

4 Technical descriptions

4.1 Scope of supply

CGMCOSMOS SYSTEM

Service Conditions

Modular and/or compact Medium Voltage cubicles

Medium Voltage modular and/or compact fully SF₆ insulated metal-enclosed cubicles system in accordance with IEC 62271-200 standard for indoor installation, – 30 °C class in accordance with IEC 62271-1 up to 2000 m* above sea level without maintenance with the following general standard conditions:

Electrical Values

- Rated Voltage U _r :	24 kV
- Rated withstand voltage at power frequency U _d (50 Hz):	
- Phase to Earth and between phases:	50 kV 1 min
- Isolating distance:	60 kV 1 min
- Lightning impulse withstand voltage U _{pk} :	
- Phase to Earth and between phases:	125 kV
- Isolating distance:	145 kV
- Frequency:	50 Hz
- Rated current:	630 A
- Short time current I _k :	21kA r.m.s. value –52.5 kA peak value 1 s

Construction

Stainless steel sealed pressure system** gas tank, in accordance with IEC 62271-1, containing the medium voltage circuit components without further gas processing during 30 years.

Three 24 kV capacitive voltage divisors.

Medium Voltage cables clamps designed to secure single core cables up to 630 mm² and to support the electrostatics efforts in the event of a short-circuit.

High protection against corrosion. It supports 150 h in a neutral salt spray chamber in the driving mechanism in accordance with ISO 7253 standard.

Safety

Integrated interlocks that not allow access to the cable compartment without connect the earthing switch or operate the equipment with the cable compartment cover removed. In the same way the switch and the earthing switch can not be connected simultaneously.

Independent padlock interlocks for the switch and earthing switch operating shafts. The driving mechanism compartment cover can not be removed with the padlocks placed.

Possibility of install independent lock interlocks in the switch and earthing switch operating shafts.

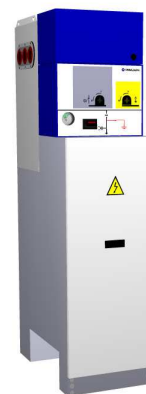
Flooding: equipment prepared to maintain the service in the Medium Voltage ring in the event of a possible flood of the installation supporting a 3 m water column test during 24 h.



4.2 Products

CGMCOSMOS-L SF₆ INSULATING AND BREAKING FEEDER CUBICLE (MANUAL)

- 1 Modular Medium Voltage incoming / outgoing cables cubicle with the following particular characteristics:



Electrical Values

- Rated voltage U_r : 24 kV
- Rated current I_r : 630 A
- Short time current I_k : 21 kA rms – 52.5 kA peak 1 s

Construction

Individual compartments with metallic division of busbar – switch, cable connection with frontal bushings with the three phases to the same height, driving mechanism with synoptic diagram of the power circuit in the cover, and lower rear gases expansion.

Extensible both sides

Three – phase SF₆ breaking switch, E3 category in accordance with IEC 60265-1 standard, of three positions: **connected – disconnected – connected to earth** with E2 (5 CC) category of capacity to be operated against a short-circuit earthing switch in accordance with IEC 62271-102. Both sequences, switch and earthing switch, tested over the same element.

Driving mechanism operating by lever, independent manual operation B type with M1 class, 1.000 operations, endurance to the switch in accordance with IEC 60265-1 standard and M0 class, 1.000 operations, to the earthing switch. The driving mechanism could be replaced on site in any of their positions without cut the service. It incorporate an element to fasten the switch with the driving mechanism removed with padlock interlock option.

The indication of the position of the switch – disconnecter is performed safely (kinematic chain test in accordance with IEC 62271-102).

Switch – disconnecter position signalling contacts:

- Switch: 2 NO + 2 NC
- Earthing Switch: 1 NO + 1 NC

Three bushings of 630 A, C type, in accordance with EN 50181 standard to connection by means of plug-in or screw-mounting terminals (*Ormazabal suggest Euromold terminals*).

ORMALINK connecting set, formed by three elastomeric adapters with electric field control.

Safety

- 1 Voltage presence self-powered flashing indicating unit ekorVPIS, designed by Ormazabal, in accordance with IEC 61958 standard.
- 1 Acoustic earthing prevention alarm self-powered unit ekorSAS, designed by Ormazabal. It is activated when there is voltage in the cubicle's Medium Voltage feeder and the lever is inserted in the earthing switch draft. Range of operation in accordance with IEC 61958.
- 1 Protection and safety for people and equipment against internal arc effects, in accordance with the criterions of the Annex A of the IEC 62271-200 standard in all the compartments: IAC AFL class (optional).

Dimensions and Weight

- Width:365 mm
- Height:1740 mm
- Depth:.....735 mm

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- Weight:100 kg

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CGMCOSMOS-M METERING CUBICLE

- 1 Modular Medium Voltage metering cubicle with the following particular characteristics:

Electrical Values

- Rated voltage U_r : 24 kV
- Rated current I_r : 630 A

Construction

Metallic enclosure destined to lodge the voltage and current measuring transformers connecting them with the general group of cubicles with dry-type insulation cable.

Cubicle prepared for installing by customer CT and VT. Always with previous information about the transformers supplied by the client to Ormazabal to check that it's possible. This could imply an overcost.

The transformers are without fuses

Two connections left and right to the adjacent cubicles through connecting kit 630A.

1 empty control box on top of Cosmos M

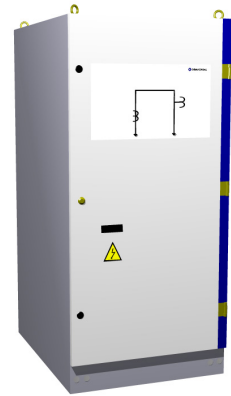
1 protection mesh

1 thermostat + 1 heater

1 key

Dimensions and Weight

- Width:800 mm
- Height:1750 mm
- Depth:.....1025 mm
- Weight (without transformers):165 kg



CGMCOSMOS-V SF₆ INSULATING AND BREAKING CIRCUIT BREAKER CUBICLE WITH AV3 DRIVING MECHANISM FOR TRANSFORMER PROTECTION (MANUAL)

1 Modular Medium Voltage circuit breaker cubicle with the following particular characteristics:

Electrial Values

- Rated voltage U_r: 24 kV
- Rated current I_r: 630 A
- Short time current I_k: 21kA 52.5 kA peak 1 s
- IAC AF/AFL/AFLR class (optional): 21kA 1 s

Construction

- Both sides extensible
- Individual compartments with metallic division of busbar – disconnector / circuit breaker, cable connection with frontal bushings with the three phases to the same height, driving mechanism with synoptic diagram of the power circuit in the cover, and lower rear gases expansion.
- Three – phase SF₆ disconnector – earthing switch E2 (5 CC) category of capacity to be operated against a short-circuit earthing switch in accordance with IEC 62271-102.
- Three – phase vacuum breaking circuit breaker in accordance with IEC 62271-100, rated sequence CO - 15 s – CO/ O – 3min – CO – 3min – CO/ O – 3min – CO – 15s - CO. Electrical endurance E2 – C2 to rated current of 2000 operations and 30 CC (50% DC).
- Disconnector driving mechanism operating by lever, independent manual operation B type with a endurance of 1.000 operations in accordance with IEC 60265-1 standard. It incorporate an element to fasten the switch with the driving mechanism removed with padlock interlock option.
- Circuit breaker springs operated manual AV3 driving mechanism operated through frontal buttons and spring charge with lever, with opening and closing coils. M2 endurance, 5000 operations, in accordance with IEC 62271-100 standard.
- The indication of the position of the switch – disconnector is performed safely (kinematic chain test in accordance with IEC 62271-102).
- Three bushings of 400 A, B type, or 630 A, C type, in accordance with EN 50181 standard to connection by means of plug-in or screw-mounting terminals (*Ormazabal suggest Euromold terminals*).
- Position signalling contacts:
 - o Disconnector: 2 NO + 2 NC
 - o Earthing Switch: 2 NO + 2 NC
 - o Circuit Breaker: 4 NO + 4 NC
- Self-powered overcurrent relay type ekor RPG20x-x, three-phase and ground protection (3x50/51, 50N/51N), including one set of three phase current sensors. Manuf. ORMAZABAL.
- ORMALINK connecting set, formed by three elastomeric adapters with electric field control.



Safety

- 1 Voltage presence self-powered flashing indicating unit ekorVPIS, designed by Ormazabal, in accordance with IEC 61958 standard.
- Protection and safety for people and equipment against internal arc effects, in accordance with the criterions of the Annex A of the IEC 62271-200 standard in all the compartments: IAC AFL class (optional).

Dimensions and Weight

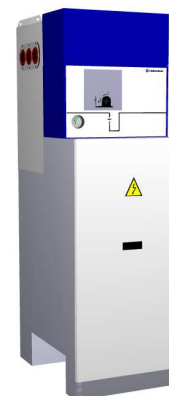
- Width:480 mm
- Height:1740 mm
- Depth:.....845 mm
- Weight:240 kg

CGMCOSMOS-S SF₆ INSULATING AND BREAKING BUSBAR SWITCH (MANUAL)

- 1 Modular Medium Voltage busbar switch cubicle with the following particular characteristics:

Electrical Values

- | | |
|---------------------------------------|------------------------------|
| - Rated voltage U _r : | 24 kV |
| - Rated current I _r : | 630 A |
| - Short time current I _k : | 21 kA rms – 52.5 kA peak 1 s |

**Construction**

Individual compartments with metallic division of busbar – switch, driving mechanism with synoptic diagram of the power circuit in the cover, and lower rear gases expansion.

Three – phase SF₆ breaking switch, E3 category (5 CC) in accordance with IEC 60265-1 standard, of two positions: **connected – disconnected** in accordance with IEC 62271-102.

Driving mechanism operating by lever, independent manual operation B type with M1 class, 1000 operations, endurance to the switch in accordance with IEC 60265-1 standard. The driving mechanism could be replaced on site in any of their positions without cut the service. It incorporate an element to fasten the switch with the driving mechanism removed with padlock interlock option.

The indication of the position of the switch – disconnecter is performed safely (kinematic chain test in accordance with IEC 62271-102). IAC AFL class (optional).

Switch – disconnecter position signalling contacts:

- Switch: 2 NO + 2 NC

ORMALINK connecting set, formed by three elastomeric adapters with electric field control.

Safety

Protection and safety for people and equipment against internal arc effects, in accordance with the criterions of the Annex A of the IEC 62271-200 standard in all the compartments

Dimensions and Weight

- Width:450 mm
- Height: 1740 mm
- Depth:.....735 mm
- Weight:115 kg