User Manual

ASeries A704

MultiPort Converter

Serial & Parallel ⇔ Parallel

ALFATRON

The interfacing specialists

A704 MultiPort User Manual

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1.0 PRODUCT DESCRIPTION

The ASeries A704 MultiPort provides both Serial and Parallel connection to a printer with only a parallel port. Switching between the two input ports is fully automatic on a first come first served basis. While one port is active the other will return a 'presently busy' signal to the host computer.

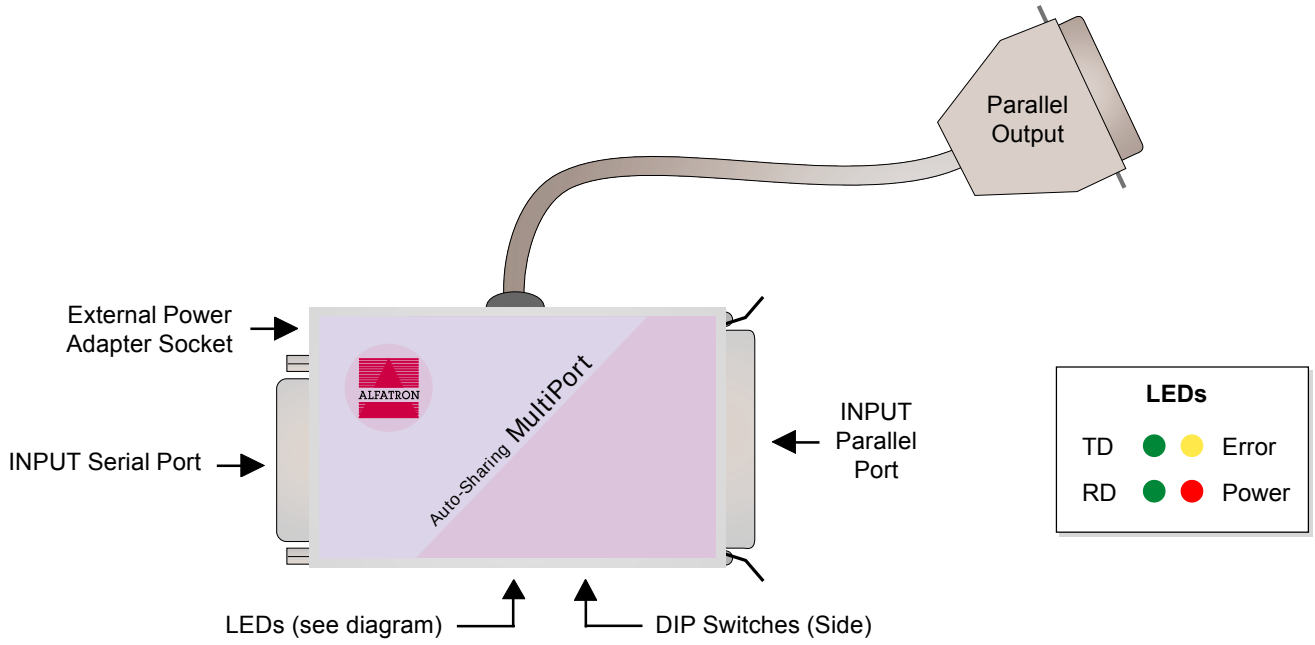

Figure 1 - A704 MultiPort Layout

2.0 INSTALLATION

Before installing the A704 MultiPort, please make sure that the DIP Switches are set correctly to meet your serial port requirements. Please refer to Section 4 for complete details of the DIP Switch Settings. Once the DIP Switches are set the A704 may be plugged directly into the parallel connector of the printer. It is connected to the parallel port of the printer and takes its power from this port, if available from pin 18, otherwise a seperate power adaptor may be used.

Turn the printer ON and observe the LEDs on the A704 MultiPort . The ‘Power’, LED should light up and remain alight. The 'RD', 'TD' and 'Error' LEDs should light up and then extinguish within 2 seconds. After this sequence the unit is ready for operation.

Power the printer OFF and connect the correct cables between the A704 MultiPort and the host devices. Use only cables which you know to have the correct pin configurations to match the A704 to your equipment. Cable requirements are discussed in Sections 6 and 7.

NOTE: All devices must be powered OFF before connecting cables to them.

3.0 CHARACTER GENERATION FUNCTION (SELF TEST)

The A704 MultiPort has a built-in Self Test Mode which will output a continuous stream of printable ASCII characters to a printer. This function may be used to self test the A704 MultiPort or to test the operation of other devices and is activated in the following manner:

Step 1: Take note of the original DIP Switch settings on the A704 MultiPort and then turn the printer OFF.

Step 2: Select ‘Self Test’ mode by setting the DIP Switch as follows:

DIP Switch Number	6	7	8
Setting	On	On	Off

Step 3: Turn the printer ON.

the output produced by the Self Test function is as follows:

```
0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_’abcdefghijklmnopqrstuvwxyz{|}~
0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_’abcdefghijklmnopqrstuvwxyz{|}~
0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_’abcdefghijklmnopqrstuvwxyz{|}~
0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_’abcdefghijklmnopqrstuvwxyz{|}~
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0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_’abcdefghijklmnopqrstuvwxyz{|}~
0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_’abcdefghijklmnopqrstuvwxyz{|}~
```

This output will continue as long as the printer is powered ON. Data will also be output from the Serial port even though it is used as an 'Input' during normal operation.To stop the output simply turn the printer OFF.

Step 4: With the printer turned OFF, the A704 DIP Switches should be returned to their original settings for normal use.

4.0 HARDWARE CONFIGURATION

4.1 Setting the DIP Switch

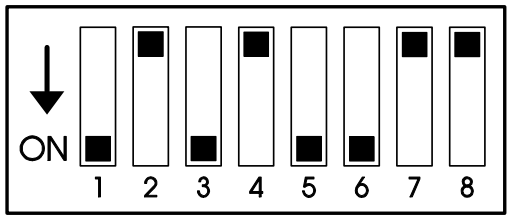
Before attempting to change DIP Switch settings, disconnect the A704 from its power source. The DIP switches are only read when the A704 is powered on. They are located beside the LEDs as shown in Section 1, Figure 1.

4.2 Default Factory Settings

The A704 has its DIP settings and Internal Jumpers factory pre-set to the following configuration:

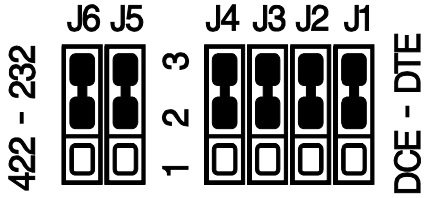
DIP Switch Settings

- Timeout of 10 seconds
- 9600 bits per second
- 8 Data Bits
- No Parity
- DTR/DSR Handshaking
- 1 Stop Bit



Internal Jumper Settings

- Serial Port set to RS-232
- Serial Port set to DTE



Serial Connector

4.3 TIMEOUT Settings

The Timeout is used to tell the A704 how long to wait for data from one port before switching to the other port. A Timeout of 10 seconds is recommended for most applications and 20 seconds is recommended for CAD, Windows and programs which tend to periodically pause during printing.

4.4 Flow Control - Robust Xon/Xoff

The A704 uses the Robust Xon/Xoff form of Software Handshaking on the input RS-232 Serial Port. This is implemented to prevent Xon/Xoff 'lockup' situations. The behaviour of the Xon/Xoff flow control buffer is as follows:

- Xoff is issued when there are 35 bytes remaining in the buffer.
- Xon is issued if there are more than 48 bytes available in the buffer.
- Robust Xon time interval is 5 seconds.

4.5 DIP Switch Settings

Table 4-1

Switch	Function	OFF	ON
1	Timeout	20 sec	10 sec
2	Handshaking	DTR/DSR	Robust Xon/Xoff
3	Bits Per Second (refer to Table -2)		
4			
5			
6	Data Bits, Parity & Test Mode (refer to Table -3)		
7			
8			

Table 4-2

Switch	300	600	1200	2400	4800	9600	19.2K	38.4K
3	Off	On	Off	On	Off	On	Off	On
4	Off	Off	On	On	Off	Off	On	On
5	Off	Off	Off	Off	On	On	On	On

Table 4-3

Switch			Data Bits	Parity	Stop Bits	Self Test
6	7	8				
On	On	On	8	Even	1	No
On	On	Off	8	None	1	Yes
On	Off	On	8	Odd	1	No
On	Off	Off	8	None	1	No
Off	On	On	7	Even	1	No
Off	On	Off	7	None	2	Yes
Off	Off	On	7	Odd	1	No
Off	Off	Off	7	None	2	No

4.6 Internal Jumper Settings

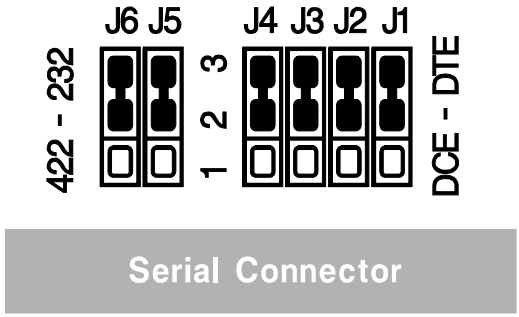
The internal jumpers are inside the A704 and are accessed by removing the single screw holding the lid. They are located on the Printed Circuit Board directly behind the serial connector.

4.6.1 Serial RS-232 as DTE (Factory Default)

To set the A704 to Serial RS-232 and DTE use the following settings:

Internal Jumper Settings

- Serial Port set to RS-232
- Serial Port set to DTE

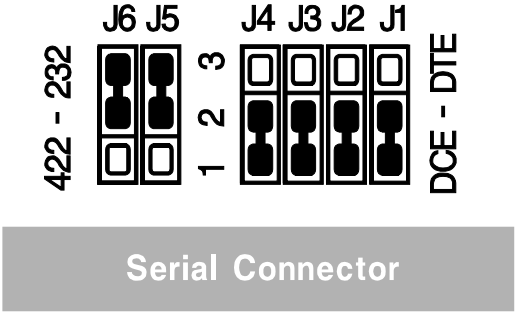


4.6.2 Serial RS-232 as DCE

To set the A704 to Serial RS-232 and DCE use the following settings:

Internal Jumper Settings

- Serial Port set to RS-232
- Serial Port set to DCE

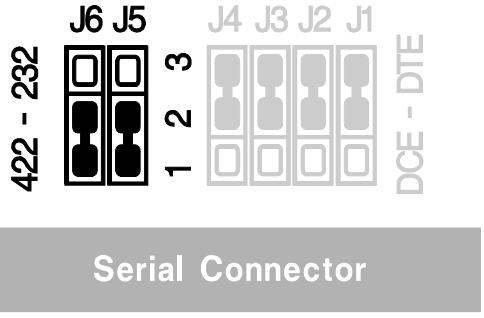


4.6.3 Serial RS-422 as DTE

To set the A704 to Serial RS-422 use the following settings:

Internal Jumper Settings

- Serial Port set to RS-422



Note: RS-422 can only be used with Software handshaking (Xon/Xoff). The 'DCE-DTE' jumpers have no effect when RS-422 is selected.

5.0 POWER REQUIREMENTS

5.1 Powered from the printer

The A704 is normally powered from pin 18 of the parallel connector of the printer and requires only 140mA to operate.

Some printers use a limiting resistor on pin 18 which may not provide enough power to operate the A704. In this case the optional power adapter socket must be used to provide external power.

5.2 External Power Adapter

The A704 may be powered from an external power adaptor which must provide a 9VDC power supply with a minimum current of 200mA. The plug must have an inner diameter of 2.5mm and an outer diameter of 5.5mm and must be wired for outer negative.

6.0 CABLE REQUIREMENTS

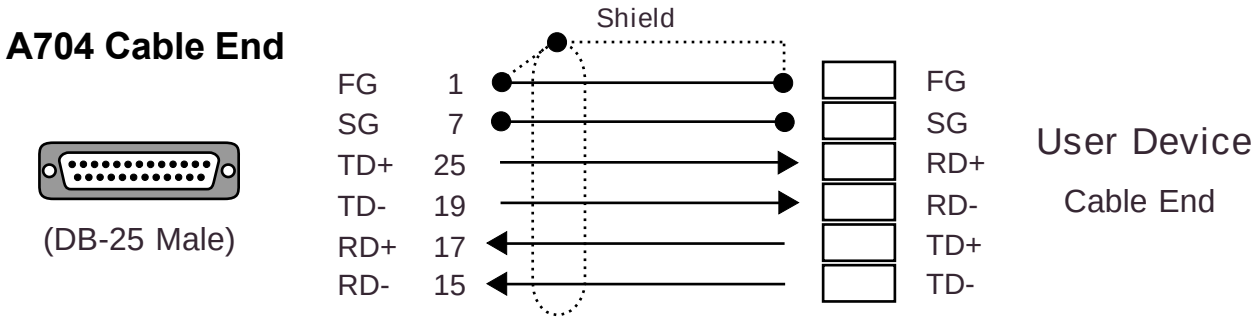
Alfatron recommends the use of shielded cable with all of its products. Shielding reduces EMI radiation and improves noise immunity. This helps minimise interference to other equipment and will improve communications reliability.

The recommended cable construction is as follows:

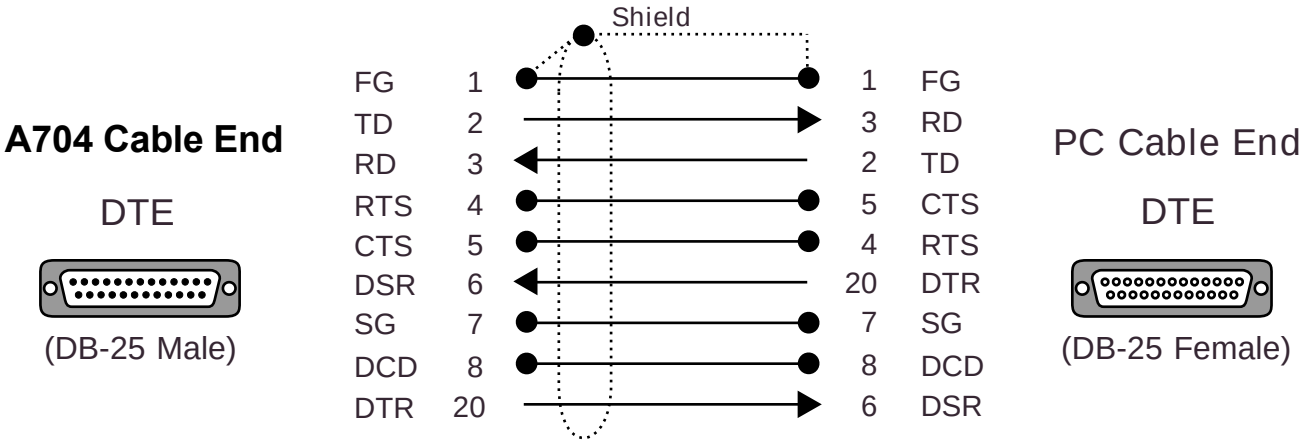
- Take the shield (surrounding cable wires) and solder it to the Frame Ground (FG) pin. If FG is not available use Signal Ground, but in this case always use a separate wire to connect Signal Ground at both ends.
- The shield must be connected at <u>both</u> ends of the cable.

7.0 CABLE EXAMPLES

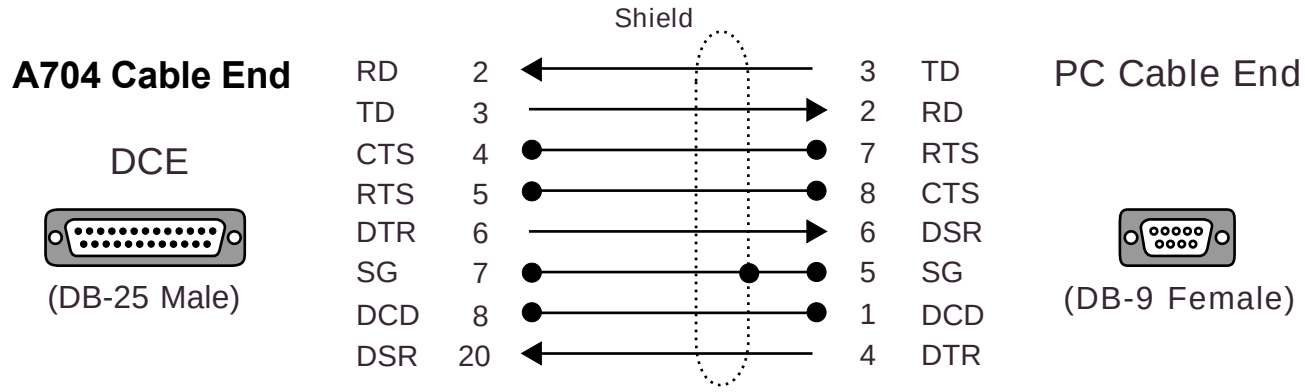
7.1 RS-422 Connection to other RS-422 Devices



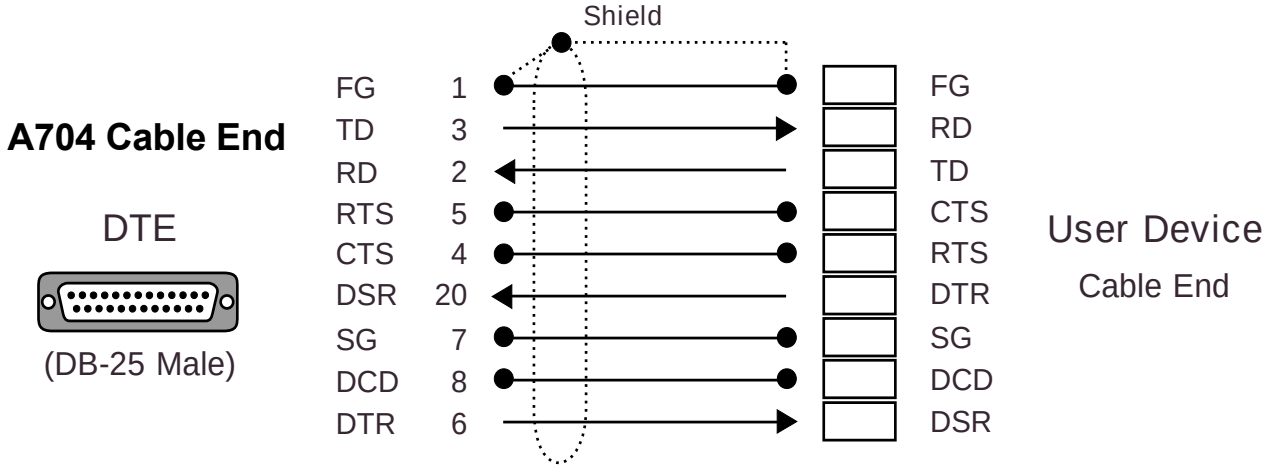
7.2 RS-232 Connection to a PC with a DB-25 Serial Connector



7.3 RS-232 Connection to a PC with a DB-9 Serial Connector



7.4 RS-232 Connection to other RS-232 Devices



8.0 PORT PINOUTS

8.1 Centronics Parallel Ports

Pin	*Signal*	*Input*	*Output*	*Pin*	*Signal*	*Input*	*Output*
1	Data Strobe	Input	Output	**19**	Ground	-	-
2	Data Bit 1	Input	Output	**20**	Ground	-	-
3	Data Bit 2	Input	Output	**21**	Ground	-	-
4	Data Bit 3	Input	Output	**22**	Ground	-	-
5	Data Bit 4	Input	Output	**23**	Ground	-	-
6	Data Bit 5	Input	Output	**24**	Ground	-	-
7	Data Bit 6	Input	Output	**25**	Ground	-	-
8	Data Bit 7	Input	Output	**26**	Ground	-	-
9	Data Bit 8	Input	Output	**27**	Ground	-	-
10	Acknowledge	Output	Input	**28**	Ground	-	-
11	Busy	Output	Input	**29**	Ground	-	-
12	Paper Error	Output	Input	**30**	Ground	-	-
13	Select	Output	Input	**31**	Initialize	Input	Output
14	Autofeed	Input	Output	**32**	Error	Output	Input
15	Not Connected	-	-	**33**	Ground	-	-
16	Ground	-	-	**34**	Not Connected	-	-
17	Ground	-	-	**35**	Connected	Pulled High	
18	Connected	Pulled High	+5V	**36**	Select In	-	-

8.2 RS-232 and RS-422 Serial Ports

The RS-232 Serial Port of the A704 MultiPort may be configuired as either DTE or DCE by setting the internal jumpers J1, J2, J3 and J4.

		RS-232		**RS-422**
Pin	***Status***	***DCE***	***DTE***	
1	Frame Ground	FG	FG	FG
2	Data Input/Output	RD	TD	-
3	Data Input/Output	TD	RD	-
4	Not used - Pulled High	CTS	RTS	-
5	Not used - Pulled High	RTS	CTS	-
6	Handshake Input/Output	DTR	DSR	-
7	Signal Ground	SG	SG	SG
8	Not used - Pulled High	DCD	DCD	-
15	Data Input	-	-	-RD
17	Data Input	-	-	+RD
19	Data Output	-	-	-TD
20	Handshake Input/Output	DSR	DTR	-
25	Data Output	-	-	+TD

Note: 1. Maximum baud rate of 38,400bps applies to RS-232 and RS-422.
2. RS-422 suitable for operation with software handshake only.

9.0 SPECIFICATIONS

CPU: 89C51 Microprocessor 14.7456MHz

Parallel Ports: Centronics Parallel
Input - 36-pin Centronics female connector
Output - 36-pin Centronics male connector

Serial Ports: Asynchronous RS-232 and RS-422
Full duplex communication
DB-25 female connector
DTE / DCE Selectable (RS-232 Only)
DIP Switch Selection:

Baud Rate: (bps)	38400, 19200, 9600, 4800 2400, 1200, 600 and 300.
Data Bits:	7 or 8
Parity:	None, Odd or Even
Stop Bits:	1 or 2
Handshaking:	Software (Robust Xon/Xoff) Hardware (DTR/DSR) (RS-232 Only)

Flow Control Buffer: 58 byte receive buffer

LED Indicators: Power On (Yellow)
Data Error (Red)
Transmit Data (Green)
Receive Data (Green)

Power Supply: 5VDC from printer parallel connector - Pin 18
Current consumption - Standby: 110mA
Operating: 140mA
Optional 9VDC 200mA Power Adapter
5.5mm outer/2.5mm inner diameter
Polarity is Outer Negative 

Dimensions: 115mm x 72mm x 24mm

Weight: 565 grams

Operating Temp: 0° to 40° C

Stroage Temp: -20° to 70° C

All specifications subject to change without notice

N42

DECLARATION OF CONFORMITY

according to the European Commissions EMC Directive 89/336/EEC

We,	Name of Manufacturer:	ALFATRON PTY. LTD
of,	Address of Manufacturer:	UNIT 9, 36 NEW ST. RINGWOOD VIC 3134 AUSTRALIA
	Australian Company Number:	ACN: 005 410 819

declare under sole responsibility that the product:

Product Name:	ASeries MultiPort Serial & Parallel to Parallel Interface Converter
Model Number:	A704

to which this declaration relates is in conformity with the following standards:

CISPR-22 / EN 55022 class B	EMI from Information Technology Equipment (ITE)
IEC 801-2 / prEN55024-2	Electro Static Discharge Immunity
IEC 801-3 / prEN55024-3	Radiated RF Immunity
IEC 801-4 / prEN55024-4	Electrical Fast Transients Immunity