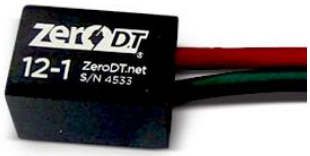
# ZeroDT 12-1

Field Protection – 12 Volt (1 loop / 2 wires)

**Datasheet**
March 2026

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 overvoltages.
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 overvoltage 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, FOUNDATION™ 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.




## ELECTRICAL SPECIFICATIONS

- **Response Time:** <5 nanoseconds.
- **Configuration:** Parallel connected, protects 1 pair or 2 wires.
- **Nominal Operating Voltage:** 12 VDC.
- **Maximum Continuous Operating Voltage (MCOV) Line-to-Ground:** 18 VDC.
- **Nominal Surge Current, $I_{Nom}$ (able to withstand repeated applications on each line):**
  - **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 $V_{peak}$.
  - **65 Amps, 10/1000, Line-to-Ground:** ≤ 65 $V_{peak}$.

## MECHANICAL SPECIFICATIONS

- **Module Dimensions:** 0.5" H x 0.75" W x 0.5" D (12.7 mm H x 19 mm W x 12.7 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)**
  - Hazardous Locations: Class I, Division 2, Groups A, B, C and D T6 ($T_{amb}$ = 40°C to +80°C)
- **RoHS compliant**

# ZeroDT 12-1

Field Protection – 12 Volt (1 loop / 2 wires)

**Datasheet**
March 2026

**Single Pair Instrument Surge Protection**

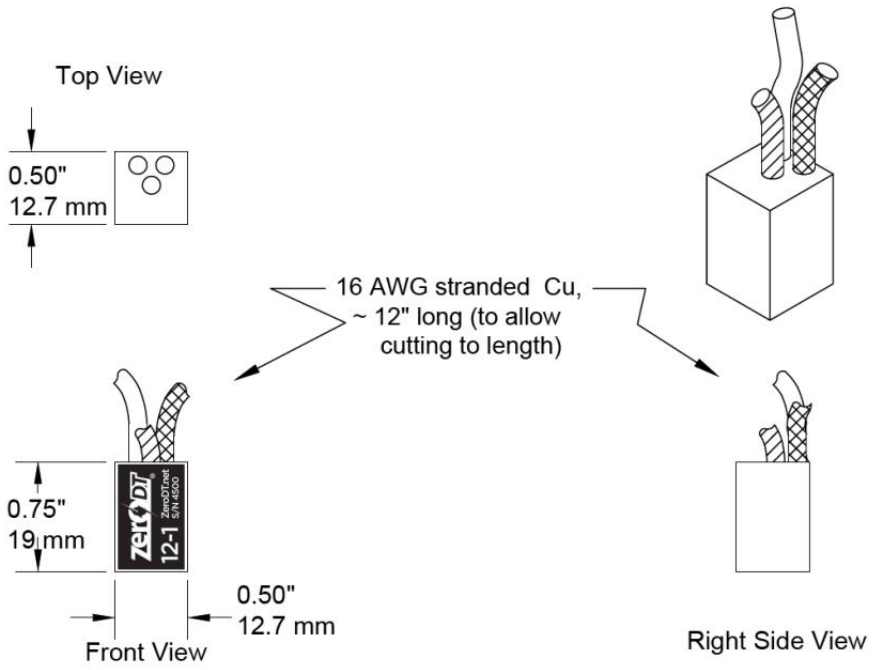
- **Model:** ZeroDT 12-1.
- **Nominal Voltage:** 12 VDC.
- **MCOV:** 18 VDC.

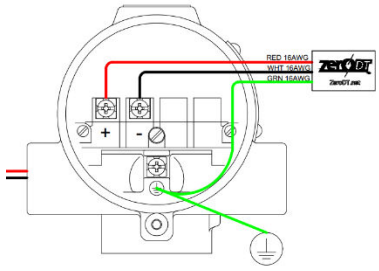
Isolated Loop Protector
E499683
Isolated Loop Circuit Protector
For Use In Hazardous Locations
E502612

**Protects 2 Wires or 1 Loop, including:**

- Analog 4-20mA, DC or AC power protection, RS232 (2 wires), RS485 (2 wires).

## ▶ DIMENSIONAL DRAWINGS / WIRING




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)

**WARNING**
**EXPLOSION HAZARD:**
Do not disconnect equipment while the circuit is live or unless the area is known to be free of ignitable concentrations.

## ▶ INSTALLATION PROCEDURE

1. For maximum overvoltage protection, mount the ZeroDT 12-1 as close as possible to the 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 positive or negative power or communication lines. **THE GREEN LEAD MUST BE PROPERLY BONDED TO A LOW RESISTANCE EARTH/GROUND FOR PROPER OVERVOLTAGE PROTECTION.**

   The wire leads should be trimmed and cut to fit keeping them as straight and short as possible for best protection.
4. In the unlikely event that the ZeroDT 12-1 self-sacrifices, DC power and communication 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.**