

FUNCTIONAL SAFETY CERTIFICATE

CERTIFICATO – ZERTIFIKAT – CERTIFICADO – CERTIFICAT

The product:

HS-420I & HS-422I
Intrinsically Safe Accelerometer

Manufactured by:

Hansford Sensors Ltd.
Artisan, Hillbottom Road, Sands Industrial Estate,
High Wycombe HP12 4HJ 8824
UK

suitable for the following safety function(s):

Overall vibration protection input device

has been assessed per the relevant requirements of

IEC 61508:2010 Parts 1 to 7

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

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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:


Rosati Francesco

CERTIFICATE No:
HANS-420VB-ENS-E01

Revision: A

Issued:
March 30th, 2021

Valid until:
March 29th, 2024

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° 155421E01N



#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.

Model	λ_S	λ_{DU}	λ_{DD}	λ_{RES}
HS-420I, HS-420IT, HS-420M	37	127	184	140
HS-422I, HS-422IT, HS-422M	37	127	183	137

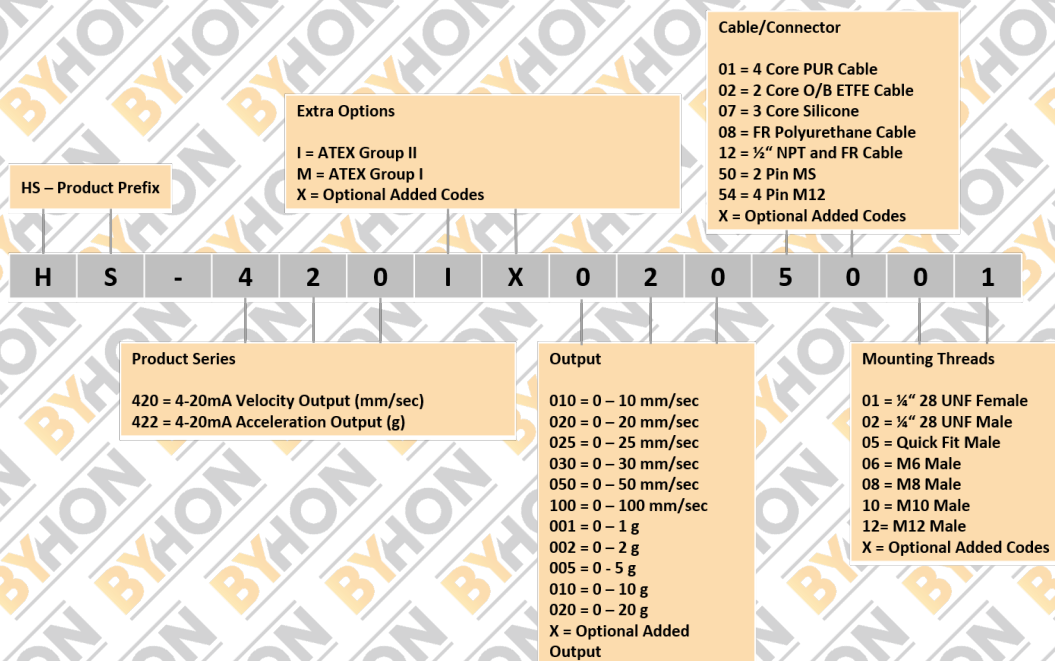
Note:

- The diagnostic part of failure rates is present in case of out-of-range diagnostic by Logic Solver.
- The λ_{RES} (RESIDUAL) failure rates includes the NO PART and NO EFFECT failure rates.
- All failure rates are in FIT (Failure In Time 1 FIT = 1 failure / 10⁹ hours).

Following the prescriptions contained in the safety manual QM34 the devices can be used in:

- SIL 2 application – HFT=0
- SIL 3 application – HFT=1

Following are indicated the products list covered by this SIL Certificate.



The "X" is a wild card for optional code letters to be added to the part when required without having any recourse to the certification or calculation.

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HANS-420VB-ENS-E01

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The Functional Safety
Assessment report no.

21-HAN-420VB-FSA-01

dated:
March 30th, 2021

is an integral part of this
certificate



Mod_12_CB Rev03

BYHON
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