

## SIL LEVEL 1, 2 & 3 (IEC61508)

We can help you meet SIL level 1, 2 & 3 requirement with our products. The instruments that we manufacture are based on analogue techniques, no software, and no microprocessors. The Amelec is a component part in a safety loop. The standard IEC8372: :2032 details the permitted failures rates of the components in the loop necessary to meet the requirements of a particular SIL level for a given safety loop. The instruments from Amelec are type A components, namely.

- The failure modes of all constituent components are well defined.
- The behaviour of the subsystem under fault conditions can be completely determined;
- There is sufficient dependable failure data from field experience to show that the claimed rates of failure for detected and undetected dangerous failures are met.

We would supply information on our product to support the safety case for the loop(s). The numbers would be generated for the particular fault conditions that you are looking /monitoring for. Following are two typical examples.

### Example 1:

Model ADT132X Trip Amplifier with two set points, Input: 4-20mA, Set point 1: High, Set point 2:Low and primary supply of 24Vdc. Both relays configured to de-energise on Alarm/Trip/Input open circuit/Loss of power.

#### Reliability data:

**Parts count failure rate:** 1.731 per million hours

**MTBF:** 65.94 years

**FMEA failure rate:** 0.578 per million hours

**MTBF:** 197.4 years

**Diagnostic cover:** 54.87%

**Safe failure Fraction:** 84.92%

**PFD :** 5.73E-04\* (See note below)

**SIL level:** 1, 2 & 3\* (See note below)

\*Above data for the ADT132X is generated based on one calibration check per year and the mean time to repair a unit is eight hours. A PFD value of 5.73E-04 gives a risk reduction of approximately 1700, in accordance with IEC61508 the instrument when correctly installed can be used in a SIL 1 "qt"2"tcvgf "uchgv "tqqr "3qq3"ctej kgewtg+0C"UKN"5"tcvgf "cr r rlecvkqp"y qwrf " tgs wktg"3qq4"ctej kgewtg0

### Example 2:

Model ADM220X RTD Resistance input signal conditioner, Input: 0-100C BS1904 three wire RTD, Output: 4-20mA Isolated and primary supply of 115Vac. Output drives down scale (<3.5mA) on input open circuit and loss of power.

#### Reliability data:

**Parts count failure rate:** 0.666 per million hours

**MTBF:** 171.5 years

**FMEA failure rate:** 0.389 per million hours

**MTBF:** 293.4 years

**Diagnostic cover:** 37.05%,

**Safe failure Fraction:** 63.2%

**PFD :** 5.38E-04\* (See note below)

**SIL level:** 1, 2 & 3\* (See note below)

\*Above data for the ADM220X is generated based on one calibration check per year and the mean time to repair a unit is eight hours. A PFD value of 5.38E-04 gives a risk reduction of approximately 1855, in accordance with IEC61508 the instrument when correctly installed can be used in a SIL 1 "c"UKN"3"qt"4"tcvgf "uchgv "tqqr "3qq3"ctej kgewtg+0C"UKN"5"tcvgf "cr r rlecvkqp"y qwrf "tgs wktg"3qq4"ctej kgewtg.

Above examples represent just two typical applications, we can provide reliability data for most of our product range. We have over 30 years of experience in the field of Signal Conditioning / Process Control Instrumentation, with this we can be confident that we can assist you in meeting your SIL requirement with our products.

For more information and/or to discuss your application, please contact our technical sales staff at the factory in Milton Keynes.

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