



Test Report issued under the responsibility of:



TEST REPORT
IEC/EN 60947-2
Low-voltage switchgear and controlgear - Part 2: Circuit-breakers

Report Reference No.: C009-CE2010CQC0303-004104

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CB/CCA Testing Laboratory: Shanghai Testing & Inspection Institute for Electrical Equipment (STIEE)

Address: 505 Wu Ning Rd. Shanghai 200063, P.R. CHINA

Applicant's name: Zhejiang Tengen Electrics Co., Ltd.

Address: TENGEN Industry Zone, Liushi, Yueqing, Zhejiang, P.R.China

Test specification:

Standard: ☐ IEC 60947-2:2006 (4th Edition) and/or
☒ EN 60947-2:2006 (4th Edition)

Test procedure: CCA

Non-standard test method: N/A

Test Report Form No.: IECEN60947_2B

Test Report Form(s) Originator: KEMA

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Test item description: Moulded Case Circuit-Breaker

Trade Mark: TENGEN

Manufacturer: Zhejiang Tengen Electrics Co., Ltd.
TENGEN Industry Zone, Liushi, Yueqing, Zhejiang, P.R.China

Model/Type reference: TGM1-225

Ratings: Ue: AC400V, AC690V
In: 100A, 125A, 160A, 180A, 200A, 225A

Testing procedure and testing location:

☒ **CB/CCA Testing Laboratory:** Shanghai Testing & Inspection Institute for Electrical Equipment (STIEE)

Testing location/ address.....: 505 Wu Ning Rd. Shanghai 200063, P.R. CHINA

☐ **Associated CB Laboratory:** N/A

Testing location/ address.....: N/A

Tested by (name + signature).....: WAN YI

Approved by (+ signature): ZHU GANG

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☐ **Testing procedure: TMP** N/A

Tested by (name + signature).....: N/A

Approved by (+ signature): N/A

Testing location/ address.....: N/A

☐ **Testing procedure: WMT** N/A

Tested by (name + signature).....: N/A

Witnessed by (+ signature).....: N/A

Approved by (+ signature): N/A

Testing location/ address.....: N/A

☐ **Testing procedure: SMT** N/A

Tested by (name + signature).....: N/A

Approved by (+ signature): N/A

Supervised by (+ signature).....: N/A

Testing location/ address.....: N/A

☐ **Testing procedure: RMT** N/A

Tested by (name + signature).....: N/A

Approved by (+ signature): N/A

Supervised by (+ signature).....: N/A

Testing location/ address.....: N/A

Particulars: test item vs. test requirements

3. Classification

3.1. Utilization category: (A or B).....	A
3.2. Interruption medium: (air, vacuum, gas Break).....	Air
3.3. Design: (open construction, moulded case).....	Moulded case
3.4. Method of controlling the operation mechanism: (dependent manual, independent manual, dependent power, independent power)	Independent manual, dependent power
3.5. Suitability for insulation: (suitable, not -suitable).....	Suitable
3.6. Provision for maintenance: (maintainable, non maintainable).....	Nonmaintainable
3.7. Method of installation: (fixed, plug in, withdrawable).....	Fixed, plug in
3.8. Degree of protection: (IP code)	N/A
4.8. Integral fuses (integrally fused circuit-breakers) Type and characteristics of SCPD.....	N/A
4.9. Switching overvoltages: (when Uimp. is declared).	N/A
7.3 Electromagnetic compatibility (EMC) Environment A or B.....	A
Circuit-breaker for use on phase-earthed systems.....	N/A
Circuit-breaker for use in IT systems.....	N/A
Rated and limiting values, main circuit	
- rated operational voltage: Ue (V).....	AC400V, AC690V
- rated insulation voltage: Ui (V).....	800V
- rated impulse withstand voltage: Uimp (kV).....	8kV
- rated operational current: Ie (A).....	100A, 125A, 160A, 180A, 200A, 225A
- kind of current.....	AC
- conventional free air thermal current: Ith (A).....	100A, 125A, 160A, 180A, 200A, 225A
- conventional enclosed thermal current: Ithe (A)	N/A
- current rating for four-pole circuit-breakers: (A).....	100A, 125A, 160A, 180A, 200A, 225A
- number of poles	3P(Type L, Type M), 4P(Type M)
- rated frequency: (Hz)	50Hz
- integral fuses (rated values)	N/A
Rated duty :	
- eight-hour duty	N/A
- uninterrupted duty: Iu (A)	100A, 125A, 160A, 180A, 200A, 225A
Short-circuit characteristic :	
rated short-time making capacity: Icm (kA).....	Type L: 73,5kA/AC400V, 7,65kA/AC690V

	Type M: 105kA/AC400V, 17kA/AC690V
rated ultimate short-circuit breaking capacity: I_{cu} (kA)	Type L: 35kA/AC400V, 5kA/AC690V Type M: 50kA/AC400V, 10kA/AC690V
rated service short-circuit breaking capacity: I_{cs} (kA).....	Type L: 22kA/AC400V, 4kA/AC690V Type M: 35kA/AC400V, 5kA/AC690V
rated short-time withstand current: I_{cw} (kA/s).....	N/A
Control circuits :	
Electrical control circuits :	
- kind of current: (AC, DC)	AC
- rated frequency: (Hz)	50Hz
- rated control circuit voltage: U_c (nature, frequency, V)	AC 50Hz 220/230V, 380/400V
- rated control supply voltage: U_s (nature, frequency V)	AC 50Hz 220/230V, 380/400V
Air supply control circuits: (pneumatic or electro-pneumatic) :	
- rated pressure and its limit	N/A
- volumes of air, at atmospheric pressure, required for each closing and each opening operation	N/A
Auxiliary circuits :	
Rated and limiting values, auxiliary circuits	
- rated operational voltage U_e (V).....	AC380V; DC220V
- rated insulation voltage: U_i (V).....	690V
- rated operational current: I_e (A).....	0,3A(AC380V); 0,15A(DC220V)
- kind of current	AC, DC
- rated frequency: (Hz)	50Hz
- number of circuits	N/A
- number and kind of contact elements	1NO+1NC, 2NO+2NC, 4NO+4NC
- rated uninterrupted current: I_u (A)	3A
- utilization category: (AC, DC, current and voltage)	AC-15, DC-13
Short-circuit characteristic :	
- Rated conditional short-circuit current (kA).....	1kA
- Co-ordination of short-circuit protective devices	RL6-25/6
- kind of protective device	Fuse

Releases :

- 1) shunt release : Yes
- 2) Over-current release..... : Yes
- a) instantaneous..... : Yes
- b) definite time delay : N/A
- c) inverse time delay : Yes
- independent of previous load : N/A
- dependent on previous load; (for example thermal type release) : Yes
- 3) Undervoltage release (for opening)..... : Yes
- 4) Other releases : N/A

Characteristics :

- 1) Shunt release and undervoltage release (for opening).... :
- rated control circuit voltage: U_c (nature, frequency, V) : Shunt release :
AC 50Hz 220V, 380V;
DC 24V, 110V
Undervoltage release:
AC 50Hz 220V, 380V
- kind of current : Shunt release : AC, DC
Undervoltage release: AC
- rated frequency: (if AC)..... : 50Hz
- 2) Over-current release..... :
- rated current..... : 100A, 125A, 160A, 180A, 200A, 225A
- kind of current : AC
- rated frequency: (if AC)..... : 50Hz
- current setting (or range of settings) : Instantaneous: $10I_n$ (Power Distribution Protection); $12I_n$ (Motor Protection)
Inverse time delay: I_n
- time settings (or range of settings) : N/A