

## Warning

D1032 series are isolated Intrinsically Safe Associated Apparatus located in Non Hazardous Locations 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.

Not to be connected to control equipment that uses or generates more than 250 Vrms or Vdc with respect to earth ground.

D1032 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.

**Warning: substitution of components may impair Intrinsic Safety.**

**Avertissement: le remplacement des composants peut dégrader la Sécurité Intrinsèque**

**Warning: de-energize main power source (turn off power supply voltage) and disconnect plug-in terminal blocks before opening the enclosure to avoid electrical shock when connected to live hazardous potential.**

**Avertissement: couper la source d'alimentation principale (tension d'alimentation) et débrancher les blocs de jonction enfichables avant d'ouvrir l'enveloppe pour éviter un choc électrique lorsqu'il est connecté à un potentiel active dangereux.**

**Explosion Hazard: to prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.**

**Danger d'Explosion: pour prévenir une inflammation de l'atmosphère inflammable ou combustible, couper l'alimentation avant de réparer.**

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.

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.

## Technical Data

**Supply:** 24 Vdc nom (20 to 30 Vdc) reverse polarity protected, ripple within voltage limits  $\leq 5$  Vpp.

**Current consumption @ 24 V:** 75 mA for 4 channels D1032Q, 60 mA for 2 channels D1032D with input closed and relays energized.

**Power dissipation:** 1.8 W for 4 channels D1032Q, 1.4 W for 2 channels D1032D with 24 V supply voltage, input closed and relays energized.

**Max. power consumption:** at 30 V supply voltage, short circuit input and relays energized, 2.4 W for 4 channels D1032Q, 2.0 W for 2 channels D1032D.

**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 1.5 KV; Out 1-3/Out 2-4 1.5 KV.

**Input switching current levels:** ON  $\geq 2.1$  mA, OFF  $\leq 1.2$  mA, switch current  $\approx 1.65$  mA  $\pm 0.2$  mA hysteresis.

**Fault current levels:** open fault  $\leq 0.2$  mA, short fault  $\geq 6.8$  mA

(when enabled both faults de-energize channel relay with quad channel unit D1032Q or actuate fault relay with dual channel unit D1032D).

**Input equivalent source:** 8 V 1 K $\Omega$  typical (8 V no load, 8 mA short circuit).

**Output:** voltage free SPST relay contact.

**Contact material:** AgNi90/10.

**Contact rating:** 2 A 150 Vac 300 VA, 2 A 150 Vdc 80 W (resistive load).

**Mechanical / Electrical life:**  $15 \times 10^6 / 1 \times 10^6$  operation, typical.

**Operate / Release time:** 5 / 2 ms typical.

**Bounce time NO / NC contact:** 1 / 5 ms.

**Response time:** 20 ms.

**Frequency response:** 10 Hz maximum.

**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:**

associated apparatus for use in Non Hazardous Locations, AEx [ia], Ex [ia].

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 UL 913 (Div. 1, 8th Ed., Rev. 2013-12-06), UL 60079-0 (General, All Zones, 6th Ed.), UL 60079-11 (Intrinsic Safety "i" Zones 0 & 1, 6th Ed.),

UL 61010-1 (3rd Ed., Rev. 2012-05-11) for UL

and CAN/CSA-C22.2 No. 157-92 (Reaffirmed 2012, Div. 1), CAN CSA-C22.2 No. 60079-0:11 (General, All Zones), CAN/CSA-C22.2 No. 60079-11:14 (Intrinsic Safety "i" Zones 0 & 1),

CAN/CSA-C22.2 No. 61010-1-12 (3rd Ed.) for C-UL.

**Mounting:** T35 DIN Rail according to EN50022.

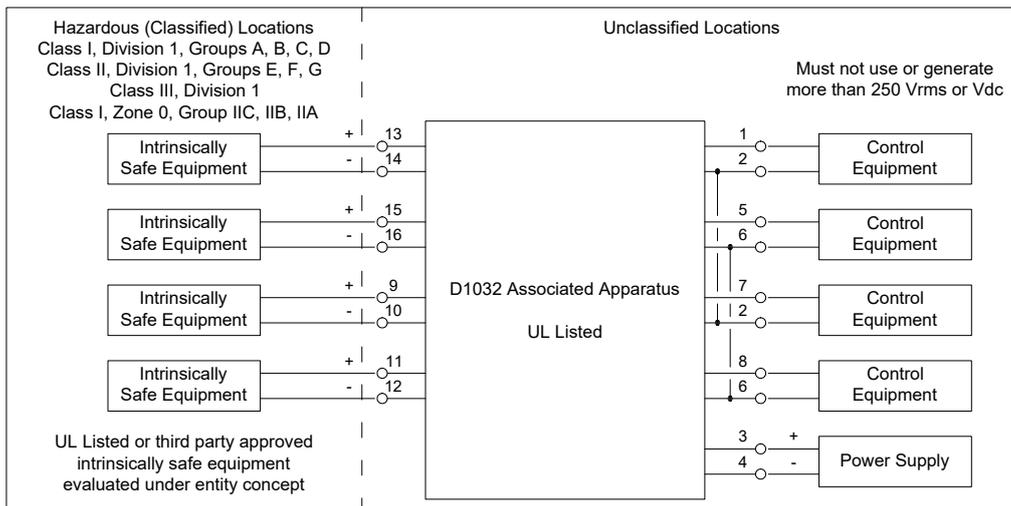
**Weight:** about 185 g D1032Q, 165 g D1032D.

**Connection:** by polarized plug-in disconnect screw terminal blocks to accommodate terminations up to 2.5 mm<sup>2</sup>.

**Location:** Non Hazardous Locations.

**Protection class:** IP 20.

**Dimensions:** Width 22.5 mm, Depth 99 mm, Height 114.5 mm.



**NOTE:**

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.

D1032 Terminals		Associated Apparatus Parameters	Must be	Hazardous Area/ Hazardous Locations Device Parameters
Ch1	13 - 14	$U_o / V_{oc} = 9.6 \text{ V}$	$\leq$	$U_i / V_{max}$
Ch2	15 - 16	$I_o / I_{sc} = 10 \text{ mA}$	$\leq$	$I_i / I_{max}$
Ch3	9 - 10			
Ch4	11 - 12	$P_o / P_o = 24 \text{ mW}$	$\leq$	$P_i / P_i$

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.

D1032 Terminals		D1032 Associated Apparatus Parameters Zones (Divisions)		Must be	Hazardous Area/ Hazardous Locations Device + Cable Parameters
Ch1 Ch2 Ch3 Ch4	13 - 14 15 - 16 9 - 10 11 - 12	$C_o / C_a = 3.598 \mu\text{F}$	IIC (A, B) IIB (C) IIA (D) (E, F, G)	$\geq$	$C_i / C_i \text{ device} + C \text{ cable}$
		$C_o / C_a = 25.998 \mu\text{F}$			
		$C_o / C_a = 209.998 \mu\text{F}$			
		$C_o / C_a = 25.998 \mu\text{F}$			
		$L_o / L_a = 379 \text{ mH}$	IIC (A, B) IIB (C) IIA (D) (E, F, G)	$\geq$	$L_i / L_i \text{ device} + L \text{ cable}$
		$L_o / L_a = 1517 \text{ mH}$			
		$L_o / L_a = 3035 \text{ mH}$			
		$L_o / L_a = 1517 \text{ mH}$			
		$L_o / R_o = 1530 \mu\text{H}/\Omega$	IIC (A, B) IIB (C) IIA (D) (E, F, G)	$\geq$	$L_i / R_i \text{ device and } L \text{ cable} / R \text{ cable}$
		$L_o / R_o = 6150 \mu\text{H}/\Omega$			
		$L_o / R_o = 12310 \mu\text{H}/\Omega$			
		$L_o / R_o = 6150 \mu\text{H}/\Omega$			

**NOTE:** for installations in which both the  $C_i$  and  $L_i$  of the Intrinsically Safe apparatus exceed 1 % of the  $C_o$  and  $L_o$  parameters of the Associated Apparatus (excluding the cable), then 50 % of  $C_o$  and  $L_o$  parameters are applicable and shall not be exceeded (50 % of the  $C_o$  and  $L_o$  become the limits which must include the cable such that  $C_i \text{ device} + C \text{ cable} \leq 50 \% \text{ of } C_o$  and  $L_i \text{ device} + L \text{ cable} \leq 50 \% \text{ of } L_o$ ). The reduced capacitance of the external circuit (including cable) shall not be greater than 1uF for Groups I, IIA (Group D), IIB (Group C), and 600nF for Group IIC (Group A and B). 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 0.20uH per foot (0.60uH per meter).