

DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. E-11199

This is to certify that the
Contactor

with type designation(s)

Manufactured by
LSIS Co., Ltd. (Cheongju Factory)
CHEONG JU, Republic of Korea

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application
For installation inside switchboard/enclosures onboard ships and offshore units.

Rated Voltage (V) Up to 690
Rated Current (A) 9 to 800
Frequency (Hz) 50/60

Busan, 2011-07-17
for Det Norske Veritas AS



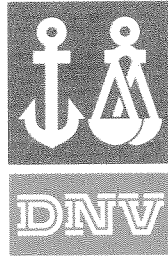
This Certificate is valid until
2014-12-31

Svein Helge Juell
Head of Section

DNV local office:
Seoul

Byoung So Lee
Surveyor

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.
If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



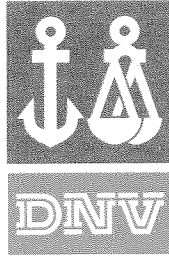
Certificate No.: E-1 1199
 File No.: 823.20
 Job Id.: 262.1-009656-2

Product description

3-pole electromagnetic contactor that controls the switches of electric circuit, the thermal overload relay that protects the overload of motor according to utilization category as listed below.

A. Utilization category AC-2 and AC-3:

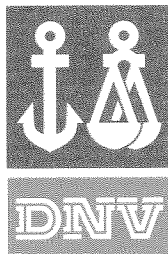
TYPE	ELECTRICAL RATINGS			
	200 - 240 V	380 - 440V	500 - 550V	690V
	(A)	(A)	(A)	(A)
MC - 6a	9	7	6	4
MC - 9a	11	9	7	5
MC - 12a	13	12	12	9
MC - 18a	18	18	13	9
MC - 9b	11	9	7	6
MC - 12b	13	12	12	9
MC - 18b	18	18	13	9
MC - 22b	22	22	18	15
MC - 32a	32	32	28	20
MC - 40a	40	40	32	-
MC - 50a	55	50	43	28
MC - 65a	65	65	60	-
MC - 75a	75	75	64	42
MC - 85a	85	85	75	45
MC - 100a	105	105	85	-
MC - 130a	130	130	90	60
MC - 150a	150	150	100	60
MC - 185a	185	185	180	120
MC - 225a	225	225	200	150
MC - 265a	265	265	225	185
MC - 330a	330	330	250	220
MC - 400a	400	400	350	300
MC - 500a	500	500	400	380
MC - 630a	630	630	500	420
MC - 800a	800	800	720	630



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B. Utilization category AC- 4:

TYPE	ELECTRICAL RATINGS(A)	
	200 - 240 V (A)	380 - 440V (A)
MC – 6a	7	5
MC – 9a	8	6
MC – 12a	11	9
MC – 18a	16	11
MC – 9b	8	6
MC – 12b	11	9
MC – 18b	16	11
MC – 22b	18	13
MC – 32a	20	17
MC – 40a	25	24
MC – 50a	35	32
MC – 65a	50	47
MC – 75a	55	52
MC – 85a	65	62
MC – 100a	80	75
MC – 130a	93	90
MC – 150a	120	110
MC –185a	150	150
MC – 225a	180	180
MC – 265a	200	200
MC – 330a	220	220
MC – 400a	300	300
MC – 500a	350	350
MC – 630a	400	400
MC –800a	530	630



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C. Utilization category AC-1

Type	Electrical Ratings
	- 440 V (A)
MC – 6a	25
MC – 9a	25
MC – 12a	25
MC – 18a	32
MC – 9b	25
MC – 12b	25
MC – 18b	40
MC – 22b	40
MC – 32a	50
MC – 40a	60
MC – 50a	70
MC – 65a	100
MC – 75a	110
MC – 85a	135
MC – 100a	160
MC – 130a	160
MC – 150a	210
MC – 185a	230
MC – 225a	275
MC – 265a	300
MC – 330a	350
MC – 400a	450
MC – 500a	580
MC – 630a	660
MC – 800a	900

Application/Limitation

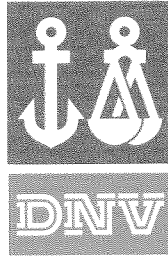
For installation inside switchboards/ enclosures onboard ships and mobile offshore unit.

Tests carried out

Type tests according to IEC 60947-4-1. Environmental tests including dry heat, damp heat, vibration, high voltage, cold, inclination and insulation resistance test

Marking of product

LSIS – Type designation - Rating



Certificate No.: E-11199
File No.: 823.20
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Certificate Retention Survey

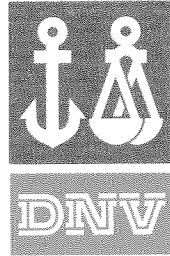
The scope of the retention/renewal survey is to verify that the conditions stipulated for the Type approval is complied with and that no alterations are made to the product design or choice of materials.

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 Routines (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
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Survey to be performed at least every second year.

END OF CERTIFICATE



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. E-11200

This is to certify that the
Overcurrent- and Short-Circuit Relay

with type designation(s)
MT type thermal Overload Relay

Manufactured by
LSIS Co., Ltd. (Cheongju Factory)
CHEONG JU, Republic of Korea


is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application
For installation inside switchboard/enclosures onboard ships and offshore units.

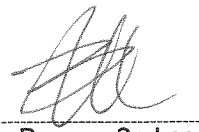
Busan, 2011-07-17
for Det Norske Veritas AS



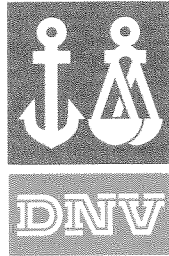
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Certificate No.: E-11200
File No.: 824.10
Job Id.: 262.1-009656-2

Product description

The type MT thermal overload relay is used for prevention of motor burn out in an overload or locked-rotor condition according to setting range and ampere range as listed below.

No	Type	Setting range – amperes	For combination with contactor types
1	MT-12	Various from 0.1 – 0.16 to 12 – 18	MC-6a,9a,12a,18a
	MT-32	Various from 0.1 – 0.16 to 28 – 40	MC-9b,12b,18b,22b,32a,40a
	MT-63	Various from 4 – 6 to 45 – 65	MC- 50a,65a
	MT-95	Various from 7 - 10 to 80 – 100	MC-75a,85a,100a
	MT-150	Various from 34 - 50 to 110 – 150	MC-130a,150a
2	MT-225	Various from 65 - 100 to 160 – 240	MC-185a,225a
3	MT-400	Various from 85 - 125 to 260 – 400	MC-265a,330a,400a
	MT-800	Various from 200 - 330 to 520 – 800	MC-500a,630a,800a

Remark: 1. MT-xx/2H,3H : Non differential type
2. MT – xx/3K : Differential type
3. MT – xx/3D : Delay Type

Application/Limitation

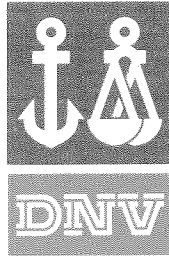
For installation inside switchboards/ enclosures onboard ships and mobile offshore units.

Tests carried out

Type tests according to IEC 60947-4-1. Environmental tests including dry heat, damp heat, vibration, high voltage, cold, inclination and insulation resistance test.

Marking of product

LSIS – Type designation - Rating



Certificate No.: E-1 1200
File No.: 824.10
Job Id.: 262.1-009656-2

Certificate Retention Survey

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