



GSW1系列万能式断路器 GSW1 Series Universal Circuit Breakers

一、用途 APPLICATION

GSW1系列万能式断路器（以下简称断路器）适用于频率50HZ，额定工作电压400V、690V，额定电流从630A-6300A配电网中，用来分配电能和保护线路及电源设备免受过载、欠电压短路、单相接地等故障的危害，该断路器具有智能化保护功能，选择性保护精确，能提高供电的可靠性，避免不必要的停电。结构紧凑、体积小、分断能力高。封闭的触头系统，实现了零飞弧，智能控制器具有试验、负载监控、大信息量显示，现场可编程及通讯等功能，可实现完善的三段或四段保护。

GSW1 series universal circuit breakers (abbreviated as circuit breakers as follows) could be suited for distribution net including frequency: 50Hz, rated working voltage: 400V, 690V, rated current: 630 ~ 6300A; and used for assigning the electrical energy and the protection line and the power equipment exempting such as overloaded, under-voltage, short-circuits, and single-phase earth harm, The circuit breaker has the intellectualized protection function, the selective protection is precise, which can enhance the power supply the reliability, and avoid the nonessential power cut. Compact structure, small volume and high Breaking Capacity. The seal contact system establishing zero over flash, The intelligent controller has test, load monitoring, great information display, real-time programming and communication function, which might establish perfect three sections or four section of protections.

二、符合标准 CONFORM TO STANDARDS

本产品符合GB/T14048.1-2000《低压开关设备和控制设备总则》和GB14048.2-2001《低压开关设备和控制设备低压断路器》，同时符合IEC60947-2《低压开关设备和控制设备 第二部分 低压断路器》的要求。

The product conforms to standards: GB/T14048.1-2000《Low-voltage switchgear and controlgear--General rules》and GB14048.2-2001《Low-voltage switchgear and controlgear--Low-voltage circuit breakers》and IEC60947-2《Low-voltage switchgear and controlgear second part--Low-voltage circuit breakers》.

三、产品型号及含义 TYPE AND MEANING

GSW1-□/□



四、工作环境 ENVIRONMENT CONDITION FOR OPERAT

△ 周围空气温度为：-5℃~+40℃，24h平均值不超过+35℃

Ambient temperature: $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$ average temperature in 24 hours 35°C .

- △ 大气条件:大气相对湿度在周围空气温度为 $+40^{\circ}\text{C}$ 时不超过50%，在较低的温度下可以有较高的相对湿度，例如 20°C 时达90%。对由于温度变化偶尔产生的凝露，应采取特殊的措施；

No exceeding 50% at the maximum ambient temperature of 40°C . With lower temperature, higher humidity would be permitted, for instance: with temperature 20°C , the humidity can exceed 90%. Take the special measure to the dews on the surface, which would appear due to temperature change.

- △ 污染等级: 3级 Pollution protection: Grade 3.
- △ 安装类别 Installation categories
- △ 主电路安装类别IV,辅助电路的除了欠电压线圈、电源变压器初级线圈安装类别为IV,其余安装类别为 III.

IV for the major circuit and III for auxiliary circuit except undervoltage release and primary circuit of transformers, whose installing categories is IV.

五、主要技术参数 MAIN TECHNICAL PARAMENTS

- 断路器主要技术指标 Main technical parament of circuit breakers

- △ 断路器的额定电流 Rated current of circuit breakers 表(Table)1

壳架等级额定电流Inm(A) Frame Rated Current	额定电流In(A) Rated Current
2000	630,800,1000,1250,1600,2000
3200	2000,2500,3200
4000	4000
6300	4000,5000,6300

- △ 主要技术指标 Main technical parament 表(Table)2

型号 Type		GSW1-2000	GSW-3200	GSW1-4000	GSW1-6300	
额定工作电压 Rated Working Voltage	Ue(V)	AC400、690V, 50Hz				
额定绝缘电压 Rated Insulation Voltage	Ui(V)	AC1000V 50Hz				
额定冲击耐受电压 Rated Impulse WithStand able Voltage	Uimp (V)	12000				
工频耐受电压 Working Frequency Withstand able Voltage	U(V)	AC3500V 1min 50Hz				
额定极限短路分断能力Icu(KA) (有效值) Limited Short-circuit Breaking Capacity Icu(effective value)	400V	80	100	100	120	
	690V	50	65	65	75	
额定运行短路分断能力Ics(KA) (有效值) Operation Short-circuit Breaking Capacity Ics(effective value)	400V	50	65	65	100	
	690V	40	50	50	65	
额定短时耐受电流Icw(KA)/1s (有效值) Rated Stand Current For Short-time(1s) Icw(effective value)	400V	50	65	65	100	
	690V	50	65	50	65	
使用类别 Applicable category		B				
隔离功能 Isolation function		可用作隔离断路器 use as circuit breakers - disconnectors				
操作性能 OPERATION Performance	电气寿命 Electric Life	400V 690V	6500 3000	3000 1500	3000 1500	500 500
	机械寿命(免维护) Mechanical Life (Non-maintenance)		15000	10000	10000	4000

- △ 智能控制器的整定值及误差

The setting value and aberration of intellignt controller 表(Table)3

GSW1	长延时 long-delay			短延时 short-delay			瞬时 instantaneous		接地(零序) earthed (N-phase)		
Inm (A)	I _{r1}	动作时间精度 fineness of acting time	显示精度 fineness of show	I _{r2}	动作时间精度 fineness of acting time	显示精度 fineness of show	I _{r3}	显示精度 fineness of show	I _g (1N)	动作时间精度 fineness of acting time	显示精度 fineness of show
2000	(0.4~1)In	± 15%	± 5%	(0.4~15)In max:50KA	见表5 link to T5	± 15%	1.0In-50KA	± 20%	(0.2~1)In	见表5 link to T5	± 10%
3200	(0.4~1)In	± 15%	± 8%	(0.4~15)In max:50KA	见表5 link to T5	± 15%	1.0In-50KA	± 20%	(0.2~1)In	见表5 link to T5	± 10%
4000	(0.4~1)In	± 15%	± 8%	(0.4~15)In max:50KA	见表5 link to T5	± 15%	1.0In-50KA	± 20%	(0.2~1)In	见表5 link to T5	± 10%
6300	(0.4~1)In	± 15%	± 10%	(0.4~15)In	见表5 link to T5	± 15%	1.0In-100KA	± 20%	(0.2~1)In	见表5 link to T5	± 10%

■ 长延时过电流保护反时限动作特性

Inverse Long-Action Feature For Over-Current

△ $1.05I_r1 < I \leq I_r2$ 为反时限动作 $1.05I_r1 < I \leq I_r2$ Inverse Action

△ $I^2T_L = (1.05I_r1)^2 t_L$ 曲线动作,见图1,其中(1.05-2.0) I_r1 的动作时间见表4

Action according to the curve, whose formula is $I^2T_L = (1.5I_r1)^2 t_L$ as picture 1 show, and the acting time in (1.05-2.0) I_r1 see Table 4

表(Table)4

电流 Current	动作时间 (t) Acting Time						
1.05 I_r1	2小时内不动作 No acting in 2h's						
1.30 I_r1	<1h 动作 < 1h acting						
1.50 I_r1	t(s)	15	30	60	120	240	480
2 I_r1	t(s)	8.4	16.9	33.7	67.5	135	270

t_L -长延时1.5 I_r1 时整定时间 t_L -setting time of long-delay 1.5 I_r1

I_r1 -长延时整定电流 I_r1 settig current of long-delay

I_n -断路器额定电流 I_n -rated current of circuit breakers

T_L 长延时动作时间 T_L -acting time of long-delay

■ 短延时动作特性 Short-delay Action Feature

△ 当 $I_r2 < I \leq 8I_r1$ 时, 且 $I^2t = Y$,则保护特性为短延时反时限, 按 $I^2t^2 = (8I_r1)^2 t_s$.

$I_r2 < I \leq 8I_r1$ and $I^2t = Y$, with the formula $I^2t^2 = (8I_r1)^2 t_s$,The protection is inverse short-delay action feature.

△ 当 $I_r2 < I \leq 8I_r1$ 时, 且 $I^2t = N$,则保护特性为短延时定时限, 定时时间见表5;

$I_r2 < I \leq 8I_r1$ and $I^2t = N$,The protection is definiteaction feature and the definite time as table 5 show.

△ 当 $8I_r1 < I \leq I_r3$ 时, 则为短延时定时限特性, 其定时限特性见表5。

$8I_r1 < I \leq I_r3$,The protection is definite actionfeature and the definite time as table 5 show.

表(Table)5

设定时间(S) setting time	0.1	0.2	0.3	0.4
动作时间(S) acting time	0.05~0.15	0.15~0.25	0.25~0.35	0.35~0.45

■ 瞬时动作特性: Instantaneous Action Feature:

△ 当 $I > I_r3$ 时, 为瞬时动作特性, 动作时间为20ms左右。

when $I > I_r3$,it becomes instantaneous actionfeature,and the action time is about 20ms.

■ 接地故障保护特性 earthed error protection feature

△ 当 $I_g \leq I < I_r1$ 时, 为接地保护特性, 其接地保护特性见图2

when $I_g \leq I < I_r1$,it is the earthed error protec tion feature,and the protection feature seeing the picture 2

■ 零序电流保护特性 N-phase current protection feature

对四极或3P+N型断路器: 当 $I_N \leq I < I_r1$, 为零序保护特性, 其保护特性见图2

just for the type of 4P or 3P+N breakers,when $I_N \leq I < I_r1$,it is the N-phase current protection feature,and the protection feature seeing the picture 2

■ 负载监控特性 Load Monitoring Feature

负载监控功能主要用于监控下级不重要负载, 以保证主系统供电的稳定性。有

两种工作方式：方式一和方式二。

Load Monitoring Feature is used to monitor and control the subordinate unimportant load, as to ensure the stability of power supply of main system. there are two working patterns: pattern 1 and pattern 2.

- △ 方式一:当运行电流超过设定值时, 控制器发出接点信号, 相继断开负载1和负载2。
pattern 1: when the operating current rises over the setting value, the controller sends out connection signal, and breaks off the load 1 and load 2 successively.
- △ 方式二:当运行电流超过设定值时, 控制器发出接点信号, 相继断开负载1和负载2, 如果电流降到设定值以下, 控制器可再发出信号, 恢复已卸负载供电。
pattern 2: when the operating current rises over the setting value, the controller sends out connection signal, and breaks off the load 1 and load 2 successively. but when the current falls below the setting value, the controller could send out another signal to revert power supply to the load which was broken off.

■ 特性曲线 Feature Curves

- △ 特性曲线包括断路器的动作特性曲线（过载长延时, 短路反时限, 短路定时限、瞬时, 见图1）、接地保护特性曲线（见图2）。
the feature curves include breaker's action feature curve (overload long-time delay, short circuit inverse time, short circuit definite time, instantaneous. see the Picture1)、earthed protection feature curve (see the Picture2).

■ 智能控制器类型 Type of the Intelligent Controller

△ GSI-3L型 GSI-3L

采用液晶显示, 有过电流保护和各种辅助功能, 可选用带电压显示型产品。详见《GSI-3系列智能控制器使用说明书》。

Display by LCD, owning over-current protection and kinds of auxiliary function, the product with voltage show can be chosen. For details see 《Instruction of GSI-3 Series Intelligent Controller》.

△ GSI-3M型 GSI-3M

采用液晶显示, 有过电流保护、背光显示和各种辅助功能, 可选用带电压显示型产品。详见《GSI-3系列智能控制器使用说明书》。

Display by LCD, owning over-current protection、backlight show and kinds of auxiliary function, The product with voltage show can be chosen. For details see 《Instruction of GSI-3 Series Intelligent Controller》.

△ GSI-3H型 GSI-3H

采用数码管显示, 具有过电流保护、电压显示和其它各种辅助功能。详见《ST-H智能控制器使用说明书》

Display by LED, owning over-current protection、backlight show and kinds of auxiliary function, The product with voltage show can be chosen. For details see 《Instruction of ST-H Series Intelligent Controller》.

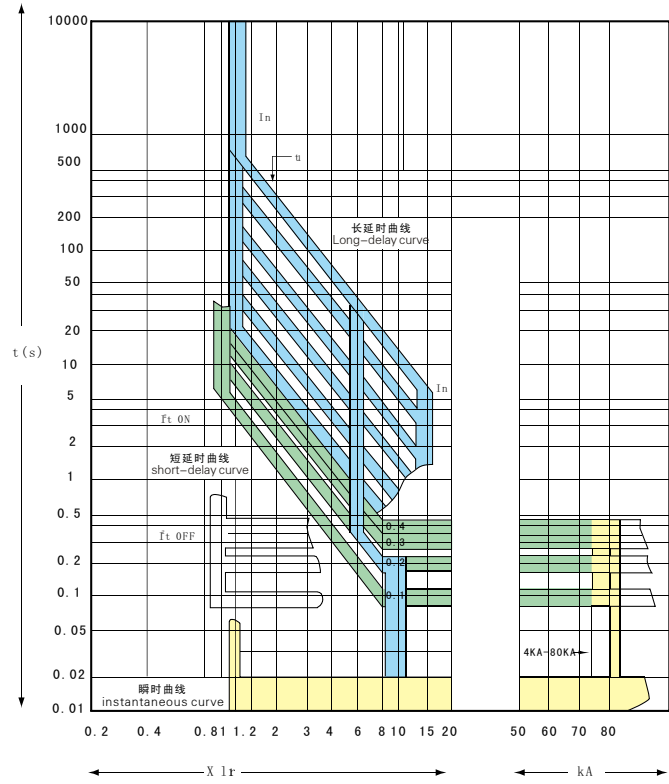


图1 过电流保护特性
picture 1 over-current protection character

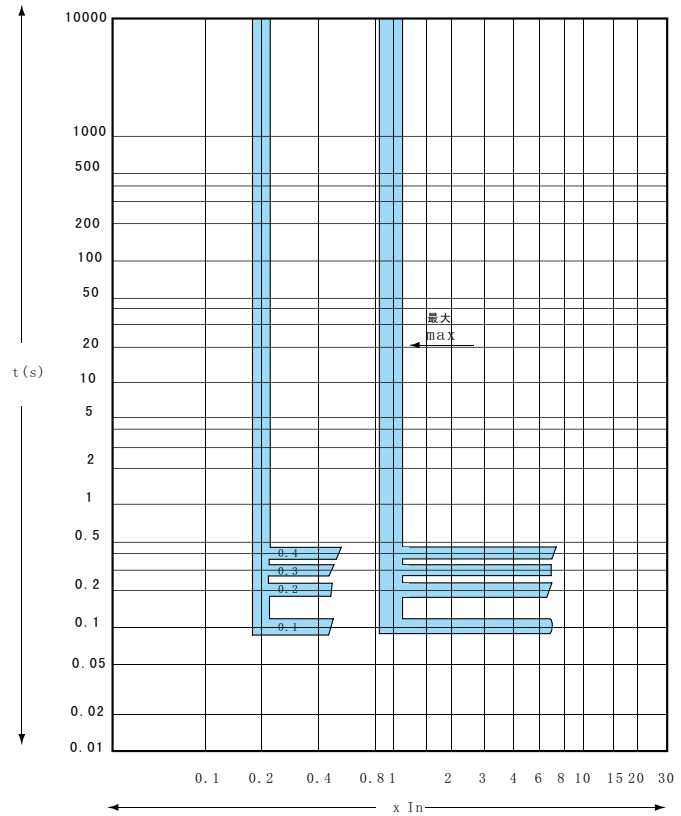
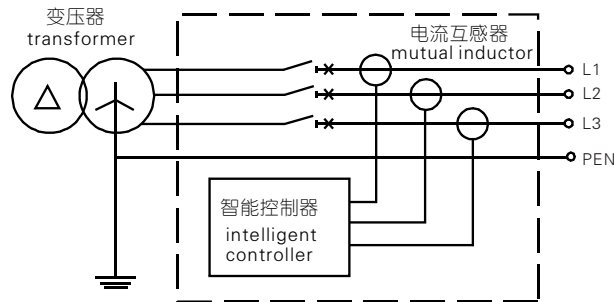


图2 接地保护特性
picture 2 earthed protection character

■ GSW1三极断路器 GSW1 3-poles breaker



△ TN-C、TN-C-S、TN-S配电系统中选用GSW1三极断路器。

To select GSW1 3-poles breaker for TN-C, TN-C-S and TN-S distribution system.

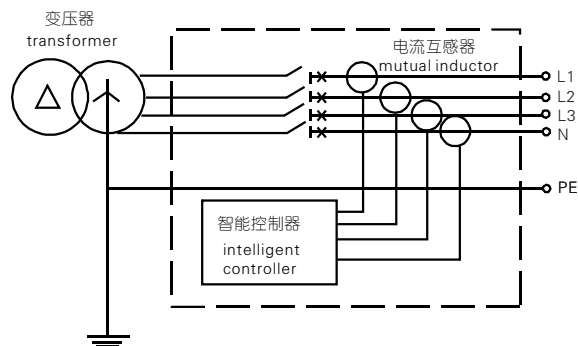
△ 接地故障保护信号取三相电流矢量。

The earthed error protection signal from sum of vectors of triphase current.

△ 保护特性为定时限保护。

The protection feature is definite time.

■ GSW1四极断路器 GSW1 4-poles breaker



△ TN-S配电系系统中选用GSW1四极断路器。

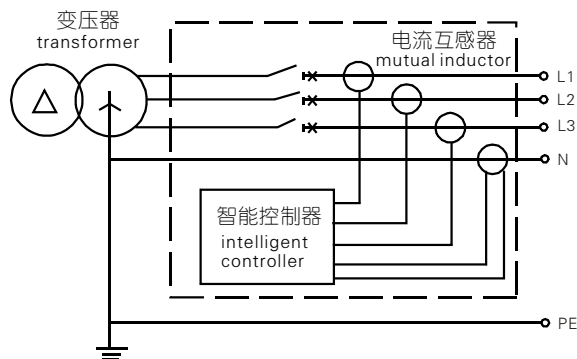
To select GSW1 4-poles breaker for TN-S distribution system

△ 接地故障保护取三相电流及N极电流的矢量。

The earthed error protection signal from sum of vectors of triphase and N-phase current

△ 保护特性为定时限保护。 The protection feature is definite time

■ GSW1三极断路器 GSW1 3-poles breaker



固定式断路器
fixed breaker



抽屉式断路器
draw-out breaker



断路器本体
body of breaker



抽屉座
draw-out socket



- △ TN-S配电系统中选用GSW1三极断路器
To select GSW1 3-poles breaker for TN-S distribution system
- △ 外接中性线N电流互感器作为接地故障保护用，互感器安装地点距离断路器最大为2米
The mutual inductor, linking externally to N-phase, earthed error protection, the works for maximum distance from the place where the mutual inductor is mounted to breaker is 2 meters
- △ 接地故障保护信号取三相电流及N相电流的矢量
The earthed error protection signal from sum of vectors of triphase and N-phase Current
- △ 保护特性为定时限保护
The protection feature is definite time

六、结构 STRUCTURE

- △ 断路器本体、二次回路接线端子、安装板、相间隔板（带有相间隔板支架）
body of breaker、secondary plug and socket units、installation plates、barrier between phases(with the fixture)
- △ 断路器本体、抽屉座、相间隔板、手柄
body of breaker、draw-out socket、barrier between phases、handle
- △ 由触头系统、智能控制器、手动操作机构、电动操作机构和附件组成
the body of breaker consists of contacts system、intelligent controller、handoperating device、motor-driven energy-storage system and attachments
- 有三个工作位置：“连接”位置、“试验”位置、“分离”位置
three working position: "connect" position、"test" position、"seperated" position
- △ “连接”位置:主回路和二次回路均接通;
"connect" position:main and auxiliary circuit are both "on";
- △ “试验”位置:主回路断开，有绝缘板隔开，仅二次回路接通，可进行一些必要的动作试验;
"test" position:the main circuit is"off", safety seperator is closed only auxiliary circuit is "on",the necessary action test could be done;
- △ “分离”位置：主回路与二次回路均断开，此时即可拉出断路器本体部分。
"seperated" position: the main and auxiliary circuit are both "off", and the body of breaker could be pull out.
- △ 断路器只有在连接位置或试验位置才能合闸而在连接或试验的中间位置断路器不能合闸
the breaker could be closed only in connect or test position and it can not be closed in the middle position

七、主要附件 MAJOR ATTCAHMENTS

- 欠压脱扣器 Undervoltage release
- △ 欠压脱扣器由脱扣器线圈和控制单元组成;
The undervoltage release consists of coil and control unit;
- △ 欠压脱扣器分为瞬时动作和延时动作两种;
The undervoltage release works in two ways:acting instantaneously and time delay;

欠压脱扣器
undervoltage release



分励脱扣器
shunt release



闭合电磁铁
the close electromagnet



电动操作机构
motor-driven energy-
storage system



△ 欠压脱扣器的延时时间为1s-10s可调；延时准确度 ± 20%

The undervoltage release delay time can be adjusted from 1s to 10s, and the time delay accuracy is ± 20% ;

△ 在1/2延时时间内，主电路电源电压恢复到85%Ue及以上时，断路器不分开。

If the voltage of power supply of main circuit returned to 85% Ue or above in half of the delay time, the breakers would not break away.

△ 特性 features

额定工作电压 Ue(V) Rated working voltage Ue(v)	AC400 V	AC230 V
动作电压 (V) Action voltage (v)	(0.35-0.7)Ue	
可靠合闸电压 (V) Reliable switching voltage (v)	(0.85-1.1)Ue	
可靠不能合闸电压 (V) Reliable repelling switching voltage (v)	≤0.35Ue	
功耗 power wastage	12VA	

■ 分励脱扣器 shunt release

△ 可远距离控制使断路器断开

They are available for operating remotely to break away

△ 特性 features

额定控制电源电压 Us(V) Rated voltage of control supply	AC400V	AC230 V	DC220 V
动作电压(V) Acting voltage	(0.7-1.1)Us		
瞬时电流(A) Instantaneous current	0.7	1.3	1.3
分断时间 Breakaway time	不大于 30ms max:30ms		

■ 闭合电磁铁 the close electromagnet

△ 储能结束后，闭合电磁铁能使操作机构的储能弹簧力瞬间释放，使断路器快速闭合。

When energy stored, the closing electromagnet would make the charging spring to release its energy instantaneously, and then to close the breaker fast.

△ 特性 features

额定控制电源电压Us(V) Rated voltage of control supply	AC400V	AC230 V	DC220 V
动作电压(V) Acting voltage	(0.7-1.1)Us		
瞬时电流(A) Instantaneous current	0.7	1.3	1.3
合闸时间 Switching time	不大于 70ms max:70ms		

■ 电动操作机构 motor-driven energy-storage system

△ 特性 features

辅助触头
auxiliary switch



额定控制电源电压 $U_s(V)$ Rated control power voltage	AC400 V	AC230 V	DC220 V
动作电压 (V) Action voltage	(0.85-1.1) U_s		
功耗 Power wastage	85W (GSW1-2000) 110 W		
贮能时间 Energy-storage time	不大于 5s		

■ 辅助触头 auxiliary switch

△ 特性 features

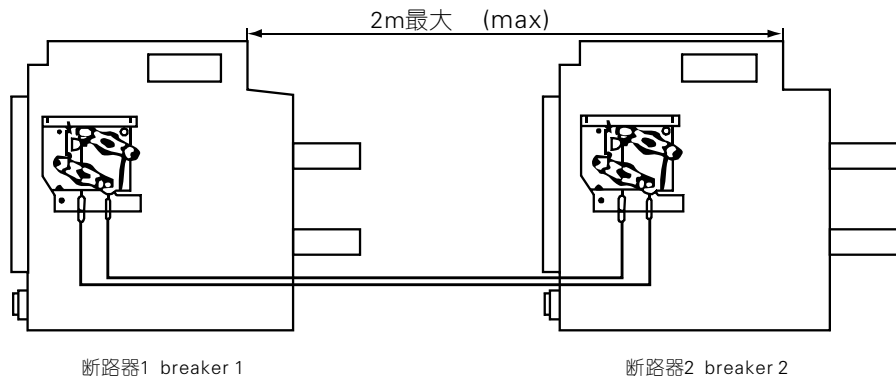
额定电压 (V) Rated voltage		约定发热电流 $I_{th}(A)$ Conventional thermal current	额定控制容量 Rated capacity
AC	230	6	300 VA
	400		
DC	220		60W

注:辅助开关标准形式 4常开 4常闭, 特殊形式为 6常开 2常闭、2常开 6常闭、3常开 3常闭。
note: The normal type of the auxiliary switch is 4 NO(normal open)4NC (normal close), and the special type as: 6NO2NC、2NO6NC、3NO3NC、6NO6NC、5NO5NC.

■ 联锁 Interlock

△ 二台平放抽屉式断路器的钢缆联锁

Two breakers (draw-out) put horizontally and interlocked with steel cable



△ 两台或三台叠装抽屉式断路器的联杆联锁

Two or three sets of breakers (draw-out) stacked and interlocked with connecting rods

“分闸”锁定装置
“BREAKOFF” locked
device



抽屉式断路器
“分离”位置锁定挂锁器
"Seperated" position locked with
padlock for draw-out breakers



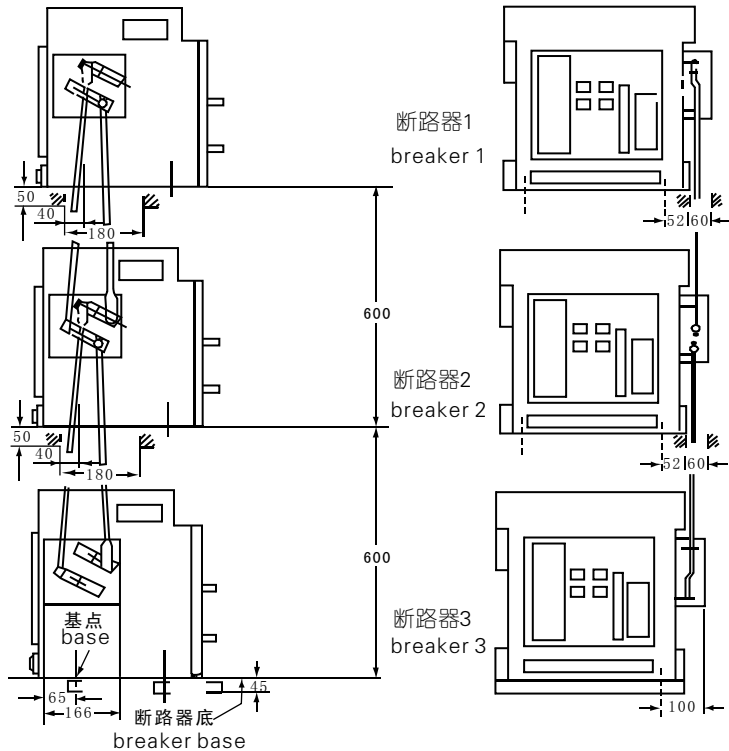
安装框
Installation frame



相间隔板
Barrier between phases



N相外接互感器
Extension N-phase
mutual inductor



■ “分闸”锁定装置 “BREAKOFF” locked device

△ “分闸”锁定装置可将断路器（抽屉式或固定式）的断开按钮锁定在按下位置上，此时，断路器不能进行闭合操作；

The "BREAKOFF" locked device could lock the "OFF" button of the breaker(draw-out or fixed type) on the pressed position ,making the breaker not to be closed;

△ 用户选装后，工厂提供锁和钥匙

After chosen by users, factory would provide lock and key

一台断路器配独立的锁和钥匙；

One breaker would be outfitted with independent lock and key;

二台断路器配两把相同的锁和一把钥匙；

Two breaker would be outfitted with one key and two the same lock;

三台断路器配三把相同的锁和二把相同的钥匙。

Three breaker would be outfitted with three the same locks and two the same keys.

■ 抽屉式断路器“分离”位置锁定挂锁器

"Seperated" position locked with padlock for draw-out breakers

△ 抽屉式断路器处于“分离”位置时，可拔出锁杆用挂锁来锁定，锁定后断路器无法摇至“试验”或“连接”位置；

When the draw-out breaker is on "seperated" position the lock rod of the breaker could be pull out and locked with a pad lock,after locking action the breaker would not be driven into "test" or "connect" position;

△ 挂锁用户自备。

The padlock would be prepared by users.

△ 当断路器需要露出柜门时，用户可以使用安装框装饰柜门。

When the breaker need to outcrop from the cupboard door,user may use

installation frame to decorate the cupboard door.

△ 用来增加相间电气间隙和爬电距离。

Be used to enhance the electrical gap and creepage distance.

△ 该互感器用于型号为3P+N的万能式断路器，直接接至用户的N相母排上，做零序保护用。其信号输出引线最大不能超过2m。

This mutual inductor is used for the type 3P+N of universal breaker, installed on the user's N-phase bus directly, for N-phase current protect. and the lines of output signals can not be over 2m.

■ 按钮锁定装置 "Button" locking device

△ 加装按钮锁定装置可防止误操作合闸或分闸按钮

"Button" locking device can prevent user from operating "in" or "off" button

■ 抽屉座位置电气指示装置

Electrical mechanism for the indication of draw-out socket's position

△ 抽屉式断路器本体与抽屉座分别处于“分离”、“试验”、“连接”三个位置时，三个位置电气指示装置可分别输出对于此三个位置时的状态信号。该装置安装于抽屉座内。

When the body of the draw-out circuit breaker and the draw-out socket are in the position of "seperated" "test" "connect" respectively, three electrical mechanisms for the indication of draw-out socket's location can output three electrical signals corresponding with three position above respectively. These

八、派生产品 DERIVATIVE PRODUCT

■ 带全功能欠压保护的断路器

Breakers with the full-function of low-voltage protection

△ 该产品的欠压保护由智能控制器来实现，其欠压值、延时时间及其欠压保护功能的选择均可现场设定，摆脱了传统的欠压脱扣器的限制，这项技术在国内外均为首创；

The product's low-voltage protection is carried out by intelligent controller, and the low-voltage value, delay-time and the function's chosen can be in situ set, which is out of traditional undervoltage release's restriction. this technic is originality both in domestic and overseas.

■ 宽电压型断路器 Wide-voltage input breakers

△ 该产品的智能控制器工作电压的范围为AC/DC80-280V，能满足部分地区运行电压波动较大的用户。较其他同类产品相比，该断路器在电压较高或较低的环境中运行更稳定；

The working voltage of the intelligent controller in this breakers is from AC/DC80V to 280V, which can be fit for the user, whose running voltage is fluctuated deeply in someplace. Compared to the other products, this breakers can work more steadily in higher or lower voltage

■ 3P+N型断路器 3P+N breakers

△ 该产品主要是针对4极产品而开发的，对于N相一直接通的配电系统来说，该产品能完全替代4极产品的功能，但在成本上将降低很多，且体积小、安装方便很受广大用户的青睐；

The breakers is developed for instead of the 4P breakers in the distribution system, which the N-phase is always connect. Compared to the 4P breakers, the 3P+N breakers has the advantage of low-cost, small volume

and installation convenient

■ 位置状态输出型断路器 Position state output breakers

△ 该产品能将抽屉式断路器的位置状态进行输出，从而实现远程监控断路器的位置状态。

The product can output the position state signals of the draw-out breakers, then the signals can be used to remote monitor the breakers state.

■ 电能管理型断路器 Energy-management breakers

△ 该产品监控当前负载电流，当负载电流大于监控电流时，控制器将在规定时间内开主回路，再次合闸后，若负载电流仍然大于监控电流，则控制器再次断开主回路，连续三次，主回路将不能再接通。

The product monitors the present load-current as the load-current over the monitoring-current, the controller will break the main-circuit in the schedule time. then close the breakers again, if the load-current still over the monitoring-current the controller will break again, and three times operating later, the main-circuit wouldn't be accessed any more.

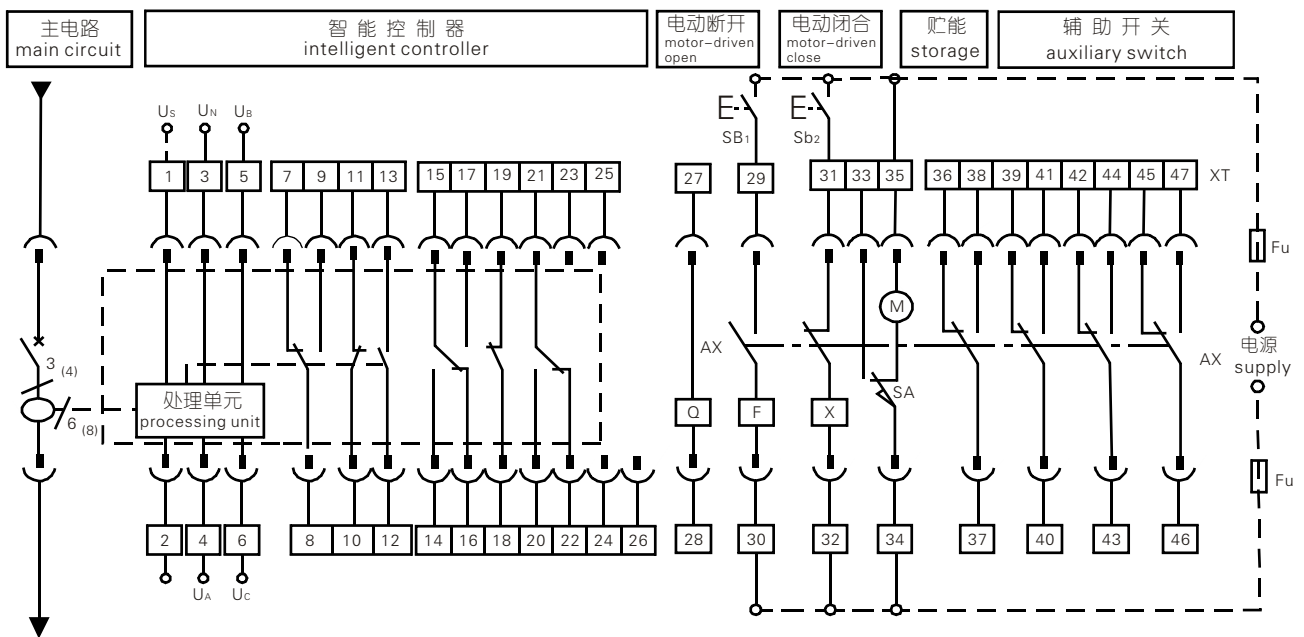
■ 隔离开关、负荷开关 Switch-disconnectors、load-switch

九、二次回路接线图

WIRING DIAGRAM OF THE SECONDARY CIRCUIT

■ 3L、3M型控制器的GSW1二次回路接线图

Wiring diagram of the secondary circuit of the GSW1 breaker with type 3L or 3M



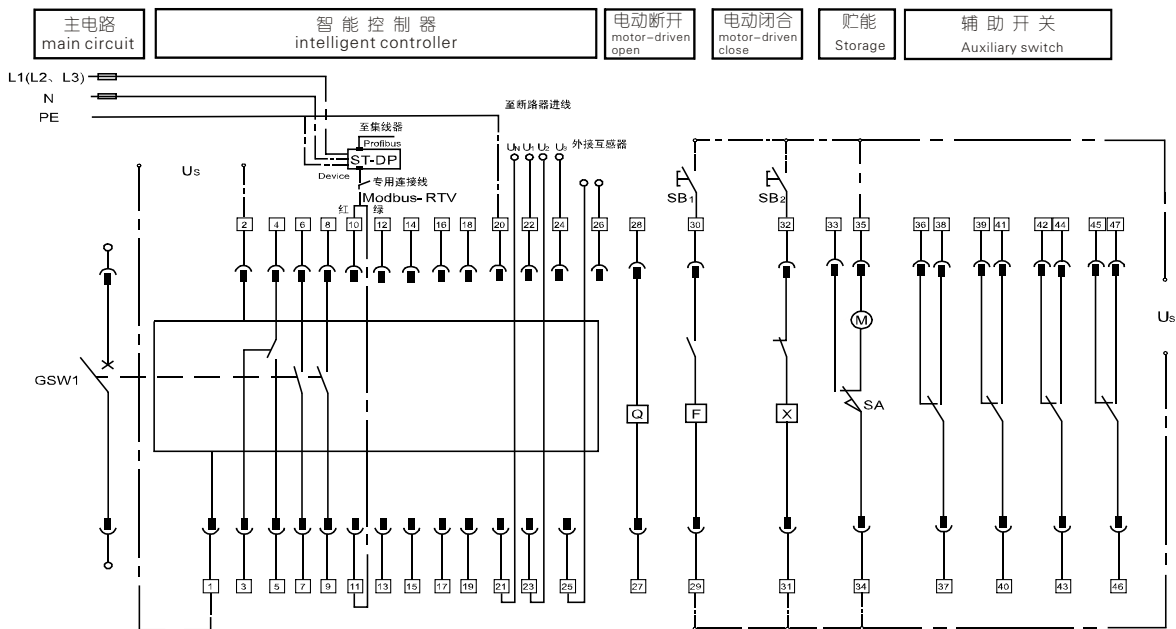
■ 注 (Note) :

- △ 1、2端子: 接智能控制器外供电源, 交流有AC230VAC400V两种; 直流控制电源有DC220V、DC110V、DC48V、DC24V四种。
terminal 1、2: wire the extension power for intelligent controller, the type is: AC230V、AC400V、DC220V、DC110V、DC48V、DC24V
- △ 如果控制器为带电压显示类型, 3、4、5、6端子为外接电压N、A、B、C相与断路器进线电源对应 (接线顺序需正确, N极必须接入) 如果控制器为不带电压显示类型, 3、4、5、6不须接入。
If the controller is the type of voltage indicating, terminal 3、4、5、6 must wire N、A、B、C phase corresponding (wiring serial must be correct and the N-phase must be wired)
- △ 7-8, 8-9为报警触头; 10-11, 12-13为辅助触头 (触点容量AC230V, 5A)
alarm terminal: 7-8, 8-9 auxiliary terminal: 10-11, 12-13 (terminal capacity: AC230V, 5A)

- △ 14-15, 15-16为负载监控方式一或方式二时, 负载一越限输出信号。
at the load-monitor pattern 1 or 2, 14-15, 15-16 output the load 1 overranging singal.
 - 17-18, 18-19为负载监控方式一或方式二时, 负载二越限输出信号。
at the load-monitor pattern 1 or 2, 17-18, 18-19 output the load 2 overranging singal.
 - 20-21, 21-22为负载监控方式二时, 恢复已卸负载信号。
at the load-monitor pattern 2, 20-21, 21-22 output the load 2 returning singal.
 - △ 25-26接保护地线。 earthed terminal: 25-26
 - △ 27-28为欠压线圈, 29-30为分励线圈, 31-32为闭合电磁铁, 33-34-35为储能电机。
terminal 27-28: undervoltage release, terminal 29-30: shunt release, terminal 31-32: closing electromagnet, terminal 33-34-35: motor-driven energy-storage system
 - △ 36~47为辅助触头 (触头容量AC230V, 9A) auxiliary terminal: 36-47 (terminal capacity AC230V, 9A)
 - △ 本二次回路接线图适合于47个端子4常开4常闭辅助触头组合的GSW1万能式断路器。
The secondary circuit in the wiring picture suitable for 47 terminal 4 always closed 4 always open auxiliary contacts of GSW1 universal circuit breakers.
 - △ 当选用3P+N型断路器时, 23、24为外接N相互感器输入端
when breaker chosen as the type of 3P+N, the extension n-phase mutual inductor's signal inputs terminal 23.24
- AX-断路器辅助开关 AX-auxiliary switch of the breaker
SB1-分励按钮 SB1-shunt button SB2-合闸按钮 SB2-closing button
Q-欠电压脱扣器(端子27、28应接在主回路中) Q-undervoltage release (terminal 27, 28 should be wired in the main circuit)
F-分励脱扣器 F-shunt release X-闭合电磁铁 X-closing electromagnet M-贮能电机 M-charging motor
SA-电动机行程开关 SA-over travel-limit switch of motor Fu-熔断器 Fu-fuse
XT-断路器二次回路接线端子 XT-terminals of secondary circuit of the breaker
35-可直接接电源(自动预贮能), 也可串接常开按钮后接电源(手动预贮能)电源-智能控制器、分励(F)、闭合(X)、电操(M)等的额定电压不同时应分别接不同电源。
35-to power supply directly(auto energy prestore), or to power supply with aNO(normal open) button simultaneously(manual energy prestore) power supply-different power supply for different rated voltage of intelligenet contro ller , F, X, M etc.

■ H型控制器的GSW1二次回路接线图

Wiring diagram of the secondary circuit of the GSW1 breaker with type H



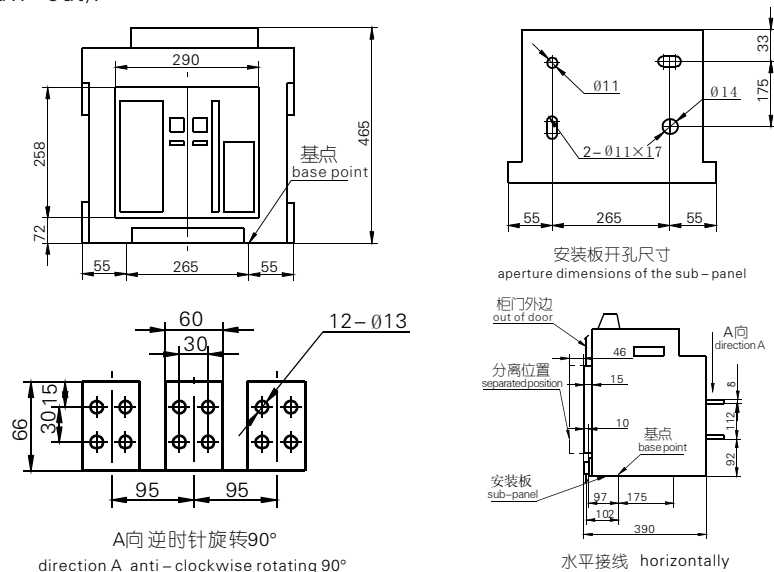
- △ 1、2为辅助电源输入端,当电源为直流时,电源先经过直流电源模块再接至1、2,且1为电源模块输出的正极。
terminal 1,2:wire the extension power,when the power is DC power ,it should be wired terminal 1,2 via the DC power supply module,and terminal 1 must be wired the positive pole
- △ 3、4、5故障跳闸触点输出(4公共端),触点容量:AC400V、16A
terminal 3,4,5 output the error breakaway signals(terminal 4 is public), the capacity is AC400V、16A
- △ 6、7和8、9: 两组断路器状态辅助触点,触头容量:AC400V、16A
terminal 6,7,8,9:two pairs of auxiliary contact showing the status of breaker,capacity is AC400V、16A
- △ 12、13(触点1)和14、15(触点2)和16、17(触点3)和18、19(触点4):控制4组信号触点输出。触点容量:5A/240VAC 7A/24VDC
terminal 12,13(contact1),14,15(contact2),16,17(contact 3) and 18,19(contact 4) control 4 pairs of signals outputting. the capacity is:5A/240V AC7A/24V DC
- △ 20为保护地线 terminal 20:wiring the earthed line
- △ 21-24为电压信号输入端 terminal 21-24:voltage signal inputting
- △ 25、26为外接互感器输入端(带漏电保护时有)
terminal 25,26:extension N-phase mutual inductor's signal inputting(3P+N type)
- △ 10、11为别为RS485A, RS485B通讯引出线。
terminal 10,11:wiring RS485A,RS485B correspondence line respectively.

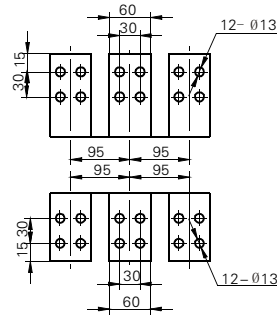
F-分励脱扣器 F-shunt release X-闭合电磁铁 X-closing electromagnet
Q-欠压脱扣器 Q-closing electromagnet M-储能电机 M-charging motor
SB1-分励按钮 SB1-shunt button SB2-合闸按钮 SB2-closing button
SA-电动机行程开关 SA-over travel-limit switch of motor Fu-熔断器 Fu-fuse

十、安装尺寸、外形尺寸

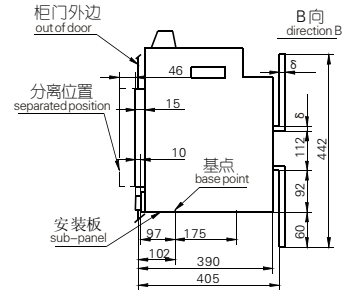
MOUNTING DIMENSIONS AND OUTLINE DIMENSIONS

- △ GSW1-2000/3 抽屉式断路器外形尺寸、安装尺寸。
Mounting dimensions and Outline dimensions of GSW1-2000/3 breaker (draw-out).





B向 top view in B direction

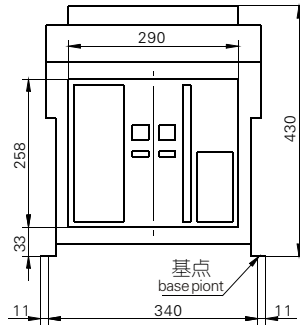


垂直接线 vertically

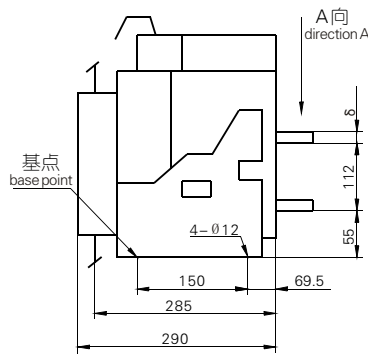
电流规格 current specification	δ (mm)
2000 A	20
1000A-1600A	15
630A-800A	10

△ GSW1-2000/3 固定式断路器外形尺寸、安装尺寸

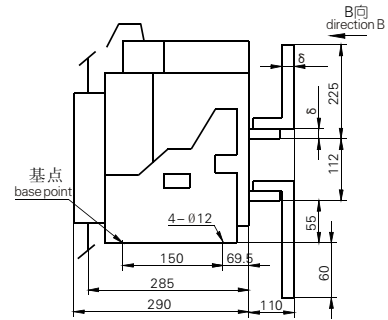
Mounting dimensions and Outline dimensions of GSW1-2000/3 breaker (fixed)



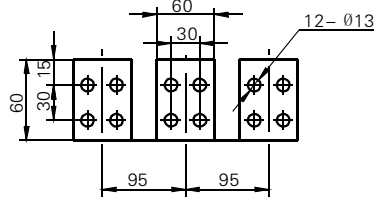
电流规格 current specification	δ (mm)
2000A	20
1000A-1600A	15
630A-800A	10



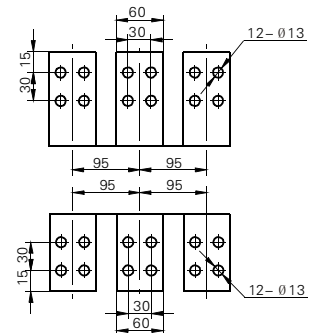
水平接线 horizontally



垂直接线 vertically



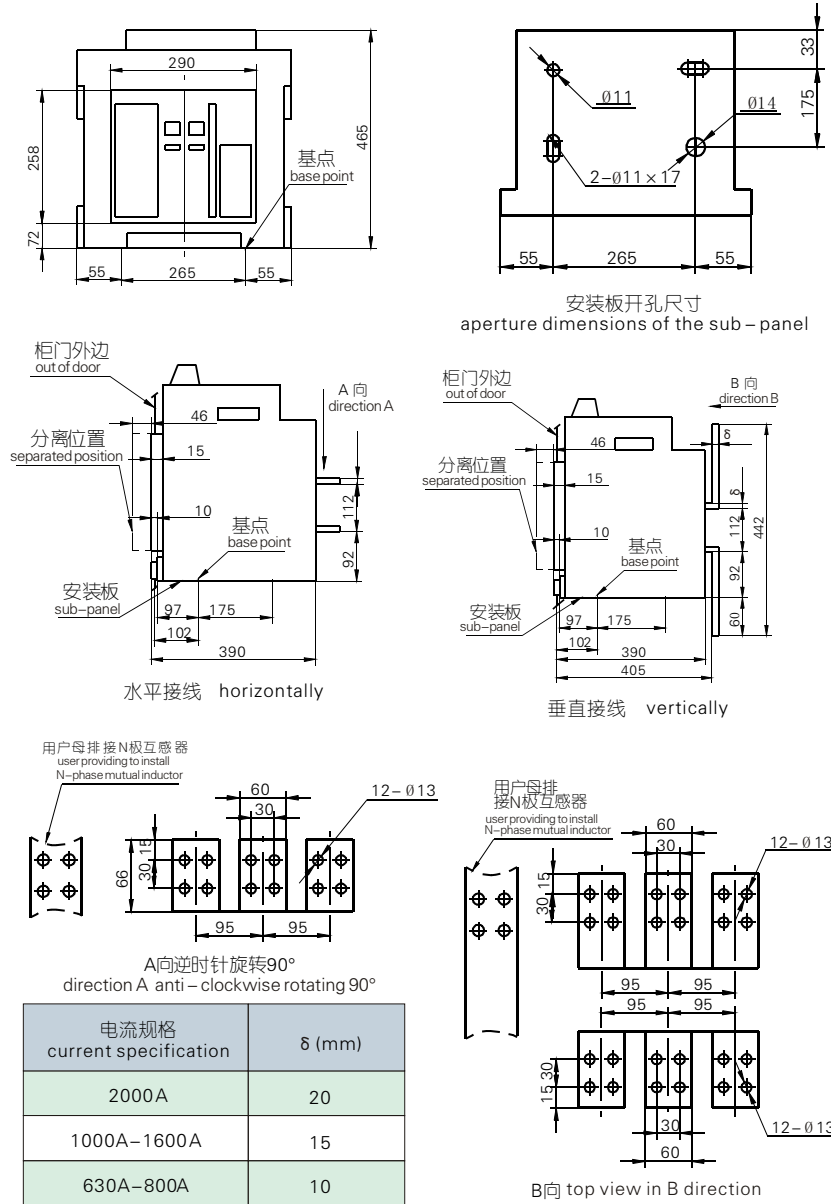
A向逆时针旋转90°
direction A anti-clockwise rotating 90°



B向 top view in B direction

△ GSW1-2000/3P+N 抽屉式断路器外形尺寸、安装尺寸

Mounting dimensions and Outline dimensions of GSW1-2000/3P+N breaker (draw-out)

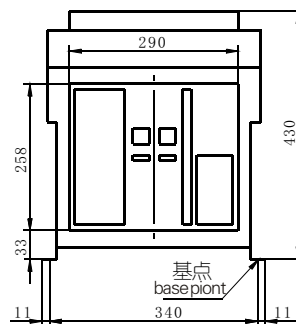


A向逆时针旋转90°
direction A anti-clockwise rotating 90°

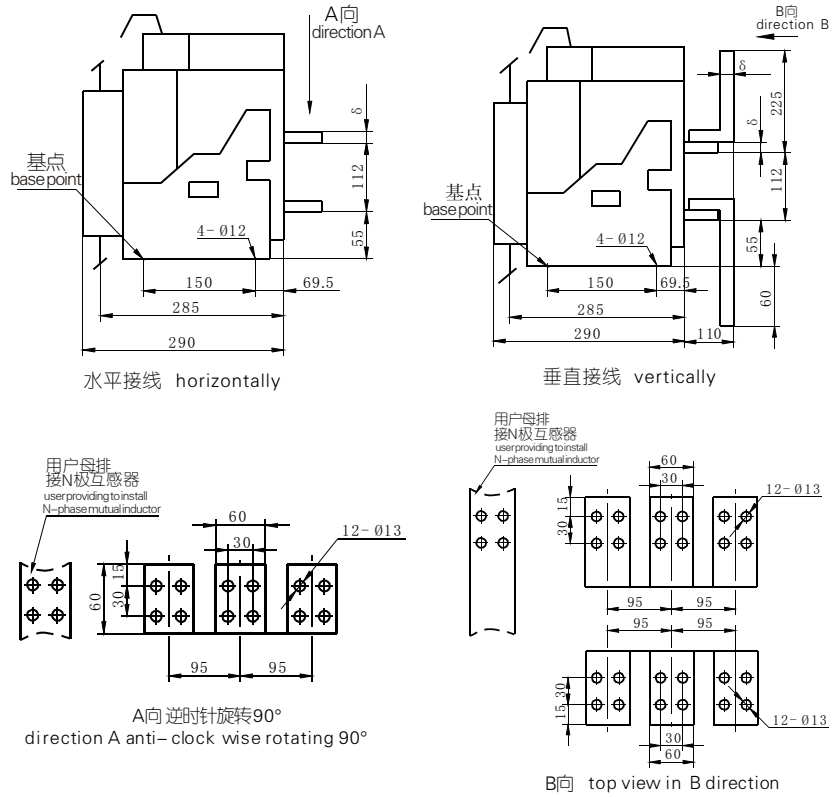
电流规格 current specification	δ (mm)
2000A	20
1000A-1600A	15
630A-800A	10

△ GSW1-2000/3P+N 固定式断路器外形尺寸、安装尺寸

Mounting dimensions and Outline dimensions of GSW1-2000/3P+N breaker (fixed)

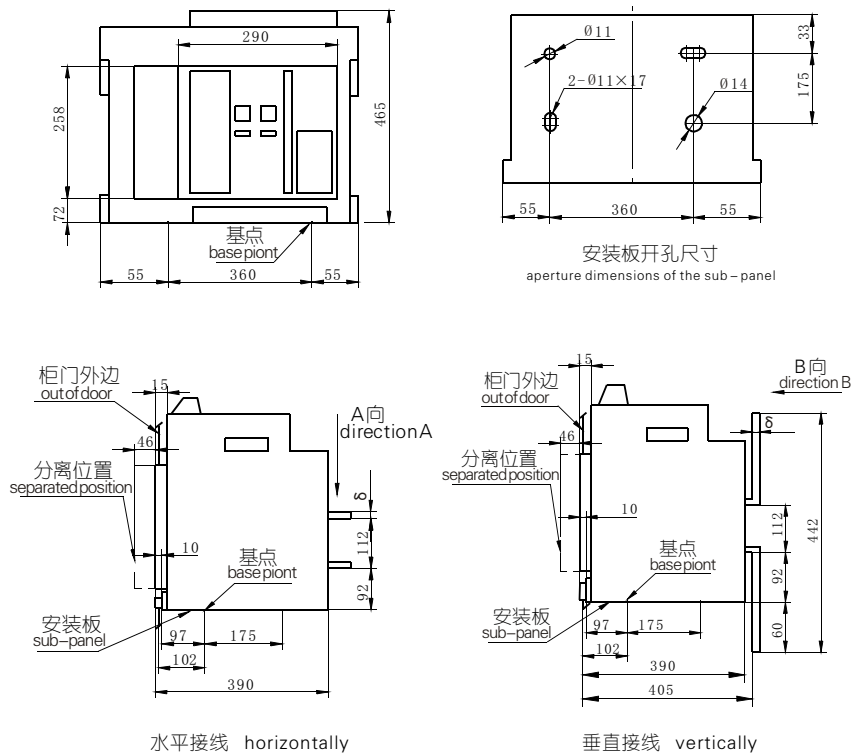


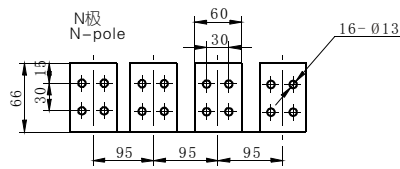
电流规格 current specification	δ (mm)
2000A	20
1000A-1600A	15
630A-800A	10



△ GSW1-2000/4 抽屉式断路器外形尺寸、安装尺寸

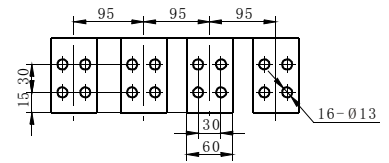
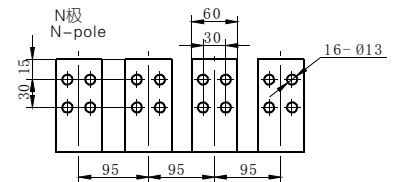
Mounting dimensions and Outline dimensions of GSW1-2000/4 breaker (draw-out)





A向逆时针旋转90°
direction A anti-clockwise rotating 90°

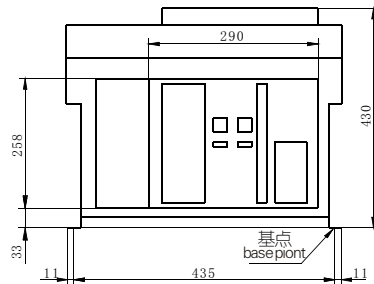
电流规格 current specification	δ (mm)
2000A	20
1000A-1600A	15
630A-800A	10



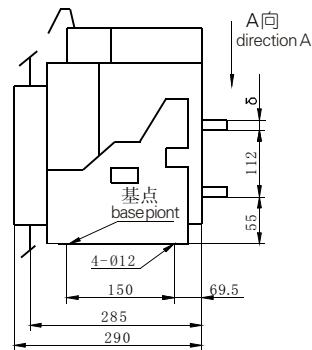
B向 top view in B direction

△ GSW1-2000/4 固定式断路器外形尺寸、安装尺寸

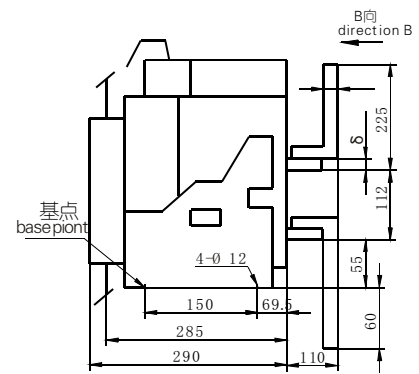
Mounting dimensions and Outline dimensions of GSW1-2000/4 breaker (fixed)



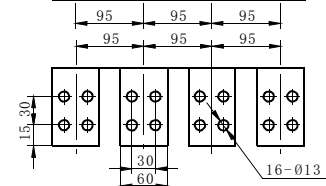
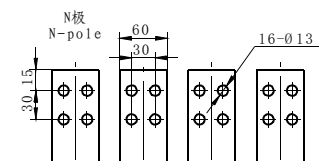
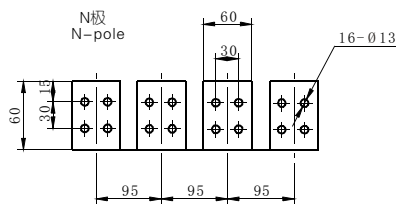
电流规格 current specification	δ (mm)
2000A	20
1000A-1600A	15
630A-800A	10



A向逆时针旋转90°
direction A anti-clockwise rotating 90°

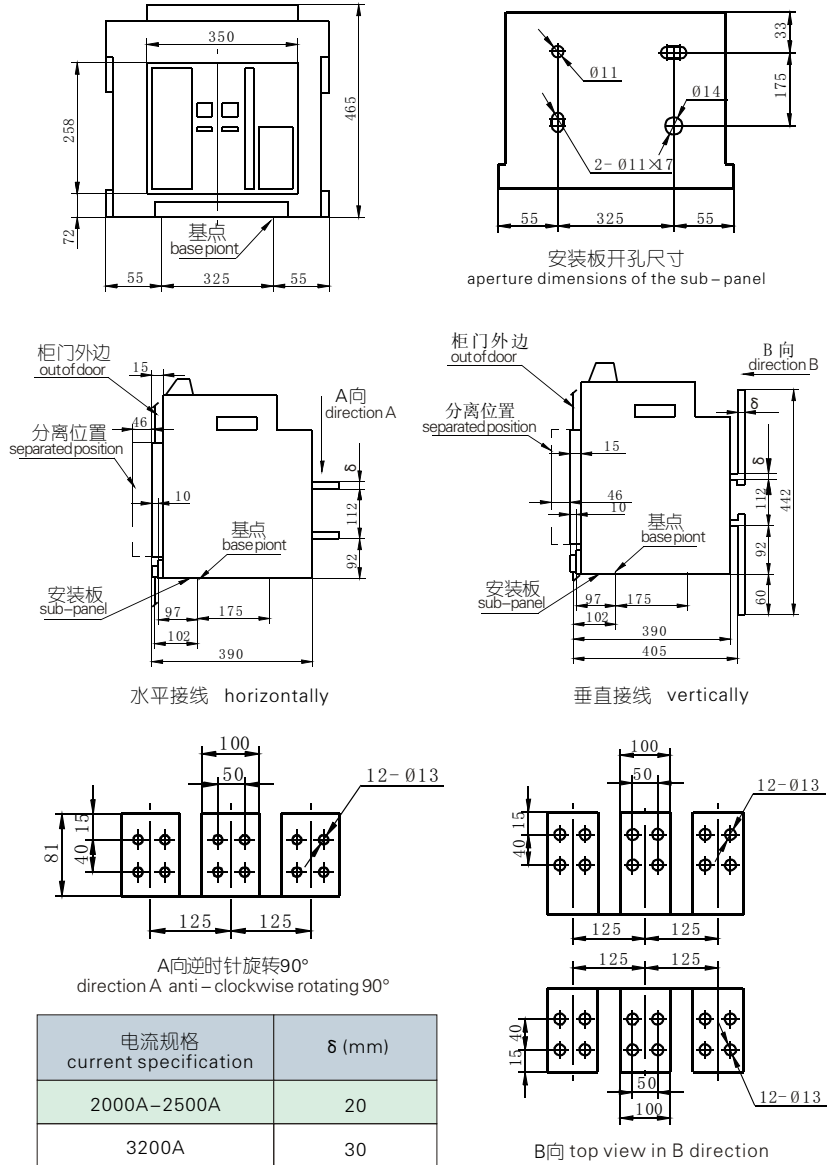


B向 top view in B direction



△ GSW1-3200/3 抽屉式断路器外形尺寸、安装尺寸

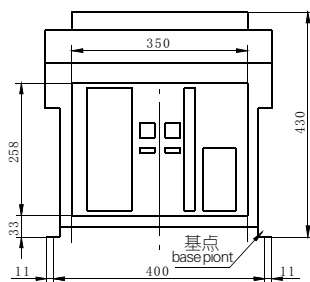
Mounting dimensions and Outline dimensions of GSW1-3200/3 breaker (draw-out)



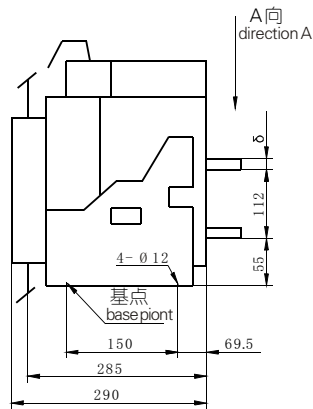
电流规格 current specification	δ (mm)
2000A-2500A	20
3200A	30

△ GSW1-3200/3 固定式断路器外形尺寸、安装尺寸

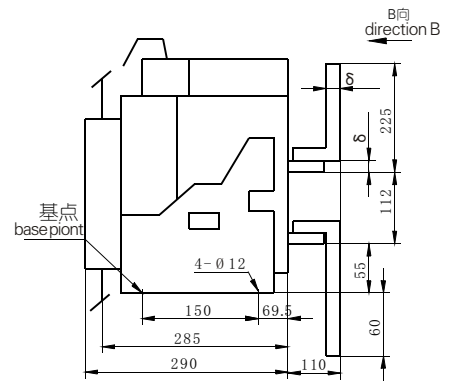
Mounting dimensions and Outline dimensions of GSW1-3200/3 breaker (fixed)



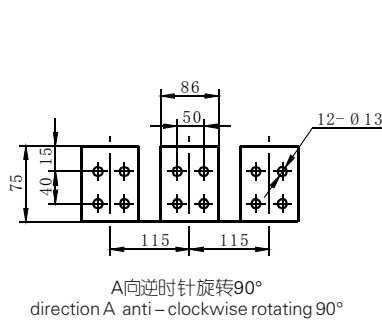
电流规格 current specification	δ (mm)
2000A-2500A	20
3200A	30



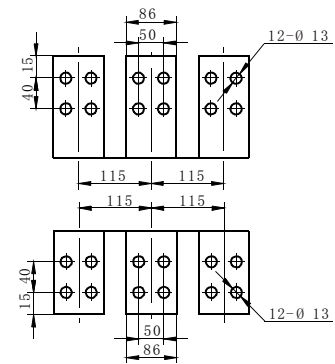
水平接线 horizontally



垂直接线 vertically



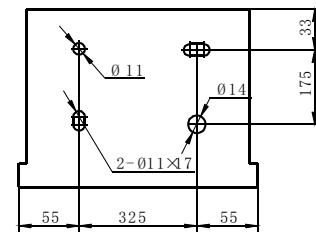
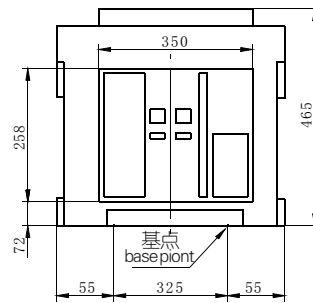
A向逆时针旋转90°
direction A anti-clockwise rotating 90°



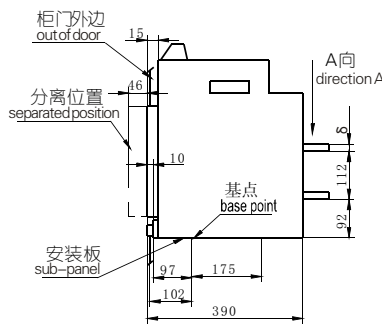
B向 top view in B direction

△ GSW1-3200/3P+N 抽屉式断路器外形尺寸、安装尺寸

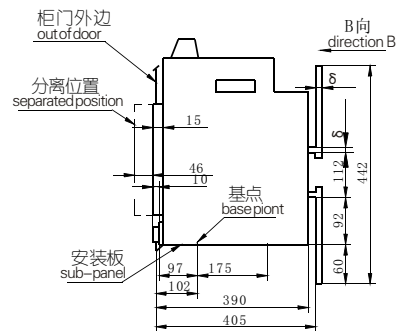
Mounting dimensions and Outline dimensions of GSW1-3200/3P+N breaker (draw-out)



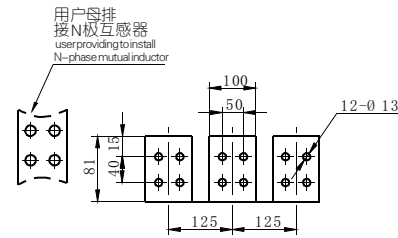
安装板开孔尺寸
aperture dimensions of the sub-panel



水平接线 horizontally

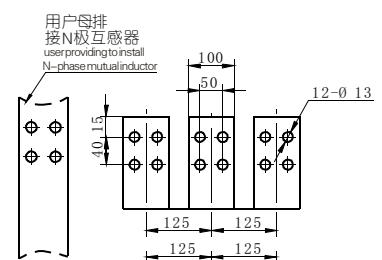


垂直接线 vertically



A向逆时针旋转90°
direction A anti-clockwise rotating 90°

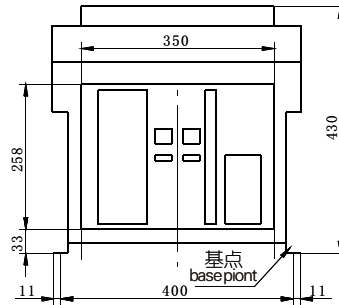
电流规格 current specification	δ (mm)
2000A-2500A	20
3200A	30



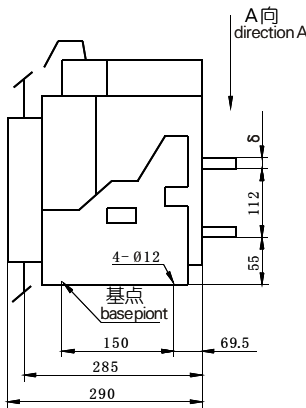
B向 top view in B direction

△ GSW1-3200/3P+N 固定式断路器外形尺寸、安装尺寸

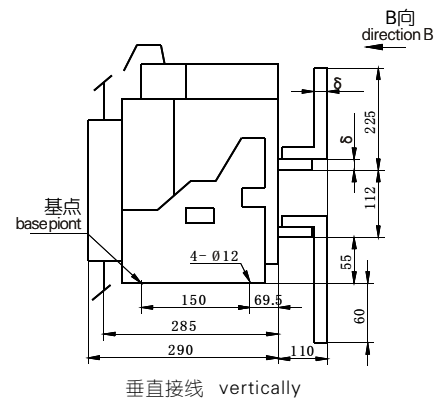
Mounting dimensions and Outline dimensions of GSW1-3200/3P+N breaker (fixed)



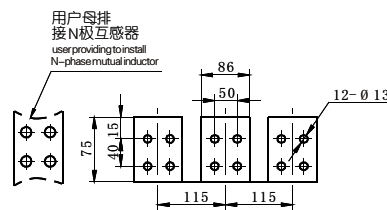
电流规格 current specification	δ (mm)
2000A-2500A	20
3200A	30



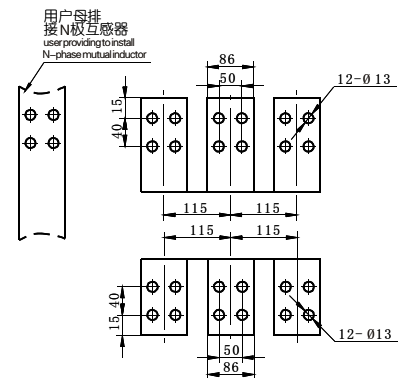
水平接线 horizontally



垂直接线 vertically



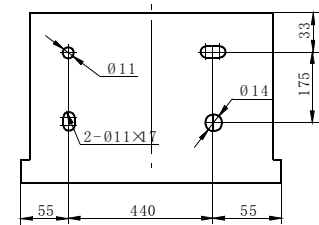
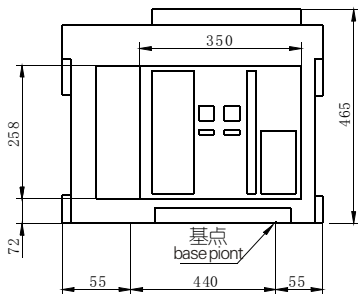
A向逆时针旋转90°
direction A anti-clockwise rotating 90°



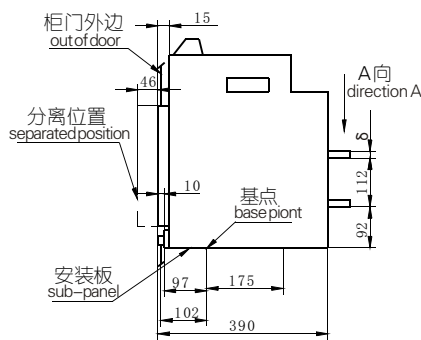
B向 top view in B direction

△ GSW1-3200/4 抽屉式断路器外形尺寸、安装尺寸

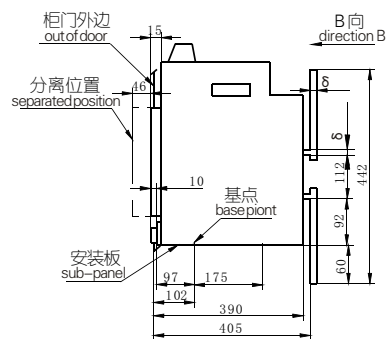
Mounting dimensions and Outline dimensions of GSW1-3200/4 breaker (draw-out)



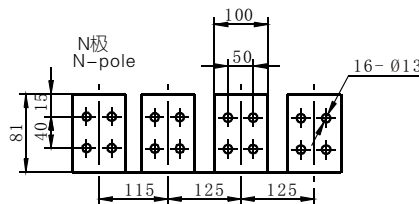
安装板开孔尺寸
aperture dimensions of the sub-panel



水平接线 horizontally

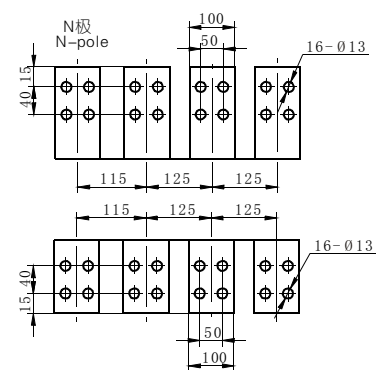


垂直接线 vertically



A向逆时针旋转90°
direction A anti-clockwise rotating 90°

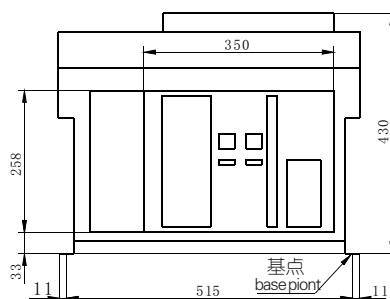
电流规格 current specification	δ (mm)
2000A-2500A	20
3200A	30



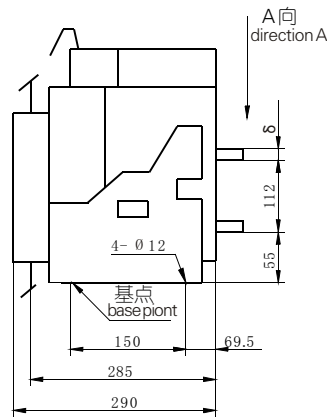
B向 top view in B direction

△ GSW1-3200/4 固定式断路器外形尺寸、安装尺寸

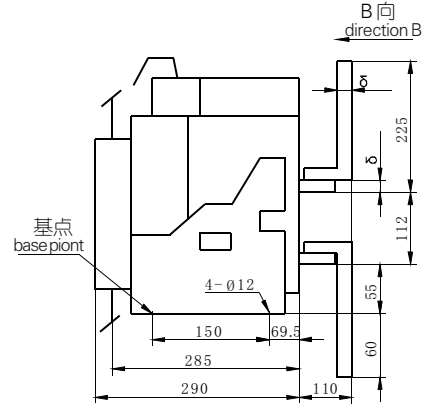
Mounting dimensions and Outline dimensions of GSW1-3200/4 breaker (fixed)



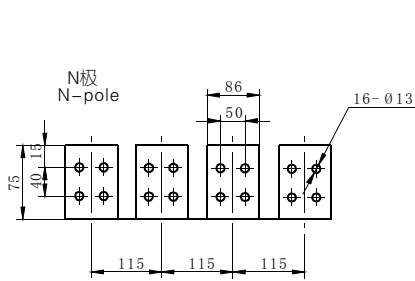
电流规格 current specification	δ (mm)
2000A-2500A	20
3200A	30



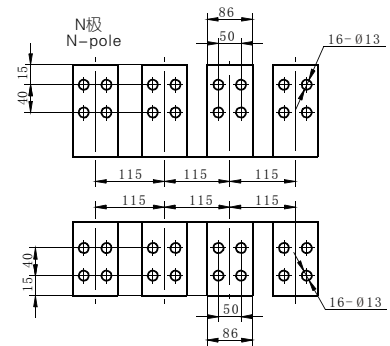
水平接线 horizontally



垂直接线 vertically



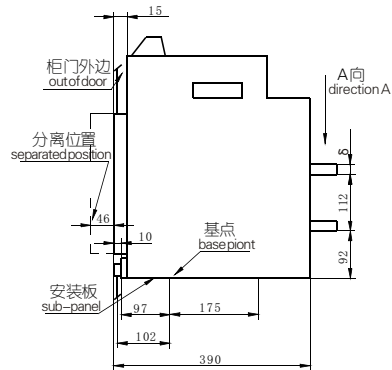
A向逆时针旋转90°
direction A anti-clockwise rotating 90°



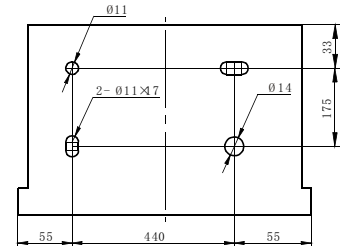
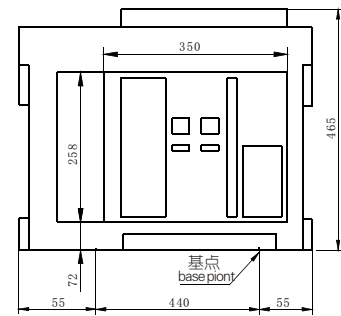
B向 top view in B direction

△ GSW1-4000/3 抽屉式断路器外形尺寸、安装尺寸

Mounting dimensions and Outline dimensions of GSW1-4000/3 breaker (draw-out)



A向逆时针旋转90°
direction A anti-clockwise rotating 90°

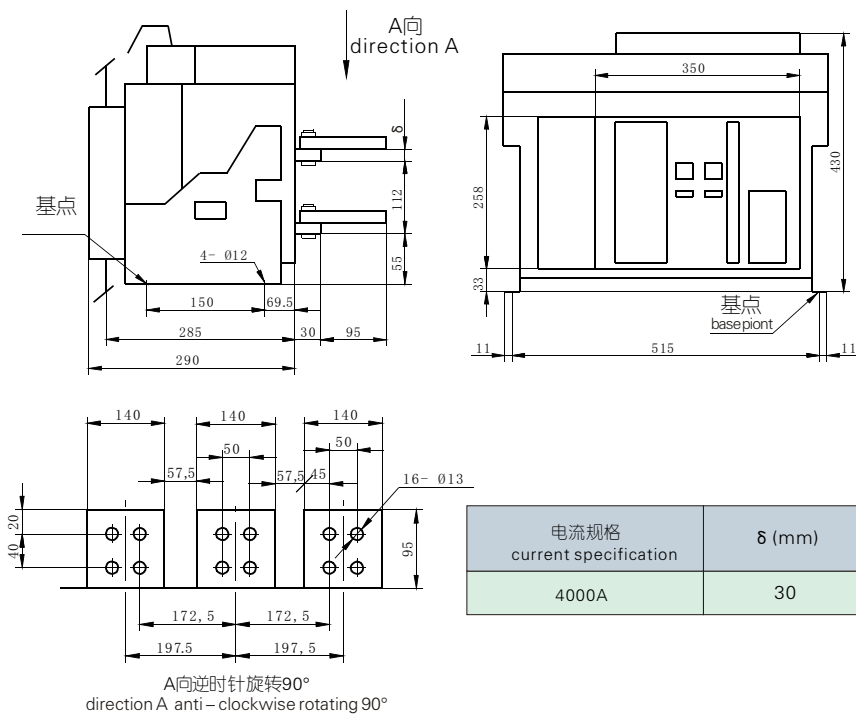


安装板开孔尺寸
aperture dimensions of the sub-panel

电流规格 current specification	δ (mm)
4000A	30

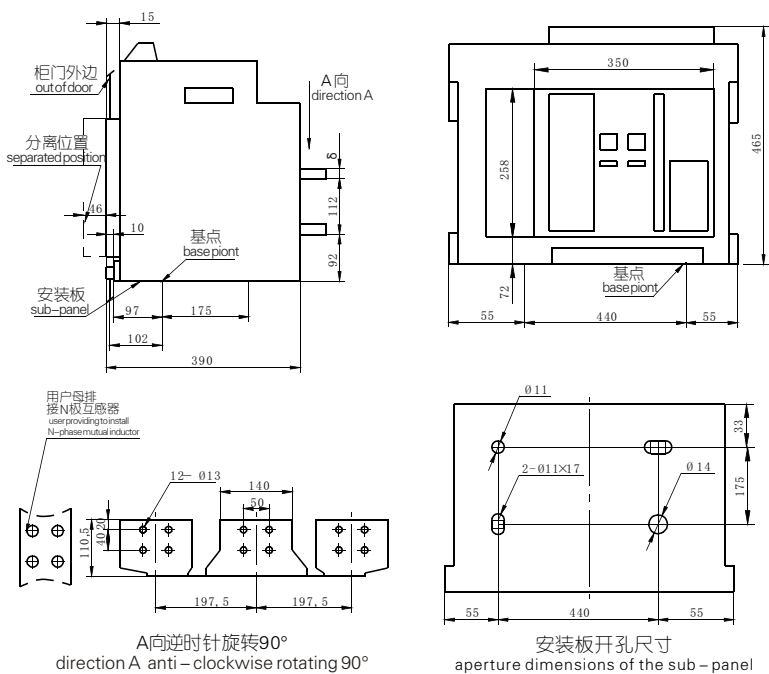
△ GSW1-4000/3 固定式断路器外形尺寸、安装尺寸

Mounting dimensions and Outline dimensions of GSW1-4000/3 breaker (fixed)



△ GSW1-4000/3P+N 抽屉式断路器外形尺寸、安装尺寸

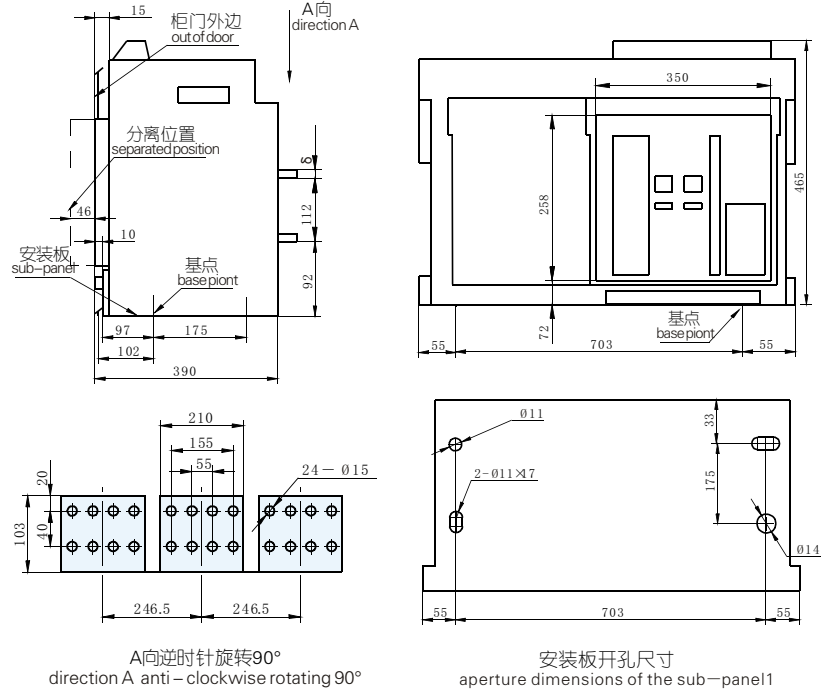
Mounting dimensions and Outline dimensions of GSW1-4000/3P+N breaker (draw-out)



电流规格 current specification	δ (mm)
4000A	30

△ GSW1-6300/3 抽屉式断路器外形尺寸、安装尺寸

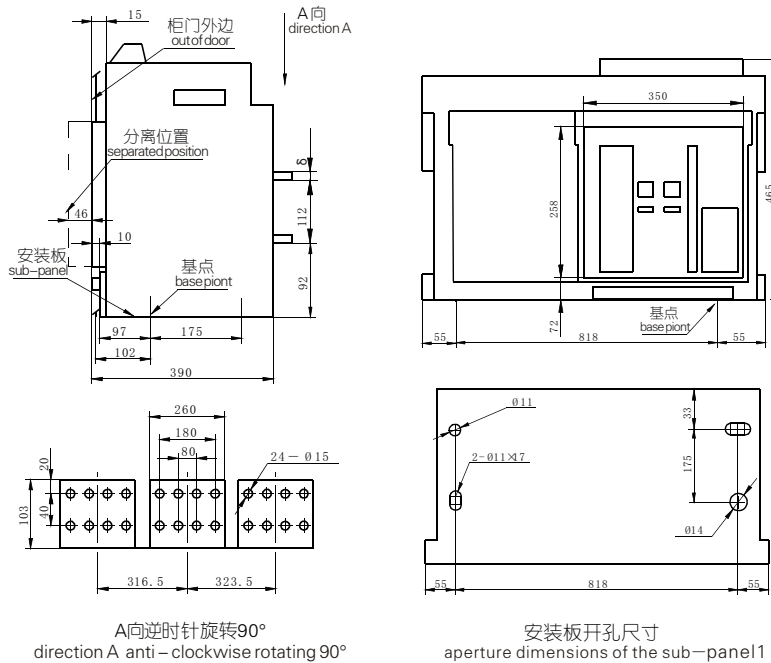
Mounting dimensions and Outline dimensions of GSW1-6300/3 breaker (draw-out)



电流规格 current specification	δ (mm)
5000A	30
4000A	20

△ GSW1-6300/3 抽屉式断路器外形尺寸、安装尺寸

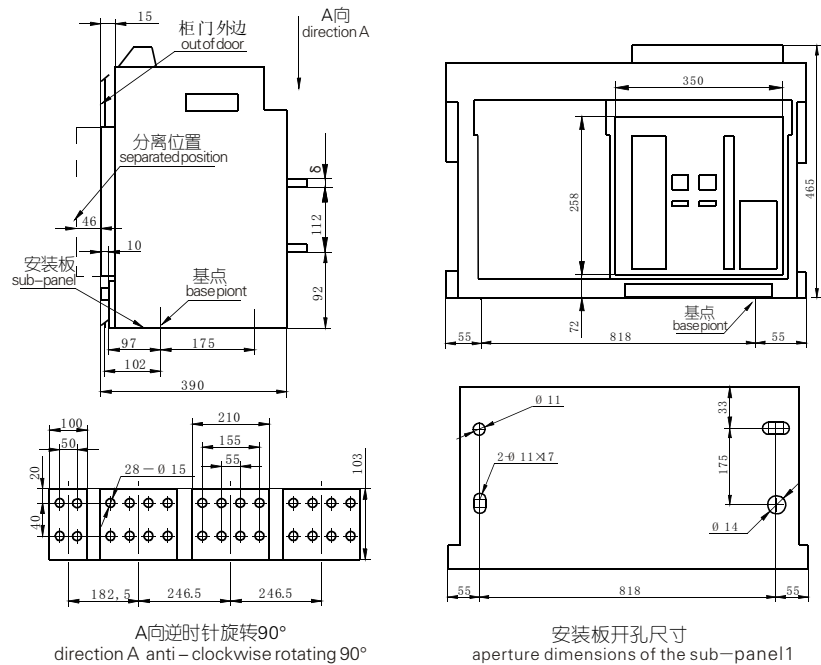
Mounting dimensions and Outline dimensions of GSW1-6300/3 breaker (draw-out)



电流规格 current specification	δ (mm)
6300A	30

△ GSW1-6300/4 抽屉式断路器外形尺寸、安装尺寸

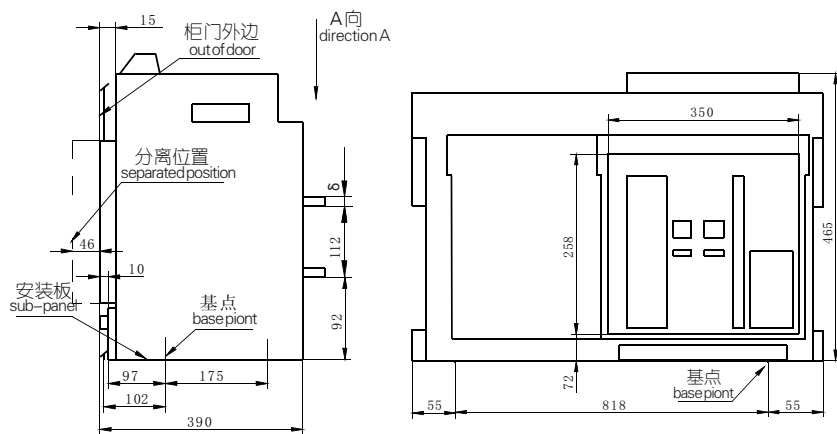
Mounting dimensions and Outline dimensions of GSW1-6300/4 breaker (draw-out)

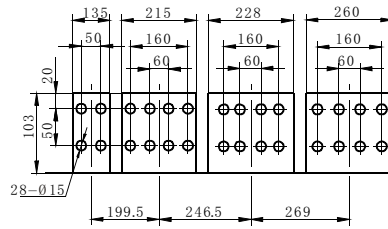


电流规格 current specification	δ (mm)
4000A	20
5000A	30

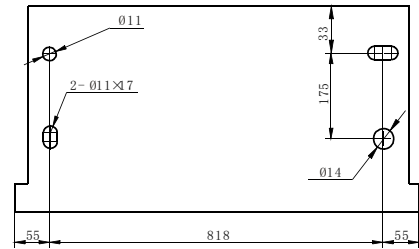
△ GSW1-6300/4 抽屉式断路器外形尺寸、安装尺寸

Mounting dimensions and Outline dimensions of GSW1-6300/4 breaker (draw-out)





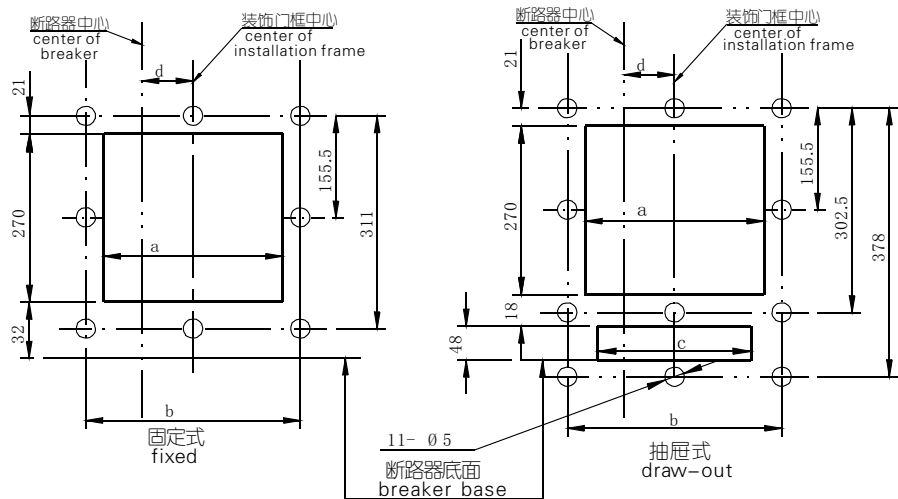
A向逆时针旋转90°
direction A anti-clockwise rotating 90°



安装板开孔尺寸
aperture dimensions of the sub-panel

电流规格 current specification	δ (mm)
6300A	30

十一、带装饰门框柜门开孔尺寸和安装尺寸 HOLING DIMENSIONS AND MOUNTING DIMENSIONS FOR DOOR FRAME WITH INSTALLATION FRAME



Inm(A)	2000/3	2000/4	3200/3	3200/4	4000/3	6000/3 (4000, 5000A)	6300A, 6300/4
a (mm)	303	303	363	363	363	363	363
b (mm)	345	345	405	405	405	405	405
c (mm)	260	260	322.5	322.5	322.5	322.5	322.5
d (mm)	0	47.5	0	57.5	57.5	189	246.5

十二、安装使用维护及常见故障解决 INSTALLATION, USAGE, MAINTENANCE AND COMMON FAULTS SETTLEMENT

■ 安装 Installation

△ 安装前先检查断路器的规格是否符合要求

Check the specifications of breaker in or out accordance with the requirement of order.

△ 安装前先以1000V兆欧表检查断路器绝缘电阻，在周围介质温度为 20°C ± 5°C 和相对湿度为 50%~70%时绝缘电阻应不小于20MΩ,否则应烘干，待绝缘电阻达到要求方可使用。

Checking the insulating resistance with a 1000v mega meter, the resistance should not be less than 20MΩ when ambient temperatures is 20°C ± 5°C and relative humidity is 50~70%, otherwise it should be dried till the insulating resistance meet the requirement.

- △ 断路器安装时，其底座应居于垂直于水平位置，并用M10螺钉固定。
When installed, the base should be in the vertical lever and fastened with M10 screw.
- △ 安装时对断路器进行可靠的接地保护，接地处有明显的接地标记，固定式断路器应严格遵守安全区。
When installed, breaker should be protected with reliable earth connection. There is obvious earth connection remark. The fixed breaker should abide by strictly safe area.
- △ 断路器安装完毕按有关接线图接线后，在主电路通电前（抽屉式断路器即抽屉座上的指示指在试验位置）应进行下列操作试验。
After finished installation and wiring according with the wiring diagram, and before the main circuit is supplied current (the signal on the draw-out base shows the test position) the operation test can be carried out.
- △ 检查欠电压、分励脱扣器及闭合电磁铁和电动操作机构等附件电压是否相符（欠电压脱扣器应吸合，断路器才能操作）。
Check voltage of undr voltage release, shunt release, electromagnetic and motor-driven operating device, auxiliary supply are in or our accordance with the voltage ,voltage of supply power(under voltage release should be on)
- △ 上下扳动面罩上的手柄六次后面板显示“贮能”并听“咔嚓”一声，贮能结束，可靠闭合（在控制器复位情况下），扳柄手柄在次贮能。
Turn the handle on 6 times until a click comes and indicator shows "energy-storage" that it tells the energy-storage process finished. At the same time, press the closing button or the closing electromagnet, the breaker could be closed reliably (under the controller's reset condition), Turn the handle on, the energy once again been stored.
- △ 接通电动操作机构电源，电动机通电操作至面罩显示“贮能”并伴随“咔嚓”一声，贮能结束电动机自动断电，按动合闸按钮或闭合电磁铁通电，断路器可靠闭合。
After the motor device's power is supplied, the motor is on and a the surface Shows "energy-storage", and a click comes. The energy storage process finished and the motor's current is cut off automatically. Press the closing button or the closing electromagnetic, the breaker could be closed reliably
- △ 断路器闭合后，无论用欠电压、分励脱扣器或面罩上的分闸按钮，智能控制器的脱扣试验均应使断路器断开。
As the breaker closed, the breaker could be released, whatever using the under voltage release, shunt release or the cut-off button on the surface.
- 断路器的插入与抽出 Breaker's insertion and withdrawal
- △ 断路器的插入 Breaker's insertion
拉出抽屉座上的左右滑板，把断路器放上滑板，将滑板推进抽屉座，利用手柄（在抽屉座左下方）的顺时针方向摇动，断路器将由“分离”位置向里推进，经

经“试验”位置，最后到达“连接”位置，在断路器到达“连接”位置时，可以听到两声清脆的“嗒嗒”声，表示断路器插入已到位。

Breaker's insertion Pullout the draw-out base' right and left slide board,place the breaker on the slide board and push the slide board into the draw-out base. Utilize the handle (located in the left-down of the draw-out base) to clockwise rotate, and the breaker moves inside from the separate position,pads by test position and finally get to the link position.As the breaker ger to the link position, two sounds of click can be heard,which means the breaker's insertion is in place.

△ 断路器的抽出 Breaker's withdrawal

处于“连接”位置的断路器，可以通过逆时针方向摇手柄抽出断路器。当指示器指向“分离”位置后，需拔出手柄，然后利用滑板把断路器从抽屉座内抽出（若未拔去摇手柄，断路器将无法抽出）抓住断路器两侧手柄，可以把断路器从抽屉座上取下。

Breaker's withdrawal in the link position, can be withdrawal by anticlockwise rotating the handler .when the indicator shows the separate position .The handler needs to be pulled out (if the handler has not been pulled out,the breaker can not withdrawa). then the breaker is withdrawn a long with the slide board. Catching hold of the two sides of the breaker,the breaker is taken off from the draw-out base.

△ 断路器在插入抽屉座前必需处于断开状态；处于“试验”位置的断路器，二次电流已接通，可进行试验操作。

Before insert breaker to the draw-out base, the breaker must be in the separate, the test operation can be carried out.

■ 维护 Maintenance

△ 在使用过程中，各转动部分应定期注入润滑油；应定期清刷灰尘，以保持断路器绝缘性能良好。

During its using period,each moving parts should be powered with lubricating oil regularly; Should clear dust regularly in order to keep breaker's good insulting properly.

现象 Phenome-non	产生原因分析 Causes analysis	排除方法 Exclusion methods
断路器不能合闸 The breaker can't close	<p>■ 欠压脱扣器没有吸合，包括以下几个原因： Under voltage release can not be operated. The reasons include:</p> <p>△ 欠压脱扣器没接通工作电压，用万用表测量，没有电压或电压低于35%Ue； Under voltage release can not been closed up. measure if there is no voltage or the voltage under 35%Ue with multimeter;</p> <p>△ 欠压脱扣器整流元件损坏，此时拨下27#和28#端子线测量，电阻无穷大，调换表笔，电阻亦为无穷大，这种情况有两个原因：一是工作电压超过110%Ue而烧毁了线圈或整流元件；二是线圈外引线已断。 Coil enamel wire of the under voltage release is broken off. At this time,27#and28# terminal line are pulled out and the resistance value is infinite.There are two reasons: 1.working current is beyond 110%ue that it burned the coil or rectifier unit; 2.leadwire outside the coil broken out.</p>	<p>△ 检查线路，接通欠压脱扣器电源； Check up circuit, put up through current of under-voltage release</p> <p>△ 更换与工作电压Ue相符的欠压脱扣器；若电压偏高，要求用户降低电压； Exchange the under-voltage release conforming to the working voltage,if the voltage is high,then advise the user lowering the voltage</p> <p>△ 拆掉欠压脱扣器，查看下面脱扣片，若断掉，则换一个，若弹力不够，用螺刀向上撬一下。 Take down under voltage release, check the absorbe-facient below, if it was broken, exchange a new one.If elasticity was not enough strong,prize it by a screw driver.</p>
	<p>断路器故障动作后，其面板上部红色按钮没有复位。 Forget to press the reset-button on the panel after the breaker broke away</p>	<p>按下复位按钮 Press the reset-button</p>

断路器不能合闸 The breaker can't close	抽屉式断路器本体没有摇到位。 Draw out breaker has not been put in place ■ 闭合电磁铁出现如下问题: The following problems appears on the closed electromagnet: △ 闭合电磁铁没接通电源; The current of closed electromagnet is not switched on; △ 用万用表测量闭合电磁铁线圈电阻无穷大,接线已断,包括两个原因: 一是工作电压 $115\%U_s$ 而烧毁了线圈;二是线圈外引线已断; If the electric resistance is infinite high by a multimeter,shows that the wiring is broken. There are two reasons:1.The working voltage is over $115\%U_e$ that lead to the coil burn out 2.The external line of the coil is broken; △ 与闭合电磁铁配合的机构上白色“小飞机”出轨,导致闭合电磁铁铁杆不能与之接触而不合闸,出现此种情况,手动也不能合闸。 The white "small plane" in the device conforming to the closed electromagnet goes off the rails. The closed electromagnetic traveler can not be touched if this problem appears, and it can not be closed manually.	将本体摇到位,听到“咔、咔”响声为止。 put the draw out breaker in the right place,until hearing the sound "ka ka" △ 检查线路,接通闭合电磁铁电源; Check the circuit, switch on the closed electromagnet △ 更换工作电压 U_e 相符的闭合电磁铁;若电压偏高,要求用户降低电压; Exchange the closed electromagnet conforms to the working voltage.If the voltage is high, lower the voltage first; △ 拆掉闭合电磁铁,查看下面白色“小飞机”,若出轨则用螺刀让其入轨。 Take off the closed electromagnet and check the white "small plane" if it goes off the rails,put it in place by a screw driver.
智能控制器不显示 Intelligent controller can't indicate	若是第一次合闸运行不显示,则为运行电流太小,小于 $20\%I_n$; If the first time close-up operation does not indicate, the current is too small that it is less than $20\%I_n$ 若是在运行过程中突然不显示,则为电压太高,烧毁智能控制器; During the operating process, it suddenly does not indicate because the voltage is too high that burns the intelligent controller	全部投入运行后则显示 Put all load into operation, and the indication shows △ 在现场用万用表量电压,若电压偏高,要求用户降低电压; Use multimeter to measure the voltage locality. If the voltage is too high,require user to lower the voltage; △ 在现场没有可更换的智能控制器情况下,为应急供电,更换控制器之前,须去掉1#、2#外接电源线,待电压正常,更换智能控制器。 If there is no intelligent controller to be replaced locality, for emergence, before the controller is replaced 1#, 2# external electric supply should be thrown out. when the voltage becomes normal, the intelligent controller must be changed.
断路器不能电动储能 The breaker can't electrically store energy	△ 电操机构电源未接通; The motor operation is not wired △ 电源容量不够; Power supply volume is not enough △ 电操中电动机烧毁。 The motor in the motor operation is burned	△ 用万用表测34#、35#端子电压,其值必须大于 $85\%U_s$,否则检查电源。 Firstly use the multimeter to measure 34#、35# terminal voltage, And the value must be lager $85\%U_s$,otherwise check the power supply. △ 其次用万用表测34#、35#两端的电阻值,若为无穷大,则电动机烧毁,要更换电动操作机构。 Secondly use the multimeter to measure there sistance value of 34#、35# on both ends. If the value is infinite, it shows the motor burned,and exchange motor operation device.
分励脱扣器不能使断路器断开 The shunt release can not break down the breaker	△ 电源电压未接通; Power supply is wireless; △ 电源容量不够; Power supply's capacity is not enough; △ 分励脱扣器断线或烧毁。 The shunt release's wire break off or burned.	先用万用表伏特档测量29#、30#端子间电压,必须大于 $70\%U_s$,若正常,则拔掉29#、30#端子用万用表欧姆档测电阻,若为无穷大,则分励脱扣器已坏。 Firstly measure the terminal voltage between 29#, 30# by the volt gear of a multimeter. The value must be larger than $70\%U_s$. If normal, take down the terminal 29#, 30#. and measure the resistance by the ohm gear of the multimeter, if the value is infinite, the shunt release is broken.
断路器频繁跳闸 The breaker trips frequently	△ 用电系统过电流或发生短路; The electrical system is over current or short circuit; △ 现场过负荷引起过载保护由于过载热记忆未能及时断电清除,又重新合闸; Overload leads to overload protection, for the overload thermal memory did not cut off electricity on time, the breaker closed up again. △ 欠电压回路有虚接情况。 Under voltage connection has the phenomenon of virtual connection	△ 查看跳闸电流,若为过载或短路,则查清原因,排除故障;否则,控制器断电一次,或30分钟后合闸。 Check the trip current, if it is overload or short circuit, and find the reasons eliminate the failures otherwise, cut off the breaker's electricity once,and 30mins later, close the breaker. △ 上面方法无效后,首先去掉欠电压脱扣器,若正常,则判定为欠电压回路虚接情况,找出虚接点并排除,易出现虚接的地方有二次回路接线处(螺钉)和二次回路插接处。 After the above methods are not affective, take off the under voltage release. If it works properly,it proves the under voltage circuit isvirtually connected. Find out the point of virtual connection and eliminate. The virtual connections frequently occur on the spot which the second circuit wiring(screw) and the second circuit socket.
抽屉式断路器在断开位置时不能抽出断路器 Draw out type in the separate position, the breaker can not be pulled out	△ 手柄未拔; The handler is not withdrawal △ 断路器没有完全到达断开位置。 The breaker is not fully in the separate position.	拔出手柄,若还不能抽出,则重新插入手柄,摇到断开位置。 Take out of the handler,if it can not be withdrawn, and then insert the handler again, rotate it in the separate position.

闭合电磁铁或分励脱扣器不动作 Closing electro-magnet or shunt does not work	<ul style="list-style-type: none"> △ 电源无电或电压太低; There is no power supply or voltage is too low; △ 闭合电磁铁或分励脱扣器接线头断线或烧毁; The wire of shunt release or shunt release has broken or been burned out; △ 二次回路接线端子配合不好, 接触不良 There be not matched up greatly between secondary circuit wiring terminals ,which leads to connect weakly. 	首先用万用表伏特档测量29#、30#或31#、32#电压, 若不正常, 则调整; 若正常, 则拔掉接线端子测量电阻, 若为无穷大, 则已断线, 须更换; 若正常, 断电摇开本体与抽屉架, 查看二次回路接线端子金属片的配合情况, 若有弯曲等现象, 则校正, 并在插入时注意配合。 Firstly, measure the voltage of 29#, 30# or 31#, 32# by the volt gear of multimeter.If abnormal , adjust it ;or normal , take off the wire terminal and measure the resistance, and if the value is infinite,they are broken; exchange a new one , if normal ,cut the electricity off,rotate off the bodyand the frame of drawer, check the match of the metal blade of the secondary circuit wiring terminals,if it is bent ,amend it and match up greatly.
运行中跳闸后不能合闸 In operation,it can not be closed after trips	电压太高导致欠压脱扣器烧毁 The voltage is too high to burn the under voltage release.	用万用表伏特档测量电压, 拔掉27#、28#端子测量其电阻, 若为无穷大, 则已烧毁, 去掉欠压脱扣器, 则能合闸, 并要调整电压至正常。 Measure the voltage by the volt gear of multimeter, pull out 27#, 28# terminal and measure the resistance.If it is infinite,the release is burned out. take off the under voltage release, the breaker can be closed then adjust the voltage to normal.
抽屉式断路器通电后一相或两相无电流 After draw-out breaker in operation,there is lack of one or two	<ul style="list-style-type: none"> △ 电源本身缺相; The phase of power supply is lack; △ 抽屉架与本体不符。 The frame of the drawer is not consistent with the body. 	首先摇开抽屉架与本体测量抽屉架与本体的母线厚度是否一致, 若一致, 则测量进线侧电流。 Firstly rotate off the body and the frame of drawer, then measure the thickness of the buses and the frame of the drawer which should be in concert,if in concert,then measure the current of the input line.
抽屉式断路器通电后一相或两相烧毁 Single phase or two phase of draw-out breaker burns out	<ul style="list-style-type: none"> △ 抽屉架与本体不符; The frame of the drawer is not consistent with the body. △ 本体母线抽屉架配合不好。 The master wire is not consistent with the frame of the drawer. 	首先测量抽屉架母线与本体母线的厚度是否一致然后观察抽屉架插接处情况, 若厚度一致性或插接处有问题, 则要调换抽屉架。 Firstly measure the thickness of the buses in body of the breaker and the frame of the drawer which should be in concert,then check the insert connection of the frame of the drawer. If the thicknesses is not in concert or the insert connection is not normal, exchange the frame of the drawer.

十三、出厂值整定 SETTING VALUE BEFORE LEAVEING FACTORY

△ 如用户订货时无特殊要求, 智能控制器出厂整定值按如下配置:

The intellignet controller would be configured as follows,if no special demands was put forward when ordering

过载长延时 Overload long-delay	电流整定值 Ir1 Current setting Ir1	In
	延时时间整定值t1 Delay time setting t1	240s
短路短延时 Short-circuit short-delay	电流整定值 Ir2 Current setting Ir2	6Ir1
	延时时间整定值t2 Delay time setting t2	0.4s
短路瞬时电流整定值 Ir3 Short-circuit instantaneous current setting Ir3		10Ir1
接地故障 Earthed errors	电流整定值 Ig Current setting Ig	OFF
	延时时间整定值tg Delay time setting tg	OFF
负载监控 Load monitoring	监控电流 ILC1 Monitoring current ILC1	Ir1
	监控电流 ILC2 Monitoring current ILC2	Ir1

十四、型号选择 TYPE CHOOSING

GSW1-2000/3 1600A M型 抽屉式 AC230V 附件说明
 1 2 3 4 5 6 7

1——断路器框架等级电流: 2000A 3200A 4000A 6300A

Frame Rated Current: 2000A 3200A 4000A 6300A

2——极数:3P、4P、3P+N

Poles:3P、4P、3P+N

3——断路器额定工作电流:

Rated Current:

2000A额定工作电流为: 630A、800A、1000A、1250A、1600A、2000A;

Rated Current of 2000:630A、800A、1000A、1250A、1600A、2000A;

3200A额定工作电流为: 2000A、2500A、3200A;

Rated Current of 3200: 2000A、2500A、3200A;

4000A额定工作电流为: 4000A(增容型)

Rated Current of 4000: 4000A (enhance capacity type)

6300A额定工作电流为: 4000A、5000A、6300A;

Rated Current of 6300: 4000A、5000A、6300A;

4——智能控制器型号: 3L、3M、3H

Type of intelligent controller:3L、3M、3H

5——安装方式: 抽屉式和固定式

Installation Pattern: draw-out and fixed

6——控制电压: AC400V AC230V DC220V DC110V

Control Voltage: AC400V、AC230V、DC220V、DC110V

7——附件说明: 详见表六,订货时,用户无特殊说明,我们提供下列6种附件
(但用户心须说明1-5附件的工作电压)

Attachment instruction:seeing T6,if user have no special specitication
when ordering, we provide six attachments as follow(user should specify
the working voltage of attachment 1-5)

1)闭合电磁铁 closing electromagent

2)分励脱扣器 shunt release

3)欠压脱扣器,瞬动式 undervoltage release ,instantaneous

4)储能电机 Motor-driven

5)智能控制器 (GSI-3M) intelligent controller(GSI-3M)

6)4常开4常闭辅助开关 auxiliary switch 4NO4NC

注note: 如选用带电压显示型产品,则注明“带电压显示”;

if users choose the breaker with voltage display function,they should
mark "voltage display".

如选用控制器带欠压保护型产品,则注明“带电压显示、欠压保护”。

If users choose the controller with undervoltage protection function,
they should mark "voltage display、undervoltage protection"

十五、订货规范 ORDER FORM

请在□内填上数值或打“√”
Please fill figures in□, or mark √in□

表(Table)6

用户单位 name		订货台数 order amount		订货日期 date		
型号 type	GSW1-□□□					
极数 pole	<input type="checkbox"/> 3P <input type="checkbox"/> 4P <input type="checkbox"/> 3P+N					
额定电压 rated voltage	<input type="checkbox"/> AC400V <input type="checkbox"/> AC690V					
额定电流 rated current	In = □□□A N极额定电流 rated current of N pole <input type="checkbox"/> 0.4Ir1 <input type="checkbox"/> 1.0Ir1					
安装方式 type of installation	固定式 <input type="checkbox"/> fixed 抽屉式 <input type="checkbox"/> draw-out					
智能控制器 Intelligent controller	类型选择 type choosing	<input type="checkbox"/> 3L <input type="checkbox"/> 3M <input type="checkbox"/> 3H				
	基本功能 basic function	过载长延时保护 overload long-time delay	短路短延时保护 shortcircuit short-time delay	短路瞬时保护 short circuit instantaneous		
		Ir1□□□A t1□S	Ir2□□□A t2□S	Ir3□□□A t3□S		
		接地故障保护 earthed error	I _g □□□A t _g □S			
	选择功能 choosing function	负载监控 load monitoring	<input type="checkbox"/> 方式一 pattern one	<input type="checkbox"/> 方式二 pattern two		
	<input type="checkbox"/> 带电压显示 voltage display	<input type="checkbox"/> 带欠压保护(仅3M型) undervoltage protection(3M type only)				
智能控制器电压 working voltage	<input type="checkbox"/> AC230V <input type="checkbox"/> AC400V <input type="checkbox"/> DC220V					
必备附件 Attachments	分励脱扣器 shunt release	<input type="checkbox"/> AC230V <input type="checkbox"/> AC400V <input type="checkbox"/> DC220V				
	闭合电磁铁 closing electromagnet	<input type="checkbox"/> AC230V <input type="checkbox"/> AC400V <input type="checkbox"/> DC220V				
	电动操作机构 motor-driven	<input type="checkbox"/> AC230V <input type="checkbox"/> AC400V <input type="checkbox"/> DC220V				
	辅助开关 auxiliary switch	标准型 normal type	<input type="checkbox"/> 4常开4常闭 4NC4NO			
		特殊型 special type	<input type="checkbox"/> 6常开2常闭 6NC2NO	<input type="checkbox"/> 2常开6常闭 2NC6NO	<input type="checkbox"/> 3常开3常闭 3NC3NO	<input type="checkbox"/> 5常开5常闭 5NC5NO
欠压脱扣器 Under-voltage release	<input type="checkbox"/> AC230V <input type="checkbox"/> AC400V <input type="checkbox"/> 无欠压 no choosing					
	<input type="checkbox"/> 欠电压瞬时脱扣器 instantaneous	<input type="checkbox"/> 欠电压延时脱扣器 time delay	<input type="checkbox"/> s(1~10s可调) setting from 1 to 10s			
选择附件 Accessory	□机械联锁	一台断路器 one breaker	<input type="checkbox"/> 一锁一钥匙 one lock one key	<input type="checkbox"/> 门联锁 door interlock		
		两台断路器 two breakers	<input type="checkbox"/> 钢缆联锁 cable interlock	<input type="checkbox"/> 联杆联锁 rod interlock	<input type="checkbox"/> 二锁一钥匙 two lock one key	
		三台断路器 three breakers	<input type="checkbox"/> 联杆联锁 rod interlock	<input type="checkbox"/> 三锁二钥匙 three lock two key	<input type="checkbox"/> 门联锁 door interlock	
	<input type="checkbox"/> 外接N相电流互感器 extension N-phase mutual inductor			<input type="checkbox"/> 安装框 installation frame		
备注 note	如用户订货的产品技术要求超过本规范表, 请与本厂协商解决 if users order with technical demands beyond range of this order form, please contact with us					