FGECO ELECTRIC

Motor Control Centers

Data sheet

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2025

Motor Control Centers

The Motor Control Center is a combination of motor starters, power feeders and interlocking relays in a modular enclosure. MCC is a compact solution allowing for better control, design and safe electrical system

Overview

- Fully compartmentalized (fixed/drawout) design conforming to form of separation Form-4B
- RAL7035 color is the standard, other colors can be provided upon request
- Neutral and earth busbars can be rated up to 100% of the main busbar
- Can be interfaced with the Building Management System (BMS) for monitoring and controlling the loads

Types of Starter

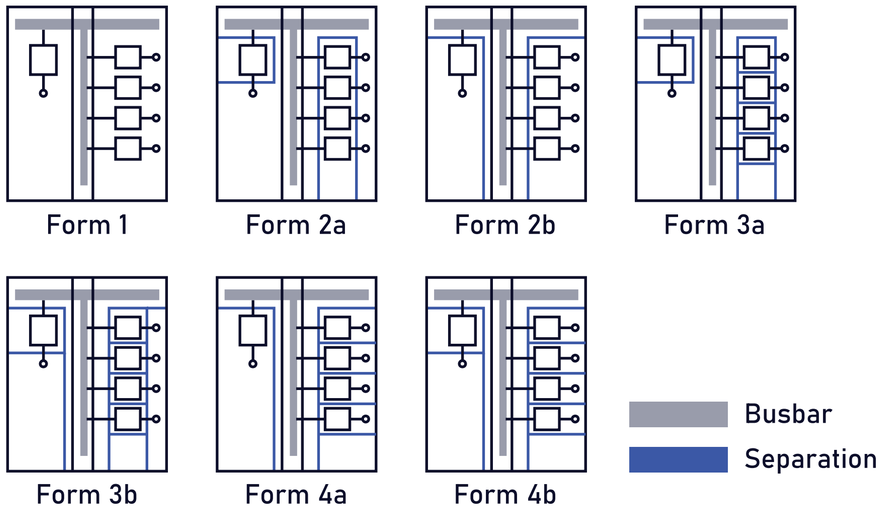
Draw-out Module	Fixed Module	
▪ Direct On-line	▪ Direct On-line	▪ Star/Delta
▪ Star/Delta	▪ Auto Transformer	▪ Soft Starter Unit
▪ Feeder	▪ Variable Speed Drive	

Technical Data

Enclosure Name	FGECO		
Electrical Data	Rated voltage	Rated operating voltage Ue	Up to 690 V
		Rated insulation voltage Ui	Up to 1000 V
		Rated impulse withstand voltage Uimp	Up to 12 kV
		Overvoltage category	Up to IV
		Material group	IIIa
		Degree of pollution	3
		Rated frequency	50/60 Hz
	Rated current	Busbar type	Pure copper bars, with 99.9%conductivity
		Rated current for main distribution busbar In	Up to 6100 A
		Rated short-time withstand current Icw (1@Sec)	Up to 100 kA
		Rated short-time withstand current Icw (3@Sec)	Up to 65 kA
		Rated peak withstand current Ipk	Up to 220 kA
		Rated current for dropper distribution in draw-out solution	Up to 1000 A
		Conditional short circuit current Icc	100 kA @ 0.2PF
	Incoming and outgoing	Incoming feeders	Up to 6300 A
		Distribution feeders	Up to 6300 A
		Motor feeders	250 A (110 KW@DOL or 45KW@SD)
	Arc fault containment	Prospective short-circuit current	Up to 100 kA @ 300 ms
	Direct contact protection	Form of separation	Up to 4b
		Protection against electric shock	Yes
	-	Seismic withstand capability test and induced vibrations	Yes
	-	Ventilation	Forced / Normal
Mechanical Characteristics	-	Number of drawer per section	Up to 20
	Degree of protection	External mechanical impacts strength IK	Up to IK10
		External degree of protection IP	IP55
	Steel components	Frame thickness	Up to 3 mm
		Sheet metal material	AluZinc steel Electrogalvanized / Stainless Steel
	-	Surface protection	Electrostatic powder coating/ Epoxy
	-	Standard colors	RAL7035*
	-	Panel mounting	Free standing only
General	Installation environment	Ambient temperature (°C)	40*
		Relative humidity	max 50% at 40°C
		Maximum altitude	Up to 2000m*
	Busbar	Busbar system	3 PH, Neutral and PE
		Busbar insulating material	PVC sleeving
		Busbar plating material	Bare / tin / silver

Separation Forms

Technical Data



Form	IEC Standard Definition	Specific Recommendations
1	No Internal separation	Protection over busbar for customer safety
2a	Separation of busbars from the functional units	Terminals not separated from busbars
2b	Separation of busbars from the functional units	Terminals separated from busbars
3a	Separation of busbars from the functional units and of all functional units from each other	Terminals not separated from busbars
3b	Separation of busbars from the functional units and of all functional units from each other	Terminals separated from busbars
4a	Separation of busbars from the functional units and of all functional units from each other, also separation of terminals from any functional unit	Terminals in the same compartment as associated functional units
4b	Separation of busbars from the functional units and of all functional units from each other, also separation of terminals from any functional unit	Terminals are not in the same compartment as the associated functional units

Ingress Protection (IP)

Standard IEC 60529 (February 2001) indicates the degree of protection provided by electrical equipment enclosures against accidental direct contact with live parts and against the ingress of solid foreign objects or water.

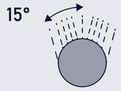
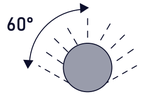
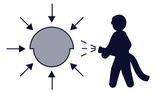
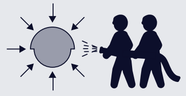
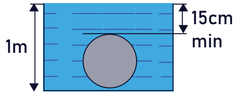
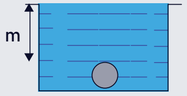
The IP code comprises 2 characteristic numerals and may include an additional letter when the actual protection of persons against direct contact with live parts is better than that indicated by the first numeral.

The first numeral characterizes the protection of the equipment against penetration of solid objects and the protection of people. The second numeral characterizes the protection of the equipment against penetration of water with harmful effects.

Protection Against Solid Bodies Data Table

Protection of Equipment			Protection of Persons
No.	Tests	Non-protected	Non-protected
1	Φ50mm 	Protected against the penetration of solid objects having a diameter greater than or equal to 50 mm	Protected against direct contact with the back of the hand (accidental contacts).
2	Φ12.5mm 	Protected against the penetration of solid objects having a diameter greater than or equal to 12.5 mm.	Protected against direct finger con- tact.
3	Φ2.5mm 	Protected against the penetration of solid objects having a diameter greater than or equal to 2.5 mm.	Protected against direct contact with a Ø 2.5 mm tool.
4	Φ1mm 	Protected against the penetration of solid objects having a diameter greater than or equal to 1 mm.	Protected against direct contact with a Ø 1 mm wire.
5		Dust protected (no harmful deposits).	Protected against direct contact with a Ø 1 mm wire.
6		Dust tight.	Protected against direct contact with a Ø 1 mm wire.

Protection Against Liquids Data Table

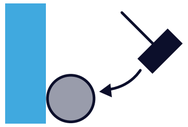
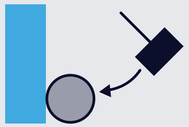
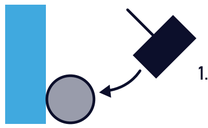
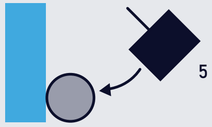
No.	Tests	Non-protected
1		Protected against vertical dripping water, (condensa- tion).
2		Protected against dripping water at an angle of up to 15°.
3		Protected against rain at an angle of up to 60°.
4		Protected against splashing water in all directions.
5		Protected against water jets in all directions.
6		Protected against powerful jets of water and waves.
7		Protected against the effects of temporary immersion.
8		Protected against the effects of prolonged immersion under specifi ed conditions.

Protected Against Access To Hazardous Parts With

Level	Tests
A	With the back of the hand.
B	With the finger.
B	With a ø 2.5 mm tool.
C	With a ø 1 mm tool.

IK Code
“Mechanical Impact Test”

The European standard EN 50102/IEC 62262 defines a coding system (IK code) for indicating the degree of protection provided by electrical equipment enclosures against external mechanical impact.

		Non-protected	
No.		H (cm)	Energy (J)
01		7.5	0.15
02		10	0.2
03		17.5	0.35
04		25	0.5
05		35	0.7
06		20	1
07		40	2
08		30	5
09		20	10
10		40	20

Standard NF C 15-100 (May 1991 edition), section 512, table 51 A, provides a cross-reference between the various degrees of protection and the environmental conditions classification, relating to the selection of equipment according to external factors.

Practical guide UTE C 15-103 contains tables showing the specifications required for electrical equipment (including minimum degrees of protection), according to the locations in which they are installed.