YAXUZG

MNS

低压抽出式开关柜

MNS Low Voltage Withdrawable Type Switchgear

YAXUZG

MNS

低压抽出式开关柜

MNS Low Voltage Withdrawable Type Switchgear

型号含义 Type Designation

正常使用条件 Working Conditions

◆周围空气温度不高于 +40℃ , 不低于 −5℃ , 并且 24h 内其平均温度不高于 +35℃。
Ambient temperature: −5~+40℃ and the average temperature in 24h must below 35℃

◆周围空气相对湿度在最高温度为 +40℃时不超过 50%，在较低温度时有较高的相对湿度，如 +20℃时为 90%, 但考虑到由于温度的变化有可能会偶然产生适度的凝露。
Humidity: ≤ 50% at the highest ambient temperature +40℃ , lower temperature with higher humidity, such as ≤ 90% at 20℃ , mild condensation occasionally happens for the variations of the temperature.

◆户内使用，使用地点的海拔高度不得超过 2000m。
Altitude: ≤ 2000m (outdoor type)

◆应安装在无剧烈震动和冲击，以及不使电器元件受到腐蚀的场所。
It is applicable in the place without violet vibration and impulsion and corrosive pollution.

主要技术参数 Specification

名称 Item	GB7251.1−2013 低压成套开关设备和控制设备 (TTA) GB7251.1−2013 Low Voltage Whole Set Switch and Control Devices (TTA) IEC60439《低压成套开关设备和控制设备》 IEC60439 "Low Voltage Whole Set Switch and Control Devices
过电压类别 Overvoltage Type	IV III
污染等级 Pollution Degree	3
额定工作电压 (Ue)(V)Rated Working Voltage (Ue)(V)	400/660
额定绝缘电压 (Ui)(V)Rated Isolation Voltage (Ui)(V)	660/1000
额定频率 (Hz)Rated Frequency (Hz)	50(60)
额定电流 Rated Current	≤ 5000A
额定短时耐受电流 (Icw)(kA)Rated Short−time Withstand Current (1cw)(kA)	50,65,80(Is 有效值) (Is effective value)
额定峰值耐受电流 (Ipk)(kA)Rated Peak Withstand Current (1pk)(kA)	105,140,176(0.1s 最大值) (0.1s maximum value)
额定最大工作电流 Rated Maximum Working Current	≤ 1000A
额定短时耐受电流 Rated Short−time Withstand Current	50kA
额定峰值耐受电流 Rated Peak Withstand Current	105kA
外壳防护等级 Protection Degree of Shell	IP30 IP40(特殊说明) (special illustration)

结构特征 Structure Features

本开关柜由于引进了瑞士 ABB 的先进技术，并在其原有基础上加以技术改进，使其更符合我国国情。柜体采用 25mm 为模数的 C 型材通过连接件来组成各种得以满足各种需求的柜架结构和抽屉单元，在 MCC 柜中采用高强度的阻燃型工程塑料组件，使其安全性能更可靠，同时加之将国外的功能板加以改型，以 200mm 为模数加以组合，便其更有利于 PC 柜与 MCC 柜混装柜体的设计需求，抽出单元与柜体具有可靠的联锁装置，以防止在开关通电状态下带负荷拉闸，提高了其安全性，另外该柜体一般均采用冷轧钢板进行钝化处理后组装而成，也可根据用户的不同需求采用敷铝锌钢板。

The switchgear introduces the advanced technologies of ABB and improves it with our original technology to make it more in line with China's national conditions. Cabinets adopt 25mm for the modulus of C sectional material and becomes each kind of frame structure and draw unit that needed by means of connection. MCC cabinet uses the high strength of flame retardant engineering plastics components to make its safety performance more reliable. At the same time, it is more suitable for the design requirement of mixing the PC cabinet and MCC cabinet by remolding the foreign function board with 200mm for the modulus. Withdrawable unit and the cabinet have reliable interlocking devices to prevent the switch to break with load when it is charged, so the safety of the cabinet improves. In addition, the cabinet adopts cold-rolled steel sheet after passivation for assembly and can also adopt aluminium zinc steel plate according to the different needs of users.

◆开关柜类型

受电、母联柜

采用国内外的各种类型的框架式断路器如 RMW1、CW1、NA1、DW45、CDW7、MT、E 等系列断路器作为总开关，实现受电或母联功能。

◆ Cabinet Type

◆ Power Receiving and Busbar Connecting Cabinet

Use various domestic and foreign types of frame type circuit breaker, such as RMW1, CW1, NA1, DW45, CDW7, MT, E series etc. circuit breaker as the main switch to achieve the function of power receiving or busbar connecting.

◆动力中心柜 (PC) Power Center Cabinet (PC)

采用国内外的各种类型的柜架式断路器如 DW45、NA1、CDW7MT、E 系列断路器进行配电。

Use various domestic and foreign types of frame type circuit breaker, such as DW45, NA1, CDW7MT, E series etc. circuit breaker to distribute power.

◆电动机控制中心 (MCC)

由大小抽屉组装而成，各回路主开关采用高分断能力的塑壳断路器或旋转式带熔断器的负荷开关。

无功功率补偿柜

◆ Motor Control Center (MCC)

MCC is assembled by various sizes of drawers and its main loop switch adopts molded case circuit breaker with high breaking capacity or load switch with rotating type fuse.

Reactive Power Compensation Cabinet

◆抽屉类型

有五种尺寸都是以 8E(200mm) 高度，进行模块化结构设计，其有效元器件安装高度为 1800mm, 使柜体整体布局更合理，更美观。

8E/4: 高 200 x 宽 150 x 深 400 高度空间平行组合 4 个抽屉单元

8E/2: 高 200 x 宽 300 x 深 400 高度空间平行组合 2 个抽屉单元

8E: 高 200 x 宽 600 x 深 400 高度空间组装 1 个抽屉单元

16E: 高 400 x 宽 600 x 深 400 高度空间组装 1 个抽屉单元

24E: 高 600 x 宽 600 x 深 400 在 24E(600mm) 高度空间组装 1 个抽屉单元

以上五种抽屉单元可在一个柜体中作单一组装，也可做混合组装 (见图一)

◆ Drawer Type

The five dimensions all are 8E (200 mm) height, modular structure designed and installation height of effective components is 1800 mm, so its whole layout is more reasonable and more beautiful.

8E/4: 200 x 150 x 400 (Height × Width × Depth) height space parallel combines 4 drawer units

8E/2: 200 x 300 x 400 (Height × Width × Depth) height space parallel combines 2 drawer units

8E: 200 x 600 x 400 (Height × Width × Depth)height space assembles 1 drawer units

16E: 400 x 600 x 400 (Height × Width × Depth) height space assembles 1 drawer units

24E: 600 x 600 x 400 (Height × Width × Depth) in 24E (600 mm) height space assembles 1 drawer units

The above five kinds of drawer units may be in one cabinet as a single assembly as well as a mixed assembly (see picture 1)

柜体简介 Brief Introduction

柜体基本尺寸 Basic Dimension

抽屉型式 Drawer Type	8E/4	8E/2	8E	16E	24E
最多容纳单元数 Maximum Units	36	18	9	4+8E	3

受电柜及联络柜 Power Receiving and Busbar Connecting Cabinet

	主母线转接柜 Main Busbar Transferring Cabinet	受电柜及联络柜 Power Receiving and Busbar Connecting Cabinet
高 (mm)Height (mm)	2200	2200
宽 (mm)Width (mm)	400	600 800 1000
深 (mm)Depth (mm)	800 1000	800 1000
备注 Remarks		

YAXUZG

动力中心 (PC) 柜 Power Center (PC) Cabinet

	2 台断路器 2 Circuit Breakers	3 台断路器 3 Circuit Breakers
高 (mm) 3 Circuit Breakers	2200	2200
宽 (mm) Width (mm)	800 1000	800 1000
深 (mm) Depth (mm)	800 1000	800 1000
备注 Remarks	DW45-2000 及以下载流量且体积较小的同类断路器 DW45-2000 and other similar circuit breakers with lower carrying capacity and smaller size	DW45-2000 及以下载流量且体 积较小的同类断路器 DW45-2000 and other similar circuit breakers with lower carrying capacity and smaller size

电动机控制中心 (MCC) 柜及电容补偿柜 Motor Control Center (MCC) Cabinet and Capacity Compensation Cabinet

	MCC 柜 MCC Cabinet			电容补偿柜 Capacity Compensation Cabinet
高 (mm) Height (mm)	2200			2200
宽 (mm) Width (mm)	600	800	1000	600 800 1000
深 (mm) Depth (mm)	1000 800	1000 800	1000 800 600	800 1000 600

柜体分区设计 Cabinet Design

◆MCC 柜根据需要可组成单面操作柜或双面操作柜，每一柜体又固定分隔成三个小室。即主母线室、电器室和电缆室。（具体见图 2）

◆安全保护系统

每柜都有一块阻燃型的高密度聚氨脂塑料功能板，或经过电镀的隔板安装在主母线室与电器室之间，其作用为有效防止开关元件因故障引起的飞弧与母线之间短路造成的事故，使操作更安全。

上下层抽屉之间都有带有通风孔的镀锌金属底板相隔离，对相邻回路之间具有较强的隔离作用。

柜内采用了多种塑料组件以支撑带电部份，这些组件要求是无卤素的，并具有 CTI300 等级的防漏电性能。

柜内设有独立的 PE 接地系统和 N 中性导体，都贯穿整个装置，各回路接地或接零都可就近联接。整个母线系统安装见图 3 所示。框架结构件采用自攻螺钉联接，具有较高的接地可靠性。（具体见图 3）

◆MCC cabinet can be composed of one size operation cabinet or double sizes operation cabinet according to different needs. Each cabinet normally is divided into three small compartments, i.e. main busbar compartment, electrical equipment compartment and cable compartment. (See picture 2)Safety Protection System

◆Each cabinet has a function plate made by flame retardant high-density polyurethane plastic or clapboard after electroplating which can be installed between the main busbar compartment and electrical equipment compartment. Its role is to effectively prevent the arc caused by switch components fault and short-circuit accident between busbars, and to make the operation more secure.

Between the upper and the lower drawers, there is a galvanized metal base plate with a vent hole to efficiently isolate between the adjacent loops.
Cabinet uses a variety of plastic components to support the charged parts. These components require halogen free, and CTI300 grades of leakage prevention performance.

Cabinet is equipped with independent PE grounding system and N neutral conductor all throughout the entire device. The grounding line or null line of each loop can be connected to the nearest. The busbar system installed as shown in picture 3. Frame structures connect with self tapping screw to guarantee its high grounding reliability. (See picture 3)

◆母线系统

开关柜的水平母线布置在开关柜的水平母线隔离室内，可置于柜后或柜顶， 后出线结构的柜体中水平母线置于柜顶。配电母线 (垂直母线) 组装在阻燃型塑料功能板中，既可防止电弧引起的放电，又能防止人体接触，通过联接件与主母线联接。

◆Busbar System

The horizontal busbar of the switchgear is arranged in the horizontal busbar isolation compartment, which can be placed at the top or at the rear of the cabinet. In back outlet connecting cabinet, the horizontal busbar is placed at the top. Distribution busbar (vertical busbar) is assembled in the function plate made by flame retardant plastics to prevent arc caused by discharge and to prevent the body contact. It connects with the main busbar through connections.

◆抽屉的电气和机械联锁

抽屉单元有可靠的机械联锁装置，通过操作手柄控制，具有明显的分闸、合 闸、试验、抽出和隔离位置。

为加强安全防范，操作手柄定位后可加上挂锁，最多可加三把锁。

◆ Electrical and Mechanical Interlocking of Drawer

Drawer units have reliable mechanical interlocking devices, controlled by operating handle. It has obvious breaking, closing, test, and withdrawable and isolation position.

To strengthen security, the operating handle can be locked when it fixed. And the locks are up to three.

◆后出线开关柜结构

柜后出线可以减少开关柜排列宽度。后出线开关柜的主母线水平安装在开关柜的顶部，柜的后半部为电缆室，进出线电缆均在柜后电缆室连接。开关柜的正面为装置小室，安装开关设备的功能单元。该系统设计将开关柜侧面的电缆室移至后半柜，大大减少了开关柜的排列宽度，以进一步满足变电站空间布置的要求。

馈电柜柜宽 600mm, 深 1000mm, 顶部为独立的母线室，与装置小室隔离。正面装置小室有效安装高度为 72E(E = 25mm), 经多功能板与后部电缆室隔离，充分利用了开关柜的安装空间，结构紧凑，单元配置灵活。后面电缆室带门，安装及维护方便。外型见图 4。

进线柜的宽度按进线单元的框架电流确定，推荐宽度为 400、600、800、1000mm，柜深 1000mm。

◆ Rear Outlet Line Cabinet Structure

Rear outlet lines can reduce the width of switchgear arrangement. The main busbar of rear outlet lines cabinet is installed at the top of the cabinet. The second back part of the cabinet is cable compartment, connecting all the inlet and outlet cables. The front of the switchgear is a small device compartment to install the function units. The advantage of this switchgear is to arrange the cable compartment at the rear of the cabinet, so the width of the switchgear arrangement greatly reduces, in order to meet the requirements of substation space layout.

Power feeding cabinet (depth: 600mm; width: 1000mm) has an independent busbar compartment at the top of it and isolates from the small device compartment (efficient installation height: 72E, and E=25mm) which is isolated from cable compartment through function plate, so the space is fully used. The compact structure makes the arrangement of units much more flexible. The rear door of the cable compartment is convenient for maintenance. (See picture 4)

The width of the inlet line cabinet is according the framework current of inlet line unit. The recommended widths are 400mm, 600mm, 800mm, 1000mm and the depth of the cabinet is 1000mm.

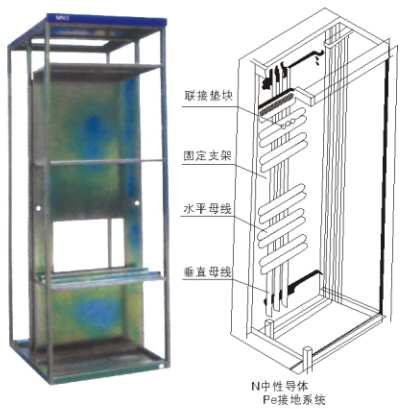

图 3 MNS 母线系统

Picture 3: MNS Busbar System

安装示意图 Installation Instruction

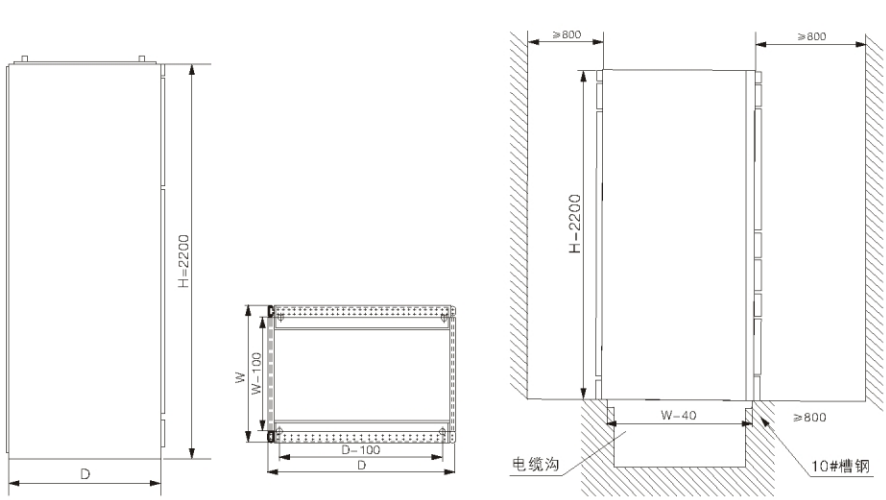

图 5 安装示意图

Picture 5: Installation Instruction