



MARINE DIVISION

Certificate number: 13409/C0 BV

File number: ACE 02/034/14

Product code: 2634H

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 AB, Cewe-Control

Västerås - SWEDEN

for the type of product

CONTACTORS (LOW VOLTAGE)

AF-Series:

AF 95 - AF 110 - AF 145 - AF 185 - AF 210 - AF 260 - AF 300 - AF 1350 - AF 1650.

Requirements:

BV Rules for the Classification of Steel Ships.

IEC 60947-1 - IEC 60947-4-1.

This certificate is issued to attest that BUREAU VERITAS 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: 06 Apr 2016

For BUREAU VERITAS,

At BV GOTHENBURG, on 06 Apr 2011,

Magne MOLLER



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. 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 Division 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 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 SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

Contactor type: AF 95, AF 110, AF 145, AF 185, AF 210, AF 260, AF 300, AF 1350, AF 1650.

- Rated Coil voltage:
 - . 20 to 60 V DC,
 - . 48-130 V 50-60 Hz, DC
 - . 100-250 V 50-60 Hz, DC
- Rated Voltage: 415 - 690 V
- Frequency: 50 - 60 Hz
- Rated current: Refer to table
- Number of poles: 3
- Rated insulation voltage (Ui): 1000 V
- Rated impulse withstand voltage (Uimp): 8 kV

CONTACTOR TYPE	Utilization Category	Operational Voltage - Ue (in VAC)	Operational Current - Ie (in A)	Remarks
AF 95	AC-1		= I _{The} : 135A	(theta <= 55°C)
	AC-3	400 VAC	96 A	"
	AC-3	440 VAC	93 A	"
	AC-3	690 VAC	65 A	"
AF 110	AC-1		= I _{The} : 145A	"
	AC-3	400 VAC	110 A	"
	AC-3	440 VAC	100 A	"
	AC-3	690 VAC	82A	"
AF 145	AC-1		= I _{The} : 230A	"
	AC-3	400 VAC	145 A	"
	AC-3	440 VAC	145 A	"
	AC-3	690 VAC	120 A	"
AF 185	AC-1		= I _{The} : 250A	"
	AC-3	400 VAC	185 A	"
	AC-3	440 VAC	185 A	"
	AC-3	690 VAC	170 A	"
AF 210	AC-1		= I _{The} : 300A	
	AC-3	400 VAC	210 A	
	AC-3	440 VAC	210 A	
	AC-3	690 VAC	210 A	
AF 260	AC-1		= I _{The} : 350A	
	AC-3	400 VAC	260 A	
	AC-3	440 VAC	240 A	
	AC-3	690 VAC	220 A	
AF 300	AC-1		= I _{The} : 400A	
	AC-3	400 VAC	305 A	
	AC-3	440 VAC	280 A	
	AC-3	690 VAC	280 A	
AF 1350	AC-1		= I _{The} : 1150A	
	AC-3	600 VAC	1305 A	
AF 1650	AC-1		= I _{The} : 1450A	
	AC-3	600 VAC	1650 A	

2. DOCUMENTS AND DRAWINGS :

Manufacturer's catalogue n° 1SBC 100122C0202.

Documents are filed in ACE 02/034/13.

3. TEST REPORTS :

Type Tests:

- SEMKO test reports n°s: 0212138/01 on 15/04/2002 (AF 95) - 0212138/02 on 16/04/2002 (AF110) - 0212141-01 on 15/04/2002 (AF 145) - 0212141-02 on 15/04/2002 (AF 185) - 0212142-01 on 15/04/2002 (AF 210) - 0212141-02 on 15/04/2002 (AF 260) - 0212141-03 on 15/04/2002 (AF 300) - 304680-1 on 22/04/2003 (AF 1350) - 304680-2 on 22/04/2003 (AF 1650).
- SEMKO Test Report n° 703345 dated 06/11/2007

Electromagnetic Tests:

- DELTA Development Technology AB test reports n°s: REC-122A07 on 08/06/2001, REC-039A07 on 29/11/2000 and REC-040A07 on 29/11/2000.
- DELTA Development Technology AB test reports n°s REC-E702531 on 11/02/2010, REC-E702531_1 on 08/02/2010, REC-E702531_2 on 08/02/2010, REC-E702531_3 on 08/02/2010, REC-E702531_6 on 08/02/2010.

Environmental Tests:

- SEMKO test reports N°s: 316185-1 on 17/12/2003, 316185-2 on 19/12/2003, 316185-3 on 19/12/2003, 316185-4 on 19/12/2003.

4. APPLICATION / LIMITATION :

- According to BV Rules for Classification of Steel Ships
- IEC 60947 series
- On board installation & Maintenance requirements as per regulations stated on the front page of the certificate.

5. PRODUCTION SURVEY REQUIREMENTS :

5.1 - The above products are to be manufactured, examined and tested by **ABB AB, Cewe-Control** in accordance with the type described in this certificate and Bureau Veritas Rules for the Classification of Steel Ships.

5.2 - Production sites are to be recognized by Bureau Veritas as per NR320 for HBV products. To this end **ABB AB, Cewe-Control** has to make the necessary arrangements for a Society's Surveyor to perform visits and product audits at the production sites.

5.3 - **ABB AB, Cewe-Control** has declared to Bureau Veritas that the type of product described in this certificate may be manufactured at the following production site:

ABB AB, Cewe-Control
SE-721 61 Västerås
SWEDEN

6. MARKING OF PRODUCT :

- According to IEC 60947 specifications.
- Trade mark ABB.

7. OTHERS :

7.1 - This approval is given on the understanding that the manufacturers **ABB AB, Cewe-Control, Västerås - Sweden**, will accept full responsibility for informing shipbuilders or their sub-contractors of the proper methods of fitting and general maintenance of the approved equipment and the conditions of this approval.

7.2 - This Certificate supersedes the Type Approval Certificate N° 13409/B0 BV issued on 08/12/2005 by the Society.

*** END OF CERTIFICATE ***