



TYPE APPROVAL CERTIFICATE
N. ELE200211CS/002

This is to certify that the product below is found to be in compliance with the applicable requirements of the RINA type approval system.

<i>Description</i>	Circuit breaker
<i>Type</i>	Tmax/ML equipped with electronic release: T1/ML, T2/ML, T3/ML, T4/ML, T5/ML, T6/ML
<i>Applicant</i>	ABB SACE SpA Via Baioni, 35 24123 Bergamo ITALY
<i>Manufacturer</i>	ABB SACE SpA Via Friuli, 4 24044 Dalmine ITALY
<i>Testing Standards</i>	IEC 60947-2

Issued in **Genova** on **June 10, 2011**

This certificate is valid until **June 10, 2016**

RINA

Valerio Bonanni

Genova, June 10, 2011

RINA S.p.A.
Via Corsica, 12 - 16128 Genova
Tel. +39 010 53851
Fax +39 010 5351000

1/6



TYPE APPROVAL CERTIFICATE N. ELE200211CS/002

Moulded-case circuit-breakers Tmax/ML Series.

- **Technical datas**

Rated operational voltage (Ue)

Rated current (In): 160A at 45°C for circuit breakers T1B/C and 160A at 40°C for circuit breaker T1N (*)

Rated frequency: 50/60 Hz ; Utilization Category: A

Rated short-circuit capacity (§):

T1B/ ML - Relay type: TMD; R16-R160

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	10	10	17

T1C/ ML - Relay type: TMD; R25-R160

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	11	15	30

T1N/ ML - Relay type: TMD; R32-R160

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	11	22	46.2

- **Technical datas**

Rated operational voltage (Ue).

Rated current (In): 160A at 45°C and 160A at 40°C for circuit breaker T2L (*).

Rated frequency: 50/60 Hz ; Utilization Category: A.

Rated short-circuit capacity (§):

T2N/ ML

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
220/230	65	65	143
380/415	36	36	75.6
440	30	30	63
500	25	25	52.5
690	6	6	9.2

T2S/ ML

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
220/230	85	85	187
380/415	50	50	105
440	45	45	94.5
500	30	30	63
690	7	7	11.9

Genova, June 10, 2011

2/6



TYPE APPROVAL CERTIFICATE N. ELE200211CS/002

T2H/ ML

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
220/230	100	100	220
380/415	70	70	154
440	55	55	121
500	36	36	75.6
690	8	8	13.6

T2L/ ML

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	56	75	165

Release system

Relay type TMD, MA, R25-R160 or electronic release type PR221DS.

- **Technical datas**

Rated operational voltage (Ue) ; Rated current (In): 250A at 40°C (*); Rated frequency: 50/60 Hz.

Utilization Category: A.

Rated short-circuit capacity (§):

T3N/ ML

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	19	25	52.5

T3S/ ML

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	20	40	84

Release system

- Relay type TMD, MA or R63-R250.

- **Technical datas**

Rated operational voltage (Ue); Rated current (In) ; Rated frequency: 50/60 Hz, Utilization Category: A.

Rated short-circuit capacity (§):

T4S/ ML 250 In=250A at 45°C

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	40	40	84
690	25	25	52.5

T4S/ ML 320 In=320A at 40°C (*)

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	40	40	84
690	25	25	52.5

Genova, June 10, 2011

3/6



TYPE APPROVAL CERTIFICATE N. ELE200211CS/002

T4H/ ML 250 In=250A at 45°C

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	65	65	143
690	40	40	84

T4H/ ML 320 In=320A at 40°C (*)

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	65	65	143
690	40	40	84

T4L/ ML 250 In=250A at 40°C for 690V (*) and 250A at 45°C for 440V

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	100	100	220
690	70	70	154

T4L/ML 320 In=320A at 40°C for 690V (*) and 320A at 45°C for 440V

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	100	100	220
690	70	70	154

T4V/ML 250 In=250A at 45°C

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	180	180	396
690	80	80	176

T4V/ML 320 In=320A at 40°C (*)

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	180	180	396
690	80	80	176

Release system

- Thermo-magnetic release: T4. 250 (from R20 to R250) and T4. 320 (from R20 to R320).
- Magnetic only release: from R10 to R200.
- Electronic release type:
 - PR221DS, PR222DS/P, PR223DS/EF: T4. 250 (from R100 to R250) and T4. 320 (from R100 to R320);
 - PR222MP, PR223DS/EF: T4.250 (from R100 to R200).

• Technical datas

Rated operational voltage (Ue) ; Rated current (In) ; Rated frequency: 50/60 Hz;
Rated short-circuit capacity (§):

T5S/ ML 400 In=400A at 40°C (*) - Utilization Category: B

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	40	40	84
690	25	25	52.5

Genova, June 10, 2011

4/6



TYPE APPROVAL CERTIFICATE N. ELE200211CS/002

T5S/ ML 630 In=630A at 40°C (*) Utilization Category: A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	40	40	84
690	25	25	52.5

T5H/ ML 400 In=400A at 45°C Utilization Category: B

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	65	65	143
690	40	40	84

T5H/ ML 630 In=630A at 40°C for 440V (*) and 630A at 45°C for 690V Utilization Category: A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	65	65	143
690	30	40	84

T5L/ ML 400 In=400A at 40°C for 690V (*) and 400A at 45°C for 440V Utilization Category: B

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	100	100	220
690	70	70	154

T5L/ ML 630 In=630A at 45°C - Utilization Category: A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	100	100	220
690	35	70	154

T5V/ ML 400 In=400A at 40°C for 690V (*) and 400A at 45°C for 440V Utilization Category: B

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	180	180	396
690	80	80	176

T5V/ ML 630 In=630A at 40°C for 440V (*) and 630A at 45°C for 690V Utilization Category: A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	180	180	396
690	40	80	176

Release system

Thermo-magnetic release:

- T5. 400 (from R320 to R400) and T5. 630 (from R320 to R630).

Electronic release type:

- PR221DS, PR222DS/P, PR223DF/EF: T5. 400 (from R320 to R400) and T5. 630 (from R320 to R630);

- PR222MP, PR223DF/EF: T5.400 (from R320 to R400).

Genova, June 10, 2011

5/6



TYPE APPROVAL CERTIFICATE N. ELE200211CS/002

• **Technical datas**

Rated operational voltage (Ue); Rated current (In) ; Rated frequency: 50/60 Hz ; Utilization Category: B;
Ambient air temperature: 45°C.

T6N / ML 630; T6N / ML 800; T6N / ML 1000 In=630A, 800A, 1000A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	30	30	63
690	15	20	40

T6S / ML 630; T6S / ML 800; T6S / ML 1000 In=630A, 800A, 1000A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	45	45	94.5
690	17.3	22.6	48.7

T6H / ML 630; T6H / ML 800; T6H / ML 1000 In=630A, 800A, 1000A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	50	50	105
690	19.5	25.4	53

T6L / ML 630; T6L / ML 800; T6L / ML 1000 Iu=630A, 800A, 1000A

Ue (V)	Ics (kA)	Icu (kA)	Icm (kA)
440	60	80	176
690	23.4	30.3	63

Release system

Thermo-magnetic release or electronic release type PR221DS, PR222DS/P or PR223DS/EF.

(§) Rated short-circuit capacity:

Rated service short circuit breaking capacity (Ics)

Rated ultimate short circuit breaking capacity (Icu)

Rated short circuit making capacity (Icm)

Remarks

(*) Derating of the rated current is to be considered with an ambient temperature of 45 °C according to ABB SACE Catalogue n° cat_ml_e_2009-07.doc IL-PM/sc.

The products are subject to the compliance with Tab.1 of RINA MIL Rules Pt.C, Ch.3, Sec.6, where applicable and with the Standards mentioned on the certificate.

Circuit Breakers with nominal current greater than 100A are subject to Final Inspection / Final Test of the Society.

Genova, June 10, 2011

RINA S.p.A.
Via Corsica, 12 - 16128 Genova
Tel. +39 010 53851
Fax +39 010 5351000

6/6