FN12-12(D)/T630-20 Indoor High-Voltage Pressure-Operated Load Switch FN12-12R (D)/T125-31.5 Indoor High-Voltage Pressure-Operated Load Switch – Fuse Combination Unit

1 Overview

1.1 Used in the 10kV and below three-phase power distribution system for control and protection of power equipment such as transformer, cables, and overhead lines, especially suitable for terminal substations and box-type substations used in urban network and rural network and for control and protection of ring network and dual radiant power supply unit.

1.2 FN12-12 (D) / T630-20 indoor pressure-operated load switch can turn on/off the load current.

1.3 FN12-12R (D) / T125-31.5 indoor pressure-operated load switch + fuse combination can turn on/off the load overcurrent, overload current, and line short circuit current.

1.4 Standard

GB/T 3804 High-voltage alternating current switches for rated voltage above 3.6 kV and less than 40.5 kV

GB/T 16926 High-voltage alternating current switch - fuse combinations

2 Type Designation

F N 12 - 12 D / T 630 - 20

- 20 — Rated short-circuit breaking current (kA)
- 630 — Rated current (A)
- T — Spring mechanism
- D — With earth switch
- 12 — Rated voltage (kV)
- 12 — Design code
- N — Indoor
- F — Pressure-operated load switch

F N 12 - 12 R D / T 125 - 31.5

- 31.5 — Rated short-circuit breaking current (kA)
- 125 — Max. rated current of optional fuse (A)
- T — Spring mechanism
- D — With earth switch
- R — With fuse
- 12 — Rated voltage (kV)
- 12 — Design code
- N — Indoor
- F — Pressure-operated load switch

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3 Technical Parameters

No.	Parameter Name			Unit	FN12-12D	FN12-12RD
1	Rated voltage			kV	12	12
2	Rated current			Hz	50	50
3	Rated frequency			A	630	125
4	Rated insulation level	Power frequency withstand voltage for 1 minute	P/phase to earth, P/phase to phase	kV	42	42
			O/open contacts		48	48
		Lighting impulse withstand voltage (peak)	P/phase to earth, P/phase to phase		75	75
			O/open contacts		85	85
5	Rated circuit-breaker withstand current (thermal stability current)			kA	20	--
6	Rated short-circuit duration (thermal stability current)		Load switch	S	4	--
			Earth switch		2	
7	Rated short-circuit making current (peak)			kA	50	--
8	Rated breaking current		Active load breaking current	A	630	--
			Closed-loop breaking current		630	--
			5% active load breaking current		31.5	--
			Cable charge current		10	--
9	Breaking no-load transformer capacity			kVA	1250	--
10	Rated short-circuit breaking current (current-limiting fuse)			kA	--	31.5
11	Rated transfer current or take-over current			A	--	1200
12	Mechanical life			times	2,000	
13	Impactor output energy			J	--	2 ~ 5
14	Main circuit resistance			μΩ	≤120	≤300
15	Fuse model			--	--	XRNT□-12

4 Operating Conditions

4.1 Ambient temperature: Upper limit: +40°C; Lower limit: -15°C;

4.2 The altitude does not exceed 1,000 meters.

4.3 For relative air humidity, the daily mean is not greater than 95%, and the monthly mean is not greater than 90%;

4.4 The seismic intensity is below 8 magnitude scales.

4.5 Installed in places free of fire, explosive risk, chemical corrosion, and violent vibration.

4.6 The installation site shall be free of flammable substance, explosive risk, chemical corrosion and violent vibration.

Please contact the manufacturer for customizing those failed to follow the normal working conditions.

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5 Features

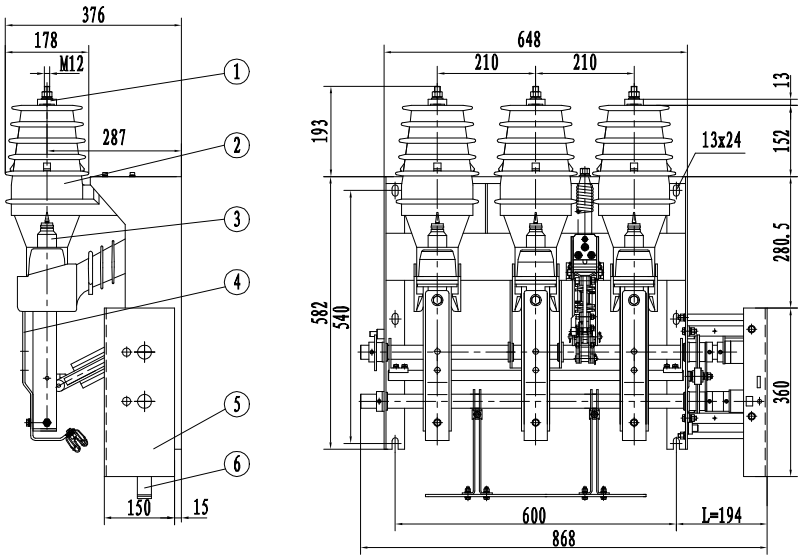
5.1 This series of product features with compact structure, reasonable design, reliable interlock, and high insulation level, and its opening and closing actions are realized in the vertical straight movement way; the spring energy-storage operating mechanism is used to ensure that the opening and closing speed is not affected by the operating force applied by the operator; the electric arc will be extinguished in the bell-shaped insulating hood, and free gas will not cause the reduction of the insulation between the phases or to the ground when arcing.

5.2 An organic transparent insulating hood is provided between the bell-shaped hood and the support (that is the switch isolating distance) to completely isolate the live body, thus improving the protection grade of ring main unit. A reliable mechanical interlock is provided between the load switch and the ground switch, and a mechanical interlock is also installed on the switch panel with the cabinet body. Those interlocks are simple and effective without mis-operation or unintended touched.

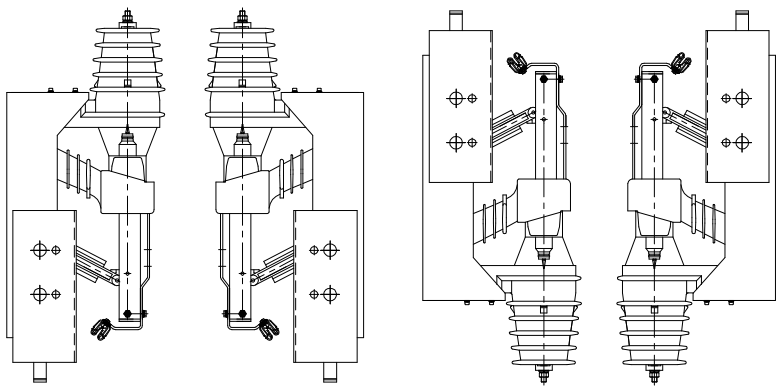
5.3 This series of products use arc contact made of copper-tungsten alloy allowing that the switch is reliably conductive and has a long electrical life with advantages of easy maintenance, convenient operation, and reliable operation.

6 Outline and Installation Dimensions

6.1 Load switch



① Static outgoing seat ③ Conducting bush ⑤ Operator panel
② Insulating hood ④ Conducting bar ⑥ Earth switch



Front side mounted for left operation | Front side mounted for right operation | Reverse side mounted for left operation | Reverse side mounted for right operation

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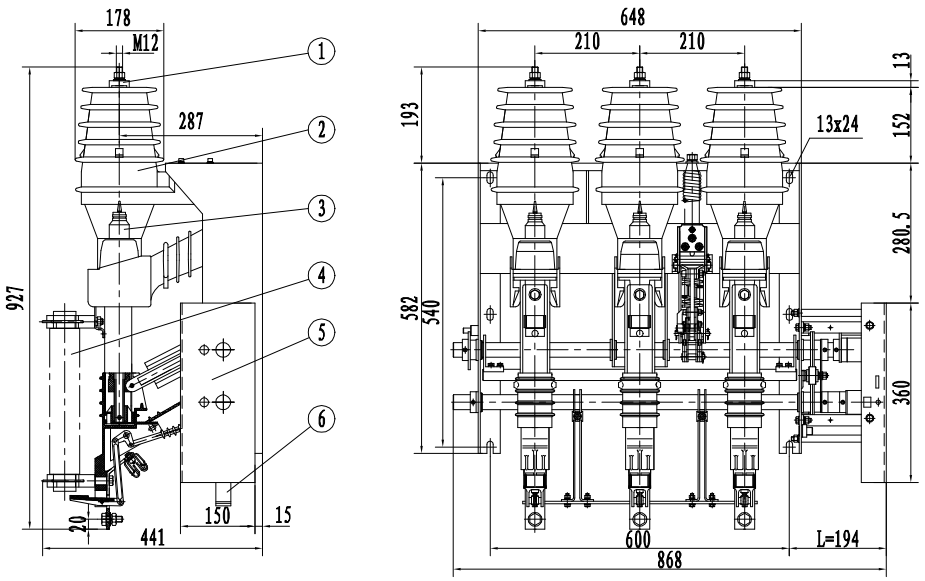
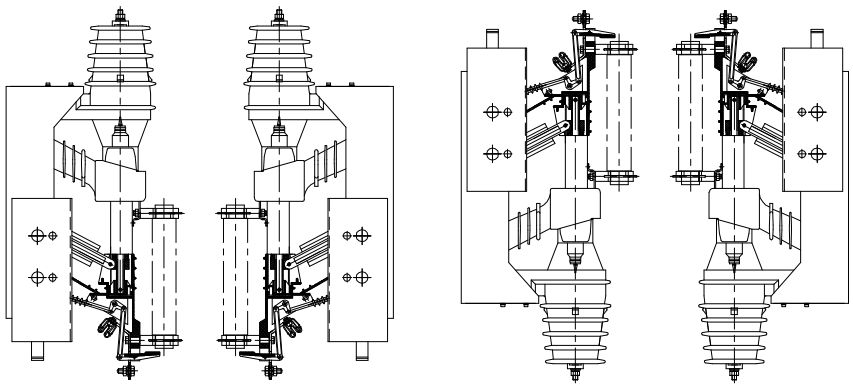
6.2 Load switch – fuse-combination unit



① Static outgoing seat
② Insulating hood
③ Conducting bush
④ Fuse
⑤ Operator panel
⑥ Earth switch



Front side mounted for left operation
Front side mounted for right operation
Reverse side mounted for left operation
Reverse side mounted for right operation

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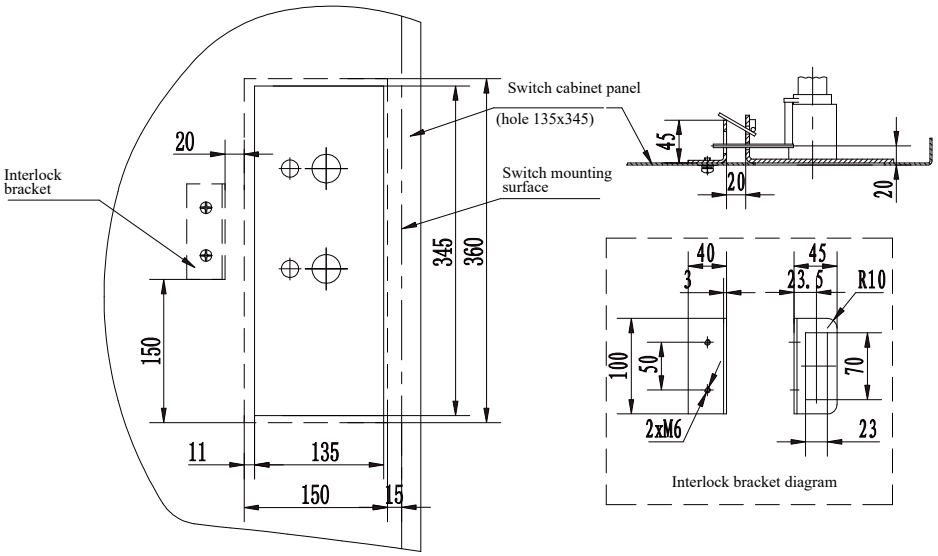
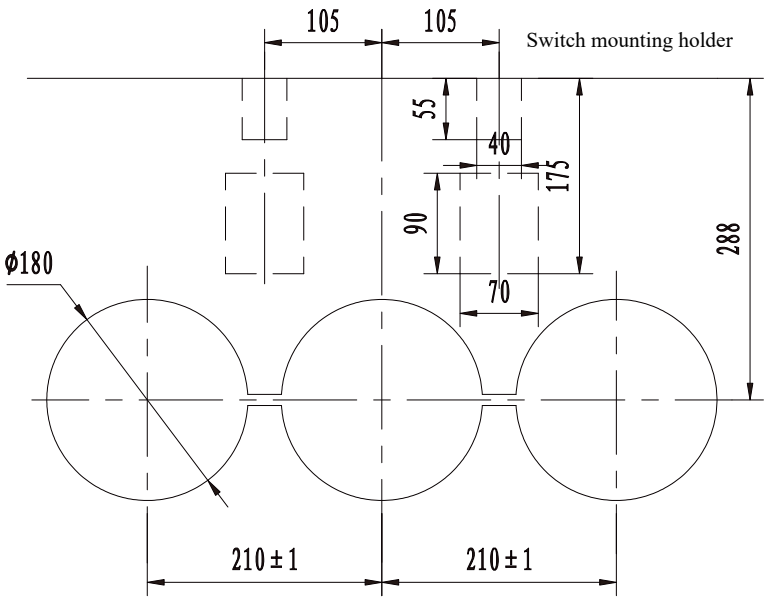
6.3 Cabinet door opening and interlock installation diagram (front side mounted for right operation)



6.4 Diagram of holes on the baffle



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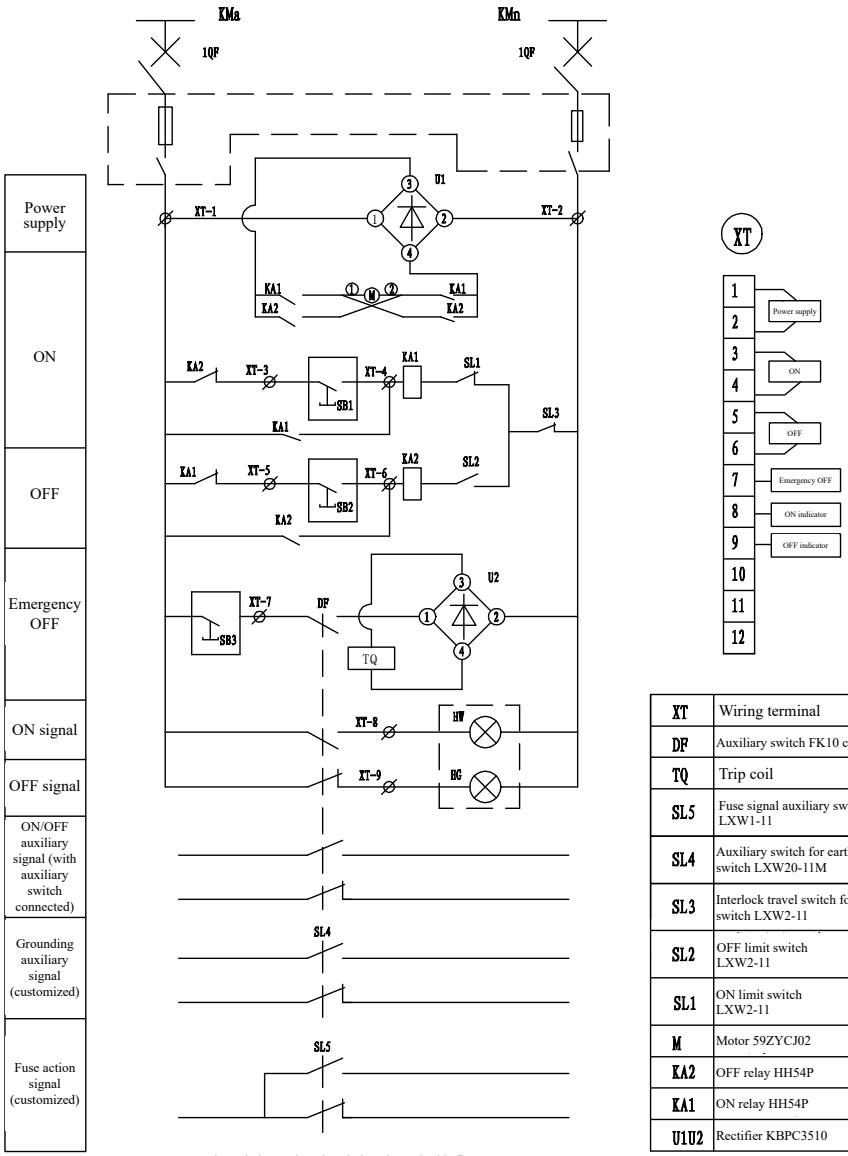
7 Secondary Scheme Diagram

7.1 Electric type



Note: The switches and earth switches shown in this figure are all at the OFF state.

XT	Wiring terminal	1
DF	Auxiliary switch FK10 changed	1
TQ	Trip coil	1
SL5	Fuse signal auxiliary switch LXW1-11	1
SL4	Auxiliary switch for earth switch LXW20-11M	1
SL3	Interlock travel switch for earth switch LXW2-11	1
SL2	OFF limit switch LXW2-11	1
SL1	ON limit switch LXW2-11	1
M	Motor 59ZYCJ02	1
KA2	OFF relay HH54P	1
KA1	ON relay HH54P	1
U1U2	Rectifier KBPC3510	1

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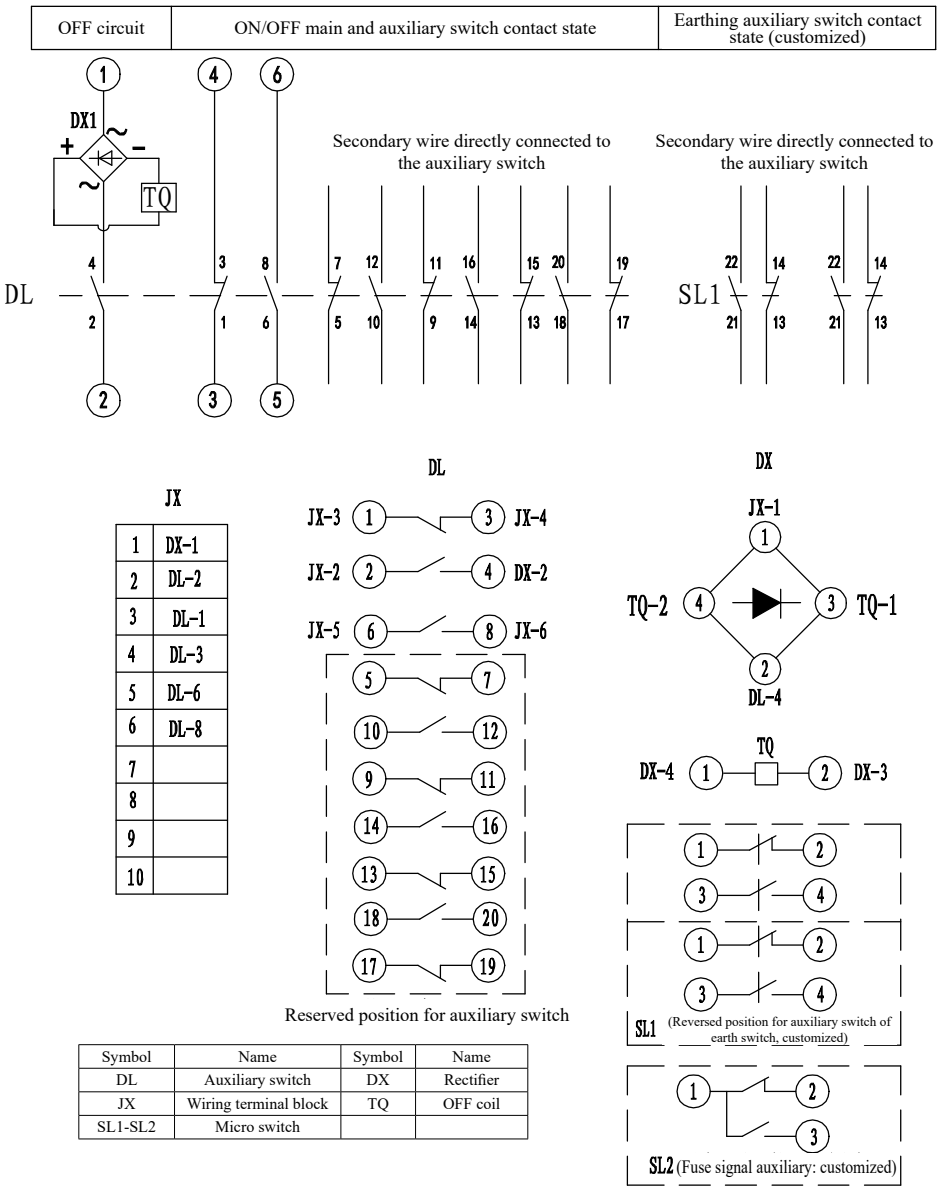
7.2 Manual type with shunt release



Symbol	Name	Symbol	Name
DL	Auxiliary switch	DX	Rectifier
JX	Wiring terminal block	TQ	OFF coil
SL1-SL2	Micro switch		

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8 Ordering Technical Confirmation Form

FN12-12 (RD) order technical confirmation table

Determine your requirements according to the items listed in table below:

<table>
<tr><td rowspan="2">Product model</td><td colspan="3">Load switch: □FN12-12 / T630-20</td></tr>
<tr><td colspan="3">Load switch – fuse-combination unit: □FN12-12R / T125-31.5</td></tr>
<tr><td>Qty. (pcs)</td><td colspan="3"></td></tr>
<tr><td>Installation method</td><td colspan="3">□Front side mounted □Reverse side mounted □Wall-mounted
Note: Side-mounted ABC phase sequence is far-middle-near layout</td></tr>
<tr><td>Operation direction</td><td colspan="3">□Right operation □Left operation</td></tr>
<tr><td rowspan="2">Operation method</td><td colspan="2">□Electric</td><td>□Manual</td></tr>
<tr><td>□AC110V □DC110V
□AC220V □DC220V</td><td>Shunt coil</td><td>□Yes (operating voltage___V)
□No (standard configuration)</td></tr>
<tr><td>Earthing device</td><td colspan="3">□With earth switch □Without earth switch</td></tr>
<tr><td>Auxiliary switch of main switch</td><td colspan="3">□Five-ON and Five-OFF □No (standard configuration for manual mode)
□Others_____</td></tr>
<tr><td>Auxiliary switch of Earthing switch</td><td colspan="3">□Two-ON and Two-OFF □No (standard configuration) □Others_____</td></tr>
<tr><td>Secondary wiring scheme</td><td colspan="3">□TENGEN's standard scheme (see catalog)
□No-standard scheme (scheme should be provided)</td></tr>
<tr><td>Outline dimensions</td><td colspan="3">□TENGEN's standard scheme (see catalog)
□No-standard scheme (scheme should be provided)</td></tr>
<tr><td>Other special requirements</td><td colspan="2"></td><td>Ordering unit (seal)

Sign:_____
Confirmation date:_____
Tel:_____</td></tr>
</table>

Note:
1. If not ticked, all options shall be manufactured according to the TENGEN's standard configurations.
2. The load switch – fuse combination is not equipped with a fusible core.