

## 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	$\lambda_{DU}$	$\lambda_{DD}$	$\lambda_{SU}$	$\lambda_{SD}$
Low Level/Flow	84 %	$1.43 \times 10^{-3}$	326 FIT	178 FIT	1170 FIT	354 FIT
High Level/Flow	82 %	$1.63 \times 10^{-3}$	371 FIT	116 FIT	1120 FIT	417 FIT

Terminology:

SFF = Safe Failure fraction  
 PFD = Probability of failure on demand  
 $\lambda_{DU}$  = failure rate dangerous undetected faults  
 $\lambda_{DD}$  = failure rate dangerous detected faults  
 $\lambda_{SU}$  = failure rate safe undetected faults  
 $\lambda_{SD}$  = 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 “ $\Delta V$  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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