



PT Guna Era Manufaktur

Catalogue 2015



GAE MCC Modular-C

Standardized Motor Control Centres

General

Definition

Type-tested low-voltage switchgear and controlgear assembly (TTA), in compliance with CEI Standards, IEC Publications and the Accident Prevention Rules.

Fire Risk

Fault risk is reduced to a minimum by HRC fuse protection or current-limiting circuit-breaker ahead of each unit, by direct connection between plugs and fuses or circuit-breaker, by double metallic separation between the module and the busbars and between the modules themselves, and by adequate ventilating openings and vent outlets. The use of self-extinguishing insulants prevents unlikely fires from spreading.

Service Reliability

Withdrawable units permit the best service reliability and ready inspection and maintenance.

Inspection and Maintenance

Ease of inspection and maintenance testing is possible when the chassis is inserted with power circuits isolated. Testing is also possible when the chassis is withdrawn, using a proper connector available if required.

Main Advantages

- Compact and lightweight dimensions facilitate transport and installation.
- Possibility of putting the switchgears against the wall or back to back, saving space.
- Good cabling facilities from the front also with live switchgear (forms of internal separation 3b - 4b).
- Housings, withdrawable units and components are completely standardized and switchgear is readily extendible and changeable.
- Withdrawable units can be quickly set up and replaced, permitting simple on-site re-arrangement of each section without having to de-energise the switchgear

Personnel Safety

Ensured by:

- Strong mechanical interlocks that prevent incorrect operations.
- Positive earthing of the entire housing.
- Earthing of withdrawable parts throughout racking-in or withdrawing operation.
- No access to equipment as long as the chassis is withdrawn and without voltage.
- Degree of protection IP2X on the live parts.
- Clear mechanical indication for all chassis positions. Chassis can be locked with padlocks (up to 3) in test and disconnected positions.

General

Applications

Power stations and industrial plants.



Installation and Cabling

Cubicles are factory assembled and tested and need simply to be fixed to the floor through expansion blocks or to suitable channel irons, coupled and cabled. The side cabling duct doors can be easily removed without using any tools for the most accessibility.

Operation

All usual service operations are simplified and carried out from the front.

Versatility

A full range of motor starters covering all ratings and incorporating the chief electrical equipment is feasible, to satisfy any particular requirement.

Versions

For indoor installation, degree of protection IP42 on the outside enclosure with plugged in units and IP20 with drawn units; higher degrees of protection if required.

Construction

The housings are made of steel sheets no less than 1.5mm, thick bolted together and with electrostatically applied epoxy resin finish standard colour grey RAL 7032 (other colours by request). Chassis, chassis-tray and interior frame work are made of zinc coated steel sheets.

Test

Comprehensively tested to CEI standard and IEC recommendations.

Certificates

Short circuit tests have been carried out on MODULAR-C by Istituto Elettrotecnico Nazionale Galileo on horizontal and vertical busbars, units and earthing circuits at 51.5 kA rms for 1 sec. Obtaining the official certificate No. 23966.

Earthing

All the metal frameworks are interconnected and connects to the earthing circuit. An earthing copper bar, minimum cross section 200sqmm, runs the length of the switchgear, and of the chassis-trays. The sliding surfaces of the chassis-trays make the earthing of the withdrawable chassis.

Standard Accessories

- Lifting hooks
- Steel covers at each end
- Installation drawings and electrical diagrams
- Indication plates
- Cover plates for covering unoccupied spaces

Optional Extras

- Anti - Condensation heaters with thermostat or humidistat
- Channel section irons.

General

A - Withdrawable Unit

Each unit consists of a completely withdrawable chassis housing the equipment and the relevant chassis – tray screwed to the framework.

They are both self aligning, and modules 1, 2, 3, and 4/11 are available.

Due to the considerable depth of the chassis the space available for the equipment is very large.

Each unit can accommodate up to 6 push buttons, indicating lamp etc. and a 48mm. Instrument including the optional thermal relay reset. Chassis can be in service, inserted with power circuit isolated, isolated and withdrawn.

No tools are necessary to operate the chassis. All service operation are carried out from the front, operating one of the two contains fuse holder and load break switch or current-limiting circuit-breaker, directly operated by the chassis operating handle. 22 control terminal per starter are normally fitted, each one with double faston for connecting 44 cables up to 6 sqmm. All the plug-in connectors are self aligning, self cleaning and use anti-loosening devices and inoxidizable parts. The contacts are made on silver plated copper. Withdrawable units are provided with identification label, limit switch and insulating cover on the main terminals.

B - Busbar Compartement

It houses horizontal and vertical busbars made of electrolytic copper bar with rounded edges, and is completely segregated from the rest of the cubicle. Horizontal busbars are normally tinned and vertical busbars are nickel-plated, (silver plated if required), sized to withstand the thermal and electrodynamic stresses due to the short circuit currents of 50kA rms for 1 sec. Horizontal busbar joints are easily achieved from the front and the whole horizontal-vertical busbars system can be completely removed from the front when the switchgear is on-site.

C - Side Cabling Duct

Access to the duct is from the front, via a large removable door provided with 2 bolts. The duct houses main and control terminals, separately arranged. Suitable brackets on the two hand sides of each duct enable main and control cables to be separately anchored. Top or bottom cables entry arrangements are catered for. Control cabling for interconnections can be accommodated in a large duct on the top of the section.

Product Qualifications



Istituto Elettrotecnico Nazionale
Galileo Ferraris



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RAPPORTO DI PROVA

N. 34291-02 costituito di 56 pagine e rilasciato in data 20 febbraio 2005

a EL.CA. Elettromeccanica Canelli di Daniela Canelli & C. S.a.s. - Novara

conforme alla richiesta ordine n. 6209 in data 2 maggio 2004

Oggetto : Apparecchiatura assiemata per bassa tensione.

Costruttore : EL.CA. Elettromeccanica Canelli di Daniela Canelli & C. S.a.s. - Novara

Tipo : MODULAR-C

Data di ricevimento in Istituto : 13 luglio 2001

Esemplari presentati : 1

Dati nominali assegnati dal Committente all'oggetto per le prove:

- Tensione nominale : 690 V ; - Corrente nominale : 2300 A; - Frequenza nominale : 50 Hz.

Le caratteristiche dell'oggetto in prova sono riportate nella pagina 2 di 56.

Data delle prove : 16, 17 e 24 luglio e 1 e 2 agosto 2001

Esemplari provati : 1

Gli esemplari provati sono identificati con riferimento ai seguenti allegati:

- n. 3 disegni EL.CA. S.a.s.: n. 1670 foglio 1 di 5, n. 1670 foglio 2 di 5 e n. 1670 foglio 3 di 5 (pagine 31 + 33 di 56);
- n. 1 disegno IEN "Galileo Ferraris": n. D1 (pag. 34 di 56);
- n. 2 fotografie: F1 e F2 (pagine 35 + 36 di 56).

Prove richieste dal Committente ed eseguite presso l'IEN in accordo con:

- norma : - CEI EN 60439-1 (quarta edizione), fascicolo 5862 (novembre 2000), classificazione CEI: 17-13/1, corrispondente alla pubblicazione IEC 439-1 (1999).
- paragrafi : - 8.2.1 (Verifica dei limiti di sovratemperatura);
- 8.2.2.4.1 (Prova di tenuta a frequenza industriale del circuito principale);
- 8.2.2.4.2 (Prova di tenuta a frequenza industriale dei circuiti ausiliari);
- 8.2.2.6 (Prova di tenuta alla tensione a impulso del circuito principale);
- 8.2.2.6 (Prova di tenuta alla tensione a impulso dei circuiti ausiliari);
- 8.2.3 (Verifica della tenuta al cortocircuito sul circuito principale e sulle unità di uscita estraibili);
- 8.2.4.2 (Verifica della tenuta al cortocircuito del circuito di protezione);
- 8.2.5 (Verifica delle distanze di isolamento in aria e superficiali);
- 8.2.6 (Verifica del funzionamento meccanico);
- 8.2.7 (Verifica del grado di protezione).

Le modalità, le condizioni ed i risultati delle prove sono riportati nel seguito.

I risultati riportati nel presente documento si riferiscono esclusivamente agli esemplari descritti e alle condizioni di misura specificate. Ogni estensione dei risultati ad altri esemplari e ad altre condizioni di misura esula dallo scopo del documento.

Le misure delle grandezze di cui al presente documento sono espresse, in accordo con quanto disposto dal D.P.R. 12 agosto 1982, n.802, mediante le unità del Sistema Internazionale delle unità di misura (SI), definito ed approvato dalla Conferenza Generale dei Pesi e delle Misure (CGMP). In accordo con quanto stabilito dalla legge 11 agosto 1991, n. 273, la riferibilità alle unità SI è assicurata dai campioni nazionali realizzati e conservati dagli Istituti metrologici primari (Istituto di Metrologia Gustavo Colonnetti del CNR, Istituto Elettrotecnico Nazionale Galileo Ferraris ed Istituto Nazionale di Metrologia delle Radiazioni Ionizzanti dell'ENEA). L'incertezza di misura è dichiarata come incertezza estesa corrispondente al livello di fiducia del 95% ed è ottenuta moltiplicando l'incertezza tipo per il fattore di copertura k specificato.

Lo Sperimentatore

Il Responsabile del
Settore Elettromeccanica

(Oriano Bottauscio)

La riproduzione del seguente documento è ammessa solo in copia **conforme integrale**. Può essere ammessa la riproduzione conforme parziale di questo documento soltanto su autorizzazione scritta dell'IEN, da riportare con il numero di protocollo in testa alla riproduzione.

Type tested assembly as per IEC 60439-1. CESI Certification.

Product Qualifications

Electrical Specification

Description	Data
Rated Voltage	up to 1000 V
1 Minute Power frequency Voltage	2500 V
Rated Frequency	50 / 60 Hz
Main Busbar Rating	800 - 1400 - 2500 A
Vertical Busbar Rating	800 A
Rated Short Time Current (1s)	50 kA
Rated Peak Withstand Current	125 kA
Auxiliary Circuits Rated Voltage	380 V
Distribution Three Pole or Four Pole	25
Maximum Rating of a "Withdrawable" Starter	400 A

Minimum Size of The Units

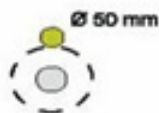
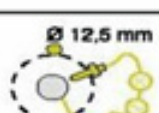




302Motor Power 380V-AC3 kW	Unit Module	Incoming Plug-in Connectors A	Outgoing Plug-in Connectors A	Fuse-Holder	Load Break Switch A	Current-Limiting Circuit-Breaker A
DOL Starter						
4	1/11	150	63	DIAZED 25A	80	100
5,5	1/11	150	63	DIAZED 25A	80	100
7,5	1/11	150	63	NH00	125	100
11	1/11	150	63	NH00	125	100
15	1/11	150	63	NH00	125	100
18,5	1/11	150	63	NH00	125	100
22	1/11	150	63	NH00	125	100
30	1/11	150	63	NH00	125	100
37	1/11	150	150	NH00	125	100
55	2/11	150	150	NH1	250	200
75	2/11	300	250	NH1	250	200
90	2/11	300	250	NH1	250	200
132	2/11	300	2 x 150	NH2	250	315
200	4/11	2 x 300	2 x 150	NH3	400	
Reverse Starter						
4	1/11	150	63	DIAZED 25A	80	100
5.5	1/11	150	63	DIAZED 25A	80	100
7.5	1/11	150	63	NH00	80	100
11	1/11	150	63	NH00	80	100
18.5	1/11	150	63	NH00	80	100
22	1/11	150	63	NH00	80	100
30	1/11	150	63	NH00	80	100
Star - Delta Starter						
11	1/11	150	63 6P	NH00	80	100
18.5	2/11	150	63 6P	NH00	80	100
22	2/11	150	63 6P	NH00	80	100
30	2/11	150	63 6P	NH00	80	100
37	2/11	150	63 6P	NH00	125	100
55	3/11	150	63 6P	NH1	250	200
75	3/11	300	2 x 150	NH1	250	200
90	3/11	300	2 x 150	NH1	250	200
132	4/11	300	2 x 150	NH2	250	315
200	4/11	2 x 300	2 x 250	NH3	400	

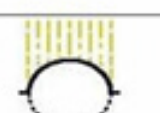
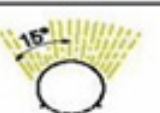


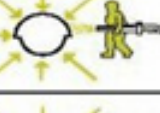


Note - Fuse Holder and load switch or current-limiting circuit-breaker in option

Product Qualifications

Dust & Waterproof up to IP54 as per IEC 529-1

IP 54

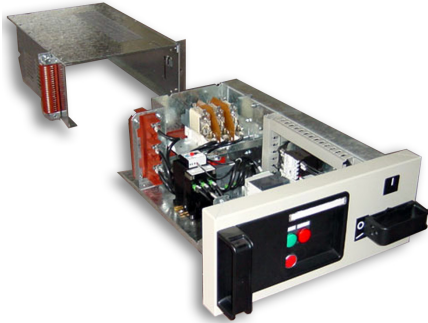
1st Figure: protection against solid bodies		
IP	TESTS	
0		No protection
1	 $\varnothing 50 \text{ mm}$	Protected against solid bodies larger than 50mm (e.g. accidental contact with the hand)
2	 $\varnothing 12.5 \text{ mm}$	Protected against solid bodies larger than 12.5mm (e.g. finger of the hand)
3	 $\varnothing 2.5 \text{ mm}$	Protected against solid bodies larger than 2.5mm (tools, wires)
4	 $\varnothing 1 \text{ mm}$	Protection against solid bodies larger than 1mm (fine tools, small wires)
5		Protected against dust (no harmful deposit)
6		Completely protected against dust

2nd Figure: protection against liquids		
IP	TESTS	
0		No protection
1		Protected against vertically-falling drops of water (condensation)
2	 15°	Protected against drops of water falling at up to 15° from the vertical
3	 60°	Protected against drops of rainwater at up to 60° from the vertical
4		Protected against projections of water from all directions
5		Protected against jets of water from all directions
6		Completely protected against jets of water of similar force to heavy seas
7	 1 m 15 cm min	Protected against the effects of immersion

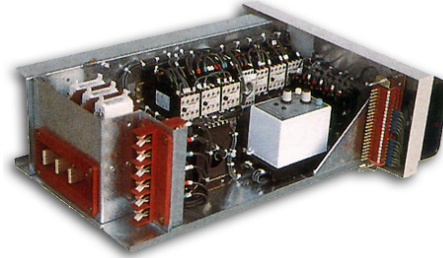
- Fully compliant with the separation requirements up to Form 4a as per IEC 60439-1 or Form 4a Typical 7 as per BS 60439-1.
- Enable safe modifications of the equipment zone under energized conditions

Withdrawable Unit

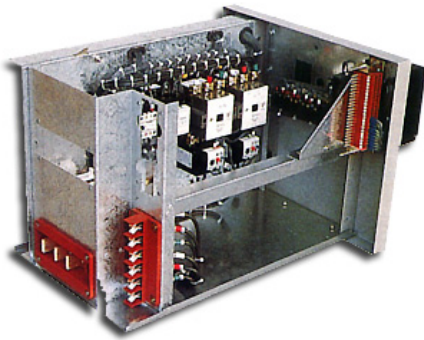
Each unit consist of completely withdrawable chassis housing the equipment and the relevant chassis-tray screwed to the framework.



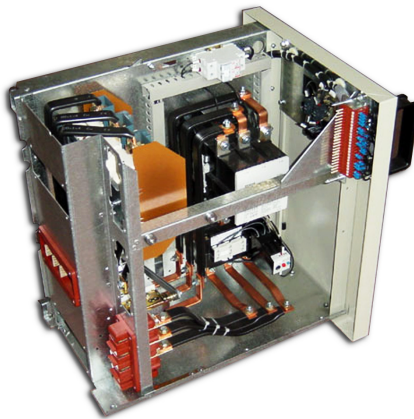
Chassis Module 1 And The Relevant Chassis-Tray



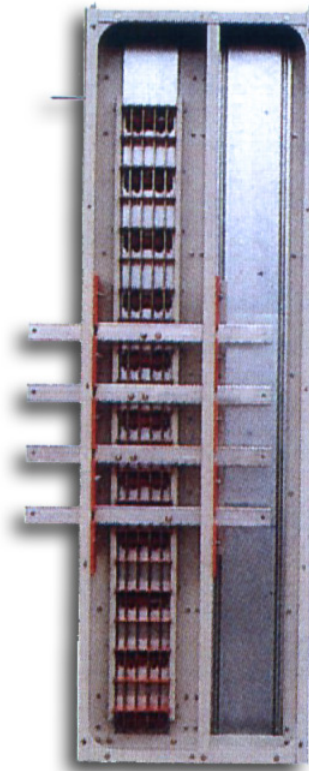
Dahlander Starter Module 1



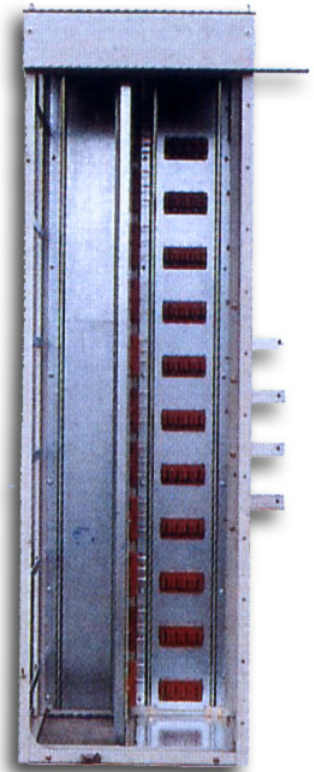
Star-Delta Starter Module 2



Dol Starter Module 3

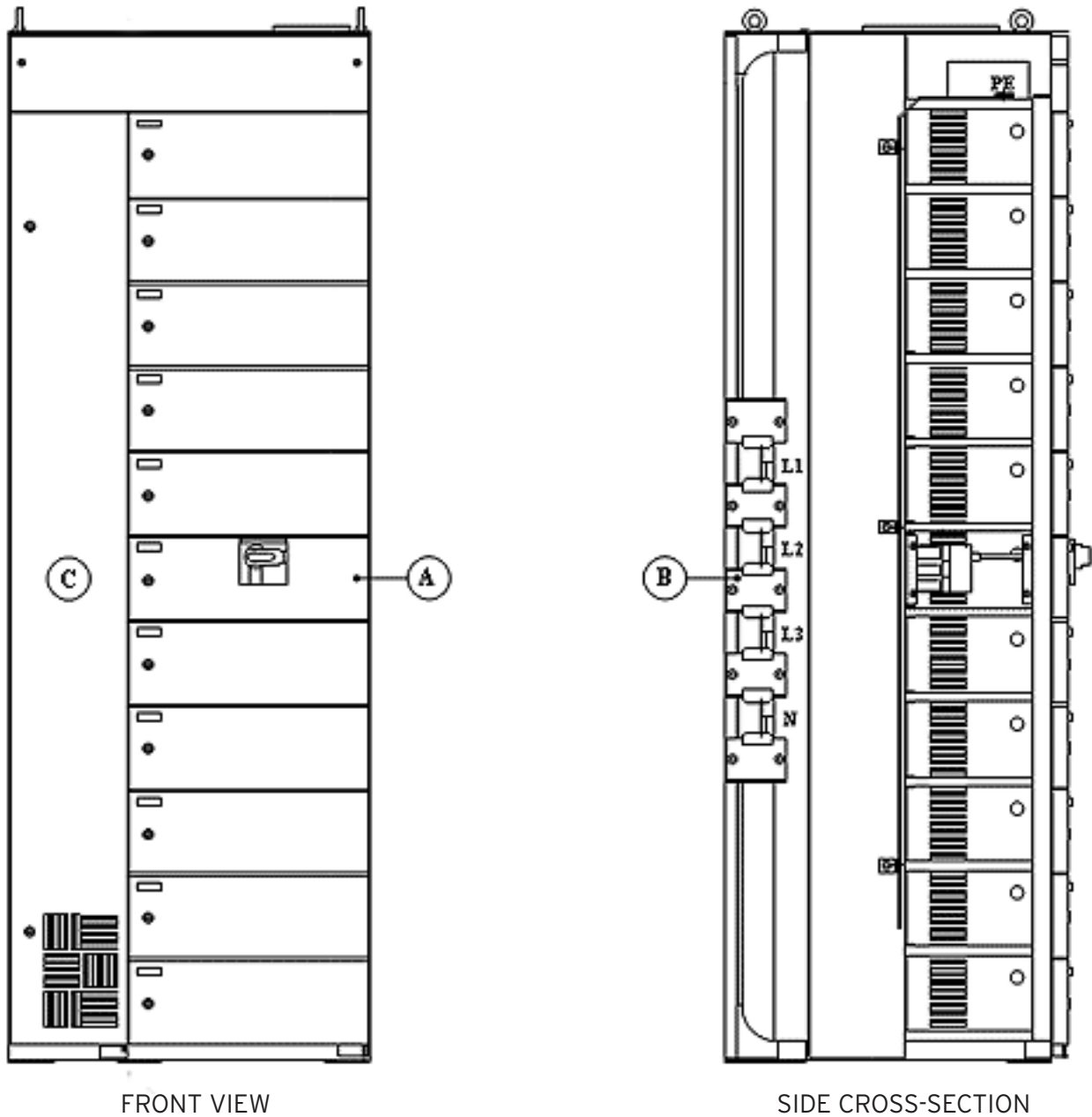


Rear view of the Busbars Compartment



Rear view of the Side Cabling Duct

Arrangement of Basic Cubicle



A	CIRCUIT-BREAKER COMPARTMENT
B	BUSBARS COMPARTMENT
C	SIDE CABLING DUCT



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