

SAFETY ASSESSMENT CERTIFICATE

According to CENELEC Standards

Inspection body	Eurofins Electric & Electronics Finland Oy
Certificate holder / manufacturer	Halton Marine Oy
Product / system and version	The following pneumatic and electrical fire dampers: FCE, FDA, FDB2, FDH, FDL and FDO fire dampers, UTA, UTG and UTP dampers
Basis of the assessment	IEC 61508-2:2020, EN ISO 13849-1:2015
Assessment report *	EUFI29-21005516-I1
Assessment result **	Complies maximum SIL 2 with electrical actuation according to IEC 61508-2:2010 (See Table 1) and maximum PL d with pneumatic actuation according to EN ISO 13849-1:2015 (See Table 2). Conditions mentioned in the assessment report EUFI29-21005516-I1 shall be considered.
Validity	Valid only for products mentioned in section "Product / system and version".
Safety Related Application Conditions / Restrictions	Safety manual for fire dampers / dampers mentioned in section "Product / system and version" shall be updated and finished relating to product types / versions and their safety properties. Safety functionality of fire dampers shall be tested at least monthly.
Certificate No.	EUFI29-21005516-C1

*) Assessment report is an integral part of the certificate

**) The assessment result is justified in detail in the assessment report

Tampere, 12 September 2022

Table 1.

Safety Function	To close the controlled damper via electrical actuation.	Maximum SIL	Notes
Architectural constraints	Type A HFT = 0 SFF = 81% Proof Test Interval = 720 h MTTR = 2 h	SIL 2	The values in this table have been calculated supposing that mean time to dangerous failure (MTTF _d) is 7 years, which is the source data collection time. See Annex 2 of EUFI29-21005516-I1.
Random hardware failures	$\lambda_{DD} = 0$ $\lambda_{DU} = 0.000016$ $\lambda_{SD} = 0$ $\lambda_{SU} = 0.000066$		No diagnostics. See Annex 2 of EUFI29-21005516-I1.
Probability of failure on demand	PFD _{AVG} = 0.0057 (Low Demand Mode)	SIL 2	Calculated using approximate formula of EN 50495. See Annexes 2 and 6 of EUFI29-21005516-I1.
Hardware safety integrity compliance	Route 1 _H		See Annex 6 of EUFI29-21005516-I1.
Systematic safety integrity compliance	Route 1 _S		See Annexes 3 and 6 of EUFI29-21005516-I1.
Overall SIL-capability achieved		SIL 2	

Table 2.

Safety Function	PL reached	Category	DC	PFH _d [1/h]	Notes
To close the controlled damper via pneumatic actuation	d	2	60%	5,8E-7	See report EUFI29-21005516-I1.
To close the controlled damper via electrical actuation	c	1	0	1,1E-6	See report EUFI29-21005516-I1. MTTF _d 10 years has been used for actuators.
To close the controlled damper via electrical actuation	b	2	60%	7,9E-6	See report EUFI29-21005516-I1. MTTF _d 10 years has been used for actuators
To close the controlled damper via pneumatic actuation	a	1	0	1,1E-5	See report EUFI29-21005516-I1.
NOTE: Conditions of category structure and requirements expressed in EN ISO 13849-1:2015 shall be followed.					