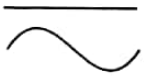
1.2 VARIOUS ELECTRICAL SYMBOLS USED IN DOMESTIC AND INDUSTRIAL INSTALLATION AND POWER SYSTEM (GENERATION TRANSMISSION AND DISTRUBATION INCLUDING SUB STATIONS) AS PER BIS CODE

1.2.1 Kind of Current

Direct Current —————

Alternating Current 

Power Frequency 

Apparatus and machines suitable either for D.C. or A.C. (Universal) 

1.2.2 System of Distribution

A.C. of m-phase and frequency $m \sim f$

Example:

(a) A.C., Single phase, 50 Hz — 1 ~ 50 Hz

(b) A.C., Three phase, 50 Hz — 3 ~ 50 Hz

(c) A.C., Three phase, 50 Hz, 415 V — 3 ~ 50 Hz, 415 V

Neutral

Example:

(a) A.C., three-phase, with neutral, 50 Hz — 3 N ~ 50 Hz

(b) A.C., three-phase, with neutral, 50 Hz 415 V (240 V between phase and neutral) — 3 N ~ 50 Hz, 415 V

D.C., Two conductors 110 V, — 2–110 V

D.C., Three conductors, including neutral 220 V, (110 V between outer conductors and neutral) — 2N–220 V

Positive polarity — +

Negative Polarity — –

1.2.3 Symbols of Lines

Lines or Cable: existing

planned

Under ground Cable

Overhead line (General Symbol)

1.2.4 Conductors

Conductors or group of several conductors

Flexible conductors

Note: Use one or several half circles reversely drawn; two half circles are never to be used because of a possible confusion with symbol for alternating current.

Two Conductors:

(a) Single line

(b) Multi line

Three Conductors:

(a) Single Line

(b) Multiline

***n* conductors:**

Example:

Four Conductors:

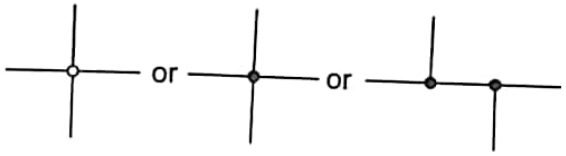
(a) Single Line

(b) Multi line

1.2.5 Terminals and Connections of Conductors

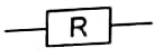
- Terminals or Junctions of Conductors

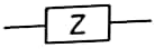
- Double junctions of Conductors

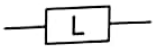


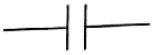
- Crossing without electrical connection

1.2.6 Circuit Elements

- Non-reactive resistance or non -reactive resistor 

- Impedance 

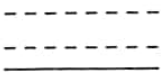
- Inductance, inductor 

- Winding 
- Capacitance Capacitor 

Note: The distance between the plates should not be greater than one -fifth of the length of the plates.

- Earth 
- Frame or chassis connection 
- Frame or chassis earth connection 
- Fault 

Example: Position of fault to frame 

Screen 

Example: Screened conductor or screened cable

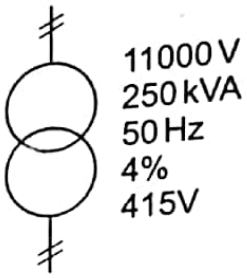
Magnetic core 

Laminated core 

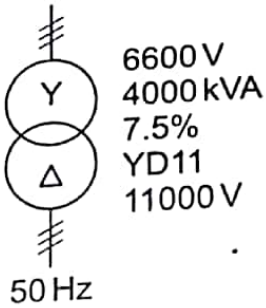
1.2.9 Transformers

Single Line

Single phase transformers, with two or three phase windings:
*Example:*11000/415 V, 250 KVA,50 Hz short circuit voltage 4%



Three phase transformer with two separate windings:
Example: Star delta 6600/1100V, 4000 KVA, 50 Hz connection Yd 11.



Short circuit voltage 7.5%

Auto transformer

Single Line

(a) Auto -transformer, single-phase

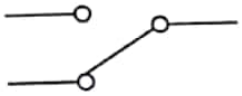
(b) Auto – transformer, three phase, star connected.

(c) Auto transformer, single phase, with continuous voltage regulations.

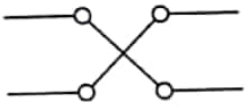
1.2.10 Switch Gear

Switch -general symbol

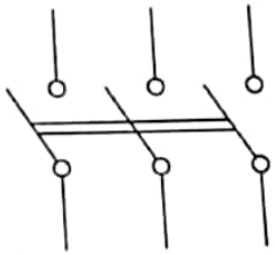
(a) Two way



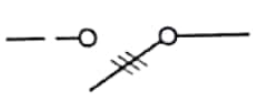
(b) Intermediate



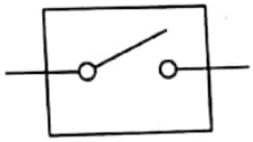
Three-pole switch, multiline



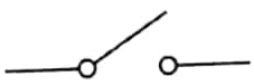
Three pole switch, single line



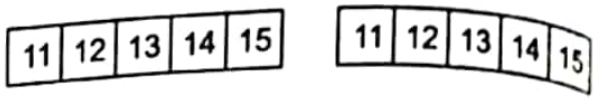
Circuit breaker



Isolator



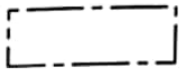
Terminal Strip



Link

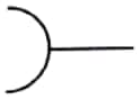
Open link

Distribution board cubical box



1.2.11 Contacts

Sockets



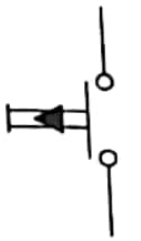
Plug

Plug & socket

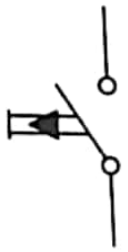
Relay or Contractor contact normally open (No)

Relay or contractor contact normally closed (NC)

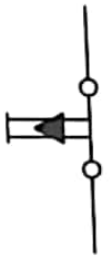
Push – button with momentary closed contact (normally open contact)



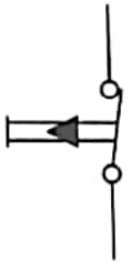
or



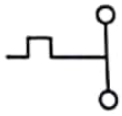
Push -button with momentary open contact (normally closed contact)



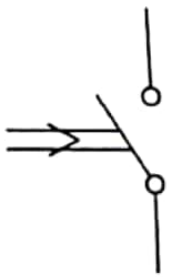
or



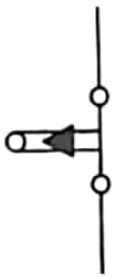
Thermal over load relay contact



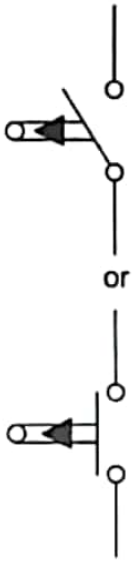
Time delay relay contact



Limit switch (NC contact)

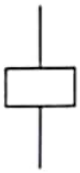


Limit switch (No Contact)

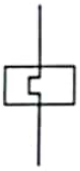


1.2.12 Relays and Contractor

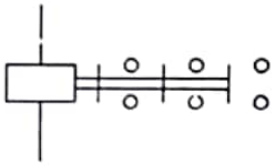
Coil of electro magnetic relay or contractor



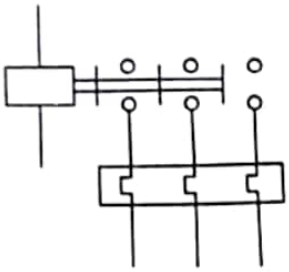
Thermal overload relay



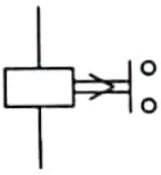
Electrically operated three-pole contractor



Electrically operated three pole contractor with thermal overload device in all three-poles



Time delay relay (TDR)



1.2.13 Fuse-boards

Lighting circuit fuse-boards:

(a) Main fuse -board without switches

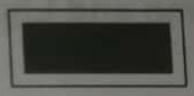
(b) Main fuse -board with switches

(c) Distribution fuse board without switches

(d) Distribution fuse-board with switches

Power circuit fuse-boards

(a) Main fuse board without switches



(b) Main fuse-board with switches

(c) Distribution fuse board without switches

(d) Distribution fuse board with switches

1.2.14 Switches and Switch Outlets

One way switch

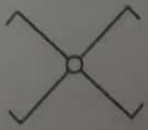
Single pole

Two Pole

Three Pole

Two way switch

Intermediate switch



Push button or bell push

1.2.15 Socket Outlets

Socket Outlet, 5A 

Socket outlet, 15 A 

Combined switch and socket Outlet, 5A 

1.2.16 Lamp and Lighting Apparatus

Lamp or outlet for lamp 

Group of three 40 W lamps 3 × 40 W

Lamp mounted on wall or light bracket 

Lamp mounted on ceiling 

Flucrescent Lamp 

Group of three 40 W Fluorescent Lamps 

1.2.17 Fans

Ceiling Fan

Bracket Fan 

Exhaust Fan 

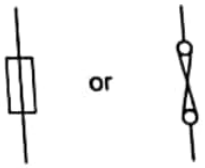
Fan Regulator 

1.2.18 Earthing

Earth Point

1.2.19 Miscellaneous Apparatus

Fuse

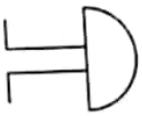


Signal lamp

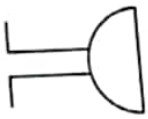
Indicator

Horn

Bell



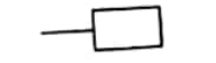
Buzzer



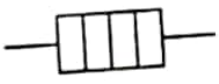
Siren

Electrical Appliances

(a) General
Note: If necessary use designation to specify



(b) Heater



(c) Storage type electric water heaters