USER MANUAL

MODEL 378S

Serial Scanning Switch

PATTON Electronics Co.

Part# 07M378S-B
Doc# 020011UB
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1.0 WARRANTY INFORMATION

Patton Electronics warrants all Model 378S 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 378S 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 378S 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 the Model 378S 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 SERVICE

All warranty and non-warranty 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 at **(301) 975-1007**. *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 378S. 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 or problems arise during installation or use of this product, please do not hesitate to contact Patton Electronics Technical Support at (301)-975-1007.

2.1 FEATURES

- Lets 8 PCs share one serial printer or plotter
- Supports data rates to 19.2 Kbps on inputs and output
- Supports both hardware (CTS/DSR) and software (X-ON/X-OFF) flow control
- Available with up to 1 Meg of RAM buffer
- Individual port LEDs show scanning progress and which port is loading data
- Buffer status LEDs show amount of buffer currently being used
- Manual override lets you select a port and give it exclusive printer access
- Variable time outs allow adjustment of waiting time between the end of data downloading and the resumption of scanning
- Buffer clear button lets you erase the buffer's memory

2.2 DESCRIPTION

The Model 378S Serial Scanning Switch provides an easy way for as many as eight PCs to share a single serial printer. Equipped with up to 1Meg of buffer, the Model 378S scans all input ports once every two seconds to see if any device is sending data. As soon as the Model 378S locates a device sending data, it locks on to that device and loads all its data to buffer. Then the Model 378S simultaneously spools the data to the printer or plotter and resumes scanning.

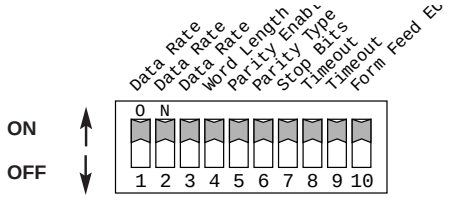
The Model 378S allows input/output data rates to 19.2Kbps, and supports both hardware (CTS/DSR) and software (X-ON/X-OFF) handshaking methods. Convenience features of the Model 378S include a manual "step" button that overrides automatic scanning, and a master buffer clear button. Two sets of LED indicators are provided: one set shows which port is currently being scanned or loaded, the other set shows the percentage of buffer space currently available.

3.0 CONFIGURATION

This section tells how to set the internal DIP switches for the Model 378S, and details the factory default DIP switch settings.

3.1 ACCESSING THE INTERNAL SWITCHES

To configure the Model 378S, you must first open the case by taking off the 4 screws (2 on each side). Then locate the DIP switches (shown below) at the lower center of the PC board:



3.2 SWITCH SETTINGS

The individual descriptions below and the table on the following page detail all possible configuration switch settings. You ***must*** *set the internal DIP switches* to match the configuration of your PCs and printer or the Model 378S will not function properly.

SW1-1-3, BAUD RATE: SW1-1, SW1-2, and SW1-3 are used to set the 378S internal baud rate. Whichever baud rate setting you choose, it must match the baud rate settings of your PCs and printer.

SW1-4, WORD LENGTH: The 378S will accept either 7 (OFF) or 8 (ON) data bits, selectable by SW1-4. Again, the setting of this switch must match the PC and printer settings. Either format may use one or two stop bits (See SW1-7).

SW1-5, PARITY ENABLE: SW1-5 enables (ON) or disables (OFF) parity. With parity enabled, the 378S accepts an even or odd parity bit (See SW1-5).

SW1-6, PARITY TYPE: The 378S accepts either even (OFF) or odd (ON) parity. In order for SW1-6 to operate properly, SW1-5 (Parity Enable) must be in the ON position.

SW1-7, STOP BITS: Use SW1-7 to set the number of Stop Bits to 1 (OFF) or 2 (ON).

SW1-8 & 9, TIMEOUT: After the last data bit is received from the currently selected port, SW1-8 and SW1-9 determine how long the 378S waits before moving on to the next port. Text and word processing files generally need a very short timeout setting. Larger graphics files may require longer timeout settings.

SW1-10, FORM FEED AT EOJ: With SW1-10 disabled (OFF), the 378S will not issue a Form Feed at the End Of Job. Any text or word processing form feeds or blank pages will print as normal. With SW1-10 enabled, the 378S will form feed one page at EOJ (see Appendix A for more information about Form Feed at EOJ).

SWITCH CONFIGURATION TABLE

Switch Position	Function		Options	Settings
SW1-1,2,3	Data Rate		1200 2400 4800 ***9600*** 19,200	SW1-1 SW1-2 SW1-3 Off Off Off Off Off On Off On Off ***Off*** ***On*** ***On*** On Off Off
SW1-4	Word Length		7 data bits ***8 data bits***	SW1-4 Off ***On***
SW1-5	PARITY	Enable	***Disable*** Enable	SW1-5 ***Off*** On
SW1-6	PARITY	Type	Even Odd	SW1-6 Off On
SW1-7	Stop Bits		***1 Stop bit*** 2 Stop bits	SW1-7 ***Off*** On
SW1-8,9	Timeout		***2 Seconds*** 8 Seconds 60 Seconds 120 Seconds	SW1-8 SW1-9 ***Off*** ***Off*** Off On On Off On On
SW1-10	Form Feed at End of Job		***Disable*** Enable	SW1-10 ***Off*** On

Bold Italics = Factory Setting

4.0 INSTALLATION

This section explains how the Model 378S handles flow control, describes input/output cable connections, and tells how to operate the Model 378S.

4.1 FLOW CONTROL CAPABILITIES

The Model 378S supports both software and hardware flow control on all ports. There is no need to configure the switch for one method or the other. However the input (PC) ports operate differently than the output (printer) port with respect to flow control.

The selected PC and the printer never communicate directly. Though it "appears" to the devices that they are communicating with one another, each is actually communicating only with the Model 378S. The Model 378S manages this communications traffic in the following manner:

1) The Model 378S flow controls incoming data from the selected PC by controlling CTS/DSR (hardware handshaking) or XON/XOFF (software handshaking). PCs cannot flow control incoming data from the printer or from the Model 378S.

2) The Model 378S retains unlimited use of the printer by keeping RTS constantly high.

3) The printer flow controls data from the Model 378S using CTS or XON/XOFF.

4.2 INPUT CABLE CONNECTIONS

All input ports are configured as DCE (Data Communication Equipment): They are designed to connect directly to a PC or another DTE (Data Termination Equipment) device using ***straight through cables***. If you are using XON/XOFF handshaking, then the only required pins are pins 2, 3, and 7. If you use hardware handshaking, then pin 5 or 6 must also be connected. The input port signals and pins are shown below:

PIN	SIGNAL	DESCRIPTION
2	TD	Data INPUT to Model 378S from PC
3	RD	OUTPUT from 378S to PC (used for XON/XOFF flow control only)

(continued)

5	CTS	OUTPUT from 378S to PC: Internally connected to pin 6. Held low--toggles high when port is chosen
6	DSR	OUTPUT from 378S to PC: Internally connected to pin 5. Held low--toggles high when port is chosen
7	SG	Signal ground
8	CD	OUTPUT from 378S at +V to PC

4.3 OUTPUT CABLE CONNECTIONS*

The output port is configured as a DTE: It is designed to connect directly to a serial printer or plotter. The output port pin descriptions are shown below:

PIN	SIGNAL	DESCRIPTION
2	TD	Data OUTPUT from Model 378S to printer
3	RD	INPUT to 378S from printer (used for XON/XOFF flow control only)
4	RTS	OUTPUT from 378S at +V to printer
5	CTS	Flow control bus connection from printer (used for CTS/DSR flow control only)
7	SG	Signal ground
8	CD	Not used
20	DTR	OUTPUT from 378S at +V to printer

Note:** The output (printer) port of the Model 378S, being configured as a DTE, requires a female to male ***crossover cable pinned as follows:

Connection to 378S DB-25 Female Pin No.	Connection to Printer DB-25 Male Pin No.
2	3
3	2
4	5
5	20
7	7
20	6 & 8

4.4 OPERATING THE MODEL 378S

After the Model 378S is properly configured and the cables are connected correctly, you are ready to operate the unit.

1) Turn the Power switch "on"

2) The Model 378S has three operating modes: Automatic Scan, Manual Scan and Manual Step. These three modes are described below:

Automatic Scan Mode - In this operating mode, the Model 378S scans all ports every two seconds in a round-robin manner. When it "discovers" a port with data to send, the Model 378S locks onto that port and receives the data into its buffer (units without buffer send the data directly to the printer).

To enter Automatic Scan Mode, set the Auto/Manual switch to "Auto". In this mode, you cannot manually interrupt the scanning process.

Manual Scan Mode - In this operating mode, the Model 378S scans all ports in a round-robin manner until it reaches the port you want it to lock onto. It will then stay at that port unil you scan again.

To enter Manual Scan Mode, set the Auto/Manual switch to "Manual". Then press the Step button and hold it down until the scanner reaches the desired port. When you remove pressure from the button, the scanner will stop at that port. Note: Using this method, you can bypass other ports that have data to send to the Model 378S.

Manual Step Mode - In this operating mode, the Model 378S scans all ports, one at a time, until it reaches the port you want it to lock onto. It will then stay at that port unil you scan again.

To enter Manual Step Mode, set the Auto/Manual switch to "Manual". Then press the Step button repeatedly until the scanner reaches the desired port.

3) Use the Reset button when you want to clear the Model 378S's buffer of all contents. This button is only operational in buffered units.

APPENDIX A
MODEL 378S SPECIFICATIONS

Input Interface

EIA RS-232 Serial. 25-pin DB Female DCE (modem) connector
Use Standard Straight-thru cable

Output Interface

EIA RS-232 Serial. 25-pin DB Male DTE (PC) connector
Uses standard IBM-to-Printer Cables

Scanning Priorities

Manual Mode– Step through by operator push button
Automatic Mode– Continue scanning to the next sequential input port. The next port is chosen only after the selected time-out expires
(refer to DIP switch positions S1-8,9)

Front Panel Controls

Power Switch– On/Off.
Auto/Manual Switch– **AUTO** mode continues after timeout interval with next in line. All ports are scanned in two seconds. **MANUAL** mode turns port selection over to the operator in conjunction with the STEP button.
Step Button- (**MANUAL** mode only) Disables currently selected port and locks onto the next port. If held, **STEP** auto-repeats to skip over several ports to reach a desired port. This action prevents an input port from 'grabbing control' while being skipped over via **STEP**.
Reset Button- Resets and clears entire buffer memory.

LED Indicators

Port Select- Port is being polled for data
Buffer Status- Buffer is up to 25%, 50%, 75% or 100% full. 1) While the input port is receiving data, all buffer status LEDs will "blink" 2) If no data is being received, but some data remains in the buffer, the appropriate number of LEDs will glow steadily (this applies only to units with RAM modules). 3) After the buffer is emptied out to the printer, all LEDs will turn off.

Buffer Options

The 378S comes factory-configured with different amounts of buffer memory. Versions are available with no RAM, 256 KB RAM, and 1 MB dynamic RAM. Contact Patton Technical Support at 301-975-1007 for details on upgrades.

Communication Parameters

Data Rate– All ports share a common data rate. The data rate is selected via DIP SWITCHES for one of five rates: 1200, 2400, 4800, 9600, or 19,200 baud.

Parity– Even/Odd/None

Word Length– 7 or 8 Bits

Flow Control– Incoming PC data is flow controlled by the switch using CTS/DSR or XON/XOFF. This flow control is unidirectional -- only data coming from the PC can be flowed off, not data coming from the printer *back* to the PC. Transmitted data to the PC consists of XON/XOFF flow control characters.

Configuration Switches

Baud Rate- 1200, 2400, 4800, 9600, or 19200

Word Length- 7 or 8 data bits

Parity Enable- Enabled/Disabled

Parity Type- Even/Odd

Stop Bits- 1 or 2

Timeout Interval- 2, 8, 60, 120 seconds

Form Feed at EOJ- Enabled/Disabled

(Note: The Model 378S has a "paper saver" feature that is active only when "Form Feed at EOJ" switch is enabled. When the paper saver feature is active, the switch monitors whether or not the last character sent by the selected PC was a form feed. If it was, the switch will decline to insert its own form feed character [carriage returns inserted by the PC after form feed are ignored]).

Power

9.8VAC, 800 MA Wall mount transformer

Size

10”W X 5”D x 1”H (approximate).

APPENDIX B
RS-232C PIN CONFIGURATIONS

DIRECTION	MODEL 378S "DCE" SETTING	DIRECTION
	1- (FG) Frame Ground	
	2- (TD) Transmit Data	To Model 378S
	3- (RD) Receive Data	From Model 378S
	4- (RTS) Request to Send	To Model 378S
	5- (CTS) Clear to Send	From Model 378S
	6- (DSR) Data Set Ready	From Model 378S
	7- (SG) Signal Ground	
	8- (DCD) Data Carrier Detect	From Model 378S

DIRECTION	MODEL 378S "DTE" SETTING	DIRECTION
	1- (FG) Frame Ground	
	2- (TD) Transmit Data	From Model 378S
	3- (RD) Receive Data	To Model 378S
	4- (RTS) Request to Send	From Model 378S
	5- (CTS) Clear to Send	To Model 378S
To Model 378S	Data Term. Ready (DTR) - 20	
	7- (SG) Signal Ground	