



ORMAZABAL

Focus on Medium Voltage



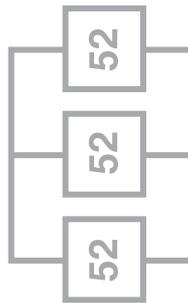
**MV Switchgear
Primary Distribution**



CPG.1 Single and double busbar gas-insulated cubicles
Up to 36 kV
CPG System

The quality of products designed, manufactured and installed by **Ormazabal** is underpinned by the implementation and certification of a quality management system, based on the international standard ISO 9001:2000.

Our commitment to the environment is reaffirmed with the implementation and certification of an environmental management system as laid down in international standard ISO 14001.



In view of the constant evolution in standards and design, the characteristics of the elements contained in this catalogue are subject to change without prior notification.

These characteristics, as well as the availability of components, are subject to confirmation by Ormazabal's Technical-Commercial Department.

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INTRODUCTION

Ormazabal's CPG System includes the **CPG.1** range of Primary Distribution GIS type, modular cubicles, with Single and Double Busbar, and SF₆-insulated.

Designed mainly to ensure people's safety and reliability of service, the **CPG.1** range contributes to improving electrical distribution in Medium Voltage networks up to 36 kV.

A complete range of cubicles is available for configuring the most common electrical diagrams, both single and double busbar, using the following functional units:

FUNCTIONAL UNITS

Single busbar

Circuit-breaker	CPG.1-V1
Disconnecter	CPG.1-S1
Fuse protection	CPG.1-F1
Longitudinal busbar coupling	CPG.1-C

Double busbar

Circuit-breaker	CPG.1-V2
Disconnecter	CPG.1-S2
Fuse protection	CPG.1-F2
Longitudinal busbar coupling	CPG.1-CL
Transversal busbar coupling	CPG.1-CT

The installation of components which enable them to withstand internal arcs in all their Medium Voltage compartments, combined with protection against various environmental conditions, make **CPG.1** cubicles the appropriate solution for use in substations, whether for utility companies or private companies.

Highly automated manufacturing processes, the performance for routine tests across the various phases of the assembly procedure and the use of the most innovative manufacturing techniques assure the highest level of quality in **Ormazabal's** products.

APPLICATIONS

Developed for use in both public and private installations, its main applications include the following:

- Utilities
 - Primary distribution substations
- Large infrastructures
 - Airports
 - Railways
- Power stations



MAIN CHARACTERISTICS

- Certification of **internal arc withstand** (up to 31,5 KA / 1s) **Class IAC AFL** in accordance with ICE 62271-200.
- Sealed SF₆-insulated assembly: **Installation**, assembly on site, **extension and replacement without gas handling**.
- **Cable bushings** up to **2000 A** for elbow connectors.
- Complete single and double busbar range up to 36 kV.
- Independent compartment metal structure with separate switchgear compartments.
- Pressure gauges in each of the switchgear compartments.
- Accessible from the front.
- Driving mechanism areas (automated and manual).
- Modularity and future extensibility.



APPLICABLE STANDARDS

IEC 62271-001

Common specifications for high-voltage switchgear and controlgear standards.

IEC 62271-200

Alternating current metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 52 kV.

IEC 62271-100

High Voltage alternating current circuit-breakers.

IEC 62271-102

Alternating current disconnectors and earthing switches.

IEC 62271-105

High voltage alternating current switch-fuse combinations.



DESIGN CHARACTERISTICS

The **CPG.1** cubicle structure, made up of separate compartments, consists of:

- A Feeder disconnecter compartment.
- B Circuit-breaker compartment.
- C Busbar compartment.
- D Cable compartment.
- E Control compartment.
- F Operator interface.

The mechanical rigidity of the metal frame, which forms the structure of these cubicles, ensures the non-deformity of the assembly in the expected service conditions.

The safety of the installation is reinforced by both the frame and the rest of the cubicles's non-live metal parts being connected to the general earthing busbar.

The cubicles are interconnected by means of a busbar with solid and shielded insulation, installed in a compartment in the upper part of the cubicles, separated from the switchgear compartments.

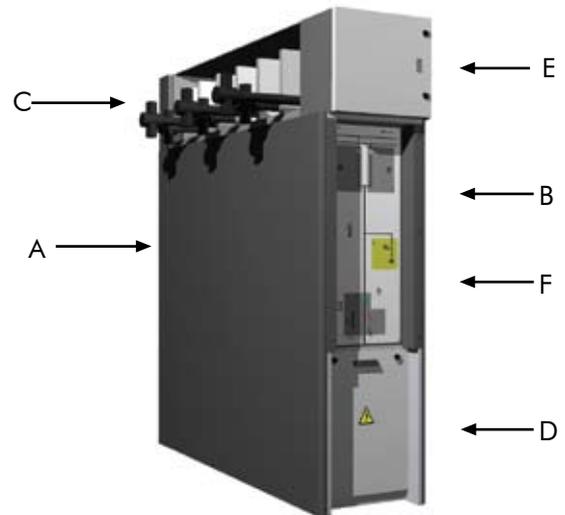


The **switchgear compartment** assembly, sealed for life and SF₆-insulate, house the switching and breaking components arranged as follows:

- One compartment for each of the feeder disconnectors (one or two, depending on whether it corresponds to a single or double busbar).
- One compartment for the Circuit-breaker and the Earthing Switch.

Depending on the cubicle's functionality, it may contain the following components:

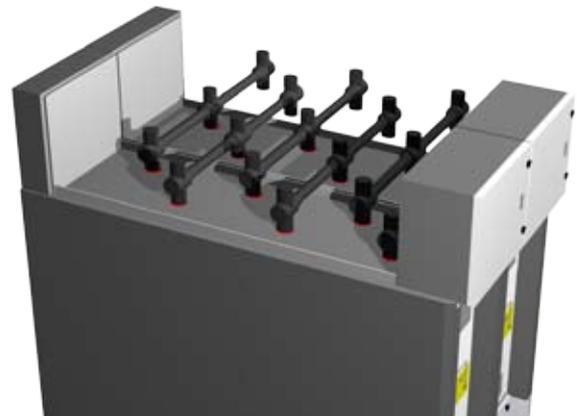
- Disconnectors.
- Earthing switch.
- Internal busbar and connections.
- Vacuum circuit-breaker.
- Fuse holders.



Designed and tested to withstand an internal arc of up to 31,5 kA / 1s, the switchgear compartments are made of stainless steel and sealed for life. When internal arcs occur, the gases generated can be cooled and channelled through a relief duct located at the back.

It's upper cable bushings are used to connect to the busbar, and the bottom ones to the Medium Voltage cables.

The temperature-compensated pressure gauges, installed in each of the cubicle switchgear compartments, make it easy to monitor the gas pressures in each compartment.



The function of the **busbar compartment**, located in the upper part of the cubicle, is to house the busbar (electrical connection between cubicles).

As an option, toroidal current transformers and / or plug-in voltage transformers can be installed in this compartment, without needing metering cubicles.

Each of the phases which make up the busbar has solid and shielded insulation, earthed by means of the compartment's specific earthing bar. Thanks to this single phase layout, the cubicle is extremely reliable in terms of continuity of service. Due to the installation of a phase segregation system using earthed metal plates, it can withstand an internal arc of 31,5 kA / 1s.

Primary Distribution MV Switchgear

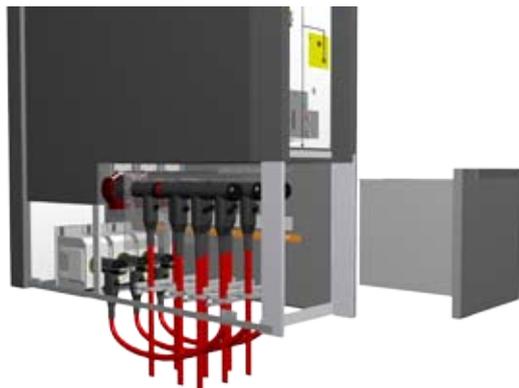
The cable bushings for elbow connectors are housed in the **cable compartment** at the front. Located at the bottom of the cubicle and accessed from the front, it has an access cover which is interlocked with the earthing system.

This compartment can be supplied ready to withstand an internal arc of 31,5 kA / 1 s, in line with the criteria of standard IEC 62271-200.

In summary, the size of this compartment is enough to house the following components:

- Up to 4 reinforced shielded connection terminals (screw in) per phase.
- Cable ties for the medium voltage cables.
- Earthing bars.
- Toroidal current transformers.
- Plug-in voltage transformers.
- Surge arresters.

All the elements making up the enclosure and the base are earthed by means of a conductor consisting of a copper strip designed to withstand the rated short-time current. This strip does not need to be removed before inserting or removing the corresponding terminal.



Cable compartment with 2000 A connectors: Euomold 2000TB.

The **control compartment**, placed at the top of the cubicle and separate from the medium voltage area, is ready for installation of the metering equipment and protection relays, and contains the terminal block with the control signals already identified.

Connections with the driving mechanism area are made via connectors, which makes the assembly more flexible, and allows the control box to be assembled and connected on site in a simple direct way.



Control compartment

The **operator interface**, located in the middle, includes the customised mimic diagram and the following switching and display components:

- Switching components:
 - Feeder disconnecter and earthing switch driving mechanism.
 - Circuit-breaker opening / closing push-buttons.
 - Slot for access of the spring loading lever.
- Display components:
 - Switchgear status.
 - Operations counter.
 - Circuit-breaker spring status.
 - Voltage presence detector.



Operator interface

In addition, for automated operation it has opening / closing push-buttons for the feeder disconnectors and for the earthing switch as applicable.



INTERNAL ARC

Both as whole and in their various MV compartments, CPG.1 cubicles are designed to withstand an internal arc of 31,5 kA / 1s, complying with the 5 criteria of Appendix A of standard IEC 62271-200 (class IAC-AFL).

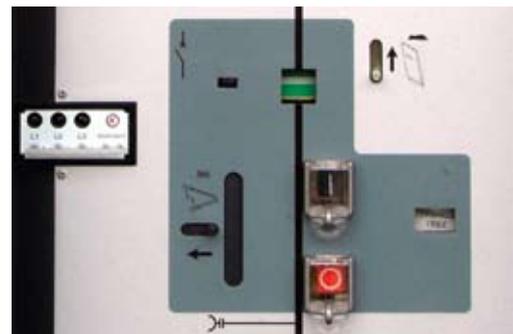
SAFETY

- **Protected** against harsh environmental conditions (dust, pollution, humidity, salinity, etc.), **protected** against indirect contacts and long service life provided by its gas insulation, with its **gas insulation**, with the breaking and connection components housed in separated stainless steel switchgear compartments, totally sealed for life.
- **Internal arc withstand**, accredited by means of tests conducted in accordance with the criteria of standard IEC 62271-200.
- **IP rating:** IP65 for the tank, and IP3X for the cubicle assembly.
- **Temperature-compensated monitoring** of the **gas pressure inside each** of the **cubicle** switchgear compartments.
- **Continuous presence / absence of voltage indicator**, with optional contacts for remote display and / or creating electromagnetic interlocks.
- **Whole power circuit fully insulated**, including the cable terminals, and entirely screened, earthed and installed inside a metal enclosure.
- **Ergonomic design, secure access** to the control and signalling areas, located outside the switchgear compartment.
- **Safe, simple** operation.
- **Interlocks** between the switching and breaking components in accordance with the criteria of standard IEC 62271-200.



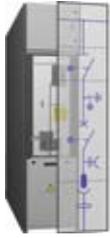
RELIABILITY

- **Testing, including routine tests** of all equipment in the factory.
- Sealed assembly: **Installation** and **assembly** on site, without gas handling.
- **Circuit-breaker** with **vacuum breaking** technology, compact and with excellent reliability, certified in accordance with standard IEC 62271-100, including extended electrical endurance (class E2) with rapid reclosing cycle, and hence **maintenance-free** during its whole service life.
- **Visual indication** of the switchgear status in the mimic diagrams.
- **No maintenance** on the live parts of the cubicles, which ensures greater continuity of service.
- **Ease and reliability of connecting** the control and signalling circuits via connectors.

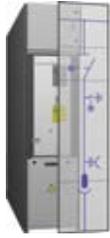


TYPES OF CUBICLE

SINGLE BUSBAR



CPG.1-V1
(Circuit-breaker Cubicle)



CPG.1-S1
(Disconnecter Cubicle)



CPG.1-F1
(Fused Protection Cubicle)



CPG.1-C
(Longitudinal Busbar Coupling Cubicle)

DOUBLE BUSBAR



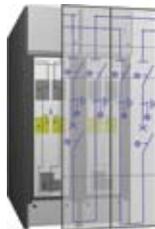
CPG.1-V2 (Circuit-breaker Cubicle)



CPG.1-S2 (Disconnecter Cubicle)



CPG.1-F2 (Fused Protection Cubicle)



CPG.1-CL (Longitudinal Busbar Coupling Cubicle)



CPG.1-CT (Transversal Busbar Coupling Cubicle)



TECHNICAL CHARACTERISTICS

	24 kV	36 kV
Rated current [A]		
General Busbar	Up to 2000	Up to 2000
Outgoing lines	630 / 1250 / 1600 / 2000*	630 / 1250 / 1600 / 2000*
Lightning impulse [kV]		
Between phases and phase-to-earth	125	170
Isolating distance	145	195
Power frequency 1 min [kV]		
Between phases and phase-to-earth	50	70
Isolating distances	60	80
Rated short-circuit breaking current [kV]	25 / 31,5	25 / 31,5
Short-circuit making capacity (peak) [kV]	63 / 80	63 / 80
Rated short-time current [kA – 1/3 s]	25 / 31,5	25 / 31,5
Internal arc withstand [kA – 1 s]	25 / 31,5	25 / 31,5
Combined switch-fuse breaking capacity [kA]	25 / 31,5	25 / 31,5
Frequency [Hz]	50 / 60	50 / 60
IP rating	IP3X	IP3X

(*) For fused protection cubicle = 200 A



CPG.1-V (CPG.1-V1 / CPG.1-V2)

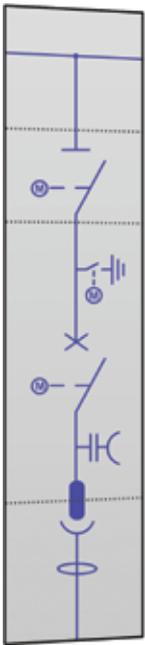
Circuit-breaker cubicle

It includes, in separate compartments, both a circuit-breaker with vacuum breaking technology and an earthing switch in series with it, and also feeder disconnectors.

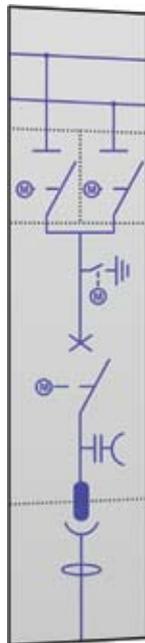
Applications:

- Main transformer protection.
- Feeder protection.
- Capacitor bank protection.
- Auxiliary service transformer protection.
- Longitudinal coupling with MV cables.

CPG.1-V1



CPG.1-V2



ELECTRICAL CHARACTERISTICS

24 / 36

Rated voltage [kV]	
Frequency [Hz]	50 / 60
Rated busbar current [A]	
General busbar	1250 / 1600 / 2000
Outgoing lines	630 / 1250 / 1600 / 2000
Rated short-circuit breaking current [kA]	25 / 31,5

PHYSICAL CHARACTERISTICS

	Height [mm]	Width [mm]	Depth [mm]	Weight [kg]
Single busbar CPG.1-V1	2500	600	2004	1100
Double busbar CPG.1-V2	2500	600	2004	1400

CONFIGURATION

Busbar	
Current transformers	Optional
Voltage transformers	Optional
Feeder disconnector	
Motor driving mechanism	Optional
Earthing switch	
Motor driving mechanism	Optional
Lock interlocks*	
Optional	
Vacuum circuit-breaker	
Motor driving mechanism	YES
Tripping coil	YES
2nd tripping coil	Optional
Closing coil	YES
Undervoltage coil	Optional
Open / close push-button blocking	YES
Voltage presence detector	
Auxiliary contact	Optional
Cable compartment	
Maximum no. of cables per phase	4 (1 of which can be replaced by a surge arrester)
Toroidal current transformers	Optional
Plug-in voltage transformers	Optional

(*) See "Interlocks" section.



CPG.1-S (CPG.1-S1 / CPG.1-S2)

Disconnecter cubicle

This incorporates feeder disconnectors and earthing switches, located in separate compartments.

Applications:

- Longitudinal busbar coupling with MV cables.
- Busbar voltage metering with disconnection of the voltage transformers.

CPG.1-S1



CPG.1-S2



ELECTRICAL CHARACTERISTICS

24 / 36

Rated voltage [kV]	
Frequency [Hz]	50 / 60
Rated busbar current [A]	
General busbar	1250 / 1600 / 2000
Outgoing lines	1250 / 1600 / 2000
Rated short-circuit breaking current [kA]	25 / 31,5

PHYSICAL CHARACTERISTICS

	Height [mm]	Width [mm]	Depth [mm]	Weight [kg]
Single busbar CPG.1-S1	2500	600	2004	1100
Double busbar CPG.1-S2	2500	600	2004	1300

CONFIGURATION

Busbar	
Current transformers	Optional
Voltage transformers	Optional
Feeder disconnector	
Motor driving mechanism	Optional
Earthing switch	
Motor driving mechanism	Optional
Lock interlocks*	
Optional	
Voltage presence detector	
YES	
Auxiliary contact	Optional
Cable compartment	
Maximum no. of cables per phase	4 (**)
Toroidal current transformers	Optional
Plug-in voltage transformers	Optional

(*) See "Interlocks" section.

(**) CPG.1-S1, 4 (1 of which can be replaced by a surge arrester)

CPG.1-S2, 2+2 (1+1 of which can be replaced by a surge arrester)



CPG.1-F (CPG.1-F1 / CPG.1-F2)

Fused protection cubicle

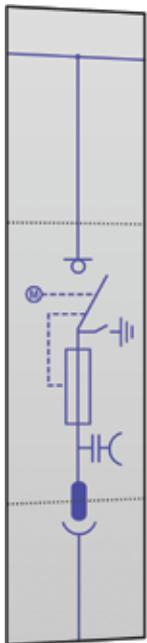
The single busbar variant is equipped with a switchgear compartment with a three-position switch-disconnector (closed / open / earthing), including fuse protection, whereas the double busbar variant is equipped with another two separate switchgear compartments with feeder disconnectors.

The fuses are housed inside sealed fuse holders, these are housed inside the switchgear compartment, and enhance its insulation level. The combined fuse blow action enables three-pole opening of the switch.

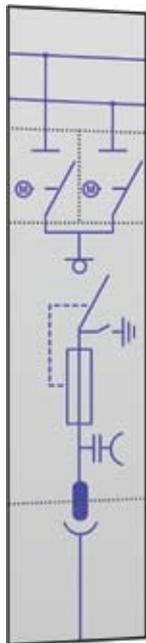
Applications:

- Auxiliary service transformer protection.

CPG.1-F1



CPG.1-F2



ELECTRICAL CHARACTERISTICS

	24 / 36
Rated voltage [kV]	
Frequency [Hz]	50 / 60
Rated busbar current [A]	
General busbar	1250 / 1600 / 2000
Outgoing lines	200
Rated short-time current (main circuit) [kA - 3s]	25 / 31,5
Transfer current [A]	800

PHYSICAL CHARACTERISTICS

	Height [mm]	Width [mm]	Depth [mm]	Weight [kg]
Single busbar CPG.1-F1	2500	600	2004	1000
Double busbar CPG.1-F2	2500	600	2004	1300

CONFIGURATION

Busbar	
Current transformers	Optional
Voltage transformers	Optional
Feeder disconnector	
Motor driving mechanism	Optional
Lock interlocks*	Optional
Fuses combined with the switch-disconnector	YES
Voltage presence detector	YES
Auxiliary contact	Optional

(*) See "Interlocks" section.



CPG.1-C (CPG.1-C / CPG.1-CL)

Longitudinal busbar coupling cubicle

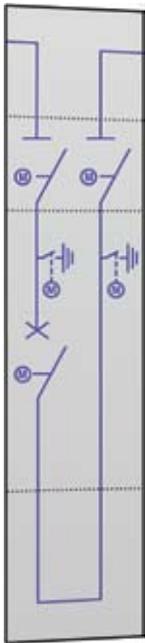
Includes the following components for each busbar in separate compartments:

A vacuum circuit-breaker and the earthing switches in series with it in a switchgear compartment and two feeder disconnectors in their corresponding compartments.

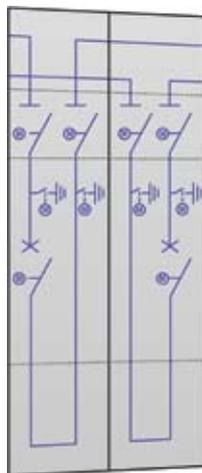
Applications:

- Busbar longitudinal coupling.

CPG.1-C



CPG.1-CL



ELECTRICAL CHARACTERISTICS

	24 / 36
Rated voltage [kV]	
Frequency [Hz]	50 / 60
Rated busbar current [A]	
General busbar	1250 / 1600 / 2000
Rated short-circuit breaking current [kA]	25 / 31,5

PHYSICAL CHARACTERISTICS

	Height [mm]	Width [mm]	Depth [mm]	Weight [kg]
Single busbar CPG.1-C	2500	600	2004	1400
Double busbar CPG.1-CL	2500	1200	2004	2800

CONFIGURATION

Busbar	
Current transformers	Optional
Voltage transformers	Optional
Feeder disconnector	
Motor driving mechanism	Optional
Earthing switch	
Motor driving mechanism	Optional
Lock interlocks*	Optional
Vacuum circuit-breaker	
Motor driving mechanism	YES
Tripping coil	YES
2nd tripping coil	Optional
Closing coil	YES
Undervoltage coil	Optional
Open / close push-button blocking	YES

(*) See "Interlocks" section.



CPG.1-CT

Transversal busbar coupling cubicle

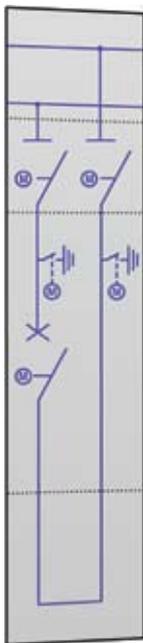
Includes the following components in separate switchgear compartments:

A vacuum circuit-breaker and two earthing switches in series with it in the switchgear compartment, and feeder disconnectors in its corresponding compartments.

Applications:

- Transversal busbar coupling.

CPG.1-CT



ELECTRICAL CHARACTERISTICS

24 / 36

Rated voltage [kV]	50 / 60
Frequency [Hz]	50 / 60
Rated busbar current [A]	1250 / 1600 / 2000
General busbar	1250 / 1600 / 2000
Rated short-circuit breaking current [kA]	25 / 31,5

PHYSICAL CHARACTERISTICS

	Height [mm]	Width [mm]	Depth [mm]	Weight [kg]
Double busbar CPG.1-CT	2500	600	2004	2200

CONFIGURATION

Busbar	
Current transformers	Optional
Voltage transformers	Optional
Feeder disconnector	
Motor driving mechanism	Optional
Earthing switch	
Motor driving mechanism	Optional
Lock interlocks*	Optional
Vacuum circuit-breaker	
Motor driving mechanism	YES
Tripping coil	YES
2nd tripping coil	Optional
Closing coil	YES
Undervoltage coil	Optional
Open / close push-button blocking	YES

(*) See "Interlocks" section.



SWITCHING AND BREAKING COMPONENTS



DISCONNECTOR AND EARTHING SWITCH

Up to 36 kV

Disconnecter

Mechanical endurance	M0 (1000 Operations)
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Earthing switch

Making capacity	80 kA
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Electrical endurance	E0 (*)
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Rated current

2000 A

Short-time current

25 kA - 1/3 s
31,5 kA - 1/3 s

(*) The earthing switch does not in itself have any making capacity, since this has been transferred to the circuit-breaker.

Characteristics:

- For manual operation:
 - Closing in clockwise direction and opening in reverse direction.
 - Separate levers for the disconnecter and the earthing switch.
- Optional:
 - Disconnecter and earthing switch motor driving mechanism 125 Vcc.

CIRCUIT-BREAKER

24 kV

36 kV

Breaking capacity

Short-circuit (asymmetry)	25 / 31,5 kA	31,5 kA
DC	>45%	>45%
No-load cable current	31,5 A	50 A
Capacitor bank	400 A	400 A
Electrical endurance	E2	E2

Reclosing sequence

O-0,3"-CO-15"-CO

Electrical endurance

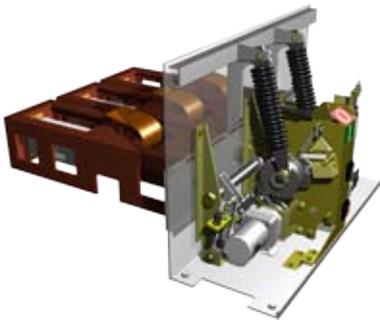
M2
(10000 operations)

Rated current

630 / 1250 / 1600 / 2000 A

Short-time current

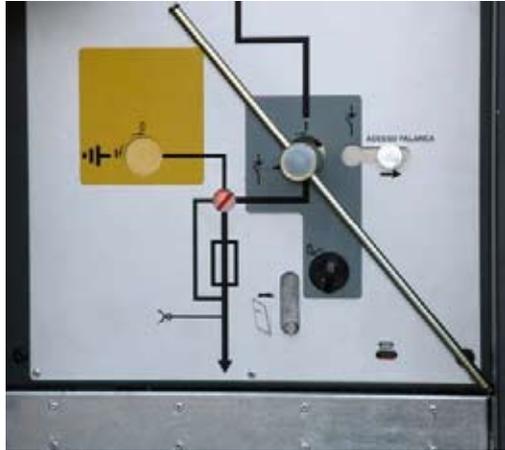
25 kA - 1/3 s
31,5 kA - 1/3 s



Characteristics:

- Vacuum circuit-breaker.
- Manual operation via push-button (padlockable).
- Motor driving mechanism 125 Vcc.
 - Spring loading time <15 seconds.
- Coils operative in the 125 Vcc range:
 - 2 shunt trip opening coils (2nd coil optional).
 - 1 closing coil.
 - 1 undervoltage coil (optional).

SWITCH DISCONNECTOR (Combined with Fuses)



	24 kV	36 kV
Switch		
Rated current	200 A	200 A
Main switch making capacity	62,5 kA / 80 kA	80 kA
Switch category	E3	E3
Electrical endurance	100	100
Electrical endurance (s-c making ops.)	5	5
Mechanical endurance (manual)	M1 (1000)	M1 (1000)
Earthing switch		
Making capacity	7,5 kA / 2,5 kA	7,5 kA / 2,5 kA
Disconnecter category	E2	E2
Electrical endurance (s-c making ops.)	5	5
Short-time current*		
	25 kA - 1/3s	25 kA - 1/3s
	31,5 kA - 1/3s	31,5 kA - 1/3s
	3 kA - 3s	3 kA - 3s
	(earthing)	(earthing)
Combined switch-fuse breaking capacity		
	31,5 kA	31,5 kA
Transfer current		
	800 A	800 A

(*) Fuse-limited.

Characteristics:

- 3 positions (closed - open - earthing).
- For manual operation:
 - Separate lever(s) for the feeder disconnecter and the earthing switch-disconnector.
- Switch driving mechanism:
 - Latched manual (BR) with tripping coil at 125 Vcc.



PROTECTION, METERING, CONTROL AND INDICATION: ekorSYS FAMILY

This family groups together a set of units which, when integrated in **CPG.1** cubicles, provide protection, metering, control and indication functions in Medium Voltage electrical distribution networks:



ekorRPS - TCP

Substation Protection Unit specially designed for applications in the field of Primary distribution. Its incorporation in **CPG.1** cubicles endows them with the necessary characteristics for inclusion in Integrated Control systems.



FEATURES OF THE ekorRPS UNIT

Protection

Overcurrent	50 / 51 - 50N / 51N - 50V / 51V
Sensitive neutral	50Ns / 51Ns
Directional overcurrent	67 / 67n
Overvoltage	59 - 59N
Undervoltage	27
Frequency	81 - 81R
Unbalance / Open phase	46 / 46FA - 47
Reclosing	79
Isolated neutral	67NA
Breaker failure	50BF
Thermal image	49
Fuse failure	FF
Synchronism check	25

Control

- Switch status and control
- Disconnecter status and control
- Switch monitoring
- Supervision of the tripping and closing coils
- Local protection panel (display + keypad)
- Local protection panel (configurable display + keypad)
- Programmable automatic mechanisms

Metering

- From 30 electrical parameters
- Inputs / Outputs**
- Up to 65 configurable EDs and 62 configurable SDs
- Programmable logic

- Event log
- Fault report
- Oscillograph
- Chronology
- Self-monitoring
- Cold load
- Fault impedance / distance
- Automation

Communications

- IEC 870-5-103
- IEC 870-5-101
- ModBus RTU
- DNP3.0.
- PROCOME
- HARRIS



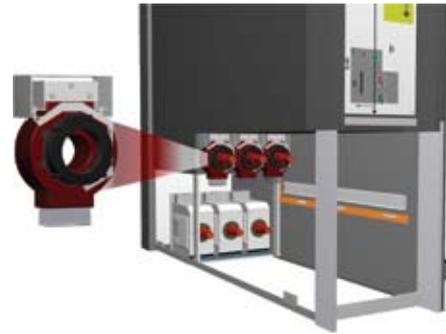
CURRENT TRANSFORMERS

Transformers developed by **Ormazabal** whose main characteristics are:

- Toroidal type.
- Encapsulated.
- Installed outside the switch compartment, upstream of the MV connectors.
- Capable of withstanding all environmental conditions.
- Easy of assembly and error-free during installation (earths).

Installation:

- Busbar compartment.
- Cable compartment.



ELECTRICAL CHARACTERISTICS

Insulation level	0,72 kV
Rated withstand alternating voltage	3 kV / 1 min
Rated frequency	50 / 60 Hz
Continuous thermal current	1,2 In
Insulation class	E

RATIO		METERING PROTECTION		
Primary	Secondary			
150* A	600* A			
200 A	800 A			
250 A	1.000 A	1 A	CL 0,2	5P10
300* A	1.200 A	5 A	CL 0,5	5P20
400 A	1.600 A			
500 A				

(*) Main ratios.

Note: Rated burden in accordance with current ratings.



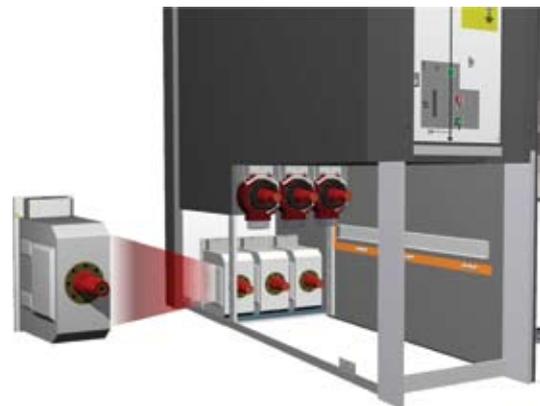
VOLTAGE TRANSFORMERS

Characteristics:

- Plug-in type.
- Single-phase.
- Insulated.
- Shielded.
- Inductive operation.
- Installed outside the switchgear compartment.
- Capable of withstanding all environmental conditions.
- Anti-explosive.

Installation:

- Busbar compartment.
- Cable compartment.



ELECTRICAL CHARACTERISTICS

Rated voltage	3,6 – 36 kV
Continuous voltage factor	1,2 Un
Rated voltage factor Ur / 8 hrs	1,9
Voltage in the secondary	100 / $\sqrt{3}$ V - 110 / $\sqrt{3}$ V - 100 / 3 V - 110 / 3 V
Burden	25 - 50 VA
Accuracy class	0,2-0,5-1 (metering) 3P - 6P (protection)

Note: Characteristics can be configured according to the type of installation.

INTERLOCKS

- The feeder disconnectors, circuit-breaker and earthing switch are interlocked in accordance with section 5.11 of **standard IEC 62271-200**.
- When the disconnector and earthing switch levers are inserted, this releases the interlocks providing access to the actuator shaft.



- Both the feeder disconnector lever and the earthing switch lever can only be inserted if the circuit-breaker is open.
- The circuit-breaker can only be operated if all the feeder disconnector and earthing switch actuating levers have been removed. Also, all electrical operations are overridden if the disconnector lever is located in the actuator shaft.
- The circuit-breaker can only be connected in the end positions of the disconnector / earthing switch.
- Access to the fuse compartment is locked by the earthing switch.
- The cable compartment is only accessible with the earthing switch closed and the circuit-breaker open.
- As an option:
 - Earthing switch electromagnetic interlock.

INSTALLATION



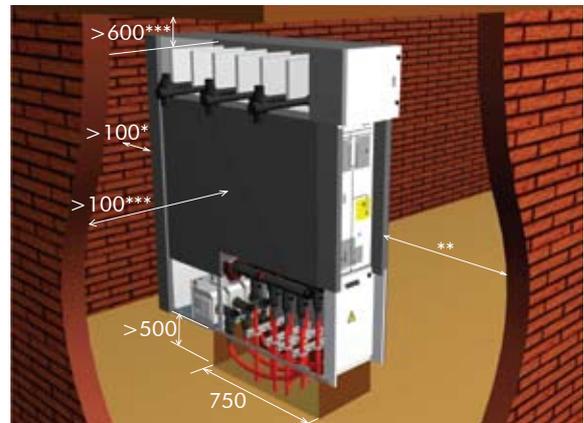
CHARACTERISTICS

- Optimised dimensions, therefore taking up less space, due to its careful design and the use of SF₆ gas as insulating medium.
- Modularity and extensibility on both sides, ensuring an installation process which is quick and economical, in a smaller space, **without handling the gas on site** (sealed assembly), since it is not necessary to move adjacent cubicles.
- Reduced dimensions of the cubicle room, due to its front access, its design with withdrawable switchgear, and not requiring operational clearance at the back.
- Easy housing of voltage transformers and toroidal current transformers.



CIVIL ENGINEERING WORKS

The minimum recommended distances [mm] for correct installation, once installed in its final position, are:



(*) Not needed with pressure relief duct.

(**) Operation: > 1000 // Removal: > 1500.

(***) In accordance with Appendix A of standard IEC 62271-220.

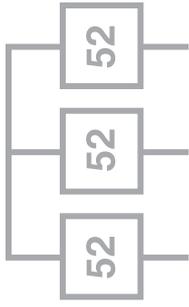
For other dimensions, please consult Ormazabal's Technical - Commercial Department



CONNECTION BETWEEN CUBICLES

The connection between cubicles is external to the switchgear compartments by means of busbars with solid and shielded single-phase encapsulation. The CPG.1 family is designed to allow a functional unit to be uninstalled without needing to move adjacent units and without gas handling.

The copper busbars are designed to withstand a continuous rated current of up to 2000 A, and also the thermal and dynamic forces of the rated short-time current (up to 31,5 kA / 1/3s).



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- Transformer Substations up to 36 kV
 - Medium Voltage Applications for Renewable Energy
- Medium Voltage Secondary Distribution Switchgear
 - CGMCOSMOS System
 - CGM.3 System
- Medium Voltage Primary Distribution Switchgear
 - CPG System
 - CPA-AMC System
- Protection, Control, Automation and Remote Control
- Distribution Transformers
- Low Voltage Switchgear