


**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*
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**THE HEAD OF NETWORK COMPONENTS**
**Fabrizio Gasbarri**



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## 1 DOCUMENT AIMS AND APPLICATION AREA

This document contains technical specifications for Family of Air Insulated Switchgear (AIS) “compact” *enel* type, to be installed in the HV/MV and MV/MV substations as container GSCM770 or building solution of the Enel Group Distribution Companies, listed below:

Country	Distribution Company
Argentina	Edesur
Brazil	Enel Distribuição Rio Enel Distribuição Ceará Enel Distribuição Goiás Enel Enel Distribuição São Paulo
Chile	Enel Distribución Chile
Colombia	Codensa
Iberia	e-distribución
Italy	e-distribuzione
Peru	Enel Distribución Perú
Romania	Enel Distributie Banat Enel Distributie Dobrogea Enel Distributie Muntenia

**Table 1 - Distribution Companies**

*This document shall be implemented and applied to the extent possible within the Enel Grids Business Line and in compliance with any applicable laws, regulations and governance rules, including any stock exchange and unbundling-relevant provisions, which in any case prevail over the provisions contained in this document.*

### 1.1 RELATED DOCUMENTS TO BE IMPLEMENTED AT COUNTRY LEVEL

This document applies to both Enel Grids Srl Company and to Enel Grids Line perimeter, when each Company does not have to issue further documents.



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## 2 DOCUMENT VERSION MANAGEMENT

Version	Date	Main changes description
1	16/12/2021	Issuing of “Global Infrastructure and Networks – GSCM690 Family of AIS “compact” <i>enel</i> type, technical specifications collection” technical specification
2	18/07/2022	IEC and tests updated

## 3 UNITS IN CHARGE OF THE DOCUMENT

Responsible for drawing up the document:

- Enel Grids: Engineering and Construction / Components and Devices Design/ Network Components unit.

Responsible for authorizing the document:

- Enel Grids: Head of Network Components unit.
- Enel Grids: Head of Quality unit.

## 4 REFERENCES

Reference documents listed below (amendments included) shall be the edition in-force at the contract date.

In case which standard edition and paragraph are indicated in this technical specification, Manufacturer shall consider the edition in force at the contract date and relative paragraph.

For South America destinations, the reference standards are the IEC/ISO, whilst for Europe destinations the reference standards are the correspondent European ones (EN)

- Code of Ethics of Enel Group;
- Enel Human Right Policy;
- The Enel Group Zero Tolerance of Corruption (ZTC) Plan;
- Organization and management model as per Legislative Decree No. 231/2001;
- Enel Global Compliance Program (EGCP);
- Integrated Policy for Quality, Health and Safety, Environment, Anti-Bribery and Information Security;
- MAT-O&M-NCS-2021-0033-EGIN “GSCG002 Technical Conformity Assessment”;
- MAT-E&C-NC-2021-0057-GIN “GSCG003 Employer’s Information Requirements for supplier components”;
- MAT-E&C-NC-2021-0122-GRI “GSCM691 Family of AIS “compact” *enel* type, list of construction drawings”;


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- MAT-E&C-NC-2021-0055-GIN “GSCM734 Voltage transformer trolley for air insulated “compact” switchgear family”;
- MAT-E&C-NC-2021-0033-GIN “GSCM505 Extractable, vertical translation, three-pole, vacuum circuit breaker, Ur=24kV for air insulated “compact” switchgear family”;
- MAT-E&C-NC-2021-0037-GRI “GSCM770 MV Section for Primary Substation in container solution”;
- MAT-E&C-NC-2021-0116-GIN “GSCM735 Earthing trolley for air insulated “compact” switchgear family”;
- WKI-QPT-CMQ-2020-0019-EGIN “Contractual Requirements for Components and Materials Quality management”;
- CNS-O&M-S&L-2021-0032-EGIN “Barcode specification”;
- GSC001 “Underground Medium voltage cables”;
- GSCC023 “Single phase medium voltage cables for primary substations and special applications”;
- GSTP101 “Protection and control device for HV/MV substation – Multifunctional feeder protection (MFP)”;
- GSTP102 “Protection and control device for HV/MV substation – Remote Input/Output module (RIO) for the MFP”;
- ISO 9001:2015 - Quality Management System – Requirements;
- ISO 14001:2015 - Environmental Management System - Requirements with guidance for use;
- ISO 45001:2018 - Occupational Health and Safety Management System - Requirements with guidance for use;
- ISO 37001:2016 - Anti-bribery Management System - Requirements with guidance for use;
- ISO/IEC 17000:2020 - Conformity assessment – Vocabulary and general principles;
- ISO/IEC 17020:2012 - General criteria for the operation of various types of bodies performing inspection;
- ISO/IEC 17025:2017 - General requirements for the competence of testing and calibration laboratories;
- ISO/IEC 17050-1:2004 - Conformity assessment - Supplier’s declaration of conformity - Part 1: General requirements (ISO/IEC 17050-1:2004, corrected version 2007-06-15);
- ISO/IEC 17050-2:2004 - Conformity assessment - Supplier’s declaration of conformity - Part 2: Supporting documentation (ISO/IEC 17050-2:2004);
- ISO/IEC 17065:2012 - Conformity assessment – Requirements for bodies certifying products, processes and services;
- IEC 62271-1 “High-voltage switchgear and controlgear - Part 1: Common specifications for alternating current switchgear and controlgear”;
- IEC 62271-213 High-voltage switchgear and controlgear - Part 213: Voltage detecting and indicating


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system;

- IEC 61243-5 Live working - Voltage detectors - Part 5: Voltage detecting systems (VDS);
- IEC 62271-200 “High-voltage switchgear and controlgear - Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV”;
- IEC/TS 62271-210 “High-voltage switchgear and controlgear - Part 210: Seismic qualification for metal enclosed and solid-insulation enclosed switchgear and controlgear assemblies for rated voltages above 1 kV and up to and including 52 kV”;
- IEC 62271-304 “High-voltage switchgear and controlgear - Part 304: Classification of indoor enclosed switchgear and controlgear for rated voltages above 1 kV up to and including 52 kV related to the use in special service conditions with respect to condensation and pollution”;
- IEC 60332-1-2 “Tests on electric and optical fibre cables under fire conditions - Part 1-2: Test for vertical flame propagation for a single insulated wire or cable - Procedure for 1 kW pre-mixed flame”;
- EN 50399 “Common test methods for cables under fire conditions - Heat release and smoke production measurement on cables during flame spread test - Test apparatus, procedures, results”;
- IEC 60445 Basic and safety principles for man-machine interface, marking and identification - Identification of equipment terminals, conductor terminations and conductors;
- ISO 12944 “Paints and varnishes — Corrosion protection of steel structures by protective paint systems”;
- Regulation (EU) of the European Parliament and of the Council 517/2014 of the 16th April 2014.

**Argentina**
**Brazil**

- NR-10 – Segurança em instalações e serviços em eletricidade.

**Chile**

- Norma técnica de calidad de servicios para sistema de distribución, Comisión Nacional de Energía, Diciembre 2017;
- ETG-1020 “Requisitos de Diseño Sísmico para Equipo Eléctrico”;
- IEEE 693-2005 “Recommended Practice for Seismic Design of Substations”;
- Norma Técnica de Seguridad y Calidad de Servicio, Comisión Nacional de Energía, Septiembre 2020;
- Reglamento de producción, transporte y distribución de energía eléctrica – Decreto N°109;
- Pliego Técnico normativo RPTD N°15 Operación y Mantenimiento. Decreto N°109;
- Pliego Técnico normativo RPTD N°17 Sistema de Gestión de integridade de instalaciones eléctricas.



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Decreto N°109.

### Colombia

- RETIE – Reglamento Técnico de Instalaciones Eléctricas.

### Perú

### Italy

- D.Lgs n. 81 of the 9 of April 2008 and subsequent modifications;
- D.P.R. n. 43 of the 27th of January 2012;
- Nota Operativa PVR001 – Rev. 2 – Ott. 2012 - Gestione Garanzie dei materiali di ENEL Distribuzione.
- GUI 101 “Caratteristiche generali e prescrizioni di impiego del pallet in legno da utilizzare per imballo di trasporto”.

### Spain

- R.D. 614/2001, de 8 de junio, sobre disposiciones mínimas para la protección de la salud y seguridad de los trabajadores frente al riesgo eléctrico;
- R.D. 337/2014, de 9 de mayo, por el que se aprueban el Reglamento sobre condiciones técnicas y garantías de seguridad en instalaciones eléctricas de alta tensión y sus Instrucciones Técnicas Complementarias ITC-RAT 01 a 23;
- R.D. 223/2008, de 15 de febrero, por el que se aprueban el Reglamento sobre condiciones técnicas y garantías de seguridad en líneas eléctricas de alta tensión y sus instrucciones técnicas complementarias ITC-LAT 01 a 09.

### Romania

- Prescriptia Energetica PE 101/85 – Normativ pentru construcția instalațiilor electrice de conexiuni și transformare cu tensiuni peste 1 kV;
- GUI 101RO "Caracteristicile generale și cerințele de utilizare ale paletului de lemn care urmează să fie utilizat pentru ambalarea de transport.

## 5 ORGANIZATIONAL PROCESS POSITION IN THE PROCESS TAXONOMY

Value Chain/Process Area: Engineering and Construction

Macro Process: Devices and Components Development

Process: Standard Catalog Management



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## 6 DEFINITIONS AND ACRONYMS

Acronym and Key words	Description
<b>Air Insulated Switchgear (AIS)</b>	A general term covering switching devices and their combination with associated control, measuring, protective and regulating equipment, also assemblies of such devices and equipment with associated interconnections, accessories, enclosures and supporting structures, intended in principle for use in connection with generation, transmission, distribution and conversion of electric energy
<b>High Voltage (HV)</b>	Electrical system with 230kV to 35kV nominal operative voltage between the phases
<b>Medium Voltage (MV)</b>	System with a nominal operative voltage between the phases higher than 1 kV to 35 kV included. NOTE: The boundary value between medium voltage and high voltage depends on local and historical circumstances or on common usage. Nevertheless for internal standardization purposes, medium voltage is defined as a system with a nominal operative voltage between the phases higher than 1 kV to 35 kV included”
<b>Technical Conformity Assessment (TCA)</b>	A “conformity assessment” <sup>1</sup> with respect to “specified requirements” <sup>2</sup> consists in functional, dimensional, constructional and test characteristics required for a product (or a series of products) and quoted in technical specifications and quality requirements issued by Enel Group distribution companies. This also includes the verification of conformity with respect to local applicable regulation and laws and possession of relevant requested certifications

<sup>1</sup> Definition 2.1 of ISO/IEC 17000

<sup>2</sup> Definition 3.1 of ISO/IEC 17000


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<b>Type A documentation</b>	Not confidential documents used for product manufacturing and management from which it is possible to verify the product conformity to all technical specification requirements, directly or indirectly
<b>TCA systems</b>	The “conformity assessment systems”, is applicable specifying that the rules and procedures to carry on the TCA are those specified in the present document





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## 7 DESCRIPTION

### 7.1 LIST OF COMPONENTS

Family of AIS compact shall be composed by the functional units and accessories listed in the table below.

Type code	Description
GSCM690/1	GSCM698/1 Bus Bar tie functional unit Ir=2000 A rear/rear
GSCM690/2	GSCM698/2 Bus Bar tie functional unit Ir=1600 A rear/rear
GSCM690/3	GSCM698/3 Bus Bar tie functional unit Ir=2000 A
GSCM690/4	GSCM698/4 Bus Bar tie functional unit Ir=1600 A
GSCM690/5	GSCM697/1 Transformer functional unit Ir=2000 A rear/rear
GSCM690/6	GSCM697/2 Transformer functional unit Ir=1600 A rear/rear
GSCM690/7	GSCM697/3 Transformer functional unit Ir=2000 A
GSCM690/8	GSCM697/4 Transformer functional unit Ir=1600 A
GSCM690/9	GSCM696/1 Line functional unit rear/rear
GSCM690/10	GSCM696/2 Line functional unit
GSCM690/11	GSCM699/1 Capacitor Bank functional unit rear/rear
GSCM690/12	GSCM699/2 Capacitor Bank functional unit
GSCM690/13	GSCM700/1 Auxiliary services functional unit rear/rear
GSCM690/14	GSCM700/2 Auxiliary services functional unit
GSCM690/15	GSCM730/1 Neutral Maker Transformer functional unit rear/rear
GSCM690/16	GSCM730/2 Neutral Maker Transformer functional unit
GSCM690/17	GSCM731/1 Voltage bus bar measurement functional unit rear/rear
GSCM690/18	GSCM731/2 Voltage bus bar measurement functional unit
GSCM690/19	GSCM732/1 Riser functional unit rear/rear MV busbar outgoing on the left
GSCM690/20	GSCM732/2 Riser functional unit rear/rear MV busbar outgoing on the right
GSCM690/21	GSCM732/3 Riser functional unit MV busbar outgoing on the left
GSCM690/22	GSCM732/4 Riser functional unit MV busbar outgoing on the right
GSCM690/23	GSCM738/1 Bus Bar cross connection functional unit Ir= 2000 A
GSCM690/24	GSCM738/2 Bus Bar cross connection functional unit Ir= 1600 A
GSCM690/25	GSCM739/1 2000 A kit for container
GSCM690/26	GSCM739/2 2000 A kit for building
GSCM690/27	GSCM739/3 GAS duct and VCB platform for container
GSCM690/28	GSCM739/4 GAS duct and VCB platform for building
GSCM690/29	GSCM739/5 Metal conduit for LV cables for container GSCM770/2_4 and for building with switchgear functional unit rear-rear
GSCM690/30	GSCM739/6 Metal conduit for LV cables for building with switchgear functional unit not rear-rear
GSCM690/31	GSCM739/7 Operating levers and rack to keep them
GSCM690/32	GSCM739/8 kit closing panel for container GSCM770/1_3
GSCM690/33	GSCM739/9 kit closing panel for container GSCM770/2_4
GSCM690/34	GSCM739/10 kit closing panel for building

**Table 2 – Type codes**

Material codes please refer to Annex Q.



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## 7.2 SERVICE CONDITIONS

Family of AIS “compact” *enel* type shall be compliant with normal service conditions for indoor installation, defined in chapter 2 of IEC 62271- 200, considering as minimum value of ambient temperature - 5°C.

Maximum altitude shall be as defined in normal service condition (1000 m).

Manufacturer shall define the  $U_r$  referred to 2700 m of altitude for specific installations, (a de-rating of  $U_r$  can be considered).

Seismic level of apparatuses, functional unit switchgear, Vacuum Circuit Breaker (VCB) compliant to GSCM505, Voltage Transformer Trolley (VTT) compliant with GSCM734 and Earthing Trolley (ET) compliant with GSCM735, shall be:

- seismic severity 2;
- acceptance class 1.

as defined in IEC/TS 62271-210.

Family of AIS “compact” *enel* type shall be compliant for installation in three-phases MV effectively and non-effectively earthed neutral system (solidly earthed, isolated, impedance earthed, resonant earthed and arc-suppression-coil-earth neutral system).

Family of AIS “compact” *enel* type shall be compliant with design class 2 of IEC 62271-304.

## 7.3 TECHNICAL CHARACTERISTICS

Family of AIS “compact” *enel* type shall be compliant with IEC 62271-200 and IEC 62271-102 for earthing switch.

Main electrical ratings are listed in the table below.

	Abbreviation	Unit	Value
<b>RATED VOLTAGE</b>	$U_r$	kV	24
<b>MAXIMUM GRID VOLTAGE</b>	$U_n$	kV	22
<b>RATED FREQUENCY</b>	$f_r$	Hz	50/60
<b>RATED POWER-FREQUENCY WITHSTAND VOLTAGE/ LIGHTNING IMPULSE WITHSTAND VOLTAGE</b>	$U_d / U_p$	kV	50/125
<b>MAXIMUM BUS BAR RATED CONTINUOUS CURRENT</b>	$I_r$	A	2000
<b>RATED SHORT-TIME WITHSTAND CURRENT</b>	$I_k$	kA	16



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	<b>RATED PEAK WITHSTAND CURRENT</b>	$I_p$	kA	41,6
	<b>RATED DURATION OF SHORT CIRCUIT</b>	$t_k$	s	1
	<b>LOSS OF SERVICE CONTINUITY CATEGORY</b>	<b>LSC</b>		2A
	<b>INTERNAL ARC CLASSIFICATION TYPE ACCESSIBILITY-CLASSIFIED SIDES</b>	<b>IAC</b>		AFLR
	<b>ARC FAULT CURRENT AND DURATION</b>	$I_a/t_a$	kA/s	16/1
	<b>IP DEGREE</b>			3X and 3XD inside the LV compartments
	<b>IK DEGREE</b>			07
	<b>RATED SUPPLY DC VOLTAGE OF AUXILIARY CIRCUITS</b>	<b>U<sub>a</sub></b>	Vdc	110 and 125
<b>EARTHING SWITCH</b>	<b>RATED ESTABLISHMENT SHORT CIRCUIT CURRENT</b>	$I_{ma}$	kA	16
	<b>MECHANICAL CLASS</b>			M0
	<b>SHORT-CIRCUIT MAKING CAPABILITY CLASS</b>			E1

**Table 3 – Electrical ratings**

DC and AC rated supplies voltage of auxiliary circuits  $U_a$  for each country are listed in the table below.

<b>Country</b>	<b>Rated supply AC voltage of auxiliary circuits <math>U_a</math> (VAC)</b>
<b>Italy</b>	230 single phase 50 Hz
<b>Romanian</b>	230 single phase 50 Hz
<b>Spain</b>	230 single phase 50 Hz
<b>Brazil *</b>	127 single phase (SP/RJ) 60Hz 220 single phase (CE/GO) 60Hz
<b>Colombia</b>	120 single phase 60 Hz
<b>Perù</b>	220 between phases 60 Hz
<b>Chile</b>	220 single phase 50 Hz
<b>Argentina</b>	220 single phase 50 Hz

**Table 4- AC rated supplies voltage of auxiliary circuits**


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\*For Brasil, RJ=Enel Distribuição Rio; CE=Enel Distribuição Ceará; GO=Enel Distribuição Goiás Enel SP=Enel Distribuição São Paulo

Other characteristics:

- Earthing switch and trolley (disconnecter) position signals with micro-switches;
- Synoptic system for earthing switch, trolley (disconnecter) and vacuum circuit breaker position;
- CTs compliant with *enel* local standard shall be installed inside the switchgears, maximum 3 phase CTs and 1 homopolar CT. Manufacturer shall check if the dimensions of CT's defined by *enel* local standards are compliant with the dimensions of CT's used during type tests therefore whether they can be installed;
- Electric protections devices to install onboard, maximum two for single switchgear functional unit, having a width of 19 inch and 6U of height;
- VDIS system compliant with IEC 62271-213 or VDS system compliant with IEC 61243-5 (until apparatuses compliant to IEC 62271-213 will be available, type proposed by Manufacturer shall be evaluated by *enel*), Un range shall be 6-22 kV.

LV wiring schemes shall be compliant to the annex O.

LV Cabling shall be manufactured by flexible single-core cable with 450/750V minimum insulation class and minimum fire reaction Cca-s1b,d1,a1 as described below.

- Cca: EN 50399: Flame Spread (FS)  $\leq 2,00\text{m}$ ; Total Heat Release (THR)  $\leq 30\text{MJ}$ ; Maximum Heat Release Rate (HHR)  $\leq 60\text{kW}$ ; Fire Growth Rate, index of heat release rate (FIGRA)  $\leq 300\text{Ws}^{-1}$  /// IEC 60332-1-2: Flame Spread, vertical flame propagation  $H \leq 425\text{ mm}$ ;
- s1b: Total Smoke Production (TSP1200)  $\leq 50\text{ m}^2$ ; Smoke Production Rate, maximum smoke (SPR)  $0,25\text{ m}^2/\text{s}$ ; transmittance  $\geq 60\% < 80\%$ ;
- a1: electrical conductivity  $< 2,5\ \mu\text{S}/\text{mm}$ ; pH  $> 4,3$ ;
- d1: No flaming droplets/particles persisting longer than 10 s within 1200 s.

Manufacturers shall be of proper dimension as Manufacturer design with minimum section of  $1,5\text{ mm}^2$ , they shall be marked at their extremity, accordance with IEC 60445 and cabling drawings.

For more details see annex O.

### 7.3.1 Construction Drawings

Construction drawings listed in GSCM691 technical specification are available for all Manufacturers interested to AIS “compact” *enel* type manufacturing.

Manufacturers shall endorse the drawings creating an owner's version with all company dates.

These drawings shall be presented as type A documents for the new TCA process.

Integrations and modifications, if any, that Manufacturers want to introduce shall be on their own responsibility.

These modifications or /and integrations, if any, shall not invalidate the following points:


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- MV Switchgears ratings (table 3);
- Mechanical, electrical and dimensional compatibility with switchgears built according to drawings listed in the GSCM691;
- Vacuum Circuit Breaker (GSCM505), Voltage Transformer Trolley (GSCM734) and Earthing Trolley (GSCM735) compatibility.

Data sheet of LV cable and VDIS (VDS) shall be present as type A documents.

#### 7.4 PAINTING CYCLE

The AIS unit components subjected to paint shall have a protective coating compliant with ISO 12944 with the following minimum features:

- Durability: High (H);
- Atmospheric corrosion category: C3.

Color RAL 7030 for paint coating of AIS functional units shall be used.

Paint thickness of not less than 80 µm is recommended.

As general indication galvanization used for internal carbon-steel pieces shall be not less than 12 µm and MV bus bar silvering shall be not less than 5 µm.

#### 7.5 MANUAL

Manual compliant with IEC 62271-200, shall be produced by Manufacturer, it shall include all components present in the MV AIS “compact” *enel* type (post insulators, earthing switch, etc.).

Minimum time of maintenance shall be 60 months.

The maintenance shall not include the substitution of main components as earthing switch, insulators and electronic parts if present.

In the manual the Manufacturer shall declare the following statements:

- Own products (switchgears) shall be interchangeable with switchgear compliant GSCM691;
- Own products (switchgears) are suitable for Vacuum Circuit Breaker (GSCM505), Voltage Transformer Trolley (GSCM734) and Earthing Trolley (GSCM735).

#### 7.6 NAMEPLATE

Each switchgear functional unit be equipped, on frontal side and visible position, with a nameplate where data indicated by IEC 62271-200 and IEC 62271-102 shall be listed (included the mass).

For more details see GSCM691.



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## 7.7 TESTS

Type, routine, factory and site acceptance tests shall be performed in compliance with IEC 62271-200, IEC 62271-102, IEC 62271-210, IEC 62271-304, ISO 12944 and the clarifications indicated in the following paragraphs.

Technical conformity assessment (TCA) process shall be compliant with GSCG002.

All GSCM690 *enel* type switchgear functional unit shall have third part TCA system excluding accessories from GSCM690/25 to GSCM690/34 that shall have first part TCA system see GSCG002.

Drawings included in the type A documentations shall be compliant with GSCG003.

### 7.7.1 Type test

Type tests performed by *enel* are available for all Manufacturers interested to AIS “compact” *enel* type manufacturing.

All type tests foreseen by main standards (see 7.7) shall be performed to confirm the values of table 3 and services condition, excluding the test below:

- Making and breaking capacity of the included switching devices (Vacuum circuit breaker compliant with GSCM505) par 7.101 IEC 62271-200 ed.3.

Type tests shall be performed on switchgear functional unit equipped as ordinary use, with relative VCB GSCM505 inserted inside it.

VCB GSCM505 needed for type tests shall be provided by Manufacturer and must have Technical Conformity Assessment in force status.

Type test compliant with ISO 12944 shall be performed to confirm the protective coating features, Durability and Atmospheric corrosion category.

Minimum 4 basic switchgears functional unit shall be defined as below:

- “Line” Switchgear functional unit, GSCM699 to be use;
- “Transformer” Switchgear functional unit GSCM698, to be use;
- Riser Switchgear functional unit GSCM732, to be use;
- Bus Bar cross connection Switchgear functional unit, GSCM738 to be use.

Third Body selected by Manufacturer, shall validate the possible extension (see GSCG002) to type tests performed on basic functional unit to others switchgear functional units.

All switchgear functional units shall have own third party certification.

Manufacturer’s IEC certification for VDS or VDIS shall be upload in TCA dossier



**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

After Manufacturer’s own certification process, Supplier becomes fully responsible of the design, manufacturing and commercialization of the AIS “compact” *enel* type.

### 7.7.2 Routine, Acceptance and Site acceptance tests

The routine tests shall be carried out by the Manufacturer on all the specimens prepared for the commissioning. For each piece belonging to the prepared batch, the supplier shall prepare a test report with the results of the tests performed.

Acceptance test are the same of the Routine tests with the clarifications described in the annex M “GSCM1674”.

Acceptance test shall be carried out on a sample basis, on a number of samples which depends on the consistency of the supply according to the conditions establish in the document “Contractual Requirements for Components and Materials Quality management”.

For routine and acceptance tests reference values and acceptability ranges defined in the TCA Dossier shall be considered.

### 7.7.3 Mock-up templates

See annex N “GSCM1676”.

## 7.8 SUPPLY REQUIREMENTS

Each *enel* type devices shall be supplied in adequate package, in order to ensure a proper protection during the transportation and storage.

Followings elements shall be supplied:

- MV Switchgear completely fitted;
- VCB GSCM505 type and VTT GSCM734 type compliant with MV switchgear supplied and with TCA in force status;
- All accessories needed for the complete installation and commissioning of equipment device;
- Functional and cabling schemes;
- Manuals of all equipment supplied;
- Manufacturers IEC certification for CT’s;
- Rack closing panel 3U see par.7.3, drawing 107 L1 20 251 where necessary;
- Only for Spain, annex D.2 GSCG002 for each equipment supplied;
- Any other element eventually needed for the operation of equipment.

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**Application Areas**Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

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Out of the package followings indications shall be present:

- *enel* DSO;
- Name of supplier;
- Description of product;
- *enel* material and type code;
- Manufacturer type code and serial number;
- Gross weight.
- BAR Code compliant with CNS-O&M-S&L-2021-0032-EGIN.

Package shall be assembled for delivering as prescribed in *enel* standard.

For building installation, since the MV bus bar for the last functional unit switchgear is shortest of normal functional unit switchgear, see drawings 107 C1 50 001, it is necessary to agree with *enel* user unit the proper MV bus bar configuration identifying the last functional unit switchgear of assemblies.

**7.8.1 Warranty**

60 months of warranty period.





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**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

## 7.9 DOCUMENTATIONS TO BE PROVIDED IN TECHNICAL OFFER

Technical offer shall include the following check list full filled by Manufacturer.

<b>Technical specification:</b>		<b>Offer number:</b>	
<b>Manufacturer:</b>		<b>Manufacturing factory:</b>	
<b>Manufacturer type code or designation:</b>			
	<b>Subject</b>	<b>(yes/no)</b>	<b>Note</b>
1	Acknowledgment of AIS “compact” <i>enel</i> type ratings		
2	Acknowledgment of Technical specification and referred technical specification and annexes		
3	Acknowledgment of Construction drawings listed in the GSCM691		
4	Acknowledgment of Certification process and referred type tests		
5	Supplier statement to become fully responsible of the design, manufacturing and commercialization of the AIS “compact” <i>enel</i> type		
6	Supplier statement to confirm that own products (switchgears) shall be interchangeable with switchgear compliant GSCM691		
7	Supplier statement to confirm that own products (switchgears) are suitable for Vacuum Circuit Breaker (GSCM505), Voltage Transformer Trolley (GSCM734) and Earthing Trolley (GSCM735).		
	<b>Technical ratings</b>	<b>Request</b>	<b>Manufacturer offer</b>
1	Grid rated Voltage (kV)	Country information before tender	
2	Maximum grid rated voltage (kV)	Country information before tender	
3	Rated voltage $U_r$ (kV) and rated normal current to 2700 m	Manufacturer information	

**Table 5- Check list**



**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

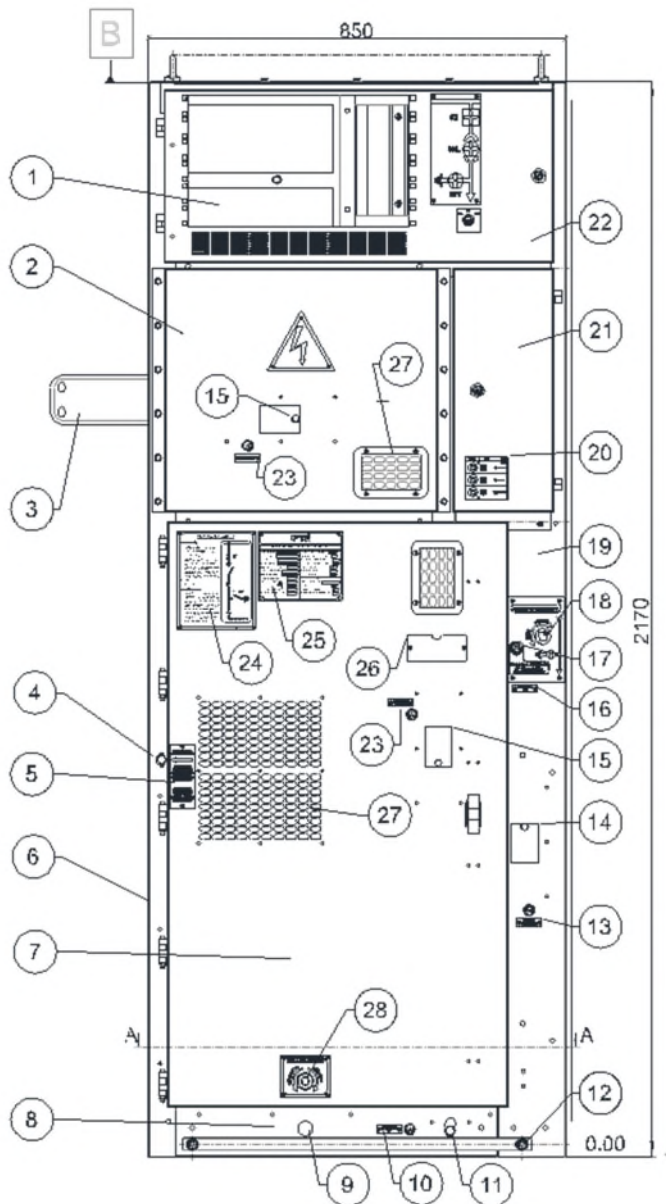
**Application Areas**  
Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**8 ANEXES**

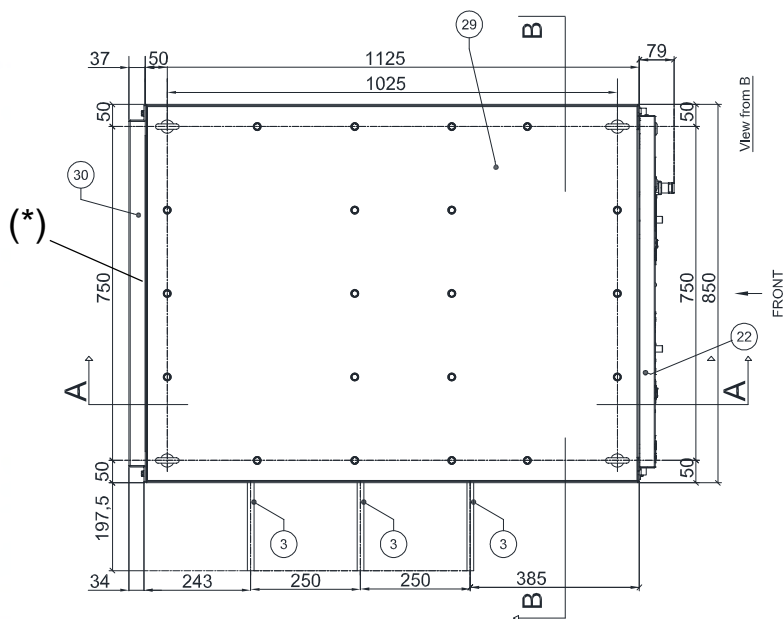
**8.1 ANNEX A - GSCM698 Bus Bar tie functional unit**

Type Code	Description
GSCM690/1	GSCM698/1 Bus Bar tie functional unit Ir=2000 A rear/rear
GSCM690/2	GSCM698/2 Bus Bar tie functional unit Ir=1600 A rear/rear
GSCM690/3	GSCM698/3 Bus Bar tie functional unit Ir=2000 A
GSCM690/4	GSCM698/4 Bus Bar tie functional unit Ir=1600 A

**FRONTA VIEW**



**PLANT VIEW**



(\*) Overpressures relief duct, only for not REAR-REAR units

REAR-REAR SWITCHGEARS	
GSCM698/1 2000 A	DRAWING: 107 CS2 12 001
GSCM698/2 1600 A	DRAWING: 107 CS2 11 001
NOT REAR-REAR SWITCHGEARS	
GSCM698/3 2000 A	DRAWING: 107 CS1 12 001
GSCM698/4 1600 A	DRAWING: 107 CS1 11 001
<b>LV WIRING SCHEME</b>	Annex O
<b>ROUTINE TEST</b>	GSCM 1674 (annex M)


**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

1) Protection and control compartment
2) MV Busbars front panel
3) MV Busbars connection system
4) Seat of the Vacuum Circuit Breaker (VCB GSCM505) horizontal blocking pivot
5) Instruction plate for emergency opening VCB
6) Left side
7) MV Cable compartment door
8) Inside system Interlock between VCB lifting trolley and earthing switch
9) Operation seat for the vertical translation lever of the VCB (equipped with an interlock between closing of the door, the earthing switch and the VCB horizontal blocking pivot)
10) Key lock plate
11) VCB disconnected position key block. The block is inserted when the seat of vertical translation is CLOSED and with the VCB in disconnected position (free key with lock inserted)
12) Earth-bar collector
13) Plate for MV cable test lock
14) MV Cable test window with unified lock
15) Thermovision with unified lock
16) Earthing switch lock plate
17) Earthing switch key block, Block inserted with earthing switch in the "open" position (key free with lock inserted)
18) Seat for earthing switches control with the possibility of padlocking
19) Right side
20) Voltage indication presence device VIDS or Voltage presence devices VDS
21) LV compartment closing panel
22) Protection compartment panel
23) Plate for Thermovision lock
24) Operation sequence plate and synoptic diagram. Plate drawing (107 CS1 70 015)
25) Ratings plate drawings: <ul style="list-style-type: none"> <li>- For GSCM698/2 (107 CS2 71 016) and for GSCM698/1 (107 CS2 72 016)</li> <li>- For GSCM698/4 (107 CS1 71 016) and for GSCM698/3 (107 CS1 72 016)</li> </ul>
26) Label holder
27) Inspection window
28) Plate indicating the direction of rotation VCB lift mechanism (disconnected / in service position)
29) Top panel
30) Rear duct

**Important: remove the “False terminal brackets” drawing 107 TR1 10 097 before the energization of switchgear functional unit**

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

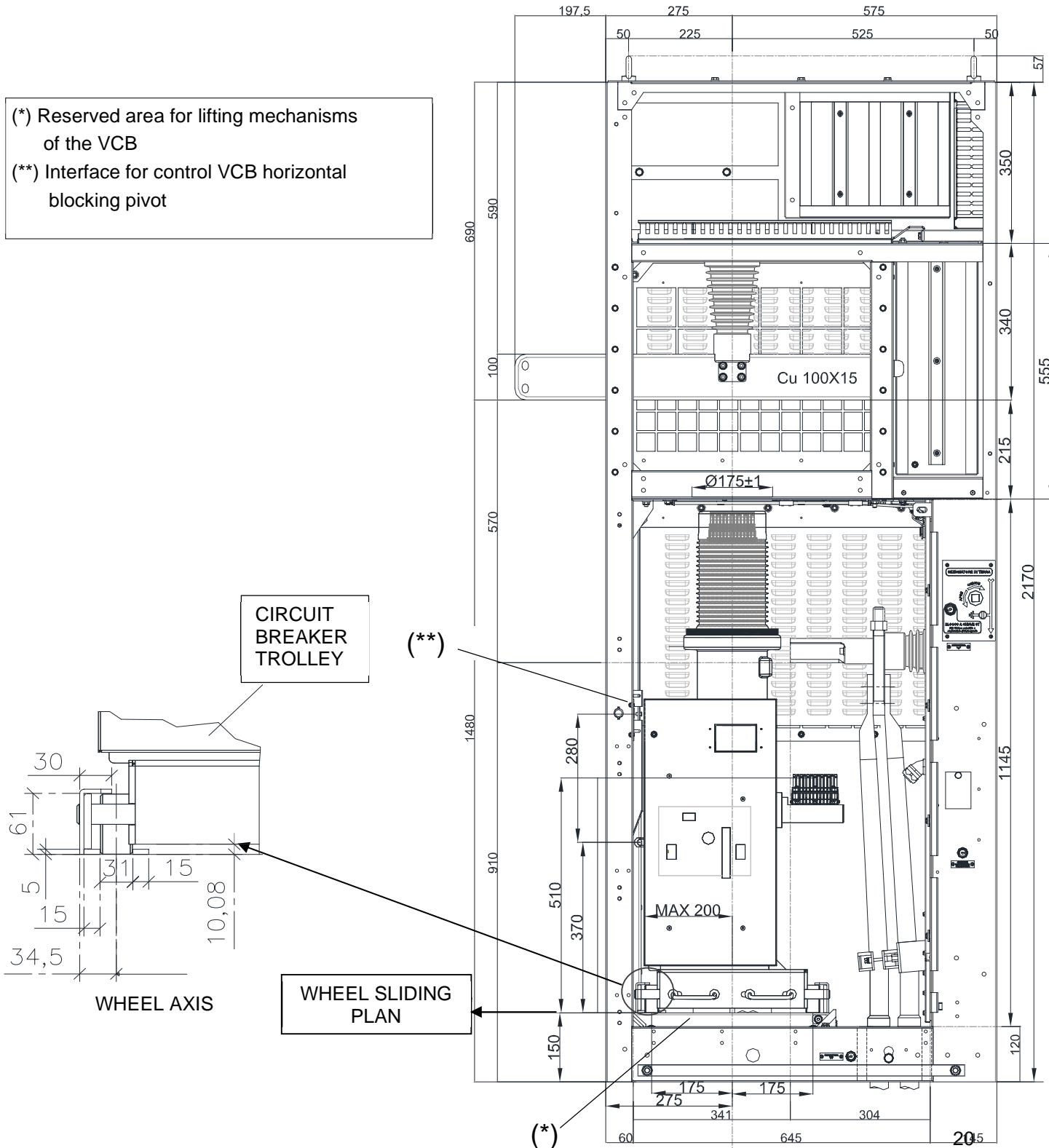
Staff Function: -

Service Function: -

Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "DISCONNECTED" POSITION**

(\*) Reserved area for lifting mechanisms of the VCB  
(\*\*) Interface for control VCB horizontal blocking pivot





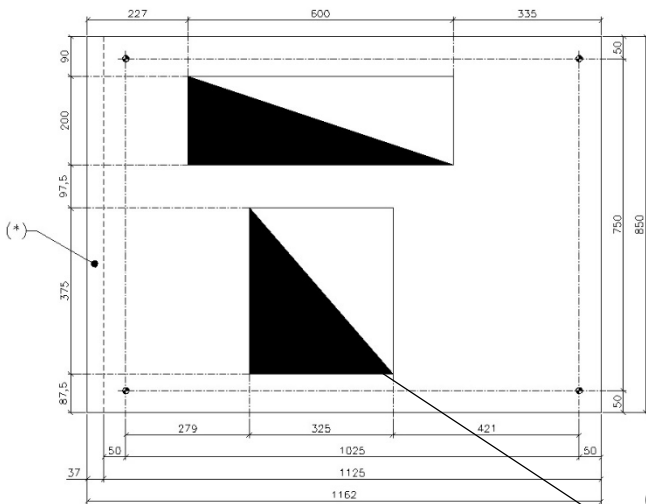
**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

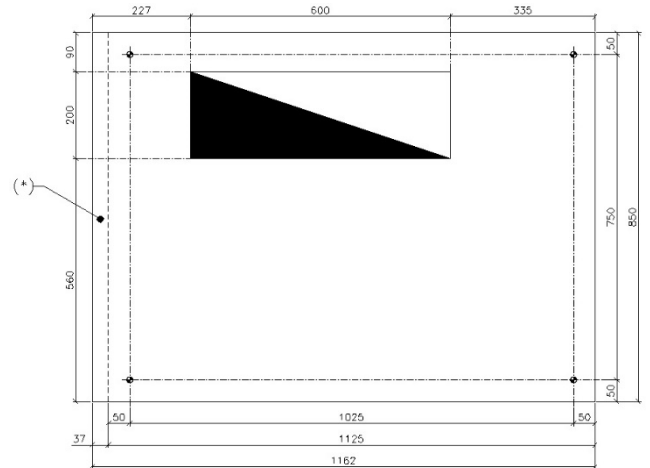
**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**BELOW VIEW GSCM 698 /1 - /3 2000 A**

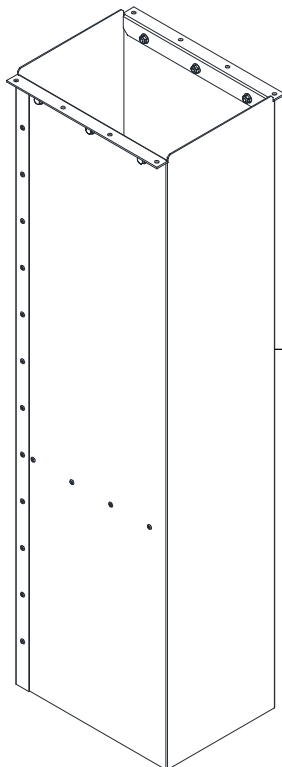


**BELOW VIEW GSCM 698 /2 - /4 1600 A**



**(\*) Overpressures relief duct, only for not REAR-REAR units**

LOWER GAS DUCT HOLE  
PRESENT ONLY FOR Ir =2000A  
COMPARTMENS



GAS DUCT TO BE CONNECTED IN  
CORRESPONDENCE OF THE HOLE  
FOR GSCM698 /1 - /3 Ir= 2000A

LOWER GAS DUCT

TYPE LOWER GAS DUCT SEE ANNEX I	DRAWING
FOR CONTAINER INSTALLATION	107 TR1 10 073
FOR BUILDING INSTALLATION	107 TR2 10 073

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

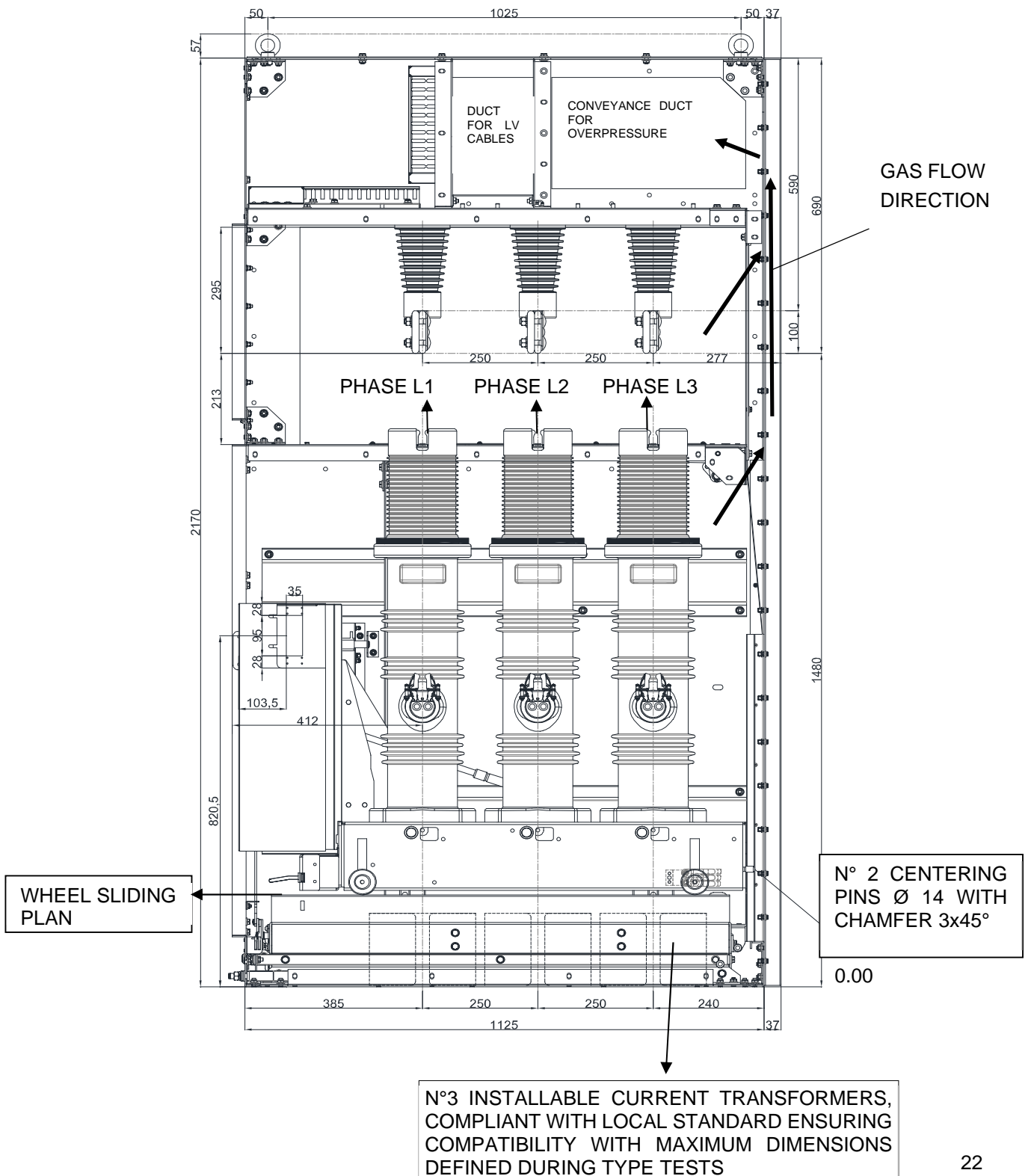
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

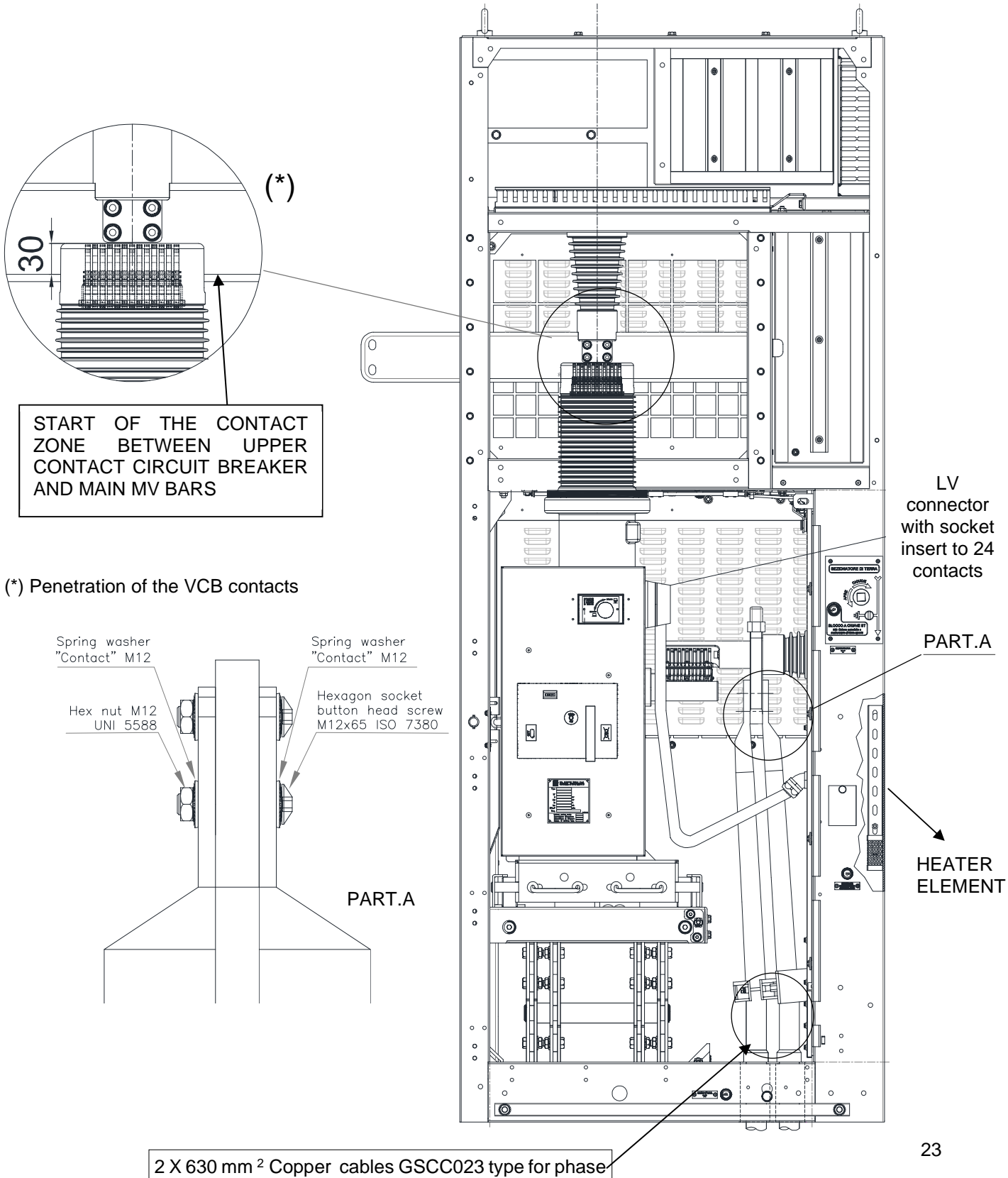
**CIRCUIT BREAKER IN "DISCONNECTED" POSITION A-A SECTION**



**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**  
Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "SERVICE" POSITION B-B SECTION**



**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

Staff Function: -

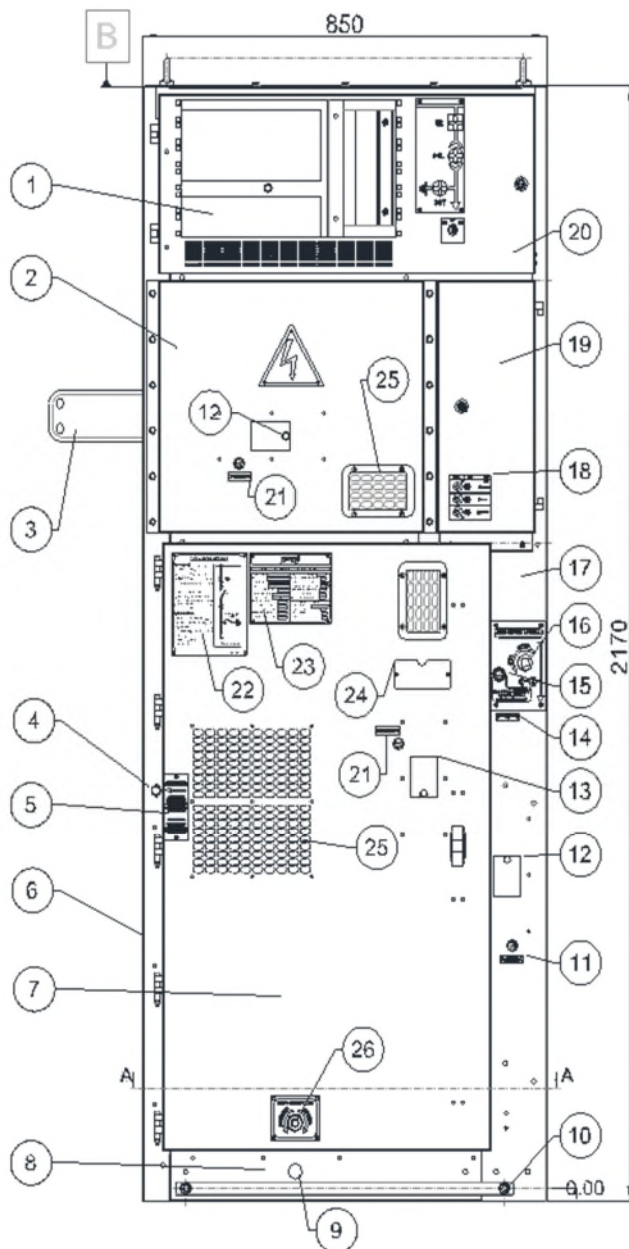
Service Function: -

Business Line: *Enel Grids*

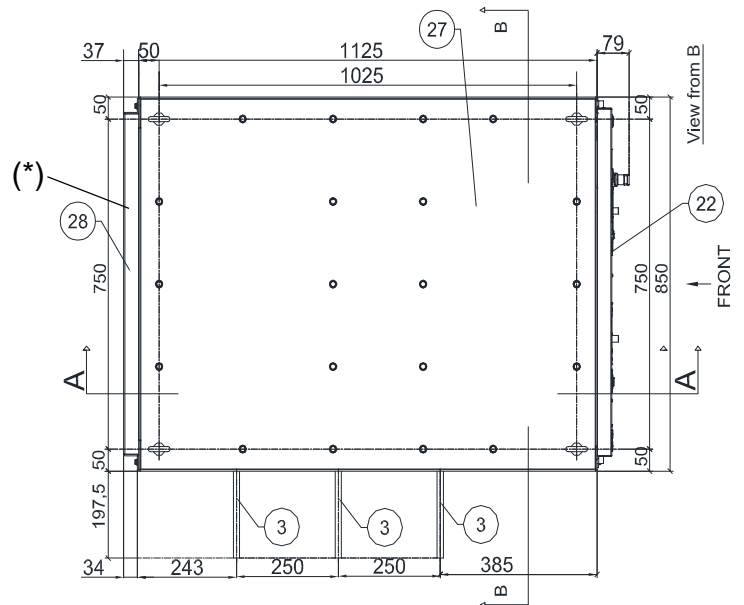
## 8.2 ANNEX B - GSCM697 Transformer functional unit

Type Code	Description
GSCM690/5	GSCM697/1 Transformer functional unit Ir=2000 A rear/rear
GSCM690/6	GSCM697/2 Transformer functional unit Ir=1600 A rear/rear
GSCM690/7	GSCM697/3 Transformer functional unit Ir=2000 A
GSCM690/8	GSCM697/4 Transformer functional unit Ir=1600 A

**FRONTAL VIEW**



**PLANT VIEW**



(\*) Overpressures relief duct, only for not REAR-REAR units

REAR-REAR SWITCHGEARS		
GSCM 697/1	2000 A	DRAWING: 107 TR2 12 001
GSCM 697/2	1600 A	DRAWING: 107 TR2 11 001
NOT REAR-REAR SWITCHGEARS		
GSCM 697/3	2000 A	DRAWING: 107 TR1 12 001
GSCM 697/4	1600 A	DRAWING: 107 TR1 11 001
<b>LV WIRING SCHEME</b>	Annex O	
<b>ROUTINE TEST</b>	GSCM 1674 (annex M)	




**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

1) Protection and control compartment
2) MV Busbars front panel
3) MV Busbars connection system
4) Seat of the Vacuum Circuit Breaker (VCB GSCM505) horizontal blocking pivot
5) Instruction plate for emergency opening VCB
6) Left side
7) MV Cable compartment door
8) Inside system Interlock between VCB lifting trolley and earthing switch
9) Operation seat for the vertical translation lever of the VCB (equipped with an interlock between closing of the door, the earthing switch and the VCB horizontal blocking pivot)
10) Earth-bar collector
11) Plate for MV cable test lock
12) MV Cable test window with unified lock
13) Thermovision with unified lock
14) Earthing switch lock plate
15) Earthing switch key block, Block inserted with earthing switch in the "open" position (key free with lock inserted)
16) Seat for earthing switches control with the possibility of padlocking
17) Right side
18) Voltage indication presence device VIDS or Voltage presence devices VDS
19) LV compartment closing panel
20) Protection compartment panel
21) Plate for Thermovision lock
22) Operation sequence plate and synoptic diagram. Plate drawing (107 TR1 70 015)
23) Ratings plate drawings: <ul style="list-style-type: none"> <li>- For GSCM697/2 (107 TR2 71 016) and for GSCM 697/1 (107 TR2 72 016)</li> <li>- For GSCM697/4 (107 TR1 71 016) and for GSCM 697/3 (107 TR1 72 016)</li> </ul>
24) Label holder
25) Inspection window
26) Plate indicating the direction of rotation circuit breaker lift mechanism (disconnected / in service position)
27) Top panel
28) Rear duct

**Important: remove the “False terminal brackets” drawing 107 TR1 10 097 before the energization of switchgear functional unit**

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

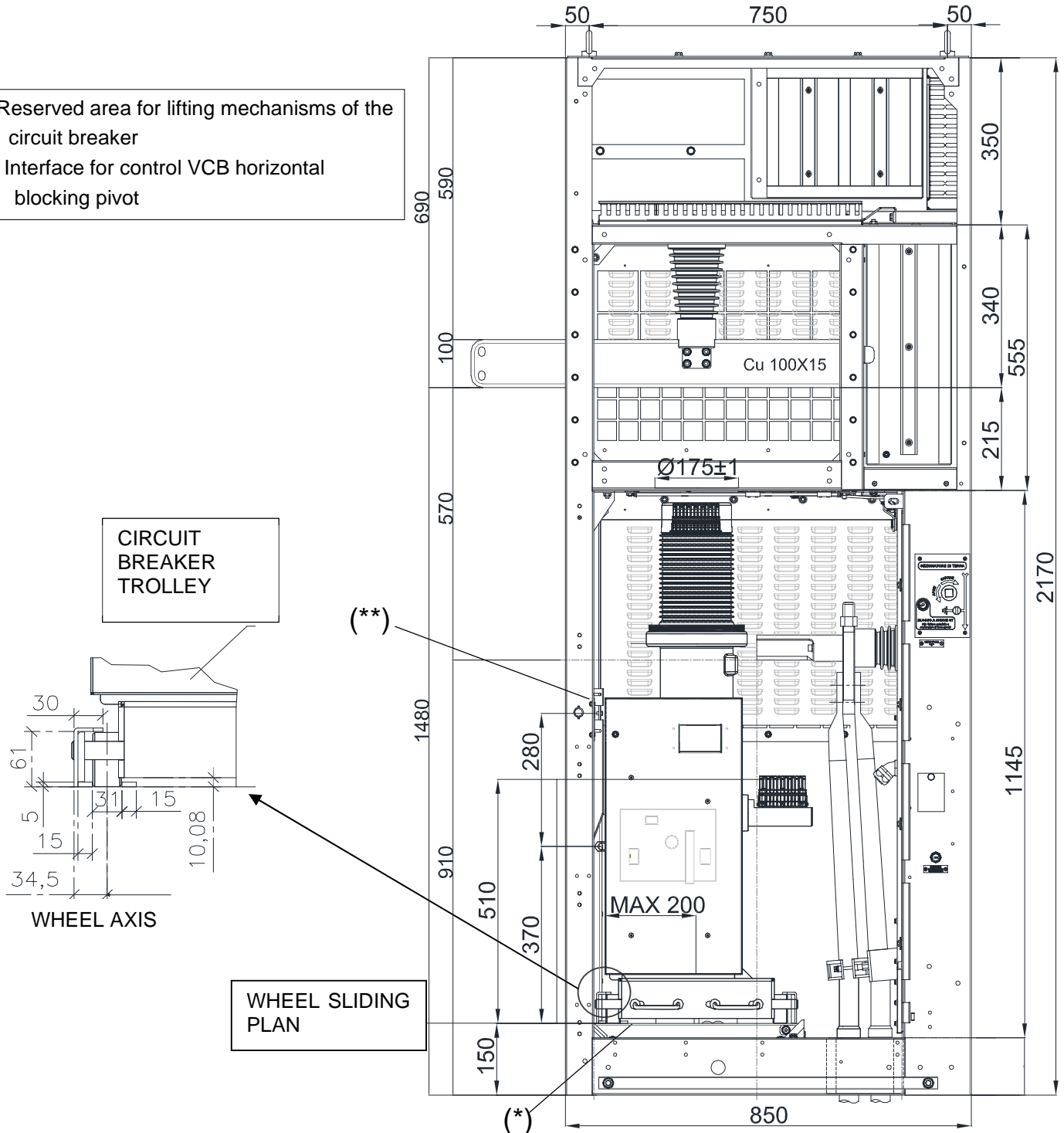
Staff Function: -

Service Function: -

Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "DISCONNECTED" POSITION**

(\*) Reserved area for lifting mechanisms of the circuit breaker  
 (\*\*) Interface for control VCB horizontal blocking pivot



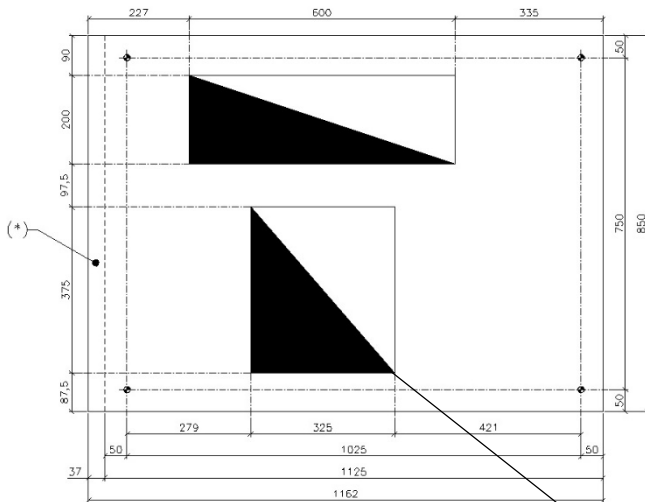


**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

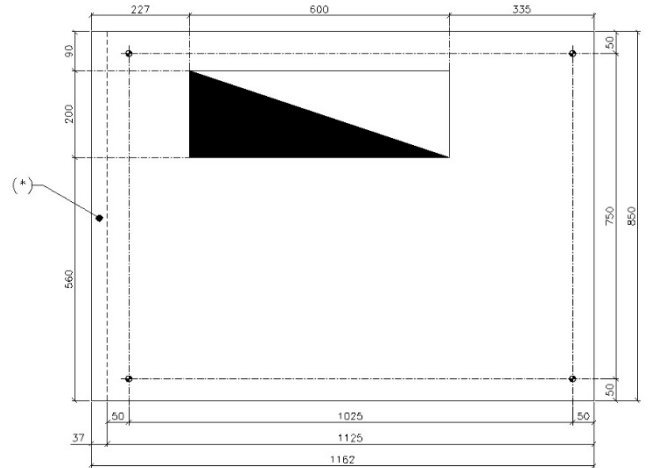
**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**  
Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**BELOW VIEW GSCM 697/1 - /3 2000 A**

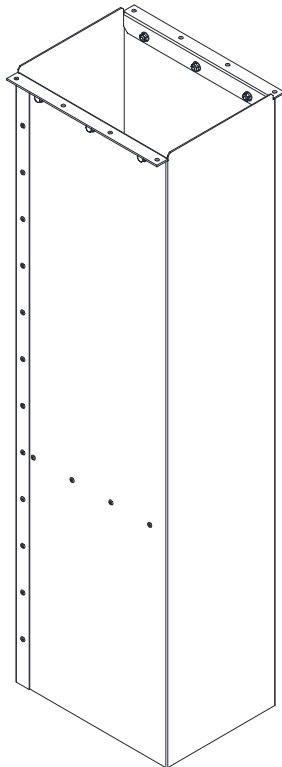


**BELOW VIEW GSCM 697 /2 - /4 1600 A**



**(\*) Overpressures relief duct, only for not REAR-REAR units**

LOWER GAS DUCT HOLE  
PRESENT ONLY Ir=2000A  
COMPARTMENTS



GAS DUCT TO BE CONNECTED  
IN CORRESPONDENCE OF THE  
HOLE FOR GSCM697 /1 - / 3  
Ir=2000A

TYPE LOWER GAS DUCT SEE ANNEX I	DRAWING
FOR CONTAINER INSTALLATION	107 TR1 10 073
FOR BUILDING INSTALLATION	107 TR2 10 073

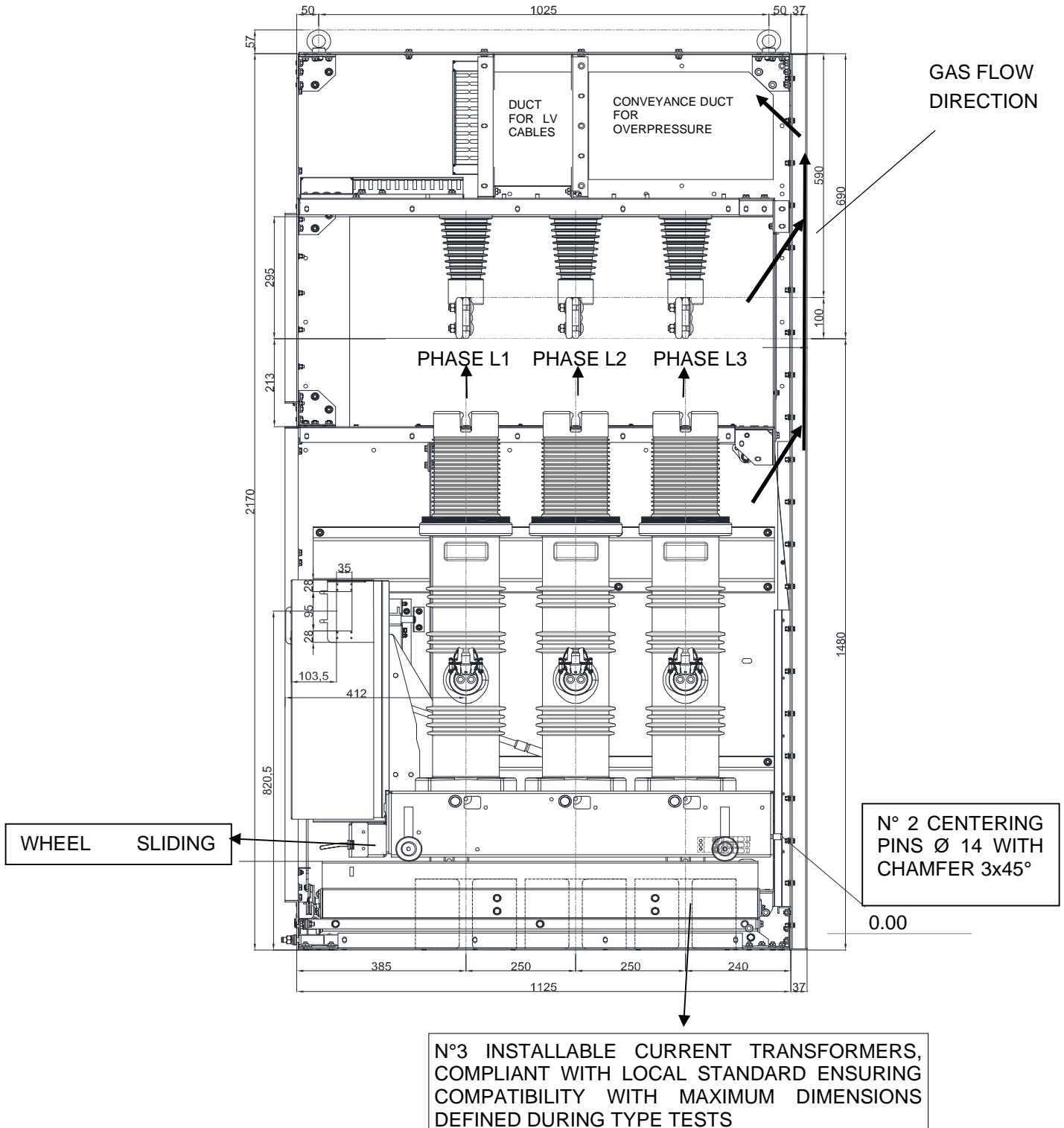
LOWER GAS DUCT

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "DISCONNECTED" POSITION A-A SECTION**



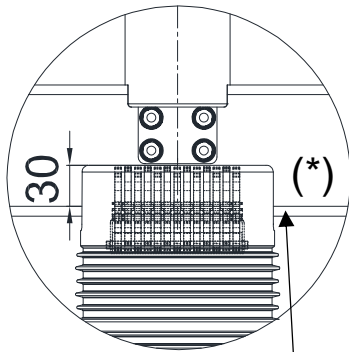


**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

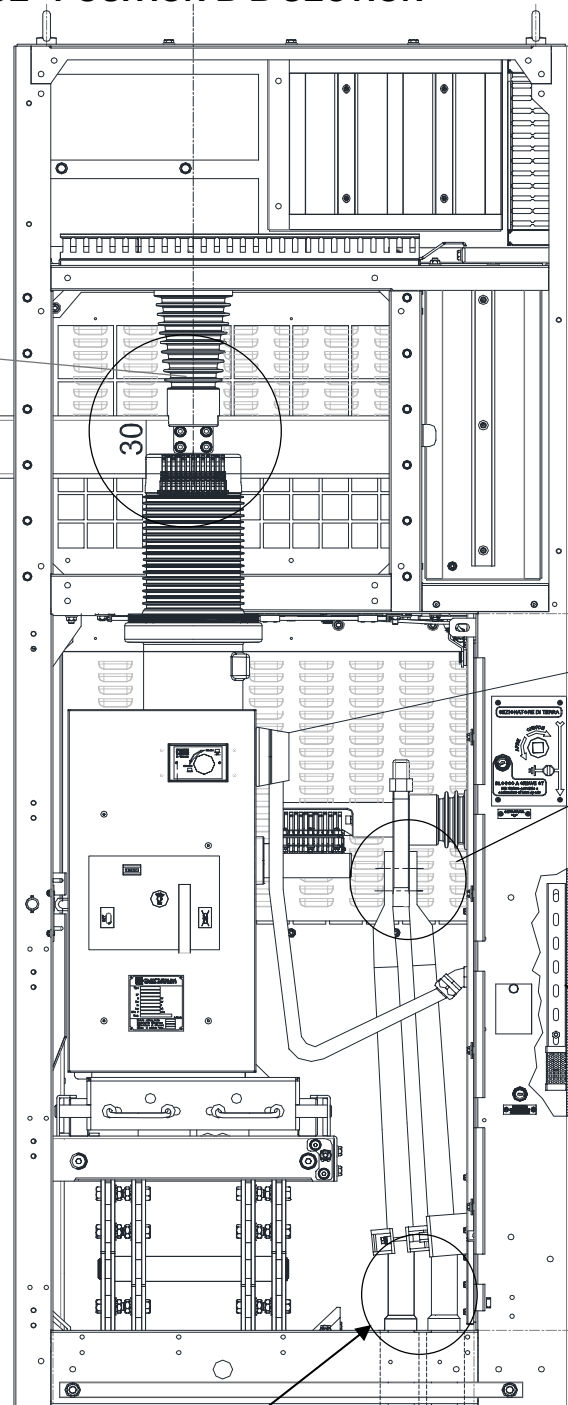
**Application Areas**  
Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "SERVICE" POSITION B-B SECTION**



START OF THE CONTACT ZONE BETWEEN UPPER CONTACT CIRCUIT BREAKER AND MV BARS

(\*) Penetration of the VCB contacts

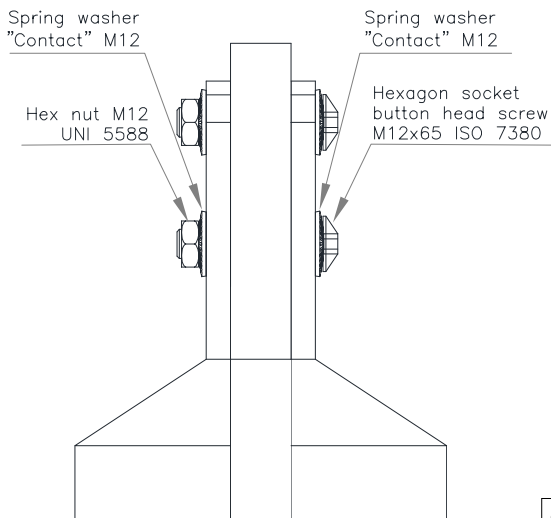


LV connector with socket insert to 24 contacts

PART.A

HEATER ELEMENT

PART.A



Spring washer "Contact" M12

Spring washer "Contact" M12

Hex nut M12 UNI 5588

Hexagon socket button head screw M12x65 ISO 7380

2 X 630 mm<sup>2</sup> Copper cables GSCC023 type for phase

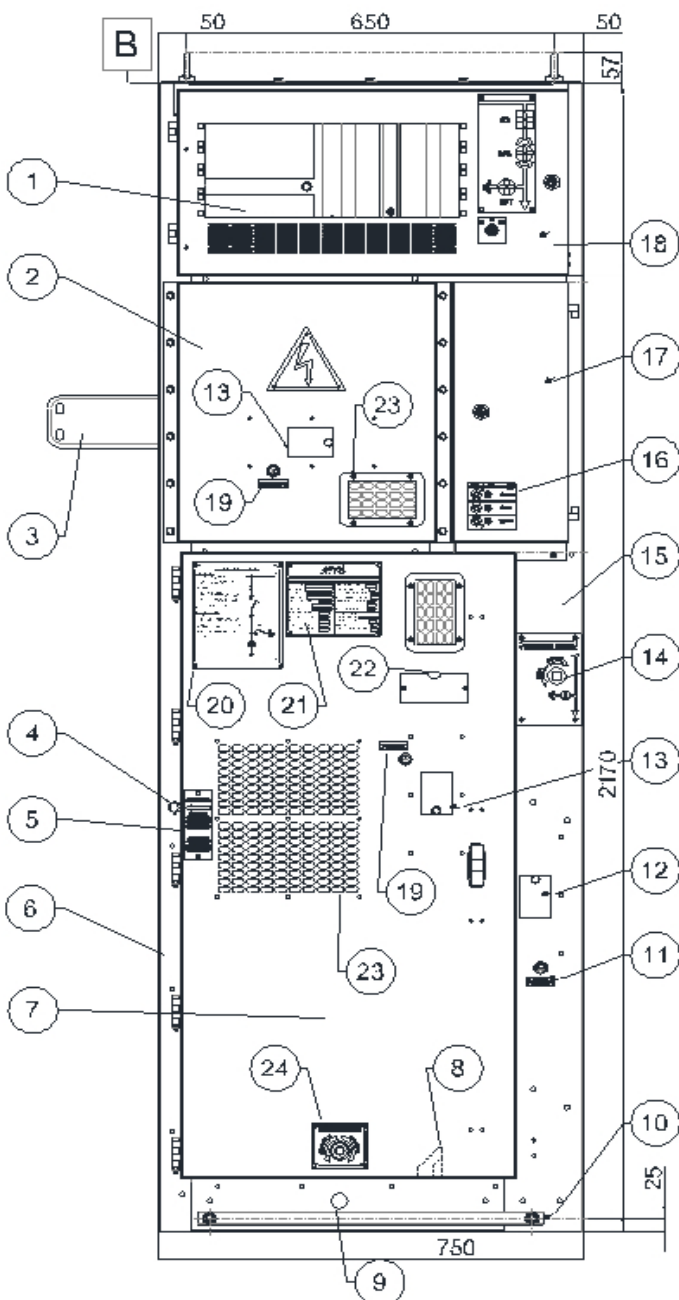
**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**  
Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

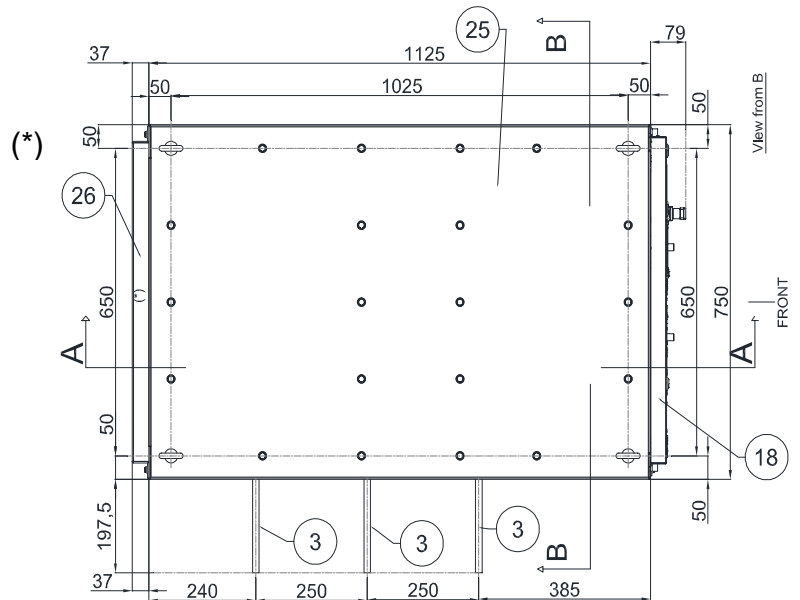
**8.3 ANNEX C - GSCM696 Line functional unit**

Type code	Description
<b>GSCM690/9</b>	GSCM696/1 Line functional unit rear/rear
<b>GSCM690/10</b>	GSCM696/2 Line functional unit

**FRONTAL VIEW**



**PLANT VIEW**



(\*) Overpressures relief duct, only for not REAR-REAR units

REAR-REAR SWITCHGEARS		
GSCM 696/1	630 A	DRAWING: 107 L2 10 001
NOT REAR-REAR SWITCHGEARS		
GSCM 696/2	630 A	DRAWING: 107 L1 10 001
<b>LV WIRING SCHEME</b>		Annex O
<b>ROUTINE TEST</b>		GSCM 1674 (annex M)


**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

1) Protection and control compartment
2) MV Busbars front panel
3) MV Busbars connection system
4) Seat of the Vacuum Circuit Breaker (VCB GSCM505) horizontal blocking pivot
5) Instruction plate for emergency opening VCB
6) Left side
7) MV Cable compartment door
8) Inside system Interlock between VCB lifting trolley and earthing switch
9) Operation seat for the vertical translation lever of the VCB (equipped with an interlock between closing of the door, the earthing switch and the VCB horizontal blocking pivot)
10) Earth-bar collector
11) Plate for MV cable test lock
12) MV Cable test window with unified lock
13) Thermovision with unified lock
14) Seat for earthing switches control with the possibility of padlocking
15) Right side
16) Voltage indication presence device VIDS or Voltage presence devices VDS
17) LV compartment closing panel
18) Protection compartment closing panel
19) Plate for Thermovision lock
20) Operation sequence plate and synoptic diagram. Plate drawing (107 L1 70 015)
21) Ratings plate drawings: <ul style="list-style-type: none"> <li>- GSCM696/1 (107 L2 70 016))</li> <li>- GSCM696/2 (107 L1 70 016)</li> </ul>
22) Label holder
23) Inspection window
24) Plate indicating the direction of rotation circuit breaker lift mechanism (disconnected / in service position)
25) Top panel
26) Rear duct

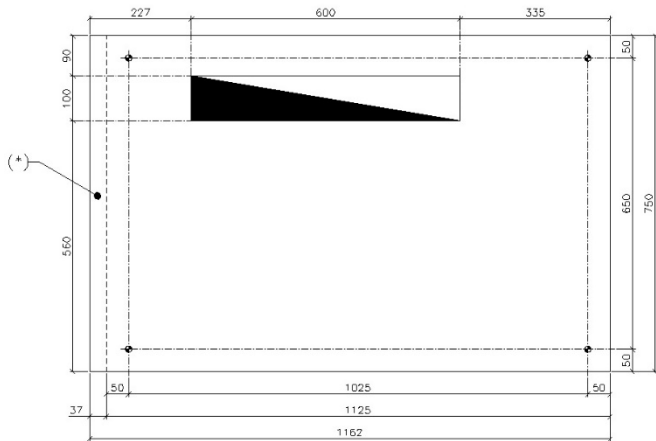
**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "DISCONNECTED" POSITION.**

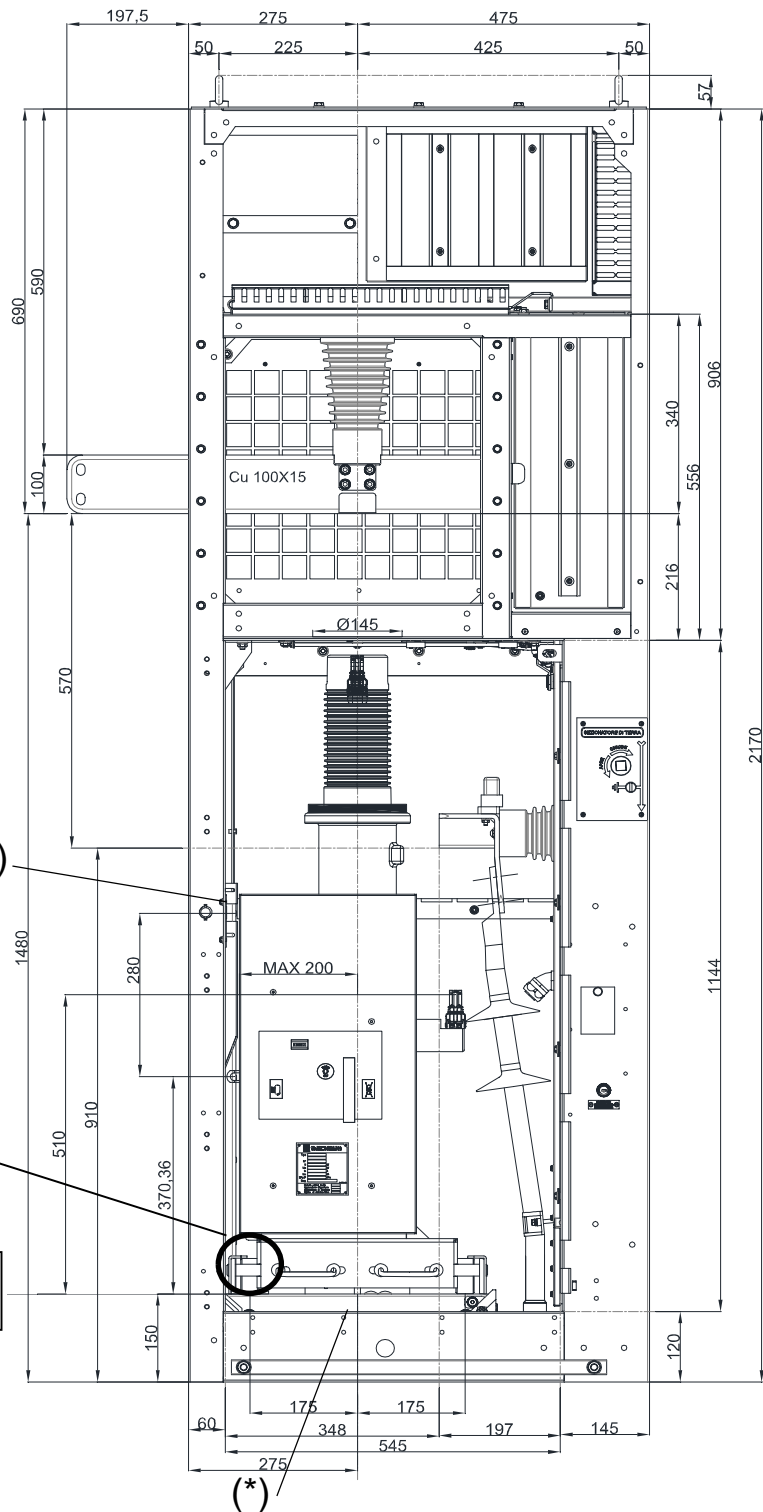
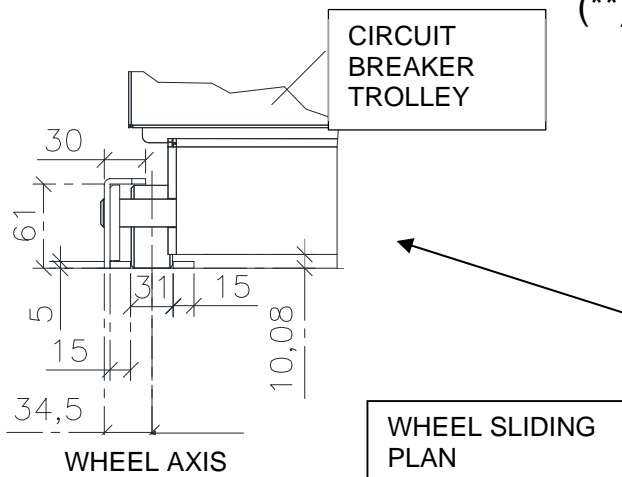
**VIEW FROM BELOW**



(\*) Overpressures relief duct, only for not REAR-REAR units

(\*) Reserved area for lifting mechanisms of the circuit breaker

(\*\*) Interface for control VCB horizontal blocking pivot





**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

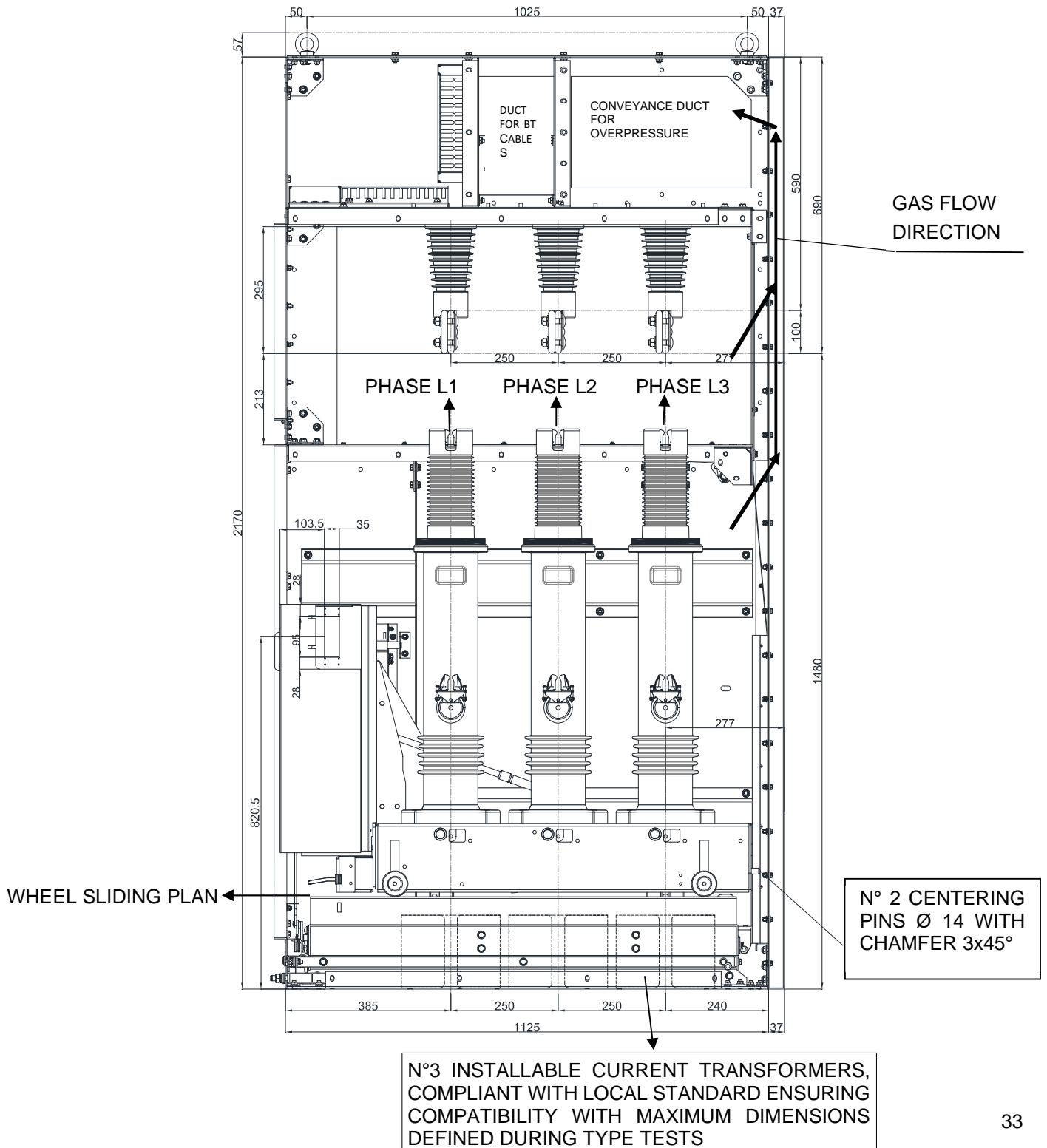
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

## CIRCUIT BREAKER IN "DISCONNECTED" POSITION A-A SECTION





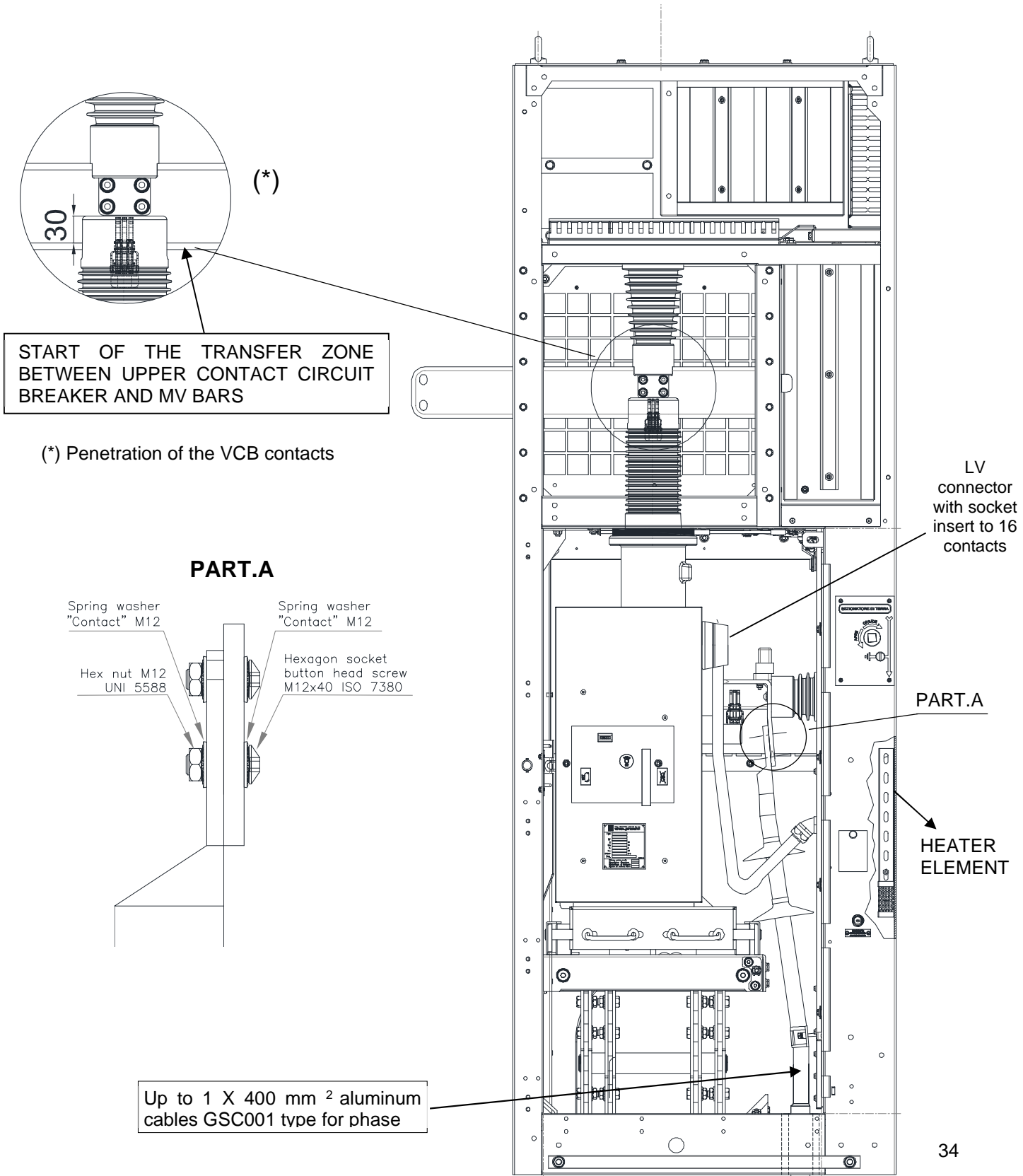
**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "SERVICE" POSITION B-B SECTION**





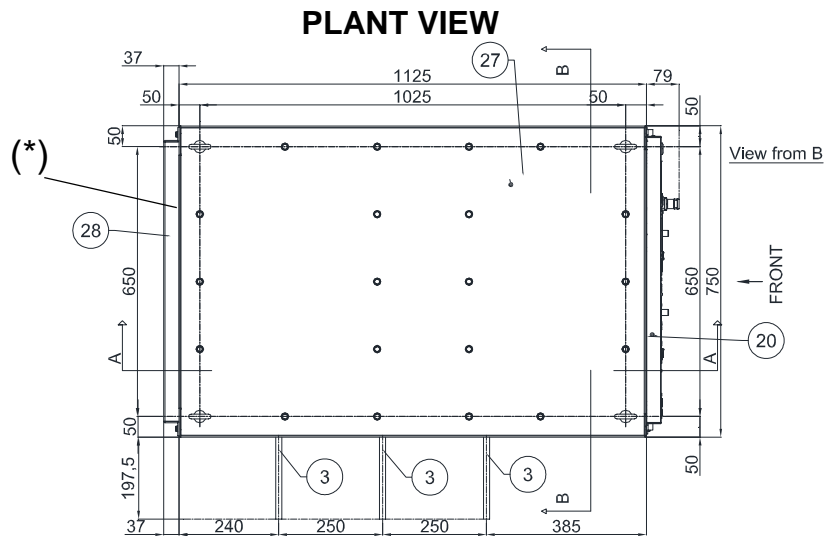
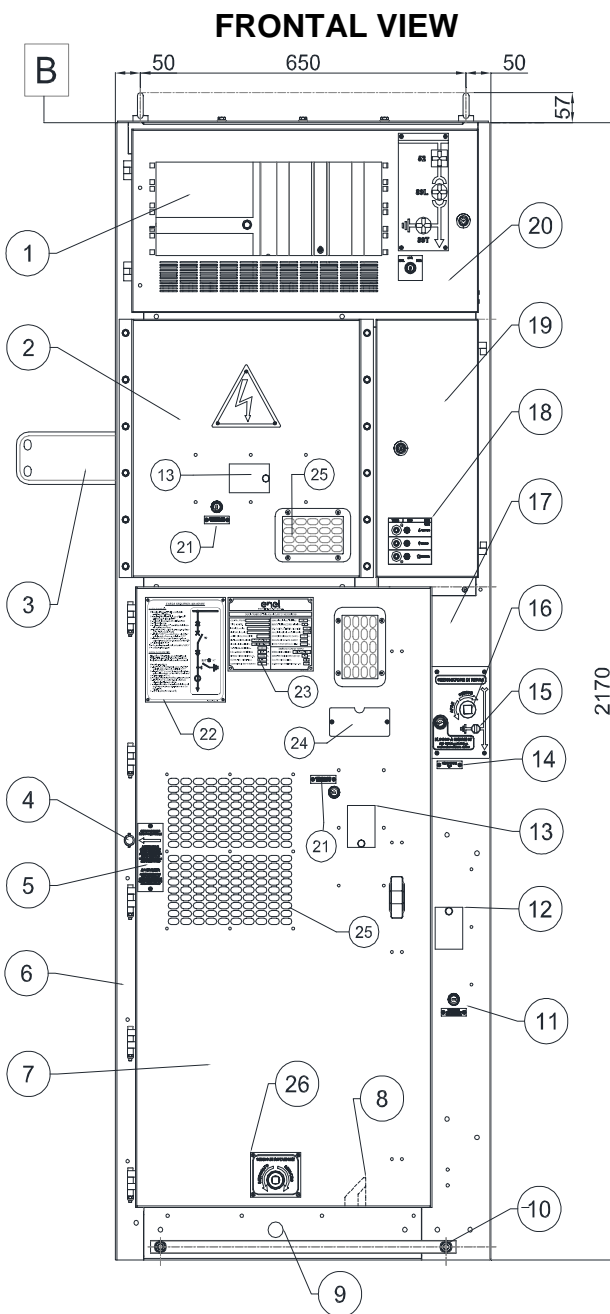
**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**  
Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**8.4 ANNEX D - GSCM699 Capacitor Bank functional unit**

Type code	Description
GSCM690/11	GSCM699/1 Capacitor bank functional unit rear/rear
GSCM690/12	GSCM699/2 Capacitor bank functional unit



(\* Overpressures relief duct, only for not REAR-REAR units

REAR-REAR SWITCHGEARS		
GSCM699/1	630 A	DRAWING: 107 R2 10 001
NOT REAR-REAR SWITCHGEARS		
GSCM699/2	630 A	DRAWING: 107 R1 10 001
<b>LV WIRING SCHEME</b>	Annex O	
<b>ROUTINE TEST</b>	GSCM 1674 (annex M)	


**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

1) Protection and control compartment
2) MV Busbars front panel
3) MV Busbars connection system
4) Seat of the Vacuum Circuit Breaker (VCB GSCM505) horizontal blocking pivot
5) Instruction plate for emergency opening VCB
6) Left side
7) MV Cable compartment door
8) Inside system Interlock between VCB lifting trolley and earthing switch
9) Operation seat for the vertical translation lever of the VCB (equipped with an interlock between closing of the door, the earthing switch and the VCB horizontal blocking pivot)
10) Earth-bar collector
11) Plate for MV cable test lock
12) MV Cable test window with unified lock
13) Thermovision with unified lock
14) Earthing switch lock plate
15) Earthing switch key lock: Lock inserted with earthing switch in the "CLOSED" position (key free with lock inserted)
16) Seat for earthing switches control with the possibility of padlocking
17) Right side
18) Voltage indication presence device VIDS or Voltage presence devices VDS
19) LV compartment closing panel
20) Protection compartment closing panel
21) Plate for Thermovision lock
22) Operation sequence plate and synoptic diagram. Plate drawing (107 R1 70 015)
23) Ratings plate drawings: <ul style="list-style-type: none"> <li>- GSCM699/1 (107 R2 70 016)</li> <li>- GSCM699/2 (107 R1 70 016)</li> </ul>
24) Label holder
25) Inspection window
26) Plate indicating the direction of rotation circuit breaker lift mechanism (disconnected / in service position)
27) Top panel
28) Rear duct



Technical Specification code: MAT-E&C-NC-2021-0064-GRI  
Version no. 2 dated 18/07/2022

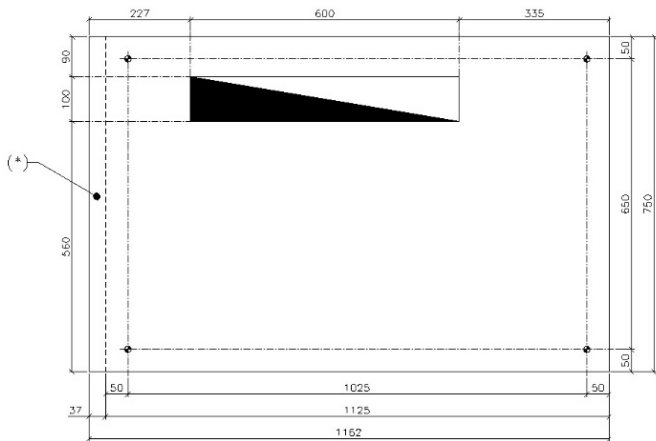
Subject: Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: Global  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "DISCONNECTED" POSITION.**

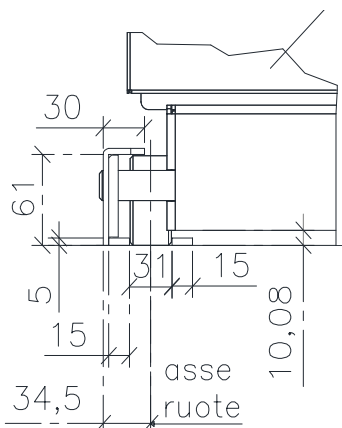
**VIEW FROM BELOW**



(\*) Overpressures relief duct, only for not REAR-REAR units

(\*) Reserved area for lifting mechanisms of the circuit breaker

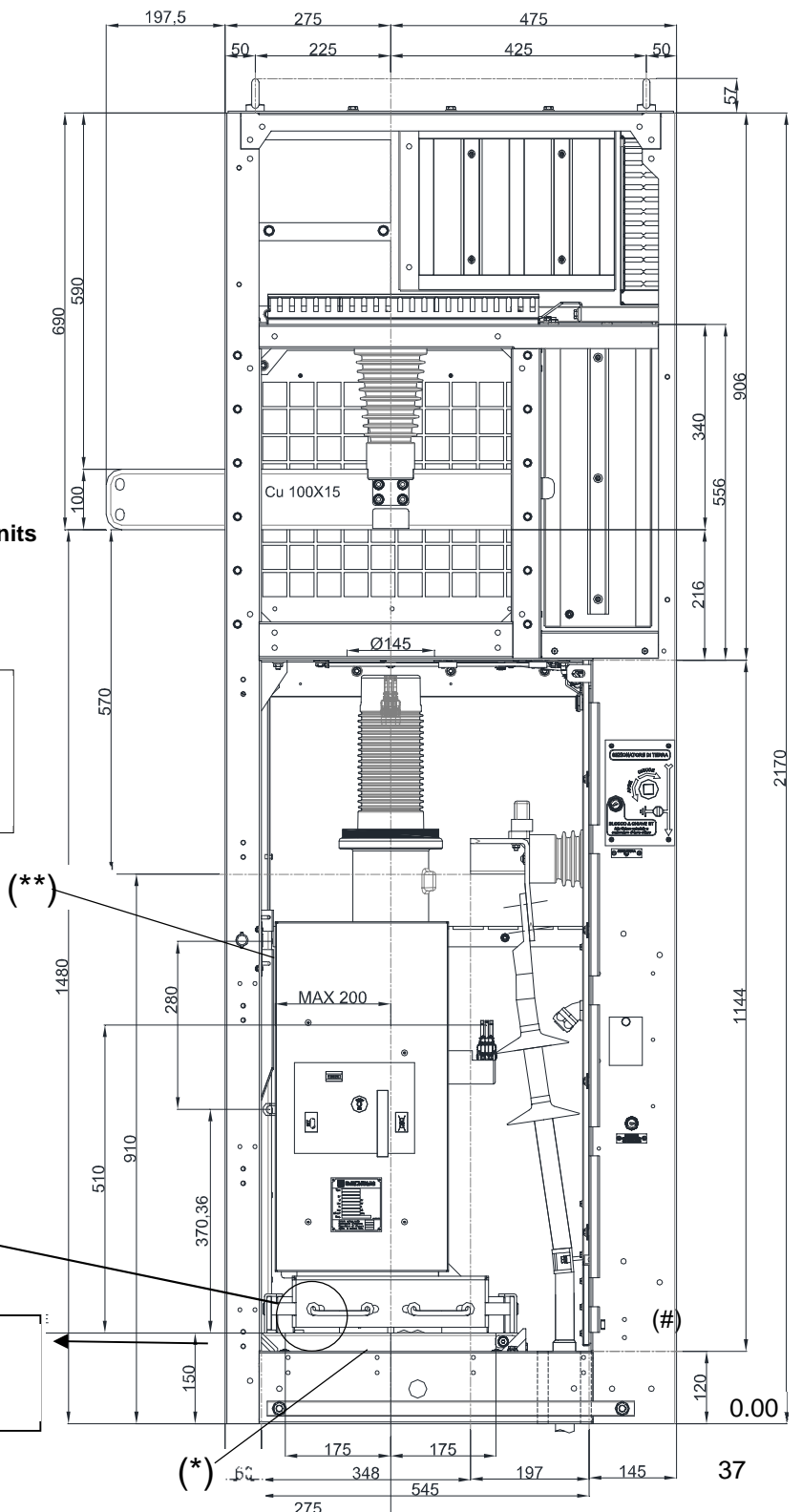
(\*\*) Interface for control VCB horizontal blocking pivot



WHEEL AXIS

CIRCUIT BREAKER TROLLEY

WHEEL SLIDING PLAN



(\*)

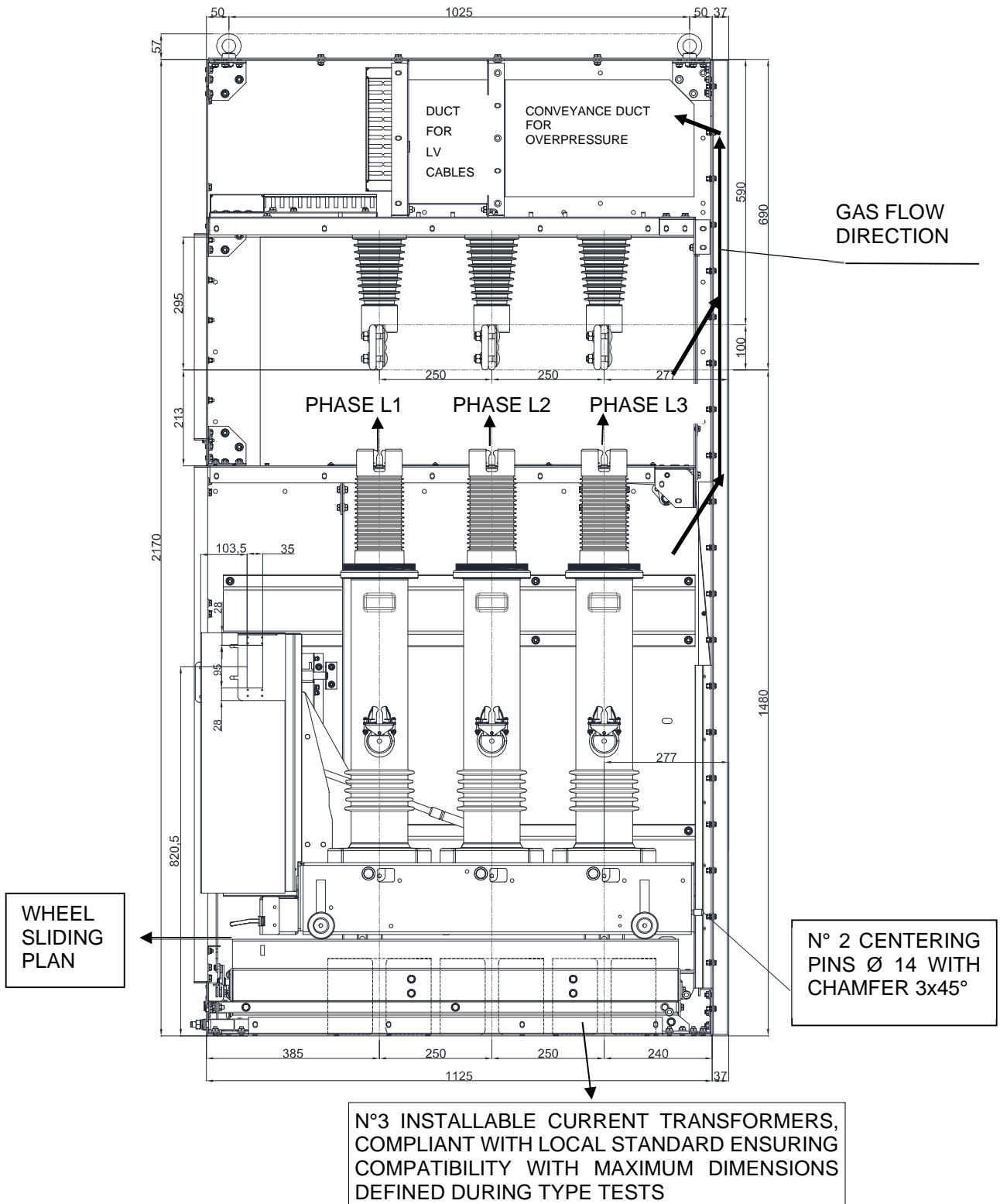
(#)

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "DISCONNECTED" POSITION A-A SECTION**

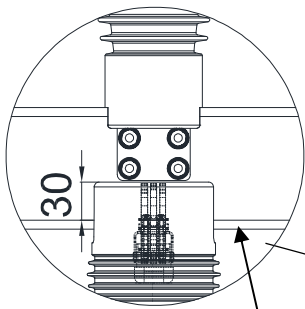


**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "SERVICE" POSITION B-B SECTION**

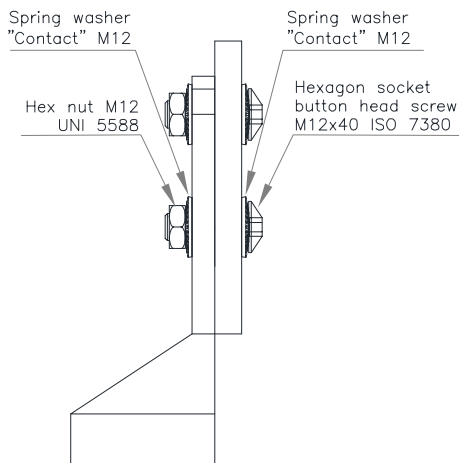


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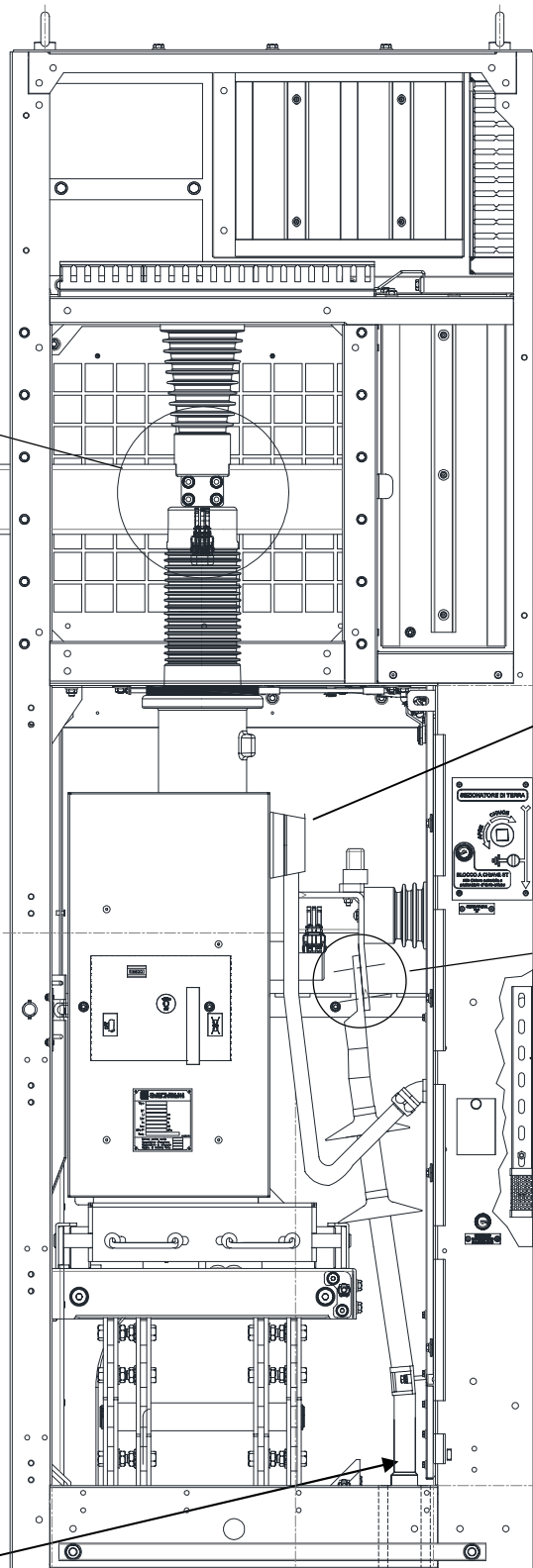
START OF THE TRANSFER ZONE BETWEEN UPPER CONTACT CIRCUIT BREAKER AND MV BARS

(\*) Penetration of the VCB contacts

**PART.A**



Up to 1 X 400 mm<sup>2</sup> aluminum cables GSC001 type for phase



LV connector with socket insert to 16 contacts

PART.A

HEATER ELEMENT



**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

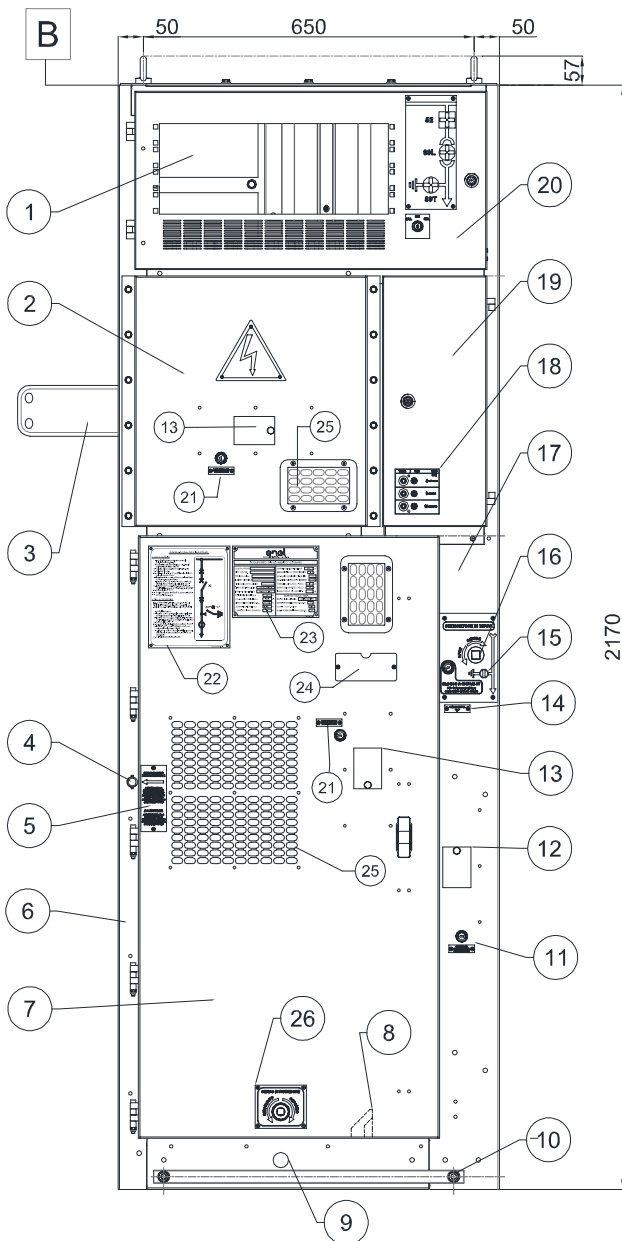
**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**  
Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

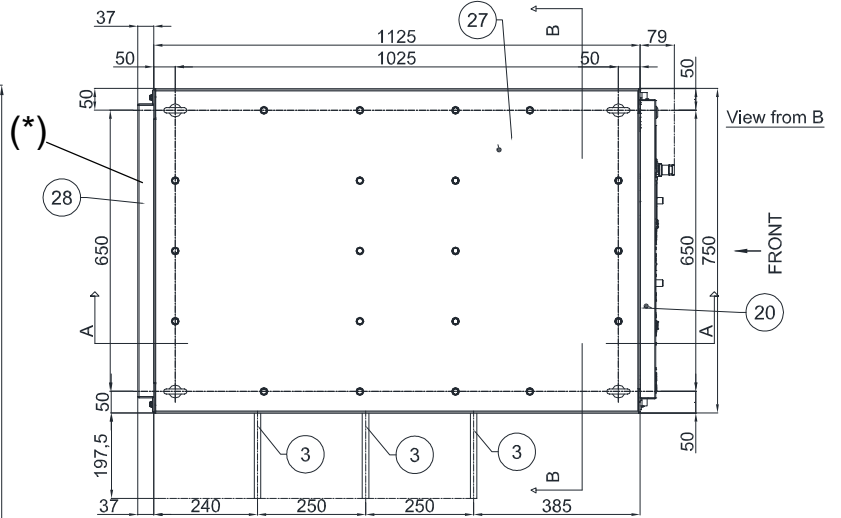
**8.5 ANNEX E – GSCM700 Auxiliary services functional unit**

Type code	Description
GSCM690/13	GSCM700/1 Auxiliary services functional unit rear/rear
GSCM690/14	GSCM700/2 Auxiliary services functional unit

**FRONTAL VIEW**



**PLANT VIEW**



(\*) Overpressures relief duct, only for not REAR-REAR units

REAR-REAR SWITCHGEAR	
GSCM700/1 630 A	DRAWING: 107 SA2 10 001
NOT REAR-REAR SWITCHGEAR	
GSCM700/2 630 A	DRAWING: 107 SA1 10 001
<b>LV WIRING SCHEME</b>	Annex O
<b>ROUTINE TEST</b>	GSCM 1674 (annex M)




**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

1) Protection and control compartment
2) MV Busbars front panel
3) MV Busbars connection system
4) Seat of the Vacuum Circuit Breaker (VCB GSCM505) horizontal blocking pivot
5) Instruction plate for emergency opening VCB
6) Left side
7) MV Cable compartment door
8) Inside system Interlock between VCB lifting trolley and earthing switch
9) Operation seat for the vertical translation lever of the VCB (equipped with an interlock between closing of the door, the earthing switch and the VCB horizontal blocking pivot)
10) Earth-bar collector
11) Plate for MV cable test lock
12) MV Cable test window with unified lock
13) Thermovision with unified lock
14) Earthing switch lock plate
15) Earthing switch key lock: Lock inserted with earthing switch in the "CLOSED" position (key free with lock inserted)
16) Seat for earthing switches control with the possibility of padlocking
17) Right side
18) Voltage indication presence device VIDS or Voltage presence devices VDS
19) LV compartment closing panel
20) Protection compartment closing panel
21) Plate for Thermovision lock
22) Operation sequence plate and synoptic diagram. Plate drawing (107 SA1 70 015)
23) Ratings plate drawings: <ul style="list-style-type: none"> <li>- GSCM700/1 (107 SA2 70 016)</li> <li>- GSCM700/2 (107 SA1 70 016)</li> </ul>
24) Label holder
25) Inspection window
26) Plate indicating the direction of rotation circuit breaker lift mechanism (disconnected / in service position)
27) Top panel
28) Rear duct

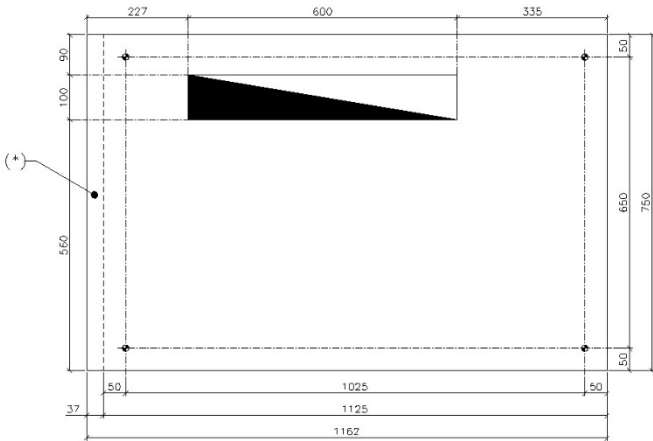
**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "DISCONNECTED" POSITION**

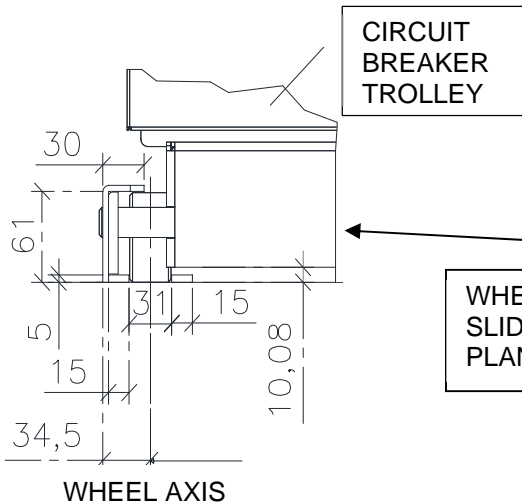
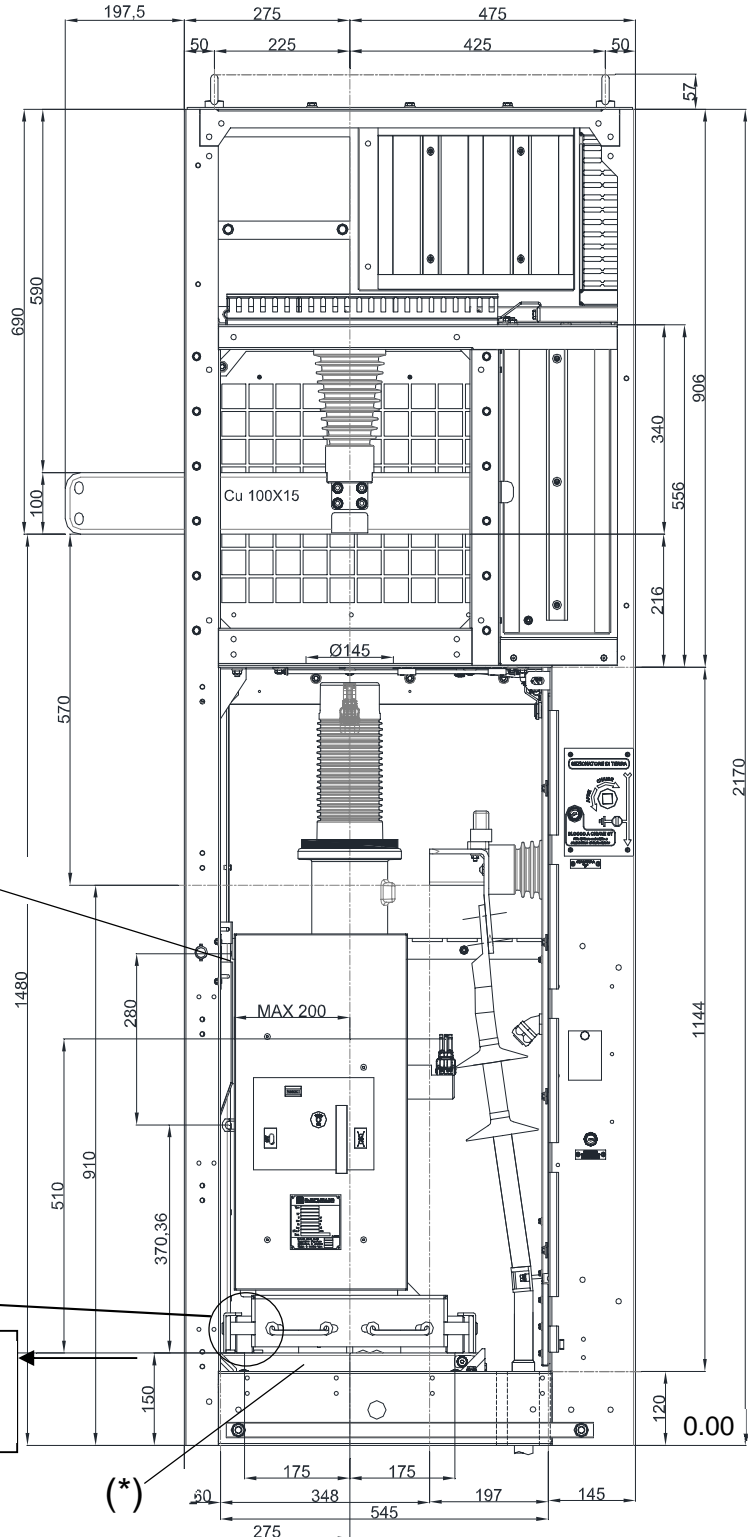
**VIEW FROM BELOW**



(\*) Overpressures relief duct, only for not REAR-REAR units

(\*) Reserved area for lifting mechanisms of the circuit breaker

(\*\*) Interface for control VCB horizontal blocking pivot

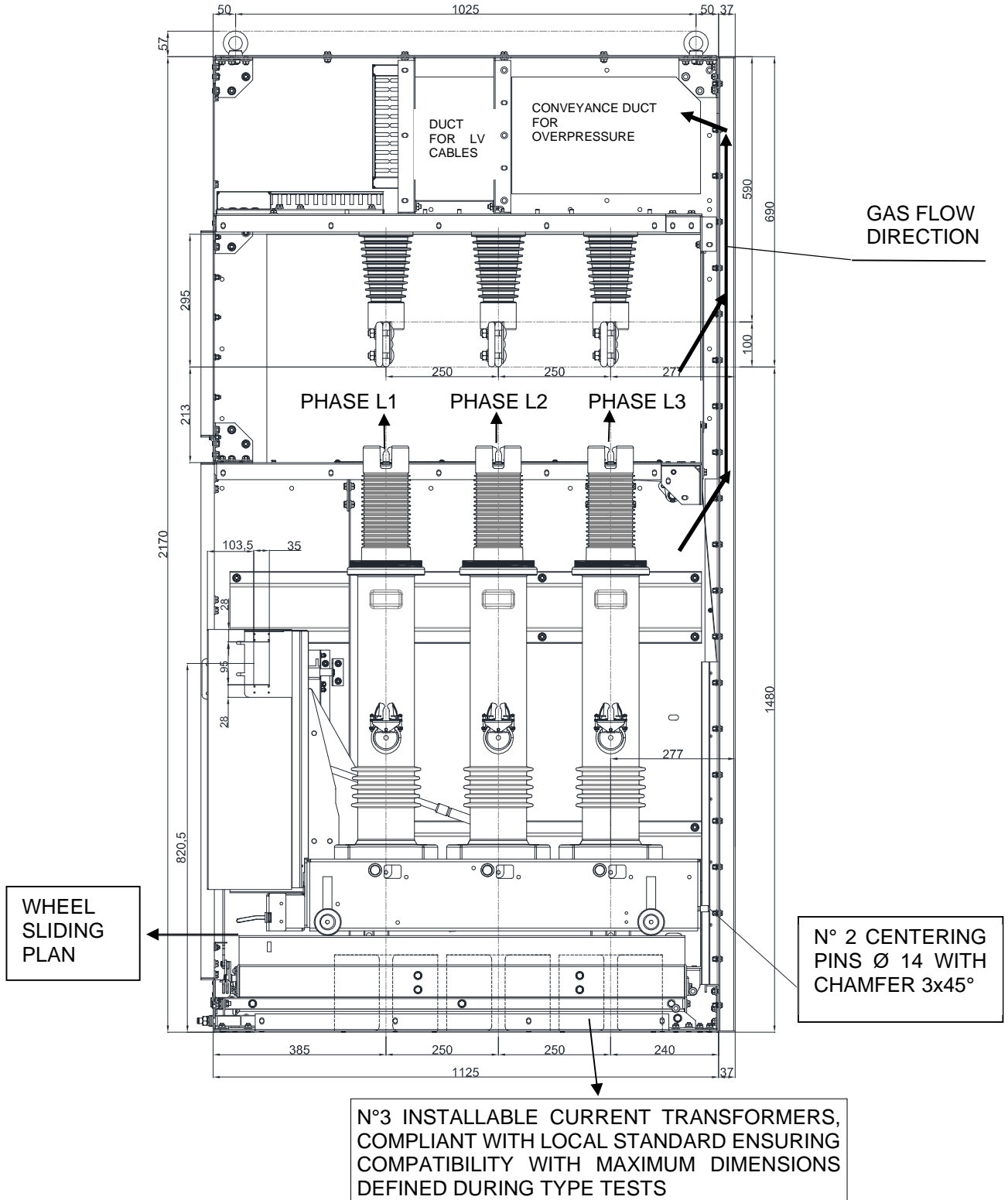


**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "DISCONNECTED" POSITION A-A SECTION**





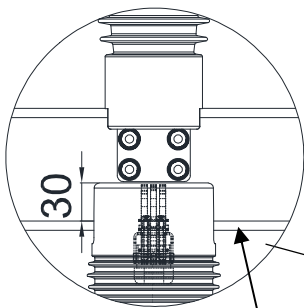
**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "SERVICE" POSITION B-B SECTION**

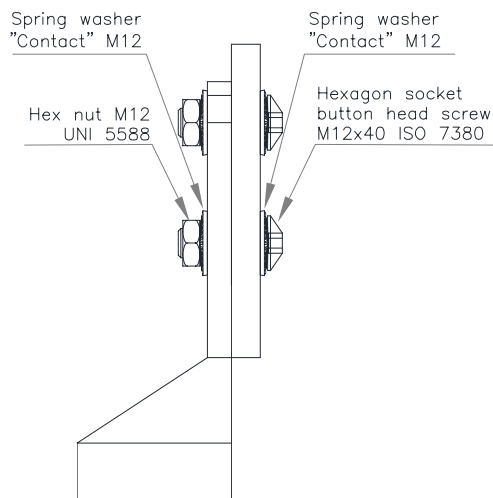


(\*)

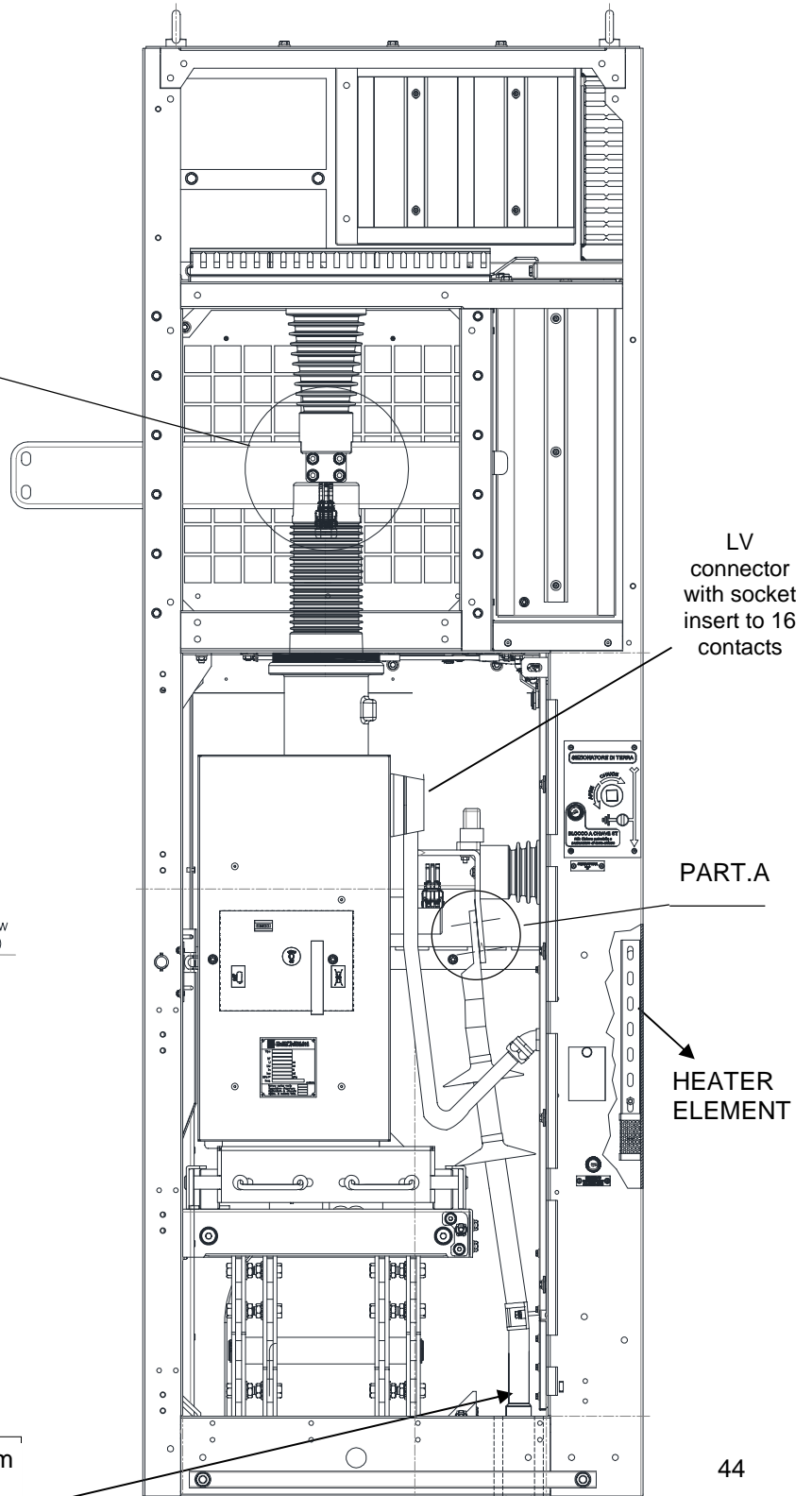
START OF THE TRANSFER ZONE BETWEEN UPPER CONTACT CIRCUIT BREAKER AND MV BARS

(\*) Penetration of the VCB contacts

**PART.A**



Up to 1 X 400 mm<sup>2</sup> aluminum GSC001 type for phase



**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

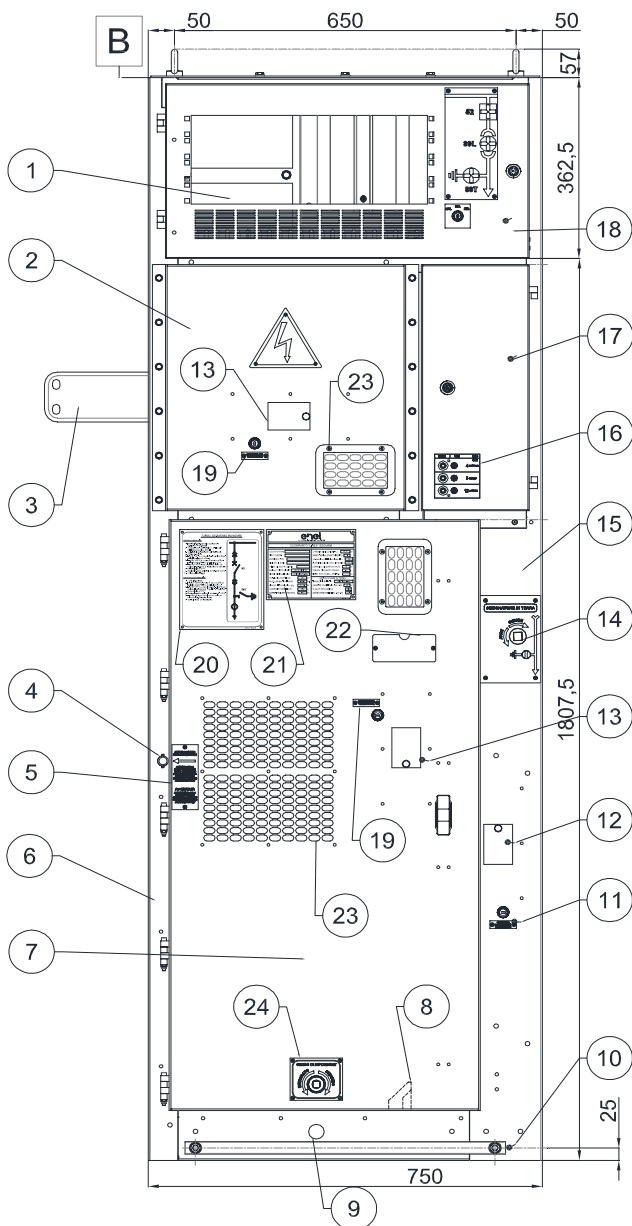
**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

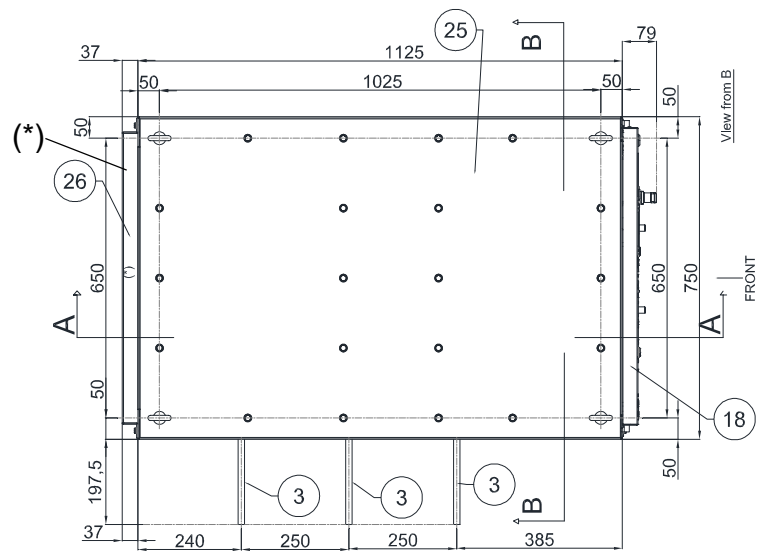
**8.6 ANNEX F – GSCM730 Neutral Maker Transformer functional unit**

Type code	Description
GSCM690/15	GSCM730/1 Neutral Maker Transformer functional unit rear/rear
GSCM690/16	GSCM730/2 Neutral Maker Transformer functional unit

**FRONTAL VIEW**



**PLANT VIEW**



(\*) Overpressures relief duct, only for not REAR-REAR units

REAR-REAR SWITCHGEAR		
GSCM730/1	630 A	DRAWING: 107 TFN2 10 001
NOT REAR-REAR SWITCHGEAR		
GSCM730/2	630 A	DRAWING: 107 TFN1 10 001
LV WIRING SCHEME		Annex O
ROUTINE TEST		GSCM 1674 (annex M)


**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

1) Protection and control compartment
2) MV Busbars front panel
3) MV Busbars connection system
4) Seat of the Vacuum Circuit Breaker (VCB GSCM505) horizontal blocking pivot
5) Instruction plate for emergency opening VCB
6) Left side
7) MV Cable compartment door
8) Inside system Interlock between VCB lifting trolley and earthing switch
9) Operation seat for the vertical translation lever of the VCB (equipped with an interlock between closing of the door, the earthing switch and the VCB horizontal blocking pivot)
10) Earth-bar collector
11) Plate for MV cable test lock
12) MV Cable test window with unified lock
13) Thermovision with unified lock
14) Seat for earthing switches control with the possibility of padlocking
15) Right side
16) Voltage indication presence device VIDS or Voltage presence devices VDS
17) LV compartment closing panel
18) Protection compartment closing panel
19) Plate for Thermovision lock
20) Operation sequence plate and synoptic diagram. Plate drawing (107 L1 70 015)
21) Ratings plate drawings: <ul style="list-style-type: none"> <li>- GSCM730/1 (107 TFN2 70 016)</li> <li>- GSCM730/2 (107 TFN1 70 016)</li> </ul>
22) Label holder
23) Inspection window
24) Plate indicating the direction of rotation circuit breaker lift mechanism (disconnected / in service position)
25) Top panel
26) Rear duct



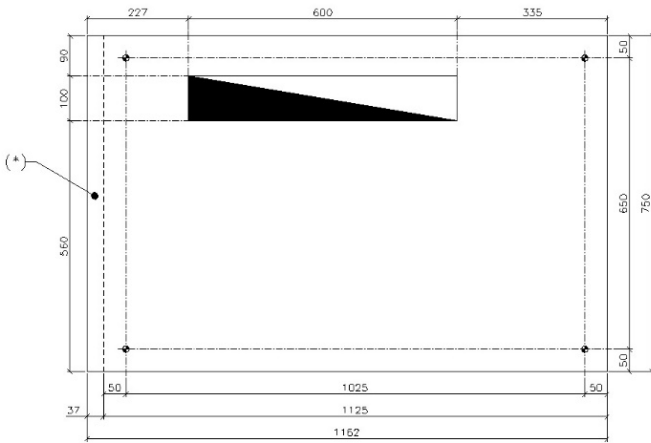
**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

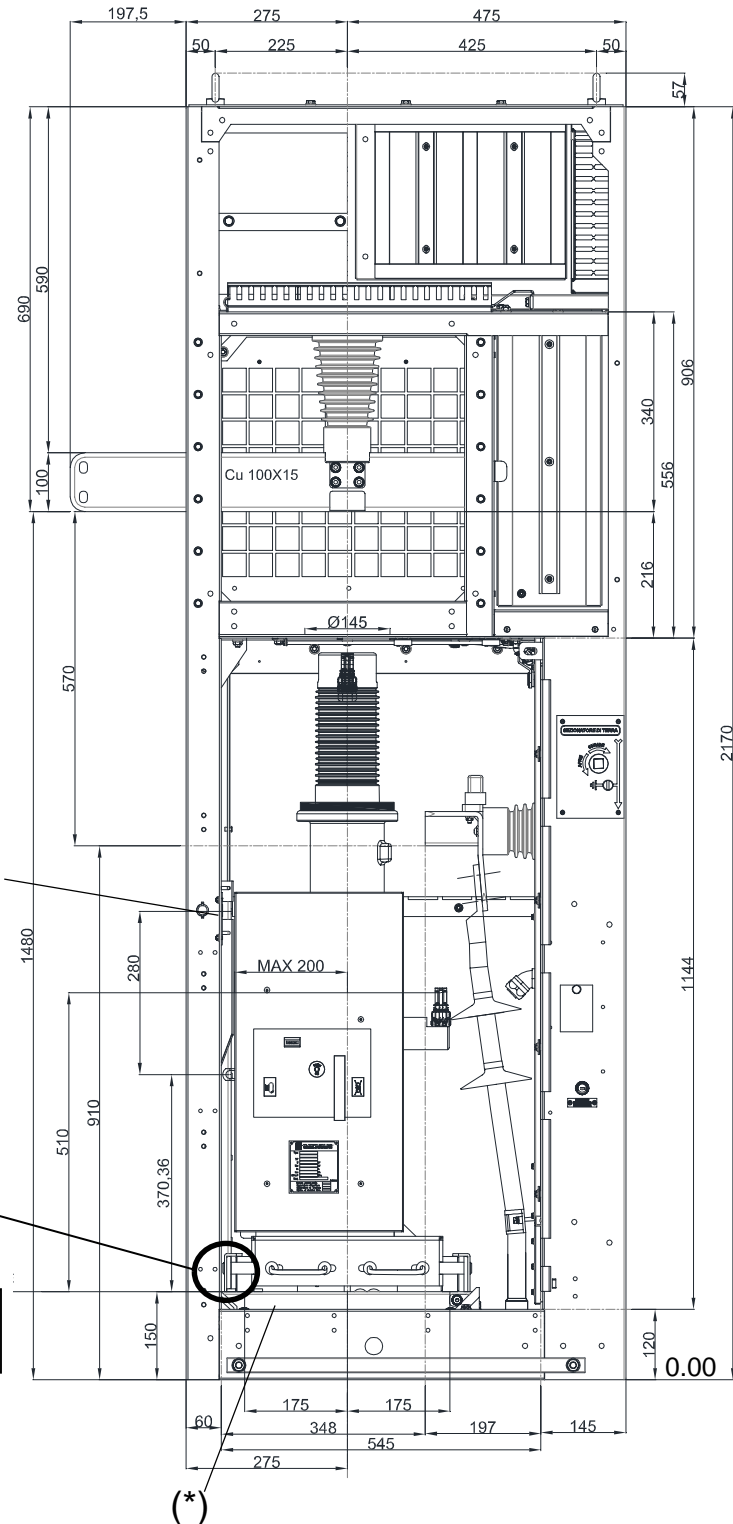
**Application Areas**  
Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "DISCONNECTED" POSITION**

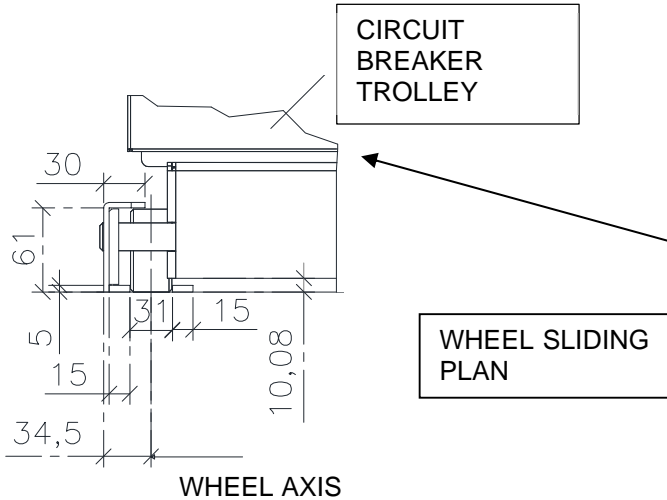
**VIEW FROM BELOW**



(\*) Overpressures relief duct, only for not REAR-REAR units



(\*) Reserved area for lifting mechanisms of the circuit breaker  
(\*\*) Interface for control VCB horizontal blocking pivot

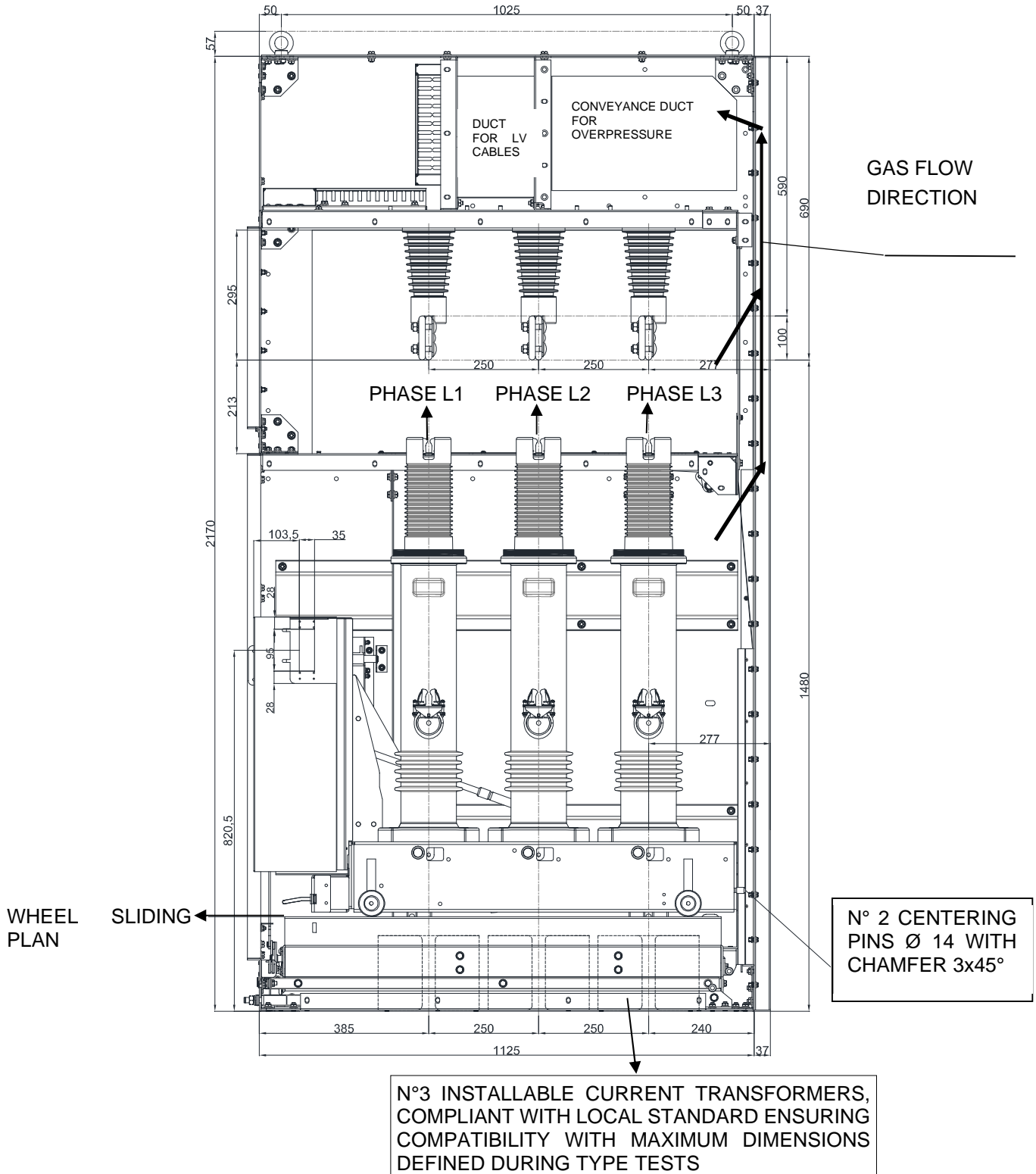


**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**CIRCUIT BREAKER IN "DISCONNECTED" POSITION A-A SECTION**





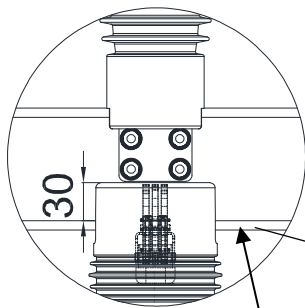


Technical Specification code: MAT-E&C-NC-2021-0064-GRI  
Version no. 2 dated 18/07/2022

Subject: Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

Application Areas  
Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

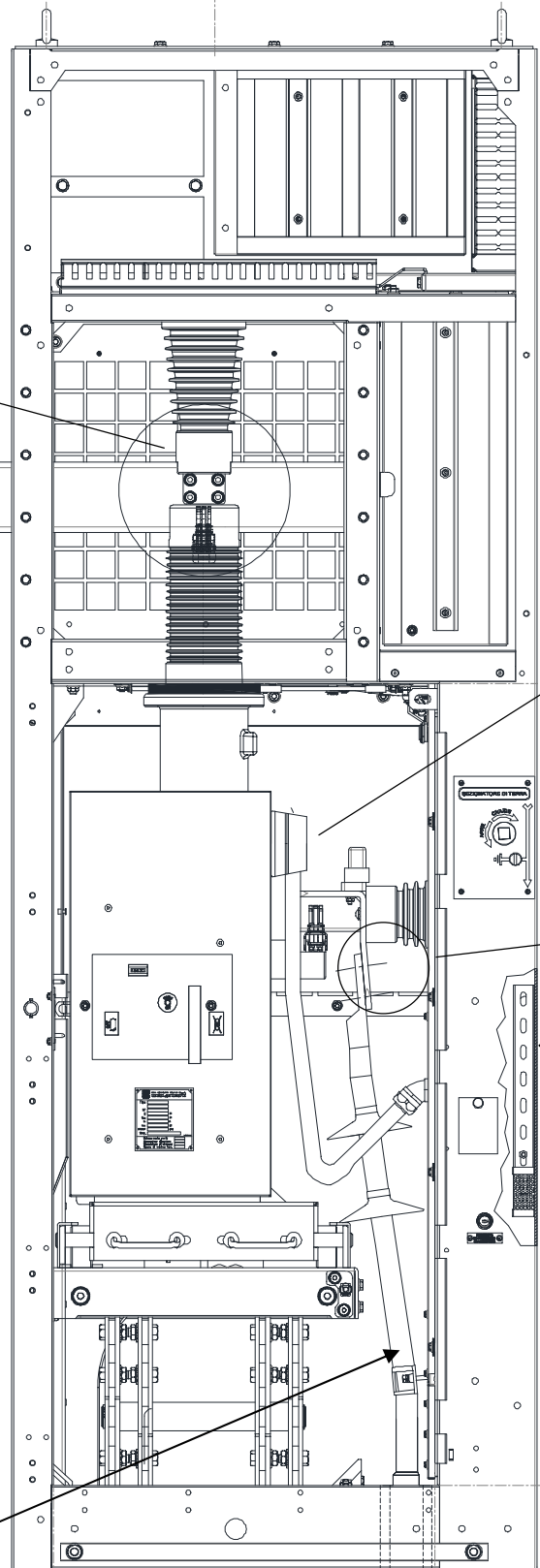
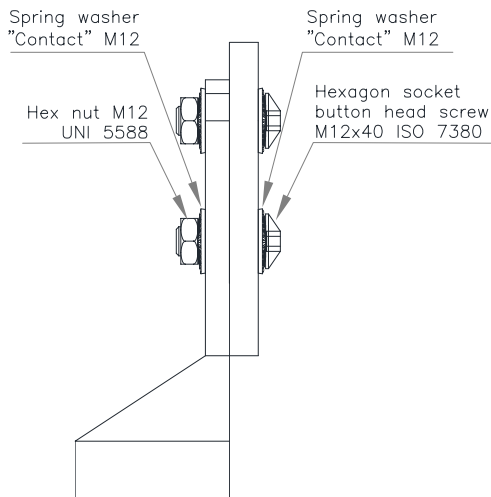
### CIRCUIT BREAKER IN "SERVICE" POSITION B-B SECTION



START OF THE TRANSFER ZONE BETWEEN UPPER CONTACT CIRCUIT BREAKER AND MAIN BARS

(\*) Penetration of the VCB contacts

#### PART.A



LV connector with socket insert to 16 contacts

PART.A

HEATER ELEMENT

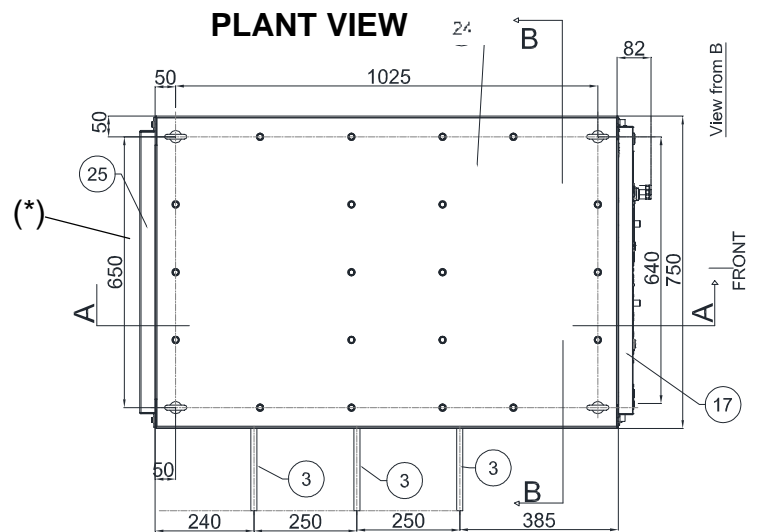
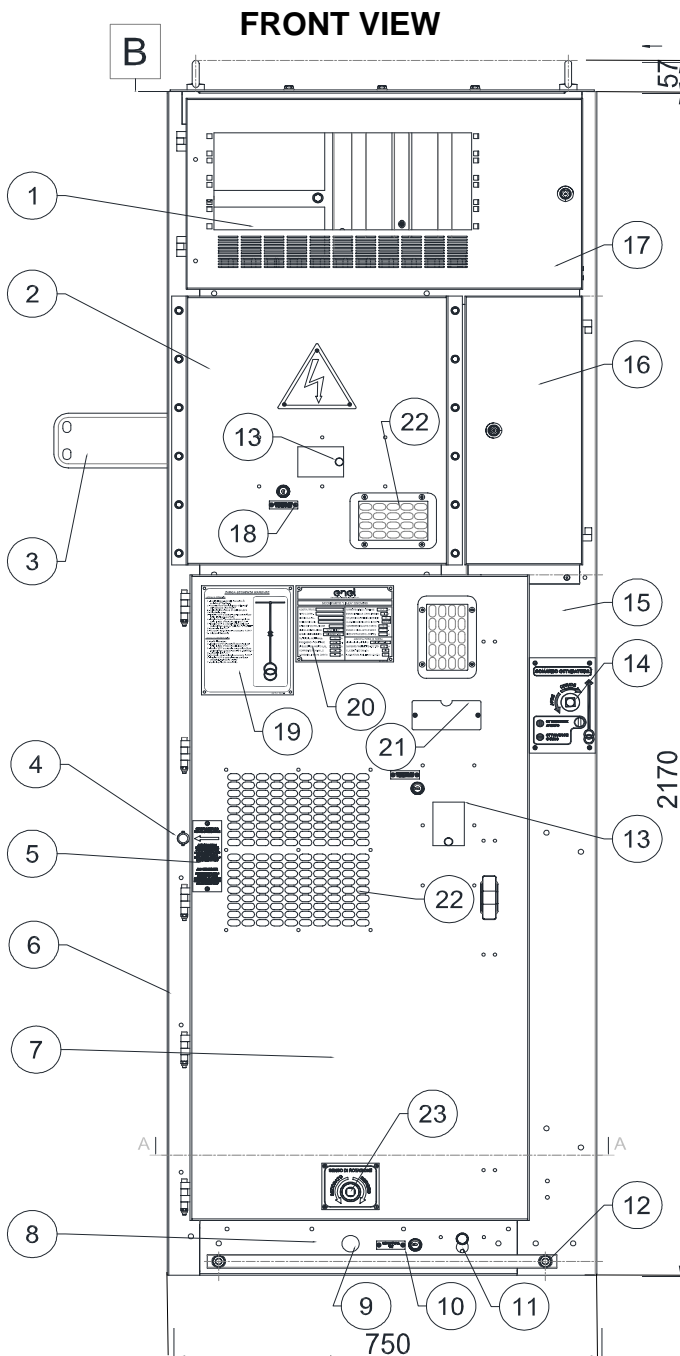
Up to 1 X 400 mm<sup>2</sup> aluminum cables GSC001 type for phase

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**  
Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**8.7 ANNEX G – GSCM731 Voltage bus bar measurement functional unit**

Type code	Description
GSCM690/17	GSCM731/1 Voltage Bus Bar measurement functional unit rear/rear
GSCM690/18	GSCM731/2 Voltage Bus Bar measurement functional unit



(\*) Overpressures relief duct, only for not REAR-REAR units

REAR-REAR SWITCHGEAR		
GSCM731/1	630 A	DRAWING: 107 TV2 10 001
NOT REAR-REAR SWITCHGEAR		
GSCM731/2	630 A	DRAWING: 107 TV1 10 001
<b>LV WIRING SCHEME</b>		Annex O
<b>ROUTINE TEST</b>		GSCM 1674 (annex M)


**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

1) Protection and control compartment
2) MV Busbars front panel
3) MV Busbars connection system
4) Seat of the Voltage Transformer Trolley (VTT GSCM734) horizontal blocking pivot
5) Instruction plate for VTT horizontal blocking pivot
6) Left side
7) MV Cable compartment door
8) Inside system Interlock between VTT lifting and earthing switch
9) Operation seat for the vertical translation lever of the VTT (equipped with an interlock between closing of the door, the earthing switch and the VTT horizontal blocking pivot)
10) Key lock plate
11) VTT service position key block. The block is inserted when the seat of vertical translation is CLOSED and VTT in the service position (key free with block inserted)
12) Earth-bar collector
13) Thermovision with unified lock
14) Seat for shutter command with the possibility of padlocking
15) Right side
16) LV compartment closing panel
17) Protection compartment closing panel
18) Plate for Thermovision lock
19) Operation sequence plate and synoptic diagram. Plate drawing (107 TV1 70 015)
20) Ratings plate drawings: <ul style="list-style-type: none"> <li>- GSCM731/1 (107 TV2 70 016)</li> <li>- GSCM731/2 (107 TV1 70 016)</li> </ul>
21) Label holder
22) Inspection window
23) Plate indicating the direction of rotation VTT lift mechanism (disconnected / in service position)
24) Top panel
25) Rear duct



**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

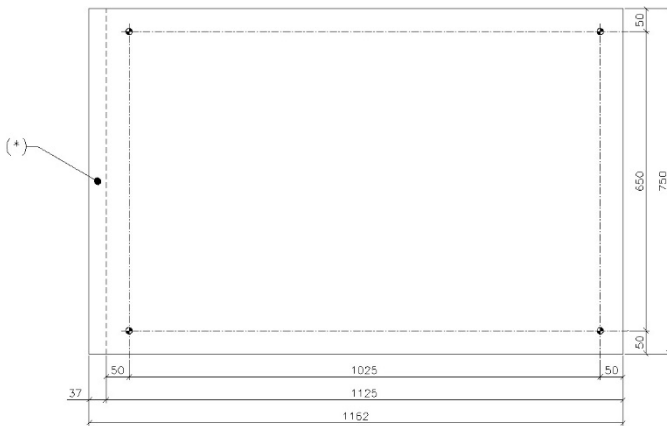
**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**VT TROLLEY IN “DISCONNECTED” POSITION**

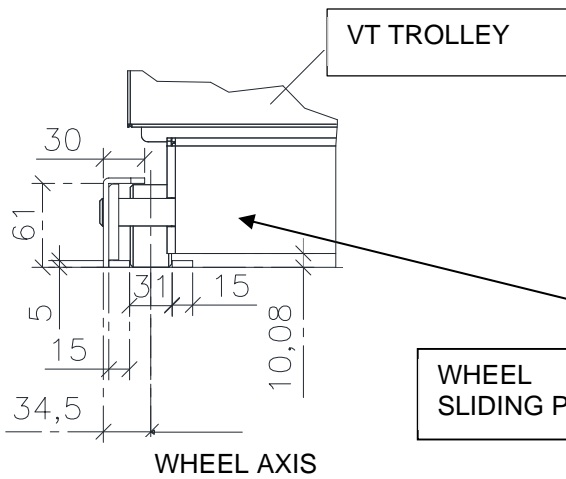
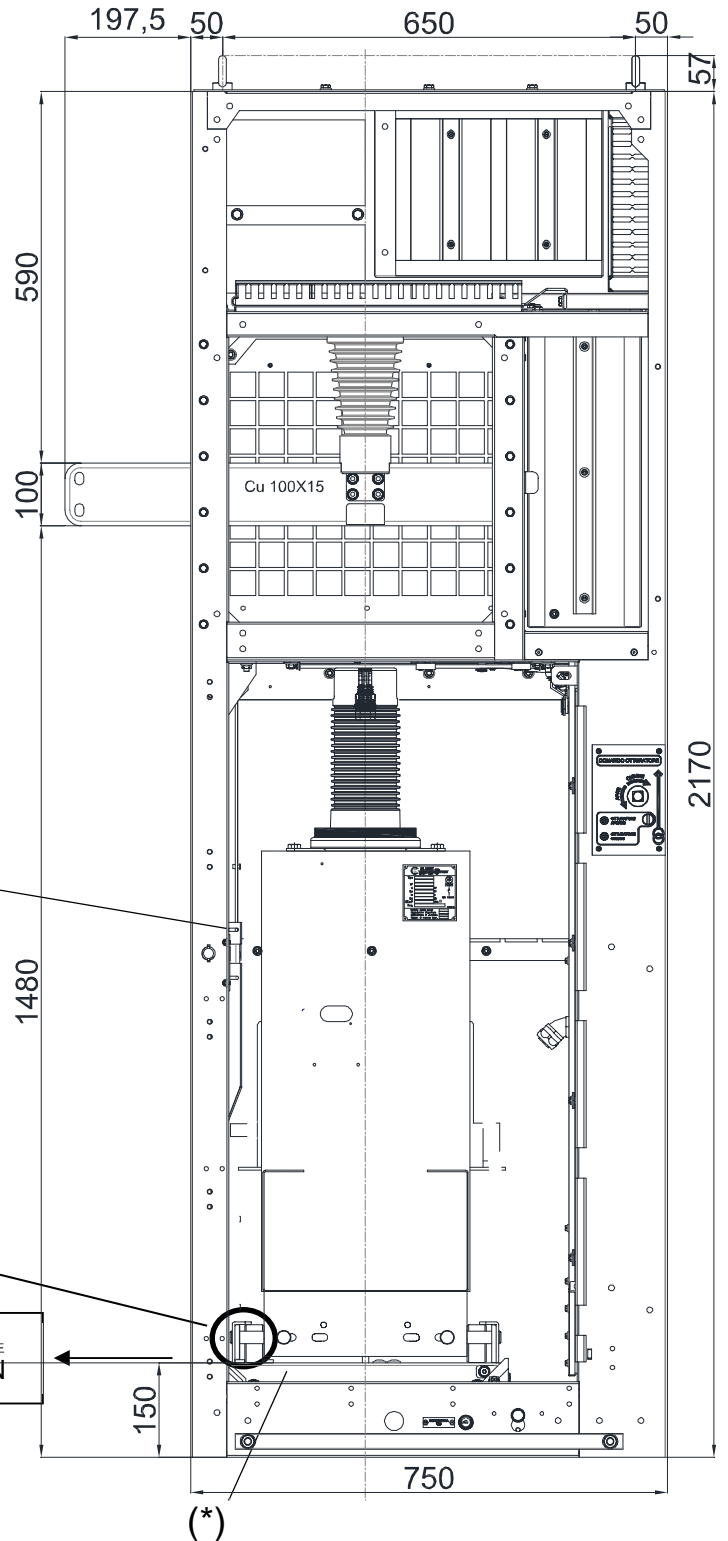
**VIEW FROM BELOW**



(\*) Overpressures relief duct, only for not REAR-REAR units

(\*) Reserved area for lifting mechanisms of the VTT

(\*\*) Interface for control VTT horizontal blocking pivot

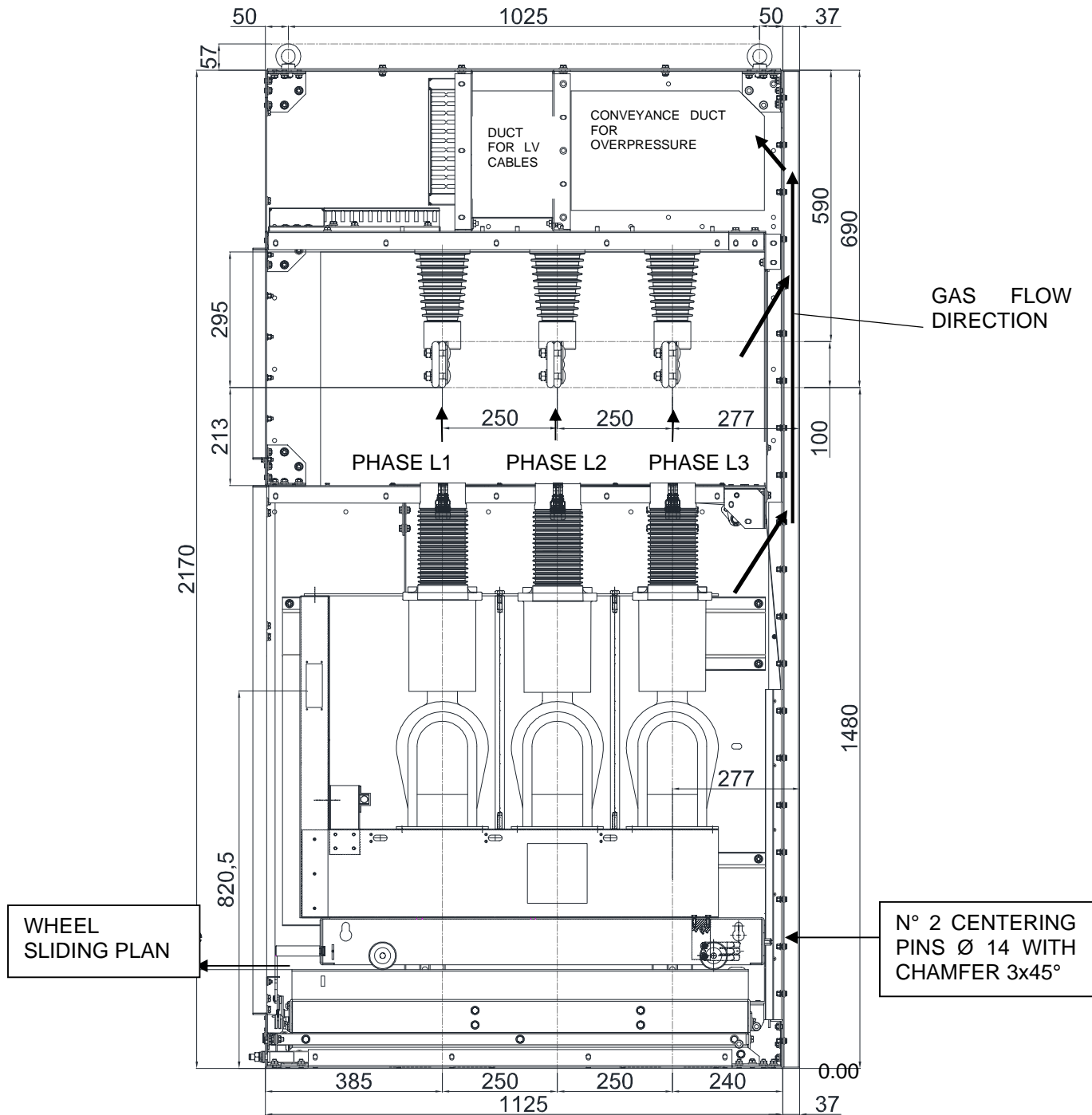


**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**VT TROLLEY IN “DISCONNECTED” POSITION A-A SECTION**





Technical Specification code: MAT-E&C-NC-2021-0064-GRI  
Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

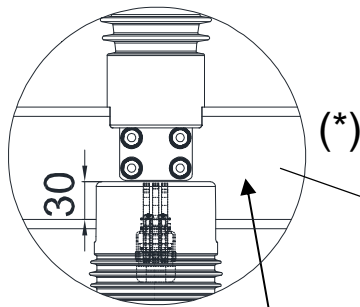
Perimeter: *Global*

Staff Function: -

Service Function: -

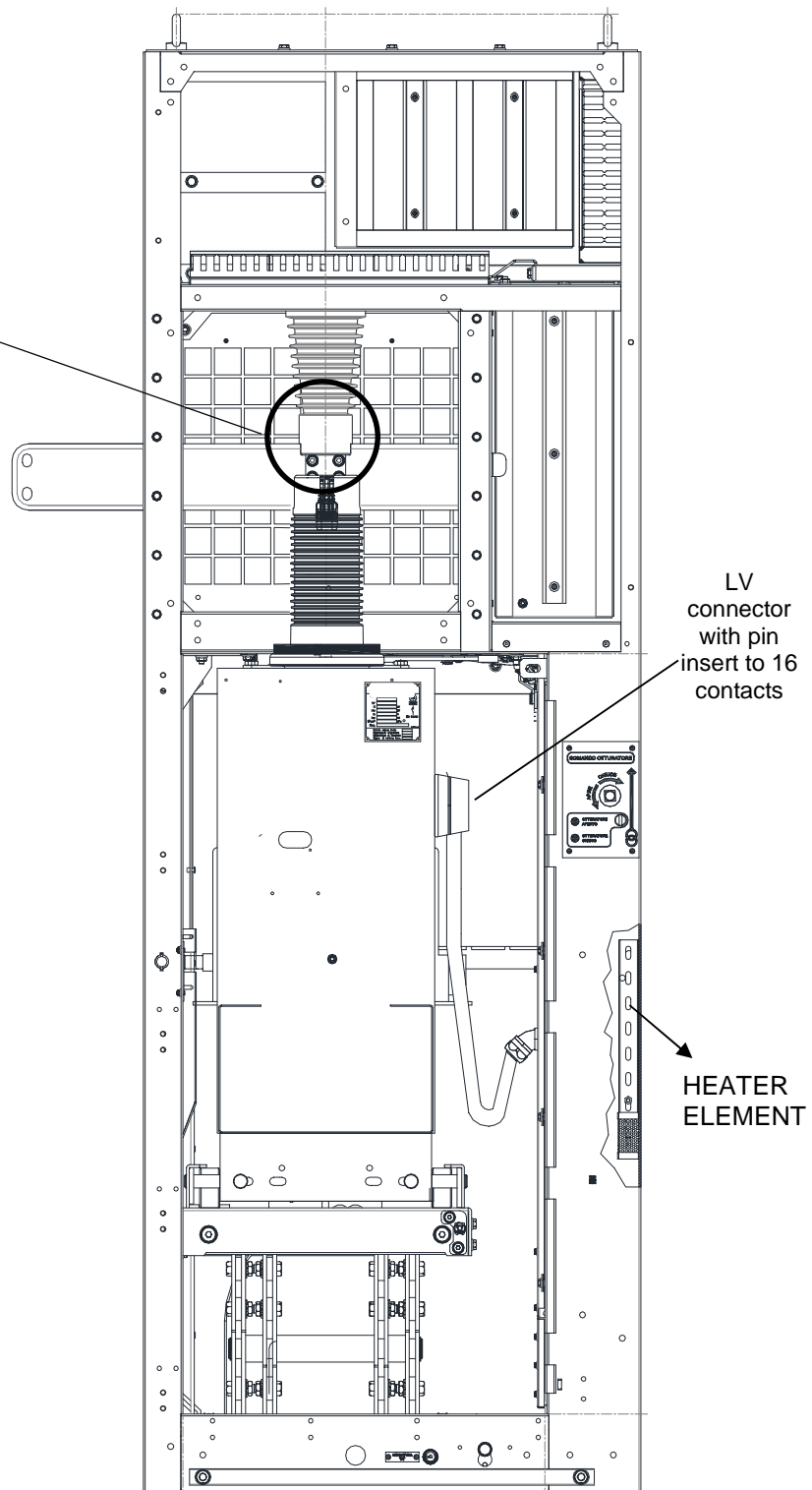
Business Line: *Enel Grids*

**VT TROLLEY IN “SERVICE” POSITION B-B SECTION**



START OF THE TRANSFER ZONE BETWEEN UPPER CONTACT VTT AND MV BARS

(\*) Penetration of the VTT contacts



LV connector with pin insert to 16 contacts

HEATER ELEMENT

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

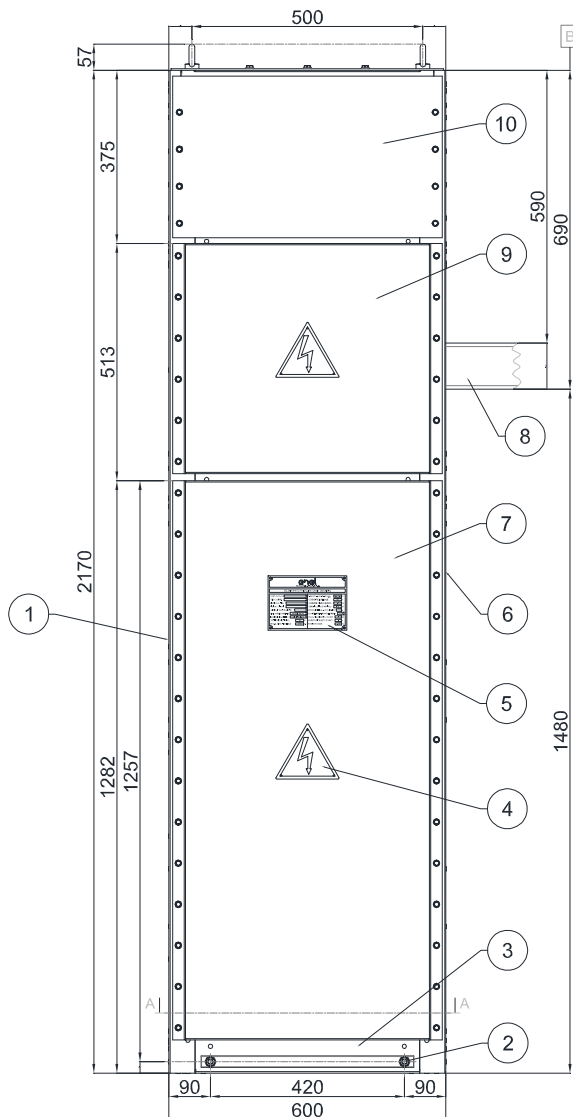
Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**8.8 ANNEX H – GSCM732 Riser functional unit**

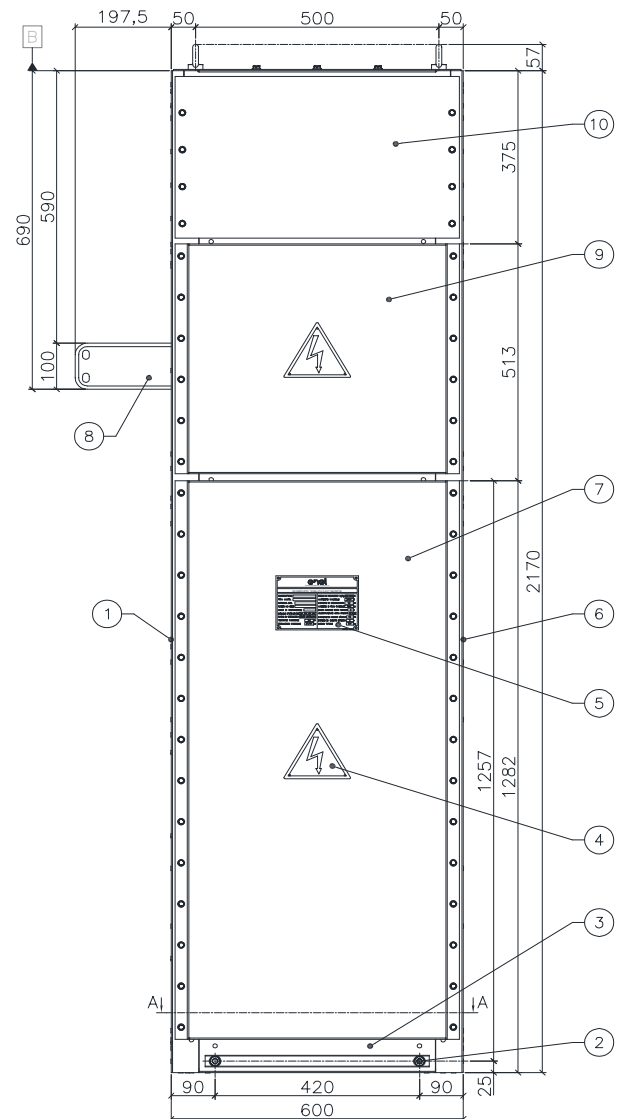
Type code	Description
GSCM690/19	GSCM732/1 Riser functional unit rear/rear MV busbar outgoing on the left
GSCM690/20	GSCM732/2 Riser functional unit rear/rear MV busbar outgoing on the right
GSCM690/21	GSCM732/3 Riser functional unit MV busbar outgoing on the left
GSCM690/22	GSCM732/4 Riser functional unit MV busbar outgoing on the right

**FRONT VIEW**

**OUTGOING RIGHT MV BAR**



**OUTGOING LEFT MV BAR**



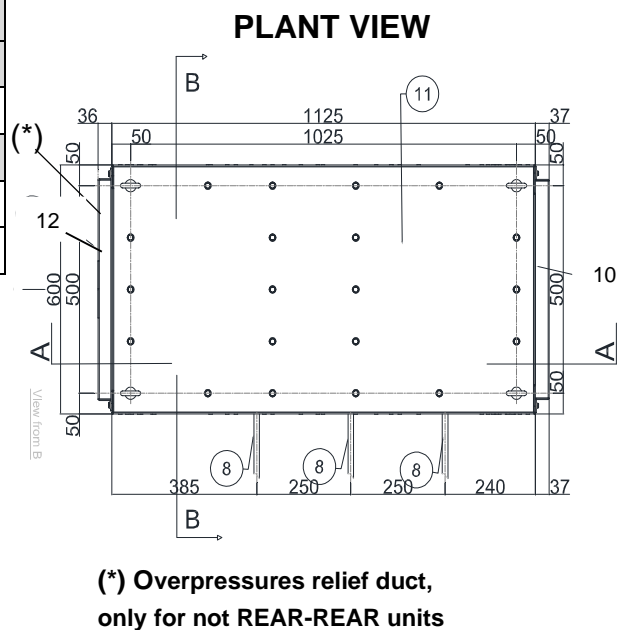
**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
 Staff Function: -  
 Service Function: -  
 Business Line: *Enel Grids*

<b>REAR-REAR SWITCHGEAR</b>	
<b>MV BUSBAR OUTGOING ON THE LEFT</b>	
GSCM 732/1 2000 A	DRAWING: 107 RC2 12 001
<b>MV BUSBAR OUTGOING ON THE RIGHT</b>	
GSCM 732/2 2000 A	DRAWING: 107 RC2 11 001
<b>NOT REAR-REAR SWITCHGEAR</b>	
<b>MV BUSBAR OUTGOING ON THE LEFT</b>	
GSCM 732/3 2000 A	DRAWING: 107 RC1 12 001
<b>MV BUSBAR OUTGOING ON THE RIGHT</b>	
GSCM 732/4 2000 A	DRAWING: 107 RC1 11 001
<b>ROUTINE TEST</b>	GSCM 1674 (annex M)

1) Left side
2) Earth-bar collector
3) Lower front bar
4) Triangle risk Alert
5) Ratings plate drawings:
- GSCM732/1 (107 RC2 72 016)
- GSCM732/2 (107 RC2 71 016)
- GSCM732/3 (107 RC1 72 016)
- GSCM732/4 (107 RC1 71 016)
6) Right side
7) MV Cable compartment door
8) Busbar connection system
9) Busbars front panel
10) Close panel
11) Top panel
12) Rear duct





**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

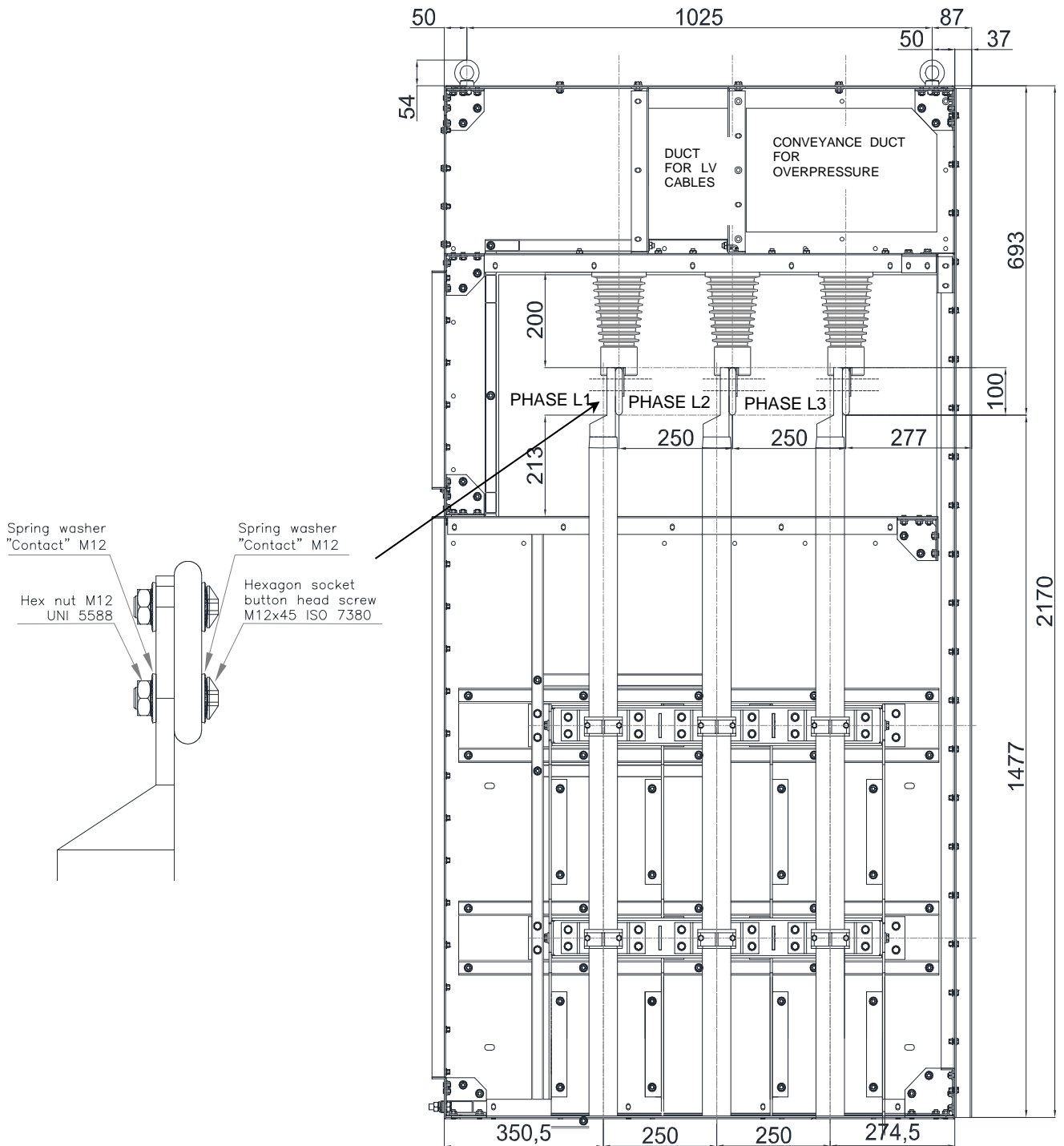
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

**A-A SECTION VIEW**



**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

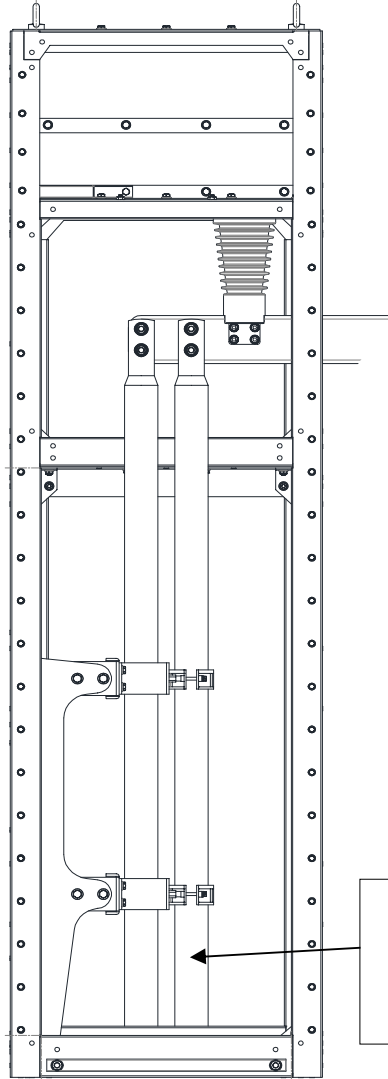
Staff Function: -

Service Function: -

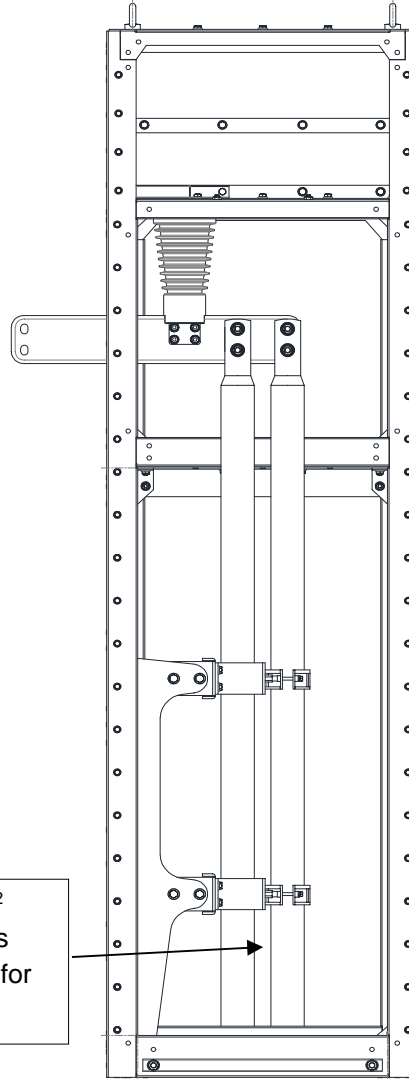
Business Line: *Enel Grids*

**B-B SECTION**

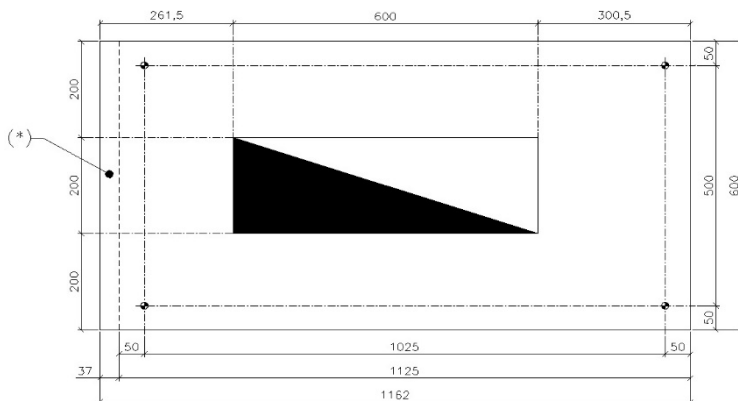
**OUTGOING RIGHT MV BAR**



**OUTGOING LEFT MV BAR**



2 X 630 mm<sup>2</sup>  
Copper cables  
GSCC023 type for  
phase



**VIEW FROM BELOW**

(\*) Overpressures relief duct, only for not REAR-REAR units



**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

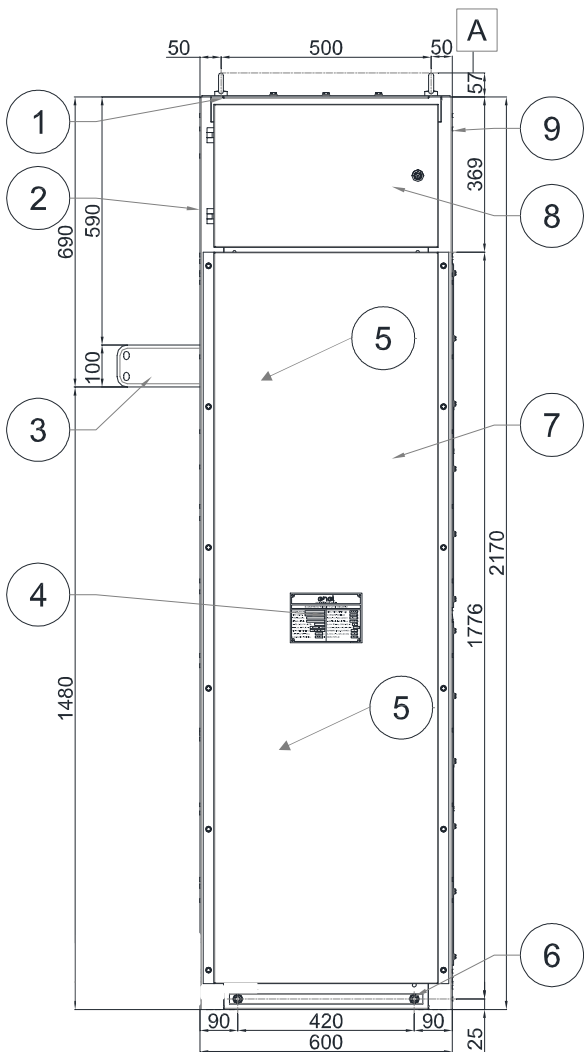
**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

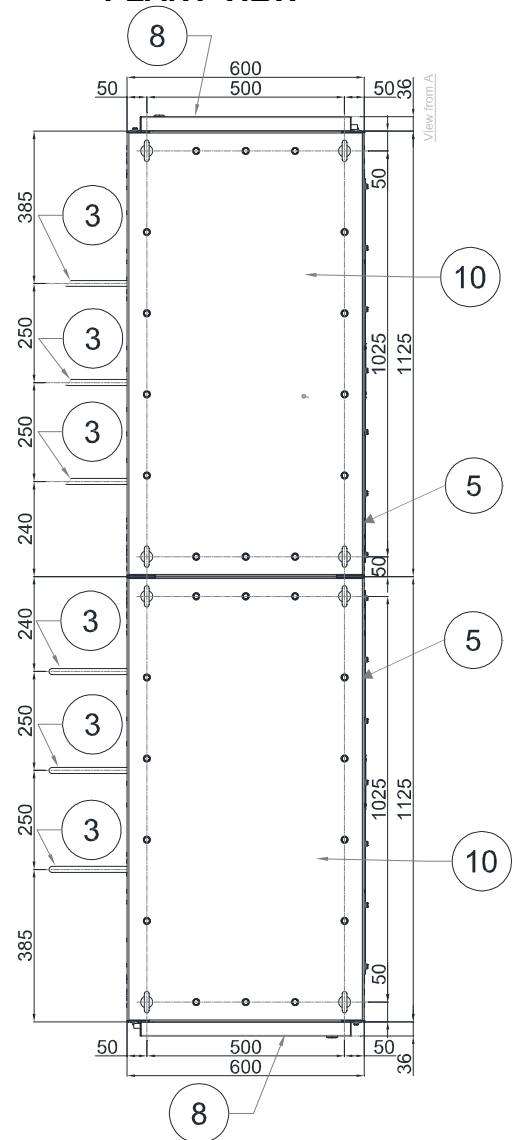
**8.9 ANNEX I – GSCM738 Bus Bar cross connection functional unit**

Type code	Description
GSCM690/23	GSCM738/1 Bus Bar cross connection functional unit Ir=2000 A
GSCM690/24	GSCM738/2 Bus Bar cross connection functional unit Ir=1600 A

**FRONT VIEW**



**PLANT VIEW**





**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

Staff Function: -

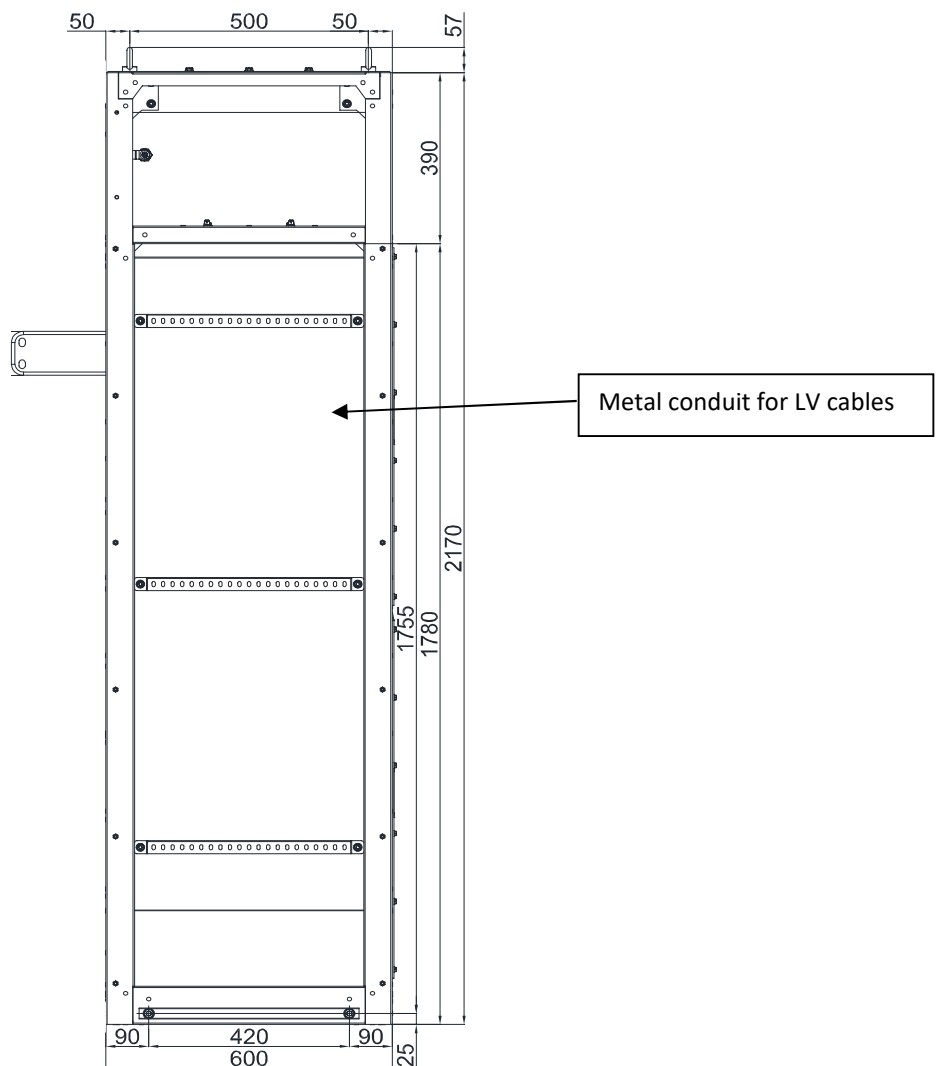
Service Function: -

Business Line: *Enel Grids*

1) Lifting Eyebolt
2) Left side;
3) Busbar connection system;
4) Rating plate drawings: <ul style="list-style-type: none"> <li>○ For GSCM 738/2 (107 RS2 71 016)</li> <li>○ For GSCM 738/1 (107 RS2 72 016)</li> </ul>
5) Lateral panel;
6) Earth bar collector;
7) MV Cable compartment panel;
8) LV compartment panel;
9) Right side;
10) Top panel;

BUS BAR CROSS CONNECTION FUNCTIONAL UNIT TYPE		
<b>GSCM738/1</b>	<b>2000 A</b>	<b>DRAWING: 107 RS2 12 001</b>
<b>GSCM738/2</b>	<b>1600 A</b>	<b>DRAWING: 107 RS2 11 001</b>
<b>ROUTINE TEST</b>		GSCM 1674 (annex M)

**A-A SECTION**



**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

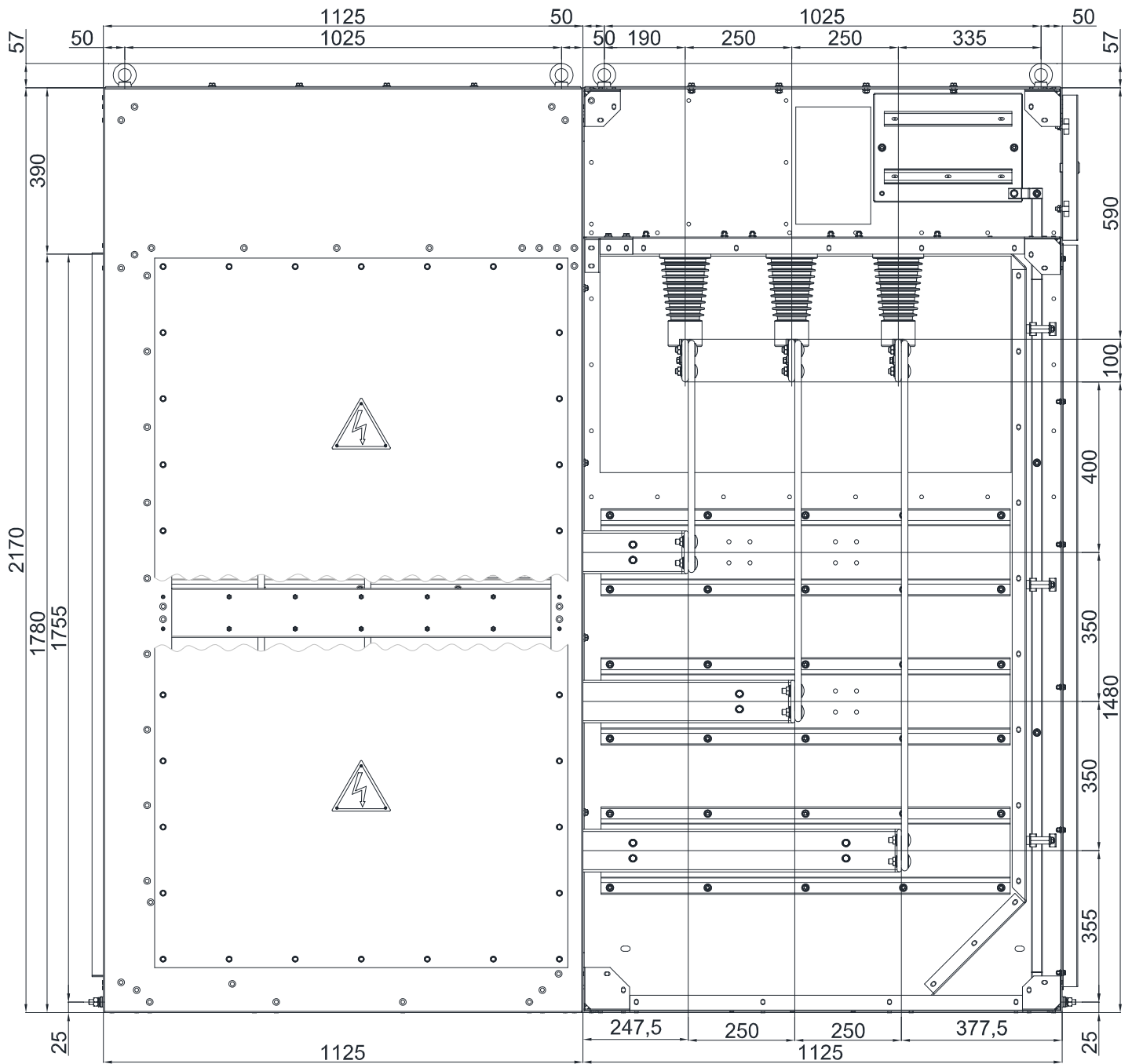
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

**B-B SECTION LATERAL VIEW**





**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

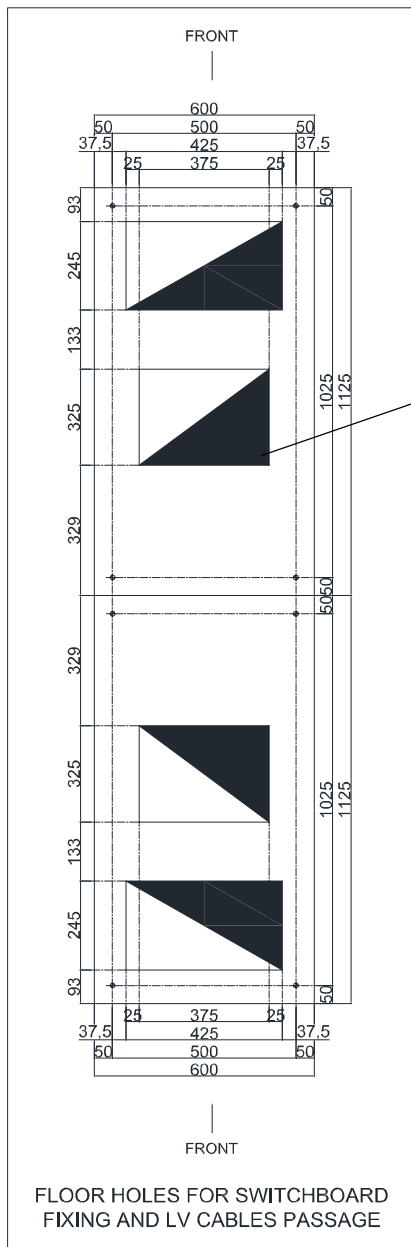
**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

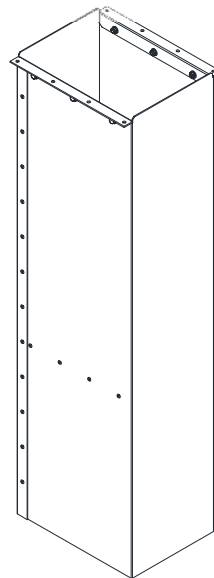
Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**BELOW VIEW GSCM 738/1 2000 A**

**BELOW VIEW GSCM 738 /2 1600 A**

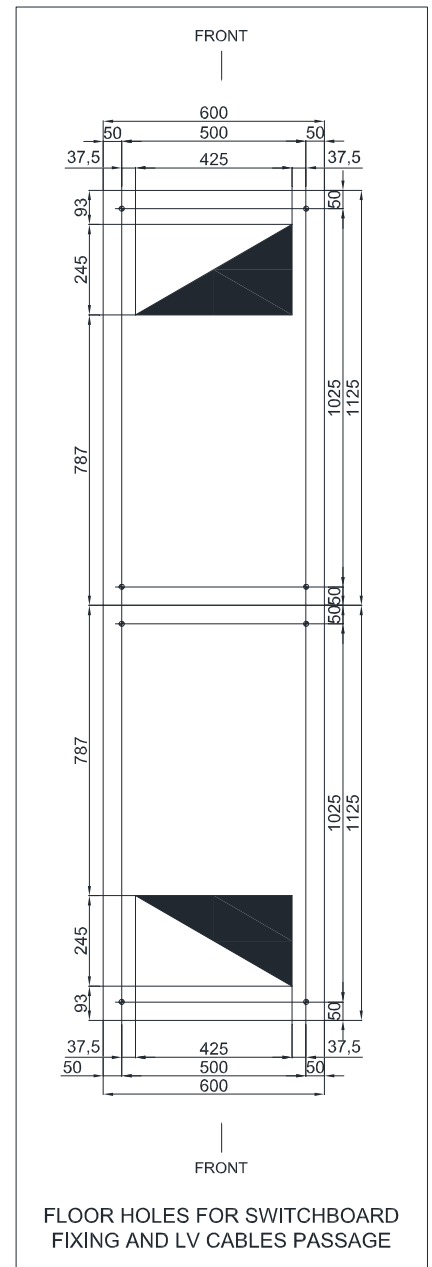


LOWER GAS DUCT HOLE, PRESENT ONLY IN Ir=2000 A COMPARTMENTS



LOWER GAS DUCT

DUCT FOR GAS PASSAGE TO BE CONNECTED IN CORRESPONDENCE OF THE HOLE FOR GSCM 738/1 Ir=2000A



TYPE LOWER GAS DUCT SEE ANNEX I	DRAWING
FOR CONTAINER INSTALLATION	107 TR1 10 073
FOR BUILDING INSTALLATION	107 TR2 10 073

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

## 8.10 ANNEX L – GSCM739 Accessories

<b>GSCM690/25</b>	GSCM739/1 2000 A kit for container
<b>GSCM690/26</b>	GSCM739/2 2000 A kit for building
<b>GSCM690/27</b>	GSCM739/3 GAS duct and VCB platform for container
<b>GSCM690/28</b>	GSCM739/4 GAS duct and VCB platform for building
<b>GSCM690/29</b>	GSCM739/5 Metal conduit for LV cables for container GSCM770/2 and for building with switchgear functional unit rear rear
<b>GSCM690/30</b>	GSCM739/6 Metal conduit for LV cables for building with switchgear functional unit not rear rear
<b>GSCM690/31</b>	GSCM739/7 Operating levers and rack to keep them
<b>GSCM690/32</b>	GSCM739/8 kit closing panel for container GSCM770/1
<b>GSCM690/33</b>	GSCM739/9 kit closing panel for container GSCM770/2
<b>GSCM690/34</b>	GSCM739/10 kit closing panel for building

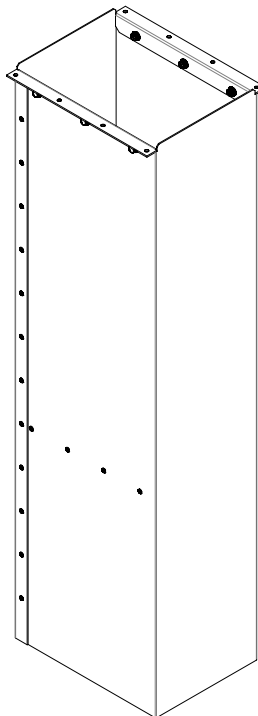
### 8.10.1 GSCM739/1 – 2000A Kit for container

Lower Gas Duct for  $I_r=2000A$  functional unit switchgear installed on container GSCM770.

This Gas duct shall be installed below each  $I_r=2000A$  functional unit switchgear.

Reference drawing: 107 TR1 10 073.

Supply for each  $I_r=2000A$  functional unit switchgear installed on primary substation container.



**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

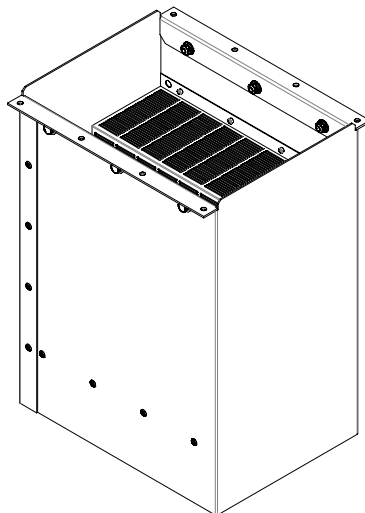
### 8.10.2 GSCM739/2 – 2000A Kit for building

Lower Gas Duct for  $I_r=2000A$  functional unit switchgear installed on building.

This Gas duct shall be installed below each  $I_r=2000A$  functional unit switchgear.

Reference drawing: 107 TR2 10 073

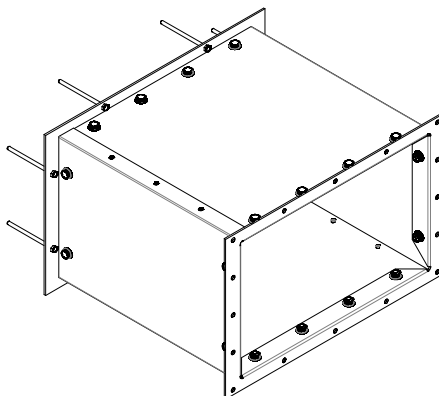
Supply for each  $I_r=2000A$  functional unit switchgear installed on primary substation building.



### 8.10.3 GSCM739/3 – Gas duct and VCB platform for container

Gas duct for Container GSCM770. Reference drawing: 107 L1 10 091.

Supply 2 unit for each MV section in container GSCM770.



Gas duct drop shutter. Reference drawing: 107 L1 11 075.

Supply 2 unit for each MV section in container GSCM770.



**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

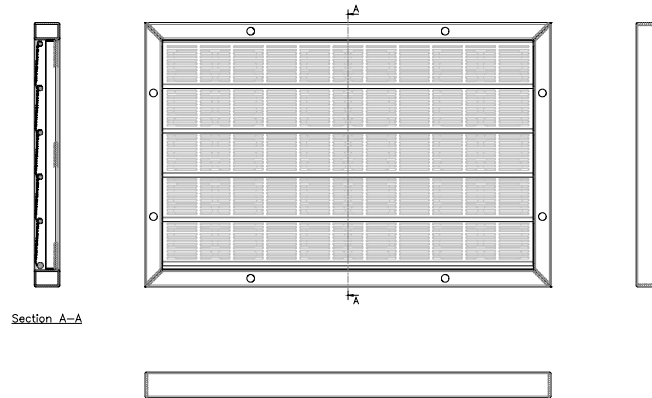
**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

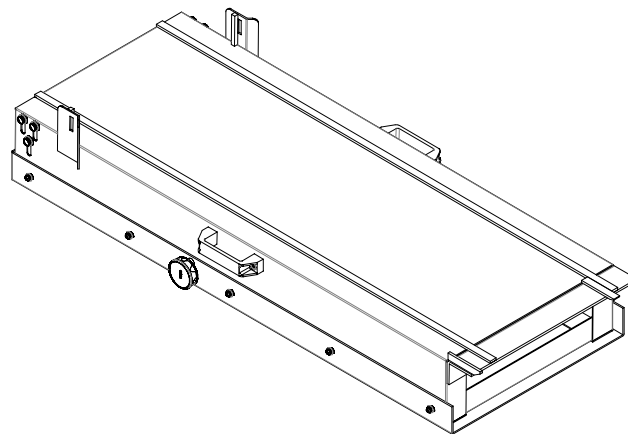
Business Line: *Enel Grids*



VCB platform for functional unit switchgear installed container. Reference drawing: 107 L1 10 086.

Supply 2 units for each MV section in container GSCM770.

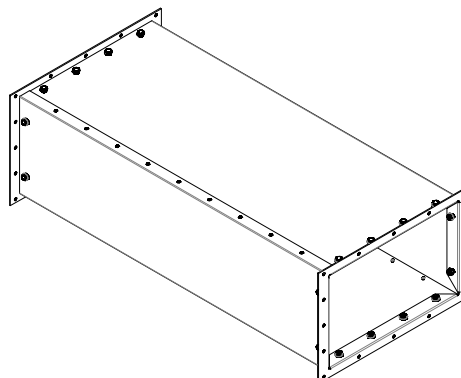
Adequate safety signals e.g. to avoid stepping on it, must be present



#### 8.10.4 GSCM739/4 – Gas duct and VCB platform for building

Gas duct for building.

Reference drawing: 107 L1 10 092. Supply 2 units for each MV section in building solution.



**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

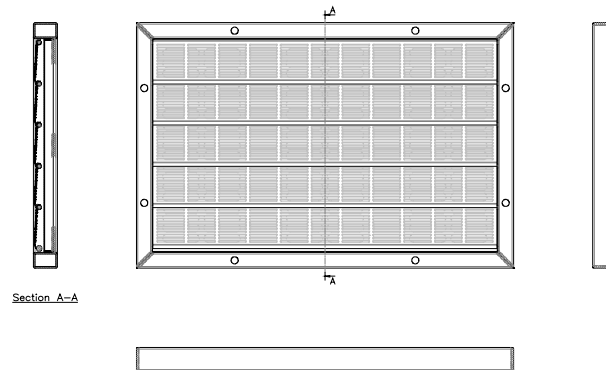
Staff Function: -

Service Function: -

Business Line: *Enel Grids*

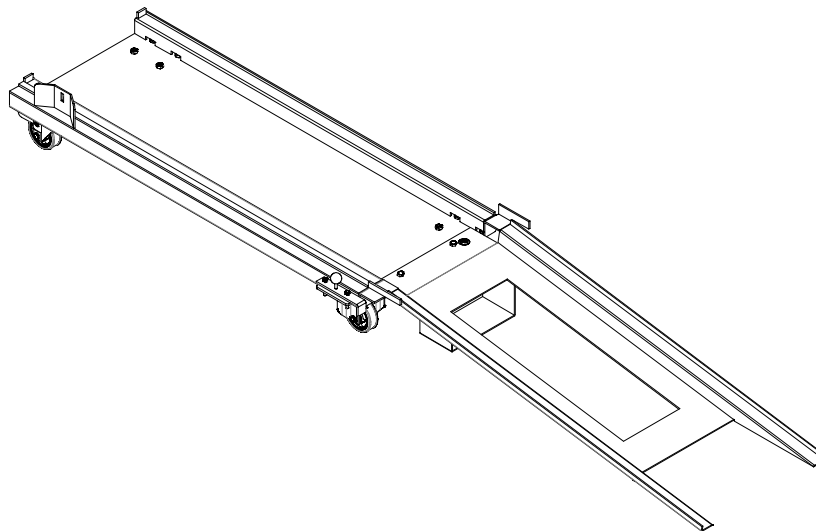
Gas duct drop shutter.

Reference drawing: 107 L1 11 075. Supply 2 units for each MV section in building solution.



VCB platform for functional unit switchgear installed building. Reference drawing: 107 L1 10 090. Supply 2 units for each MV section in building solution.

Adequate safety signals e.g. to avoid stepping on it, must be present



#### 8.10.5 GSCM739/5 – Metal conduit for LV cables for container GSCM770/2\_4 and for building with switchgear functional unit rear rear

Metal conduit for LV cables installed for MV section in container GSCM770/2\_4 and MV section in building solution with functional unit rear rear.

This solution does not apply to MV section in building solution with functional unit rear rear where GSCM738 functional unit is present.

Reference drawing: 107 L1 10 093



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**Application Areas**

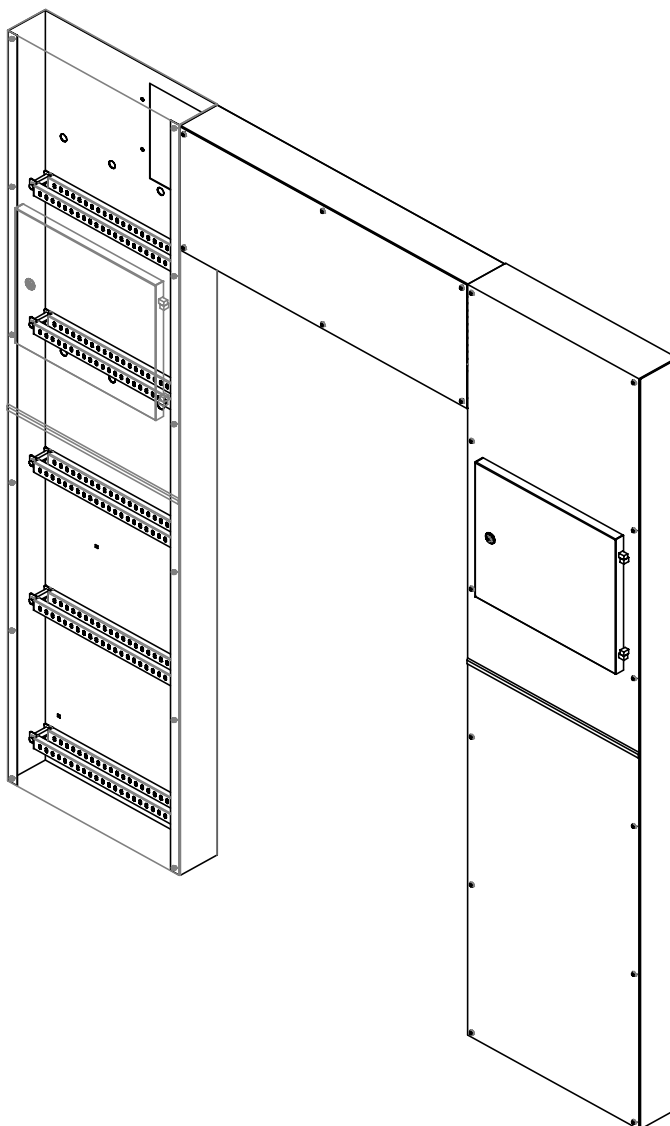
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

Supply 1 units for each MV section in container GSCM770/2\_4 and for each MV section in building solution with functional unit rear rear.



**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

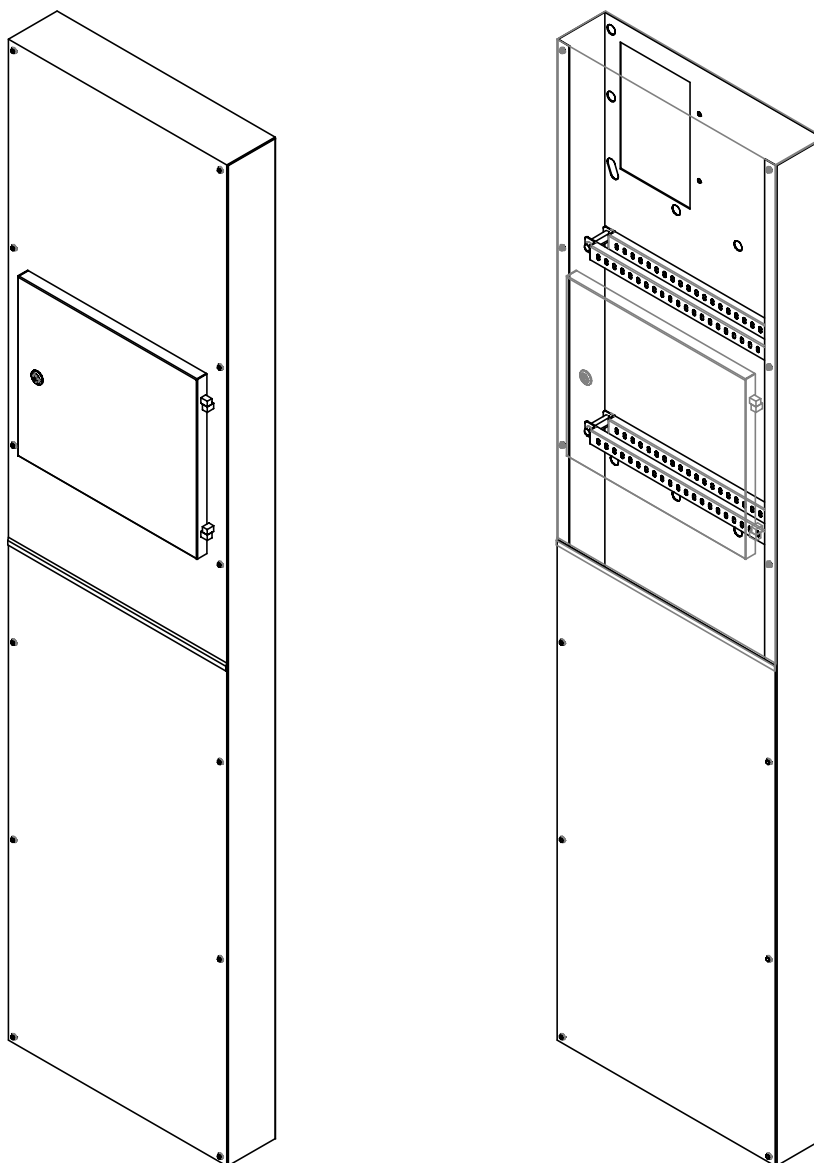
Business Line: *Enel Grids*

**8.10.6 GSCM739/6 – Metal conduit for LV cables for building with switchgear functional unit not rear rear**

Metal conduit for LV cables installed for MV section in building solution.

Left side reference drawing: 107 L1 10 095.

Supply 1 units for each MV section in building solution.



**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

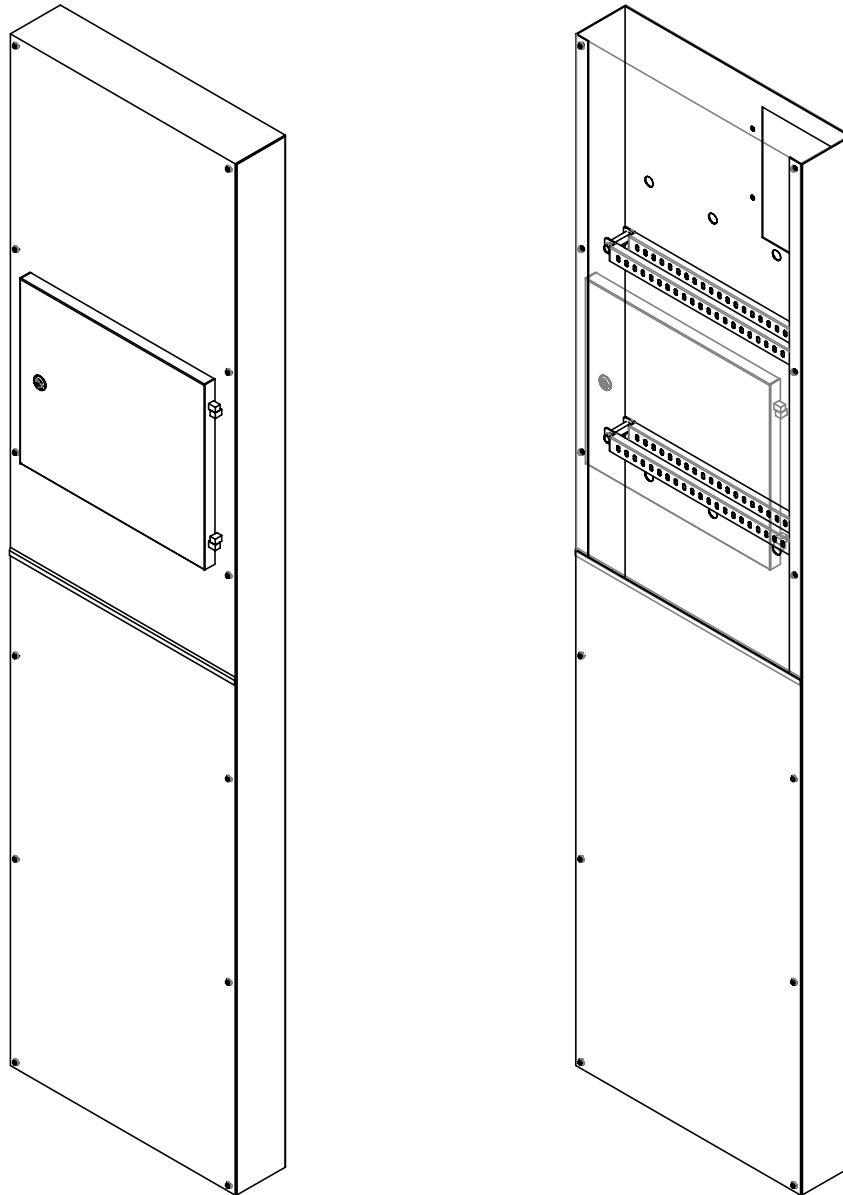
Staff Function: -

Service Function: -

Business Line: *Enel Grids*

Right side reference drawing: 107 L1 10 096.

Supply 1 units for each MV section in building solution.





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**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

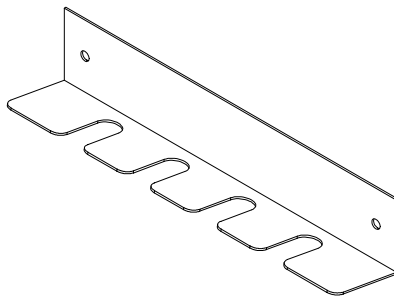
Business Line: *Enel Grids*

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### 8.10.7 GSCM739/7 – Operating levers and rack to keep them

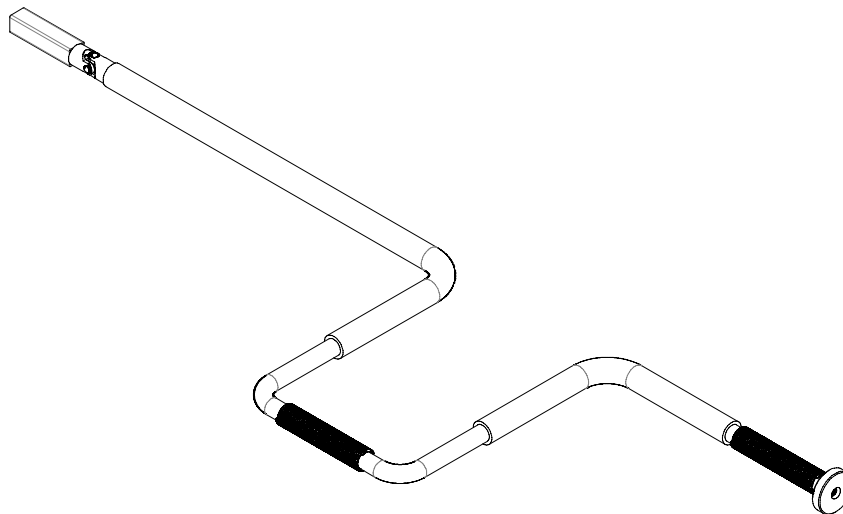
Rack for operating levers: horizontal blocking pivot lever LCPO, earthing switch lever LST, VCB translation lever LTV. Reference drawing: 107 L1 20 212.

Supply 2 units for each MV section.



VCB translation lever LTV. Reference drawing: 107 L1 10 079.

Supply 2 units for each MV section.





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**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

Staff Function: -

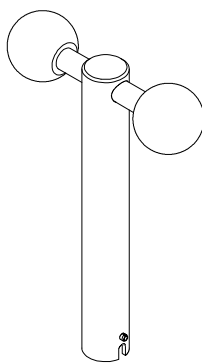
Service Function: -

Business Line: *Enel Grids*

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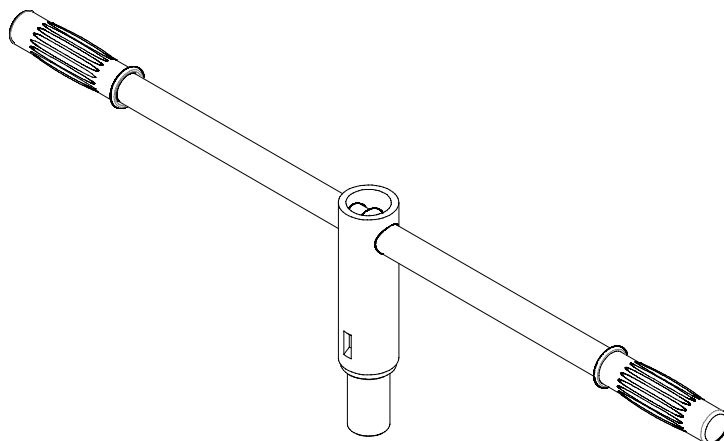
Horizontal blocking pivot lever LCPO. Reference drawing: 107 L1 10 080.

Supply 2 units for each MV section.



Earthing switch lever LST. Reference drawing: 107 L1 10 081.

Supply 2 units for each MV section.





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**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

Staff Function: -

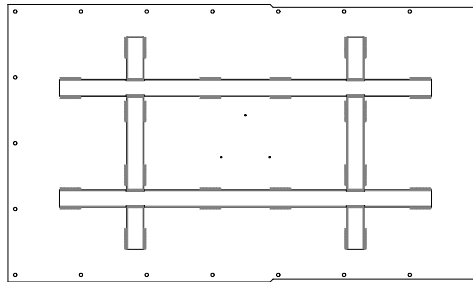
Service Function: -

Business Line: *Enel Grids*

### 8.10.8 GSCM739/8 – Kit closing panel for container GSCM770/1\_3

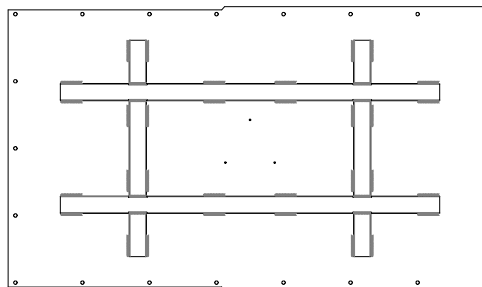
Left side closing panel for functional unit switchgear. Reference drawing: 107 L1 10 060.

- Supply 1 unit for each MV section in container GSCM770/1\_3.



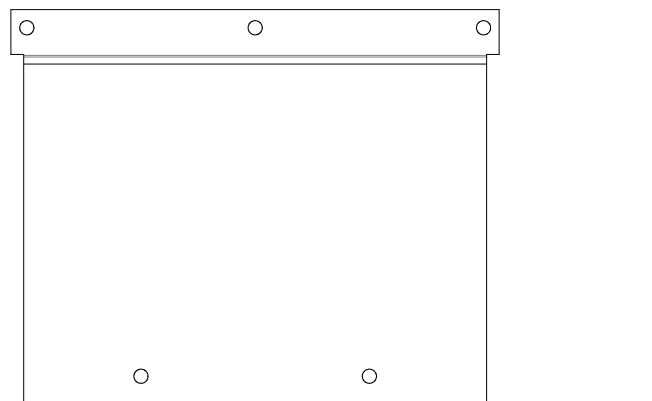
Right side closing panel for functional unit. Reference drawing: 107 L1 10 061

- Supply 1 unit for each MV section in container GSCM770/1\_3.



Cable passage closing panel for functional unit. Reference drawing: 107 L1 20 196.

Supply 2 units for each MV section in container GSCM770/1\_3.







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Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

Staff Function: -

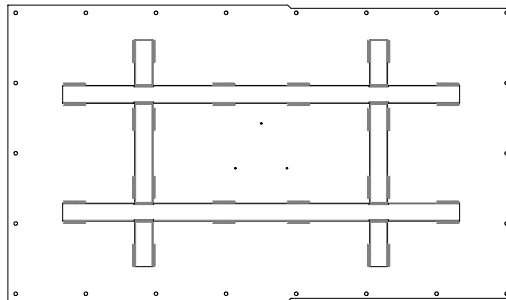
Service Function: -

Business Line: *Enel Grids*

### 8.10.9 GSCM739/9 – Kit closing panel for container GSCM770/2\_4

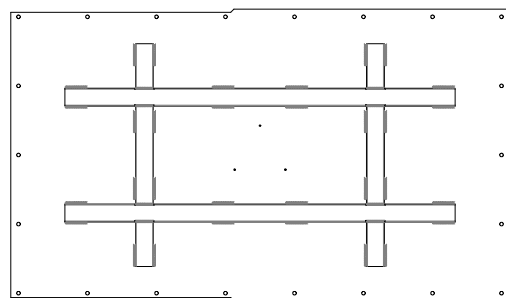
Left side closing panel for functional unit. Reference drawing: 107 L1 10 060.

Supply 2 units for each MV section in container GSCM770/2\_4.



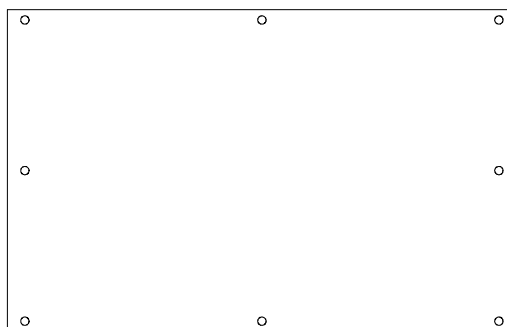
Right side closing panel for functional unit. Reference drawing: 107 L1 10 061

Supply 2 units for each MV section in container GSCM770/2\_4.



Gas duct side closing panel for functional unit. Reference drawing: 107 L1 20 176.

Supply 2 units for each primary substation GSCM770/2\_4.



Cable passage closing panel for functional unit. Reference drawing: 107 L1 20 196.

Supply 2 units for each primary substation GSCM770/2\_4.


**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

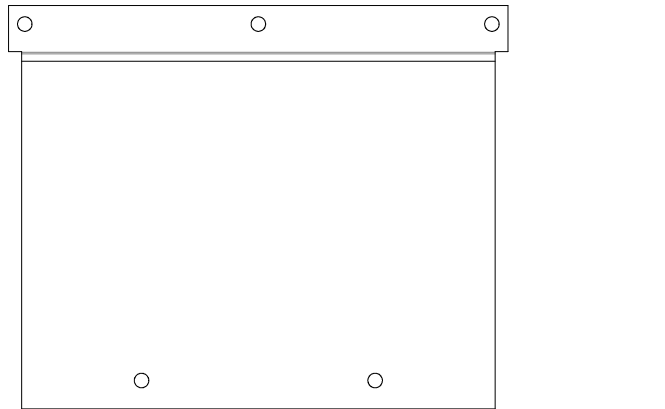
Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**
Perimeter: *Global*

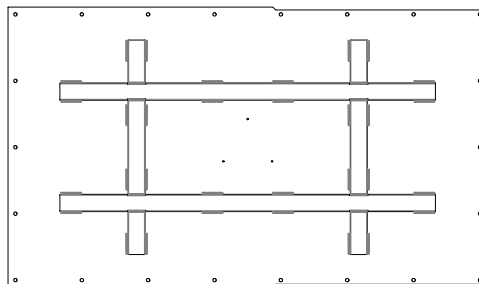
Staff Function: -

Service Function: -

Business Line: *Enel Grids*
**8.10.10 GSCM739/10 – Kit closing panel for building**

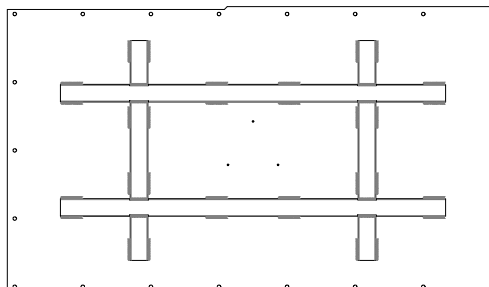
Left side closing panel for functional unit. Reference drawing: 107 L1 10 060.

Supply 2 units for each MV section in building solution.



Right side closing panel for functional unit. Reference drawing: 107 L1 10 061

Supply 2 units for each MV section in building solution.



**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection**Application Areas**Perimeter: *Global*

Staff Function: -

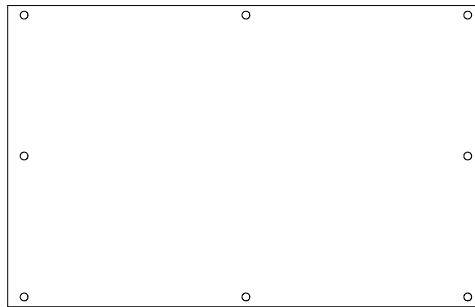
Service Function: -

Business Line: *Enel Grids*

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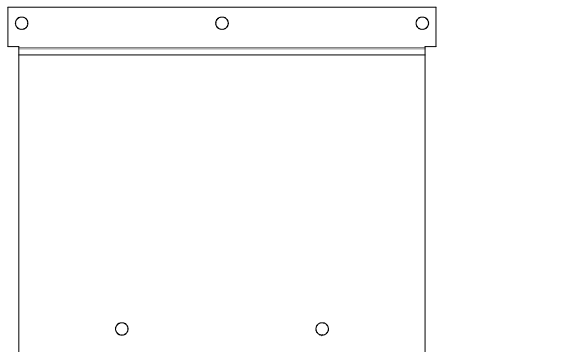
Gas duct side closing panel for functional unit. Reference drawing: 107 L1 20 176.

Supply 2 units for each MV section in building solution.



Cable passage closing panel for functional unit. Reference drawing: 107 L1 20 196.

Supply 2 units for each MV section in building solution.





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**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

## 8.11 ANNEX M – GSCM1674 Routine, Factory and Site Acceptance tests

### 8.11.1 Routine test

Routine test	Reference
Type correspondence verifications	Par. 8.11.1.1 Par. 8.6 of IEC 62271-200 ed.3
Dielectric test on the main circuit	Par. 8.2 of IEC 62271-200 ed.3
Tests on auxiliary and control circuits	Par. 8.3 of IEC 62271-200 ed.3
Measurement of the resistance of the main circuit	Par. 8.11.1.2 Par. 8.4 of IEC 62271-200 ed.3
Partial discharge verification	Par. 8.11.1.3 Par. 8.101 of IEC 62271-200 ed.3
Mechanical operation tests and interlock functionality	Par. 8.11.1.4 Par. 8.102 of IEC 62271-200 ed.3
Protective coating dimensional check	Par. 8.11.1.5 and Main standards applicable
VDIS or VDS	Chapter 8 of IEC 62271-213 or IEC 61243-5.

**Table 6- Routine test**

Last edition of previous standards shall be utilized, paragraph indicated are referred to current edition.

VCB and VTT used for routine, acceptance and site tests shall have TCA in force status.

#### 8.11.1.1 Type correspondence verifications

Following verifications shall be performed:

- a) Visual examination in order to check the absence of external imperfections and constructive defects;
- b) Constructive features check with drawings schemes and pictures of the approved type A documentations.

#### 8.11.1.2 Measurement of the resistance of the main circuit

For each functional unit switchgear, measurement of the main circuit shall be performed in compliance with par. 8.4 of IEC 62271-200 ed.3, measures shall be executed with methods indicated in the related type test, checking that measured values do not exceed 1.2 time the values of reference measuring declared by Manufacturer (measure performed with mock template or VCB already tested).

Coupling resistance between two functional units switchgear shall be performed in compliance with par. 8.4 of IEC 62271-200 ed.3, as below indicated.

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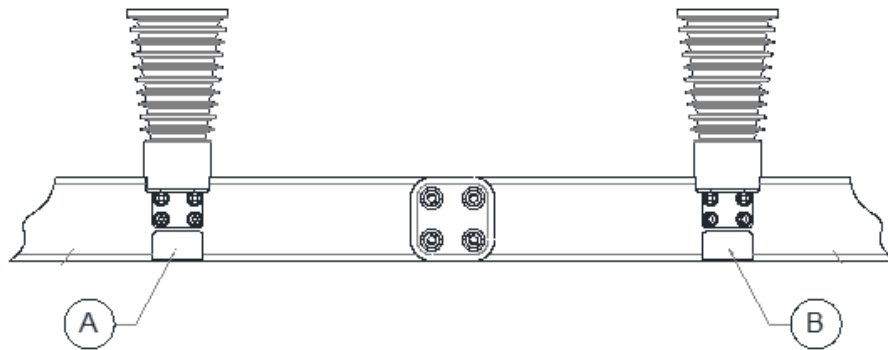
**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*



MEASURING POINTS	REFERENCE RESISTANCE VALUE [ $\mu\Omega$ ]
A-B	12

### 8.11.1.3 Partial Discharge

PDs test shall be performed on each organic material component used inside the functional unit switchgear.

Maximum values shall be defined by the Manufacturer it orders of magnitude shall be close to the values indicated by IEC 62271-200 ed.3 annex B.

### 8.11.1.4 Mechanical operation test and check of mechanical interlocks

Test compliant with paragraph 8.102 of IEC 62271-200 ed.3 using VCB/VTT already tested or with VCB mock-up template for those cases in which the VCB or VTT are not available

List of tests necessary to verify the mechanical operation and interlocks and their procedure shall be defined by Manufacturer under own responsibility, a line guide present in the par. 8.12.3 GSCM1676 annex N, could be take in the account from Manufacturer.

### 8.11.1.5 Protective coating dimensional check

Protective coating dimension declared during TCA shall be checked using the main standards applicable.

Verification of silvering thickness, the test shall be performed choosing three components, measured value must not be less than 5  $\mu\text{m}$  or other value accepted during TCA phase.

### 8.11.2 Factory acceptance test

Factory acceptance test shall be the same of the Routine tests with the following clarifications:

- Test shall be performed using VCB/VTT already tested;


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- Dielectric test on the main circuit shall be compliant with 8.2 of IEC 62271-200 ed.3 and shall be performed on main circuit of assembly switchgear with VCB inserted in close position and VTT in service position at higher the rated frequency.

In case to the higher the rated frequency test shall not be performed, VTT shall be in disconnected position. In this case documental verification of routine tests “Dielectric test on the main circuit” performed on VTT installed inside in voltage bus bar measurement switchgear functional unit (GSCM731) is required.

“False terminal brackets” drawing 107 TR1 10 097, shall be removed before the test;

- Dielectric tests on auxiliary and control circuits foreseen in routine “Tests on auxiliary and control circuits” shall be only a documental verification of routine tests performed;
- IP degree compliant with Par. 7.7 of IEC 62271-200 ed.3 shall be performed;
- PD<sub>s</sub> verification shall be only a documental verification of routine tests performed.

### 8.11.3 Site acceptance test

Site acceptance tests shall be compliant with par. 8.104 of IEC 62271-200 ed.3 and following paragraphs.

Site tests shall be performed at the destination site, for units installed in building or container.

Test shall be performed using VCB/VTT already tested and supplied by the same Manufacturer.

The sequency of test is defined by following paragraphs.

#### 8.11.3.1 Mechanical operation test and check mechanical interlocks

See par.8.11.1.4.

#### 8.11.3.2 Voltage test of the main circuit

Test compliant with 8.104 of IEC 62271-200 ed.3

shall be performed on main circuit of assembly switchgear with VCB inserted in close position and VTT in service position at higher the rated frequency.

In case to the higher the rated frequency test shall not be performed, VTT shall be in disconnected position

During this test, the turn on of the lamps of the VDIS or VDS shall be checked.

“False terminal brackets” drawing 107 TR1 10 097, shall be removed before the test.

#### 8.11.3.3 Measurement of the resistance of the main circuit

See par.8.11.1.2.



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Staff Function: -

Service Function: -

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## 8.12 ANNEX N – GSCM1676 Mechanical operation test and check of mechanical interlocks utilization guideline

### 8.12.1 Scope

The purpose of this document is to give guidelines for “mechanical operation test and check of mechanical interlocks” using mock-up templates or VCB/VTT already tested.

### 8.12.2 Mock-up templates features

Mock-up templates can be divided as following:

- Vacuum Circuit-breaker mock-up template (hereinafter referred to as TCB): construction drawing 107 L1 10 097;
- Functional unit switchgear mock- up template (hereinafter referred to as TAIS): construction drawing 107 L1 10 097.

Mock-up templates shall be manufactured by Manufacturer in compliance with previous *enel* drawings and specifications; verification of the template accuracy is in charge of Manufacturer.

Annual check of mock-up template with portable 3D automatic meter shall be performed by Manufacturer.

Portable 3D automatic meter shall have at least 1 mm of precisions.

Mock-up template shall be always accompanied by Manufacturer’s serial numbers and expiry date of verification.

### 8.12.3 Functional unit switchgear “Mechanical operation test and check of mechanical interlocks”

Constructive features verification of functional unit switchgear defined by Manufacturer could be take in the account the procedure below described.

1. Insert the TCB (or VCB/VTT) on the lifting device;
2. Using the translation lever, lift the TCB (or VCB/VTT) until the end of the limit switch, checking that:
  - 2.1. There is no interference between the poles of the TCB (or VCB/VTT) and the holes for their passage on the shutter with the busbar compartment and verify the centering;
  - 2.2. The upper clamps of the TCB (or VCB/VTT) have a proper penetration on the MV busbars;
  - 2.3. The lower clamps of the TCB (or VCB/VTT) have a proper penetration on the MV cable connection;
3. Only in the case of TCB is used, check of the centering clamps shall be performed as follows:
  - 3.1. On TCB close the auxiliary switch on the lamp group and press the "test" button to check the operation of all lamps and the condition of full battery;


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3.2. With the TCB fully inserted, check the lit of all the lamps. If all are ON, the centering of the clamps on the busbar is correct and no further checks are required. If some lamps are OFF, a thickness of 1 mm is allowed to prove compliance.

The right interlock functionality defined by Manufacturer could be take in the account the) following the procedure.

1. Verify that the mechanical lock prevents the TCB (or VCB/VTT) translation (seat for vertical translation is not openable) if the earthing switch is in the closed position;
2. Make sure it is not possible to access the seat for vertical translation when the MV cable compartment door is open;
3. With the earthing switch open:
  - a. Verify that the operating seat for vertical translation is free only after having activated the mechanical lock of the horizontal blocking pivot with a dedicated key;
  - b. Verify that the MV cable compartment door cannot be opened if the earthing switch is in the open position and the shutter is open;
4. Only for GSCM697 and GSCM698 functional units:  
It shall be possible to extract the key on the block at the earthing switch only with the block inserted and earthing switch in open position; if the earthing switch is in the closed position, the block cannot be inserted and the key must remain bound;
5. Verify that the mechanical lock prevents the closure of the earthing switch and the opening of the MV cable compartment door if the TCB (or VCB/VTT) is in the service position;
6. Only GSCM699 and GSCM700 functional units:  
It shall be possible to extract the key on the block at the earthing switch only with the block inserted and earthing switch in closed position; if the earthing switch is in the open position, the block cannot be inserted and the key must remain bound.
7. Only for GSCM698 functional unit:  
It shall be possible to extract the key on the block at the operation seat for VCB vertical translation only with the block inserted and TCB (or VCB) in disconnected position; if the TCB (or VCB) is in the service position, the block cannot be inserted and the key must remain bound.
8. Only for GSCM731 functional unit:  
It shall be possible to extract the key on the block at the VT trolley only with the block inserted and TCB (or VTT) in service position; if the TCB (or VTT) is in the disconnected position, the block cannot be inserted and the key must remain bound;
9. With TCB (or VCB/VTT) in disconnected position, check with MV cable test window open that:
  - a. MV cable compartment door can be closed and opened;





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- b. Earthing switch can be closed and opened;
- c. Seat for vertical translation is not openable, vertical translation of TCB (or VCB) shall not be allowed.

#### **8.12.4 VCB GSCM505, VTT GSCM734 and ET GSCM735 “Mechanical operation test and check of mechanical interlocks “**

Constructive features and interlocks verification of VCB GSCM505, VTT GSCM734 and ET GSCM735 defined by Manufacturer could be take in the account the procedure below described:

1. Remove the TAIS front hood and striker bars.
2. Extract the TCB from the TAIS.
3. Place the TAIS on a horizontal support surface, stable and without roughness.
4. Position the VCB/VTT/ET under test in correspondence with the TAIS and insert it completely.
5. Check that the two pins  $\Phi 14$  of the VCB/VTT/ET trolley are inserted and centered in the corresponding holes  $\Phi 16$  on the bottom of the base of the TAIS.
6. Check that the earth clamp located on the VCB/VTT/ET trolley is correctly inserted in the respective TAIS earthing bar.
7. Check that the two locking pins, with the circuit breaker inserted in the compartment (see GSCM505 ref. n°8), are correctly inserted in the respective slots on the base of the TAIS.
8. Check that the blocking pivot  $\Phi 20$  during translation (see GSCM505 ref. n°7) is centered with respect to the TAIS control blocking pivot. By turning the control blocking pivot of the TAIS within the red band, with the VCB in the "closed" state, it must not occur opening of the VCB. Instead, by screwing the blocking pivot inside the green band, you have to check the opening of the VCB.
9. Insert the front hood of the TAIS and check that there is no interference with the crankcase of the VCB/VTT/ET under test.
10. For each pole of the VCB/VTT/ET under test, for checking the upper clamps on the busbar side, insert the stop bar compliant with *enel* drawing 107 L1 50 037 pos. 1 for VCB with  $I_r$  equal to 630A and for VTT/ET from the side with lower thickness into the appropriate upper slots of the TAIS until the reference pin rests on the plane of the crosspiece of tally pole. The stop bar must insert by gravity and effortlessly. The proper reference mark of the stop bar must coincide with the electrical contact point of the VCB/VTT/ET clamps. VCB/VTT/ET clamps must be centered with respect to the incision along the vertical axis of the stop bar. Then repeat the insertion operation and check the notches reference by inserting the stop bar from the side having the higher thickness. Then the insertion of the bar requires the application of a slight effort.

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11. For VCB with  $I_r$  equal to 1600A and 2000A, insert the stop bar compliant with *enel* drawing 107 L1 50 038 pos. 1 from the side with lower thickness into the appropriate upper slots of the TAIS until the reference pin rests on the plane of the crosspiece of tally pole. The bar must insert by gravity and effortlessly. The proper reference mark of the stop bar must coincide with the electrical contact point of the VCB clamps must be centered with respect to the incision along the vertical axis of the stop bar. Then repeat the insertion operation and check the notches reference by inserting the stop bar from the side having higher thickness. Then the insertion of the stop bar requires the application of a slight effort.
12. For each pole of the VCB under test, to check the lower clamps on the cable connection side, use the stop bar compliant with *enel* drawing 107 L1 50 037 pos. 2 for VCB with  $I_r$  equal to 630A; instead use stop bar compliant with *enel* drawing 107 L1 50 038 pos.2 for for VCB with  $I_r$  equal to 1600A and 2000A repeating the procedure described in the previous point.
13. Remove the front hood of the TAIS and turn off the VCB/VTT/ET under test.
14. Insert the TCB and reposition the front hood of the TAIS and the striker bars.



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**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

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### 8.13 ANNEX O – LV WIRING SCHEMES

LV wiring schemes can be summarized as below:

- GSTX135 is valid for Line, neutral maker transformer, capacitor bank; auxiliary services functional units;
- GSTX136 is valid for Transformer and bus bar tie functional unit;
- GSTX137 is valid for Voltage bus bar measurement functional unit.

Previous schemes are intended as general indication that could be subjected at modifications due to:

- Country's needs;
- Type technical specification for protection relay and I/O modules (in the schemes Global standard GSTP101 and GSTP102 have been considered);
- Modifications protection relay and I/O module technical specifications.



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**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**8.13.1 GSTX135**

SHEET	TITLE
1	LIST OF SHEETS
2	REVISION LIST
3	TERMINAL BLOCK LIST
4	WIRING SPECIFICATIONS
5	MEDIUM VOLTAGE DIAGRAM
6	LAYOUT
7	POWER SUPPLY VDC GSTP101
8	LOCAL/REMOTE CONTROL SELECTION
9	MT SWITCH CLOSING CONTROL
10	MT SWITCH OPENING CONTROL
11	OPENING COMMANDS AVAILABLE
12	MV CB POSITION
13	MV SWITCH POSITION
14	LOCAL SYNOPTIC SIGNALS
15	DIGITAL INPUT
16	DIGITAL OUTPUT
17	RIO 1 -- MV CB ALARMS
18	RIO 1 -- MV CB ALARMS
19	RIO 1 -- COMMANDS AVAILABLE
20	SENSITIVE NEUTRAL, F40 AND QFT
21	MV MOTOR AND HEATING CIRCUIT
22	OPTICAL FIBER CONNECTION
23	AMPEROMETRIC CIRCUIT
24	VOLTMETRIC CIRCUIT
25	X-S2 TERMINAL BLOCK
26	X-M TERMINAL BLOCK
27	X-C TERMINAL BLOCK
28	X-PS TERMINAL BLOCK
29	GSTP101 CONNECTORS
30	GSTP102 CONNECTORS
31	CONNECTOR 52MT
32	INTERNAL COMPONENTS WIRING
33	INTERNAL COMPONENTS WIRING
34	INTERNAL COMPONENTS WIRING

5	GENERAL REVISION	06/08/2020	Berasil P.	DATA	18/02/2020		MV GLOBAL STANDARD CELL WITH GSTP101 LIST OF SHEETS CONSTRUCTION DIAGRAM	ELECTRICAL DIAGRAMS STANDARD			
4	GENERAL REVISION	04/06/2020	Berasil P.	DRAWN	Berasil			GSTX135.DWG	SHEET	1 OF	34
3	GENERAL REVISION	29/05/2020	Berasil P.	VERIFIED	Scrosati			SERIAL CODE	N'DOC.	NEXT	2
REV.	MODIFICATIONS	DATA	SIGN.	APPROVED	Giammanco						

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Service Function: -

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REVISION	SHEET	DESCRIPTION	DATE	RESPONSIBLE
5	1	GENERAL REVISION	06/08/2020	BERASI P.
5	2	GENERAL REVISION	06/08/2020	BERASI P.
5	3	GENERAL REVISION	06/08/2020	BERASI P.
5	6	GENERAL REVISION	06/08/2020	BERASI P.
5	7	GENERAL REVISION	06/08/2020	BERASI P.
5	8	GENERAL REVISION	06/08/2020	BERASI P.
5	10	GENERAL REVISION	06/08/2020	BERASI P.
5	12	GENERAL REVISION	06/08/2020	BERASI P.
5	14	GENERAL REVISION	06/08/2020	BERASI P.
5	15	GENERAL REVISION	06/08/2020	BERASI P.
5	16	GENERAL REVISION	06/08/2020	BERASI P.
5	20	GENERAL REVISION	06/08/2020	BERASI P.
5	25	GENERAL REVISION	06/08/2020	BERASI P.
5	26	GENERAL REVISION	06/08/2020	BERASI P.
5	27	GENERAL REVISION	06/08/2020	BERASI P.
5	28	GENERAL REVISION	06/08/2020	BERASI P.
5	29	GENERAL REVISION	06/08/2020	BERASI P.
5	30	GENERAL REVISION	06/08/2020	BERASI P.
5	31	GENERAL REVISION	06/08/2020	BERASI P.
5	32	GENERAL REVISION	06/08/2020	BERASI P.
5	33	GENERAL REVISION	06/08/2020	BERASI P.
5	34	GENERAL REVISION	06/08/2020	BERASI P.

5	GENERAL REVISION	06/08/2020	Berasi P.	DATA	18/02/2020		MV GLOBAL STANDARD CELL WITH GSTP101 REVISION LIST CONSTRUCTION DIAGRAM	ELECTRICAL DIAGRAMS STANDARD			
4	GENERAL REVISION	04/06/2020	Berasi P.	DRAWN	Berasi			GSTX135.DWG	SHEET	2 OF	34
3	GENERAL REVISION	29/05/2020	Berasi P.	VERIFIED	Scrosati			SERIAL CODE	N'DOC.	NEXT	3
REV.	MODIFICATIONS	DATA	SIGN.	APPROVED	Giammanco						

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TERMINAL BOARD	SITE	DESCRIPTION
X-S2	+TERMINAL BLOCK COMPARTMENT	CB AND ANALOG TERMINAL BOARD
X-C	+DEVICE COMPARTMENT	TERMINAL BLOCK FOR CABLE CONNECTIONS
X-M	+DEVICE COMPARTMENT	SUPPORT TERMINAL BLOCK
X-PS	+DEVICE COMPARTMENT	POWER SUPPLY TERMINAL BLOCK

CONNECTOR	SITE	DESCRIPTION
S2MT	+S2 MT	S2MT -- CONNECTOR
LC 1	+GSTP101	LC RIO 1 CONNECTOR
LC 2	+GSTP101	LC RIO 2 CONNECTOR
LC RIO 1	+GSTP102	LC RIO 1 CONNECTOR
LC RTU	+GSTP101	LC CONNECTOR
MA	+GSTP101	MV CURRENT CONNECTOR
MI	+GSTP101	DIGITAL INPUT CONNECTOR
MMI	+GSTP102	DIGITAL INPUT CONNECTOR
MMO	+GSTP102	DIGITAL OUTPUT CONNECTOR
MMP	+GSTP102	POWER SUPPLY CONNECTOR
MO	+GSTP101	DIGITAL OUTPUT CONNECTOR
MP	+GSTP101	POWER SUPPLY CONNECTOR
MT	+GSTP101	MT SWITCH CONTROL CONNECTOR
MV	+GSTP101	MV VOLTAGE CONNECTOR

SITE	DESCRIPTION
+GSTP101	MULTIFUNCTION PROTECTION AND CONTROL DEVICE
+GSTP102	MV CB SIGNAL REMOTE MODULE
+SIDE_PLATE	MV CELL AUXILIARY COMPONENTS
+DEVICE COMPARTMENT	DEVICE COMPARTMENT FOR TERMINAL BOARD HOUSING
+MV CELL	MV CELL
+TERMINAL BLOCK COMPARTMENT	VERTICAL TERMINAL BLOCK COMPARTMENT
+SYNOPTIC	LOCAL SYNOPTIC SIGNALS/COMMANDS
+S2 MT	MV CIRCUIT BREAKER
+MV CT	MV CURRENT TRANSFORMER

5	GENERAL REVISION	06/08/2020	Berasi P.	DATA	18/02/2020		MV GLOBAL STANDARD CELL WITH GSTP101 TERMINAL BLOCK LIST CONSTRUCTION DIAGRAM	ELECTRICAL DIAGRAMS STANDARD			
4	GENERAL REVISION	04/06/2020	Berasi P.	DRAWN	Berasi			GSTX135.DWG	SHEET	3 OF	34
3	GENERAL REVISION	29/05/2020	Berasi P.	VERIFIED	Scrosati			SERIAL CODE	N'DOC.	NEXT	4
REV.	MODIFICATIONS	DATA	SIGN.	APPROVED	Giammanco						

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**Application Areas**

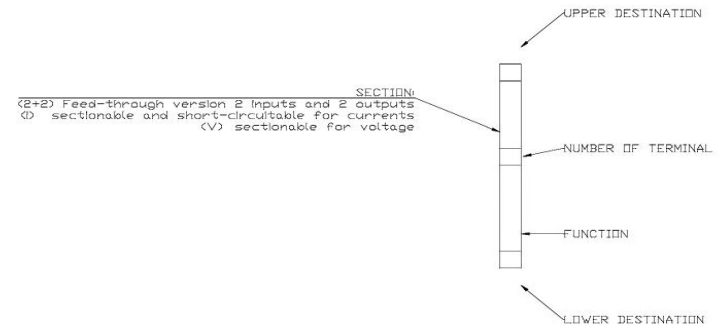
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

	1	2	3	4	5	6	7	8																																
A	<p>1 THE DIAGRAM SHOWS THE COMMAND OF THE MV CIRCUIT-BREAKER IN ACCORDING WITH GSCM505 GLOBAL STANDARD AND IN PARTICULAR:                  A. TYPE A COMMAND – 16 PIN CONNECTOR – 1 CLOSING COMMAND (52CH), 1 OPENING COMMAND (52AP)                  B. TYPE B COMMAND – 24 PIN CONNECTOR – 1 CLOSING COMMAND (52CH), 1 OPENING COMMAND (52AP) AND 1 UNDERVOLTAGE OPENING COMMAND (52&lt;U)                  C. TYPE C COMMAND – 16 PIN CONNECTOR – 1 CLOSING COMMAND (52CH), 1 OPENING COMMAND (52AP) AND 1 UNDERVOLTAGE OPENING COMMAND (52&lt;U)                  D. TYPE D COMMAND – 24 PIN CONNECTOR – 1 CLOSING COMMAND (52CH), 2 OPENING COMMANDS (52AP AND 52 2'AP)</p>								A																															
B	<p>2 ELECTRICAL CIRCUITS MUST BE MADE WITH SINGLE-POLE FLEXIBLE CONDUCTOR (WHERE NOT OTHERWISE DEFINED) WITH THE FOLLOWING SECTIONS:                  A. 1,5MM<sup>2</sup> FOR CIRCUITS OF COMMAND, CONTROL AND SIGNALING                  B. 2,5MM<sup>2</sup> FOR VOLTAGE CIRCUITS                  C. 2,5MM<sup>2</sup> FOR CURRENT CIRCUITS                  ALL THE ELECTRICAL CONNECTIONS INSIDE THE CELL AND SHOWN IN THE CONSTRUCTION DRAWING MUST BE MADE, PROVIDING ALL THE ACCESSORIES NECESSARY FOR THE PROFESSIONAL CONSTRUCTION OF THE ELECTRICAL WIRING</p>								B																															
C	<p>3 ALL THE MATERIALS INDICATED IN THIS DRAWING MUST BE INCLUDED IN THE CONSTRUCTION OF THE MV CELL. THE CONSTRUCTIVE CHARACTERISTICS OF THE VARIOUS COMPONENTS ARE SHOWN PURELY AS AN INDICATION. FOR EACH COMPONENT, THE MANUFACTURER MUST INDICATE THE MATERIAL USED, COMPLETE WITH TECHNICAL DATA SUCH AS: SUPPLIER, TECHNICAL CHARACTERISTICS, ARTICLE CODE.</p>								C																															
D	<p>4 NEAR THE TERMINAL BOARDS MUST BE PROVIDED A SPECIAL 25 MM<sup>2</sup> COPPER BAR WITH Ø 6.5 MM HOLES CONNECTED TO THE EQUIPOTENTIAL EARTH CONNECTION</p> <p>5 FOR THE MARKING OF THE CONDUCTORS, REFER TO THE CABLE NOTE IN THIS DRAWING, INDICATING THE DOUBLE DESTINATION (START/FINISH) ON A SPECIAL WIRE MARKER.</p> <p>6 THE CHOICE OF THE TYPE OF TERMINALS TO BE USED IS THE RESPONSIBILITY OF THE MANUFACTURER AND MUST COMPLY WITH WHAT IS PRESCRIBED BY LOCAL TECHNICAL SPECIFICATIONS. IN PARTICULAR:                  A. IN CASE OF SCREW TERMINALS, A SUITABLE TERMINAL ON THE CONDUCTOR MUST ALWAYS BE PROVIDED                  B. IN CASE OF SPRING TERMINALS, THE CONDUCTOR CAN BE USED WITHOUT A SUITABLE TERMINAL                  C. IN CASE OF PUSH-IN TERMINALS, A SUITABLE TERMINAL ON THE CONDUCTOR MUST ALWAYS BE PROVIDED                  IN CORRESPONDENCE TO EACH TERMINAL BOARD, SUITABLE PVC FIRE-RETARDANT CONDUITS MUST BE PROVIDED</p>								D																															
E	<p>THE DIAGRAM IS SHOWN WITH MV CIRCUIT-BREAKERS OPEN, WITHOUT ALARMS AND WITHOUT AC AND DC POWER SUPPLY</p>								E																															
F	<table border="1"> <tr> <td>4</td> <td>GENERAL REVISION</td> <td>04/06/2020</td> <td>Beraal P.</td> <td>DATA</td> <td>18/02/2020</td> <td rowspan="2"> </td> <td rowspan="2">                     MV GLOBAL STANDARD CELL WITH GSTP101                      WIRING SPECIFICATIONS                      CONSTRUCTION DIAGRAM                 </td> <td colspan="3">ELECTRICAL DIAGRAMS STANDARD</td> </tr> <tr> <td>REV.</td> <td>MODIFICATIONS</td> <td>DATA</td> <td>SIGN.</td> <td>VERIFIED</td> <td>Serosat!</td> <td>GSTX135.DWG</td> <td>SHEET</td> <td>4 OF</td> <td>34</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>APPROVED</td> <td>Giammanco</td> <td>SERIAL CODE</td> <td>N'DOC.</td> <td>NEXT</td> <td>5</td> </tr> </table>								4	GENERAL REVISION	04/06/2020	Beraal P.	DATA	18/02/2020		MV GLOBAL STANDARD CELL WITH GSTP101 WIRING SPECIFICATIONS CONSTRUCTION DIAGRAM	ELECTRICAL DIAGRAMS STANDARD			REV.	MODIFICATIONS	DATA	SIGN.	VERIFIED	Serosat!	GSTX135.DWG	SHEET	4 OF	34					APPROVED	Giammanco	SERIAL CODE	N'DOC.	NEXT	5	F
4	GENERAL REVISION	04/06/2020	Beraal P.	DATA	18/02/2020		MV GLOBAL STANDARD CELL WITH GSTP101 WIRING SPECIFICATIONS CONSTRUCTION DIAGRAM	ELECTRICAL DIAGRAMS STANDARD																																
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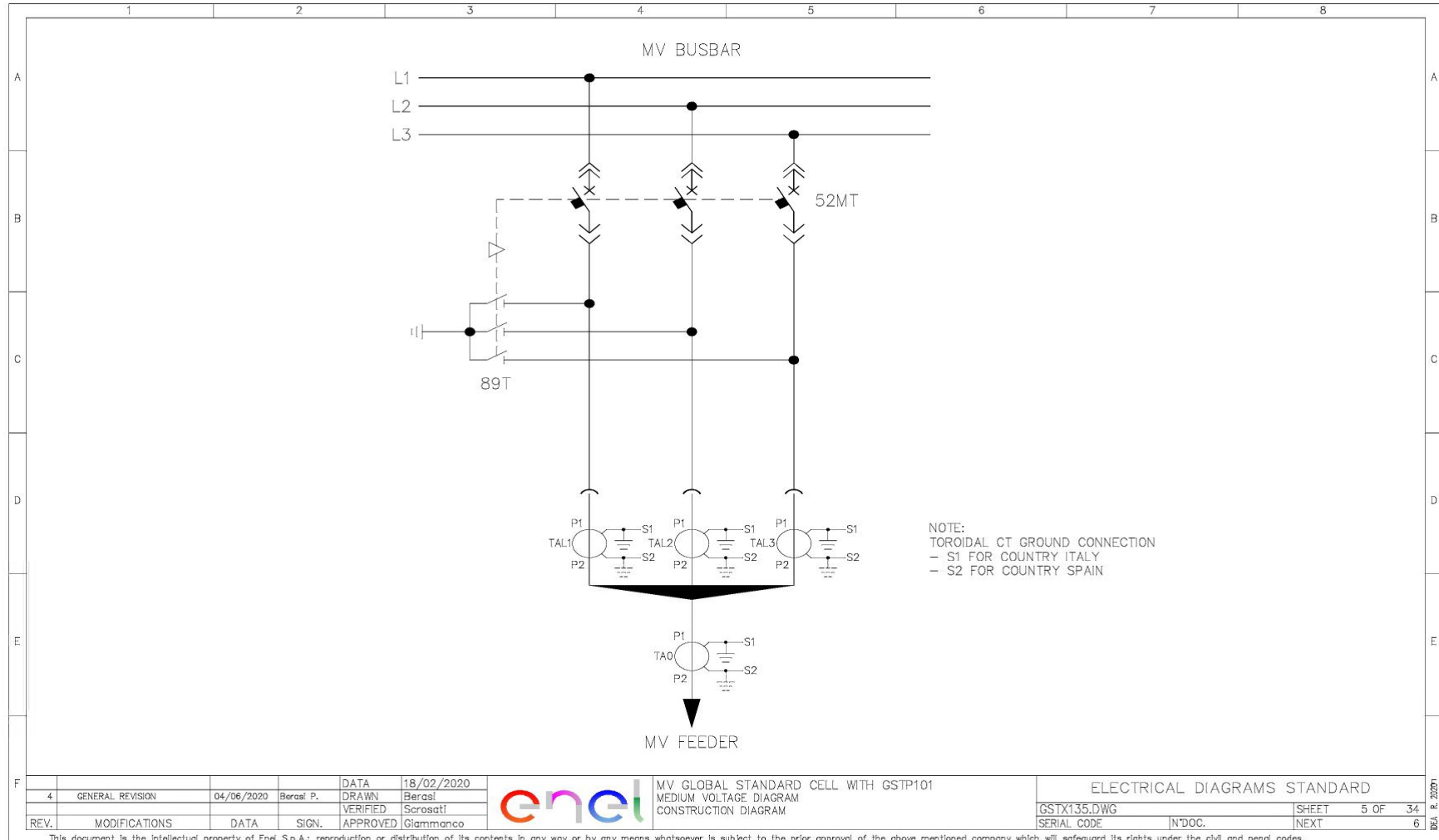
**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
 Staff Function: -  
 Service Function: -  
 Business Line: *Enel Grids*



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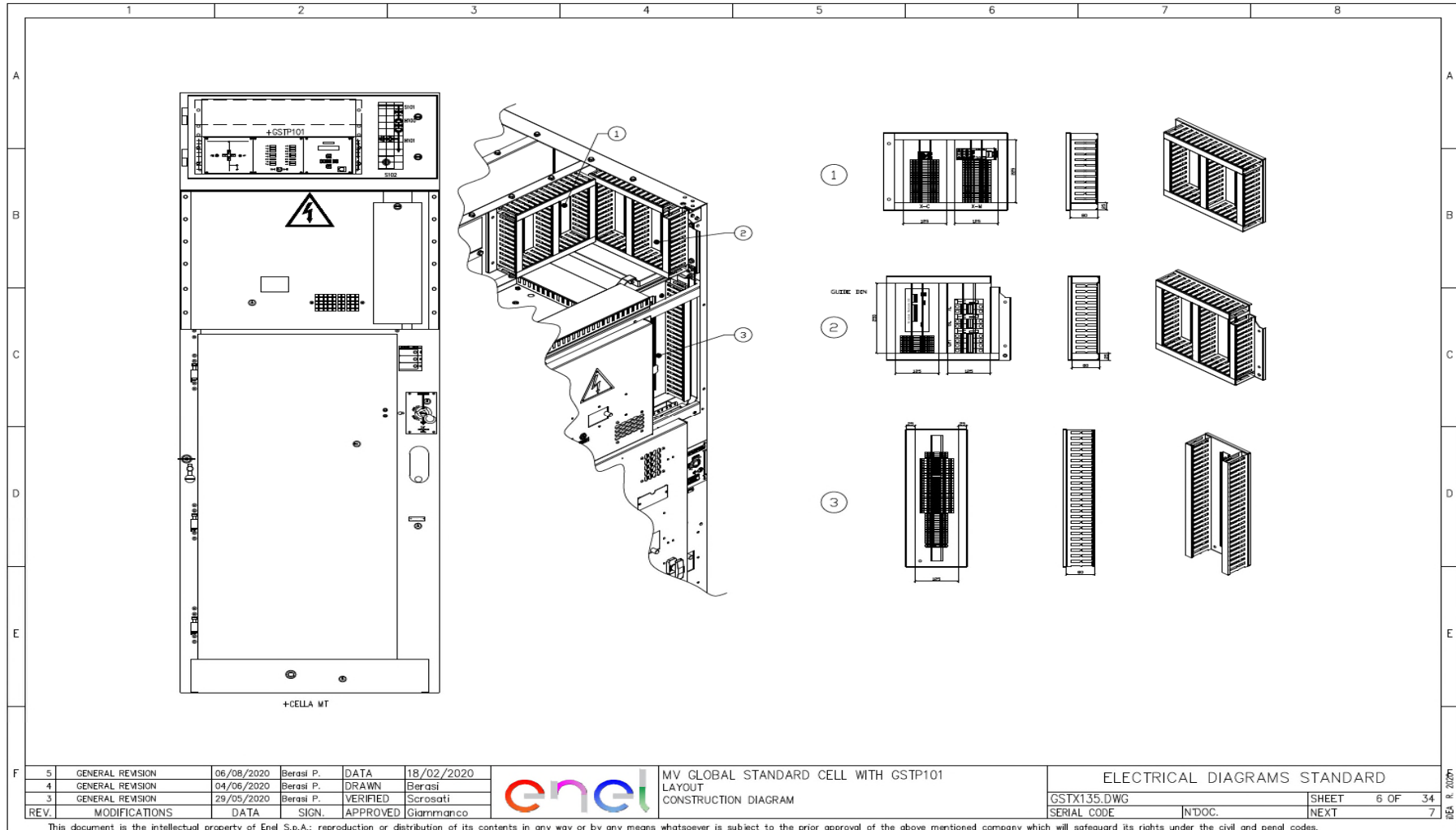
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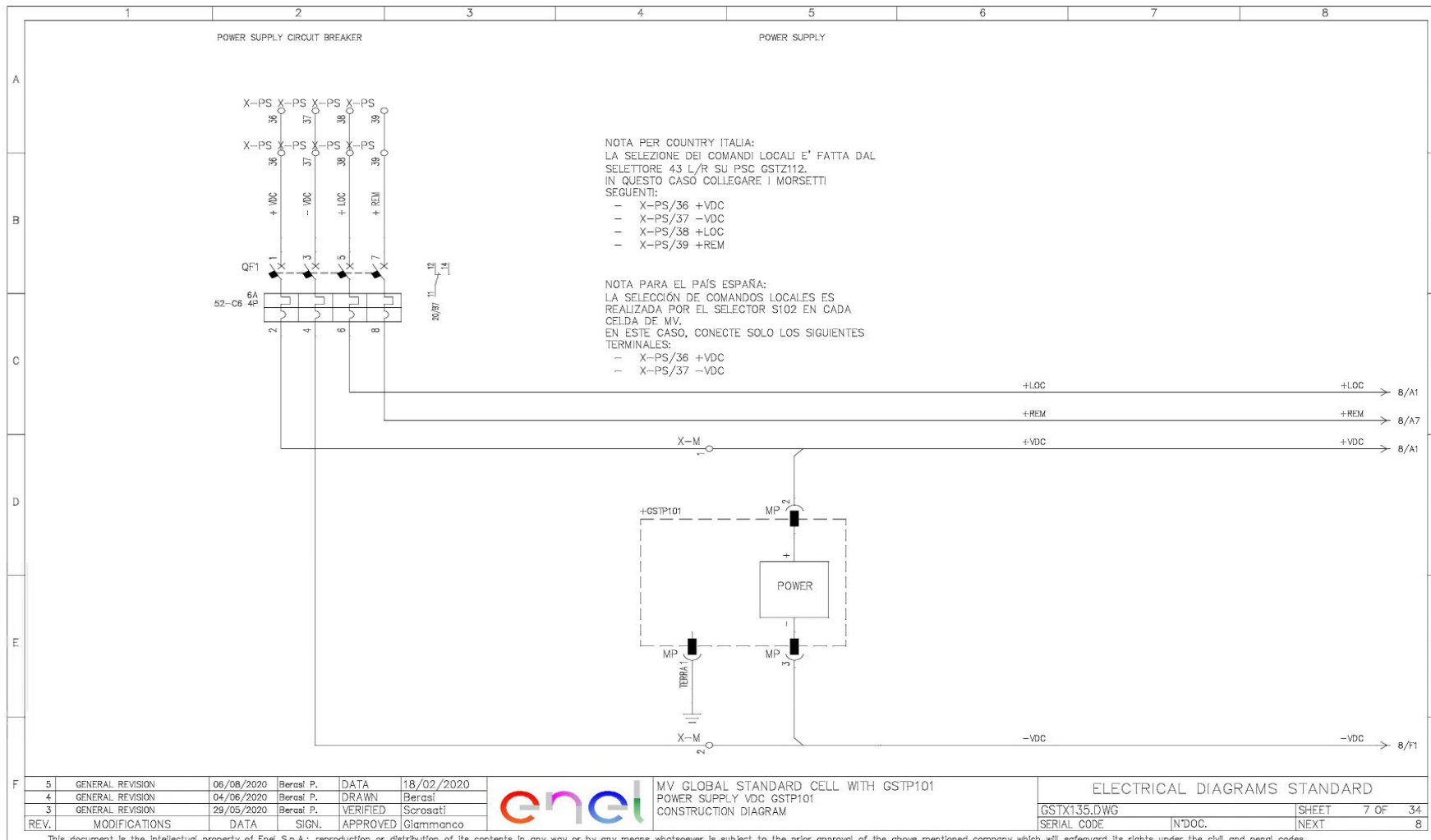
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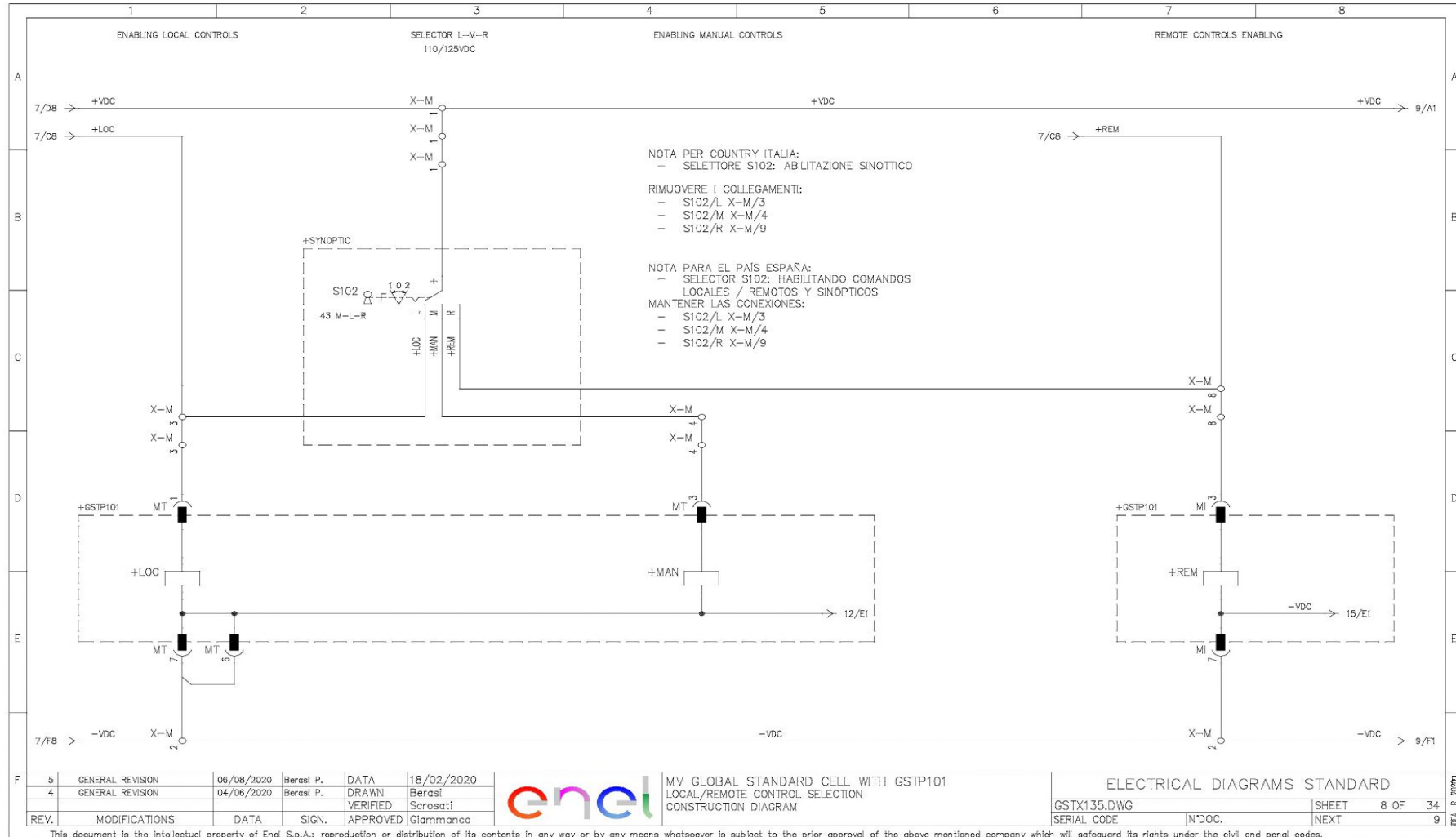
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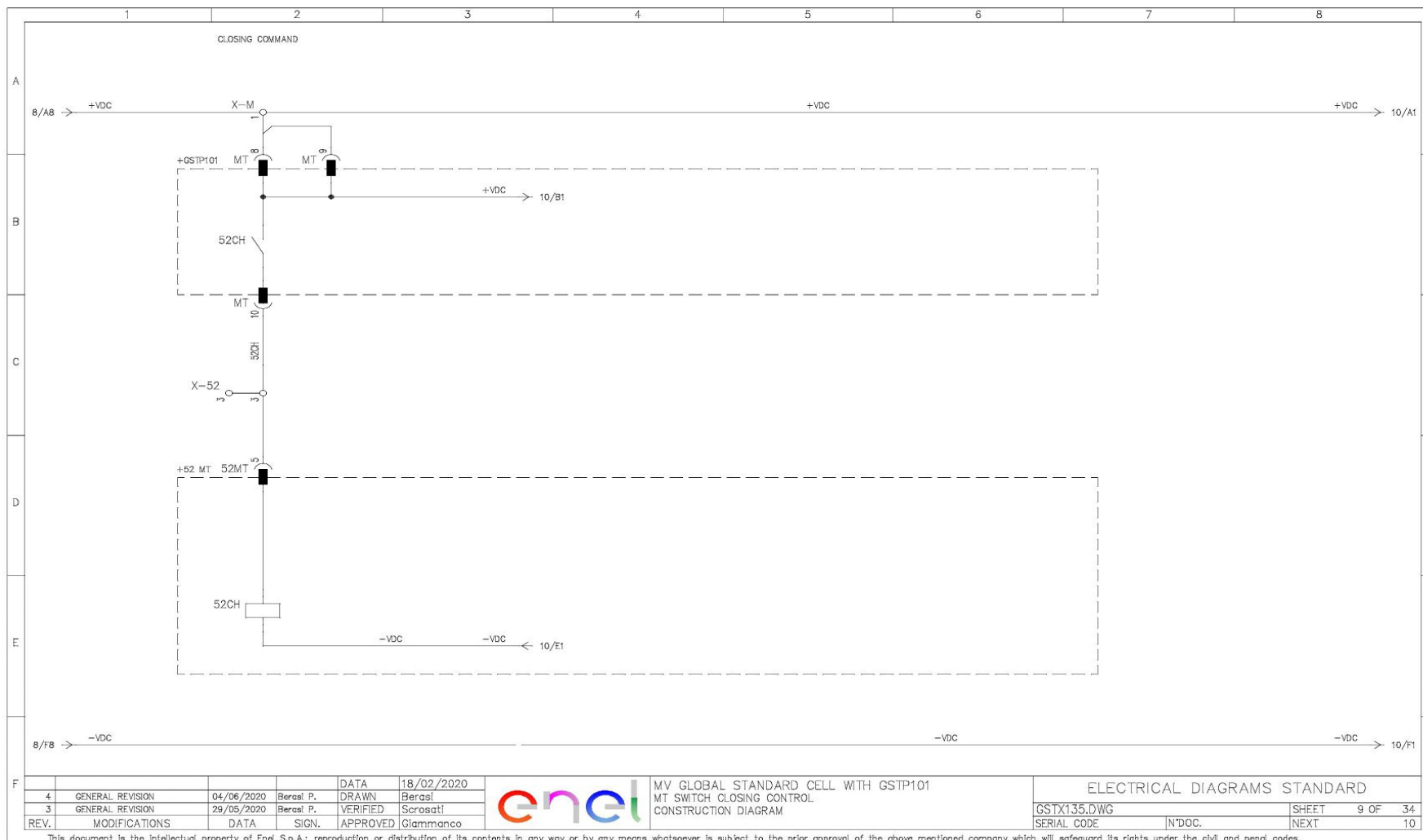
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4	GENERAL REVISION	04/06/2020	Berasi P.	DATA	18/02/2020
3	GENERAL REVISION	29/05/2020	Berasi P.	DRAWN	Berasi
REV.	MODIFICATIONS	DATA	SIGN.	APPROVED	Giammanco



MV GLOBAL STANDARD CELL WITH GSTP101  
 MT SWITCH CLOSING CONTROL  
 CONSTRUCTION DIAGRAM

ELECTRICAL DIAGRAMS STANDARD	
GSTX135.DWG	SHEET 9 OF 34
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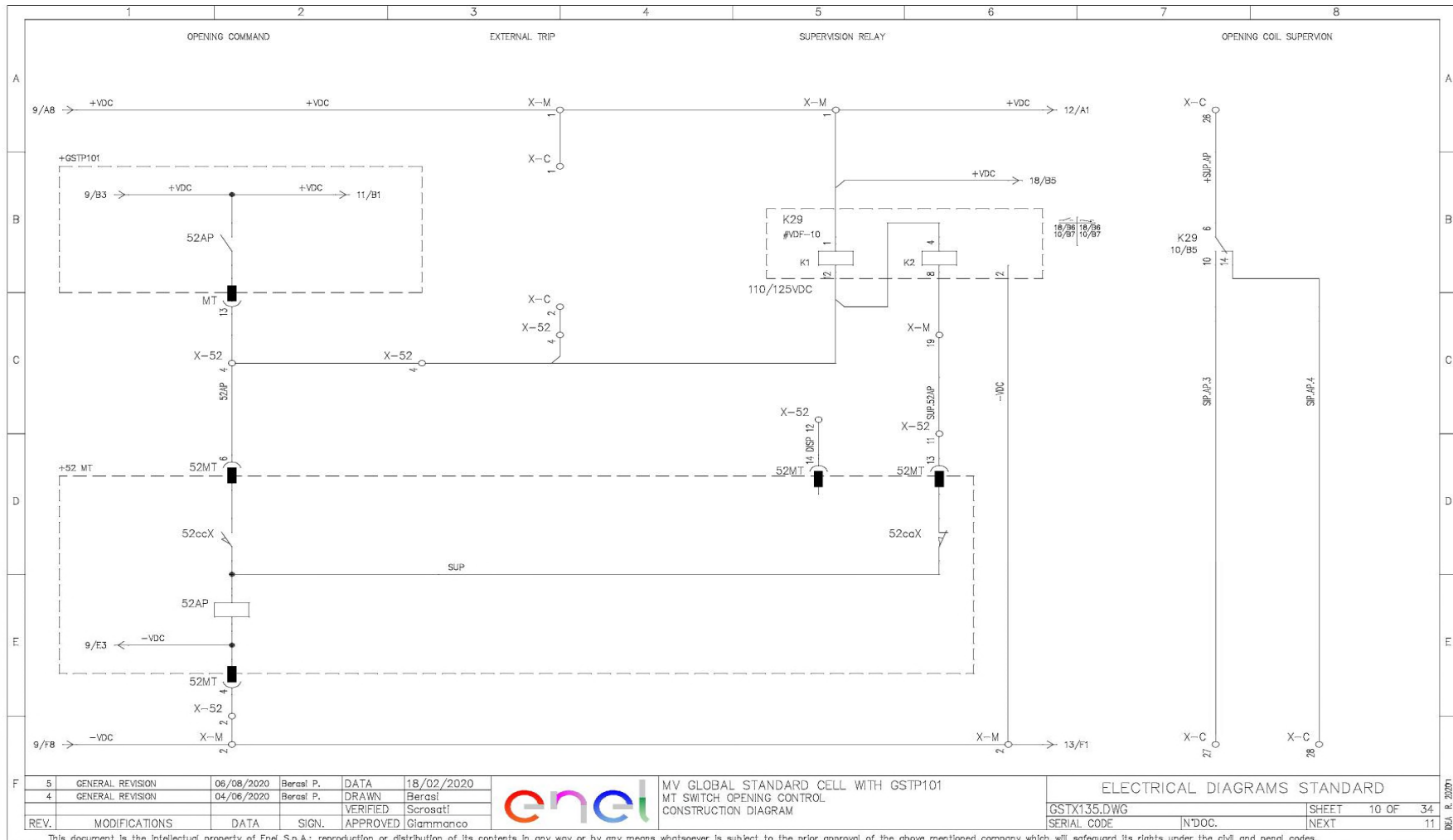
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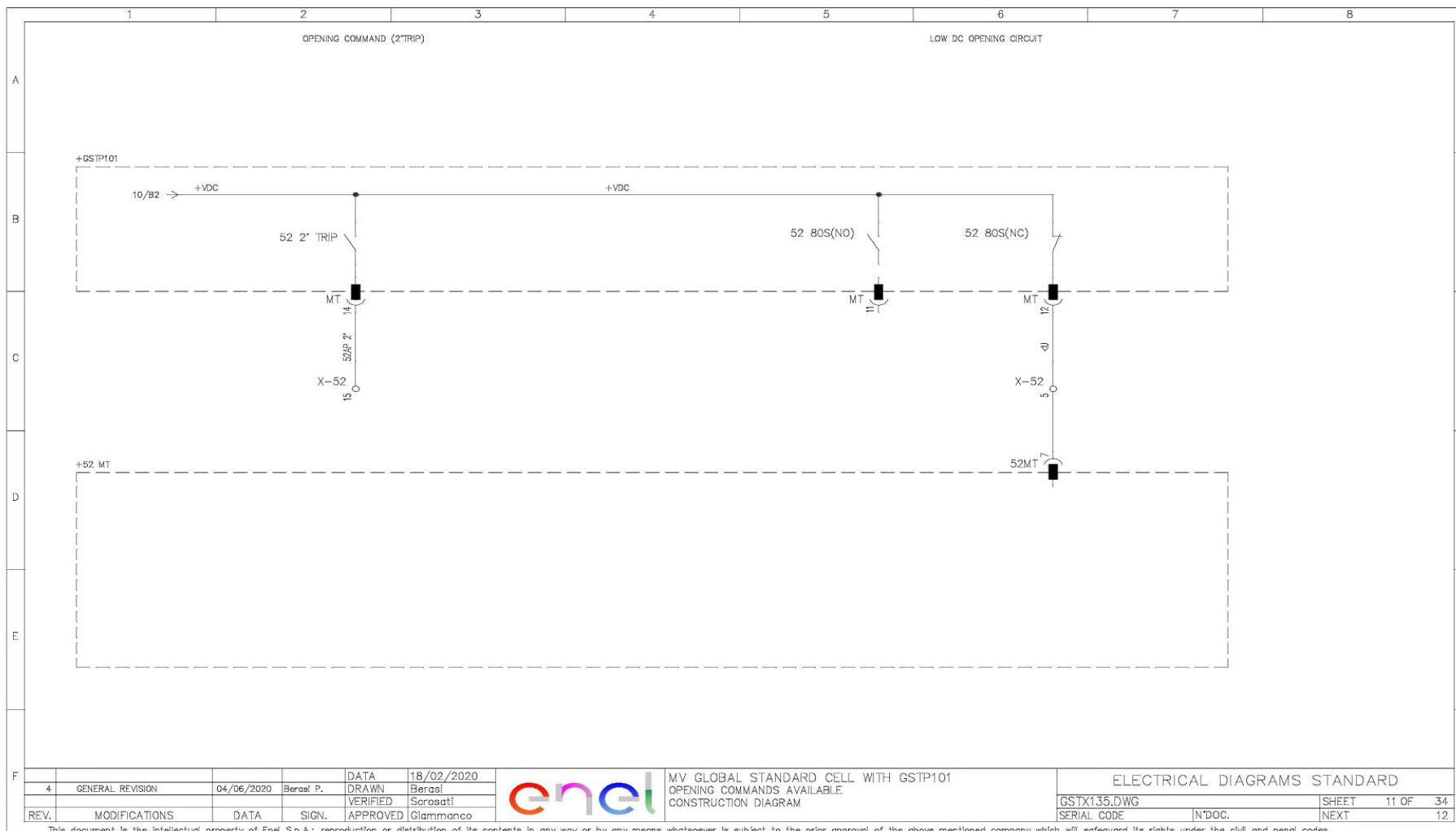


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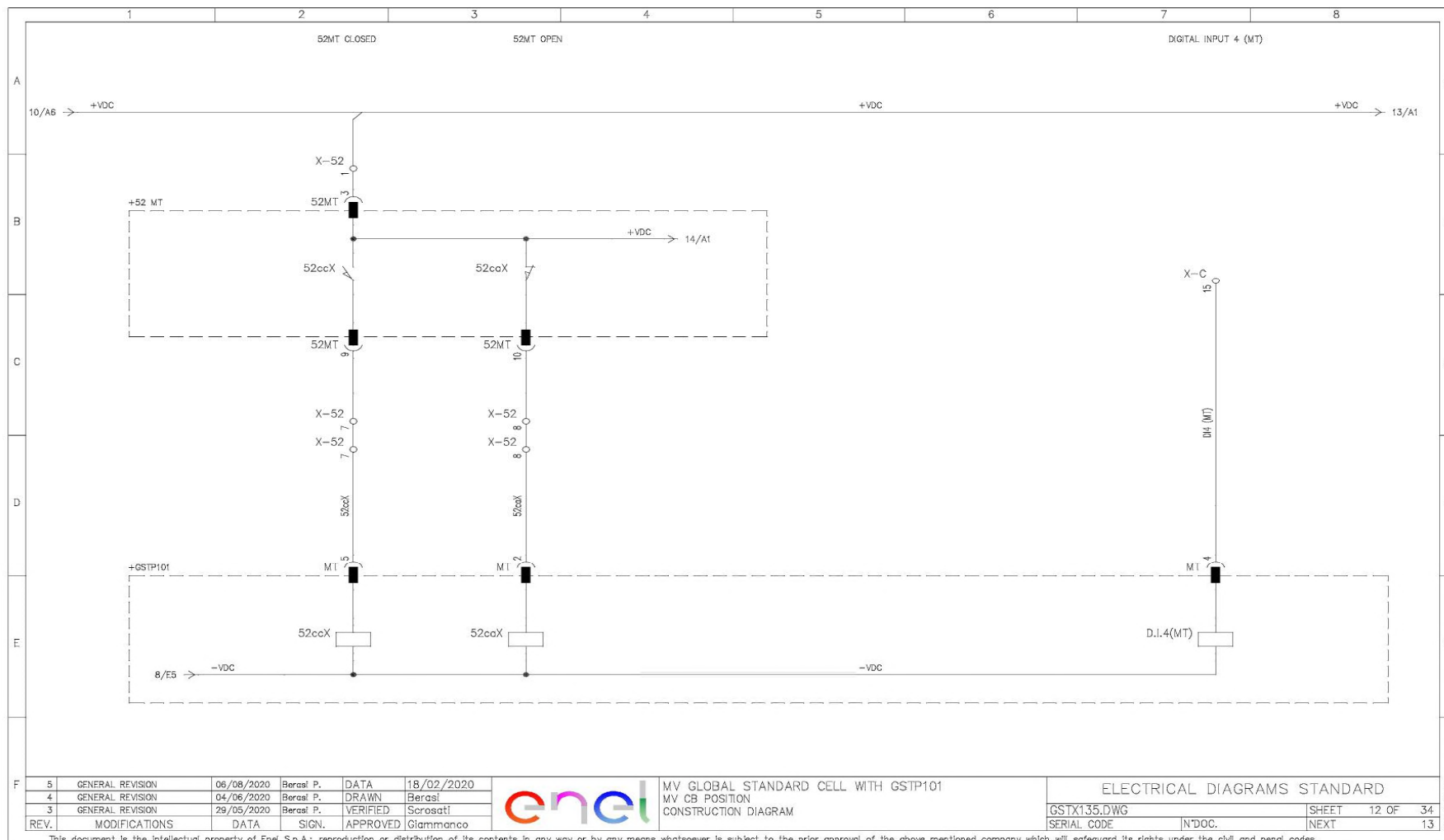


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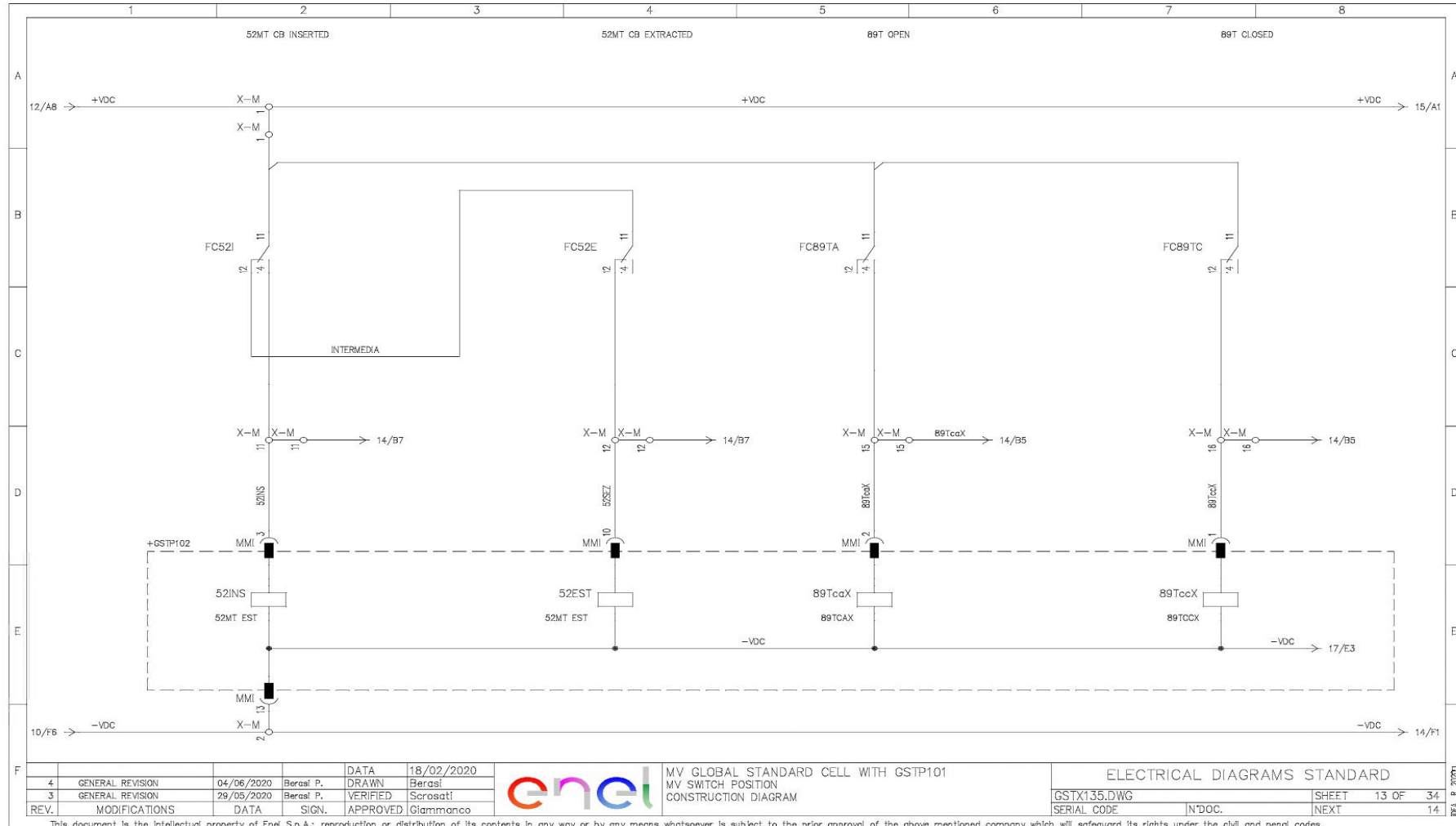
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4	GENERAL REVISION	04/06/2020	Berasi P.	DRAWN	18/02/2020	Berasi
3	GENERAL REVISION	29/05/2020	Berasi P.	VERIFIED		Serosati
REV.	MODIFICATIONS	DATA	SIGN.	APPROVED		Giammanco



MV GLOBAL STANDARD CELL WITH GSTP101  
 MV SWITCH POSITION  
 CONSTRUCTION DIAGRAM

ELECTRICAL DIAGRAMS STANDARD			
GSTX135.DWG	SHEET	13 OF	34
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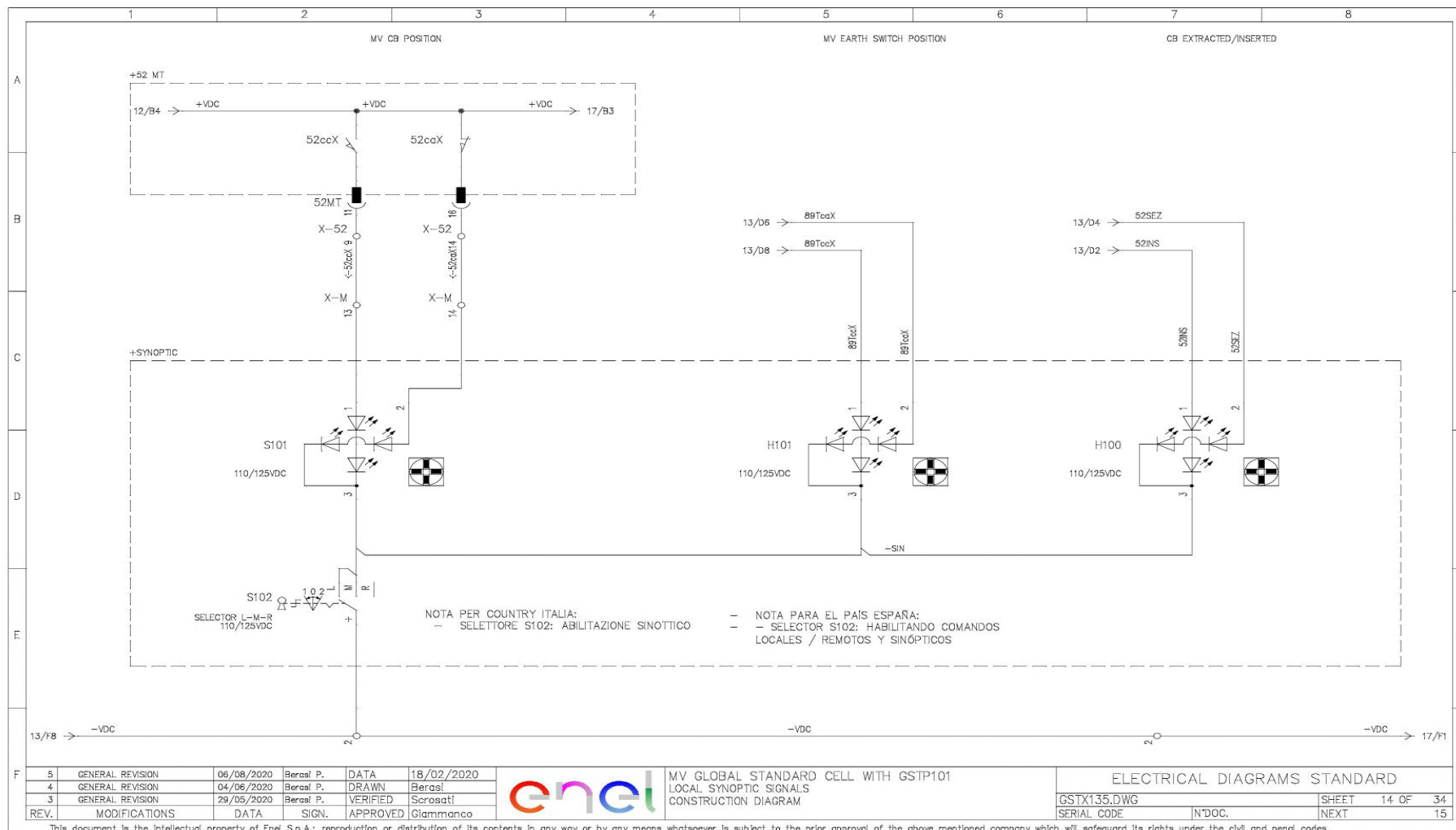
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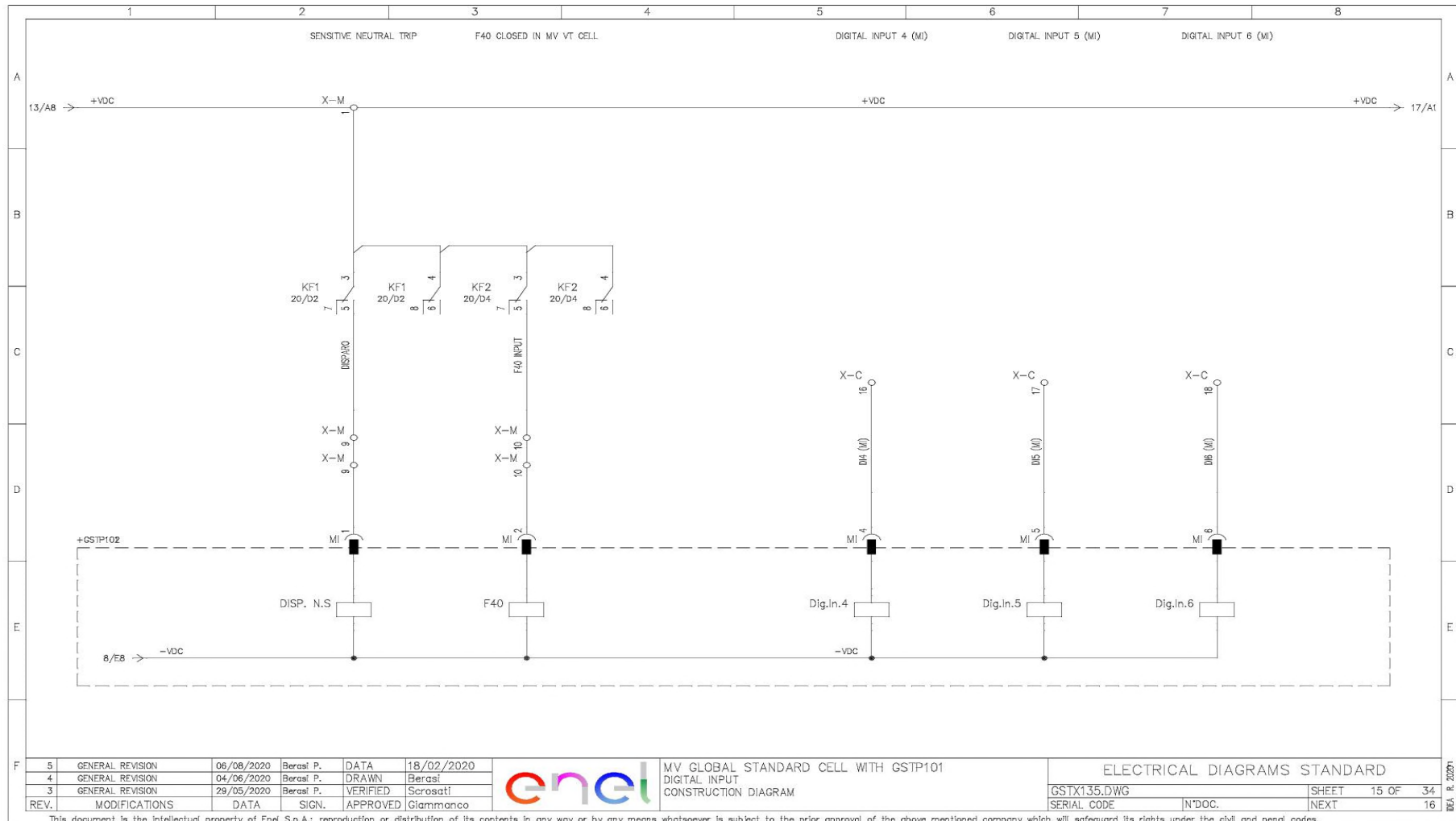
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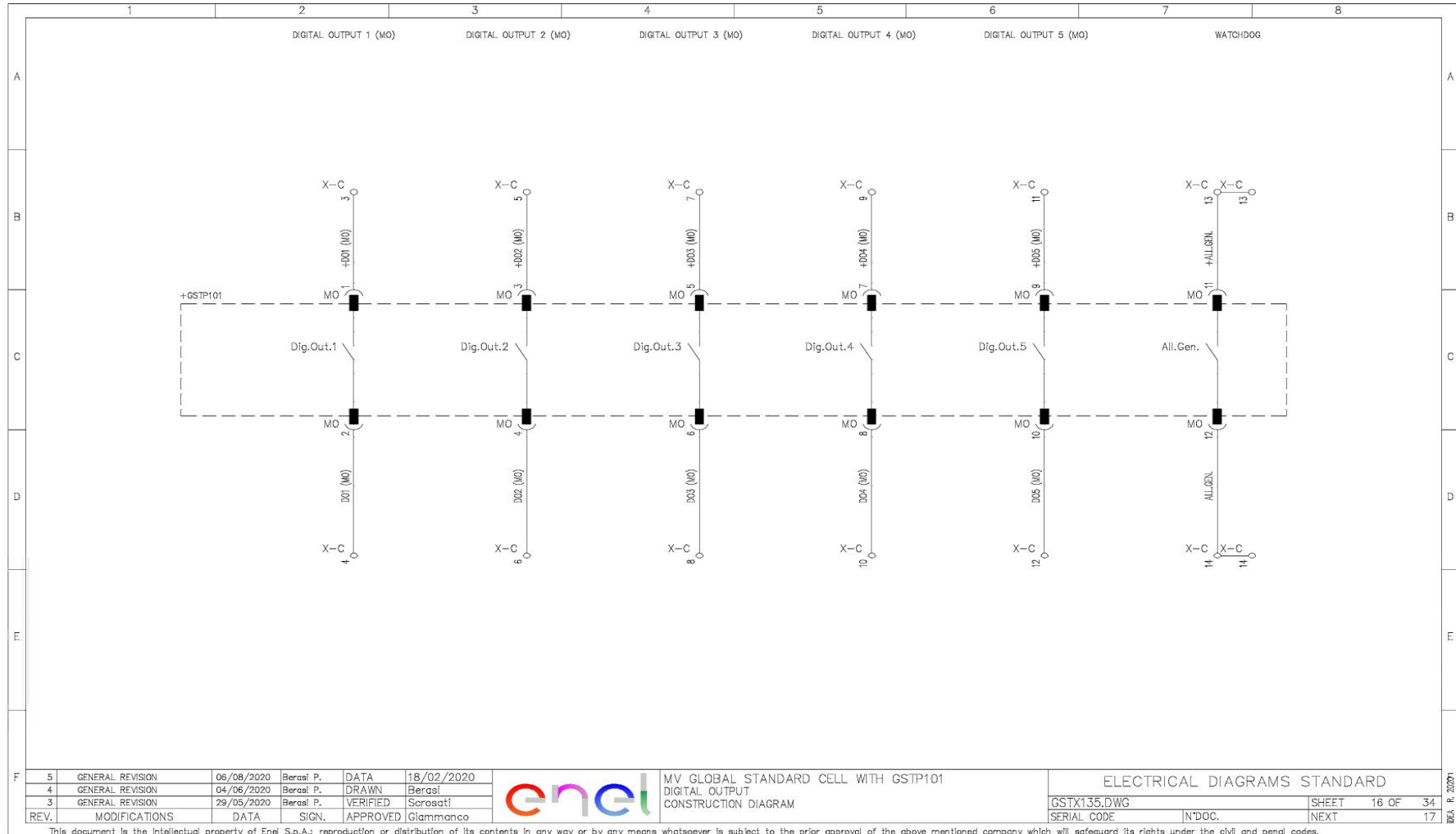
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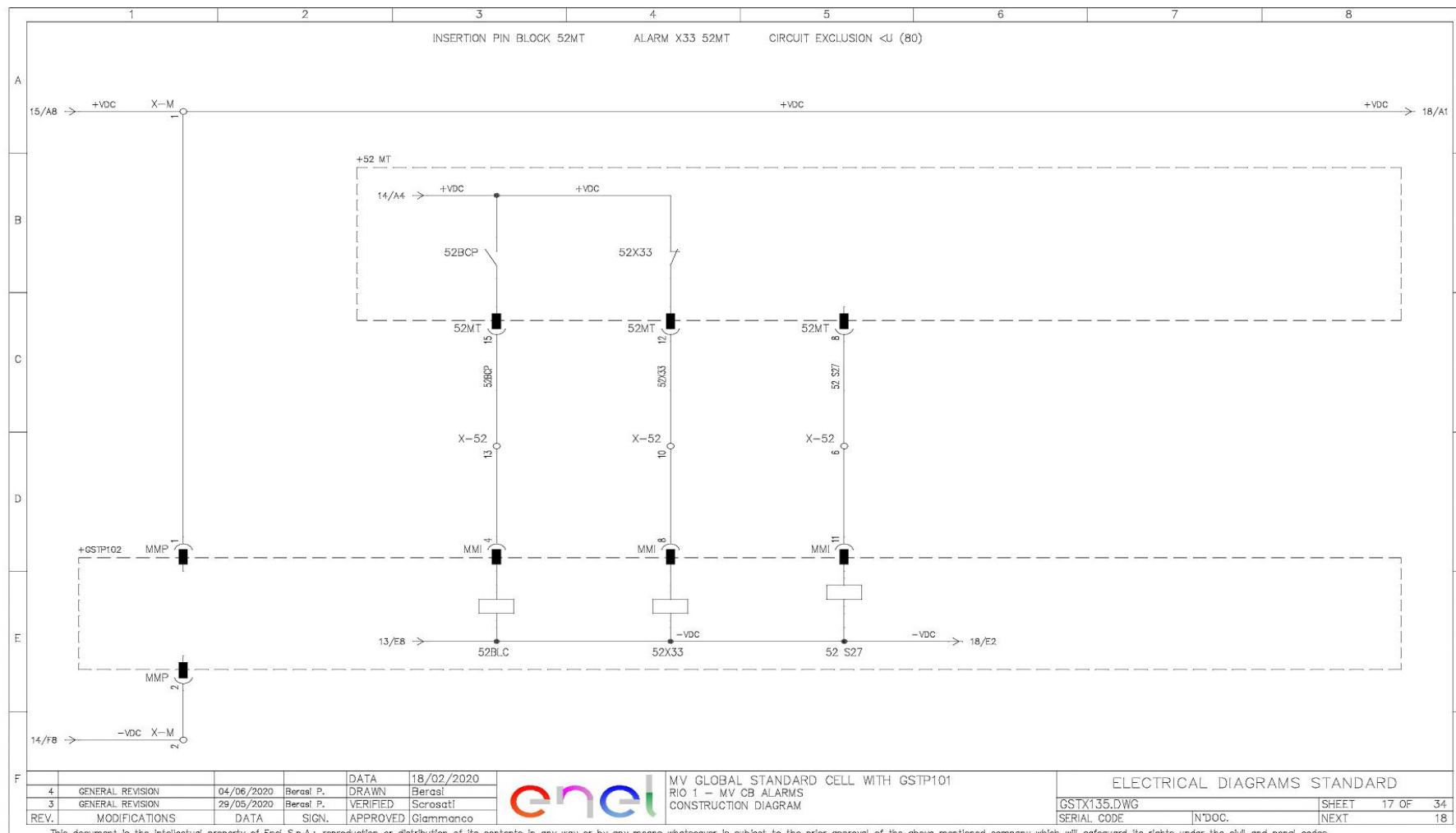
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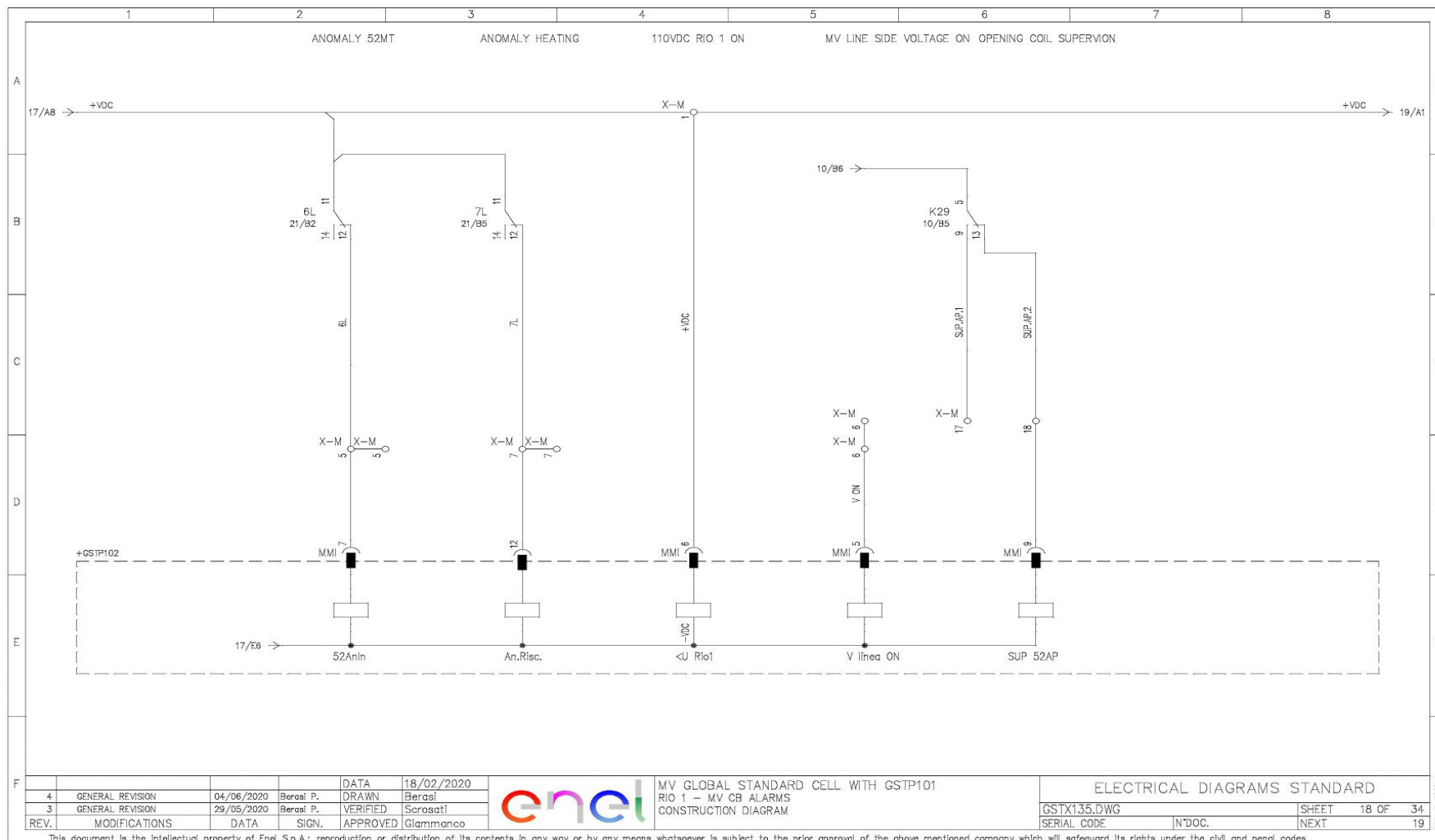
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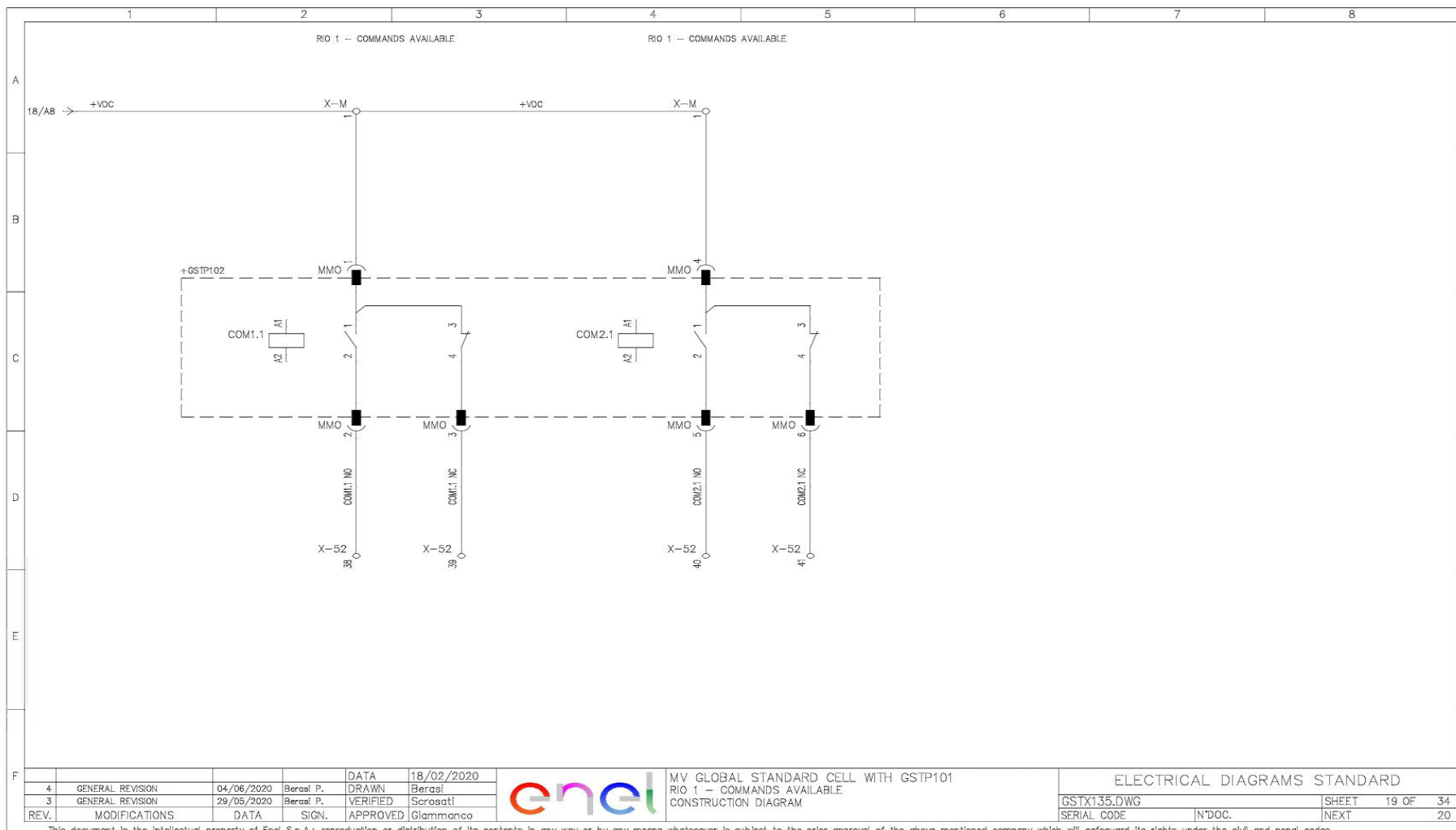


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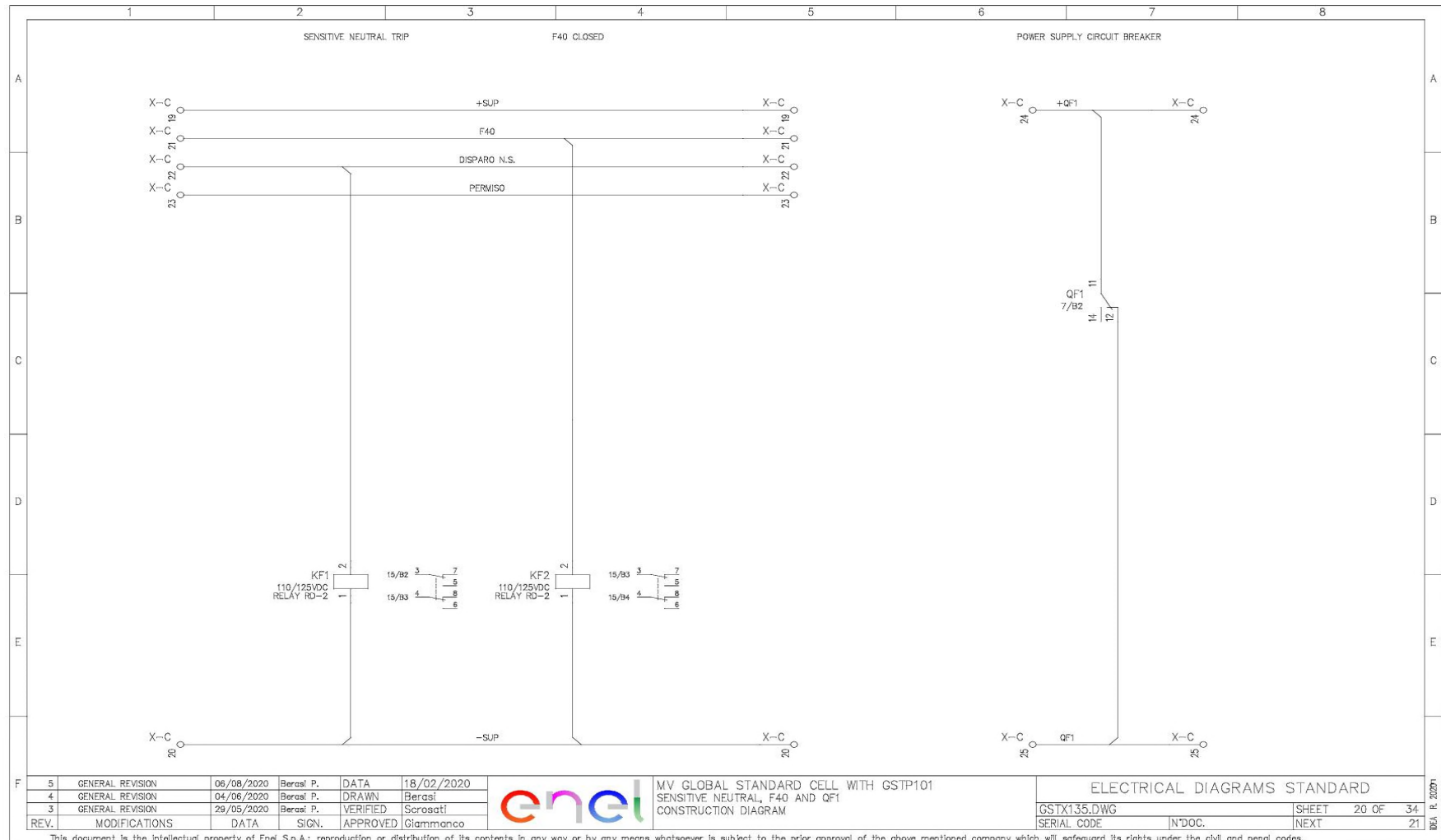
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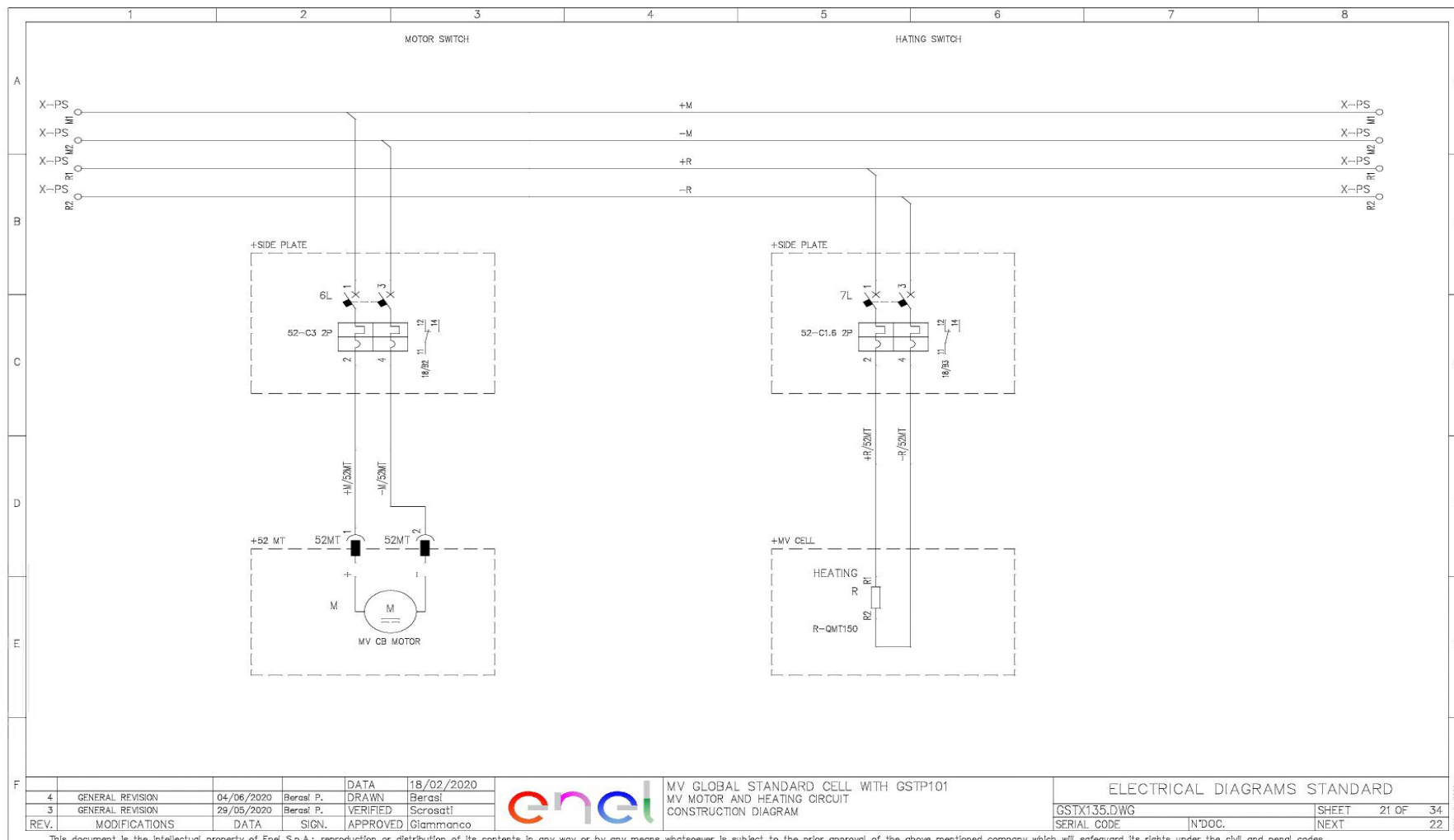
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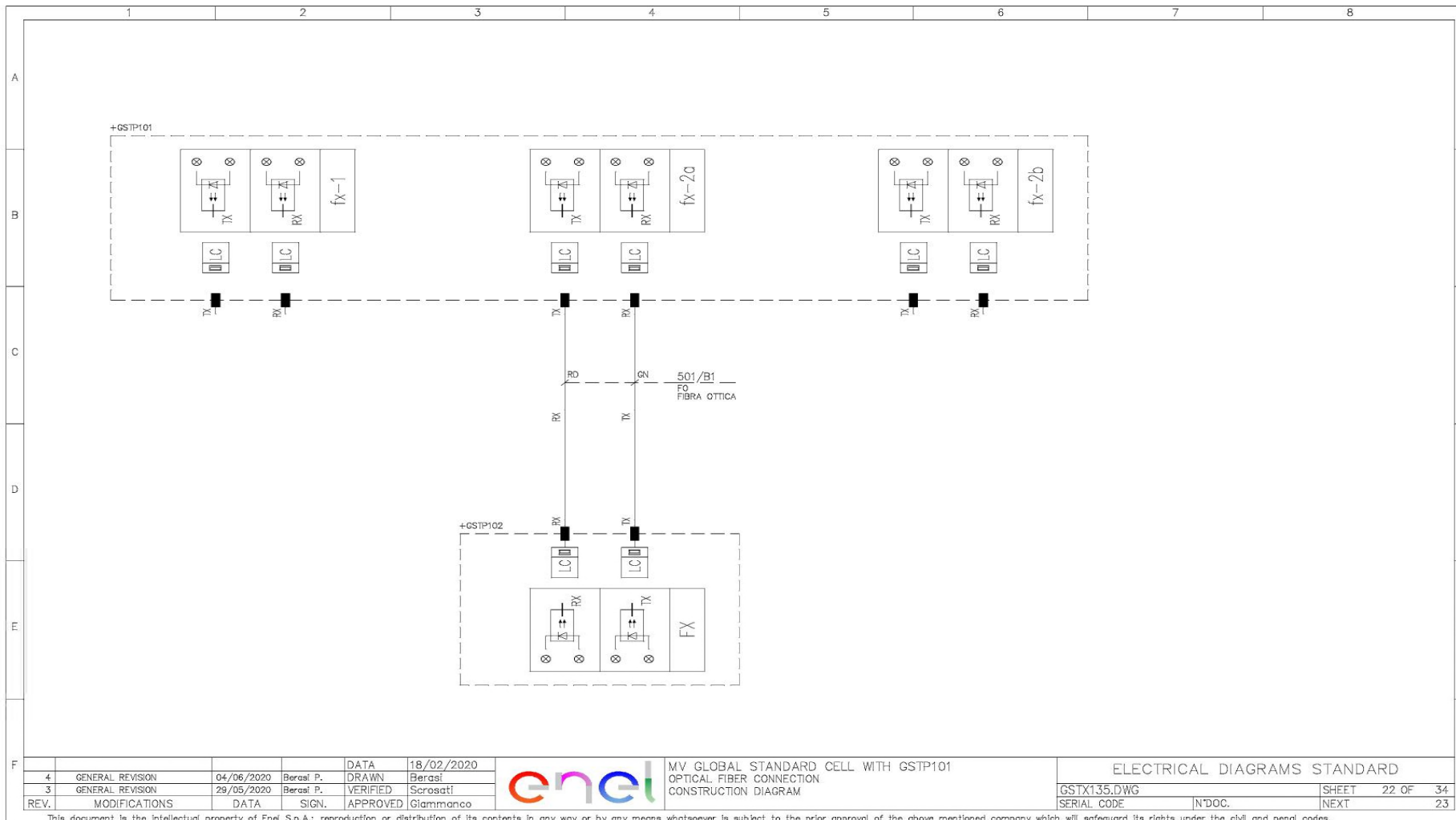
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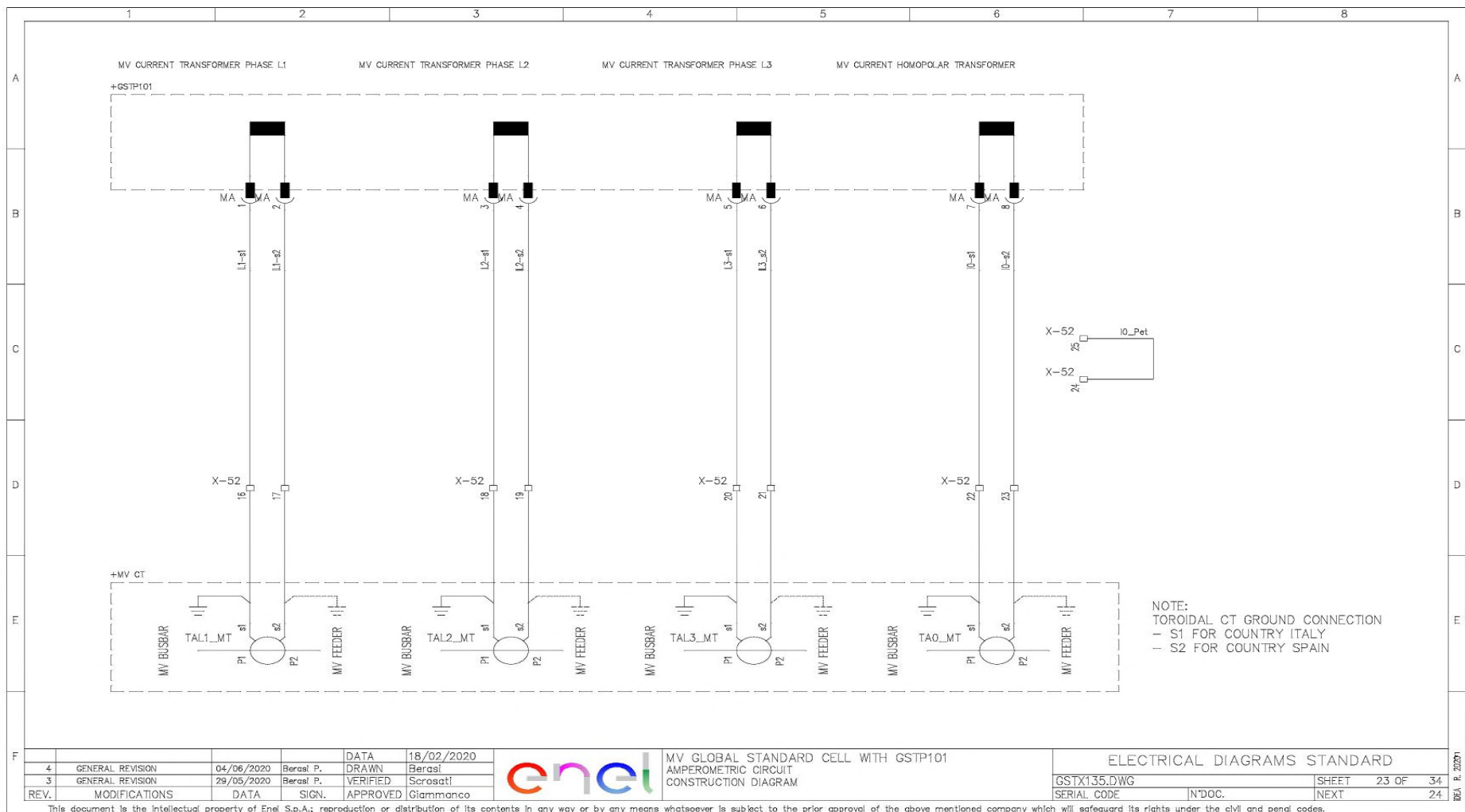
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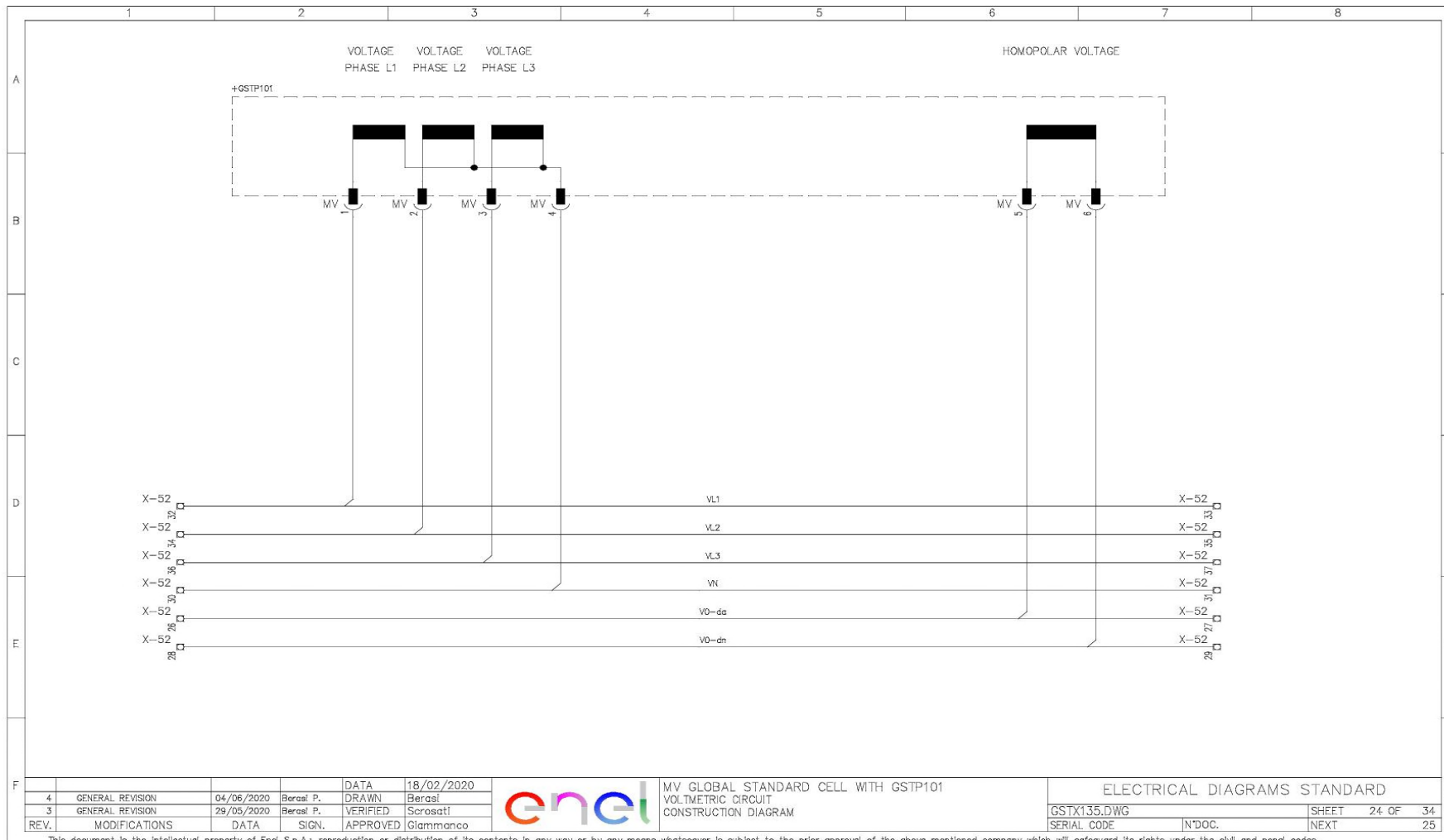
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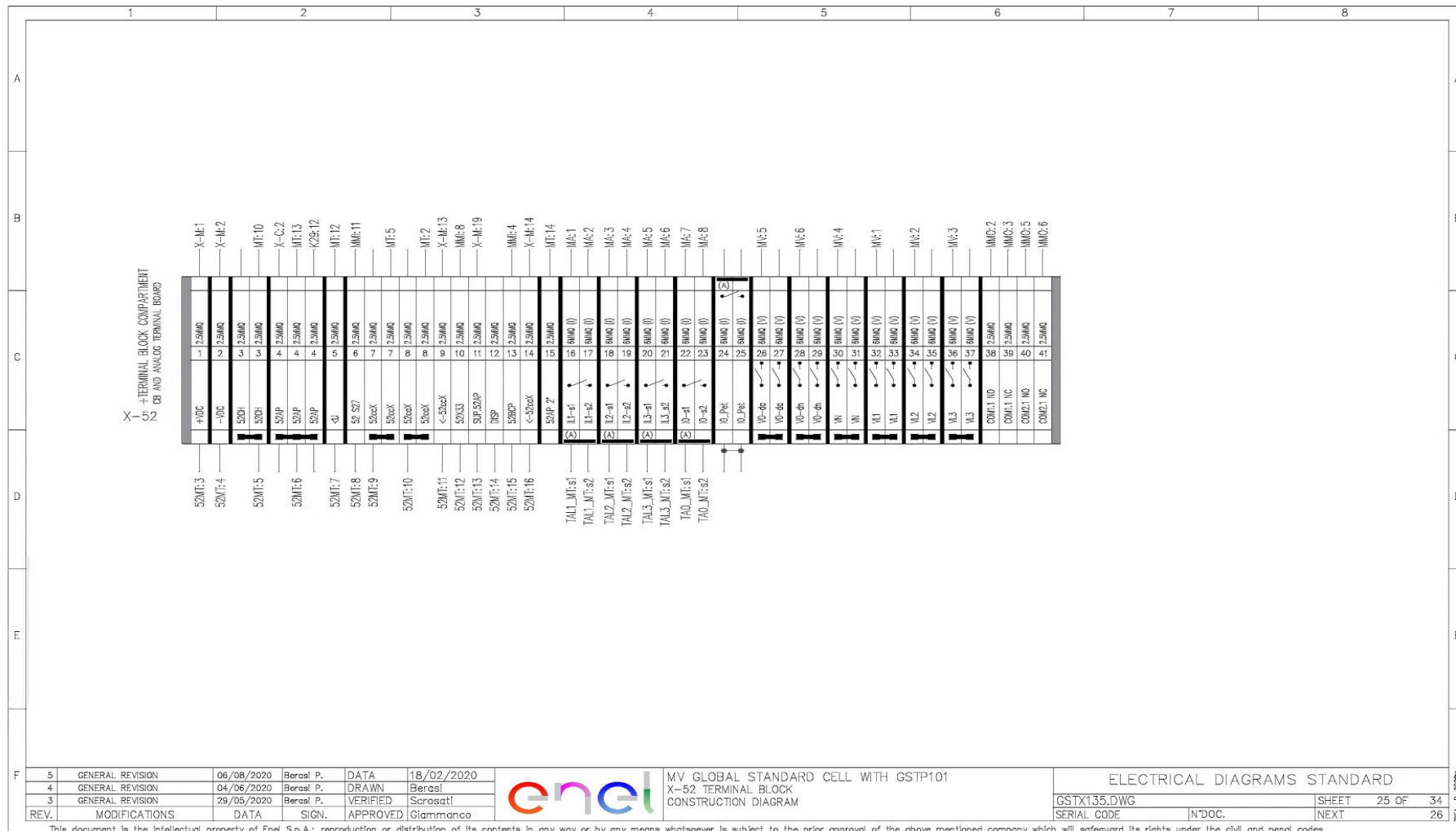
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Perimeter: *Global*

Staff Function: -

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Business Line: *Enel Grids*



5	GENERAL REVISION	06/08/2020	Bercasi P.	DATA	18/02/2020
4	GENERAL REVISION	04/06/2020	Bercasi P.	DRAWN	Bercasi
3	GENERAL REVISION	29/05/2020	Bercasi P.	VERIFIED	Scrosati
REV.	MODIFICATIONS	DATA	SIGN.	APPROVED	Giammanco



MV GLOBAL STANDARD CELL WITH GSTP101  
X-52 TERMINAL BLOCK  
CONSTRUCTION DIAGRAM

ELECTRICAL DIAGRAMS STANDARD	
GSTX135.DWG	SHEET 25 OF 34
SERIAL CODE	N'DOC.
	NEXT 26

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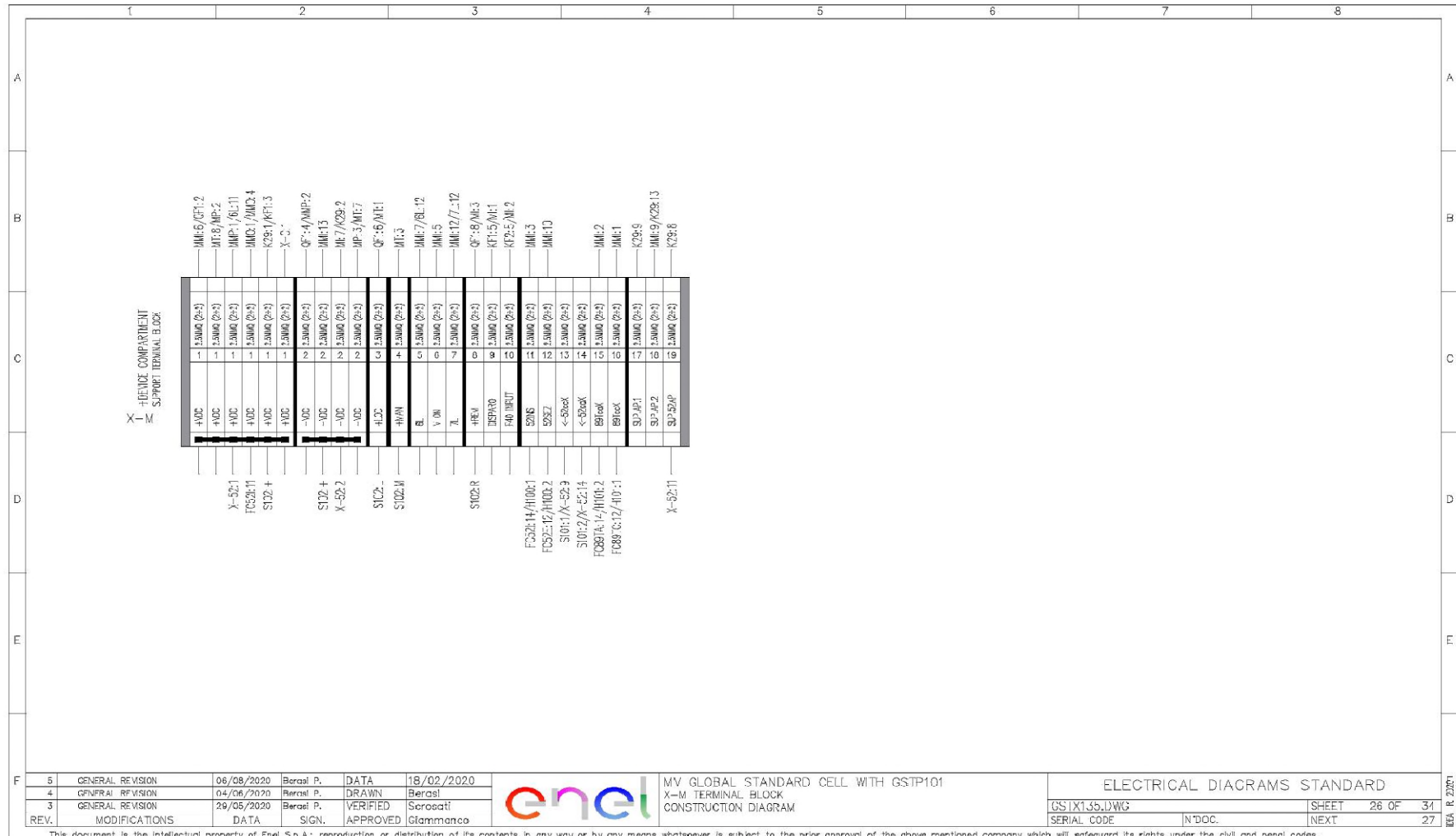
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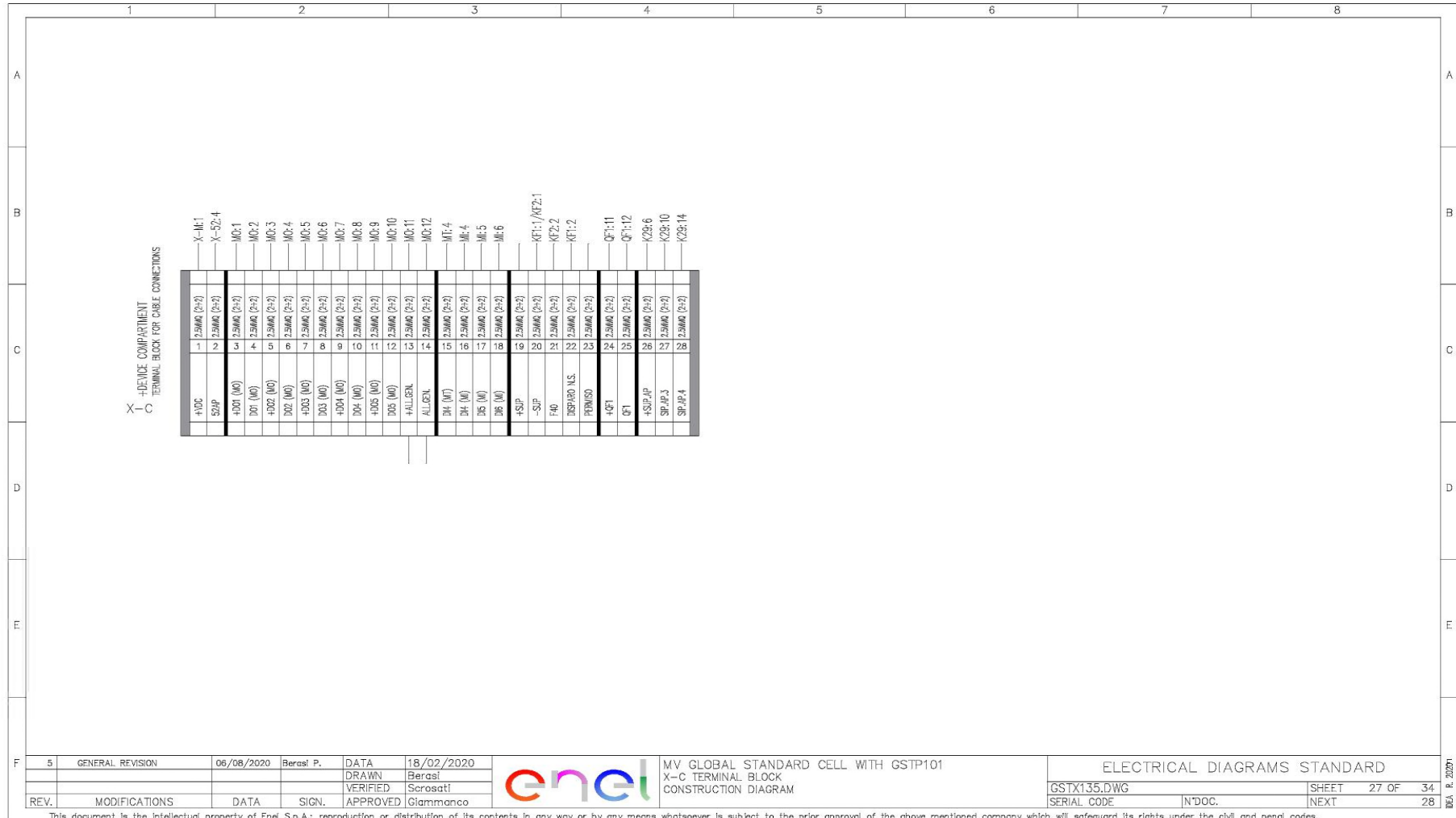
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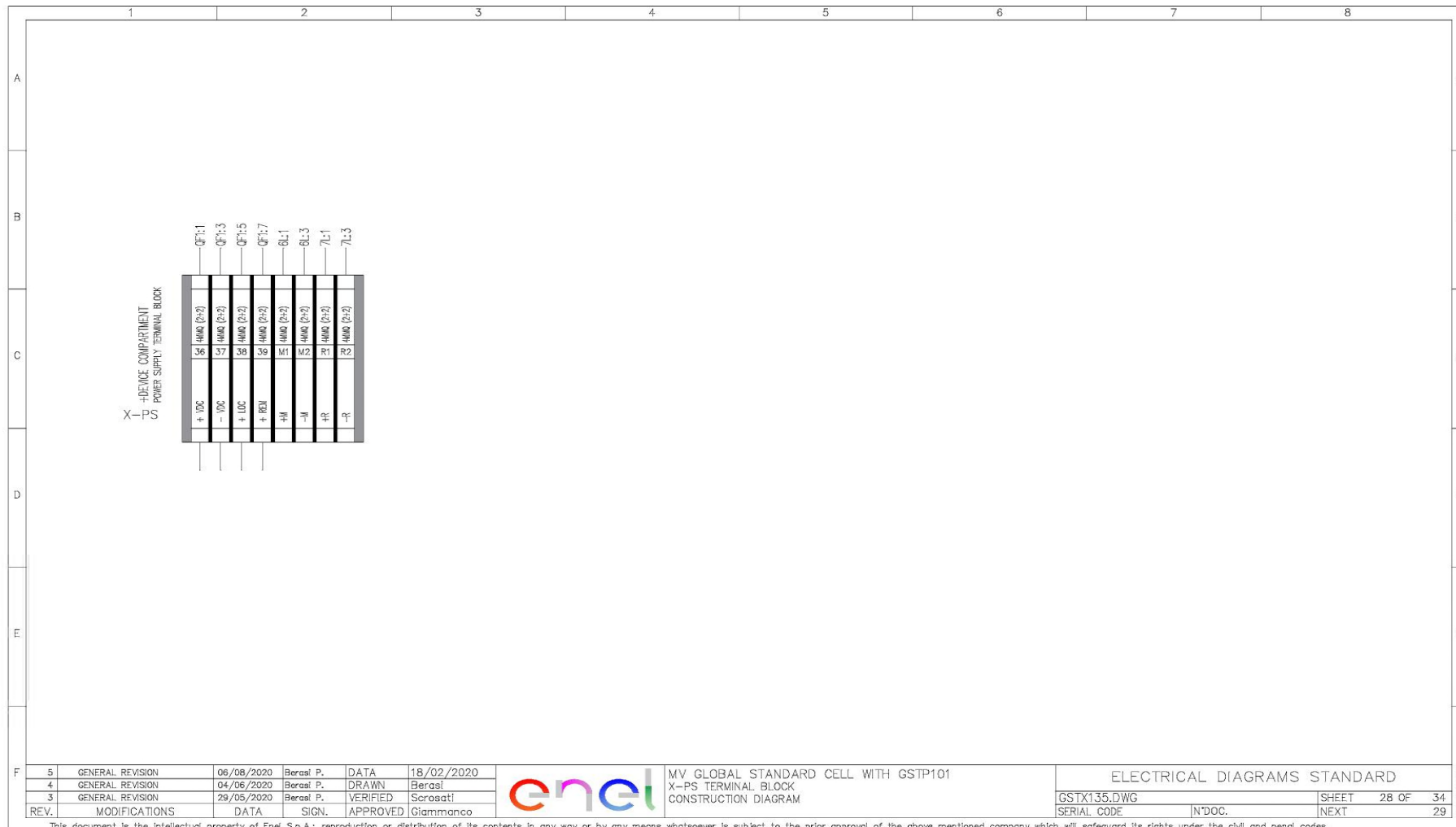
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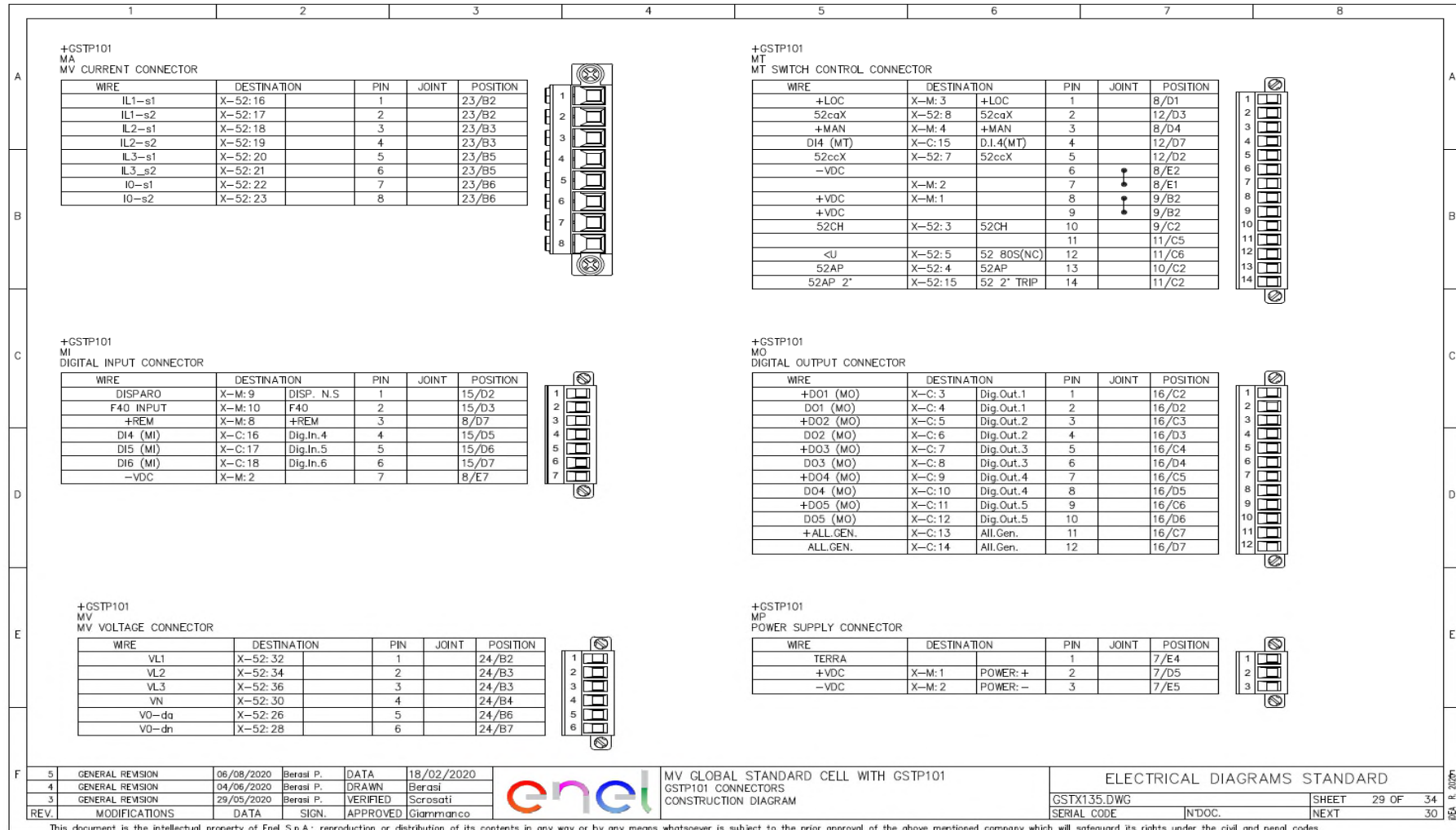
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A	+GSTP102 MM DIGITAL INPUT CONNECTOR																																																																													
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+VDC	X-M:1	<U Rto1	6	18/D4																																																																										
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	REV.	MODIFICATIONS	DATA	SIGN.	APPROVED	Giammanco	31																																																																							

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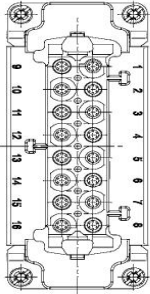
**Application Areas**
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

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+M/52MT	6L: 2	1		21/D2
-M/52MT	6L: 4	2		21/D3
+VDC	X-52: 1	3		12/B2
-VDC	X-52: 2	4		10/E2
52CH	X-52: 3	5		9/D2
52AP	X-52: 4	6		10/D2
<U	X-52: 5	7		11/D6
52 S27	X-52: 6	8		17/C5
52ccX	X-52: 7	9		12/C2
52caX	X-52: 8	10		12/C3
<-52ccX	X-52: 9	11		14/B2
52X33	X-52: 10	12		17/C4
SUP.52AP	X-52: 11	13		10/D6
DISP	X-52: 12	14		10/D5
52BCP	X-52: 13	15		17/C3
<-52caX	X-52: 14	16		14/B3



+52 MT  
52MT  
52MT - CONNECTOR

5	GENERAL REVISION	06/08/2020	Berasi P.	DATA	18/02/2020
4	GENERAL REVISION	04/06/2020	Berasi P.	DRAWN	Berasi
3	GENERAL REVISION	29/05/2020	Berasi P.	VERIFIED	Scrosati
REV.	MODIFICATIONS	DATA	SIGN.	APPROVED	Giammanco

enel

MV GLOBAL STANDARD CELL WITH GSTP101  
CONNECTOR 52MT  
CONSTRUCTION DIAGRAM

ELECTRICAL DIAGRAMS STANDARD

GSTX135.DWG	SHEET	31 OF	34
SERIAL CODE	N'DOC.	NEXT	32

INDA. R. 20201

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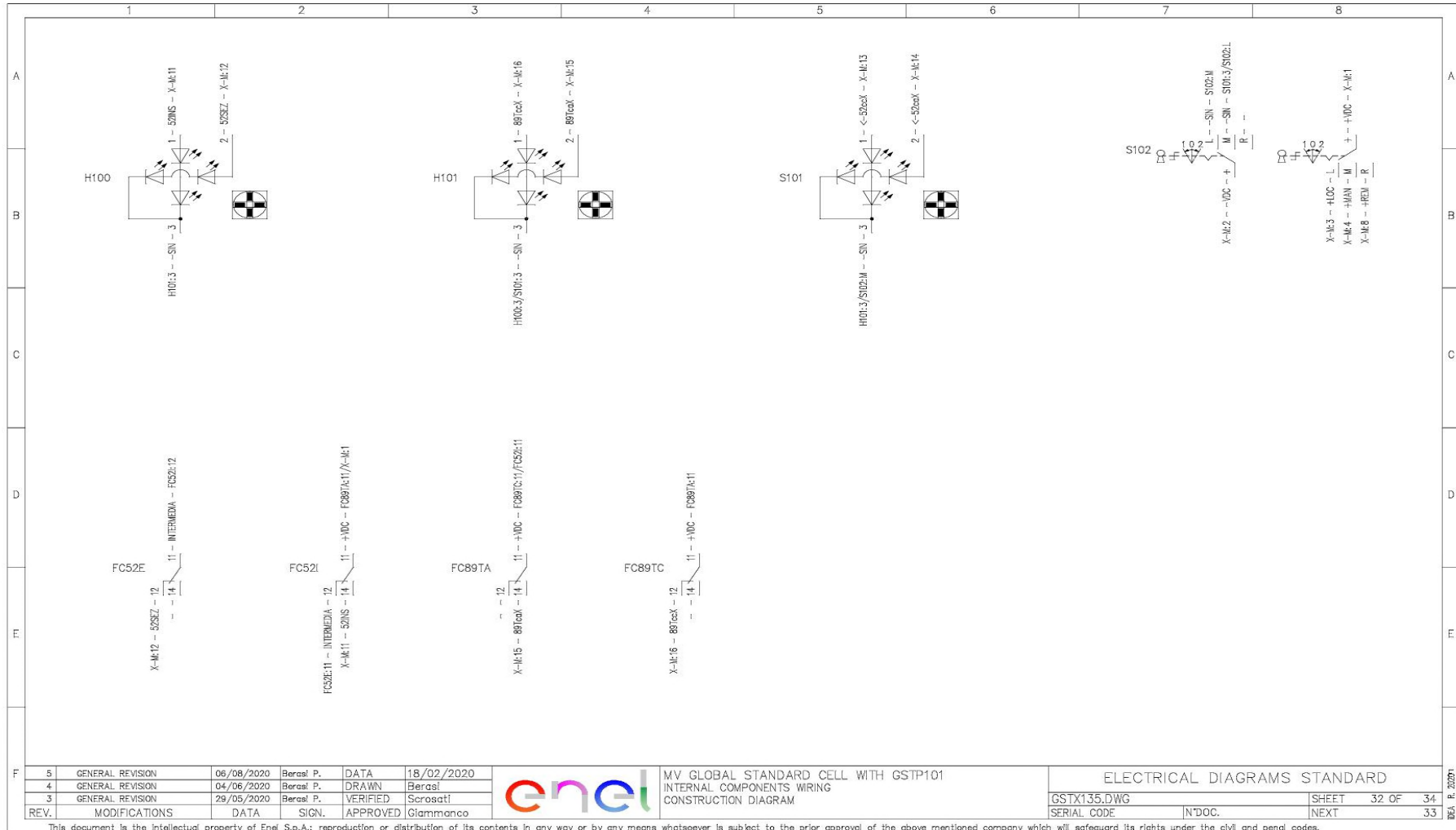
**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*





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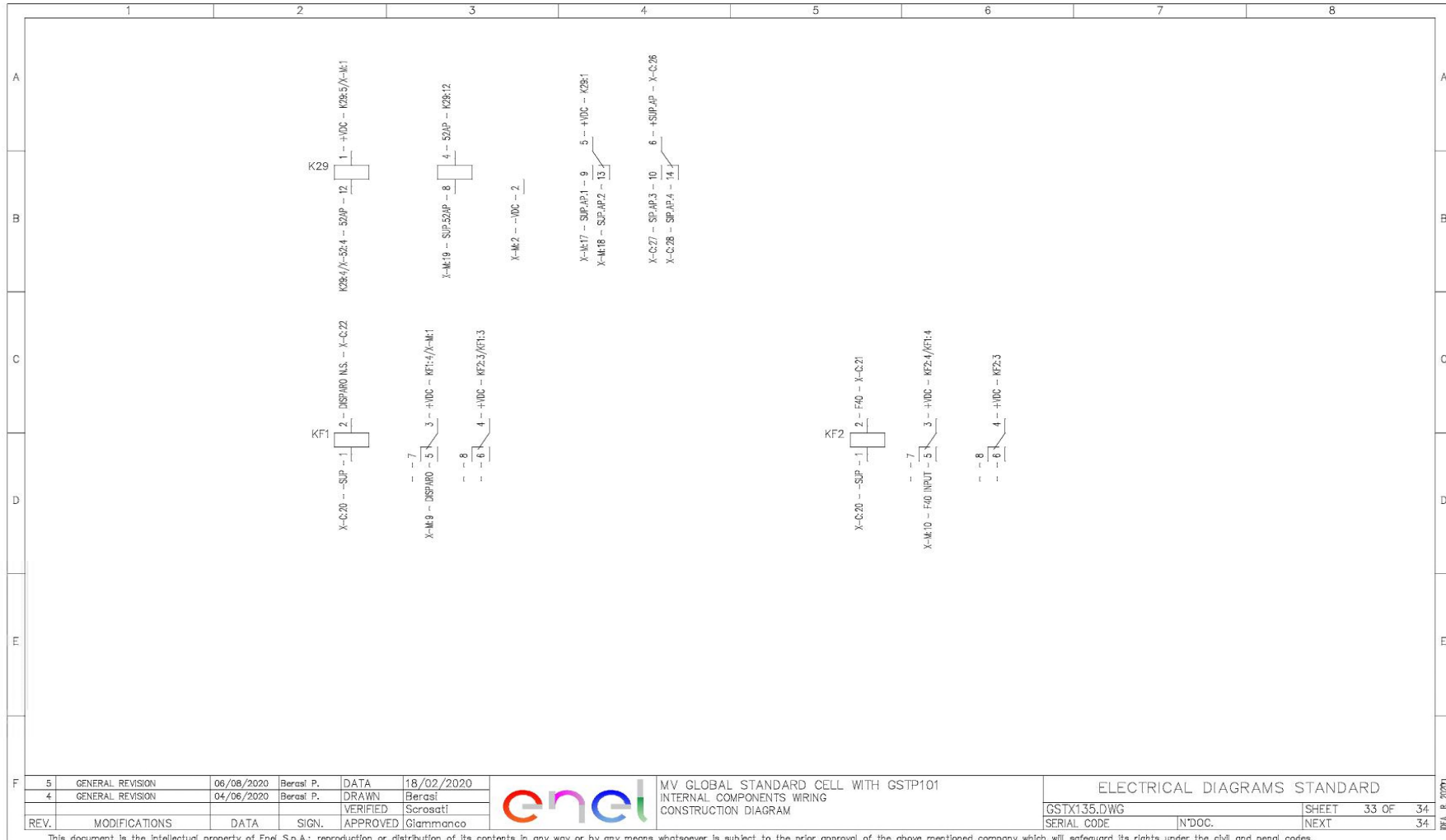
**Application Areas**

Perimeter: *Global*

Staff Function: -

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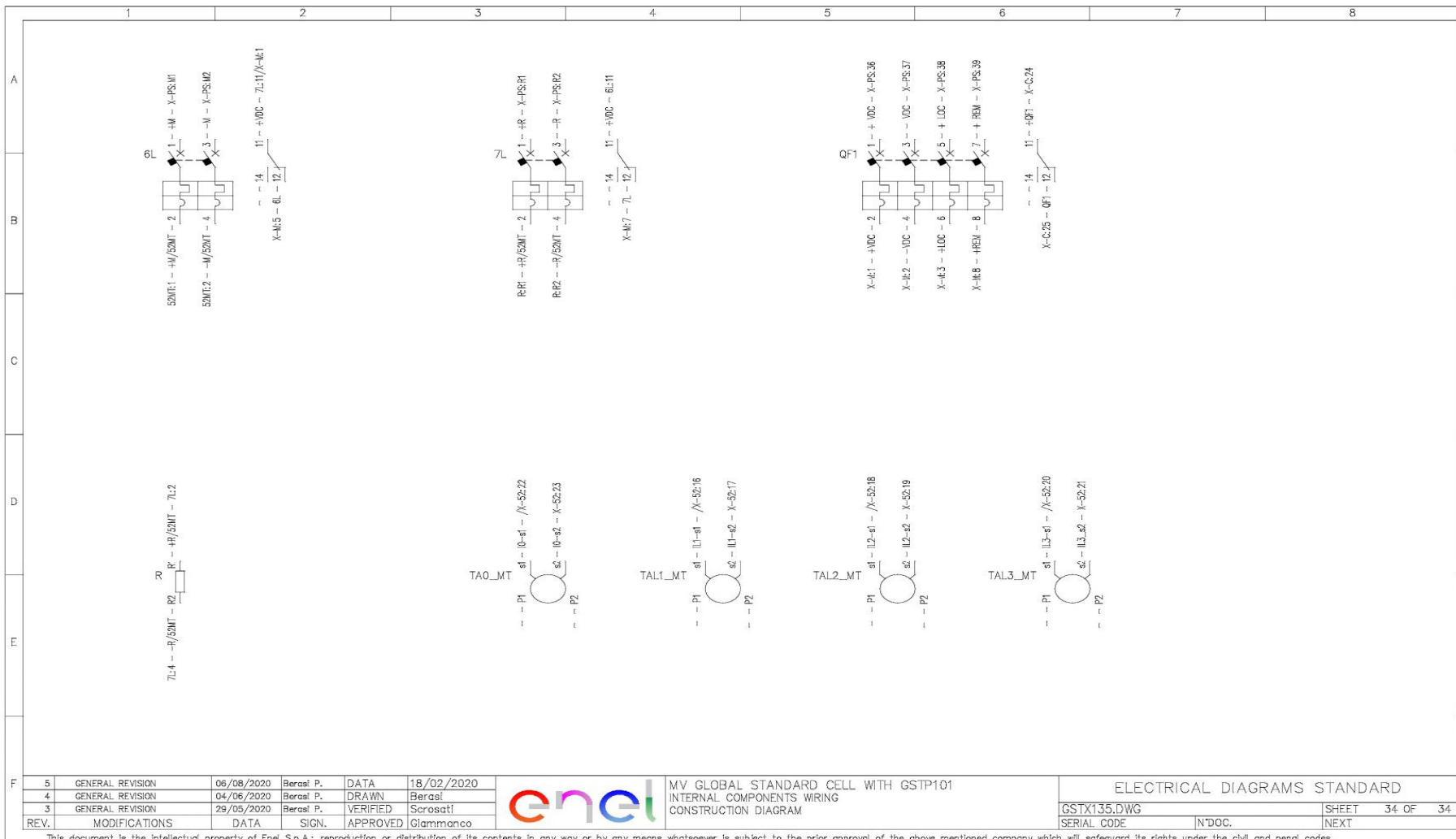
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Perimeter: *Global*

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**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

**8.13.2 GSTX136**

SHEET	TITLE
1	LIST OF SHEETS
2	REVISION LIST
3	TERMINAL BLOCK LIST
4	WIRING SPECIFICATIONS
5	MEDIUM VOLTAGE DIAGRAM
6	LAYOUT
7	MV CB COMMANDS
8	MV CB POSITION
9	POWER SUPPLY VDC GSTP101
10	MV SWITCH POSITION
11	LOCAL SYNOPTIC SIGNALS
12	RIO 1 – MV CB ALARMS
13	RIO 1 – MV CB ALARMS
14	RIO 1 – COMMANDS AVAILABLE
15	SENSITIVE NEUTRAL AND F40
16	MV MOTOR AND HEATING CIRCUIT
17	AMPEROMETRIC CIRCUIT
18	X-52 TERMINAL BLOCK
19	X-M TERMINAL BLOCK
20	X-PS TERMINAL BLOCK
21	GSTP112 CONNECTORS
22	SYNOPTIC CONNECTOR
23	CONNECTOR SWIT
24	INTERNAL COMPONENTS WIRING
25	INTERNAL COMPONENTS WIRING

DATA	09/06/2020		MV CELL LIST OF SHEETS CONSTRUCTION DIAGRAM	ELECTRICAL DIAGRAMS STANDARD		
DRAWN	Berasi			GSTX136.DWG	SHEET	1 OF 25
VERIFIED	Serosatti			SERIAL CODE	N'DOC.	NEXT
REV.	MODIFICATIONS	DATA	SIGN.	APPROVED	Giammanco	

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**Application Areas**

Perimeter: *Global*  
 Staff Function: -  
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 Business Line: *Enel Grids*

	1	2	3	4	5	6	7	8											
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F									F										
				DATA	09/06/2020			MV CELL REVISION LIST CONSTRUCTION DIAGRAM		ELECTRICAL DIAGRAMS STANDARD									
				DRAWN	Berasi			GSTX136.DWG		SHEET	2 OF	25							
				VERIFIED	Scrosati			SERIAL CODE		N'DOC.	NEXT	3							
	REV.	MODIFICATIONS	DATA	SIGN.	APPROVED	Giammanco													

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**Application Areas**
Perimeter: *Global*

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Service Function: -

Business Line: *Enel Grids*

1	2	3	4	5	6	7	8
A	TERMINAL BOARD	SITE	DESCRIPTION				
	X-S2	+TERMINAL BLOCK COMPARTMENT	CB AND ANALOG TERMINAL BOARD				
	X-M	+DEVICE COMPARTMENT	TERMINAL BOARD				
	X-PS	+DEVICE COMPARTMENT	POWER SUPPLY TERMINAL BLOCK				
B	CONNECTOR	SITE	DESCRIPTION				
	S2MT	+S2 MT	S2MT -- CONNECTOR				
	CS	+MV CELL	SYNOPTIC CONNECTOR				
	MMI	+GSTP112	DIGITAL INPUT CONNECTOR				
	MMO	+GSTP112	DIGITAL OUTPUT CONNECTOR				
	MMP	+GSTP112	POWER SUPPLY CONNECTOR				
E	SITE	DESCRIPTION					
	+GSTP112	MV CB SIGNAL REMOTE MODULE					
	+SIDE PLATE	MV CELL AUXILIARY COMPONENTS					
	+DEVICE COMPARTMENT	DEVICE COMPARTMENT FOR TERMINAL BOARD HOUSING					
	+MV CELL	MV CELL					
	+TERMINAL BLOCK COMPARTMENT	VERTICAL TERMINAL BLOCK COMPARTMENT					
	+SYNOPTIC	LOCAL SYNOPTIC SIGNALS/COMMANDS					
	+S2 MT	MV CIRCUIT BREAKER					
	+MV CT	MV CURRENT TRANSFORMER					
	F	DATA	09/06/2020		MV CELL TERMINAL BLOCK LIST CONSTRUCTION DIAGRAM		
DRAWN		Berasi					
VERIFIED		Scrosati		ELECTRICAL DIAGRAMS STANDARD GSTX136.DWG      SHEET 3 OF 25 SERIAL CODE      N'DOC.      NEXT      4			
APPROVED		Giammanco					
REV.	MODIFICATIONS	DATA	SIGN.	<small>           This document is the intellectual property of Enel S.p.A.; reproduction or distribution of its contents in any way or by any means whatsoever is subject to the prior approval of the above mentioned company which will safeguard its rights under the civil and penal codes.         </small>			







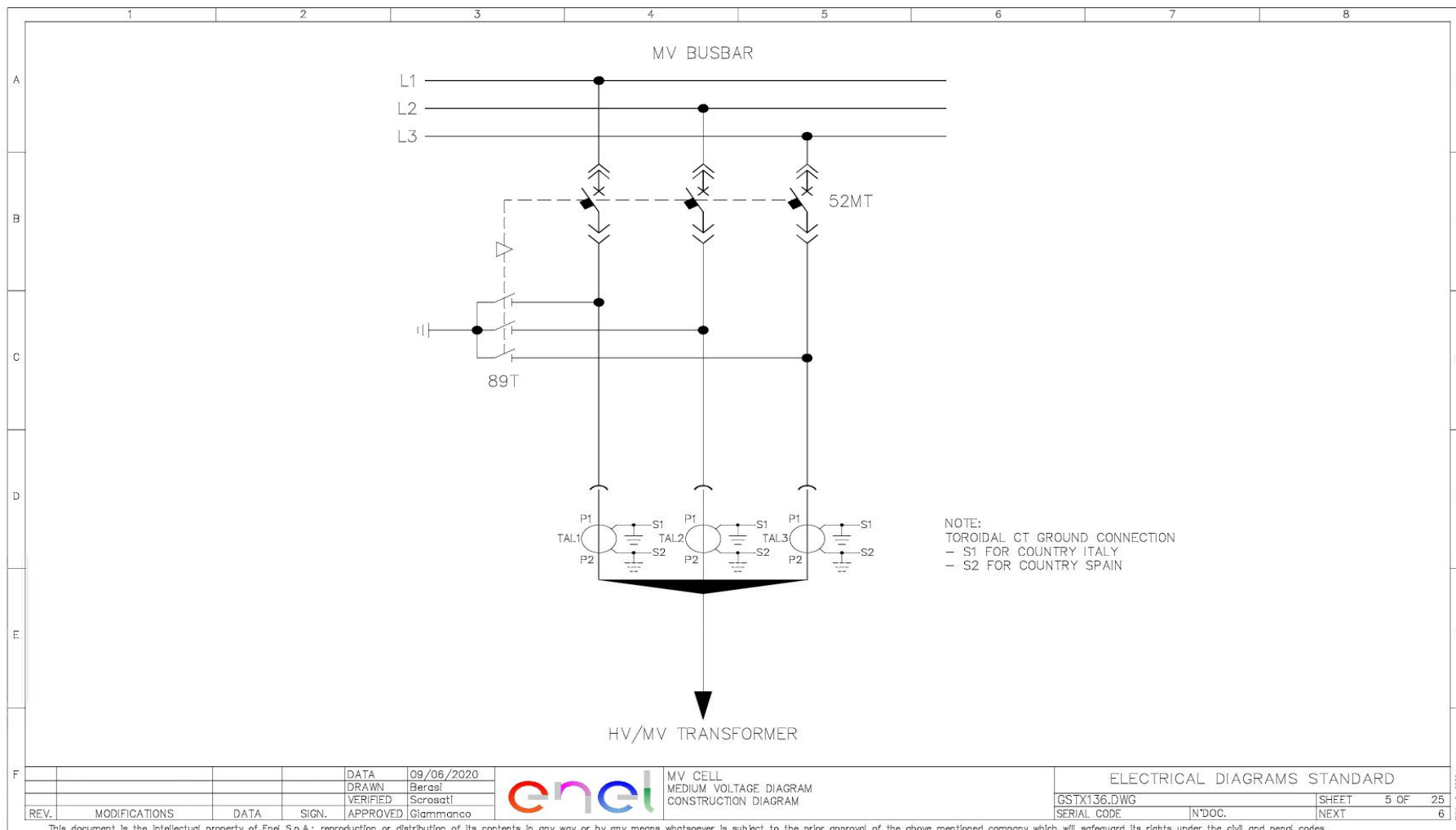
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 Business Line: *Enel Grids*



DATA	09/06/2020
DRAWN	Berasi
VERIFIED	Scrosati
APPROVED	Giammanco



MV CELL  
 MEDIUM VOLTAGE DIAGRAM  
 CONSTRUCTION DIAGRAM

ELECTRICAL DIAGRAMS STANDARD	
GSTX136.DWG	SHEET 5 OF 25
SERIAL CODE	N'DOC.
	NEXT 6

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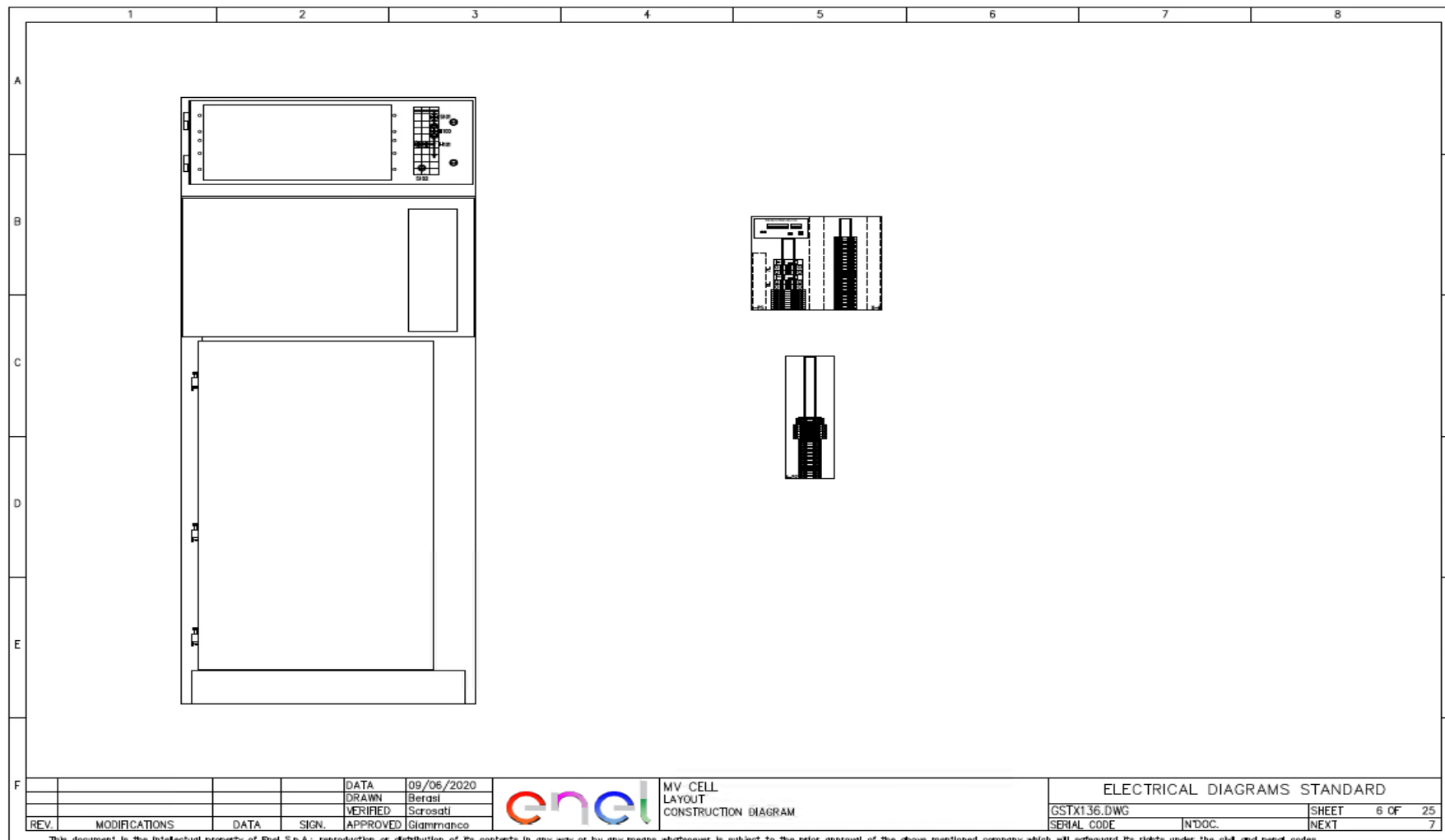
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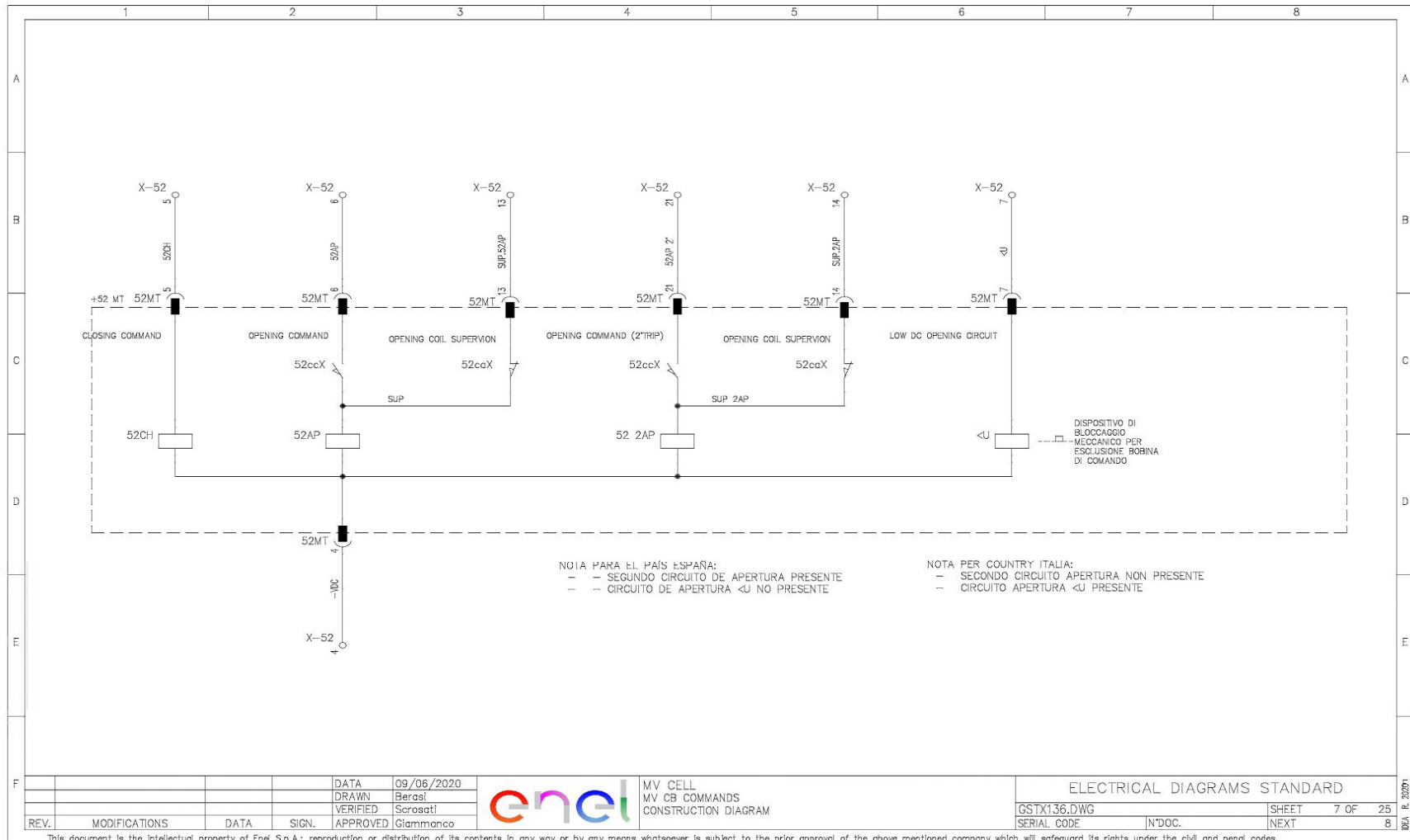
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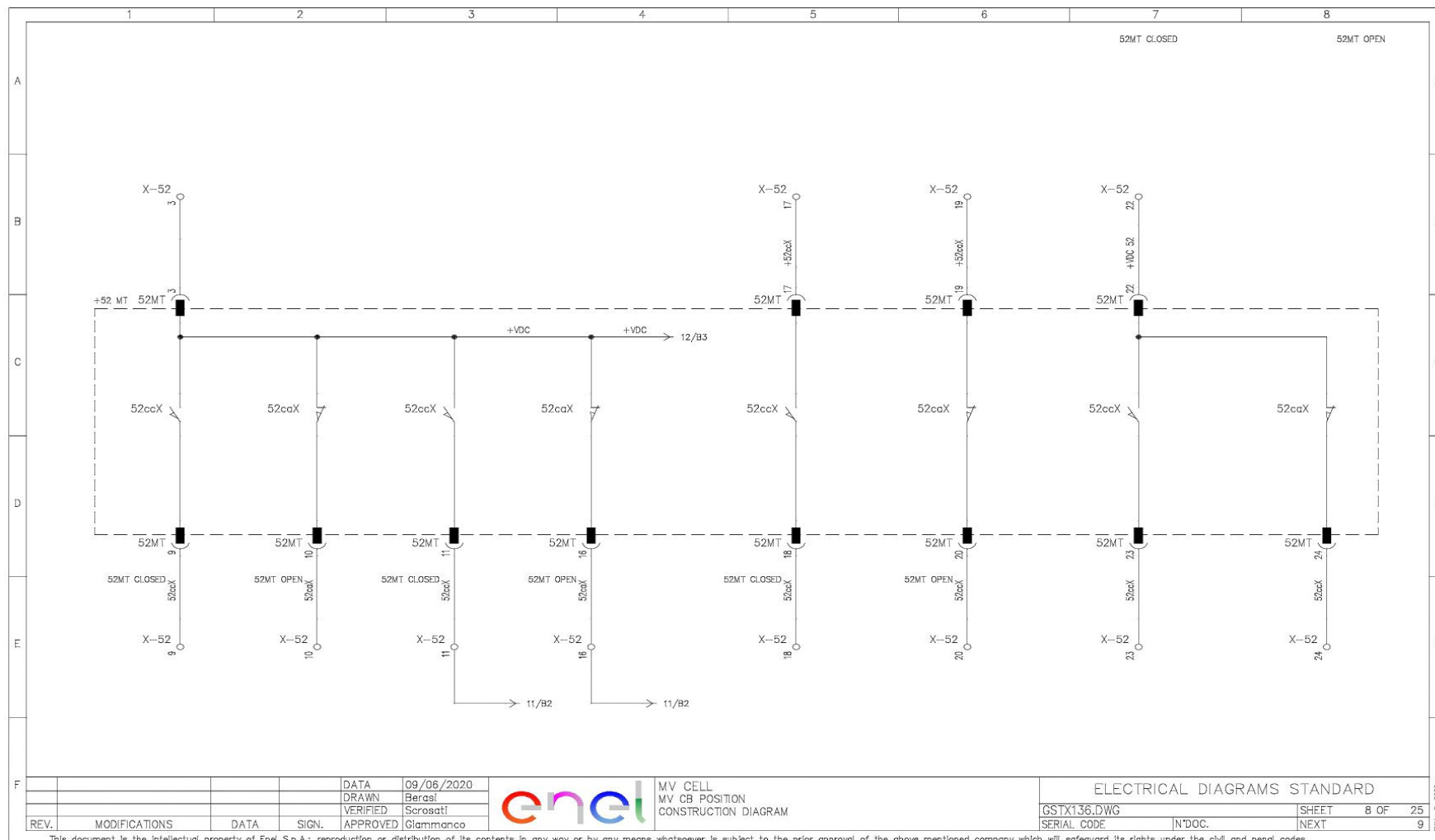
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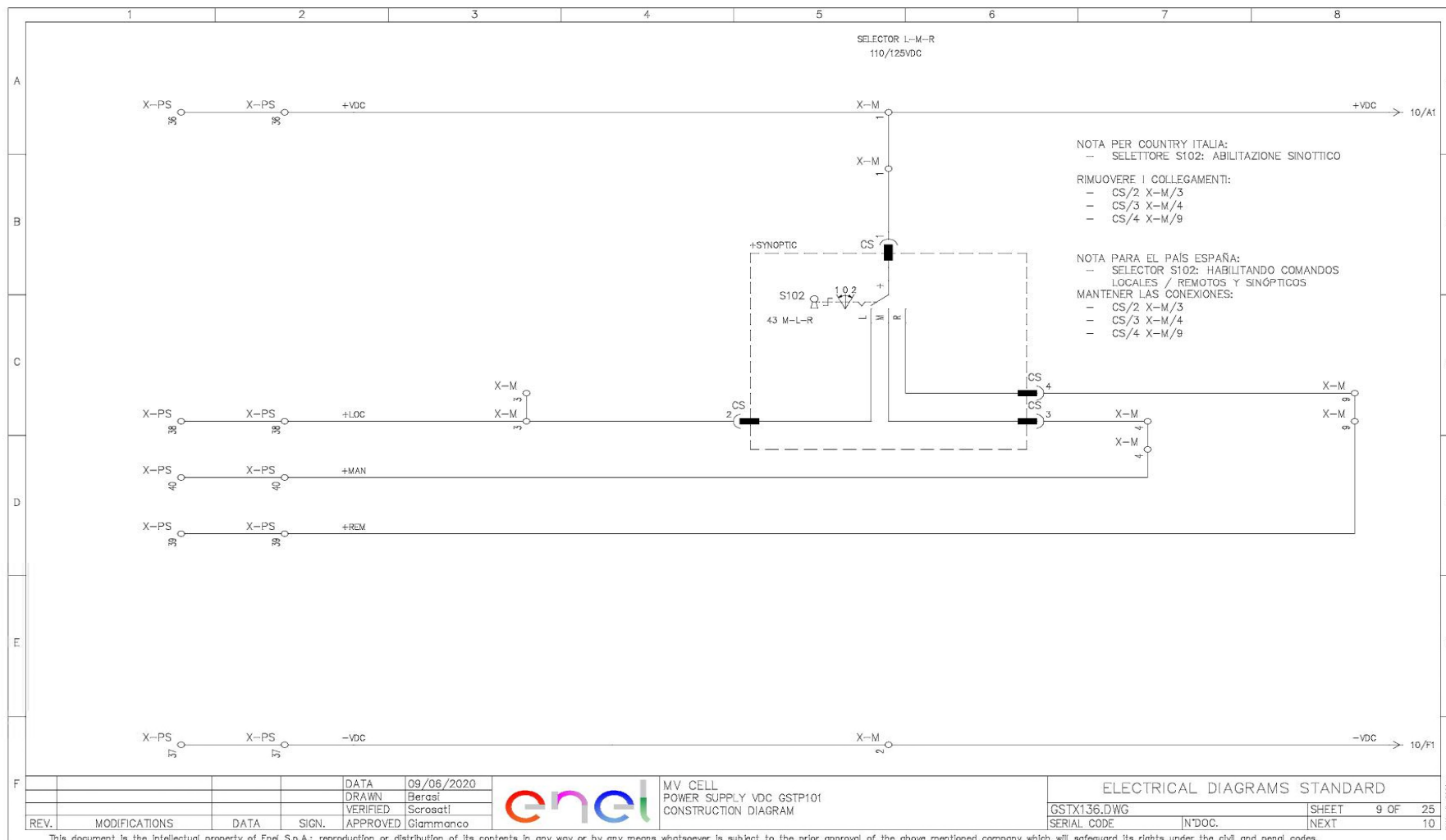
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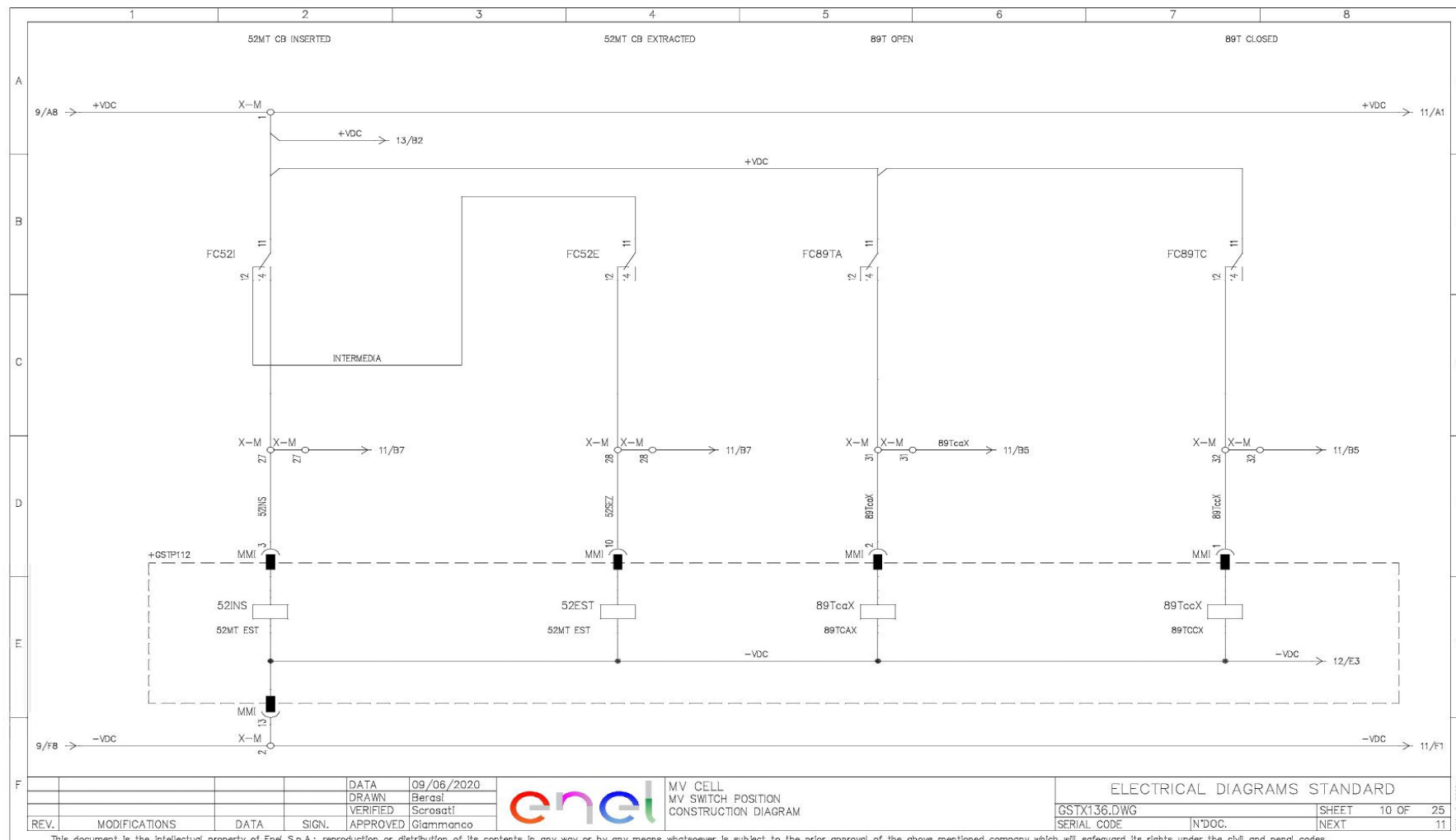
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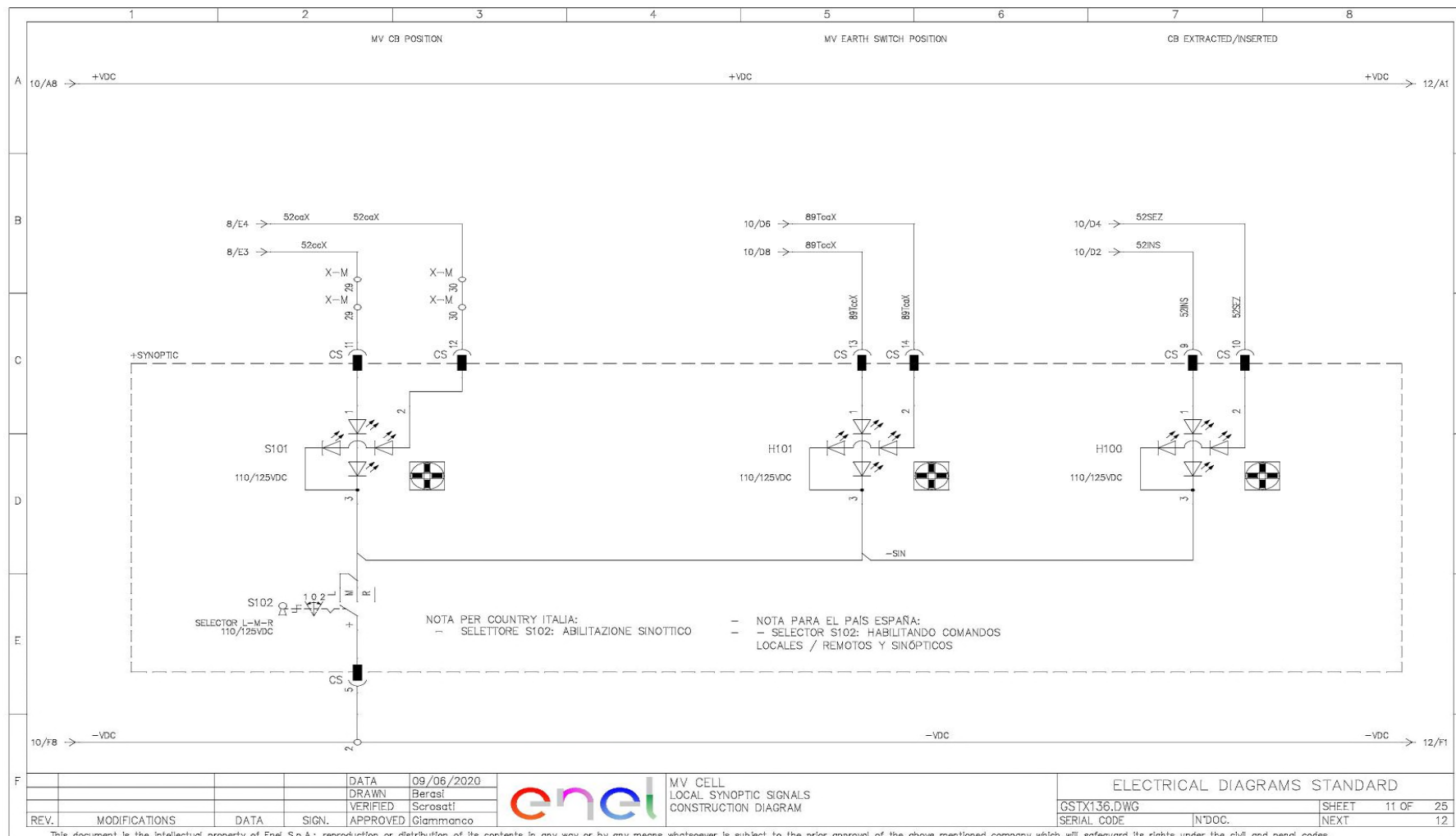
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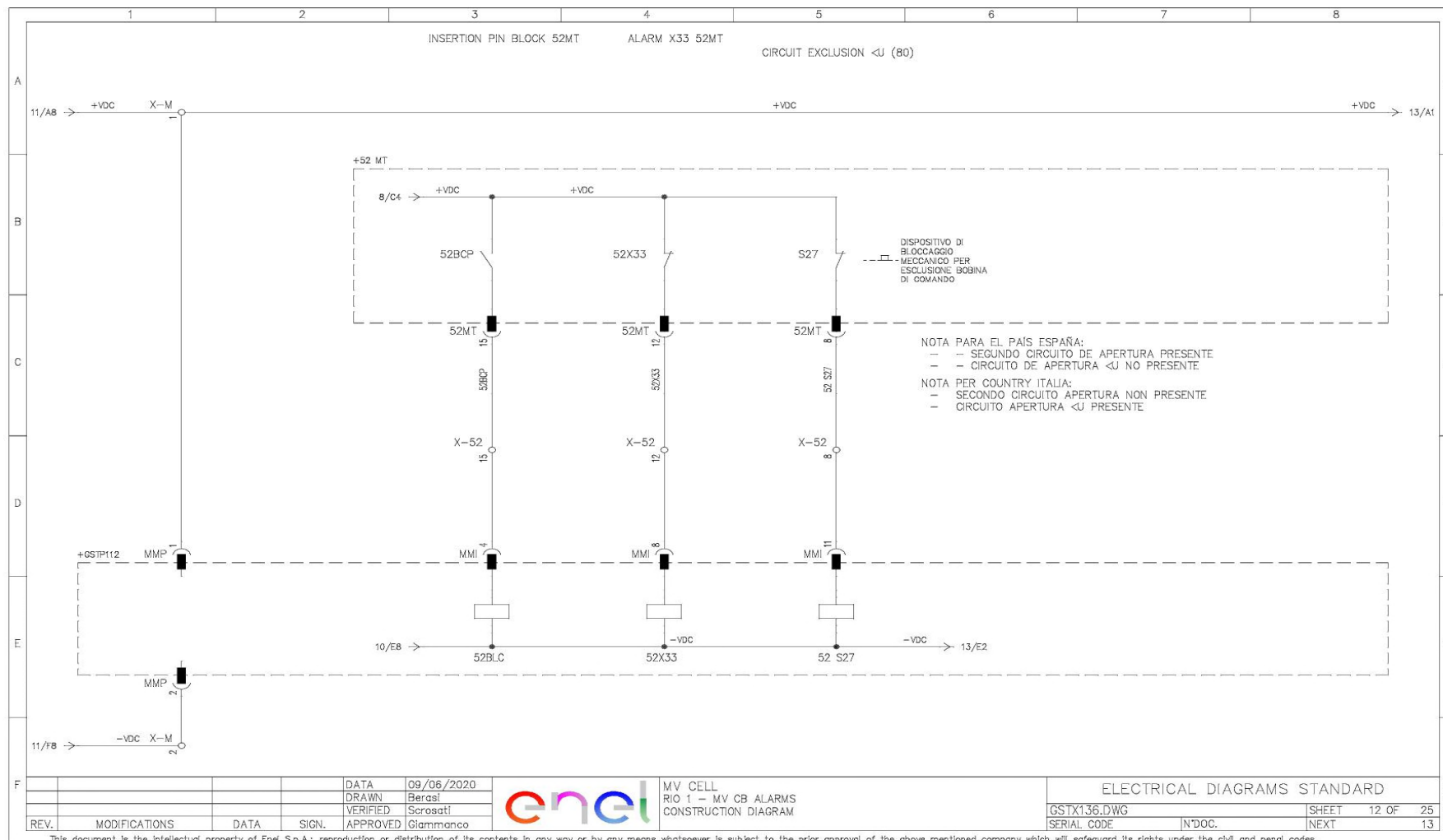
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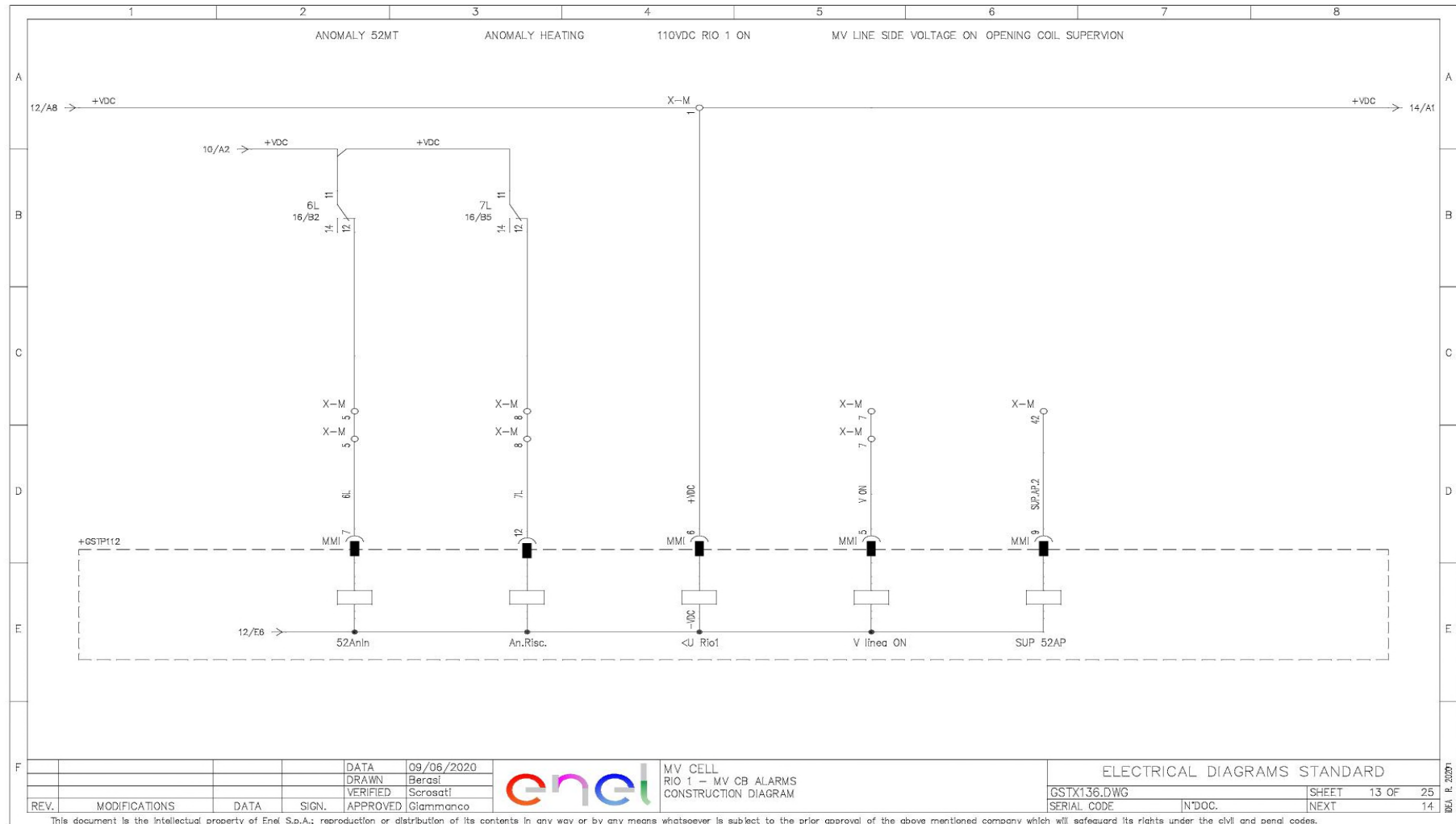
**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*



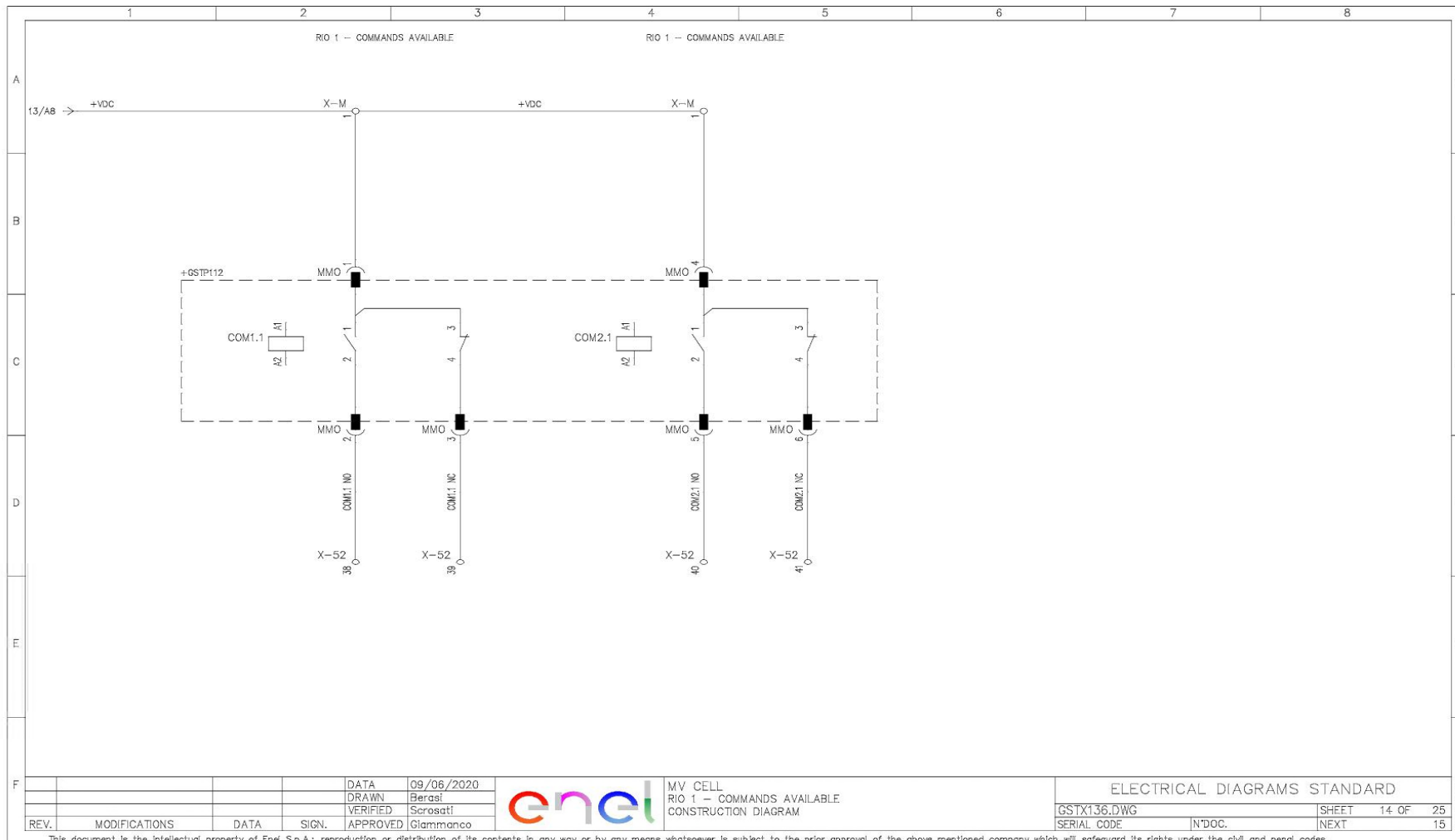


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Version no. 2 dated 18/07/2022

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**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*





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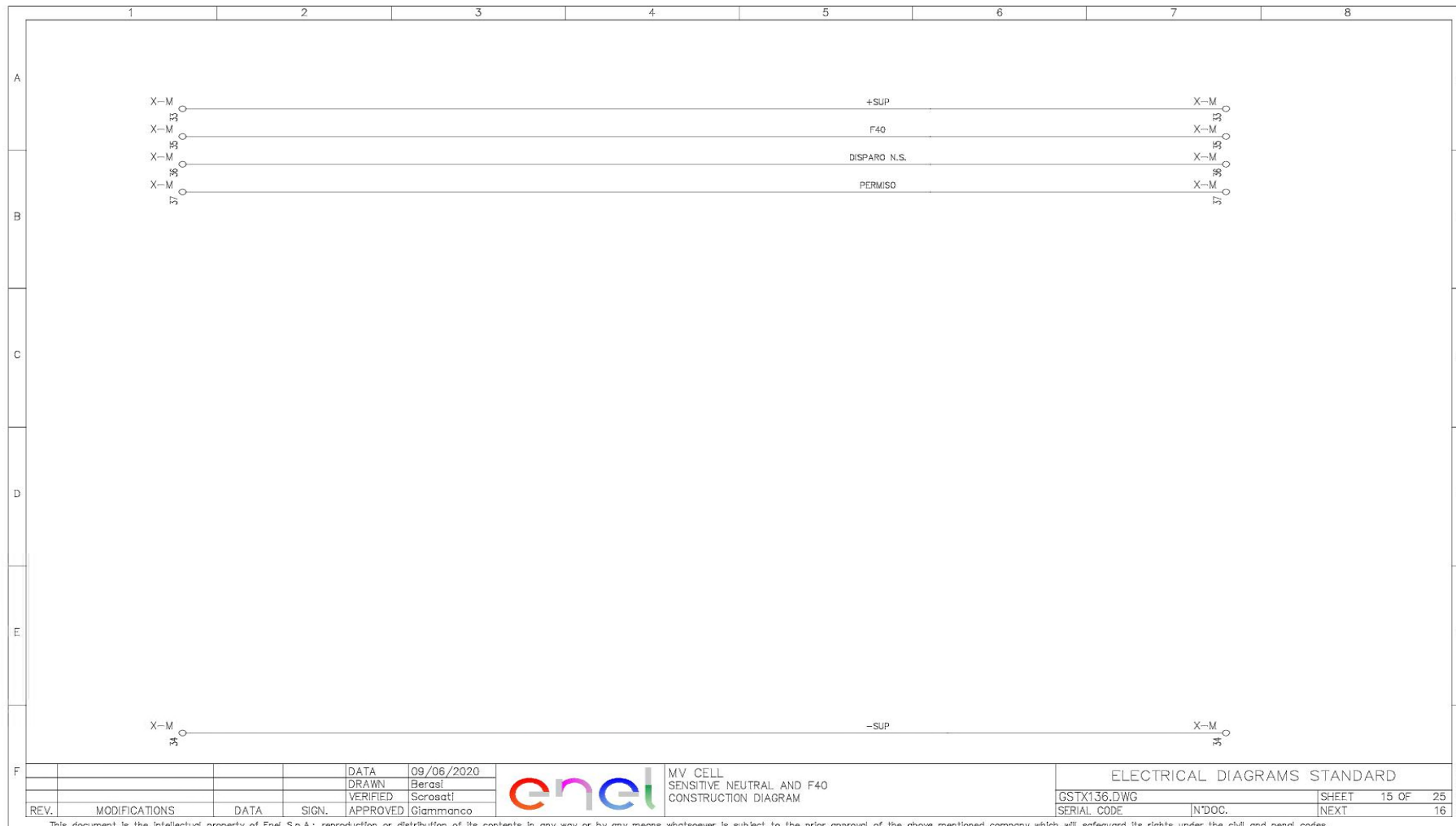
**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*



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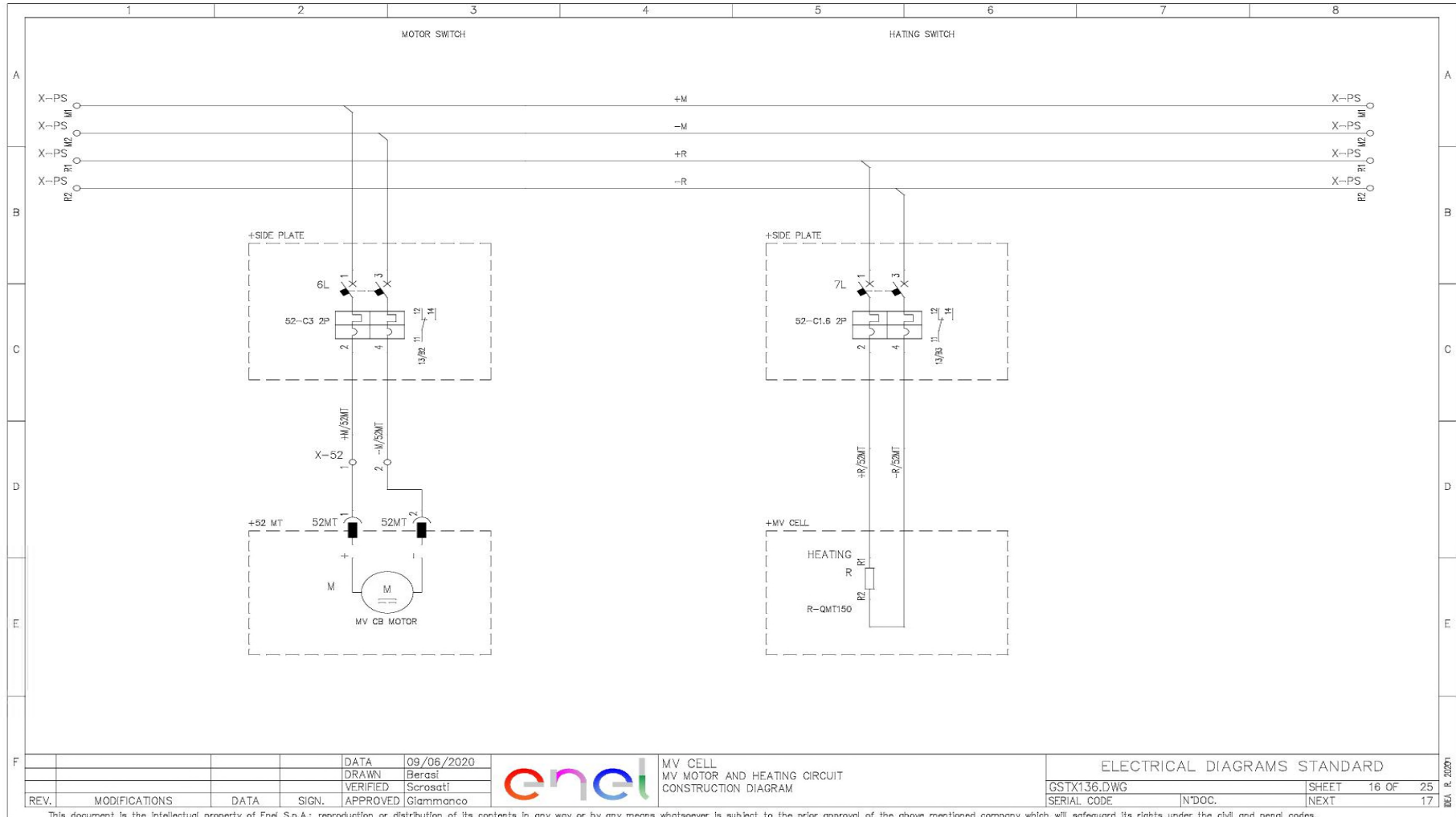
**Application Areas**

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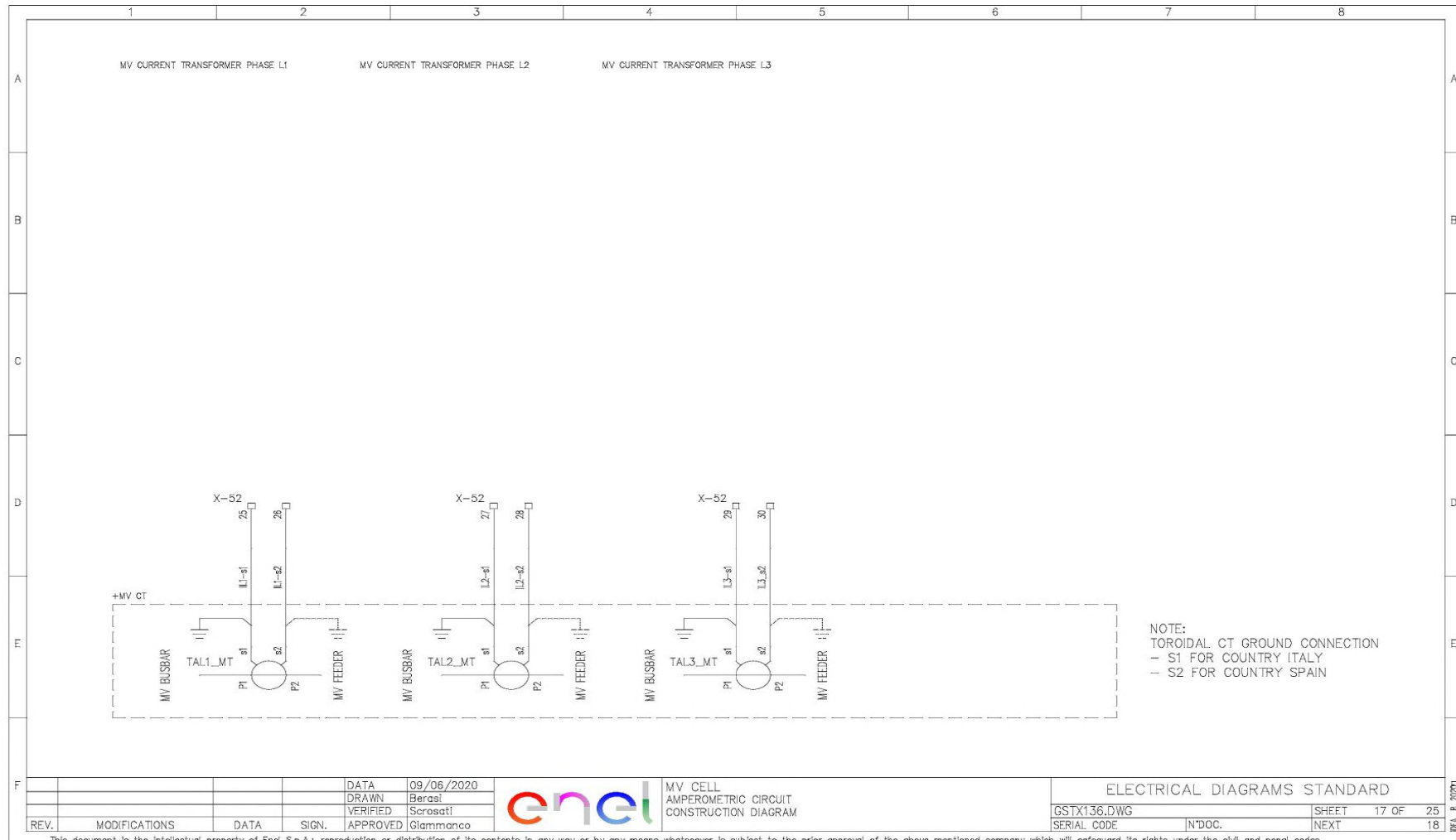
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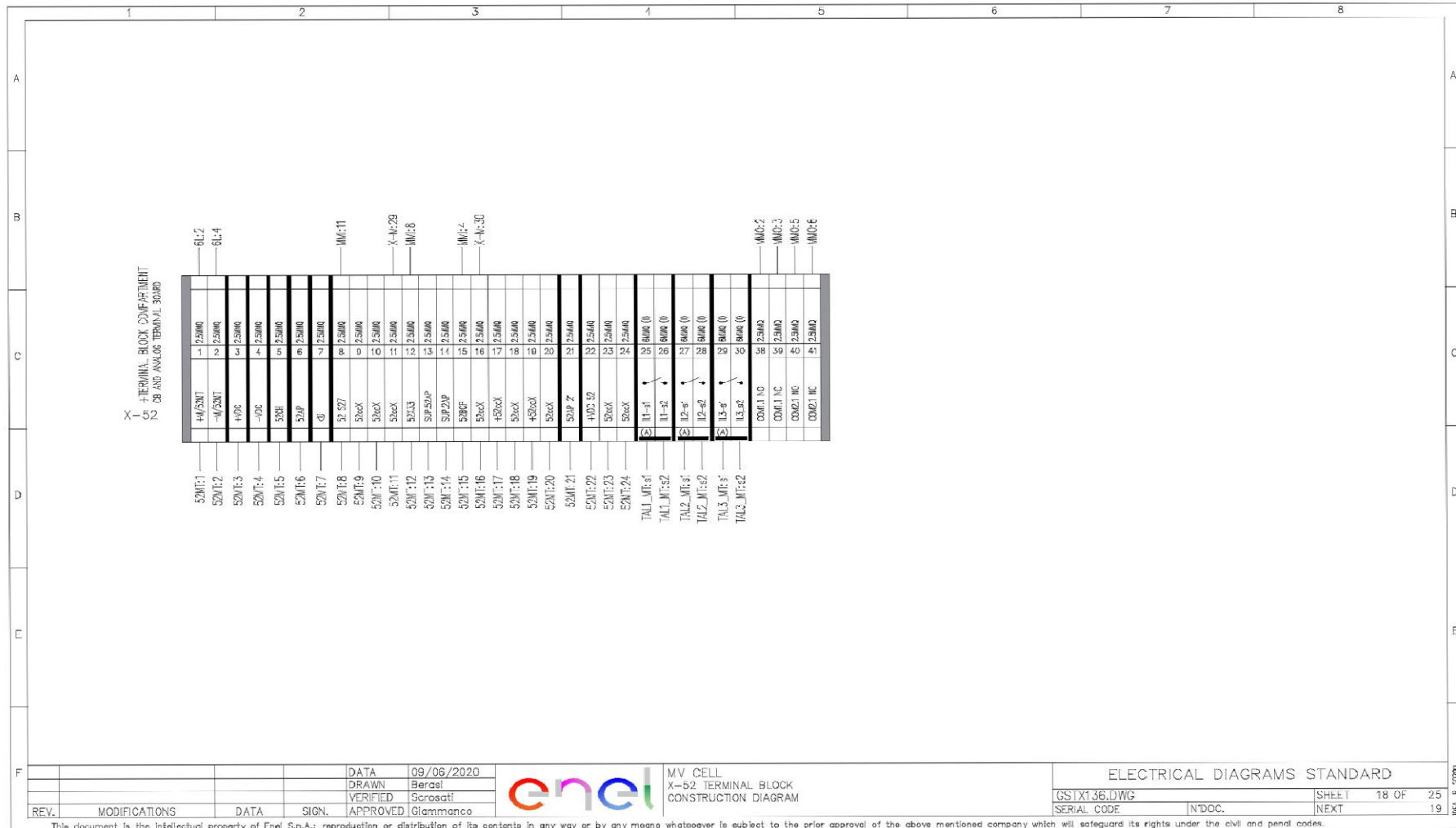
**Application Areas**

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Staff Function: -

Service Function: -

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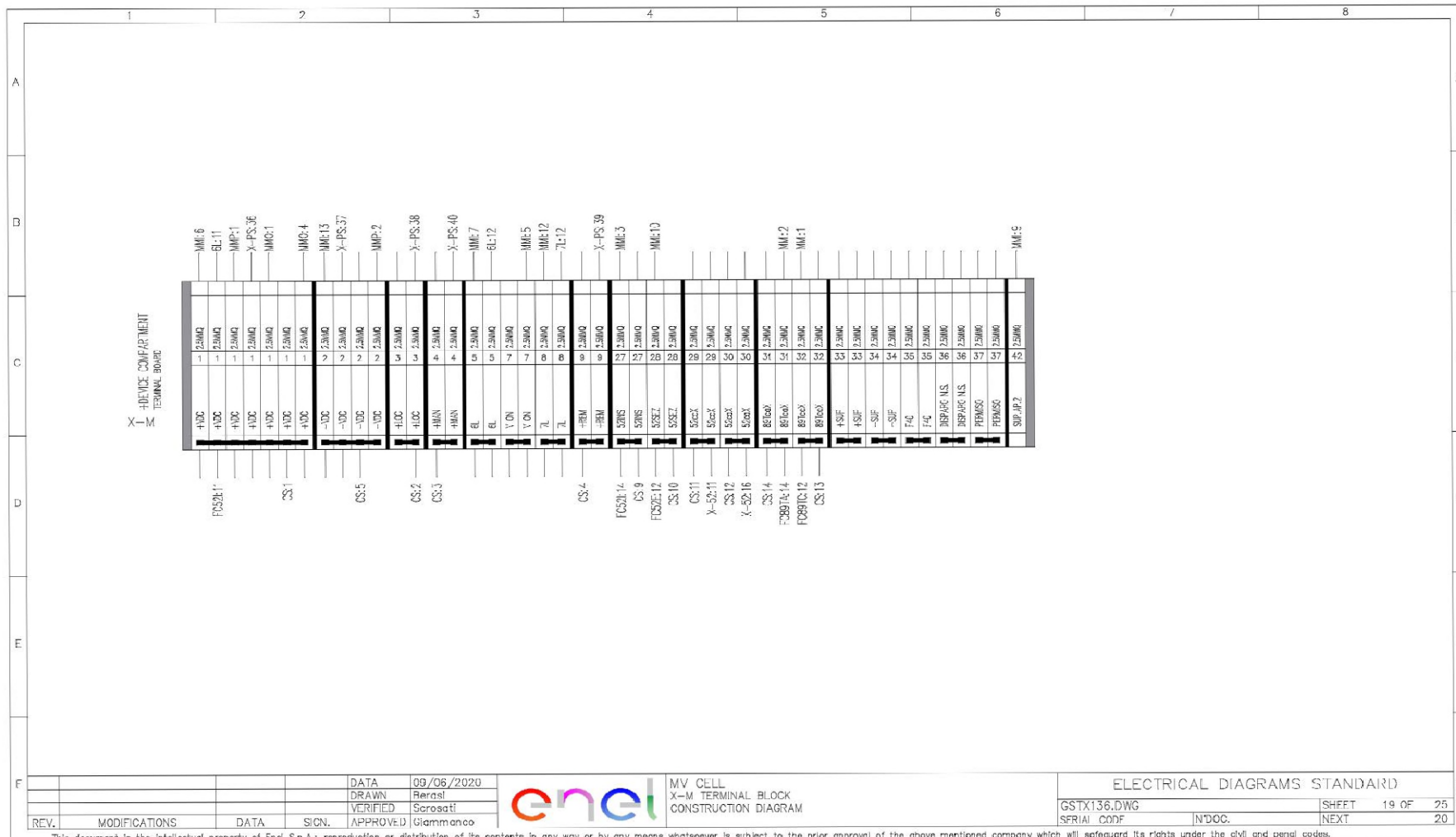


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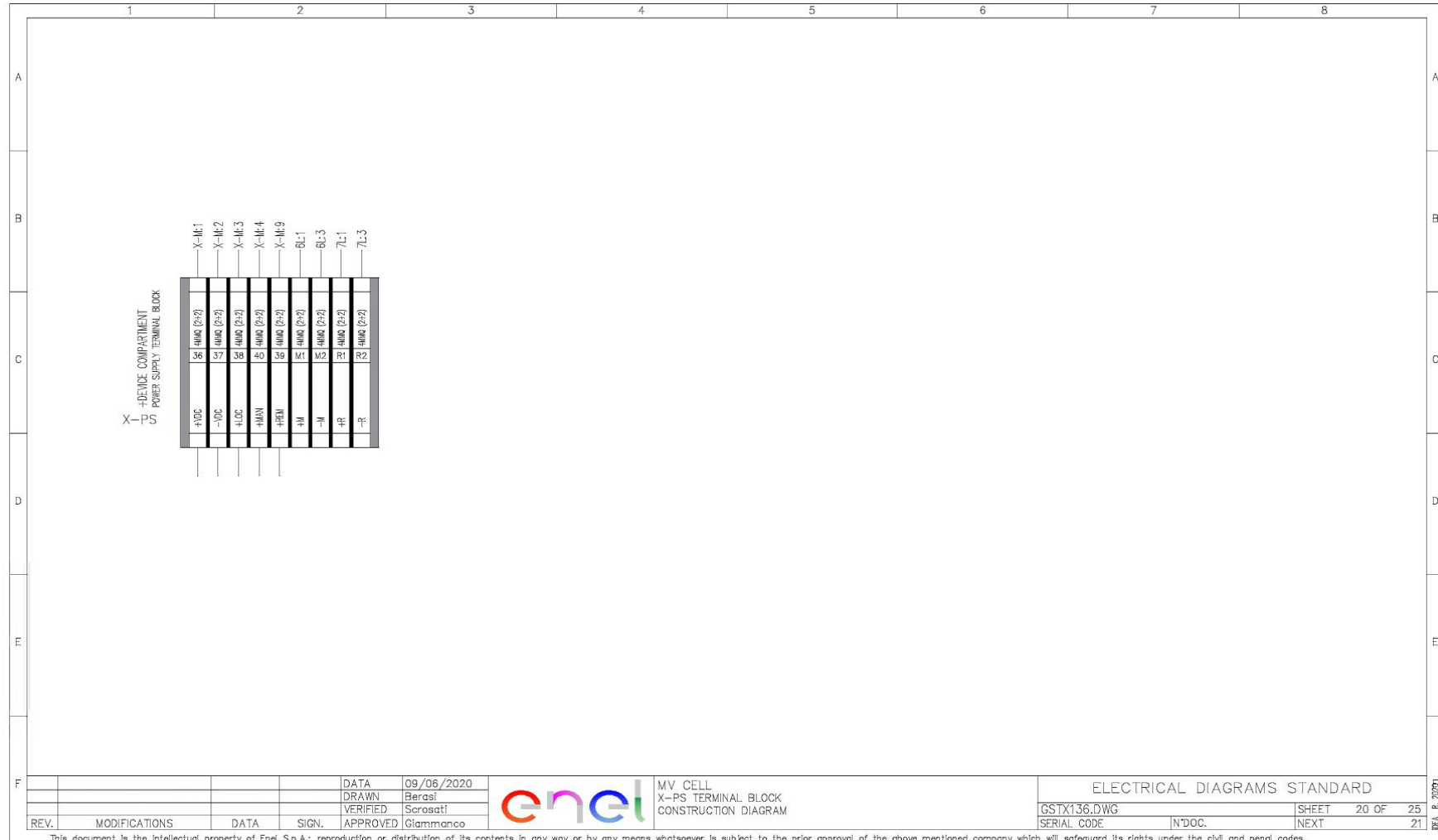
**Application Areas**

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Staff Function: -

Service Function: -

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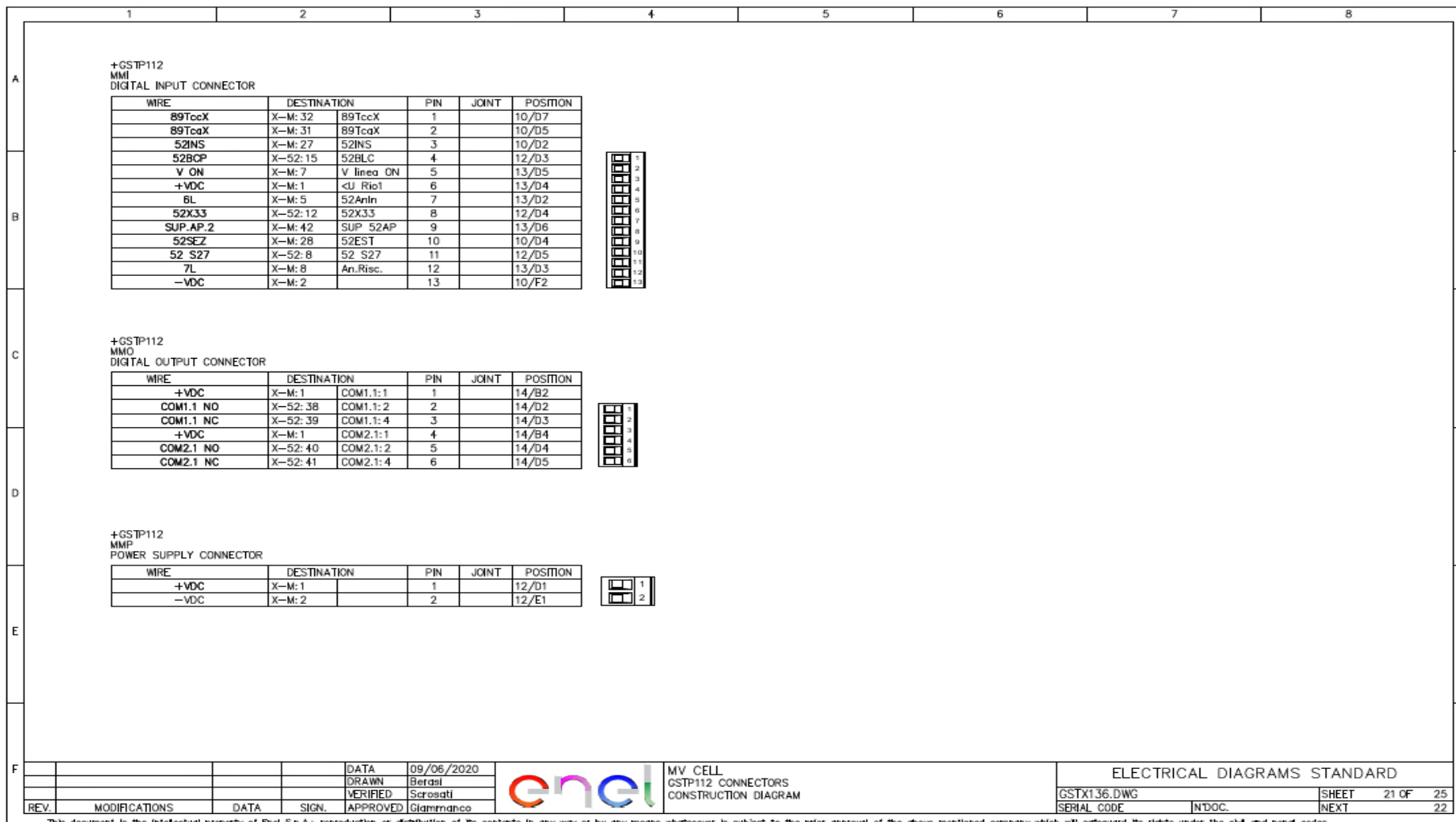
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WIRE	DESTINATION	PIN	JOINT	POSITION
+VDC	S102:+ X-M:1	1		8/B3
+LOC	S102:L X-M:3	2		8/C2
+MAN	S102:M X-M:4	3		8/C4
+REM	S102:R X-M:9	4		8/C4
-VDC	S102:+ X-M:2	5		14/E2
52INS	H100:1 X-M:27	9		14/C7
52SEZ	H100:2 X-M:28	10		14/C7
<-52ccX	S101:1 X-M:29	11		14/C2
<-52caX	S101:2 X-M:30	12		14/C3
89TccX	H101:1 X-M:32	13		14/C5
89TcaX	H101:2 X-M:31	14		14/C6
		6		
		7		
		8		

REV.	MODIFICATIONS	DATA	SIGN.	APPROVED	DATE
					09/06/2020
					Berasi
					Scrosati
					Giammanco

ELECTRICAL DIAGRAMS STANDARD			
GSTX136.DWG	SHEET	22 OF	25
SERIAL CODE	N'DOC.	NEXT	23

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Service Function: -

Business Line: *Enel Grids*

WIRE	DESTINATION	PIN	JOINT	POSITION
+M/52MT	X-52:1	1		16/D2
-M/52MT	X-52:2	2		16/D3
+VDC	X-52:3	3		8/C1
-VDC	X-52:4	4		7/D2
52GH	X-52:5	5		7/C1
52AP	X-52:6	6		7/C2
<U	X-52:7	7		7/C6
52 527	X-52:8	8		12/C5
52ccX	X-52:9	9		8/D1
52caX	X-52:10	10		8/D2
52ccX	X-52:11	11		8/D3
52X33	X-52:12	12		12/C4
SUP_52AP	X-52:13	13		7/C3
SUP_2AP	X-52:14	14		7/C5
52BCP	X-52:15	15		12/C3
52caX	X-52:16	16		8/D4
+52ccX	X-52:17	17		8/C5
52ccX	X-52:18	18		8/D5
+52coX	X-52:19	19		8/C6
52ccX	X-52:20	20		8/D6
52AP 2*	X-52:21	21		7/C4
+VDC 52	X-52:22	22		8/C7
52ccX	X-52:23	23		8/D7
52ccX	X-52:24	24		8/D8

+52\_MT  
52MT  
52MT - CONNECTOR

MV CELL  
CONNECTOR 52MT  
CONSTRUCTION DIAGRAM

ELECTRICAL DIAGRAMS STANDARD

REV.	MODIFICATIONS	DATA	SIGN.	APPROVED	Giammonco	GSTX136.DWG	SHEET 23 OF 25
						SERIAL CODE	N'DOC. NEXT 24

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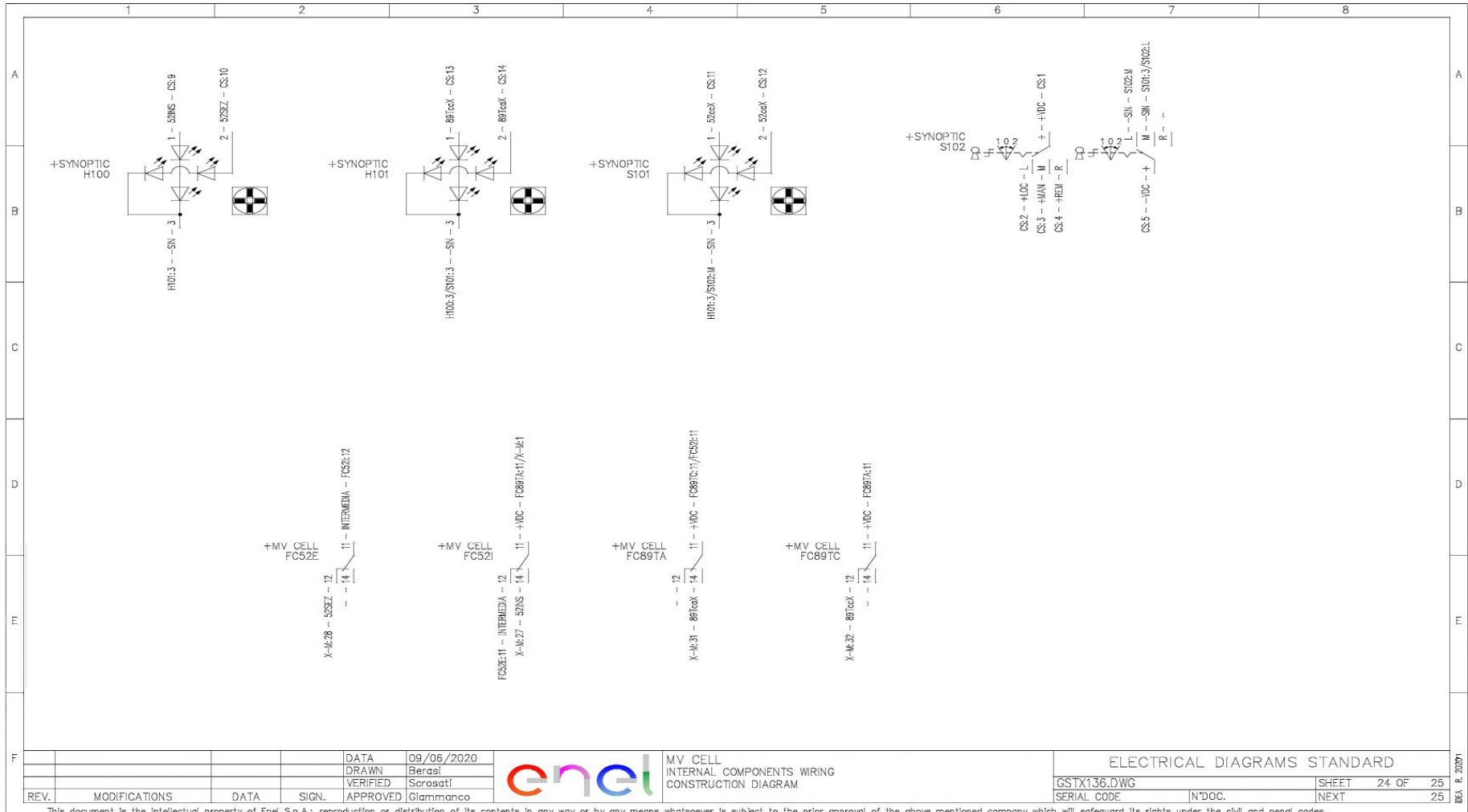
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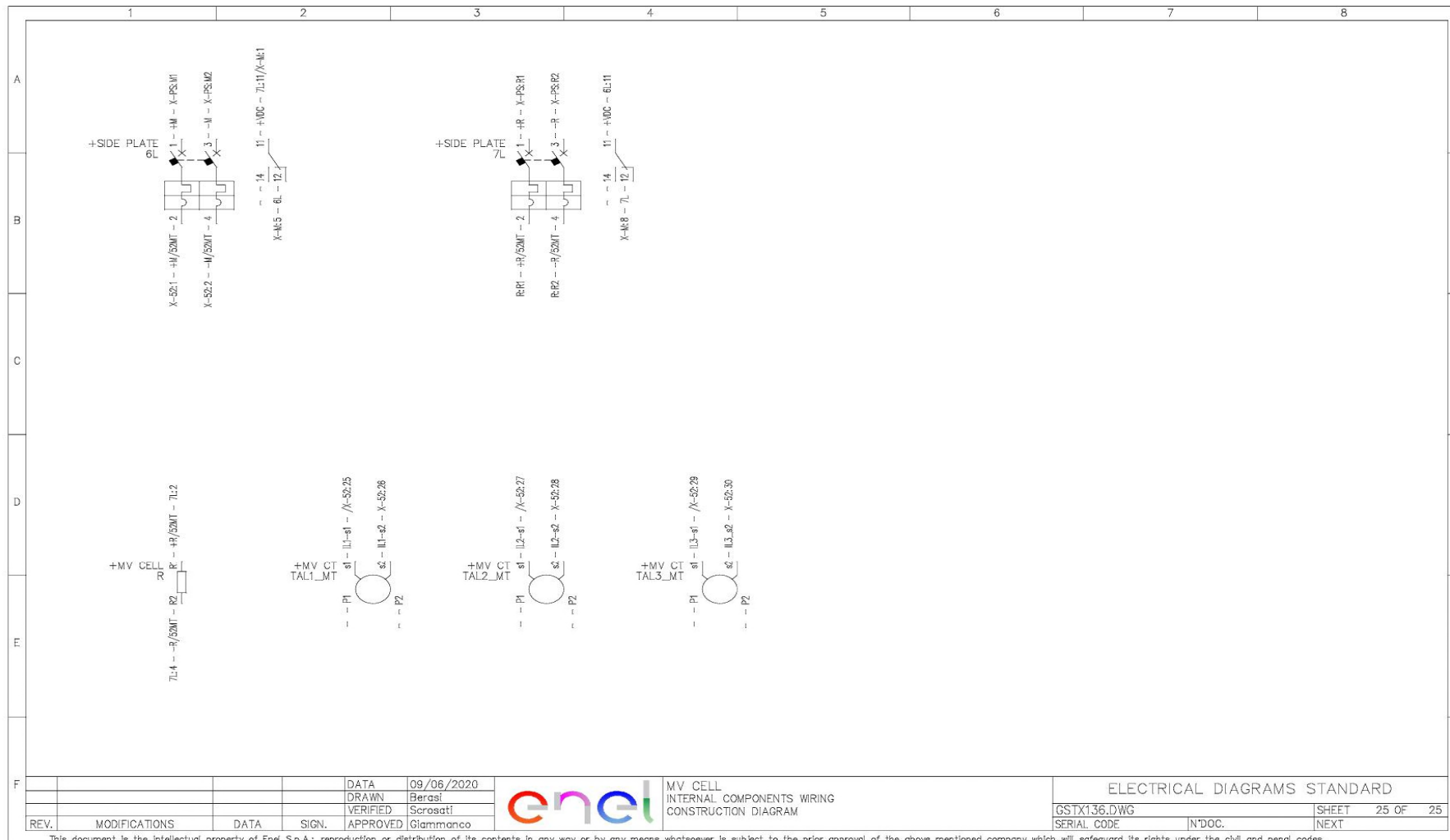
**Application Areas**

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Business Line: *Enel Grids*



DATA	09/06/2020
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VERIFIED	Serosati
APPROVED	Giammanco



MV CELL  
INTERNAL COMPONENTS WIRING  
CONSTRUCTION DIAGRAM

ELECTRICAL DIAGRAMS STANDARD	
GSTX136.DWG	SHEET 25 OF 25
SERIAL CODE	N'DOC.
	NEXT

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Service Function: -

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**8.13.3 GSTX137**

SHEET	TITLE
1	LIST OF SHEETS
2	REVISION LIST
3	TERMINAL BLOCK LIST
4	WIRING SPECIFICATIONS
5	MEDIUM VOLTAGE DIAGRAM
6	LAYOUT
7	VOLTAGE TRANSFORMERS
8	BUSBAR VOLTAGE
9	HOMOPOLAR VOLTAGE
10	MAGNETOTHERMAL INTERVENTION SIGNALS
11	MAGNETOTHERMAL INTERVENTION SIGNALS
12	SENSITIVE NEUTRAL AND F40
13	HEATING
14	X-M TERMINAL BLOCK
15	X-TV TERMINAL BLOCK
16	MV VT CONNECTOR
17	INTERNAL COMPONENTS WIRING

				DATA	08/06/2020		MV CELL LIST OF SHEETS CONSTRUCTION DIAGRAM	ELECTRICAL DIAGRAMS STANDARD		SHEET 1 OF 17 NEXT 2	06.1 P. 20201	
				DRAWN	Berasi			GSTX137.DWG	SERIAL CODE			N'DOC.
REV.	MODIFICATIONS	DATA	SIGN.	APPROVED	Giammanco							

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	1	2	3	4	5	6	7	8																		
A	<table border="1"> <thead> <tr> <th>TERMINAL BOARD</th> <th>SITE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>X-M</td> <td>+DEVICE COMPARTMENT</td> <td>ALARMS</td> </tr> <tr> <td>X-TV</td> <td>+DEVICE COMPARTMENT</td> <td>MV VOLTAGE DISTRIBUTION</td> </tr> </tbody> </table>		TERMINAL BOARD	SITE	DESCRIPTION	X-M	+DEVICE COMPARTMENT	ALARMS	X-TV	+DEVICE COMPARTMENT	MV VOLTAGE DISTRIBUTION	<table border="1"> <thead> <tr> <th>CONNECTOR</th> <th>SITE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>CTV</td> <td>+MV CELL</td> <td>MV VT CONNECTOR</td> </tr> </tbody> </table>		CONNECTOR	SITE	DESCRIPTION	CTV	+MV CELL	MV VT CONNECTOR							A
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C									C																	
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Perimeter: *Global*

Staff Function: -

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Business Line: *Enel Grids*

	1	2	3	4	5	6	7	8	
A	<p>1 THE DIAGRAM SHOWS THE COMMAND OF THE MV CIRCUIT-BREAKER IN ACCORDING WITH GSCM505 GLOBAL STANDARD AND IN PARTICULAR:</p> <p>A. TYPE A COMMAND – 24 PIN CONNECTOR – 1 CLOSING COMMAND (52CH), 1 OPENING COMMAND (52AP): GENERALLY FOR MV LINE AND MV POWER FACTOR CORRECTION</p> <p>B. TYPE B COMMAND – 24 PIN CONNECTOR – 1 CLOSING COMMAND (52CH), 1 OPENING COMMAND (52AP) AND 1 UNDERVOLTAGE OPENING COMMAND (52-U): GENERALLY FOR TFN MT</p> <p>C. TYPE C COMMAND – 24 PIN CONNECTOR – 1 CLOSING COMMAND (52CH), 1 OPENING COMMAND (52AP) AND 1 UNDERVOLTAGE OPENING COMMAND (52-U): GENERALLY FOR MV TRANSFORMER AND MV COUPLER</p> <p>D. TYPE D COMMAND – 24 PIN CONNECTOR – 1 CLOSING COMMAND (52CH), 2 OPENING COMMANDS (52AP AND 52 2'AP): GENERALLY FOR MV TRANSFORMER AND MV COUPLER</p>								A
B	<p>2 ELECTRICAL CIRCUITS MUST BE MADE WITH SINGLE-POLE FLEXIBLE CONDUCTOR (WHERE NOT OTHERWISE DEFINED) WITH THE FOLLOWING SECTIONS:</p> <p>A. 1,5MM<sup>2</sup> FOR CIRCUITS OF COMMAND, CONTROL AND SIGNALING</p> <p>B. 2,5MM<sup>2</sup> FOR VOLTAGE CIRCUITS</p> <p>C. 2,5MM<sup>2</sup> FOR CURRENT CIRCUITS</p> <p>ALL THE ELECTRICAL CONNECTIONS INSIDE THE CELL AND SHOWN IN THE CONSTRUCTION DRAWING MUST BE MADE, PROVIDING ALL THE ACCESSORIES NECESSARY FOR THE PROFESSIONAL CONSTRUCTION OF THE ELECTRICAL WIRING</p>								B
C	<p>3 ALL THE MATERIALS INDICATED IN THIS DRAWING MUST BE INCLUDED IN THE CONSTRUCTION OF THE MV CELL. THE CONSTRUCTIVE CHARACTERISTICS OF THE VARIOUS COMPONENTS ARE SHOWN PURELY AS AN INDICATION. FOR EACH COMPONENT, THE MANUFACTURER MUST INDICATE THE MATERIAL USED, COMPLETE WITH TECHNICAL DATA SUCH AS: SUPPLIER, TECHNICAL CHARACTERISTICS, ARTICLE CODE.</p>								C
D	<p>4 NEAR THE TERMINAL BOARDS MUST BE PROVIDED A SPECIAL 25 MM<sup>2</sup> COPPER BAR WITH Ø 6.5 MM HOLES CONNECTED TO THE EQUIPOTENTIAL EARTH CONNECTION</p> <p>5 FOR THE MARKING OF THE CONDUCTORS, REFER TO THE CABLE NOTE IN THIS DRAWING, INDICATING THE DOUBLE DESTINATION (START/FINISH) ON A SPECIAL WIRE MARKER.</p>								D
E	<p>6 THE CHOICE OF THE TYPE OF TERMINALS TO BE USED IS THE RESPONSIBILITY OF THE MANUFACTURER AND MUST COMPLY WITH WHAT IS PRESCRIBED BY LOCAL TECHNICAL SPECIFICATIONS. IN PARTICULAR:</p> <p>A. IN CASE OF SCREW TERMINALS, A SUITABLE TERMINAL ON THE CONDUCTOR MUST ALWAYS BE PROVIDED</p> <p>B. IN CASE OF SPRING TERMINALS, THE CONDUCTOR CAN BE USED WITHOUT A SUITABLE TERMINAL</p> <p>C. IN CASE OF PUSH-IN TERMINALS, A SUITABLE TERMINAL ON THE CONDUCTOR MUST ALWAYS BE PROVIDED</p> <p>IN CORRESPONDENCE TO EACH TERMINAL BOARD, SUITABLE PVC FIRE-RETARDANT CONDUITS MUST BE PROVIDED</p>								E
F	<p>THE DIAGRAM IS SHOWN WITH MV CIRCUIT-BREAKERS OPEN, WITHOUT ALARMS AND WITHOUT AC AND DC POWER SUPPLY</p> <div style="text-align: right;"> </div>								F
				DATA	08/06/2020	enel		MV CELL WIRING SPECIFICATIONS CONSTRUCTION DIAGRAM	
				DRAWN	Berasi			ELECTRICAL DIAGRAMS STANDARD	
				VERIFIED	Scrosati			GSTX137.DWG	
REV.	MODIFICATIONS	DATA	SIGN.	APPROVED	Giammanco			SERIAL CODE	
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								SHEET 4 OF 17	
								NEXT 5	

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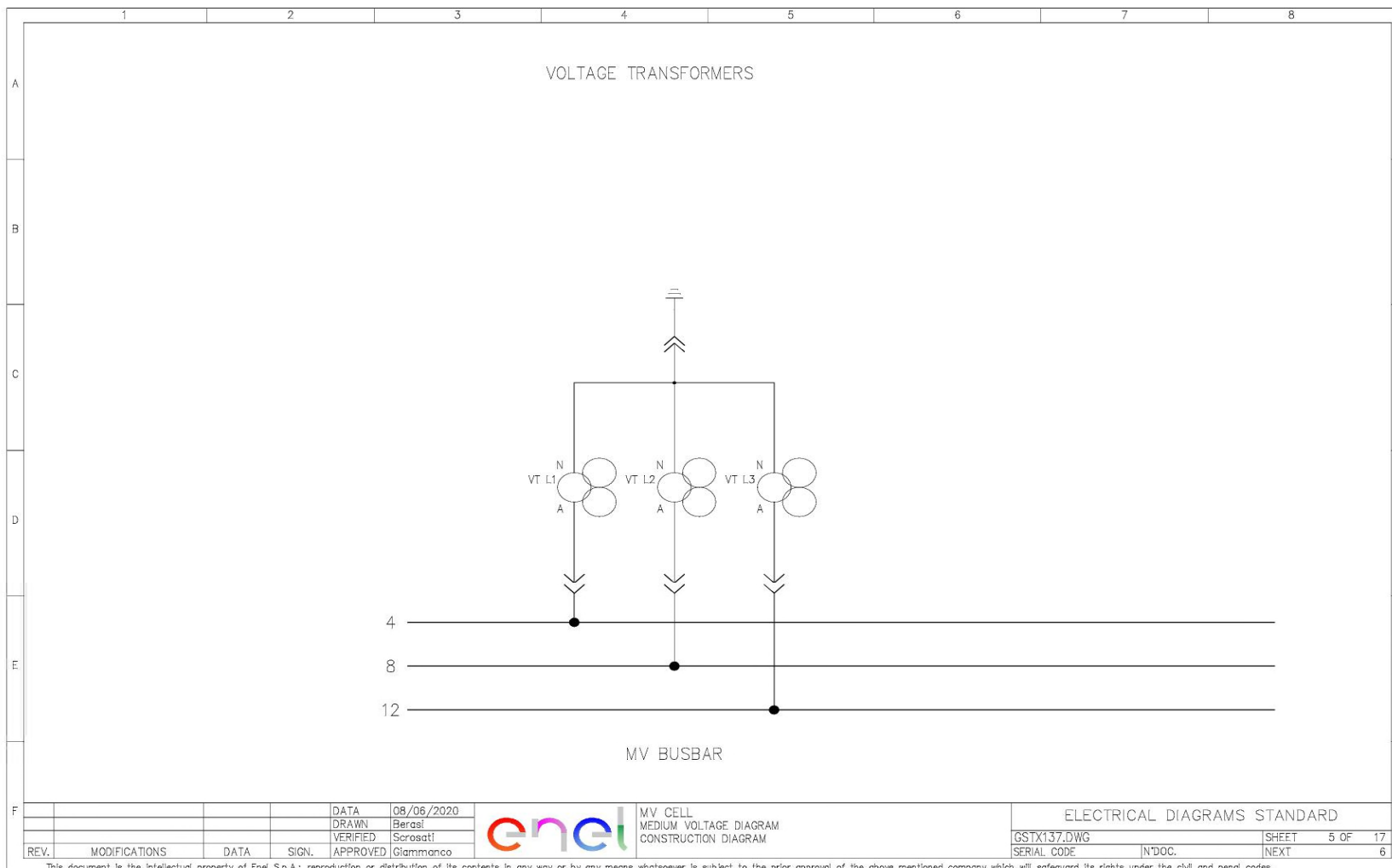
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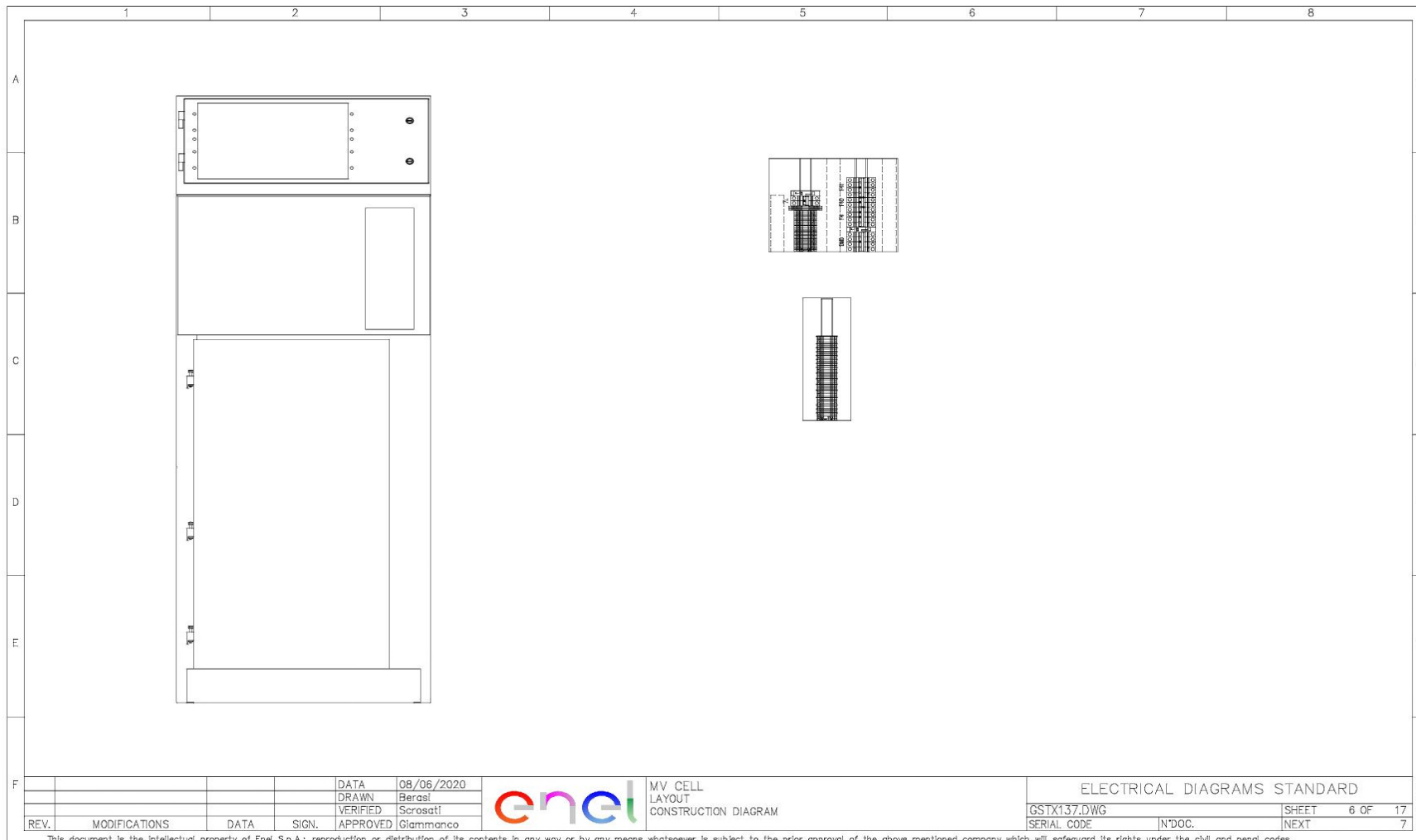
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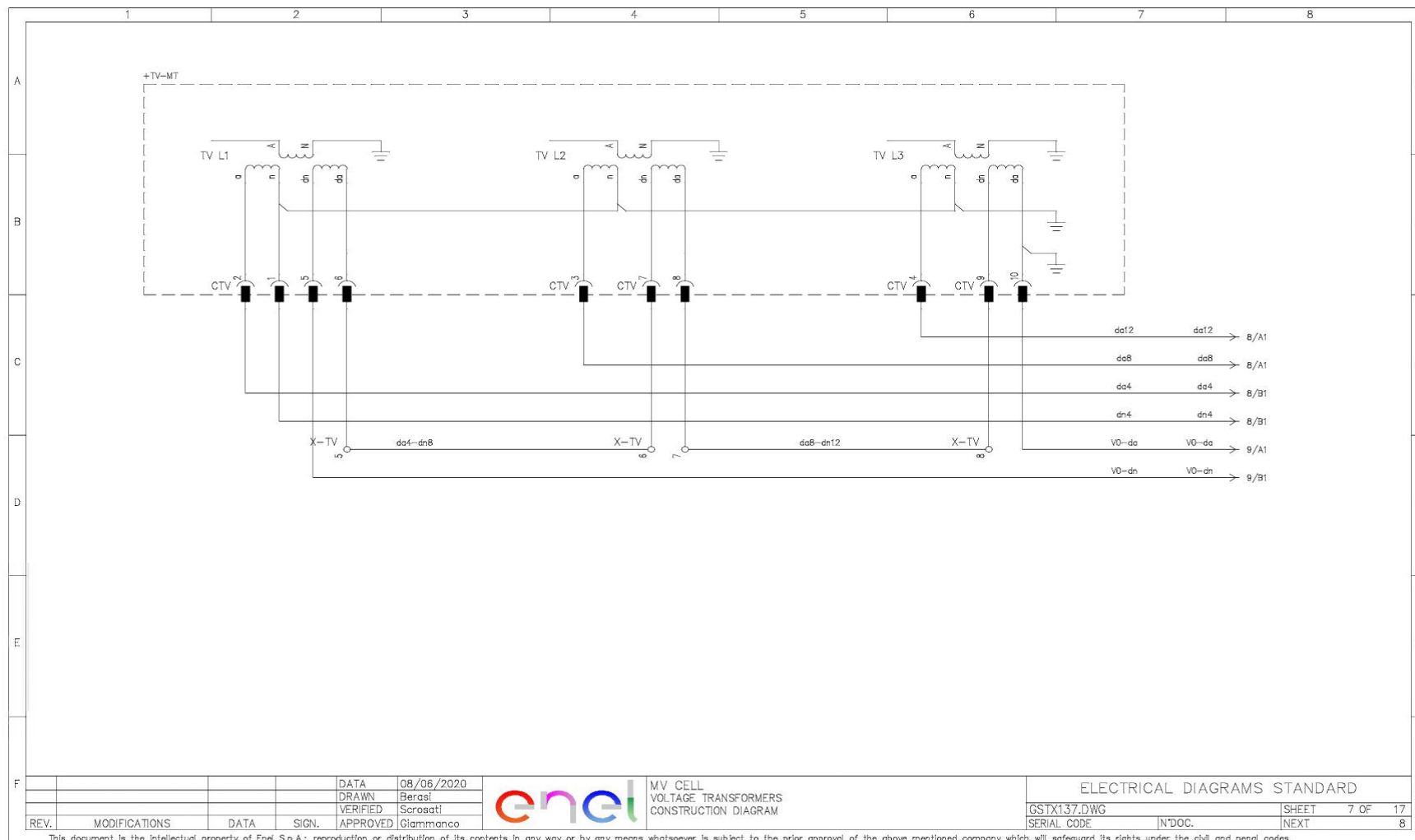
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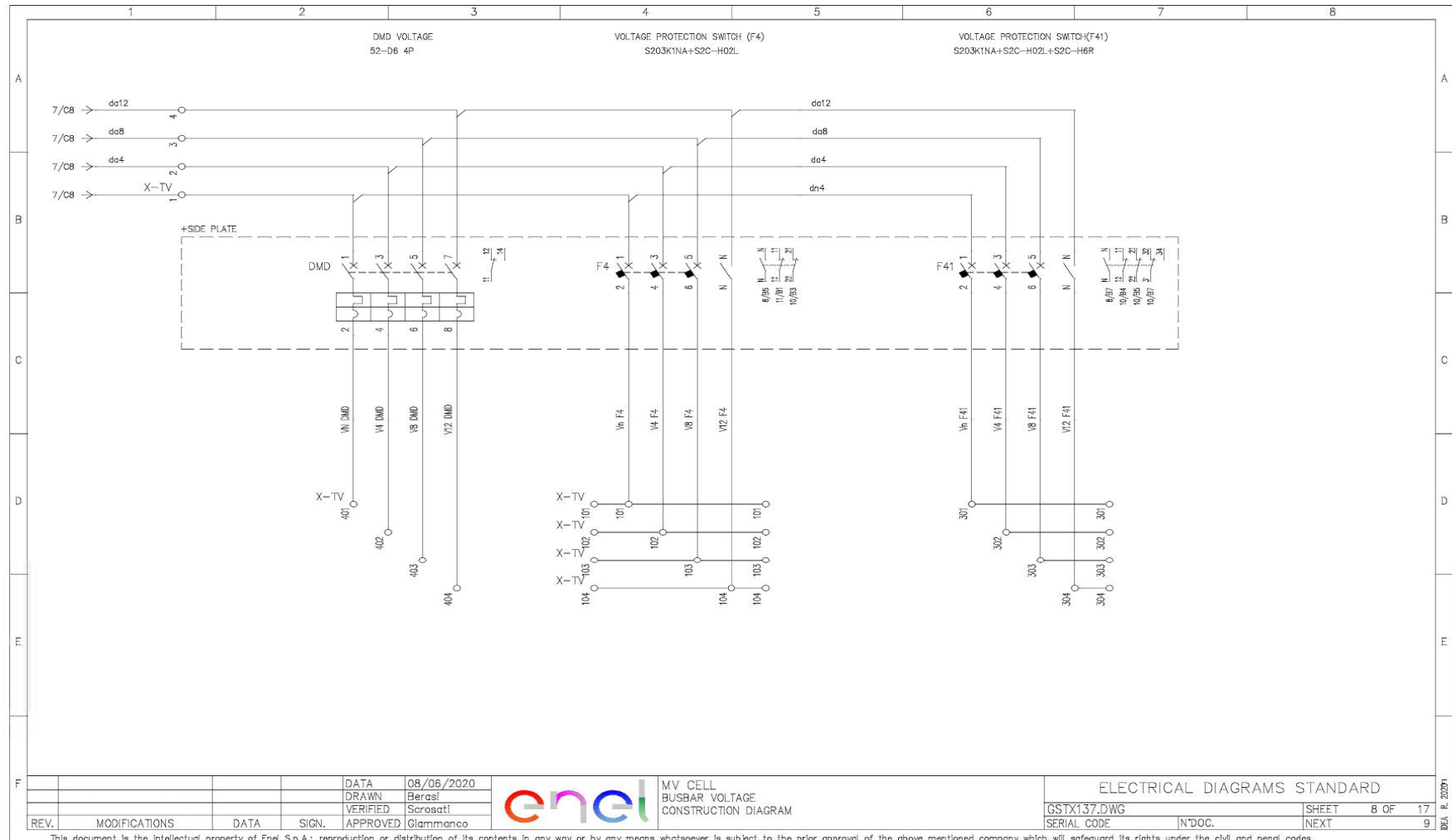
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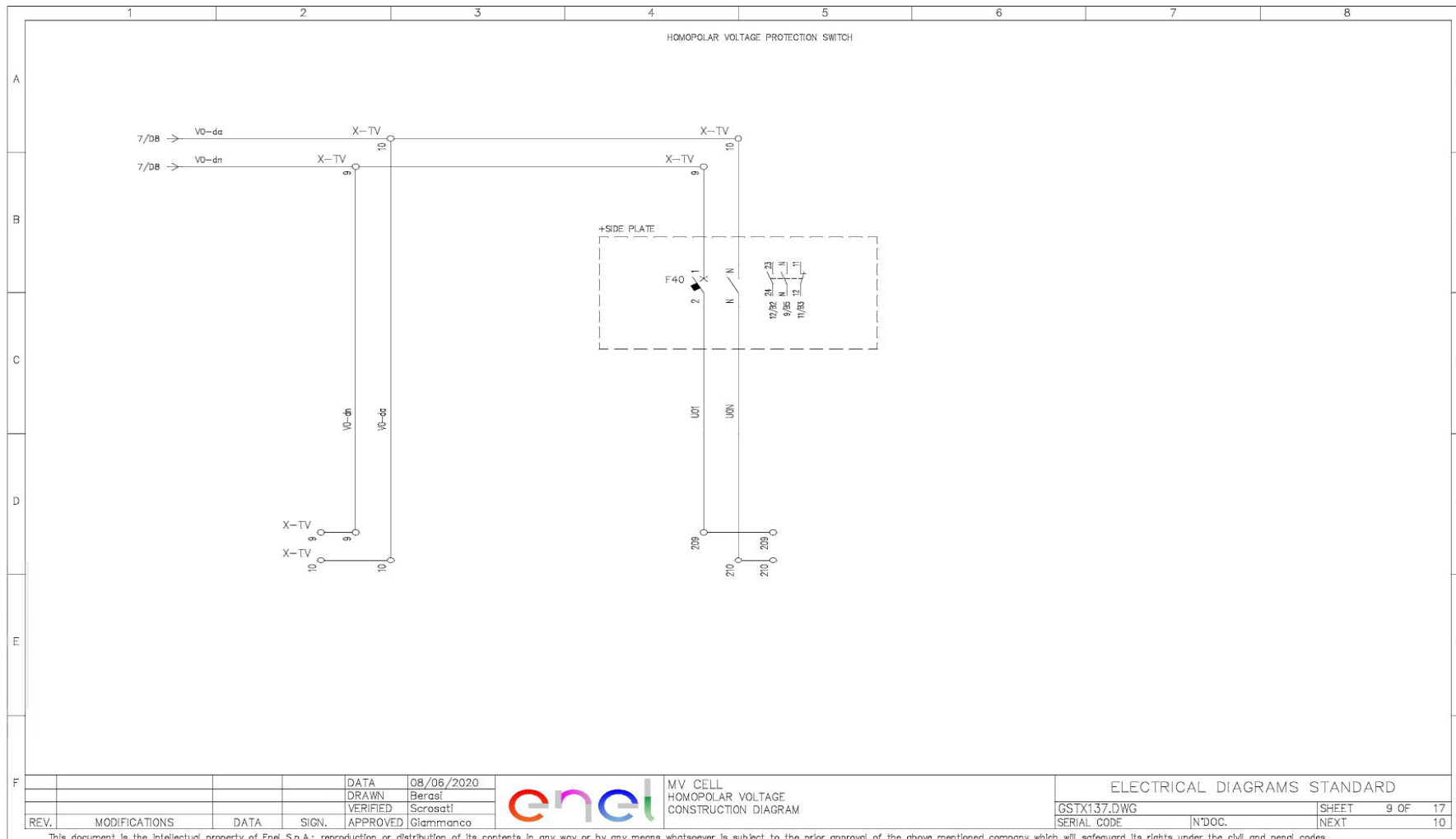
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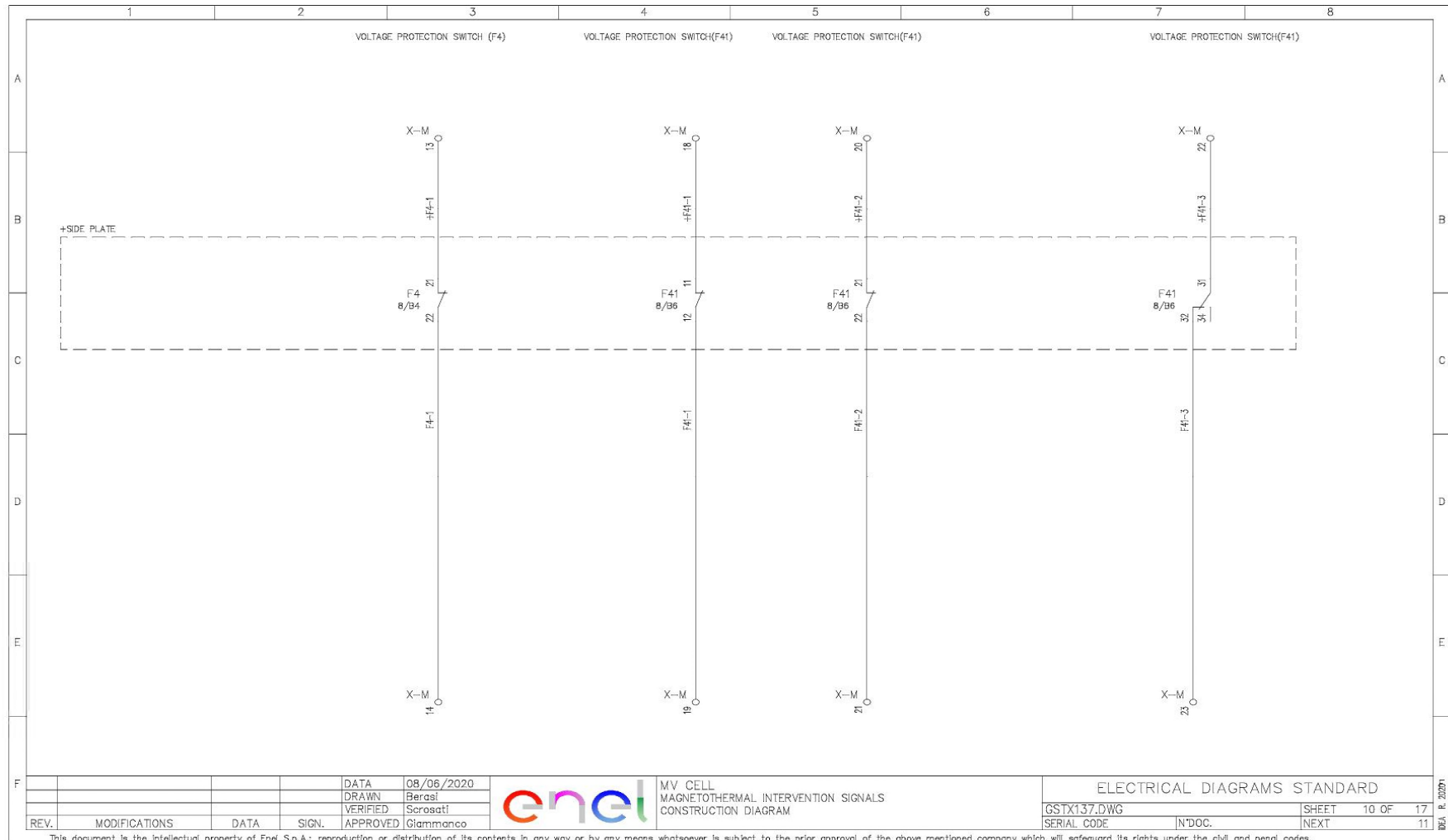
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Version no. 2 dated 18/07/2022

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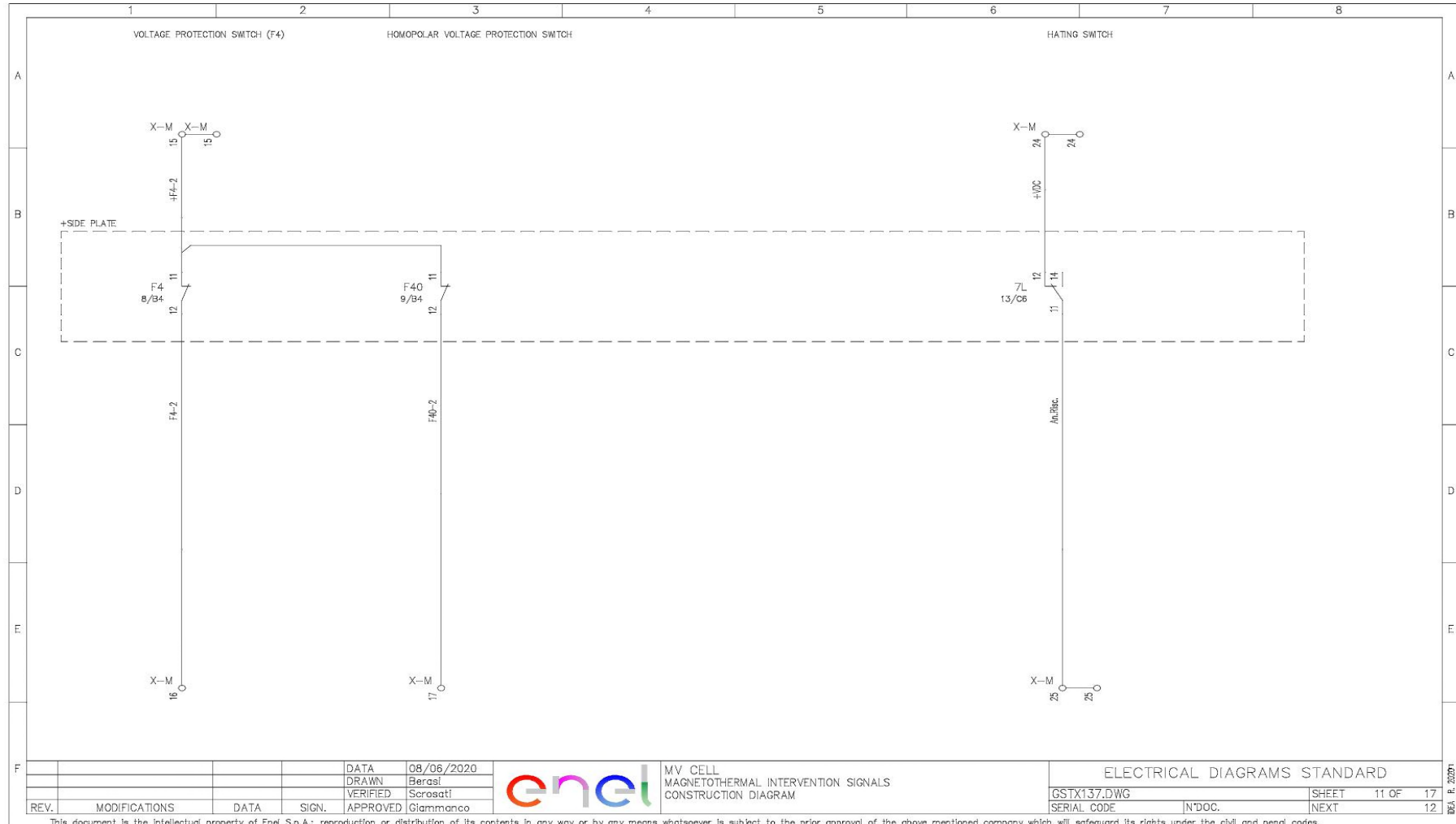
**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*



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**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

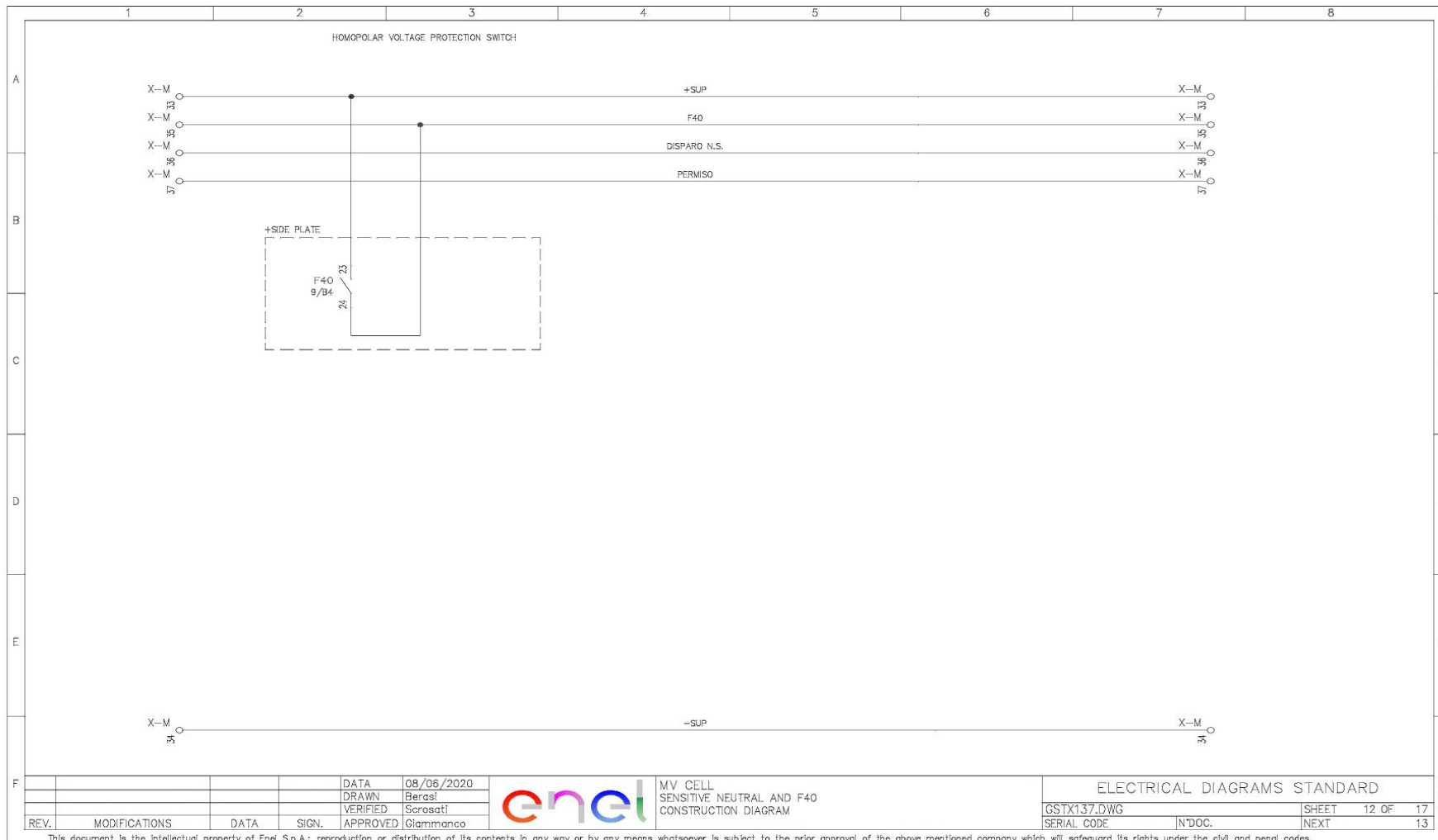
**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*





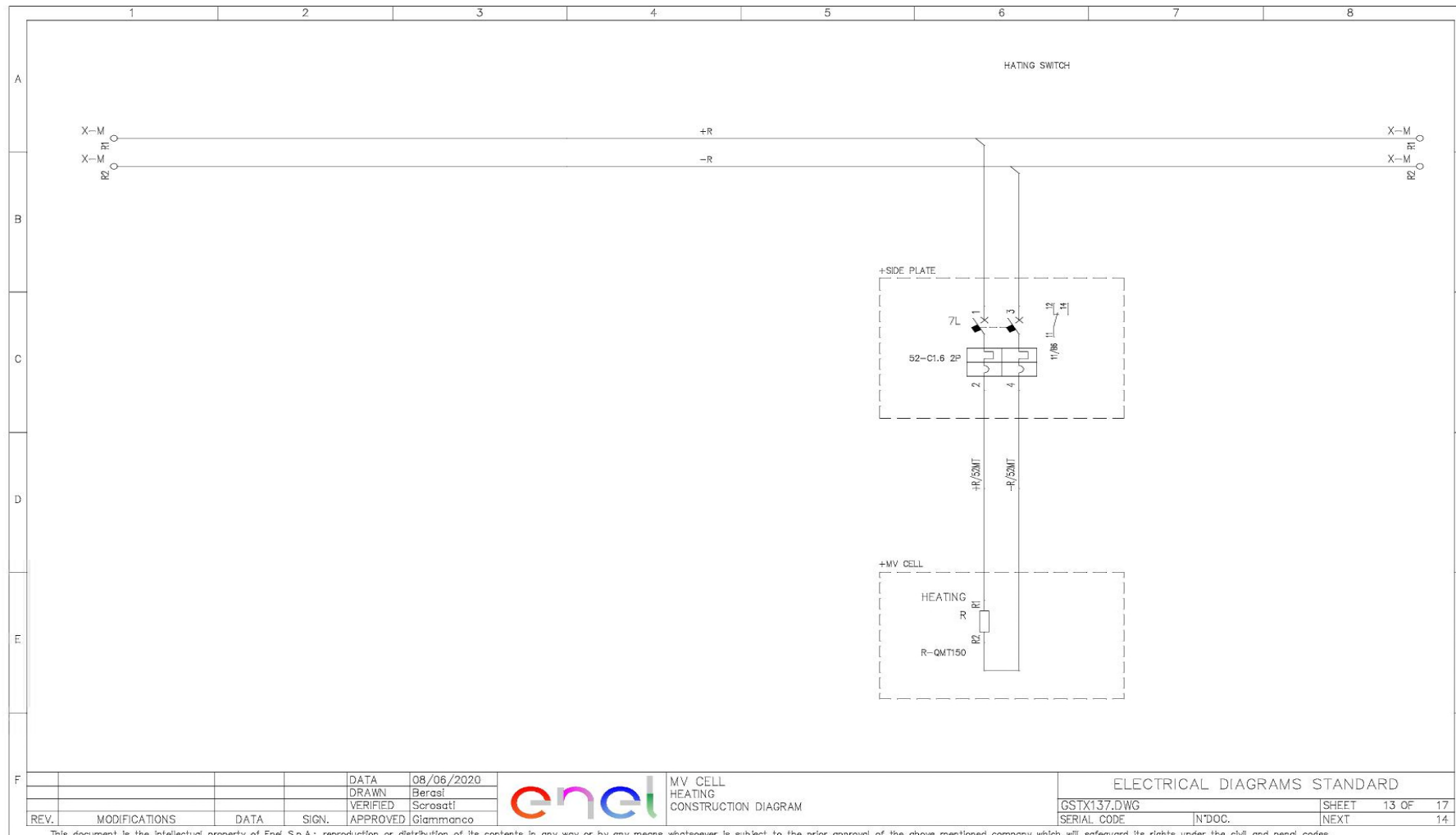
**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
 Staff Function: -  
 Service Function: -  
 Business Line: *Enel Grids*



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MV CELL  
 HEATING  
 CONSTRUCTION DIAGRAM

ELECTRICAL DIAGRAMS STANDARD	
GSTX137.DWG	SHEET 13 OF 17
SERIAL CODE	N'DOC.
	NEXT 14

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**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

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**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

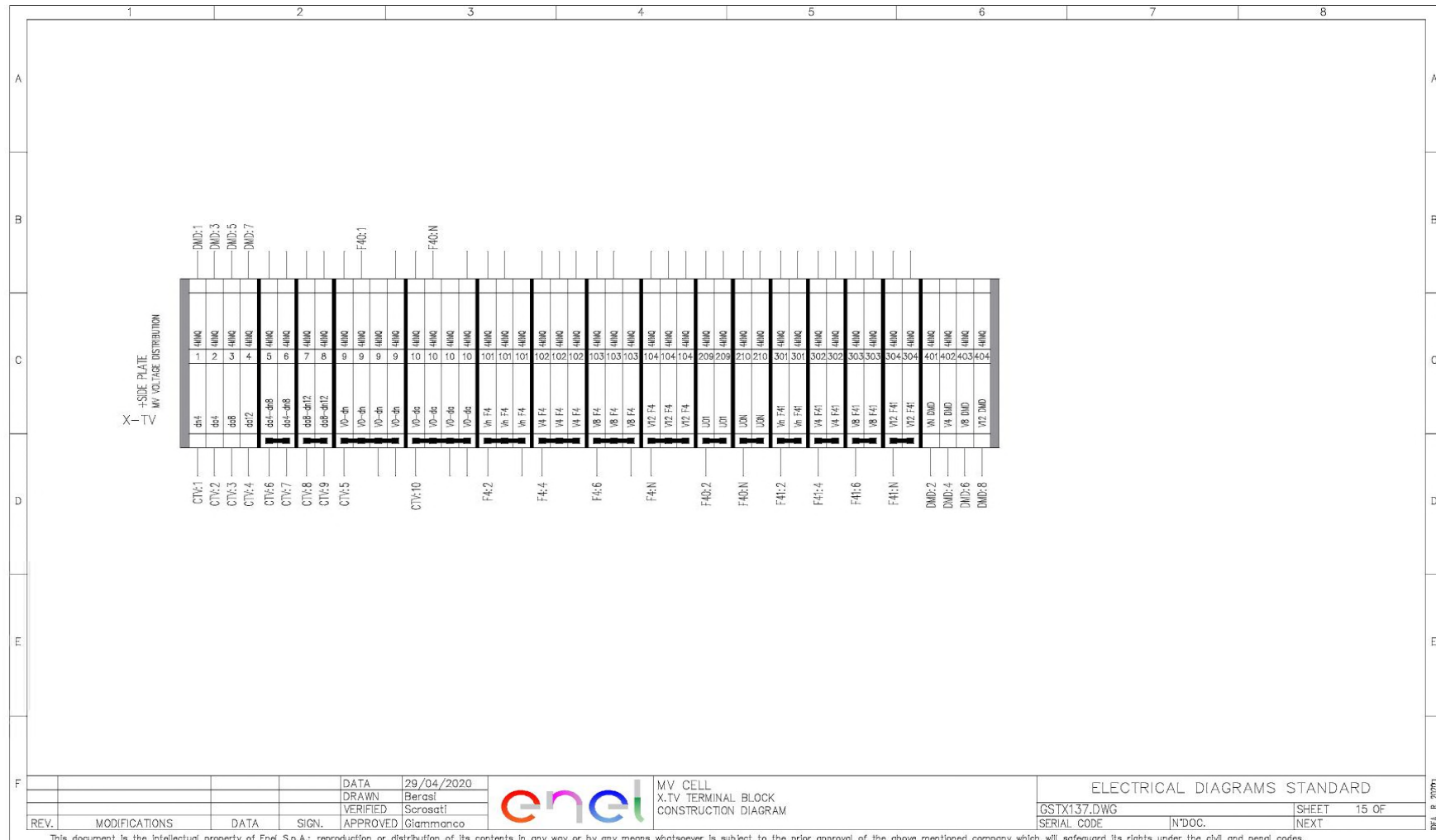
**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*



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**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

WIRE	DESTINATION	PIN	JOINT	POSITION
dn4	TV L1:n X-TV:1	1		7/B2
da4	TV L1:a X-TV:2	2		7/B2
da8	TV L2:a X-TV:3	3		7/B4
da12	TV L3:a X-TV:4	4		7/B6
V0-dn	TV L1:dn X-TV:9	5		7/B2
da4-dn8	TV L1:da X-TV:5	6		7/B2
da4-dn8	TV L2:dn X-TV:6	7		7/B4
da8-dn12	TV L2:da X-TV:7	8		7/B4
da8-dn12	TV L3:dn X-TV:8	9		7/B6
V0-da	TV L3:da X-TV:10	10		7/B6
		11		
		12		
		13		
		14		
		15		
		16		

+MV CELL  
 CTV  
 MV VT CONNECTOR

DATA 08/06/2020  
 DRAWN Berasi  
 VERIFIED Scrosati  
 APPROVED Giammanco

MV CELL  
 MV VT CONNECTOR  
 CONSTRUCTION DIAGRAM

ELECTRICAL DIAGRAMS STANDARD  
 GSTX137.DWG SERIAL CODE N'DOC. SHEET 16 OF 17 NEXT 17

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**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” **enel** type, technical specifications collection

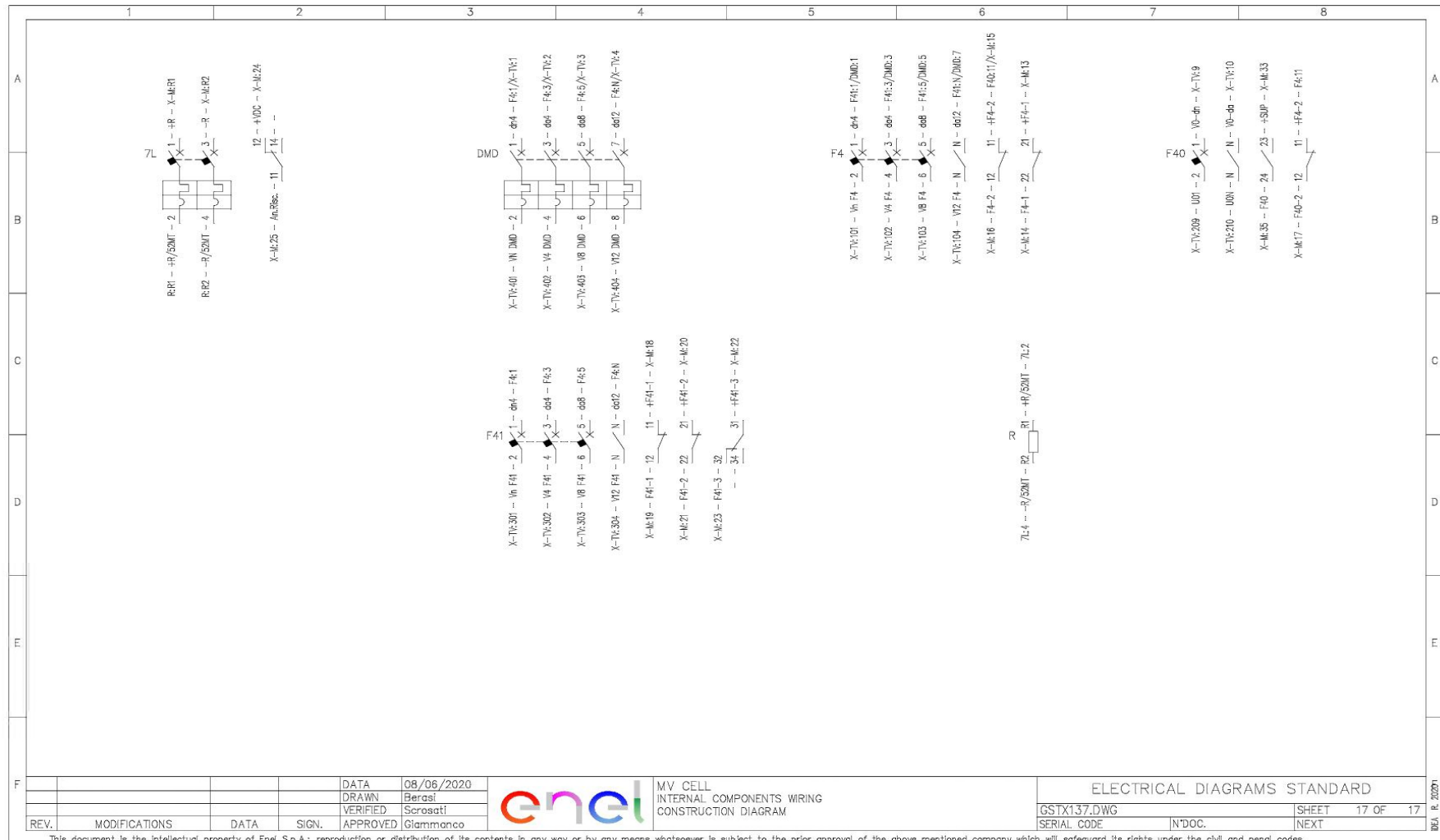
**Application Areas**

Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*



				DATA	08/06/2020			MY CELL		ELECTRICAL DIAGRAMS STANDARD			
				DRAWN	Berasi			INTERNAL COMPONENTS WIRING		GSTX137.DWG		SHEET 17 OF 17	
				VERIFIED	Scrosati			CONSTRUCTION DIAGRAM		SERIAL CODE		NEXT	
REV.	MODIFICATIONS	DATA	SIGN.	APPROVED	Giammanco			N'DOC.		NEXT			

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**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**  
Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

#### 8.14 ANNEX P – Certificate of Type Conformity

List of certificates (present at the end of document):

Type code	Description	CESI Certificate
GSCM690/1	GSCM698/1 Bus Bar tie functional unit Ir=2000 A rear/rear	C2002320
GSCM690/2	GSCM698/2 Bus Bar tie functional unit Ir=1600 A rear/rear	C2002320
GSCM690/3	GSCM698/3 Bus Bar tie functional unit Ir=2000 A	C2002320
GSCM690/4	GSCM698/4 Bus Bar tie functional unit Ir=1600 A	C2002320
GSCM690/5	GSCM697/1 Transformer functional unit Ir=2000 A rear/rear	C2002608
GSCM690/6	GSCM697/2 Transformer functional unit Ir=1600 A rear/rear	C2002608
GSCM690/7	GSCM697/3 Transformer functional unit Ir=2000 A	C2002608
GSCM690/8	GSCM697/4 Transformer functional unit Ir=1600 A	C2002608
GSCM690/9	GSCM696/1 Line functional unit rear/rear	C2004480
GSCM690/10	GSCM696/2 Line functional unit	C2004480
GSCM690/11	GSCM699/1 Capacitor Bank functional unit rear/rear	C2002322
GSCM690/12	GSCM699/2 Capacitor Bank functional unit	C2002322
GSCM690/13	GSCM700/1 Auxiliary services functional unit rear/rear	C2004482
GSCM690/14	GSCM700/2 Auxiliary services functional unit	C2004482
GSCM690/15	GSCM730/1 Neutral Maker Transformer functional unit rear/rear	C2004484
GSCM690/16	GSCM730/2 Neutral Maker Transformer functional unit	C2004484
GSCM690/17	GSCM731/1 Voltage bus bar measurement functional unit rear/rear	C2004486
GSCM690/18	GSCM731/2 Voltage bus bar measurement functional unit	C2004486
GSCM690/19	GSCM732/1 Riser functional unit rear/rear MV busbar outgoing on the left	C2002326
GSCM690/20	GSCM732/2 Riser functional unit rear/rear MV busbar outgoing on the right	C2002326
GSCM690/21	GSCM732/3 Riser functional unit MV busbar outgoing on the left	C2002326
GSCM690/22	GSCM732/4 Riser functional unit MV busbar outgoing on the right	C2002326
GSCM690/23	GSCM738/1 Bus Bar cross connection functional unit Ir= 2000 A	C2002324
GSCM690/24	GSCM738/2 Bus Bar cross connection functional unit Ir= 1600 A	C2002324

**Table 7 – List Certificate of Type Conformity**





**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**  
Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**

Perimeter: *Global*  
Staff Function: -  
Service Function: -  
Business Line: *Enel Grids*

**8.15 ANNEX Q – Material codes**

<i>enel</i> type	Description	Argentina	Brazil	Chile	Colombia	Italy	Perú	Rumania	Spain
<b>GSCM690/1</b>	GSCM698/1 Bus Bar tie functional unit Ir=2000 A rear/rear	TBD	TBD	TBD	TBD	140188	TBD	TBD	140787
<b>GSCM690/2</b>	GSCM698/2 Bus Bar tie functional unit Ir=1600 A rear/rear	TBD	TBD	TBD	TBD	140187	TBD	TBD	140774
<b>GSCM690/3</b>	GSCM698/3 Bus Bar tie functional unit Ir=2000 A	TBD	TBD	TBD	TBD	140186	TBD	TBD	140773
<b>GSCM690/4</b>	GSCM698/4 Bus Bar tie functional unit Ir=1600 A	TBD	TBD	TBD	TBD	140185	TBD	TBD	140772
<b>GSCM690/5</b>	GSCM697/1 Transformer functional unit Ir=2000 A rear/rear	TBD	TBD	TBD	TBD	140184	TBD	TBD	140771
<b>GSCM690/6</b>	GSCM697/2 Transformer functional unit Ir=1600 A rear/rear	TBD	TBD	TBD	TBD	140183	TBD	TBD	140770
<b>GSCM690/7</b>	GSCM697/3 Transformer functional unit Ir=2000 A	TBD	TBD	TBD	TBD	140182	TBD	TBD	140769
<b>GSCM690/8</b>	GSCM697/4 Transformer functional unit Ir=1600 A	TBD	TBD	TBD	TBD	140181	TBD	TBD	140768
<b>GSCM690/9</b>	GSCM696/1 Line functional unit rear/rear	TBD	TBD	TBD	TBD	140180	TBD	TBD	140767
<b>GSCM690/10</b>	GSCM696/2 Line functional unit	TBD	TBD	TBD	TBD	140179	TBD	TBD	140766
<b>GSCM690/11</b>	GSCM699/1 Capacitor Bank functional unit rear/rear	TBD	TBD	TBD	TBD	140178	TBD	TBD	140765
<b>GSCM690/12</b>	GSCM699/2 Capacitor Bank functional unit	TBD	TBD	TBD	TBD	140177	TBD	TBD	140764
<b>GSCM690/13</b>	GSCM700/1 Auxiliary services functional unit rear/rear	TBD	TBD	TBD	TBD	140176	TBD	TBD	140763
<b>GSCM690/14</b>	GSCM700/2 Auxiliary services functional unit	TBD	TBD	TBD	TBD	140175	TBD	TBD	140762
<b>GSCM690/15</b>	GSCM730/1 Neutral Maker Transformer functional unit rear/rear	TBD	TBD	TBD	TBD	140174	TBD	TBD	NA
<b>GSCM690/16</b>	GSCM730/2 Neutral Maker Transformer functional unit	TBD	TBD	TBD	TBD	140173	TBD	TBD	NA


**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

<i>enel</i> type	Description	Argentina	Brazil	Chile	Colombia	Italy	Perú	Rumania	Spain
<b>GSCM690/17</b>	GSCM731/1 Voltage bus bar measurement functional unit rear/rear	TBD	TBD	TBD	TBD	140172	TBD	TBD	140761
<b>GSCM690/18</b>	GSCM731/2 Voltage bus bar measurement functional unit	TBD	TBD	TBD	TBD	140169	TBD	TBD	140760
<b>GSCM690/19</b>	GSCM732/1 Riser functional unit rear/rear MV busbar outgoing on the left	TBD	TBD	TBD	TBD	140162	TBD	TBD	140759
<b>GSCM690/20</b>	GSCM732/2 Riser functional unit rear/rear MV busbar outgoing on the right	TBD	TBD	TBD	TBD	140159	TBD	TBD	140758
<b>GSCM690/21</b>	GSCM732/3 Riser functional unit MV busbar outgoing on the left	TBD	TBD	TBD	TBD	140158	TBD	TBD	140757
<b>GSCM690/22</b>	GSCM732/4 Riser functional unit MV busbar outgoing on the right	TBD	TBD	TBD	TBD	140157	TBD	TBD	140756
<b>GSCM690/23</b>	GSCM738/1 Bus Bar cross connection functional unit Ir= 2000 A	TBD	TBD	TBD	TBD	140149	TBD	TBD	140786
<b>GSCM690/24</b>	GSCM738/2 Bus Bar cross connection functional unit Ir= 1600 A	TBD	TBD	TBD	TBD	140129	TBD	TBD	140785
<b>GSCM690/25</b>	GSCM739/1 2000 A kit for container	TBD	TBD	TBD	TBD	140148	TBD	TBD	140784
<b>GSCM690/26</b>	GSCM739/2 2000 A kit for building	TBD	TBD	TBD	TBD	140147	TBD	TBD	140783
<b>GSCM690/27</b>	GSCM739/3 GAS duct and VCB platform for container	TBD	TBD	TBD	TBD	140146	TBD	TBD	140782
<b>GSCM690/28</b>	GSCM739/4 GAS duct and VCB platform for building	TBD	TBD	TBD	TBD	140140	TBD	TBD	140781
<b>GSCM690/29</b>	GSCM739/5 Metal conduit for LV cables for container GSCM770/2 and for building with switchgear functional unit rear-rear	TBD	TBD	TBD	TBD	140139	TBD	TBD	140780
<b>GSCM690/30</b>	GSCM739/6 Metal conduit for LV cables for building with switchgear functional unit not rear-rear	TBD	TBD	TBD	TBD	140137	TBD	TBD	140779


**Technical Specification code: MAT-E&C-NC-2021-0064-GRI**

Version no. 2 dated 18/07/2022

**Subject:** Enel Grids – GSCM690 Family of AIS “compact” *enel* type, technical specifications collection

**Application Areas**
Perimeter: *Global*

Staff Function: -

Service Function: -

Business Line: *Enel Grids*

<i>enel</i> type	Description	Argentina	Brazil	Chile	Colombia	Italy	Perú	Rumania	Spain
<b>GSCM690/31</b>	GSCM739/7 Operating levers and rack to keep them	TBD	TBD	TBD	TBD	140136	TBD	TBD	140778
<b>GSCM690/32</b>	GSCM739/8 kit closing panel for container GSCM770/1	TBD	TBD	TBD	TBD	140134	TBD	TBD	140777
<b>GSCM690/33</b>	GSCM739/9 kit closing panel for container GSCM770/2	TBD	TBD	TBD	TBD	140128	TBD	TBD	140776
<b>GSCM690/34</b>	GSCM739/10 kit closing panel for building	TBD	TBD	TBD	TBD	140127	TBD	TBD	140775

**Table 8 - Local material codes**

## Certificate of Type Conformity

in compliance with Standard

IEC 62271 - 200 Ed. 3.0 (2021-05)

Product	Three-phase AC, medium voltage, air-insulated, metal-enclosed switchgear and controlgear
Designation	CS (GSCM698)
Manufacturer	Col Giovanni Paolo S.p.A., via Chiribiri, 1, Trofarello 10028 (TO), – Italy Factory: Strada Provinciale 14, n ° 93 - 95, Piano Tavola, 95032 Belpasso (CT) - Italy
Applicant	Enel Global Infrastructure and Network S.r.l. – Via Ombrone, 2 – 00198 Roma (Italy)
Main ratings	Rated voltage 24 kV; Rated current 1600 A / 2000 A; Rated frequency 50/60 Hz:
Main performance	IAC 16 kA x 1 s AFLR; Ageing level 2; Seismic severity level 2; Seismic acceptance class 1.

The certified product has been evaluated as compliant with the following standards:

IEC 62271-200: 2021-05 “High voltage switchgear and controlgear – Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV”.

This document attests that the certified product meets all the requirements relevant to the ratings assigned by the applicant and listed in the Evaluation Report indicated in the following, verified by testing according to the above specified normative reference documents.  
This Certificate has been issued according to a Product Certification Scheme Type 1 (see requirements of ISO/IEC17067:2013 item 5.3.7).

This certificate is composed of 5 pages.

30 March 2022

30 March 2022

29 March 2027

First Issue date

Current Issue Date

Expiry Date

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Approved by



PRD N° 018B

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC  
Signatory of EA, IAF and ILAC Mutual Recognition agreements

## I. Detailed ratings assigned by the Manufacturer

<b>Metal-enclosed switchgear and controlgear type CS (GSCM 698)</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM698
Number of phases	3
Voltage (U <sub>r</sub> )	24 kV
Lightning impulse withstand voltage (U <sub>p</sub> ) – common value	125 kV
Power frequency withstand voltage (U <sub>d</sub> ) – common value	50 kV
Frequency (f <sub>r</sub> )	50 / 60 Hz
Normal current (I <sub>r</sub> ) for main bus bar	2000 A
Normal current (I <sub>r</sub> ) for feeder bus bar	1600 A - 2000 A
Short-time withstand current for main (I <sub>k</sub> ) and earthing circuits (I <sub>ke</sub> )	16 kA
Peak withstand current for main (I <sub>p</sub> ) and earthing circuits (I <sub>pe</sub> )	41,6 kA
Duration of short-circuit (t <sub>k</sub> )	1 s
Rated supply voltage of auxiliary and control circuits (U <sub>a</sub> )	110 V <sub>dc</sub> – 125 V <sub>dc</sub>
Rated supply frequency of auxiliary and control circuits (f <sub>a</sub> )	DC
Loss of service continuity category (LSC)	LSC 2A
Degree of protection IP/IK	IP3X / IK07
Degree of protection low voltage compartment	IP3XD
Partition class	PM
Ageing level	2
Seismic severity level	2
Seismic acceptance class	1
<b>IAC Internal Arc Classification:</b>	
Type of accessibility / classified sides	A/FLR
Arc fault current (I <sub>A</sub> )	16 kA
Arc fault duration (t <sub>A</sub> )	1 s
Number and section of the main bus bar for each phase	1 x (100 x 15) mm
Number and section of the derivation bus bar for each phase	1 x (60 x 25) mm
Number and section of the earth bus bar	1 x (25 x 3) mm
<b>Three-pole MV vacuum circuit-breaker in withdrawable version</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM505/9
Rated Voltage	24 kV
Rated Lightning impulse withstand voltage	125 kV
Rated Power frequency withstand voltage	50 kV
Rated Frequency	50 / 60 Hz
Rated Service current	1600 A - 2000 A
Rated Short-time withstand current	16 kA
Rated Peak withstand current	41,6 kA
Short-circuit time	1 s
Rated Short-circuit breaking current	16 kA
Rated first-pole-to-clear factor	1,3 – 1,5
Rated Short-circuit making current	41,6 kA
Rated Operating sequence	O – 0,3 s – CO – 15 s - CO
Rated line-charging breaking current	10 A
Rated cable-charging breaking current	31,5 A
Rated single capacitor bank breaking current	530 A
Back-to-back capacitor bank breaking current	400 A

Capacitor bank in rush breaking current	20 kA @ 4250 kHz
Classification	E2, M2, C2, S1
Rated supply voltage of auxiliary and control circuits	110 V <sub>dc</sub> , 125 V <sub>dc</sub>
Rated supply frequency of auxiliary and control circuits	DC
<b>Vacuum Interrupters:</b>	
Manufacturer	EATON
Type	WL41256
Opening gap dimension	10,5 mm
<b>Three-pole medium-voltage air insulated earthing switch</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Type	107 TR1 10 024
Rated Voltage	24 kV
Rated Lightning impulse withstand voltage	125 kV
Rated Power frequency withstand voltage	50 kV
Rated Frequency	50/60 Hz
Rated Short-time withstand current	16 kA
Rated Short-circuit time	1s
Rated peak withstand current	41,6 kA
Mechanical class	M0
Electrical class	E1
Rated Short-circuit making current	41,6 kA

## II. Tests performed

The product has been tested according to the relevant standards.  
The complete list of reports follows.

Standard	Item	Test	Test Report
IEC 62271 - 200	7.2.7.3	Lightning impulse voltage tests	C1001287-1
IEC 62271 - 200	7.2.7.2	Power-frequency voltage tests	C1001287-1
IEC 62271 - 200	7.5	Temperature rise test	C0016030-2 C0015951-1
IEC 62271 - 200	7.4.4	Resistance measurement of contacts and connections in the main circuit as a condition check	C0016030-2 C0015951-1
IEC 62271 - 200	7.2.11	Dielectric tests on auxiliary and control circuits	C0019066
IEC 62271 - 200	7.7.1	Verification of the IP coding	C1021339
IEC 62271 - 200	7.7.2	Verification of the IK coding	C1021339
IEC 62271 - 200	7.102.1	Switching devices and removable parts	C1009417
IEC 62271 - 102	7.102.3	Mechanical endurance test on earthing switch	
IEC 62271 - 200	8.101 and Annex B	Partial discharge measurement	C2000177
IEC 60270	-		
IEC 62271-200	7.102	Mechanical and electromechanical interlocks and locking devices	C0019294

Standard	Item	Test	Test Report
IEC 62271-200	7.9	Electromagnetic compatibility tests (EMC)	C1013164
IEC 62271-200	7.6	Short time withstand current and peak withstand current tests	C1022167
IEC 62271-200	7.101	Test to prove the short circuit making performance of earthing switches	C1016726
IEC 62271-102	7.101		
IEC 62271-200	7.105 Annex A	Internal arc test	C0013522 C1011673
IEC 62271-200	4	Ageing test – level 2	C1021338
IEC 62271-304	9.2		
IEC 60068–2-57	8.1 8.2 8.3 8.5	Seismic qualification test	C2002582 C1016647 C0015602-1
IEC 60068–3-3	Part 3		
IEC 62271 - 210	-		
IEEE Std 693	Annex E		
IEC 62271-200	7.101	Verification of making and breaking capacities	C0015759
IEC 62271-100	7.102 to 7.108		
IEC 62271-200	7.101	Making and breaking tests on class E2 circuit-breakers	C0016027
IEC 62271-100	7.112		
IEC 62271-200	7.101	Capacitive current tests	C0016110
IEC 62271-100	7.111		

All documents issued by CESI are available in CESI archive for 10 years.

### III. Conformity evaluation

The evaluation of compliance with the declared standards is duly reported in the following document issued by CESI:

CESI Evaluation Report C2002319

The Manufacturer guarantees that the tested objects are manufactured according to the submitted drawings.

CESI checked that these drawings adequately represent in shape and dimensions the manufacturing details, materials and the parts of the certified product.

According to the above-mentioned evaluation, CESI issues the Certificate of Type Conformity of the product owned by Enel Global Infrastructure and Network S.r.l. Via Ombrone, 2 – 00198 Roma (RM) – Italy and manufactured by COL GIOVANNI PAOLO S.p.A., via Chiribiri, 1, Trofarello, 10028 (TO), Factory: Strada Provinciale 14, n ° 93 - 95, Piano Tavola, 95032 Belpasso (CT) – Italy.



## Certificate of Type Conformity

in compliance with Standard

IEC 62271 - 200 Ed. 3.0 (2021-05)

Product	Three-phase AC, medium voltage, air-insulated, metal-enclosed switchgear and controlgear, for indoor application, for primary substations in earthed and unearthed neutral system.
Designation	T (GSCM697)
Manufacturer	Col Giovanni Paolo S.p.A., via Chiribiri, 1, Trofarello 10028 (TO), – Italy Factory: Strada Provinciale 14, n° 93 - 95, Piano Tavola, 95032 Belpasso (CT) - Italy
Applicant	Enel Global Infrastructure and Network S.r.l. – Via Ombrone, 2 – 00198 Roma (Italy)
Main ratings	Rated voltage 24 kV; Rated current 1600 A / 2000 A; Rated frequency 50/60 Hz:
Main performance	IAC 16 kA x 1 s AFLR; Ageing level 2; Seismic severity level 2; Seismic acceptance class 1

The certified product has been evaluated as compliant with the following standards:

IEC 62271-200: 2021-05 “High voltage switchgear and controlgear – Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV”.

This document attests that the certified product meets all the requirements relevant to the ratings assigned by the applicant and listed in the Evaluation Report indicated in the following, verified by testing according to the above specified normative reference documents.  
**This Certificate has been issued according to a Product Certification Scheme Type 1 (see requirements of ISO/IEC17067:2013 item 5.3.7).**

This certificate is composed of 5 pages.

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## I. Detailed ratings assigned by the Manufacturer

<b>Metal-enclosed switchgear and controlgear type T (GSCM 697)</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM697
Number of phases	3
Voltage (U <sub>r</sub> )	24 kV
Lightning impulse withstand voltage (U <sub>p</sub> ) – common value	125 kV
Power frequency withstand voltage (U <sub>d</sub> ) – common value	50 kV
Frequency (f <sub>r</sub> )	50 / 60 Hz
Normal current (I <sub>r</sub> ) for main bus bar	2000 A
Normal current (I <sub>r</sub> ) for feeder bus bar	1600 A - 2000 A
Short-time withstand current for main (I <sub>k</sub> ) and earthing circuits (I <sub>ke</sub> )	16 kA
Peak withstand current for main (I <sub>p</sub> ) and earthing circuits (I <sub>pe</sub> )	41,6 kA
Duration of short-circuit (t <sub>k</sub> )	1 s
Rated supply voltage of auxiliary and control circuits (U <sub>a</sub> )	110 V <sub>dc</sub> – 125 V <sub>dc</sub>
Rated supply frequency of auxiliary and control circuits (f <sub>a</sub> )	DC
Loss of service continuity category (LSC)	LSC 2A
Degree of protection IP/IK	IP3X / IK07
Degree of protection low voltage compartment	IP3XD
Partition class	PM
Ageing level	2
Seismic severity level	2
Seismic acceptance class	1
<b>IAC Internal Arc Classification:</b>	
Type of accessibility / classified sides	A/FLR
Arc fault current (I <sub>A</sub> )	16 kA
Arc fault duration (t <sub>A</sub> )	1 s
Number and section of the main bus bar for each phase	1 x (100 x 15) mm
Number and section of the derivation bus bar for each phase	1 x (60 x 25) mm
Number and section of the earth bus bar	1 x (25 x 3) mm
<b>Three-pole MV vacuum circuit-breaker in withdrawable version</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM505/9
Rated Voltage	24 kV
Rated Lightning impulse withstand voltage	125 kV
Rated Power frequency withstand voltage	50 kV
Rated Frequency	50 / 60 Hz
Rated Service current	1600 A - 2000 A
Rated Short-time withstand current	16 kA
Rated Peak withstand current	41,6 kA
Short-circuit time	1 s
Rated Short-circuit breaking current	16 kA
Rated first-pole-to-clear factor	1,3 – 1,5
Rated Short-circuit making current	41,6 kA
Rated Operating sequence	O – 0,3 s – CO – 15 s - CO
Rated line-charging breaking current	10 A
Rated cable-charging breaking current	31,5 A
Rated single capacitor bank breaking current	530 A
Back-to-back capacitor bank breaking current	400 A

Capacitor bank in rush breaking current	20 kA @ 4250 kHz
Classification	E2, M2, C2, S1
Rated supply voltage of auxiliary and control circuits	110 V <sub>dc</sub> , 125 V <sub>dc</sub>
Rated supply frequency of auxiliary and control circuits	DC
<b>Vacuum Interrupters:</b>	
Manufacturer	EATON
Type	WL41256
Opening gap dimension	10,5 mm
<b>Three-pole medium-voltage air insulated earthing switch</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Type	107 TR1 10 024
Rated Voltage	24 kV
Rated Lightning impulse withstand voltage	125 kV
Rated Power frequency withstand voltage	50 kV
Rated Frequency	50/60 Hz
Rated Short-time withstand current	16 kA
Rated Short-circuit time	1s
Rated peak withstand current	41,6 kA
Mechanical class	M0
Electrical class	E1
Rated Short-circuit making current	41,6 kA

## II. Tests performed

The product has been tested according to the relevant standards.  
The complete list of reports follows.

Standard	Item	Test	Test Report
IEC 62271 - 200	7.2.7.3	Lightning impulse voltage tests	C1001287-1
IEC 62271 - 200	7.2.7.2	Power-frequency voltage tests	C1001287-1
IEC 62271 - 200	7.5	Temperature rise test	C0016030-2 C0015951-1
IEC 62271 - 200	7.4.4	Resistance measurement of contacts and connections in the main circuit as a condition check	C0016030-2 C0015951-1
IEC 62271 - 200	7.2.11	Dielectric tests on auxiliary and control circuits	C0019066
IEC 62271 - 200	7.7.1	Verification of the IP coding	C1021339
IEC 62271 - 200	7.7.2	Verification of the IK coding	C1021339
IEC 62271 - 200	7.102.1	Switching devices and removable parts Mechanical endurance test on earthing switch	C1009417
IEC 62271 - 102	7.102.3		
IEC 62271 - 200	8.101 and Annex B	Partial discharge measurement	C2000177
IEC 60270	-		
IEC 62271-200	7.102	Mechanical and electromechanical interlocks and locking devices	C0019294

Standard	Item	Test	Test Report
IEC 62271-200	7.9	Electromagnetic compatibility tests (EMC)	C1013164
IEC 62271-200	7.6	Short time withstand current and peak withstand current tests	C1022167
IEC 62271-200	7.101	Test to prove the short circuit making performance of earthing switches	C1016726
IEC 62271-102	7.101		
IEC 62271-200	7.105 Annex A	Internal arc test	C0013522
			C1011673
IEC 62271-200	4	Ageing test – level 2	C1021338
IEC 62271-304	9.2		
IEC 60068–2-57	8.1 8.2 8.3 8.5	Seismic qualification test	C2002582 C1016647 C0015602-1
IEC 60068–3-3	Part 3		
IEC 62271 - 210	-		
IEEE Std 693	Annex E		
IEC 62271-200	7.101	Verification of making and breaking capacities	C0015759
IEC 62271-100	7.102 to 7.108		
IEC 62271-200	7.101	Making and breaking tests on class E2 circuit-breakers	C0016027
IEC 62271-100	7.112		
IEC 62271-200	7.101	Capacitive current tests	C0016110
IEC 62271-100	7.111		

All documents issued by CESI are available in CESI archive for 10 years.

### III. Conformity evaluation

The evaluation of compliance with the declared standards is duly reported in the following document issued by CESI:

CESI Evaluation Report C2002607.

The Manufacturer guarantees that the tested objects are manufactured according to the submitted drawings.

CESI checked that these drawings adequately represent in shape and dimensions the manufacturing details, materials and the parts of the certified product.

According to the above-mentioned evaluation, CESI issues the Certificate of Type Conformity of the product owned by Enel Global Infrastructure and Network S.r.l. Via Ombrone, 2 – 00198 Roma (RM) – Italy and manufactured by COL GIOVANNI PAOLO S.p.A., via Chiribiri, 1, Trofarello, 10028 (TO), Factory: Strada Provinciale 14, n ° 93 - 95, Piano Tavola, 95032 Belpasso (CT) – Italy.

## Certificate of Type Conformity

in compliance with Standard

IEC 62271 - 200 Ed. 3.0 (2021-05)

Product	Three-phase AC, medium voltage, air-insulated, metal-enclosed switchgear and controlgear, for indoor application, for primary substations in earthed and unearthed neutral system.
Designation	L (GSCM696)
Manufacturer	Col Giovanni Paolo S.p.A., via Chiribiri, 1, Trofarello 10028 (TO), – Italy Factory: Strada Provinciale 14, n ° 93 - 95, Piano Tavola, 95032 Belpasso (CT) - Italy
Applicant	Enel Global Infrastructure and Network S.r.l. – Via Ombrone, 2 – 00198 Roma (Italy)
Main ratings	Rated voltage 24 kV; Rated current 630 A; Rated frequency 50/60 Hz
Main performance	IAC 16 kA x 1 s AFLR; Ageing level 2; Seismic severity level 2; Seismic acceptance class 1

The certified product has been evaluated as compliant with the following standards:

IEC 62271-200: 2021-05 “High voltage switchgear and controlgear – Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV”.

This document attests that the certified product meets all the requirements relevant to the ratings assigned by the applicant and listed in the Evaluation Report indicated in the following, verified by testing according to the above specified normative reference documents.  
This Certificate has been issued according to a Product Certification Scheme Type 1 (see requirements of ISO/IEC17067:2013 item 5.3.7).

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## I. Detailed ratings assigned by the Manufacturer

<b>Metal-enclosed switchgear and controlgear type L (GSCM696)</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM696
Number of phases	3
Voltage (U <sub>r</sub> )	24 kV
Lightning impulse withstand voltage (U <sub>p</sub> ) – common value	125 kV
Power frequency withstand voltage (U <sub>d</sub> ) – common value	50 kV
Frequency (f <sub>r</sub> )	50 / 60 Hz
Normal current (I <sub>r</sub> ) for main bus bar	2000 A
Normal current (I <sub>r</sub> ) for feeder bus bar	630 A
Short-time withstand current for main (I <sub>k</sub> ) and earthing circuits (I <sub>ke</sub> )	16 kA
Peak withstand current for main (I <sub>p</sub> ) and earthing circuits (I <sub>pe</sub> )	41,6 kA
Duration of short-circuit (t <sub>k</sub> )	1 s
Rated supply voltage of auxiliary and control circuits (U <sub>a</sub> )	110 V <sub>dc</sub> , 125 V <sub>dc</sub>
Rated supply frequency of auxiliary and control circuits (f <sub>a</sub> )	DC
Loss of service continuity category (LSC)	LSC 2A
Degree of protection IP/IK	IP3X / IK07
Degree of protection low voltage compartment	IP3XD
Partition class	PM
Ageing level	2
Seismic severity level	2
Seismic acceptance class	1
<b>IAC Internal Arc Classification:</b>	
Type of accessibility / classified sides	A/FLR
Arc fault current (IA)	16 kA
Arc fault duration (tA)	1 s
Number and section of the main bus bar for each phase	1 x (100 x 15) mm
Number and section of the derivation bus bar for each phase	1 x (60 x 8) mm
Number and section of the earth bus bar	1 x (25 x 3) mm
<b>Three-pole MV vacuum circuit-breaker in withdrawable version</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM505/7
Rated Voltage	24 kV
Rated Lightning impulse withstand voltage	125 kV
Rated Power frequency withstand voltage	50 kV
Rated Frequency	50 / 60 Hz
Rated Service current	630 A
Rated Short-time withstand current	16 kA
Rated Peak withstand current	41,6 kA
Short-circuit time	1 s
Rated Short-circuit breaking current	16 kA
Rated first-pole-to-clear factor	1,3 – 1,5
Rated Short-circuit making current	41,6 kA
Rated Operating sequence	O – 0,3 s – CO – 15 s – CO
Rated line-charging breaking current	10 A
Rated cable-charging breaking current	31,5 A
Rated single capacitor bank breaking current	530 A
Back-to-back capacitor bank breaking current	400 A

Capacitor bank in rush breaking current	20 kA @ 4250 kHz
Classification	E2, M2, C2, S1
Rated supply voltage of auxiliary and control circuits	110 V <sub>dc</sub> , 125 V <sub>dc</sub>
Rated supply frequency of auxiliary and control circuits	DC
<b>Vacuum Interrupters:</b>	
Manufacturer	EATON
Type	WL41243
Opening gap dimension	12 mm
<b>Three-pole medium-voltage air insulated earthing switch</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Type	107 R1 10 024
Rated Voltage	24 kV
Rated Lightning impulse withstand voltage	125 kV
Rated Power frequency withstand voltage	50 kV
Rated Frequency	50/60 Hz
Rated Short-time withstand current	16 kA
Rated Short-circuit time	1 s
Rated peak withstand current	41,6 kA
Mechanical class	M0
Electrical class	E1
Rated Short-circuit making current	41,6 kA

## II. Tests performed

The product has been tested according to the relevant standards.  
The complete list of reports follows.

Standard	Item	Test	Test Report
IEC 62271 - 200	7.2.7.3	Lightning impulse voltage tests	C1001287-1
IEC 62271 - 200	7.2.7.2	Power-frequency voltage tests	C1001287-1
IEC 62271 - 200	7.5	Temperature rise test	C0015672
IEC 62271 - 200	7.4.4	Resistance measurement of contacts and connections in the main circuit as a condition check	C0015672
IEC 62271 - 200	7.2.11	Dielectric tests on auxiliary and control circuits	C0019051
IEC 62271 - 200	7.7.1	Verification of the IP coding	C1021339
IEC 62271 - 200	7.7.2	Verification of the IK coding	C1021339
IEC 62271 - 200	7.102.1	Switching devices and removable parts	C1009417
IEC 62271 - 102	7.102.3	Mechanical endurance test on earthing switch	
IEC 62271 - 200	8.101 and Annex B	Partial discharge measurement	C2000177
IEC 60270	-		
IEC 62271-200	7.102	Mechanical and electromechanical interlocks and locking devices	C0019294
IEC 62271-200	7.9	Electromagnetic compatibility tests (EMC)	C1013164



Standard	Item	Test	Test Report
IEC 62271-200	7.6	Short time withstand current and peak withstand current tests	C1012265 C1016787-1
IEC 62271-200	7.101	Test to prove the short circuit making performance of earthing switches	C1016726
IEC 62271-102	7.101		
IEC 62271-200	7.105 Annex A	Internal arc test	C0013522
IEC 62271-200	4	Ageing test – level 2	C1021338
IEC 62271-304	9.2		
IEC 60068-2-57	8.1 8.2 8.3 8.5	Seismic qualification test	C2002582 C1016647 C0015635-1
IEC 60068-3-3	Part 3		
IEC 62271 - 210	-		
IEEE Std 693	Annex E		
IEC 62271-200	7.101	Verification of making and breaking capacities	C1012265
IEC 62271-100	7.102 to 7.108		
IEC 62271-200	7.101	Making and breaking tests on class E2 circuit-breakers	C1012265
IEC 62271-100	7.112		
IEC 62271-200	7.101	Capacitive current tests	C1012473
IEC 62271-100	7.111		

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### III. Conformity evaluation

The evaluation of compliance with the declared standards is duly reported in the following document issued by CESI:

CESI Evaluation Report 2004479.

The Manufacturer guarantees that the tested objects are manufactured according to the submitted drawings.

CESI checked that these drawings adequately represent in shape and dimensions the manufacturing details, materials and the parts of the certified product.

According to the above-mentioned evaluation, CESI issues the Certificate of Type Conformity of the product owned by Enel Global Infrastructure and Network S.p.A. Via Ombrone, 2 – 00198 Roma (RM) – Italy and manufactured by COL GIOVANNI PAOLO S.p.A., via Chiribiri, 1, Trofarello, 10028 (TO), Factory: Strada Provinciale 14, n° 93 - 95, Piano Tavola, 95032 Belpasso (CT) – Italy.

## Certificate of Type Conformity

in compliance with Standard

IEC 62271 - 200 Ed. 3.0 (2021-05)

Product	Three-phase AC, medium voltage, air-insulated, metal-enclosed switchgear and controlgear, for indoor application, for primary substations in earthed and unearthed neutral system.
Designation	R (GSCM699)
Manufacturer	Col Giovanni Paolo S.p.A., via Chiribiri, 1, Trofarello 10028 (TO), – Italy Factory: Strada Provinciale 14, n ° 93 - 95, Piano Tavola, 95032 Belpasso (CT) - Italy
Applicant	Enel Global Infrastructure and Network S.r.l. – Via Ombrone, 2 – 00198 Roma (Italy)
Main ratings	Rated voltage 24 kV; Rated current 630 A; Rated frequency 50/60 Hz
Main performance	IAC 16 kA x 1 s AFLR; Ageing level 2; Seismic severity level 2; Seismic acceptance class 1.

The certified product has been evaluated as compliant with the following standards:

IEC 62271-200: 2021-05 “High voltage switchgear and controlgear – Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV”.

This document attests that the certified product meets all the requirements relevant to the ratings assigned by the applicant and listed in the Evaluation Report indicated in the following, verified by testing according to the above specified normative reference documents.  
This Certificate has been issued according to a Product Certification Scheme Type 1 (see requirements of ISO/IEC17067:2013 item 5.3.7).

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## I. Detailed ratings assigned by the Manufacturer

<b>Metal-enclosed switchgear and controlgear type R (GSCM699)</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM699
Number of phases	3
Voltage (U <sub>r</sub> )	24 kV
Lightning impulse withstand voltage (U <sub>p</sub> ) – common value	125 kV
Power frequency withstand voltage (U <sub>d</sub> ) – common value	50 kV
Frequency (f <sub>r</sub> )	50 / 60 Hz
Normal current (I <sub>r</sub> ) for main bus bar	2000 A
Normal current (I <sub>r</sub> ) for feeder bus bar	630 A
Short-time withstand current for main (I <sub>k</sub> ) and earthing circuits (I <sub>ke</sub> )	16 kA
Peak withstand current for main (I <sub>p</sub> ) and earthing circuits (I <sub>pe</sub> )	41,6 kA
Duration of short-circuit (t <sub>k</sub> )	1 s
Rated supply voltage of auxiliary and control circuits (U <sub>a</sub> )	110 V <sub>dc</sub> , 125 V <sub>dc</sub>
Rated supply frequency of auxiliary and control circuits (f <sub>a</sub> )	DC
Loss of service continuity category (LSC)	LSC 2A
Degree of protection IP/IK	IP3X / IK07
Degree of protection low voltage compartment	IP3XD
Partition class	PM
Ageing level	2
Seismic severity level	2
Seismic acceptance class	1
<b>IAC Internal Arc Classification:</b>	
Type of accessibility / classified sides	A/FLR
Arc fault current (IA)	16 kA
Arc fault duration (tA)	1 s
Number and section of the main bus bar for each phase	1 x (100 x 15) mm
Number and section of the derivation bus bar for each phase	1 x (60 x 8) mm
Number and section of the earth bus bar	1 x (25 x 3) mm
<b>Three-pole MV vacuum circuit-breaker in withdrawable version</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM505/7
Rated Voltage	24 kV
Rated Lightning impulse withstand voltage	125 kV
Rated Power frequency withstand voltage	50 kV
Rated Frequency	50 / 60 Hz
Rated Service current	630 A
Rated Short-time withstand current	16 kA
Rated Peak withstand current	41,6 kA
Short-circuit time	1 s
Rated Short-circuit breaking current	16 kA
Rated first-pole-to-clear factor	1,3 – 1,5
Rated Short-circuit making current	41,6 kA
Rated Operating sequence	O – 0,3 s – CO – 15 s – CO
Rated line-charging breaking current	10 A
Rated cable-charging breaking current	31,5 A
Rated single capacitor bank breaking current	530 A
Back-to-back capacitor bank breaking current	400 A

Capacitor bank in rush breaking current	20 kA @ 4250 kHz
Classification	E2, M2, C2, S1
Rated supply voltage of auxiliary and control circuits	110 V <sub>dc</sub> , 125 V <sub>dc</sub>
Rated supply frequency of auxiliary and control circuits	DC
<b>Vacuum Interrupters:</b>	
Manufacturer	EATON
Type	WL41243
Opening gap dimension	12 mm
<b>Three-pole medium-voltage air insulated earthing switch</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Type	107 R1 10 024
Rated Voltage	24 kV
Rated Lightning impulse withstand voltage	125 kV
Rated Power frequency withstand voltage	50 kV
Rated Frequency	50/60 Hz
Rated Short-time withstand current	16 kA
Rated Short-circuit time	1 s
Rated peak withstand current	41,6 kA
Mechanical class	M0
Electrical class	E1
Rated Short-circuit making current	41,6 kA

## II. Tests performed

The product has been tested according to the relevant standards.  
The complete list of reports follows.

Standard	Item	Test	Test Report
IEC 62271 - 200	7.2.7.3	Lightning impulse voltage tests	C1001287-1
IEC 62271 - 200	7.2.7.2	Power-frequency voltage tests	C1001287-1
IEC 62271 - 200	7.5	Temperature rise test	C0015672
IEC 62271 - 200	7.4.4	Resistance measurement of contacts and connections in the main circuit as a condition check	C0015672
IEC 62271 - 200	7.2.11	Dielectric tests on auxiliary and control circuits	C0019051
IEC 62271 - 200	7.7.1	Verification of the IP coding	C1021339
IEC 62271 - 200	7.7.2	Verification of the IK coding	C1021339
IEC 62271 - 200	7.102.1	Switching devices and removable parts Mechanical endurance test on earthing switch	C1009417
IEC 62271 - 102	7.102.3		
IEC 62271 - 200	8.101 and Annex B	Partial discharge measurement	C2000177
IEC 60270	-		
IEC 62271-200	7.102	Mechanical and electromechanical interlocks and locking devices	C0019294
IEC 62271-200	7.9	Electromagnetic compatibility tests (EMC)	C1013164

Standard	Item	Test	Test Report
IEC 62271-200	7.6	Short time withstand current and peak withstand current tests	C1012265 C1016787 - 1
IEC 62271-200	7.101	Test to prove the short circuit making performance of earthing switches	C1016726
IEC 62271-102	7.101		
IEC 62271-200	7.105 Annex A	Internal arc test	C0013522
IEC 62271-200	4	Ageing test – level 2	C1021338
IEC 62271-304	9.2		
IEC 60068–2-57	8.1 8.2 8.3 8.5	Seismic qualification test	C2002582 C1016647 C0015635-1
IEC 60068–3-3	Part 3		
IEC 62271 - 210	-		
IEEE Std 693	Annex E		
IEC 62271-200	7.101	Verification of making and breaking capacities	C1012265
IEC 62271-100	7.102 to 7.108		
IEC 62271-200	7.101	Making and breaking tests on class E2 circuit-breakers	C1012265
IEC 62271-100	7.112		
IEC 62271-200	7.101	Capacitive current tests	C1012473
IEC 62271-100	7.111		

All documents issued by CESI are available in CESI archive for 10 years.

### III. Conformity evaluation

The evaluation of compliance with the declared standards is duly reported in the following document issued by CESI:

CESI Evaluation Report C2002321.

The Manufacturer guarantees that the tested objects are manufactured according to the submitted drawings.

CESI checked that these drawings adequately represent in shape and dimensions the manufacturing details, materials and the parts of the certified product.

According to the above-mentioned evaluation, CESI issues the Certificate of Type Conformity of the product owned by Enel Global Infrastructure and Network S.r.l. Via Ombrone, 2 – 00198 Roma (RM) – Italy and manufactured by COL GIOVANNI PAOLO S.p.A., via Chiribiri, 1, Trofarello, 10028 (TO), Factory: Strada Provinciale 14, n ° 93 - 95, Piano Tavola, 95032 Belpasso (CT) – Italy.

## Certificate of Type Conformity

in compliance with Standard

IEC 62271 - 200 Ed. 3.0 (2021-05)

Product	Three-phase AC, medium voltage, air-insulated, metal-enclosed switchgear and controlgear, for indoor application, for primary substations in earthed and unearthened neutral system.
Designation	SA (GSCM700)
Manufacturer	Col Giovanni Paolo S.p.A., via Chiribiri, 1, Trofarello 10028 (TO), – Italy Factory: Strada Provinciale 14, n° 93 - 95, Piano Tavola, 95032 Belpasso (CT) - Italy
Applicant	Enel Global Infrastructure and Network S.r.l. – Via Ombrone, 2 – 00198 Roma (Italy)
Main ratings	Rated voltage 24 kV; Rated current 630 A; Rated frequency 50/60 Hz
Main performance	IAC 16 kA x 1 s AFLR; Ageing level 2; Seismic severity level 2; Seismic acceptance class 1.

The certified product has been evaluated as compliant with the following standards:

IEC 62271-200: 2021-05 “High voltage switchgear and controlgear – Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV”.

This document attests that the certified product meets all the requirements relevant to the ratings assigned by the applicant and listed in the Evaluation Report indicated in the following, verified by testing according to the above specified normative reference documents.  
This Certificate has been issued according to a Product Certification Scheme Type 1 (see requirements of ISO/IEC17067:2013 item 5.3.7).

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## I. Detailed ratings assigned by the Manufacturer

<b>Metal-enclosed switchgear and controlgear type SA (GSCM700)</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM700
Number of phases	3
Voltage (U <sub>r</sub> )	24 kV
Lightning impulse withstand voltage (U <sub>p</sub> ) – common value	125 kV
Power frequency withstand voltage (U <sub>d</sub> ) – common value	50 kV
Frequency (f <sub>r</sub> )	50 / 60 Hz
Normal current (I <sub>r</sub> ) for main bus bar	2000 A
Normal current (I <sub>r</sub> ) for feeder bus bar	630 A
Short-time withstand current for main (I <sub>k</sub> ) and earthing circuits (I <sub>ke</sub> )	16 kA
Peak withstand current for main (I <sub>p</sub> ) and earthing circuits (I <sub>pe</sub> )	41,6 kA
Duration of short-circuit (t <sub>k</sub> )	1 s
Rated supply voltage of auxiliary and control circuits (U <sub>a</sub> )	110 V <sub>dc</sub> , 125 V <sub>dc</sub>
Rated supply frequency of auxiliary and control circuits (f <sub>a</sub> )	DC
Loss of service continuity category (LSC)	LSC 2A
Degree of protection IP/IK	IP3X / IK07
Degree of protection low voltage compartment	IP3XD
Partition class	PM
Ageing level	2
Seismic severity level	2
Seismic acceptance class	1
<b>IAC Internal Arc Classification:</b>	
Type of accessibility / classified sides	A/FLR
Arc fault current (IA)	16 kA
Arc fault duration (tA)	1 s
Number and section of the main bus bar for each phase	1 x (100 x 15) mm
Number and section of the derivation bus bar for each phase	1 x (60 x 8) mm
Number and section of the earth bus bar	1 x (25 x 3) mm
<b>Three-pole MV vacuum circuit-breaker in withdrawable version</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM505/7
Rated Voltage	24 kV
Rated Lightning impulse withstand voltage	125 kV
Rated Power frequency withstand voltage	50 kV
Rated Frequency	50 / 60 Hz
Rated Service current	630 A
Rated Short-time withstand current	16 kA
Rated Peak withstand current	41,6 kA
Short-circuit time	1 s
Rated Short-circuit breaking current	16 kA
Rated first-pole-to-clear factor	1,3 – 1,5
Rated Short-circuit making current	41,6 kA
Rated Operating sequence	O – 0,3 s – CO – 15 s – CO
Rated line-charging breaking current	10 A
Rated cable-charging breaking current	31,5 A
Rated single capacitor bank breaking current	530 A
Back-to-back capacitor bank breaking current	400 A

Capacitor bank in rush breaking current	20 kA @ 4250 kHz
Classification	E2, M2, C2, S1
Rated supply voltage of auxiliary and control circuits	110 V <sub>dc</sub> , 125 V <sub>dc</sub>
Rated supply frequency of auxiliary and control circuits	DC
<b>Vacuum Interrupters:</b>	
Manufacturer	EATON
Type	WL41243
Opening gap dimension	12 mm
<b>Three-pole medium-voltage air insulated earthing switch</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Type	107 R1 10 024
Rated Voltage	24 kV
Rated Lightning impulse withstand voltage	125 kV
Rated Power frequency withstand voltage	50 kV
Rated Frequency	50/60 Hz
Rated Short-time withstand current	16 kA
Rated Short-circuit time	1 s
Rated peak withstand current	41,6 kA
Mechanical class	M0
Electrical class	E1
Rated Short-circuit making current	41,6 kA

## II. Tests performed

The product has been tested according to the relevant standards.  
The complete list of reports follows.

Standard	Item	Test	Test Report
IEC 62271 - 200	7.2.7.3	Lightning impulse voltage tests	C1001287-1
IEC 62271 - 200	7.2.7.2	Power-frequency voltage tests	C1001287-1
IEC 62271 - 200	7.5	Temperature rise test	C0015672
IEC 62271 - 200	7.4.4	Resistance measurement of contacts and connections in the main circuit as a condition check	C0015672
IEC 62271 - 200	7.2.11	Dielectric tests on auxiliary and control circuits	C0019051
IEC 62271 - 200	7.7.1	Verification of the IP coding	C1021339
IEC 62271 - 200	7.7.2	Verification of the IK coding	C1021339
IEC 62271 - 200	7.102.1	Switching devices and removable parts Mechanical endurance test on earthing switch	C1009417
IEC 62271 - 102	7.102.3		
IEC 62271 - 200	8.101 and Annex B	Partial discharge measurement	C2000177
IEC 60270	-		
IEC 62271-200	7.102	Mechanical and electromechanical interlocks and locking devices	C0019294
IEC 62271-200	7.9	Electromagnetic compatibility tests (EMC)	C1013164



Standard	Item	Test	Test Report
IEC 62271-200	7.6	Short time withstand current and peak withstand current tests	C1012265 C1016787 - 1
IEC 62271-200	7.101	Test to prove the short circuit making performance of earthing switches	C1016726
IEC 62271-102	7.101		
IEC 62271-200	7.105 Annex A	Internal arc test	C0013522
IEC 62271-200	4	Ageing test – level 2	C1021338
IEC 62271-304	9.2		
IEC 60068–2-57	8.1 8.2 8.3 8.5	Seismic qualification test	C2002582 C1016647 C0015635-1
IEC 60068–3-3	Part 3		
IEC 62271 - 210	-		
IEEE Std 693	Annex E		
IEC 62271-200	7.101	Verification of making and breaking capacities	C1012265
IEC 62271-100	7.102 to 7.108		
IEC 62271-200	7.101	Making and breaking tests on class E2 circuit-breakers	C1012265
IEC 62271-100	7.112		
IEC 62271-200	7.101	Capacitive current tests	C1012473
IEC 62271-100	7.111		

All documents issued by CESI are available in CESI archive for 10 years.

### III. Conformity evaluation

The evaluation of compliance with the declared standards is duly reported in the following document issued by CESI:

CESI Evaluation Report C2004481.

The Manufacturer guarantees that the tested objects are manufactured according to the submitted drawings.

CESI checked that these drawings adequately represent in shape and dimensions the manufacturing details, materials and the parts of the certified product.

According to the above-mentioned evaluation, CESI issues the Certificate of Type Conformity of the product owned by Enel Global Infrastructure and Network S.r.l. Via Ombrone, 2 – 00198 Roma (RM) – Italy and manufactured by COL GIOVANNI PAOLO S.p.A., via Chiribiri, 1, Trofarello, 10028 (TO), Factory: Strada Provinciale 14, n ° 93 - 95, Piano Tavola, 95032 Belpasso (CT) – Italy.

## Certificate of Type Conformity

in compliance with Standard

IEC 62271 - 200 Ed. 3.0 (2021-05)

Product	Three-phase AC, medium voltage, air-insulated, metal-enclosed switchgear and controlgear, for indoor application, for primary substations in earthed and unearthed neutral system.
Designation	TFN (GSCM730)
Manufacturer	Col Giovanni Paolo S.p.A., via Chiribiri, 1, Trofarello 10028 (TO), – Italy Factory: Strada Provinciale 14, n° 93 - 95, Piano Tavola, 95032 Belpasso (CT) - Italy
Applicant	Enel Global Infrastructure and Network S.r.l. – Via Ombrone, 2 – 00198 Roma (Italy)
Main ratings	Rated voltage 24 kV; Rated current 630 A; Rated frequency 50/60 Hz
Main performance	IAC 16 kA x 1 s AFLR; Ageing level 2; Seismic severity level 2; Seismic acceptance class 1.

The certified product has been evaluated as compliant with the following standards:

IEC 62271-200: 2021-05 “High voltage switchgear and controlgear – Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV”.

This document attests that the certified product meets all the requirements relevant to the ratings assigned by the applicant and listed in the Evaluation Report indicated in the following, verified by testing according to the above specified normative reference documents.  
This Certificate has been issued according to a Product Certification Scheme Type 1 (see requirements of ISO/IEC17067:2013 item 5.3.7).

This certificate is composed of 4 pages.

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## I. Detailed ratings assigned by the Manufacturer

<b>Metal-enclosed switchgear and controlgear type TFN (GSCM730)</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM730
Number of phases	3
Voltage (U <sub>r</sub> )	24 kV
Lightning impulse withstand voltage (U <sub>p</sub> ) – common value	125 kV
Power frequency withstand voltage (U <sub>d</sub> ) – common value	50 kV
Frequency (f <sub>r</sub> )	50 / 60 Hz
Normal current (I <sub>r</sub> ) for main bus bar	2000 A
Normal current (I <sub>r</sub> ) for feeder bus bar	630 A
Short-time withstand current for main (I <sub>k</sub> ) and earthing circuits (I <sub>ke</sub> )	16 kA
Peak withstand current for main (I <sub>p</sub> ) and earthing circuits (I <sub>pe</sub> )	41,6 kA
Duration of short-circuit (t <sub>k</sub> )	1 s
Rated supply voltage of auxiliary and control circuits (U <sub>a</sub> )	110 V <sub>dc</sub> , 125 V <sub>dc</sub>
Rated supply frequency of auxiliary and control circuits (f <sub>a</sub> )	DC
Loss of service continuity category (LSC)	LSC 2A
Degree of protection IP/IK	IP3X / IK07
Degree of protection low voltage compartment	IP3XD
Partition class	PM
Ageing level	2
Seismic severity level	2
Seismic acceptance class	1
<b>IAC Internal Arc Classification:</b>	
Type of accessibility / classified sides	A/FLR
Arc fault current (IA)	16 kA
Arc fault duration (tA)	1 s
Number and section of the main bus bar for each phase	1 x (100 x 15) mm
Number and section of the derivation bus bar for each phase	1 x (60 x 8) mm
Number and section of the earth bus bar	1 x (25 x 3) mm
<b>Three-pole MV vacuum circuit-breaker in withdrawable version</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM505/7
Rated Voltage	24 kV
Rated Lightning impulse withstand voltage	125 kV
Rated Power frequency withstand voltage	50 kV
Rated Frequency	50 / 60 Hz
Rated Service current	630 A
Rated Short-time withstand current	16 kA
Rated Peak withstand current	41,6 kA
Short-circuit time	1 s
Rated Short-circuit breaking current	16 kA
Rated first-pole-to-clear factor	1,3 – 1,5
Rated Short-circuit making current	41,6 kA
Rated Operating sequence	O – 0,3 s – CO – 15 s – CO
Rated line-charging breaking current	10 A
Rated cable-charging breaking current	31,5 A
Rated single capacitor bank breaking current	530 A
Back-to-back capacitor bank breaking current	400 A

Capacitor bank in rush breaking current	20 kA @ 4250 kHz
Classification	E2, M2, C2, S1
Rated supply voltage of auxiliary and control circuits	110 V <sub>dc</sub> , 125 V <sub>dc</sub>
Rated supply frequency of auxiliary and control circuits	DC
<b>Vacuum Interrupters:</b>	
Manufacturer	EATON
Type	WL41243
Opening gap dimension	12 mm
<b>Three-pole medium-voltage air insulated earthing switch</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Type	107 R1 10 024
Rated Voltage	24 kV
Rated Lightning impulse withstand voltage	125 kV
Rated Power frequency withstand voltage	50 kV
Rated Frequency	50/60 Hz
Rated Short-time withstand current	16 kA
Rated Short-circuit time	1 s
Rated peak withstand current	41,6 kA
Mechanical class	M0
Electrical class	E1
Rated Short-circuit making current	41,6 kA

## II. Tests performed

The product has been tested according to the relevant standards.  
The complete list of reports follows.

Standard	Item	Test	Test Report
IEC 62271 - 200	7.2.7.3	Lightning impulse voltage tests	C1001287-1
IEC 62271 - 200	7.2.7.2	Power-frequency voltage tests	C1001287-1
IEC 62271 - 200	7.5	Temperature rise test	C0015672
IEC 62271 - 200	7.4.4	Resistance measurement of contacts and connections in the main circuit as a condition check	C0015672
IEC 62271 - 200	7.2.11	Dielectric tests on auxiliary and control circuits	C0019051
IEC 62271 - 200	7.7.1	Verification of the IP coding	C1021339
IEC 62271 - 200	7.7.2	Verification of the IK coding	C1021339
IEC 62271 - 200	7.102.1	Switching devices and removable parts Mechanical endurance test on earthing switch	C1009417
IEC 62271 - 102	7.102.3		
IEC 62271 - 200	8.101 and Annex B	Partial discharge measurement	C2000177
IEC 60270	-		
IEC 62271-200	7.102	Mechanical and electromechanical interlocks and locking devices	C0019294
IEC 62271-200	7.9	Electromagnetic compatibility tests (EMC)	C1013164

Standard	Item	Test	Test Report
IEC 62271-200	7.6	Short time withstand current and peak withstand current tests	C1012265 C1016787 - 1
IEC 62271-200	7.101	Test to prove the short circuit making performance of earthing switches	C1016726
IEC 62271-102	7.101		
IEC 62271-200	7.105 Annex A	Internal arc test	C0013522
IEC 62271-200	4	Ageing test – level 2	C1021338
IEC 62271-304	9.2		
IEC 60068–2-57	8.1 8.2 8.3 8.5	Seismic qualification test	C2002582 C1016647 C0015635-1
IEC 60068–3-3	Part 3		
IEC 62271 - 210	-		
IEEE Std 693	Annex E		
IEC 62271-200	7.101	Verification of making and breaking capacities	C1012265
IEC 62271-100	7.102 to 7.108		
IEC 62271-200	7.101	Making and breaking tests on class E2 circuit-breakers	C1012265
IEC 62271-100	7.112		
IEC 62271-200	7.101	Capacitive current tests	C1012473
IEC 62271-100	7.111		

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### III. Conformity evaluation

The evaluation of compliance with the declared standards is duly reported in the following document issued by CESI:

CESI Evaluation Report C2004483.

The Manufacturer guarantees that the tested objects are manufactured according to the submitted drawings.

CESI checked that these drawings adequately represent in shape and dimensions the manufacturing details, materials and the parts of the certified product.

According to the above-mentioned evaluation, CESI issues the Certificate of Type Conformity of the product owned by Enel Global Infrastructure and Network S.r.l. Via Ombrone, 2 – 00198 Roma (RM) – Italy and manufactured by COL GIOVANNI PAOLO S.p.A., via Chiribiri, 1, Trofarello, 10028 (TO), Factory: Strada Provinciale 14, n ° 93 - 95, Piano Tavola, 95032 Belpasso (CT) – Italy.

## Certificate of Type Conformity

in compliance with Standard

IEC 62271 - 200 Ed. 3.0 (2021-05)

Product	Three-phase AC, medium voltage, air-insulated, metal-enclosed switchgear and controlgear, for indoor application, for primary substations in earthed and unearthed neutral system.
Designation	VTT (GSCM731)
Manufacturer	Col Giovanni Paolo S.p.A., via Chiribiri, 1, Trofarello 10028 (TO), – Italy Factory: Strada Provinciale 14, n° 93 - 95, Piano Tavola, 95032 Belpasso (CT) - Italy
Applicant	Enel Global Infrastructure and Network S.r.l. – Via Ombrone, 2 – 00198 Roma (Italy)
Main ratings	Rated voltage 24 kV; Rated current 2000 A; Rated frequency 50/60 Hz
Main performance	IAC 16 kA x 1 s AFLR; Ageing level 2; Seismic severity level 2; Seismic acceptance class 1.

The certified product has been evaluated as compliant with the following standards:

IEC 62271-200: 2021-05 “High voltage switchgear and controlgear – Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV”.

This document attests that the certified product meets all the requirements relevant to the ratings assigned by the applicant and listed in the Evaluation Report indicated in the following, verified by testing according to the above specified normative reference documents.  
This Certificate has been issued according to a Product Certification Scheme Type 1 (see requirements of ISO/IEC17067:2013 item 5.3.7).

This certificate is composed of 3 pages.

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## I. Detailed ratings assigned by the Manufacturer

<b>Metal-enclosed switchgear and controlgear type VTT (GSCM731)</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM731
Number of phases	3
Voltage (U <sub>r</sub> )	24 kV
Lightning impulse withstand voltage (U <sub>p</sub> ) – common value	125 kV
Power frequency withstand voltage (U <sub>d</sub> ) – common value	50 kV
Frequency (f <sub>r</sub> )	50 / 60 Hz
Normal current (I <sub>r</sub> ) for main bus bar	2000 A
Short-time withstand current for main (I <sub>k</sub> ) and earthing circuits (I <sub>ke</sub> )	16 kA
Peak withstand current for main (I <sub>p</sub> ) and earthing circuits (I <sub>pe</sub> )	41,6 kA
Duration of short-circuit (t <sub>k</sub> )	1 s
Rated supply voltage of auxiliary and control circuits (U <sub>a</sub> )	110 V <sub>dc</sub> , 125 V <sub>dc</sub>
Rated supply frequency of auxiliary and control circuits (f <sub>a</sub> )	DC
Loss of service continuity category (LSC)	LSC 2A
Degree of protection IP/IK	IP3X / IK07
Degree of protection low voltage compartment	IP3XD
Partition class	PM
Ageing level	2
Seismic severity level	2
Seismic acceptance class	1
<b>IAC Internal Arc Classification:</b>	
Type of accessibility / classified sides	A/FLR
Arc fault current (I <sub>A</sub> )	16 kA
Arc fault duration (t <sub>A</sub> )	1 s
Number and section of the main bus bar for each phase	1 x (100 x 15) mm
Number and section of the earth bus bar	1 x (25 x 3) mm
<b>Voltage Transformer Trolley</b>	
VT transformer type to be installed	GSCT008/1, GSCT008/2
Number of VT	3
Voltage (U <sub>r</sub> )	24 kV
Lightning impulse withstand voltage (U <sub>p</sub> )	125 kV
Power frequency withstand voltage (U <sub>d</sub> )	50 kV
Frequency (f <sub>r</sub> )	50 / 60 Hz
IP degree of frontal case	2X

## II. Tests performed

The product has been tested according to the relevant standards.  
The complete list of reports follows.

Standard	Item	Test	Test Report
IEC 62271 - 200	7.2.7.3	Lightning impulse voltage tests	C1001287-1
IEC 62271 - 200	7.2.7.2	Power-frequency voltage tests	C1001287-1
IEC 62271 - 200	7.2.11	Dielectric tests on auxiliary and control circuits	C0019051

Standard	Item	Test	Test Report
IEC 62271 - 200	7.7.1	Verification of the IP coding	C1021339
IEC 62271 - 200	7.7.2	Verification of the IK coding	C1021339
IEC 60270	-		
IEC 62271-200	7.102	Mechanical and electromechanical interlocks and locking devices	C0019294
IEC 62271-200	7.105 Annex A	Internal arc test	C0013522
IEC 62271-200	4	Ageing test – level 2	C1021338
IEC 62271-304	9.2		
IEC 60068–2-57	8.1	Seismic qualification test	C2002582 C1016647 C0015635-1
	8.2		
8.3			
8.5			
IEC 60068–3-3	Part 3		
IEC 62271 - 210	-		
IEEE Std 693	Annex E		
IEC 62271-100	7.111		

All documents issued by CESI are available in CESI archive for 10 years.

### III. Conformity evaluation

The evaluation of compliance with the declared standards is duly reported in the following document issued by CESI:

CESI Evaluation Report C2004485.

The Manufacturer guarantees that the tested objects are manufactured according to the submitted drawings.

CESI checked that these drawings adequately represent in shape and dimensions the manufacturing details, materials and the parts of the certified product.

According to the above-mentioned evaluation, CESI issues the Certificate of Type Conformity of the product owned by Enel Global Infrastructure and Network S.r.l. Via Ombrone, 2 – 00198 Roma (RM) – Italy and manufactured by COL GIOVANNI PAOLO S.p.A., via Chiribiri, 1, Trofarello, 10028 (TO), Factory: Strada Provinciale 14, n ° 93 - 95, Piano Tavola, 95032 Belpasso (CT) – Italy.



## Certificate of Type Conformity

in compliance with Standard

IEC 62271 - 200 Ed. 3.0 (2021-05)

Product	Three-phase AC, medium voltage, air-insulated, metal-enclosed switchgear and controlgear, for indoor application, for primary substations in earthed and unearthed neutral system.
Designation	RC (GSCM732)
Manufacturer	Col Giovanni Paolo S.p.A., via Chiribiri, 1, Trofarello, 10028 (TO), Factory: Strada Provinciale 14, n ° 93 - 95, Piano Tavola, 95032 Belpasso (CT) – Italy.
Applicant	Enel Global Infrastructure and Network S.r.l. – Via Ombrone, 2 – 00198 Roma (Italy)
Main ratings	Rated voltage 24 kV; Rated current 2000 A; Rated frequency 50/60 Hz
Main performance	IAC 16 kA x 1 s AFLR; Ageing level 2. Seismic severity level 2; Seismic acceptance class 1.

The certified product has been evaluated as compliant with the following standards:

IEC 62271-200: 2021-05 “High voltage switchgear and controlgear – Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV”.

This document attests that the certified product meets all the requirements relevant to the ratings assigned by the applicant and listed in the Evaluation Report indicated in the following, verified by testing according to the above specified normative reference documents.  
This Certificate has been issued according to a Product Certification Scheme Type 1 (see requirements of ISO/IEC17067:2013 item 5.3.7).

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## I. Detailed ratings assigned by the Manufacturer

<b>Metal-enclosed switchgear and controlgear type RC (GSCM732)</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM732
Number of phases	3
Voltage (U <sub>r</sub> )	24 kV
Lightning impulse withstand voltage (U <sub>p</sub> ) – common value	125 kV
Power frequency withstand voltage (U <sub>d</sub> ) – common value	50 kV
Frequency (f <sub>r</sub> )	50 / 60 Hz
Normal current (I <sub>r</sub> ) for main bus bar	1600 A - 2000 A
Short-time withstand current for main (I <sub>k</sub> ) and earthing circuits (I <sub>ke</sub> )	16 kA
Peak withstand current for main (I <sub>p</sub> ) and earthing circuits (I <sub>pe</sub> )	41,6 kA
Duration of short-circuit (t <sub>k</sub> )	1 s
Loss of service continuity category (LSC)	LSC 2A
Degree of protection IP/IK	IP3X / IK07
Partition class	PM
Ageing level	2
Seismic severity level	2
Seismic acceptance class	1
<b>IAC Internal Arc Classification:</b>	
Type of accessibility / classified sides	A/FLR
Arc fault current (I <sub>A</sub> )	16 kA
Arc fault duration (t <sub>A</sub> )	1 s
Number and section of the main bus bar for each phase	1 x (100 x 15) mm
Number and section of the earth bus bar	1 x (25 x 3) mm

## II. Tests performed

The product has been tested according to the relevant standards.  
The complete list of reports follows.

Standard	Item	Test	Test Report
IEC 62271 - 200	7.2.7.3	Lightning impulse voltage tests	C1001287-1
IEC 62271 - 200	7.2.7.2	Power-frequency voltage tests	C1001287-1
IEC 62271 - 200	7.5	Temperature rise test	C0016030-2 C0015951-1
IEC 62271 - 200	7.4.4	Resistance measurement of contacts and connections in the main circuit as a condition check	C0016030-2 C0015951-1
IEC 62271-200	7.6	Short time withstand current and peak withstand current tests	C1016818
IEC 62271-200	7.105 Annex A	Internal arc test	C0013522
IEC 62271-200	4	Ageing test – level 2	C1021338
IEC 62271-304	9.2		

Standard	Item	Test	Test Report
IEC 60068-2-57	8.1 8.2 8.3 8.5	Seismic qualification test	C2002582 C1016647 C0015635-1
IEC 60068-3-3	Part 3		
IEC 62271 - 210	-		
IEEE Std 693	Annex E		

All documents issued by CESI are available in CESI archive for 10 years.

### III. Conformity evaluation

The evaluation of compliance with the declared standards is duly reported in the following document issued by CESI:

CESI Evaluation Report C2002325.

The Manufacturer guarantees that the tested objects are manufactured according to the submitted drawings.

CESI checked that these drawings adequately represent in shape and dimensions the manufacturing details, materials and the parts of the certified product.

According to the above-mentioned evaluation, CESI issues the Certificate of Type Conformity of the product owned by Enel Global Infrastructure and Network S.r.l. Via Ombrone, 2 – 00198 Roma (RM) – Italy and manufactured by COL GIOVANNI PAOLO S.p.A. via Chiribiri, 1, Trofarello, 10028 (TO), Factory: Strada Provinciale 14, n ° 93 - 95, Piano Tavola, 95032 Belpasso (CT) – Italy.

## Certificate of Type Conformity

in compliance with Standard

IEC 62271 - 200 Ed. 3.0 (2021-05)

Product	Three-phase AC, medium voltage, air-insulated, metal-enclosed switchgear and controlgear, for indoor application, for primary substations in earthed and unearthed neutral system.
Designation	GS (GSCM738)
Manufacturer	Col Giovanni Paolo S.p.A., via Chiribiri, 1, Trofarello 10028 (TO), – Italy Factory: Strada Provinciale 14, n° 93 - 95, Piano Tavola, 95032 Belpasso (CT) - Italy
Applicant	Enel Global Infrastructure and Network S.r.l. – Via Ombrone, 2 – 00198 Roma (Italy)
Main ratings	Rated voltage 24 kV; Rated current 2000 A; Rated frequency 50/60 Hz
Main performance	IAC 16 kA x 1 s AFLR; Ageing level 2; Seismic severity level 2; Seismic acceptance class 1.

The certified product has been evaluated as compliant with the following standards:

IEC 62271-200: 2021-05 “High voltage switchgear and controlgear – Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV”.

This document attests that the certified product meets all the requirements relevant to the ratings assigned by the applicant and listed in the Evaluation Report indicated in the following, verified by testing according to the above specified normative reference documents.  
This Certificate has been issued according to a Product Certification Scheme Type 1 (see requirements of ISO/IEC17067:2013 item 5.3.7).

This certificate is composed of 3 pages.

30 March 2022

30 March 2022

29 March 2027

First Issue date

Current Issue Date

Expiry Date

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Approved by



PRD N° 018B

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC  
Signatory of EA, IAF and ILAC Mutual Recognition agreements

## I. Detailed ratings assigned by the Manufacturer

<b>Metal-enclosed switchgear and controlgear type GS (GSCM738)</b>	
Manufacturer	Col Giovanni Paolo S.p.A.
Designation	GSCM738
Number of phases	3
Voltage (U <sub>r</sub> )	24 kV
Lightning impulse withstand voltage (U <sub>p</sub> ) – common value	125 kV
Power frequency withstand voltage (U <sub>d</sub> ) – common value	50 kV
Frequency (f <sub>r</sub> )	50 / 60 Hz
Normal current (I <sub>r</sub> ) for main bus bar	1600 A, 2000 A
Short-time withstand current for main (I <sub>k</sub> ) and earthing circuits (I <sub>ke</sub> )	16 kA
Peak withstand current for main (I <sub>p</sub> ) and earthing circuits (I <sub>pe</sub> )	41,6 kA
Duration of short-circuit (t <sub>k</sub> )	1 s
Loss of service continuity category (LSC)	LSC 2A
Degree of protection IP/IK	IP3X / IK07
Partition class	PM
Ageing level	2
Seismic severity level	2
Seismic acceptance class	1
<b>IAC Internal Arc Classification:</b>	
Type of accessibility / classified sides	A/FLR
Arc fault current (I <sub>A</sub> )	16 kA
Arc fault duration (t <sub>A</sub> )	1 s
Number and section of the main bus bar for each phase	1 x (100 x 15) mm
Number and section of the earth bus bar	1 x (25 x 3) mm

## II. Tests performed

The product has been tested according to the relevant standards.  
The complete list of reports follows.

Standard	Item	Test	Test Report
IEC 62271 - 200	7.2.7.3	Lightning impulse voltage tests	C0016260
IEC 62271 - 200	7.2.7.2	Power-frequency voltage tests	C0016260
IEC 62271 - 200	7.5	Temperature rise test	C1022673 C1016087 – 3
IEC 62271 - 200	7.4.4	Resistance measurement of contacts and connections in the main circuit as a condition check	C1022673 C1016087 – 3
IEC 62271 - 200	7.7.1	Verification of the IP coding	C1021339
IEC 62271 - 200	7.7.2	Verification of the IK coding	C1021339
IEC 62271-200	7.6	Short time withstand current and peak withstand current tests	C1016819
IEC 62271-200	7.105 Annex A	Internal arc test	C0013522 C1011673

Standard	Item	Test	Test Report
IEC 62271-200	4	Ageing test – level 2	C1021338
IEC 62271-304	9.2		
IEC 60068–2-57	8.1	Seismic qualification test	C2002582 C1016647 C0015635-1
	8.2		
	8.3		
	8.5		
IEC 60068–3-3	Part 3		
IEC 62271 - 210	-		
IEEE Std 693	Annex E		

All documents issued by CESI are available in CESI archive for 10 years.

### III. Conformity evaluation

The evaluation of compliance with the declared standards is duly reported in the following document issued by CESI:

CESI Evaluation Report C2002323.

The Manufacturer guarantees that the tested objects are manufactured according to the submitted drawings.

CESI checked that these drawings adequately represent in shape and dimensions the manufacturing details, materials and the parts of the certified product.

According to the above-mentioned evaluation, CESI issues the Certificate of Type Conformity of the product owned by Enel Global Infrastructure and Network S.r.l. Via Ombrone, 2 – 00198 Roma (RM) – Italy and manufactured by COL GIOVANNI PAOLO S.p.A., via Chiribiri, 1, Trofarello 10028 (TO), Factory: Strada Provinciale 14, n ° 93 - 95, Piano Tavola, 95032 Belpasso (CT) – Italy.