



Marine & Offshore

Certificate number: 23070/C2 BV

File number: AP4121

Product code: 4501H

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

Bachmann electronic GmbH

Feldkirch - AUSTRIA

for the type of product

PROGRAMMABLE LOGIC CONTROL UNITS

M1 series

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships

EC Code: 33

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: 23 Jul 2025

For Bureau Veritas Marine & Offshore,

At BV HAMBURG, on 12 Jan 2023,

Dirk Hoepfner

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. 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 5 page(s)

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION:

M1 series are programmable logic controller and comprises the following modules:

Module type	Model	Description
Processor		
Modules	MH230	CPU Core2 Duo (2x2,3GHz)
	MX207	CPU x86 Pentium equivalent (66MHz)
	MX213	CPU x86 Pentium equivalent (133MHz)
	MX220	CPU x86 Pentium equivalent (200MHz)
	MC205	CPU Atom E620 (600MHz)
	MC206	CPU Atom class (600MHz)
	MC210	CPU Atom E680 (1,6GHz)
	MC212	CPU Atom class (2x1,3GHz)
	MC220	CPU Atom class (4x1,6GHz)
Digital I/O		
	DI216	16 inputs, two groups, 24VDC
	DI232	32 inputs, two groups, 24VDC
	DI232/np1	32 inputs, four groups, 24VDC
	DIO216	0 to 16 inputs, 0 to 16 outputs, 24VDC
	DIO216/4	0 to 16 inputs, 0 to 16 outputs, 24VDC
	DIO232	16 to 32 inputs, 0 to 16 outputs, 24VDC
	DIO248	16 to 32 inputs, 16 to 32 outputs, 24VDC
	DIO264	24 to 40 inputs, 24 to 40 outputs, 24VDC
	DIO280	32 to 48 inputs, 32 to 48 outputs, 24VDC
	DO216	16 outputs, 24VDC
	DO232	32 outputs, 24VDC
	DOR206	6 outputs for relays
	DOR206/230	6 relay outputs, 230VAC/1A or 24VDC/0.5A
Analogue I/O		
	AI204/1	1 input, +/-10V
	AI204/2	2 inputs, +/-10V
	AI204/4	4 inputs, +/-10V
	AI202/SI	2 inputs, 0(4) to 20mA, isolated
	AI204/SI	4 inputs, 0(4) to 20mA, isolated
	AI208/SI	8 inputs, 0(4) to 20mA, isolated
	AIC206	4 inputs +/- 6V, 2 counter
	AIC212	9 inputs +/-6V, 3 inputs +/-10V
	AIC214	12 inputs +/- 6V, 2 counter
	AIO208	8 inputs/outputs (configurable)
	AIO216	16 inputs/outputs (configurable)
	AIO202/SI	2 inputs/outputs, isolated (configurable)
	AIO204/SI	4 inputs/outputs, isolated (configurable)
	AIO208/SI	8 inputs/outputs, isolated (configurable)
	AIO288	8 inputs, 8 outputs, 4 inputs PT100/PT1000, isolated
	AIO288/1	8 inputs, 8 outputs, 4 inputs PT100/PT1000, non isolated
	AO202	2 outputs, +/- 10V

Module type	Model	Description
Analogue I/O		
	AO202/SI	2 outputs, 0 to 20mA
	AO204/SI	4 outputs, 0 to 20mA
	PTAI216	4 inputs, +/-1V, +/-10V or 0 to 20mA, 12 inputs, PT100/PT1000
	TI214	14 inputs, PT100/PT1000/J/K
	TI214/2	14 inputs, N/S
General I/O		
	GIO212	12 inputs/outputs, isolated (individually configurable)
Technology Modules		
	CNT204/H	Counter, 2 INC HTL + 2 counter or 4 counter
	CNT204/R	Counter, 2 INC RS422 + 2 counter or 4 counter
	ISI222	Encoder, 2 INC/SSI, 1MHz, 2 analogue out +/- 10V, 2 INIT, 2 TRIGGER
	ISI222/8	Encoder, 2 INC, 8MHz, 2 analogue out +/- 10V, 2 INIT, 2 TRIGGER
	PVA204	Proportional valve amplifier, current regulated, max.4 unipolar solenoids
	PVA208	Proportional valve amplifier, current regulated, max.8 unipolar solenoids
Interface Modules		
	RS204	Serial interfaces, 4 RS232/422/485
	RS204/T	Serial interfaces, 3 RS232/422/485, 1 TTY
	RS204/R	Serial interfaces, 3 RS232/422/485, 1 RS232
	RS204/2	Serial interfaces, RS232/422/485, 2MBit/s
Bus Modules		
	CM202	2 CAN bus master
	DPM200	2 PROFIBUS connectors
	EM213	Ethernet master, 3 RJ45, 10/100MBit/s
	FM211, FM221	FAST bus master, 1 fibre optic interface
	FM212, FM222	FAST bus master, 2 fibre optic interfaces
	FS211, FS221	FAST bus slave, 1 fibre optic interface
	FS211/N, FS221/N	FAST bus slave, 1 fibre optic interface, integrated power supply
	FS212, FS222	FAST bus slave, 2 fibre optic interfaces
	FS212/N, FS222/N	FAST bus slave, 2 fibre optic interfaces, integrated power supply
Decentral CAN Modules		
	DA3284-C	8 analogue IN, 4 analogue OUT, 16 digital IN, 16 digital IN/OUT
	DIO16-C	16 digital inputs/outputs
	DIO32-C	32 digital inputs/outputs
	DIO264-C	32 digital inputs/outputs and 32 digital inputs

Module type	Model	Description
Accessories		
	BS201 to BS216	Backplanes with 1 to 16 module slots
	BS203/S to BS216/S	Backplanes with 1 to 16 module slots for class 1 protective connection
	BS203/E to BS210/E	Backplanes with 3 to 10 module slots
	S201 to S205	Backplane with max 5 module slots, without bus
	CF200	CF-Card (64/128/256/512MB, 1/2/4/8GB)
	LM201	Dummy modules
NT255	Power supply modules, 24VDC	

Main characteristics:

Power supply: 24VDC nominal voltage
Degree of protection: IP20
Firmware version: M-Base V4.xx and V3.xx

2. DOCUMENTS AND DRAWINGS:

- Technical Documentation V01/Feb.2009
- Data sheets dated 18.03.2011, 03/2014, 02/2015 and 04/2015 ; PVA20xDoku_13228-000-24 Rev000
- Operating manuals: Benutzerhandbuch M-BASE V4.00, revision 02, dated 28 April 2016
- Software Quality Assurance documents: G130, dated 28.07.2016 ; G135, dated 28.07.2016 ; G142, dated 16.08.2016 ; G150, dated 07.10.2016 ; G161, dated 11.10.2016 ; G162, dated 11.10.2016 ; G170, dated 29.11.2016 ; G180, dated 07.10.2016 ; G194, dated 01.08.2016 ; RLG100-20, REV 000.1, dated 13.02.2013 ; RLG100-01, REV 017, dated 11.4.2016 ; RLG100-07, REV 005, dated 27.04.2015 ; RLG100-17, REV 008.1, dated 15.02.2011 ; RLG100-08, REV002, dated 09.02.2015 ; RLG100-18, REV005.1, dated 09.03.2011

For C1 version:

- AIC214B dated 05.09.2018; MC220B dated 04.11.2019; MH230B dated 14.11.2019
- Data sheets: AIC206 dated 11/2019; AIC214 dated 11/2019; MC200 dated 08/2020; MH200 dated 08/2020; BS200/E dated 11/2019; BS2xx/E dated Sep 22, 2020

For C2 version:

- Data sheet: CM202 dated 09/2022; Schematic: CM202/B dated 23.09.2021

3. TEST REPORTS:

- Bachmann:

- 10992 dated 22.July.2009, 30.July.2009, 2x 17.08.2009, 2x 17.Aug.2009, 14.Aug.2009, 4.August.2009 and 16.Oct.2009; 09144/09 dated 16.Sept.2008 2x 22.Sept.2008 and 11.Sep.2008, SuV010 dated 1.July.2008; 9942 dated 21.11.01; 10469 dated 14.Jan 2008; 10631 dated 13.12.2007; 9825 dated 16.9.1999 and 13.12.1999; 10511 dated 29.5.2008
- 10134 dated 2.4.2002; 9584 dated 09.03.1999; 10123 dated 28.3.2002; 10502/03 dated 22.Sep.2008; 9483 dated 05.11.1999; 9810 dated 28.03.2001; 10463 dated 08.06.2006; 10814 dated 09.11.2007; 9949 dated 01.12.2000; 10346 dated 16.09.04; 10741 dated 27.10.2008; 09144/09 dated 23.Sep.2008 and 10992 dated 15.07.2010; 12482 dated 05 May 2011, 13 June 2011 and 19 Aug 2011;
- 12718.00.03/04 dated 29.10.2014; 12718.00.05/06/11 dated 28.11.2014; 12718.00.10 dated 24.11.2014; 12718.00.13/14/17/18 dated 30.10.2014; 12718.00.19 dated 30.10.2014; 12718.00.20 dated 30.10. 2014; 12718.00.21 dated 22.01.2015 Rev.1; 13228-000-3,4 dated 01.02.2016 Rev.000; 13228-000-5,6,11 dated 21.03.2016 Rev.000; 13228-000-9 dated 21.03.2016 Rev.000; 13228-000-10 Rev.000 dated 04.02.2016; 13228-002-13,14,15,16,17,18 Rev.003 dated 06.06.2016; 13228-000-19,20 Rev.000 dated 01.02.2016; 13228-000-21 Rev.000 dated 21.01.2016
- ZAMM: 436-0508 dd.: 2008-05-13; 403-0109 dd.: 2009-01-29; 424-0308 dd.: 2008-03-11; 453-1109 dd.: 2009-11-03
- SGS: BOTW0001 dd.: Oct 09.2008
- TÜV SÜD: 71366028 dated 2010-06-21; 14312-03974-1(Ed. 1) dated 28 July 2011; 71386807 dated 2011-08-04; 713051191 dated 2014-11-25; 14312-52016-01 Ed.1 dated 13 Nov 2014; 713077298 Rev 1 dated 2016-02-16

For C0 version:

- TÜV SÜD: TR-14312-89434-01 Ed.01 dated 2020-07-02

For C1 version:

- Bachmann: 13870-000-3,4 Rev.0 dated 03.12.2019; 13870-00-5,6,11 Rev.02 dated 2020-03-31; 13870-00-9,10 Rev.0 dated 2019-12-12; 13870-000-13,14,15,16,17,18 Rev.01 dated 18.12.2019; 13870-000-19,20 Rev. 0 dated 13.12.2019; 13870-000-21 dated 17.12.2019
- TÜV SÜD: 713177494 Rev.01 dated 31.01.2020

For C2 version:

- Bachmann: 14498-000-3,4 dated 2022-12-05; 14498-000-5,6,11 dated 2022-12-05; 14498-000-9,10 dated 2022-12-05; 14498-000-13,15,16,17,18 dated 2022-12-05; 14498-000-19,20 dated 2022-12-05
- TÜV SÜD: TR-713278061-00 Rev.0 dated 2022-12-12
- Treo: 433-22 Issue: 1 dated 2022-12-15

4. APPLICATION / LIMITATION:

- 4.1 - Bureau Veritas Rules for the Classification of Steel Ships
- 4.2 - Approval valid for ships intended to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT** and **AUT-IMS**.
- 4.3 - Bureau Veritas Environmental Category, **EC Code: 33**
- 4.4 - The equipment fulfils the EMC requirements for installation in on bridge or deck by using an interference filter on the power supply lines as specified in the M-Base V4.xx Operating manual.
- 4.5 - Equipment covered by this Type Approval certificate has been tested according to requirements of IACS UR E10 rev8.
- 4.6 - The product designation of some modules may be followed by "CC" and additional marked with "*" at the front and the product designation of processor modules may be followed by "W". These features are not relevant for the certificate.
- 4.7 - Data processing system used for machinery protection is to be independent from the control and monitoring system.

4.8 - 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.

4.9 - Only Hardware and Software successfully tested together in compliance with the regulations as referred to in page one, according to the declaration of the manufacturer is covered by this certificate.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 - The above products are to be supplied by **Bachmann electronic GmbH** 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 - **Bachmann electronic GmbH** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products :

Bachmann electronic GmbH
Kreuzäckerweg 33
6800 Feldkirch
AUSTRIA

6. MARKING OF PRODUCT:

- Maker's name or trademark

- Date of manufacture and/or serial number

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

- The title and version of each software element included in the installed software system shall be either marked on the equipment or displayed on command by a visualization unit.

7. OTHERS:

7.1 - It is the responsibility of **Bachmann electronic GmbH - AUSTRIA** 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 N° 23070/C1 BV issued on 15 Jan 2021 by the Society.

*** END OF CERTIFICATE ***