

INGRESS PROTECTION

Rugged tablet computers, which must resist water and dust, are often ranked by ingress protection (IP) ratings which specify the environmental protection provided by an electronic enclosure. The IP rating has two numbers: the first indicates the levels of protection that the enclosure provides

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against the ingress of solid foreign objects, including dust; the second characterizes protection against the ingress of water. These ratings are applied to electronic enclosures of all types, including those intended for continued submersion. Rugged computers have solid object (dust) protection rating of 4 (protected against solid objects over 1mm) 5 (protected against limited ingress), or 6 (totally protected against dust). Water protection levels include 5 (low pressure jets of water from all directions), 6 (powerful jets of water) or 7 (the effect of immersion between 15cm and 1m for 30 min.). Thus typical IP ratings for rugged computers range from 54 to 67, with the dust protection level of 6 being of particular importance.

Dust and water are two of a computer's worst enemies. In order to prevent or minimize dust and water ingress, a computer's external housing must be designed and manufactured to very tight tolerances, and all gaps must be carefully sealed. The interfaces between materials exhibiting different coefficients of thermal expansion are especially important because the sealing material must be able to compensate for thermal expansion and contraction and maintain a tight seal.

The elimination of a fan for the purpose of cooling internal components is one strategy to ensure continued function in the presence of water and dust. Air-handling openings found in conventional computers can allow water and dust to enter the computer directly. And air intakes can become blocked with dust, leading to excessive heat within the unit and

catastrophic failure. Further, this functionality demands a preventative maintenance program that increases the total cost of ownership.



ARMOR products sealed design protects against dust and moisture infiltration, shielding internal components from damage.