UL Control Drawing ISM0132 for D1034S - D1034D

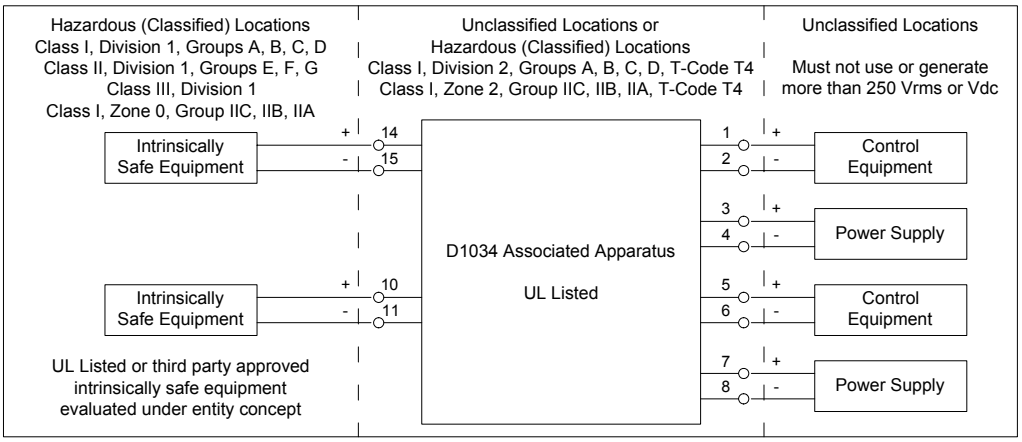
Warning

D1034 series are isolated Intrinsically Safe Associated Apparatus located in Non Hazardous Locations or Class I, Division 2, Groups A, B, C, D, Temperature Code T4 and Class I, Zone 2, Group IIC, IIB, IIA Temperature Code T4 Hazardous Locations (according to UL 1604, UL 60079-15, CSA-C22.2 No. 213-M1987, CSA-E60079-15) within the specified operating temperature limits Tamb -20 to +60 °C, and connected to equipment with a maximum limit for AC power supply Um of 250 Vrms.
When installed in Class I, Division 2 or Class I, Zone 2 Hazardous Locations, the module must be mounted in supplemental enclosure meeting at least IP54 degree protection.
Not to be connected to control equipment that uses or generates more than 250 Vrms or Vdc with respect to earth ground.
D1034 series must be installed, operated and maintained only by qualified personnel, in accordance to the relevant national/international installation standards (e.g. ANSI/ISA RP12.06.01 Installation of Intrinsically Safe System for Hazardous (Classified) Locations, National Electrical Code NEC ANSI/NFPA 70 Section 504 and 505, Canadian Electrical Code CEC) following the established installation rules, particular care shall be given to segregation and clear identification of I.S. conductors from non I.S. ones.
De-energize power source (turn off power supply voltage) before plug or unplug the terminal blocks when installed in Hazardous Locations or unless area is known to be nonhazardous.
Warning: substitution of components may impair Intrinsic Safety and suitability for Division 2, Zone 2.
Explosion Hazard: to prevent ignition of flammable or combustible atmospheres, disconnect power before servicing or unless area is known to be nonhazardous.
The enclosure provides, according to EN60529, an IP20 minimum degree of mechanical protection (or similar to NEMA Standard 250 type 1) for indoor installation, outdoor installation requires an additional enclosure with higher degree of protection (i.e. IP54 to IP65 or NEMA type 12-13) consistent with the effective operating environment of the specific installation.
Units must be protected against dirt, dust, extreme mechanical (e.g. vibration, impact and shock) and thermal stress, and casual contacts.
If enclosure needs to be cleaned use only a cloth lightly moistened by a mixture of detergent in water.
Electrostatic Hazard: to avoid electrostatic hazard, the enclosure of D1034 must be cleaned only with a damp or antistatic cloth.
Any penetration of cleaning liquid must be avoided to prevent damage to the unit.
Failure to properly installation or use of the equipment may risk to damage the unit or severe personal injury.
The unit cannot be repaired by the end user and must be returned to the manufacturer or his authorized representative. Any unauthorized modification must be avoided.
If calibration requires the use of an adjustable power supply, current meter, or voltmeter, it should be only be performed when the area is known to be nonhazardous or with equipment suitable for the area classification.

Technical Data

Supply: 12-24 Vdc nom (10 to 30 Vdc) reverse polarity protected, ripple within voltage limits ≤ 5 Vpp.
Current consumption @ 24 V: 40 mA for 2 channels D1034D, 20 mA for 1 channel D1034S with short circuit input typical.
Current consumption @ 12 V: 80 mA for 2 channels D1034D, 40 mA for 1 channel D1034S with short circuit input typical.
Power dissipation: 1.4 W for 2 channels D1034D, 0.7 W for 1 channel D1034S with 24 V supply voltage, short circuit input and 24 V loop output voltage.
Max. power consumption: at 30 V supply voltage and short circuit input, 1.2 W for 2 channels D1034D, 0.6 W for 1 channel D1034S.
Isolation (Test Voltage): I.S. In/Out 1.5 KV; I.S. In/Supply 1.5 KV; I.S. In/I.S. In 500 V; Out/Supply 500 V; Out/Out 500 V.
Input: ***Current levels:*** ≥ 0.1 mA, ≤ 7.0 mA
Input equivalent source: 8 V 1 KΩ typical (8 V no load, 8 mA short circuit).
Output: 0.1 to 7.0 mA in sink mode, V min. 5 V at 0 Ω load V max. 30 V, current limited at ≈ 8 mA, repeats input current level.
Response time: 5 ms (10 to 90 % step change).
Environmental conditions: ***Operating:*** temperature limits -20 to + 60 °C, relative humidity max 90 % non condensing, up to 35 °C.
Storage: temperature limits – 45 to + 80 °C.
Safety Description:
for use in Class I, Division 2, Groups A, B, C, D, Temperature Code T4; Class I, Zone 2, AEx nC [ia] IIC T4 and Class I, Zone 2, Ex nL [ia] IIC T4 Hazardous Locations.
Provides intrinsically safe circuits for use in Class I, Division 1, Groups A, B, C, D; Class II, Division 1, Groups E, F, G; Class III, Division 1 and Class I, Zone 0, Group IIC Hazardous Locations.
Approvals: UL & C-UL E222308 conforms to UL913 (Div.1, 7th Ed., Rev. 2008-08-12), UL 60079-0 (General, All Zones, 1st Ed.), UL60079-11 (Intrinsic Safety "i" Zones 0 & 1, 1st Ed.) UL60079-15 ("n" Zone 2, 1st Ed.), UL 1604 (Div.2, 3rd Ed., Rev. 2004-02-03), UL 61010-1 (2nd Ed., Rev. 2008-10-28) for UL and CSA-C22.2 No.157-92 (Div.1, Rev. 2003-06), CSA-E60079-0:02 (General, All Zones), CSA-E60079-11:02 (Intrinsic Safety "i" Zones 0 & 1), CSA-C22.2 No. 213-M1987 (Div. 2, 1st Ed.) and CSA-E60079-15:02 ("n" Zone 2), CSA-C22.2 No. 61010-1-04 (2nd Ed., Rev. 2004-07) for C-UL.
Mounting: T35 DIN Rail according to EN50022.
Weight: about 160 g D1034D, 110 g D1034S.
Connection: by polarized plug-in disconnect screw terminal blocks to accomodate terminations up to 2.5 mm^2.
Location: Non Hazardous Locations or Class I, Division 2, Groups A, B, C, D Temperature Code T4 and Class I, Zone 2, Group IIC, IIB, IIA T4 installation.
Protection class: IP 20.
Dimensions: Width 22.5 mm, Depth 99 mm, Height 114.5 mm.

Connections for Proximity or Voltage free Contacts



NOTE:
when installed in Class I, Division 2 or Class I, Zone 2 Hazardous Locations, the module must be mounted in supplemental enclosure meeting at least IP54 degree protection.

This associated apparatus may also be connected to simple apparatus as defined in Article 504.2 and installed and temperature classified in accordance with article 504.10(B) of the National Electrical Code (ANSI/NFPA 70), or other local codes, as applicable.

Where multiple circuits extend from the same piece of associated apparatus, they must be installed in separate cables or in one cable having suitable insulation. Refer to Article 504.30(B) of the National Electrical Code (ANSI/NFPA 70) and Instrument Society of America Recommended Practice ISA RP12.6 for installing intrinsically safe equipment.

This associated apparatus has not been evaluated for use in combination with another associated apparatus.

This associated apparatus provides galvanically isolated intrinsically safe circuits.

D1034 Terminals		Associated Apparatus Parameters	Must be	Hazardous Area/ Hazardous Locations Device Parameters
Ch1	14 - 15	Uo / Voc = 9.6 V	≤	Ui / Vmax
		Io / Isc = 11 mA	≤	Ii/ Imax
Ch2	10 - 11	Po / Po = 25 mW	≤	Pi / Pi

The output current of this associated apparatus is limited by a resistor such that the output voltage-current plot is straight line drawn between open-circuit voltage and short-circuit current.

D1034 Terminals		D1034 Associated Apparatus Parameters Zones (Divisions)		Must be	Hazardous Area/ Hazardous Locations Device + Cable Parameters
Ch1 Ch2	14 - 15 10 - 11	Co / Ca = 3.6 µF Co / Ca = 26.0 µF Co / Ca = 210.0 µF Co / Ca = 26.0 µF	IIC (A, B) IIB (C) IIA (D) (E, F, G)	≥	Ci / Ci device + C cable
		Lo / La = 334 mH Lo / La = 1345 mH Lo / La = 2690 mH Lo / La = 1345 mH	IIC (A, B) IIB (C) IIA (D) (E, F, G)	≥	Li / Li device + L cable
		Lo / Ro = 1449 µH/Ω Lo / Ro = 5790 µH/Ω Lo / Ro = 11590 µH/Ω Lo / Ro = 5790 µH/Ω	IIC (A, B) IIB (C) IIA (D) (E, F, G)	≥	Li / Ri device and L cable / R cable

NOTE: for installations in which both the Ci and Li of the Intrinsically Safe apparatus exceed 1 % of the Co and Lo parameters of the Associated Apparatus (excluding the cable), then 50 % of Co and Lo parameters are applicable and shall not be exceeded (50 % of the Co and Lo become the limits which must include the cable such that
Ci device + C cable ≤ 50 % of Co and
Li device + L cable ≤ 50 % of Lo).
Capacitance and inductance of the field wiring from the intrinsically safe equipment to the associated apparatus shall be calculated and must be included in the system calculations as shown in the entity parameters table.
If the cable parameters are unknown, the following may be used:
Capacitance 60pF per foot (180pF per meter),
Inductance 0.20µH per foot (0.60µH per meter).