



FIRE AND GAS DETECTION SOLUTIONS

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DECLARATION OF CONFORMITY

Detector Electronics Corporation certifies that the Model PIRECL Series Eclipse Infrared Hydrocarbon Gas Detector has the following diagnostic coverage factors as determined by calculation per IEC 61508 by exida.com LLC. The Model PIRECL is a Type B safety-related subsystem device and meets the architectural constraints as described in IEC 61508-2:2000, Table 3, for use in a SIL 2 safety instrumented function with a hardware fault tolerance of 0.

Eclipse 4-20mA output

Scope is the Detectors optics to the electronic output.

Safe Failure Fraction = 92.8%

$\lambda^H = 17 * 10^{-9}$ failures per hour (classified as SD when logic solver programmed to detect over current)

$\lambda^L = 635 * 10^{-9}$ failures per hour (classified as DD when logic solver programmed to detect under current)

$\lambda^{SU} = 0 * 10^{-9}$ failures per hour

$\lambda^{DU} = 73 * 10^{-9}$ failures per hour

$\lambda_{No\ effect} = 284 * 10^{-9}$ failures per hour (classified as safe per IEC 61508 definition but will not false trip)

A user of the Model PIRECL Series gas detector can utilize these failure rates in a probabilistic model of a Safety Instrumented Function (SIF) to determine suitability in part for Safety Instrumented System (SIS) usage in a particular Safety Integrity Level (SIL).

References:

IEC 61508: Functional safety of electrical/electronic/programmable electronic safety-related systems.

exida.com LLC: fmeda detronics eclipse_V112

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