外殼防護等級相關規定

NEMA

Indoor Non hazardous Locations

Type of Enclosure										Provides a Degree of Protection Against the Following Environment Conditions
1*	2*	4	4X	5	6	6P	12	12K	13	
○	○	○	○	○	○	○	○	○	○	Incidental contact with the enclosed equipment
○	○	○	○	○	○	○	○	○	○	Failing dirt
	○	○	○	○	○	○	○	○	○	Falling liquids and light
		○	○		○	○	○	○	○	Circulating dust, lint, fibers and flings **
		○	○	○	○	○	○	○	○	Settling airborne dust, lint, fibers, and flings **
		○	○		○	○				Hose down and splashing water
							○	○	○	Oil and coolant seepage
									○	Oil or coolant spraying and splashing
			○			○				Corrosive agents
					○	○				Occasional temporary submersion
						○				Occasional prolonged submersion

*	These enclosures may be ventilated.
**	These fibers and flings are non hazardous materials and are not considered Class III type ignitable fibers or combustible flings. For Class III type ignitable fibers or combustible flings see the National Electrical Code, Article 500.

Outdoor Non hazardous Locations

Type of Enclosure							Provides a Degree of Protection Against the Following Environment Conditions
3	3R*	3S	4	4X	6	6P	
○	○	○	○	○	○	○	Incidental contact with the enclosed equipment
○	○	○	○	○	○	○	Rain, snow, and sleet **
		○					Sleet **
○		○	○	○	○	○	Windblown dust, lint, fibers, and flings
			○	○	○	○	Hose down
				○		○	Corrosive agents
					○	○	Occasional temporary submersion
						○	Occasional prolonged submersion

*	These enclosures may be ventilated.
**	External operating mechanisms are not required to be operable when the enclosure is ice covered.
***	External operating mechanisms are operable when the enclosure is ice covered

Indoor Hazardous Locations

Type of Enclosure									Provides a Degree of Protection Against the Atmospheres Typically Containing
Class	A	B	C	D	E	F	G	10	
I	○								Acetylene
I		○							Hydrogen, manufactured gas
I			○						Diethyl
I				○					Gasoline, hexane, butane, naphtha, propane, acetone, toluene, isoprene
II					○				Metal dust
II						○			Carbon black, coal dust, coke dust
II							○		Flour, starch, grain dust
III							○		Fibers, flings **
MSHA								○	Methane with or without coal dust

*	For Class III type ignitable fiber or combustible flying see the National Electrical Code, Article 500.
**	Due to the characteristics of the gas, vapor, or dust, a product suitable for another Class or Group unless marked on the product.

IP

國際電器技術委員會 IEC 529 箱體保護規定

其箱體的構造以 **IP XX** 來定義其保護構造之等級

第一個 X 字：

0	無保護
1	防止直徑大於 50mm 的固體外物進入箱體
2	防止手指接觸到帶電體及防止直徑大於 12mm 的固體外物進入箱體
3	防止直徑大於 2.5mm 的電線等接觸到帶電體及防止直徑大於 2.5mm 的固體外物進入
4	防止直徑大於 1mm 的電線等接觸到帶電體及防止直徑大於 1mm 的固體外物進入
5	防止任何物體接觸到帶電體及防止危險的灰塵附著物進入箱體
6	防止任何物體接觸到帶電體及防止任何灰塵進入箱體

第二個 X 字：

0	無保護
1	防止垂直落水滴進入箱體
2	防止 15 度角內傾斜落水滴入箱體
3	防止 60 度角內傾斜灑水滴進入箱體
4	防止任何方向飛濺水滴進入箱體
5	防止任何方向噴水滴進入箱體
6	防止任何方向頃刻間大量噴水滴進入箱體
7	防止頃刻間的浸水進入箱體
8	防止無期限的浸水進入箱體

	Protection against contact and ingress of solid foreign bodies		Protection against ingress of water	
	1.Charact numeral	Temp f. extent of protection	2.Charact numeral	Temp f. extent of protection
IP	0	No protection	0	No protection
	1	Protection against large size (>50 mm) solid foreign bodies	1	Protection against drops of water falling vertical
	2	Protection against medium size (>12 mm) solid foreign bodies	2	Protection against drops of water falling at an angle up to 15 deg. from the vertical
	3	Protection against small size (>12 mm) solid foreign bodies	3	Protection against drops of water falling at an angle up to 15 deg. from the vertical
	4	Protection against granular size (>1 mm) solid foreign bodies	4	Protection against water splashed from any direction
	5	Protection against harmful deposits of dust	5	Protection against water-jets. Projected by a nozzle from any direction
	6	Protection against ingress of dust	6	Protection against temporary flooding(e.g. by waters from heavy seas on ships decks)
			7	Protecting when being immersed in water(under stated pressure and time conditions)
			8	Protecting when being submerged in water for unlimited time (under stated pressure conditions)