Certificate no.:
TAA00003S9

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Programmable Controller

with type designation(s)
AVAT Marine Control Platform

issued to
AVAT Automation GmbH
Tübingen, Baden-Württemberg, Germany

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.
Location classes:
Temperature: D
Humidity: B
Vibration: B
EMC: A
Enclosure: A

Issued at **Hamburg** on **2025-11-18**
This Certificate is valid until **2030-11-17**.
DNV local unit: **Augsburg**

for **DNV**

Approval Engineer: **Jens Dietrich**

Product description

Universal programmable controller and scalable IO system:
The main components of the system consist of universal programmable controller CPU-4M (CPU) and a programmable, scalable IO system IOC-4M.

CPU-4M CU, AVAT article no. 3004040
Programmable CPU for applications in the maritime sector with these interfaces:
2x Ethernet, 2x CAN, 3x Serial interfaces (2x RS485, 1x RS232), 2x USB.

CPU-4M CU E01, AVAT article no. 3004041
Additional to the CPU-4M CU: IO-interface with 8 digital inputs, 2 digital outputs, 2 analog Outputs

IOC-4M components:

Communication Controller	IOC-4M-CC	4007100
Communication Controller	IOC-4M CC-E	4007101
I/O module	IOC-4M 7T	4007200
I/O module	IOC-4M 5AI	4007202
I/O module	IOC-4M 4AIO-SI	4007204
I/O module	IOC-4M 6AIO	4007205
I/O module	IOC-4M 18DI1	4007400
I/O module	IOC-4M 8DI2	4007402
I/O module	IOC-4M 18DO1	4007403
I/O module	IOC-4M 8DOd	4007404
I/O module	IOC-4M 7DOs	4007406
I/O module	IOC-4M 8DIcb	4007407
I/O module	IOC-4M 6DIO	4007408
Rack	IOC-4M Rack-05	4007000
Rack	IOC-4M Rack-08	4007001
Rack	IOC-4M Rack-13	4007002
Rack	IOC-4M Rack-20	4007003

Firmware:
CPU-4M-01.xxx.xxx
IOC-4M 1.x.x.

Approval conditions

For the use on combustion engines the system needs to be tested by means of a DNV witnessed integration test with the individual engine type and its governor. The integration test needs to be agreed with DNV prior to testing.

The requirements for installation in the AVAT User Manuals are to be observed. Use of Vibration dampers is required for I/O Units mounted in cabinets on engines.

The following documentation of the actual application is to be submitted for approval in each case:
- Reference to this Type Approval Certificate
- Functional description
- System block diagram
- Power supply arrangement (may be part of the System block diagram)
- List of control and monitored points
- Circuit diagrams
- Test program for certification

The Type Approval covers hardware listed under Product description.

Product certificate
If required for the application the system is to be certified according to Pt.4 Ch.9 Sec.1. The certification test is to be performed at the manufacturer of the application system before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

Application 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.

Type Approval documentation

Tests carried out

Applicable tests according to DNV CG-0339, 2021,
Functional Performance Test.

Marking of products

CPU-4M and IOC-4M:
Manufacturer with address, type designation and description, part no., serial number, electrical ratings.
I/O system station: Manufacturer with address, serial number, electrical and IP 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

A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE