



CERTIFICATE NUMBER 22-2304456-PDA
EFFECTIVE DATE 21-Sep-2022
EXPIRY DATE 20-Sep-2027
ABS TECHNICAL OFFICE Houston ESD - Electrical

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

METRIX INSTRUMENT CO.

located at

8824 FALLBROOK DR., , HOUSTON, TX, United States, 77064

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: Monitoring Instruments
Model: Digital Proximity System (DPS):
MX8030/MX2030 (probe);
MX8031/MX2031 (ext cable);
MX2033 (driver); and
MX2034 (transmitter).

Endorsements:

Tier: 2 - PDA Issued

This Product Design Assessment (PDA) Certificate remains valid until 20/Sep/2027 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Jingdong Sheng, Senior Managing Principal Engineer

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

METRIX INSTRUMENT CO.

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Product: Monitoring Instruments
Model: Digital Proximity System (DPS):
MX8030/MX2030 (probe);
MX8031/MX2031 (ext cable);
MX2033 (driver); and
MX2034 (transmitter).

Endorsements:

Intended Service:

Measuring shaft vibrations, RPMs, axial displacement of motors, pumps, compressors, generators, and other machinery on Vessels and Offshore Units

Description:

The DPS consists of three elements: a Probe, Extension Cable, and Driver or Transmitter. Digital Proximity Systems are used for 3 main functions: 1) measure and monitor the shaft vibration of a wide variety of machines with Sleeve bearings, 2) measure and monitor shaft RPMs and 3) measure and monitor axial displacement.

Rating:

General Specifications:

- MX2033 3-wire driver
- MX8030/MX2030 5mm/8mm probe with 0.5m/1.0m cable
- MX8031/MX2031 4.0m/4.5m/8.0m/8.5m extension cable
- AISI 4140 steel target gapped at 50 mils (1.27mm) from probe tip
- Temp = 22° C
- 0.17mA current loop noise floor

Specifications for MX2034 loop-powered transmitters assume the same probes, cables, target materials, temperatures, and current loop noise floor as shown above.

Electrical

- a) Power supply of Transmitter/Driver: 24Vdc
- b) Driver/Transmitter Excitation Voltage Range: +/-17 to +/-30Vdc
- c) Driver/Transmitter Max Current Consumption: MX2033: 10mA, MX2034: 23mA
- d) Driver/Transmitter Output:
 - Radial Vibration: Proportional 4-20 mA (mils pk-pk, mm pk-pk)
 - Axial position: 4-20 mA proportional to position (mils, m)
 - RPM: 4-20 mA proportional to speed
- e) Frequency: MX2033: 0-10 kHz, MX2034: 0 - 5kHz

Environmental

Operating and Storage Temperature:

- Probe: -51°C to +177°C (-60°F to +350 °F)
- Extension Cable: -51°C to +177°C (-60°F to +350°F)
- Driver or Transmitter: -40°C to +85°C (-40°F to +185°F)
- Relative Humidity: 95%, non-condensing
- Probe tip-to-case Pressure Rating: 8mm Probe 80 bar (1160 psi)

Hazardous Area Approvals

Probe/Cable:

- Class I, Div 1, Groups A,B,C,D, -40°C to +177°C, Intrinsically Safe and Non-Incendive

Driver/Transmitter MX2033 & MX2034: Intrinsically Safe 'ia', Ex ia IIC T4 Ga; Increased Safety 'ec', Ex ec IIC T4 Gc

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- Class I, Div 1, Groups A,B,C,D, T4, -40°C Ta +85°C, Intrinsically Safe,
- Class I, Div 2, Groups A,B,C,D, T4, -40°C Ta +85°C, Increased Safety

See more details in the attached datasheets.

Service Restriction:

1. Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.
2. The MX2034 transmitters and MX2033 drivers are to be connected an ABS Type Approved computer-based systems or any control systems which has been tested according to Marine Vessel Rules 4-9-9/Table 1 or IACS UR E10 rev. 8, 2021. Due to the indirect connection between the transmitters/drivers and power supply, the subject product is not being required to tested for surge as per 2022 Marine Vessel Rules 4-9-9/Table 1 item 16 (IACS UR E10 rev. 8 item 18.)

Comments:

- a) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
- b) Application and use are to be in accordance with the manufacturer's instructions.

Notes/Drawing/Documentation:

- Drawing No. 104968532DAL-003 Ex ia, Revision: -, Pages: 1
- Drawing No. 104968532DAL-005 Ex ec, Revision: -, Pages: 1
- Drawing No. 1456014, IECEX Ex ia Cert, Revision: C, Pages: 1
- Drawing No. 1456015, IECEX Ex nA Cert, Revision: B, Pages: 1
- Drawing No. 1466204, IECEX Technical File, Revision: B, Pages: 1
- Drawing No. 1466205, IECEX Test Report, Revision: B, Pages: 1
- Drawing No. 1886928, IECEX Ex ec Cert, Revision: A, Pages: 1
- Drawing No. ETL22ATEX0138X Ex ia, Revision: -, Pages: 1
- Drawing No. ETL22ATEX0157X Ex ec, Revision: -, Pages: 1
- Drawing No. Ex ec IECEX_ETL_22.0017_000, Revision: -, Pages: 1
- Drawing No. Ex ia IECEX_ETL_22.0014_000, Revision: -, Pages: 1
- Drawing No. ITS22UKEX0528X Ex ia, Revision: -, Pages: 1
- Drawing No. ITS22UKEX0533X Ex ec, Revision: -, Pages: 1
- Drawing No. 23088-10_30_Metrix_MX2033 and MX2044_ENV and EMC Test Report, Revision: -, Pages: 1

Terms of Validity:

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STANDARDS**ABS Rules:**

Rules for Conditions of Classification, Part 1 - 2022 Marine Vessels Rules 1-1-4/7.7, 1-1-A3, 1-1-A4, which covers

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the following:

2022 Marine Vessels: 4-8-3/1.7, 1.11, 1.17, 4-8-3/13.3, 4-8-4/27.5, 27.7, 27.9, 4-8-4/27, 4-9-3/11, 4-9-9/Table 1

Rules for Conditions of Classification, Part 1 - 2022 Offshore Units and Structures 1-1-4/9.7, 1-1-A2, 1-1-A3, which covers the following:

2022 Mobile Offshore Units: 4-3-3/9, 4-3-4/5

National:

NA

International:

IEC 60079-0: 2017

IEC 60079-11: 2011

IEC 60079-7:2017

Government:

NA

EUMED:

NA

OTHERS:

IACS UR E10, Rev. 8 2021