

SIL DECLARATION OF CONFORMITY Model FLT93 SERIES with Surface Mount Components

We, *Fluid Components International LLC*, located at 1755 La Costa Meadows Drive, San Marcos, California 92078 USA, declare as manufacturer, that the *FLT93 Series* is suitable for use in a safety instrumented system for SIL 2 as High and Low Flow alarming device and as High and Low level alarming device.

The FLT93 Series has been classified as Type A subsystem according to IEC 61508-1 Chapter 7.4.3.1.2 with a Hardware tolerance (HFT) of 0.

The Failure Modes, Effects and Diagnostic Analysis (FMEDA) report carried out by notified body TUV Nord Cert GmbH, resulted in following failure ratings:

SIL (Safety Integrity Level) : 2
 HFT (Hardware Fault Tolerance) : 0
 Subsystem type : A

Failure rates according to IEC 61508-1


Function	SFF	PFD	λ_{DU}	λ_{DD}	λ_{SU}	λ_{SD}
Low Level/Flow	84 %	1.43×10^{-3}	326 FIT	178 FIT	1170 FIT	354 FIT
High Level/Flow	82 %	1.63×10^{-3}	371 FIT	116 FIT	1120 FIT	417 FIT

Terminology:

SFF = Safe Failure fraction
 PFD = Probability of failure on demand
 λ_{DU} = failure rate dangerous undetected faults
 λ_{DD} = failure rate dangerous detected faults
 λ_{SU} = failure rate safe undetected faults
 λ_{SD} = failure rate safe detected faults
 FIT = Failure Rate in 10^{-9} /hour

Above analysis is based on assuming:

- At a single point in time only one component fails.
- Failure rates are constant, mechanism wear is not included.
- Propagation of failures is not relevant.
- The stress levels are average for the industrial environment.
- External power supply failures are excluded.
- Mis-wired terminals are excluded.
- Set point potentiometers are adjusted according to manufacturer’s specification.
- Operation point of the internal “ ΔV sig1” is between 0.5 and 7.0 volts.
- Electronics must be in manufacturer’s standard enclosures.
- After use of the calibration potentiometer, it is turned to the maximum value to guarantee random switching of the “cal switch” leads to a failsafe state.
- J22 is open.


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