



Marine &amp; Offshore

Certificate number: 48642/A4 BV

File number: ACE6/1/2

Product code: 2592I

*This certificate is not valid when presented without the full attached schedule composed of 7 sections*

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## TYPE APPROVAL CERTIFICATE

*This certificate is issued to*

**ABB Oy Drives**

Helsinki - FINLAND

*for the type of product*

**FREQUENCY CONVERTERS (Power 50kW and over)**

ACS880LC Drives, Modules and Cabinets

### Requirements:

Bureau Veritas Rules for the Classification of Steel Ships

IEC 61800-5-1 (2007)

IEC 60533 (2015)

EC Code: 21

*This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.*

**This certificate will expire on: 11 Dec 2022**

**For Bureau Veritas Marine & Offshore,**

At BV TURKU (ABO), on 30 Sep 2021,

Miika KOKKO



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: <http://www.veristarp.com/veristarnb/jsp/viewPublicPdfTypepec.jsp?id=4ymz4ypwmy>

BV Mod. Ad.E 530 June 2017

This certificate consists of 4 page(s)

## **THE SCHEDULE OF APPROVAL**

### **1. PRODUCT DESCRIPTION :**

The ACS880LC is liquid cooled frequency converter family. It includes complete drives, its modules and cabinets.

#### **Model – ACS880LC**

Typical input voltage supply 742/849/976 VDC.

Ratings at 45 degree.

#### **Modules/Cabinets:**

Module	Cabinet	Type	Voltage U <sub>N</sub> (V)	Rated Current I <sub>IN</sub> (A)	Power P <sub>N</sub> (kW)	Frame size
ACS880-104LC	ACS880-107LC	Inverter(INU)	690	390-6460	355-6000	1*R8i .... 8*R8i
ACS880-204LC	ACS880-207LC	IGBT supply(ISU)	690	360-5810	426-6874	1*R8i ...8*R8i
ACS880-304LC +A018	ACS880-307LC +A018	Diode supply (DSU)	690	490-6000	559-6849	1* D8T ...8*D8T
ACS880-304LC +A019	ACS880-307LC +A019	Diode supply (DSU)	690	820-5940	932-6784	1* D8D ...8*D8D
ACS880-604LC	ACS880-607LC	Brake unit	525-690	N/A	404-2422	1-6*NBRW-669
ACS880-604LC	ACS880-607LC	Brake unit	690	N/A	870-6500	1*R8i ...5*R8i
N/A	ACS880-1007LC	Liquid cooling unit	400/690	N/A	70-195	NA
ACS880-1604LC	ACS880-1607LC	DC-DC converter (DDC)	690	400-1800	351-1581	1*R8i ...2*R8i

#### **Single Drives:**

Category	Voltage U <sub>N</sub> (V)	Rated Current I <sub>IN</sub> (A)	Power P <sub>N</sub> (kW)	Frame size
ACS880-07CLC	690	390-6460	355-6000	1*D8D+1*R8i ...8*D8D+8*R8i
ACS880-07LC	690	390-6460	355-6000	1*D8T+1*R8i ...8*D8T+8*R8i
ACS880-17LC	690	390-6260	355-6000	1*R8i +1*R8i ...8*R8i + 8*R8i
ACS880-37LC	690	390-6260	355-6000	1*R8i +1*R8i ...8*R8i + 8*R8i

### **2. DOCUMENTS AND DRAWINGS:**

- Main circuit diagram Ref: 3AXD50000045610 Rev A, dated 28/04/2017.
- Hardware Manual ACS880-07CLC drives Ref: 3AXD50000131457 Rev A, dated 09/03/2018.
- Main circuit diagram Ref: ACS880 CLC Rev.0, dated 26/10/2018.

#### **For modification A3 version:**

- ACS880-17LC drives Hardware manual, No. 3AXD50000250295 Rev. A, dated 30-06-2019.
- ACS880-37LC drives Hardware manual, No. 3AXD50000251407 Rev. A, dated 30-06-2019.
- ACS880-204LC IGBT supply modules Hardware manual, No. 3AXD50000284436 Rev. A, dated 30-06-2019.
- ACS880-207LC IGBT supply units Hardware manual, No. 3AXD50000174782 Rev. A, dated 30-06-2019.
- ACS880-1604LC DC/DC converter modules Hardware manual, No. 3AXD50000371631 Rev. A, dated 28-06-2019.
- ACS880-1607LC DC/DC converter modules Hardware manual, No. 3AXD50000431342 Rev. A, dated 28-06-2019.
- ACS880 17LC circuit diagrams, dated 31-05-2019.
- ACS880 37LC circuit diagrams, dated 31-05-2019.
- ACS880 207LC circuit diagrams, dated 31-05-2019.
- ACS880-R8iLC Main Assembly drawing, No. 3AXD50000044181, dated 26-09-2019.
- ACS880-R8iLC Dimension drawing, No. 3AXD50000048361, dated 05-06-2019.
- ACS880-R8iLC Circuit diagrams, No. 3AXD10000461740.
- Assembly Drawing DDC IXR8i W800 ACS880LC, No. 3AXD50000330188, dated 08-08-2019.

**For modification A4 version:**

- ACS880-304LC+A018 diode supply modules Hardware manual No. 3AXD50000568963 Rev. A, dated 30-06-2020.
- ACS880-307LC diode supply units Hardware manual No. 3AXD50000579662 Rev. A, dated 30-06-2020.
- ACS880-604LC brake units modules Hardware manual No. 3AXD50000581641 Rev. A, dated 05-10-2020.
- ACS880-607LC brake units Hardware manual No. 3AXD50000581627 Rev. A, dated 02-10-2020.
- ACS880-07LC drives Hardware manual, No. 3AXD50000569786 Rev. A, dated 02-07-2020.
- ACS880-07LC Schematic, dated 30-03-2020.
- ACS880 D8T Circuit diagrams, No. 3AXD10000891714, dated 16-03-2018.
- ACS880-D8T Module Assembly drawing No. 3AXD50000032085, dated 18-05-2021.
- ACS880 D8T Cabinet Assembly drawing No. 3AXD50000032218, dated 23-12-2020.
- ACS880LC DBU Assembly drawing No. 3AXD50000436279, 3AXD50000641420, dated 22-10-2020.

**3. TEST REPORTS:**

- ACS880-104LC-0850A-7, ref: 3AXD10000552845, dated 20 Oct 2016.
- ACS880-104LC-0850A-7, ref: 3AXD10000552846, dated 20 Oct 2016.
- ACS880-104LC-0850A-7, ref: 3AXD10000574977 Rev A, dated 10 Feb 2017.
- ACS880-104LC-0850A-7, ref: 3AXD10000602470 Rev A, dated 30 Mar 2017.
- ACS880-07CLC-1660A-7, ref: 284748-3-1, dated 30 Sept 2016.
- ACS880-07CLC-1660A-7, ref: 284748-3-2, dated 04 oct 2016.
- ACS880-104LC-0850A-7, ref: 285729-1, dated 04 Jul 2017.
- ACS880-104LC-0850A-7 R8i, ref: 3AXD10000592161, dated 21 Feb 2017.
- ACS880-104LC-0850A-7 R8i, ref: 3AXD10000608989, dated 01 Jun 2017.
- ACS880-104LC R8i, ref VTT-S-05213-16, dated 27 Jan 2017.
- Type Test Reports ACS880-07CLC as communicated to BV dated 04/10/2018.

**For modification A3 version:****SGS:**

- EMC Test Report No. 289705-2-3, dated 08-12-2017.
- EMC Test Report No. 289705-1-1, dated 06-10-2017.
- EMC Test Report No. 289705-2-4, dated 16-05-2018.
- EMC Test Report No. 292790-1-3, dated 18-04-2018.
- EMC Test Report No. 297705-1-2, dated 18-09-2019.

**VTT:**

- Sine VibrationTest Report, No. VTT-S-06945-17, dated 19-01-2018.
- Sine VibrationTest Report, No. VTT-S-06943-17, dated 19-01-2018.
- Sine VibrationTest Report, No. VTT-S-02259-18, dated 28-05-2018.

**ABB:**

- Type test report ACS880-17/37LC, No. 3AXD10000730962, dated 18-06-2018.
- Type test report ACS880-17/37LC, No. 3AXD10000733140, dated 10-08-2018.
- Type test report ACS880-17/37LC, No. 3AXD10000746500, dated 15-06-2018.
- Type test report ACS880-17/37LC, No. 3AXD10000733140, dated 10-08-2018.
- Type test report ACS880-207LC, No. 3AXD10000690789, dated 14-06-2019.
- Type test report ACS880-207LC, No. 3AXD10000808563, dated 06-06-2019.
- Environmental Type test report ACS880-1607LC, No. 3AXD10000737173, dated 29-05-2018.
- Type test report ACS880-17/37LC and ACS880-207LC, No. 3AXD10000894763, dated 26-04-2019.
- Type test report ACS880-1607LC, No. 3AXD10000908840, dated 07-05-2019.
- Environmental Type test report ACS880-204LC, No. 3AXD10000930972, dated 12-06-2019.
- ACS880-1607LC-0900A-7 type test report Rev. C, dated 04-12-2019.
- ACS880-207LC-1500A-7 type test report Rev. B02, dated 11-06-2019.

**eurofins:**

- Sine VibrationTest Report, No. EUFI29-19001903-T2, dated 16-05-2019.

**For modification A4 version:****SGS:**

- Test report No. 298488-1, dated 15-06-2020.
- Test report No. 298488-4, dated 09-11-2020.
- EMC Test Report No. 297930-1-3, dated 05-12-2019.

**ABB:**

- Type test report ACS880-307LC+A018, No. 3AXD10001066066, dated 11-05-2020.
- Type test report ACS880-607LC, No. 3AXD10001175718, dated 26-08-2020.
- Type test report ACS880-307LC+A018 2nd source module, No. 3AXD10001159972, dated 18-05-2020.

**eurofins:**

- Sine VibrationTest Report, No. EUFI29-19003076-T2, dated 17-06-2019.

**4. APPLICATION / LIMITATION:**

- 4.1 - BV Rules for the Classification of Steel Ships.  
4.2 - Approval also valid for ships to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**  
4.3 - BUREAU VERITAS Environmental Category, **EC Code: 21.**  
4.4 - In accordance with the manufacturer instructions.  
4.5 - ACS880 liquid cooled drive module is to be mounted in a cabinet.  
4.6 - The equipment should be installed in "special distribution zone", according to the dispositions stipulated in the IEC 60533.



**5. PRODUCTION SURVEY REQUIREMENTS:**

- 5.1 - The above product are to be supplied by **ABB Drives Helsinki- Finland** in compliance with the type and the requirements described in this certificate.  
5.2 - This type of product is within the category IBV of Bureau Veritas Rule Note NR320.  
5.3 - BV product certificate is required.  
5.4 - The **ABB Drives Helsinki- Finland** has declared to Bureau Veritas the following production site:

**ABB Oy Drives FIDRI**  
**Hiomotie 13 FI-00380**  
**PO Box 184 FI-00381**  
**Helsinki Finland**

**ABB (China) Limited**  
**Universal Plaza, 10 Jiuxianqiao Lu**  
**Chaoyang District, 100016 BeiJing**  
**CHINA**

**6. MARKING OF PRODUCT:**

- 6.1 - Maker's name or trade mark,  
6.2 - Serial number of the units,  
6.3 - Equipment type number or model identification under which it was type-tested,  
6.4 -  or  conformity marking, as relevant.

**7. OTHERS:**

- 7.1 - It is **ABB Drives Helsinki- Finland**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.  
7.2 - This certificate supersedes the Type Approval Certificate No. 48642/A3 BV issued on 13 Jan 2020 by the Society.

\*\*\* END OF CERTIFICATE \*\*\*