

LV Power Center Switchboard CE-PC200



Catalogue

General Characteristics



CE-PC200 is Power Center switchboard particularly suitable for application requiring high performance and high level of reliability. They are generally installed downstream the MV/LV transformers or generator groups and contain the main and distribution circuit-breakers of Low Voltage Plants

They consist of standardized section based on an easy-to-fit modular design permitting to suit any plant configuration, electrical diagrams and installation sites.

The high flexibility of the **CE-PC200** when combined with **CE-MCC200** achieve the complete control of power distribution and motors command with high performance.

The wide range of sections, offer different versions which ensure both front and rear access., offer different solutions satisfying any need in terms of installation and space requirements.

Switching and regulation operation on the equipment, as well as the access and routine maintenance of the switchboard can be carried out in maximum safety for personnel and with no danger of accidental contact with live parts.

Use

Thanks to a their versatility and high performance **CE-PC200** switchboards can be used in public plants, power production plants, industrial plants, on installations board and anywhere else are required with the following advantages:

- personnel safety
- flexibility of configuration
- continuity of service
- reliability
- rapidity of use and maintenance
- easy installation and connections
- possibility of extensions and modifications.

Standards

CE-PC200 switchboards comply with main Italian and International standards and in particular with:

- EN 61439-1 "low-voltage switchgear and controlgear assemblies" Part 1: General rules
- EN 61439-2 "low-voltage switchgear and controlgear assemblies" Part 2: Power switchgear and controlgear assemblies.
- EN 61641 "Enclosed Low Voltage switchgear and controlgear assemblies" Guides for Testing under condition of arcing due to internal fault.

Type tests and routine tests

CE-PC200 switchboards have been tested by qualified laboratories and routine tests are carried out in compliance with relative standard EN 61439-1

All the switchboards are subjected to the routine test foreseen in the standard:

- inspection of the assembly, including inspection of wiring and, if necessary, electrical operation test;
- dielectric test
- checking of protective measures and of the electrical continuity of protective circuits
- checking of insulation resistance

Main characteristics

CE-PC200

Electrical characteristics

Rated insulation voltage (Ui)		1000 V
Rated operational voltage (Ue)		690 V
Rated Frequency		50/60 Hz
Way of grounding		TT-IT-TNS-TNC
Rated current (In)		UP to 6300A
Rated short-time current for 1 sec. (Icw) UP TO		150 kA
Rated peak withstand current (Ipk)		375 kA
Degree of protection (according to EN 60529)	External enclosure	standard IP31 (on request up to IP54)
	With open doors	IP2X
Normal service conditions	Installation	indoors
	Ambient	normal
	Ambient air temperature	min -5°C max 40°C (period of 24 hours -35°C)
	Relative humidity	max 50% at 40°C
	Altitude	≤ 2000 m
	Pollution degree	≤ 3
Internal separation	Forms	2b/3b/4a/4b
Standard colour of external enclosure		RAL 7032 (Other Colour on request)
Access		from the front / rear
Entry and exit of cables		from top or bottom
Entry and exit by bus-ducts		from top or bottom
Dimension of a section	Width	600 – 800- 1000-1200-1400mm + 30mm side cover
	Height	2275mm
	Depth	800-1000-1200-1400-1600 mm
Protection persons against internal arc (IEC 61641)		up to 100kA 0,5 sec.(on request)

Note:

Customised solutions could be evaluated on request

Construction

Enclosure and Frame structure

The supporting framework of the switchboard is modular and it made by sections of galvanized steel bars rectangular C shaped open-ended, pierced, with a minimum thickness of 3 mm assembled with bolts, self-tapping screws or rivets.

All covers, doors, and panels of the external enclosure are made of steel plate coated with epoxy polyester powder with a standard thickness of 60 microns. (Other colours and thickness are available on request).

Each column is divided into the following main parts:

- main busbar
- switchgear space
- auxiliaries space
- power connection



Main busbars



The main bus bars are normally situated on the rear part of the switchboards and consists of one or more parallel copper bars attached to the supporting structure by insulated supports and it is suitably designed so as to withstand the rated current and thermal and dynamic stresses caused by a short-circuit current.

the main busbars are normally situated in the upper part of the section lying horizontally (or in the lower part if requested) in an insulated compartment. they have the function of distributing the current to the different sections of the switchboards. They can be accessed from the roof by lifting a removable cover. The busbars of each section are systematically provided with appropriate holes to allow the connection of adjacent section.

Distribution busbars

Distribution busbars in normally situated on the rear part of the section, lying vertically in an insulated compartment. Derived from the main busbars they have the task of distributing the current to the various outgoing units. It is accessible on the rear or on the front side by lifting a removable covers.



Protective conductor

Electrical continuity in the metal masses is achieved by a copper bar with cross- section of 250 mm² (500 mm² on request) bolted to the supporting structure and including:

- **horizontal conductor** situated in the bottom part of the section, destined for interconnections and earthing of the metal masses of the various sections which make up the switchboard;
- **vertical conductor**, situated in the connection space, which has been pierced to allow it to be connected to the metallic shielding or earth conductor of the power cables. The earth connections of the various pieces of equipment and auxiliary devices installed in the switchboard are also connected to this conductor.



Switchgears space

The switchgears space is situated in the front side of the section and is accessible through hinged doors.

This space normally contains the circuit breakers in their different versions (Fixed, plug-in, withdrawable) and types of operating mechanism (toggle, rotary handle, motor) fitted in compartments in according to the required form.



Auxiliary space

The auxiliary space is situated in the front side of the section next to the switchgear space and which is the same height of the section. It can be accessed from the front through a hinged door and normally contains auxiliary, measures and protection equipment of the functional units and the auxiliary circuits.



Power connection space



The power connection space can be placed on the left frontal side of the section in the **CE-PC200** with access from the front or on the rear of the section in the **CE-PC200** with access from the rear.

It can be accessed through a hinged door or removable panel whose dimension allow easy connection of the power cables.

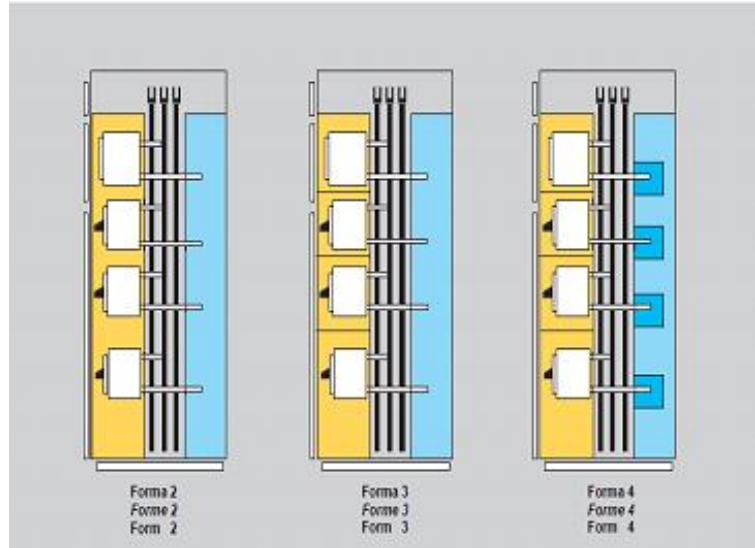
In to the connection space are situated:

- The terminal power necessary for the connection of the incoming and outgoing power cable or busducts. According to the required form the outgoing terminal can be protected with suitably shielded so as to permit the connection of a single unit when the adjacent ones are live;
- Cable support for fixing cable
- The protection conductor for the connection of the metal shields or earth conductor of the power cables
- current transformer if required.

Internal separation

The internal separation consist of barriers and partitions made of galvanized steel plates sheet. These partitions divide the section into compartments or sub-section ensuring:

- The protection of personnel against direct contact with live parts of the sub-sections or adjacent compartments.
- The protection against the passage of solid foreign bodies between sub-sections or adjacent compartments.
- limitation of the probability of initiating arc faults.



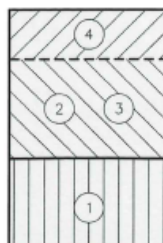
The switchboards can be supplied in the following versions:

- **PC 200N**. Non segregated: main bus bars and shunt bus bars are visible after removing or opening rear panel. Bus bars are in any case separated from operational units. This version allow to install several switches in one compartment. Form 2 of IEC 61439-2 standards
- **PC 200P**. Partially segregated: main bus bars, shunt bus bars and circuit-breaker feeder connection are separated by metal panels Form 3 of IEC 61439-2 standards.
- **PC 200S**. Fully segregated: all areas are separated from each other. This enables maximum continuity of service whilst maintenance is carried out. Maximum safety guaranteed during access to power cables area of each circuit-breaker wile switchboard is live. Form 4 of IEC 61439-2 standards.

Sezioni delle esecuzioni tipiche Sections of main versions

- ① Zona celle interruttori / Switch area
- ② Zona sbarre di distribuzione / Distribution bus bars area
- ③ Connessioni di uscita degli interruttori / Circuit breaker out terminals connections
- ④ Zona cavi di potenza in uscita / Outgoing power cables area

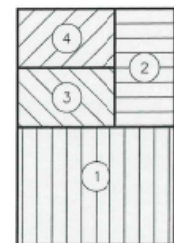
PC 200N



PC 200P



PC 200S



Installation

CE-PC200 switchboards are installed by positioning the single section or several sections which form the transport unit of which it consists on a suitably prepared base.

On site positioning and fixing

The switchboard must be fixed to a perfectly horizontal surface using the M12 expansion bolts inserting in the corresponding anchoring holes.

If the surface is not perfectly levelled, it is possible to place the switchboard on an iron base or pedestal, embedded or fixed in the floor. Customised iron bases and pedestals are available on request.

Distance from the walls

Before preparing the support base it is necessary to check that there is sufficient safety distance from the walls and to consider the following factors:

- the space required for the available lifting handling and maintenance machinery
- avoid placing the sides of the panel against a wall if with this solution possible escape routes are blocked.

Electrical Connections

When the switchboard is in position it is necessary to connect electrically each column to the other to ensure continuity of power supply for:

- the main bus-bar;
- the auxiliary circuits;
- the protective conductor.

Afterwards in the cable compartment, the power cables (incoming and feeders) and the auxiliary circuit cables will be fixed on the cable supports and connected to the corresponding terminals.

Accessories

CE-PC200 panels are normally equipped with:

standard accessories

- iron crossbars for lifting and handling the switchboard;
- labels;
- covers for closing empty compartment;
- a series of keys for doors opening;
- side cover for covering edges;
- cable-supports for fixing cables into position;
- Copper joint and screws to connect the main bus bars to the adjacent section
- bolts for connection between columns;
- Standard technical documentation
- Instruction manual for installation, operation and maintenance.

Over and above the standard accessories supplied on request the CE-PC200 can be equipped with:

Optional accessories

- heating resistor
- thermostat;
- hydrostat;
- internal lighting (cable compartment);
- power socket 220/110V 15 A;
- synoptic diagram;
- base irons;
- cover plates for closing cable entrance;
- locks with keys for the doors;
- lifting truck for circuit breakers

Spare parts

The following pieces can be supplied on request:

- insulated supports and accessories;
- doors handles and hinges;
- closing panels for empty compartments;
- support plates for circuit-breakers;
- blind or drilled panel for circuit breakers.