sifam tinsley
PRECISION INSTRUMENTATION

Application Note

3105 Creekside Village Dr, Unit 801,
Kennesaw, GA 30144

Tel.: 800-879-6171
Email: info@sifamtinsley.com

EPSILON Cam TNC Series switches - The perfect solution for Distribution Boards

Overview

Electricity is generated and transmitted in three phases i.e. R-Y-B (L1-L2-L3) as well as it is distributed using a three phase system. Heavy industrial loads like motors, air compressors, work on three phase supply; but as we go towards residential usage typically the loads work on single phase supply.

Hence, it becomes essential to provide single phase supply to residential loads like household appliances where 230V AC is enough. A distribution system is thus designed which will convert or bifurcate the incoming three phase supply into single phase.

It is also important to distribute single phase loads equally on all three phases so as to ensure balance in the system. It is convenient to convert a three phase system to single phase such a system is known as a Phase selector distribution board.

Problem Statement

A residential complex consists of a number of sections and floors. Three phase four wire systems are distributed equally to these floors such that a balanced system is maintained. But the power supply fails to remain reliable.

Solution

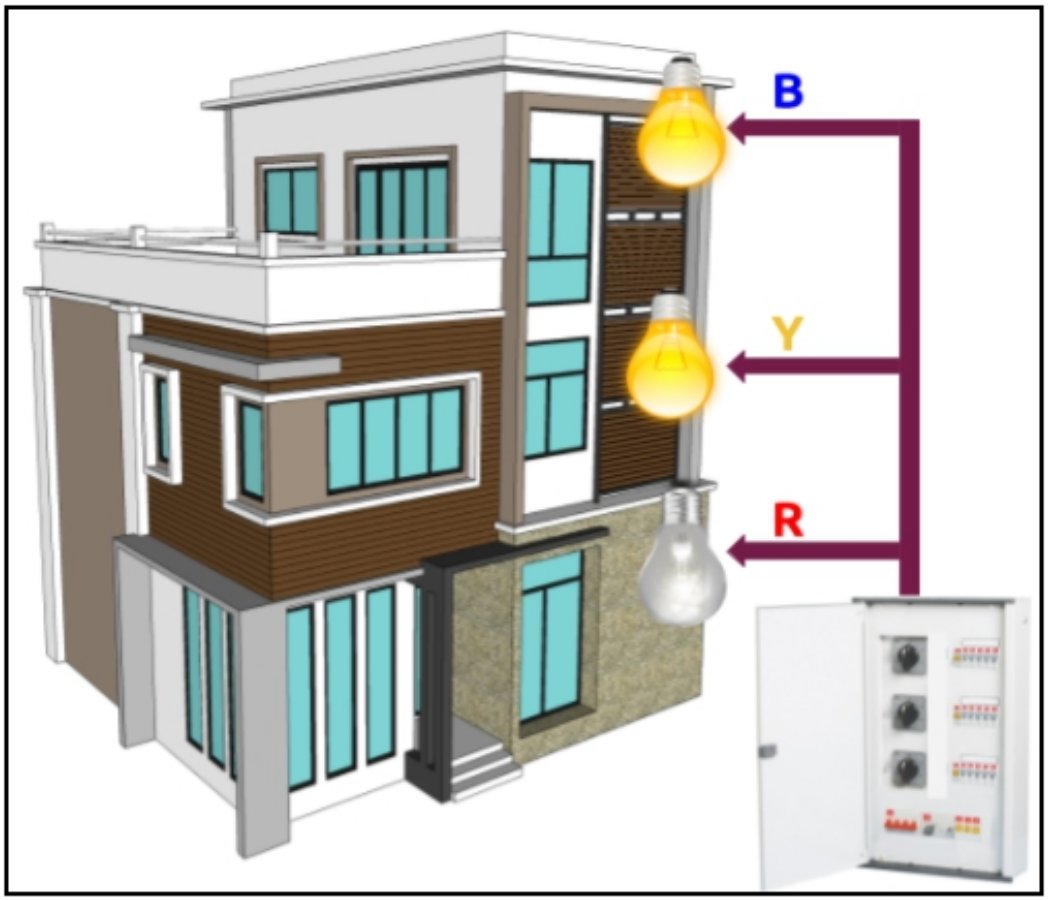
What is a Phase Selector Distribution Board?

In Phase Selector Distribution Board, the phase priority selection is manually carried out by selector switch & user can select phase according to his own choice i.e. R Phase, Y Phase, B Phase.

Let us consider a case in which a residential complex consists of 3 floors, separate phases supplying power to individual floors. In normal conditions, first floor receives power from R phase, Y & B supply power to 2nd & 3rd floor respectively. If the R phase is present and its voltage is within desired range first floor loads will run on R phase only. This is indicated by an LED glowing in the distribution board

Assume that the supply of first floor fails, the indicating LED stops glowing. In order to have continuity of power we have to shift the supply of R phase (1st floor) to either on Y phase (2nd floor) or on B phase (3rd floor). The shift of supply would be dependent on the availability of supply on the 2nd & 3rd floor, which can be easily found out from the LED indication on Distribution Board.

To cater this application, Cam switches are deployed. These Cam switches are 63A, Phase changeover switches with the capability of switching between two simultaneous phases efficiently.

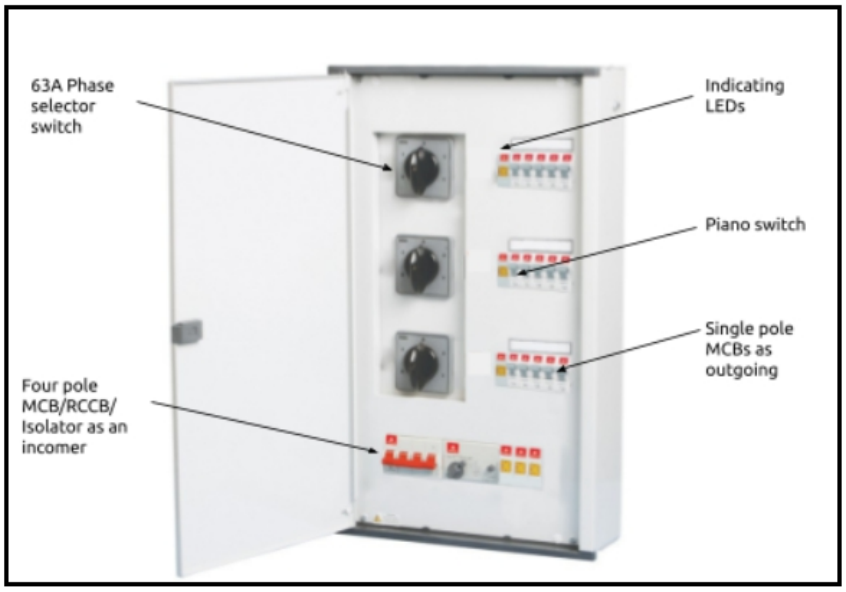


Need of 63A current rating

In a Distribution Board, generally 63 A Rotary Cam Switch is used for Changeover application as discussed previously.
If we consider the general single phase residential application the maximum current requirement is 15 A - 20 A. Now the question is "Why 63 A Current rating is required?".

The answer is - "While selecting a phase selector DB it has to be noted that rating of the switch should be 3 times higher than actual connected load on any single phase". This is to ensure that the incomer is capable of feeding connected loads.

Phase selector phase distribution board



1. Best in class aesthetics with high mechanical strength
2. Fully type tested as per international standard IEC 60947
3. Compact design leading to indirect cost benefits in Distribution board design

Featured Product

EPSILON Cam TNC Series

Available features :

1. Conformance to international standard IEC 60947 - 1/3/5
2. High rated operational voltage : 690 V AC
3. Wide operating temperature range : -25 C to 60 C
4. Better electrical and mechanical life
5. Available in : 6A, 10A, 16A, 20A, 25A, 32A, 40A, 63A, 100A, 200A current ranges