

# ZeroDT 12-1

The design of the ZeroDT 12-1 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:** 12 V dc
- Maximum Continuous Operating Voltage (MCOV) Line-to-Ground:** 18 V dc
- Nominal Surge Current,  $I_{Nom}$  (able to withstand repeated applications):**
  - 8/20  $\mu$ s (IEEE/ANSI C62.41 Combination Wave), Line-to-Ground: >600 Amps
  - 10/1000  $\mu$ s (IEEE/ANSI C62.41 Long Wave), Line-to-Ground: >65 Amps
- Voltage Protection Level (VPL):**
  - 600 Amps, 8/20  $\mu$ s, Line-to-Ground:  $\leq 55 V_{peak}$
  - 65 Amps, 10/1000  $\mu$ s, Line-to-Ground:  $\leq 65 V_{peak}$

## Mechanical Specifications:

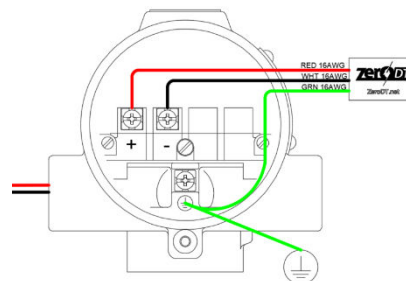
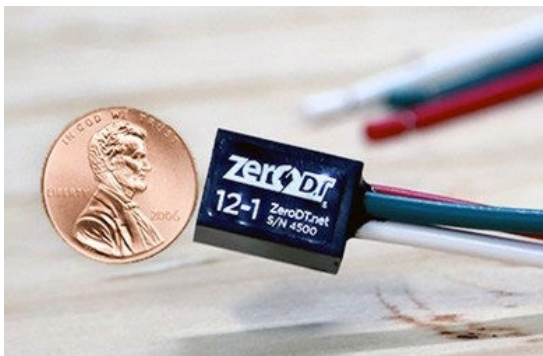
- Module Dimensions:** 0.5" H x 0.75" W x 0.5" D (12.4 mm H x 18.9 mm W x 12.4 mm D)
- Wire Leads:** #16 AWG stranded copper, 12 inches (allows cutting to length)
  - Qty. 1 Red -- Positive or Negative
  - Qty. 1 White -- Positive or Negative
  - Qty. 1 Green -- Ground / Earth

## 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 1, Division 2, Groups A, B, C and D Hazardous Locations (T6)  $T_{amb} = -40^{\circ}\text{C}$  to  $80^{\circ}\text{C}$
- 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)



## Single Pair Instrument Surge Protection

Model: ZeroDT 12-1,  
Nominal Voltage: 12 Vdc  
MCOV: 18 Vdc



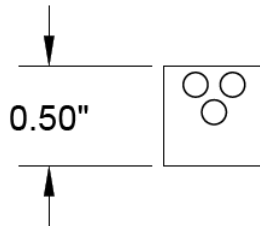
Isolated Loop Protector  
E499683  
Isolated Loop Circuit  
Protector – For Use in  
Hazardous Locations  
E502612

Class1, Division 2,  
Groups A-D  
Hazardous Locations (T6)  
 $T_{amb} = -40^{\circ}\text{C to } +80^{\circ}\text{C}$

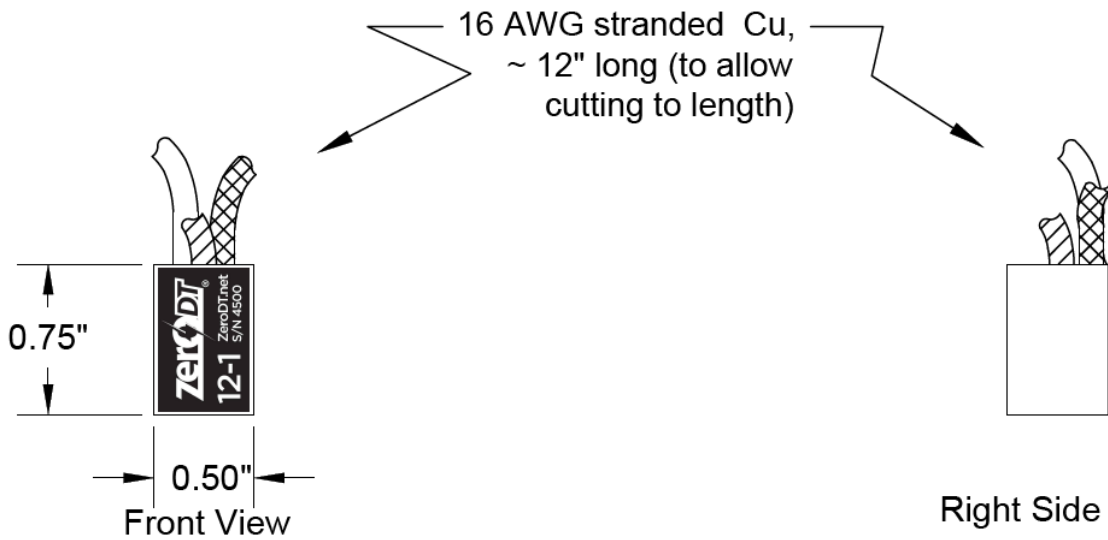
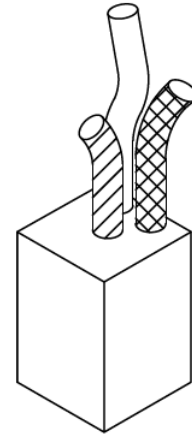
### Protects 2 Wires or 1 Loop including:

Analog 4-20 mA (2-wire)  
RS232 (2-wire)

DC or AC power protection (2-wire)  
RS485 (2-wire)



Top View



Right Side View

## Installation Procedure

- 1 For maximum overvoltage protection, mount the ZeroDT 12-1 as close as possible to the device/equipment to be protected
- 2 The ZeroDT 12-1 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 OVERVOLTAGE PROTECTION.** The leads 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).