

What does IP20 mean? Actually, what does any IP mean?



IP stands for “ingress protection”. The numbers then describe your protection against solid objects and liquids.

The first number is the protection rating against solid objects and the second number is the protection against liquids.

For example, using the listing below, IP20 means you are protected against solid objects up to 12mm (2) but there is no protection against liquids (0).

Here is what each number means:

IP Rating Chart

IP ratings are represented by combining the first and second digits of the following columns. See example below.

1st Digit - SOLID Degree of protection against solid objects	2nd Digit - LIQUID Degree of protection against water
0 No Protection	0 No Protection
1 Protected against a solid object greater than 50mm, such as a hand.	1 Protected against water drops.
2 Protected against a solid object greater than 12.5mm, such as a finger.	2 Protected against water spray at a 15 degree angle.
3 Protected against a solid object greater than 2.5mm, such as a wire.	3 Protected against water spray at 60 degree angle.
4 Protected against a solid object greater than 1mm, such as a thin wire.	4 Protected against water spraying from any angle.
5 Dust Protected. Prevents ingress of dust sufficient to harm parts.	5 Protected against water jets from any angle.
6 Dust Tight. No ingress of dust.	6 Protected against powerful water jets from any angle.
Example:	7 Protected against the effects of temporary submersion in water (up to 1m for 30 mins).
IP 65	8 Protected against the effects of permanent submersion in water (up to 3m for 30 mins).

IP First number – Protection against solid objects

- **0** – No special protection
- **1** – Protected against solid objects up to 50 mm, e.g. accidental touch by persons hands.
- **2** – Protected against solid objects up to 12 mm, e.g. persons fingers.
- **3** – Protected against solid objects over 2.5 mm (tools and wires).
- **4** – Protected against solid objects over 1 mm (tools, wires, and small wires).
- **5** – Protected against dust limited ingress (no harmful deposit).
- **6** – Totally protected against dust.

IP Second number – Protection against liquids

- **0** – No protection.
- **1** – Protection against vertically falling drops of water e.g. condensation.
- **2** – Protection against direct sprays of water up to 15o from the vertical.
- **3** – Protected against direct sprays of water up to 60o from the vertical.
- **4** – Protection against water sprayed from all directions – limited ingress permitted.
- **5** – Protected against low pressure jets of water from all directions – limited ingress.
- **6** – Protected against temporary flooding of water, e.g. for use on ship decks – limited ingress permitted.
- **69K** – Protected against ingress of high temperature (steam)/high pressure water.
- **7** – Protected against the effect of immersion between 15 cm and 1 m.
- **8** – Protects against long periods of immersion under pressure.

IP Rating and NEMA Rating Comparison

IP Code	Minimum NEMA Enclosure rating to satisfy IP Code
IP20	1
IP54	3
IP66	4, 4X
IP67	6
IP68	6P

The United States National Electrical Manufacturers Association (NEMA) also publishes protection ratings for enclosures similar to the IP rating system published by the International Electrotechnical Commission (IEC). However, it also dictates other product features not addressed by IP codes, such as corrosion resistance, gasket aging, and construction practices. Thus, while it is possible to map NEMA enclosure rating/NEMA ratings that can satisfy or exceed the IP Code criteria, it is not possible to map IEC ratings (IP codes) to NEMA enclosure ratings, as the IP Code does not mandate the additional requirements. The table above indicates the minimum NEMA rating that satisfies or exceeds a given IP code, but can only be used in that way, not to map IP to NEMA.

By knowing the right IP rating for your electrical enclosure upfront you could save a whole lot on the back end – especially if your enclosure is going to be used in extreme weather conditions. Look for a product’s IP rating when making a purchase. The product’s IP rating is your way of knowing that the product is protected from particles or dust or water that may be present in the environment where you install the product. This is good to know, particularly when you’re designing your next enclosure for a buyer in Europe.

IP20 and NEMA comparison for MPS MOLLER evaluation

NEMA Enclosure Ratings

All enclosures are designed to protect users from accidental contact with installed electrical components and to protect your equipment from possible theft or tampering. However, in order to better protect your valuable equipment from all possible threats, you should choose an enclosure that is proven to withstand the environmental conditions of your application. [High Quality NEMA and IP Rated Enclosures](#) keep your electronics safe during harsh weather conditions, high pressure spray downs, and even temporary submersion. Knowing the final application of your product will help you decide which level of protection is needed.

NEMA ENCLOSURE RATINGS																
		INDOOR USE					OUTDOOR USE									
		Type 1	Type 2	Type 5	TypeS 12/12K	Type 13	Type 3	Type 3S	Type 3X	Type 3SX	Type 3R	TYPE 3RX	Type 4	Type 4X	Type 6	Type 6P
SOLIDS	INCIDENTAL CONTACT	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	FALLING DIRT	●	●		●	●	●	●	●	●	●	●	●	●	●	●
	CIRCULATING DUST				●	●							●	●	●	●
	SETTLING AIRBORNE DUST			●	●	●							●	●	●	●
	WINDBLOWN DUST						●	●	●	●			●	●	●	●
LIQUIDS	LIGHT SPLASH		●	●	●	●	●	●	●	●	●	●	●	●	●	●
	HOSEDOWN & SPLASH												●	●	●	●
	TEMPORARY SUBMERSION														●	●
	PROLONGED SUBMERSION															●
	RAIN, SNOW & SLEET						●	●	●	●	●	●	●	●	●	●
	ICE LADEN							●		●						
CHEMICALS	OIL & COOLANT SEEPAGE				●	●										
	OIL & COOLANT SPLASH					●										
	CORROSION								●	●		●		●		●
Comparable IP Rating		IP 20	IP 22	IP 53	IP 54		IP 55			IP 24			IP 66		IP 67	IP 68

NEMA 1 Enclosures constructed for indoor use to provide a degree of protection to the equipment inside the enclosure against limited amounts of falling dirt.

NEMA 2 Enclosures constructed for indoor use to provide a degree of protection to the equipment inside the enclosure against falling dirt and limited amounts of falling water (dripping and light splashing).

NEMA 3 Enclosures constructed for either indoor or outdoor use to provide a degree of protection against rain, sleet and wind-blown dust, and will remain undamaged by the external formation of ice on the enclosure.

NEMA 3R Enclosures constructed for either indoor or outdoor use to provide a degree of protection against rain, sleet, wind-blown dust, and will remain undamaged by the external formation of ice on the enclosure. A small drain hole on the bottom allows for ventilation and quick dispersion of any water that may enter the enclosure.

NEMA 3SX Enclosures constructed for either indoor or outdoor use to provide a degree of protection against rain, sleet, windblown dust and an additional level of protection against corrosion. These enclosures will also allow for operation of external mechanisms when ice laden.

NEMA 4 Enclosures constructed for either indoor or outdoor use with a dust-tight, water-tight seal to protect against windblown particles, rain, splashing water and hose-directed water. Will remain undamaged by the external formation of ice on the enclosure.

NEMA 4X/IP66 Enclosures constructed for either indoor or outdoor use with a dust-tight, water-tight seal to protect against windblown dust and rain, splashing water, hose-directed water, and damage from external ice formation. Plus, an additional level of protection against corrosion. All Integra Enclosures carry a minimum 4X NEMA Rating.

NEMA 5 Enclosures constructed for indoor use to provide a degree of protection against settling airborne dust and fibers and dripping non-corrosive liquids.

NEMA 6 Enclosures constructed for either indoor or outdoor use to protect against hose-directed water, damage from external ice formation, and the entry of water during occasional *temporary* submersion at a limited depth.

NEMA 6P/IP68 Enclosures constructed for either indoor or outdoor use to provide a degree of protection against hose-directed water, damage from external ice formation, and the entry of water during occasional *prolonged* submersion at a limited depth. [Integra IP 68](#) rated enclosures can be submerged in up to 6 feet of water for up to 24 hours.

NEMA 12 Enclosures constructed (without knockouts) for indoor use to provide a degree of protection against circulating dust or fibers, falling dirt and dripping non-corrosive liquids.

NEMA 12K Enclosures constructed (with knockouts) for indoor use to provide a degree of protection against circulating dust or fibers, falling dirt and dripping non-corrosive liquids.

NEMA 13 Enclosures constructed for indoor use to provide a degree of protection against dust, spraying of water, oil, and noncorrosive coolants.