FUNCTIONAL SAFETY

CERTIFICATE

CERTIFICATO – ZERTIFIKAT – CERTIFICADO – CERTIFICAT

The product:

Proximity Probes MX8030 – MX2030 – 10000*(7200)**
and its relative Extension Cables MX8031 - MX2031 – 7200**
(all configurations)

Manufactured by:

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

suitable for the following safety function(s):

Inductive proximity sensor for no-contact motion measures of metallic objects

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
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-10000-ENS-E01
Revision: A

Issued:
February 16th, 2022

Valid until:
February 15th, 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° 010522E02N

ANSI ACCREDITED
#8914
ISO/IEC 17065
Product Certification Body

DOCUMENT NO: 1882361
REV: B

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 Proximity Probes and Extension Cables – All configurations

Configuration	λ_{SU}	λ_{SD}	λ_{DU}	λ_{DD}	λ_{RES}
Proximity Probe MX2030 – MX8030 – 10000*(7200)**	0	0	75	261	572
Extension Cable MX2031 – MX8031 – 7200**	0	0	24	199	147

Note:

- *Registered trademark of Metrix Instrument Co.
- **Registered trademark of Bently Nevada®.
- The λ_{RES} (RESIDUAL) failure rates includes the NO PART and NO EFFECT failure rates.
- All failure fates are in FIT (Failure In Time 1 FIT = 1 failure / 10^9 hours).

The prescriptions contained in the safety manual QP064-40 shall be followed.

CERTIFICATE NO:
MTXI-10000-ENS-E01
Revision: A

Issued:
February 16th, 2022

Valid until:
February 15th, 2025

The Functional Safety Assessment report no.

20-MTX-10000-FSA-01

dated:
February 16th, 2022

is an integral part of this certificate

Mod_12_CB Rev03

BYHON
Via Lepanto 23, 59100
Prato (PO)
ITALY

DOCUMENT NO: 1882361
REV: B

The following pages are the prior revisions of this certificate.

CERTIFICATE

CERTIFICATO – ZERTIFIKAT – CERTIFICADO – CERTIFICAT

The product:

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and its relative Extension Cables MX8031 - MX2031 – 7200**
(all configurations)

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8824 Fallbrook Dr. Houston, TX 77064
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IEC 61508:2010 Parts 1 to 7

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CERTIFICATE No:
MTXI-10000-ENS-E01
Revision: A

Issued:
July 31st, 2019

Valid until:
July 30th, 2022

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° 500719E03N

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
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

DOCUMENT NO: 1882361
REV: A

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Failure rate for Proximity Probes and Extension Cables – All configurations

Configuration	λ_{SU}	λ_{SD}	λ_{DU}	λ_{DD}	λ_{AUS}
Proximity Probe MX2030 – MX8030 – 10000*(7200)**	0	0	75	261	572
Extension Cable MX2031 – MX8031 – 7200**	0	0	24	199	147

Note:

- *Registered trademark of Metrix Instrument Co.
- **Registered trademark of Bently Nevada®.
- All failure rates are in FIT (Failure in Time 1 FIT = 1 failure / 10^9 hours).
- The λ_{AU} (RESIDUAL) failure rates includes the NO PART and NO EFFECT failure rates.

The prescriptions contained in the safety manual QP064-40 shall be followed.

CERTIFICATE NO:
MTXI-10000-ENS-E01
Revision: A

Issued:
July 31st, 2019

Valid until:
July 30th, 2022

The Functional Safety Assessment report no.

19-MTX-10000-FSA-01

dated:
July 30th, 2019

is an integral part of this certificate

DOCUMENT NO: 1882361
REV: A