



Certificate number: 23267/A0 BV

File number: ACE2/138/12

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

LS INDUSTRIAL SYSTEMS CO., LTD. (Cheongju Plant)

Cheongju (Chungbuk) - KOREA (REPUBLIC OF)

for the type of product

CONTACTORS (LOW VOLTAGE)

Electromagnetic Contactor MC type
Thermal Overload Relay MT Type

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships,
IEC 60947-1, IEC 60947-4-1, IEC 60947-5-1.

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: 15 Dec 2015

For BUREAU VERITAS,

At BV PUSAN, on 15 Dec 2010,

Keum-Ho Lee



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:

Electromagnetic Contactors MC-6a, MC-9a, MC-12a, MC-18a, MC-9b, MC-12b, MC-18b, MC-22b, MC-32a, MC-40a, MC-50a, MC-65a, MC-75a, MC-85a, MC-100a, MC-130a, MC-150a, MC185a, MC-225a, MC-265a, MC-330a, MC-400a, MC-500a, MC-630a, MC-800a

Thermal Over load Relays MT-12, MT-32, MT-63, MT-95, MT-150, MT-225, MT-400, MT-800

Coil a.c. supply: from 24 to 600V, 50/60Hz

Coil d.c. supply: from 12 to 250V

Poles	3
Rated Operational Power:	From 2.2 kW to 900 kW
Operational voltage (Ue):	Up to 690Vac
Insulation voltage (Ui):	690V for MC-6a to MC-22b; 1000V from MC-32a
Impulse withstand voltage (Uimp):	6k for MC-6a to MC-22b; 8kVac from MC-32a
Frequency:	50/60Hz
Utilization category:	AC1, AC2, AC3, AC4

2. DOCUMENTS AND DRAWINGS:

- According to Manufacturer's catalogue 2009.09,
- Layout Drawings filed in ACE 02/138/12.

3. TEST REPORTS:

- KEMA Performance Test Report n° 2113421.52 dated 25/08/2008.
- KEMA Performance Test Report n° 2108402.50 dated 01/11/2007.
- KEMA Performance Test Report n° 2113421.50 dated 25/08/2008.
- Underwriters Laboratories Performance Test Report n° 08CA56358-20090219 dated 13/09/2009.
- KEMA Performance Test Reports n° 2123631.50, 51, 52, 53, 54, 55, 56 dated 19/08/2009.
- PT&T Environmental Test Reports n° R410-2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205 dated November 2010.
- PT&T Environmental Test Reports n° R410-2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213 dated November 2010.

4. APPLICATION / LIMITATION:

- 4.1 - According to BV Rules for the Classification of Steel Ships, IEC 60947-4-1 and IEC 60947-5-1 specifications.
- 4.2 - Approval valid for ships intended to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**

5. PRODUCTION SURVEY REQUIREMENTS:

- 5.1 - The above products are to be manufactured, examined and tested by **LS Industrial Systems Co. Ltd.**, 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 **LS Industrial Systems Co. Ltd.**, has to make the necessary arrangements for a Society's Surveyor to perform visits and product audits at the production sites.
- 5.3 - **LS Industrial Systems Co. Ltd.** has declared to Bureau Veritas that the type of product described in this certificate are manufactured at the following production site:

**LS Industrial Systems Co. Ltd.
1, Songjeong-gong, Heungdeok-gu,
Cheongju-si, Chungcheongbuk-do,
361-720 KOREA**

6. MARKING OF PRODUCT:

According to IEC 60947 specifications.

7. OTHERS:

This approval is given on the understanding that the Society reserves the right to require check tests to be carried out on the units at any time, and that **LS Industrial Systems** will accept full responsibility for informing shipbuilders, shipowners or their sub-contractors of the proper methods of use and general maintenance of the units and the conditions of this approval.

*** END OF CERTIFICATE ***

