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Thank you for purchasing Patton Electronics products! We do appreciate your business. I trust that you find this user manual helpful.

We manufacture one of the widest selections of data communications products in the world including CSU/DSU's, network termination units, powered and self-powered short range modems, fiber optic modems, interface converters, baluns, electronic data switches, data-line surge protectors, multiplexers, transceivers, hubs, print servers and much more. We produce these products at our Gaithersburg, MD, USA, facility, and can custom manufacture products for your unique needs.

We would like to hear from you. Please contact us in any of the following ways to tell us how you like this product and how we can meet your product needs today and in the future.

Web: <http://www.patton.com>
Sales E-mail: sales@patton.com
Support E-mail: support@patton.com
Phone - Sales (301) 975-1000
Phone - Support (301) 975-1007
Fax: (301) 869-9293
Mail: Patton Electronics Company
7622 Rickenbacker Drive
Gaithersburg, MD 20879 USA

We are committed to a quality product at a quality price. Patton Electronics is BABT and ISO 9001 certified. We meet and exceed the highest standards in the industry (CE, UL, etc.).

It is our business to serve you. If you are not satisfied with any aspect of this product or the service provided from Patton Electronics or its distributors, please let us know.

Thank you.

Burton A. Patton
Executive Vice President

P.S. Please tell us where you purchased this product:

USER MANUAL

MODEL 2023 Serial to Parallel Interface Converter



An ISO-9001
Certified Company

Part# 07M2023-C
Doc# 020111UC
Revised 08/12/99

SALES OFFICE
(301) 975-1000
TECHNICAL SUPPORT
(301) 975-1007
<http://www.patton.com>

1.0 WARRANTY INFORMATION

Patton Electronics warrants all Model 2023 components to be free from defects, and will—at our option—repair or replace the product should it fail within one year from the first date of shipment.

This warranty is limited to defects in workmanship or materials, and does not cover customer damage, abuse or unauthorized modification. If this product fails or does not perform as warranted, your sole recourse shall be repair or replacement as described above. Under no condition shall **Patton Electronics** be liable for any damages incurred by the use of this product. These damages include, but are not limited to, the following: lost profits, lost savings and incidental or consequential damages arising from the use of or inability to use this product.

Patton Electronics specifically disclaims all other warranties, expressed or implied, and the installation or use of this product shall be deemed an acceptance of these terms by the user.

1.1 RADIO AND TV INTERFERENCE

The Model 2023 generates and uses 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 and television reception. The Model 2023 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 from such interference in a commercial installation. However, there is no guarantee that interference will not occur in a particular installation. If it does cause interference to radio or television reception, which can be determined by disconnecting the RS-232 interface, the user is encouraged to try to correct the interference by one or more of the following measures: moving the computing equipment away from the receiver, re-orienting the receiving antenna and/or plugging the receiving equipment into a different AC outlet (such that the computing equipment and receiver are on different branches).

1.2 CE NOTICE

The CE symbol on your Patton Electronics equipment indicates that it is in compliance with the Electromagnetic Compatibility (EMC) directive and the Low Voltage Directive (LVD) of the Union European (EU). A Certificate of Compliance is available by contacting Patton Technical Support.

1.3 SERVICE

All warranty and nonwarranty repairs must be returned freight prepaid and insured to Patton Electronics. All returns must have a Return Materials Authorization number on the outside of the shipping container. This number may be obtained from Patton Electronics Technical Service: **(301) 975-1007**; <http://www.patton.com>; or, **support@patton.com**.

NOTE: Packages received without an RMA number will not be accepted.

Patton Electronics' technical staff is also available to answer any questions that might arise concerning the installation or use of your Model 2023. Technical Service hours: **8AM to 5PM EST, Monday through Friday**.

2.0 GENERAL INFORMATION

Thank you for your purchase of this Patton Electronics product. This product has been thoroughly inspected and tested and is warranted for One Year parts and labor. If any questions arise during installation or use of the unit, contact Patton Electronics Technical Support: (301) 975-1007; <http://www.patton.com>; or, support@patton.com.

2.1 FEATURES

- Converts serial data to parallel data
- Built-in 16 bit buffer prevents loss of data
- Supports both XON/XOFF and hardware flow control
- Data rates to 19.2 Kbps
- No AC power required
- DCE/DTE switch selectable
- Small and easy to install
- Complete with 6 feet of cable and a Centronics connector
- Made in USA

2.2 DESCRIPTION

The Model 2023 Serial to Parallel Converter converts RS-232C serial data to parallel data. An internal strapping option facilitates hardware or software flow control by converting the parallel BUSY signal to the relevant signal on the serial interface. It supports serial data rates to 19.2 Kbps and requires no AC power.

For easy configuration, the Model 2023 features a convenient set of configuration switches, which allows you to control data rate, parity, data bits and flow control. The Model 2023 is also DCE/DTE switch selectable.

Housed in an ultra-miniature ABS plastic case, the Model 2023 measures only 4.17" x 1.73" x .87". The Model 2023 comes standard with a DB-25 female connector on the computer side, a Centronics 36 pin male connector on the printer side and a 6 foot connector. Custom connectors and cable lengths are also available.

3.0 CONFIGURATION

The Model 2023 is equipped with internal jumpers for data configuration, rate selection and method of handshaking to be used. The jumper options are summarized in Figure 1 (below). See Table 1 for a description of the factory settings.

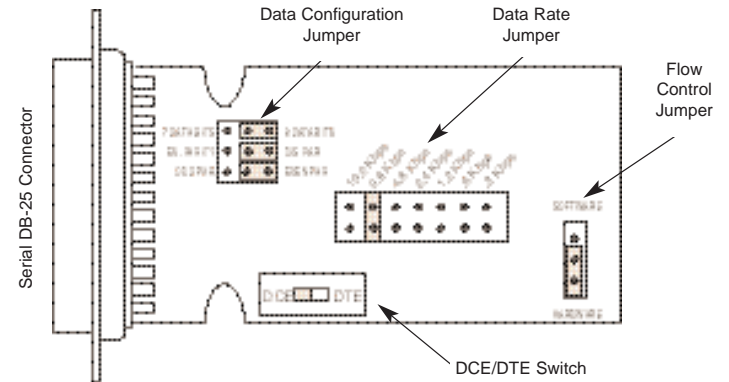


Figure 1. The Location of the Patton Model 2023 Configuration Switches

3.1 ACCESSING JUMPERS AND SWITCHES

To gain access to the internal jumpers, remove the four screws on the plastic casing and pull the case halves apart. Be careful not to lose the four case screws or the captive screws.

3.2 SETTING THE DCE/DTE SWITCH

The internal DCE/DTE switch (shown below) allows the Model 2023 to plug directly into a DB-25 serial interface port without use of a crossover cable. When connecting the Model 2023 to a PC, terminal or other DTE, set the DCE/DTE switch to "DCE". When connecting the Model 2023 to a modem or multiplexer, set the DCE/DTE switch to "DTE". Refer to Appendix B & Appendix C for specific DCE/DTE pin designations.



Figure 2. Close up of the Patton Model 2023 DCE/DTE Switch

4.0 INSTALLATION

3.3 SETTING THE JUMPERS

Data Bits: Set the jumper to match the data bit configuration on your serial communication port.

Parity: Parity bits are sometimes used to enable a limited error detection scheme. Set the EN/DIS jumper to ENABLE if your serial communication port uses a parity bit, and to DISABLE if it does not. Set the ODD/EVEN jumper according to your system's requirements.

Data Rate: Most PC serial communication ports can operate at speeds up to 9600 bps. Match the data rate to the COM port bit rate.

Hardware Flow Control: In "DCE" mode, when the BUSY line (pin 11) from the parallel port goes high, CTS (pin 5) and DSR (pin 6) on the serial port go low: this stops the flow of data. After the buffer empties, the BUSY line goes low, and CTS and DSR go high. This allows the serial port to send data. (In "DTE" mode, pins 11, 19 and 20 are used for hardware flow control).

Software Flow Control: In "DCE" mode, whenever BUSY (pin 11) on the parallel interface goes high for more than 5 mSec, an XOFF command is sent to the serial port to stop data flow. When the BUSY line turns off, an XON command is sent to allow the serial port to continue transmitting.

Strap Identity	Function	Possible Settings	Factory Setting
Data Bits	Matches number of data bits to the printer.	7 8	8 bits
Parity	Determines parity usage.	EN/DIS EVEN/ODD	Disable Even
Data Rate	Matches the speed of the 2023 to that of serial input device.	300 600 1200 2400 4800 9600 19200	9600
Flow Control	Enables CTS/DSR control or XON/XOFF flow control.	H=Hardware S=Software	Hardware
NOTE:	Unit is hardwired for one stop bit		
NOTE:	With the jumper removed from the flow control pins, both Hardware and Software flow control are operative, i.e., XON/XOFF is sent as well as normal control of the CTS/DSR control lines. This mode is not recommended for most operations.		

Table 1. Factory Strap Settings

After configuring the Model 2023, align the case halves and replace the four case screws. Then, plug the DB-25 connector (in the case) into the serial port of your RS-232 device and tighten the brass screws for a secure connection. Next, plug the Centronics connector (on the cable end) into your parallel printer and fasten the bail latches to the corresponding "ears".

Once connected to the proper interface ports, the Model 2023 is ready to operate. Since the Model 2023 derives power from the serial interface, there is no "power" switch to turn on and no AC adapter to plug in. If you are using the Model 2023 in a DOS environment, please follow the software set-up instructions in Section 4.1 (below).

4.1 DOS SOFTWARE SET-UP

To use the Model 2023 in a standard DOS application, you will need to set-up the serial COM port on the computer. Make sure the COM port configuration and the Model 2023 configuration are the same. To do this you can refer to your DOS manual or see the summary below:

```
From C> Mode Comn [:] baud [,parity[,data bits[,stop bits[,P]]]]
```

where n = 1 or 2 [COM port 1 or 2]

baud = 300, 600, 1200, 2400, 4800, 9600

parity = Either N (none), O (odd), or E (even)
(default = E)

data bits = Either 7 or 8 (default = 7)
Note: Graphics files require 8

stop bits = Either 1 or 2 (default = 1)

P = Indicates that the COM port is being used for a printer. If you enter P, time out errors will be continuously retried.

The following command sets the COM1 for the default configuration of the Model 2023:

```
C> MODE COM1:96,N,8,1,P
```

Note: If your PC or output device requires a different software set-up, consult the user manual or call Technical Support at (301) 975-1007.

APPENDIX A

PATTON MODEL 2023 SPECIFICATIONS

Serial Interface:	Asynchronous, RS-232C compatible, DB-25 female; DCE/DTE switch selectable
Serial Data Rates:	300, 600, 1200, 2400, 4800, 9600, 19200 bps
Data Format:	Strap selectable: 7 or 8 bits; one stop bit
Parity:	Strap selectable: enable/disable, even/odd
Parallel Interface:	Centronics compatible, 36 pin male connector attached to the end of a 6 foot cable
Power:	Uses power from RS-232C interface; no external power required
Temperature:	0-60°C (32-140°F)
Altitude:	Up to 3000m (10,100 feet)
Humidity:	5 to 95% non-condensing
Physical:	4.17" x 1.73" x 0.87"

APPENDIX B

PATTON MODEL 2023 SERIAL PORT CONNECTIONS

“DCE” SETTING

Pin	Name	Description
1	FG	Frame Ground
2	TXD	Serial Transmit Data; data input from serial port; input to the 2023 power supply
3	RXD	Serial Receive Data (sends XON/XOFF to serial port)
4	RTS	Request to Send; input to the 2023 power supply*
5	CTS	Clear to Send; used for hardware flow control ON (high) when parallel BUSY lead is low OFF (low) when parallel BUSY lead is high
6	DSR	Data Set Ready; used for hardware flow control connected to CTS line (pin 5 above)
7	SG	Signal Ground
8	CD	Carrier Detect; pulled to +V when powered up
9	+V	Input to the 2023 power supply*
11		Input to the 2023 power supply;* connected to pin 20
19		Input to the 2023 power supply;* connected to pin 20
20	DTR	Data Terminal Ready; input to the 2023 power supply*

“DTE” SETTING

Pin	Name	Description
1	FG	Frame Ground
2	TXD	Serial Transmit Data; (sends XON/XOFF to serial port)
3	RXD	Serial Receive Data; data input from serial port input to the 2023 power supply
4	RTS	Request to Send; pulled to +V when powered up
5	CTS	Clear to Send; input to the 2023 power supply*
6	DSR	Data Set Ready; input to the 2023 power supply*
7	SG	Signal Ground
8	CD	Carrier Detect; input to the 2023 power supply*
9	+V	Input to the 2023 power supply*
11		Used for hardware flow control; connected to pin 20
19		Used for hardware flow control; connected to pin 20
20	DTR	Data Terminal Ready; input to the 2023 power supply ON (high) when parallel BUSY lead is low; OFF (low) when parallel BUSY lead is high

*Note: These power inputs are **not** required for operation.

APPENDIX C

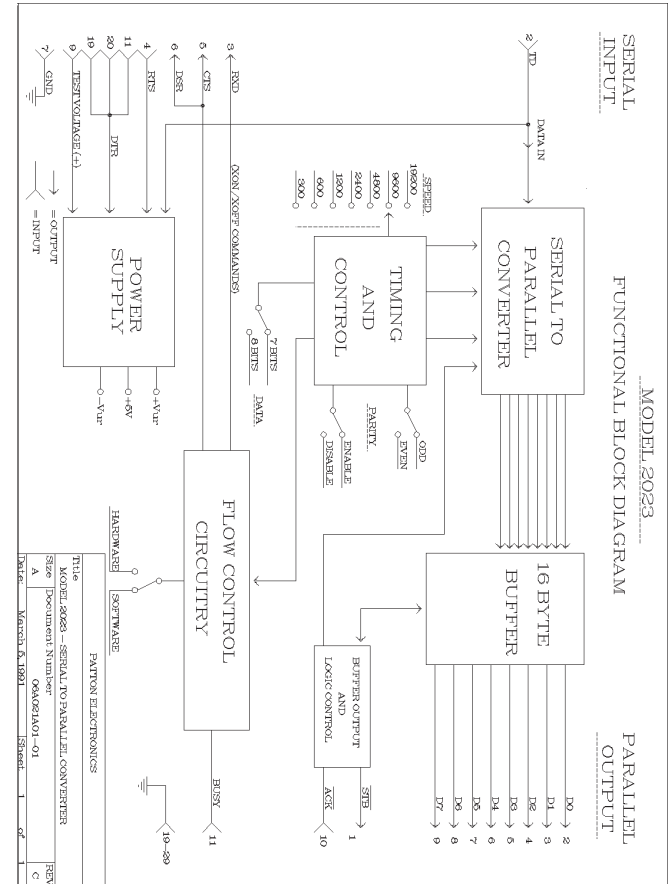
PATTON MODEL 2023 PARALLEL PORT CONNECTIONS

Pin	Name	Description
1	Strobe	Output; normally high; goes low to read in data on power-up)
2	Data bit 0	Output
3	Data bit 1	Output
4	Data bit 2	Output
5	Data bit 3	Output
6	Data bit 4	Output
7	Data bit 5	Output
8	Data bit 6	Output
9	Data bit 7	Output
10	Acknowledge	Input; normally high; goes low to shift next byte out of the buffer
11	Busy	Input; normally low; goes high when buffer is full; goes low when buffer empties
16	Ground	
17	Ground	
19	Ground	
30	Ground	
33	Ground	
36	Ground	

*Note: These power inputs are **not** required for operation.

APPENDIX D

PATTON MODEL 2023 BLOCK DIAGRAM



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