JP Type

Reactive metering integrated distribution cabinet for district transformer

Equipped with high-precision metering devices
It has the function of reactive power compensation
High integration improves the operation efficiency
It is equipped with a comprehensive protection device

Comply with IEC / CEI /GB/JB/DL standards
Provided customized manufacture
Whole solutions for design, assembly, test...
Accountable solution for safety and reliability
Wide range offering, easy business and convenient installation

Rockwill Group is one of the leading high technical enterprises professional deals in medium high voltage switchgear and components develop, manufacture and sales.

Located in Wengyang Industrial Zone, Wenzhou, used to known as Yueqing Real Electric Works (Registered in 1986), we have more than 20 years experiences in Medium & high voltage field. We strategically cooperate with worldwide high reputation medium& high voltage switchgear manufacturer and research institute, successfully developed series of medium voltage mutually; filled the blank in China.

We also teamed up with province grade intelligence high voltage switch laboratory, together developed new generation intelligence simultaneous technical vacuum switch, electronic current transformer, digital integrated substation etc. through the cooperation we obtain plenty achievements and build up experience technical team. Plentiful talent backup, advanced production equipment, perfect quality control system and reverse inspection procedure are powerful guarantee of our reliable product quality and high reputation.

We have always insisted the faith on grow together with customers, and to provide a safe, simply, green and efficient medium & high voltage switchgear and components.

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ROCKWILL® Electric strives to bring our customers the latest technology and competitive pricing and best service for distribution automatic.

The distribution cabinetis an outdoor complete set of power distribution unit of three-phase AC50Hz and rated voltage of 400V, is applicable to urban and rural power grids, used for control, compensation and metering of output of transformer of 10KV to transformer. It realizes load control, meter reading, remote maintenance, anti-electricity-theft alarm, prepayment control of electric charge and other functions to circuit, there is air circuit breaker that is used for breaking loads in the switch chamber; reactive compensation chamber is equipped with multi-stage dynamic reactive power compensation device that is of surgefree and long service life, which realizes compensation mode of voltage zero crossing switch in and current zero-crossing switch off, will not produce over voltage, it is able to realize multi compensation modes of three-phase equilibrium, three-phase separation, three-phase separation + equilibrium and so on. As it integrates the functions of electric energy metering with load breaking reactive compensation, it is of great advantage to realize automated control, and is convenient for installation, it cuts down the investment, is propitious to be popularized. This integrated distribution cabinet complies with the standards GB/7251.1-2005, GB/15576-2008 and so on.

Service environment:

Air temperature:	-25℃ ~ +50℃
Relative humidity	≤90% (50℃)
Altitude	≤2000m
Inclination of vertical installation	≤10°
Class of air pollution	IIIheavy

Precise Metering:

The cabinet body is made of stainless steel by welding, it is rainproof in outdoors.Equipped with high - precision metering devices, it can accurately measure the power consumption of the distribution transformer in the station area. It provides accurate data for electricity bill settlement, reduces metering errors, and avoids disputes caused by inaccurate metering.

Reactive Power Compensation:

It has the function of reactive power compensation and can automatically perform dynamic compensation according to the reactive power demand of the power grid. This improves the power factor, reduces line losses, enhances the power quality, cuts down the enterprise's electricity expenses, and also helps to extend the service life of electrical equipment.

High Integration:

It is composed of electric energy metering chamber, switch chamber and reactive compensation chamber. Elegant appearance, small volume, light weight, there are vertical type and horizontal type two types that is convenient for mounting.It integrates multiple functions such as metering, reactive power compensation, protection, and control into one unit. This saves installation space, reduces the connection lines between devices,

makes the power distribution cabinet compact in structure and reasonable in layout, facilitates installation, commissioning, and maintenance, and improves the overall operating efficiency of the distribution transformer in the station area.

Reliable Protection：

Degree of protection of the enclosure: IP44.Load control, meter reading, anti-electricity-theft, prepayment control of electric charge and other functions.It is configured with comprehensive protection devices, such as over - current protection, over - voltage protection, under - voltage protection, and leakage protection. These can effectively protect the distribution transformer in t he station area and other electrical equipment from damage caused by fault currents and abnormal voltages, enhancing the reliability and safety of the power supply system.

Intelligent Monitoring：

It can be equipped with an intelligent monitoring system to realize real - time monitoring and remote control of various electrical parameters in the power distribution cabinet. This makes it convenient for maintenance personnel to promptly grasp the operating status of the equipment, detect and handle faults in a timely manner, and improves the efficiency and level of operation and maintenance management.

High - quality Materials：

It uses high - quality electrical components and cabinet materials to ensure that the power distribution cabinet has good electrical and mechanical properties. It can adapt to different working environments, has a long service life, and a low failure rate.The product complies with the standards GB/7251.1-2005, GB/15576-2008 and so on.

Metering Principle:

The metering unit usually employs current transformers and voltage transformers to convert high voltage and large current into low voltage and small current. Then, high-precision electrical energy metering chips or watt-hour meters are used to sample and calculate the converted current and voltage. According to the calculation formulas of active power and reactive power, the consumption of active electrical energy and reactive electrical energy is calculated in real time, and then accumulated and stored. In this way, accurate metering of the electrical energy consumption of the distribution transformer in the station area is achieved, providing accurate data for electricity bill settlement.

Protection Principle:

Various protection devices in the protection unit (such as over-current protection, over-voltage protection, under-voltage protection, leakage protection, etc.) will monitor parameters such as current and voltage inside the power distribution cabinet in real time. When the over-current protection device detects that the current in the line exceeds the set threshold, it will consider that an overload or short-circuit fault has occurred and immediately trigger the protection action to cut off the circuit, preventing electrical equipment from being damaged due to over-current. Over-voltage protection and under-voltage protection respectively monitor whether the voltage exceeds or is lower than the normal range. When over-voltage or under-voltage situations occur, timely measures such as cutting off the power supply or sending out alarm signals will be taken to protect the equipment from the damage caused by abnormal voltage. The leakage protection device determines whether there is a leakage fault by detecting the residual current in the line. Once the detected leakage current exceeds the set value, it will quickly cut off the power supply to ensure the safety of personnel and equipment.

Reactive Power Compensation Principle:

The reactive power compensation unit operates by monitoring the reactive power status of the power grid in real time. When there are many inductive loads (such as motors, transformers, etc.) in the power grid, it will lead to a decrease in the power factor of the power grid and generate lagging reactive current. At this time, the controller in the reactive power compensation device will automatically control the switching-in of the capacitor bank according to the monitored magnitude of the reactive power and the set value of the power factor. Capacitors can generate leading reactive current in an alternating current circuit, which cancels out the lagging reactive current generated by the inductive loads. Thus, the power factor of the power grid is improved, line losses are reduced, and the power quality is enhanced. When the reactive power demand in the power grid decreases, the controller will automatically cut off some of the capacitor banks to avoid over-compensation.

Control Principle:

The control unit is the core part of the power distribution cabinet. It centrally controls and manages the operation of the entire power distribution cabinet by receiving signals from various sensors and monitoring devices. According to the preset parameters and operation rules, such as the set value of the power factor and the protection threshold, the control unit controls the switching of the capacitors in the reactive power compensation unit to achieve automatic compensation of reactive power. At the same time, the control unit is also responsible for monitoring the operation status of various electrical parameters. When an abnormal situation occurs, it will promptly trigger the action of the protection unit and upload the relevant information to the intelligent monitoring system. In addition, the control unit can also receive remote control commands from the intelligent monitoring system to realize remote operation and management of the power distribution cabinet, facilitating centralized monitoring and maintenance by operation and maintenance personnel.

Current transformer part of distribution box:

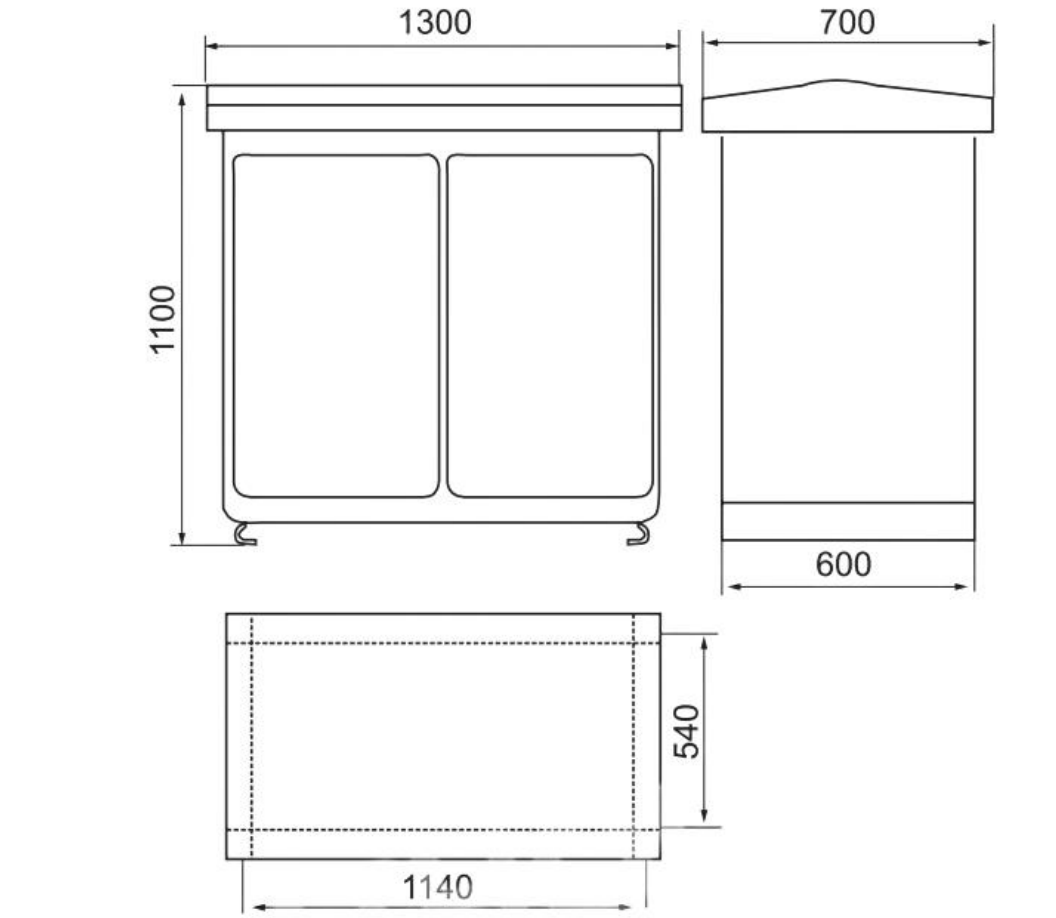
Type	Rated primary ampere turn	Rated primary current	Accuracy class and rated load (VA)		
			0.2S	0.5	3
JP-0.4	150	5, 10, 15, 30, 50, 75	5	5	10
	200	20, 40, 100, 200	5	10	10
	300	300	10	15	20
	400	400			
	500	500			
	600	600			
	800	800			
	1000	1000	15	20	20
	1200	1200			
	1500	1500			
	2000	2000			
	3000	3000			

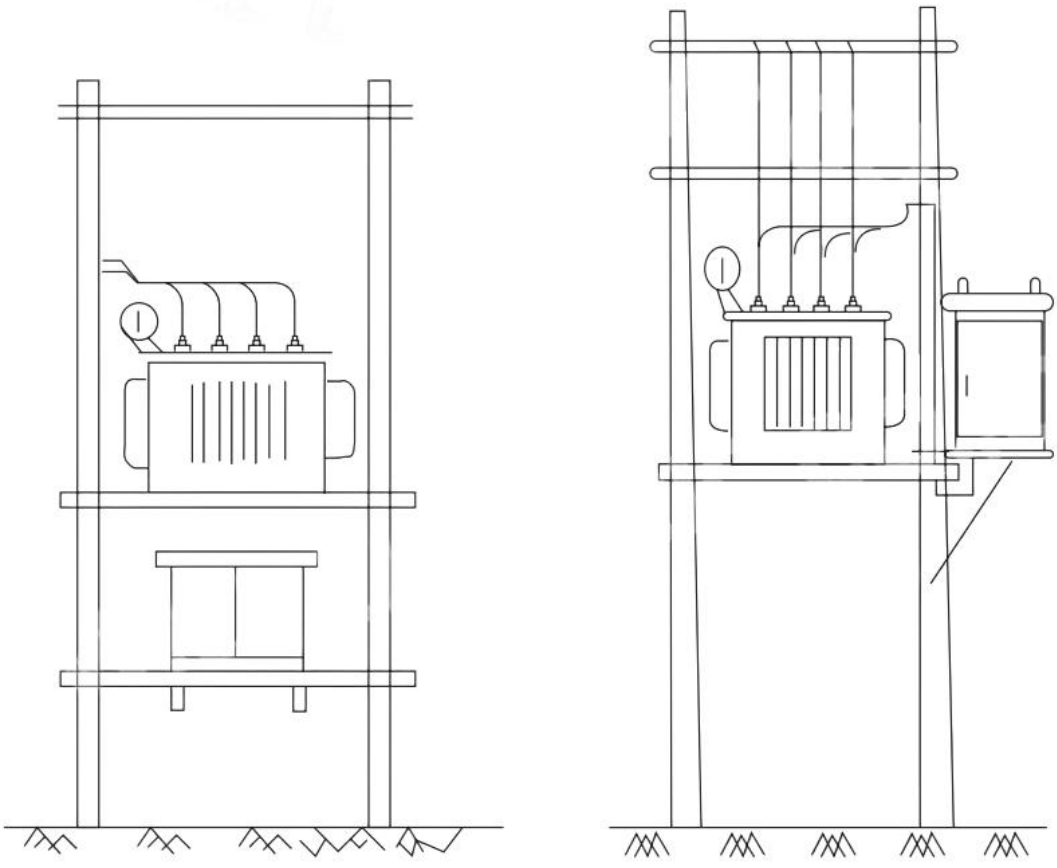
Switch part of distribution box:

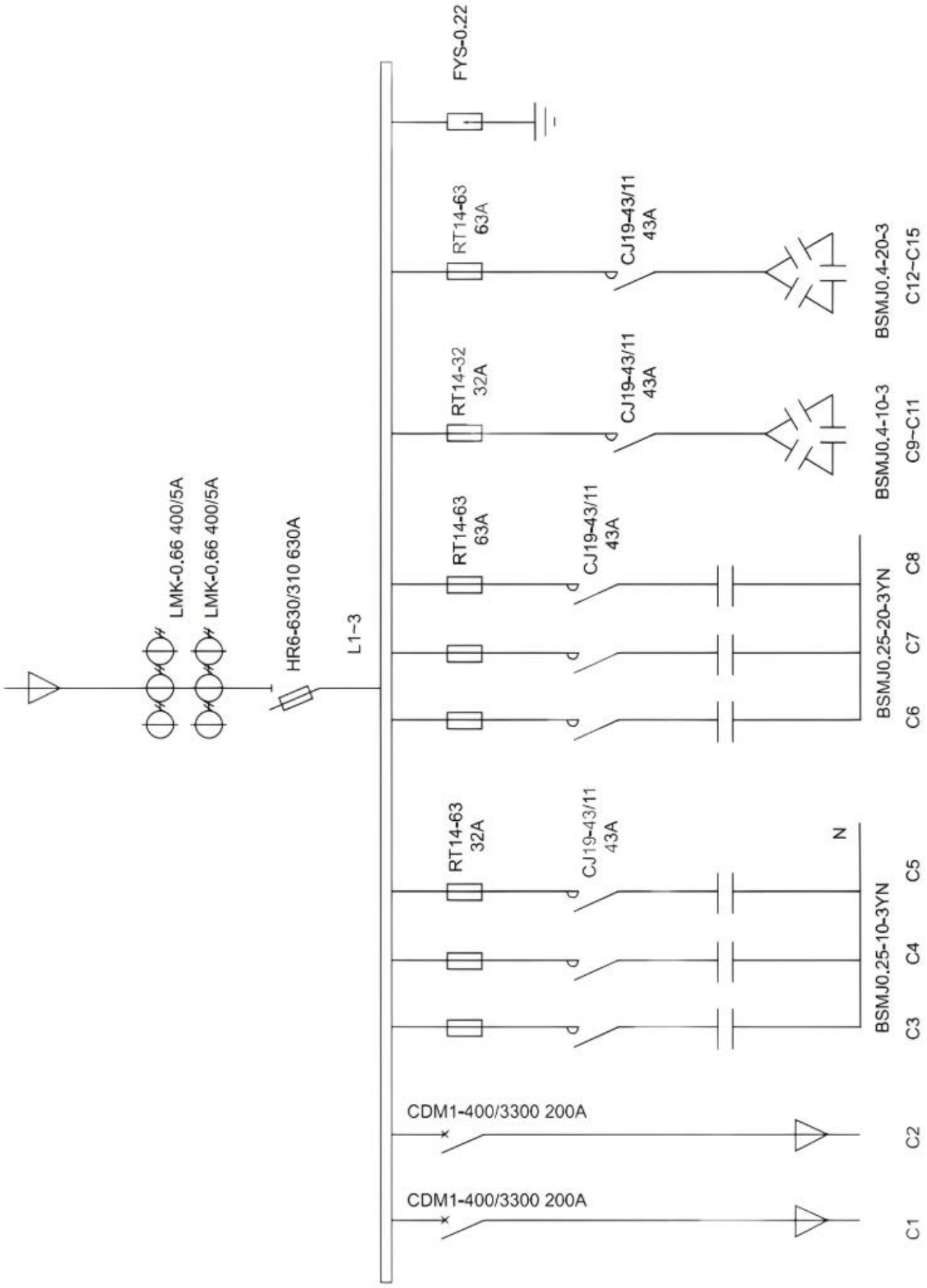
Type	Rated insulation voltage	Conventional thermal current (A)	Max control power under use category of AC - 3 (kW)		
			220V	380V	660V
JP - 0.4/10	690	10	2.2	4	4
JP - 0.4/16		16	4.5	2.5	11
JP - 0.4/25		32	5.5	11	13
JP - 0.4/40		33	11	22	22
JP - 0.4/63		80	18	30	35
JP - 0.4/100		125	28	50	50
JP - 0.4/160		200	48	85	83
JP - 0.4/250		315	80	132	190
JP - 0.4/400		400	115	200	220
JP - 0.5/630		630	175	300	330

Reactive compensation

Rated voltage	380V
Rated frequency	50Hz
Rated capacity	30% of capacity of distribution transformer, or determined according to user requirements
Compensation modes	Three-phase equilibrium, three-phase separation, threephase separation + equilibrium
Control physical quantity	Reactive power
Dynamic response time	⩽ 20ms
Working voltage	(85%-110%)
Protective functions	Over-voltage,under-voltage,open-phase, under-current, harmonic wave overrun, zero sequence overrun, etc.
Automatic running functions	Power-failure exit, automatic recovery after 10s of time delay when power recovers







Field service operation and warranty issues:

ROCKWILL® can provide competent, well trained field service representatives to provide technical guidance and advisory assistance for the installation, overhaul, repair and maintenance of ROCKWILL® equipment, processes and systems.

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