

FUNCTIONAL SAFETY CERTIFICATE

CERTIFICATO – ZERTIFIKAT – CERTIFICADO – CERTIFICAT

The product:

*Smart Signal Conditioner 5580
Dual Channel Configurable Switch SW5580*

Manufactured by:

*Metrix Instruments Co.
8824 Fallbrook Dr. Houston, TX 77064
United States of America*

suitable for the following safety function(s):

- 1) Provides a 4-20mA DC signal output proportional to the measured physical quantity.
- 2) Provides digital outputs for configurable threshold levels. (just for SW5580)

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 2

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/B

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:
MTXI-W5580-ENS-E01

Revision: A

Issued:
August 26th, 2022

Valid until:
August 25th, 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°010522ES07A



#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 5580 and SW5580– All configurations

| Configuration | λ_s | λ_{DU} | λ_{DD} | Type |
|--|-------------|----------------|----------------|------|
| Input Channel (Accelerometer, Electro-Mechanical Velocity Sensor, Proximity Probe System) | 64.1 | 190.8 | 186.0 | A |
| Input Channel (Piezoelectric Velocity Sensor) | 64.7 | 191.4 | 256.1 | A |
| Common Part | 16.4 | 292.9 | 503.4 | B |
| Analog Output Channel | 0 | 4.35 | 38.2 | A |
| Digital Output (Electromechanical Relay) | 892.8 | 192.4 | 4.6 | A |
| Digital Output (SS Relay) | 33.3 | 5.0 | 4.6 | A |

Notes:

- All failure rates are in FIT (Failure In Time 1 FIT = 1 failure / 10⁹ hours).
- For each safety functions the device can be used up to SIL 1 with HFT=0. SIL 2 is achievable with HFT=1.
- Even if the output relays or input channels are used in redundancy (1oo2), the common part must always be considered with HFT=0 (1oo1).
- If the device is used with two input probes, they cannot be of the same type, otherwise the device cannot be used in SIL applications.
- When analog output is used, it is considered that the acquisition performs out-of-range diagnostics
- MCU Firmware Release: 2.5.xx
- FPGA Firmware Release: 4.04

The prescriptions contained in the safety manual QP064-67 shall be followed.

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The Functional Safety
Assessment report no.

22-MTX-W5580-FSA-01

dated:
August 25th, 2022

is an integral part of this
certificate



Mod_12_CB Rev03

BYHON
Via Lepanto 23, 59100
Prato (PO)
ITALY