IP Rating Chart (IEC 60529)

Basis: IEC 60529 Degrees of protection provided by enclosures (IP Code). IP69K is defined in ISO 20653 for road vehicles and widely used in food plants.

instrumentationblog.in/downloads/engineering-reference-tables/ip-rating-chart/

First digit: protection against solids

Digit	Protection	Access probe
0	No protection	No protection
1	Objects over 50 mm (back of hand)	Large surfaces only
2	Objects over 12.5 mm (finger)	Finger
3	Objects over 2.5 mm (tools, thick wires)	Tool
4	Objects over 1.0 mm (most wires, screws)	Wire
5	Dust protected (limited ingress, no harmful deposit)	Wire
6	Dust tight (no ingress of dust)	Wire

Second digit: protection against water

Digit	Protection	Test condition
0	No protection	
1	Vertically dripping water	1 mm/min for 10 min
2	Dripping water with enclosure tilted 15°	3 mm/min for 10 min
3	Spraying water up to 60° from vertical	10 L/min, 5 min
4	Splashing water from any direction	10 L/min, 5 min
5	Water jets from any direction (6.3 mm nozzle)	12.5 L/min, 3 m, 3 min
6	Powerful water jets (12.5 mm nozzle)	100 L/min, 3 m, 3 min
7	Temporary immersion	Up to 1 m for 30 min
8	Continuous immersion	Beyond 1 m, conditions agreed with maker
9	High pressure, high temperature jets	80 °C water, 80 to 100 bar, close range

Common IP ratings

Rating	Meaning	Typical use
IP20	Finger safe, no water protection	Indoor control panels, DIN rail devices
IP54	Dust protected, splashing water	Indoor industrial, sheltered outdoor
IP55	Dust protected, water jets	Motors, outdoor junction boxes
IP65	Dust tight, water jets	Field instruments, washdown areas
IP66	Dust tight, powerful jets	Outdoor transmitters, offshore
IP67	Dust tight, immersion to 1 m	Sensors in pits, flooded areas
IP68	Dust tight, continuous immersion	Submersible level probes
IP69K	Dust tight, high pressure steam cleaning	Food and beverage hygienic areas (ISO 20653)

Notes

- A higher second digit is not always better: IPX7 immersion does not prove resistance to jets (IPX5, IPX6).
- IP ratings do not cover corrosion, ice or hazardous areas.

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