

TECHNICAL GUIDE

SafeGear® MCC

7.2, up to 50 kA arc-resistant switchgear



**Medium voltage SafeGear®
Motor Control Center: controlling
energy for a safe world**

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Medium voltage SafeGear® MCC

Motor control center overview

Ideally suited for heavy duty applications of medium voltage motors, SafeGear® MCC is the perfect control and protection for your motors and transformers.

Designed with the highest degree of safety and reliability to meet industrial requirements, SafeGear® MCC is suitable for most market needs.

It is equipped with mechanical interlocks, between the removable contactor truck and the front door, to increase operation and maintenance safety.

The withdrawable contactor design eliminates the need for an isolation switch. Due to the reduced number of parts and simple design, handling, maintenance and safety are improved.

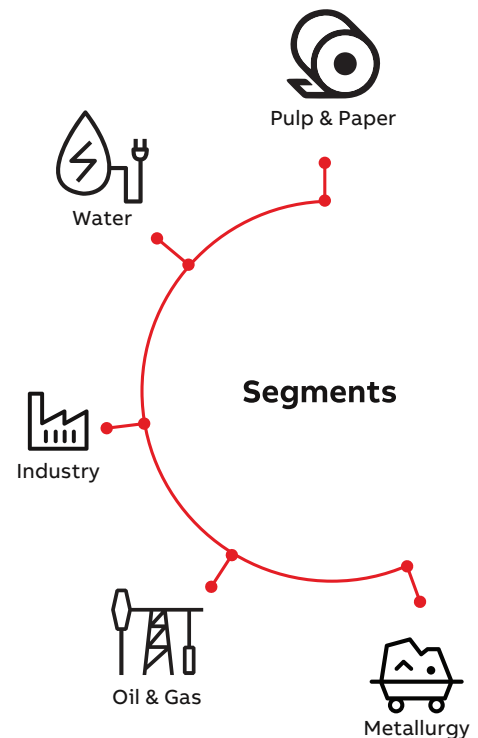
A segregated LV instrument compartment with Type 2B arc resistant construction provides a high level of operator safety.

For optimal flexibility, SafeGear® MCC is designed to be used in combination with SafeGear® switchgear.

Featuring galvanized steel construction, hem bending manufacturing techniques, and Delrin® arc-quenching contacts (PT module), SafeGear® MCC is designed with safety, reliability and durability in mind.

SafeGear® MCC is in compliance with following international standards:

- **UL 347**
Medium voltage AC contactors, controller and control centers
- **UL 50/50E**
Enclosure for electrical equipment
- **IEEE C37.20.2**
Standard for metal-clad switchgear
- **IEEE C37.20.7**
Guide for test metal-enclosed switchgear for internal arcing faults
- **CSA C22.2 No. 253-09**
Medium voltage ac contactors, controllers, and control centers
- **CSA 22.2 No. 14**
Industrial Control Equipment
- **IBC-2012 / CBC-2013 with Ip =1.0**
Seismically Qualified



Values and benefits

— 01 Arc-resistant design

SafeGear® arc-resistant Motor Control Center is available in Accessibility Type 2B, in accordance with IEEE C37.20.7. This differentiates ABB from competitors who typically test to Type 2 arc-resistant construction.

SafeGear® MCC does not require an additional transition section to be coupled to SafeGear, reducing initial investment and required space in the electrical room.

— 02 Up to two contactors per frame

SafeGear® MCC construction allows installation of up to two contactors per frame, up to 720 A, optimizing the quantity of frames and maximizing cost savings by more than 15% without considering the additional benefit of footprint reduction.

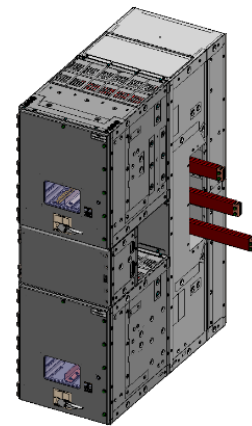
SafeGear® MCC is in compliance with the international standard IEEE C37.20.2 (metal-clad construction) improving safety for the users.

— 03 No transition section required

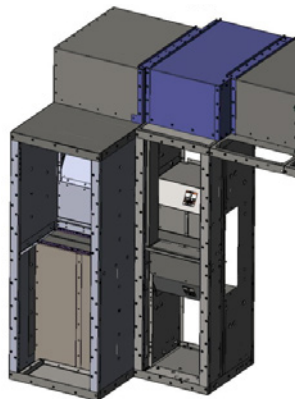
— 04 Metal-clad construction



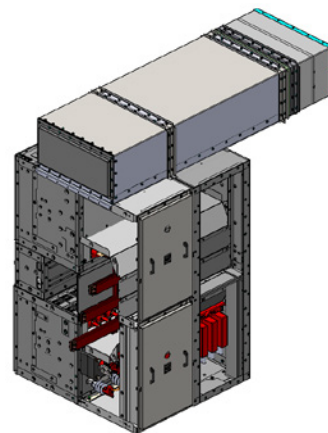
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Arc-resistant construction

SafeGear® meets today's challenge of controlling energy for a safe world

—
01 Non-arc-resistant
Motor Control Center
50 kA interruption
at LAPEM test lab

—
02 Arc-resistant
Motor Control Center
50 kA interruption
at LAPEM test lab

No electrical system is foolproof. There is always a chance that insulation system deterioration, equipment malfunction or human error will result in an arc fault, with potentially catastrophic consequences.

When an arc fault occurs in conventional switchgear, the heat of the arc (30,000° C), can melt and even vaporize, compartment materials and components. Flames and hot gases escape and ignite nearby materials. As air temperature increases in the enclosed space, so does the pressure. The rapid pressure build-up is explosive, hurling objects such as doors, panels, and components.

Disastrous arc faults cost managers of large-power installations hundreds of thousands of dollars in lost equipment and downtime, as well as needless deaths and injuries. The images below illustrate the consequences of an arc fault in conventional gear and the advantages of using SafeGear arc-resistant Motor Control Center.

SafeGear® not only meets conventional standards for metal-clad switchgear, it goes beyond ANSI standards to provide the protection of arc-resistant construction.

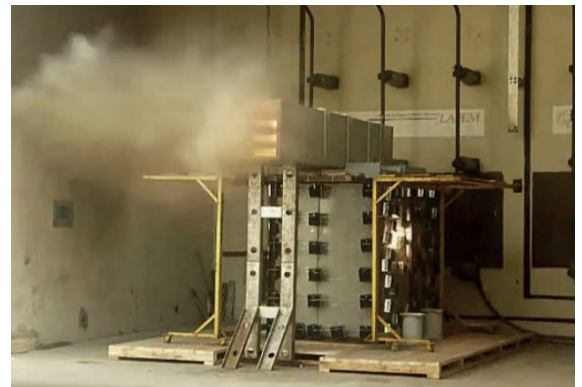
During an arc fault, expanding hot gases are carefully routed through a system of vents and flaps, generally through the roof and away from personnel at the front, rear or sides of the switchgear. Doors and panels are reinforced and sealed to withstand the temporary pressure surge until relief vents and flaps operate. Using techniques such as double sidewall and Type 2B construction, damage is contained into the gear inclusive when the low voltage compartment door is open.

SafeGear arc-resistant construction is design tested under actual arc-fault conditions and in conformance to ANSI/IEEE C37.20.7-2007 standards to verify:

- Cotton fabric test panels near the front, rear and sides do not ignite
- Doors and panels remain secure, except for minor distortion
- Components and molten materials are not ejected from the switchgear
- The arc does not burn through to the LV compartment (Type 2B)
- Ground connections remain intact



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SafeGear® MCC features

Characteristic	
Type of construction	Metal-clad
Arc-resistant accessibility type	2B
Short-time withstand current (main bus)	50 kA (2sec)
Rated voltage	Up to 7.2 kV
Rated contactor current*	400 A
Insulation level/power frequency/lighting impulse BIL*	7.2/20/60 kV
Rated frequency	60 Hz
Rated main bus current*	1200 A, 2000 A or 3000 A

* Ratings given are for service conditions within temperature and altitude limitations as defined by UL 347-2009/IEEE C37.20.2-2015 metal-clad standard.

Product highlights

- Fully compliant to CSA and UL 347 6th edition for Motor Control Centers
- One and two-high construction (available for both 400 and 720 Amps)
- Dead front that avoids access to live parts
- Automatic secondary disconnects
- Closed door PT racking
- SmartRack® remote racking system for contactors as well as PTs
- Optional ground studs for safety during maintenance
- Optional infrared windows available for temperature monitoring
- Optional surge arresters for lightning protection

Standard Service conditions

The listed SafeGear® MCC ratings are applicable under the following conditions:

- Minimum ambient temperature: -5°C
- Maximum ambient temperature: $+40^{\circ}\text{C}$
- Maximum 24-hour ambient relative humidity: 85% non-condensing
- The normal operational altitude is up to 1000 m above sea level. For higher altitude applications, please consult your ABB sales representative
- Non-corrosive and non-contaminated atmosphere



Features construction

—
01 Contactor
truck assembly

—
02 Single-phase
protection

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03 Shutters and
exhaust plenum

—
04 Exhaust plenum

—
05 Main Bus
and supports

The vacuum contactor and power fuses are mounted on a fully withdrawable rackable truck. This truck assembly eliminates the need for an isolation switch, reducing the number of moving parts and simplifying handling, maintenance and safety.

A blown fuse trip system can actuate a limit switch that will trip the contactor and energize an indicating lamp located on the instrument compartment cell door.

A metallic shutter blocks access to primary contacts when the contactor is in the Disconnected/Test position or removed from the SafeGear® MCC. The motion of the removable contactor opens and closes the shutter automatically.

In the event of an internal arc, the exhaust plenum will safely vent the gases outside of the building. ABB's Relion® family of protection and control relays for distribution applications provides the performance, safety, and ease-of-use that MCC specifiers and users demand. The Relion 615 and 620 series offer complete protection and control for motors and transformers in MCC applications and are characterized by their flexibility and performance in today's and future distribution schemes.

Bus supports and insulation materials are flame-retardant, track-resistant and non-hygroscopic.

Bus bars are made of copper and have fully rounded edges. The standard bus insulation is made of a solid epoxy coating standard (heat-shrinkable tubing is an available option).

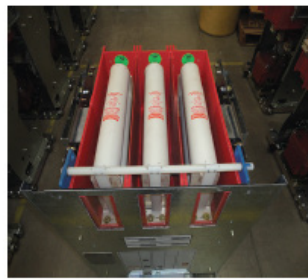
Connection joints, as well as bus bars, are silver-plated (tin plating is an option).

Current limiting power fuses are installed with the withdrawable contactor and are suitable for use with motor, capacitor or transformer applications. Power fuses for motor protection (Type R) will be equipped with bolted type connection. Optional power fuses for transformer protection (Type E) equipped with bolted type connection are also available.

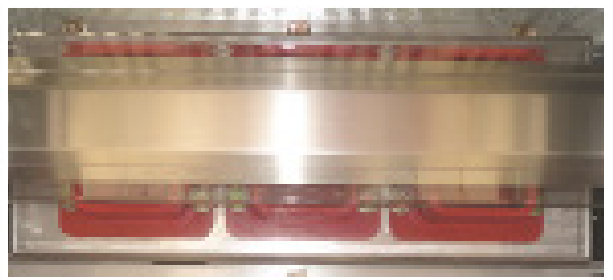
SafeGear® MCC uses Delrin arc-quenching contacts for PT contacts. A sleeve with a round conductor probe is inserted into a receptacle with recessed contacts. Due to its unique properties, Delrin performs as self-lubricating contacts, arcs created during load break conditions are extinguished by a gas emitted by the Delrin material as it heats. The PT contact design also includes a shutter assembly as standard.



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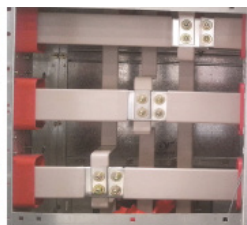
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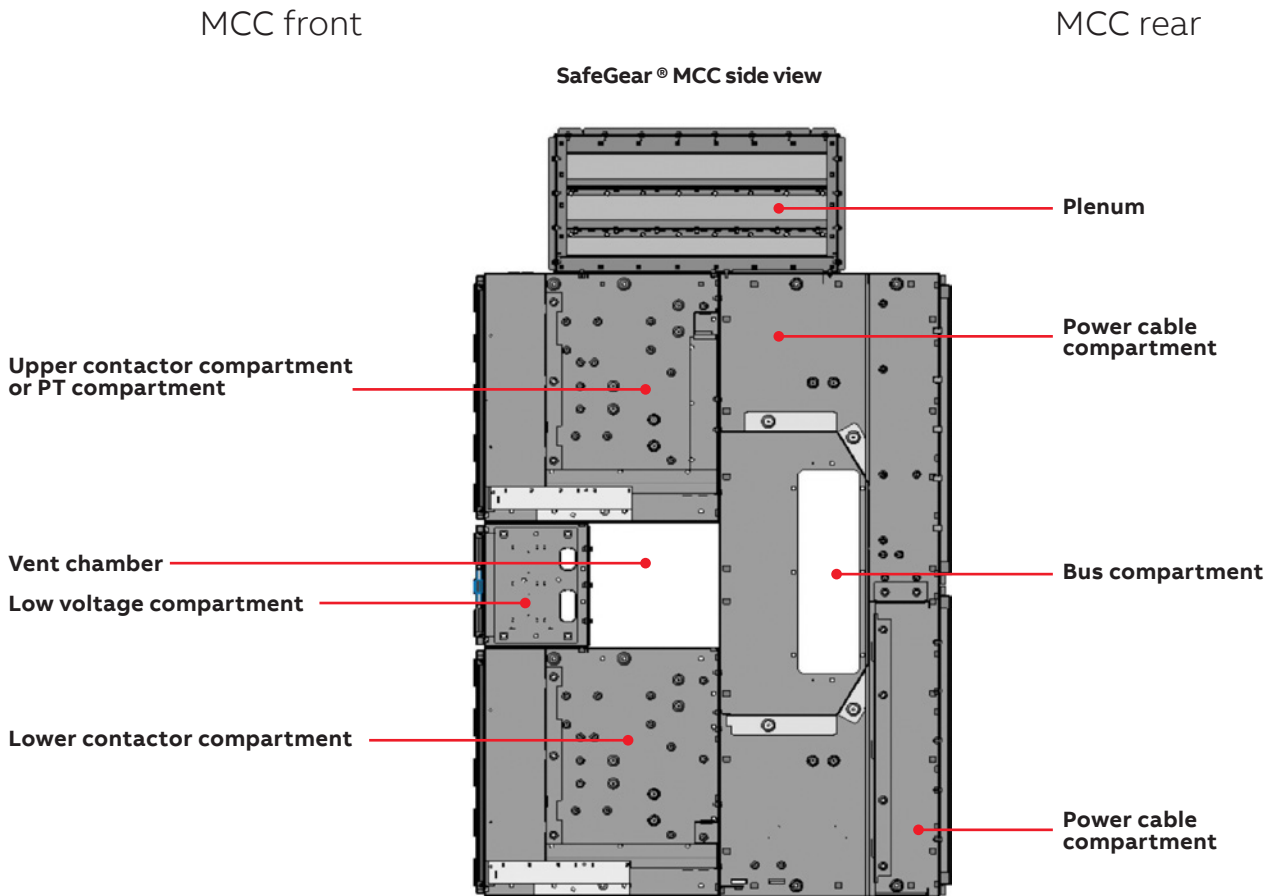


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Main parts

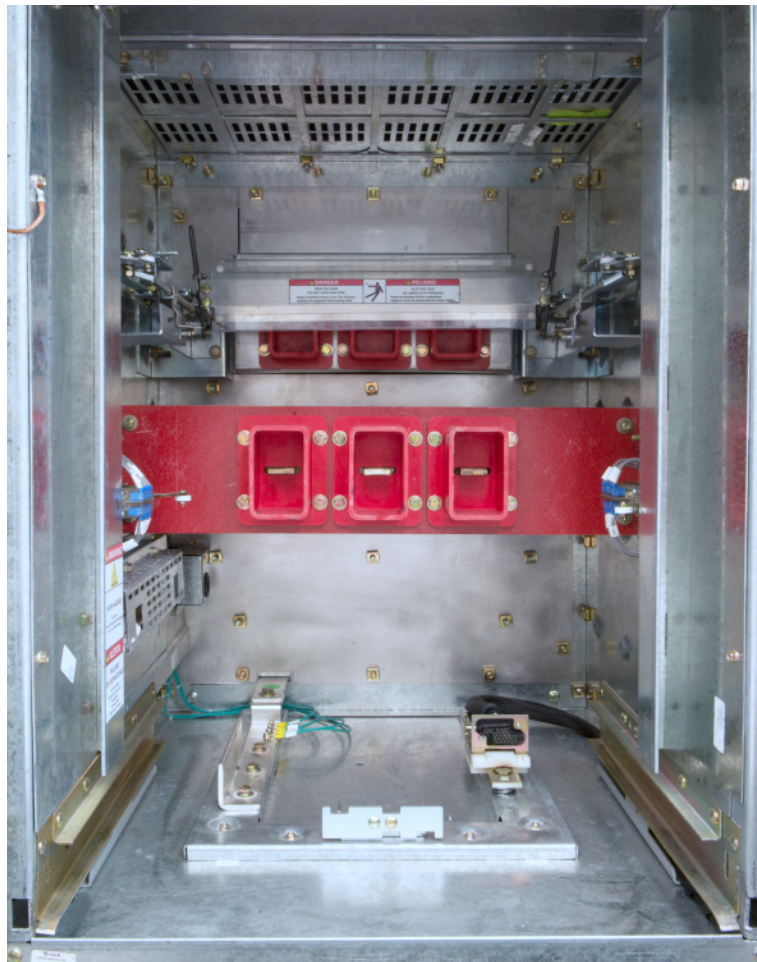


Contactor compartment

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01 Contactor
compartment
overview

A typical contactor compartment interior with the line side shutter closed is shown in figure 1. The interlock linkage operates the line side terminal guard piece (shutter). The one-high and two-high designs use a draw-out contactor for 400 or 720 A. The contactor racking system allows two positions, Disconnected-Test (DICONN.) and Connected (CONN.).

The contactor compartment includes interlocks to ensure proper sequencing and safe operation. Interlocks prevent racking while the contactor compartment door is open. The contactor can only be racked into the connected position with the door closed, maintaining the integrity of arc resistance. The door only opens when the contactor is in the disconnected position (DISCONN.). A door padlock is provided as standard to secure the contactor in place. The contactor compartment includes stationary support bushings and primary contacts for coupling with the contactor. Bolted and multipoint latch doors are available.

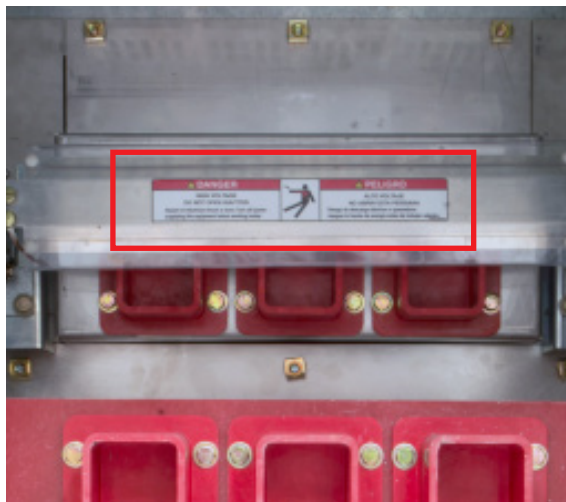


- 02 Shutter
- 03 Truck operated contact (TOC)

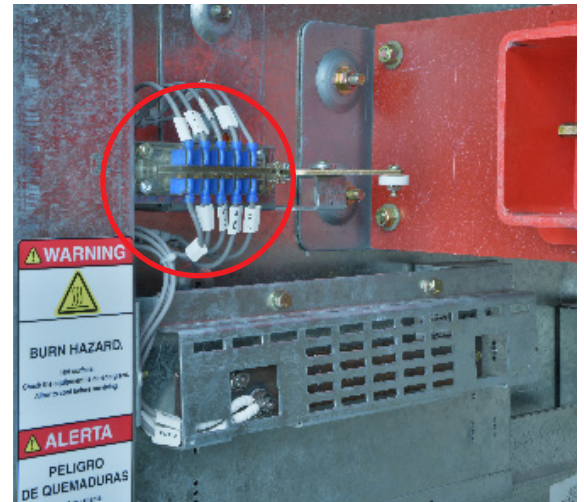
Metallic shutter, covered by a polycarbonate barrier, blocks access to primary contacts when the contactor is in the Disconnected-Test position or withdrawn from the cell. The motion of the withdrawable contactor opens and closes the shutter automatically with the contactor's position and does not depend on gravity. The shutter is driven simultaneously from both sides for smooth, balanced operation.

Interlocks prevent accidental opening of the shutters and access to energized contact stabs. Shutter is available with padlock provision.

Auxiliary switch contacts are actuated by the contactor position, Disconnected-Test (DISCONN.), and Connected position (CONN.). UL listed auxiliary switch is used, minimum 10 amperes, 600 volts AC.



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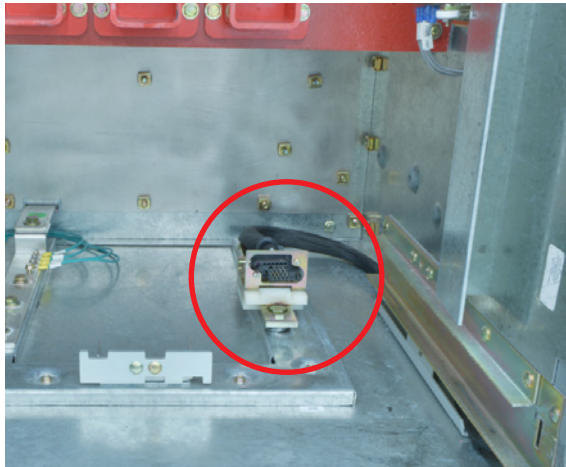
- 04 Automatic secondary connect system
- 05 Contactor grounding
- 06 Control wiring wireway

The contactor compartment includes a fully automatic secondary connect system, self-aligned, so manual connection is not required.

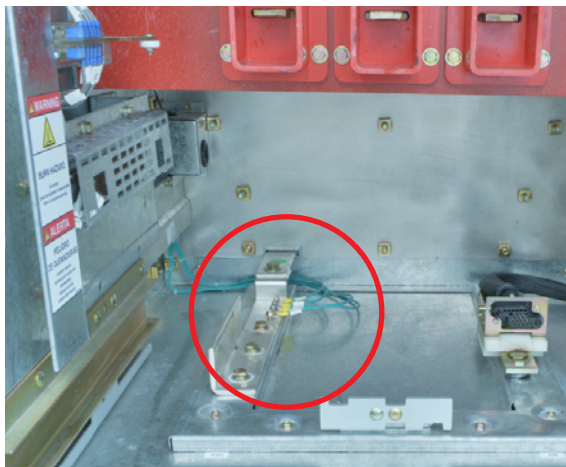
A secondary connector allows up to 25 pin contacts for control circuit. Connection is continuous during the contactor racking operation.

Control wiring wireway runs along both sides of the contactor compartment and into the control compartment. Ducts covered by galvanized steel create an enclosed wireway. An enclosed channel runs through the lower left side of the contactor compartment to the CT terminals.

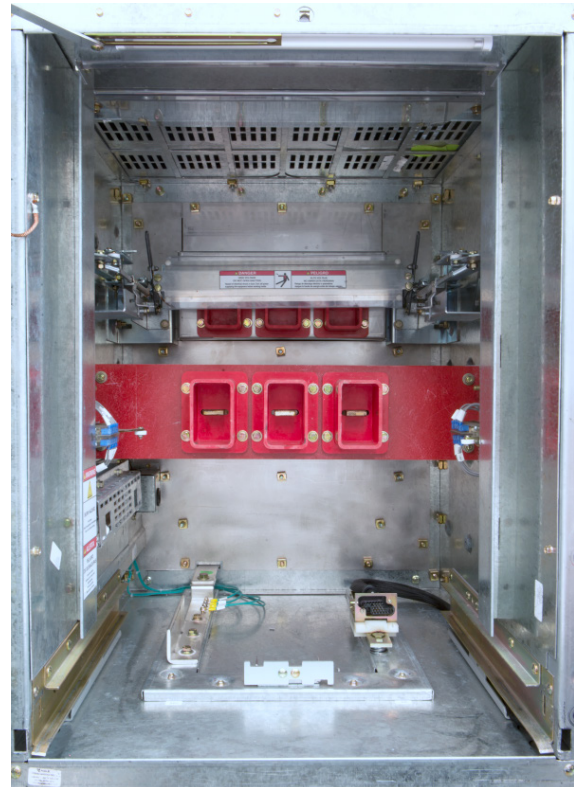
A grounding bar placed in the contactor compartment, interacts with the contactor grounding contact. Ground connection is continuous during the contactor racking operation. The ground bar is made of tin plated copper and have round edges.



— 04



— 05



— 06

- 07 Heater assembly
- 08 Low voltage compartment
- 09 Cable compartment

UL recognized strip heaters are provided in the bottom of the contactor compartment to reduce condensation and dampness in humid environments. Strip type heaters are used in various combinations. Power is provided by control power transformers.

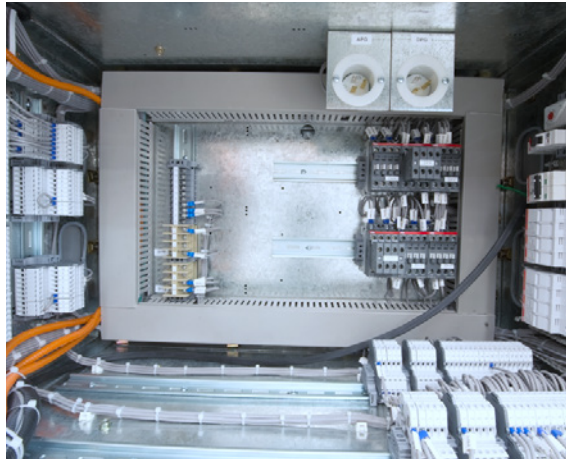
Rating power (W)	Rating voltage (V)	Part number
250	240	OT1202PCN129728
500	240	OT1205PCN129760

All protection and control devices are mounted in a specific low voltage compartment. Each low voltage control compartment is completely isolated and segregated from the medium voltage compartment according to metal-clad construction guidelines. This ensures safety for operations and maintenance personnel while they work on control and auxiliary circuits.

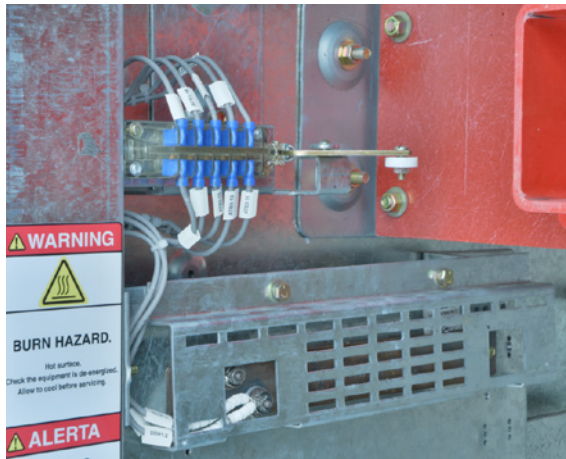
Devices and control switches are mounted on the door for easy readability and convenient access. Devices that do not require immediate access are mounted inside the compartment. The overall dimensions of the compartment are 30 inches wide, 19 or 57 inches high and 15 inches deep.

The power cable compartment is fully segregated from the other compartments. Located at the rear of the MCC, the cable compartment is segregated from the lower and upper compartments.

For lower or upper compartments, cable entry is rear either bottom or top. Easily accessible 2-NEMA cable lugs simplify power cable installation. The cable compartment has enough space for stress cones. Multiple cables that do not exceed the next dimensions may also be used.



07



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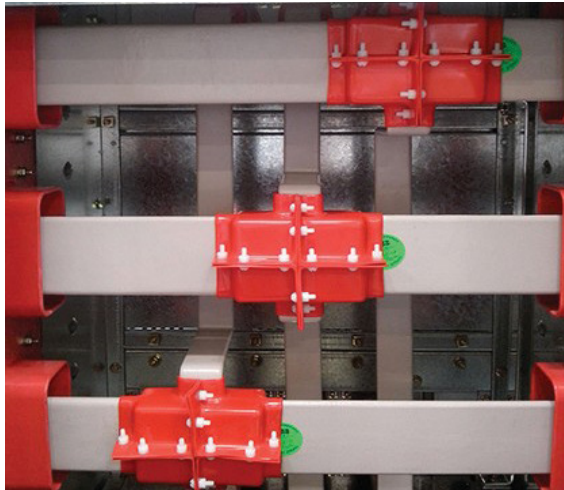
- 10 Main bus
- 11 PT compartment
- 12 Plenum
- 13 MCC

The available main bus ratings are 1200, 2000 and 3000 A. The main bus compartment can be accessed from the back by unbolting the rear covers. Bus supports and insulation materials are flame-retardant, track resistant and non-hygroscopic. Bus bars are made of copper and have fully round edges. Bus bars and connections are silver-plated (tin-plating is available as an option) and epoxic hysol insulation is standard (heat-shrinkable tubing insulation is an option).

SafeGear® MCC uses Delrin arc-quenching contacts for PT contacts. A sleeve with a round conductor probe is inserted into a receptacle with recessed contacts. Due to its unique properties, Delrin performs as self-lubricating contacts, arcs created during load break conditions are extinguished by a gas emitted by the Delrin material as it heats. The PT contact design also includes a shutter assembly as standard.

The plenum is provided to exhaust gases during an arc fault condition to the exterior of the building. The plenum is located above the upper contactor compartment and bus and cable compartments. The plenum construction, with external flanges, makes it easy to do field installation.

Each MCC lineup has a master nameplate, typically located on the horizontal wireway door of the left most section. Each MCC lineup is labeled with operation and warning labels.



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— 12



— 11

ABB	
Serial num. / Núm. serie	
Prod. year / Año de prod.	According with UL 347
Rated voltage / Tensión máxima [kV]	
System voltage / Tensión del sistema [kV]	
Main bus capacity / Capacidad del bus principal [A]	
Short time, sym. rms / Corriente de corto tiempo sim. rms [kA]	
Peak withstand current / Corriente pico [kA]	
Frequency / Frecuencia [Hz]	
Phases number / Número de fases	
Control voltage / Tensión de control [V]	
Enclosure type / Tipo de envolvente	
Ground bus size / Capacidad del bus a tierra [kA]	
Insulation levels / Niveles de aislamiento	
PF withstand / Sobretensión soportada a frecuencia industrial [kV]	
Impulse / Impulso [kV]	
Assembled in / Ensamblado en: S.L.P., México	

— 13

MCC Controller

General overview

The SafeGear® MCC Controller is a magnetically actuated and latched controller capable of a very high number of operations due to its robust design. Controller's ratings are 400 A and 720 A and NEMA Class E2. It conforms to latest international standards including UL 347, ICS3 part 2.



Controller features

- Fuse status indicator
- Position indicator
- Operation counter
- Controller status
- Local trip on the front side
- Blown fuse mechanism
- Extraction truck

Contactor model	HCV-5HA	HCV-5HAL (Latched type)	HCV-6KAU	HCV-6KALU* (Latched type)
Rated voltage	2400/4200/6900 V (7.2 kV Max)		2400V/4200/6900 V (7.2 kV Max)	
Rated current	400 A		720 A	
Interrupting capacity	7000A RMS Symmetrical @5000V Max.		7200 A	
	4500A RMS Symmetrical @7200V Max.			
Peak withstand current	15.8 kA		20 kA	
Impulse withstand	60 kV			
Permissible switching	1200/Hour	300/Hour	600/Hour	300/Hour
Mechanical life operations	2,500,000	250,000	1,000,000	200,000
Electrical life operations	250,000	250,000	200,000	
Closing time	50-110 ms		80-120 ms	
Opening time	10-60 ms		35-85 ms	
Arcing time	10 ms or less			
Pick-Up voltage AC or DC	70% (Cold) to 85% (Hot) AC or DC			
Drop-Out voltage AC or DC	40% (Cold) to 50% (Hot) AC or DC			
Rated control voltage AC	115/120 or 230/240 V 50/60 Hz		100-240V AC	
Rated control voltage DC	120/125 or 240/250 V		100-240V DC	
Trip voltage	-	24, 32, 48 ,125, 250 VDC	-	24, 32, 48 ,125, 250 VDC
Control circuit burden (Closing)	5.4 A peak @ 120 VAC, 670 VA (AC), 700 W (DC)		6 to 7.0 A @ 120 VAC, 840 VA (AC), 875 W (DC)	
Control circuit burden (Holding)	0.12 A Avg. @ 120 VAC,85 VA (AC), 85 W (DC)		0.8 to 1 A @ 120 VAC 48 VA	
Auxiliary contact arrange	3 N.O. - 3 N.C.	2 N.O.-2 N.C.	3 N.O.-3 N.C.	2 N.O.-2 N.C.
Auxiliary contact rating	10 A, 600 V (NEMA Class A600)			

Power fuses

Recognized Component R and E-rated fuses can be used. The following fuses are used with the contactor for motor or transformer applications.

Motor

Contactor model							
5.08kV				7.2kV			
Mersen catalog number	Size	Continuous ampere rating	No. of barrels	Mersen catalog number	Size	Continuous ampere rating	No. of barrels
A051B1DAR0-2R	2R	70	1	A072B1DAR0-2R	2R	70	1
A051B1DAR0-3R	3R	100	1	A072B1DAR0-3R	3R	100	1
A051B1DAR0-4R	4R	130	1	A072B1DAR0-4R	4R	130	1
A051B1DAR0-6R	6R	170	1	A072B1DAR0-5R	5R	150	1
A051B1DAR0-9R	9R	200	1	A072B1DAR0-6R	6R	170	1
A051B1DAR0-12R	12R	230	1	A072B1DAR0-9R	9R	200	1
A051B2DAR0-18R	18R	390	2	A072B1DAR0-12R	12R	230	1
A051B2DAR0-24R	24R	450	2	A072B1DAR0-19R	19R	300	1
A051B2DAR0-32R	32R	600	2	A072B1DAR0-18R	18R	390	2
A051B2DAR0-38R	38R	700	2	A072B1DAR0-24R	24R	450	2
A051B3DAR0-48X	48X	750	3	A072B1DAR0-32R	32R	540	2

R-rated fuses are intended to provide short circuit protection only. An R-rated fuse is not designed to protect against overloads. Relays used to protect against overloads.

Transformer						
5.5kV			8.25kV			
Mersen catalog number	Amp. rating	No. of barrels	Mersen catalog number	Amp. rating	No. of barrels	
A055B1DAR0-10E	10E	1	A083B2DAR0-125E	125E	2	
A055B1DAR0-15E	15E	1	A083B2DAR0-150E	150E	2	
A055B1DAR0-20E	20E	1	A083B2DAR0-175E	175E	2	
A055B1DAR0-25E	25E	1	A083B2DAR0-200E	200E	2	
A055B1DAR0-30E	30E	1	-	-	-	
A055B1DAR0-40E	40E	1	-	-	-	
A055B1DAR0-50E	50E	1	-	-	-	
A055B1DAR0-65E	65E	1	-	-	-	
A055B1DAR0-80E	80E	1	-	-	-	
A055B1DAR0-100E	100E	1	-	-	-	
A055B1DAR0-125E	125E	1	-	-	-	
A055B1DAR0-150E	150E	1	-	-	-	
A055B1DAR0-175E	175E	1	-	-	-	
A055B2DAR0-200E	200E	1	-	-	-	
A055B2DAR0-250E	250E	2	-	-	-	
A055B2DAR0-300E	300E	2	-	-	-	
A055B2DAR0-350E	350E	2	-	-	-	
A055B2DAR0-400E	400E	2	-	-	-	

Optional components

Selection guide

CTs per Phase

SAB	SAB-D	SAB + SAB-D	SCG-3	SCG-4	SCG-5
Up to 3	1	1/1	Up to 2	Up to 2	Up to 2

CT Part numbers

Primary amps	SAB-1	SAB-1D	SCG-3	SCG-4	SCG-5
50	923A329G01	923A331G01-M	7525A28G01	7525A29G01	7525A30G01
75	923A329G02	923A331G02-M	7525A28G02	7525A29G02	7525A30G02
100	923A329G03	923A331G03-M	7525A28G03	7525A29G03	7525A30G03
150	923A329G04	923A331G04-M	7525A28G04	7525A29G04	7525A30G04
200	923A329G05	923A331G05-M	7525A28G05	7525A29G05	7525A30G05
250	923A329G06	923A331G06-M	7525A28G06	7525A29G06	7525A30G06
300	923A329G07	923A331G07-M	7525A28G07	7525A29G07	7525A30G07
400	923A329G08	923A331G08-M	7525A28G08	7525A29G08	7525A30G08
500	923A329G08	923A331G09-M	7525A28G09	7525A29G09	7525A30G09
600	923A329G10	923A331G10-M	7525A28G10	7525A29G10	7525A30G10
800	923A329G11	923A331G11-M	7525A28G12	7525A29G12	7525A30G12
1000	923A329G12	923A331G12-M	7525A28G13	7525A29G13	7525A30G13
1200	923A329G13	923A331G13-M	7525A28G14	7525A29G14	7525A30G14
1500	923A329G14	923A331G14-M	7525A28G15	7525A29G15	7525A30G15
2000	923A329G15	923A331G15-M	-	7525A29G17	7525A30G17
2500	923A329G16	923A331G16-M	-	7525A29G18	7525A30G18
3000	923A329G17	923A331G17-M	-	7525A29G19	7525A30G19

01 Current transformers

CT models SAB or SCG by ABB (1-5A output) can be used. CTs are mounted on the load side bus, provided with insulating tube made of glass polyester GPO-3. Both SAB and SCG arrangements are supported by galvanized steel reinforcements.



Accessories

- 01 Ground sensor for lower compartment
- 02 Ground sensor for upper compartment
- 03 Surge Arresters
- 04 Load side terminals
- 05 Lift Truck
- 06 Extension Ramp

Zero sequence CT for MCC is Type BYZ-S by ABB, located on the floor directly under the load terminals for the lower compartment and located at the rear-middle of the frame for the upper compartment.

Bus bar terminals are provided with two holes (2-NEMA) prepared to connect the appropriate lugs. The lug kits can be supplied with each unit as an option.

Surge arresters are the mean of protection of medium voltage AC networks against both multiple atmospheric and switching overvoltages, as well as Very Fast Transients (VFT) to protect transformers, cables, motors and other medium voltage equipment. For indoor installation only, surge arresters can be Polim-D, MWD or Ohio-Brass type. Surge arresters are connected with NATVAR.

A lift truck is required to raise or lower the contactor to or from the upper contactor compartment. The lift truck has wheels for easy maneuvering in restricted space. The contactor has self-contained wheels for easy floor rolling and interlocks to fix the contactor into the lift truck during maneuvering.

The lower contactor compartment has provisions to put a ramp in front of it in order to withdraw the contactor, instead of using a crane or lift truck. This ramp carries the lower contactor outside of the contactor compartment for maintenance or service

Zero sequence CT selection guide

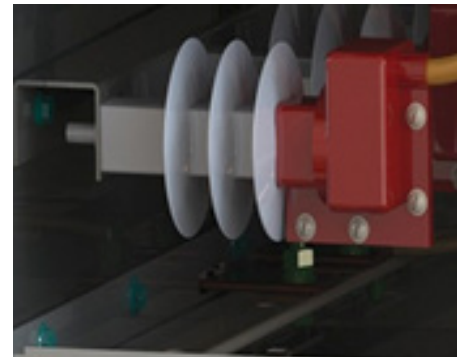
Primary ampere rating	IEEE Relaying accuracy	Style number
50	C10	6353C97H01
100	C20	6353C97H02



01



02



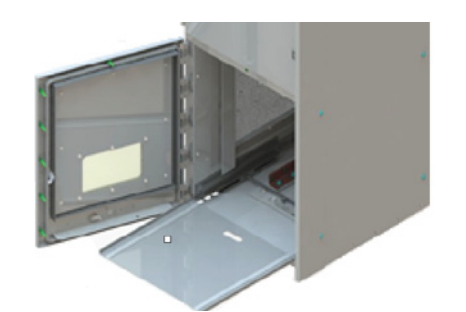
03



04



05



06

MCC electrical features and normal service conditions

MCC Electrical features	
Type of construction	Type 1 Gasketed
Arc-resistant accessibility type	2B
Short-time withstand current (main bus)	50kA (2 sec)
Rated main bus current	1200 \ 2000 \ 3000 A
Rated contactor current	400 and 720 A
Insulation level/Power frequency/ Lighting impulse	7.2/20/60 kV
Rated main bus current	1200 \ 2000 \ 3000 A

MCC normal operation conditions	
Minimum ambient temperature	-5°C
Maximum ambient temperature	40°C
Maximum 24 hour ambient relative humidity	85% non-condensing
Normal operational altitude above sea level	1000m
Normal non-corrosive and non-contaminated atmosphere	

Altitude correction factors (ACF)			
Altitude (m)	Altitude (ft)	ACF for dielectric withstand voltage	ACF for continuous current
1000	3300	1	1
1200	4000	0.98	0.995
1500	5000	0.95	0.991
1800	6000	0.92	0.987
2000	6600	0.91	0.985
2100	7000	0.89	0.98
2400	8000	0.86	0.97
2700	9000	0.83	0.965
3000	10 000	0.80	0.96
3600	12 000	0.75	0.95
4000	13 000	0.72	0.94
4300	14 000	0.70	0.935
4900	16 000	0.65	0.925
5500	18 000	0.61	0.91
6000	20 000	0.56	0.9

Intermediate values may be obtained by interpolation.

Maximum load controller ratings

The maximum load ratings for motor and transformer purpose are shown below. This is only a guide. Larger motors and transformers can be supported depending on performance ratings.

Maximum load ratings for motors										
Voltage rating (kV)	2.4		4.16		4.8		6.6		6.9	
Contacting rating (A)	400	720	400	720	400	720	400	720	400	720
Induction motors (HP)	1500	2700	2600	4700	3000	5400	4200	7500	4400	7800
Induction motors (kW)	1100	2000	1900	3500	2200	4000	3100	5800	3200	5800
Fuse type	24R	48X	24R	48X	24R	48X	24R	48X	24R	48X

Considerations: Efficiency 95%, PF=0.9, Start time: 10 sec, Service Factor=1.25 (According to NEC), Fusing Factor Protection=1.33. The fuses shown in chart were selected with the values above mentioned and they should only be used as reference. The final selection of power fuses is the responsibility of the customer based on system and load parameters and should be confirmed during engineering stage of the project.

Maximum load rating in kV for transformers								
Voltage Rating (kV)	2.4		4.16		4.8		6.9	
Contacting Rating (A)	400		400		400		400	
Transformers (kVA)	1000		2000		2500		1500	
Fuse type	400E		400E		400E		400E	

Fuses will conduct transformer magnetizing inrush current of 25 times transformer primary rated current for 0.1 seconds and 12 times for 0.01 second.

SafeGear® MCC applications

The MCC offers different options and configurations that allow a wide range of industry applications including:

Utilities and power plants

- Substations
- Power generation stations
- Transformer stations
- Switching stations
- Main and auxiliary switchgear

Industry

- Pulp and paper
- Cement
- Textiles
- Chemicals
- Food
- Automotive
- Oil and gas facilities
- Metallurgy
- Rolling mills
- Mines

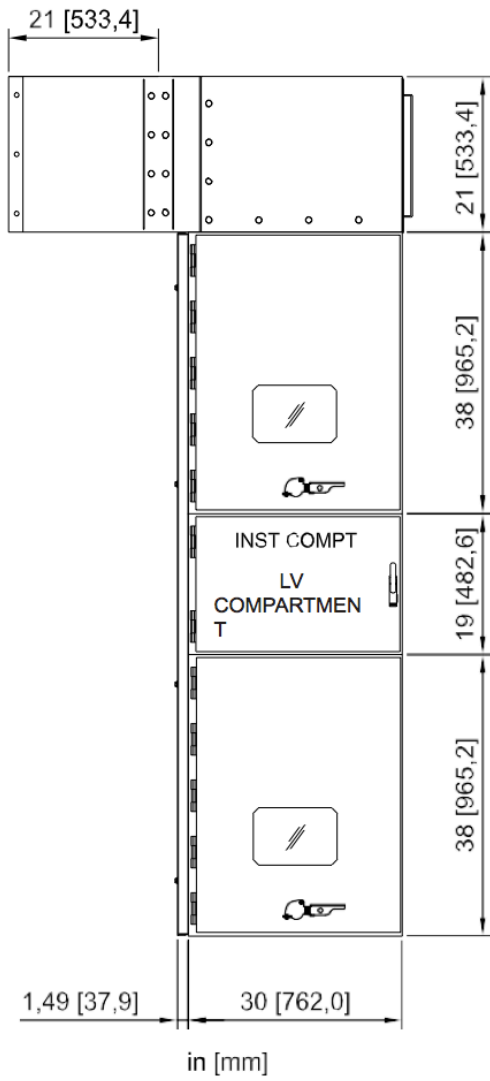
Marine applications

- Off-shore rigs
- Tankers
- Ships

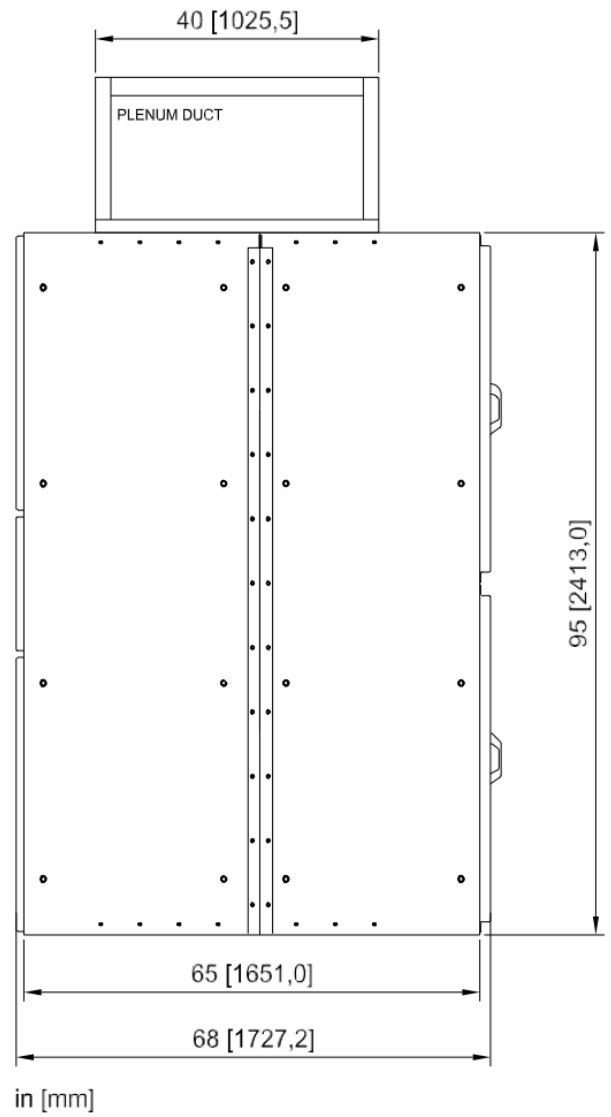
MCC configurations

Characteristic		
Description	Standard configurations	
Main bus	1200 /2000/3000A	
Power cable entry	Bottom or Top	
Bus bars finish	Silver Plated (Standar)	
Application	1-High	2-High 1-High and TPs Compartment
Bus bars Insulation	Epoxy Hysol	
Ground bus	With rear extension	Without rear extension
Contacting compartment door	Without mechanical trip	With mechanical trip
Description	Options	
CTs	Up to 3 sets of SAB or 1 of SAB-D	Up to 2 sets of SCG-3, SCG-4 or SCG-5
Surge protection	Surge arresters	
Ground stud	Up to 40kA	Up to 50kA
Ground sensor	Up to 50kA	
Stress cones	Up to 10" large	
Infrared windows	Crystal Window (Fluke)	Polycarbonate Window (IRIS)

General dimensions

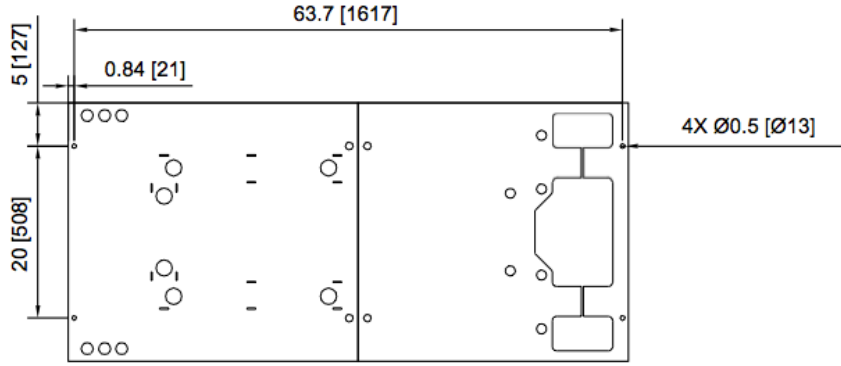


2H
Front View

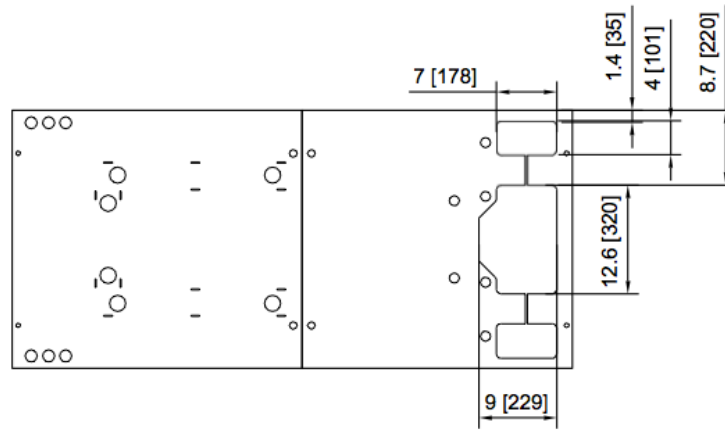


Side View

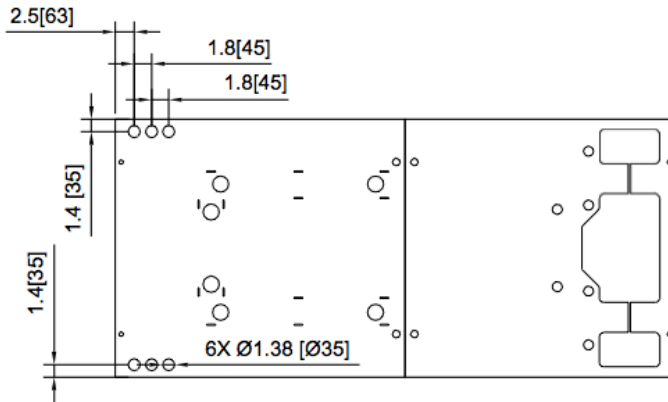
Anchor entry



Bottom View



Control wiring entry



MCC Weights

Description	Approx. weight (lb)	Approx. weight (kg)
1-High frame*	1544	700
2-High frame*	1985	900
Plenum per section	111	50
Plenum exhaust box (one per lineup)	155	70
Contactors with fuses	177	80

* Without contactor and instrumentation



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Your sales contact:

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