ATEX: Explosive Emissions Standard

Overview

The ATEX Directive was finalized by the European Parliament in 1994 and was designed to:

- Offer protection to employees and members of the public from the effects of explosions;
- Prevent explosions from occurring at all; or
- Arrest explosions during the early stages of ignition.

Definition

The acronym ATEX comes from the French atmosphères explosible (explosive environments). To qualify as a potentially explosive atmosphere, the area must contain the flammable substance(s) and air and be under atmospheric conditions.

An explosive environment would at first appear to include anywhere liquid fuels, flammable gases and explosives are stored or used, but explosions can occur in less obvious places such as where there are large amounts of dust or even flour suspended in the air. History is plagued with examples of mill and coal mining explosions causing catastrophic loss of life, injury and structural damage.

The risk posed by electrical equipment

Most explosions need a spark, and as soon as electronic equipment is introduced into a potentially explosive environment, the risk is increased. Switches, circuitry and motors all have the potential to create sparks; wherever a circuit is broken or is close to being reconnected, electric currents can jump through the air in the form of an arc. Sparks can also be initiated by the build-up of static electricity; anyone who has ever walked on a carpet and then received a shock when touching a conductive surface will already know how much static electricity can accumulate.

TouchStar and ATEX certification

TouchStar fabricate all our products with the elimination of arcing and static electricity as key design principles. Our handheld computers are regularly used around re-fuelling stations, airport aprons, in factories and often in enclosed spaces, each of which represents a specific explosive risk. That is why we offer a range of fully ATEX
Compliant units

All internal circuitry and mechanical parts, such as printer motors, are rigorously tested and are not put into production until any possible source of sparking is eliminated. External sockets and plugs, also potential arcing weak spots, undergo specific design and manufacture techniques to avert sparking. Finally, the polycarbonate shell that is essential to the TouchPC hardware's durability is treated seriously as a source of static electricity. We go to great lengths to make sure that static accumulation is not a danger.

Any work undertaken by a TouchStar-authorized subcontractor to assist in the repair, manufacture or servicing of a piece of TouchPC equipment will also be carried out in accordance with the rules of the ATEX Directive.

RTCA: Standards for on-board aircraft usage

RTCA DO-160D defines a series of minimum standard environmental test conditions and applicable test procedures for airborne equipment. The purpose of these tests is to determine the performance characteristics of airborne equipment in environmental conditions representative of those which may be encountered in airborne operation of the equipment.
The standard includes environmental tests for temperature, altitude, humidity, operational shock and crash safety, vibration, explosion, waterproofness, fluids susceptibility, sand and dust, fungus, and salt spray.
TouchStar has been developing products to the requirements of RTCA DO-160D for aircraft, aerospace and commercial industries for more than 20 years. Test programs are utilized to ensure compliance to;

Emissions: RTCA/DO160D Limit M (for on-board aircraft usage) (Global)

Compass Safe Distance: RTCA 160D Section 15.3 & Class Z BS3G100 Pt 2.2.4* (for on-board aircraft usage) (Global)

Environmental IP Ratings

What are IP ratings?

IP stands for 'Ingress Protection'

An IP number is used to specify the environmental protection of enclosures around electronic equipment. These ratings are determined by specific tests.

The IP number is composed of two numbers, the first referring to the protection against solid objects and the second against liquids. The higher the number, the better the protection. TouchStar offer terminals with a variety of different IP ratings to match your specific requirement.

Level of protection against solid objects or materials
0 No Protection
1 Protected against solid objects to 50mm
2 Protected against solid objects to 12mm
3 Protected against solid objects to 2.5mm
4 Protected against solid objects to 1mm
5 Protected against dust, limited ingress (no harmful deposit)
6 Totally protected against dust

Level of protection against water / liquids
0 No Protection
1 Protection against vertically falling drops of water (e.g. condensation)
2 Protection against direct sprays of water up to 15 degrees from vertical
3 Protection against direct sprays of water up to 60 degrees from vertical
4 Protection against water sprayed from all directions - limited ingress permitted
5 Protected against low pressure jets of water from all directions - limited ingress permitted
6 Protected against low pressure jets of water, limited ingress permitted (e.g. ship deck)
7 Protected against the effects of immersion between 15cm and 1m
8 Protected against long periods of immersion under pressure