AEG

样本如有修改，恕不另行通知
本手册纸张可循环利用
版本号：201912D01CN

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Industrial systems

MLS

Low-voltage switchgear assemblies

AEG

CONTENT

Product description

Configuration scheme

PRODUCT DESCRIPTION

MLS low-voltage switchgear assemblies are FBA low-voltage switchgear made of standardized modules. They are suitable for use in power supply/distribution system of 50 (60)Hz AC electricity with rated operational voltage ≤ 690V and rated operational current up to 6300A for such purposes as power distribution, conversion, control and reactive compensation.
The product is compliant with GB/T7251.12 and JB/T9661 standards.

The system includes the following components:

- Power Center

  Main incoming cabinet of modular design with rated current up to 6300A

- Motor control center

  Available in the forms of plug-in and withdrawable units for use in feeder and motor control loop

- Components

  EntelliGuard™ and M-Pact air circuit breakers; Record Plus molded breakers

Product's suitable service conditions

- -5°C ≤ ambient temperature ≤ +40°C, 24-hour average ambient temperature ≤ +35°C
- Atmospheric conditions: clean air of relative humidity ≤ 50% at maximum acceptable temperature of +40°C, or of greater relative humidity when ambient temperature is lower.
- For example, the maximum acceptable value is 90% at +20°C. In consideration of temperature variation, moderate condensate formed accidentally is acceptable.
- The acceptable temperature range for transportation and storage is -25°C to +55°C and up to +70°C for a short while (≤24h)
- Altitude: ≤ 2000m;
- Pollution degree of environmental conditions: Grade 3 per GB/T72251.1
- If any electric component fails to meet the above operating conditions, the user should consult the manufacturer for a solution.
- If the service conditions contradict the above-mentioned operating conditions, the user should inform and consult the manufacturer for a solution

Key electrical performance

Rated operating voltage V	Main circuit	≤ AC 690V
	Auxiliary circuit	≤ AC 380V, ≤ DC220V
Rated insulation voltage V Rated impulse withstand voltage (1.2/50μs)kV	Main circuit	≤ AC 1000V
	Main circuit	8, 12
Rated operating current (IP4X)* A	Main busbar	≤6300, ≤3600 (MLS double-sided cabinet)
	Vertical busbar	790, 1000, 1250, 1600 (withdraw able), ≤2500 (plug-in MCCB)
Rated short time withstand current kA/2 sec	Main busbar	50, 65, 80, 100
	Vertical busbar	50, 65, 80, 90
Rated peak withstand current kA/0.1sec	Main busbar	105, 143, 176, 220
	Vertical busbar	105, 143, 176, 198

* The main busbar's rated operating current is ≤2500A when IP rating is IP55.

PRODUCT DESCRIPTION

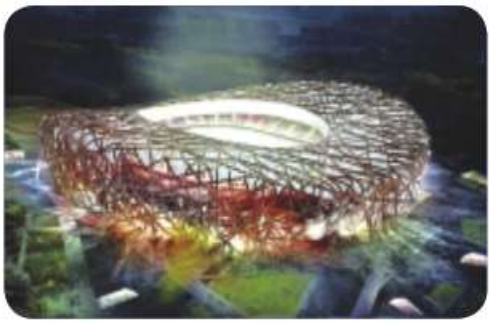
Applications

Power station
Substation
Switch station

Petroleum and natural gas
Mining
Ship
Pulp & papermaking
Cement
Textile
Chemical engineering
Automobile
Petrochemical
Metallurgy
Data center

Air transportation
Port
Railway
Metro

Supermarket
Shopping mall
Hospital
Large infrastructure and civil work



Applications

PRODUCT DESCRIPTION

Cubicle structure

- Enclosure

The cabinet body is made of 2mm thick Al-Zn coated steel sheet. Various subsections and functional units are assembled with Grade 8.8 self-tapping screws using E=25mm modulus holes. The framework and enclosure should be made of a material of adequate strength and rigidity and capable of withstanding certain mechanical stress, electrical stress and thermal stress. The material should be capable of withstanding the dampness that might be encountered during the product's normal service. The door panels are made of 1.5mm thick quality steel sheet and all doors are hinged to the framework and punched holes for mounting locks. The hinges have an opening angle of at least 120°. The door surface should be sprayed a coat of epoxy powder of standard color RAL7035. Other steel parts such as hinges and mounting plates should be electrogalvanized. The entire framework is compliant to GB/T7251.12-2013 in corrosion resistance tests such as salt spray test and damp heat test and in ascension test.

- IP rating

The cabinet roof is designed with multiple functions. The cabinet is available in multiple standard configurations including IP30 and IP40 (for ventilation roof type), and drip-proof IP31 and IP41 structures. These options can be easily combined for upgrading IP grade. For example, the product can be upgraded to IP42 model if the cabinet door is added a louver, or to P55 model (for use in workplaces with high ingress protection requirements such as a power plant where electric precipitation is required) if the product is added a rubber sealing roof and an outer glass door.
When the withdrawable functional unit is in disconnected position, its enclusure's IP rating is IP2XD. When the withdrawable functional unit is in removed position, the IP rating inside the compartment and between dangerous live parts is IPXXB.

- Busbar system

The main busbar can be a three phase four wire system or five wire system and fixed to a subsection by insulation support. The main busbar system can be installed at the rear or in the upper part of the cabinet. Dual busbar structure is used for systems with a rated current of 4000A or above. The control cabinet's vertical busbar can have a rated current up to 1600A and be equipped with 3 -pole and 4 -pole systems. Internal safety barriers separate the busbar compartment from the equipment compartment to prevent operators from coming into contact with dangerous live parts. The highest compartment can be up to Form 4b. The protection circuit consists of separate protective conductors and conductive structures. Protective conductor PE lines are set up along the full length of the cabinet and vertical branch earthing busbars with main earth point and earthing mark are also set up. The protective conductors, the shells of all electric components installed inside the cabinet, metal parts and the cabinet body are connected together and securely earthed.

- Power Center

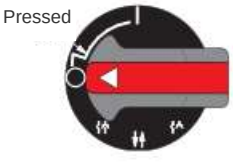
The power center is divided into 3 functional areas: busbar compartment, equipment compartment and cable compartment. The busbar compartment located at the rear or upper part of the switch cabinet is for installing horizontal and vertical busbar system.
The internal safety barrier separates the busbar compartment and equipment compartment, and a separate partition may be used to separate the equipment compartment and the cable compartment. The busbar compartment can be installed up to two sets of main busbar systems as deemed necessary. Breakers of various specifications can be installed inside the compartment and in 3-pole or 4-pole configurations. Up to three air circuit breakers can be installed.
The incoming cabinet can be equipped with Entelliguard^{TM} or M-Pact series air circuit breakers and intelligent electronic release upon user's request for providing complete circuit protection and control functions including zone selective interlocking (ZSI), reduced energy let through (RELT), waveform capture, and communication for achieving acceptable selectivity, quick breaking capacity and high reliability.
Cables can be connected to the switch cabinet directly or via prefabricated connectors; and control cables are connected to the terminal blocks.
Top-in top-out or bottom-in bottom-out options are available for use.

- Motor control center

- Fixed unit
  Fixed units are used in fuse-free feeder schemes. They can be equipped with 3-pole or 4-pole molded breakers that have a rated subsection current of 160A-2000A. The breakers are connected to the vertical busbar via branch busbar. The height of standard modules varies from 8E/2 to 72E.

- Plug-in unit
  Plug-in units can be used in schemes for feeders and motor startup units with or without fuse. These units have a rated subsection current of 160A~800A and standard modules of 8E/2 to 36E.

- Withdrawable unit
  Withdrawable units are of modular design and consist of standard modules ranging from 8E/4 to 24E. These units are suitable for use in schemes for feeders and motor startup units. They are easy to use, replace, and maintain. They can be operated through the multi-function operating handle and a mechanical interlocking mechanism on the front panel. The working state of the control unit is clearly displayed on position indicator area on the panel. A reliable mechanical interlocking is used for preventing misoperation.



8E/2, 8E/4 withdrawable operating handle

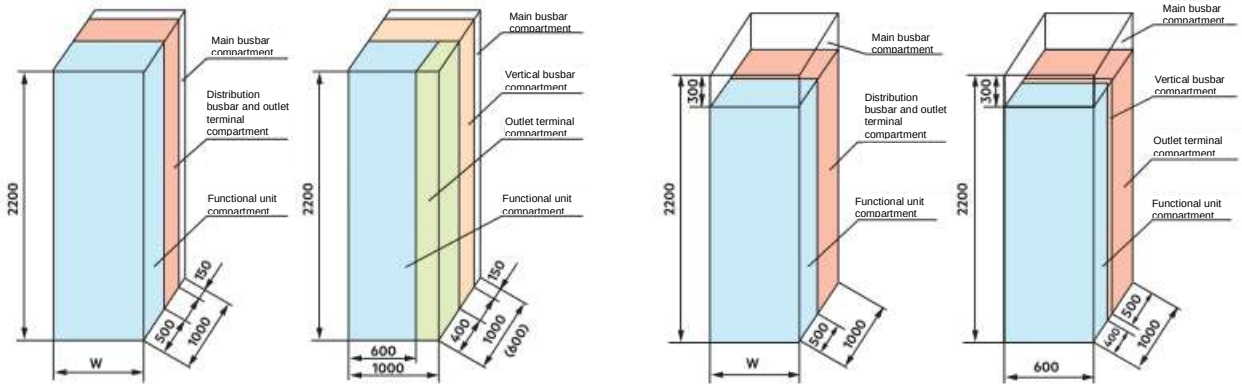
8~24E withdrawable operating handle

I	Closing position -- main switch closed, control loop closed, drawer locked
O	Opening position -- main switch opened, control loop opened, drawer locked
	Test position -- main switch opened, control loop closed, drawer locked
	Plug-in position -- main circuit and control loop opened, drawer withdrawable
	Isolation position-- pulled out 30mm, main circuit and control loop opened for completing isolation, drawer locked.
	Connected position -- main switch closed/opened, drawer locked
	Test position -- main switch opened, control loop closed
	Pull-out position -- main circuit and control loop opened, drawer withdrawable
	Isolation position -- pulled out 45mm, main circuit and control loop opened for completing isolation, drawer locked.

PRODUCT DESCRIPTION

Dimensions and installation

Height (H) mm	Width (W) mm	Depth (D) mm	Remark
2200	300	1000	Cabinet for busbar connection (MLS-600)
2200	400	1000	PC Cabinet
2200	500	1000	
2200	600	1000	PC and reactive compensation cabinet
2200	1000	1000	
2200	1200	1000	
2200	1000	1000 (600)	MCC Cabinet (MLS)
2200	600	1000	MCC Cabinet (MLS-600)

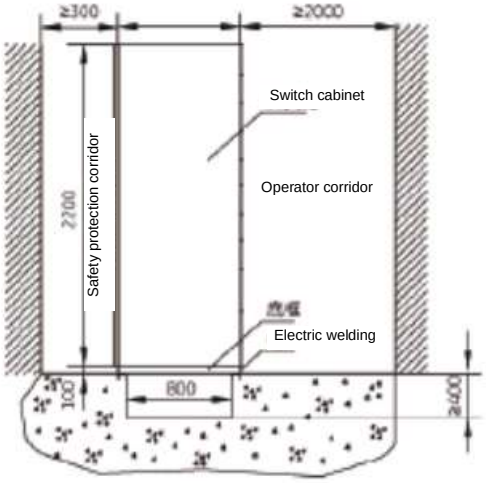


a. PC Cabinet b. MCC Cabinet c. PC Cabinet d. MCC Cabinet

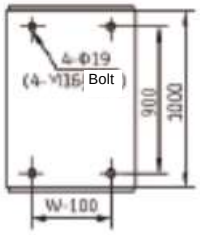
MLS structure (rear-mounted busbar) MLS-600 structure (top-mounted busbar)

Welding or 4-M16 bolts can be used for securing the supporting studs beneath the product; 8-M8 hexagon socket head screws are used for connecting the display panels of the cabinets into a large one.

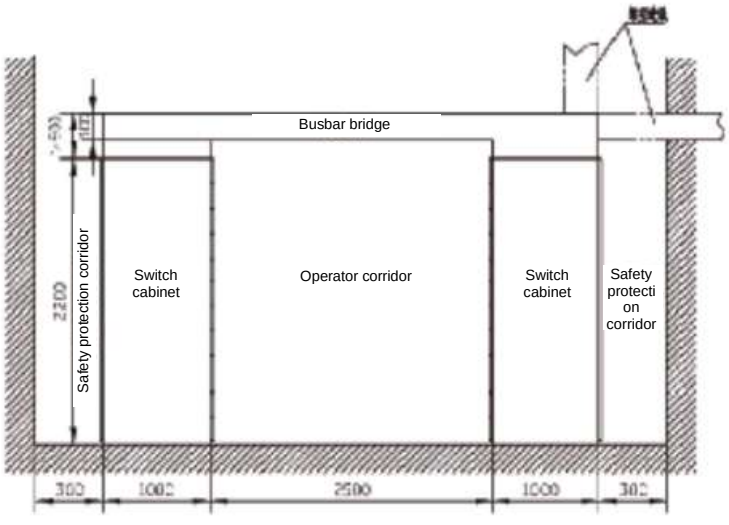
MLS can be wall mounted but a clearance ≥300mm between the cabinet and the wall is advised (as shown in the following Fig.).
MLS-600 can be mounted off-wall and a clearance of ≥800mm is required at the rear of the cabinet.



Installation diagram



Bolt fastener dimensions
(Top view)



PRODUCT DESCRIPTION

Main components

EntelliGuard™ air circuit breaker

Brand-new EntelliGuard™ low-voltage air circuit breaker is compliant with the requirements in IEC, CCC, ANSI and UL standards. The breaker's rated current ranges from 400A to 6400A and 3-pole and 4-pole product models are available. Its rated breaking capacity is up to 150kA. The breaker's unique design renders it excellent short circuit withstand capacity for achieving well-balanced quick release performance at times of high fault current and selective protection requirements at times of low fault current. The new generation intelligent electronic release uses latest technology for rendering breaker the capability to provide safer and more reliable circuit protection, electricity parameter measurement and display, relay input/output, Modbus or Profibus communication functions.

M-Pact air circuit breaker

M-Pact air circuit breakers have a rated current ranging from 400A to 4000A and they are available in 3-pole and 4-pole, fixed and withdrawable products. Two frameworks of compact structure, small size, and light weight. The breaker is of identical height and identical depth design and the outgoing lines can be led out vertically, horizontally, or from the front. It is equipped with MPro electronic release for delivering all-round selective protection functions to effectively protect low-voltage power distribution system. It is of good operation stability, operability, and maintainability.

Record Plus molded breakers

Record Plus series plastic case breakers for low-voltage distribution and control systems have a rated current of 3-630A and products of 3-pole and 4-pole designs are available for fixed, plug-in and withdrawable installations. They can be divided into FD, FE, FG categories for providing rated short circuit breaking capacity in the range of 18-150kA. Rotary dual-contact structure for excellence current limiting capability and selection functions. Modular design, complete accessories, high reliability.

Intelligent motor protector

The intelligent motor protector used in this product is MC10 series. The protector provides motor protection functions against overload, earthing, locked-rotor, and phase unbalance, functions for recording electricity parameters such as current, voltage, frequency, and their waveforms. It supports multiple field busbar protocols including Modbus and Profibus DP and has independent networking interface.

Standard and certification

Compliant with

GB/T7251.12; GBZ18859-2012; IEC/TR361641：1996; GB/T15576-2008; IEC60068-3-3-1991;GB50556

DESIGN SCHEME

Configuration of a typical solution

Incoming cabinet with EntelliGuard™ air circuit breaker

Rated current A	Frame	3-pole	4-pole	Cubicle height	Cubicle width	Cubicle depth	Breaking capacity 50kA	65kA	80kA	100kA
Single withdrawable breaker: lead-in, feeder; bus tie cubicle width +300mm										
630	1	●	●	2000	600	800-1000	●			
1000	1	●	●	2000	600	800-1000	●			
1000	1	●		2200	500	800-1000	●			
			●	2200	600	800-1000	●			
1250	1	●		2200	500	800-1000	●			
			●	2200	600	800-1000	●			
1600	1	●		2200	500	800-1000	●	●	●	
			●	2200	600	800-1000	●	●	●	
2000	1	●		2200	500	800-1000	●	●	●	
			●	2200	600	800-1000	●	●	●	
2500	2	●		2200	600	800-1000	●	●	●	
			●	2200	800	800-1000	●	●	●	
3200 (3150)	2	●		2200	600	800-1000	●	●	●	●
			●	2200	800	800-1000	●	●	●	●
4000	2	●		2200	800	800-1000		●	●	●
			●	2200	1000	800-1000		●	●	●
5000	3	●		2200	1000	1000			●	●
			●	2200	1200	1000			●	●
6300	3	●		2200	1000	1000			●	●
			●	2200	1200	1000			●	●
Two withdrawable breakers: lead-in + bus tie										
630	1	●	●	2000	600	800-1000	●			
1000	1	●	●	2000	600	800-1000	●			
1000	1	●		2200	500	800-1000	●			
			●	2200	600	800-1000	●			
1250	1	●		2200	500	800-1000	●			
			●	2200	600	800-1000	●			
1600	1	●		2200	600	800-1000	●	●	●	
			●	2200	800	800-1000	●	●	●	
2000	1	●		2200	600	800-1000	●	●	●	
			●	2200	800	800-1000	●	●	●	
Two withdrawable breakers: 2 feeder loops										
630	1	●	●	2000	600		●			
1000	1	●	●	2000	600		●			
1000	1	●		2200	500		●			
			●	2200	600		●			
1250	1	●		2200	500		●			
			●	2200	600		●			
1600	1	●		2200	600		●	●	●	
			●	2200	800		●	●	●	
2000	1	●		2200	600		●	●	●	
			●	2200	800		●	●	●	
Three withdrawable breakers: 3 feeder loops										
630	1	●	●	2000	800	1000	●			
1000	1	●	●	2000	800	1000	●			
1250	1	●		2200	800	1000	●			
			●	2200	1000	1000	●			

Configuration of a typical solution

Incoming cabinet with M-Pact air circuit breaker

Rated current A	Frame	3-pole	4-pole	Cubicle height	Cubicle width	Cubicle depth	Breaking capacity 50kA	65kA	80kA
Single withdrawable breaker: lead-in, feeder; bus tie cubicle width +300mm									
630	1	●	●	2000	600	800-1000	●		
1000	1	●	●	2000	600	800-1000	●		
1000	1	●		2200	500	800-1000	●		
			●	2200	600	800-1000	●		
1250	1	●		2200	500	800-1000	●		
			●	2200	600	800-1000	●		
1600	1	●		2200	500	800-1000	●	●	●
			●	2200	600	800-1000	●	●	●
2000	1	●		2200	500	800-1000	●	●	●
			●	2200	600	800-1000	●	●	●
2500	1	●		2200	600	800-1000	●	●	●
			●	2200	800	800-1000	●	●	●
3200 (3150)	2	●		2200	800	800-1000	●	●	●
			●	2200	800	800-1000	●	●	●
4000	2	●		2200	800	800-1000		●	●
			●	2200	1000	800-1000		●	●
Two withdrawable breakers: lead-in + bus tie									
630	1	●	●	2000	600	800-1000	●		
1000	1	●	●	2000	600	800-1000	●		
1000	1	●		2200	500	800-1000	●		
			●	2200	600	800-1000	●		
1250	1	●		2200	500	800-1000	●		
			●	2200	600	800-1000	●		
1600	1	●		2200	600	800-1000	●	●	●
			●	2200	800	800-1000	●	●	●
2000	1	●		2200	600	800-1000	●	●	●
			●	2200	800	800-1000	●	●	●
Two withdrawable breakers: 2 feeder loops					600	800-1000			
630	1	●	●	2000	600	800-1000	●		
1000	1	●	●	2000	600	800-1000	●		
1000	1	●		2200	500	800-1000	●		
			●	2200	600	800-1000	●		
1250	1	●		2200	500	800-1000	●		
			●	2200	600	800-1000	●		
1600	1	●		2200	600	800-1000	●	●	●
			●	2200	800	800-1000	●	●	●
2000	1	●		2200	600	800-1000	●	●	●
			●	2200	800	800-1000	●	●	●
Three withdrawable breakers: 3 feeder loops									
630	1	●	●	2000	800	800-1000	●		
1000	1	●	●	2000	800	800-1000	●		
1250	1	●		2200	800	800-1000	●		
			●	2200	1000	800-1000	●		

DESIGN SCHEME

Configuration of a typical solution

Selection of functional unit

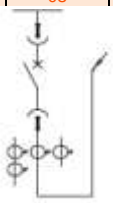
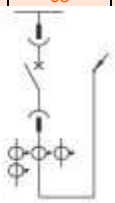
Withdrawable unit

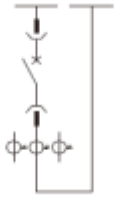
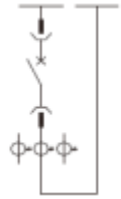
Direct start		CW/CCW		Y/△		Feeder (3-pole)		Feeder (4-pole)	
Maximum load (KW)	Module dimensions (E)	Maximum load (KW)	Module dimensions (E)	Maximum load (KW)	Module dimensions (E)	Maximum load (KW)	Module dimensions (E)	Maximum load (KW)	Module dimensions (E)
11	8E/4	/	/	/	/	32	8E/4	32	8E/4
22	8E/2	15	8E/2	7.5	8E/2	63	8E/2	63	8E/2
37	8E	37	8E	15	8E	225	8E	225	8E
75	16E	45	16E	37	16E	400	16E	400	16E
160	24E	110	24E	55	24E	500	24E	500	24E

Plug-in unit

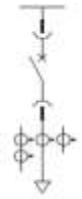
Direct start		CW/CCW		Y/△		Feeder (3-pole)		Feeder (4-pole)	
Maximum load (KW)	Module dimensions (E)	Maximum load (KW)	Module dimensions (E)	Maximum load (KW)	Module dimensions (E)	Maximum load (KW)	Module dimensions (E)	Maximum load (KW)	Module dimensions (E)
33	8E/2	15	8E/2	11	8E/2	100	8E/2	100	8E/2
37	6E	30	6E	15	6E	225	6E	160	6E
55	8E	37	8E	30	8E	400	8E	250	8E
132	16E	55	16E	55	16E	630	12E	400	12E
						630	16E	630	16E

Primary scheme

Scheme No.	01	02	03	04	05	06	07	08	09	10
Primary scheme										
Cubicle width (mm)	500	600	800	1000	1000	600	800	1000	1200	1200
Unit compartment height (mm)	72E	72E	72E	72E	72E	72E	72E	72E	72E	72E
Maximum operating current (A)	1250A	2500A	3500A	5000A	5000A	1600A	2500A	3500A	5000A	5000A
Major equipment	MP-12;GG 13	MP-25;GG 25	MP-40;GG 40	GG50	GG50	MP-16;GG 16	MP-25;GG 25	MP-40;GG 40	GG50	GG50
Purpose	Top entry (exit) line (3-pole switch)					Top entry (exit) line (4-pole switch)				

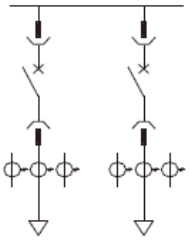
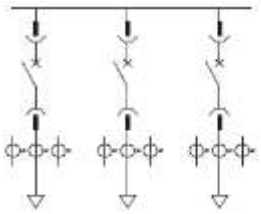
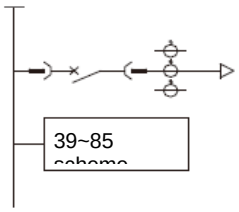
Scheme No.	11	12	13	14	15	16	17	18	19	20
Primary scheme										
Cubicle width (mm)	500/800	600/900	800/1100	1600/1300	1600/1300	600/900	800/1100	1000/1300	1800/1500	1800/1500
Unit compartment height (mm)	72E	72E	72E	72E	72E	72E	72E	72E	72E	72E
Maximum operating current (A)	1250A	2500A	3500A	5000A	6300A	1600A	2500A	3500A	5000A	6300A
Major equipment	MP-12;GG 13	MP-12;GG 13	MP-40;GG 40	GG50	GG64	MP-16;GG 16	MP-25;GG 25	MP-40;GG 40	GG50	GG64
Purpose	Bus tie (3-way switch)					bus tie (4-way switch)				

* The figure above the slash denotes the width of MLS busbar rear-mounted models and the figure beneath the slash denotes the width of MLS-600 busbar top-mounted models (with an added 300mm cabinet for flipping over the busbar)

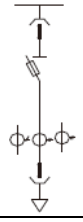
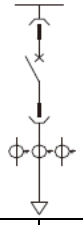
Scheme No.	21	22	23	24	25	26	27	28	29	30
Primary scheme										
Cubicle width (mm)	500	600	800	1000	1000	600	800	1000	1200	1200
Unit compartment height (mm)	72E	72E	72E	72E	72E	72E	72E	72E	72E	72E
Maximum operating current (A)	1250A	2500A	3500A	5000A	6300A	1600A	2500A	3500A	5000A	6300A
Major equipment	MP-12;GG 13	MP-25;GG 25	MP-25;GG 25	GG50	GG64	MP-16;GG 16	MP-25;GG 25	MP-40;GG 40	GG50	GG64
Purpose	Top entry (exit) line (3-pole switch)					Bus tie (4-way switch)				

DESIGN SCHEME

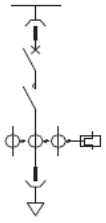
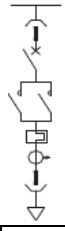
Primary scheme

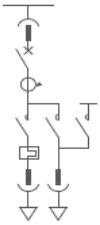
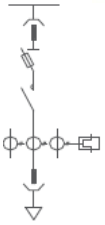
Scheme No.	31	32	33	34	35	36		37	38
Primary scheme									
Cubicle width (mm)	400	500	800	1000	500	1000		1000/600	1000/600
Unit compartment height (mm)	2×32E	2×32E	2×32E	2×32E	2×24E	3×24E		24E (PC)+40E (MCC)	24E (PC)+40E (MCC)
Maximum operating current (A)	2×630	2×630	2×1250	2×1250	3×630	3×1000		1600 (PC)	630 (PC)
Major equipment	FG630 3P BH-40II	FG630 3P,4P BH-40II	MP-12; GG13 3P BH-60II	MP-12; GG13 3P,4P BH-60II	FG630 3P,4P BH-40II	MP-10; GG10 3P,4P BH-60II		MP-16; GG16 3P BH-80II	FG630 3P,4P BH-40II
Purpose	Feeders (Top/bottom entry or exit lines)				Feeders (Top/bottom entry or exit cables)			Feeders (Top/bottom entry or exit lines)	

Scheme No.	39	40	41	42	43	44	45	46	47
Primary scheme									
Cubicle width (mm)	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600
Unit compartment height (mm)	8E/4	8E/2	8E	8E	16E	24E	24E	8E/4	8E/2
Maximum operating current (A)IPX3	30	50	125	225	315	400	500	30	50
Major equipment	NC100 3P;4P BH-30	FD160 3P BH-30	FD/FE 160 3P BH-30	FE250 3P;4P BH-40II	FG400 3P;4P BH-40II	FG630 3P;4P BH-60II	FG630 3P;4P BH-60II	FB CD32A HH17 BH-30	FB 63 BH-30
Purpose	Feeding and lighting (3-pole/4-pole switch)								

Scheme No.	48	49	50	51	52	53	54	55	56
Primary scheme									
Cubicle width (mm)	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600
Unit compartment height (mm)	8E	16E	16E	8E/2	16E	24E	24E	8E/4	8E/2
Maximum operating current (A)IPX3	125	200	315	100	315	400	500	30	50
Major equipment	QSA_125 FB 160A DH-40	QSA_400 FB 250A DH-40II	QSA-400 FB 160A DH-40	FD/FE160 3P, 4P, plug-in BH-40	FE250 3P, plug-in BH-30~40	FE250 3P, 4P plug-in BH-30~40	FG250 3P, 4P plug-in BH-30~40	FG400 3P plug-in BH-40II	FG630 3P plug-in BH-40II
Purpose	Feeding and lighting (3-pole switch)			Feeding and lighting/fixed isolated unit					

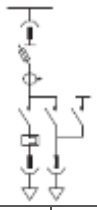
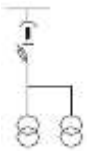
Primary scheme

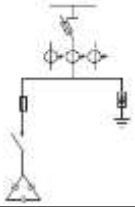
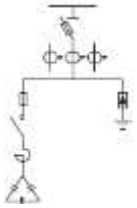
Scheme No.	57	58	59	60	61	62	63	64	65	66
Primary scheme										
Cubicle width (mm)	600/1000	600/1000	600/1000	600/1000	600/1000	600/1000	600/1000	600/1000	600/1000	600/1000
Unit compartment height (mm)	8E/4	8E/2	8E/4	8E/2	8E	16	24E	8E/2	8E	16E
Maximum control power ~380V/AC-3 (kW)	7.5	15	7.5	15	37	75	160	15	37	45
Major equipment	NC100 CL00~02 BH-30	FD160 CL03~04 BH-30	NC100 CL00~02 RT1B~1T BH-30	FD160 CL03~04 RT1B~1 W BH-30	FD160 CL06~08 RT2A~2L BH-40	FE250 CL09~10 CK75 RT2M~3F BH-40II	FG400 CK85~95 RT1L BH-40II	FD160 CL00~04 RT1B~1W BH-30	FD160 CL06~08 RT2A~2L BH-40	FD160 CL09 RT2L~2M BH-40II
Purpose	Motor control (irreversible)							Motor control (reversible)		

Scheme No.	67	68	69	70	71	72	73	74	75	76
Primary scheme										
Cubicle width (mm)	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600
Unit compartment height (mm)	24E	8E/2	8E	16E	24E	8E/4	8E/2	8E	16E	24E
Maximum control power ~380V/AC-3 (kW)	110	7.5	15	37	55	7.5	15	37	55	110
Major equipment	FE250 CK75~85 RT1L BH-40II	FD160 CL00~02 RT1B~1M BH-30	FD160 CL00~02 RT1B~1M BH-30	FD160 FE160 CL06~08 RT2A~2H BH-40II	FE250 CL09~10 CK75 RT2H~2M BH-40II	FB CL00~02 RT1B~1T BH-30	FB63A CL03~04 RT1B~1 W BH-30	FB100A QSA100 CL06~08 RT2A~2L BH-40	FBX_250A QSA250 CL09~10 RT2H~2M BH-40II	FBX_400A QSA_400 CK75~85 RT1L BH-40II
Purpose	Reversible	(Y/Δ)						Motor control (reversible)		

DESIGN SCHEME

Primary scheme

Scheme No.	77	78	79	80	81	82	83		84	85
Primary scheme										
Cubicle width (mm)	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600	1000/600		1000/600	1000/600
Unit compartment height (mm)	8E/2	8E	16E	24E	8E	16E	24E		8E	16E
Maximum control power ~380V/AC-3 (kW)	15	37	55	110	15	37	55		100VA	200VA
Major equipment	FB CD32~63A CL00~04 RT1B~1W BH-30	QSA-125 FB D63~160A CL06~08 RT2A~2L BH-40 Motor control	QSA-250 FB≤250 CL09~10 RT2H~2M BH-40II (reversible)	QSA≤400A FB≤400 CK75~85 RT1L BH-40II	QSA-125 FB CD32~63A CL00~04 RT1B~1T T45 BH-30	QSA-160 FB≤160 CL06~08 RT2A~2H BH-40II	QSA≤400 FB≤400 CL09~10 RT2H~2M BH-40II △		QSA-63 FB CD25A JDG4-0.5 380/100V	QSA-63 FB CD25A JDG-0.5 380/100V
Purpose	Motor control (reversible)				(Y/Δ)				Power mains	

Scheme No.	86	87	88	89	90	91	92	93	94
Primary scheme									
Cubicle width (mm)	600	800	800	1000	1000	600	800	1000	1200
Unit compartment height (mm)	72E	72E	72E	72E	72E	72E	72E	72E	72E
Maximum compensation capacity {Kvar}	16×8=128	16×12=192	30×10=300	16×8=128	16×16=256	30×4=120	30×6=180	30×8=240	30×10=300
Main equipment (optional)	QSA-400 RT20~63 B30C GSC-16 BH-40II	QSA-400 RT20~63 B30C GSC-16 BH-40II	QSA-630 RT20~100 B63C GSC-30 BH-40II	QSA-630 RT20~63 B30C GSC-16 BH-40II	QSA-630 RT20~100 B63C GSC-30 BH-60II	QSA-400 RT20~63 B63C GSR-2.1 GSC-30 BH-40II	QSA-400 RT20~63 B63C GSR-2.1 GSC-30 BH-40II	QSA-630 RT20~63 B63C GSR-2.1 GSC-30 BH-40II	QSA-630 RT20~63 B63C GSR-2.1 GSC-30 BH-40II
Purpose	Reactive compensation					Reactive compensation and filtering (P=7%)			