



Flow or Leak Detection In Nuclear Power Plants With Accurate, Reliable FLT93 FlexSwitch

*Ideal for Flood Alarm, Condensate Pot Level, Turbine Water Level,
Pump Protection, Reactor Core Coolant, Level Interface Detection & Temperature*

San Marcos, CA — Process and plant engineers responsible for nuclear power plants who need various alarms and indicators for use in liquid, air, gas, or for interface service will find the [FLT93 Series FlexSwitch®](#) from [Fluid Components International \(FCI\)](#) provides a highly reliable solution.

The FCI FLT93 FlexSwitch provides dependable critical equipment protection and plant integrity validation that makes it Ideal for use in a wide range of nuclear power plant flow, level and temperature measurement applications. Applications include: reactor core coolant, level interface detection and temperature, pump protection, flood alarm, condensate pot level and turbine water level. It is ideal in any application where the measurement of both flow and temperature or level and temperature are important.

A single sensor design provides dual measuring functions with the FLT93 FlexSwitch. It helps nuclear plant operations save weight, space and costs over two or more discrete sensors. Operators also realize reduced qualification installation costs and complexity. It is the industry's most advanced heavy-duty thermal dispersion technology flow/ level switch in the world. Its multi-parameter measurement design is based on more than 55 years of flow and level switch engineering and application experience, providing a rugged long-life instrument.

The original FCI Models 12-64 and FR72 were installed when the first commercial nuclear power plants were built and are just now being replaced by the FLT93 Series. They have survived the initial operating licenses and now are being replaced due to the extensions being granted.

The FLT93 FlexSwitch has been tested to IEEE 323-1983 and IEEE 344-1987, making it fully qualified for Class 1E safety related nuclear power plant applications. FCI maintains a 10CFR50 Appendix B Quality Assurance Program and complies with 10CFR21 and ANSI-N45-2. Both the insertion and in-line sensor versions are qualified for a 40-year life at 150°F. The FLT93 sensor is qualified to radiation levels of 2x10⁸ rads. The FLT93 electronics are qualified to 5x10⁵ rads for applications requiring an integral unit (sensor and electronics).



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As a dual-function instrument, the FLT93 FlexSwitch can be configured for flow or level sensing, flow + temperature sensing or level + temperature sensing. A single FLT measures and monitors flow or level and temperature simultaneously with excellent accuracy and reliability. Dual trip points and 6A relay outputs are standard and are assignable to flow, level or temperature.

FCI's unique sensor technology when combined with its FlexSwitch temperature compensation circuitry provides users with unparalleled performance capabilities: It operates at a low process temperature range of -40 to 250°F [-40 to 121°C], a high temperature range of -40 to 455°F [-40 to 235°C], a process pressure rating of 2000 psig, and accuracy of $\pm 5\%$ of reading on flow.

In water, the sensing element set point range is up to 0.01 to 3.0 sfps [0.003 to 0.09 smps], 3.0 watt heater power, depending on the specific model configuration. In hydrocarbon-based liquids, the sensing element set point range is up to 0.01 to 5.0 sfps [0.003 to 1.5 smps], 3.0 Watt heater power, depending on the specific model configuration. In gases, the sensing element set point range is 0.25 to 120 sfps [0.076 to 37 smps].

A wide selection of standard and custom process connections can be provided. The electronic control circuit can be integrally-mounted with the sensing element, or it can be located in a remote location. The standard enclosure is a coated aluminum alloy. It can be used in ATEX locations and is rated for NEMA Type 4X (IP66) environments.

Recognized for its reliable, long-life products, FCI has been a Continuous Class 1E Supplier to the nuclear power industry since 1978. Today it has more than 30 applications operational in 115 nuclear power plants worldwide. The company is qualified to IEEE 323 and 344, certified to ISO 9001 and NUPIC audited and approved.

Extensively tested, this switch meets the requirements of MIL-STD-461 and EN/IEC61000 and is completely analog. FCI is the only manufacturer of thermal dispersion technology flow meters, flow switches, level switches and level gauges accredited for both nuclear safety related and balance-of-plant applications.

Fluid Components International is a global company committed to meeting the needs of its customers through innovative solutions to the most challenging requirements for sensing, measuring and controlling flow and level of air, gases and liquids.