



MINGRUI

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MINGRUI

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Dedicate to Protect your transformer, generator and associated equipments!

Company Brief

- **Who are we?**
- Mingrui is specialized in researching, producing, selling and serving automatic equipments of electric power system. With 5 years experience in the filed, our products have been exported to Belarus, India, Vietnam, Malaysia, South Africa, Georgia, Peru and so on. We have 1200 square meters of workshop and 800 square meters of warehouse. All manufacturing equipments like welding machines, machine tools, pressing machines, board cutting machines and testing equipments are all available here.
- **Our advantages:**
- The director of research and development department has more than 20 years of experience in electric power system, owning bachelor of Electrical Engineering and Automation.
- The whole after sales service team have 7-8 years of experience in the filed.
- Stable operation performance makes us a leading place in the filed.
- **Our belief:**
- Success is due to exquisite technology. Exquisite technology is due to diligence. Continuous innovation survives the enterprise!

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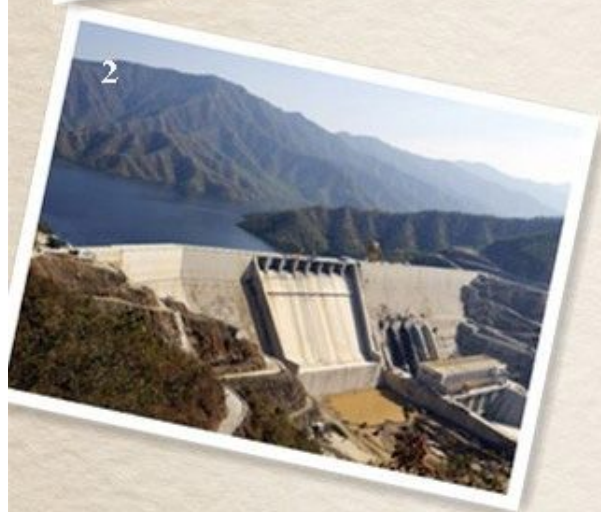
Certificates



Typical Projects

Project Name	Introduction
1.Indonesia PLTU NAD (2*110MW)Coal-fired Power Plant	The capacity of the plant is 2x110MW, high temperature and high pressure circulation fluid bed boiler unit. It is located in Puntong villiage, Kuala District, Nagan Raya Regency, Nangroe Aceh Darussalam Province, 175Km southeast to Banda Aceh. Geographical Corrdinates: east longitude 96°11'38.16", south latitude 04°06'12.06"
2.Myittha Hydropower Plant in Myanmar	Myittha hydropower plant is located at Myittha river, tributary of Chindwin Valley. The water of power plan is drawn from the back of dam by single pile to plant house where it is devided into two pipes for supplying water for two generator set. There is water turbine inlet wave before volute.
3.Tibet Sangri 20MWp PV Power Plant of China General Nuclear Power Group	Altitude: 3600m Max. Temperature: +35°C Min. Temperature: -13.2°C Daily Max. Temperature Difference: 25K Daily Relative Averaged Humidity: ≤95% Monthly Relative Averaged Humidity: ≤90%
4.PCH1 × 1680kW Hydropower in Peru	
5.110KV POMINA SUBSTATION	POMINA is the largest steel manufacturer in Vietnam, particularly, the refining plant with the capacity of 1 million tons / year and the largest billet refining plant in the Southeast Asia. POMINA 3 plant is continuing to build the Phase 2 with the capacity of 1 million tons of steel per year, increasing the laminating capacity of the whole system to 2.1 million tons of construction steel / year. The 35KV neutral grounding resistor is applied in Phase 2.
6.Simbuang Hydro Electric Power Plant in Indonesia	Simbuang micro power system is a power plant with type Run Off River Plant. It is the type of plants that suck or take water from rivers dammed by way of using the body of the dam which is designed pair cycloop concrete and coated with a concrete cover thickness + 20 cm. and modifications where the water will go into the conductive path for later accommodated in the storage ponds (Headpond) that will go into the pipe rapidly to drive the turbines. The 20KV neutral grounding resistor was installed in such Run-Off-River Plant.
7.South Asia Pakistan Terminals Ltd (SAPT), Karachi Port	The Port of Karachi is one of the South Asia's largest and busiest deep-water seaports, handling about 60% of the nation's cargo (25 million tons per annum) located in Karachi, Pakistan. The port will be able to handle new generation containerhips when phase one of South Asia Pakistan Terminals (SAPT), being built by Hutchison Port Holdings (HPH) under a 25 year concession agreement, is completed in 2013. The NER was applied in the project.
8."Shilda" HPP	Project name: "Shilda" HPP, Alititude 700m, Temperature: -10 to +40°C, Site Address: 35kv substation "Shilda", Kakheti Region, Georgia,

For More project cases, please contact with us for detailed list.





Product Lines

- Neutral Protection Devices

Neutral Grounding Resistor
MRD-BJ/FD Neutral Grounding Resistor (NGR)
Arc Suppression Coil / Neutral Grounding Reactor / Peterson Coil

- Switchgear and Auxiliary Equipment

(1) Switchgear
KYN28 Metal-clad Switchgear
GGD Power Distribution Board
(2) SF6 Gas Leak Detector & Alarm System

- Power Factor Correction

(1) Harmonic Filtering and Reactive Power Compensation
(2) Harmonic Filtering and Reactive Power Compensation Module

- Transformer and Auxiliary Equipment

(1) Grounding Transformer
(2) Transformer Cooler Control Cabinet

- Electrical Fire Safety Equipment

(1) Nitrogen Injection Fire Protection System for Transformer

- Accessories

(1) Multifunctional Power Meter
(2) Zero Sequence Current Transformer
(3) Temperature and Humidity Controller for Switchgear
(4) Electric Fire Prevention Alarm and Control System
(5) Wireless Temperature Monitoring System
(6) Leakage Relay
(7) MRD-CZX ZX KX Control and Display Device for Switchgear

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MRD-BJ/FD Neutral Grounding Resistor (NGR)

FUNCTION	Neutral Grounding Resistors are used for resistance grounding of industrial power systems. They are usually connected between earth ground and the neutral of power transformers, power generators or artificial neutral transformers. Their main purpose is to limit the maximum fault current to a value which will not damage generating, distribution or other associated equipment in the power system, yet allow sufficient flow of fault current to operate protective relays to clear the fault.
SPECIFICATIONS	There are six parameters needed to specify if inquiry neutral grounding resistor 1. Rated voltage line to neutral or system voltage. 2. Rated fault current. 3. Rated "duration time" of the line to neutral voltage not exceeding the allowable temperature rise. 4. Rated Resistance. 5. Application environment, indoor or outdoor. 6. Enclosure material, ss plate or normal cold rolled sheet.
RANGE	Rated current: from 1 amp to 2000 A Rated voltage: from 0.4 to kV Rated Resistance: from 1 ohm to 2000 ohm Rated time: 1 sec to continuous time rating
TEST AND QUALITY	All Mingrui Neutral Grounding Resistors are designed, rated, manufactured and tested in strict compliance with IEEE-32 . Routine tests performed on each Neutral Grounding Resistor are <u>measurement of resistance, high voltage power frequency, insulation measurement, aspect verification, dimensional control</u> . Mingrui's internal quality system has been developed and certified under ISO 9001 quality system
CONSTRUCTION	Standard unit includes the stainless steel resistor assembly plus all the required insulators, internal connections and hardware installed in a standard safety enclosure. Neutral Grounding Resistor units are completely assembled, prewired, and tested at our facility. For shipping all units are crated for added protection and ease of handling.
ENCLOSURE FEATURES	<ul style="list-style-type: none"> • Forged eyebolts in all four corners for easy hoisting. • Removable front and rear louvered covers for easy access for connection and inspection. • Corrosion resistant nameplate provides complete ratings and manufacturers information. • Heavy gauged enclosure polyester powder coated finish provides maximum protection.
ENCLOSURE OPTIONS	<ul style="list-style-type: none"> • Stainless steel, cold rolled plate construction. Custom paint finish is available. • Top or side mounted entrance bushing(s). • Screened covers for indoor applications. • Support stands for elevating the enclosure above ground.
OPTIONAL COMPONENT	<ul style="list-style-type: none"> • Current or grounding transformers mounted and prewired at our facility • ON or OFF Load disconnecting switches

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MRD-BJ Neutral Grounding Resistor (NGR)

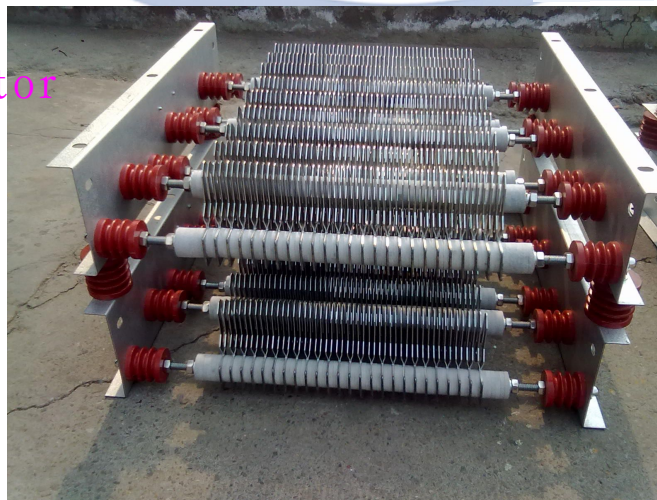


SUS304 Enclosure



35KV, 1600A NGR

SS resistor



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MRD-XHZ/XHP Arc Suppression Coil

Function

Arc suppression coils are used for capacitive current compensation during earth faults in electric networks. They are to be connected between the transformer neutral point and the ground.

Specification

There are six parameters needed to specify if inquiry arc suppression coil

1. Rated voltage line to neutral or system voltage.
2. Rated capacity or power of arc suppression coil and grounding transformer(if required)
Formula: $\text{ASC capacity} + (\text{secondary capacity of grounding transformer}) = \text{Primary capacity of grounding transformer}$
3. Rated "duration time", 2 hours max.
4. Compensation current range
5. Quantity of zero-sequence CT
5. Application environment, indoor or outdoor.
6. Enclosure material (only for dry type), ss plate or normal cold rolled sheet

Range

Adjust range: 0~100% rated current
Voltage range: 6~66KV
Duration time: 2 hours Max.

Test & Quality

All Mingrui arc suppression coil are designed, rated, manufactured and tested in strict compliance with **IEEC60076-6**. Routine tests performed on each arc suppression coil are insulation resistance test, winding resistance measurement, applied voltage test, transformer oil withstanding voltage test and HV characteristic test. Mingrui's internal quality system has been developed and certified under **ISO 9001** quality system

Arc Suppression coil

1. MRD-XHZ step type: with tap changer connecting with different taps on ASC to change the inductive current with steps
2. MRD-XHP sliding type: change inductive smoothly by arranging a magnetized iron core inside ASC and applying DC magnetizing current on the iron core

Controller

1. IPC system, multilayer PCB, stable system operation
2. Color LCD with data display, set and query function
3. Auto measure system voltage and displacement voltage etc, Auto trace and compensate
4. Compensate range: 0~100% of rated current
5. Inside inserted grounding fault detector and the fault feeder could be detected and switched off quickly
6. RS232 & RS485 communication interface
7. with standard printing interface and print timely and grounding information
8. Grounding wave is recorded and could display on any other computer without driver installation
9. Max. 1000 grounding information could be stored

On-load Tap Changer

Only needed if MRD-XHZ step arc suppression coil is chose.

Damping Resistor

Only suitable for MRD-XHZ step type, made of stainless steel alloy.
During earth fault, it is switched off, and during normal operation, it is connected with arc suppression coil to prevent resonant over-voltage

Optional

- Grounding transformer
- Shunt Resistor

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MRD-XHZ/XHP Arc Suppression Coil

Dry Type



Controller Panel



Oil Immersed Type



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KYN28A-12 Metal-clad Switchgear

Function

KYN28A-12 indoor metal-clad draw-out switchgear designed by MINGRUI is mainly applied in power distribution of industrial and mine enterprises and power system of secondary power distribution substation to receive and distribute electricity and start large HV motor.

Specification

Please specify the following details when ordering

- 1.Main cable connection scheme, single line system diagram, arrangement diagram and layout drawing.
- 2.Secondary function diagram like terminal arrangement drawing. If no such drawing, then arrange as per factory standard.
- 3.Model No. Specification and quantity of all elements inside switchgear
- 4.Summary table of electrical equipments
- 5.Please advise the span and height if need busbar bridge
- 6.If special environment conditions, please indicate when order
- 7.If need any special extra elements, please advise the name and quantity

Standard

IEC289, IEC62271-200

Design & Structure

Designed in accordance with IEC62271-200, meet requirement of interlock and has the following features:

- Avoid drawing circuit breaker handcart while on load
- Avoid mis-switching on or off the circuit breaker
- Avoid switching on the circuit breaker when grounding disconnecter is at close status.
- Avoid mis-switching on grounding disconnecter when power is on.
- Avoid mis-enter into charged compartment

Rated Technical Data

	Item	Unit	Value
	Rated Voltage	KV	3.6、7.2、12
	Rated Frequency	Hz	50
Rated Insulation Level	1min Power Frequency Withstanding Voltage	KV	42
	Lightning Impulse Withstand Voltage	KV	75
	Rated Current of Main Busbar	A	630、1250、1600、2000、2500、3150
	Rated Current of Branch Bus	A	630、1250、1600、2000、2500、3150
	4S Thermal Stable Current (Effective Value)	KA	16、20、25、31.5、40、50
	Rated Dynamic Stable Current (peak value)	KA	40、50、63、80、100、125
	Protection of Degree	IP degree of enclosure is P4X When door of circuit rood is open, the IP degree of compartment is IP2X	

KYN28A-12 Metal-clad Switchgear

Ready for delivery



Installed at site



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GGD AC Low Voltage Distribution Board

Function

GGD distribution board is applied in AC 50Hz, 380V, rated current to 3450A power system of power plant, substation, industrial and mine plant to convert, distribute and control energy of power unit, lighting devices and power distribution equipments.

Specification

Information to be specified when ordering

Product model no. (including main circuit scheme no. and auxiliary circuit scheme no.)

System combination sequence diagram and layout chart of main circuit

SLD and wire connection diagram of auxiliary circuit

Detailed list of elements inside cabinet including model no., specification, quantity and technical data

Any special requirements beyond standards, please specify in advance

Standard

IEC439

Rated Technical Data

1. Rated insulation voltage: 660V

2. Rated frequency: 50Hz

3. Rated Voltage: 380V

4. Working voltage of auxiliary circuit

AC: 100V 220V 380V

DC: 110V 220V

5. Rated current

GGD1 400A, 600A(630), 1000A

GGD2 1000A, 1500A(1600)

GGD3 2000A, 2500A, 3150A

6. Rated short circuit intensity

GGD1 breaking capacity 15KA, rated withstanding current 30KA peak

GGD2 breaking capacity 30KA, rated withstanding current 63KA peak

GGD3 breaking capacity 50KA, rated withstanding current 105KA peak

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GGD AC Low Voltage Distribution Board



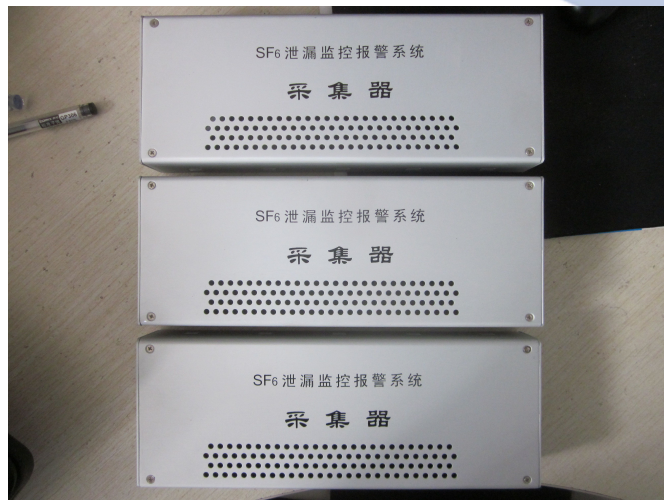
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SF6 Gas Leak Detector & Alarm System

FUNCTION	SF6 Gas Leakage Detector & Alarm System is designed for testing SF6 gas leakage and oxygen deficit in GIS room. It can reflect SF6 gas density changes and present users the real-time condition of the working environment and equipment operation, to provide safety alarm for work fore and prevent equipment operation failure.
SPECIFICATIONS	There are three parameters needed to specify the SF6 gas leak detector & alarm system. 1. Working voltage grade 2. Fan power, power phase number and installation method 3. Installation environment: indoor or outdoor
TEST AND QUALITY	All Mingrui SF6 Gas Leak Detector & Alarm Systems are designed, rated, manufactured and tested in strict compliance with SAE J1627-1995 and CE. Routine tests performed on each SF6 Gas Leak Detector & Alarm System are alarm function, insulation resistance and strength, sensitivity and response time. Mingrui's internal quality system has been developed and certified under ISO9001 quality system.
CONSTRUCTION	Standard unit includes detection computer, SF6-O2 double gas collector, temperature and humidity collector, ventilation fan, fan controller and acousto-optic alarm. For shipping all units are crated for added protection and ease of handling.

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SF6 Gas Leak Detector & Alarm System



SF6 gas collector



Alarm system

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Harmonic Filtering and Reactive Power Compensation Device

FUNCTION	<p>Connected equipment (transformers, motors, air-conditioning, refrigerators, etc.) cause a phase angle between current and voltage. When the current is phase-shifted, it takes more current to deliver the same amount of active power. Thus we need to install Harmonic Filtering and Reactive Power Compensation Device to enhance power quality.</p> <p>Harmonic filtering compensation is the trend of reactive power compensation, however Mingrui harmonic filtering module includes capacitor, reactor as well as relative controller.</p> <p>Standardization, miniaturization and simplification.</p>
SPECIFICATIONS	<p>There are five parameters needed to specify the harmonic filtering and reactive power compensation device</p> <ol style="list-style-type: none">1. Transformer rated capacity, voltage, no-load current and reactance ratio coefficient2. Rated Resistance.3. IP Grade4. Existing power factor and desired power factor5. Harmonic current composition and content
RANGE	<p>IP Grade: IP20/IP00/IP54</p>
TESTING AND QUALITY	<p>All Mingrui Harmonic Filtering and Reactive Power Compensation Devices are designed, rated, manufactured and tested in strict compliance with IEEE-519 and IEC 61000.3.6. Routine tests performed on Harmonic Filtering and Reactive Power Compensation Device are IP grade test, insulation resistor test, power frequency withstand voltage test, anti-interference test and short circuit resistance strength test. Mingrui's internal quality system has been developed and certified under ISO 9001 quality system</p>
CONSTRUCTION	<p>Standard unit includes thyristor switch, capacitor, harmonic filter reactor, switch disconnector fuse and harmonic filtering and reactive power compensation modules installed in a standard safety enclosure. Harmonic Filtering and Reactive Power Compensation units are completely assembled, prewired, and tested at our facility. For shipping all units are crated for added protection and ease of handling.</p>
ENCLOSURE FEATURES	<ul style="list-style-type: none">• Forged eyebolts in all four corners for easy hoisting.• Front louvered covers for easy access for connection and inspection.• Corrosion resistant nameplate provides complete ratings and manufacturers information.

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Harmonic Filtering and Reactive Power Compensation Device



Thyristor switch



Reactor



Disconnecting switch

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Harmonic Filtering and Reactive Power Compensation Module

FUNCTION	Harmonic Filtering and Reactive Power Compensation Module is applicable to GCS, GSK and GGP cabinet of three phase power grid with serious harmonic pollution.
SPECIFICATIONS	<ul style="list-style-type: none">1.Ambient temperature: -40 Celsius to 55 Celsius2.Relative humidity: less than 95%3.Altitude: less than 4000m (If excess, we provide plateau type)4.Reactance ratio: 5.67%, 7%, 12.5%,14%5.Technical standard: IEC439-16.Rated voltage: AC230-800V7.Rated frequency: 50Hz, 60Hz8.IP grade: IP20 or IP00 (if IP54 needed, please indicate)
TESTING AND QUALITY	All Mingrui Harmonic Filtering and Reactive Power Compensation Modules are designed, rated, manufactured and tested in strict compliance with IEC439-1. Routine tests performed on each Harmonic Filtering and Reactive Power Compensation Module are power frequency withstand voltage test, insulation test and IP grade test. Mingrui's internal quality system has been developed and certified under ISO 9001 quality system
CONSTRUCTION	Harmonic Filtering and Reactive Power Compensation Modules includes high load, dry and self-healing capacitors with over pressure protection device, filter reactor with temperature protection and whole vacuum impregnation, special super contactor for capacitor, vertical bus system with low voltage fuse protection.

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Harmonic Filtering and Reactive Power Compensation Module



Reactor



Capacitor + Contactor



Capacitor

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MRD-DKSC Grounding Transformer

Function

The function of grounding transformer is to provide a physical neutral for a power transformer with a delta connected downside. The Grounding Transformers neutral point has low impedance and is suitable for different grounding systems such as solid earthing, NER earthing (resistor) and resonance earthing (Arc Suppression Coil).

Specification

Please specify the following details when ordering

1. System voltage
2. Capacity (if with secondary, please also advise capacity of secondary)
3. Phase
4. Dry or oil-immersed type

Standard

IEC 60076-1

Rated Technical Data

1. Voltage range: 6.3KV, 10KV, 24KV, 35KV
2. Capacity Max.: 2000KVA

Rated Technical Data

Routine Tests

1. Applied voltage test
2. Transformer Oil withstand voltage test
3. Rated voltage / current test (IEC 60076-6)
4. HV insulation test (IEC 60076-6)
5. LV winding insulation test (3kV ~ 60s) (IEC 60076-6)
6. Measurement of losses (IEC 60076-1)

Special tests

On request, as per agreement

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MRD-DKSC Grounding Transformer



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Transformer Cooler Control Cabinet

FUNCTION	Transformer cooler control cabinet is an indispensable auxiliary system of oil immersed transformer and provides optimal control to the whole transformer cooling system, lowering the transformer body temperature, saving energy and prolonging transformer service life.
SPECIFICATIONS	There are six parameters needed to specify the transformer cooler control cabinet 1. Control cooler number and fan number 2. Control cooler or fan power, rated current and oil circulation method 3. Control power 4. Control voltage grade 5.Communication specifications (if communication function is needed): RS232,RS485,Ethernet 6. Cabinet ventilation pattern
RANGE	Control cooler number: 2-10sets, fan number:2-30sets Control power: DC110V+10% or DC220V+10% or AC220V+10% IP grade:IP55
TESTING AND QUALITY	All Mingrui Transformer cooler control cabinets are designed, rated, manufactured and tested in strict compliance with IEEE and IEC standard. Routine tests performed on each Transformer Cooler Control Cabinet are electrical disturbance test, dielectric withstand test and insulation test. Mingrui's internal quality system has been developed and certified under ISO 9001 quality system
CONSTRUCTION	Standard unit includes PLC, motor protector, thermal relay, temperature and humidity controller, heater and air break switch installed in a standard safety enclosure. Transformer cooler control cabinet units are completely assembled, prewired, and tested at our facility. For shipping all units are crated for added protection and ease of handling.
ENCLOSURE FEATURES	<ul style="list-style-type: none"> • Forged eyebolts in all four corners for easy hoisting. •Corrosion resistant nameplate provides complete ratings and manufacturer's information. •Heavy gauged enclosure polyester powder coated finish provides maximum protection.
ENCLOSURE OPTIONS	<ul style="list-style-type: none"> •Stainless steel, cold rolled plate construction. Custom paint finish is available. • Top or side mounted entrance bushing(s). • Screened covers for indoor applications. • Support stands for elevating the enclosure above ground.

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Transformer Cooler Control Cabinet



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BPZM-MRD Nitrogen Injection System

Overview

BPZM-MRD Nitrogen Injection Explosion Prevention & Fire Protection System became more advanced fire protection and explosion prevention system for the Oil immersed transformer protection after "Water Spray System" and "CO2 Spray System", BPZM-MRD Systems were also examined by "National Fixed Fire Extinguishing Systems and Components Quality Supervision and Inspection Center" and passed the test as qualified.

Transformer are among the most expensive equipment located in power plants and substations. They generally contain a large quantity of combustible substance, which can spray fire to nearby installations and caused a power failure and huge economic losses. Special attention should therefore be paid to their protection. The traditional protection of transformer usually focuses on the electric parameters of the transformer, while the sudden pressure increased within the tank resulting from insulation breakdown does not draw much attention.

Function

Explosion Prevention and Fire Extinguishing

The system can extinguishing the fire immediately thro injected the N2 gas into the Transformer Tank. The Nitrogen can be injected continuously for 30 mins to stir and cool down the transformer oil, which also isolated the air from the tank.

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Specification

Please specify the following details when ordering

1. layout drawing, contact details of transformer manufacturer and system designing company.
2. if any special requirement, please indicate.

Scope of applications

Generator power unceasingly increase with the development of technology, there are many transformer explosion happened due to ineffective of current breaker between the Generator and Power Transformer.

BPZM-MRD Nitrogen Injection System is suitable for new or remodeled power transformer which located in the high power plant, substations, indoor substations, underground substations, city substations and cold and water-deficient area.

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BPZM-MRD Nitrogen Injection System

Installed at Site



Controlling Device

Inside Structure



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Multifunctional Power Meter

FUNCTION	Multifunctional Power Meter is widely used in energy management system, substation automation, power distribution network and switchgear to provide wide range monitoring and measurement of current, voltage, frequency, power factor and active power etc.				
SPECIFICATIONS	<p>There are four parameters needed to specify the multifunctional power meter.</p> <ol style="list-style-type: none"> 1. Rated voltage: AC100V/AC400V 2. Rated current: AC 1A/5A 3. Display mode: LED/LCD 4. Outline shape: Groove shape or Square shape 				
TESTING AND QUALITY	All Mingrui Multifunctional Power Meters are designed, rated, manufactured and tested in strict compliance with IEC688/IEC255-3 and IEC-61000-4. Routine tests performed on each Multifunctional Power Meter are electrostatic discharge immunity test, electrical fast transient burst immunity test and surge (shock) immunity test. Mingrui's internal quality system has been developed and certified under ISO 9001 quality system				
CONSTRUCTION	Metal housing with standard switchboard dimensions and cutout.				
OUTLINE AND CUTOUT SIZE	Outline Code	Meter Outline	Screen Frame Size(mm)	Screen Size(mm)	Hole Size (mm)
	1	16 Groove	160*80	150*74	151*75
	2	42 Square	120*120	110*110	111*111
	3	6 Square	80*80	75*75	76*76
	5	5 Groove	96*48	90*43	91*44
	9	9 Square	96*96	90*90	91*91
	A	A Square	72*72	66*66	67*67
	D	Micro Square	48*48	42.5*42.5	45*45

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Multifunctional Power Meter



Square power meter



Groove power meter

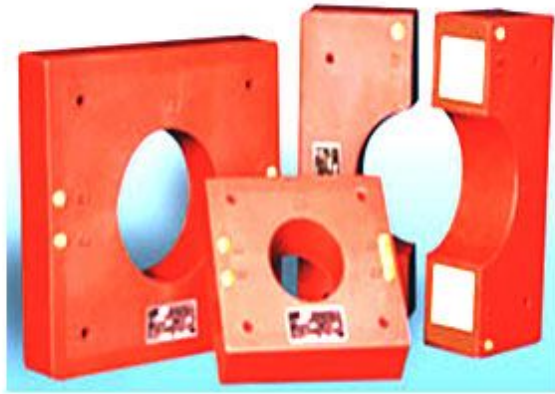
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Zero Sequence Current Transformer

FUNCTION	The Zero Sequence Current Transformer is used in metering electric energy, voltage controlling and relay protection application and provided for non-direct earthed neutral systems of rated frequency of 50Hz/60Hz and rated voltage of 66KV and below.
SPECIFICATIONS	<p>There are seven parameters needed to specify the zero sequence current transformers.</p> <ol style="list-style-type: none">1. Rated primary current.2. Rated secondary current: 1A/5A3. Rated frequency: 50Hz/60Hz4. Hole diameter.5. Precision level: 0.2, 0.56. Rated secondary side load7. Enclosure material: Fire retardation PBT/Fire retardation ABS.
RANGE	<p>Rated primary current: from 50A to 2000 A Hole diameter: 80mm-300mm Rated secondary side load: 2.5-10VA</p>
TESTING AND QUALITY	All Mingrui Zero Sequence Current Transformers are designed, rated, manufactured and tested in strict compliance with IEC60044-1. Routine tests performed on each Zero Sequence Current Transformer are power frequency withstand test, short time current test, temperature rise test, verification of terminal markings and inter-turn overvoltage test . Mingrui's internal quality system has been developed and certified under ISO 9001 quality system
CONSTRUCTION	High insulation flam-retardant casing with a silicon steel coil made toroidal core on which the secondary coil winding and sealing with epoxy resin.

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Zero Sequence Current Transformer



Square shape with split core



Round shape with split core



Round shape with integrated core

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Temperature and Humidity Controller

FUNCTION	<p>MRD-ZWS Temperature and Humidity Controller is equipped with programmable measurement, display and monitor function, and provides real-time and precise monitoring process on environment temperature and humidity to make them conform to working requirement and effectively prevent condensation too.</p> <p>MRD-ZWS Temperature and Humidity controller applies digital display on temperature and humidity set value and measuring value, users can set their own temperature and humidity control value. RS485 communication function is available to facilitate backend software of data collection and temperature and humidity changes record analysis. We provide heating type and fan cooling type for customer choice.</p>
SPECIFICATIONS	<p>There are four parameters needed to specify the temperature and humidity controller.</p> <ol style="list-style-type: none"> 1. Product Model, quantity, length of lead wire for humidity sensor 2. Product installation mode, power of load
RANGE	<p>Power supply type: AC220V/DC220V/DC110V Standard humidity sensor wire length is 3m.</p>
TESTING AND QUALITY	<p>All Mingrui Temperature and Humidity Controllers for Switchgear are designed, rated, manufactured and tested in strict compliance with IEC61557. Routine tests performed on each Temperature and Humidity Controller are power frequency withstand voltage test, insulation measurement test and hysteresis quantity measurement test. Mingrui's internal quality system has been developed and certified under ISO 9001 quality system</p>



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Electric Fire Prevention Alarm and Control System

FUNCTION	Electric Fire Prevention Alarm and Control System is applicable to AC 50/60Hz, rated voltage 400V, rated current 16-1600A power distribution network, eliminating electrical fire danger caused by electric leakage. The device is widely used in school, hotel, gym, factory workshop and mining establishments.
EXCULSIVE FEATURES	<ol style="list-style-type: none">1. Apply digital processing technology to real-time monitor and display power distribution circuit working condition.2. Use 485 communication technology to real time and accurately transfer each detector operation parameters and control instructions3. Employ multi-level distributed intelligent control system to provide locality protection of the distribution circuit4. Equipped with residual current alerting function5. Intelligent data analyzing and parameters setting6. Use stand-by power system to support the whole system working more than 4hours
TESTING AND QUALITY	All Mingrui Electric Fire Prevention Alarm and Control Systems are designed, rated, manufactured and tested in strict compliance with IEC-62606. Routine tests performed on each Electric Fire Prevention Alarm and Control System are insulation measurement test, electric leakage detection and warning test, over-current detection and temperature measurement test.. Mingrui's internal quality system has been developed and certified under ISO 9001 quality system
CONSTRUCTION	Standard unit includes the alarm and control unit for electric fire prevention, heat detectors, residual current detectors, residual current transformers and temperature sensor. For shipping all units are crated for added protection and ease of handling.

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Electric Fire Prevention Alarm and Control System



Alarm and control unit for electric fire prevention system



Residual current transformer



Temperature sensor



Electric fire detector and residual current detector

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Wireless Temperature Monitoring System

FUNCTION	Wireless Temperature Monitoring System uses radio waves for signal transmission without electric connect with receiving equipment and provide real-time operating temperature and working condition of the high equipment, and also is equipped with alarming function when over-temperature happens.	
SPECIFICATIONS	<p>There are seven parameters needed to specify the wireless temperature monitoring system</p> <ol style="list-style-type: none"> 1. Manageable temperature sensor numbers: 18 or more 2. Displayable temperature sensor numbers: 6-18 3. Alarm output: One (electrical independent contact), 250Vac, 0.6A/24Vdc, 5A 4. Internet interface: one-line isolation RS-485 industrial bus interface 5. Rated voltage: AC110-240V 6. Operating temperature: -10℃~+80℃ 7. Storage temperature: -40℃~+80℃ 	
TESTING AND QUALITY	All Mingrui Wireless Temperature Monitoring Systems are designed, rated, manufactured and tested in strict compliance with IEEE-802.15.4. Routine tests performed on each wireless temperature monitoring system are temperature display test, operating condition indicating test and over temperature alarming test. Mingrui's internal quality system has been developed and certified under ISO 9001 quality system	
CONSTRUCTION	Standard wireless temperature monitoring system includes wireless temperature sensors and wireless temperature monitor	
WIRELESS TEMPERATURE SENSOR	Function	Wireless temperature sensor packages temperature sensor, measuring circuit, logic control circuit, wireless interface and power supply circuit into a heat shrinkable coat and is used to measure charged object surface temperature
	Specifications	<ol style="list-style-type: none"> 1. Temperature measuring range: -55℃~+125℃ 2. Measuring precision: ±0.5℃ 3. Resolution ratio: 0.0625℃ 4. Temperature measurement period: about 75s

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Wireless Temperature Monitoring System



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Leakage Relay

FUNCTION	Leakage relay is applicable to AC voltage up to 660V, frequency of 50Hz power distribution system. It is widely used to prevent equipment failure and electrical fire, and protect human from electric shock.
SPECIFICATIONS	<p>There are six parameters needed to specify the leakage relay</p> <ol style="list-style-type: none"> 1. Rated voltage (V) 2. Dia. of CT through hole- Φ (mm) and relative max. rated current value (A) 3. Rated residual operating current and non-operating current (mA) 4. Response time (S) 5. Rated control capacity: 220V/5A 6. Installation method: normal type—fixed mounting (H type); rail-type or fixed type(Z type); panel type mounting (M type)
RANGE	<ol style="list-style-type: none"> 1. Rated voltage: 380V/660V 2. Dia of CT through hole- Φ (mm) and relative max. rated current value(A): 25/100, 45/200, 75/400, 100/630 3. Rated residual operating current and non-operating current is adjustable and customized 4. Quick type response time: $\leq 0.1s$; Time delay type response time: 0.2-2S
TESTING AND QUALITY	All Mingrui leakage relays are designed, rated, manufactured and tested in strict compliance with IEC60755-1983. Routine tests performed on each leakage relay are reclosing function test, leakage alarm function test and power frequency voltage-withstand test. Mingrui's internal quality system has been developed and certified under ISO 9001 quality system
CONSTRUCTION	The whole set leakage relay includes zero-sequence current transformer, electronic circuit, test circuit and tripping relay. For shipping all units are crated for added protection.
OPTIONS	<ul style="list-style-type: none"> • Customized bigger current ampere or through hole is acceptable.

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Leakage Relay



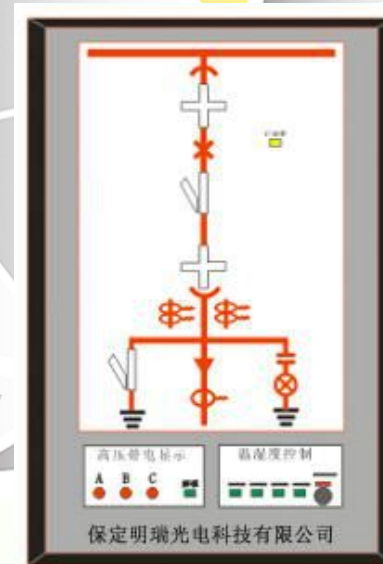
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Switchgear Control and Display Device

FUNCTION	Switchgear Control and Display Device is applicable to 0.1-40.5 indoor switchgear to indicate primary simulated condition, handcart position, isolation switch position, temperature and humidity, and also equipped with heater fault detection function, automatic heating and dehumidify function, anti-error voice reminder and ultra high temperature alarm function.
SPECIFICATIONS	<p>There are seven parameters needed to specify the switchgear control and display device</p> <ol style="list-style-type: none">1. Equipment input power: AC/DC 220V or AC/DC 110V2. Humidity and temperature sensor wire length3. Electrical contact temperature measuring section4. Ambient humidity: less than 95%5. Atmospheric pressure: 80-110KPa6. Altitude: less than 2500M7. Ambient Temperature: -20centigrade to 65 centigrade (normal work) -30 centigrade to 70 centigrade (limitation) -10 centigrade to 55 centigrade (storage)
TESTING AND QUALITY	All Mingrui Switchgear Control and Display Devices are designed, rated, manufactured and tested in strict compliance with IEC255-22. Routine tests performed on each Switchgear Control and Display Device are anti-interference test, insulation test and dielectric strength test. Mingrui's internal quality system has been developed and certified under ISO 9001 quality system
CONSTRUCTION	Switchgear control and display device includes temperature measuring control and display device, comprehensive indicator and switchgear operator.

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Switchgear Control and Display Device



Comprehensive indicator



Temperature measuring control and display device



Switchgear operator

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