



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......: 00901-CE2014CQC0303-006932

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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

Master TRF: Dated 2008-10

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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: TGM1-400

Ratings: Ue: AC400V, AC690V
In: 225A, 250A, 315A, 350A, 400A

Testing procedure and testing location:	
<input checked="" type="checkbox"/> CB/CCA Testing Laboratory: Testing location/ address:	Shanghai Testing & Inspection Institute for Electrical Equipment (STIEE) 505 Wu Ning Rd. Shanghai 200063, P.R. CHINA
<input type="checkbox"/> Associated CB Laboratory: Testing location/ address:	N/A N/A
Tested by (name + signature): Approved by (+ signature):	Cheng Yanmin Wei Qingyuan
<input type="checkbox"/> Testing procedure: TMP Tested by (name + signature): Approved by (+ signature): Testing location/ address:	N/A N/A N/A N/A
<input type="checkbox"/> Testing procedure: WMT Tested by (name + signature): Witnessed by (+ signature).....: Approved by (+ signature): Testing location/ address:	N/A N/A N/A N/A N/A
<input type="checkbox"/> Testing procedure: SMT Tested by (name + signature): Approved by (+ signature): Supervised by (+ signature).....: Testing location/ address:	N/A N/A N/A N/A N/A
<input type="checkbox"/> Testing procedure: RMT Tested by (name + signature): Approved by (+ signature): Supervised by (+ signature).....: Testing location/ address:	N/A N/A N/A N/A 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)	Non maintainable
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).....	: 225A, 250A, 315A, 350A, 400A
- kind of current.....	: AC
- conventional free air thermal current: Ith (A).....	: 225A, 250A, 315A, 350A, 400A
- conventional enclosed thermal current: Ithe (A)	: N/A
- current rating for four-pole circuit-breakers: (A)	: 225A, 250A, 315A, 350A, 400A
- 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)	: 225A, 250A, 315A, 350A, 400A

Short-circuit characteristic :

rated short-time making capacity: Icm (kA)	Type L: AC400V 105kA, AC690V 17kA; Type M: AC400V 143kA, AC690V 17kA
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rated ultimate short-circuit breaking capacity: I_{cu} (kA) : Type L: AC400V 50kA, AC690V 10kA;
 Type M: AC400V 65kA, AC690V 10kA
 rated service short-circuit breaking capacity: I_{cs} (kA)..... : Type L: AC400V 35kA, AC690V 5kA;
 Type M: AC400V 42kA, AC690V 5kA
 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 N/A
 each closing and each opening operation..... :

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)..... : 3A(AC380V); 0,20A(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 : 225A, 250A, 315A, 350A, 400A

- 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

Summary of testing:**Tests performed (name of test and test clause):**N/A**Testing location:**

Shanghai Testing & Inspection Institute for Electrical Equipment (STIEE)
505 Wu Ning Rd. Shanghai 200063, P.R. CHINA

Summary of compliance with National Differences: N/A