Low Voltage Reactive Power Compensation Unit

Brief introduction

Low Voltage Reactive Power Compensation Unit <Model: JPD (ZPD) -0.4> serie is an integrated power distribution product gathering the functions of power distribution, measurement, protection, control and compensation, which installed at the low-voltage side of the transformers. It is consist of three parts i.e. switch compartment, measuring compartment and compensation compartment, and the main components include circuit breakers, metering and measuring current transformers, power meters, data collection terminals, distribution integrated control terminals, capacitor switching unit, and self-healing low voltage shunt capacitors, etc. Due to the advantages of power distribution, control, management, harmonics governance and reactive power compensation, the Low Voltage Reactive Power Compensation Unit has been widely used in the reconstruction project of power distribution system of city and new rural grid. This product can improve the power factor of low voltage distribution network, to decrease consumption, improve power quality at load side, and increase availability of transformer and transmission line. It plays an important part at the energy saving, loss reduction, increasing network safety and stability of power system, and improving user economic benefits, etc.

The ZPD series Power Compensation Units produced by our company are designed according to IEC and National Standards, which can operate reliably and safely in a variety of environmental conditions. They have been widely used in the low voltage distribution systems around the country, especially in the reconstruction project of new rural grid distribution system in Inner Mongolia, Gansu, Guizhou, Hubei and Hebei province.

The ZPD series Power Compensation Units produced by our company are in accordance with the following standards:

- IEC439-1 < Low-voltage switchgear and controlgear ASSEMBLIES>
- GB7251.1-2005 < Low-voltage switchgear and controlgear ASSEMBLIES>
- GB/T15576-2008 <Low-voltage reactive power compensation ASSEMBLIES>

Environmental conditions

Maximum daily temperature difference	30℃	Wind pressure	≤700Pa
Relative humidity (25℃)	Daily average≤ 95% Monthly average ≤90%	Altitude	≤2000m
Irradiance (wind speed 0.5m/s hour)	0.1W/cm2	Maximum icing thickness	10mm
Requirement of	Outdoor, no harmful gases and steam, no conductive or explosive dust, non		

installation location	vibration and shock locations
Seismic capacity	Ground horizontal acceleration 0.3g; ground vertical acceleration 0.15g; lasted three sine waves at the same time; safety factor ≥1.67

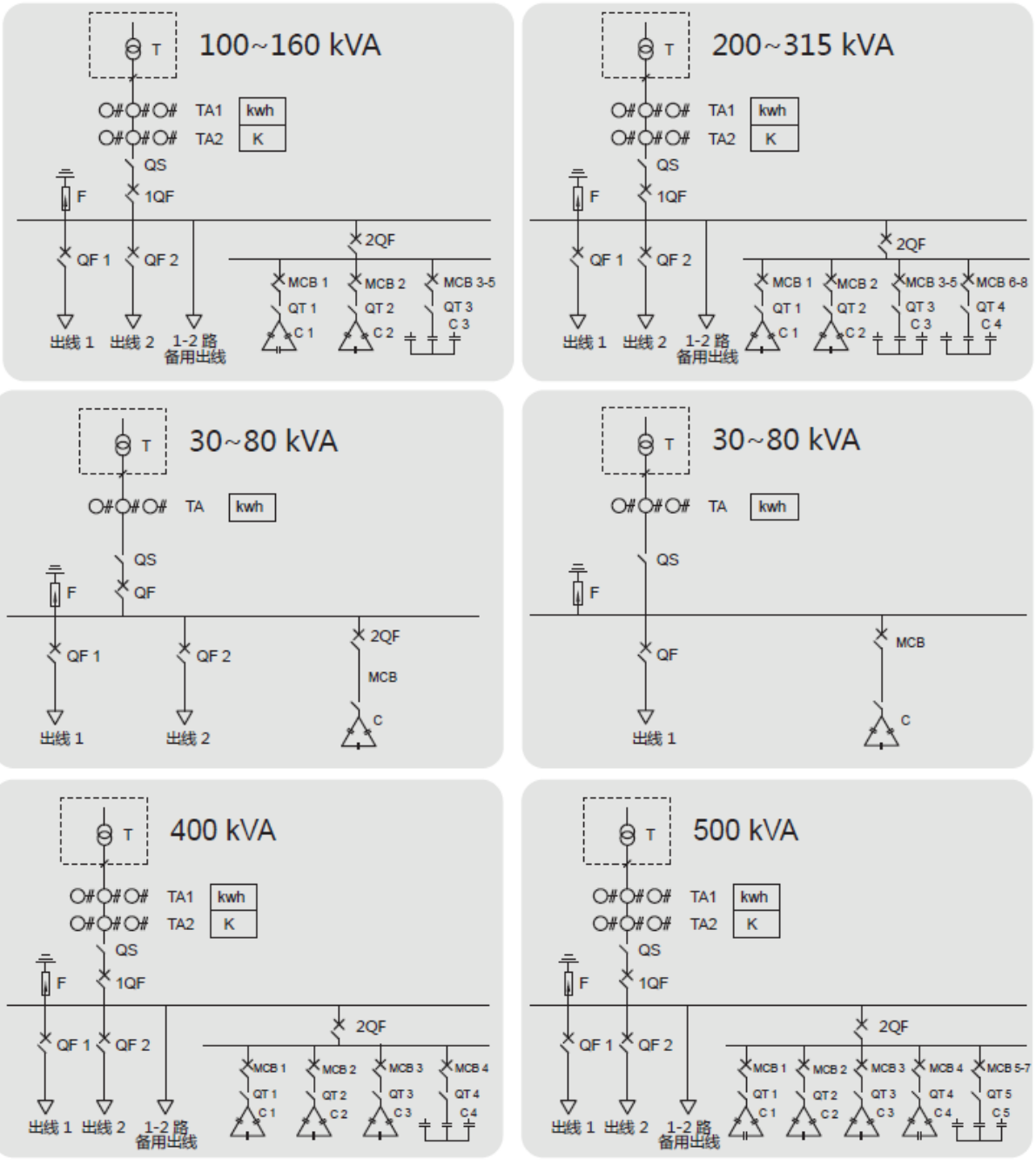
Technical data

Rated voltage	0.4kV	Rated frequency	50Hz
Rated insulation voltage	660V	Rated current	50,80,125,160,200,250, 315,400,500,630,800A
Circuit breaker rated limit short Circuit breaking capacity	≥50kA	Clearance	≥10mm
Creeping distance	≥14mm	Grounding mode	Neutral point grounding directly
Outlet switch loop quantity	1~4 loop	Compensation capacity	5~300kvar, compensate 10%-40% of transformer
Pollution grade	III grade	Installation method	Single pole bracket installation, installed on transformer rack (U steel)
Inlet-outlet line connection mode	Side inlet side outlet and bottom inlet bottom outlet	Compensation mode	Phase splitting compensation/ 3 phase compensation/ combined compensation
Dynamic response time	<20ms	Self discharge feature	Voltage descend to below 50V in 1 min after removal
Maximum switching grade	12 grade		

Features:

- Integrated energy metering and reactive power compensation in one, to improve equipment utilization and shorten payback period;
- No operating over voltage, and no arc reignition in switching process; can be switching frequently, once arrival for multiple compensation, can realize phase splitting compensation, 3 phase compensation and combined compensation; the equipped reactor can filter high harmonics;
- With complete protection: short circuit, phase loss, overvoltage, undervoltage, harmonic protection, etc.;
- Convenient to set each parameter, quit operation automatically when there is an external fault, resume operation automatically after being powered;
- Reduce line losses, increase effective output capacity of distribution transformer, so as to reduce the grid burden; optimize the quality of electricity, including raising the voltage passing rate, reducing voltage fluctuation, suppressing voltage flicker, improving safety and reliability of grid operation;
- At the 3 phase unbalanced position, it can achieve phase splitting reactive power compensation, to improve the imbalance;
- The capacitance can be configured at random, the unit will select the capacitor combinations automatically based on the principle of "best compensation, minimum switching".

Typical schematic drawing



- Without special instructions, outlet circuit less than 500kVA should be configured by not more than 2-circuit outlet, 500kVA above by not more than 3-circuit, the outlet rated current of each circuit should be configured with dispersion coefficient of 0.8 (80% rated current of inlet switch).
- Stainless steel enclosure, depth of 480mm, 500 mm, 530mm, 550mm, 580mm and 600 mm optional for small and medium capacity unit, only 600mm depth available for 500kVA or above unit.
- If the user has special requirements of the enclosure dimensions or components configuration, it can be customized according to the user's requirements.

Specifications and selection guide of Reactive Power Compensation Unit (5MC enclosure)

Transformer capacity (KVA)	Enclosure dimensions(W×H×D) mm	Inlet switch rated current (A)	Maximum outlet loop quantity	Compensation capacity	Maximum compensation loop quantity	Compensation mode (suggested)
30-50-80	600×1000×640	50-80-125	2	No less than 10% compensation	1	Fixed capacity co comp.
100-160	1000×1000×640	160-250	4	30% compensation	3	2co 1sep auto comp.
200-250-315	1200×1000×640	315-400-500	4	30% compensation	4	2co 2sep auto comp.
400	1200×1000×640	630	3	30% compensation	4	3co 1sep auto comp.
500	1200×1250×640	800	3	30% compensation	5	4co 1sep auto comp.
600-630	1400×1250×640	1000	4	30% compensation	6	4co 2sep auto comp.
800	1600×1200×640	1250	4	30% compensation	7	5co 2sep auto comp.

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30-50-80	600×1000×600	50-80-125	2	No less than 10% compensation	1	Fixed capacity co comp.
100-160	1000×1000×600	160-250	4	30% compensation	3	2co 1sep auto comp.
200-250-315	1200×1000×600	315-400-500	4	30% compensation	4	2co 2sep auto comp.
400	1200×1000×600	630	3	30% compensation	4	3co 1sep auto comp.
500	1200×1250×600	800	3	30% compensation	6	4co 2sep auto comp.
600-630	1400×1250×600	1000	4	30% compensation	6	4co 2sep auto comp.
800	1600×1200×600	1250	4	30% compensation	7	5co 2sep auto comp.