

Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the LR Type Approval System.

This certificate is issued to:

PRODUCER	LSIS Co., Ltd.
PLACE OF PRODUCTION	Cheongju Plant #1, Songjeong-dong, Heungdeok-gu, Cheongju, 361-720, Korea
DESCRIPTION	Molded Case Circuit Breaker Metasol 400/800AF series
TYPE	ABN403c, ABS403c, ABH403c, ABL403c ABN803c, ABS803c, ABL803c
APPLICATION	Marine, offshore and industrial applications for use in environmental categories ENV3 as defined in LR Type Approval System Test Specification No. 1-2002 where the Test Specification is satisfactory for the intended operation.
DESIGN CODE STANDARD	IEC 60947-2; 2006 4 TH Edition

Certificate No.	11/10107
Issue Date	16 December 2011
Expiry Date	15 December 2016
Sheet	1 of 3



S. Nakauma
Yokohama Design Support Office
Lloyd's Register

*Lloyd's Register, registered office:
71 Fenchurch Street, London EC3M 4BS*

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RATINGS

Alternating Current

Type	Current rating at 45°C (A)	Rated voltage (V)	Breaking current (r.m.s.) (kA) Icu/Ics	Making current (Peak asymmetrical) (kA)	Power factor Icu/Ics	Over current release (See Note)	Standard
ABL403c	250, 300, 350, 400	460 /440 /415	85/65	187	0.20	Thermal magnetic release	IEC60947-2 (2006) Utilisation category: A
		250 /240 /220	125/85	275	0.19		
ABH403c	250, 300, 350, 400	460 /440 /415	65/65	143	0.20		
		250 /240 /220	85/85	187	0.19		
ABS403c	250, 300, 350, 400	460 /440 /415	50/50	105	0.20		
		250 /240 /220	75/75	165	0.19		
ABN403c	250, 300, 350, 400	460 /440 /415	37/37	78	0.20		
		250 /240 /220	50/50	105	0.19		

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Type	Current rating at 45°C (A)	Rated voltage (V)	Breaking current (r.m.s.) (kA) Icu/Ics	Making current (Peak asymmetrical) (kA)	Power factor Icu/Ics	Over current release (See Note)	Standard
ABL803c	500, 630, 700, 800	460 /440 /415	85/65	187	0.20	Thermal magnetic release	IEC60947-2 (2006) Utilisation category: A
		250 /240 /220	125/85	275	0.19		
ABS803c	500, 630, 700, 800	460 /440 /415	65/65	143	0.20		
		250 /240 /220	85/85	187	0.19		
ABN803c	500, 630, 700, 800	460 /440 /415	37/37	78	0.20		
		250 /240 /220	50/50	105	0.19		

"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register of any modification or changes to the equipment in order to obtain a valid certificate."

The Design Appraisal Document No. 11/10107 and its supplementary Type Approval Terms and Conditions form part of this Certificate.

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Marine Design Appraisal Document

Lloyd's Register
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Yokohama, 220-6010 Japan
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Date
16 December 2011

Quote this reference on all future communications
YDS/T/SNZ/116603(E11-52)

THE LR TYPE APPROVAL SYSTEM, 2002.

Issued to: **LSIS Co., Ltd.**
 for: **Molded Case Circuit Breaker Metasol 400/800AF series**
TYPE APPROVAL CERTIFICATE No. 11/10107

The undernoted documents have been reviewed for compliance with the requirements of the LR Type Approval System, 2002 and this Design Appraisal Document forms part of the Certificate.

APPROVAL DOCUMENTATION

Request for Marine Services	Form 2502	28 January 2011
Approval Services – Request for Quotation	Form LR6606	28 January 2011
TYPE APPROVAL		
METASOL 400/800AF		
Molded Case Circuit Breakers		
7-1 Type designation		
7-2 Rating to be approved		
14-1 General description of product		
14-2 Design drawing		
14-3 Performance specification (Catalogue)		
14-4 Technical file	Report No. R49-0813	16-22 June 2009
	Report No. 2126589.51	
	Report No. R49-0816	16-22 June 2009
	Report No. 2126589.54	
14-5 Proposed test program		

TEST REPORTS

14-6 Existing test report		
KEMA Test Report IEC/EN 60947-2	Report Reference No. 2126589.51	19 August 2009
	Ditto. 2126589.54	19 August 2009
	Ditto. 2126589.52	19 August 2009
	Ditto. 2126589.55	19 August 2009
Test Report MCCB (ABL403C, ABL803C)	No. R411-0324	18 April 2011
	No. R411-0325	18 April 2011

FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

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Supplementary Type Approval Terms and Conditions

Type Approval certifies that a representative sample of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein. It does not mean or imply approval for any other use, nor approval of any product(s) designed or manufactured otherwise than in strict conformity with the said representative sample.

Type Approval is based on the understanding that the manufacturer's recommendations and instructions and any relevant requirements of the Rules and Regulations are complied with.

Type Approval does not eliminate the need for normal inspection and survey procedures required by the Rules and Regulations.

Lloyd's Register reserves the right to cancel or withdraw this Type Approval Certificate in accordance with the LR Type Approval System Procedure.



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FINAL ACCEPTANCE OF ACTUAL ITEM(S) DEPEND(S) ON SATISFACTORY SURVEY AND TESTING

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Circuit Breakers (ENV Tested)

Producer/ Licence No.	Type	Standard	Rating				Short Circuit	Category/ Additional Tests	Remarks	Cert. No.
			A.C. 50/60Hz		D.C.					
			Normal Current Amperes	Voltage	Power Factor	Voltage				
LSIS Co., Ltd. Cheongju Plant #1, Songjeong-dong, Heungdeok-gu, Cheongju, 361-720, Korea	3 poles Molded Case Circuit Breaker: Metasol 400/800AF series	IEC60947-2					ENV3 (1996)	Expires: 15 December 2016 Utilisation Category: A in accordance with IEC 60947 part 2 2006 4 th Edition	11/10107	
	ABL403c		250, 300, 350, 400	460/440 /415	0.20		(A) rms breaking Icu/Ics(kA) (B) peak making (kA) (A) (B) Icu/Ics Icm 85/65 187	Thermal magnetic		
	ABH403c		250, 300, 350, 400	250/240 /220 460/440 /415	0.19 0.20		125/85 275 65/65 143	Thermal magnetic		
	ABS403c		250, 300, 350, 400	250/240 /220 460/440 /415	0.19 0.20		85/85 187 50/50 105	Thermal magnetic		
	ABN403c		250, 300, 350, 400	250/240 /220 460/440 /415	0.19 0.20		75/75 165 37/37 78	Thermal magnetic		
	ABL803c		500, 630, 700, 800	250/240 /220 460/440 /415	0.19 0.20		50/50 105 85/65 187	Thermal magnetic		
	ABS803c		500, 630, 700, 800	250/240 /220 460/440 /415	0.19 0.20		125/85 275 65/65 143	Thermal magnetic		
				250/240 /220	0.19		85/85 187	Thermal magnetic		

Circuit Breakers (ENV Tested)

Producer/ Licence No.	Type	Standard	Rating						Short Circuit	Category/ Additional Tests	Remarks	Cert. No.
			Normal Current Amperes	A.C. 50/60Hz		D.C.		Time Constant Seconds				
				Voltage	Power Factor	Voltage						
	ABN803c		500, 630, 700, 800	460/440 /415	0.20			37/37	78			
				250/240 /220	0.19			50/50	105			Thermal magnetic

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Mr. Lee

LG Ind. Co.,Ltd.

Cheongju Plant #1, Songjeong-dong, Heungdeok-gu, Cheongju-si,
Chungchoengbuk-do 361-720, Korea

Date 30 December 2011
Your ref
Our ref

Dear Sirs,

Molded Case Circuit Breaker – Metalsol 400/800AF Series


With satisfactory nature of your tests reports to the subject, hereby Type Approval was granted.

We are pleasure in advising that Type Approval for the above material is issued in accordance with your requisition.

We enclosed herewith the original of Type Approval Certificate No. 11/10107, associated DAD and List entry. Also each one copy of technical documents and test reports were returned with duly endorsed by Yokohama Plan Approval Services (YPAS).

Lloyd's Register of Shipping and me wish you all ways your prosperity, and expressed our best regards our honour to have a chance to serve you.

Sincerely yours,



D.H.KIM
LR Asia, Seoul

Enclosed: As stated above