

FUNCTIONAL SAFETY CERTIFICATE

CERTIFICATO – ZERTIFIKAT – CERTIFICADO – CERTIFICAT

The product:

Regulators & filter regulators series 1700 Steel Line

Manufactured by:

PNEUMAX S.p.A.
*Via Cascina Barbellina 10
24050 Lurano (BG) – Italy*

suitable for the following safety function(s):

SF#1: To guarantee a controlled flow and pressure to pressurize the chamber of an actuator

SF#2: When part of emergency systems operating in DETT mode, not to hinder the emergency manoeuvre

has been assessed per the relevant requirements of

IEC 61508:2010 Parts 1 to 2

and meets the requirements providing the following:

Systematic Capability:

The compliance with the requirements for the avoidance of systematic faults and the requirements for the control of systematic faults have been achieved following the compliance Route 1_S.

SC 3

Hardware Safety Integrity:

The constraints on hardware safety integrity have been verified in order to achieve a sufficiently robust architecture taking into account the level of element and subsystem complexity following the compliance Routes 1_H and 2_H.

Type
A

Random Safety Integrity:

The estimated safety integrity, for each safety function, due to random hardware safe and dangerous failures rates (excluding "no part" and "no effect" contribution).

See
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The architectural constraints and the effects of random failures (PFH/PFD_{AVG}) must be verified for each specific application and safety function implemented by the E/E/PE safety-related system.

Certified by:

BYHON

BYHON Certification Director:

Franco Rosati

Rosati Francesco

CERTIFICATE No:

PNMX-FFREG-ENS-A01

Revision: A

Issued:

December 3rd, 2024

Valid until:

December 2nd, 2027

The owner of a valid certificate for an assessed product is authorized to affix the following mark and relative ID number, to all recognized devices which are identical to the product assessed.

BYHON
SIL ✓

ID.N°454924EN03A



ANSI National Accreditation Board

ACCREDITED

ISO/IEC 17065

**PRODUCT CERTIFICATION
BODY**

#8914

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The design of each Safety Instrumented Function (SIF) shall meet the requirements listed in the reference standards that shall be selected by taking into account the specific application. Specific activities necessary to investigate and reach a judgment on the adequacy of the functional safety achieved by the E/E/PE safety-related system or compliant items (elements/subsystems) has been conducted by an independent assessor.

The following failure rates data shall be used to the PFH/PFD_{AVG} estimation, taking into consideration all parameters such as redundancy, architectural constraints, diagnostic capability, also introduced by the whole system, including the considerations about the proof test and its effectiveness, mean time of restoration, up to the maintenance capability and its minimum characteristics.

Device failure rates

Models	Description	Safety Function	λ_s	λ_{DU}	λ_{DD}
#SS172#R### #SF172#R### #SS173#R### #SF173#R### #SS174#R### #SF174#R###	Regulator	SF#1	-	493.1	-
		SF#2	327.9	2.0	-
#SS172#E#### #SF172#E#### #SM172#E#### #SS173#E#### #SF173#E#### #SM173#E#### #SS174#E#### #SF174#E#### #SM174#E####	Filter regulator	SF#1	-	508.7	-
		SF#2	327.9	2.0	-

Note:

- All failure rates are in FIT (Failure In Time 1 FIT = 1 failure / 10⁹ hours).
- The device is capable to be used in Safety Instrumented Systems (SIS) when properly designed into a Safety Instrumented Function (SIF) and configured according to the Safety Manual. The device can be used in applications up to SIL 3.

The prescriptions contained in the Safety Manual no. TF232003-FRV-MA shall be followed.

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The Functional Safety
Assessment report no.

24-PMX-FFREG-FSA-01

dated:
December 3rd, 2024

is an integral part of this
certificate



Mod_12_CB Rev08

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