

BLACK BOX EXPLAINS: THE ANSI/ISA STANDARD FOR HAZARDOUS LOCATIONS

Fires and explosions are a major safety concern in industrial plants. Electrical equipment that must be installed in these locations should be specifically designed and tested to operate under extreme conditions. The hazardous location classification system was designed to promote the safe use of electrical equipment in those areas “where fire or explosion hazards may exist due to flammable gases or vapors, flammable liquids, combustible dust, or ignitable fibers or flyings.”

The NEC and CSA define hazardous locations by three classes:

Class 1: Gas or vapor hazards

Class 2: Dust hazards

Class 3: Fibers and flyings

And two divisions:

Division 1: An environment where ignitable gases, liquids, vapors or dusts can exist

Division 2: Locations where ignitables are not likely to exist

Hazardous classes are further defined by groups A, B, C, D, E, F, and G:

A. Acetylene

B. Hydrogen

C. Ethylene, carbon monoxide

D. Hydrocarbons, fuels, solvents

E. Metals

F. Carbonaceous dusts including coal, carbon black, coke

G. Flour, starch, grain, combustible plastic or chemical dust



Class 1, Div 2 certification ensures reliable, safe switching in hazardous areas.

ANSI/ISA 12.12.01

Our line of Industrial Ethernet Switches (LEH1208A, LEH1208A-2GMMSC, LEH1216A and LEH1216A-2GMMSC) is fully compliant with ANSI/ISA 12.12.01, a construction standard for Nonincendive Electrical Equipment for Use in Class I and II, Division 2 and Class III, Divisions 1 and 2 Hazardous (Classified) Locations.

ANSI/ISA 12.12.01-2000 is similar to UL1604, but is more stringent (for a full list of changes, see *Compliance Today*). UL1604 was withdrawn in 2012 and replaced with ISA 12.12.01.

The standard provides the requirements for the design, construction, and marking of electrical equipment or parts of such equipment used in Class I and Class II, Division 2 and Class III, Divisions 1 and 2 hazardous (classified) locations. This type of equipment, in normal operation, is not capable of causing ignition.

The standard establishes uniformity in test methods for determining the suitability of equipment as related to their potential to ignite to a specific flammable gas or vapor-in-air mixture, combustible dust, easily ignitable fibers, or flyings under the following ambient conditions:

- a) an ambient temperature of -25°C to 40°C .
- b) an oxygen concentration of not greater than 21 percent by volume.
- c) a pressure of 80 kPa (0.8 bar) to 110 kPa (1.1 bar).

Source: <https://bboxblog.wordpress.com/2014/04/29/black-box-explains-the-ansiisa-standard-for-hazardous-locations/>