



TYPE APPROVAL CERTIFICATE

Certificate No. : HMB23278-AC001 **Initial Approval :** 10th April, 2018
Product : Frequency Converter
Manufacturer : ABB Oy, Drives
Hiomotie 13, 00380 Helsinki, Finland

Product Description : Type : ACS880-01 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 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 9th April, 2023
Reissued at Busan, Korea on 18th October, 2019



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 (ME19029449594) and certificate No. (HMB23278-AC001).



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.

Appendix 1

Product Description and/or Approval Condition

Certificate No : HMB23278-AC001

Date of Issue : 18th October, 2019

A. Product Description

1. Product Specification

- 1) Voltage : 3-phase 230V, 400V, 500V, 690V
- 2) Frequency : 50/60 Hz
- 3) Enclosure Protection : IP21 (standard), IP55 (option), IP 20 (option)
- 4) Type code designation +C132 for marine application
- 5) Rating (at 45°C)

Drive Type	Nominal Ratings	
ACS880-01-	In(A)	Pn(kW)

Un = 230V (Range 208 - 240V)

04A6-2	4.4	0.75
06A6-2	6.3	1.1
07A5-2	7.1	1.5
10A6-2	10.1	2.2
16A8-2	16	3.0
24A3-2	23	5.5
031A-2	29	7.5
046A-2	44	11
061A-2	58	15
075A-2	71	18.5
087A-2	83	22
115A-2	109	30
145A-2	138	37
170A-2	162	45
206A-2	196	55
274A-2	260	75

Un = 400V (Range 380 - 415V)

02A4-3	2.3	0.75
03A3-3	3.1	1.1
04A0-3	3.8	1.5
05A6-3	5.3	2.2
07A2-3	7.6	3.0
09A4-3	9.5	4.0
12A6-3	12.3	5.5
017A-3	16	7.5
025A-3	24	11
032A-3	30	15
038A-3	36	18.5
045A-3	43	22
061A-3	58	30
072A-3	68	30
087A-3	83	45
105A-3	100	55
145A-3	138	55
169A-3	161	75
206A-3	196	90
246A-3	234	110
293A-3	278	132
363A-3	345	160
430A-3	409	200

Un = 500V (Range 380 - 500V)

02A1-5	2.0	0.75
03A0-5	2.9	1.1
03A4-5	3.2	1.1
04A8-5	4.6	1.5
05A2-5	4.9	2.2
07A6-5	7.2	3.0
11A0-5	10.5	4.0

Appendix 1

Product Description and/or Approval Condition

Certificate No : HMB23278-AC001

Date of Issue : 18th October, 2019

014A-5	13	5.5
021A-5	20	7.5
027A-5	26	11
034A-5	32	15
040A-5	38	18.5
052A-5	49	22
065A-5	62	30
077A-5	73	37
096A-5	91	45
124A-5	118	55
156A-5	148	75
180A-5	171	90
240A-5	228	110
260A-5	247	132
302A-5	287	160
361A-5	343	160
414A-5	393	200

Un = 690V (Range 525 - 690V)

07A4-7	7.0	4.0
09A9-7	9.4	7.5
14A3-7	13.6	11
019A-7	18	11
023A-7	22	18.5
027A-7	26	22
07A3-7	6.9	4.0
09A8-7	9.3	7.5
14A2-7	13.5	11
018A-7	17	11
022A-7	21	18.5
026A-7	25	22
035A-7	33	30
042A-7	40	30
049A-7	47	37
061A-7	58	55
084A-7	80	55
098A-7	93	75
119A-7	113	90
142A-7	135	110
174A-7	165	132
210A-7	200	160
271A-7	257	200

* Derating as per ABB 3AXD50000010521 Rev.D (EN)

2. Approved Drawings and Documents

- 1) Document No. 3AUA0000078093 Rev.M, Chapter 12
- 2) Document No. 3AXD50000010521 Rev.D, Page 13-16

3. Test Reports, etc.

- 1) List of Type Tests_3AXD10000114572
- 2) Test Report No. 3AXD10000021409, 3AXD10000021814, 3AXD10000021815, 3AXD10000021816, 3AXD10000021817, 3AXD10000021818, 3AXD10000021819, 3AXD10000021889, 3AXD10000021890, 3AXD10000021891, 3AXD10000021892, 3AXD10000021893, 3AXD10000021894, 3AXD10000024136, 3AXD10000024767, 3AXD10000024768, 3AXD10000024769, 3AXD10000026305, 3AXD10000026406, 3AXD10000026407, 3AXD10000026408, 3AXD10000026409, 3AXD10000027032, 3AXD10000027073, 3AXD10000027146, 3AXD10000027195, 3AXD10000027195_appendix_1~3, 3AXD10000027230, 3AXD10000027621, 3AXD10000028559, 3AXD10000029807, 3AXD10000034648, 3AXD10000034777, 3AXD10000035090, 3AXD10000035090_appendix_1~3, 3AXD10000036352, 3AXD10000038457, 3AXD10000039108, 3AXD10000040025, 3AXD10000040042, 3AXD10000040403, 3AXD10000040403_appendix_1~2, 3AXD10000041041, 3AXD10000041041_appendix_1, 3AXD10000041059, 3AXD10000041059_appendix_1, 3AXD10000041150, 3AXD10000041436, 3AXD10000042355, 3AXD10000042711, 3AXD10000046573, 3AXD10000046584, 3AXD10000046590, 3AXD10000047005, 3AXD10000047006, 3AXD10000047200,

Appendix 1

Product Description and/or Approval Condition

Certificate No : HMB23278-AC001

Date of Issue : 18th October, 2019

3AXD10000052740, 3AXD10000052741, 3AXD10000056383, 3AXD10000056384,
3AXD10000057482, 3AXD10000057483, 3AXD10000058318, 3AXD10000058319,
3AXD10000062989, 3AXD10000063852, 3AXD10000064202, 3AXD10000064202_appendix_1,
3AXD10000064203, 3AXD10000064204, 3AXD10000064205, 3AXD10000064941,
3AXD10000066610, 3AXD10000066610_appendix_1~2, 3AXD10000067104,
3AXD10000067104_appendix_1~3, 3AXD10000067141, 3AXD10000067142,
3AXD10000071397, 3AXD10000071397_appendix_1~2, 3AXD10000075140,
3AXD10000075140_appendix_1~3, 166547 S1~S9, 3AXD10000081248,
3AXD10000081248_appendix_1~5, 3AXD10000085313, 3AXD10000085313_appendix_1~2,
3AXD10000085546, 3AXD10000085546_appendix_1~4, 3AXD10000087746,
3AXD10000088411, 3AXD10000096222, 3AXD10000096222_appendix_1~2,
3AXD10000098355, 3AXD10000098356, 3AXD10000099637, 3AXD10000099638,
3AXD10000099854, 3AXD10000104406, 3AXD10000104408, 3AXD10000104413,
3AXD10000104414, 3AXD10000239342, 3AXD10000241957, 3AXD10000241958,
3AXD10000242583, 3AXD10000244185, 3AXD10000254793, 3AXD10000263443,
3AXD10000263498, 3AXD10000263499, 3AXD10000263500, 3AXD10000266957,
3AXD10000277010, 3AXD10000277012, 3AXD10000284805, 3AXD10000292422,
3AXD10000292829, 203997 R5-R9, 3AXD10000295786, 3AXD10000295792,
3AXD10000295825, 3AXD10000303253, 3AXD10000306202, 3AXD10000314693,
3AXD10000315812, 3AXD10000320956, 3AXD10000323254, 286948-1, 290542-1,
290245-1-1, 285151-2-1, 285151-2-2, 3AXD10000665893, 3AXD10000611661,
3AXD10000508543, 3AXD10000580488, 3AXD10000637143, 3AXD10000619906,
3AXD10000613080, 3AXD10000619912, 3AXD10000603369, 3AXD10000614135,
3AXD10000603111, Merille R3 Dry heat test report, R3_Immunity test report,
VTT-S-05334-16, VTT-S-03562-17, UL test report No. 70139061,
UL ACS880 R3 Merille 15 kW report, UL ACS880 R3 Merille 22 kW report

B. Approval Condition

1. Application & Limitation

- 1) This approval is granted on the basis of the test reports and approved documentation.
- 2) This product is to have the appropriate IP grade according to Pt. 6, Ch. 1, Sec. 201 of the Rules for Classification, Steel Ships.
- 3) Converters with conducted and radiated emission above the KR required limits can be installed in special distribution zone and general power distribution zone, in accordance with IEC 60533 provided measures are taken to attenuate these effects on the distribution system, so safe operation is assured.
- 4) The product is not allowed to be installed in the bridge and on open decks.

2. Individual Product Cert. and Drawing Approval Requirement

- 1) If the converters are used as parts of the motor controller which drive essential auxiliaries specified in KR Rule Pt. 5, Ch. 1, 102 and exceed the output 7.5 kW, Individual Product Certification is required for the motor controller.

3. Marking

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

4. Others

N/A

< End of Certificate >



TYPE APPROVAL CERTIFICATE

Certificate No. : HMB23278-AC002 **Initial Approval** : 10th April, 2018
Product : Frequency Converter
Manufacturer : ABB Oy, Drives
Hiomotie 13, 00380 Helsinki, Finland

Product Description : Type : ACS880-04 Series

" See Appendix 1 ~ 2 "

Approval Condition : " See Appendix 2 "

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 9th April, 2023

Issued at Busan, Korea on 10th April, 2018



KOREAN REGISTER OF SHIPPING

[Signature]
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.*

Appendix 1

Product Description and/or Approval Condition

Certificate No : HMB23278-AC002

Date of Issue :10 April, 2018

A. Product Description

1. Product Specification

- 1) Voltage : 3-phase 400V, 500V, 690V
- 2) Frequency : 50/60 Hz
- 3) Enclosure Protection : IP20
- 4) Type code designation +C132 for marine application
- 5) Rating (at 45°C)

Drive Type	Nominal Ratings	
ACS880-04-	In(A)	Pn(kW)

| Un = 400V (Range 380 - 415V) |

505A-3	480	250
585A-3	556	315
650A-3	621	355
725A-3	689	355
820A-3	779	400
880A-3	836	450

| Un = 500V (Range 380 - 500V) |

460A-5	437	250
503A-5	478	315
583A-5	554	355
635A-5	603	400
715A-5	679	450
820A-5	779	500
880A-5	836	560

| Un = 690V (Range 525 - 690V) |

330A-7	314	250
370A-7	352	315
430A-7	409	400
425A-7	409	400
470A-7	447	400
522A-7	496	450
590A-7	561	500
650A-7	618	560
721A-7	685	630

* Derating as per ABB 3AXD50000010521 Rev C (EN)

2. Approved Drawings and documents

- 1) Document No. 3AUA0000128301 Rev. G, Chapter 15
- 2) Document No. 3AXD50000010521 Rev C, Page 13

3. Test Reports, etc.

- 1) Test Report No. 3AXD10000089327, 3AXD10000106522, 3AXD10000241834, 3AXD10000242533, 3AXD10000248380, 3AXD10000249676, 3AXD10000281074, 3AXD10000287077, 3AXD10000309964, 3AXD10000331826, 3AXD10000351614, 3AXD10000351619, 3AXD10000352832, 3AXD10000352833, 3AXD10000406983, 3AXD10000413217, 3AXD10000415632, 224724 TRF EMC_3AXD10000097342, 243333-1 R10 TRF EMC_3AXD10000262979, 252375 TRF EMC_3AXD10000315812, 273767 A_3AXD10000311718, 275993-1 TRF EMC_3AXD10000318980, 275996 TRF EMC_3AXD10000318978, 276592-1 TR EMC IEC61800-3_3AXD10000369955, 276592-2 TR EMC IEC60533_3AXD10000369956, 277447-1 R10 ABB Spelt ACS880 690V TRF Complete, 277447-2 R11 ABB Spelt ACS880 690V TRF Complete, 272110-1_3AXD10000243890, 273473-1_3AXD10000284796, VTT-S-01320-13_3AXD10000116165, VTT-S-03275-13_3AXD10000235075, VTT-S-06084-12_3AXD10000095239

- to be continued -

Appendix 2

Product Description and/or Approval Condition

Certificate No : HMB23278-AC002

Date of Issue : 10 April, 2018

B. Approval Condition

1. Application & Limitation

- 1) This approval is granted on the basis of the test reports and the approved documentation.
- 2) This product is to have the appropriate IP grade according to Pt. 6, Ch. 1, Sec. 201 of the Rules for Classification, Steel Ships.
- 3) Converters with conducted and radiated emission above the KR required limits can be installed in special distribution zone and general power distribution zone, in accordance with IEC 60533 provided measures are taken to attenuate these effects on the distribution system, so safe operation is assured.
- 4) The product is not allowed to be installed in the bridge and on open decks.

2. Individual Product Cert. and Drawing Approval Requirement

- 1) If the converters are used as parts of the motor controller which drive essential auxiliaries specified in KR Rule Pt. 5, Ch. 1, 102 and exceed the output 7.5 kW, Individual Product Certification is required for the motor controller.

3. Marking

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

4. Others

N/A

< The End >

