



Marine &amp; Offshore

Certificate number: 31048/C0 BV

File number: AP4345

Product code: 3831H

*This certificate is not valid when presented without the full attached schedule composed of 7 sections*

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## TYPE APPROVAL CERTIFICATE

*This certificate is issued to*

**Axiomatic Technologies Corporation**

Mississauga, ON - CANADA

*for the type of product*

**TEMPERATURE CONTROLLERS**

RTD8 & TC20 series.

### Requirements:

Bureau Veritas Rules for the Classification of Steel Ships.

EC Code: 31.

*This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.*

**This certificate will expire on: 10 Dec 2027**

**For Bureau Veritas Marine & Offshore,**

At BV PORT EVERGLADES CENTRE, on 09 Aug 2023,

Flavio Rosas

***This certificate was created electronically and is valid without signature***



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site [www.veristar.com](http://www.veristar.com). Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 4 page(s)

## THE SCHEDULE OF APPROVAL

### 1. PRODUCT DESCRIPTION:

#### 1.1 - RTD Scanner description:

Type	Description
Power	Power Supply range: 9-32V, Nominal: 12/24V DC
RTD Types	Up to 8 channels. 2,3 or 4 wires
RTD Inputs	10-350 Ohms. Accuracy +/- 1°C, Resolution: 0.001°C
Scan Rate	100ms/channel. 900ms max sweep time
CAN	1x CAN 2.0Bport
RS232	1x RS-232port, 115200 Baud Rate
Microprocessor	MC56F8366, 16-Bit, 512 Kbyte memory
Protection	IP56, Pollution Degree 3 per UL508
Firmware	P/N: 234-1645 EC08 P/N: 607-1964  Details: Bootloader: CATBoot-RTD8-TC20-Hfile.elf.S, dated April 26, 2012 Application: AF-10007-6.01-CAT-RTD8-PN_607-1964-00.flS

#### 1.2 - RTD Module CATAX180300 description:

Type	Description
Power	Power Supply range: 9-60V, Nominal: 12/24V DC
RTD Types	Up to 8 channels. 2,3 or 4 wires
RTD Inputs	20-400 Ohms. Accuracy +/- 0.4°C, Resolution: 0.001°C
Scan Rate	all within 1.5s
CAN	1x CAN 2.0Bport (SAE J1939) 250 bit/sec
RS232	1x RS-232port, 115200 Baud Rate
Microprocessor	STM32F413CGU6, 1.5MB Flash, 320KB RAM
Protection	IP57
P/N	AX180300
Firmware	607-4110-XX Details: AF-20155-2.00-CATAX180300-PN_607-4110-00.bin

#### 1.3 - Thermocouple Scanner description:

Type	Description
Power	Power Supply range: 9-32V, Nominal: 12/24V DC
Thermocouple Types	Up to 20 channels, Type J or K
Thermocouple Inputs	Accuracy +/- 1°C, Resolution: 0.001°C The device reads mV signals from the supported Thermocouples. J= -8.095 to 69.553mV or K= -6.458 to 54.886 mV
Scan Rate	100ms/channel, max 2.2s sweep time
CAN	1x CAN 2.0Bport
RS232	1x RS-232port, 115200 Baud Rate
Microprocessor	MC56F8366, 16-Bit, 512 Kbyte memory
Protection	IP56, Pollution Degree 3 per UL508
Firmware	P/N: 234-1644 EC06 P/N: 591-7977  Details: Bootloader: CATBoot-RTD8-TC20-Hfile.elf.s dated April 26, 2012 Application: AF-10006-V5.10-CAT-TC20-PN_591-7977-00.flS

**1.4 - Thermocouple Scanner Module CATAX185000 description:**

Type	Description
Power	Power Supply range: 9-60V, Nominal: 12/24V DC
Thermocouple Types	Up to 20 channels, Type J or K
Thermocouple Inputs	Accuracy +/- 1°C, Resolution: 0.001°C The device reads mV signals from the supported Thermocouples. J= -8.095 to 69.553mV or K= -6.458 to 54.886 mV
Scan Rate	max 1.5s sweep time
CAN	1x CAN 2.0Bport (SAE J1939) 250 bit/sec
RS232	1x RS-232port, 115200 Baud Rate
Microprocessor	STM32F205VG, 32-bit, 1 MB flash memory
Protection	IP57
P/N	AX185000, CATAX185000, 605-1986
Firmware	639-7998-XX Details: AF-20156-2.00-CATAX185000-PN_607-5084-01

**2. DOCUMENTS AND DRAWINGS:****Axiomatic:**

- User Manual UM2341645B dated June 16, 2021.
- User Manual UM2341644B dated June 16, 2021.
- Software Practices V1.0, dated July 17, 2012.
- Drawing N°PCB 10006-01 Rev.6.1, dated April 16, 2012 & drawing N°AXTC20, dated April 18, 2012.
- All schematics REV: 5.4 dated May 28, 2012.
- Drawing N°PCB 10007-01 Rev.6.1, dated April 13, 2012.
- Drawing N°AXRTD8-MD dated April 23, 2012.
- Drawing N°CAT171002F-MD, dated January 15, 2021.
- Drawing N°CAT171001E-MD, dated July 09, 2020.
- White Paper Version 3.1, dated January 31, 2021 and White Paper Version 1.0, dated December 11, 2022
- Drawing N° CATAX185000-MD, rev.D2, dated 20 Jun 2022.
- Drawing N° CATAX180300-MD, rev.A-D3, dated 21 Apr 2023.
- User manual UMCATAX185000, V 1.0.1, dated 24 July 2023.
- User manual UMCATAX180300, V 1.0.1, dated 24 July 2023.

**3. TEST REPORTS:****Elite Electronic Engineering Inc.:**

- Test Report N°1201612-01, dated September 18, 2012.
- Test Report N°1201612-02, dated September 18, 2012.
- Test Report N°1201614-01, dated September 13, 2012.
- Test Report N°2203472-01, dated February 23, 2023.
- Test Report N°2203471-01, Rev.A, dated March 31, 2023.
- Test Report N°2203471-02, Rev.A, dated March 31, 2023.

**UltraTech Group of Labs:**

- Test Report N°22ATC080\_EC-29-R1, dated November 30, 2022.
- Test Report N°22ATC059\_EC-42\_EMC, dated May 16, 2022.
- Test Report N°22ATC074\_EC-42\_EMC, dated October 04, 2022.

**4. APPLICATION / LIMITATION:**

4.1 - BUREAU VERITAS Rules for the Classification of Steel Ships.

4.2 - BUREAU VERITAS Environmental Category, **EC Code: 31**

4.3 - The equipment fulfils the EMC requirements for installation in General Power Distribution Zones.

4.4 - Approval also valid for ships to be granted with the notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**

4.5 - Hardware and Firmware / Software are to be successfully tested together in compliance with the regulations as referred to in page one according to the declaration of the manufacturer.

4.6 - In accordance with IACS UR E22 and as applicable to programmable devices for computer based systems of Category II or III, for each ship application :

- Ship specific documentation is to be submitted including software documentation and categorization of the computer based system.

- Inspection and testing before installation onboard is to be performed under the surveillance of the Society.

4.7 - Equipment covered by this Type Approval certificate has been tested according to requirements of IACS UR E10 rev 8.

**5. PRODUCTION SURVEY REQUIREMENTS:**

5.1 - The above products are to be supplied by **Axiomatic Technologies Corporation** in compliance with the type described in this certificate.

5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.

5.3 - **Axiomatic Technologies Corporation** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

5.4 - For information, **Axiomatic Technologies Corporation** has declared to Bureau Veritas the following production site:

**Axiomatic Technologies Corporation  
1445 Courtneypark Drive E,  
L5T 2E3 Mississauga, ON  
CANADA**

**6. MARKING OF PRODUCT:**

6.1 - Trade name.

6.2 - Date of manufacture and serial number.

6.3 - Equipment type or model identification under which it was type-tested.

**7. OTHERS:**

7.1 - It is **Axiomatic Technologies Corporation** responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.2 - This certificate supersedes the Type Approval Certificate No. 31048/B1 BV issued on 13 Jul 2021 by the Society.

\*\*\* END OF CERTIFICATE \*\*\*