FUNCTIONAL SAFETY

CERTIFICATE

CERTIFICATO – ZERTIFIKAT – CERTIFICADO – CERTIFICAT

The product:

Digital Proximity System (DPS) probes MX2030, MX8030, 10000 (7200) and extension cables MX2031, MX8031 (All configurations)

Manufactured by:

Metrix Instruments Co.
18824 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 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 Routes 1_H and 2_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-B01

Issued:
February 21st, 2025

Valid until:
February 20th, 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

ANAB
ANSI National Accreditation Board
ACCREDITED
ISO/IEC 17065
PRODUCT CERTIFICATION BODY
#8914

DOCUMENT NO: 1882361
REV: C

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

Product	Series	λ_S	λ_{DU}	λ_{DD}
Proximity Probe	MX2030	-	75	261
	MX8030			
	10000* (7200)**			
Extension Cable	MX2031	-	24	199
	MX8031			
	7200**			

Note:

- *Registered trademark of Metrix Instrument Co.
  **Registered trademark of Bently Nevada®.
- 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.
- The device can be used in SIL 2 application with HFT=0, and up to SIL 3 application with HFT=1. In any case, the SIL reached by the entire Safety Instrumented Function (SIF) must be verified by the System Integrator / Final User considering demand mode, architectures, proof test interval and effectiveness, availability of diagnostics.

CERTIFICATE NO:
MTXI-10000-ENS-B01

Issued:
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Valid until:
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The Functional Safety Assessment report no.

25-MTX-10000-FSA-01

dated:
February 21st, 2025

is an integral part of this certificate

Mod_12_CB Rev09

BYHON
Via Lepanto 23, 59100
Prato (PO)
ITALY

DOCUMENT NO: 1882361
REV: C

The following pages are the prior revisions of this certificate.

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.

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The Functional Safety Assessment report no.

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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:

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:

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

Issued:
July 31st, 2019

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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

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_{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