

IS1 Intrinsic Safety Barrier

The IS1 Intrinsic Safety Barrier is a specially engineered analog signal Zener shunt-diode barrier that is used between a single Siemens analog transmitter (such as our A1000, A1200 or A3000) located in a hazardous environment and its associated pump controllers, signal conditioners or other equipment.

The IS1 Barrier provides “intrinsically safe” characteristics within the transducer equipment and associated circuitry installed in the defined hazardous location, thus making the transducers suitable for operation within sewage lift station wet wells, stormwater-handling pump stations (which might inadvertently receive combustible liquids or produce combustible gasses), and many process applications.

The IS1 is made in 2-wire (IS1-2) and 3-wire (IS1-3) versions to be used in 4-20 mA DC, 2-wire and 1-5 VDC, 3-wire transducer systems, respectively. It has been tested and is listed by Underwriters Laboratory, Inc., as Process Control Equipment (QUZW). The transducer and signal conditioning system elements for use with the IS1 Barriers are UL-listed under Intrinsically Safe Equipment and Systems (OERX).

The IS1-2 Barrier is designed to make its associated transducers and circuitry suited for Class 1, Division 1 or 2, Groups C and D; Class II, Division 1 or 2, Groups E, F and G; and Class III hazardous locations as defined by the National Electrical Code (NEC). The IS1-3 Barrier is suited for use with those locations, as well as Class I, Division 1 or 2, Groups A and B.

The IS1 barriers are ideally suited for applications requiring compliance with UL913 procedures pertaining to electrical control panels with intrinsically safe extensions to hazardous areas.

IS1 Product Specification

Cable Lengths: Interconnecting cable in the hazardous area is not to exceed 1000 ft.

Maximum Safe Area Voltage: 250 VAC

Maximum Operating Voltage (IS1-2): 26.5 VDC

Maximum Operating Voltage (IS1-3): 6.5 VDC

Outside Dimensions: 4" H x 2" W x 2-1/4" D

IS1 Typical Specifications

The transducers shall interface to the control circuitry via an intrinsically safe barrier. The barrier shall provide an intrinsically safe interface for analog signal-producing devices located in a hazardous area rated Class I, Group A, B, C, and D, and Class II, Groups E, F, and G. The intrinsic safety barrier, the level/ pressure transducer, and all relevant circuit elements shall be UL-listed.

Nec Definition of Hazardous Locations

The NEC Handbook defines hazardous locations by Class, Division and Group as follows:

Class I Locations – Are those in which flammable gasses or vapors are or may be present in the air in quantities sufficient to produce explosive or ignitable mixtures.

Class II Locations – Are those which are hazardous because of the presence of combustible dust.

Class III Locations – Are those which are hazardous because of the presence of easily ignitable fibers or flyings, but in which such fibers or flyings are not likely to be in suspension in 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 concentrations are handled, processed, or used but 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.

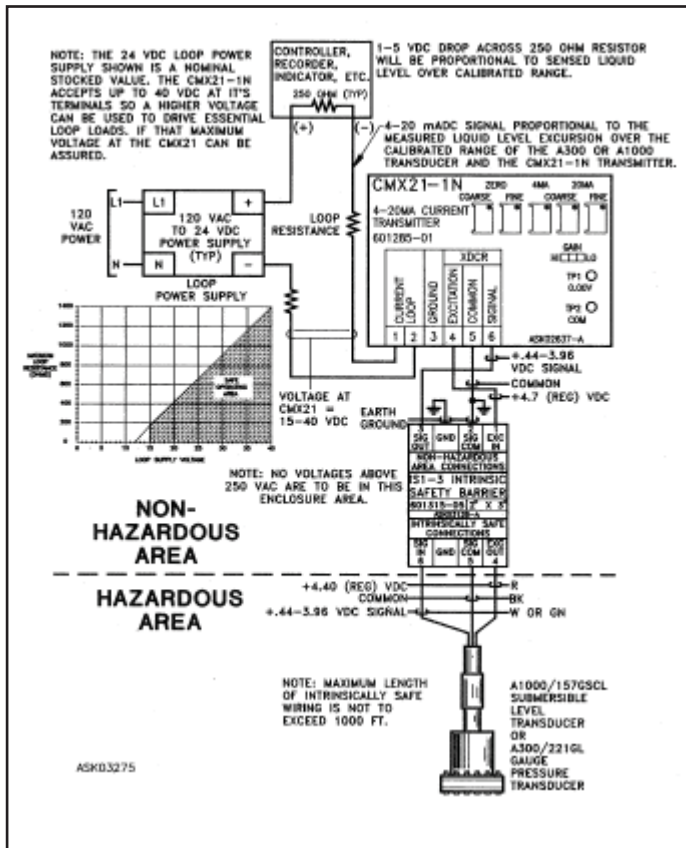
Group B – Atmospheres containing hydrogen, or gasses or vapors of equivalent hazard, such as manufactured gas.

Group C – Atmospheres containing ethyl-ether vapors, ethylene, or cyclopropane.

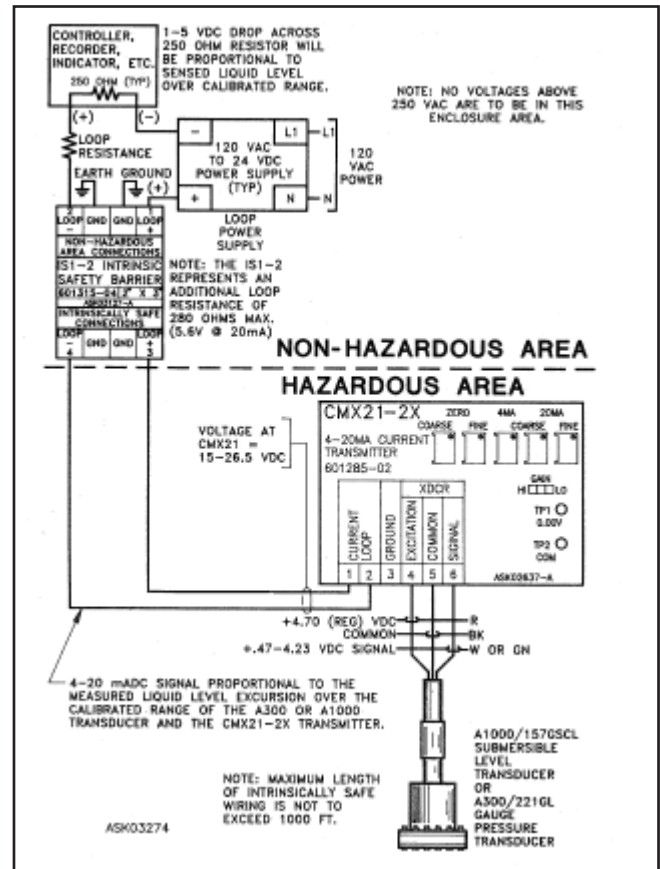
Group D – Atmospheres containing gasoline, hexane, naphtha, benzene, butane, propane, alcohol, acetone, benzol, lacquer solvent vapors, or natural gas.

Group E – Atmospheres containing metal dust, including aluminum, magnesium, and their commercial alloys, and other metals of similarly hazardous characteristics.

Group F – Atmospheres containing carbon black, coal, or coke dust. **Group G** – Atmospheres containing flour, starch, or grain dusts.



The IS1-3 is used to provide intrinsically safe characteristics for the lower portion of the A1000 (Models 157GSCD and 157GSL) Current Transmitter in the non-hazardous area.



The IS1-2 Barrier is used to provide intrinsically safe characteristics for an A1000 (Model 157GSCD), CMX21-2X Current Transmitter. In this case, the entire system is U.L.-listed for operation within hazardous locations.

Complete Control Capabilities

Siemens Control Systems offers a single, high-quality source for everything from simple level sensors to telemetry systems to complex system control engineering and software. Based in St. Paul, Minnesota, Siemens Control Systems is part of the leading global provider of industrial, municipal and residential water and wastewater treatment systems, products and services. As a major manufacturer/integrator with an extensive selection of specialized product lines in the areas of SCADA and telemetry, power equipment integration, automation and measurement, Siemens Control Systems is uniquely positioned to provide cost-effective, comprehensive solutions for water, wastewater, and process control and telemetry applications.



Description	Part No.
Model IS1-2 intrinsic safety barrier; 4-20 mA output (use w/potted CMX21)	601315-04
Model IS1-3 intrinsic safety barrier; 1-5 V output (standard)	601315-05

Siemens
Water Technologies
1239 Willow Lake Blvd.
Vadnais Heights, MN 55110
651.766.2700 phone
651.766.2701 fax

© 2008 Siemens Water Technologies Corp.
CS-IS1dr-DS-0708
Subject to change without prior notice.

The information provided in this literature contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of the contract.