



MV/LV Transformer Substations for  
Distribution Network Solutions

## miniSUB

Underground compact Prefabricated  
Transformer Substations

Up to 36 kV, 630 kVA

IEC 62271-202 standard

Reliable innovation. Personal solutions.

## Preface

In 1998 **Ormazabal** introduced its range of compact prefabricated transformer substations, to be installed at ground level **miniBLOK** or underground **miniSUB**, both consisted of **MB** electrical compact equipment assembly.

Since then the compact prefabricated transformer substations have continuously evolved with enhanced performances, being adapted to the needs of the MV distribution network.

**miniSUB** is a **Compact Prefabricated Transformer Substation**, installed underground, with reduced dimensions, standard-built, tested and supplied from the factory as a unit.

It is characterised by incorporating an **Ormazabal MB** Medium Voltage associated type (A) compact equipment assembly, for use in both public and private distribution networks up to 36 kV.

**miniSUB** prefabricated transformer substation is used into several Distribution Network Solutions (DNS) for utilities (public distribution, smart grids...) and end users (infrastructures, industry, tertiary).

Its careful exterior design and reduced dimensions minimises its visual impact, making it suitable when the available space is limited, in industrial and residential areas as well as historical landmarks.

The main advantage of these Transformer Substations is their high safety and protection for both people and property against internal faults, their **IAC classification**, as well as their robustness and reliability.

Currently over 2,000 **miniSUB** have been installed worldwide.

## Safety

- » High personnel safety against internal arcs, accidental direct contact, touch and step voltage
- » Equipotential operating surface
- » No access to live parts
- » Dielectric liquid collection pits
- » Test performed on the MB as an individual unit and as a whole assembly in the miniSUB

## Reliability

- » Fully factory-assembled and equipped (enclosure, switchgear, transformer and internal earthing circuit)
- » Product tested as a unit
- » Fast changes of electrical equipment
- » Suitable for limited space areas
- » Simple installation, limited to the introduction of the enclosure in the excavation and the connection of the cables

## Efficiency

- » Ventilation: natural air circulation (class 10). Horizontal (H) or vertical (V) types
- » Easy to transport due to its reduced dimensions and weight
- » MV and LV cables input/output through sealed feedthroughs
- » Impermeability and sealing

## Sustainability

- » Minimum visual, environmental and acoustic impact
- » Reduced size and versatility
- » Low risk of insulator spillage on the public roads, with no harm to the environment

## Continuous innovation

- » Great capacity for integration to the environment
- » Ideal for use in public distribution networks up to 36 kV
- » Smart-Grids ready substation
- » Ventilation modelling and testing optimized with Ormazabal transformers

## Standards

### EN 50532

Compact Equipment Assembly (CEADS)

### IEC -EN 62271-202

High Voltage Switchgear: Prefabricated Transformer Substations

### On request:

Specific regulations of the Utility.  
Applicable local regulations.

## Technical data

### miniBLOK

» Monoblock concrete enclosure (base and walls) with removable roof.

**MB** associated compact equipment assembly:

- » Fully gas insulated Medium Voltage Switchgear: **CGM COSMOS-2LP** up to 24 kV or **CGM.3-2LP** up to 36 kV. Electrical diagram (RMU) with 2 feeder functional units, input and output, and a protection functional unit with a switch-fuse combination.
- » Ormazabal protection, control and metering units (remote control, telemetering, integrated control, telemanagement, etc.).
- » Medium Voltage Distribution Transformer, 250, 400 or 630 kVA
- » LV Switchgear: Low Voltage board with control and protection unit, as well as an auxiliary safety supply.
- » Direct MV and LV interconnections.
- » Self-supporting frame.
- » Earthing circuit connection.
- » Lighting and auxiliary services circuit.

### Technical Data

	miniSUB	24	36
Rated voltage [kV]		24	36
Frequency [Hz]		50	
Internal Arc (IAC class)		16 kA / 0,5 s	
<b>Transformer</b>			
Power [kVA]		250/400/630	
<b>MV Switchgear</b>			
Rated current [A]		400/630	
In Busbars		400/630	
Outgoing Line		400/630 (L) 200 (P)	
Short-time current [kA]		16 / 20	
<b>Insulation level</b>			
Industrial Frequency [kV]		50 / 60	70 / 80
Lightning impulse [kV] <sub>CRESTA</sub>		125 / 145	170 / 195
<b>Low Voltage Board</b>			
Rated voltage [V]		440	
Rated current [A]		1000	
Rated current [A]		400	
No. outputs		4	

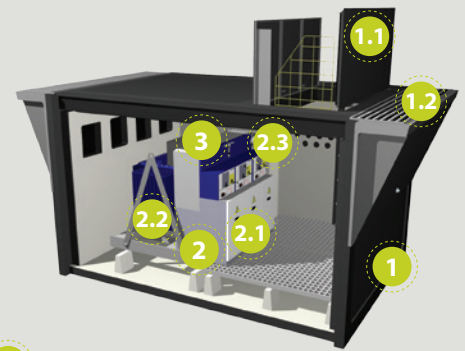
➔ Optionally: Anti-vibration devices and insulating platform.

### External dimensions and weights

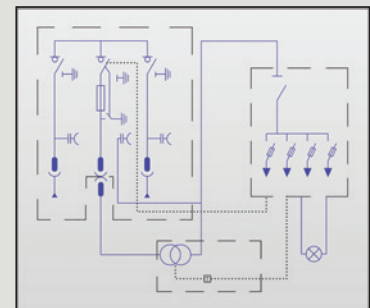
Ventilation		H	V
Width [mm]		4450	3460
Depth [mm]		2460	2460
Height [mm]		2240	2240
Visible height [mm]			
Body		-2350	-2350
Ventilation		0	+ 485
<b>Weight*</b> [kg]			
miniSUB 24		16700	15200
miniSUB 36		16850	15350

➔ (\*) With 630 kVA transformer and no remote control.  
For other configurations and/or values, please consult a **Ormazabal**

## Design

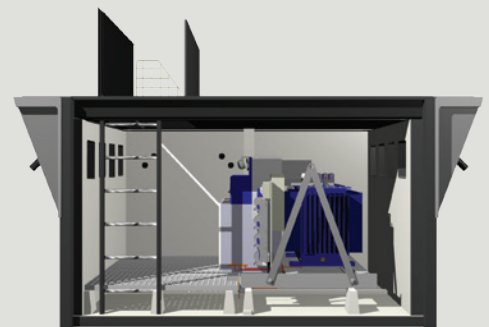


- 1 Concrete enclosure
  - 1.1 Staff access
  - 1.2 Ventilation (H=Horizontal / V=Vertical)
- 2 Associated compact equipment assembly
  - 2.1 MV switchgear up to 36 kV
  - 2.2 Transformer up to 630 kVA
  - 2.3 LV board
- 3 Protection, control and metering units



## Family

### Horizontal ventilation: miniSUB-H



### Vertical ventilation: miniSUB-V

