



## Waterproof Connectors - Where are they used and how are they rated?

### Where are they used?

Applications for these connectors are numerous and include automotive, communication, industrial and medical instruments. Dust and moisture are the two most common contaminants that enter through exposed data ports, damaging or destroying electronic equipment. Fortunately, specially sealed cables and connectors are available from L-com to protect these ports from dust and moisture.

L-com offers a number of protected interface types including:

**D-subminiature** for many serial and parallel devices



**RJ45** for industrial Ethernet applications



**USB** for device interconnection and data transfer



**Fiber Optic** for industrial networks/harsh environments



### How are they rated?

The most popular system to rate the environmental protection of a particular connector is the Ingress Protection Rating (commonly known as IP Rating). The IP Rating is a number ranging from 1 to 3 digits.

- The first digit rates protection against ingress of solid objects
- The second digit rates protection against ingress of liquids
- The third digit rates protection against impact damage

**Note:** Many products, including L-com products, are not rated for impact. Larger value digits indicate greater protection against that substance/force.

Please see the chart below for details of the first two digit ratings:

First number (Protection against solid objects)	Definition	Second number (Protection against liquids)	Definition
0	No protection	0	No protection
1	Protected against solid objects over 50mm (e.g. accidental touch by hands)	1	Protected against vertically falling drops of water
2	Protected against solid objects over 12mm (e.g. fingers)	2	Protected against direct sprays up to 15° from the vertical
3	Protected against solid objects over 2.5mm (e.g. tools and wires)	3	Protected against direct sprays up to 60° from the vertical
4	Protected against solid objects over 1mm (e.g. tools, wires and small wires)	4	Protected against sprays from all directions - limited ingress permitted
5	Protected against dust - limited ingress (no harmful deposit)	5	Protected against low pressure jets of water from all directions - limited ingress permitted
6	Totally protected against dust	6	Protected against strong jets of water, e.g. for use on ship decks - limited ingress permitted
		7	Protected against the effects of temporary immersion between 15cm and 1m. Duration of test 30 minutes
		8	Protected against long periods of immersion under pressure