High Speed Async to Sync Interface Converter

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1. Specifications

Data Rates	19.2 to 64 Kbps
Clocking	Provided by modem or multiplexor
Buffer	4-bit RTS override feature empties buffers before dropping RTS
Data Transmission	Full or half-duplex
Connectors	DB25 female on asynchronous port, DB25 male on synchronous port
Power Supply	None required; Uses power from data and control signals
MTBF	395,538 hours
MTTR	1 hour
Temperature	32° to 140°F (0° to 60°C)
Humidity	Up to 95%, noncondensing

HIGH SPEED ASYNC TO SYNC INTERFACE CONVERTER

Altitude   Up to 15,000 feet (4570 m)

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

Weight   2 oz. (56.7 g)

2. Introduction

2.1 Description

The High Speed Async to Sync Interface Converter plugs directly into a local asynchronous DTE (terminal, PC, etc.) and connects that DTE, via straight-through pinned RS-232 cable, to a synchronous DCE. The Interface Converter is designed to be used in pairs. When the same setup is installed on the remote end, the local and remote DTEs can communicate over the synchronous link.

Drawing power from either the synchronous or asynchronous RS-232 interface, the Interface Converter needs no AC power or batteries to operate and supports RS-232 data rates of 19.2 to 64 Kbps. Because the Interface Converter automatically adjusts the synchronous data rate to match the asynchronous DTE's output rate, no data-rate strapping is necessary. The Interface Converter derives clocking externally from the synchronous DCE's clock, and imposes no limit on data-block size. Characters may be up to 11 bits long.

The High Speed Async to Sync Interface Converter is housed in a sturdy ABS plastic case. It comes fully equipped with a DB25 male connector and a DB25 female connector, which plug directly into the synchronous and asynchronous ports.

2.2 Features

- •Conforms to CCITT V.22 and V.14 standards.
- •Lets asynchronous terminals communicate with synchronous modems and multiplexors.
- •Accepts character lengths to 11 bits.
- •Requires no AC power or batteries.
- •Supports data rates of 19.2 to 64 Kbps.
- •Automatically adjusts synchronous data rates.
- •Draws power from the data and control signals.
- •Plugs directly into async or sync DB25 port.
- •Accepts external clocking.

3. Configuration

The High Speed Async to Sync Interface Converter is configured using internal DIP switches. Figure 3-1 shows the location of the configuration switches.
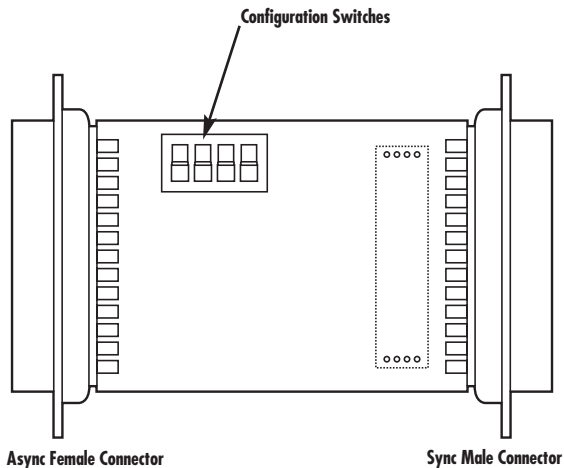

Figure 3-1. Switch locations on the PC board.

3.1 Accessing the Internal Switches

The High Speed Async to Sync Interface Converter's DIP switches are mounted on the PC board. To access the PC board, insert the blade of a small flathead screwdriver into the slot on one side of the Interface Converter's case. Pop the case open by twisting the blade. Repeat on the other side of the case. You should now be able to pull the case halves apart and see the DIP switches on the PC board. Once you have set the switches properly (see **Section 3.2**), align the case halves and snap them together.

3.2 Setting the Internal Switches

Three DIP switches are used to configure the High Speed Async to Sync Interface Converter: two switches set the character length (SW1-1 and SW1-2) and one switch matches the signaling rates of the asynchronous and synchronous ports (SW1-3). (Switch SW1-4 is not used.) Figure 3-2 shows the orientation of the DIP switches.
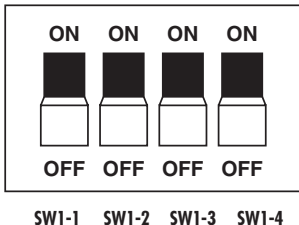
Figure 3-2. DIP switch orientation.

3.2.1 CHARACTER LENGTH

Switches SW1-1 and SW1-2 operate jointly to set the asynchronous character length. The asynchronous character length setting is determined by combining the number of start, stop, data, and parity bits that make up each character generated by the asynchronous DTE. The Interface Converter does not care about the composition of each asynchronous character; only its length is significant. The combined switch settings that set the four possible asynchronous character lengths are shown on the next page.

	SW1-1	SW1-2
8 bit	OFF	ON
9 bit	ON	ON
10 bit	OFF*	OFF*
11 bit	ON	OFF

*Default settings

3.2.2 EXTENDED SIGNALING RATE (ESR)

The position of switch SW1-3 ensures that the asynchronous input data rate matches the synchronous output data rate. When switch SW1-3 is set to OFF, the asynchronous bit rate must match the synchronous clock rate to a tolerance of -2.5% to +1%. When the switch SW1-3 is set to ON, the asynchronous bit rate must match the synchronous clock rate to a tolerance of -2.5% to +2.3%.

	SW1-3
-2.5% to +1%	OFF*
-2.5% to +2.3%	ON

*Default settings

4. Installation

The High Speed Async to Sync Interface 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. The figure below illustrates a typical High Speed Async to Sync Interface Converter installation.
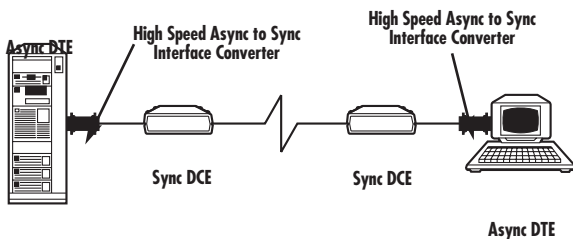
4.1 Connecting the Asynchronous Port

The High Speed Async to Sync Interface Converter's asynchronous port is a DB25 female and is configured as DCE. Therefore, it wants to communicate to a DTE device, such as a terminal or PC. The High Speed Async to Sync Interface Converter may be plugged directly into the DB25 serial port of a DTE or connected via short straight-through pinned cable.

4.2 Connecting the Synchronous Port

The High Speed Async to Sync Interface Converter's synchronous port is a DB25 male and is configured as DTE. Therefore, it wants to communicate to a DCE device, such as a modem or channel on a multiplexor. The High Speed Async to Sync Interface Converter may be plugged directly into the DB25 serial port of a DCE or connected via straight-through pinned cable.
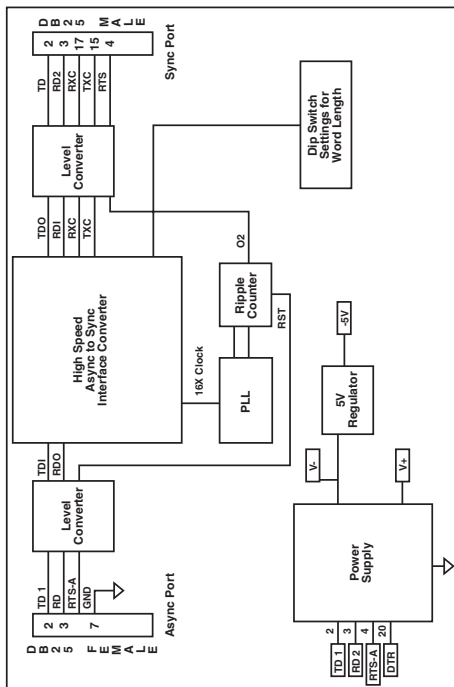
Appendix A. Asynchronous Port Connections (Configured as DCE)

PIN	NAME	DESCRIPTION
1	FG	Frame Ground; Connected straight to synchronous port
2	TXD	Transmit Data (to the Converter); Data input from asynchronous port; Input to the Converter power supply
3	RXD	Receive Data (from the Converter); Data output to asynchronous port
4	RTS	Request to Send (to the Converter); Input to the 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 the 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 the Converter); Input to power supply
22	RI	Ring Indicator (from the Converter); Connected straight-through to synchronous port

Appendix B. Synchronous Port Connections (Configured as DTE)

PIN	NAME	DESCRIPTION
1	FG	Frame Ground; Connected straight to asynchronous port
2	TXD	Transmit Data (from the Converter); Data output to synchronous port
3	RXD	Receive Data (to the Converter); Data input from the synchronous port; Input to the Converter power supply
4	RTS	Request to Send (from the 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 (to the Converter); Connected straight-through to asynchronous port
6	DSR	Data Set Ready (to the Converter); Connected straight-through to asynchronous port
7	SG	Signal Ground; Connected straight-through to asynchronous port
8	CD	Carrier Detect (to the 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 the Converter); Used to synchronize data conversion from the Converter to synchronous port
17	RXC	Receive clock (to the Converter); Used to synchronize data conversion from the Converter to synchronous port
20	DTR	Data Terminal Ready (from the Converter); Input to power supply
22	RI	Ring Indicator (to the Converter); Connected straight-through to asynchronous port

Appendix C. Block Diagram

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