IP mode of protection
IP= “Insulation Protection” is a measure of protection against water and partical ingression that a device withstand. The level of protection offered by a device is laid down in the manufacturer’s specification according to DIN 40050.

The first digit of the code states the level of protection against partical ingression and the second digit states the level of protection against penetration of water.

Modes of protection as per DIN VDE 0470-1 (EN 60529)

Degrees of protection against solid foreign bodies *First Code:*	**Degrees of protection against water** *Second Code:*
0 No particular protection	0 No particular protection
1 Protection against penetration of solid foreign bodies whose diameter exceeds 50 mm (large foreign bodies) * No protection against intentional access. ex. by hand, but exclusion of larger parts of the body	1 Protection against water dropping perpendicularly. No harmful effect must arise (water drip)
2 Protection against penetration of solid foreign bodies whose diameter exceeds 12 mm. * (medium-sized foreign bodies) to exclude fingers or similar parts	2 Protection against water dropping perpendicularly. No harmful effect must arise with an equipment unit 15° in relation to its normal position (casing) (obliquely water drip)
3. Protection against penetration of solid foreign bodies whose diameter exceeds 2.5 mm (small foreign bodies) * ◊ To exclude tools, wires or similar items whose thickness exceeds 2.5 mm	3 Protection against water dripping at any angle of up 60 ° to the perpendicular. No harmful effect must arise (water spray)
4. Protection against penetration of solid foreign bodies whose diameter exceeds 1 mm (granular foreign body) * ◊ To exclude tools, wires, or similar items whose thickness exceeds 1 mm	4 Protection against water which splashes onto the equipment unit (ex. casing) from any direction. No harmful effect must arise (water splash)
5. Protection against harmful accumulations of dust. Penetration of dust is not entirely preventive; but must not penetrate in such quantities that the mode of operation of the equipment unit is affected (dust protection) ❦ Complete contact prevention	5 Protection against water steam from a jet which is directed against the equipment unit (casing) from any direction. No harmful effects must arise (water spray)
6. Prevention of penetration of dust (dust proof) Complete contact prevention	6 Protection against heavy sea or powerful water jet. Water must not penetrate the operating equipment in harmful quantities (flooding)
	7 Protection against water if the operating equipment is dipped in water under certain pressure and time. Water must not penetrate in harmful quantities (dipping)
	8 The operating media (casing) is suitable for permanent dipping in water under conditions which are to be defined by the manufacturer (immersion) X

* In the case of operating media of protection levels 1 to 4, consistently or inconsistently formed foreign bodies with three dimensions perpendicular to each other and larger than the corresponding diameter numerical values are prevented from entering.

◊ For degrees of pollution 3 and 4, the application of his table is appropriate for operating media with drain holes or cooling air apertures which are the subject of the responsibility of the corresponding expert commit tee.

❦ For protection level 5, the application of this table is appropriate for operating media with drain holes, and comes under the responsibility of the respective expert committee.

X This level of protection normally relates to an air-tight field operating medium.
For certain operating media, however, water may penetrate provided that there is no harmful effect.