

Third Party Compliances



CSA - Canadian Standards Association

CSA certifies devices for use in Canadian hazardous and non-hazardous locations.



FM - Approvals

FM approves devices for use in explosive hazardous locations in the US. Intrinsically safe (IS) devices are approved for Division 1 areas; nonincendive (NI) devices are approved for Division 2 areas.



UL - Underwriter's Laboratories

UL is a nationally recognized US test laboratory that tests equipment to meet US standards and jurisdictional requirements. UL lists stand-alone devices, such as sensors, and recognizes system components, such as relays.



Note: **TURCK** products comply with many International standards. Consult factory for more information.

Hazardous Location Approvals

The NAMUR sensors shown in this catalog are Intrinsically Safe per the following:



EUROPE: CENELEC Standards EN 50 014 and EN 50 020; EC Directive 94/9/EC (ATEX)

USA, CANADA: Class I, II, III Division 1 Groups A, B, C, D, E, F, G*

Any FM approved or CSA certified associated apparatus with the following Entity Concept parameters can be used with these sensors:

$$V_{OC} \text{ or } V_T \leq 15 \text{ V} \quad C_a \geq C_{\text{cable}} + 220 \text{ nF}$$

$$I_{SC} \text{ or } I_T \leq 60 \text{ mA} \quad L_a \geq L_{\text{cable}} + 280 \mu\text{H}$$

* Note: CSA does not allow the use of quick disconnects in Groups E and F

Many 3-wire DC sensors are Nonincendive for Class I, Division 2 hazardous areas and Suitable for Class II and Class III, Division 2 hazardous areas. Only those 3-wire sensors identified with the FM logo have this approval.

USA: Class I, II, III Division 2 Groups A, B, C, D, F, G
 -AN6X, -AP6X
 -RN6X, -RP6X Factory Mutual file number: 2T3A5.AX



More on Hazardous Locations

Standards for Intrinsically Safe systems in hazardous locations are found in the following publications:

- United States: National Electrical Code 1996 (ANSI/NFPA 70) Articles 504 and 505
Factory Mutual Approval Standard Class No. 3610
Underwriters Laboratory Standard UL 913
- Canada: Canadian Electrical Code C22.1-94 Section 18 and Appendix F.
- Europe: CENELEC Standards EN 50 020 and EN 50 014

Hazardous Location Definitions (U.S. and Canada)

- Class I Locations in which flammable gases or vapors exist or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures.
- Class II Locations that are hazardous because of the presence of combustible dust.
- Class III Locations that are hazardous because of the presence of easily ignitable fibers or flyings, but in which such fibers or flyings are not likely to be suspended in the air in quantities sufficient to produce ignitable mixtures.
- Division 1 Locations in which hazardous concentrations in the air exist continuously, intermittently, or periodically under normal operating conditions.
- Division 2 Locations in which hazardous materials are handled, processed or used, but in which they are normally confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown.
- Group A Atmospheres containing acetylene.
- Group B Atmospheres containing hydrogen, fuel and combustible process gases containing more than 30% hydrogen by volume, or gases or vapors of equivalent hazard such as butadiene, ethylene oxide, propylene oxide and acrolein.
- Group C Atmospheres such as ethyl ether, ethylene, acetaldehyde, cyclopropane, or gases or vapors of equivalent hazard.
- Group D Atmospheres such as acetone, alcohol, ammonia, benzene, butane, cyclopropane, ethylene dichloride, gasoline, hexane, lacquer solvent vapors, methane, natural gas, naphtha, propane, xylene, or gases or vapors of equivalent hazard.
- Group E Atmospheres containing combustible metal dusts, including aluminum, magnesium, and their commercial alloys, and other combustible dusts with similarly hazardous characteristics.
- Group F Atmospheres containing combustible carbonaceous dusts, including carbon black, charcoal and coal.
- Group G Atmospheres containing other combustible dusts, such as chemical, agricultural or plastic dusts.

Exerpt from National Electrical Code:

Intrinsically safe apparatus and wiring shall be permitted in any hazardous (classified) location for which it is approved, and the provisions of Articles 501 through 503 and 510 through 516 shall not be considered applicable to such installations except as required by Article 504.

Wiring of intrinsically safe circuits shall be physically separated from wiring of all other circuits that are not intrinsically safe. Means shall be provided to minimize the passage of gases and vapors. Installation of intrinsically safe apparatus and wiring shall be in accordance with the requirements of Article 504.