

FTG-12R/T125-50 Indoor Medium-voltage AC Vacuum Load Switch—Fuse Combination Unit

1 Overview



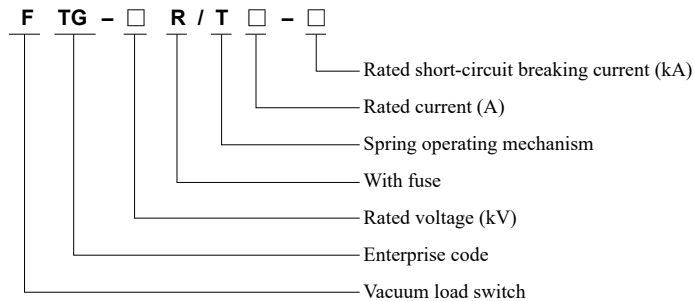
FTG-12R/T125-50 indoor high-voltage AC vacuum load switch—fuse-combination unit (hereinafter referred to as combination unit) is a three-phase AC 50 Hz indoor switchgear with rated voltage 12kV. As main component in the ring main unit, it is widely used in the power distribution system in many places such as industrial and mining enterprises, residence community, hospitals, schools, parks, and secondary substations, and is the best option for protection of station transformer.

The product complies with GB/T “16926 High-voltage alternating current switch – fuse combinations” and GB/T “3804 High-voltage alternating current switches for rated voltage above 3.6 kV and less than 40.5 kV.”

The product operating mechanism is designed into an integrated structure. The operating mechanism and the primary circuit are arranged at front and back. With withdrawable design, the combination unit can be pulled out from the cabinet when troubleshooting and replacement of high-voltage fuse.



2 Type Designation



3 Technical Parameters

3.1 Main technical parameters

No.	Name		Unit	Parameter
1	Rated voltage		kV	12
2	Rated frequency		Hz	50
3	Rated current		A	125
4	Rated insulation level	Power frequency withstand voltage (phase to phase, phase to earth)	kV	42
		Power frequency withstand voltage (open contacts)		48
		Lightning impulse withstand voltage (phase to phase, phase to earth)		75
		Lightning impulse withstand voltage (open contacts)		85
5	Rated short-circuit breaking current		kA	50
6	Rated short-circuit operating current (peak)			125
7	Rated active load breaking current		A	125
8	Closed loop breaking current			125
9	Rated cable-charging breaking current			10
10	Rated transfer current			1750
11	Rated take-over current			3150
12	Mechanical life			Times
13	Allowable cumulative wear thickness for moving and fixed contacts		mm	3

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3.2 Mechanical property parameters

No.	Name	Unit	Parameter
1	Distance between open contacts	mm	9±1
2	Contact overtravel	mm	3.5±0.5
3	Contact closing bounce time	ms	≤ 2
4	Average closing speed	ms	0.4 ~ 0.8
5	Average opening speed	m/s	0.9 ~ 1.3
6	Closing time	ms	30 ~ 70
7	Opening time	ms	20 ~ 50
8	Closing asynchronous	ms	≤ 2
9	Opening asynchronous	ms	≤ 2
10	Main circuit resistance	μΩ	≤ 250
11	Center distance between phases	mm	210
12	Allowable cumulative wear thickness for moving and fixed contacts	mm	3

4 Operating Conditions

4.1 Normal Working Conditions

- 4.1.1 Ambient temperature: The max. temperature is +40°C, and the min. temperature is -15°C (storage and transport at -30°C are allowed);
- 4.1.2 Environmental humidity: The daily mean relative humidity is ≤ 95%, the monthly mean relative humidity is ≤ 90%; the daily mean vapor pressure is ≤ 2.2 x 10⁻³ MPa, and the monthly mean vapor pressure is ≤ 1.8 x 10⁻³ MPa;
- 4.1.3 The altitude does not exceed 1000m (customization is required if greater than 1000m);
- 4.1.4 The earthquake intensity does not exceed 8 degrees;
- 4.1.5 There is no water drops, no flammable materials, no chemical corrosive gas and no severe vibration at the site.
- 4.2 If the normal working conditions are not met, please contact the manufacturing unit.

5 Features

5.1 Excellent overall performance

- 5.1.1 Combine the current limiting fuse with the vacuum interrupter organically by solid-sealing pole
- 5.1.2 The mechanical life is up to 10,000 times and above.

5.2 Strong breaking capacity

- 5.2.1 Vacuum circuit breaker body (vacuum interrupter) is used to make and open various load current and overload current
- 5.2.2 Current-limiting fuse is used to open the short-circuit current

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5.3 Integrally cast solid-sealed pole

5.3.1 The solid-sealed pole is formed by the new APG process;

5.3.2 The vacuum interrupter and fuse are solid-sealed in the pole to effectively prevent damage and surface contamination caused by foreign matters, and to significantly reduce the size of the product.

5.4 Flexible and simple operating mechanism

5.4.1 The operating mechanism is of the spring energy storage type, and has two functions of electric and manual energy storage;

5.4.2 During operation, the energy of the energy storage spring is transferred to the link gear through the output cam, and then to the moving contact part through the link gear;

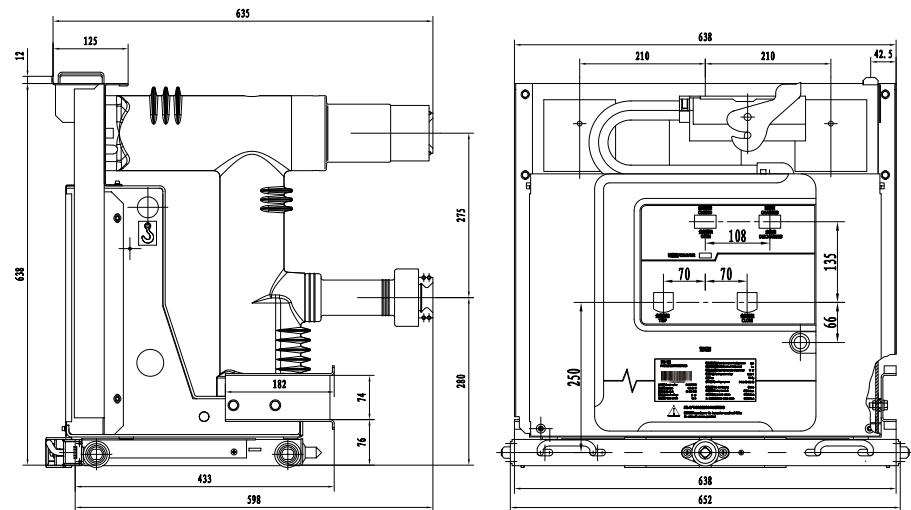
5.4.3 With advanced and reasonable damping device, the opening rebound force is small.

5.4.4 Adjustment-free, very little maintenance.

5.5 The overall dimensions are exactly consistent with those of circuit breaker with better universality and interchangeability

6 Outline and Installation Dimensions

6.1 Outline drawing of fuse-combination unit

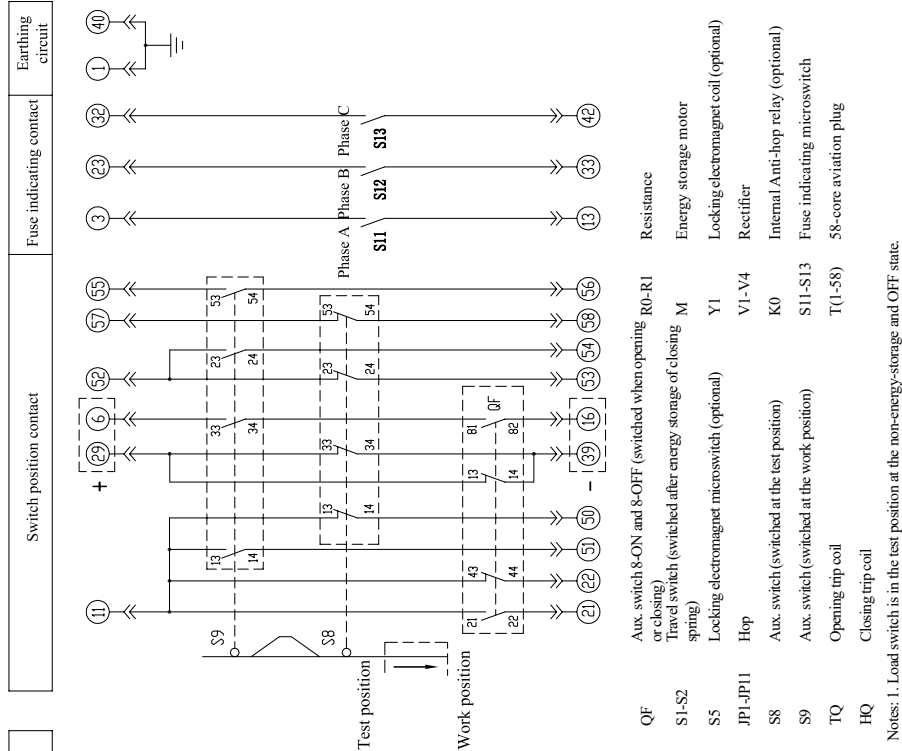


Notes:

1. The advance stroke of handcart is 200mm;
2. Contact size: the size of the matching fixed contact is $\Phi 35$ or $\Phi 49$, and the size of fixed contact in the cabinet shall be confirmed when ordering.

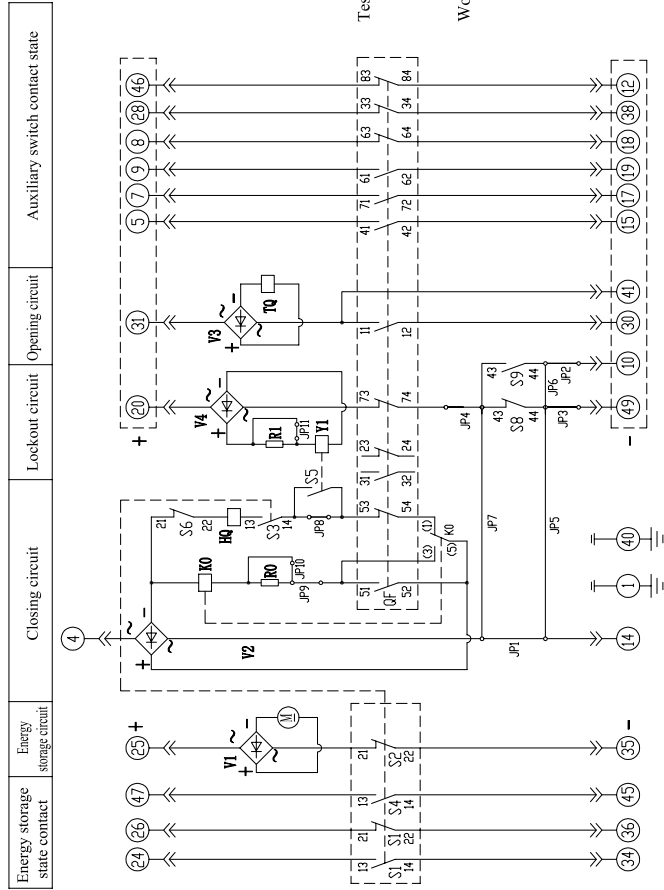
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7 Electrical Secondary Schematic Diagram



- QF Resistance
- S1-S2 Energy storage motor
- S5 Locking electromagnet coil (optional)
- JP1-JP11 Rectifier
- S8 Aux. switch (switched at the test position)
- S9 Aux. switch (switched at the work position)
- TQ Opening trip coil
- HQ Closing trip coil

Notes: 1. Load switch is in the test position at the non-energy-storage and OFF state.
2. When operating under the DC power supply, the polarity in the dashed box shall be same, and the motor shall be wired according to the polarity shown in figure.



Option wiring layout: a-b h-g e-f c-d a-f a-g b-c i-j l-k

Hop state Configuration	JP1	JP2	JP3	JP4	JP5	JP6	JP7	JP8	JP9
With lockout	✓	✓	✓	✓	✓	✓	✓	✓	✓
Without lockout	✓	✓	✓	✓	✓	✓	✓	✓	✓
With anti-hop	✓	✓	✓	✓	✓	✓	✓	✓	✓
Without anti-hop	✓	✓	✓	✓	✓	✓	✓	✓	✓

Operating power selection:	l-m	q-p
Hop state Configuration	JP 10	JP 11
AC/DC220V	/	/
AC/DC110V	✓	✓

Notes: "✓" indicates disconnection;
"-" indicates connection

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8 Ordering Technical Confirmation Form

Technical Confirmation Form for Ordering FTG-12R/T125-50 Indoor High-Voltage AC Vacuum Load Switch-Fuse Combination Unit

Please determine your requirements according to the items listed in table below:

Product model	Load switch – fuse-combination unit: <input type="checkbox"/> FTG-12/T125-50	
Qty. (unit)		
Contact size	<input type="checkbox"/> Matched with $\phi 35$ fixed contact (standard configuration) <input type="checkbox"/> Matched with $\phi 49$ fixed contact	
Phase spacing (mm)	<input type="checkbox"/> 210 (800mm cabinet as standard configuration) <input type="checkbox"/> 275 (1,000mm cabinet configured) Note: Phase spacing is the center distance between Phase A and Phase B or between Phase B and Phase C.	
Pole distance (mm)	<input checked="" type="checkbox"/> 275 (Standard configuration) Note: The clearance between poles refers to the center distance between the top and bottom outlet terminals.	
Energy storage holding	<input type="checkbox"/> Yes (Standard configuration) <input type="checkbox"/> No <input type="checkbox"/> No (with closed holding relay) Notes: With energy storage holding, store the energy and then operate the closing action Without energy storage holding, the closing is automatically conducted after energy storage is completed.	
Operating voltage (V)	OFF, ON: <input type="checkbox"/> AC220 <input type="checkbox"/> DC220 <input type="checkbox"/> Others _____	
	Stored energy: <input type="checkbox"/> AC220 <input type="checkbox"/> DC220 <input type="checkbox"/> Others _____	
Closing lockout	<input type="checkbox"/> Without lockout (Standard configuration) <input type="checkbox"/> With lockout	
Anti-hop device	<input type="checkbox"/> Without Anti-hop (Standard configuration) <input type="checkbox"/> With Anti-hop	
Overcurrent device	<input type="checkbox"/> Without overcurrent (Standard configuration) <input type="checkbox"/> Overcurrent of phases A and C <input type="checkbox"/> Overcurrent of phases A, B, and C	
Voltage-loss trip device	<input type="checkbox"/> No (Standard configuration) <input type="checkbox"/> Yes Note: Auto opening after power outage.	
Fuse	<input checked="" type="checkbox"/> Provided by user Note: Model XRNT-12, length 360mm	
Chassis cart option	Lockout: <input type="checkbox"/> With lockout (Standard configuration) <input type="checkbox"/> With lockout, operating voltage _____ V Note: Load switch cannot be pushed forwards or out if the lockout coil is not electrified Earthing: <input type="checkbox"/> Bottom friction earthing (Standard configuration) <input type="checkbox"/> Guide rails earthing at both sides Program lock: <input type="checkbox"/> No (Standard configuration) <input type="checkbox"/> Lock the chassis cart (drill a key hole on the cabinet door) <input type="checkbox"/> Lock the side baffle of circuit breaker Cabinet door interlock: <input type="checkbox"/> No (Standard configuration) <input type="checkbox"/> With door closing interlock function (middle door interlock)	
Secondary wiring scheme	<input type="checkbox"/> Tengen standard scheme (see Catalogue) <input type="checkbox"/> Non-standard scheme (scheme should be provided)	
Dimensions	<input type="checkbox"/> Tengen standard scheme (see Catalogue) <input type="checkbox"/> Non-standard scheme (scheme should be provided)	
Standard accessories	One chassis cart handle (length 40mm), one energy storage handle, one aviation socket port (58-core, with 50 pins (1.5 mm ²)), one coiled pipe (about 300mm)	
Other special requirements		Ordering unit (seal) Signature: _____ Confirmation date: _____ Tel: _____