

RS-232↔422 Opto-Isolator

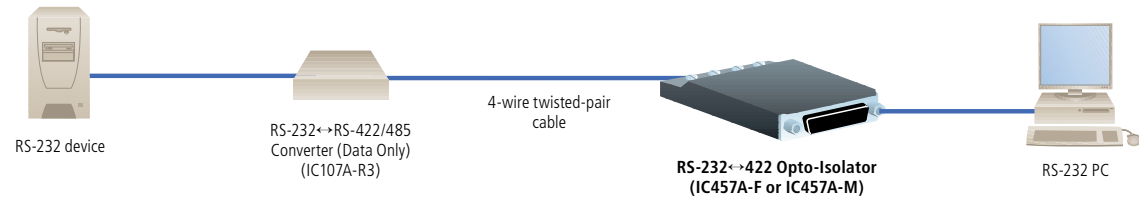
Protect the integrity of  
your RS-232 and RS-422  
equipment and data.



## FEATURES

- » "Air gap" protects data and equipment from dangerous electrical problems like ground loops.
- » Supports distances up to 4000 feet (1219.2 m) between RS-232 and RS-422 units at 19.2 kbps.
- » Withstands up to 2500 VAC.
- » Bidirectional data conversion.

In a typical application, an opto-isolator connects to an RS-232 PC at one end of a 4000-foot (1219.2-m) RS-422 twisted-pair link. An RS-232↔RS-422 interface converter connects to another RS-232 device at the opposite end of the link.



## OVERVIEW

The **RS-232↔422 Opto-Isolator** connects an RS-232 device to an RS-422 device while protecting against electrical ground loops that can damage data and equipment.

The opto-isolator translates data signals into bursts of light that travel across an "air gap" that electricity can't cross. This design isolates and protects each end of a data link.

Use opto-isolators wherever an RS-232 device is placed as far away as 4000 feet (1219.2 m) from an RS-422 device running at 19.2 kbps. At longer distances, the 19.2-kbps signal strength weakens significantly and can't power the opto-isolator. You can increase the maximum distance rating, however, by using a larger-gauge wire and slower data transmission rates.

You can also use opto-isolators when the RS-232 and RS-422 devices are powered from separate AC sources. Different AC sources may have different grounding systems and different ground potential. In these instances, the possibility of developing an electrical problem—a damaging surge or spike—increases substantially.

For the most effective protection from ground loops and electrical disturbances like lightning strikes, use the opto-isolators and dependable surge protectors.

The opto-isolator has a DTE/DCE switch that's used to set the RS-232 device as DTE or DCE.

If the opto-isolator is connected to a DCE device, set the switch to DTE. If the opto-isolator is connected to a DTE device, set the switch to DCE. This switch setting determines the pins from which the opto-isolator will draw its power.

The opto-isolator has a four-screw block connector on one side (the RS-422 interface) and a DB25 connector (the RS-232 interface) on the other. If you're connecting the opto-isolator to a PC or an RS-232 device with a DB25 port, attach the opto-isolator directly to the RS-232 equipment. If your PC has a DB9 port, however, you'll need a 6-foot (1.8-m) DB25 M to DB9 F extension cable. Call Tech Support for details.

The opto-isolator has a few limitations that are worth noting. First, this unit operates over four wires in full duplex mode, point-to-point only, so the opto-isolator does not support loopback testing. Also, two opto-isolators cannot be used back-to-back in a short-haul modem application.

## TECH SPECS

**Operation** — 4-wire, full duplex, point-to-point

**Protocol** — Asynchronous

**Speed (Maximum)** — 19.2 kbps, transparent

**Pins Supported** — RS-232: TD, RD, SG; RS-422: TXA, TXB, RXA, RXB

**Power Consumption** — RS-232: 48 mW;

RS-422: 34 mW

**RS-232 Voltage Requirements** — Minimum: ±3 VDC; Maximum: ±15 VDC

**RS-422 Voltage Requirements** — Minimum: 2 VDC; Maximum: 6 VDC

**Voltage Isolation** — Withstands up to 2500 VAC

**MTBF** — 300,000 hours

**Enclosure** — High-impact plastic

**Interface** — RS-232 (DTE or DCE) and RS-422

**Connectors** — RS-232: (1) DB25 female;

RS-422: (1) 4-screw terminal block

**Operating Temperature** — 32 to 158°F (0 to 70°C)

**Humidity** — Up to 95% relative, noncondensing

**Power** — From both RS-232 and RS-422 interfaces

**Size** — 0.7"H x 2"W x 2.7"D (1.8 x 5.1 x 6.9 cm)

**Weight** — 0.1 lb. (<0.1 kg)



IC457A-F

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### Recognize any of these situations?

- You wait more than 30 minutes to get through to a vendor's tech support.
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- You don't have a purchase order number and the tech refuses to help you.
- It's 9 p.m. and you need help, but your vendor's tech support line is closed.

According to a survey by *Data Communications* magazine, 90% of network managers surveyed say that getting the technical support they need is extremely important when choosing a vendor. But even though network managers pay anywhere from 10 to 20% of their overall purchase price for a basic service and support contract, the technical support and service they receive falls far short of their expectations—and certainly isn't worth what they paid.

At Black Box, we guarantee the best value and the best support. You can even consult our Technical Support Experts before you buy if you need help selecting just the right component for your application. Don't waste time and money—call Black Box today.

### Item

RS-232↔422 Opto-Isolator  
Female  
Male

### Code

IC457A-F  
IC457A-M

*NOTE: The RS-232↔422 Opto-Isolators cannot be used in pairs.*

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