



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 12-FEB-2023. 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 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-x07/1607-yyyyA-3/5/7+zzzz(Categ.2.a),
ACS880-x7/multidrive-yyyyA-3/5/7+zzzz (Cat 2.b)

Presented to:

ABB OY DRIVES
HIOMOTIE 13
PO BOX 184
FIN-00380
Finland

Intended Service:

For use on ABS classed vessels and offshore facilities in accordance with the listed ABS Rules and International Standards.

Description:

Air-cooled ACS880 Drive (cabinet-built single drives and multidrives Category 2.a and Category 2.b) with built in PLC capability are suitable for controlling the speed and torque of various type of motors including gas asynchronous AC induction motors, permanent magnet motors, AC induction servomotors and ABB synchronous reluctance motors (SynRM motors). The drive can be configured in single drive or multi drive modes. The power range is from 5 to 6180 kW and the voltage range is from 380 to 690 V. The enclosure class of the electrical cabinet is IP22 as standard. ACS880 multidrive modules are designed to be built into a customers' own cabinets by machine builders and system integrators. Multidrive modules are used for building multidrive configurations. Category 2 products are divided in two parts: Category 2.a Cabinet-built ACS880 multidrives and Category 2.b Cabinet-built ACS880 single drives Category 2.a can be arranged according to the requirements of output power and motor configurations. A number of converter modules (rectifier or inverter) can be linked to a common DC bus, thus enabling multiple machine operation with parallel driving and braking. The available modules and their configurations. Supply : Diode Supply Units (DSU: ACS880-307), IGBT Supply Units (ISU: ACS880-207) Inverter : IGBT Inverter Units (INU: ACS880-107)

Brake (ACS880-607 -NBRA 1phase, nxR8i 3phase) and DC/DC converter Modules: ACS880-1607. Multidrive , ACS880-X07 have a side-by-side mounting on the assembly plate situated in the cabinet, making module installation faster and easier. Category 2.b consist of ACS880-07, ACS880-17 and ACS880-37 The ACS880-07 cabinet-built single drives module packages include the parallel connected R8i inverter module and D8T half controlled diode bridge with thyristor charging. The built-in features include direct torque control (DTC), chokes for harmonic reduction, safe torque off (STO) and drive-to-drive communication, EMC filters, braking chopper and common mode filters, several inputs/outputs terminals, fieldbus connectivity, integrated safety including several safety functions and option slots for speed feedback. ACS880-17/37 module package consists of R8i multidrive modules and a LCL line filter optimized for easy cabinet assembly. ACS880-17, regenerative single drive module package consists of R8i multidrive modules and a LCL line filter optimized for easy cabinet assembly. With regenerative functionality, the braking energy of the motor is returned back to the drive and distributed forward to the supply network. This ensures that braking energy is not wasted as heat.

Tier:

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Ratings:

Category 2.a (Cabinet-built ACS880 multidrives): 380-690V ACS880-207: 278 - 5819 KVA, Frame: R8i ... 10xR8i + BLCL ... 5xBLCL-XX-X ACS880-307 : 430 - 5174 KVA, Frame: 2xD7T, D8T... 6xD8T ACS880-107: 5 - 5320 kW, Frame: R5i ... 10xR8i ACS880-607 (NBRA -type, 1-phase): 91...678 kW, Frame: NBRA 659..... 6xNBRA669 ACS880-607 (nxR8i -type, 3-phases): 480...6180kW, Frame: R8i...5R8i ACS880-1607: 290 ... 2721kW, Frame: R8i ... 5xR8i (DC output)
 Category 2.b (Cabinet-built ACS880 single drives): 380-690V ACS880-07 : 52 - 2660 kW, Frame: R6...R11, 2xD7T, D8T ... 4xD8T + 2...5xR8i ACS880-17/37: 152 - 3040 kW, Frame: R11, R8i ... 6xR8i + R8i ... 6xR8i

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 per SVR 4-8-3/1.5, 4-8-3/5.11, 4-8-3/8 and MODU 4-1-1/ Table 3&4 or 6-1-7/9.1.1(b) and 6-1-7/19.7. Inspection and testing of equipment should comply with ABS Steel Vessels Rules (2018) 4-8-3/8.7. When incorporated in a system of Category I, II or III in accordance with 4-9-3/7.1 and 4-9-3/Table 1 of the ABS Rules for Building and Classing Steel Vessels 2018 the documentation detailed in 4-9-3/Table 2 is to be submitted to ABS or to be available for review by ABS as applicable. As per Steel Vessel Rules 4-8-3/1.5, when the drive is intended for essential services i.e. to control motors of 100kW or above, it will be subject to a plan review. Assessment is for Hardware only and no functionality is included in this assessment.

Comments:

1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product. 2. Each particular application configuration is to be specifically approved in conjunction with the relevant system in which the inverter are being used. 3. Drives are not intended for installation in hazardous areas. 4. Drives are to be installed in an Enclosure with IP rating accordance with 4-8-3/Table 2 5. Wiring schematics & assembly drawings to be submitted for each installation. 6. Installations are to be in accordance with manufacturer's instruction and installation manual. 7. Approval is for Hardware only. 8. EMC filter option E202 (not for 690V) to be used in TN-system for 1st environment, restricted distribution, C2. 9. EMC filter as standard (Note: For category C3 no optional equipment is needed, but the drive must be installed according to the instructions given in the manuals) for 2nd environment, C3, grounded/ungrounded network (TN/IT-systems). 10. Converter to 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.

Notes / Documentation:

please see attachment for the drawings list .

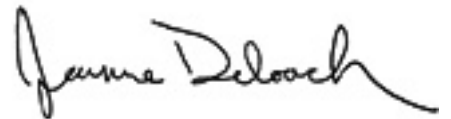
Term of Validity:

This Product Design Assessment (PDA) Certificate 18-LD1627263-PDA, dated 13/Feb/2018 remains valid until 12/Feb/2023 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 (2018): 1-1-4/7.7, 1-1-A3&A4; 4-1-1/7.15, 4-8-3/8, 4-9-8/3, 4-9-8/13, 4-9-8 Table 1 and Table 2; - Steel Vessels Under 90 Meters (295 Feet) in Length (2018): 1-1-4/7.7, 1-1-A3&A4; 4-1-1/37, 4-6-4/10, 4-7-2 Table 1; - Facilities on Offshore Installations (2018): 1-1-4/9.7, 1-1-A2&A3; - Offshore Support Vessels (2018): 1-1-4/7.7, 1-1-A3&A4; 4-1-1/7.15, 4-8-3/5.11, 4-8-3/8, 4-9-8/3, 4-9-8/13, 4-9-8 Table 1 and Table 2; - Mobile Offshore Drilling Units (2018): 1-1-4/9.7, 1-1-A2&A3; 4.1.1/7.9; 6-1-1/9, 6-1-1/13, 6-1-7/12, 6-1-7/13.5; - Steel Vessels for Service on Rivers and Intracoastal Waterways (2018): 1-1-4/7.7, 1-1-A3&A4; 4-1-1/21, 4-5-4/10; - High Speed Crafts (2018): 1-1-4/11.9, 1-1-A2&A3; 4-1-1/37, 4-6-4/10, 4-7-9/15, 4-7-9 Table 9 and Table 10; - Steel Barge Rules (2018): 1-1-4/7.9, 1-1-A3&A4;
- National Standards:** NA
- International Standards:** IEC 61800-5-1 Ed2.0:2007, IEC 60533 Ed 3.0 2015, IEC 61800-3:2004 +A1:2012, IEC 61000-4-11 Ed2.0:2004, IEC/EN 60204-1:2016, EN ISO/IEC 17025:2005, ISO 9001:2015, ISO 14001:2015
- Government Authority:** NA
- EUMED:** NA
- Others:** NA

Model Certificate	Model Certificate No	Issue Date	Expiry Date
PDA	18-LD1627263-PDA	13-FEB-2018	12-FEB-2023



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.