# FUNCTIONAL SAFETY

# CERTIFICATE

CERTIFICATO – ZERTIFIKAT – CERTIFICADO – CERTIFICAT

The product:

***Emergency Stop Pushbuttons***

Manufactured by:

*ASEM S.r.l.*
*Via Buia, 4*
*33011 Artegna, Udine*
*Italy*

suitable for the following safety function(s):

Open the normally closed emergency contacts allowing the downstream emergency devices to block the machine/unit

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 route $1_H$.

**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 page 2**

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:

Rosati Francesco

CERTIFICATE No:
**ASEM-EPUSH-ENS-02**
Revision: A

Issued:
February 8th, 2023

Valid until:
**February 3rd, 2025**

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° 158622EN01B

ANSI ACCREDITED
#8914
ISO/IEC 17065
Product Certification Body

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.

Failure rate for Emergency Stop Pushbuttons

| Configuration | Code | $\lambda_S$ | $\lambda_{DU}$ | $\lambda_{DD}$ |
|---|---|---|---|---|
| 1 | 26149501 | 42 | 4 | 0 |
| 17 | 26149517 | 42 | 4 | 0 |
| 2 | 26149502 | 44 | 2 | 7 |
| 18 | 26149518 | 42 | 4 | 0 |
| 3 | 26149503 | 44 | 2 | 7 |
| 4 | 26149504 | 45 | 2 | 7 |
| 5 | 26149505 | 42 | 4 | 0 |
| 6 | 26149506 | 42 | 4 | 0 |
| 7 | 26149507 | 42 | 4 | 0 |
| 8 | 26149508 | 44 | 2 | 7 |
| 11 | 26149511 | 42 | 4 | 0 |
| 9 | 26149509 | 44 | 2 | 7 |
| 12 | 26149512 | 42 | 4 | 0 |
| 10 | 26149510 | 44 | 2 | 7 |
| 13 | 26149513 | 42 | 4 | 0 |
| 14 | 26149514 | 29 | 2 | 0 |
| 15 | 26149515 | 29 | 2 | 0 |
| 16 | 26149516 | 24 | 2 | 0 |
| 19 | 26149520 | 18 | 2 | 0 |

Notes:
- All failure fates are in FIT (Failure In Time 1 FIT = 1 failure / $10^9$ hours).
- Each configuration can be used up to SIL 3 application.

The prescriptions contained in the safety manual E071304 shall be followed.

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The Functional Safety Assessment report no.

22-ASE-EPUSH-FSA-02

dated:
February 6th, 2023

is an integral part of this certificate

Mod_12_CB Rev03

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