

## LR Type Approval Certificate Extension

*This is to certify* that Certificate No. 93/00154(E1) for the undernoted products is extended and renumbered as shown.

*This certificate is issued to*

**PRODUCER** Hyundai Heavy Industries Co. Ltd.

**PLACE OF PRODUCTION** LCB Department  
1 Cheonha-Dong  
Dong-Ku  
Ulsan  
Republic of Korea

**DESCRIPTION** 2 and 3 pole moulded case circuit breaker

**TYPES** HBS-102C, HBS-103C  
HBL-202, HBL-203

**APPLICATION** Marine, offshore and industrial applications.  
Protection and switching of distribution circuits.

**SPECIFICATION** IEC 60947-2: 1995

**Certificate No.** 93/00154(E2)

**Issue Date** 18 January 1999

**Expiry Date** 31 October 2003

**Sheet** 1 of 2

*Lloyd's Register of Shipping*  
71 Fenchurch Street, London EC3M 4BS

*Lloyd's Register*

J.W. Prior

**Lloyd's Register**



## RATING (Alternating Current)

Type	Current Rating at 45°C (A)	Rated Voltage (V)	Breaking Current (rms Symmetrical) (kA)	Making Current (Peak Asymmetrical) (kA)	Power Factor	Over-Current Release (See Notes)	Standard
HBS-102C	15 to 100A	250	10	17	0.37	1	IEC 947-2
HBS-103C	15 to 100A	500	7.5	12.7	0.37	1	IEC 947-2
HBL-202	125 to 225A	480	42	88.2	0.2	1	IEC 947-2
HBL-203	125 to 225	480	42	88.2	0.2	1	IEC 947-2

Notes: 1. Overload Release: Thermal  
Short Circuit Release: Instantaneous Magnetic

*"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 LR of any modification or changes to the equipment in order to obtain a valid certificate."*

*The attached Design Appraisal Document No. 93/00154(E2) forms a part of this Certificate.*

All other details remain as the original Certificate No. 93/00154(E1) to which this extension should be attached.

Certificate No. 93/00154(E2)

Issue Date 18 January 1999

Expiry Date 31 October 2003

  
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## LR 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** Hyundai Heavy Industries Co. Ltd.  
**PLACE OF PRODUCTION** Industrial & Power Systems  
1, Cheonha-Dong  
Dong-Ku  
Ulsan, 682-061  
Republic of Korea

**DESCRIPTION** Moulded case 2 and 3 pole circuit breakers

**TYPE** HBX-103, HBX-203  
HBL-202, HBL-203

**APPLICATION** Marine, offshore and industrial applications.  
Protection and switching of distribution circuits.

**SPECIFIED STANDARD** NEMA AB 1-1993

**Certificate No.** 97/00074

**Issue Date** 4 June 1997

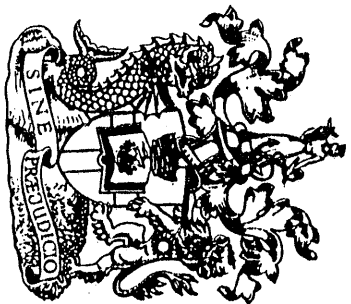
**Expiry Date** 3 June 2002

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Continuation

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**RATINGS**

Type:	HBX-103	HBX-203	HBL-202	HBL-203
Method of Operation:	Manual	Manual	Manual	Manual
No. of Poles:	3	3	2	3
Frame Size:	100A	225 A	225 A	225A
Type of Release:	Thermal Trip: Instantaneous Trip:	Bimetal Electro- magnetic	Bimetal Electro- magnetic	Bimetal Adjustable Electro- magnetic
Termination:	Screw	Bolt	Bolt	Bolt
Terminal Mark:	LINE, LOAD	LINE, LOAD	LINE, LOAD	LINE, LOAD
Rated Operational Voltage (Ue)	480V ac	480V ac	480V ac	480V ac
Rated Insulation Voltage (Ui):	660V ac	660V ac	660V ac	660V ac
Rated current	15/100A	125/225A	125/225A	125/225A
Rated frequency:	60Hz	60Hz	60Hz	60Hz
Rated short circuit current	75kA	75kA	42kA	42kA

Certificate No. 97/00074

Issue Date 4 June 1997

Expiry Date 3 June 2002

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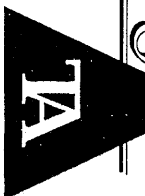
Part 1

Subject: Electrical Equipment (Not Environmentally Tested)

Product: Circuit Breakers

Producer/Licence No.	Description of Product				Cert. No.		
	Type	Details of Approval				Application	Remarks
<b>Hyundai Heavy Industries Co. Ltd., Industrial &amp; Power Systems, 1, Cheonha-Dong, Dong-Ku, Ulsan, 682-061, Republic of Korea.</b>	Moulded case 2 and 3 pole circuit breakers	Current rating at 45°C (A): 15-100 Rated voltage (V)                      Breaking Capacity (kA)                      Power Factor 460    75    0.2 <sup>(1)</sup>			Marine and offshore protection and switching of distribution circuits.	Expires: 3 June 2002 Complies with: NEMA AB1 - 1993 <sup>(1)</sup> Thermal trip: Bimetal Instantaneous trip: Electromagnetic <sup>(2)</sup> Thermal trip: Bimetal Instantaneous trip: Adjustable electromagnetic	97/00074
	HBX-103 3 pole	Current rating at 45°C (A): 125-225 Rated voltage (V)                      Breaking Capacity (kA)                      Power Factor 460    75    0.2 <sup>(1)</sup>					
	HBX-203 3 pole	Rated voltage (V)                      Breaking Capacity (kA)                      Power Factor 460    42    0.2 <sup>(2)</sup>					
	HBL-202 2 pole	Rated voltage (V)                      Breaking Capacity (kA)                      Power Factor 460    42    0.2 <sup>(2)</sup>					
	HBL-203 3 pole	Rated voltage (V)                      Breaking Capacity (kA)                      Power Factor 460    42    0.2 <sup>(2)</sup>					

*[Handwritten signature]*  
5/6/97 1



## LR Type Approval Certificate Extension

This is to certify that Certificate No. 95/00124 for the undemoted products is extended and renumbered as shown.

PRODUCER Hyundai Heavy Industries Co., Ltd.

PLACE OF PRODUCTION LCB Department  
1, Cheonha-Dong  
Dong-Ku

Ulsan 682-792  
Republic of Korea

DESCRIPTION 2 & 3 Pole Moulded Case Circuit Breakers

TYPE HB Series (See 'Ratings' on Sheets 2 and 3)

APPLICATION Switching and Protection of Distribution Circuits

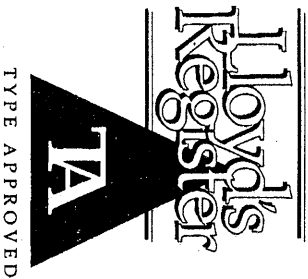
Certificate No. 01/10001(E1)

Issue Date 11 January 2001

Expiry Date 10 January 2006

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Continuation Sheet

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RATINGS

(Alternating Current)

Type	Current Rating at 45°C (A)	Rated Voltage (A)	Breaking Current (rms Symmetrical) (kA)	Making Current (Peak Asymmetrical) (kA)	Power Factor	Standard
HBD-52	10-50	125 250	7.5 5	11.47 7.42	0.39 0.59	IEC 157 P-1
HBD-52D	10-50	125 250	7.5 5	11.47 7.42	0.39 0.59	"
HBL-32 & HBL-33	15-30	250 500	8.5 30	19.5 75.2	0.14 0.05	"
HBL-102 & HBL-103	15-100	480	42	104.16	0.09	"
HBL-402 & HBL-403	250-400	480	42	104.16	0.09	"
HBL-602 & HBL-603	450-600	480	50	105	0.06	"
HBX-103	15-100	440	45	94.5	0.09	IEC 157 P-2
HBX-203	125-225	440	45	94.5	0.09	"
HBX-403	250-400	460	123	279.1	0.15	IEC 157 P-1

Certificate No.

01/10001(E1)

Issue Date

11 January 2001

Expiry Date

10 January 2006

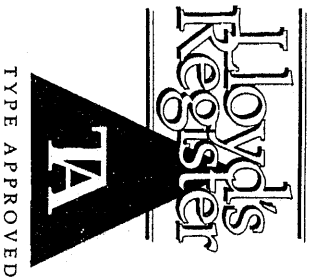
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RATINGS (Cont'd)

(Alternating Current)

Type	Current Rating at 45°C (A)	Rated Voltage (A)	Breaking Current (rms Symmetrical) (kA)	Making Current (Peak Asymmetrical) (kA)	Power Factor	Standard
HBS-32 & HBS-33	3-30	250 500	5 2.5	8.83 3.68	0.48 0.52	IEC 157-1 P-1
HBE-52 & HBE-53	3-50	250 500	5 2.5	8.83 3.68	0.48 0.52	"
HBS-62C & HBS-63C	15-60	250 500	10 7.5	17.2 13.4	0.43 0.42	"
HBH-102 & HBH-103	15-100	250 500	35 18	62.6 34.1	0.07 0.23	"
HBH-202 & HBH-203	125-225	480	25	52.5	0.19	"
HBS-402 & HBS-403	250-400	480	30	63	0.16	"
HBE-602 & HBE-603	450-600	480	30	63	0.16	"
HBS-802 & HBS-803	700-800	480	50	105	0.06	"

Notes:

Overcurrent Release:  
 Overload: Thermal.  
 Short circuit: Instantaneous magnetic.

Certificate No.

01/10001(E1)

Issue Date

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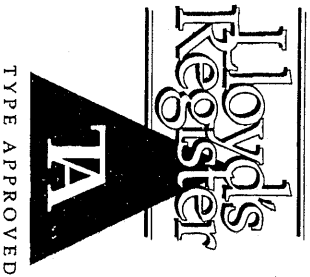
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*"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify LR of any modification or changes to the equipment in order to obtain a valid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

*The attached Design Appraisal Document No. 01/10001(E1) and its supplementary Type Approval Terms and Conditions form part of this Certificate.*

All other details remain as the previous Certificate No. 95/00124 to which this extension should be attached.

Certificate No. 01/10001(E1)

Issue Date 11 January 2001

Expiry Date 10 January 2006

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