

# FUNCTIONAL SAFETY CERTIFICATE

CERTIFICATO – ZERTIFIKAT – CERTIFICADO – CERTIFICAT

The product:

*Mechanical Vibration Switch 5550 and 5550G  
(All configurations)*

Manufactured by:

*Metrix Instruments Co.  
18824 Fallbrook Dr. Houston, TX 77064  
United States of America*

suitable for the following safety function(s):

Overall vibration protection input device for low to medium speed machinery.

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<sub>S</sub>.

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<sub>H</sub> and 2<sub>H</sub>.

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<sub>AVG</sub>) 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*  
Rosati Francesco

CERTIFICATE No:  
MTXI-5550G-ENS-B01

Issued:  
February 20<sup>th</sup>, 2025

Valid until:  
February 19<sup>th</sup>, 2028

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

**BYHON**  
**SIL** ✓



ANSI National Accreditation Board

ACCREDITED

ISO/IEC 17065

PRODUCT CERTIFICATION  
BODY

#8914

\*The Certificate shall be reproduced only in its original entirety

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<sub>AVG</sub> 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 Mechanical Vibration Switch 5550**

Configuration	$\lambda_S$	$\lambda_{DU}$	$\lambda_{DD}$
SPDT – Manual reset only	388	219	-
SPDT – Reset coil option	504	375	-
DPDT – Manual reset only (COMMON)	321	185	-
DPDT – Manual reset only (REDUNDANT SWITCH)	67	34	-
DPDT – Reset coil option (COMMON)	437	341	-
DPDT – Reset coil option (REDUNDANT SWITCH)	67	34	-

**Failure rate for Mechanical Vibration Switch 5550G**

Configuration	$\lambda_S$	$\lambda_{DU}$	$\lambda_{DD}$
SPDT with Reset coil	473	290	-
DPDT with Reset coil (COMMON)	406	256	-
DPDT with Reset coil (REDUNDANT SWITCH)	67	34	-

Note:

- All failure rates are in FIT (Failure In Time 1 FIT = 1 failure / 10<sup>9</sup> hours).
- The prescriptions contained in the safety manual QP064-43 shall be followed.
- SPDT contacts are standard; DPDT contacts are optional. Reset coil is standard on 5550G, optional on 5550.
- The device can be used in SIL 2 application with HFT=0, and up to SIL 3 application with HFT=1.

CERTIFICATE NO:  
MTXI-5550G-ENS-B01

Issued:  
February 20<sup>th</sup>, 2025

Valid until:  
February 19<sup>th</sup>, 2028

The Functional Safety  
Assessment report no.

25-MTX-5550G-FSA-01

dated:  
February 20<sup>th</sup>, 2025

is an integral part of this  
certificate



Mod\_12\_CB Rev09

BYHON  
Via Lepanto 23, 59100  
Prato (PO)  
ITALY

\*The Certificate shall be reproduced only in its  
original entirety.