

**Safety Integrity Level (SIL)  
Self-certification**  
Authority as per IEC 61508-I Table-5, 2010

**Certificate**

553300-C01

EIC-P hereby confirms that

**Series 290 & 390 Valve  
(2/2 & 3/2 Way Pilot Operated with Signalling Unit)**

ASCO SAS France

Assessed according to IEC 61508:2010 Part 1, 2 and Meets requirements providing

*Systematic Integrity : SIL 2 Capable*

*Random Integrity :*

*For a standalone device on/off Valve Assembly :*

*Type A device : SIL2\* @ HFT=0*


*For a Valve Assembly used in a final element Assembly :  
SIL must be verified for the specific application*

For details refer to FMEDA report. **553300-R01**

EICP, 15-Nov-2022



Evaluating Assessor  
Rajesh Salikeri



Certifying Assessor  
Frederique Baloche

Revision	Issue Date	Updates	Certifying Assessor	ECN No.
-	25-Aug-2021	Initial Release	Christian Carvin	317723
AA	13-May-2022	Added Catalog no's	Frederique Baloche	324674
AB	15-Nov-2022	Updated PFH values	Frederique Baloche	330081

## Declaration of conformity

**Engineering Location:** ASCO SAS 53 Rue de la Beauce 28110 Lucé France

**Manufacturing location:** Emerson AFCP sp. z o.o. Kurczaki 132, 93-331 Łódź, Poland

Above device is suitable for the use in a safety-related application under the condition of the intended usage and the consideration of the enclosed safety instructions manual

Safety function: Valve will move to the designed safe position when de-energized within specific time. The functional safety is given according to IEC 61508 with the following data:

SIL capability	2	2
Operation Mode	Low Demand Mode (1 to 10/year)	High Demand Mode
Type of sub-system	A	A

Construction	DESCRIPTION	Failures (FIT)				PFDavg	PFH (Failures/Hour)
		$\lambda_{SD}$	$\lambda_{SU}$	$\lambda_{DD}$	$\lambda_{DU}$		
Valve Assembly (Catalog Numbers XX90DXXXXXXXXXX)	NC-DTT-Below Disc 290	0	492	16.2	36.4	1.15E-03	2.75E-07
	NC-ETT- Below Disc 290	4	14	11	315	1.34E-02	3.17E-06
	NO-DTT- Below Disc 290	0	188	14.9	126	4.99E-03	7.94E-06
	NO-ETT- Below Disc 290	2	25	13	116	4.62E-03	8.62E-06
	NC-DTT- Upper Disc 290	0	83.9	14.9	229	9.48E-03	4.37E-06
	NC-ETT- Upper Disc 290	3	12	12	317	1.34E-02	3.15E-06
	NC-DTT- Below Disc 390	0	491	13.5	31.6	1.01E-03	3.16E-07
	NC-ETT- Below Disc 390	8	15	18.7	141	5.53E-03	7.09E-06
	NO-DTT- Below Disc 390	4	46	21	33.4	9.55E-04	2.99E-07
	NO-ETT- Below Disc 390	7	13	20.1	117	4.45E-03	8.55E-06
	DA NC- Below Disc 290	0	10	13.3	114	4.52E-03	8.77E-06
	DA NO- Below Disc 290	0	10	13.3	300	1.26E-02	3.33E-06
Signaling Box (ON, OFF) (Catalog numbers Singling box X890ATXXXXXXXXXX Compact Signaling P890ASXXOXA00XX Signaling flameproof encloser P890ADXXXAT1XX)	Signaling Box (ON/OFF Indicator w/o Pilot), NC	0	0	13.8	5.2	7.92E-05	1.92E-08
	Signaling Box (ON/OFF Indicator w/o Pilot), NO	0	0	13.8	37.3	1.24E-03	2.68E-07
	Compact Signaling Unit (ON/OFF Indicator), NC/NO	1	1	9	7.5	1.67E-04	1.33E-08
	Flameproof Ex d (ON/OFF Indicator), NC	0	0	13.8	5.2	7.92E-05	1.92E-08
	Flameproof Ex d (ON/OFF Indicator), NO	0	0	13.8	37.3	1.24E-03	2.68E-07

FIT= 1failure/10<sup>9</sup> hours. DTT-De-energized to trip    ETT-Energized to trip    DA-Double Acting  
 NO-Normally open    NC-Normally Closed    Catalog numbers: for X description refer to main Catalog.

Note:

Above values are generated using EXIDA software FMEDAx Version 2.1.0.40711 tool.

\*PFDavg values are calculated based on assumptions below

- PFDavg calculation is performed for single (1oo1) architecture, with mission time of 10 years, Proof test interval of 1 year (8760hrs) and MTTR (mean time to repair) of 24 hours.
- $\lambda_{DU}$  numbers are used to generate the proof test coverage (PTC) as a conservative approach.
- It is the responsibility of the Safety Instrumented Function designer to do calculation for entire SIF.