



ENGINEERING SAFETY CONSULTANTS

The Global Provider of Functional Safety Expertise and Technical Consultancy

Certificate of Conformity to IEC 61508 Safety Integrity Level (SIL) 2 in Terms of Random Hardware Performance Requirements

Functional Safety of Safety-Related Programmable Electronic Systems

The **Hochiki Europe (UK) Ltd. CHQ-PCM(SCI), CHQ-PCM/DIN(SCI), CHQ-DIM2(SCI), CHQ-DIM2/DIN(SCI), CHQ-DRC2(SCI) and CHQ-DRC2/DIN(SCI)** have been assessed and are considered capable for use in a low demand Safety Function up to SIL 2 with regard to random failure rates and architectural constraints (these products include PCB's at rev A). The assessments were based on the assumptions, data provided and recommendations given in:

ESC Ltd report D134_SV001 rev.2.

The products were assessed against the following failure modes:

- Failure to send valid signal to controller when end device impedance is between 200 Ω and 1000 Ω ;
- Failure to initiate a valid output command when requested.

The products assessed include the following results:

- SIL 2 SIF suitable – CHQ-PCM(SCI), CHQ-PCM/DIN(SCI), CHQ-DRC2(SCI) and CHQ-DRC2/DIN(SCI) with simplex input and/or duplex output module configuration;
- SIL 2 SIF suitable – CHQ-PCM(SCI), CHQ-PCM/DIN(SCI), CHQ-DRC2(SCI) and CHQ-DRC2/DIN(SCI) with only input;
- SIL 1 SIF suitable – CHQ-PCM(SCI), CHQ-PCM/DIN(SCI), CHQ-DRC2(SCI) and CHQ-DRC2/DIN(SCI) simplex output module configuration;
- SIL 2 SIF suitable – CHQ-PCM(SCI), CHQ-PCM/DIN(SCI), CHQ-DRC2(SCI) and CHQ-DRC2/DIN(SCI) with duplex output module configuration;
- SIL 2 SIF suitable – CHQ-DIM2(SCI) and CHQ-DIM2/DIN (SCI).

The assessments were carried out to determine compliance with IEC 61508 with regards to:

- Random Hardware Failures with Predicted PFD <1.0 E-3 (assuming a 1 year proof test and average repair time of 168 hrs);
- Architectural Constraints:
 - Input Block, Type A, SFF >90%, <99%;
 - Main Processor Block, Type B, SFF >90%, <99%;
 - Simplex Output Block, Type A, SFF >0%, <60%.

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Member of the IEC61508 committee

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