# Fuel Management Systems

## Global Product Catalogue
Effective March 1, 2014

**Franklin Fueling Systems**

# Table of Contents

# Fuel Management Systems
# Submersible Pumping Systems

With the most comprehensive product offering from the industry's leader in total system solutions, Franklin Fueling Systems provides unparalleled simplicity in placing one order, having one point of contact, with a customer focused service team and receiving one consolidated shipment.

A wide variety of products, a world-class customer service experience and extensive technical background create a complete system solution where our services, features and products set us apart as the industry leader.

### Complete Solution

Whether you want to automate your station or network, build or re-build your station according to the latest environmental laws, update a station to fulfil new regulations or intend to realise a more cost efficient site construction and operation, you can rely on Franklin Fueling Systems. Our submersible pumping systems, service station hardware, fuel management systems and complete pipework solutions can increase your efficiency and improve your business. In addition to the industry's most comprehensive product offering.

Franklin Fueling Systems also provides:

- One ordering point for all equipment.
- Factory tested leak-tight equipment.
- Reduced site downtimes.
- 100% Bio-fuel compatible options.
- Effective control of your fuel stocks.
- Assured environmental protection.
- Solutions to keep fuel in and water out.
- Lowest total cost of ownership
- Time and money savings.

Franklin Fueling Systems can deliver a complete package of pipework, manhole chambers, under dispenser containment, submersible pumps and intelligent fuel stock & environmental monitoring systems all designed around your exact needs and delivered in one shipment, ready for installation.

### Fuel Management Systems

Franklin Fueling Systems manufactures and markets a complete line of fuel management systems globally under the INCON product brand. Automatic tank gauges, electronic line leak detection, magnetostrictive probes and remote monitoring software are just some of the products available.

All are designed and manufactured using state-of-the-art technology to meet all of our customers' fuel management and leak detection compliance needs.

### Submersible Pumping Systems

Franklin Fueling Systems has contributed many innovative product designs to the petroleum industry, including the highest performing submersible pumping systems available. Franklin Fueling Systems offers 2 hp and 4 hp models to meet the needs of high volume retailers and variable speed technology provides constant flow during peak business times, as well as efficiencies during off peak times. The innovative MagShell™ design is an expanded motor shell option which increases the flow around the motor by 45%, resulting in significantly higher flow rates. For those high-volume dispensing sites, FFS also offers either a 3 or 5 hp high capacity pump. Intelligent pump controllers, like the STP-SCI smart controller and the EcoVFC™ variable frequency controller, provide unmatched user interface and fault detection capabilities to keep your station running.
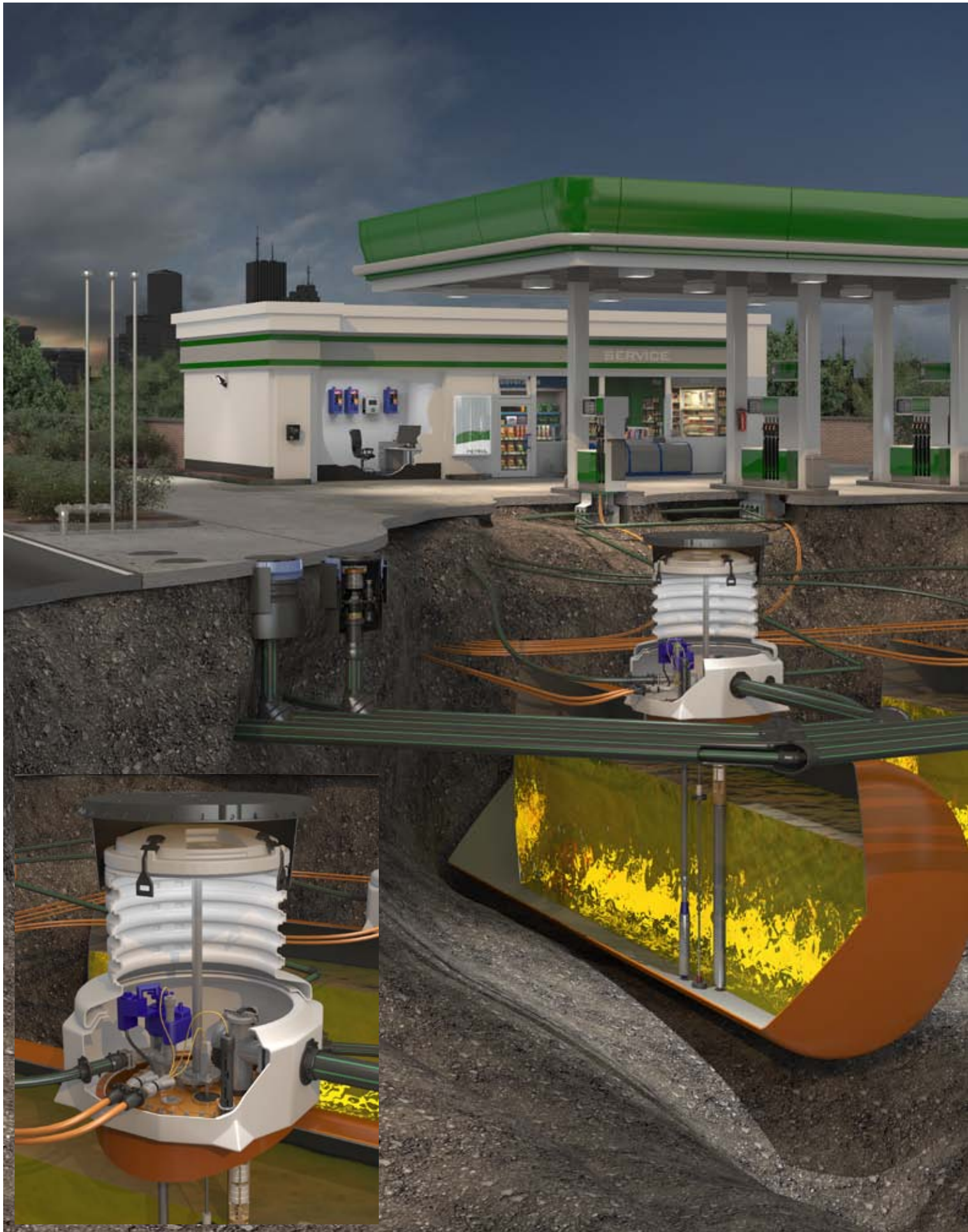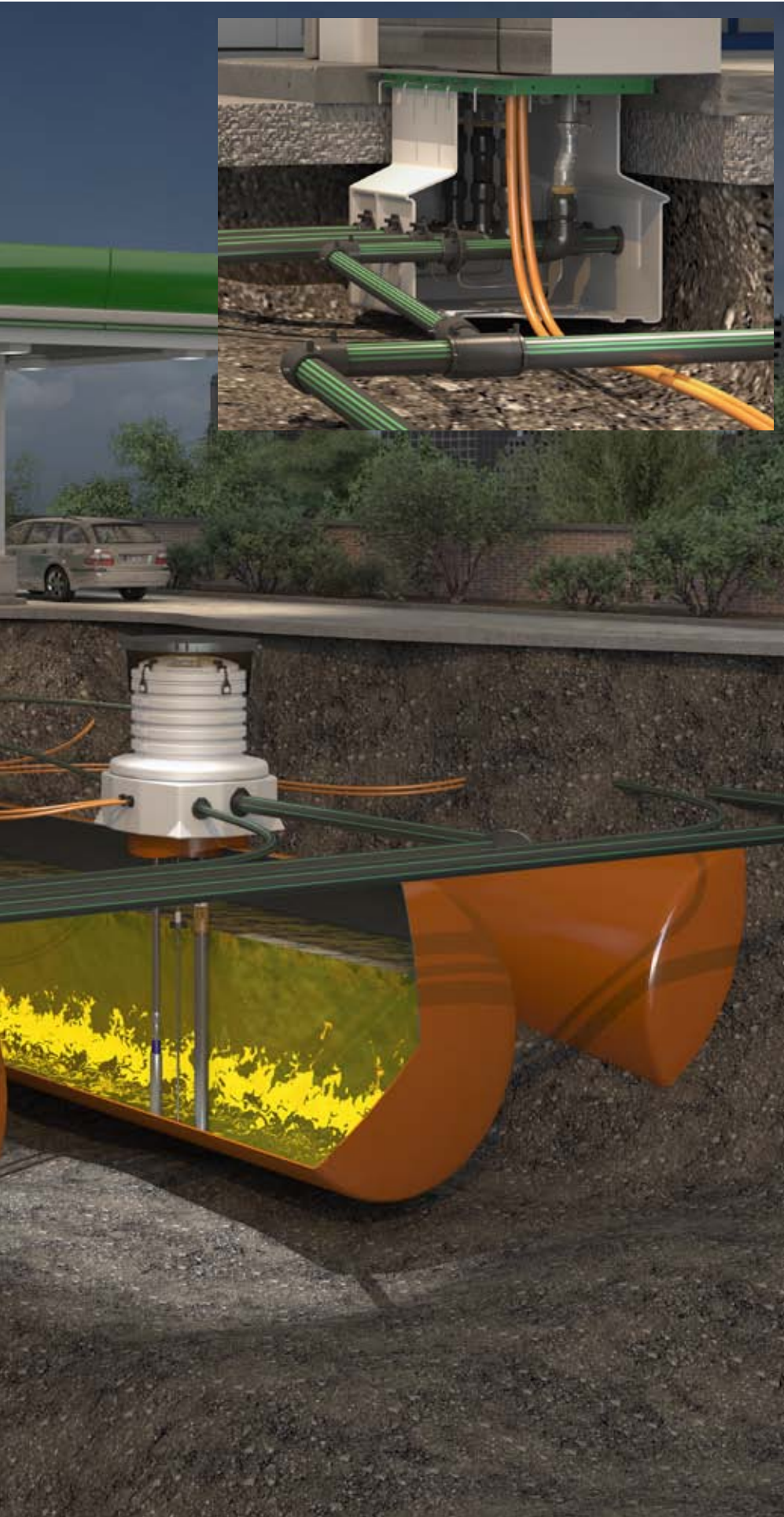
## Fuel Management Systems

Franklin Fueling Systems offers a complete line of inventory monitoring systems, providing users the capability to take complete control of fuel management. The INCON range is ideal for monitoring inventory, environmental control and fuel management. Next generation technology from INCON allows users to monitor tanks from any web browser.

## Submersible Pumping Systems

Franklin Fueling Systems submersible pumping systems provide faster fuel dispensing, improved efficiency and unmatched reliability. The FE Petro brand industry-leading product design offers the highest performing submersible pumping systems available.

## Piping and Containment

Franklin Fueling Systems offers the most comprehensive line of piping and containment products in the industry. The UPP brand features innovative technology and outstanding quality. With 30 years' worth of installations and a 100% leak-free performance record, Franklin Fueling Systems is the leading provider of fuel pipe.

## Service Station Hardware

Franklin Fueling Systems fuel station hardware products comprise a comprehensive and environmentally friendly system, including a complete biofuel approved system for E85 and biodiesel sold under the brands EBW and Phil-Tite.

## Dispensing Systems

Franklin Fueling Systems manufactures and markets a complete line of Stage II vapour recovery systems globally under the Healy product brand. Healy vapour recovery products suit any application and customize to any site, ensuring proper connection.

## Transport Systems

Franklin Fueling Systems road tanker systems products make it easy to connect to loading terminals and underground storage tanks with our broad line of adapters, elbows and valves. Sold under the brand EBW, these products cover both loading and off-loading applications. Our road tanker hardware products provide a wide range of connection options.

## An Overview of Fuel Management Systems

With so many tools and monitoring options available on the market, a need to select the right one is vital. Franklin offers a complete line of fuel management systems worldwide with automatic tank gauges, electronic line leak detection, magnetostrictive probes and even remote monitoring software and an option to generate e-mail notifications with real-time status information or access to all data remotely.

- Electronic Line Leak Detection System monitors the primary side of pressurised fuel lines from the submersible pump up to the single wall fittings and single wall flex hoses using the patented AutoLearn technology.

- Interstitial Space Leak Prevention Systems apply the AutoLearn technology, draw and continuously monitor a vacuum on the secondary containment lines, sumps and tanks.

- Automatic 5-series Tank Monitoring System continuously monitors tank inventory and detects any leak through highly accurate magnetostrictive probe technology.

- Colibri Tank Monitoring System uses tank probes to monitor product level, temperature, water level and density of fuel tank contents without exposing an individual to fuel vapours.

- Leak Prevention Sensors monitor dispenser pans and containment sumps utilising magnetostrictive technology and report directly to fuel management consoles with programmable water and product alarms.

- Vacuum Testing provides a specific tightness testing of tank dispenser sumps and spill buckets at critical points during the installation process ensuring a leak proof environment.

## Advantages

- Capable of monitoring even the largest sites.
- Continuous inventory monitoring and tank testing through proven magnetostrictive probe technology.
- Highest rated continuous 24 hour leak detection (SCALD) in the industry.
- Density measurement and alarm capabilities.
- Patented AutoLearn™ electronic line leak detection capability, including Statistical Line Leak Detection for high throughput lines.
- Standard communication ports including one Ethernet and RS-485, two USB and RS-232.
- Complete web interface and email capabilities.
- Turbine Pump Interface, intelligent STP control.
- Programmable product colours.
- Programmable One Touch buttons.
- Quick Jump menu ease of navigation.
- F.A.S.T. programming with the Franklin Auto Setup Tool.

# TS-550 evo Fuel Management System

TS-550 evo brings a new level of usability and functionality to fuel management. A highly evolved user interface and blisteringly-fast new processor based on the proven TS-550 platform makes everything from daily functions to advanced setup and programming simple for every user.

## Specifications

- Number of tanks monitored: 12 (72*)
- Number of lines monitored: 8 (48*)
- Sensor input channels: 12 (72*)
- Dry contact input channels: 2
- AC input channels: 12 (72*)
- 4-20 ma input channels: 8 (48*)
- Relay output channels: 2 (50*)
- Display type: colour LCD touch screen
- Printer type: thermal
- Internal audible alarm
- Alarm, warning and power LEDs
- Applicable liquids: petroleum, chemicals and hazardous waste
- Level units: inches, centimetres and millimeters
- Volume units: gallons or litres (mass with density option)
- Display size: 7" (17.78 cm)
- Power requirements: 110 to 240 VAC, 50/60 hz, 2.6 Amps
- Operating temperature: 32° to 104 °F (0° to 40 °C)
- Humidity: 0-90% non-condensing
- Dimensions: 11" x 11.75" x 9.5" (279 mm x 298 mm x 241 mm)
- Interface to devices with intrinsic safety rating:
  - US - Class I, Div. I, Group D
  - Europe - Group IIA, Zone 0

## Connectivity

- Ethernet/complete web interface
- RS-232/485
- USB
- Fax/data modem
- IFSF via Echelon

## Capabilities

- Inventory and delivery management
- Leak detection sensors
- Static and Continuous tank testing
- Static and Statistical Electronic Line Leak Detection
- High, low and water alarm set points
- Inventory reconciliation / tank autocalibration
- Density and mass measurement
- Secondary Containment Monitoring (vacuum)
- Turbine Pump Interface (TPI)
- Email notifications
- Back-up generator monitoring / fuel flow control

## Approvals

- UL, cUL, ATEX, IECEx
- Third party certification of leak detection capabilities

**\* Maximum number when including additional options.**

## TS-550 evo

| Model | Description |
|---|---|
| T550ED | TS-550 evo base console without printer |
| T550EDP | TS-550 evo base console with printer |

## Expansion Console

| Model | Description |
|---|---|
| EVO-EXPC | Secondary console to add eleven additional plug-in modules to the primary TS-550 evo console, comes without a display or printer |

## TS-550 Hardware and Software Options

TS-550 evo consoles come standard with the ability to perform in-tank static leak detection. The following software and hardware options can be added to customise your console. The internal hardware options will be factory installed when ordered with the console.

### Internal Hardware Options

| Part Number | Description |
|---|---|
| TS-DIMIB | (I) Internal dispenser interface module, dispenser interface cable must be ordered separately |
| EVO-LON | (E) EcheLON communication module, IFSF protocol capability |
| TS-MDMIB | (M) Internal modem, includes fax and data software capability |

Note: Only one TS-DIM or TS-LON module can be installed per console.

### Internal Software Options

| Part Number | Description |
|---|---|
| TS-TT | (T) Statistical Continuous Automatic Leak Detection, 24 hour continuous tank testing software |
| TS-TRAC | (R) Tank inventory reconciliation and auto calibration |
| TS-ELLD | (L) Electronic line leak detection |
| TS-SCM | (S) Secondary containment monitoring |

## TS-550 evo Fuel Management System Console Ordering Guide

Console model, software and hardware options can be listed separately or combined when ordering. Systems shipped from the factory will list the combined part number. Complete console part numbers have a specific order and are created using the following guidelines:

**T550ED** **PMY** / **TRLS**

**T550ED = Model**

T5 = TS-5, 110 or 200 VAC.

**PMY = Hardware Options**

D = Display, standard in the TS-5.
M = Internal modem.
X = I for dispenser interface module or E for a LON module.

**TRLS = Software Options**

T = SCALD 24-hour tank testing
R = Reconciliation/Autocalibration
L = Line leak detection
S = Secondary containment monitoring

## Advantages

- Monitors up to 12 tanks.
- Continuous inventory monitoring and tank testing through proven magnetostrictive probe technology.
- Highest rated continuous 24 hour leak detection (SCALD) in the industry.
- Density measurement and alarm capabilities.
- Low cost, compact console.
- Standard communication ports including Ethernet, two RS-232 and USB.
- Internal fax and data modem options.
- Generates inventory, compliance and fuel management reports.

# TS-5 Fuel Management System

The TS-5 fuel management system provides inventory and leak detection for up to 12 storage tanks.

## Specifications

- Number of tanks monitored: 12.
- Input channels: 2.
- Output only channels: 2.
- Display type: touch screen LCD.
- Applicable liquids: petroleum, chemicals and hazardous waste.
- Level units: inches, centimetres and millimetres.
- Volume units: gallons or litres.
- Display size: 320 × 240 pixels.
- Power requirements: 110 to 220 VAC, +15%, -10%, 150 Watt maximum,1.5 Amps.
- Operating temperature: 32° to 104°F (0° to 40°C).
- Storage temperature: -4° to 140°F (-20° to 60°C).
- Intrinsic safety rating: US - Class I, Div. I, Group D. Europe - Group IIA, Zone 0.
- LCD backlight contains mercury, dispose of properly.

### Applications

The fuel management system has been designed to monitor tank tightness and gather inventory information.

- Third party approved volumetric leak detection (Pd = 99.9% at 0.2 gph).
- Can provide dispenser information and automate reconciliation when used in conjunction with the dispenser interface module.

- Provides accurate inventory information, including reports that can be used to better schedule deliveries.
- Multipurpose relays can be used for outputs to overfill alarms and external audible and visual indicators.

### Capabilities

The fuel management system is built on an established open-system software platform.

- Standard Ethernet connection allows easy integration to existing wide area networks.
- XML-based software allows remote access to data without additional software.
- Graphical touch screen LCD allows text to be displayed in native language.
- E-mail notification gives station owners real-time status information.
- Monitor back-up generators for fuel inventory control, run status reports, and continuous leak detection.

### Approvals

- UL, cUL, ATEX, IECEx
- Third party certification of leak detection capabilities

**Franklin Fueling Systems**

| Model | Description |
|-------|-------------|
| T5 | TS-5 console without display |
| T5D | TS-5 console with LCD display |

Note: Includes one TS-PRB 12 input probe module.

## TS-5 Console Hardware and Software Options

The TS-5 console comes standard with the ability to perform in-tank static leak detection. The following software and hardware options can be added to customize your consoles. The internal hardware options will be factory installed when ordered with the console.

## Internal Hardware Options

| Part Number | Description |
|-------------|-------------|
| TS-LON5 | (E) EcheLON communication module, IFSF protocol capability |
| TS-MDMIB | (M) Internal modem, includes fax and data software capability |

Note: Only one TS-DIMIB or TS-LON module can be installed per console.

## Internal Software Options

| Part Number | Description |
|-------------|-------------|
| TS-TT | (T) Statistical Continuous Automatic Leak Detection, 24 hour continuous tank testing software |
| TS-TRAC | (R) Tank inventory reconciliation and auto calibration |

## TS-5 Fuel Management System Console Ordering Guide

Console model, software and hardware options can be listed separately or combined when ordering. Systems shipped from the factory will list the combined part number. Complete console part numbers have a specific order and are created using the following guidelines:

**T5  DM X  /  TR**

**T5 = Model**

T5 = TS-5, 110 or 200 VAC.

**DM X = Hardware Options**

D = Display, standard in the TS-5.
M = Internal modem.
X = I for dispenser interface module or E for a LON module.

**TR = Software Options**

T = SCALD 24-hour tank testing.
R = Reconciliation.

## Advantages

- Monitors up to 72 tanks.

- Continuous inventory monitoring and tank testing through proven magnetostrictive probe technology.

- Highest rated continuous 24 hour leak detection (SCALD) in the industry.

- Density measurement and alarm capabilities.

- Patented AutoLearn™ electronic line leak detection capability, including Statistical Line Leak Detection for high throughput lines.

- Standard communication ports including one Ethernet and USB, two RS-232.

- Internal fax and data modem options.

- Interstitial and piping sump leak sensing for up to 72 sensors.

- Can handle 72 dispenser hook inputs, eliminating need for an external box.

- Approved by the California Air Resources Board EO VR-202 & VR-208.

# TS-550 and TS-5000 Fuel Management Systems

The TS-550 and TS-5000 fuel management systems' modular design provides compliance and fuel management capability in a single enclosure.



## Specifications

- Number of tanks monitored: 72.
- Input channels: 2.
- Output only channels: 2.
- Display type: touch screen LCD.
- Printer type: thermal.
- Applicable liquids: petroleum, chemicals and hazardous waste.
- Level units: inches, centimetres and millimetres.
- Volume units: gallons or litres.
- Display size: 320 × 240 pixels.
- Power requirements: 110 to 220 VAC, +15%, -10%, 150 Watt maximum, 1.5 Amps.
- Operating temperature: 32° to 104°F (0° to 40°C).
- Storage temperature: -4° to 140°F (-20° to 60°C).
- Intrinsic safety rating: US - Class I, Div. I, Group D. Europe - Group IIA, Zone 0.
- LCD backlight contains mercury, dispose of properly.

### Applications

The flexible architecture of the TS-550 and TS-5000 allows multiple applications to run concurrently, satisfying current business and regulatory requirements.

- Fuel management system applications provide accurate inventory information, third party-approved tank and line leak detection, automated inventory reconciliation and submersible pump monitoring.
- The vapour recovery monitoring application gauges the effectiveness of a station's vapour recovery equipment through continuous monitoring of gasoline vapours during fuelling operations.
- Secondary containment monitoring application continuously monitors the interstitial spaces of double wall tanks, lines and sumps, and notifies station owners when a release of product into the environment has occurred.

### Capabilities

The TS-550 and TS-5000 are built on an established open-system software platform.

- Standard Ethernet connection allows easy integration to existing wide area networks.
- XML-based software allows remote access to data without software.
- Graphical touch screen LCD allows text to be displayed in native language.
- Generic interface modules give flexibility in configuring station monitoring requirements.
- E-mail notification gives station owners real-time status information.
- Multiple printing options give flexibility in style and format of reports.
- Monitor back-up generators for fuel inventory control, run status reports, and continuous leak detection.

### Approvals

- UL, cUL, ATEX, IECEx
- Third party certification of leak detection capabilities

13

**Franklin Fueling Systems**

## TS-550 110 and 220 VAC Models

| Model | Description |
|-------|-------------|
| T550 | TS-550 base console without display and printer |
| T550D | TS-550 base console with display and without printer |
| T550DP | TS-550 base console with display and printer |

## TS-5000 110 and 220 VAC Models

| Model | Description |
|-------|-------------|
| T5000 | TS-5000 base console without display and printer |
| T5000D | TS-5000 base console with display and without printer |
| T5000DP | TS-5000 base console with display and printer |

## Expansion Console

| Model | Description |
|-------|-------------|
| TS-EXPC | Secondary console to add eleven additional plug-in modules to the primary TS-550/5000 console, comes without a display or printer |

## TS-550 and TS-5000 Console Hardware and Software Options

TS-550 and TS-5000 consoles come standard with the ability to perform in-tank static leak detection. The following software and hardware options can be added to customize your console. The internal hardware options will be factory installed when ordered with the console.

## Internal Hardware Options

| Part Number | Description |
|-------------|-------------|
| TS-LON | (E) EcheLON communication module, IFSF protocol capability |
| TS-MDMIB | (M) Internal modem, includes fax and data software capability |

Note: Only one TS-DIM or TS-LON module can be installed per console.

## Internal Software Options

| Part Number | Description |
|-------------|-------------|
| TS-TT | (T) Statistical Continuous Automatic Leak Detection, 24 hour continuous tank testing software |
| TS-TRAC | (R) Tank inventory reconciliation and auto calibration |
| TS-ELLD | (L) Electronic line leak detection |
| TS-SCM | (S) Secondary containment monitoring |

## TS-550 and TS-5000 Fuel Management System Console Ordering Guide

Console model, software and hardware options can be listed separately or combined when ordering. Systems shipped from the factory will list the combined part number. Complete console part numbers have a specific order and are created using the following guidelines:

**TX DPMY / TRLS**

**TX = Model**

T550 = TS-550, 110 or 220 VAC.
T5000 = TS-5000, 110 or 220 VAC.

**DPMY = Hardware Options**

D = Display.
P = Printer.
M = Internal modem.
Y = I for dispenser interface module or E for a LON module.

**TRLS = Software Options**

T = SCALD 24-hour tank testing.
R = Reconciliation.
L = Line leak detection.
S = Secondary containment monitoring.

# Fuel Management System Console Accessories

## TS-550 and TS-5000 Fuel Management System Console Interface Modules

TS-550 and TS-5000 consoles come standard with a power supply module and a controller module. Additional interface modules can be installed. Interface modules ordered with a console will be installed at the factory. The following guidelines must be followed:

- TS-550: Six total modules can be installed with a maximum of four intrinsically safe modules and a maximum of three of any one kind of module.
- TS-5000: Eleven total modules can be installed with a maximum of nine intrinsically safe modules and a maximum of three of any one kind of module.

### Intrinsically Safe Modules

| Part Number | Description |
|---|---|
| TS-PRB | 12 input probe module, LL2 Series mag probes, VFM flow meters and DMS Mag sensors |
| TS-2WSNS | 12 input 2-wire sensor module, TSP-ULS , TSP-UHS and TSP-HLS sensors |
| TS-3WSNS | 8 input 3-wire sensor module, TSP-EIS, TSP-DIS, TSP-DDS, TSP-DTS, TSP-HIS, TSP-MWS and TSP-DVS sensors. Can also support 2-wire sensors. |
| TS-420IB | 8 input 4-20 mA module, LSU500 transducers and VPS and SCCM pressure sensors |

### Non-Intrinsically Safe Modules

| Part Number | Description |
|---|---|
| TS-ACI | 12 input AC input module, dispenser hook inputs |
| TS-RLY | 8 output relay module, SCCM solenoid and STP control |
| TS-10ARLY | 6 output 10 Amp relay output module, dispenser power |
| TS-IO | Input output module, 4 output 4-20 mA, 8 input 3-240 VAC/DC |
| TS-420EXP | 8 input 4-20 mA module, LSU500E transducers and external devices |

Note: TS-RLY Module is not required for STP control when utilizing turbine pump interface (TPI) communications.
The TS-420EXP module requires Controller Module software version 9.5 or greater.
Do not include power supply and controller module when calculating total modules allowed.

## TS-LS500 AutoLearn™ with Statistical Line Leak Detection

Pressurized line leak detection provides automatic 3.0 gph hourly, 0.2 gph monthly and 0.1 gph annual precision line leak detection for TS-550 and TS-5000 consoles. Statistical Line Leak Detection (SLLD) is a standard feature that can provide 0.2 gph monthly results on even high throughput lines. Available in intrinsically safe and explosion proof models. Use explosion proof when low voltage conduit is not available. The TS-420IB or TS-420EXP, TS-ACI and TS-RLY module and TS-ELLD software option must be ordered and installed in the fuel management system console.

### Intrinsically Safe

For new installations where separate low voltage conduits can be used. Use TS-420IB module.

| Part Number | Description |
|---|---|
| TS-LS500/2 | 2-line transducer kit |
| TS-LS500/3 | 3-line transducer kit |
| TS-LS500/4 | 4-line transducer kit |

Note: Using turbine pump interface (TPI) communications eliminates the need for a TS-RLY module; FFS intelligent controllers required.

### Explosion Proof

For retrofit installations where only a high voltage conduit can be used. Use TS-420EXP module.

| Part Number | Description |
|---|---|
| TS-LS500E/2 | 2-line transducer kit, explosion proof |
| TS-LS500E/3 | 3-line transducer kit, explosion proof |
| TS-LS500E/4 | 4-line transducer kit, explosion proof |

Note: Using turbine pump interface (TPI) communications eliminates the need for a TS-RLY module; FFS intelligent controllers required.

### Alternative Fuels Accessories

| Part Number | Description |
|---|---|
| TS-AFALNIP | Leak generator needle valve kit required for E85 installations |

## Paper Supplies

| Part Number | Description |
|---|---|
| **Thermal Printer Supplies** | |
| TS-TP2 | One box of 5 rolls of thermal printer paper for TS-550, TS-5000 and Tank Sentinel® consoles |
| TS-TP2C | One case (100 rolls) of thermal printer paper for TS-550, TS-5000 and Tank Sentinel® consoles |
| **Impact Printer Supplies** | |
| TS-TP5000 | TS-550 and TS-5000 impact printer paper |
| TS-TP5000C | 12 rolls of impact printer paper |
| TS-INKRB | TS-550 and TS-5000 ink ribbon |

## Secondary Containment Monitoring

The secondary containment monitoring system is designed to detect leaks in double-wall tanks, sumps and piping. TS-420IB, TS-RLY and TS-ACI modules and the TS-SCM software option must be ordered and installed in the tank gauge console.

### Sensor Modules

| Part Number | Description |
|---|---|
| TS-SCCM/1 | Single channel secondary containment control module |
| TS-SCCM/2 | Dual channel secondary containment control module |
| TS-SCMCAL | Leak generator kit, one per station |
| VS-SCCM/1 | 220 VAC single channel secondary containment control module |
| VS-SCCM/2 | 220 VAC dual channel secondary containment control module |

### Install Kit

| Part Number | Description |
|---|---|
| TSP-SCLSI | Product, vapour line and sump containment install kit |
| TSP-SCTK2 | Tank containment install kit for 2" risers, in-tank hose sold separately |
| TSP-SCTK2B | Tank containment install kit for 2" risers with BSP threads, in-tank hose sold separately |
| TSP-SCTK4 | Tank containment install kit for 4" risers, in-tank hose sold separately |
| TSP-SCTK4B | Tank containment install kit for 4" risers with BSP threads, in-tank hose sold separately |

### Accessories

| Part Number | Description |
|---|---|
| TSP-SCBRB | Five 1/4" NPT barbed fittings |
| TSP-SCBRBT | 1/4" NPT barbed T-fitting |
| TSP-SCCLP | Five hose clamps |
| TSP-SCTB25 | 25' hose |
| TSP-SCTB50 | 50' hose |
| TSP-SCTB100 | 100' hose |
| TSP-SCVLV | Five Schreader valves |

## Upgrading Installed Fuel Management System Consoles

Two types of upgrades can be done on a fuel management system console: feature upgrades and software upgrades. The latest software versions are included with all feature upgrades. Most feature upgrades require ordering a software option, hardware options and interface modules. Some modules may already be installed.

### Feature Upgrade

| Upgrade | Software | Hardware | Interface Module |
|---|---|---|---|
| Internal modem | | TS-MDMIB internal modem | |
| 24 hour tank testing | TS-TT SCALD tank testing | | |
| Line leak | TS-ELLD electronic line leak detection | Appropriate TS-LS500/N transducer kit | TS-RLY module, not needed with TPI<br>TS-420IB module<br>TS-ACI module |
| Tank inventory reconciliation | TS-TRAC tank inventory reconciliation and auto calibration | TS-DIMIB module<br>Appropriate DIM interface cables | |
| Secondary containment monitoring | TS-SCM secondary containment monitoring | Appropriate TS-SCCM modules, installation kits and accessories | TS-ACI module<br>TS-RLY module<br>TS-420IB module |
| Vapour recovery monitoring (ISD) | TS-VRM vapour recovery monitoring | TS-VFM flow meters<br>TS-VPS pressure sensor<br>TS-DIMIB dispenser interface | TS-ACI module (not needed w/ VRM 1.2)<br>TS-RLY or TS-10ARLY module<br>TS-PRB probe module<br>TS-420IB module |

Note: When placing an order for a feature upgrade, the serial number of the console to be upgraded must be supplied.

### Software Version Upgrade Only

| Part Number | Description |
|---|---|
| TSA-UPGMS | Software version upgrade shipped on a USB memory stick |

## Advantages

- Monitors fuel levels and density measurements in up to six tanks.

- Static and continuous tank leak detection capabilities.

- Standard communication ports.

- External USB printer support.

- Web interface for remote access.

- Programmable email notification of alarms and events.

- Compact size provides installation location flexibility.

- Autocalibration can recreate missing or inaccurate tank strapping charts.

# Colibri Tank Monitor

Colibri is the ideal solution for the fuelling station owner who requires basic, straightforward functionality in a fuel inventory monitoring system. The Colibri system monitors fuel density and inventory levels in up to six tanks and provides accurate, reliable information without manually taking tank readings. Additional features communicate the status of tank contents, including volume, temperature, mass, water level and continuous tank leak detection. The Web interface feature allows authorised users access to tank information from any computer connected to the internet or wide area network, as well as custom alerts which can be sent to email or mobile devices. The Colibri tank monitor is the highest quality, best value solution available for any fuelling station that requires essential tank monitoring capabilities.



## Specifications

- Number of tanks monitored: 6.
- Output channels: 2.
- Display type: colour LCD touch screen.
- Internal audible alarm.
- Alarm, warning and power LEDs.
- Applicable liquids: petroleum, chemicals and hazardous waste.
- Level units: centimetres, millimetres and inches.
- Volume units: litres or gallons (mass with density option).
- Display size: 142 mm (5.6 in).
- Dimensions: 185 mm x 303 mm x 57 mm (7.27 in x 11.92 in x 2.24 in).
- Power requirements: 94 to 264 VAC, 50/60 Hz 1.0 Amps.
- Operating temperature: 0 to 40°C (32 to 104°F).
- Humidity: 0% to 95% non-condensing.
- Intrinsically safe rating: US – Class I, Div. I, Group D Europe – Group IIA, Zone 0.

- Compatible with FFS inventory and leak detection LL2 probes.

**Standard Capabilities**
- Inventory and delivery management.
- Static tank leak detection.
- High, low and water alarm set points.
- Available with or without display.
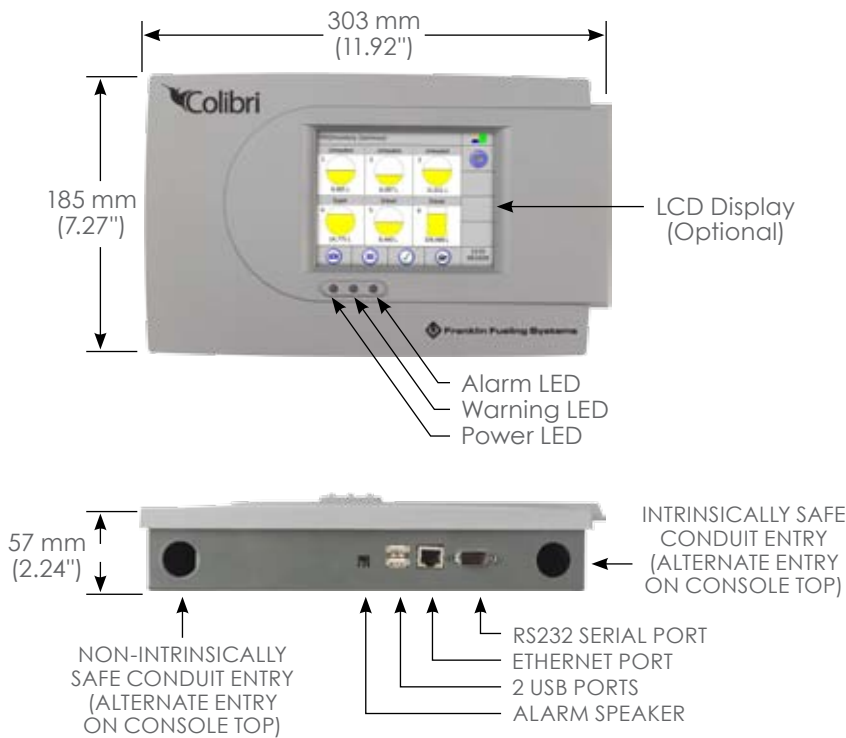- Web interface and email notifications.

**Optional Capabilities**
- SCALD 24 hour tank leak detection.
- Inventory reconciliation / Tank autocalibration.
- Density and mass measurement.

**Approvals**
- UL, cUL, ATEX, IECEx.
- Third party certification of leak detection capabilities.

**Franklin Fueling Systems**

303 mm
(11.92")

185 mm
(7.27")

LCD Display
(Optional)

Alarm LED
Warning LED
Power LED

57 mm
(2.24")

INTRINSICALLY SAFE
CONDUIT ENTRY
(ALTERNATE ENTRY
ON CONSOLE TOP)

NON-INTRINSICALLY
SAFE CONDUIT ENTRY
(ALTERNATE ENTRY
ON CONSOLE TOP)

RS232 SERIAL PORT
ETHERNET PORT
2 USB PORTS
ALARM SPEAKER

## Ordering Guide

Console model and software can be listed separately or combined when ordering. Systems shipped from the factory will list the combined part number. Complete console part numbers have a specific order and are created using the following guidelines:

**CL6 D / TR**

CL6 = Colibri Model

D = Display Option

TR = Software Options

T = SCALD 24 hour tank testing

R = Reconciliation/autocalibration

## Colibri Consoles

| Model | Description |
|---|---|
| CL6 | Six channel Colibri console without display |
| CL6D | Six channel Colibri console with display |

## Internal Software Options

| Part Number | Description |
|---|---|
| CL-TT | (T) Statistical Continuous Automatic Leak Detection (SCALD), 24 hour continuous tank testing software |
| CL-TRAC | (R) Tank inventory reconciliation and autocalibration software |

## Upgrading Installed Colibri Systems

### Feature Upgrade
The Colibri console can be upgraded after installation to add any of the available Internal Software Options. The serial number of the console as well as the part number of the option being ordered must be supplied.

### Software Upgrade
The latest version of the Colibri software can be shipped on a memory stick.

| Part Number | Description |
|---|---|
| CL-UPGMS | Colibri Software Version Upgrade on a USB memory stick |

Note: The latest version of the Colibri software is also available for download from the FFS website.

## Advantages

- Monitors up to 4 tanks.

- Designed on an open architecture platform that is easily expandable for additional capabilities.

- Low cost, compact console handles a wide range of applications and is easily programmed through multipurpose function keys to meet site-specific criteria.

- Internal high-speed fax/data modem capability allows remote access from System Sentinel™ and System Sentinel AnyWare™.

- Executes automatic system check and notifies user if the unit is not functioning properly and performs continuous leak testing, no station down time required.

# TS-1001 Full Feature Compliance Consoles

The TS-1001 consoles feature business management and environmental compliance capabilities. They offer inventory, leak detection, reporting and alarm notification.

## Specifications

- Number of tanks monitored: 4.
- Input channels: 2 (10*).
- Output only channels: 2 (10*).
- Sensor inputs: 12 (28*).
- Dimensions: 11" × 12" × 4".
- Display type: alphanumeric LCD.
- Applicable liquids: petroleum, chemicals and hazardous waste.
- Level units: inches or millimetres.
- Volume units: gallons or litres.
- Temperature units: degrees Fahrenheit or Celsius.
- Display size: 2 lines of 40 characters.
- Power requirements: 230 VAC - +15%, -10%, 100 Watts maximum, 0.5 Amp maximum.
- Operating temperature: 32° to 122°F (0° to 50°C).
- Storage temperature: -4° to 140°F (-20° to 60°C).
- Intrinsic safety rating: US - Class I, Div. I, Group D.
- Number of LLDs supported: 4.
- Printer type: 24 column thermal.

### Applications

The automatic tank gauge has been designed to monitor tank tightness, gather inventory information and assist with multiple environmental compliance issues.

- Third party approved volumetric leak detection (Pd = 99.9% at 0.2 gph).
- Can provide dispenser information and automate reconciliation when used in conjunction with the dispenser interface module.
- Provides accurate inventory information including reports that can be used to better schedule deliveries.
- Multipurpose relays can be used for outputs to overfill alarms and external audible and visual indicators.

### Capabilities

The VS-1001 has programmable settings and is capable of monitoring up to four tanks.

- Offers a wide range of advanced communication options.
- Expanded, backlit LCD display with two lines of 40 columns.
- Supports multiple languages.
- Supports English and metric units.
- Generates numerous system warnings and tank alarms to quickly notify the user of any potential problems.
- Supports important generator and fuel management features.

*Maximum number when including additional options.

## TS-1001, 220 VAC Models

| Model | Description |
|-------|-------------|
| V1P/0C | Leak monitor with 12 sensor inputs and printer |
| V1P/2C | ATG, up to 2 tanks with 12 sensor inputs and printer |
| V1P/4C | ATG, up to 4 tanks with 12 sensor inputs and printer |
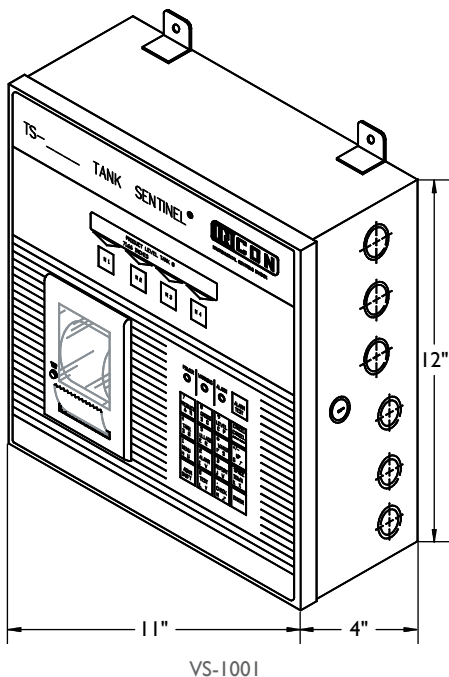


VS-1001

## TS-1001 Console Ordering Guide

Console model, software and hardware options can be listed separately or combined when ordering. Systems shipped from the factory will list the combined part number. Complete console part numbers have a specific order and are created using the following guidelines:

**XX PM / A B C CLR**

**XX = Model**

V1 = VS-1001, 220 VAC.

**PM = Hardware Options**

P = Printer, standard.

M = Internal modem.

**A B C CLR = Software Options**

A = 0, 2, 4 tanks,
VS-1001 - 0, 2, 4.

B* = S, SCALD, or G, generator.

C** = D - data, F - fax/data software.

C = Continental version.

L = Line leak detection.

R = Reconciliation.

*SCALD and generator options are mutually exclusive. The SCALD option is not needed for the generator model.

**Data and fax/data modem options are mutually exclusive.

## Advantages

• Monitors up to 2 tanks.

• Proven INCON design.

• Easy site-specific programming through keyboard.

• Accurate inventory information, including days supply remaining.

• Alarms and positive shut-off available.

• As many as 28 sensor inputs.

• Communicates directly to System Sentinel™ software.

• Uses highly accurate magnetostrictive probe technology.

## TS-1001/G Console Ordering Guide

Console model, software and hardware options can be listed separately or combined when ordering. Systems shipped from the factory will list the combined part number. Complete console part numbers have a specific order and are created using the following guidelines:

**XX PM / 2G B C**

**XX = Model**

V1 = VS-1001, 220 VAC.

**PM = Hardware Options**

P = Printer, standard.
M = Internal modem.

**2G B C = Software Options**

B* = D - data, F - fax/data software.
C = Continental version.

*Data and fax/data modem options are mutually exclusive.

# TS-1001/G Fixed Feature Generator Tank Monitoring Console

The TS-1001/G back-up generator tank monitoring system provides fuel inventory control, runs status reports and continuous leak detection.



## Specifications

• Number of tanks monitored: 2.

• Input channels: 2 (10*).

• Output only channels: 2 (10*).

• Sensor inputs: 12 (28*).

• Dimensions: 12" × 11" × 4".

• Display type: alphanumeric LCD.

• Applicable liquids: petroleum, chemicals and hazardous waste.

• Level units: inches or millimetres.

• Volume units: gallons or litres.

• Temperature units: degrees Fahrenheit or Celsius.

• Display size: 2 lines of 40 characters.

• Power requirements: 230 VAC - +15%, -10%, 100 Watts maximum, 0.5 Amp maximum.

• Operating temperature: 32° to 122°F (0° to 50°C).

• Storage temperature: -4° to 140°F (-20° to 60°C).

• Intrinsic safety rating: US - Class I, Div. I, Group D.

• Number of LLDs supported: 8.

• Printer type: 24 column thermal.

### Capabilities

• Generates inventory, compliance and fuel management reports.

• Performs continuous leak detection.

• Supports English and metric units.

• Generates numerous system warnings and tank alarms to quickly notify the user of any potential problems.

• Can open and shut appropriate valves through multipurpose relays.

*Maximum number when including additional options.

## TS-1001/G, 220 VAC Models

| Model | Description |
|-------|-------------|
| V1P/2G | One to two tank configuration with generator back-up capability (220 VAC) |

**Franklin Fueling Systems**

# TS-504 and TS-508 Fixed Feature Inventory Control Consoles

This inventory control family of products offers a feature-rich and cost-effective solution for continuous inventory management of fuel sites where in-tank leak detection is not required.

## Specifications

• Number of tanks monitored: TS-504 - 4. TS-508 - 8.

• Input channels: 2 (10*).

• Output only channels: 2 (10*).

• Sensor inputs: 8 (24*).

• Dimensions: 12" × 11" × 4".

• Display type: alphanumeric LCD.

• Applicable liquids: petroleum, chemicals and hazardous waste.

• Level units: inches or millimetres.

• Volume units: gallons or litres.

• Temperature units: degrees Fahrenheit or Celsius.

• Display size: 2 lines of 40 characters.

• Power requirements: 230 VAC - +15%, -10%, 100 Watts maximum, 0.5 Amp maximum.

• Operating temperature: 32° to 122°F(0° to 50°C).

• Storage temperature: -4° to 140°F (-20° to 60°C).

• Printer type: 24 column thermal.

## Applications

The TS-504 and TS-508 family of tank monitors is the perfect solution for monitoring and controlling liquid levels in aboveground tanks at:

• Retail fuelling sites.

• Fuel distribution depots.

• Heating oil storage terminals.

• Bulk storage locations for other motor fluids.

• Bulk fuel terminals.

• Chemical storage plants.

• Many other inventory control applications not requiring in-tank leak detection.

## Capabilities

• Provides real-time, accurate inventory and delivery information for each tank monitored.

• Supports up to 24 sensors for sumps, interstitial spaces and test well applications.

• Can control remote alarms and pumps via multipurpose, high current relays.

• Self-calibration and diagnostic features quickly notify users of potential problems.

• Delivers cost-effective overfill protection.

• Can provide sales throughput information and automated reconciliation of sales and consumption data when used with the INCON dispenser interface module.

• Multiple monitors can be easily networked to support large tank farms and bulk terminals with more than eight tanks.

• Can be remotely monitored and controlled via System Sentinel™ remote fuel management software.

• Supports multiple languages as well as English and metric units.

*Maximum number when including additional options.

Console model, software and hardware options can be listed separately or combined when ordering. Systems shipped from the factory will list the combined part number. Complete console part numbers have a specific order and are created using the following guidelines:

**XXXX PM / Y A CLR**

**XXXX = Model**

V504 = VS-504, 220 VAC.
V508 = VS-508, 220 VAC.

**PM = Hardware Options**

P = Printer, standard.
M = Internal modem.

**Y A CR = Software Options**

Y = 4 or 8 tanks,
VS-504 - 4.
VS-508 - 8.
A* = D - data, F - fax/data software.
C = Continental version.
R = Reconciliation.
*Data and fax/data modem options are mutually exclusive.

## TS-504 and TS-508, 220 VAC Models

| Model | Description |
|---|---|
| V504/4C | ATG, up to 4 tanks with 8 sensor inputs |
| V504P/4C | ATG, up to 4 tanks with 8 sensor inputs and printer |
| V508/8C | ATG, up to 8 tanks with 8 sensor inputs |
| V508P/8C | ATG, up to 8 tanks with 8 sensor inputs and printer |

VS-504/508

**Franklin Fueling Systems**
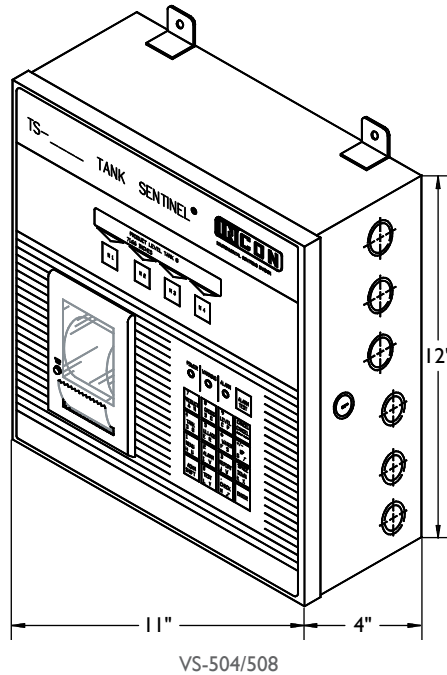
## Internal Console Hardware Enhancements

| Part Number | Description |
|---|---|
| TSSP-FDM2 | (M) Internal modem, see software enhancements |

## Console Software Enhancements

| Part Number | Description |
|---|---|
| TS-SCALD* | (S) Statistical Continuous Automatic Leak Detection, 24 hour continuous tank testing software |
| TS-DOM2** | (D) Data only modem software |
| TS-FM2** | (F) Fax and data modem software |
| TS-LLDI*** | (L) Line leak detector interface software |

*SCALD is not available with inventory control consoles or back-up generator consoles (the S in the console part number identifies this option). SCALD is used in 24 hour locations for tank leak testing.

**TSSP-FDM2 internal modem hardware is required (the M before the forward slash in the console part number identifies this option). Choose data only modem software to support System Sentinel™ software, or choose fax and data modem software when faxed reports are required.

***Electronic line leak detector hardware is required (the L in the console part number identifies this option). This interface software enables line leak detector compliance reporting and line leak test scheduling capability. Not available on the TS-750 console.

## Upgrading Installed Tank Sentinel® Consoles

| Upgrade | Description |
|---|---|
| Internal modem | TSSP-FDM2 internal modem hardware<br>TS-DOM2 data only modem software or TS-FM2 fax and data software |
| 24 hour leak detection | TS-SCALD statistical, continuous automatic leak detection software |
| Line leak | Appropriate TS-LS300 or TS-LLD<br>TS-LLDI line leak detector interface software |

Note: When placing order to upgrade installed consoles, the serial number of the console to be upgraded must be supplied.

## Paper Supplies

| Part Number | Description |
|---|---|
| TS-TP2 | One box of 5 rolls of thermal printer paper for fuel management system and Tank Sentinel® consoles |
| TS-TP2C | One case of 20 boxes of 5 rolls of thermal printer paper for fuel management system and Tank Sentinel® consoles |

**INCON®** FUEL MANAGEMENT SYSTEMS

## Advantages

• Monitors up to 4 sensors for overfill or leak detection

• Simple to install and configure

• Can be installed indoors or outdoors

• Cost effective leak detection or overfill solution

• Connect to remote alarms or external devices

# S940 Sensor Alarm Console

The S940 Sensor Alarm Console is a cost effective solution for tank overfill protection and sensor leak detection needs. This easy-to-install-and-operate device monitors up to four tanks, containment sumps or interstitial spaces and provides an audible and visual indication of an alarm condition. Two programmable relay outputs are included to sound an external alarm or send a signal to a building control or monitoring system. The weather proof enclosure allows the S940 Sensor Alarm Console to be conveniently installed indoors or out.



## Specifications

• Input channels: 4 (2-wire float switch sensor inputs).
• Output channels: 2 (dry contact relay outputs).
• Internal audible alarm.
• Alarm, power and output LEDs.
• Compatible Franklin Fuelling Systems 2-wire sensors.
   • TSP-ULS universal liquid sensor.
   • TSP-HLS high level sensor.
   • TSP-HFS horizontal float switch.
   • TSP-UHS universal hydrostatic sensor.
• Dimensions 6" x 6" x 4".
• Power requirements: 100-240 VAC +/- 10%, 50/60 Hz, 15 W max.
• Operating temperature: -13 to +140 °F (-25 to +60 °C).
• Enclosure: NEMA 4, indoor / outdoor (non-hazardous locations only).

### Capabilities

• Tank overfill alarm.
• Steel or fiberglass tank interstitial monitoring.
• Containment sump monitoring.
• General liquid sensor monitoring.
• Programmable relay outputs for remote alarm or external device interface.

### Approvals

• UL, cUL, associated apparatus, non-hazardous location.
• Provides intrinsically safe circuits for sensors located in Class 1, Div 1, Group D hazardous location.
• Third party certification of leak detection capabilities.

| Model | Description |
|-------|-------------|
| S940 | Four channel sensor alarm console |

**Franklin Fueling Systems**

# TS-LS300 AutoLearn™

The TS-LS300 AutoLearn™ line leak detection system learns the exact characteristics of each line, ensuring unparalleled accuracy. It can run independently or with any INCON VS-1001, TS-2001, VS-504 or VS-508 tank gauge.

## Advantages

- Automatically learns exact pipeline characteristics.

- No pipe type and length programming required.

- Monitors flexible, steel and/or fiberglass pipelines in any combination up to certified maximum values.

- Works with submersible pumps generating 25 psi or more.

- Automatically performs 3.0 gph, 0.2 gph and 0.1 gph line tests.

- Positive submersible pump shutdown in the event of a leak.

- Can be monitored through ATG and System Sentinel™.

- Third party certified for 0% probability of false alarm.

- Eliminates the need for factory calibration or on-site field judgments for set-up.

- For use in rigid, flex and rigid/flex piping configuration.

- Immediate notification of alarm condition.

- Allows printed compliance reports.

## Console Specifications

- Number of lines monitored: 1, 2, 3 or 4.
- Dimensions: 11" × 12" × 4".
- Power requirements: 115 VAC - +15%, -10%, 100 Watts maximum, 1 Amp maximum. 230 VAC - +15%, -10%, 100 Watts maximum, 0.5 Amp maximum.
- Operating temperature: 20° to 122°F (10° to 50°C).
- Intrinsic safety rating: Associated Apparatus II (1) G [EEX Ia] IIA.

**Leak Sensing Transducer Specifications**

- Number of lines monitored: 1.
- Dimensions: 6-1/4" × 2" NPT.
- Applicable liquids: motor fuels.
- Power requirements: 10 to 20 VDC from console.
- Operating temperature: -40° to 149°F (-40° to 66°C).
- Operating pressure: 0 to 100 psi (0 to 689 kPa).
- Belden cable: #9363-22 AWG, #9364-20 AWG or #9365-18 AWG.
- Max. sensor to console cable distance: 500' (152.4 M).

- Sensor port fitting: 2" female NPT.
- Sensor material: anodized aluminium body and stainless steel sensor.
- Intrinsic safety rating: Class 1, Div. 1, Group D, II (1) G [EEX Ia] IIA T4
- Explosion proof: Class 1, Div. 1, Group D.

### Capabilities

- The TS-LS300 performs a 3.0 gph leak and pressure test after every dispense. Upon detection of a failed test, the LS300 will alarm and positively shutdown the affected turbine.
- The TS-LS300 continuously monitors pressurized lines for thermally stable conditions and performs a 0.2 gph monthly and 0.1 gph annual precision leak test during the thermally stable union.
- AutoLearn™ line leak detection technology is also available with the TS-LS500, part of the TS-550 and TS-5000 fuel management systems.

### TS-LS300, 115 VAC 50/60 Hz Models

**Intrinsically Safe**

For new installations where separate low voltage conduits can be used.

| Model | Description |
|-------|-------------|
| TS-LS300/2 | 2-line console with line calibration kit |
| TS-LS300/3 | 3-line console with line calibration kit |
| TS-LS300/4 | 4-line console with line calibration kit |

Note: All AutoLearn™ models include the TPI turbine pump interface module.

**Explosion Proof**

For retrofit installations where only a high voltage conduit can be used.

| Model | Description |
|-------|-------------|
| TS-LS300E/2 | 2-line console with line calibration kit |
| TS-LS300E/3 | 3-line console with line calibration kit |
| TS-LS300E/4 | 4-line console with line calibration kit |

Note: All AutoLearn™ models include the TPI turbine pump interface module.

### TS-LS300, 230 VAC 50/60 Hz Models

**Intrinsically Safe**

For new installations where separate low voltage conduits can be used.

| Model | Description |
|-------|-------------|
| VS-LS300/2 | 2-line console with line calibration kit |
| VS-LS300/3 | 3-line console with line calibration kit |
| VS-LS300/4 | 4-line console with line calibration kit |

Note: All AutoLearn™ models include the TPI turbine pump interface module.

### Interface Cable
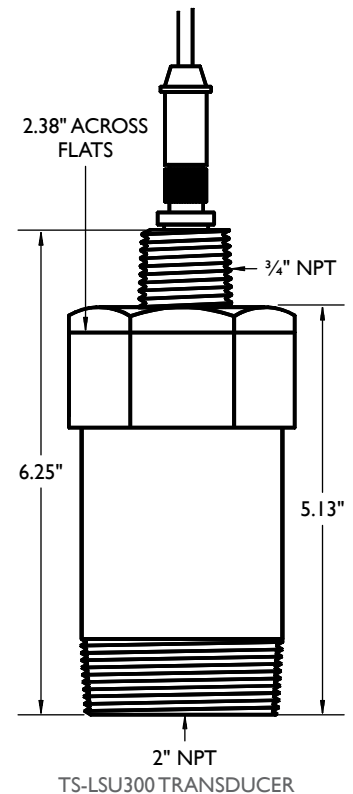
For connecting two AutoLearn™ consoles together.

| Model | Description |
|-------|-------------|
| TSSP-ALICBL | AutoLearn™ interface cable |

### Alternative Fuels Accessories

| Model | Description |
|-------|-------------|
| TS-AFALNIP | Leak generator needle valve kit required for E85 installations |

TS-LS300

2.38" ACROSS FLATS

¾" NPT

6.25"

5.13"
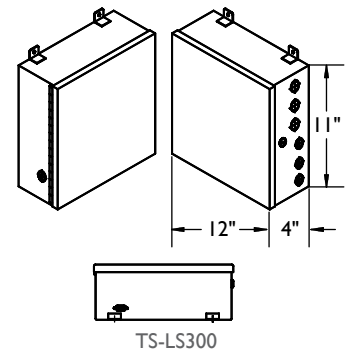
2" NPT

TS-LSU300 TRANSDUCER

# Leak Detection and Inventory Control Probes

TSP-LL2 liquid level probes are advanced instruments that use magnetostrictive position measurement technology to accurately report inventory levels in storage tanks.



## Specifications

- Operating temperature: -40° to 140°F (-40° to 60°C).
- Storage temperature: -40° to 158°F (-40° to 70°C).
- Intrinsic safety rating: Class 1, Div. 1, Group D.
- Non-linearity: ±0.025% of full scale.
- Repeatability: ±0.001".
- Temperature sensors: 5 thermistors located in the shaft.
- Temperature resolution: ±0.02°F (±0.01°C).
- Probe pigtail: 10' long two conductor cables with shields and polyurethane jacket.
- Interface cable:
  0' to 200' - Belden 87760.
  0' to 400' - Belden 87761.
  0' to 1500' - Belden 89182.
  Consult factory for others.
- Shaft, E-ring and washer materials: # 316 stainless steel. Housing - anodized aluminium, MIL-A-8625C, Type 2, Class 2. Floats - nitrophyl, Kynar and nickel plated brass.
- Float kits must be ordered separately.

## Applications

The LL2 Series of liquid level probes feature exceptional linearity, resolution and stability, and are used in underground and aboveground storage tanks. Two types of probes are manufactured for use with Franklin Fueling Systems Automatic Tank Gauges.

- The TSP-LL2 probe is typically used for underground storage tanks and petroleum applications when static or SCALD leak detection is required.

- The TSP-LL2-I probe is typically used for aboveground storage tanks, chemical or oil waste, or underground storage tanks that do not require in-tank leak detection.
- Probes are available in many sizes that are suitable for all common tanks.
- Easily installed into 2", 3" or 4" riser pipes.

## Capabilities

- Probes can report the level of up to 3 floats.
- The TSP-LL2 is capable of precise leak detection, density measurement and inventory monitoring.
- The TSP-LL2-I is capable of inventory monitoring.
- Use the appropriate FFS suspension type installation kit to install all TSP-LL2 leak detection probes.
- Use the appropriate FFS bottom mount type installation kit for installing all TSP-LL2-I Inventory Control probes. These probes come with special hardware for installation on the tank bottom.
- Float kits must be ordered separately.

## Advantages

- Easy to use and install.
- Uses innovative, magnetostrictive position measurement technology to report liquid levels.
- Highly stable performance.
- Unparalleled accuracy and performance when used with a Franklin Fueling Systems Automatic Tank Gauge.
- Screw-in electrical connector provides quick installation or removal eliminating the need to resplice wires.
- Intrinsically safe circuits for hazardous locations.

## Theory of Operation

- An electromagnetic field is created inside the probe head and forms around a long waveguide within the probe shaft when position measurements are taken.
- The electromagnetic field interacts with the magnetic field of the float(s) and produces a shock wave in the waveguide that travels at a known speed.
- When the shock wave is detected at the probe head, the probe creates a signal that corresponds precisely to the product level.
- Product expansion calculations are enabled by temperature sensors that are located at various points in the probe shaft.

## Leak Detection

| Model | Description |
|---|---|
| TSP-LL2-29 | 2' diameter tank probe |
| TSP-LL2-41 | 3' diameter tank probe |
| TSP-LL2-53 | 4' diameter tank probe |
| TSP-LL2-65 | 5' diameter tank probe |
| TSP-LL2-69 | 5'4" diameter tank probe |
| TSP-LL2-77 | 6' diameter tank probe |
| TSP-LL2-81 | 6'4" diameter tank probe |
| TSP-LL2-89 | 7' diameter tank probe |
| TSP-LL2-101 | 8' diameter tank probe |
| TSP-LL2-113 | 9' diameter tank probe |
| TSP-LL2-125 | 10' diameter tank probe |
| TSP-LL2-131 | 10'6" diameter tank probe |
| TSP-LL2-137 | 11' diameter tank probe |
| TSP-LL2-149 | 12' diameter tank probe |

Notes: 1. Custom probe lengths are available; contact factory for price and delivery.
2. These probes are used with all Franklin Fueling Systems ATG consoles.
3. Float kits must be ordered separately.

## Inventory Control

| Model | Description |
|---|---|
| TSP-LL2-29-I | 2' diameter tank probe |
| TSP-LL2-41-I | 3' diameter tank probe |
| TSP-LL2-53-I | 4' diameter tank probe |
| TSP-LL2-65-I | 5' diameter tank probe |
| TSP-LL2-69-I | 5'4" diameter tank probe |
| TSP-LL2-77-I | 6' diameter tank probe |
| TSP-LL2-81-I | 6'4" diameter tank probe |
| TSP-LL2-89-I | 7' diameter tank probe |
| TSP-LL2-101-I | 8' diameter tank probe |
| TSP-LL2-113-I | 9' diameter tank probe |
| TSP-LL2-125-I | 10' diameter tank probe |
| TSP-LL2-131-I | 10'6" diameter tank probe |
| TSP-LL2-137-I | 11' diameter tank probe |
| TSP-LL2-149-I | 12' diameter tank probe |
| TSP-LL2-161-I | 13' diameter tank probe |
| TSP-LL2-173-I | 14' diameter tank probe |
| TSP-LL2-185-I | 15' diameter tank probe |
| TSP-LL2-197-I | 16' diameter tank probe |
| TSP-LL2-209-I | 17' diameter tank probe |
| TSP-LL2-221-I | 18' diameter tank probe |

Notes: 1. Orders for probes larger than 149" cannot be cancelled
and are non-returnable.
2. Probes larger than 149" may require special floats and install kits.
Contact FFS for more info.
3. These probes are used with all Franklin Fueling Systems ATG consoles.
3. Not for leak detection.
4. Float kits must be ordered separately.
5. Comes with bottom mount hardware. For replacement hardware
kits, order TSSP-BMKT

**Franklin Fueling Systems**
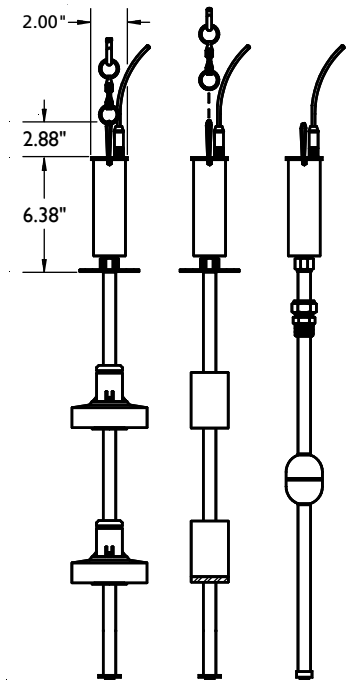
# Moorman Level Gauge Kit

The Moorman level gauge kit includes the complete Moorman gauge (7S for 35' tanks and 9S for 50' tanks) and the appropriate length magnetostrictive inventory probe. The Moorman level gauge retrofit kit includes the appropriate length magnetostrictive inventory probe and probe mounting accessories. TSP-UVPK ultraviolet protection kit is included.

<br/>

## Advantages

• Can be used in any tank up to 50' high.

• Suitable for all petroleum and many industrial applications.

• Available as a complete system or retrofit.

| Model | Description |
|---|---|
| TSP-MLGK-35 | Standard gauge kit for vertical tanks up to 35' |
| TSP-MLGK-35-M | Standard gauge for vertical tanks up to 35' with metric display |
| TSP-MLGKSS-35 | Standard gauge for tanks up to 35' with stainless steel tape and float |
| TSP-MLGKSS-35-M | Standard gauge for tanks up to 35' with metric display, with stainless steel tape and float |
| TSP-MLGK-50 | Standard gauge for vertical tanks up to 50' |
| TSP-MLGKSS-50 | Standard gauge for tanks up to 50' with stainless steel tape and float |
| TSP-MRFK-35 | Retrofit gauge kit for vertical tanks up to 35' |
| TSP-MRFK-50 | Retrofit gauge kit for vertical tanks up to 50' |

**INCON** ® FUEL MANAGEMENT SYSTEMS

## 2" and 4" Float Kit Advantages

• Designed for applications involving 2", 3" or 4" riser pipes.

• Each float set contains a product and water float.

• Constructed of nitrile rubber and kynar. Water floats contain either stainless steel or nickel plated brass ballast. Compatible with a wide variety of petroleum products.

• Water floats are coloured red for gasoline and blue for diesel.

## TSP-SSP Chemical Float Advantages

• #316 stainless steel product float with 2-1/16" OD.

• Suitable for use in a wide variety of chemical applications, consult factory for chemical compatibility issues.

• Use one float per TSP-LL2-I probe.

• Float specific gravity 0.55 to 0.63.

• Collapse pressure 500 psi/g minimum.

## LPG Float Advantages

• Designed for applications involving tank openings of at least 2".

• Single float used for monitoring the level of LPG (propane) fuel.

• Suitable for monitoring pressurized products.

• For use in USTs or ASTs with TSP-LL2 or TSP-LL2-I probes. TSP-LPG/EU float can be used with locally supplied tank isolation sleeves.

## Phase Separation Advantages

• Optional float kit for gasoline and Ethanol blend users.

• Product float determines fuel level.

• Water float will rise with the presence of water or phase separated fuel.

• Simple single-float solution for both water and phase separation.

• Free software upgrade available for T5 Series fuel management systems and Colibri automatic tank gauges.

• Improved minimum water level detection capability.

• Allows you to easily shut down a submersible pump before water or phase separation reaches the customer's vehicle.

# Float Kits



| Model | Description |
|---|---|
| TSP-IDF2 | 2" float set for diesel tanks |
| TSP-IGF2 | 2" float set for gasoline tanks |
| TSP-IDF4 | 4" float set for diesel tanks |
| TSP-IGF4 | 4" float set for gasoline tanks |
| TSP-LPGF | 2" float for LPG tanks, with or without isolation sleeve |
| TSP-SSP | 2-1/16" OD, #316 stainless steel float for chemical applications only |

Note: Order one float set for each LL2 Mag probe.

# Water & Phase Separation Detection Float Kit

Detect both water and phase separation with a single float kit. The water and phase separation detection fl oat kit allows you to effectively manage product levels as well as alert you of water or phase separation levels in your tanks. A single fl oat is used to detect the presence of both water or phase separated fuel to ensure the prevention of either from reaching customer's vehicles.



**Water & Phase Separation Detection Float Kit**

| Model | Description |
|---|---|
| TSP-IGF4P | 4" fl oat set for gasoline and up to E15 tanks |

**Franklin Fueling Systems**

# Density Measurement Float Kits

The Colibri and T5 Series fuel management systems have the ability to continuously monitor the density of fuel stored in underground and aboveground storage tanks. The same TSP-LL2 magnetostrictive probe that provides inventory management and leak detection capabilities can also supply product density and mass without the addition of extra probes or sensors. Programmable high and low density alarm points allow the user to determine the range of acceptable density fluctuations. Available in Standard and Precision models for both gasoline and diesel/fuel oil products.
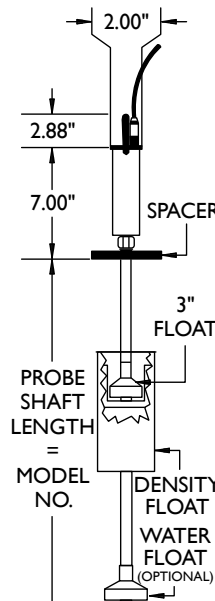


## Advantages

- Designed for applications involving 4" riser pipes.
- Each float set contains a product, density and water float.
- Available in Standard or Precision models
- Floats are constructed of nitrile rubber and kynar. Precision model density floats are also nickel plated.
- Water and product floats are coloured red for gasoline and blue for diesel.
- Density and product floats are calibrated and must be maintained as a set.

## Theory of Operation

Density measurement is based on the distance between the calibrated product and density floats. As the density of the fuel changes, the gap between the floats will increase or decrease in proportion to the change. The tank gauge receives this information from the probe and uses it to calculate and display the current density of the fuel.

## Standard

| Part Number | Description | Density Range |
|---|---|---|
| TSP-IDF4D3 | Diesel/fuel oil density float kit | 790-900 kg/m³ |
| TSP-IGF4D3 | Gasoline density float kit | 690-800 kg/m³ |

## Precision

| Part Number | Description | Density Range |
|---|---|---|
| TSP-IDF4D | Diesel/fuel oil density float kit | 790-900 kg/m³ |
| TSP-IGF4D | Gasoline density float kit | 690-800 kg/m³ |

Note: 1. Order one density measurement float kit for each magnetostrictive probe. Probes used with density float kits must have serial numbers greater than 6000000.

2. Standard density float kits accuracy: 3 kg/m³.

3. Precision density float kits accuracy: 1 kg/m³.

## Advantages

- The TSP-K4AS/ASL install kits are for use with chemical or other installations where it is desirable for the probe head to be outside of the riser. It consists of a #316 SS 4" cap and compression fitting that is installed on the probe shaft so that only the floats and shaft are exposed to the tank contents. Includes TSP-UVPK probe head protection kit.

- The TSP-LPGK install kit is for use with pressurized LPG tanks where the probe head will reside outside of the tank opening. It consists of a special compression fitting, designed to retain the contents of the pressurized tank, that is installed on the probe shaft and then inserted into a user supplied cap with a 3/4" NPT hole. Includes TSP-UVPK probe head protection kit.

# Probe Installation Kits

FFS Probe installation kits primarily come in two styles, Suspension and Bottom Mount. The Suspension kits are used to install TSP-LL2-xxx Leak Detection probes in underground storage tank applications using either 2" or 4" riser pipes. Suspension isolates the probe from possible tank deflection and also keeps in it a true vertical orientation for optimal float movement and measurement accuracy. These kits also provide a tight seal to the tank to prevent water intrusion and meet regulatory requirements. The 4" models also provide a quick release cap for easy access to the probe for inspection or maintenance. TSP-LL2-xxx-I Inventory Control probes come with hardware that allows them to be installed on the tank bottom. The Bottom Mount install kits provide the same tight seal and ease of access without the need for the suspension hardware necessary in leak detection applications. Both styles work well on either steel or fiberglass tanks.



## Suspension Kits

| Part Number | Description |
|---|---|
| TSP-K2A | Leak detection probe install kit for 2" riser pipes |
| TSP-K2B | Leak detection probe install kit for 2" riser pipes with BSP threads |
| TSP-K4A | Leak detection probe install kit for 4" riser pipes |
| TSP-K4B | Leak detection probe install kit for 4" riser pipes with BSP threads |

## Bottom Mount Kits

| Part Number | Description |
|---|---|
| TSP-C2A | Inventory probe Install kit for 2" risers |
| TSP-C2B | Inventory probe Install kit for 2" risers with BSP threads |
| TSP-C4A | Inventory probe install kit for 4" risers |
| TSP-C4B | Inventory probe install kit for 4" risers with BSP thread |

## Other Kits

| Part Number | Description |
|---|---|
| TSP-K4AS | #316 stainless steel mag probe install kit for 4" riser pipes |
| TSP-K4ASL | #316 SS install kit for probes larger than 149" |
| TSP-LPGK | LPG probe install kit, 149" maximum LL2 probe length |

Note: TSP-LPGK install kit is not needed when locally supplied tank isolation sleeve is utilized.

## Cables

| Part Number | Description |
|---|---|
| 600-0042 | Belden #87761, runs up to 500' |
| 600-0055 | Belden #89182, runs 500' to 1,500' |
| 600-0080 | Quick disconnect probe cable |

Notes: 1. Cable is sold in 500' increments.
2. Orders greater than 500' will ship in 1000' and 500' rolls.
3. Contact tech support for more information on cable requirements.

## Accessories

| Part Number | Description |
|---|---|
| TSP-DB1 | One direct burial splice connector kit |
| TSP-DB10 | Pack of 10 direct burial splice connector kits |
| TSP-DBTOOL | Epoxy dispensing tool |
| TSP-KW30 | Pack of 30 3M splice connectors |
| TSP-UVPK | Ultraviolet protection kit - protects probe electronics when installed in AST applications |

Notes: 1. Use the TSP-DB1 or TSP-DB10 for direct burial cable applications or when weather proof junction boxes are not used.
2. The DBTOOL is required to dispense the epoxy.
3. Each direct burial splice connector kit includes a receptacle, three splice connectors and epoxy for the dispensing tool.

**Franklin Fueling Systems**

# TSP-HIS Hydrostatic Interstitial Brite™ Sensor

The TSP-HIS hydrostatic interstitial Brite™ sensor detects leaks in double wall tanks where the interstitial space is filled with a liquid brine solution. For use with all Tank Sentinel® and fuel management systems, the TSP-HIS polyester, nitrile and epoxy construction is compatible with all types of brine.

## Application

For liquid-filled tank interstitial monitoring.

## Advantages

• Versatile sensor for virtually all fiberglass double wall tanks equipped for hydrostatic leak detection.

• Microcomputer monitors liquid at varying levels within tanks and relays digitally encoded status information via the fail-safe Brite™ sensor digital communication system to fuel management system or Tank Sentinel® consoles, alerting of any alarm conditions.

## Installation

• Lower TSP-HIS to the bottom of the brine reservoir of double wall tank.

• The normal brine level should reside half way up the sensor.

• Sensors include the TSP-KV4 vented 4" riser cap.

| Model | Description |
|-------|-------------|
| TSP-HIS | Hydrostatic interstitial Brite™ sensor, 11'* |
| TSP-HIS-XL | Hydrostatic interstitial Brite™ sensor, 21'* |
| TSP-KV4 | Hydrostatic sensor vented riser pipe cap kit for 4" riser pipes |

Note: This sensor communicates with the console using 3 wires.

*Not including cable.

## Application

For dry tank interstitial monitoring.

## Advantages

• Installs in the interstitial space of steel and fiberglass double wall tanks and sumps.

• Uses light beam traveling through probe to determine if sensor is wet.

• Microprocessor inside sensor interprets readings and communicates data to the Tank Sentinel® and fuel management system.

• Fail-safe digital communications with built-in alarm if sensor malfunctions.

• Sensor can distinguish between petroleum and water.

• Alarms indicate petroleum present, water present and sensor malfunction.

## Installation

Each TSP-DIS comes with 25' of oil-resistant cable. For fiberglass tanks, TSP-DIS is pulled into the interstitial space using a "fish" string or wire. For steel interstitial tanks, TSP-DIS is lowered directly to the bottom of the interstitial space through a 2" NPT fitting provided for that purpose on the tank. Optional installation kits are available which include a riser cap and other parts required to complete installation.

# TSP-DIS Discriminating Interstitial Brite™ Sensor

The TSP-DIS discriminating interstitial Brite™ sensor detects the presence of various liquids in tanks as well as sumps and other locations. The TSP-DIS is designed to interface with the Tank Sentinel® and fuel management system.



| Model | Description |
|---|---|
| TSP-DIS | Discriminating interstitial Brite™ sensor |
| TSP-KI2 | Interstitial sensor riser cap kit for 2" riser pipes |

Note: This sensor communicates with the console using 3 wires.

# TSP-EIS Electro-Optic Interstitial Sensor

The TSP-EIS electro-optic interstitial sensor may be used with all Tank Sentinel® and fuel management system consoles. Utilizing electro-optic technology and made of chemically resistant polysulfone plastic, the TSP-EIS may be installed in sumps, double wall tanks or other locations where the presence of liquid indicates a leak has occurred.

| Model | Description |
|-------|-------------|
| TSP-EIS | Electro-optic interstitial sensor |
| TSP-K12 | Interstitial sensor riser cap kit for 2" riser pipes |

Note: This sensor communicates with the console using 3 wires.

# TSP-HFS Horizontal Float Switch Sensor

The TSP-HFS horizontal fl oat switch sensor is a 2-wire non-discriminating liquid sensor which may be used with the S940 alarm console. The TSP-HFS is designed primarily for liquid detection in fi berglass tank dry interstitial spaces.

| Model | Description |
|-------|-------------|
| TSP-HFS | Horizontal float switch sensor |
| TSP-KI2 | Interstitial sensor cap kit for 2" riser pipes |

## Application

For dry tank interstitial monitoring.

## Advantages

• Highly accurate electro-optic technology and closed output circuit ensures that leaks are detected.

• Chemical-resistant materials.

• Can be installed in fiberglass or steel double wall tanks.

• Utilizes light emitting diodes and prisms to indicate if a leak has occurred.

## Installation

Each TSP-EIS comes with 25' of oil-resistant cable. For fiberglass tanks, TSP-EIS is pulled into the interstitial space using a "fish" string or wire. For steel interstitial tanks, TSP-EIS is lowered directly to the bottom of the interstitial space through a 2" NPT fitting provided for that purpose on the tank. Optional installation kits are available which include a riser cap and other parts required to complete installation.

## Application

For dry fi berglass tank interstitial monitoring.

## Advantages

• Fiberglass interstitial monitoring using a 2-wire sensor.

• Highly reliable magnetic-float/ reed-switch technology.

• Chemical-resistant materials.

## Installation

Each TSP-HFS comes with 25 feet of oil-resistant cable. For fiberglass tanks, the TSP-HFS sensor is pulled into the interstitial space using a "fish" string wire. Optional installation kits are available which include a riser cap and other parts required to complete the installation and other parts required to complete the installation.

For dry steel tank interstitial and containment sump monitoring.

## Advantages

• Highly reliable float technology and closed output circuit ensures that leaks are detected.

• Chemical-resistant materials assure compatibility with most liquids.

## Installation

Each TSP-ULS comes with a 25' cable. 1/2" NPT thread is provided on the compression gland fitting attached to the sensor's cable, allowing it to be suspended from standard electrical boxes and fittings. The sensor may be positioned vertically by adjusting cable length. For steel interstitial tanks, TSP-ULS is lowered into the opening provided on the tank and is suspended by optional TSP-KI2 installation kit. Other mounting methods available depending upon application and location.

## Application

Typically used for hydrostatic monitoring of the liquid in a double wall sump interstice.

## Advantages

• Highly reliable float technology and closed output circuit ensures that leaks are detected.

• Chemical-resistant materials.

## Installation

Each TSP-UHS comes with a 25' cable. The sensor can be installed into the reservoir of a liquid filled double wall containment sump. The sensor must be installed in a vertical position at a level where it is normally submerged. The TSP-UHS will alert if the liquid level drops below the bottom of the sensor.

# TSP-ULS Liquid Sensor

The TSP-ULS liquid sensor is a low cost sensor which may be used with all Tank Sentinel® and fuel management system consoles. This sensor is also compatible with S940 Sensor Alarm Console. Based on float-switch technology and made of chemically resistant materials, the TSP-ULS may be installed in sumps, dispenser pans, steel double wall tanks or other locations where the presence of liquid indicates a leak has occurred.



| Model | Description |
|-------|-------------|
| TSP-ULS | Universal liquid sump sensor |
| TSP-K12 | Interstitial sensor riser cap kit for 2" riser pipes |

Note: This sensor communicates with the console using 2 wires.

# TSP-UHS Universal Hydrostatic Sensor

The TSP-UHS Universal Hydrostatic Sensor uses float switch technology to continuously monitor liquid filled double wall containment sumps. Normally submerged, the single float TSP-UHS will provide an indication if there is a loss of monitoring liquid.



| Model | Description |
|-------|-------------|
| TSP-UHS | Universal Hydrostatic Sensor |
| HM-KIT | Hydrostatic monitoring installation kit. Includes: flexible brine tube, sensor housing clamp, sensor housing, sensor cap and hardware |

Note: This sensor communicates with the console using 2 wires.

# TSP-DMS Discriminating Magnetostrictive Sensor

The TSP-DMS is a fast acting discriminating sensor that utilizes magnetostrictive technology to provide reliable monitoring of dispenser pans and containment sumps. Its floats can detect the presence of water or hydrocarbons and also ensure that the sensor installation has not been tampered with. The TSP-DMS can report water warnings and programmable water alarm points as well as product alarms. The TSP-DMS is used with fuel management system consoles.

## Application

For containment sump monitoring.

## Advantages

• Utilizes proven magnetostrictive technology.

• Water warning, water alarm and product alarm.

• Tamper protection feature will alarm if sensor is moved from installed position.

• Will alarm and recover quickly when hydrocarbons are present.

| Model | Description |
|---|---|
| TSP-DMS-12 | Discriminating magnetostrictive sensor, 12" (305mm) |
| TSP-DMS-24 | Discriminating magnetostrictive sensor, 24" (610mm) |
| TSP-KS | Uni-Strut® mounting kit |

Notes: 1. For use with the T5 Series fuel management systems.

2. This sensor communicates with the console via the TS-PRB probe module.

3. Requires Controller Module software version 9.5 or greater.

## Advantages

• Uses magnetic float switches to detect liquid at two levels.

• Innovative polymer strip detects hydrocarbons along sensor and floating on water.

• Compatible with common fuels and chemicals.

• Detects liquid at 1-1/2" from base.

• Detects hydrocarbons on sensor and floating on water.

• Digitally encoded status information sent from microcomputer to console from 775+ feet.

• Alarms to indicate liquid in sump, hydrocarbon detected, sump is full and sensor malfunction.

## Installation

Variety of mounting methods possible depending on location. Bracket provided for quick installation.

## Application

For containment sump monitoring.

## Advantages

• Uses magnetic float switches to detect liquid at two levels.

• Innovative polymer strip detects hydrocarbons along sensor and floating on water.

• Compatible with common fuels and chemicals.

• Detects liquid at 1-1/2" from base.

• Detects hydrocarbons on sensor and floating on water.

• Digitally encoded status information sent from microcomputer to console from 775+ feet.

• Alarms to indicate liquid in sump, hydrocarbon detected, full sump and sensor malfunction.

# TSP-DDS Discriminating Dispenser Sump Brite™ Sensor

The TSP-DDS is a discriminating dispenser sump Brite™ sensor which provides reliable monitoring of dispenser pans and containment sumps. Combining magnetic float switch sensors with an innovative polymer strip, the TSP-DDS generates three different alarms for the detection of hydrocarbons, for liquid in sump and when the sump is full. The TSP-DDS may be used with both fuel management system and Tank Sentinel® consoles.

| Model | Description |
|---|---|
| TSP-DDS | Discriminating dispenser sump Brite™ sensor |
| TSP-KS | Uni-Strut® mounting kit |

Note: This sensor communicates with the console using 3 wires.

# TSP-DTS Discriminating Turbine Sump Brite™ Sensor

The TSP-DTS is a discriminating turbine sump Brite™ sensor that detects the presence of liquid and hydrocarbons when installed in turbine and containment sumps. TSP-DTS is designed to interface with Tank Sentinel® and fuel management system.

| Model | Description |
|---|---|
| TSP-DTS | Discriminating turbine sump Brite™ sensor |
| TSP-KS | Uni-Strut® mounting kit |

Note: This sensor communicates with the console using 3 wires.

**Franklin Fueling Systems**

# TSP-DVS Discriminating Vapour Brite™ Sensor

The TSP-DVS is a discriminating vapour Brite™ sensor that detects the presence of gas or vapour molecules when installed in dry monitoring wells or containment space where vapour detection is necessary. TSP-DVS is designed to interface with the Tank Sentinel® and fuel management system.

| Model | Description |
|---|---|
| TSP-DVS | Discriminating vapour Brite™ sensor |
| TSP-KW4 | Vapour sensor monitoring well pipe cap kit for 4" riser pipes |

Note: This sensor communicates with the console using 3 wires.

# TSP-MWS Monitoring Well Brite™ Sensor

The TSP-MWS monitoring well Brite™ sensor is a discriminating liquid sensor which detects the presence of hydrocarbon floating on groundwater. Using a float switch and innovative conductive polymer strip, the TSP-MWS identifies hydrocarbons anywhere along the length of the sensor.

| Model | Description |
|---|---|
| TSP-MWS-10 | Monitoring well Brite™ sensor, 10' |
| TSP-MWS-15 | Monitoring well Brite™ sensor, 15' |
| TSP-MWS-20 | Monitoring well Brite™ sensor, 20' |
| TSP-MWS-25 | Monitoring well Brite™ sensor, 25' |

Note: This sensor communicates with the console using 3 wires.

## Application
For use in dry monitoring wells.

## Advantages
- Detects vapour, gas and rising groundwater when installed in a monitoring well.
- Fail-safe digital communication with built-in alarm if sensor malfunctions.
- Senses ambient temperature to minimize false alarms.
- Equipped with twenty feet of oil-resistant cable for installation in 2" and 4" monitoring wells located around underground tanks.
- Senses vapour, gas and groundwater.
- Communicates with console from 775+ feet.
- Alarms to indicate sensor malfunction.

## Application
For use in wet monitoring wells.

## Advantages
- Unique alarms for the detection of hydrocarbons or decreased groundwater levels.
- Completely reusable even after several exposures to hydrocarbons.
- Available in four different lengths to accommodate well depth.
- Microcomputer within TSP-MWS detects presence of hydrocarbons and alerts Tank Sentinel® and fuel management system of alarm conditions via digitally-encoded information.

## Installation
- Normally installed in 4" groundwater monitoring wells.
- Integral well cap may be locked with standard padlock to prevent unauthorized access.

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## Application

Overfill protection switch.

## Theory of Operation

The secret to the TSP-HLS's reliability is its float switch technology. A small magnetically-activated reed switch is located inside the body of the sensor. Tiny magnets are positioned inside a lightweight float which is free to move up and down along the shaft so that the magnets are below the reed switch. When the sensor is immersed in liquid, the float rises and the magnet activates the reed switch, signalling the console that the high limit has been reached.

# TSP-HLS Level Sensor

The TSP-HLS level sensor is an overfill prevention switch which is compatible with all Tank Sentinel® and fuel management system consoles. This sensor is also compatible with S940 Sensor Alarm Console. It may be adjusted to operate over a wide range of levels. The TSP-HLS is based on float-switch technology and is made of chemical-resistant materials to assure compatibility with most liquids. Each sensor is supplied with jacketed cable five feet in length. The TSP-HLS's normally closed output circuit provides supervised operation, ensuring that broken wires and similar failures will not go undetected.

The TSP-HLS is installed in a 2" NPT fitting on the tank. The level at which it operates may be adjusted by loosening a fitting and moving the sensor's shaft in or out of the tank as required.

| Model | Description |
|---|---|
| TSP-HLS-15 | High product level sensor, 15" long, installed in tank |
| TSP-HLS-15/SS | High product level sensor, stainless steel 15" long, installed in tanks containing alternative fuels |
| TSP-HLS-30 | High product level sensor, 30" long, installed in tank |
| TSP-HLS-30/SS | High product level sensor, stainless steel 30" long, installed in tanks containing alternative fuels |

Note: This sensor communicates with the console using 2 wires.

# DC400 Dispensing Cutoff System

The DC400 Dispensing Cutoff System is a stand-alone, solid state two-part system which includes a controller and sensor, designed to automatically shut down product fl ow if liquid is detected inside containment spaces. Ideal for retrofi t applications, the DC400 allows for easy compliance with new and evolving regulations, without the added expenses of shutting down your site to break concrete for new conduit and wiring installation. The DC400 can be mounted inside any turbine sump to provide complete pump shut down or mounted directly into dispenser sumps, allowing only the effected dispenser to be shut down as liquid is detected.

## Application

• Containment sump liquid detection resulting in dispensing cutoff.

## Advantages

• Automatically stops fuel from dispensing in the event of liquid detection.

• Easily installed in either turbine or dispenser sumps.

• Ideal for retrofit applications as system connects to existing turbine or dispenser wiring, eliminating the need to pull new wires or break concrete.

## Installation

• Simply mount the 404-4 Controller inside any containment sump and connect it to the existing turbine or dispenser wiring. (Dispenser installations require an electrical junction box with an open conduit hub).

• Connect the liquid sensor using the supplied water tight splice kit. Suspend it so it is just touching the bottom of the containment sump.

## Specification

- 404-4 Controller is compatible with:
- S404 Liquid Sensor

Note: Previous versions of the 404-4, S406, and S404 are not compatible. Both the controller and sensor must be replaced if either requires it. Core credit available for legacy items.

- Dimensions:
  - 404-4 Controller: 6.6" x 6.2" x 3.2"
  - S404 Liquid Sensor: 1 1/2" x 3 1/2", 25' cable length
- 404-4 Input power: 90-250 VAC, 50/60 Hz, 0.25 A
- 404-4 Relay contacts: 12A, 2 hp @ 250 VAC, 12A, 1.5 hp @ 120 VAC
- Operating temperature: -4 to 140 °F (-20 to +60 °C)
- Enclosures: All sensors intrinsically safe, controller explosion proof
- Detection time: <1 second
- S404 sensor minimum detectable water limit: 0.98" (25 mm)

## Capabilities

- Cutoff power to submersible pumps or dispensers when liquid is detected in containment sumps.
- Automatic reset on liquid removal.

## Approvals

- UL - Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, Division 1, Group D Hazardous Locations
- CUL - Pending
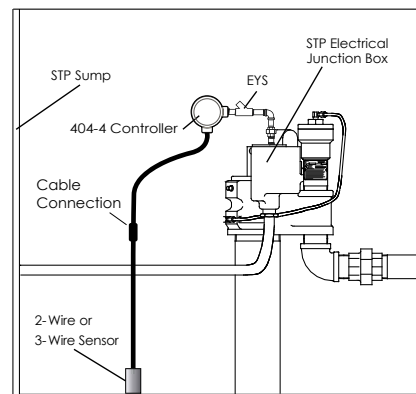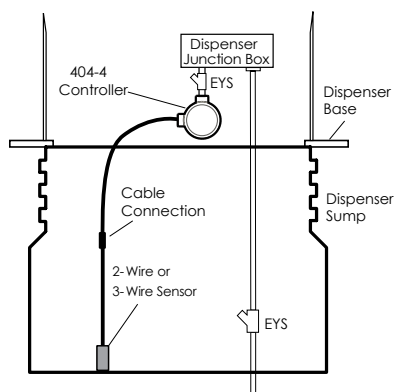


| Model | Description |
|---|---|
| DC404 | S404 liquid sensor and controller |
| TS-FE | FE Petro STP electric junction box adapter |
| TS-RJ | Red Jacket® STP electric junction box adapter |
| TS-RJQ | Red Jacket® Quantum STP electric junction box adapter |

Note: Electric junction box adapters for STP installations.

**Franklin Fueling Systems**

# TSP-K12 Interstitial Sensor Riser Cap Installation Kit

Installation kit for installing the TSP-DIS, TSP-EIS or TSP-ULS in dry interstitial spaces with 2" riser pipe openings.



| Model | Description |
|---|---|
| TSP-K12 | Interstitial sensor riser cap kit for 2" riser pipes |

### Advantages

• Supplied with a cord grip and butt splices for wiring connections.

• Easily installs into a two-inch riser pipe with a compression fit against the walls of the pipe.

• Provided with security holes that fit a padlock to prevent unauthorized access into the riser pipe.

# TSP-KV4 Hydrostatic Sensor Vented Riser Cap Installation Kit

Replacement vented installation kit for use with the TSP-HIS or TSP-HIS XL sensor installed in a 4" reservoir opening on double wall fiberglass tanks. One TSP-KV4 is already included with each TSP-HIS or TSP-HIS-XL.



| Model | Description |
|---|---|
| TSP-KV4 | Hydrostatic sensor vented riser cap kit for 4" riser pipes |

### Advantages

• The riser cap is compression fit into a 4" riser pipe via the use of a lever.

• Supplied with a cord grip and butt splices for wiring connections.

• Provided with security holes that fit a padlock to prevent unauthorized access into the riser pipe.

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## Advantages

• The interstitial/monitoring well cap is compression-fit into the riser pipe via the use of a lever.

• Supplied with a cord grip and butt splices for wiring connections.

• Provided with security holes that fit a padlock to prevent unauthorized access into the riser pipe.

# TSP-KW4 Interstitial/Monitoring Well Pipe Cap Installation Kit

Installation kit for installing sensors in a dry tank interstitial or monitoring well with a 4" riser.



| Model | Description |
|-------|-------------|
| TSP-KW4 | Interstitial/monitoring well pipe cap kit for 4" riser pipes |

# Sensor Installation Accessories

## Uni-Strut® Mounting Kit

Installation kit for installing the TSP-DDS and TSP-DTS in sump space.

| Model | Description |
|---|---|
| TSP-KS | Uni-Strut® mounting kit for TSP-DDS and TSP-DTS sensors |

## Sensor Installation Accessories

| Part Number | Description |
|---|---|
| TSP-DB1 | One direct burial splice connector kit |
| TSP-DB10 | Pack of 10 direct burial splice connector kits |
| TSP-DBTOOL | Epoxy dispensing tool |
| TSP-KW30 | Pack of 30 3M splice connectors |

Notes: 1. Use the TSP-DB1 or TSP-DB10 for direct burial cable applications or when weather proof junction boxes are not used.

2. The DBTOOL is required to dispense the epoxy.

3. Each direct burial splice connector kit includes a receptacle, three splice connectors and epoxy for the dispensing tool.

## Advantages

- Easily customized to fit virtually any sump by cutting the Uni-Strut® assembly to desired length.

- Provided with 2", 3" and 4" pipe clamps for mounting to sump piping.

- Sensor location easily adjusted by the unique sliding feature of the Uni-Strut® assembly.

## Advantages

• Pulsating light and piezoelectric buzzer warn of alarm conditions.

• Can be combined with TS-RK remote acknowledge unit to provide choice of alarm silencing options.

• Can be programmed through Franklin Fueling Systems Automatic Tank Gauges to activate in response to any type of alarm in the system.

• Alarms for overfill and general purpose.

## Installation

• Install within 1000 feet of console.

• Wiring: Type THHN, TFFN or THWN, 18 AWG or larger installed in conduits and completely separated from probe and sensor circuits.

• Operates directly from 110 VAC line power.

• For use in indoor/outdoor applications that have low background noise.

# TS-RA1 Remote Audible and Visible Alarm Unit

The TS-RA1 is a remote audible and visible alarm unit for use with Franklin Fueling Systems Automatic Tank Gauges.. The unit may be used as an overfill alarm as required by federal, state and local regulations, or as a general purpose remote alarm annunciator.



| Model | Description |
|-------|-------------|
| TS-RA1 | Standard intensity, tank overfill alarm with light and horn |
| TS-RK | Remote tank overfill alarm acknowledge unit |

Note: Only available in 110V 60 Hz

**Franklin Fueling Systems**

# TS-RA2 Remote Audible and Visible Alarm Unit

The TS-RA2 is a high intensity remote audible and visible alarm unit for use with Franklin Fueling Systems Automatic Tank Gauges.. The unit may be used as an overfill alarm as required by federal, state and local regulations, or as a general purpose remote alarm annunciator.



## Advantages

- Pulsating light and electromechanical buzzer warn of alarm conditions.
- Ideal for outdoor applications where a high intensity alarm is necessary.
- Can be combined with TS-RK remote acknowledge schemes.
- Has adjustable sound level with useful range of over 200 feet.

## Installation

- Install within 1000 feet of console.
- Wiring: Type THHN, TFFN or THWN, 18 AWG or larger installed in conduits and completely separated from probe and sensor circuits.
- Operates directly from 110 VAC line power.
- For use in indoor/outdoor applications that have high background noise.

| Model | Description |
|-------|-------------|
| TS-RA2 | High intensity, tank overfill alarm with light and horn |
| TS-RK | Remote tank overfill alarm acknowledge unit |

Note: Only available in 110V 60 Hz

## Advantages

• Locks or silences audible and visible alarms up to 1000 feet.

• Facilitates rapid response during emergencies in either indoor or outdoor locations.

• Can be combined with TS-RA1 or TS-RA2 remote alarm units to provide a choice of alarm silencing options.

• Housed in rugged, non-metallic NEMA 4X unit ideal for any weather condition.

## Installation

• Install within 1000 feet of console.

• Wiring: Type THHN, TFFN or THWN, 18 AWG or larger installed in conduits and completely separated from probe and sensor circuits.

• In conjunction with TS-RA1 or TS-RA2 and operates directly from 110 VAC line power.

# TS-RK Remote Alarm Acknowledge Unit

The TS-RK is a remote alarm acknowledge unit for use with all Franklin Fueling Systems Automatic Tank Gauges equipped with remote alarm annunciators.



| Model | Description |
|-------|-------------|
| TS-RK | Remote tank overfill alarm acknowledge unit |

Note: Only available in 110V 60 Hz

**Franklin Fueling Systems**

# TS-TPI Turbine Pump Interface

The TS-TPI turbine pump interface provides a communication link for FE Petro intelligent pump controllers to communicate faults to enabled devices. This link allows the INCON ATG to include the reporting of submersible pump conditions to a monitoring party or to the station operator. Also, by integrating the intelligence of these two systems, the ATG can keep the station pumping fuel without service calls during several events that normally would result in down time and lost fuel sales. The TS-TPI is a standard internal option on the fuel management system consoles, not available on the TS-750 or Colibri.

## System Requirements

TS-TPI integrated into TS-LS300 AutoLearn™ line leak detection console.

• INCON VS-1001 or TS-2001 ATG console with version 3.5 software or higher.
• INCON TS-LS300 line leak detection console.
• FE Petro smart controller model STP-SCI, STP-SCIII or MagVFC™.
• For remote communication capabilities, System Sentinel™ version 3.1 software or higher or System Sentinel AnyWare™ version 1.0 or higher.

For TS-TPI standalone option,

• INCON VS-1001 or TS-2001 ATG console with version 3.5 software or higher.
• TS-TPI module.
• FE Petro smart controller model STP-SCI, STP-SCIII or MagVFC™.

• For remote communication capabilities, System Sentinel™ version 3.1 software or higher, or System Sentinel AnyWare™ version 1.0 or higher.

### Configurations

• Standalone: TS-TPI turbine pump interface module.
• Included in AutoLearn™ TS-LS300: TS-TPI turbine pump interface module included in all TS-LS300 AutoLearn™ line leak detectors.

| Model | Description |
|---|---|
| TS-TPI | Turbine pump interface |

Note: Not available with the TS-750.

## Advantages

• Designed for use with the Tank Sentinel® console to perform key emergency functions, disable pumps, operate indicator lights, sound alarms and perform other control functions.

• Flexible configuration that energizes or de-energizes each channel's relay in response to an alarm or loss of power.

• Available in 4 and 8 channel configurations.

• Uses miniature electromechanical relays to switch external loads.

• Each TS-ROM2 output channel can switch a 3 Amp 120/240 VAC load.

## Installation

• Originally installed with Tank Sentinel® consoles, or can be added later.

• BriteBox™ mounted no further than 18" from Tank Sentinel® console.

• Wiring: ten conductor BriteBus™ ribbon cable run through ¾" flexible or rigid conduit connecting Tank Sentinel® console to BriteBox™ enclosure. TS-KB installation kit recommended.

• Wiring from the load circuits is connected to the field wiring terminal strip in the TS-ROM2.

# TS-ROM2 BriteBox™ Relay Output Module

The TS-ROM2 relay output module is a BriteBox™ expansion control module which may be used with the Tank Sentinel® console to perform control functions in response to alarm conditions. Not available on TS-750, fuel management system, or Colibri consoles.

| Model | Description |
|---|---|
| TS-ROM2/4 | Relay output module, 4 channel SPST |
| TS-ROM2/8 | Relay output module, 8 channel SPST |
| TS-KB | Installation kit |

Notes: 1. Up to four BriteBoxes™ can be connected to the console (two TS-SEMs, one TS-ROM2 and one TS-CIM1 can be connected).

2. One TS-ROM2 is typically used for positive pump shutdown when certain alarms occur.

3. Order one TS-KB install kit for each BriteBox™ (includes ribbon cable, flexible conduit and fittings).

4. Not available on TS-750, fuel management system, or Colibri consoles.

**Franklin Fueling Systems**

# TS-EPS Ethernet Port Server

The TS-EPS is a serial to Ethernet converter that allows Tank Sentinel® consoles
to be assigned an IP address.

| Model | Description |
|---|---|
| TS-EPS | Ethernet port enabling device for Tank Sentinel® consoles |
| TS-EPS-N | Ethernet port enabling device with null modem cable for other ATG systems. Not required with fuel management system or Colibri consoles. |

Note: The Ethernet port device allows remote access to tank gauge console through
an Ethernet IP address.

# External Console Hardware Accessory

**Waterproof Enclosure**
(not available on fuel management system consoles)

| Part Number | Description |
|---|---|
| TS-NEMA4X | NEMA 4 waterproof enclosure |

# System Sentinel™ Remote Fuel Management Software

System Sentinel™ is a powerful, versatile and easy-to-use remote fuel management software that can communicate with all major tank gauge brands.



## Specifications

- Microsoft Windows: 2000 or XP Professional editions, or Windows NT 2.0 or Windows 98.
- Pentium class processor: 33 MHz minimum.
- Minimum of 50 MB available hard drive space.
- Minimum of 32 MB RAM, 64 MB RAM with Windows XP.
- Display setting of 800 × 600 pixels with small font setting.
- Modem, Ethernet or serial connection.

## Applications

With its easy-to-use report interface, System Sentinel™ allows you to spend more time managing your business. System Sentinel™ generates a wide variety of reports that can be customized to meet your business needs. The report formats are easy to read and allow you to extract relevant data quickly and easily for intelligent decision making. Some available reports are:

- Alarm history.
- Delivery.
- Leak test detail.
- Tank test detail.
- Detail and summary inventory.
- Monthly, daily and shift reconciliation.
- Alarm status.
- Average daily usage.
- Cathodic protection.
- Regulatory with sensor status.

## Capabilities

- Allows remote access to all fuelling sites 24 hours a day.
- Inventory can be monitored as needed to precisely schedule deliveries.
- Monthly reconciliation and reconciliation summary reports allow for adjustments in delivery or sales volume data.
- Can monitor and report effectiveness of cathodic anti-corrosion devices.
- Communicates with all major tank gauge brands, no need to replace existing tank gauges.

## System Sentinel™ Interactive Tool Bar

System Sentinel™'s interactive tool bar lets you access your site data with a click of the mouse.
Each of the icons represents an important module of System Sentinel™.
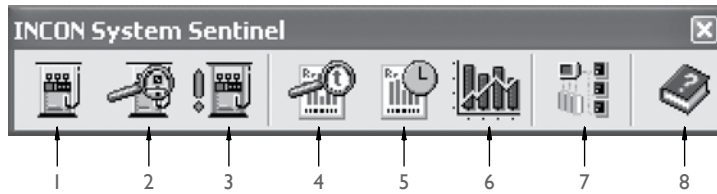


| Number | Module | Description |
|--------|--------|-------------|
| 1 | Site Sentinel | Allows you to set-up and store the programming of tank gauges at your sites |
| 2 | Site Watch | Enables and assigns the polling function |
| 3 | Site Alert | Monitors your sites and notifies you when any alarms occur |
| 4 | Report Sentinel | Queries the database and organizes the information into user-selected reports or data format |
| 5 | Report Scheduler | Allows you to schedule reports to be displayed, printed or faxed at predefined times |
| 6 | Site Director | Provides a single-screen view of the alarm status up to 25 sites simultaneously, as well as product usage, delivery forecasts and regulatory compliance status for management by exception |
| 7 | Database Administrator | Allows you to archive and/or purge the data in your database |
| 8 | Help | Provides online assistance when using the software |

## System Sentinel™ Tech Edition

A cost effective version of System Sentinel that includes all the programming and diagnostic
interface features used by technicians. (Site Sentinel, Report Sentinel, Database Administrator)

## Advantages

- Broad communication capabilities via modem, local or wide area networks, satellites, DSL, cable or other high-speed internet-based methods.

- Gathers specified data in a user-defined polling schedule or in real-time.

- Inventory can be monitored as needed to precisely schedule deliveries.

- Deliveries are forecast from current inventory usage rates.

- Provides centralized control of all compliance information such as tank and line leak testing data and leak detection sensor status.

- Access to information can be controlled for multiple users.

- A wide variety of reports can be custom-scheduled, displayed and printed or faxed at specific times.

- Communicates with all major tank gauge brands.

- Supports an unlimited number of sites.

- Offers immediate notification of alarms for corrective action.

# System Sentinel AnyWare™ Internet Enabled Fuel Management Software

System Sentinel AnyWare™ is an internet based fuel management package designed to provide you with unparalleled monitoring and control capabilities. Residing on a local server in your home office, System Sentinel AnyWare™ will allow your personnel to access site information through any web browser.



## Specifications

- Server:
  Microsoft Windows server operating system.
  933 MHz Pentium III with 512 MB of physical memory.
  100 MB for the application and 500 MB to 1 GB for the database disk space.
  Second processor will boost performance significantly.

- Third Party application:
  Microsoft Internet Server (IIS) web server.
  Microsoft SQL server.
  Seagate Crystal Reports server.

## Capabilities

- The powerful rules engine of the System Sentinel AnyWare™ allows you to manage by exception by automatically forwarding alarm, leak test and inventory information to the appropriate people when immediate attention is required.

- Capable of communicating to an unlimited number of sites using your WAN (wide area network) or a bank of multiple modems. System Sentinel AnyWare™ will quickly collect your site information and get it to you to help you run your business.

55

# Get Connected AnyWare™ Remote Polling Service

Get Connected AnyWare™ is a remote polling service from Franklin Fueling Systems that allows customers internet access to their sites from any web browser. Get Connected AnyWare™ acts as an application service provider of our powerful System Sentinel AnyWare™ software, allowing customers access to the application running on our servers at the Get Connected Data Centre. Through high speed Ethernet or modem dial-up communications, Get Connected AnyWare™ can communicate with ATGs and retrieve important fuel management, alarm and compliance data.

Site can be accessed at www.gcanyware.com. Log in using the user demo and password demo.
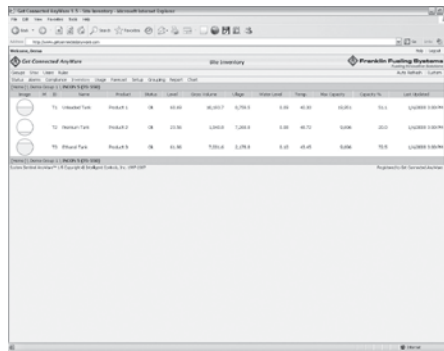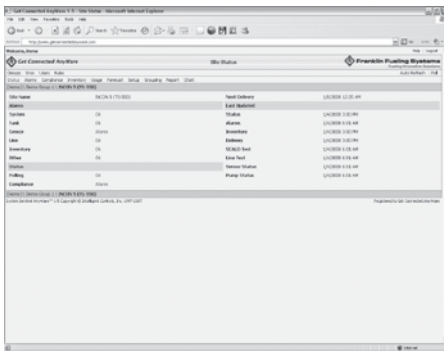


| Polling Options | |
|---|---|
| One poll | AM, All history poll |
| Two polls | PM, Alarms, inventory and latest delivery |
| Three polls | Late PM, Alarms, inventory and latest delivery |
| On-demand | Customer directed polling any time |

## Advantages

- E-mails or text messages are immediately sent upon receipt of an alarm notification from the console to help lower service costs, provide less downtime and help have a higher throughput.

- Automatically and reliably retrieves fuel management and compliance data from all sites to eliminate reporting errors, lost printouts and keep all data in one place. This frees up site personnel for other tasks.

- Hardware and software is maintained by FFS so there is no need to purchase, install or maintain a server to monitor your sites.

- Secure access to site data from anywhere so you can view data with immediate accuracy from your home, office or the road.

- Daily usage and delivery forecast tools help to accurately schedule fuel drops and eliminate running out.

- A wide variety of reports and date range options help generate various compliance, alarm and inventory reports.

- Centralized, secure compliance information makes all your sites accessible in minutes.

# Get Connected AnyWare™ Remote Polling Service

Monthly fee schedule per site based on ATG and connection type.  Data export and Data Archive services also available.

## Polling Service Details

Get Connected AnyWare™ hosts the server, the application (System Sentinel AnyWare™) and provides internet access to it. Online training and phone/e-mail support are available. Other details include:

• Ability to browse to the Get Connected AnyWare™ Web site from home, office, on the road or anywhere you have internet access.

• Customers can monitor their own sites and respond to alarms, compliance issues and perform fuel management.

• Rules can be created to send out e-mails and text messages on alarms and other events.

• All sites will be polled at least once daily and more frequent polling options are available.

• Get Connected AnyWare™ consists of an auto-renewing six month agreement that can be discontinued at any time with a 30-day notice.

## Receiving for High Speed Connections

Customers with an Ethernet connection can program their ATGs to contact Get Connected AnyWare™ on various alarms or events. Get Connected AnyWare™ will receive these transmissions and poll the site for new data. The new data will be applied to the current rules and e-mails will be generated if applicable.

## Support While Getting Connected

Franklin Fueling Systems will provide support in bringing online and troubleshooting communication with sites using Franklin Fueling Systems communications equipment. This includes the TS-EPS Ethernet port server, the TS-MLS multi-line phone switch and the TS-FM2 internal modem.

## Site Survey

If requested, Franklin Fueling Systems will recommend a distributor or service company in the customer's area to perform site surveys of the sites they wish to bring online.

## More Functions

Get Connected AnyWare™ will support connectivity to the following ATGs:

• INCON TS-5 Series (TS-5, TS-550, TS-5000, TS-EMS).

• INCON VS-1001 Series (VS-1001, TS-2001, VS-504, VS-508, TS-750).

• EBW Autostik (Bulkstik and Autostik Jr. version 3.905 or greater).

• Veeder-Root TLS-300, 350 and Gilbarco EMC Automatic Tank Gauges.

Connection can be established via Ethernet or internal modem. The Get Connected AnyWare™ data centre will store two years worth of data for each site and allow you to export your data. Data older than two years can be accessed with the data archive service.

## TS-5, TS-550, TS-5000, TS-EMS and TS-550 evo Consoles

| Part Number | Description |
|---|---|
| Common To All (TS-5 uses TSSP-PRB only) | |
| TSSP-10ARLY | Spare 6 output 10 amp relay module |
| TSSP-2WSNS | Spare 12 input 2-wire sensor module |
| TSSP-3WSNS | Spare 8 input 3-wire sensor module |
| TSSP-420IB | Spare 8 input 4-20ma module |
| TSSP-420EXP | Spare 8 input EXP 4-20ma module |
| TSSP-ACI | Spare 12 input AC input module |
| TSSP-IO | Spare input output module |
| TSSP-PRB | Spare 12 input probe module |
| TSSP-RLY | Spare 8 output relay module |
| TSSP-PS | Power supply module |
| TSSP-IPPTR | Impact printer assembly for TS-550,TS-5000 and TS-EMS (upgrade to thermal optional) |
| TSSP-TMPTR | Thermal printer assembly for TS-550,TS-5000,TS-EMS and TS-550 evo |
| TSSP-TRMBLK | Package of 10 assorted terminal blocks |
| TSSP-EXPPS | Expansion console power supply |
| TS-5/550/5000/ Only | |
| TSSP-CM | Spare controller module, fuel management system application only, no software options |
| TSSP-CM/R | Replacement controller module, factory programmed with required options |
| TSA-CMUPG | Upgrade kit for TSSP-CM in stock to add original options |
| TSSP-LCDIFB5x | LCD display and interface board kit for TS-550,TS-5000 |
| TSSP-T550MB | TS-550 motherboard (for use with TS-EMS also) |
| TSSP-T5000MB | TS-5000 motherboard |
| TSSP-SP5FUSE | Spare Fuse Kit |
| TS-5 Only | |
| TSSP-T5MB | TS-5 motherboard |
| TSSP-LCDIFB5 | LCD display and interface board kit for TS-5 |
| TS-EMS Only | |
| TSSP-CM/EMS | Spare controller module for TS-EMS, vapour recovery monitoring application only |
| TSSP-CM/EMSB | Spare controller module for TS-EMS (balance site), VRM (1.1) application only |
| TS-550 evo Only | |
| EVO-CM | Spare TS-550/5000 evo controller module, standard features only, no software options Spare TS-550/5000 evo controller module, standard features only, no software options |
| EVO-CM/R | Replacement TS-550 evo controller module, factory programmed with required options |
| EVO-CMUPG | Upgrade kit for EVO-CM in stock to add original options |
| EVO-LCD | Replacement colour LCD display |
| EVO-IFB | Replacement display/printer interface board |

Note: The serial number of the old CM must be provided when ordering the TSSP or EVO-CM/R. Provide the serial number of the old and new CM when ordering the TSA or EVO-CMUPG.

## Colibri Consoles

| Part Number | Description |
|---|---|
| CL-MBWD | Replacement main board/display |
| CL-MBWD/R | Replacement main board/display, factory programmed with required options |
| CL-MB | Replacement main board (no display systems) |
| CL-MB/R | Replacement main board (no display systems), factory programmed with required options |
| CL-CVRWD | Replacement cover with display opening |
| CL-CVR | Replacement cover without display opening |
| CL-MBUPG | Upgrade kit for CL-MBWD in stock to add original options |

Note: The serial number of the old main board must be provided when ordering the CL-MBWD/R. Provide the serial number of the old and new main boards when ordering the CL-MBUPG

## TS-504 and TS-750 Consoles

| Part Number | Description |
|---|---|
| TSSP-BAT | 3 Volt lithium battery |
| TSSP-DSP1 | Keypad/display PC board |
| TSSP-DSPKC1 | Display/keypad cable |
| TSSP-ENCLK | Enclosure lock and key |
| TSSP-PSTB4-SM | Surface mount probe/sensor terminal board, serial numbers 100000 and higher |
| TSSP-PTR | Printer assembly |
| TSSP-PTRC1 | Printer cable |
| TSSP-SMSB4 | Surface mount system PC board, 110 VAC, serial numbers 100000 and higher |
| TSSP-SPFUSE | Spare fuse kit |
| TSSP-SVKT4-SM | VS-504 and TS-750 service kit for surface mount boards* |
| VSSP-SMSB4 | Surface mount system PC board, 220 VAC, serial numbers 100000 and higher |

*TSSP-SVKT4-SM includes one of the following: TSSP-SMSB4, TSSP-DSP1, TSSP-PSTB4-SM, TSSP-PTR, TSSP-PTRC1, TSSP-DSPKC1, TSSP-SPFUSE, TSSP-ENCLK and TSSP-BAT.

Note:TSSP-MSB4 boards are no longer available. Order TSSP-SMSB4 main board and TSSP-PSTB4-SM terminal board as replacement.

## TS-508 Console

| Part Number | Description |
| --- | --- |
| TSSP-BAT | 3 Volt lithium battery |
| TSSP-DSP1 | Keypad/display PC board |
| TSSP-DSPKC1 | Display/keypad cable |
| TSSP-ENCLK | Enclosure lock and key |
| TSSP-PSTB8-SM | Surface mount probe/sensor terminal board, serial numbers 100000 and higher |
| TSSP-PTR | Printer assembly |
| TSSP-PTRC1 | Printer cable |
| TSSP-SMSB8 | Surface mount system PC board, 110 VAC, serial numbers 100000 and higher |
| TSSP-SPFUSE | Spare fuse kit |
| TSSP-SVKT8-SM | VS-508 service kit for surface mount boards* |
| VSSP-SMSB8 | Surface mount system PC board, 220 VAC, serial numbers 100000 and higher |

*TSSP-SVKT8-SM includes one of the following: TSSP-SMSB8, TSSP-DSP1, TSSP-PSTB8-SM, TSSP-PTR, TSSP-PTRC1, TSSP-DSPKC1, TSSP-SPFUSE, TSSP-ENCLK and TSSP-BAT.

Note:TSSP-MSB8 boards are no longer available. Order TSSP-SMSB8 main board and TSSP-PSTB8-SM terminal board as replacement.

## TS-1001 Console

| Part Number | Description |
| --- | --- |
| TSSP-BAT | 3 Volt lithium battery |
| TSSP-DSP1 | Keypad/display PC board |
| TSSP-DSPKC1 | Display/keypad cable |
| TSSP-ENCLK | Enclosure lock and key |
| TSSP-PSTB1-SM | Surface mount probe/sensor terminal board, serial numbers 100000 and higher |
| TSSP-PTR | Printer assembly |
| TSSP-PTRC1 | Printer cable |
| TSSP-SMSB4 | Surface mount system PC board, 110 VAC, serial numbers 100000 and higher |
| TSSP-SPFUSE | Spare fuse kit |
| TSSP-SVKT1-SM | VS-1001 service kit for surface mount boards |
| TSSP-T1KEY | Replacement key |
| VSSP-SMSB4 | Surface mount system PC board, 220 VAC, serial numbers 100000 and higher |

*TSSP-SVKT1-SM includes one of the following: TSSP-SMSB4, TSSP-DSP1, TSSP-PSTB1-SM, TSSP-PTR, TSSP-PTRC1, TSSP-DSPKC1, TSSP-SPFUSE, TSSP-ENCLK and TSSP-BAT.

Note:TSSP-MSB4 boards are no longer available. Order TSSP-SMSB4 main board and TSSP-PSTB1-SM terminal board as replacement.

## TS-2001 Console

| Part Number | Description |
| --- | --- |
| TSSP-BAT | 3 Volt lithium battery |
| TSSP-DSP2 | Keypad/display PC board |
| TSSP-DSPKC2 | Display/keypad cable |
| TSSP-ENCLK | Enclosure lock and key |
| TSSP-PSTB2-SM | Surface mount probe/sensor terminal board, serial numbers 100000 and higher |
| TSSP-PTR | Printer assembly |
| TSSP-PTRC2 | Printer cable |
| TSSP-SMSB8 | Surface mount system PC board, 110 VAC, serial numbers 100000 and higher |
| TSSP-SPFUSE | Spare fuse kit |
| TSSP-SVKT2-SM | TS-2001 service kit for surface mount boards* |
| VSSP-SMSB4 | Surface mount system PC board, 220 VAC, serial numbers 100000 and higher |

*TSSP-SVKT2-SM includes one of the following: TSSP-SMSB8, TSSP-DSP2, TSSP-PSTB2-SM, TSSP-PTR, TSSP-PTRC2, TSSP-DSPKC2, TSSP-SPFUSE, TSSP-ENCLK and TSSP-BAT.

Note:TSSP-MSB2 boards are no longer available. Order TSSP-SMSB8 main board and TSSP-PSTB2-SM terminal board as replacement.

## DC400

| Part Number | Description |
| --- | --- |
| 404-4 | Controller |
| 404-4C | Controller for Canadian applications |
| S404 | Float switch sensor |

Note: Replacement parts not compatible with legacy DC400 systems. Both controller and sensor must be replaced. Order DC404 system to replace legacy components.

## TS-LS300

| Part Number | Description |
|---|---|
| 600-0080 | Transducer quick disconnect cable |
| TS-ALCAL | 3.0 gph calibration kit |
| TS-ALFUSE | AutoLearn™ fuse kit |
| TS-AFALNIP | Alternative fuels needle valve kit |
| TS-ALNIP | Needle valve kit |
| TS-LSU300 | Intrinsically safe pressure transducer |
| TS-LSU300E | Explosion proof pressure transducer |
| TSSP-ALDB2 | 2-line display board |
| TSSP-ALDB4 | 4-line display board |
| TSSP-ALMB2 | 2-line intrinsically safe main board, 110 VAC |
| TSSP-ALMB2E | 2-line explosion proof main board, 110 VAC |
| TSSP-ALMB4 | 4-line intrinsically safe main board 110 VAC |
| TSSP-ALMB4E | 4-line explosion proof main board 110 VAC |
| TSSP-ALPTRC | Ribbon cable, display board to main board |
| TSSP-ALTPI | TPI turbine pump interface board |
| VSSP-ALMB2 | 2-line I/S main board, 220 VAC |
| VSSP-ALMB4 | 4-line I/S main board, 220 VAC |

## TS-LS500

| Part Number | Description |
|---|---|
| 600-0080 | Transducer quick disconnect cable |
| TS-ALCAL | 3.0 gph calibration kit |
| TS-AFALNIP | Alternative fuels needle valve kit |
| TS-ALNIP | Needle and valve kit |
| TS-LSU500 | Intrinsically safe 4-20 mA pressure transducer |
| TS-LSU500E | Explosion proof 4-20 mA pressure transducer |

## Accessories

| Part Number | Description |
|---|---|
| 430-0033 | 3 amp fuse for TS-ROM2/4 or /8 |
| TSP-ENCD | Replacement encoder for TS-VFM |

# Contact Information

**Franklin Fueling Systems**

If you wish to contact us about any of our products or services please contact the nearest Franklin Fueling Systems office.

For a list of local contacts please visit franklinfueling.com for more information.

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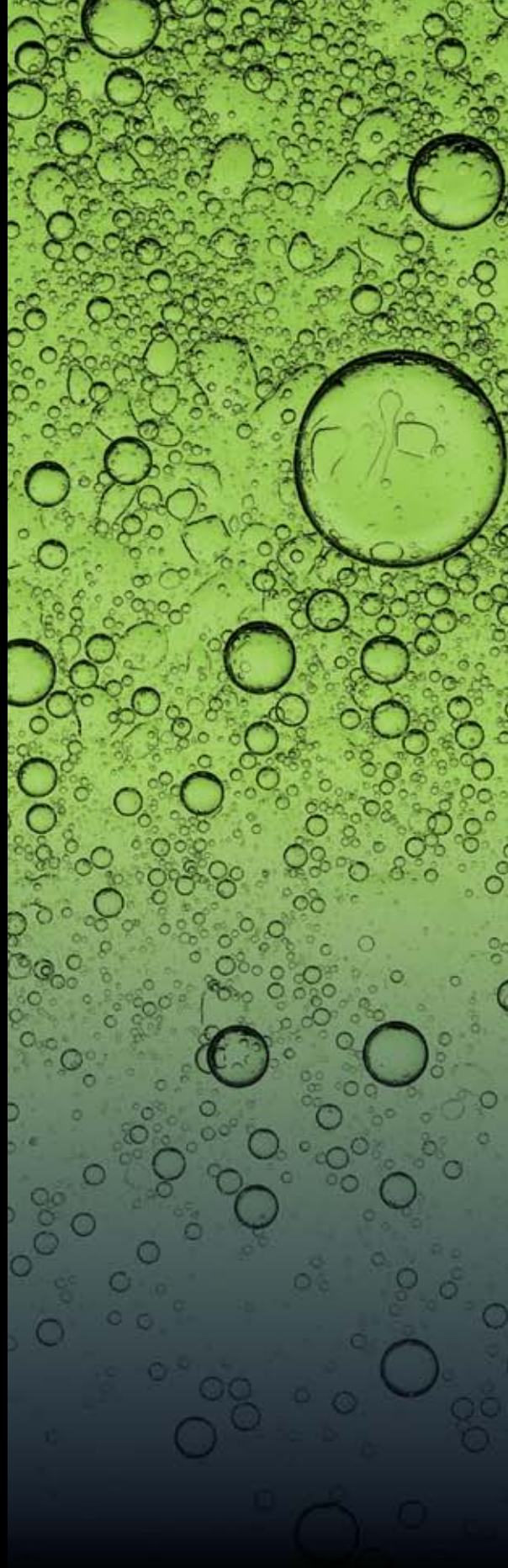
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**PEI** MEMBER

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FFS-0220 FMS 03-14
Global Product Catalogue