



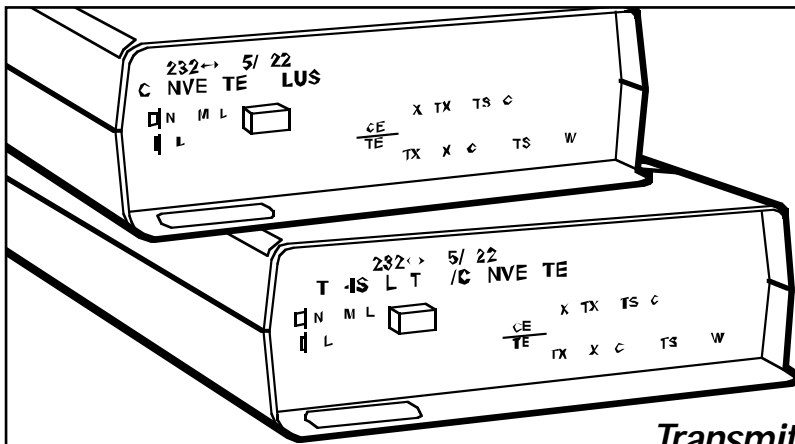
BLACK BOX[®]

NETWORK SERVICES

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RS-232 ↔ RS-485/422 CONVERTERS



*Transmits data fast—up to 115 kbps!
Plus three selectable modes of operation.*

Key Features

- ▶ **Send data at speeds up to 115.2 kbps.**
- ▶ **Switch the RS-232 interface for DCE or DTE.**
- ▶ **Version available with opto-isolation to prevent damage from ground loops.**
- ▶ **Link up to 32 devices together in 2-wire multipoint applications using IC109 models.**
- ▶ **Bidirectional conversion from RS-232 (V.24) to RS-422/485.**
- ▶ **Choose standalone or rackmount versions.**

Transmit data up to 4000 ft. (1219.2 m) over 2- or 4-wire lines in full or half-duplex. And send it at speeds up to up to 115.2 kbps! Use these Converters with PCs and other RS-232 equipment that has the 16550 UART.

Switch settings let you customise the converter to your specific application. Now set line bias to match your 485 equipment, set the line termination resistors, and switch the RS-232 interface for DCE or DTE.

Improved surge suppression keeps your converter safe from induced surges on the RS-485 side. If you are transmitting between buildings or over long distances, order one of the Opto-Isolation models for protection against ground-loop surges.

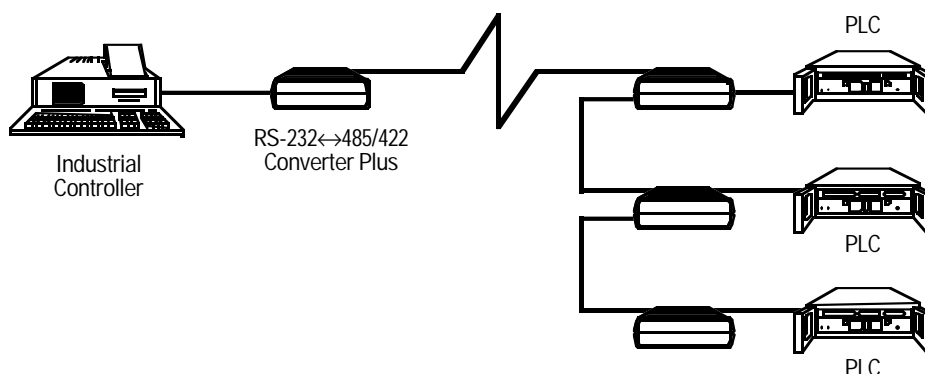
Specially designed circuitry lets the converter inhibit the CTS signal if the CD signal is present. That way, a device on the 485 side can act as a controller.

Data Enable Mode is also faster—up to 64 kbps! So you won't lose data when you transmit in Data Enable.

Opto-Isolation

IC109A-R2 and IC109C protect one segment of your extended network from problems that arise on the other. Inside the RS-232↔485/422 Converter Plus with Opto-Isolation, optical-isolation circuits convert electrical signals to light and back again, to keep signal noise and ground loops from crossing between segments of your RS-485 installation. That means the electrical noise from your factory floor won't affect your office communications, and the difference in ground potential over long distances and between buildings won't damage your sensitive equipment.

In the application shown, an industrial controller is used to gather information from several remote programmable logic controller stations (PLCs). A system protocol has been defined so that all the PLCs receive the information sent by the industrial controller, but only the remote station specifically addressed will respond. In this system, the industrial controller and all the remote stations are DTE devices.



Specifications

Interface: (1) Asynchronous RS-232 port (DTE/DCE selectable); (1) asynchronous RS-485 port with improved surge protection and switch-selectable line termination or line bias

Connectors: (1) DB25 female [RS-232 port]; (1) four-screw terminal block [RS-485 port]

Data Rate: Up to 115 kbps, transparent to data

Optical Isolation: IC109A-R2 and IC109C only

Operation: Point-to-point or multipoint; half- or full duplex; transparent to data; selectable RTS-to-CTS delay with option to inhibit CTS if CD is present (DCE); DTE or DCE configurable RS-232 port; normal or loopback operation

Pins Supported: RS-232 port: TD, RD, RTS, CTS, CD, DTR, DSR, SG, and FG; RS-485 port: TXA, TXB, RXA, RXB

Indicators: (5) LEDs: TX, RX, RTS, CD, and PWR

Timeout Delay: 0.15, 0.7, 2, 7, or 70 msec (for the RS-485 driver enabled by data feature)

Temperature Tolerance:
Operating: 32 to 122°F (0 to 50°C);
Storage: -4 to +158°F (-20 to +70°C)

Humidity Tolerance:
Up to 95%, noncondensing

MTBF: Approximately 180,000 hours (ground benign environment)

Power: IC108A and IC109A-R2: PS154 (Input is 120V, 60 Hz, and 20W; Output is AC 17 VCT and 0.7A); IC108C and IC109C: Powered by the RM005 rack

Size: IC108A and IC109A-R2: 1.8"H x 5.5"W x 8.5"D (4.6 x 14 x 21.6 cm); IC108C and IC109C: 7.4"L x 4.7"W (18.8 x 11.9 cm), 0.6 inches (1.5 cm) thick

Weight: IC108A and IC109A-R2: 1 lb. (0.5 kg); Power supply only (PS154): 0.4 lb. (0.2 kg)

What the Package Includes

- (1) RS-232↔485/422 Converter Plus or Converter Plus with Opto-Isolation
- (1) Power supply (with IC108A and IC109A-R2 only)
- (1) 6-ft. (1.8-m) AT® Modem Cable, Premium, DB9 Female/DB25 Male, 9-Conductor, 24 AWG (EVBMC-0006)
- (1) AT Adapter (Serial) DB9 Male to DB25 Female (FA521A)
- (1) Users' manual

Ordering Information

ITEM	CODE
RS-232↔RS-485/422 Converter Plus	
Standalone	IC108A
Rackmount Card	IC108C
RS-232↔RS-485/422 Converter Plus with Opto-Isolation	
Rackmount Card	IC109C
Standalone with cables	IC109A-R2
<i>You might also need to order...</i>	
2-Pair, Category 3 Twisted-Pair Cable	EYN712A
Multi-Function Rack	RM005