

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Frequency Converter

with type designation(s)
ACS800LC

Issued to

ABB Oy, Drives

,

is found to comply with
DNV GL rules for classification – Ships
DNV GL offshore standards
DNV GL rules for classification – High speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2021-06-30**.

Issued at **Høvik** on **2016-06-22**

DNV GL local station: **Helsinki**

for **DNV GL**

Approval Engineer: **Andreas Kristoffersen**

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Marit Laumann
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Job Id: **262.1-008818-4**
 Certificate No: **TAE000010D**

Name and place of manufacturer

ABB Oy, Drives
Helsinki, Finland

ABB Beijing Drive System Co. Ltd
Beijing, China

ABB AS Drives and Renewables factory
Jüri Rae vald, Harjumaa, Estonia

Product description

The ACS800LC drive can be configured in multi drive or single drive modules to control synchronous and induction motors. It can be configured from Diode supply units or IGBT supply units.

OVERVIEW

Worksheet Name	Type Code	Definition	Ratings (A)
Supply Unit			
304	ACS800-304LC/704LC	Diode Supply Module	572 - 5000
204	ACS800-204LC	IGBT Supply Module	341 - 4560
307	ACS800-307LC/507LC/1107LC/1207LC	Supply Unit	572 - 6124
207	ACS800-207LC	IGBT Supply Unit	216 - 4560
ALCL	ALCL-XXLC	ALCL filter	216 - 1482
Drive Unit			
104	ACS800-104LC	Drive Module	4.9 - 5540
107	ACS800-107LC	Drive Unit	4.9 - 5540
Braking Unit			
NBRW	NBRW-669C	Braking Module	119 kW
607_BRC	ACS800-607LC BRC	Braking Unit	119 - 714 kW
604	ACS800-604LC	3-phase High Power Brake module	250 - 6500 kW
607_DBU	ACS800-607LC DBU	3-phase High Power Brake unit	250 - 6500 kW
Liquid Cooling Unit			
1007	ACS800-1007LC	Liquid Cooling Unit	
Single Drives			
04	ACS800-04LC	Single Drive	546 - 5540
07	ACS800-07LC	Single Drive, Cabinet	546 - 5540
14	ACS800-14LC	Regenerative Drive	79 - 5540
17	ACS800-17LC	Regenerative Drive, Cabinet	79 - 5540
37	ACS800-37LC	Low Harmonic Drive, Cabinet	79 - 5540

For more detailed information regarding ratings see ACS800LC Technical specification doc. no. 68892970 00542856.xls rev. B dated 2008-04-22.

General Technical Specification

Mains connection	
3-Phase Supply Voltage:	$U_{3IN} = 380...415 \text{ V} \pm 10 \% (-15\% - 20\% \text{ transient})$
	$U_{5IN} = 380...500 \text{ V} \pm 10 \% (-15\% - 20\% \text{ transient})$
	$U_{7IN} = 525...690 \text{ V} \pm 10 \% (-15\% - 20\% \text{ transient})$
Frequency:	48...63 Hz (45 - 66 Hz transient)

Short Circuit Capacity:	IEC 61439-1 / -2	
	I cw/ 1 sec.	I pk
Contacteur version	50 kA	105 kA
Breaker version	65 kA	143 kA
Power Factor:	cosφ 1 = 0.97 (fundamental)	
	cosφ = 0.93...0.95 (total)	

Motor connection		
3-Phase Output Voltage:	0.../U _{3IN} /U _{5IN} /U _{6IN}	
Frequency Control:	0...±300 Hz, 0...±100 Hz with du/dt filters	
Field Weakening Point:	8...300 Hz	
Motor Control Software:	ABB's Direct Torque Control (DTC)	
Torque Control:	Open loop	Closed loop
Torque step rise time:	<5 ms with nominal torque	<5 ms with nominal
Non-linearity:	±4 % with nominal torque	±1 % with nominal
Enclosure		
Paint Colour:	Light beige (RAL 7035 semi gloss)	
Enclosure class (IP	IP42/54 (fully enclosed) IP 20 open door	
Insulation class	Voltage category III, sea level altitude	

Power Ratings		
3-Phase Supply Voltage:	U _{3IN} = 380...415 V ± 10 % (-15% - 20% transient)	
	U _{5IN} = 380...500 V ± 10 % (-15% - 20% transient)	
	U _{7IN} = 525...690 V ± 10 % (-15% - 20% transient)	
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Power Factor:	cosφ 1 = 0.97 (fundamental)	
	cosφ = 0.93...0.95 (total)	
Environmental Limits		
Ambient Temperature:		
Transportation:	-40...+70 °C	
Storage:	-40...+55 °C	
Stationary use:	0...+45 °C	
	+45...+50 °C derating required	
Relative Humidity:	5... 95 %, no condensation allowed	
	60 % in the presence of corrosive gases	
Cooling Method:	Direct Water Cooling	
	+5...+38 °C water intake customer circuit	
	≤ 42 °C water outlet	
	water intake, internal circuit	
Temperature class	A	
Humidity class	B	
Vibration class	A	
EMC Class	A (See application/ limitation)	

Application/Limitation

The ACS800LC must be regarded as a component. The actual installation shall be designed according to ABB Oy Users Manual and according to the applicable DNV GL Rules for the actual application. Drawings for the actual application are to be submitted for approval in each case. A product certificate is required case by case in accordance with Rule requirement Pt.4. Ch.8. Sec.1.

To be installed in an enclosure with an IP degree in accordance with DNV GL Rules w.r.t. location.

*Converters with conducted and radiated emission above the DNV GL 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 the safe operation is assured. Planned EMC measures shall be submitted for approval prior to installation onboard.

GN

The EMC measures should be derived from an EMC analysis and plan in accordance with IEC 60533 Annex B and /or IEC 61800-3 Annex E.

End of GN.

Type Approval documentation

Technical info:

ACS800LC Technical specification doc. no. 68892970 00542856.xls rev. B dated 2008-04-22 (part 4 of the binder 3/5, see below).

Test reports, drawings and all other documentation:

ABB Technical Construction Files for Classification Bodies, binders 1 -2 dated 2007-03-16.

ABB Technical Construction Files for Classification Bodies, second phase, binders 3 -5 dated 2008-04-25.

Tests carried out

General type tests in accordance with IEC 61800-1 and 61800-5-1 including Full Current Test and Heat run test.

Environmental tests including Power Supply Variation, Power Supply Failure, Dielectric, EMC (immunity and emission), Vibration, Low temperature and Damp heat.

Marking of product

ABB Oy – Type designation – Output – Input – IP degree

Periodical assessment

The scope of the Periodical assessment is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the survey are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Production Sample Tests (PST) and Routine Tests (RT) checked (if not available tests according to PST and RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance



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- Ensure traceability between manufacturer's product type marking and Type Approval Certificate.

Survey to be performed at least every second year.

END OF CERTIFICATE