



TYPE APPROVAL CERTIFICATE

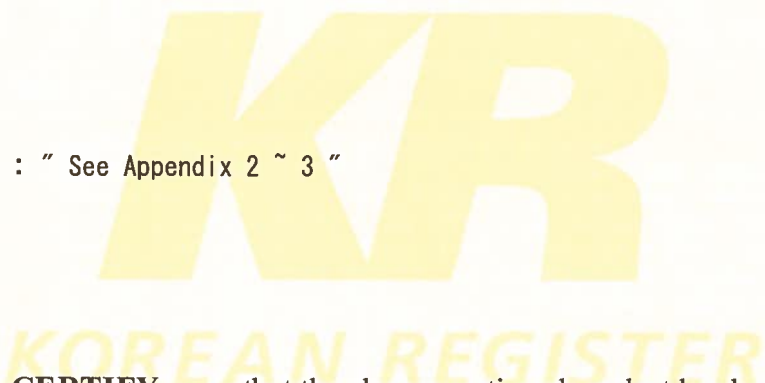
Certificate No. : HMB39370-AC001 **Initial Approval** : 26th November, 2018
Product : Programmable Logic Controllers
Manufacturer : ABB Automation Products GmbH
Eppelheimer Strasse 82, DE-69123 Heidelberg, Germany

Product Description : Type : AG500-eCo / S500-eCo

* Manufacturing place
- Welco Technology (Shenzhen) Ltd.
Wanfeng Industrial Estate, 34 The East of Wangzhang Pu, Shajing,
Baoan, Shenzhen, Guangdong, P.R. China

" See Appendix 1 - 2 "

Approval Condition : " See Appendix 2 ~ 3 "



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 and entered in the "List of Approved Manufacturers and Type Approved Equipment".

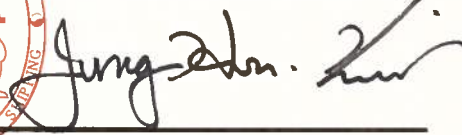
Pt. 6, Ch. 2, Art. 301 of the Rules for Classification, Steel Ships.

This Certificate is valid until 25th November, 2023

Issued at Busan, Korea on 26th November, 2018



KOREAN REGISTER OF SHIPPING



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

Certificate No : HMB39370-AC001

Date of Issue :26 November, 2018

A. Product Description

1. Product Specification

1) System Description (Programmable Logic Controllers, Type : AC500-eCo / S500-eCo)

| Type | Description |
|---|---|
| CPU (AC500-eCo) | |
| PM554-RP | 128 kB memory, 8 DI/6 DO-R, 24 V DC |
| PM554-RP-AC | 128 kB memory, 8 DI/6 DO-R, 100-240 |
| PM554-TP | 128 kB memory, 8 DI/6 DO-T, 24 V DC |
| PM554-TP-ETH | 128 kB memory, 8 DI/6 DO-T, 24 V DC, Ethernet interface |
| PM556-TP-ETH | 512 kB memory, 8 DI/6 DO-T, 24 V DC, Ethernet interface |
| PM564-RP | 128 kB memory, 6 DI/6 DO-R / 2 AI / 1 AO, 24 V DC |
| PM564-RP-AC | 128 kB memory, 6 DI/6 DO-R / 2 AI / 1 AO, 100-240 V AC |
| PM564-RP-ETH | 128 kB memory, 6 DI/6 DO-R / 2 AI / 1 AO, 24 V DC, Ethernet interface |
| PM564-RP-ETH-AC | 128 kB memory, 6 DI/6 DO-R / 2AI / 1 AO, 100-240 V AC, Ethernet interface |
| PM564-TP | 128 kB memory, 6 DI/6 DO-T / 2 AI / 1 AO, 24 V DC |
| PM564-TP-ETH | 128 kB memory, 6 DI/6 DO-T / 2 AI /1 AO, 24 V DC |
| PM566-TP-ETH | 512 kB memory, 6 DI/6 DO-T / 2 AI /1 AO, 24 V DC, Ethernet interface |
| I/O Modules (S500-eCo) | |
| AI561 | Analog Input Module 4 AI, configurable |
| AI562 | Analog Input Module 2 AI, RTD (resistance temp. detector), configurable |
| AI563 | Analog Input Module 3 AI, RTD (resistance temp. detector), configurable |
| AO561 | Analog Output Module, 1 AO, RTD (resistance temp. detector), configurable |
| AX561 | Analog Input/Output Module, 4 AI, 2 AO (24 V DC), configurable |
| DC561 | Digital Input/Output Module, 16 configurable inputs/outputs, 24 V DC |
| DC562 | Digital Input/Output Module, 16 configurable inputs/outputs, 24 V DC |
| DI561 | Digital Input Module, 8 DI, 24 V DC |
| DI562 | Digital Input Module, 16 DI, 24 V DC |
| DI571 | Digital Input Module, 8 DI, 100-240 V AC |
| DI572 | Digital Input Module, 16 DI, 100-240 V AC |
| DO561 | Digital Output Module, 8 DO, 24 V DC, transistor output |
| DO562 | Digital Output Module, 16 DO, 24 V DC, transistor output |
| DO571 | Digital Output Module, 8 DO, 24 V DC or 100-240V AC, relay output |
| DO572 | Digital Output Module, 8 DO, 240 V AC, triac output |
| DO573 | Digital Output Module, 16 DO, 24 V DC or 100-240V AC, relay output |
| DX561 | Digital Input/Output Module, 8 DI, 8 DO, 24 V DC, transistor output |
| DX571 | Digital Input/Output Module, 8 DI, 8 DO, 24 V DC, relay output |
| FM562 | Positioning module, 4 digital inputs, 2 per axis, RS-422, 4 DI, 24 V DC |
| Accessories (AC500-eCo / S500-eCo) etc. | |
| TA561-RTC | Serial RTC adaptor for PM55x and PM56x CPUs |
| TA562-RS | Serial RS-485 adaptor for PM55x- and PM56x-CPU |
| TA562-RS-RTC | Serial RS-485 and Real-time clock adaptor for PM55x- and PM56x-CPU |
| TA563-9 | Terminal blocks, 9 poles, screw connection type |
| TA563-11 | Terminal blocks, 11 poles, screw connection type |
| TA564-9 | Terminal blocks, 9 poles, screw connection type |
| TA564-11 | Terminal blocks, 11 poles, screw connection type |
| TA565-9 | Terminal blocks, 9 poles, spring connection type |
| TA565-11 | Terminal blocks, 11 poles, spring connection type |
| TA566 | Wall Mounting Accessory for AC500-eCo CPU and S500-eCo I/O |
| TA570 | Spare part set for AC500-eCo CPUs, 3x6 pieces |
| TA571-SIM | Input Simulator for PM55x- and PM56x-CPU |

< To be continued >

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| Type | Description |
|---|---|
| Accessories (AC500-eCo / S500-eCo) etc. | |
| TK501 | Programming cable Sub-D / Sub-D, length 5 m |
| TK502 | Programming cable Sub-D / terminal block, length 5 m |
| TK503 | Programming cable USB -> SUB-D (RS485), length 3 m |
| TK504 | Programming Cable USB -> single conductors, length 3 m |
| TK506 | RS-485 Isolator D-SUB/5-pole terminal |
| MC503 | SD Memory Card expansion module for PM55x-and PM56x-CPU's |

2. Approved Drawings and documents

1) Approved Drawings:

- Mechanical Drawings : 1SAP126601F0001, 1SAP126604F0001, 1SAP126620F0001
1SAP126621F0001
- Schematic Diagram : 1SAP000000F0000, 1SAP120610F0001, 1SAP120620F0001
1SAP120630F0001, 1SAP120730F0001, 1SAP120730F0001
1SAP181410F0001, 1SAP186310F0001, 1SAP230010F0001
1SAP230410F0001, 1SAP230510F0000, 1SAP230510F9000
1SAP230810F0001, 1SAP231210F0001, 1SAP231310F0000
1SAP231410F0001, 1SAP231810F0001, 1SAP231910F0000
1SAP233110F0001, 1SAP235110F0001, 1SAP235120F0001
1SAP235410F0001, 1SAP235910F0001

2) Instruction manual :

AC500 PLC Device Descriptions (Hardware) for AC500 V2 Products, 2017.05.31

3. Test Reports, etc.

1) EMC Test Reports

- | | | | |
|---------------------|------------|-------------------|------------|
| - No. 2010H_W032 | 2010.09.25 | 3893-394f | 2009.09.04 |
| - 3893-3124 | 2017.11.01 | 071832.191.17 | 2017.09.21 |
| - C10-133-WT | 2010.06.01 | SEC12-0456WM-E-E1 | 2012.11.28 |
| - SEC12-0456WM-E-E2 | 2012.11.28 | SEC13-0728WM-E-E1 | 2013.10.21 |
| - SEC13-0728WM-E-E2 | 2013.10.21 | SEC13-1473WM-E-E1 | 2014.04.30 |
| - SEC13-1473WM-E-E2 | 2014.04.30 | SEC13-1475WM-E-E1 | 2014.04.30 |
| - SEC13-1475WM-E-E2 | 2014.04.30 | SEC15-0182WM-E-E1 | 2015.05.18 |
| - SEC15-0182WM-E-E2 | 2015.05.18 | | |

2) Environmental Test Reports

- | | | | |
|--------------------------------|------------|----------------------|------------|
| - 09-2475B-BE-AC500 | 2009.05.27 | 12-4737-BE-AC500 | 2012.10.15 |
| - 16-7720-BE-AC500 | 2016.03.30 | 17-9054-BE-AC500-eCo | 2017.10.12 |
| - 17-9139-BE-Flammability Test | 2017.09.15 | | |

3) High Voltage Test Reports

- | | | | |
|------------|------------|----------|------------|
| - D2009004 | 2009.01.29 | D2009032 | 2009.06.25 |
| - D2012014 | 2012.04.20 | D2012055 | 2012.12.23 |
| - D2013007 | 2013.09.30 | D2013008 | 2013.11.14 |
| - D2013009 | 2013.10.29 | D2015003 | 2015.08.05 |
| - D2016008 | 2016.08.05 | | |

B. Approval Condition

1. Application & Limitation

- 1) This Approval is granted on the basis of the test reports and the approved documentation.
- 2) The manufacturer should inform this Society of all kinds of revisions of the equipment including 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.
- 3) The product is to be installed as manufacturer's instructions.
- 4) The products is suitable for bridge and deck zone if the metal cabinet is used.

< To be continued >

Product Description and/or Approval Condition

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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.

4. Others

1) Test condition

| Test | Condition | Remark |
|-----------------------|--|------------------------------------|
| EMC | All locations excluding the bridge and deck zone | Refer to Approval Condition B.1.4) |
| Temperature | 0 - +70°C | - |
| Vibration | Acceleration ±0.7g | - |
| Salt mist | Not Applied | - |
| Compass Safe Distance | 710mm from Standard Compass 350mm from Steering Compass | - |
| IP Grade | IP 20 | 1) |

Note.

1) Protection according to Pt 6, Ch, 1, Sec.2 shall be provided upon installation on board

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