



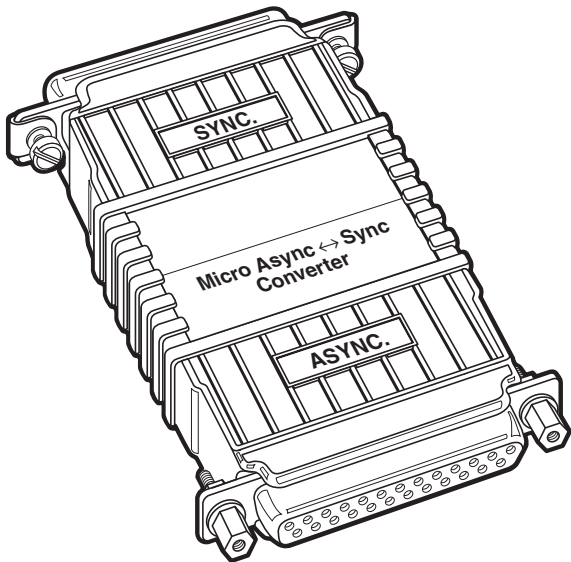
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1000 Park Drive • Lawrence, PA 15055-1018 • 724-746-5500 • Fax 724-746-0746



# Micro Async to Sync Converter



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## CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S. 24 hours, 7 A.M. Monday to midnight Friday: **877-877-BBOX**  
FREE technical support, 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**  
Mail order: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018  
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## FEDERAL COMMUNICATIONS COMMISSION AND INDUSTRY CANADA RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

*This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.*

*Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.*



This product is CE certified.

# NORMAS OFICIALES MEXICANAS (NOM) ELECTRICAL SAFETY STATEMENT

## INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energia.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
  - A: El cable de poder o el contacto ha sido dañado; u
  - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
  - C: El aparato ha sido expuesto a la lluvia; o
  - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
  - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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## TRADEMARKS

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# 1. Specifications

**Data Rates**—Up to 19.2 kbps

**Clocking**—Provided by modem or multiplexor

**Buffer**—4-bit RTS override feature empties buffers before dropping RTS, so you can use the Converter in a polling environment

**Data Transmission**—Full- or half-duplex

**Connectors**—Async: DB25 female; Sync: DB25 male

**Operating Temperature**—32 to 140°F (0 to 60°C)

**Altitude**—Up to 15,000 feet (4572 m)

**Humidity**—Up to 95% noncondensing

**Power**—No external power required; uses power from data and control signals on async side only

**Size**—0.75"H x 2"W x 3.2"D (1.9 x 5.1 x 8.1 cm)

**Weight**—2 oz. (0.06 kg)



## 2. Introduction

### 2.1 Description

The Micro Async to Sync Converter gives asynchronous hardware access to synchronous modems or multiplexors. The Converter plugs directly into the asynchronous RS-232 DTE port and connects via RS-232 cable to the synchronous DCE device.

Drawing power from the RS-232 interface, the Converter needs no AC power or batteries to operate and supports data rates to 19.2 kbps. Because the Converter automatically adjusts the synchronous data rate to match the asynchronous DTE's output rate, no data-rate strapping is necessary. The Converter derives clocking externally from the clock of the synchronous DCE, and imposes no limit on data-block size. Characters may be up to 11 bits long.

Measuring only 0.75"H x 2"W x 3.2"D (1.9 x 5.1 x 8.1 cm), the Converter is housed in a sturdy ABS plastic case. It comes equipped with a DB25 male connector and a DB25 female connector.

## **2.2 Features**

- Conforms to CCITT V.14 and V.22 standards
- Adapts asynchronous terminals to synchronous modems and multiplexors
- Allows character lengths from 8 to 11 bits
- Requires no AC power or batteries
- Data rates to 19.2 kbps
- Automatically adjusts synchronous data rates
- Miniature size
- Accepts external clocking
- Made in the USA

## 3. Configuration

You can configure the Converter via four internal switches. **Figure 3-1** shows where the switches are on the printed circuit board.

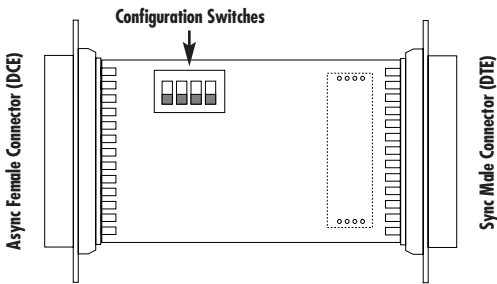


Figure 3-1. Switch locations on the PC board.

### 3.1 Setting Internal Switches

The four switches shown in **Figure 3-2** allow selection of character length and extended signaling rate. These switches are located internally on the Converter's PC board. To access them, use a small flathead screwdriver to pop open the Converter's case as shown in **Figure 3-2**.

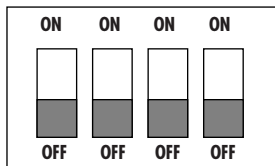


Figure 3-2. Closeup of the Converter's configuration switches.

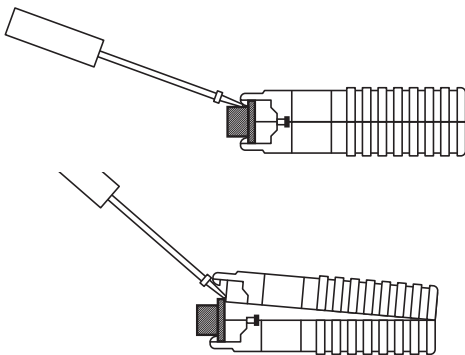


Figure 3-3. Opening the Converter's case with a small screwdriver.

## 3.2 Switch Settings

All possible settings for the Converter's configuration switches are presented in **Table 3-1**. If you have additional questions about configuration, call Black Box Technical Support at 724-746-5500.

Switches SW1-1 and SW1-2 are set in combination to determine the character length for asynchronous data.

**Table 3-1. Switch Summary Table.**

Position	Function	Factory Default
Switch 1-1	Character Length	Off
Switch 1-2	Character Length	Off } 10 bit
Switch 1-3	Signalling Rate	Off -2.5% to 1%
Switch 1-4	Not Used	

### SWITCHES SW1-1 AND SW1-2: CHARACTER LENGTH

Switches SW1-1 and SW1-2 are set in combination to determine the character length for asynchronous data.

<u>SW1-1</u>	<u>SW1-2</u>	
Off	On	8 bit
On	On	9 bit
Off	Off	10 bit
On	Off	11 bit

### SWITCH SW1-3: EXTENDED SIGNALING RATE (ESR)

The setting for switch 1-3 determines the range of variability the Converter looks for in asynchronous data rates (the actual variance from a given frequency level the Converter will tolerate).

#### SW1-3

Off	-2.5% to +1%
On	-2.5% to +2.3%

### SWITCH SW1-4: NOT USED

## 4. Installation

The Converter is designed to be used in pairs, with one unit installed between an asynchronous DTE and a synchronous DCE on either end of a synchronous communication link. **Figure 4-1** illustrates a typical Converter installation.

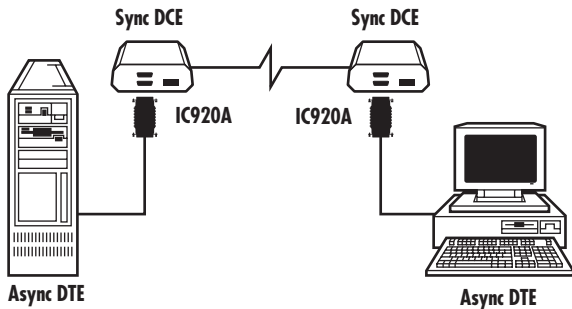


Figure 4-1. Typical Converter application.

### 4.1 Connecting the Asynchronous Port

The asynchronous port of the Converter is a DB25 female and is configured as DCE. Therefore, it wants to talk to a DTE device such as a terminal or PC. You can either plug the Converter directly into the DB25 serial port of a DTE or connect it via “straight-through” cable.

## **4.2 Connecting the Synchronous Port**

The synchronous port of the Converter is a DB25 male and is configured as DTE. Therefore, it wants to talk to a DCE device such as a modem or a multiplexor. You can plug the Converter directly into the DB25 serial port of a DCE or connect it via “straight-through” cable.



## Appendix A: Asynchronous Port Connections (Configured as DCE)

<b>Pin</b>	<b>Name</b>	<b>Description</b>
1	FG	Frame Ground; connected straight through to synchronous port
2	TXD	Transmit Data (to Converter); data input from asynchronous port; input to the Converter's power supply
3	RXD	Receive Data (from Converter); data output to asynchronous port
4	RTS	Request to Send (to Converter); input to the Converter's power supply
5	CTS	Clear to Send (from the Converter); connected straight through to synchronous port
6	DSR	Data Set Ready (from the Converter); connected straight through to synchronous port
7	SG	Signal Ground; connected straight through to synchronous port
8	CD	Carrier Detect (from Converter); connected straight through to synchronous port
9	+DCV	Connected straight through to synchronous port
10	-DCV	Connected straight through to synchronous port
20	DTR	Data Terminal Ready (to Converter); input to Converter power supply
22	RI	Ring Indicator (from Converter); connected straight through to synchronous port

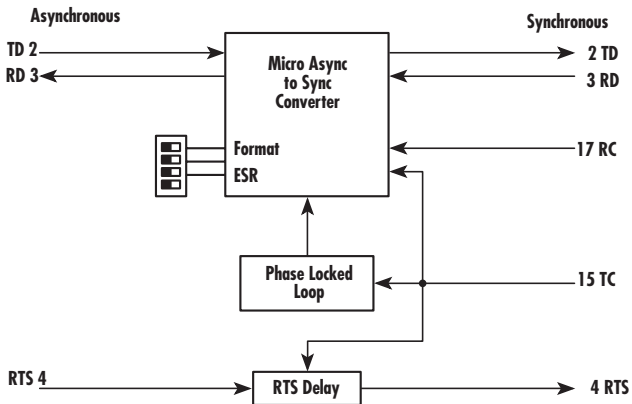
## Appendix B: Synchronous Port Connections (Configured as DTE)

<b>Pin</b>	<b>Name</b>	<b>Description</b>
1	FG	Frame Ground; connected straight through to asynchronous port
2	TXD	Transmit Data (from Converter); data output to synchronous port
3	RXD	Receive Data (to Converter); data input from the synchronous port; input to Converter's power supply
4	RTS	Request to Send (from Converter); 4-bit delay from asynchronous port (Converter waits 4 bits before dropping RTS to the synchronous port; this facilitates use in a polling environment)
5	CTS	Clear to Send (from Converter); connected straight through to asynchronous port
6	DSR	Data Set Ready (to Converter); connected straight through to asynchronous port
7	SG	Signal Ground; connected straight through to asynchronous port
8	CD	Carrier Detect (to Converter); connected straight through to asynchronous port
9	+DCV	Connected straight through to asynchronous port
10	-DCV	Connected straight through to asynchronous port
15	TXC	Transmit clock (to Converter); used to synchronize data conversion from Converter to synchronous port

## MICRO ASYNC TO SYNC CONVERTER

<b>Pin</b>	<b>Name</b>	<b>Description</b>
17	RXC	Receive clock (to Converter); used to synchronize data conversion from Converter to synchronous port
20	DTR	Data Terminal Ready (from Converter)
22	RI	Ring Indicator (to Converter); connected straight through to asynchronous port

## Appendix C: Block Diagram



Pins 1, 5, 6, 7, 8, 9, 10, 20, and 22 are connected straight through

Figure C-1. Block Diagram.