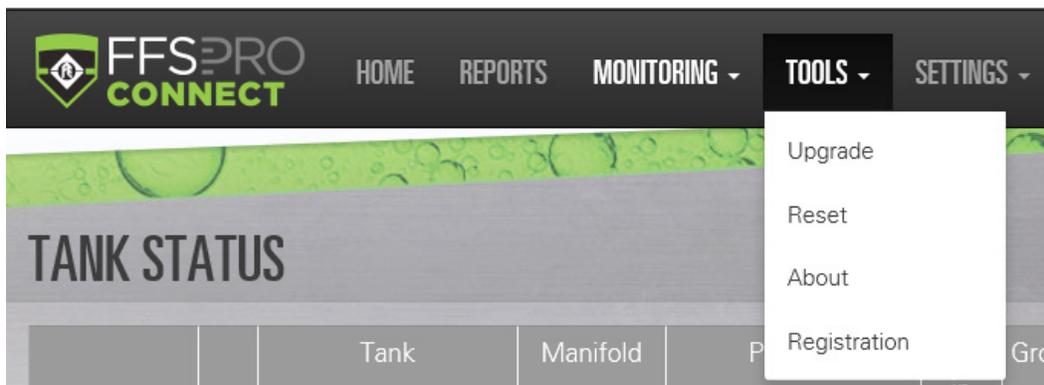
MONITORING



Click MONITORING to open a drop-down list of the following items:

- Tank Status shows a summary of tank information.
- Sensor Status shows a summary of sensor information.
- Pump Status shows a summary of pump information.
- Conditions shows the status of configured conditions.
- Active Events shows current active events.
- Alarm History shows a complete history of alarms.
- Event History shows a complete history of events that are not alarms.

TOOLS



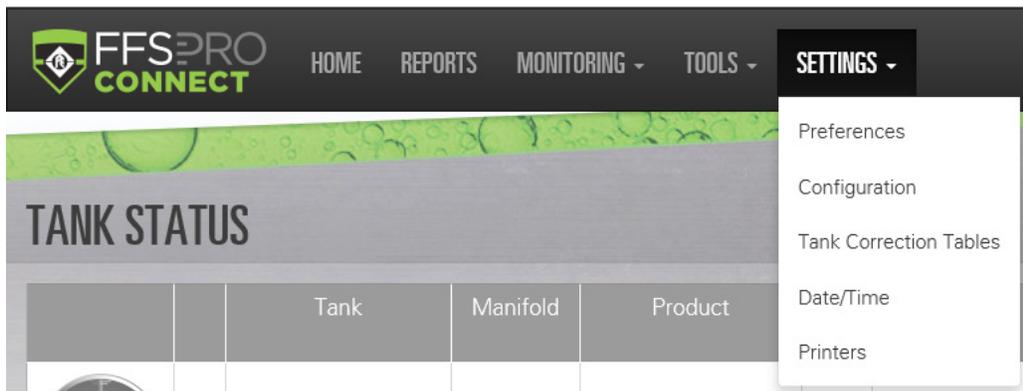
Click TOOLS to open a drop-down list of the following items:

- Upgrade allows an FFS certified technician to upgrade the firmware.
- Reset allows the user to Reboot the System, Erase historical data, or Erase all configuration and historical data.

IMPORTANT: Choosing Erase historical data deletes all historical information. Choosing Erase all configuration and data deletes all historical information and all system configuration programming. Only an FFS certified contractor should perform these tasks under direction from FFS Technical Support.

- About shows the Device ID, Firmware ID, and Release Version of the ATG.
- Registration allows an FFS certified technician to upgrade the system registration, such as Add SCALD® Option.

SETTINGS



Click SETTINGS to open a drop-down list of the following items:

- Preferences allows users to define Passwords, Language Preference, Home Web Page, and Unit Preferences.
- Configuration is used by an FFS certified technician to configure the ATG for operation.
- Tank Correction Tables allows users to configure tank chart correction points, download and upload tank correction charts, and start the autocalibration process. (Dispenser reconciliation is required for autocalibration.)
- Date/Time allows users to program the appropriate data and time.
- Printers allows users to identify a network printer.

How to Manually Start Leak Tests Using the Console Interface

1. Open your web browser and connect to the site
2. Select the QJM>Applications>Tanks. Select a specific Tank and select Control.
3. From the drop-box, select the type of test (Monthly or Annual) you want to perform for each tank.
4. Click on Start Leak Tests on the Action Bar.

Maintenance

As a user or owner, there is limited maintenance you need to perform on the ATG. To keep the unit in good, serviceable condition, follow the procedures outlined below.

⚠ WARNING: Do not attempt to open the console unless you are a certified Franklin Fueling Systems technician. Electrical hazards exist and injury or death may occur if the console interior is accessed by unauthorized personnel.

Console Care

Carefully wipe the outer areas of the console with a soft, damp cloth to remove any residue or build-up. Some chemicals may damage the protective cover on the LCD display. Avoid spraying the console with anything directly. Cords and cables routed from the inside and bottom of the console could contain electricity. Use caution in these areas to avoid shock. Ensure that data communications and electrical energy lines are segregated so that electrical interference will not be induced into data transmission lines, or erroneous data returns could result.

LCD Touch Screen

Calibration

If the touch screen does not appear to be accurately registering “touches,” it may need to be calibrated. To calibrate the touch screen function of the display, you must first access the calibration application.

NOTE: If you are unable to navigate to the Tools menu to calibrate, reboot the console, wait for the Loading Status Bar to be full, and then press and hold the LCD touch screen for ten seconds.

1. From the Quick Jump Menu, select Tools and then Calibrate TouchScreen.
2. You will be asked if “you are sure,” answer Yes.
3. Follow the on-screen instructions to complete the calibration process.

Intentionally Blank

Alarms and Troubleshooting

For all alarms conditions, the troubleshooting steps provided in this chapter are suggested actions to take in the event of an alarm. Follow all site policy procedures set by local governing agencies in the case of a spill, leak, or malfunction. If the steps provided by this manual or the site policy are followed and the system still requires additional support, contact Franklin Fueling Systems Technical Services.

Alarms are listed in sections for System Alarms, VRM Alarms, FMS Alarms, SCM Alarms, Wire Sensor Alarms, LLD Alarms, TPI Alarms, Printer Alarms and Miscellaneous Alarms.

System Alarms

| Displayed Alarm/Warning | Device | Description | Recommended Actions |
|-------------------------|--------|--|--|
| AC Input Alarm | None | An input on the AC input module has been configured as an alarm and is active | Check the programming and voltage inputs for the specified Input channel on the AC Input module |
| Invalid Configuration | None | The configuration that has been loaded is not valid. | Verify the file type of the configuration which is being uploaded. |
| Invalid Registration | None | The registration that is loaded is not valid. | If you have upgraded the site before, use the upgrade tool to restore the former registration. If you have not upgraded the site before, contact FFS Technical Services for support. |
| IO Input Alarm | None | An input on the Input/Output module has been configured as an alarm and is active. | Check the programming and voltage inputs for the specified Input channel on the IO module. |
| Probe is Offline | Slot | Probe Module is not communicating with the console. | Follow safety procedures before working inside the console. Visually verify a steady green "Run" light. If red "Err" light is flashing or steady, re-seat module and reboot system. If the condition still exists, contact Franklin Fueling Systems' Technical Support for help on this issue. |
| Probe Setup Error | None | Programming errors made during setup of the Probe Module. | Verify Probe Module programming parameters. If the condition still exists, contact Franklin Fueling Systems' Technical Support for help on this issue. |
| Set Date and Time | None | System detected an issue with the date and time | Check and set the system date and time. |

FMS Alarms

| Displayed Alarm/Warning | Device | Description | Recommended Actions |
|-------------------------------|--------|--|--|
| Alpha volume correction error | Tank | This error is caused by a programming mistake in the Special Products section. | Verify Special Product Alpha volume correction program parameters. Contact FFS Technical Services Department for assistance. |
| Annual Compliance Alarm | Any | The device listed has gone out of compliance | Pass a test or clear the alarm on the device. |
| Annual Compliance Warning | Any | The device listed has 7 days before it will go into a compliance alarm | Pass a test or clear the alarm on the device. |
| API volume correction error | Tank | This error is caused by a programming mistake in the Special Products section. | Verify Special Product API volume correction program parameters. Contact FFS Technical Services Department for assistance. |
| Correction table error | Tank | Level and Volume mismatch detected in Correction table programming. | Verify that all levels and volumes are entered accurately into the Correction Table programming. |
| Density float error | Tank | A communication error has occurred involving the density float. | Verify programming and contact FFS Technical Services for support. |
| Density error | Tank | The density of the product is not within specifications. | Enter setup and verify the information under density in the probe programming. |
| Float height error | Tank | This error could indicate that the wrong float type is installed or that a programming error has occurred. | Review probe programming for proper float type, number of floats in the tank. (This would be an idea time to clean the probe and floats). |
| Float Missing | Tank | Probe detects a lesser number of floats than programmed | Review probe programming for correct number of floats. If correct then inspect probe shaft, floats, and float magnets. With the probes out of the tank, this would be an idea time to clean the probe and floats. If pressures meets requirements specified, contact Franklin Fueling Systems' Technical Services Dept. for support on this issue. |
| FMS configuration error | None | Conflicts exist within FMS Application programming. | Verify FMS setting are correct in accordance with the site specifications. |
| High product level | Tank | Product level exceeded High limit set. Possible close to tank overflow condition | Acquire an accurate product level. If actual product level in tank does not match the consoles displayed current level, verify programming is correct. |
| High product volume | Tank | The specified tank has reached the programmed High Product Volume. | Check product volume and compare to the programmed High Volume alarm Limit in the setup menu. Acquire an accurate product level and compare to the ATG. If levels differ, verify programming is correct. If alarm persists, contact FFS Technical Services for support. |

| Displayed Alarm/Warning | Device | Description | Recommended Actions |
|--------------------------------|-------------------|---|---|
| High High product volume | Tank | The specified tank has reached the programmed High High Product Volume. | Check product volume and compare to the programmed High High Volume alarm Limit in the setup menu. Get an accurate product volume and compare to the ATG. If levels differ, verify programming is correct. If alarm persists, contact FFS Technical Services. |
| High water level | Tank | Water level exceeded High limit set. | Verify programmed level. If water is too high consult you local site policy procedures for corrective actions. |
| High Water/Phase Sep | Tank | Water/Phase Separation has exceeded the High Limit set. | Remove Water/Phase Separated product form the tank. |
| Level error | Tank | Product level exceeds tank diameter due to an error in console of programming. | Verify tank, offset, and probe programming. |
| Low product volume | Tank/ Manifold | Product volume below Low limit set. The tank/ manifold specified may be near empty. | Acquire an accurate product volume. If actual product volume in tank does not match the consoles displayed current volume, verify programming. |
| Low low product volume | Tank/ Manifold | Product volume below Low Low limit. The tank or manifold specified may be near empty. | Acquire an accurate product volume, and if does not match the consoles displayed current volume, verify programming. |
| Mag installation error | Sensor | The specified TSP-DMS has an installation error | Check the installation of the TSP-DMS, the sensor must be plumb. If installation is correct, then try to relearn the sensor. If the problem persist, the sensor may need to be replaced |
| Mag product alarm | Sensor | The specified TSP-DMS has detected product. | Inspect the sump for the presence of product. |
| Mag sensor configuration error | Sensor | An error has been detected in the configuration of the specified TSP- DMS. | Enter into the setup and inspect the TSP-DMS setup. |
| Mag sensor data error | Sensor | There is an error with the reported data from the specified TSP-DMS | Inspect wire |
| Mag sensor float height error | Sensor | The float height has exceeded the limits as learned. | Inspect wire |
| Mag sensor float missing | Sensor | The specified TSP-DMS is not reporting the level information for one or more float. | Inspect the Mag sensor for damage and redo the connections. If the Problem persists, contact FFS Technical Services. |
| Mag sensor missing | Sensor | The console is not receiving any information from the specified TSP-DMS. | Inspect wire connections at the Mag sensor. If the problem persists, contact FFS Technical Services. |
| Mag sensor not learned error | Sensor | The specified TSP-DMS was not properly learned. | Enter into the Control > Mag Sensor screen and have the console learn the sensor. |

| Displayed Alarm/Warning | Device | Description | Recommended Actions |
|----------------------------------|--------|---|---|
| Mag sensor synchronization error | Sensor | The console is receiving incomplete or improperly timed data from the specified TSP-DMS | Inspect wire connections at the Mag sensor. If the problem persists, contact FFS Technical Services. |
| Mag water alarm | Sensor | The specified TSP-DMS has detected water. | Inspect the sump for water. |
| Mag water warning | Sensor | The TSP-DMS has detected water above the preset limit. | Inspect the sump for water. |
| Manifold Delivery Detected | Tank | A delivery has been detected on the specified manifold. | This is not an alarm and should only be a concern if there was not a delivery to the site at the specified date and time. |
| Manifold Gross Leak Detected | Tank | A leak in the specified manifolded tanks has been detected via a SCALD® test. Suspect possible leak. | Review Tank Leak Test History and programming. |
| Manifold Leak Detected | Tank | A leak in the specified manifolded tanks has been detected via a SCALD® test. Suspect possible leak | Review Tank Leak Test History and programming. |
| Manifold low product volume | Tank | The specified manifold has reached the programmed Low Product Volume | Check product volume and compare to the programmed Low Volume alarm Limit in the setup menu. Acquire an accurate product volume and compare to the ATG. If levels differ, verify programming is correct. If alarm persists, contact FFS Technical Services for support. |
| Manifold low low product volume | Tank | The specified manifold has reached the programmed Low Low Product Volume | Check product volume and compare to the programmed Low Low Volume alarm Limit in the setup menu. Acquire an accurate product volume and compare to the ATG. If levels differ, verify programming is correct. If alarm persists, contact FFS Technical Services for support. |
| Manifold Leak Detected | Tank | A leak in the specified manifolded tanks has been detected via a SCALD® test. Suspect possible leak. | Review Tank Leak Test History and programming. |
| Manifold Theft Detected | Tank | The specified manifold has entered Sentinel Mode and detects product leaving the tank that exceeds the programmed theft limits. | Verify programming and accurate level / volume readings. |
| Monthly Compliance Alarm | Any | The device listed has gone out of compliance | Pass a test or clear the alarm on the device. |

| Displayed Alarm/Warning | Device | Description | Recommended Actions |
|--|--------|--|---|
| Monthly Compliance Warning | Any | The device listed has 7 days before it will go into a compliance alarm. | Pass a test or clear the alarm on the device. |
| Net error | Tank | Product net levels exceed tank diameter | Verify tank, product offset and probe programming |
| No data available | System | A communication issue has occurred between the probe and the console | Check for proper probe programming at the console and inspect wire connections at the probe. If the problem persists, contact FFS Technical Services for support. |
| No probe detected | Tank | The Console is not receiving any communication from the probe. | Check for proper probe programming at the console and inspect wire connections at the probe. If the problem persists, contact FFS Technical Services for support. |
| Probe synchronization error | Tank | Communication between the probe and the Console is either incomplete or ill timed. | Check for proper probe programming at the console and inspect wire connections at the probe. If the problem persists, contact FFS Technical Services for support. |
| Product volume error | Tank | The Product Volume as reported by the probe has exceeded the limits of the tank. | Check for proper probe and tank programming at the console. If programming is correct, inspect the probe to ensure that the float is not stuck in the riser or is otherwise obstructed. |
| RTD table error | Tank | RTD distance error; Special Probe programming error. | Verify correct RTD programming. If issue still exists, inspect wiring to probe. If the condition still exists, contact Franklin Fueling Systems' Technical Services for support. |
| System memory error | System | The system has detected a low memory situation. | Contact FFS Technical Services for support. |
| Tank Gross Leak Detected | Tank | Tank Gross leak test detected tank. Suspect possible leak. | Review tank leak test history and programming. |
| Tank Leak Detected | Tank | Tank leak detected. Suspect possible leak. | Review tank leak test history and programming. |
| Tank Product Density High Limit Exceeded | Tank | The Product Density exceeds the programmed high limit. | Verify programming if correct this alarm may be an indication of improper density of the fuel. |
| Tank Product Density Low Limit Exceeded | Tank | The Product Density has exceeded the programmed low limit. | Verify programming if correct this alarm may be an indication of improper density of the fuel. |
| Tank SCALD® Leak Detected | Tank | SCALD® leak test detected tank leak. Suspect possible leak. | Review Tank Leak Test History and programming. Refer to page 17 for more information on SCALD® tests. |
| Tank Delivery Detected | Tank | A delivery has been detected on the specified tank. | This is not an alarm and should only be a concern if there was not a delivery to the site at the specified date and time. |

| Displayed Alarm/Warning | Device | Description | Recommended Actions |
|-------------------------------------|--------|---|--|
| Tank Water/Phase Sep Float Disabled | Tank | The Phase Separation Water Float has been disabled in setup | Verify Phase Separation Water Float level and enable the float in setup. |
| Tank Theft Detected | Tank | Product used in Sentinel Mode exceeds theft limit set. Suspect theft, and then verify theft limit in programming. | Verify theft limit in programming. Also obtain an accurate product level and compare to inventory. |
| Temperature error | Tank | Special Probe RTD temperature error detected. | Verify correct RTD table programming. If problem still exists, suspect wiring or faulty probe. |
| Ullage error | Tank | Ullage reported has exceeded tank capacity. | Check for proper probe and tank programming at the console. If programming is correct, inspect the probe to ensure that the float is not stuck in the riser or obstructed. Bring the probe inside and wire directly to the gauge to eliminate possible problems with the field wiring. |
| Unstable probe | Tank | LL Liquid Level probes can send inconsistent data back to console. | Check for proper probe programming at the console and inspect wire connections at the probe. If the problem persists, contact FFS Technical Services for support. |
| Water volume error | Tank | Water volume has exceeded tank capacity. | Check for proper probe and tank programming at the console. If programming is correct, inspect the probe to ensure that the colored water float is on the bottom. |

Liquid Sensor Alarms

| Displayed Alarm/Warning | Device | Description | Recommended Actions |
|-------------------------|--------|---|--|
| Sensor On | | Sensor shows alarm status. | Inspect location for presence of liquid. In the case of a leak, follow site policy procedures. If no liquid is present, and alarm still exists, sensor may be tripped on error. Check wiring continuity from sensor to console. Test sensor at console, trip sensor on purpose. Verify console terminal wiring. If issue still exists, inspect wiring to sensor. Contact Franklin Fueling Systems' Technical Services for support. |
| Sensor Data Error | | Console has received erroneous data from sensor. | Check wiring continuity from sensor to console. Test sensor at console, trip sensor on purpose. Verify console terminal wiring. If issue still exists, inspect wiring to sensor. If the condition still exists, contact Franklin Fueling Systems' Technical Services for support. |
| Sensor Dry Well | | Monitoring well is dry. | Visually verify that the alarm is correct. |
| Sensor High Brine | | Brine solution has tripped high level brine sensor. | Verify actual level of solution and sensor installed location. |

| Displayed Alarm/Warning | Device | Description | Recommended Actions |
|-------------------------|--------|---|--|
| Sensor Low Brine | | Brine solution has tripped low level brine sensor. | Verify brine level and sensor location. |
| Sensor ID Error | | Discriminating sensor is given an improper ID. | Verify sensor programming and Auto configuration. |
| Sensor No Signal | | Console is not receiving data from a discriminating sensor. | Verify programming of sensor type and wiring connection. |
| Sensor Product | | Discriminating sensor has detected product present at location. | Visually inspect location carefully for presence of liquid. In the case of a leak, follow site policy procedures. If no liquid is present, and alarm still exists, sensor may be tripped on error. Check wiring continuity from sensor to console. |
| Sensor Pwr Short | | Liquid sensor malfunction. | If a 2-wire sensor is used on a 3-wire module ensure that the red/pwr terminal is not used. If a 3-wire sensor is used, disconnect wires and see if alarm clears. If alarm clears inspect shorts in wiring. If alarm stays at PWR short replace module. Contact Franklin Fueling Systems' Technical Services Dept. for support. |
| Sensor On | | Liquid sensor shows alarm status. | Inspect location for presence of liquid. In the case of a leak, follow site policy procedures. If no liquid is present, and alarm still exists, sensor may be tripped on error. Check wiring continuity from sensor to console. Test sensor at console, trip sensor on purpose. Verify console terminal wiring. If issue still exists, inspect wiring to probe. If the condition still exists, contact Franklin Fueling Systems' Technical Services for support. |
| Sensor Sump Full | | Liquid sensor detected sump full of liquid. | Inspect location for presence of liquid. In the case of a leak, follow site policy procedures. If in alarm with no liquid is present, sensor may be tripped on error. Check wiring continuity from sensor to console. |
| Sensor Sync Error | | Liquid sensor data signals not in sync with module. | Verify correct wiring and re-make the connections. Verify sensor type. |
| Sensor Vapor | | Discriminate sensor detecting vapors at location. | Visually inspect area for product presence. Verify the vapor level has been calibrated correctly. |
| Sensor Water | | Discriminate sensor detecting water at location. | Visually inspect area for water presence. |

TPI Alarms

| Displayed Alarm/Warning | Device | Description | Recommended Actions | |
|-------------------------|--------|---|--|--|
| Capacitor Failing | TPI | The STP controller is reporting a capacitor failure. | Refer to the applicable Smart controller Installation guide for details. | |
| Clogged Intake | TPI | The STP controller has reported a dry run condition but the associated tank shows a product level above the intake. | Ensure proper programming of the TPI and calibration of the Smart Controller. If correct, check for an obstruction on the PMA. | |
| Communication Failure | TPI | Communication from the TPI to the STP controller has failed. The Console is seeing the controller but the controller is not responding to commands. | Verify all wiring connections. Call FFS Technical Services Department for support. | |
| Controller Type Error | TPI | The programmed controller type does not match what the console is detecting. | Verify proper programming of the TPI as well as the Smart controller type and address. | |
| Dry Tank | TPI | The STP Controller has reported a dry run condition and the tank level is at or below the programmed intake. | Ensure proper programming of the TPI and calibration of the Smart Controller. If correct, add fuel. | |
| Extended Run | TPI | The STP controller is reporting an extended run condition. | Refer to the applicable Smart Controller Installation guide for details. | |
| Hardware Fault | TPI | The STP controller is reporting is reporting a hardware fault condition. | | |
| High Temperature | TPI | The STP controller is reporting a high temperature condition. | | |
| Locked Rotor | TPI | The STP controller is reporting a locked rotor rating. | | |
| Not Calibrated | TPI | The STP controller is reporting that it has not been calibrated. | | |
| Open Circuit | TPI | The STP controller is reporting an open circuit condition. | | |
| Over Speed | TPI | The STP controller is reporting an over speed condition. | | |
| Over Voltage | TPI | The STP controller is reporting an over voltage condition. | | |
| Pump Communication Fail | TPI | Communication from the TPI to the STP controller has failed. | | Check all wiring connections and ensure that there is power supplied to the Smart Controller. |
| Pump In Water | TPI | The water level has risen to within 3 inches of the programmed intake level. | | Ensure proper programming of the TPI and calibration of the Smart Controller. If correct, have water removed from the tank |

| Displayed Alarm/Warning | Device | Description | Recommended Actions |
|-------------------------|--------|--|---|
| Relay Fault | TPI | The STP controller is reporting a relay fault error. | Refer to the applicable Smart Controller Installation guide for details. |
| Short Circuit | TPI | The STP controller is reporting a short circuit condition. | |
| Unbalanced Load | TPI | The STP controller is reporting an unbalanced load condition. | |
| Unbalanced Voltage | TPI | The STP controller is reporting an unbalanced voltage condition. | |
| Under Voltage | TPI | The STP controller is reporting a voltage level under 200 VAC. | |
| Under Load | TPI | The STP controller is reporting an underload condition. | |
| Unknown Fault | TPI | The STP controller is reporting an unknown fault code. | Check fault condition on Smart controller and contact FFS Technical Services for more information |



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