



Franklin Electric
FUELING SYSTEMS

EVO™ SERIES ELECTRONIC LINE LEAK DETECTION

EVO™ Series Electronic Line Leak Detection (ELLD) is designed to provide early detection of leaks in pressurized fuel lines. The system features automatic submersible pump shutdown in the event of a leak, minimizing the risks of costly spills and environmental cleanup. This pressure-based system utilizes learned line characteristics learned to monitor for changes in pressure to declare the line as tight or determine if a leak is present.

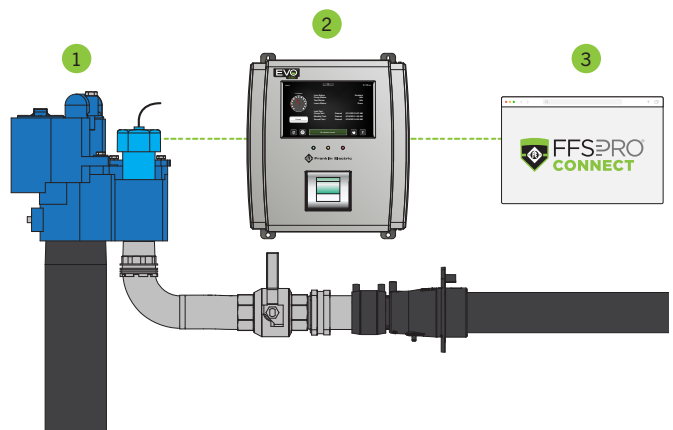
HIGHLIGHTS

- Optional software feature of EVO™ 600 and EVO™ 6000.
- Utilizes pressure transducer installed in the submersible pump.
- Compatible with submersible pumps generating 25 psi or more.
- Automatically learns the pressure characteristics of each line.
- Automated 3 gph (11 lph), 0.2 gph (0.8 lph), and 0.1 gph (0.4 lph) compliance testing.
- Performs a 3 gph leak and pressure test after every dispense cycle or 45 min. Positive shutdown of the pump on test failure.
- Performs a 0.2 gph monthly and 0.1 gph annual precision leak test during the thermally stable periods of dispensing. Optional positive shutdown of the pump on test failure.
- Positive pump shutdown in the event of a gross leak (can be disabled for generator applications), optional for monthly and annual precision testing.
- Performs pressure up, catch pressure, other additional checks.
- Compatible with flexible, steel, fiberglass, or combination of pipe.
- Remote access to line pressure, test, and alarm information.
- Dispenser Hook Isolation (DHI) and Turbine Pump Interface™ (TPI) pump control options.
- EVO™ leverages AUTO-LEARN® technology to automatically program the unique pressure characteristics of each pipework system. This ensures precise, customized leak detection, reducing the risk of false alarms and enhancing overall system accuracy.
- With Statistical Line Leak Detection (SLLD), EVO™ allows sites with constant fuel flow to perform 0.2 gph leak testing even during peak operation. This is ideal for busy fuel stations where quiet periods are rare, ensuring continuous compliance without disrupting operations.
- EVO™ streamlines the regulatory process by automating 3 gph, 0.2 gph, and 0.1 gph line leak detection compliance testing. This feature ensures that your system meets environmental standards effortlessly, with the EVO™ automatically performing the necessary tests at regular intervals.

SPECIFICATIONS

Operation

- 1 The EVO™ Pressure Transducer is typically installed in the leak detector port of the submersible pump manifold. During the AUTO-LEARN® setup process, EVO™ learns the pressure decay curve characteristics of a calibrated leak.
- 2 During non-pumping periods, the EVO™ will conduct line leak testing by comparing the line pressure changes to those learned during the AUTO-LEARN® process. A deviation in pressure, such as a drop beyond predefined thresholds, will be declared as a leak and shut down the associated submersible pump.
- 3 With declaration of a leak, the system will notify the operator via the EVO™ display with additional email or SMS notification through the FFS PRO® Connect Web Browser Interface.



SPECIFICATIONS CONTINUED

Pressure Transducer

| | |
|----------------------------|--|
| Dimensions | 4" x 2" NPT |
| Operating temperature | -40° F to 149° F (-40° C to 66° C) |
| Operating pressure | 0 to 100 psi (0 to 689 kPa) |
| Sensor port fitting | 2" female NPT |
| Sensor material | Anodized aluminum body and stainless steel sensor |
| Approvals / Certifications | - UL, cUL, ATEX, IECEx - Third party certification of leak detection capabilities |

Minimum Pressure Requirements

| Item | Value |
|---------------------------|--|
| Minimum Pump Off Pressure | 15 psi (1.034 bar) for gross 3.0 gph (11.4 lph) hourly tests |
| | 17.5 psi (1.207 bar) for monthly 0.2 gph (0.8 lph) precision tests |
| | 22.5 psi (1.551 bar) for annual 0.1 gph (0.4 lph) precision tests |
| | 20 psi (1.379 bar) for learning lines |

Line Volume Requirements - Gross Test

| Pipework System | Gallons | Liters |
|------------------------------------|---------------|--------------|
| Rigid / hybrid (rigid + flexible)* | 2.5 – 1202.02 | 9.5 – 2359.1 |
| UPP® pipework (semi-rigid) | 2.5 – 623.2 | 9.5 – 1185.5 |
| APT® XP pipework (flexible) | 2.5 – 313.17 | 9.5 – 4550.1 |

* To be considered hybrid, the bulk modulus of the line must be at a minimum of 20,000 psi for gross tests.

Line Volume Requirements - Precision Test

| Pipework System | Gallons | Liters |
|------------------------------------|--------------|--------------|
| Rigid / hybrid (rigid + flexible)* | 2.5 – 559.02 | 9.5 – 2116.1 |
| UPP® pipework (semi-rigid) | 2.5 – 161.46 | 9.5 – 611.2 |
| APT® XP pipework (flexible) | 2.5 – 81.19 | 9.5 – 307.3 |

* To be considered hybrid, the bulk modulus of the line must be at a minimum of 35,000 psi for precision tests.

ORDERING INFORMATION

Site Requirements

- EVO™ 600/6000
- TS-ELLD software option (TS-ELLD-G software option for generator-specific applications)
- TS-ACI, TS-420IB, *TS-RLY Modules

* TS-RLY Module is not required when utilizing Turbine Pump Interface™ (TPI) communications. Franklin Electric intelligent pump controllers required for TPI.

EVO™ Series Electronic Line Leak Detection Kits

| Model | Description |
|-------------|---|
| FMP-LS500/1 | 1-line ELLD kit, includes (1) pressure transducer, (1) leak generator kit (TS-ALCAL), (1) needle valve kit (TS-ALNIP) |
| FMP-LS500/2 | 2-line ELLD kit, includes (2) pressure transducer, (1) leak generator kit (TS-ALCAL), (2) needle valve kit (TS-ALNIP) |
| FMP-LS500/3 | 3-line ELLD kit, includes (3) pressure transducer, (1) leak generator kit (TS-ALCAL), (3) needle valve kit (TS-ALNIP) |
| FMP-LS500/4 | 4-line ELLD kit, includes (4) pressure transducer, (1) leak generator kit (TS-ALCAL), (4) needle valve kit (TS-ALNIP) |
| FMP-LSU500 | Replacement pressure transducer |
| TS-ALCAL | Leak generator kit |
| TS-ALNIP | Needle valve kit for standard fuels |
| TS-AFALNIP | Needle valve kit for E85 fuel |

EXPLOSION-PROOF TRANSDUCERS

For sites without intrinsically-safe conduits available, explosion-proof transducers may be used that share the conduit of pump wiring.

SPECIFICATIONS

Pressure Transducer

| | |
|----------------------------|--|
| Dimensions | 6 1/4" x 2" NPT |
| Operating temperature | -40° F to 149° F (-40° C to 66° C) |
| Operating pressure | 0 to 100 psi (0 to 689 kPa) |
| Sensor port fitting | 2" female NPT |
| Sensor material | Anodized aluminum body and stainless steel sensor |
| Approvals / Certifications | - UL, cUL, ATEX, IECEx - Third party certification of leak detection capabilities |

Minimum Pressure Requirements

| Item | Value |
|-------------------------|--|
| Minimum Static Pressure | 15 psi (1.034 bar) for gross 3.0 gph (11.4 lph) hourly tests |
| | 17.5 psi (1.207 bar) for monthly 0.2 gph (0.8 lph) precision tests |
| | 22.5 psi (1.551 bar) for annual 0.1 gph (0.4 lph) precision tests |
| | 20 psi (1.379 bar) for learning lines |

Pipe Length Requirements

| Pipe Diameter ID (in/cm) | Rigid (ft) | Rigid (m) | Flexible (ft) | Flexible (m) | Hybrid* (ft) | Hybrid* (m) | UPP® (ft) | UPP® (m) |
|--------------------------|------------|-----------|---------------|--------------|--------------|-------------|-----------|-----------|
| 1.0 (2.5) | 62 – 7651 | 19 – 2332 | 62 – 2338 | 19 – 712 | 62 – 10191 | 19 – 3106 | 62 – 4313 | 19 – 1314 |
| 1.5 (3.8) | 28 – 3400 | 9 – 1037 | 28 – 1039 | 9 – 316 | 28 – 4529 | 9 – 1380 | 28 – 1917 | 9 – 584 |
| 1.75 (4.4) | 21 – 2498 | 7 – 762 | 21 – 763 | 7 – 232 | 21 – 3327 | 7 – 1014 | 21 – 1408 | 7 – 429 |
| 2.0 (5.1) | 16 – 1912 | 5 – 583 | 16 – 584 | 5 – 178 | 16 – 2547 | 5 – 776 | 16 – 1078 | 5 – 328 |
| 2.5 (6.4) | 10 – 1224 | 4 – 374 | 10 – 374 | 4 – 113 | 10 – 1630 | 4 – 496 | 10 – 690 | 4 – 210 |
| 3.0 (7.6) | 7 – 850 | 3 – 260 | 7 – 259 | 3 – 78 | 7 – 1132 | 3 – 345 | 7 – 479 | 3 – 145 |
| 4.0 (10.2) | 4 – 478 | 2 – 146 | 4 – 146 | 2 – 44 | 4 – 636 | 2 – 193 | 4 – 269 | 2 – 81 |
| 5.0 (12.7) | 3 – 306 | 1 – 94 | 3 – 93 | 1 – 28 | 3 – 407 | 1 – 124 | 3 – 172 | 1 – 52 |

Line Volume Requirements - Gross Test

| Pipework System | Gallons | Liters |
|-------------------|-------------|--------------|
| Rigid pipework | 2.5 – 312.2 | 9.5 – 1181.9 |
| Flexible pipework | 2.5 – 95.4 | 9.5 – 361.1 |
| Hybrid pipework* | 2.5 – 415.8 | 9.5 – 1574.0 |
| UPP® pipework | 2.5 – 176.0 | 9.5 – 666.2 |

* The capacity of the flexible component cannot exceed 95.4 gallons (361.1 liters)

ORDERING INFORMATION

Site Requirements

- EVO™ 550/5000 or EVO™ 600/6000
- TS-ELLD software options (TS-ELLD-G software option for generator-specific applications)
- TS-ACI, TS-420EXP, *TS-RLY Modules

* TS-RLY Module is not required when utilizing Turbine Pump Interface™ (TPI) communications. Franklin Electric intelligent pump controllers required for TPI.

EVO™ Series Explosion-Proof Electronic Line Leak Detection Kits

| Model | Description |
|-------------|---|
| TS-LS500E/2 | 2-line ELLD kit, includes (2) pressure transducer, (1) leak generator kit (TS-ALCAL), (2) needle valve kit (TS-ALNIP) |
| TS-LS500E/3 | 3-line ELLD kit, includes (3) pressure transducer, (1) leak generator kit (TS-ALCAL), (3) needle valve kit (TS-ALNIP) |
| TS-LS500E/4 | 4-line ELLD kit, includes (4) pressure transducer, (1) leak generator kit (TS-ALCAL), (4) needle valve kit (TS-ALNIP) |
| TS-AFALNIP | Needle valve kit for E85 fuel |