MD190(HONOR)

低压配电系统、组合型低压开关柜（ABB授权）



Application range:

Md190 (Honor) "Anya" low–voltage switch cabinet (hereinafter referred to as MD190 for short) People Group is introducing a modular combination of ABB low voltage switchgear concept Design The technology conforms to international standards such as BS5486–1, AS3439–1, EN60439–1 and IEC60439 and Chinese state standard GB7251.

MD190 is suitable for various distribution and motor–control projects, for instance: industrial distribution device、Power plant and oil refinery、Petrochemical industry、Drilling platform at offshore oil station、Industrial, commercial and residential highrise 、Central airconditioning system、Marine distribution board

Product feature:

Adopt whole ABB series low–voltage electrical appliance elements, including: Megamax and Emax air circuit breakers; Isomax and Tmax moulded case circuit breakers and A series contactors, etc., which composes perfect and most–reliable low–voltage system.High–strength structural materials make switch structure firmer.

Scheme is complete and ensures arbitrary selection and assembly of fixed separation way and drawer way so as to keep consistent appearance.

Modularized cabinet depth, width and height are adopted to satisfy high adaptability and flexible design scheme.

It is ranked in compaction so as to save space and cost.

Unit elements are free and have high adaptability and flexible change, which can satisfy project need.

It has protection level and internal separation way of different cases and users can make different options according to needs

It's convenient and fast in assembly and no special and complex process is needed.

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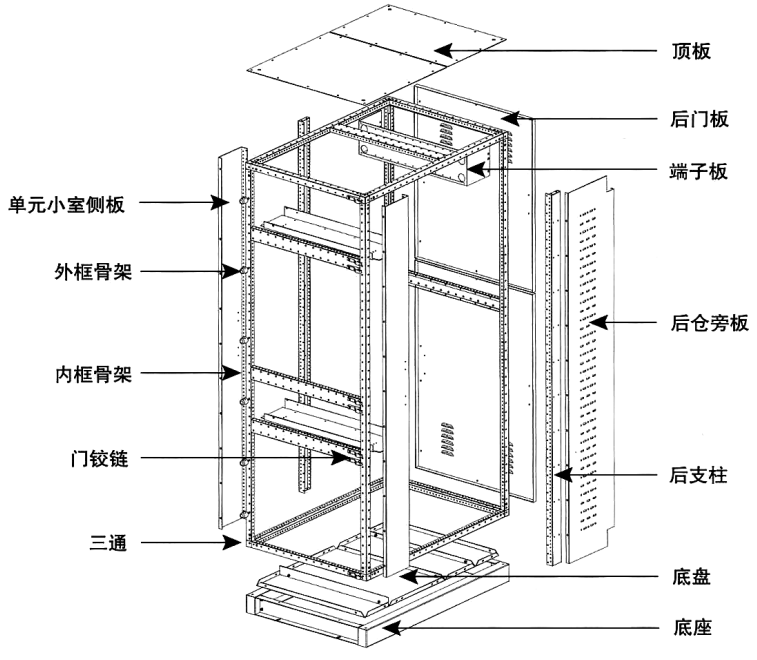
MD190(HONOR)

Low–voltage distribution systemCombined low–voltage switch cabinet(Authorized by ABB)

Framework and case:

Framework system of MD190 takes 190mm as a standard module (1U) and is divided into external framework and internal framework (used in cabinet structure with extremely–strong separation room).Connection of external framework adopts tee joint so as to ensure the degree of symmetry of framework installation.Case protection level of MD190 is IP31 standard. The front adopts door plate which can be opened on left or right and is equipped with waterproof sealing strip and groundin screw.

The rear adopts door cover and is equipped with waterproof sealing strip and heat dissipation hole. Case protection level can be increased up to IP54 according to need (adopt double front door and the front outside door contains high–quality toughed glass).



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Structural design

Structure design:
Cabinet–frame structure
Cabinet–frame structure of MD190 adopts modularized framework structure so as to make height, depth and width of cabinet combined into various appearing dimensions according to module.
It is divided into three rooms of mutually separated inside cabinet framework:

(1)Device room of elements
(2)Bus room for main bus and distribution bus
(3)Inlet and outlet rooms (can be inlet or outlet up and down)

Main bus and distribution bus:

Main bus is equipped to bus room and can be horizontally installed at different positions from top to bottom.

Capacity of main bus is 800–6300A.

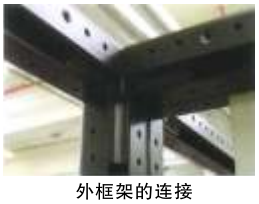
Distribution bus is installed in vertical way and the capacity of distribution bus is 800–3200A.



柜架结构



主母排(5000A)



外框架的连接



主母排(2500A)



分支母排

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4 separated form the internal



Out of style



Separated out of style within

Fixed separate switchgear cabinet structure

Cabinet framework structure of fixed separation–way switch cabinet:
Height, depth and width of modularized cabinet:

Height: standard is 2090 (11 module) + 95mm (base height)
Maximum is 2280 (12 module) + 95 (base height)
Depth: rear wiring scheme, standard depth is 1010mm/1200mm
Front wiring scheme, standard depth is 440/630/820mm (distinguish upon current load)
Width: from 380mm (2 module) to 1140mm (6 module)

Example:

(i)Rear wiring MCC scheme: includes three specifications such as 380mm (6 moulded case circuit breakers can be installed), 570mm and 760mm (12 moulded case circuit breakers can be installed).

(ii)Rear wiring inlet scheme: three specifications such as 760mm, 950mm and 1140mm

Case protection: standard IP31, or increased up to IP54 according to project need
Size of whole framework does not change. It only changes for double door (outside door contains toughed glass) and room structure inside cabinet. Small adjustment is necessary.
Internal separation way: way 3 (standard type) and way 4, way 2 (capacity compensation cabinet and power control panel)

Standard scheme

1)Distribution: wire inlet, contact, feed, dual–power automatic switch system and three–power automatic switch system

2)Motor control: direct start, reversible start and star–triangle start and soft start

3)Reactive power compensation: adopt UA series contactor for switching capacitor of ABB Corporation, CLMD series dry capacitor with small volume and good heat dissipation Unit assembly

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抽屉



导轨



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Before wiring scheme



After the wiring scheme



IP54

Specification and scheme

1) Element contains six specifications: (width X height)
Three specifications: 380mmX (190/285/380) mm
Three specifications: 760mmX (190/285/380)mm
The cabinet can be equipped with 18 unit circuits at most and the maximum current capacity is 160A.

2) Assembly scheme
Moulded case circuit breaker for distribution (MCCB)
Motor control with moulded case circuit breaker

Structure feature:

1) There is reliable interlock between breaker and door of unit drawler (meaning that: only in breaking state of breaker can room door be opened)

2) Two groups of connectors of main circuit inlet and outlet of the drawler are put in preset position by steps, which reduce the operational moment force of plugging in and out drawler.

3) Movement of connectors adopt a way of boosting and extracting with guide rail and threaded rod. It has small operational force and good stability. Drawler has obvious position indication for connection, test and separation.

4) It means that after unit assembly is pulled out, connecting positions of assemblies inside switch cabinet will remain IP20 protection level.

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IPD (Intelligent Power Device) series products are intelligent automatic products issued by ABB Corporation for specific low–voltage system.

Products series include communication processor and HMI human–machine interface, M101–M/M 102–M intelligent motor control unit, PMC916 power monitor and Control device, EM–plus intelligent electric quantity meter. RTU monitoring and distributive control device and specific current transformer, etc.

IPD series products are complete and can realize change from low–end intelligent data collection to high–end intelligent field monitoring and management function.

IPD low–voltage switch is equipped so that communication connection with upper–class system can be established via Ethernet interface (TCP/IP agreement). Therefore, IPD is The important tool to change from conventional low–voltage switch cabinet to intelligent low–voltage switch cabinet. IPD products adopt standard communication interface and open communication agreement and can Be connected with management systems of any computers, for instance, BAS system, DCS system, distribution automation system and power dispatching system, etc.



HMI(人机界面)



PMC916仪表



M101–M、M102–M

Standard scheme of PC switch cabinet based on IPD distribution intelligent product:

1) Each intelligent switch cabinet should be equipped with a HMI (human–machine interface) for data collection and submission. Use diagram to visually show state information and measuring information of field switches.

2) Each ACB should be equipped with a EM–plus meter to measure and monitor parameters such as V, A, W, PF, KW and KWH…on and off of remote switch

3) Each sub–circuit should be equipped with a EM–plus meter to measure and monitor parameters such as V, A, W, PF and KW…

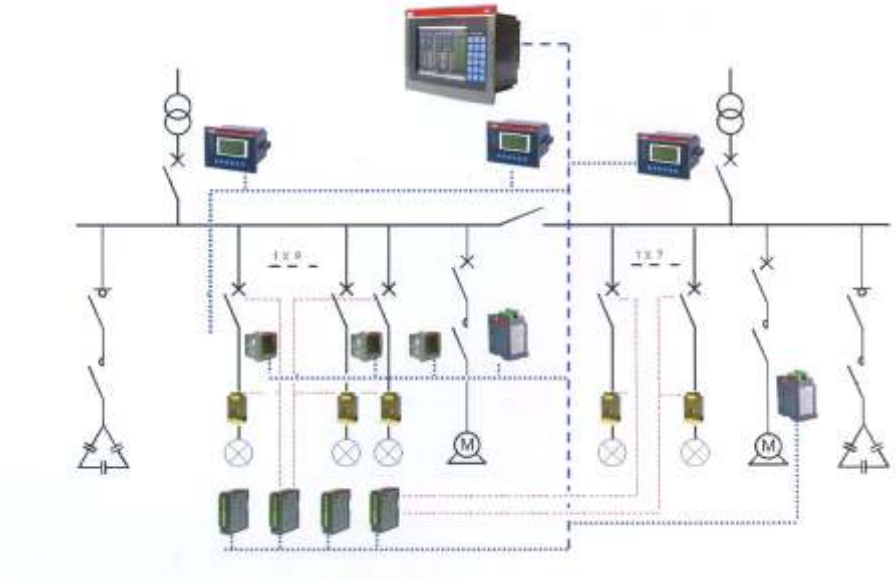
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Standard scheme of MCC motor–control center based on IPD distribution intelligent product:

1) Each MCC cabinet is equipped with a set of PLCAC500 for data collection and submission
2) Each motor circuit is equipped with a M101–M or M102–M motor–control device to measure circuit, protect overload and realize remote control. M101–M can only measure circuit. M102–M can measure voltage, current, active power and power coefficient, etc.
3) Each motor circuit is equipped with a MD2 meter .

network topology drawing



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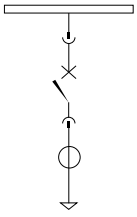
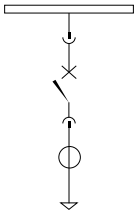
Low–voltage distribution systemCombined low–voltage switch cabinet(Authorized by ABB)

Type	MD190(HONOR)	
Rated insulation voltage VAC	1000	
Rated working voltage VAC	690	
Rated impulse withstand voltage kV	12	
Overvoltage type	IV	
Pollution level	3	
Rated working frequency	50Hz / 60Hz	
Maximum rated current of main bus–bar	~6300A	
Rated peak withstand current kA	220	
Rated short–time withstand current (kA effective value/1s)	100	
Maximum rated current of main bus	3200A (fixed separation way)	2000A (extraction way)
Rated peak withstand current kA	176	143
Rated short–time withstand current (kA effective value/1s)	80	65
Arc–protection test IEC60439 kA	50	
Mechanical feature		
(Standard overall height) mm	2185	
Effective height (1 module =190mm)	11 module	
(Width) mm	380/570/760/950/1140	
(Depth) mm	440/630/820/1010/1200	
Internal separation way (in conformation to IEC60439–1 standard)	1/2/3b/4b	
Protection level (in conformation to IEC60529 standard)	IP31/42/54	
Surface protection	high–temperature epoxy powder polymerization	
Standard color	RAL7032	

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Scheme for fixed separation way:

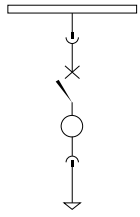
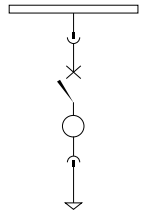
Scheme number	9					10	
Main circuit diagram							
Use	Feed and illumination					Feed and illumination	
Serial number	9A	9B	9C	9D	9E	10A	10B
Type and specification	quantity					quantity	
Moulded case circuit breaker							
T2–160 3P/4P	1						
T3–250 3P/4P		1					
T4–320 3P/4P			1				
T5–400 3P/4P				1		1	
T5–630 3P/4P					1		1
/5A circuit transformer	1	1	1	1	1	1	1
Height of unit room (mm)	285	285	380	380	475	380	475
Width of unit room (mm)	380						
Cabinet depth	1010/1200						
Notes	fixed vertical installation (inserting moulded case circuit breaker)						

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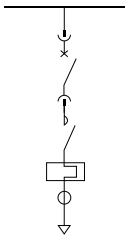
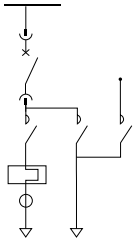
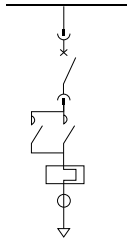
Scheme for non–extraction way:

Scheme number	11							12							
Main circuit diagram															
Use	Feed and illumination							Feed and illumination							
Serial number	11A	11B	11C	11D	11E	11F	11G	12A	12B	12C	12D	12E	12F	12G	12H
Maximum rated circuit (A)	160	160	160	160	250	250	320	160	160	160	160	250	320	250	630
Type and specification	quantity							quantity							
Moulded case circuit breaker															
T1–160 3P	1		1					1		1					
T2–250 3P		1		1					1		1				
T3–320 3P					1	1						1		1	
T4–400 3P							1						1		
T5–630 3P															1
/5A circuit transformer	1	1	3	3	3	3	3	3	3	3	3	3	3	3	3
Height of unit room (mm)	190		285		380			190		285				380	
Width of unit room (mm)	380							760							
Cabinet depth	380/760							760							
Notes	fixed vertical installation (inserting moulded case circuit breaker)														

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Scheme for fixed separation way:

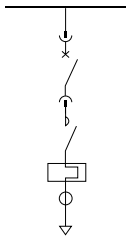
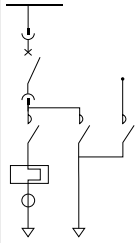
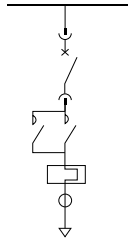
Scheme number	13						14			15					
Main circuit diagram															
Use	motor control (directly start)						motor control (star and triangle start)			motor control (directly start and reversible)					
Serial number	13A	13B	13C	13D	13E	13F	14A	14B	14C	15A	15B	15C	15D	15E	15F
Maximum rated circuit (A)	7.5	18.5	37	45	55	90	37	63	90	7.5	18.5	37	45	55	90
Moulded case circuit breaker	S2	S2	S2	S2	S3	S3	S2	S3	S3	S2	S2	S2	S2	S3	S3
	R20	R50	R100	R125	R160	R250	R80	R160	R250	R20	R50	R110	R125	R160	R50
Contactor 1	A16	A40	Q75	A95	A110	A185	A40	A75	A110	A16	A40	A75	A95	A110	A185
Contactor 2	–	–	–	–	–	–	A40	A75	A110	A16	A40	A75	A95	A110	A185
Contactor 3	–	–	–	–	–	–	A26	A50	A95	–	–	–	–	–	–
Thermal overload relay	TA25	TA42	TA75	TA110	TA110	TA200	TA42	TA75	TA110	TA25	TA42	TA75	TA110	TA110	TA200
	DU19	DU42	DU80	DU110	DU110	DU175	DU42	DU80	DU110	DU19	DU42	DU80	DU90	DU110	DU175
/5A circuit transformer	20/5	50/5	100/5	150/5	150/5	250/5	100/5	200/5	250/5	20/5	50/5	100/5	125/8	150/5	250/5
Height of unit room (mm)	380	570	570	570	570	760	570	760	760	380	570	570	570	570	760
Cabinet Width (mm)	380	570	570	570	570	570	760	760	760	570	760	760	760	760	760
Cabinet depth (mm)	1010/1200														
Notes	fixed vertical installation (inserting moulded case circuit breaker)														

Notes: cabinet widths are respectively 380, 570 and 750; overall cabinet height is 2185mm. Overall height of rooms available is 1805mm (main bus is 4000A or lower);
1710mm (main bus is 5000A or higher)

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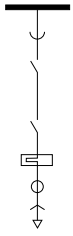
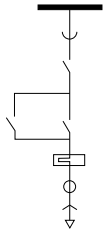
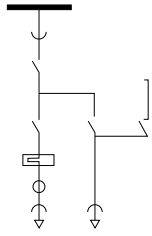
Scheme number	16						17			18					
Main circuit diagram															
Use	motor control (directly start)						motor control (star and triangle start)			motor control (directly start and reversible)					
Serial number	16A	16B	16C	16D	16E	16F	17A	17B	17C	18A	18B	18C	18D	18E	18F
Maximum rated circuit (A)	7.5	18.5	37	45	55	90	37	63	90	7.5	18.5	37	45	55	90
Moulded case circuit breaker	T2	T2	T2	T2	T3	T3	T2	T3	T3	T2	T2	T	T	T	T
	R20	R50	R100	R125	R160	R250	R80	R160	R250	R20	R50	R110	R125	R60	R50
Contactor 1	A16	A40	A75	A95	A110	A185	A40	A175	A110	A16	A40	A75	A95	A110	A185
Contactor 2	–	–	–	–	–	–	A40	A175	A110	A16	A40	A75	A95	A110	A185
Contactor 3	–	–	–	–	–	–	A26	A50	A95	–	–	–	–	–	–
Thermal overload relay	TA25	TA42	TA75	TA110	TA110	TA200	TA42	TA75	TA110	TA25	TA42	TA75	TA110	TA110	TA200
	DU19	DU42	DU80	DU90	DU110	DU175	DU42	DU80	DU110	DU19	DU42	DU80	DU90	DU110	DU175
/5A circuit transformer	20/5	50/5	100/5	125/5	150/5	250/5	100/5	200/5	250/5	0/5	50/5	100/5	125/5	150/5	250/5
Height of unit room (mm)	380	570	570	570	570	760	570	760	760	380	570	570	570	570	760
Cabinet Width (mm)	380	570	570	570	570	570	760	760	760	570	760	760	760	760	760
Cabinet depth (mm)	1010/1200														
Notes	fixed vertical installation (inserting moulded case circuit breaker)														

Notes: cabinet widths are respectively 380, 570 and 750; overall cabinet height is 2185mm. Overall height of rooms available is 1805mm (main bus is 4000A or lower);
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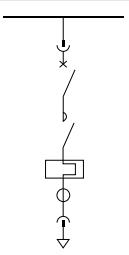
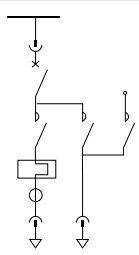
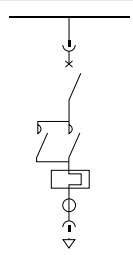
Scheme for extraction way

Scheme number	19						20					21	
Main circuit diagram													
Use	motor control (directly start)						motor control (reversibly start)					motor control (star ・ triangle start)	
Serial number	19A	19B	19C	19D	19E	19F	20A	20B	20C	20D	20E	21A	21B
Maximum capacity of motor (kW)	11	37	55	37	55	90	22	37	11	37	55	37	75
Type and specification	quantity						quantity					quantity	
Moulded case circuit breaker –T2–160 3P	1	1		1			1		1	1		1	
–T3–250 3P			1		1	1		1			1		1
Contactor –A30	1								2			1	
–A50							2			2			
–A75		1		1				2				2	1
–A95											2		2
–A110			1		1								
–A185						1							
–TA42 Thermal overload relay	1								1				
–TA75		1		1			1	1		1		1	
–TA110			1		1						1		1
–TA200						1							
/5A circuit transformer	1	1	1	1	1	1	1	1	1	1	1	1	1
Height of unit room (mm)	190	285	380	190	285	380	285	380	190	285	380	285	380
Cabinet width(mm)	380			760			380		760			760	
Cabinet depth(mm)	380/760			760			380/760		760			760	
Notes	fixed moulded case circuit breaker												

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Scheme number	22						23			24					
Main circuit diagram															
Use	motor control (directly start)						motor control (star・triangle start)			motor control (directly start–reversible)					
Serial number	22A	22B	22C	22D	22E	22F	23A	23B	23C	24A	24B	24C	24D	24E	24F
Maximum rated kW	7.5	18.5	37	45	55	90	37	63	90	7.5	18.5	37	45	55	90
Moulded case circuit breaker	T2	T2	T2	T2	T3	T3	T	T3	T3	T2	T2	T2	T	T3	T3
	R20	R50	R100	R125	R160	R250	R80	R160	R250	R20	R50	R100	R125	R160	R250
Contactor 1	A16	A40	A75	A95	A110	A185	A40	A75	A110	A16	A40	A75	A195	A110	A185
Contactor 2	–	–	–	–	–	–	A40	A75	A110	A16	A40	A75	A195	A110	A185
Contactor 3	–	–	–	–	–	–	A26	A50	A95	–	–	–	–	–	–
Thermal overload relay	Ta25	Ta42	Ta75	Ta110	Ta110	Ta200	Ta42	Ta75	TA110	Ta25	Ta42	Ta75	Ta110	Ta110	Ta200
	Du19	Du42	Du80	Du90	Du110	Du175	Du42	Du80	DU110	Du19	Du42	Du80	Du90	Du110	Du175
/5A circuit transformer	20/5	50/5	100/5	125/5	150/5	20/5	100/5	200/5	250/5	20/5	50/5	100/5	125/5	150/5	250/5
Height of unit room (mm)	190	285	285	475	475	570	380	380	570	285	285	285	475	475	570
Cabinet width (mm)	570	570	570	570	570	570	570	760	760	570	570	570	760	760	760
Cabinet depth (mm)	1010/1200														
Notes	drawer and switch are fixed														

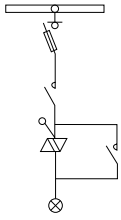
Notes: overall height of rooms available is 1710mm (main bus is 4000A or lower);
1615mm (main bus is 5000A or higher)

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MD190(HONOR)

低压配电系统、组合型低压开关柜（ABB授权）

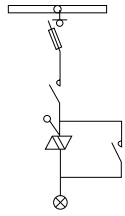
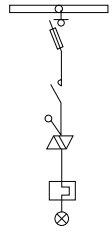
Rated voltage AC400V, environmental temperature 40℃, external connection; normal start (with by–pass):

Scheme number	25									
Main circuit diagram										
Use	motor–control circuit (soft start, 1 control 1)									
Serial number	25A	25B	25C	25D	25E	25F	25G	25H	25I	25J
Power(kW)	11	15	18.5	22	25	30	37	45	55	75
Current (A)	25	28	37	44	50	60	72	85	105	142
Separation switch fuse protector set	OS125		OS160						OS250	OS400
Fuse protector	70M1566		170M1568	170M1569		170M1570	170M1571	170M1572	170M3819	170M5809
Main circuit contactor By–pass contactor	A26	A30	A40	A50		A63	A75	A95	A110	A145
Soft starter	PST30		PST44	PST50		PST60	PST72	PST85	PST105	PST142
Thermal overload relay	installed in soft starter									
Unit occupation height	4.5U							9U		
Unit occupation width	3U									
Cabinet width (mm)	570/760/950									
Separation way	2a 2b									
Notes	E=25mm						U=190mm			

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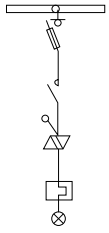
MD190(HONOR)

Low–voltage distribution systemCombined low–voltage switch cabinet(Authorized by ABB)

Scheme number	26							
Main circuit diagram								
Use	motor–control circuit (soft start, 1 control 1)							
Serial number	26A	26B	26C	26D	26E	26F	26G	26H
Power (kW)	90	110	132	160	200	250	290	415
Current (A)	175	193	250	300	340	432	470	524
Separation switch fuse protector set	OS400			OS630	OS400	OS630		
Fuse protector	170M5810	170M5812	170M5813	170M6812	170M5813	170M6813		
Main circuit contactor	A185	A210	A260	A300	AF400	AF460	AF580	AF580
By–pass contactor					installed in soft starter			
Soft starter	PST175	PST210	PST250	PST300	PSTB370	PSTB470	PSTB570	PSTB570
Thermal overload relay	installed in soft starter							
Unit occupation height	9U							
Unit occupation width	4U				3U		4U	
Cabinet width (mm)	760/950/1140							
Separation way	2a 2b							
Notes	U=190mm							

MD190(HONOR)

低压配电系统、组合型低压开关柜（ABB授权）

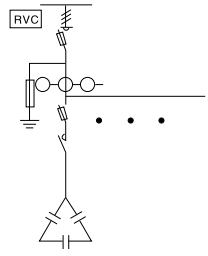
Scheme number	27			
Main circuit diagram				
Use	motor–control circuit (soft start, 1 controls 1)			
Serial number	27A	27B	27C	27D
Power (kW)	355	400	450	560
Current (A)	662	680	720	1050
Separation switch fuse protector set	OS800		OT1250	
Fast–acting fuse	170M8554		170M8556	170M8558
Main circuit contactor	AF750		AF1350	AF1650
By–pass contactor	installed in soft starter			
Soft starter	PSTB720		PSTB840	PSTB1050
Thermal overload relay	installed in soft starter			
Unit occupation height	9U			
Unit occupation width	4U			
Cabinet width (mm)	760/950/1140			
Separation way	2a 2b			
Notes	U=190mm			

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MD190(HONOR)

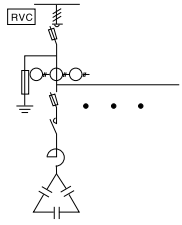
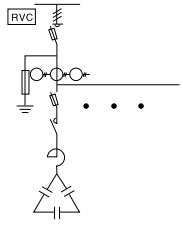
Low–voltage distribution systemCombined low–voltage switch cabinet(Authorized by ABB)

RC non–power compensation scheme (once circuit scheme):

Scheme number	28				
Main circuit diagram					
Serial number	28A	28B	28C	28D	28E
Compensation capacity	150	180	240	300	360
Elements in the scheme (type and specification)	quantity				
Separation switch					
OT400E03P	1	1			
OT630E03P			1	1	
OT800E03P					1
Power coefficient controller					
RVC–6	1	1			
RVC–8			1		
RVC–10				1	
RVC–12					1
Fuse protector–type separation switch (square)					
XLP000–6CC	6	6	8	10	12
Fuse protector					
OFAFC000GG80	18	18	24	30	36
Contactor for switching capacitors					
UA53–30–11	6				
UA63–50–11		6	8	10	12
Low–voltage capacitor					
CLMD33/43–25 KVAR	6				
CLMD33/43–30 KVAR		6	8	10	12
Cabinet width(mm)	570	760	760	950	950

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COMPLETE SETS OF EQUIPMENT

	7% reactor (mainly used to restrain 5 or more harmonic waves)						14% reactor (mainly used to restrain 3 or more harmonic waves)				
Scheme number	29						30				
Main circuit diagram											
Serial number	29A	29B	29BB	29C	29CC	29D	30A	30B	30BB	30C	30CC
Compensation capacity	180	240	240	300	300	360	180	240	240	300	300
Elements in the scheme (type and specification)	quantity						quantity				
Separation switch											
OT400E03P	1						1				
OT630E03P		1	1	1	1			1	1	1	1
OT800E03P						1					
Power coefficient controller											
RVC–6	1		1				1		1		
RVC–8		1			1			1			1
RVC–10				1		1				1	
Fuse protector–type separation switch (square)											
XLP000–6CC	6	8	1	10	2	2	6	8	1	10	2
XLP00			5		6	7			5		6
Fuse protector											
OFAFC000GG40			3		6	3			3		6
OFAFC000GG80	18	24		30		3	18	24		30	
OFAFC000G125			15		18	21			15		18
Contactor											
A30–30–10(需另配辅助触点CA5–01)			1		2	1			1		2
A63–30–11	6	8		10		1	6	8		10	
A95–30–11			5		6	7			5		6
Low–voltage capacitor											
CLMD43/20.8 KVAR 480V 50Hz			1		2	1					
CLMD53/40.8 KVAR 480V 50Hz	6	8		10		1					
CLMD63/60.8 KVAR 480V 50Hz			5		6	7					
CLMD43/22.5 KVAR 525V 50Hz							6		1		2
CLMD53/44.9 KVAR 525V 50Hz								8		10	
CLMD63/67.8 KVAR 525V 50Hz									5		6
Low–voltage reactor											
15KVAR 400V 50Hz			1		2	1			1		2
30KVAR 400V 50Hz	6	8		10		1	6	8		10	
45KVAR 400V 50Hz			5		6	7			5		6
Step length	2:2:2:2:2:2	2:2:2:2:2:2	1:3:3:3:3:3	2:2:2:2:2:2	1:1:3:3:3:3	1:2:3:3:3:3	2:2:2:2:2:2	2:2:2:2:2:2:2:2	1:3:3:3:3:3	2:2:2:2:2:2:2:2:2:2	1:1:3:3:3:3:3:3
Cabinet width(mm)	760	760	760	950	760	1140	760	950	760	1140	950

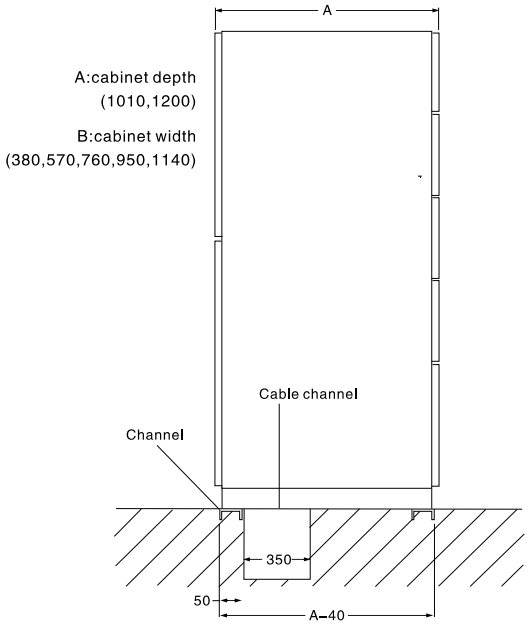
Notes: capacitor with reactor should be equipped with fan machine. The size and quantity of fan machines depend on various factors such as cabinet protection level and air inlet size. Please contact Low–Voltage Department of People Electrical Appliances Group Co., Ltd. for details.

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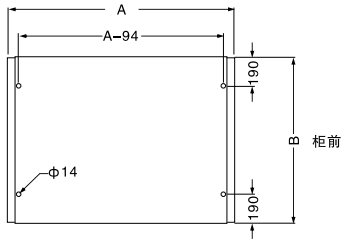
MD190(HONOR)

Low–voltage distribution systemCombined
low–voltage switch cabinet(Authorized by ABB)

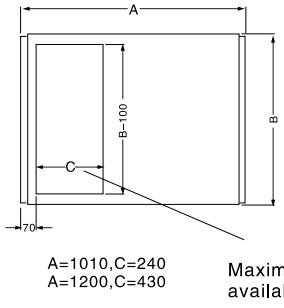
Installation foundation drawing



Inlet and Outlet Dimension of Cable at Bottom of Cabinet Drawing



Bolt Fixation and Installation Drawing



A=1010,C=240
A=1200,C=430

Maximum space available

Cable Inlet and Outlet Drawing