The Datalinker Model A

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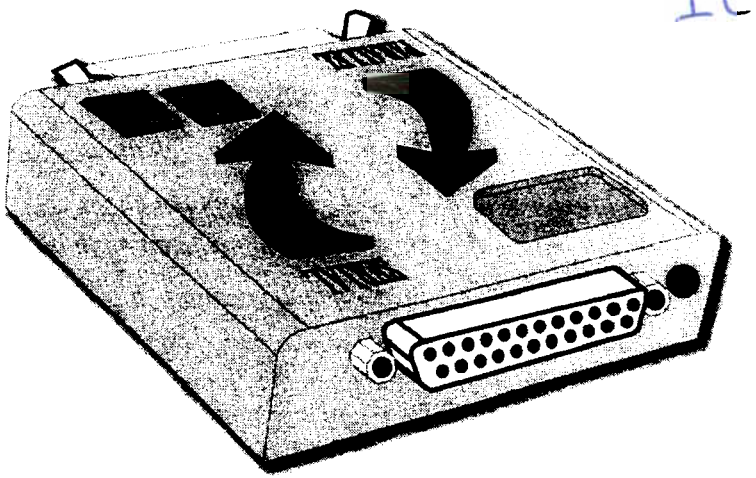
IC1052



Bi-directional RS-232 to Centronics Interface Converter User Manual

Revision 3 May 1997

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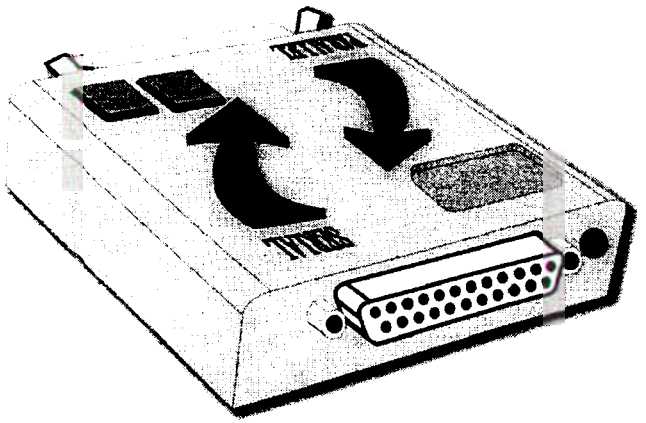
Description

The Datalinker Model A is a bi-directional interface converter, capable of converting Centronics Parallel data format to RS-232/V24 Serial data format and vice versa. It handles both CTS/DTR and Xon/Xoff flow control and incorporates a 60 byte buffer.



Features

- Self powered - it derives its power directly from the RS-232 signals (DTR,RTS and RD) hence no external power supply would normally be required. Provision, however, is mode to power the Datalinker Model A from an optional power supply for applications where long serial cables are being employed or where the required RS-232 signals are not available.
- Supports both XON/XOFF and DTR flow control.
- Includes a 60 byte buffer.
- Fully configurable for - Baud rate 300 - 19200, Data bit selection 7 or 8, Flow control Xon/Xoff or CTS/DTR, Parity NONE, ODD, EVEN.
- Sensible configuration when all the communications switches are set to the OFF position - 9600 Baud, 8 Data bits, No parity, DTR flow control.
- Robust construction - all metal case.
- DCE serial port - allows straight through RS-232 cables to be used for most applications.

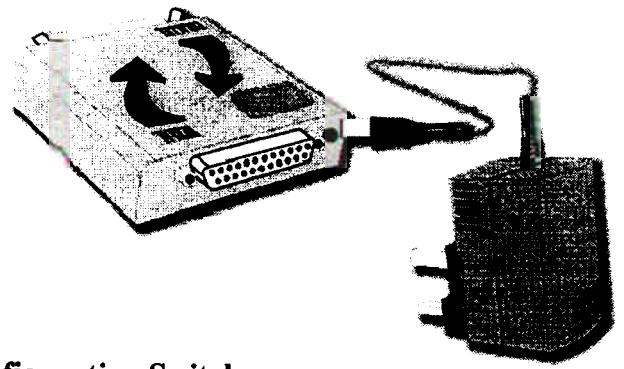
Datalinker Model A

Installation

Power Requirements

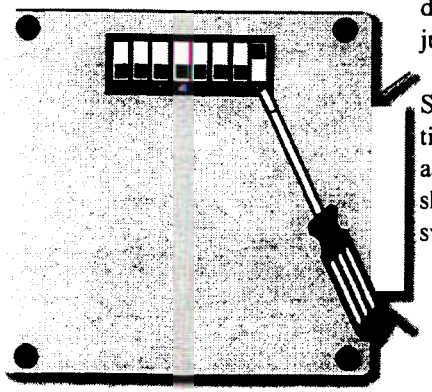
The Datalinker Model A derives its power directly from the RS-232 signals provided by the connected communications equipment and thus in most applications no additional power source is required. Provision is mode, however, to power the Datalinker Model A from an optional power supply for applications where the typical RS-232 signals are not available, although most equipment including the majority of Printers and Computers do provide the required signals for correct operation of the Datalinker Model A. *Further information on the required signals can be found in the appendix of this manual*

For applications which must use the optional power adaptor, the Datalinker Model A is fitted with a 2.1mm power inlet into which the power adaptor should be plugged.



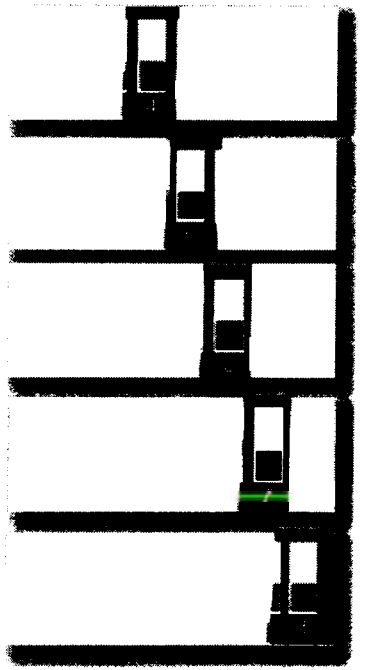
Configuration Switches

Accessible from the base of the Datalinker Model A is a set of eight miniature switches. These must be set during installation to set the required operating conditions of the unit. They can also be adjusted subsequently if your needs change.



Switch operations:- To set the configuration switches use a small instrument such as a screwdriver. The example on the left shows switch 8 in the ON position and switches 1 to 7 in the OFF position.

Configuration switch summary



Baud Rate			
SW1	**SW2**	**SW3**	Baud Rate
OFF	OFF	OFF	9600
OFF	OFF	ON	300
OFF	ON	OFF	600
OFF	ON	ON	1200
ON	OFF	OFF	2400
ON	OFF	ON	4800
ON	ON	OFF	9600
ON	ON	ON	19200

Flow Control	
Switch 4	**Flow Control**
OFF	DTR (Hard ware)
ON	Xon/Xoff (Soft)

Parity	
Switch 5	**Parity**
OFF	Disabled
ON	Enabled

Parity Type	
Switch 6	**Parity**
OFF	EVEN
ON	ODD

No. of data bits	
Switch 7	Data bits
OFF	8
ON	7

Interface Conversion	
Switch 8	Direction
OFF	Serial to Parallel
ON	Parallel to Serial

Given in the following tables is a more detailed explanation of the switch functions:-

Switches 1, 2 & 3 (Baud Rate)

These switches set the baud rate (data signaling speed) at the serial port. They must be set to match the speed setting of your serial device.

Baud Rate			
SW1	SW2	SW3	Baud Rate
OFF	OFF	OFF	9600
OFF	OFF	ON	300
OFF	ON	OFF	600
OFF	ON	ON	1200
ON	OFF	OFF	2400
ON	OFF	ON	4800
ON	ON	OFF	9600
ON	ON	ON	19200

Switch 4 (Flow Control)

Xon/Xoff Flow Control - One popular method of achieving flow control is a method known as Xon/Xoff. In this method the receiving device transmits two special data characters, called 'Xon' and 'Xoff', back to the sending equipment periodically during data transmission. Xoff means 'stop', and Xon means 'go'. In order for this method to work, the sending equipment must 'listen' for, and respond to, these special characters arriving at its data input pin in the communications port.

Flow Control	
Switch 4	Flow Control
OFF	DTR (Hard ware)
ON	Xon/Xoff (Soft)

Hardware Flow Control - Another very common method of flow control is called 'hardware flow control'. In this method the recipient controls a steady voltage level signal on one of its interface pins (usually - but not always - pin 20 (DTE equipment)). A positive voltage (between +3V and +25V) means 'go' and a negative voltage (between -3V and -25V) means 'stop'.
Again, for this method to work properly the sending equipment must monitor the voltage on one of its interface pins so that it knows when to stop sending and when to resume.

Switches 5 & 6 (Parity Selection)

Parity when selected adds or checks for an additional bit in the serial transmission. This bit serves as check on the validity of the transmitted data. The parity selection must be set to match that of the serial device.

Switch 7 (Character Length)

The character length is the number of data bits that form each character, and is normally either 7 or 8. This parameter should be set to match the requirement of your serial device. For text only applications only 7 data bits are required, for graphics or text plus graphics 8 data bits are required. In general most serial devices default to 8 bits to cover both text and graphics applications. If in doubt, the setting can be adjusted when the output from the Datalinker is observed to be incorrect.

Parity	
Switch 5	Parity
OFF	Disabled
ON	Enabled
Parity Type	
Switch 6	Parity
OFF	EVEN
ON	ODD

Switch 8 (Conversion)

Switch 8 configures the Datalinker Model B to convert from either Serial to Parallel or from Parallel to Serial. Note: To avoid any possible damage to the Datalinker Model B or your equipment it is important to set the direction of conversion before connecting to any other equipment.

No. of data bits	
Switch 7	Data bits
OFF	8
ON	7

Stop Bit Selection

The stop bit selection sets the number of non-active bits either generated or tested for between each character transmitted or received. When the Datalinker Model B is being used in the serial to parallel mode the number of stop bits is automatically set to One. Conversely when the Datalinker Model A is in the parallel to serial mode the number of stop bits is set to Two. This automatic configuration of the stop bit selection allows the Datalinker to function with most equipment.

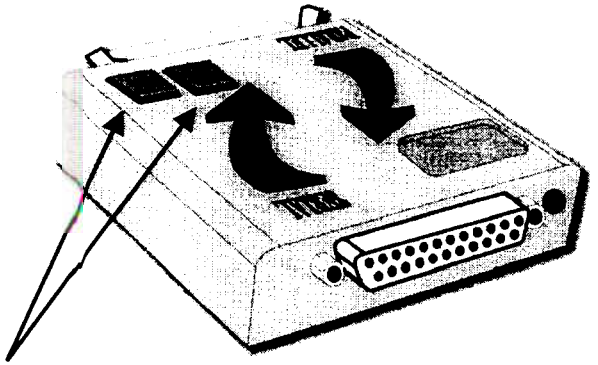
Interface Conversion	
Switch 8	Direction
OFF	Serial to Parallel
ON	Parallel to Serial

Default Settings

Many printers and computers *(including the IBM PC range and compatibles)* either default to or are factory set to the following serial port parameters:- 9600 Baud, 8 Data bits, No Parity, and DTR Flow control. The Datalinker Model B matches these parameters when all switches are OFF.

Button Operation

Located close to the Centronics connector are two buttons as shown above. The button located closest to the edge, is used to provide a reset to the Datalinker. Depression of this button has the same effect of powering on the Datalinker.

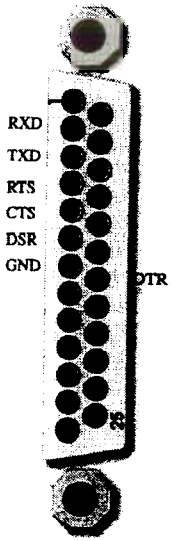


The other button is used to generate a status print on the selected output port, that is to say, that if the conversion has been set for serial to parallel operation the status print will be directed to the parallel Centronics output. To generate the status print depress both buttons at the same time and release the Reset button before the status print button. Shown below Button operation

```
*******************************************************************************
Interlink Communications Limited
Serial RS232 << >> Parallel Converter
8K Datalinker      Version 2.0
*******************************************************************************
SWITCH CONFIGURATION
SW1     SW2     SW3     Baud                                    OFF     ON
                        Rate
OFF     OFF     OFF     9600    SW4     FLOWCON         DTR     Xon/Xoff
OFF     OFF     ON      300
OFF     ON      OFF     600     SW5     PARITY          DIS     ENB
OFF     ON      ON      1200
ON      OFF     OFF     2400    SW6     PARITY          EVEN    ODD
ON      OFF     ON      4800
ON      ON      OFF     9600    SW7     DATABITS        8       7
ON      ON      ON      19200   SW8     DIRECTION       Ser>Par Par>Ser
CURRENT SETTINGS
BAUD RATE 9600, FLOWCONTROL XON/XOFF, PARITY DISABLED
DATABITS 8, DIRECTION SERIAL >> PARALLEL
```

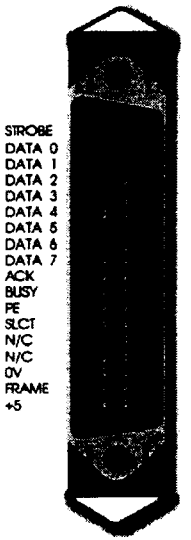

Interconnections

Serial RS-232 Connections



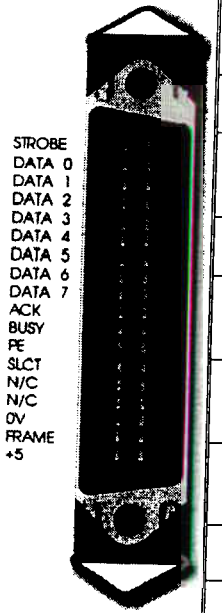
Pin	Signal	Destination	Comment
1	Frame		Connected to the metal case
2	RXD (Receive Data)	Input	Serial Data input
3	TXD (Transmit Data)	Output	Serial Data transmission line. Transmits data.
4	RTS (Request to send)	Input	This signal has no communications function with the Datalinker.
5	CTS (Clear to send)	Output	Used for flow control in serial to parallel applications when DTR flow control is selected.
6	DSR (Data set ready)	Output	Connected to pin 5 above.
7	GND		Signal Ground (0V) level.
20	DTR (Data terminal ready)	Input	Used for flow control in parallel to serial applications when DTR flow control is selected.

Parallel Connections (Serial to Parallel)



Pin	Destination	Signal	Function
1	Output	$\overline{\text{Strobe}}$	A high to low logic level pulse of approx. 5uS is generated from Datalinker to strobe data into the printer or receiving device.
2-9	Output	Data 1-8	These lines represent the data in true logic. Data 1 is the LSB.
10	Input	$\overline{\text{Ack}}$	A low active pulse generated from the printer or receiving device to acknowledge data transfer from the Datalinker.
11	Input	Busy	When this signal is high the Datalinker will not send data to the printer.
12	Input	PE	Indicates the printer is out of paper when this signal is high. This signal is not monitored by the Datalinker and is tied to GND (0V) through a 10K resistor.
13	Input	SLCT	Indicates the printer is ON LINE when this signal is high. This signal is not monitored by the Datalinker and is tied to +5 volts through a 47K resistor.
14/15/30/31-35		N/C	Not connected.
16/19-29/36	0V	GND	Logic GND level.
17		Frame	Connected to pin 1 of the 25 pin D connector and to the metal case.
18	Input	+5V	

Parallel Connections (Parallel to Serial)



Pin	Destination	Signal	Function
1	Input	$\overline{\text{Strobe}}$	When this signal is taken low and then high for a minimum period of 0.5uS data is strobed into the Datalinker
2-9	Input	Data 1-8	These lines represent the data in true logic. Data 1 is the LSB.
10	Output	$\overline{\text{Ack}}$	A low active pulse generated from the Datalinker or to acknowledge data input.
11	Output	Busy	When high the Datalinker will not accept data.
12	Output	PE	Tied to GND (0V) through a 10K resistor. Normally used to indicate the paper status of a printer.
13	Output	SLCT	Tied to +5 volts through a 47K resistor. Indicates the ON-Line status of a printer.
14/15/30/31-35		N/C	Not connected.
16/19-29/36	0V	GND	Logic GND level.
17		Frame	Connected to pin 1 of the 25 pin D connector and to the metal case.
18	Input	+5V	

Specification

Specification

Datalinker Model A is a bi-directional RS-232 Serial to Centronics Parallel Interface converter that allows two devices with such interfaces to communicate.

Serial Parameter Configuration	
Baud Rate	Selectable between 300 and 19200 by switches 1,2 and 3
Flow Control	Selectable between CTS/DTR and Xon/Xoff by switch 4
Parity selection	Selectable for NONE, EVEN, ODD by switches 5 and 6
Data bit selection	Selectable for 7 or 8 bits by switch 7
Stop bit selection	Automatically set to one for serial input and two for serial output
RS-232 Interface	
Connector	25 pin D type socket with female locking screws
Interface signal levels	+ 8 to + 25 volts For RS-232 powered operation at least -8 volts is required on the data input line (when not transmitting data) and +8 volts on RTS and DTR.
Centronics (Parallel Interface)	
Connector	36 pin Amphenol type female with locking clips
Interface signal levels	Standard TL logic levels
Handshaking (Flow control)	by Strobe and Acknowledge
Buffer	
Serial to parallel operation	60 bytes
Parallel to serial operation	60 bytes
Dimensions	
Length (distance between connector edges)	93 mm(between case edges), 106mm (between connectors)
Width	103mm
Height	28mm (without feet) 30mm (with feet)
Weight	350 grams

This product conforms to the following EMC Directives:-

EN55022:1987 CLASS A for Conducted and Radiated Interference.
EN50082-1:1992 for Immunity.
CE **EN60950:1992** for LVD.