



MARINE DIVISION

Certificate number: 19983/B0 BV

File number: ACE 02/138/08

Product code: 2671H

*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*

**LSIS CO., LTD. (Cheongju Plant)**

Cheongju (Chungbuk) - KOREA (REPUBLIC OF)

*for the type of product*

### ELECTRICAL MOTOR STARTERS

- Manual Motor Starter - Type: 32AF (MMS-32S, MMS-32H, MMS-32HI), 63AF (MMS-63S, MMS-63H, MMS-63HI), 100AF (MMS-100S, MMS-100H, MMS-100HI).

#### Requirements:

BV Rules for the Classification of Steel Ships.  
IEC 60947-1, IEC 60947-2, 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: 23 Jul 2017**

**For BUREAU VERITAS,**

At BV PUSAN, on 23 Jul 2012,

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:

- Manual Motor Starter <sup>1)</sup> - Type:

32AF (MMS-32S, MMS-32H, MMS-32HI)

63AF (MMS-63S, MMS-63H, MMS-63HI)

100AF (MMS-100S, MMS-100H, MMS-100HI)

	MMS -32S	MMS -32H, MMS -32HI	MMS -63S	MMS -63H, MMS -63HI	MMS -100S	MMS -100H, MMS -100HI
Number of poles	3	3	3	3	3	3
Max. Rated operating voltage $U_e$ (VAC)	Up to 690V	Up to 690V	Up to 690V	Up to 690V	Up to 690V	Up to 690V
Rated Insulation voltage $U_i$ (VAC)	690V	690V	1000V	1000V	1000V	1000V
Rated current $I_{th} = I_e$ (A)	0.16 to 32	0.16 to 32	10 to 63	10 to 63	17 to 100	17 to 100
Rated breaking capacity	$I_{cu} / I_{cs}$ (kA)	$I_{cu} / I_{cs}$ (kA)	$I_{cu} / I_{cs}$ (kA)	$I_{cu} / I_{cs}$ (kA)	$I_{cu} / I_{cs}$ (kA)	$I_{cu} / I_{cs}$ (kA)
240/230V(AC)	100/100 50/38 40/30 30/22	100/100	100/100 50/38	100/100	100/100	100/100
415/400V(AC)	100/100 50/38 20/15 15/11	100/100 50/38	100/100 50/38 25/19	100/100 50/50	50/38	100/100 100/50 75/50
460/440V(AC)	100/100 50/38 15/11 10/8 8/6 6/4	100/100 50/38 20/15	15/12 10/8	50/38 35/27	40/30	50/38
525/500V(AC)	100/100 50/38 15/11 10/8 6/5 5/4	100/100 50/38 42/32 10/8	10/8 6/5	50/38 42/32 12/9 10/8	25/19 15/11 12/9 8/6	35/27 25/19 20/15 15/11 12/9
690/600V(AC)	100/100 3/3	100/100 8/8 6/6 4/4	4/3	6/5 5/5	10/8 6/5 5/4	12/9 10/8 8/6 6/6
Rated Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Degree of protection (IEC 60529)	IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Operating handle type	Rocker	Rotary	Rotary	Rotary	Rotary	Rotary
Utilization Category IEC	A	A	A	A	A	A
60947-2(Breaker)						
IEC 60947-4 (Motor starter)	AC 3	AC 3	AC 3	AC 3	AC 3	AC 3

Note: <sup>1)</sup>circuit breaker used as manual motor starter.



**2. DOCUMENTS AND DRAWINGS:**

2.1 - In accordance with the manufacturer's drawings and documents, at latest and at any subsequent issue endorsed by Bureau Veritas:

2.1.1 - Manufacturer's catalogue ref.: 2006. 10.

2.1.2 - According to documentation filed in ACE 02/138/08.

Nb: This above list can be revised to show changes to drawings and documents issue status.

Before changes can be implemented, new drawings and documents must be provided to Bureau Veritas for review and acceptance. The new documents and drawings list will be stamped and endorsed accordingly.

**3. TEST REPORTS:**

3.1 - Power Testing & Technology Institute test reports: N° R47-1575, R47-1576, R47-1577, R47-1578 dated 08/Oct./2007

The above tests were witnessed by a Society's Surveyor.

3.2 - Korea Institute of Machinery & Materials, Vibration test report No:

3.3 - KEMA Test reports N°s: 2038108.51, 2038108.52, 2038108.53, 2038108.54, 2038108.55, 2038108.56 dated 26/May/2004.

3.4 - QA certificate N° QMS-0260 (ISO 9001).

**4. APPLICATION / LIMITATION :**

4.1 - According to BV Rules for the Classification of Steel Ships and IEC 60947 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 **LSIS CO., LTD. (Cheongju Plant) - Korea (Republic of)** 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 **LSIS CO., LTD. (Cheongju Plant) - Korea (Republic of)** has to make the necessary arrangements for a Society's Surveyor to perform visits and product audits at the production sites.

5.3 - **LSIS CO., LTD. (Cheongju Plant) - Korea (Republic of)** has declared to Bureau Veritas that the type of products described in this certificate are manufactured at the following production site:

**LSIS CO., LTD. (Cheongju Plant)**  
1, Songjung-dong, Heungdeok-gu  
Cheongju (Chungbuk)  
KOREA (REPUBLIC OF)

**6. MARKING OF PRODUCT :**

According to IEC 60947 specifications.

**7. OTHERS :**

7.1 - This approval is given on the understanding that the Society reserves the right to require check tests to be carried out on the above Manual Motor Starter at any time, and that **LSIS CO., LTD. (Cheongju Plant) - Korea (Republic of)**, will accept the responsibility for informing shipbuilders or their sub-contractors of the proper methods of use and general maintenance of the Manual Motor Starter and of the conditions of this approval.

7.2 - This certificate cancels and replaces the Type Approval Certificate N° 19983/A1 BV issued on 28/07/2011 by the Society.

\*\*\* END OF CERTIFICATE \*\*\*

