

Voltage ranges

Motor control centres are usually used for low voltage [three-phase](#) alternating current motors from 208 V to 600 V. Medium-voltage motor control centres are made for large motors running at 2300 V to around 15000 V, using vacuum contactors for switching and with separate compartments for power switching and control.^[1]

Usage

Motor control centres have been used since 1950 by the automobile manufacturing industry which used large numbers of electric motors. Today they are used in many industrial and commercial applications. Where very dusty or corrosive processes are used, the motor control centre may be installed in a separate air-conditioned room, but often an MCC will be on the factory floor adjacent to the machinery controlled.

Components

A motor control centre consists of one or more vertical metal cabinet sections with power bus and provision for plug-in mounting of individual motor controllers. Very large controllers may be bolted in place but smaller controllers can be unplugged from the cabinet for testing or maintenance. Each motor controller contains a contactor or a solid-state motor controller, overload relays to protect the motor, fuses or a circuit breaker to provide short-circuit protection, and a disconnecting switch to isolate the motor circuit. Three-phase power enters each controller through separable connectors. The motor is wired to

terminals in the controller. Motor control centres provide wire ways for field control and power cables.

Specifications

Each motor controller in an MCC can be specified with a range of options such as separate control transformers, pilot lamps, control switches, extra control terminal blocks, various types of thermal or solid-state overload protection relays, or various classes of power fuses or types of circuit breakers. A motor control centre can either be supplied ready for the customer to connect all field wiring, or can be an engineered assembly with internal control and interlocking wiring to a central control terminal panel board or programmable controller.

Fire protection

Motor control centres usually sit on floors, which are often required to have a fire-resistance rating. Fire stops may be required for cables that penetrate fire-rated floors and walls.

PCC/MCC panels are made up of 14/16 SWG CRCA material semi bolted structure firmly supported. Ensures desired breaking capacities, temperature rise & IP protection. Enough Space for incoming & outgoing Cable termination. Outgoing terminals are stud type as standard practice. All starters are Type Two Co-ordinated. CT terminals, Cable Alley Illumination Lamp, Space Heaters with Thermostats are standard features of our Panel boards.

MCC/PCC/ DB Specification :

CONSTRUCTIONAL FEATURES : The Design of the PCC/MCC panel is robust and rigidly constructed to suit a wide range of industries and buildings. The supporting structures which form the framework are made up from 2.0 mm thickness steel sections, fully pressed and punched by CNC machines. The door covers, partitions and panel parts are fabricated with CNC machines for high precision and accuracy. Base degree of protection is IP42. Higher degree of protection like IP54 or more can be manufactured on request. Abhitrans Engineers & Contractors switchboards can be supplied both with top and or bottom entry.

FINISHES :

Abhitrans Engineers & Contractors pays great attention to the standard of workmanship and finishes. To ensure high quality finishing, all metal parts undergo thorough chemical treatment for anti-rust and epoxy powder adhesion. As standard, epoxy powder coating of 70 micron is applied evenly on all metal surface and oven baked at an average temperature of 150°C.

BUSBARS : Non-insulated or insulated high conductivity copper/Aluminium busbars with neutral are housed at the top section of the cubicle. The main busbars are mounted and supported on SMC busbar supports. The busbar chamber is housed in a separate compartment on top of the cubicle with facilities for segregation. Maximum temperature rise is less than 70°C on an ambient of 40°C.

INTERNAL SEPARATIONS OF ASSEMBLIES (FORM 1, 2, 3

AND 4) : Abhitrans Engineers & Contractors switchboard can be provided with partitions for protected spaces according to Form 1 to Form 4. The form of separation according to the latest IEC60439-1:1999 offers an internal protection of minimum IP2X or more.

WIRING : The entire wiring is done with high grade bright copper annealed standard PVC or FRLS or HR FR insulated flexible wires. Control wiring is carried with minimum 1.5 sqmm Gray wire & CT wiring is done with 2.5 sqmm Gray wires. DC wiring is done with 2.5 / 1.5 sqmm white wire. All doors are earthed with the help of 1.5 sqmm yellow green wire.. Electronic Card signal wiring is done with 1 sqmm Shielded wire.

Cable Chamber: Cable Chamber of adequate size is provided on the side of Each Vertical with sufficient no of Cable Tie bars. Each Terminal block is provided with the identification markers & feeder designation sticker. Control & Power TB's are separated from each other. Each Cable Chamber is provided with panel illumination CFL lamp with door switch & heater & Thermostats are provided optionally.

Component Identification : All the base plates are neatly mounted with necessary electrical components to ease the wire routings & wherever necessary PVC Trufs are provided. The component Identification stickers are provided both on the components & base plates.

Drawings : Following Drawings are provided to the customer before starting the manufacturing of PCC/MCC of the panel

- a) General Arrangement
- b) Single Line Diagram
- c) Bill Of Material
- d) General Notes
- e) Control Circuits

After manufacture & testing of panel as built diagram are provided.

Test

Following Tests can be witnessed by the customer

- a) Dimensional Check
- b) Bill of Material Verification
- c) Functional Checks
- d) Relay Function Test(On case to Case basis)
- e) Insulation resistance test
- f) High Voltage Test 2.5. KV for 1 minute