

FUNCTIONAL SAFETY CERTIFICATE

CERTIFICATO – ZERTIFIKAT – CERTIFICADO – CERTIFICAT

The product:

**Digital Proximity System MX2033 and MX2034
(all configurations)**

Manufactured by:

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

suitable for the following safety function(s):

Programmable multiple measurement of safety parameters to rotating machinery.

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
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).

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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:

MTXI-20334-ENS-E02

Revision: B

Issued:

March 16th, 2022

Valid until:

December 22nd, 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.

MX2033

BYHON
SIL ✓

ID.N° 500719E05S

MX2034

BYHON
SIL ✓

ID.N° 010519ES05B



#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 MX2033

Configuration	λ_{SU}	λ_{SD}	λ_{DU}	λ_{DD}	λ_{RES}
ALL CONFIGURATION	0	0	595	1210	452

Failure rate for MX2034

Configuration	λ_{SU}	λ_{SD}	λ_{DU}	λ_{DD}	λ_{RES}
ALL CONFIGURATION	0	0	644	1349	455

Note:

The firmware release covered by the present certificate are:

- 1353.10.XX for the MX2033
- 1354.20.XX for the MX2034

The prescriptions contained in the safety manual QP064-42 shall be followed.

CERTIFICATE NO:
MTXI-20334-ENS-E02

Revision: B

Issued:
March 16th, 2022

Valid until:
December 22nd, 2022

The Functional Safety
Assessment report no.

19-MTX-20334-FSA-02

dated:
March 15th, 2022

is an integral part of this
certificate



Mod_12_CB Rev03

BYHON
Via Lepanto 23, 59100
Prato (PO)
ITALY



The following pages are the prior revisions of this certificate.

CERTIFICATE

CERTIFICATO -- ZERTIFIKAT -- CERTIFICADO -- CERTIFICAT

The product:

**Digital Proximity System MX2033 and MX2034
(all configurations)**

Manufactured by:

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

suitable for the following safety function(s):

Programmable multiple measurement of safety parameters to rotating machinery.

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 1s.

SC 2

Software Systematic Capability:

The MX2033 and MX2034 dedicated firmware have been designed, developed and validated as compliance with the requirements for the avoidance of software systematic faults following the compliance route 1s.

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 1s.

Type
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).

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page
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Certified by:

BYHON

BYHON Certification Director:

F. NA.
Rosati Francesco

CERTIFICATE No:

MTXI-20334-ENS-E01

Revision: A

Issued:

December 23rd, 2019

Valid until:

December 22nd, 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.

MX2033

BYHON
SIL ✓

ID.N° 500719E05S

MX2034

BYHON
SIL ✓

ID.N° 500719E04S



The architectural constraints and the effects of random failures (PFH/PFD_{MC}) must be verified for each specific application and safety function implemented by the E/E/PE safety-related system.

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.

Where applicable, the compliance with all requirements established by specific sector standards, such as IEC 61511 or IEC 62061, shall be evaluated considering the constraints each specific application.

The following failure rates data shall be used to the PFH/PFD_{MC} 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 MX2033

Configuration	λ_{SU}	λ_{SD}	λ_{OU}	λ_{OO}	λ_{RES}
ALL CONFIGURATION	0	0	595	1210	452

Failure rate for MX2034

Configuration	λ_{SU}	λ_{SD}	λ_{OU}	λ_{OO}	λ_{RES}
ALL CONFIGURATION	0	0	644	1349	455

Note:

The firmware release covered by the present certificate are:

- 1353.10.XX for the MX2033
- 1354.10.XX for the MX2034

The prescriptions contained in the safety manual QP064-41 shall be followed.

CERTIFICATE NO:

MTX-20334-ENS-E01

Revision: A

Issued:

December 23rd, 2019

Valid until:

December 22nd, 2022

The Functional Safety
Assessment report no.

19-MTX-20334-FSA-01

dated:

December 16th, 2019

is an integral part of this
certificate



Mod_12_CB Rev02