



Certificate no.:
TAA00003TF

TYPE APPROVAL CERTIFICATE

This is to certify:

that the **Programmable Controller**

with type designation(s)
M100-Series

issued to

Bachmann electronic GmbH
Feldkirch, Vorarlberg, Austria

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, B*
Enclosure	A

Issued at **Hamburg** on **2025-12-17**

This Certificate is valid until **2030-12-16**.

for **DNV**

DNV local unit: **Augsburg**

Approval Engineer: **Dariusz Lesniewski**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

M100 I/O system modules:

Module	Description	Main Features
AIM112	Analog Input Module	Max. 12 Inputs
AIO104/I	Analog Input/Output Module	Max. 4 Inputs/Outputs
AIO11x	Analog Input/Output Module	Max. 16 Inputs/Outputs
BPC101	Backplane Slot Cover	-
BPR1xx	Backplane - DIN-Rail Mounted	Max. 32 Slots
BPS1xx	Backplane for Direct Screw Mounting	Max. 32 Slots
COM10x	Serial Interface Module	Max. 4 Interface Ports
DIS1xx	Digital Input Module	Max. 36 Inputs
DOH108	Digital Output Module (High Power)	Max. 8 Outputs
DOS1xx	Digital Output Module	Max. 36 Outputs
EAS102	Absolute Encoder Interface Module	Max. 2 Interface Ports
EII102	Counter / Time Measurement / Incremental Encoder Interface Module	Max. 2 Interface Ports, 6 Counter Ports
NCN102	Node Adapter CAN/CANopen	Max. 2 CAN Interfaces
NEC102	Node Adapter EtherCAT	Max. 2 EtherCAT Interfaces
PSI135	Power Supply Module	Max. 35 W
UIO10x	Universal Input/Output Module	Max. 8 Inputs/Outputs

Extended Climate option for all modules possible, marked by **EC**

Power supply: 24 V DC

System software (firmware), version: M-Base V4.xx and V5.xx

Compass safe distance	
Standard compass	70 cm
Steering compass	45 cm

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.

Application/Limitation

*Location class EMC 'B' only with use of the **Bachmann EMC-filter 24/48V, 2 x 1,8mH**

Type Approval documentation

M100-IO-System User-Manual, V4-85, issue date

Test procedure: Marine013, REV. 001, issue date 13.06.2025

Documents as referenced to in the Bachmann document list 'DNV Overview Marine 13 Documents.xls' (submission 2025)

Tests carried out

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

For the bridge mounted components the 'Compass safe distance' was measured according to section 11.2 of IEC 60945 4th edition (2002).

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