Certificate No:
TAA0000377

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Peripheral Equipment

with type designation(s)
AX140100, 4163701, AX140200, 1100357, AX140400, AX140100-03, 545-6553, AX140100-04, 517-0738

Issued to
Axiomatic Technologies Corporation
Mississauga, ON, Canada

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Temperature	**D**
Humidity	**B**
Vibration	**B**
EMC	**A**
Enclosure	**B (IP67)**

Issued at **Hamburg** on **2022-10-04**

This Certificate is valid until **2027-07-13.**
DNV local station: **Montreal**

Approval Engineer: **Jens Dietrich**

for **DNV**

Digitally Signed By: Papanuskas, Joannis
Location: DNV GL SE Hamburg, Germany

Joannis Papanuskas
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

Compact size metal-housed protocol converters:
-Gateway or interface between CAN buses with different baud rates and protocols (SAE J1939 or SAE J1939-CANopen)
-Fast data exchange between a CAN network (SAE J1939 or SAE J1939- CANopen) and RS-485 bus (SAE J1587 or Modbus RTU)
-2 Isolated CAN ports (CAN 2.0B), 1 Isolated RS-485 serial port Main types:
-AX140100, 4163701 - Protocol Converter, 2 SAE J1939, Modbus RTU - This is the base model with firmware for AX140100-03 and AX140100-04.
AX140100-03, 545-6553 – CAN Repeater 1 - These are the same as AX140100 with some setpoints in the s/w defaulted to different values.
AX140100-04, 517-0738 – CAN Repeater 2 - These are the same as AX140100 with some setpoints in the s/w defaulted to different values.
AX140200 - Protocol Converter, SAE J1939, CANopen®, Modbus RTU
AX140400 - Protocol Converter, SAE J1939, SAE J1939, J1587
1100357 - J1587/J1939 Converter – Private label of AX140100

Fully sealed enclosure rated IP67
Nominal Power Supply: 12V DC or 24V DC (Range: 9…36V DC).

Approval conditions

The Type Approval covers hardware listed under Product description. When the hardware is used in applications to be classed by DNV, documentation for the actual application is to be submitted for approval by the manufacturer of the application system in each case. Reference is made to DNV rules for classification of ships Pt.4 Ch.9 Control and monitoring systems.

Product certificate
If specified in the Rules, ref. Pt.4 Ch.9 Sec.1, the control and monitoring system in which the above listed hardware is used shall be delivered with a product certificate. For each such delivery the certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. The test shall be done according to an approved test program. After certification the clause for software control will be put into force.

Software control
All changes in software are to be recorded as long as the system is in use on board. Documentation of major changes is to be forwarded to DNV for evaluation and approval before implemented on board. Certification of modified functionality may be required for the particular vessel.

Type Approval documentation

Test report : I2PS No. 2015-0240901, dated 2015-12-16; Ultra Tech ATC014_60533-R1, dated 2015-06-25. Outline drawing AX140X0X-MD-A, rev.D2, dated 2015-09-22; User Manual AX140X00, rev. I, dated 2016-03-14. SW test reports: AX140100, V3.06; AX140200, V4.02; AX140400, v2.06; AX140202, V2.21.
Additional EMC test report: UltraTech no. 21ATC051_60945, issued 2021-06-10.
Type approval assessment report issued by DNV Montreal, 2021-11-18.

Tests carried out

Applicable tests according to class guideline DNV-CG-0339, August 2021.

Marking of product

The products to be marked with:
manufacturer name, model name, serial number, power supply ratings

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems, software versions, components and/or materials.

The main elements of the assessment are:

- Ensure that type approved documentation is available
- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines
- Ensuring that systems, software versions, components and/or materials used comply with type approved documents and/or referenced system, software, component and material specifications

- Review of possible changes in design of systems, software versions, components, materials and/or performance, and make sure that such changes do not affect the type approval given
- Ensuring traceability between manufacturer's product type marking and the type approval certificate

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE