

Protecting Computers Against Dust in Industrial and Warehouse Environments

Tiny dust particles—varying in size from just a few hundred microns to a few micrometers—can wreak havoc on the precise inner workings of a computer, causing performance issues or outright failure. While dust is just about everywhere, industrial and warehouse environments are especially affected, generating huge quantities of dust during everyday operations. The computers in these harsh environments require protection from the dust that threatens to hamper operational efficiency.

IP RATINGS

Ingress Protection (IP) ratings are assigned using a two-digit IP code that indicates the degree to which an enclosure prevents the intrusion of solids and liquids.

The first digit indicates the level of protection against the ingress of solid foreign objects, and the second digit indicates protection against the harmful ingress of water.

The protection from solids rating ranges from no protection at 0 to completely sealed against dust at 6. The protection from liquids rating ranges from no protection at 0 to protected against long periods of immersion under pressure at 8.

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Ingress Protection (IP) Ratings			
Solids		Liquids	
0	No protection	0	No protection
1	Protected against objects greater than 50 mm (large body parts, hands)	1	Protected against dripping water or condensation
2	Protected against objects greater than 12.5 mm (fingers)	2	Protected against dripping water when tilted 15 degrees
3	Protected against objects greater than 2.5 mm (tools/thick wires)	3	Protected against water spray at any angle up to 60 degrees from vertical
4	Protected against objects greater than 1 mm (most wires, screws)	4	Protected against splashing water from any direction
5	Protected against dust, limited ingress	5	Protected against jets of water
6	Dust tight, totally protected against dust	6	Protected against high pressure water jets
		7	Protected against the effects of immersion up to 1 m
		8	Protected against immersion beyond 1 m

DUST HAZARDS

Consumer laptops and tablets typically carry a rating of IP42, meaning you can softly toss a few screws or pebbles at them without those objects getting inside, or dribble a few drops of water over them without causing too much damage.

In most industrial or warehouse environments, where cutting, sawing, grinding, moving, boxing, and storing are the norm and dust is constantly being generated, sealing electronics against dust is imperative.

Over time, dust accumulates, blocking filters and preventing cooling air from flowing through the computer. As a result, the computer can overheat, circuit boards can short, the computer can crash or “blue screen,” data can be lost, and—in some cases—the computer can catch fire. Dust can also hinder moving parts like disk drives and block USB ports and other interfaces.

MINIMUM IP REQUIREMENTS FOR INDUSTRIAL AND WAREHOUSE ENVIRONMENTS

Industry analyst VDC Research Group ranks systems that exceed an IP64 rating as “ultra-rugged,” the most demanding of all device categories. The minimum requirement for computers operating in most industrial environments is IP65, which protects against both dust and water. The “6” means it is dust-proof; there is no ingress of dust. And the “5” means water projected by a nozzle against any of the computer’s enclosures from any direction will have no harmful effects.

All DAP Technology computers are rated IP65 and above, completely protecting the computer against dust and ensuring safe, reliable, and continuous performance in the most challenging environments. Some DAP computers like the M9010 tablet achieve an impressive IP67 rating, indicating they are completely sealed against the ingress of dust and sealed against liquid when fully immersed in up to one meter (39 inches) of water.

PROTECTING AGAINST DUST: A CLEAR CHOICE

Given the hazards of dust and its potential to cause costly and inefficient downtime, choosing computer hardware that is completely sealed against dust and carries an IP solids rating of 6 is a necessity in most industrial and warehouse environments. Selecting hardware with a lower IP rating might result in savings at the initial time of purchase, but repairs, replacements, downtime, and lost productivity will add up, resulting in a much higher total cost of ownership. Rugged handheld, tablet, and vehicle-mount computers are the clear choice for industrial environments.

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ABOUT DAP TECHNOLOGIES

DAP Technologies has offices in Tempe, Ariz.; Quebec City; and Abingdon, U.K., and designs and manufactures a full range of rugged computers, including PDAs, handhelds, tablets, and vehicle-mount computers for demanding industries and harsh environments. DAP's mobile and vehicle-mount computers improve data collection, processing, and transmission in numerous industries, including utilities, field service, identity management, transportation, and logistics.

To learn more, please visit DAP Technologies at www.daptech.com or contact your nearest DAP office location.

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