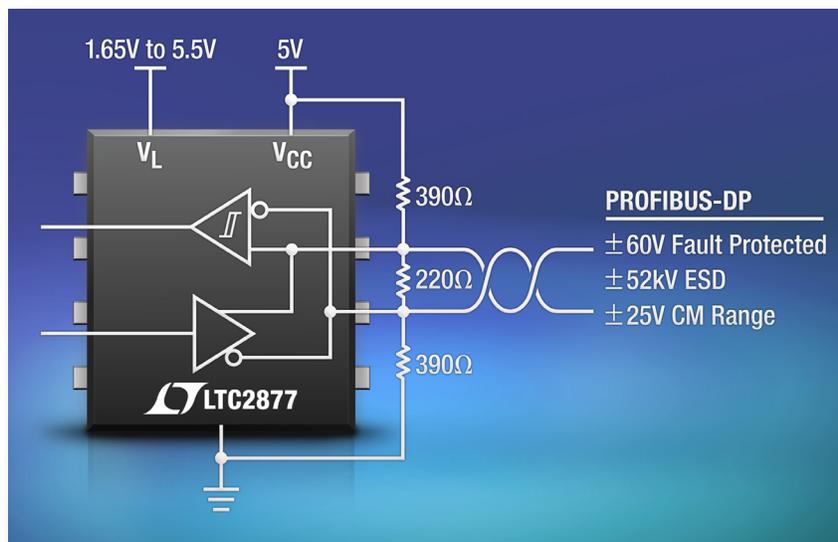


# Ultra Rugged $\pm 60V$ PROFIBUS Transceivers



## Optimized for True PROFIBUS IEC 61158-2 Compliant Operation

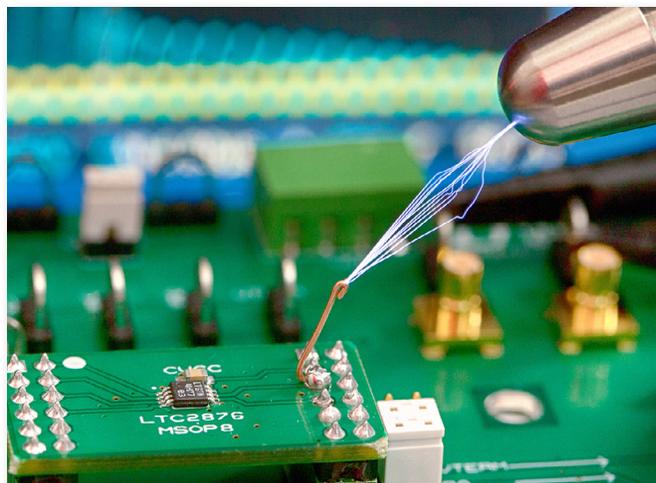
The LTC<sup>®</sup>2876 and LTC2877 are exceptionally rugged, high voltage tolerant PROFIBUS RS485 transceivers to eliminate field failures without the need of costly external protection devices.  $\pm 60V$  overvoltage fault protection on the data transmission lines protects bus pins during operation or when unpowered. Extended  $\pm 25V$  input common mode range and full failsafe operation improve data communication reliability in electrically noisy environments and in the presence of ground loop voltages. Enhanced ESD protection allows these devices to withstand  $\pm 52kV$  HBM on the transceiver pins without latchup or damage; all other pins are protected to  $\pm 15kV$  HBM.

### Features

- $\pm 60V$  Overvoltage Protection
- $\pm 52kV$  ESD Interface Pins,  $\pm 15kV$  All Other Pins
- $\pm 2kV$  (Level 4) IEC61000-4-4 Fast Transient Burst
- Supports All Data Rates Up to 20Mbps
- $\pm 25V$  Working Common Mode Range
- Fully Balanced Differential Receiver Thresholds with 240mV Hysteresis for Superior Noise Tolerance and Low Duty Cycle Distortion
- 3V to 5.5V Supply Voltage
- Wide Operating Temperature Range:  $-40^{\circ}C$  to  $125^{\circ}C$

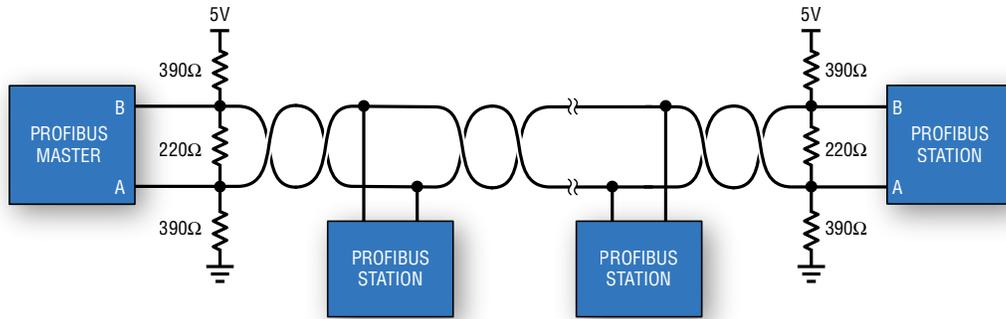
An Unprotected LTC2876 Hit Repeatedly with 26kV ESD Discharges While Operating without Damage or Circuit Latchup

PART NUMBER	LOGIC SUPPLY PIN	PACKAGE
LTC2876	No	DFN-8, MSOP-8
LTC2877	Yes	DFN-10, MSOP-10



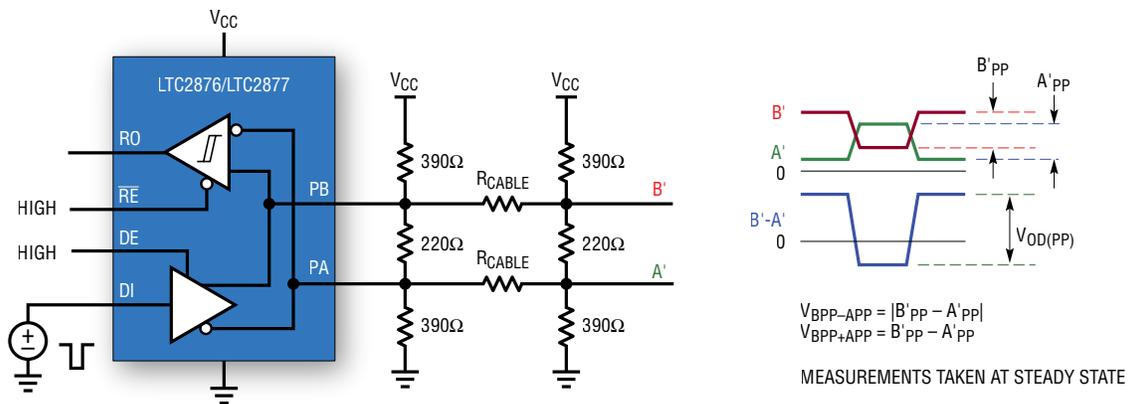
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## PROFIBUS Multi-Node Network Twisted Pair Cable ( $Z_0 = 150\Omega$ )



PROFIBUS adopted much of the TIA/EIA-485-A (RS485) standard, but did make a few changes. As a result, not all RS485 transceivers and cables are suitable for PROFIBUS-DP networks. There are differences in cabling, termination, signal names and driver requirements.

## Testing the LTC2876/LTC2877 Differential Output Voltage ( $V_{OD}$ ) Using a PROFIBUS Load



The LTC2876/LTC2877 are tested with a PROFIBUS load and with series resistance to simulate cable losses, where the  $V_{OD}$  (blue curve) is generated from measurements taken at the “end of the cable” (A' and B') to ensure the  $7V_{P-P}$  PROFIBUS-DP limit is met. Be wary of “PROFIBUS-compatible” RS485 transceivers that only specify a  $V_{OD}$  minimum value (i.e., 2.1V) without a maximum value, which can easily overdrive the bus.

## Spotlight App: 3500V<sub>RMS</sub> Isolated PROFIBUS Node with Termination

