TYPE APPROVAL CERTIFICATE

Certificate No:
TAA00000W1
Revision No:
4

This is to certify:

That the Programmable Electronic System

with type designation(s)
AC500-eCo / S500-eCo

Issued to
ABB AG
Heidelberg, **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	**A*, B*, D***
Humidity	**B**
Vibration	**A**
EMC	**A*, B***
Enclosure	**Required protection according to DNV Rules shall be provided upon installation on board.**

(*) Remarks under Application/Limitation to be observed

Issued at **Hamburg** on **2024-03-06**
This Certificate is valid until **2027-01-09**.
DNV local station: **Augsburg**

Approval Engineer: **Dariusz Lesniewski**

for **DNV**

Joannis Papanuskas
Head of Section

Product description

ABB AC500-eCo Scalable Programmable Logic Controller with S500 I/O-Modules

Type	Description
CPUs	
PM554-TP	PM554-TP: AC500, SPS, 128kB, 8DI/6DO-T, 24VDC
PM554-TP-ETH	PM554-TP-ETH: AC500, SPS, 128kB, 8DI/6DO-T, ETH
PM554-RP	PM554-RP: AC500, SPS, 128kB, 8DI/6DO-R, 24VDC
PM554-RP-AC	PM554-RP-AC: AC500, SPS, 128kB, 8DI/6DOR, VAC
PM556-TP-ETH	PM556-TP-ETH: AC500, SPS, 512kB, 8DI/6DO-T, ETH
PM564-TP	PM564-TP:AC500, SPS, 128kB, 6DI/6DO-T/2AI/1AO
PM564-TP-ETH	PM564-TP-ETH: AC500, SPS,128kB,6DI/6DO-T/2AI/1AO
PM564-RP	PM564-RP: AC500, SPS,128kB, 6DI/6DO-R/2AI/1AO
PM564-RP-ETH	PM564-RP-ETH: AC500, SPS, 128kB, 6DI/6DO-R
PM564-RP-ETH-AC	PM564-RP-ETH-AC: AC500, SPS, 128kB, 6DI/6DO-R
PM564-RP-AC	PM564-RP-AC: AC500, SPS, 128kB, 6DI/6DO-R/2AI/1AO
PM566-TP-ETH	PM566-TP-ETH: AC500, SPS, 128kB, 8DI/6DO-R/2AI/1AO
PM5012-T-ETH[1)]	CPU 1MB, 6DI/4DO-Transistor, Ethernet, 24VDC, 1x Option Board Slot
PM5012-R-ETH[1)]	CPU 1MB, 6DI/4DO-Relay, Ethernet, 24VDC, 1x Option Board Slot
PM5032-T-ETH[1)]	CPU 2MB,12DI/8DO-T/2DC, Ethernet, 24VDC, 2x Option Board Slots
PM5032-R-ETH[1)]	CPU 2MB, 12DI/6DO-Relay/2DC, Ethernet, 24VDC, 2x Option Board Slots
PM5052-T-ETH[1)]	CPU 4MB,12DI/8DO-T/2DC, Ethernet, 24VDC, 3x Option Board Slots
PM5052-R-ETH[1)]	CPU 4MB, 12DI/6DO-Relay/2DC, Ethernet, 24VDC, 3x Option Board Slots
PM5072-T-2ETH[1)]	CPU 8MB,12DI/8DO-T/2DC, 2xEthernet, 24VDC, 3x Option Board Slots
PM5072-T-2ETHW[1)]	CPU 8MB,12DI/8DO-T/2DC, 2xEthernet, 24VDC, 3x Option Board Slots, Wide
PM5052-R-ETHL[1)]	CPU 84MB, 12DI/6DO-Relay/2DC, Ethernet, 24VDC, 3x Option Board Slots
PM5082-T-2ETH[1)]	CPU 8MB, 12DI/8DO-Transistor, 2x Ethernet, 3x Option Board Slots
I/O-Modules	
DX561	8 isolated DO (24V DC, T), 8DI (24V DC)
DC561	16 isolated DI/DO (24V DC)
DC562	16 isolated DI/DO (24V DC), configurable
DI561	8DI (24V DC)
DO561	8DO (24V DC, T)
DO562	16DO (24V DC, T)
AX561	4AI, 2AO (24V DC)
AI561	4AI
AO561	2AO
DI562	2x8 isolated DI (24V DC)
AI562	2AI, RTD (resistance temp. detector), 24V DC
AI563	4 isolated AI, TC (thermocouples), 24V DC
DX571	8DO (120/240V AC, R, 2A), 8DI (24V DC)
DO571	8DO (120/240V AC, R, 2A)
DI571	8DI (120/240V AC)
DI572	16DI (100-240V AC)
DO572	8DO
DO573	16DO
FM562	Function module for servo and stepper motors
Accessories	
TA5130-KNXPB[1)]	KNX address switch option board, 1 push button
TA5131-RTC[1)]	Real Time Clock without battery, option board for AC500-eCo Basic CPU
TA5101-4DI[1)]	Digital input module option board, 4DI 24 VDC
TA5101-4DIW[1)]	Digital input module option board, 4DI 24 VDC, wide temperature range

Type	Description
TA5105-4DOT[1)]	Digital output module option board, 4DO-Trans. 24 VDC/0.5A, wide temperature range
TA5105-4DOTW[1)]	Digital output module option board, 4DO-Trans. 24 VDC / 0.5A
TA5110-2DI2DOT[1)]	Digital in/output module option board, 2DI 24VDC, 2DO-Trans. 24VDC /0.5A
TA5110-2DI2DOTW[1)]	Digital in/output module option board, 2DI 24VDC, 2DO-Trans. 24VDC /0.5A, wide temperature range
TA5120-2AI-UI[1)]	Analog input option board, 2AI U/I
TA5120-2AI-UIW[1)]	Analog input option board, 2AI U/I, wide temperature range
TA5123-2AI-RTD[1)]	Analog input option board, 2AI RTD
TA5123-2AI-RTW[1)]	Analog input option board, 2AI RTD, wide temperature range
TA5126-2AO-UI[1)]	Analog output option board, 2AO U/I
TA5126-2AO-UI[1)]	Analog output option board, 2AO U/I, wide temperature range
TA5130-KNXPBW[1)]	Option board KNX address push button, wide temperature range
TK503, TK504	Programming cable
TA5301-CFA[1)]	Cable fixing part
TK506	RS-485 isolator for COM1
MC503	SD Memory Card expansion module
MC5102[1)]	Memory Card
TA561-RTC	Real-time clock expansion modue
TA562-RS	Serial communication interface COM2
TA562-RS-RTC	Serial communication interface COM2 with real-time clock
TA5141-RS232I[1)]	RS232 serial adapter isolated option board
TA5141-RS232IW[1)]	RS232 serial adapter isolated option board, wide temperature range
TA566	Wall mounting for eCo modules
TA5300-CVR[1)]	Dummy cover
TA569-RS-ISO	RS-485 adapter for galvanic isolation for PM55x-XP and PM56x-xP
TA5142-RS485I	RS485 serial adapter isolated option board
TA5142-RS485IW	RS485 serial adapter isolated option board, wide temperature range
TA5142-RS485	RS485 serial adapter non isolated option board
TA5142-RS485W	RS485 serial adapter non isolated option board, wide temperature range
TA563-9, TA563-11	Terminals
TA564-9, TA564-11	Terminals
TA565-9, TA565-11	Terminals
TA5211-TSCL-B[1)]	Terminals
TA5211-TSPF-B[1)]	Terminals
TA5212-TSCL[1)]	Terminals
TA5212-TSPF[1)]	Terminals
TA5220-SPF5/6/7/8/9[1)]	Terminals

Compass safe distance (not for modules marked with [1)])

Compass Type	Distance
Steering	35 cm
Standard	71 cm

Place of manufacture

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 Ships Pt.4 Ch.9 Control and Monitoring Systems.

Product certificate
Each delivery of the application 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 according to an approved test program before the system is shipped to the yard. After the certification the clause for application software control will be put into force.

Clause for application software control
All changes in software are to be recorded as long as the system is in use on board. The records of all changes are to be forwarded to DNV for evaluation and approval. Major changes in the software are to be approved before being installed in the computer.

Application/Limitation

- EMC location class A: for all modules without [1]. Metal cabinet is required.
- EMC location class B: for modules marked with [1]
- EMC location class B: for AI561, DX571. Metal cabinet and additional mains filter are required
- Temperature location class B:
  - PM5032-T/R-ETH, PM5052-T/R-ETH, PM5052-R-ETHL, PM5072-T-2ETH, PM5082-T-2ETH
- Temperature location class D:
  - PM554-RP-AC, PM564-RP-AC, PM564-TP/RP, PM554-TP
  - DX561, DI561, DO561, DC561, DI562, DX571, DO571, DI571, DO572
  - AX561, AI561, AI562, AO561, AI563
  - TA562-RS-RTC, MC503, TA561-RTC, TA562-RS
  - PM5072-T-2ETHW, TA5101-4DI, TA5105-4DOT, TA5110-2DIDOT, TA5141-RS232I, TA5142-RS485I
  - TA5142-RS485, TA5130-KNXPB, MC5102

CPU module types PM5xx-xP... and the IO module types are used with any of the terminal types:
  - TA563-9, TA563-11, TA564-9, TA564-11, TA565-9, or TA565-11
CPU module types PM5012-x-ETH are used with any of the terminal types:
  - TA5211-TSCL-B or TA5211-TSPF-B CPU
CPU module types PM5032-x-ETH, PM5052-x-ETH(L) or PM5072-T-2ETH(W) are used with any of the terminal types:
  - TA5212-TSCL or TA5212-TSPF

Type Approval documentation

Tests carried out

Applicable tests according to Class Guidance DNV-CG-0339, August 2021.
For on bridge mounted components the 'Compass safe distance' was measured according to section 11.2 of the IEC 60945 4th edition (2002) - not for modules marked with [1].

Marking of product

The products to be marked with model name, manufacturer name and serial number

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