

# SWITCHGEAR

## MNS

### Low voltage switchgear



#### Description

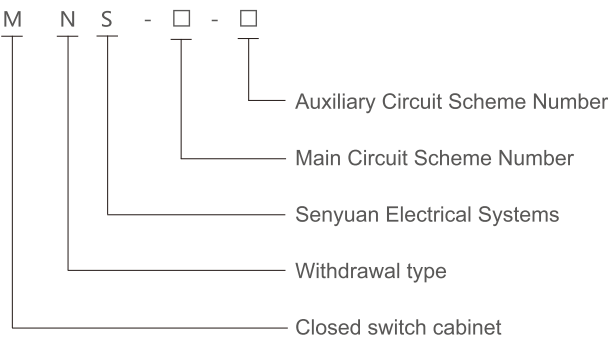
MNS type low-voltage switchgear (hereinafter referred to as low-voltage switchgear) is a product that our company has improved the selection of electrical components and cabinet structure based on the development trend of low-voltage complete switchgear in our country, and re-registered. The electrical performance and mechanical properties of this product fully meet the technical requirements of the original MNS products.

This low-voltage switchgear is suitable for power systems with AC 50 ~ 60Hz and rated working voltage of 660V and below. It is used as equipment control for power generation, transmission, distribution, electric energy conversion and electric energy consumption.

In addition to general land use, this low-voltage switchgear can also be used in offshore oil drilling platforms and nuclear power plants after special treatment.

This low voltage switchgear complies with IEC439, VDE0660 Part 5, GB7251-87 Low voltage complete switchgear and JB/T9661 “Low voltage withdrawable complete set of switchgear” industry standard.

#### Product model No. and its implication



#### Technical parameter

1. Main technical parameter of MNS type low voltage switchgear to see table below

Rated working voltage (V)		380、660
Rated insulation voltage (V)		660
Rated working current (A)	Horizontal busbar	630 ~ 5000
	Vertical busbar	800 ~ 2000*
Rated short-time withstand current Effective value (1S)/Peak value (kA)	Horizontal busbar	50 ~ 100/105 ~ 250
	Vertical busbar	60/130 ~ 150

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Protection grade of case	IP30、IP40、IP54**
Overall dimension (W×D×H mm)	600×800、1000×600、(1000)×2200

\* Rated operating current of vertical bus: 800A for single-sided or double-sided operation of pull-out MCC, 1000A for movable MCC; The cabinet depth is 1000mm and the MCC for single-side operation is 800 ~ 2000A,  
\* \* Protection level IP54 is not recommended due to serious capacity reduction.

2. The technical data of the main electrical appliances in the cabinet of this product are shown in the table

Name	Model No.	Main parameter	Name	Model No.	Main parameter
Low voltage circuit breaker	DW914(AH)	600 ~ 4000A	Fuse type Disconnecter	DCHR1	125 ~ 630A
Low voltage circuit breaker	RDW17	600 ~ 3900A	Fuse type Disconnecter	HH15	125 ~ 800A
Low voltage circuit breaker	RDM1 RDM2	15 ~ 630A	AC contactor	CJX2-F(RDC6) CJX2(RDC6) CJX8	4.7 ~ 630A
Low voltage circuit breaker	DZ47-63 S503	10 ~ 63A	Fuse	NGT RT20/NT	4 ~ 630A
Low voltage circuit breaker	RDM8 LNA	6 ~ 100A	Thermal overload relay	JRS2 JRS8/NT	16 ~ 370A
Fuse type Load switch	SMP	125 ~ 630A	Current transformer	LMK1 LN LMZ2	15 ~ 5000/5A
Fuse type Load switch	OESA	63A	Capacitor	BSMJ CLMB	~400v(internal Δ)
Low voltage circuit breaker	RDSW6(RDW1)	600 ~ 3200A	Low voltage circuit breaker	M	600 ~ 6300A

Structure description

The basic cabinet frame of low-voltage switchgear is a combined assembly structure. All structural parts of the cabinet frame are galvanized, firmly connected with each other through self-tapping locking screws or 8.8 grade hexagonal screws to form a basic cabinet frame. Then, according to the needs of scheme changes, corresponding doors, sealing plates, partitions, installation brackets, busbars, functional units and other parts are added to assemble a complete low-voltage switchgear. The dimensions of parts and compartments in the switchgear are modularized (modulus unit E = 25mm, the same below).

1. Power distribution center (hereinafter referred to as PC)

- The PC cabinet is divided into four compartments, namely the horizontal busbar compartment, at the back of the cabinet; The functional unit compartment is on the upper part of the front of the cabinet or on the left side of the front of the cabinet; Cable compartment, on the lower part of the front of the cabinet or on the right part of the front of the cabinet: control circuit compartment, on the upper part of the front of the cabinet. Separation measures: melamine phenolic sandwich panels or steel plates are used between the horizontal busbar compartment and the functional unit compartment. The control circuit compartment and the functional unit compartment are separated by a flame-retardant polyurethane foam plastic molded seal shell. The functional unit compartment on the left and the electrical system compartment on the right are separated by a steel plate.
- Cabinet-frame circuit breakers installed in the cabinet can be manually operated outside the cabinet when the door is closed. Check the opening and closing status of the circuit breaker and determine whether the circuit breaker is in the test position or the working position according to the positional relationship between the operating mechanism and the door.
- The main circuit and the auxiliary circuit are designed as a separation structure. The auxiliary circuit units composed of instruments, signal lights and buttons are all installed on a plastic board. There is a cover made of flame-retardant polyurethane foam plastic behind the board. Separate from the main circuit

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2. Withdrawable motor control center and low-current power distribution center (hereinafter referred to as withdrawable MCC)

- The withdrawable MCC cabinet is divided into three isolation rooms, namely, the horizontal bus compartment at the back of the cabinet, the functional unit compartment on the left side of the front of the cabinet, and the cable compartment on the right side of the front of the cabinet. The horizontal bus compartment and the functional unit compartment are separated by a functional wall made of flame-retardant foam plastic, and the cable compartment is separated by a steel plate from the horizontal bus compartment and the functional unit compartment.

- Withdrawable MCC has two structures: single-sided operation and double-sided operation.

- The withdrawable MCC has five standard sizes of drawers, which are 8E/4, 8E/2, 8E, 16E and 24E respectively. The structures of the 8E/4 and 8E/2 drawers are molded flame-retardant plastic parts and aluminum alloy profiles (4 pcs of 8E/4 or 2 pcs of 8E/2 forming an 8E-height interval). The total height of the functional unit compartment is 72E

- Five standard sizes of drawers generally have 16 secondary isolation contacts leading out. If necessary, except for the 8E/4 drawer, the other four drawers can be increased to 32. The terminals of each fixed contact can be connected with 3 pcs of wires at the same time. The above terminals are provided by the manufacturer with appropriate accessories and cold rolling pliers with the product.

- Through the operation procedure of the mechanical interlocking device, the drawer can only be moved when the main circuit and the auxiliary circuit are all disconnected. The mechanical interlocking device makes the drawer have a moving position, a breaking position and a separating position, and marks them with corresponding symbols. The operating handle on the mechanical interlocking device and the operating handle of the main circuit breaker can be locked by three padlocks at the same time.

3. Movable motor control center and small current power distribution center (hereinafter referred to as movable MCC)

- The cabinet structural characteristics of the movable MCC are the same as (a) and (b) in clause 4.2.

- The functional unit is designed as a movable structure. The connection between the functional unit and the vertical busbar uses a primary isolation contact. Even if the circuit connected to it is live, the functional unit can be completely taken out from the equipment and put back. The other end is fixed structure.

The functional units of the movable MCC are divided into 3E, 6E, 8E, 16E, 24E and 40E functional unit compartments, and the total height is also 72E.

4. Busbar system

- Horizontal busbar (L1, L2, L3). The horizontal busbar is installed in an independent busbar compartment behind the cabinet. It has two optional installation positions, that is, 1/3 or 2/3 of the cabinet height. The busbar can be installed at the upper or lower part as needed, the upper and lower groups can also be installed at the same time. The two sets of busbars can be used separately or in parallel.

Each phase busbar consists of 2, 4 or 8 busbars connected in parallel, and the busbar cross sections have six kinds of 10x30x2, 10x60x2, 10x80x2, 10x60x4, 10x80x2x2 and 10x60x4x2.

- The vertical busbar L-shaped copper busbar with 50x30x5, which is embedded in the functional wall made of flame-retardant plastic, and the protection level of the live part reaches Ip20.

- Neutral wire (N wire) and protective grounding wire (PE wire). The neutral wire busbar and protective grounding wire busbar are installed in parallel at the lower part of the functional unit compartment and vertically in the cable compartment. If the N wire and PE wire are separated by insulators, the N wire and the PE wire are used separately. If the two are shorted with conductors, the PEN wire will be formed.

5. Protective grounding system

The protection circuit of this switchgear consists of two parts: PE wire (or PEN) installed separately and running through the entire arrangement length and conductive metal structural parts. Except for the external door and sealing plate, the rest of the metal structural parts have been tinned. The connections of the structure have been carefully designed to allow it to pass a certain short-circuit current.

6. Auxiliary circuit cable tray

An auxiliary circuit cable tray is installed on the top of the functional unit compartment, and the connecting lines between cabinets and public power lines can be placed in the tray.

7. Isolation measures of auxiliary circuits

In each circuit of the extractable MCC scheme, an isolation transformer can be installed according to the needs of the system. The capacity of the transformer is higher than that of the AC contactor, and the specifications are determined.