

● NEMA AND IEC CROSS-REFERENCE GUIDE

Enclosures may be the last thing considered in your application, but that same enclosure is the first thing that will protect your vital equipment.

Understanding NEMA and IEC standards are essential when choosing an enclosure that will fit your specific needs. In addition to the type of environment, the location of your application is crucial when choosing the correct standards level. This will tell you whether you should be concerned with NEMA or IEC standards.

Depending on whether or not your application will be indoor or outdoor, submerged in water or on dry land, or if your application needs venting/cooling, different IP protection levels are necessary.

IEC Ratings and NEMA protection levels are not equivalent. Both systems determine levels of protection against foreign bodies; however, the test methods are not the same.

NEMA standards meet or exceed IEC standards but this is a one-way conversion and IEC standards cannot be applied to meet a NEMA classification.

Even though NEMA and IP ratings are not the same, there are rough approximations for cross-referencing (shown in the chart below).

Phoenix Mecano products are developed and tested to IEC standards for ingress protection; however, in certain product groups, they have also been tested to NEMA standards and can be marked as such when requested.

This allows Phoenix Mecano to offer world-class solutions to our regional customers.

NEMA Enclosure Classifications		IEC Enclosure Classifications		
Protection Against Solids & Liquids		Protection Against Solids	Protection Against Liquids	
1	General purpose - Indoor	IP10	Protected against solid objects up to 50mm, e.g. accidental touch by hands	Not protected
2	Drip-proof - Indoor	IP11	Protected against solid objects up to 50mm, e.g. accidental touch by hands	Protection against vertically falling drops of water e.g. condensation
3	Dust tight, rain tight, sleet tight – Outdoor	IP54	Protected against dust-limited ingress (no harmful deposit)	Protection against water sprayed from all directions, limited ingress permitted
3R	Rain tight, sleet resistant – Outdoor	IP14	Protected against solid objects up to 50mm, e.g. accidental touch by hands	Protection against water sprayed from all directions, limited ingress permitted
3S	Dust tight, rain tight, sleet tight – Outdoor	IP54	Protected against dust, limited ingress (no harmful deposit)	Protection against water sprayed from all directions, limited ingress permitted
4	Water tight, dust tight, sleet resistant – Indoor and Outdoor	IP66	Totally protected against dust	Protection against strong jets of water from all directions, limited ingress permitted
4X	Water tight, dust tight, corrosion resistant – Indoor and Outdoor	IP66	Totally protected against dust	Protection against strong jets of water from all directions, limited ingress permitted
5	Dust tight, drip-proof – Indoor	IP52	Protected against dust, limited ingress (no harmful deposit)	Protection against direct sprays of water up to 15° from the vertical
6	Occasionally submersible, water tight, sleet resistant – Indoor and Outdoor	IP67	Totally protected against dust	Protected against the effect of immersion between 15cm and 1m
6P	Water tight, sleet resistant with prolonged submersion – Indoor and Outdoor	IP67	Totally protected against dust	Protected against the effect of immersion between 15cm and 1m
12	Dust tight and drip tight – Indoor	IP52	Protected against dust, limited ingress (no harmful deposit)	Protection against direct sprays of water up to 15° from the vertical
12K	Dust tight and drip tight, with Knockouts – Indoor	IP52	Protected against dust, limited ingress (no harmful deposit)	Protection against direct sprays of water up to 15° from the vertical
13	Oil tight and dust tight – Indoor	IP54	Protected against dust, limited ingress (no harmful deposit)	Protection against water sprayed from all directions, limited ingress permitted