

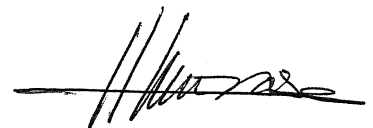
## Type Approval Certificate Extension

This is to certify that Certificate No. 96/10020(E6) for the undernoted products is extended and renumbered as shown.

This certificate is issued to:

<b>PRODUCER</b>	Terasaki Electric Co., Ltd. 7-2-10, Hannan-cho, Abeno-ku, Osaka, 545-0021 Japan
<b>PLACE OF PRODUCTION</b>	Kami Factory 6-13-47 Kamihigashi, Hirano-ku, Osaka, 547-0002 Japan  Yabakei Factory 1073-1 Tobaru, Yabakei-machi, Nakatsu-city, Oita-ken, 871-0404 Japan  Malaysia Factory Lot 3, Jalan 16/13D, 40000 Shah Alam, Selangor Darul Ehsan, Malaysia  Hager Factory No.17 Huitai Road, Huitai Industrial District Huizhou Guangdong 516006, P.R. China
<b>DESCRIPTION</b>	Moulded Case Circuit Breakers, Back-Up Protection
<b>TYPE</b>	E, H, L, S, TB, TL, XE, XH and XS Series
<b>APPLICATION</b>	Protection and switching of distribution circuits for marine, offshore and industrial applications
<b>DESIGN CODE</b>	IEC 60947-1 (2007), IEC 60947-2 (2006) ; Annex A

<b>Certificate No.</b>	96/10020(E7)
<b>Issue Date</b>	23 May 2011
<b>Expiry Date</b>	22 May 2016
<b>Sheet</b>	1 of 14



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

## RATINGS

450 Va.c. Short-Circuit Breaking Current (Sym. r.m.s. kA) / Making Current (Asym. Peak kA) in Cascade Back-Up Protection

Back-up breaker	E250-SF	S100-NF S125-NF S125-NJ S100-NFL S100-NFH S125-SF	S160-NJ S225-NF S250-NF S250-NJ S225-NFL S225-NFH	S50-GF S100-GF S125-GF S125-GJ S50-GFL S50-GFH	S160-GJ S225-GF S250-GF S250-GJ S225-GFL S225-GFH	H100-NF H125-NF H125-NJ	L100-NF L125-NF L125-NJ	
	Branch breaker		S250-SF	S100-GFL S100-GFH				
	E50-SF, E100-SF	15/32.6	22/51.9	15/32.6	22/51.9	15/32.6	22/51.9	180/430

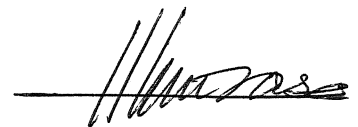
Back-up breaker	S160-NJ S225-NF S250-NF S250-NJ S225-NFL S225-NFH S250-SF	S400-CF S400-CJ S630-CF S630-CJ S800-CF S800-CJ	S400-NF S400-NJ S400-NE S400-NEH	S50-GF S100-GF S125-GF S125-GJ S50-GFL S50-GFH S100-GFL S100-GFH	S160-GJ S225-GF S250-GF S250-GJ S225-GFL S225-GFH	S630-NF S630-NJ S630-NE S630-NEH	S800-NF S800-NJ S800-NE S800-NEH	
	E250-SF	25/56.2	30/70.8	30/70.8		30/70.8	30/70.8	30/70.8
	S50-SF, S125-SF		30/70.8	30/70.8	42/96.7	42/96.7	30/70.8	30/70.8
	S100-NF, S125-NF, S125-NJ, S100-NFL, S100-NFH, S100-NM		30/70.8	30/70.8	42/96.7	42/96.7	30/70.8	30/70.8
	S160-NJ, S225-NF, S250-NF, S250-NJ, S225-NFL, S225-NFH, S225-NM		30/70.8	42/96.7		42/96.7	42/96.7	42/96.7
S250-SF		30/70.8	42/96.7		42/96.7	42/96.7	42/96.7	
S400-CF, S400-CJ			45/109			50/117	50/117	
S630-CF, S630-CJ						50/117	50/117	
S800-CF, S800-CJ							50/117	

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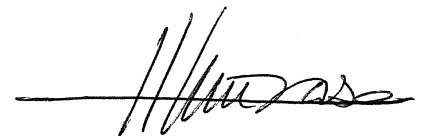
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## RATINGS (Continued)

450 Va.c. Short-Circuit Breaking Current (Sym. r.m.s. kA) / Making Current (Asym. Peak kA) in Cascade Back-Up Protection

Back-up breaker / Branch breaker	S400-GF S400-GJ S400-GE S400-GEH S400-PF S400-PJ S400-PE	H100-NF H125-NF H125-NJ	H225-NF H160-NJ H225-NJ H250-NJ	H400-NE	H630-NE	H800-NE
E250-SF	30/70.8		50/121	50/121	30/65.2	30/65.2
S50-SF, S125-SF	30/70.8	50/121	50/121	50/121	30/70.8	30/70.8
S100-NF, S125-NF, S125-NJ, S100-NFL, S100-NFH, S100-NM	30/70.8	50/121	50/121	50/121	30/65.2	30/65.2
S160-NJ, S225-NF, S250-NF, S250-NJ, S225-NFL, S225-NFH, S225-NM	42/96.7		70/165	70/165	70/165	70/165
S250-SF	42/96.7		70/165	70/165	70/165	70/165
S400-CF, S400-CJ	50/121			100/230	70/165	70/165
S630-CF, S630-CJ					100/230	100/230
S800-CF, S800-CJ						100/230
S400-NF, S400-NJ, S400-NE, S400-NFH				100/230	100/230	100/230

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## RATINGS (Continued)

450 Va.c. Short-Circuit Breaking Current (Sym. r.m.s. kA) / Making Current (Asym. Peak kA) in Cascade Back-Up Protection

Back-up breaker / Branch breaker	L100-NF L125-NF L125-NJ	L225-NF L160-NJ L225-NJ L250-NJ	L400-NE	L630-NE	L800-NE
E250-SF		70/165	70/165	30/70.8	30/70.8
S50-SF, S125-SF	180/430	70/165	70/165	30/70.8	30/70.8
S100-NF, S125-NF, S125-NJ, S100-NFL, S100-NFH, S100-NM	180/430	70/165	70/165	30/70.8	30/70.8
S160-NJ, S225-NF, S250-NF, S250-NJ, S225-NFL, S225-NFH, S225-NM		130/311	130/311	85/203	85/203
S250-SF		130/311	130/311	85/203	85/203
S400-CF, S400-CJ			130/311	100/230	100/230
S630-CF, S630-CJ				130/311	130/311
S800-CF, S800-CJ					130/311
S400-NF, S400-NJ, S400-NE, S400-NFH			130/311	130/311	130/311

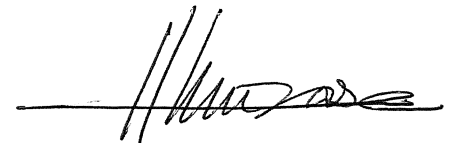
Back-up breaker / Branch breaker	H100-NF H125-NF H125-NJ	H225-NF H160-NJ H225-NJ H250-NJ H400-NE	L100-NF L125-NF L125-NJ	L225-NF L160-NJ L225-NJ L250-NJ L400-NE	L630-NE L800-NE
S50-GF, S100-GF, S125-GF, S125-GJ, S50-GFL, S50-GFH, S100-GFL, S100-GFH	70/165	70/165	180/430	85/203	
S160-GJ, S225-GF, S250-GF, S250-GJ, S225-GFL, S225-GFH		70/165		130/311	85/203

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## RATINGS (Continued)

450 Va.c. Short-Circuit Breaking Current (Sym. r.m.s. kA) / Making Current (Asym. Peak kA) in Cascade Back-Up Protection

Back-up breaker / Branch breaker	H400-NE	H630-NE	H800-NE	L100-NF L125-NF L125-NJ	L225-NF L160-NJ L225-NJ L250-NJ	L400-NE	L630-NE	L800-NE
S630-NF, S630-NJ, S630-NE, S630-NEH		100/230	100/230				130/311	130/311
S800-NF, S800-NJ, S800-NE, S800-NEH			100/230					130/311
S400-GF, S400-GJ, S400-GE, S400-GEH, S400-PF, S400-PJ, S400-PE	100/230	100/230	100/230			130/311	130/311	130/311
H100-NF, H125-NF, H125-NJ				180/430				
H225-NF, H160-NJ, H225-NJ, H250-NJ					130/311			
H400-NE						180/396	180/396	180/396

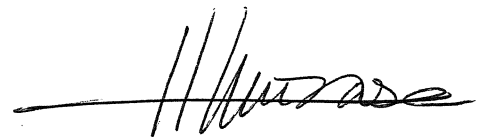
Back-up breaker / Branch breaker	XS50NB XS60NS XE100NS	E125-NJ	XE225NS	E225-NF E250-NF E250-NJ E225-NFL E225-NFH	XS100NB	XS125NB	S100-NF S125-NF S125-NJ S100-NFL S100-NFH
XS30NB, XE50NB	10/28.6	5/8.17	5/9.4	5/8.17	10/28.6		10/17.3
XS50CB	10/28.6	10/17.3			15/31.4		15/32.6
XS50NB		15/32.6	15/31.4	15/32.6	22/50.6	22/50.6	22/51.9
XS60NS		15/32.6	15/31.4	15/32.6	22/50.6		22/51.9
XE100NS		15/32.6	15/31.4	15/32.6	22/50.6	22/50.6	22/51.9

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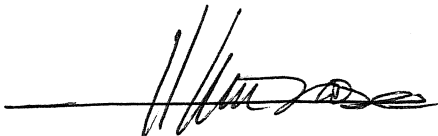
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## RATINGS (Continued)

450 Va.c. Short-Circuit Breaking Current (Sym. r.m.s. kA) / Making Current (Asym. Peak kA) in Cascade Back-Up Protection

Back-up breaker / Branch breaker	XS225NS	S160-NJ S225-NF S250-NF S250-NJ S225-NFL S225-NFH	XS400CS	S400-CF S400-CJ	XS600CS XS800CS	XH50NS	XH100NS
XS30NB, XE50NB	5/9.4	5/8.17					
XS50CB						15/31.4	15/31.4
XS50NB, XS60NS, XE100NS	15/31.4	15/32.6				22/50.6	22/50.6
E125-NJ		25/56.2	30/70.8	30/70.8	30/70.8		
XE225NS	25/56.6		30/72.6		30/72.6		
E225-NF, E250-NF, E250-NJ, E225-NFL, E225-NFH		25/56.2	30/70.8	30/70.8	30/70.8		
XS100NB	25/56.6	25/56.2	30/72.6	30/70.8	30/72.6		42/96.8
XS125NB				30/70.8	30/72.6		
S100-NF, S125-NF, S125-NJ, S100-NFL, S100-NFH, S100-NM			30/70.8		30/70.8		
XS225NS			30/72.6		30/72.6		
S160-NJ, S225-NF, S250-NF, S250-NJ, S225-NFL, S225-NFH, S225-NM			30/70.8		30/70.8		

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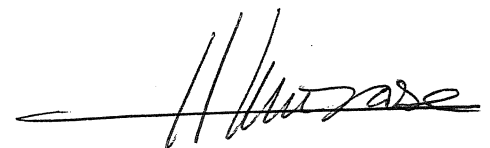
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**RATINGS (Continued)**  
 450 Va.c. Short-Circuit Breaking Current (Sym. r.m.s. kA) / Making Current (Asym. Peak kA) in Cascade Back-Up Protection

Back-up breaker	XH225NS	S400-NF S400-NJ S400-NE S400-NEH	S50-GF S100-GF S125-GF S125-GJ S50-GFL S50-GFH S100-GFL	XH225NE	S160-GJ S225-GF S250-GF S250-GJ S225-GFL S225-GFH	XS400NS XS400NE	XS600NS XS600NE XS800NS XS800NE
Branch breaker			S100-GFH				
XS50CB			15/32.6				
XS50NB, XS60NS, XE100NS	15/31.4		22/51.9		15/32.6		
E125-NJ		30/70.8	30/70.8	30/70.8	30/70.8	30/70.8	30/70.8
XE225NS	30/72.6			30/72.6		30/72.6	30/72.6
E225-NF, E250-NF, E250-NJ, E225-NFL, E225-NFH		30/70.8		30/70.8	30/70.8	30/70.8	30/70.8
XS100NB	42/96.8	30/70.8	42/96.7	30/72.6	42/96.7	30/72.6	30/72.6
XS125NB		30/70.8	42/96.7	30/72.6	42/96.7		30/72.6
S100-NF, S125-NF, S125-NJ, S100-NFL, S100-NFH, S100-NM				30/70.8		30/70.8	30/70.8
XS225NS	42/96.8			42/96.8		42/96.8	42/96.8
S160-NJ, S225-NF, S250-NF, S250-NJ, S225-NFL, S225-NFH, S225-NM				42/96.7		42/96.7	42/96.7

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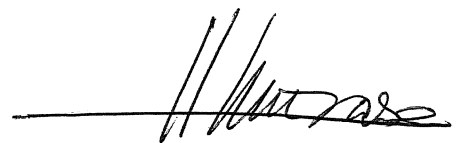
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## RATINGS (Continued)

450 Va.c. Short-Circuit Breaking Current (Sym. r.m.s. kA) / Making Current (Asym. Peak kA) in Cascade Back-Up Protection

Back-up breaker / Branch breaker	S400-GF S400-GJ S400-GE S400-GEH	XH800PS	TL-100F	H100-NF H125-NF H125-NJ	TL-225F	H225-NF H160-NJ H225-NJ H250-NJ	TL-400E	H400-NF H400-NJ
XS50NB, XS60NS, XE100NS			22/50.1	22/50.1				
E125-NJ	30/70.8	30/70.8	50/112	50/121	50/112	50/121	50/112	50/121
XE225NS		30/70.8			50/117		50/117	
E225-NF, E250-NF, E250-NJ, E225-NFL, E225-NFH	30/70.8	30/70.8			50/112	50/121	50/112	50/121
XS100NB	30/70.8	30/70.8	50/117	50/121	50/117	50/121	50/117	50/121
XS125NB	30/70.8	30/70.8		50/121		50/121		
S100-NF, S125-NF, S125-NJ, S100-NFL, S100-NFH, S100-NM		30/70.8	50/112		50/112		50/112	50/121
XS225NS		42/96.7			70/161		70/161	
S160-NJ, S225-NF, S250-NF, S250-NJ, S225-NFL, S225-NFH, S225-NM		42/96.7			70/165		70/165	70/165

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## RATINGS (Continued)

450 Va.c. Short-Circuit Breaking Current (Sym. r.m.s. kA) / Making Current (Asym. Peak kA) in Cascade Back-Up Protection

Back-up breaker Branch breaker	H400-NE	TL-600NE TL-800NE	TL-100C	L100-NF L125-NF L125-NJ	TL-225B	L225-NF L160-NJ L225-NJ L250-NJ	TL-400	L400-NF L400-NJ
XS50NB, XS60NS, XE100NS			180/416	180/430				
E125-NJ	50/121	30/65.2	180/430	180/430	70/165	70/165	70/165	70/165
XE225NS		30/65.2			70/165		70/165	
E225-NF, E250-NF, E250-NJ, E225-NFL, E225-NFH	50/121	30/65.2			70/165	70/165	70/165	70/165
XS100NB	50/121	30/65.2	180/416	180/430	70/165	70/165	70/165	70/165
XS125NB	50/121	30/65.2		180/430		70/165		
S100-NF, S125-NF, S125-NJ, S100-NFL, S100-NFH, S100-NM		30/65.2	180/430		70/165		70/165	70/165
XS225NS		70/161			130/312		130/312	
S160-NJ, S225-NF, S250-NF, S250-NJ, S225-NFL, S225-NFH, S225-NM		50/112			130/307		130/307	130/311

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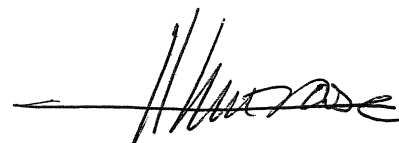
## RATINGS (Continued)

450 Va.c. Short-Circuit Breaking Current (Sym. r.m.s. kA) / Making Current (Asym. Peak kA) in Cascade Back-Up Protection

Back-up breaker / Branch breaker	L400-NE	TL-600 TL-800						
E125-NJ	70/165	30/70.8						
XE225NS		30/72.6						
E225-NF, E250-NF, E250-NJ, E225-NFL, E225-NFH	70/165	30/70.8						
XS100NB	70/165	30/72.6						
XS125NB	70/165	30/72.6						
S100-NF, S125-NF, S125-NJ, S100-NFL, S100-NFH, S100-NM		30/70.8						
XS225NS		85/198						
S160-NJ, S225-NF, S250-NF, S250-NJ, S225-NFL, S225-NFH, S225-NM		85/203						

Back-up breaker / Branch breaker	XS400NS	XS400NE	XS600NS XS600NE	XS800NS XS800NE	XH800PS	TL-100F	TL-225F	TL-400E	H400-NF H400-NJ
XS400CS	50/125	50/121	50/125	50/125	50/117			100/225	
S400-CF, S400-CJ		50/121	50/117	50/117	50/117				100/230
XS600CS			50/125	50/125	50/117				
XS800CS				50/125	50/117				
XH50NS, XH100NS						70/161	70/161	70/161	
XH225NS							70/161	70/161	
S400-NF, S400-NJ									100/230

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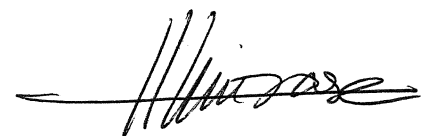
## RATINGS (Continued)

450 Va.c. Short-Circuit Breaking Current (Sym. r.m.s. kA) / Making Current (Asym. Peak kA) in Cascade Back-Up Protection

Back-up breaker / Branch breaker	TL-600NE	TL-800NE	TL-100C	TL-225B	TL-400	L400-NF L400-NJ	TL-600	TL-800
XS400CS	70/161	70/161			130/312		100/233	100/233
S400-CF, S400-CJ	70/165	70/165				130/311	100/230	100/230
XS600CS	100/230	100/230					130/312	130/312
XS800CS		100/230						130/312
XH50NS, XH100NS			180/416	85/198	85/198			
XH225NS	70/161	70/161		130/312	130/312		85/198	85/198
S400-NF, S400-NJ	100/230	100/230				130/311	130/303	130/303
S400-NE, S400-NEH	100/230	100/230					130/311	130/311

Back-up breaker / Branch breaker	TL-100F	TL-225F	TL-400E	H400-NF H400-NJ	H400-NE	TL-600NE	TL-800NE
S50-GF, S100-GF, S125-GF, S125-GJ, S50-GFL, S50-GFH, S100-GFL, S100-GFH	70/165	70/165	70/165	70/165			
XH225NE			100/225	100/230	100/230	100/230	100/230
S160-GJ, S225-GF, S250-GF, S250-GJ, S225-GFL, S225-GFH		70/165	70/165	70/165			
XS400NS			100/225			100/230	100/230
XS400NE			100/225	100/230		100/230	100/230
XS600NS						100/230	100/230
XS600NE						100/230	100/230
XS800NS							100/230
XS800NE							100/230
S400-GF, S400-CJ				100/230		100/230	100/230
S400-GE, S400-GEH						100/230	100/230

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## RATINGS (Continued)

450 Va.c. Short-Circuit Breaking Current (Sym. r.m.s. kA) / Making Current (Asym. Peak kA) in Cascade Back-Up Protection

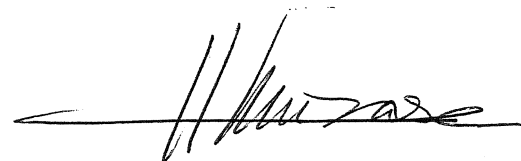
Back-up breaker / Branch breaker	TL-100C	TL-225B	TL-400	L400-NF L400-NJ	L400-NE	TL-600	TL-800
S50-GF, S100-GF, S125-GF, S125-GJ, S50-GFL, S50-GFH, S100-GFL, S100-GFH	180/430	85/203	85/203	85/203			
XH225NE			130/312	130/311	130/311	130/312	130/312
S160-GJ, S225-GF, S250-GF, S250-GJ, S225-GFL, S225-GFH		130/307	130/307	130/311		85/203	85/203
XS400NS			130/312			130/312	130/312
XS400NE			130/312	130/311		130/312	130/312
XS600NS						130/312	130/312
XS600NE						130/312	130/312
XS800NS							130/312
XS800NE							130/312
S400-GF, S400-GJ				130/311		130/303	130/303
S400-GE, S400-GEH						130/311	130/311
TL-100F	180/396						
TL-225F		130/311					
H400-NF, H400-NJ				180/430		180/396	180/396
H400-NE						180/396	180/396

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## RATINGS (Continued)

240 V a.c. Short-Circuit Breaking Current (Sym. r.m.s. kA) / Making Current (Asym. Peak kA) in Cascade Back-Up Protection

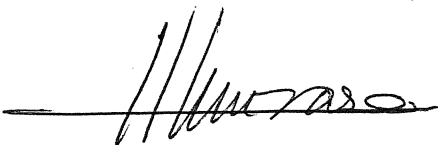
Back-up breaker	E50-SF	S125-SF	S160-NJ
	E100-SF	S100-NF S125-NF S125-NJ S100-NFL S100-NFH	S225-NF S250-NF S250-NJ S225-NFL S225-NFH
Branch breaker			
TB-5S, TB-5D, TB-5P	25/58.3	25/55.6	
E50-SF, E100-SF		50/115	50/115

Back-up breaker	XS50NB XS60NS XE100NS	XE225NS	E125-NJ	E225-NF E250-NF E250-NJ	XS100NB	S100-NF S125-NF S125-NJ S100-NFL S100-NFH	XS225NS	S160-NJ S225-NF S250-NF S250-NJ S225-NFL S225-NFH
	Branch breaker							
TB-5S, TB-5D, TB-5P	25/58.3		25/55.6		25/58.3			
XS30NB, XE50NB	25/53.2		25/55.6		30/69.2	30/68.3		
XS50CB	25/53.2	25/53.2	25/55.6	25/55.6	30/69.2	30/68.3	25/53.2	25/55.6
XS50NB, XS60NS, XE100NS					50/116	50/115	50/116	50/115

125 Va.c. Short-Circuit Breaking Current (Sym. r.m.s. kA) / Making Current (Asym. Peak kA) in Cascade Back-Up Protection

Back-up breaker	XS50CB XS50NB XS60NS XE100NS
	Branch breaker
XS30NB, XE50NB	42/96.9

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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 Lloyd's Register of any modification or changes to the equipment in order to obtain a valid certificate."*

*The attached Design Appraisal Document No. 96/10020(E7) and its supplementary Type Approval Terms and Conditions form part of this Certificate.*

All other details remain as the previous Certificate No. 96/10020(E6) to which this extension should be attached.

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