



Type Approval Certificate

[Programmable Logic controller]

Initial Approval 11 July 2019
Manufacturer Bachmann electronic GmbH
Kreuzaeckerweg 33 A-6800 Feldkirch, Austria
Product Description Type : M1 Series

“ See Appendix 1 ”



Approval Condition “ See Appendix 1 ”

THIS IS TO CERTIFY that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows.
Pt. 6, Ch. 2, Art. 301 of the Rules for Classification, Steel Ships.

This Certificate is valid until 10 July 2024
Reissued at Busan, Korea on 17 April 2023



This certificate is signed electronically in accordance with IMO FAL.5/Circ.39/Rev.2. Validation and authentication of the certificate can be confirmed from "<http://e-cert.krs.co.kr>" by using the tracking No(ME23015025670) and certificate No.(MIL39250-AC001).



KOREAN REGISTER

*General Manager of
Marine & Ocean Equipment Team*

- Note :**
1. This certificate will be valid subject to complying with the approval conditions described on the certificate and/or on the Rules of this Society.
 2. This certificate will be invalid from the expiry date aforementioned unless the extension or renewal has been granted to the applicant or the manufacturer.
 3. Any significant modifications or changes in design or construction to the above product without approval from this Society will render this certificate invalid.
 4. Should the specified rules, regulations or standards be amended during the validity of this certificate, the product is to be re-approved by this Society in accordance with the requirements as amended.

Product Description and/or Approval Condition

Date of Issue : 17 April 2023

A. Product Description

1. Product Specification

1) Product Descriptions

M1 series are Programmable Logic Controller (PLC) of a wide of range of applications.

- Power supply : DC 24V
- Software : M-BASE V4. xx

2) Product Comprising

Product	Descriptions
A12xx/xx*	Analog input module, Max 8 inputs
A1C212, 214, 206*	Condition monitoring module, Max 12 inputs
A1O2xx/x*	Analog I/O module, Max 16 input/outputs
A1O2xx/SI*	Analog I/O module, Max 8 input/outputs
AO2xx/xx*	Analog output module, Max 4 outputs
BS2xx/xx*	Backplane with different slot(s), Max 16 slots (BS2xx/E, BS2xx/S, BS2xx/ET)
CF200/xxxx*	Compact flash card, Capacity 2~8 GB
CFA200/x*	Cfast card, Capacity 4~16 GB
CM202*	CAN-bus module (Master), 2 CAN interfaces
CNT204/x*	Counter module, Max 4 inputs
DA3284-C*	Digital Analog Input/Output module, 8 analog outputs, 4 inputs, 16 digital inputs/outputs
D12xx/xxx*	Digital input module, Max 32 inputs
D1O2xx/x*	Digital input/output module, Max 80 in/ouputs
D1Oxxx-C*	Digital Input/Output module, max. 32 inputs/outputs
DO2xx/xx*	Digital output module, Max 32 outputs
DOR206*	Digital output relay module, 6 relay outputs (24VDC, 230VAC)
DPM200*	Profibus module
EM2xx*	Ethernet master module, 3 Ethernet ports
FM2xx*	Fastbus master module, Max 2 FO-ports
FS2xx/x*	Fastbus slave module, Max 2 FO-ports
GI0212*	General I/O module, 12 in/outputs
GM260*	Grid measurement module
GMP232/x*	Grid measurement protection module, 3 analog inputs and 3 relay outputs
GSP274*	Grid measurement, synchronisation and protection module
ISI2xx/x*	Encoder interface module, 2 analog outputs, 4 digital input (initiator and trigger)
LM201*, S2xx	Dummy module
MC205*	CPU module, CPU 600 MHz ATOM E620
MC206*	CPU module, CPU ATOM class (600MHz)
MC210*	CPU module, CPU 1.6 GHz ATOM E680
MC212*	CPU module, CPU ATOM class (2x1.3GHz)
MC220*	CPU module, CPU ATOM class (4x1.6GHz)
MH230*	CPU module, CPU Core 2 Duo (2x2,3GHz)
MX2xx/x*	CPU module, Max 433MHz clock frequency
NT2xx*	Power supply 24/48VDC
PTAI216*	Temperature recording module, 4 analog inputs and 12 Pt100/Pt1000 sensors inputs
TI214/x*	Temperature recording module, 14 channels
PVA204/PVA208*	Proportional valve amplifier, Max 8 solenoids
RS204/x*	Interface module RS232, 422, 485, TTY, 4 interface ports
SAI205 CC	Safety Analog Input module, max. 10 inputs
SCT202 CC	Safety Pulse Counter, 2 incremental encoder inputs, 2 counter inputs, 2 digital inputs, 2 digital outputs
SDI208 CC	Safety digital input, 2x8 digital input
SDO204 CC	Safety digital output, 2x4 digital output
SLG284 CC	Safety logic controller, 2x8 digital input and 2x4 digital output

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Product	Descriptions
GMP232/x2*	Grid measurement protection module, 3 voltage, 3 current inputs and 2 relay outputs

Note : '*' Cold Climate modules are included

2. Approved Drawings and Documents

- 1) Layouts
 - Document for KR Type Approval
 - Datasheet for CM202, Doc. No. 14498-00001-0922
 - Datasheet for GMP232/x2, Doc. No. 14498-00002-0922

3. Test Reports, etc.

- 1) Environmental & EMC Test Reports
 - Bachmann Electronic's project MARINE 003, Project No 10992 series
 - Bachmann Electronic's project MARINE 004, Project No 12482 series
 - Bachmann Electronic's project MARINE 005, Project No 12718 series
 - Bachmann Electronic's project MARINE 006, Project No 13228 series
 - Bachmann Electronic's project MARINE 008, Project No 13870 series
 - TR-14312-89434-01 Ed.01 (2020.07.20) issued by TUV
 - Report No. 3, 4_Power_Supply_Failure_and_Variation_Test_Report_Marine012_REV000
 - Report No. No5, 6, 11_Dry_Heat_Damp_Heat_Cold_Test_Report_Marine012_REV000
 - Report No. No7_Vibration_TR_713252021-00_Marine012_REV001 issued by TUV
 - Report No. No9, 10_Insulation_Resistance_and_High_Voltage_Test_Report_Marine012_REV000
 - Report No. No13 - 18_EMC_Interference_Test_Report_Marine012_REV000
 - Report No. No14_EMC_Interference_TR-713278061-00_Marine012_REV000
 - Report No. No14_EMC_Interference_TR-14312-24452-01 Ed. 2_Marine012_REV000
 - Report No. EMV, No19, 20_EMC_Emission_Test_Report_Marine012_REV000
 - Report No. No22_Compass_Safe_Distance_433-22_V1U_Test_Report_Marine012_REV000
- 2) Etc.
 - System Overview dated, 2022-06
 - Software management(13228-000-1), dated 2016-01
 - User manual (M-BASE V4.49) Version 18, dated 2020-09
 - User Manual (Grid Measurement and Protection Module Family GMP232/x and GMP232/x2) Version 15, dated 2022-07

B. Approval Condition

1. Application & Limitation

- 1) This Approval is granted on the basis of the test reports and the approved documentation.
- 2) Degree of protection is to be complied with Rule Pt. 6 Ch.1 Sec.2 201.2. (5).
- 3) The manufacturer is to inform this Society of all kinds of revisions of the equipment including the major changes of software. If the changes are recognized to affect functionality of the approved equipment, type test to confirm the reliability of the revised equipment may be performed in the presence of our surveyor.
- 4) The product is to be installed as manufacturer's instructions.

2. Individual Product Cert. and Drawing Approval Requirement

- 1) Individual Product Certification is not required.

3. Marking

- 1) The product or packing is to be marked with manufacturer name and type designation on a suitable position.

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4. Others

1) Test condition (IACS UR E10 Rev. 8)

Test	Condition	Remark
EMC	All locations including the bridge and deck zone *1 All locations excluding the bridge and deck zone	- Only for GMP232/x2
Temperature	-25 ~ +70°C	-
Vibration	Acceleration $\pm 4.0g$	-

*1 : With EMI filter

(Inductance : Min 2x1.8mH, e.g. Model : Phoenix contact NEF 1-10-2788977)

< End of Certificate >

