

The design of the ZeroDT 24-1 utilizes the latest generation, non-degrading Silicon Avalanche Suppression Diode (SASD) stack array encapsulated in urethane, to protect transmitters, gas detection sensors & systems, level equipment, flow measurement devices as well as other field instrumentation transient over-voltages. This SASD technology provides continuous, bi-directional (eliminating installation issues), and bi-polar (both positive and negative) protection that returns to its original state (no loss or degradation of protection) once the over-voltage has passed. The unit is designed to limit the energy of these over-voltage surges on 4-20 mA current loops, and RS-485/422, DeviceNet, Fieldbus communication lines as well as low voltage DC power lines.

The module is small enough to allow it to be mounted directly into a measurement device's explosion-proof housing or other small electrical housings, eliminating the need for additional enclosures and getting the protection as close as possible to the device to allow for the best possible protection



## ⚡ ELECTRICAL SPECIFICATIONS

- **Response Time:** <5 nanoseconds
- **Configuration:** parallel connected -- protects 1 pair or 2 wires
- **Nominal Operating Voltage:** 24 V dc
- **Maximum Continuous Operating Voltage (MCOV) Line-to-Ground:** 36 V dc
- **Nominal Surge Current, I<sub>Nom</sub> (able to withstand repeated applications):**
  - 8/20 μs (IEEE/ANSI C62.41 Combination Wave), Line-to-Ground: >600 Amps
  - 10/1000 μs (IEEE/ANSI C62.41 Long Wave), Line-to-Ground: >65 Amps
- **Voltage Protection Level (VPL):**
  - 600 Amps, 8/20 μs, Line-to-Ground: ≤55 V<sub>peak</sub>
  - 65 Amps, 10/1000 μs, Line-to-Ground: ≤65 V<sub>peak</sub>

## ⚙️ MECHANICAL SPECIFICATIONS

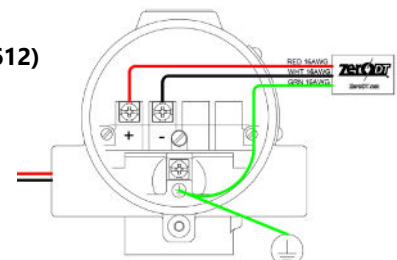
- **Module Dimensions:** 0.5" H x 0.75" W x 0.5" D (12.4 mm H x 18.9 mm W x 12.4 mm D)
- **Wire Leads:** #16 AWG stranded copper, 12 inches (allows cutting to length)
  - Qty. 1 Red -- Positive or Negative
  - Qty. 1 White -- Positive or Negative
  - Qty. 1 Green -- Ground / Earth

## 🔑 ENVIRONMENTAL SPECIFICATIONS

- **Operating / Storage Temperature:** -40°C to +80°C.
- **Humidity:** 0 to 95% non-condensing.

## ✓ CERTIFICATIONS

- **UL Listed - Isolated Loop Circuit Protector (E499683)**
- **UL Listed - Isolated Loop Circuit Protector for use in Hazardous Locations (E502612)**
  - **Class I, Division 2, Groups A, B, C and D Hazardous Locations,**  
T6 - T<sub>amb</sub> = -40°C to 80°C
- **RoHS Compliant**



Single Loop or 2-Wire Devices  
ZeroDT 24-1, 12-1, 48-1 & 120-1  
1 Red Wire ( Voltage + or - )  
1 White Wire ( Voltage + or - )  
1 Green Wire (GND)



# ZeroDT 24-1

Field Protection – 24 Volt (1 Loop / 2 wires)

## Single Pair Instrument Surge Protection

**Model:** ZeroDT 24-1

**Nominal Voltage:** 24 Vdc

**MCOV:** 36 Vdc



Isolated Loop Protector  
E499683  
Isolated Loop Circuit Protector  
For Use in Hazardous Locations  
E502612

## Protects 2 Wires or 1 Loop including:

Analog 4-20 mA (2-wire)

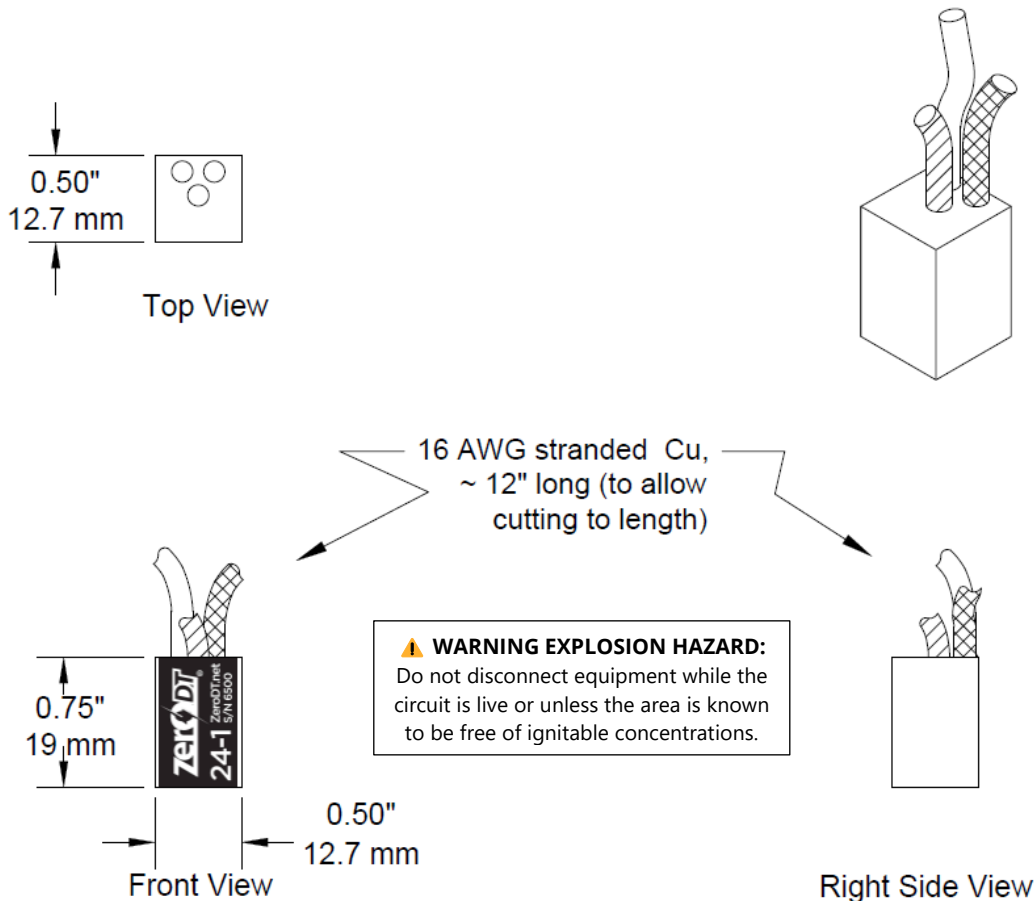
RS232 (2-wire)

DC or AC power protection (2-wire)

RS485 (2-wire)



## DIMENSIONAL DRAWINGS



## INSTALLATION PROCEDURE

- 1 For maximum overvoltage protection, mount the ZeroDT 24-1 as close as possible to the device/equipment to be protected.
- 2 The ZeroDT 24-1 unit is to be installed in accordance with the applicable requirements of the National Electric Code and the local authorities having jurisdiction.
- 3 Wiring Installation: Terminate the red and white leads on either the positive or negative power or data communication lines. **THE GREEN LEAD MUST BE PROPERLY BONDED TO A LOW RESISTANCE EARTH GROUND FOR PROPER OPERATION AND OVERVOLTAGE PROTECTION.** The wire leads should be trimmed and cut to fit keeping them as straight and short as possible for the best protection.
- 4 In the unlikely event that the ZeroDT self-sacrifices, DC power and communications will be interrupted (unit is designed to fail with lines shorted to Ground).

This equipment is suitable for use in Class I, Div. 2, Gr. A, B, C, or D (T6) as well as in non-hazardous locations.