

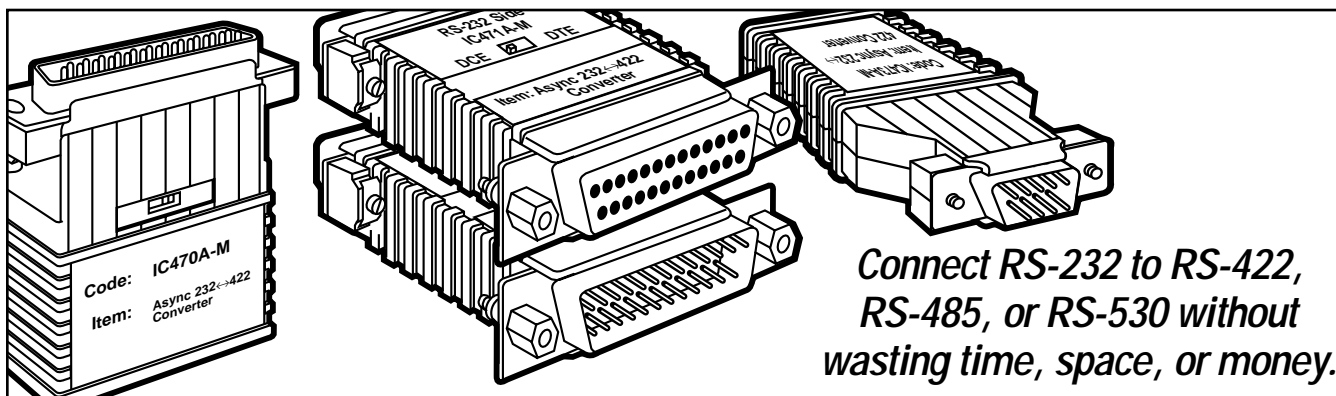
© 2000. All rights reserved.  
Black Box Corporation.

# BLACK BOX<sup>®</sup>

## NETWORK SERVICES

Black Box Corporation • 1000 Park Drive • Lawrence, PA 15055-1018 • Tech Support: 724-746-5500 • www.blackbox.com • e-mail: info@blackbox.com

## ASYNC RS-232 INTERFACE CONVERTERS



*Connect RS-232 to RS-422,  
RS-485, or RS-530 without  
wasting time, space, or money.*

### Key Features

- ▶ **Translate to and from RS-422, RS-485, or RS-530 for PCs and other RS-232 devices.**
- ▶ **Interface-powered; plug them right into a DB9 or DB25 RS-232 serial port.**
- ▶ **Run at least as far as 4000 ft. (1219 m) to the non-RS-232 device.**
- ▶ **Non-RS-485 models support async data rates up to 19,200 bps.**
- ▶ **RS-485 models support async data rates up to 115,200 bps and as many as 31 drops.**
- ▶ **Some models provide 600-W surge protection.**

The RS-422, RS-485, and RS-530 interfaces are wonderful. Devices with these interfaces support high speeds and very long distances, and they communicate very reliably. There's just one problem: These interfaces aren't native to PCs or to most of today's office equipment.

If you want a modular, inexpensive, compact, and powerful solution to this dilemma, look no further. Our Async RS-232 Interface Converters are designed to plug directly into the RS-232 serial ports of PCs and other devices, effectively turning those ports into RS-422, RS-485, or RS-530 ports. They don't require AC power or batteries; they operate using just the small voltage present on the RS-232 data and control leads.

The Converters come in a variety of models with a variety of RS-232 and non-RS-232 connectors. (See page 3 for a full listing of which models have which types of connectors.) But they can be considered as three main groups:

#### The RS-422/530 Group

One group of models (our product codes IC470A through

IC473A, IC630A, and IC631A) is designed to translate between RS-232 and either RS-422 or the data signals of RS-530. (These models loop back the RS-232 control signals and can't support the RS-530 control signals.)

They support data rates up to 19,200 bps and non-RS-232 distances up to 4000 ft. (1219 m). Some of these models have DB25 RS-232 connectors and are DTE/DCE-switchable; other models have DB9 RS-232 connectors and are always DCE.

#### The RS-422/485 Group

The second group of models (our product codes IC476A-R2 through IC478A-R2, IC620A, IC623A, and IC624A) is designed to translate between RS-232 and RS-422 and 2- or 4-wire RS-485. These models pass through one control signal, and can be configured for various flow-control options.

They support support data rates up to 115,200 bps and non-RS-232 distances up to 9 miles (14.5 km), but this distance will depend on the data rate and the type of cable you're using. (Call Black Box Technical Support for

assistance in determining how far you can run in a given application.)

These models can support as many as 31 RS-485 drops. Like the first group, some of these models have DB25 RS-232 connectors and are always DCE. The RS-422/485 group of models have built-in Silicon Avalanche Diodes that protect against surges up to 600 watts per wire.

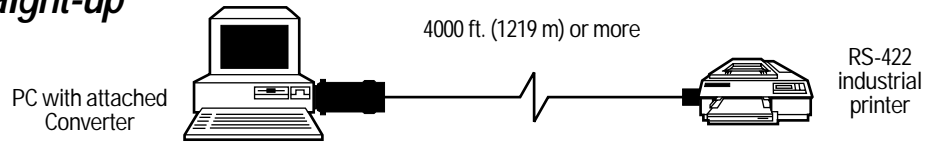
#### The 2-Wire RS-485 Group

The third group of models (our product codes IC520A and IC521A) is designed to translate between RS-232 and 2-wire RS-485 only. These models loop back the RS-232 control signals.

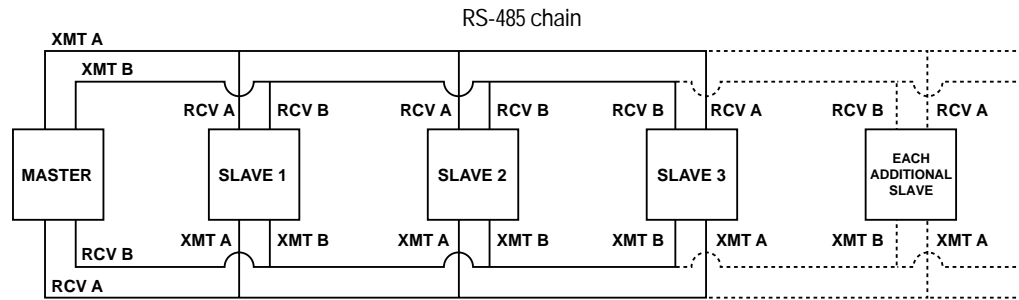
They support data rates up to 115,200 bps and as many as 31 RS-485 drops. These models also support non-RS-232 distances up to 4000 ft. (1219 m). They all have DB25 RS-232 connectors but are all DCE. Like the RS-422/485 group, they have Silicon Avalanche Diodes for 600-watt-per-wire surge protection.



## Install a Converter for straight-up one-to-one long-distance communication...



...or install one to talk to a lot of devices spread out across a factory floor.



## Specifications

### Cable Required:

Unconditioned twisted pair between Converters:  
 IC520A and IC521A models: 2 wires (1 pair);  
 IC476A, IC477A, IC478A, IC620A, IC623A, and IC624A models: 2 or 4 wires (1 or 2 pairs);  
 IC470A through IC473A, IC630A, and IC631A models: 4 wires (2 pairs)

**Compliance:** CE; FCC Part 15 Subpart J Class A, IC Class/classe A

### Interfaces:

To devices: EIA/TIA RS-232C: IC470A, IC471A, IC472A, IC476A, IC477A, and IC478A models: Original pinning on DB25, DTE or DCE (user-selectable);

IC520A and IC521A: Original pinning on DB25, DCE; IC473A, IC620A, IC623A, IC624A, IC630A, and IC631A models: Pinned according to TIA-574 on DB9, DCE;

To line:

IC470A, IC473A, IC630A, and IC631A models: EIA/TIA RS-422; IC471A and IC472A models: EIA/TIA RS-422 or transmit-and receive-data signals of EIA/TIA RS-530;

IC476A, IC477A, IC478A, IC620A, IC623A, and IC624A models: 2- or 4-wire EIA/TIA RS-485; IC520A and IC521A models: 2-wire EIA/TIA RS-485

**Protocol:** Asynchronous

**Data Format:** Transparent to data format

**Software Flow Control:** Transparent to software flow control (X-ON/X-OFF, etc.)

**Hardware Flow-Control Signaling:** IC470A through IC473A, IC520A, IC521A, IC630A, and IC631A models: Loop back RS-232 hardware flow-control signals (RTS, CTS, DTR, DSR, and CD); IC476A, IC477A, IC478A, IC620A, IC623A, and IC624A models: Raise DSR in response to DTR; raise CD in response to carrier; raise CTS in response to RTS (after no delay or 8-ms delay, user-selectable); carrier is either constantly ON or controlled by RTS, user-selectable

### Operation:

IC520A and IC521A models: Half-duplex only;  
 IC476A, IC477A, IC478A, IC620A, IC623A, and IC624A models: Transparent to 2-wire half-duplex or 4-wire full- or half-duplex;  
 IC470A through IC473A, IC630A, and IC631A models: Transparent to full- or half-duplex

### Data Rate:

IC470A through IC473A, IC630A, and IC631A models: Transparent to data rates up to 19,200 bps;  
 All other models: Transparent to data rates up to 115,200 bps

### Maximum Distance:

Between RS-232 device and Converter: 50 ft. (15.2 m), but Converters not directly attached will be underpowered;  
 Between non-RS-232 device and Converter: IC470A through IC473A, IC520A, IC521A, IC630A, and IC631A models: 4000 ft. (1219 m); IC476A, IC477A, IC478A, IC620A, IC623A, and IC624A models: Up to 9 miles (14.5 km) depending on data rate and cable type

### User Controls:

IC470A, IC471A, and IC472A models: (1) DTE/DCE slide switch;  
 IC476A, IC477A, and IC478A models: (1) DTE/DCE slide switch and (1) internal 8-position DIP switch for configuration;  
 IC620A, IC623A, and IC624A models: (2) Internal 4-position DIP switches for configuration;  
 All other models: None

**Indicators:** None

**Connectors:** See **Ordering Information** on the next page

### Power:

From RS-232 data and control signals (no AC power or batteries required); IC473A and IC620A through IC631A models only: If necessary, 6 to 12 VDC can be applied to Pin 9 of the DB9 RS-232 connector (call Black Box Tech Support for details)

### Surge Protection:

IC476A, IC477A, IC478A, IC520A, IC521A, IC620A, IC623A, and IC624A models: Internal Silicon Avalanche Diodes dissipate surges up to 600 watts per wire within one millisecond;  
 All other models: None

### Mean Time Between Failures (MTBF):

IC470A through IC478A, IC520A, IC521A, IC630A, and IC631A models: Approx. 240,000 hours;  
 IC620A, IC623A, and IC624A models: Over 209,000 hours

**Maximum Altitude:** 10,000 ft. (3048 m)

**Temperature Tolerance:** 32 to 122°F (0 to 50°C)

**Humidity Tolerance:** 5 to 95% noncondensing

**Enclosure:** ABS plastic

### Size:

IC470A, IC471A, and IC472A models: 2.2"H x 1.8"W x 0.8"D (5.6 x 4.5 x 1.9 cm);  
 IC473A, IC620A, IC623A, IC624A, IC630A, and IC631A models: 2.5"H x 1.2"W x 0.8"D (6.4 x 3 x 1.9 cm);  
 IC476A, IC477A, IC478A, IC520A, and IC521A models: 2.7"H x 2.1"W x 0.8"D (6.9 x 5.3 x 1.9 cm);

### Weight:

IC473A and IC620A through IC631A models: 3 oz. (85 g);  
 All other models: 2 oz. (57 g)



# Ordering Information

ITEM

CODE

Async RS-232 Interface Converters:

RS-232↔RS-422 or RS-530:

<i>RS-232 Connector</i>	<i>RS-422/530 Connector</i>	
DB25 female .....	Terminal block .....	IC470A-F
	DB25 female .....	IC471A-F
	DB25 male .....	IC472A-F
DB25 male .....	Terminal block .....	IC470A-M
	DB25 female .....	IC471A-M
	DB25 male .....	IC472A-M
DB9 female .....	Terminal block .....	IC473A-F
	RJ-11 female .....	IC630A-F
	RJ-45 female .....	IC631A-F
DB9 male .....	Terminal block .....	IC473A-M
	RJ-11 female .....	IC630A-M
	RJ-45 female .....	IC631A-M

RS-232↔RS-422 or 2- or 4-Wire RS-485:

<i>RS-232 Connector</i>	<i>RS-485 Connector</i>	
DB25 female .....	Terminal block .....	IC476A-F-R2
	DB25 female .....	IC477A-F-R2
	DB25 male .....	IC478A-F-R2
DB25 male .....	Terminal block .....	IC476A-M-R2
	DB25 female .....	IC477A-M-R2
	DB25 male .....	IC478A-M-R2
DB9 female .....	Terminal block .....	IC620A-F
	RJ-11 female .....	IC623A-F
	RJ-45 female .....	IC624A-F
DB9 male .....	Terminal block .....	IC620A-M
	RJ-11 female .....	IC623A-M
	RJ-45 female .....	IC624A-M

RS-232↔2-Wire RS-485:

<i>RS-232 Connector</i>	<i>2-Wire RS-485 Connector</i>	
DB25 female .....	Terminal block .....	IC520A-F
	RJ-45 female .....	IC521A-F
DB25 male .....	Terminal block .....	IC520A-M
	RJ-45 female .....	IC521A-M

Consult our catalog, our Web site, or Black Box Technical Support for help in finding the right cables for your application.



Black Box offers the best warranty program in the industry—Fido Protection®. For more information, request **FaxBack 22512**.

