

**IP - Ingress Protection rating is used to specify the environmental protection of electrical equipment**

Ingress Protection (IP) ratings are developed by the European Committee for Electro Technical Standardization (CENELEC) (described IEC/EN 60529), specify the environmental protection an enclosure provides

The IP rating normally has two (or three) numbers:

- 1 Protection against solid objects
- 2 Protection against liquids
- 3 Protection against mechanical impacts (commonly omitted)

## IP First number - Protection against solid objects

<b>0</b>	No protection
<b>1</b>	Protected against solid objects over 50mm, e.g. accidental touch by hands
<b>2</b>	Protected against solid objects over 12mm, e.g. fingers
<b>3</b>	Protected against solid objects over 2.5mm, e.g. tools and wires
<b>4</b>	Protected against solid objects over 1mm, e.g. tools, wire, and small wires
<b>5</b>	Protected against dust limited ingress no harmful deposit
<b>6</b>	Totally protected against dust

## IP Second number - Protection against liquids

<b>0</b>	No protection
<b>1</b>	Protected against vertically falling drops of water e.g. condensation
<b>2</b>	Protected against direct sprays of water up to 15° from the vertical
<b>3</b>	Protected against direct sprays of water up to 60° from the vertical
<b>4</b>	Protected against water sprayed from all directions limited ingress permitted
<b>5</b>	Protected against low pressure jets of water from all directions limited ingress permitted
<b>6</b>	Protected against strong jets of water, e.g. for use on ship decks limited ingress permitted
<b>7</b>	Protected against the effect of immersion between 15cm and 1m (Duration of test 30 minutes)
<b>8</b>	Protected against long periods of immersion under pressure

## IP Third number - Protection against mechanical impacts (commonly omitted)

<b>0</b>	No protection
<b>1</b>	Protected against impact of 0.225 joule, e.g. 150g weight falling from 15cm height
<b>2</b>	Protected against impact of 0.375 joule, e.g. 250g weight falling from 15cm height
<b>3</b>	Protected against impact of 0.5 joule, e.g. 250g weight falling from 20cm height
<b>4</b>	Protected against impact of 2.0 joule, e.g. 500g weight falling from 40cm height
<b>5</b>	Protected against impact of 6.0 joule, e.g. 1.5kg weight falling from 40cm height
<b>6</b>	Protected against impact of 20.0 joule, e.g. 5kg weight falling from 40cm height