Certificate Number: 15-LD1389105-PDA
01/FEB/2016

Confirmation of Product Type Approval

Please refer to the "Service Restrictions" shown below to determine if Unit Certification is required for this product.

This certificate reflects the information on the product in the ABS Records as of the date and time the certificate is printed.

Pursuant to the Rules of the American Bureau of Shipping (ABS), the manufacturer of the below listed product held a valid Manufacturing Assessment (MA) with expiration date of 20/AUG/2019. The continued validity of the Manufacturing Assessment is dependent on completion of satisfactory audits as required by the ABS Rules.

And; a Product Design Assessment (PDA) valid until 20/JUL/2020 subject to continued compliance with the Rules or standards used in the evaluation of the product.

The above entitle the product to be called Product Type Approved.

The Product Design Assessment is valid for products intended for use on ABS classed vessels, MODUs or facilities which are in existence or under contract for construction on the date of the ABS Rules used to evaluate the Product.

ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Product Name: Frequency Converter
Model Name(s): ACS880-04, Frame size -R10 and R11

Presented to:
ABB OY DRIVES
(TYPE APPROVAL ONLY - INVOICES USE WCN 004531)
HIOMOTIE 13
PO BOX 184
Finland

Intended Service:	For use on ABS classed vessels and offshore facilities in accordance with the listed ABS Rules and International Standards.
Description:	The ACS880-04 is a drive module for controlling various type of motors including gas asynchronous AC induction motors, permanent magnet motors, AC induction servomotors and ABB synchronous reluctance motors (SynRM motors).
Tier:	5
Ratings:	Ratings Norminal Voltage: 380V to 690V Output Power: 200kW to 710kW Supply Frequency: 50/60Hz (+/-5%) Input current and output current ratings are as per Technical Data at ACS880-04 drive modules Marine Supplement Ambient Temperature: +45…55 °C (with derating) IP rating:IP20 as standard IP00 with option code +0B051(plastic enclosure at input/output terminal removed)
Service Restrictions:	Unit Certification is required for semiconductor converters used to control motor drives having a rated power of 100 kW(135 hp) and over intended for essential services as 4-8-3/1.5 of Rules. Detailed requirements for unit certification are in 4-8-3/8.7 of the ABS Rules for Building and Classing Steel Vessels 2015. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined. If the drive is connected to multiple motors, use a separate circuit breaker or fuses for protecting each motor

	cable and motor against overload. The drive overload protection is tuned for the total motor load. It may not trip due to an overload in one motor circuit only.
Comments:	The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product. In the temperature range +45…55 °C, the rated output current is derated by 1% for every added 1 °C (1.8 °F)
Notes / Documentation:	Drawing No. 173-14, Technical Data, Revision: -, Pages: 1 Drawing No. 224724 TRF EMC_3AXD10000097342, 35, Revision: -, Pages: - Drawing No. 233660 R11 ABB Spelt ACS880 TRF INST_3AXD10000159119, 1, Revision: -, Pages: - Drawing No. 243333-1 R10 TRF EMC_3AXD10000262979, 36, Revision: -, Pages: - Drawing No. 252375 TRF EMC_3AXD10000315812, 37, Revision: -, Pages: - Drawing No. 254363 R10 ABB Spelt ACS880 TRF 2014-03-31_3AXD10000159119, 2, Revision: -, Pages: - Drawing No. 273767 A_3AXD10000311718, 38, Revision: -, Pages: - Drawing No. 275993-1 TRF EMC_3AXD10000318980, 39, Revision: -, Pages: - Drawing No. 275996 TRF EMC_3AXD10000318978, 40, Revision: -, Pages: - Drawing No. 276592-1 TR EMC IEC61800-3_3AXD10000369955, 41, Revision: -, Pages: - Drawing No. 276592-2 TR EMC IEC60533_3AXD10000369956, 42, Revision: -, Pages: - Drawing No. 277447-1 R10 ABB Spelt ACS880 690V TRF_3AXD10000403998, 3, Revision: -, Pages: - Drawing No. 277447-2 R11 ABB Spelt ACS880 690V TRF_3AXD10000403998, 4, Revision: -, Pages: - Drawing No. 3AXD00000596052, 17, Revision: -, Pages: - Drawing No. 3AXD10000089327, 18, Revision: -, Pages: - Drawing No. 3AXD10000106522, 19, Revision: -, Pages: - Drawing No. 3AXD10000241834, 20, Revision: -, Pages: - Drawing No. 3AXD10000242533, 21, Revision: -, Pages: - Drawing No. 3AXD10000248380, 22, Revision: -, Pages: - Drawing No. 3AXD10000249676, 23, Revision: -, Pages: - Drawing No. 3AXD10000281074, 24, Revision: -, Pages: - Drawing No. 3AXD10000287077, 25, Revision: -, Pages: - Drawing No. 3AXD10000309964, 26, Revision: -, Pages: - Drawing No. 3AXD10000331826, 27, Revision: -, Pages: - Drawing No. 3AXD10000351614, 28, Revision: -, Pages: - Drawing No. 3AXD10000351619, 29, Revision: -, Pages: - Drawing No. 3AXD10000352832, 30, Revision: -, Pages: - Drawing No. 3AXD10000352833, 31, Revision: -, Pages: - Drawing No. 3AXD10000406983, 31, Revision: -, Pages: - Drawing No. 3AXD10000413217, 33, Revision: -, Pages: - Drawing No. 3AXD10000415632, 34, Revision: -, Pages: - Drawing No. ABB Oy Drives and ABB Oy Power Conversion Quality Manual_rev G_3AFE001509, 11, Revision: -, Pages: - Drawing No. ACS880-04 R10_R11 Declaration of Conformity MD _revB, ACS880-04 R10_R11 Declaration of Conformity MD _revB, Revision: -, Pages: - Drawing No. ACS880_drive_modules_catalog_3AUA0000115038_RevF, 5, Revision: -, Pages: - Drawing No. EN_ACS880_01_04_C132_marine_SUPPL_B_3AXD50000010521, 7, Revision: -, Pages: - Drawing No. EN_ACS880_04_R10 _R11_HW_F_A3[1], 8, Revision: -, Pages: - Drawing No. Enviromental_test cases_3AXD10000114570, 13, Revision: -, Pages: - Drawing No. List of Type Tests ACS880-04_3AXD10000319393, 43, Revision: -, Pages: - Drawing No. Main circuit diagram_-5_0000313789, 9, Revision: -, Pages: - Drawing No. Main circuit diagram_-7_0000313789, 10, Revision: -, Pages: - Drawing No. Reguired Test for Marine approval_3AXD10000114570, 15, Revision: -, Pages: - Drawing No. Test Report 273473-1_3AXD10000284796, 45, Revision: -, Pages: - Drawing No. Test report 272110-1_3AXD10000243890, 44, Revision: -, Pages: - Drawing No. VTT-S-01320-13_3AXD10000116165, 46, Revision: -, Pages: - Drawing No. VTT-S-03275-13_3AXD10000235075, 47, Revision: -, Pages: - Drawing No. VTT-S-06084-12_3AXD10000095239, 48, Revision: -, Pages: -
Term of Validity:	This Product Design Assessment (PDA) Certificate 15-LD1389105-PDA, dated 21/Jul/2015 remains valid until 20/Jul/2020 or until the Rules or specifications used in the assessment are revised (whichever occurs first). This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product. Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA. Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.
ABS Rules:	- Steel Vessel Rules (2015) 1-1-4/7.7, 1-1-A3&A4; 4-8-3/8, 4-9-8 Table 1 - Steel Vessels Under 90 Meters (295 Feet) in Length (2015) 1-1-4/7.7, 1-1-A3&A4;

4-6-4/10, 4-7-2 Table 1 - Facilities on Offshore Installations (2015) 1-1-4/9.7, 1-1-A2&A3 - Offshore Support Vessels (2015) 1-1-4/7.7, 1-1-A3&A4; 4-8-3/8, 4-9-8 Table 1 - Mobile Offshore Drilling Units (2015) 1-1-4/9.7, 1-1-A2&A3, 6-1-1/9, 6-1-1/13 - Steel Vessels for Service on Rivers and Intracoastal Waterways (2015) 1-1-4/7.7, 1-1-A3&A4; 4-5-4/10 - High Speed Crafts (2015) 1-1-4/11.9, 1-1-A2&A3; 4-6-4/10, 4-7-9 Table 9 - Steel Barge Rules (2015) 1-1-4/7.9, 1-1-A3&A4

National Standards:

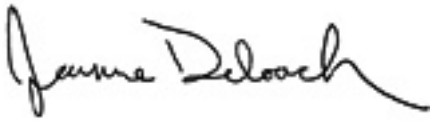
International Standards: IEC 61800-3 Ed.2.0 b: 2004, IEC 61800-5-1 Ed. 2.0 b: 2007, IEC 60533 Ed. 2.0:1999, IEC 60068-2-6 Ed. 7.0 b:2007, IEC 60068-2-78 Ed 1.0:2001, IEC 60068-2-30 Ed.3.0: 2005, EN60068-2-1:2007, IEC/EN 60529:1991 +A2:2013, EN 60204-1:2006+A1: 2009 CSA-C22.2 No. 0-10, 14-13 and CSA C22.2 No.274-13

Government Authority:

EUMED:

Others:

Model Certificate	Model Certificate No	Issue Date	Expiry Date
PDA	15-LD1389105-PDA	21/JUL/2015	20/JUL/2020



ABS Programs

ABS has used due diligence in the preparation of this certificate and it represents the information on the product in the ABS Records as of the date and time the certificate was printed. Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. Limited circumstances may allow only Prototype Testing to satisfy Type Approval. The approvals of Drawings and Products remain valid as long as the ABS Rule, to which they were assessed, remains valid. ABS cautions manufacturers to review and maintain compliance with all other specifications to which the product may have been assessed. Further, unless it is specifically indicated in the description of the product; Type Approval does not necessarily waive witnessed inspection or survey procedures (where otherwise required) for products to be used in a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS. Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.