

User Manual

ASeries A600

Interface Converter
X.21 ↔ V.35



The interfacing specialists

A600 User Manual

Version 1.10

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1.0 PRODUCT DESCRIPTION

The A Series A600 is an X.21 bis <> CCITT V.35 interface converter and provides bi-directional data communication between the X.21 and V.35 communication standards at data rates up to 2 Mbits/second. No changes are made to either data or timing signals and the A600 is transparent to data and any introduced protocol.

Both the X.21 and V.35 ports of the A600 may be configured to either Data Communications Equipment (DCE) or Data Terminal Equipment (DTE) via an internal 50-pin jumper. Internal jumpers are also used for the selection of Clock Sources and Handshaking lines. Possible A600 configurations are as follows:

- V.35 (DCE) to X.21 (DTE)

in this configuration the X.21 Control Signal source is jumper selected between either V.35 Request To Send (RTS) or V.35 Data Terminal Ready (DTR).

- V.35 (DTE) to X.21 (DCE)

in this configuration the X.21 Signal Timing source is jumper selected between either V.35 Serial Clock Transmit (SCT) or V.35 Serial Clock Receive (SCR).

The physical layout of the A Series A600 is as follows:

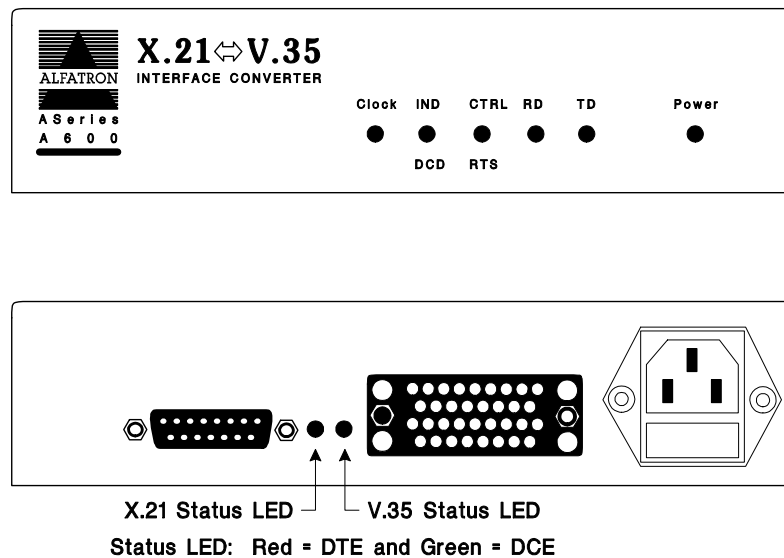


Figure 1-1 A600 viewed from front and rear

Light Emitting Diodes (LEDs) on Rear Panel

The two LEDs shown on the rear panel in Figure 1-1 are a convenient method of identifying the DTE or DCE status of each port:

- Bi-colour LED is 'RED' if corresponding port is 'DTE'.
- Bi-colour LED is 'GREEN' if corresponding port is 'DCE'.

2.0 INSTALLATION

2.1 Selecting a Port as DCE or DTE

Before installing the A600 please make sure that the 50-pin jumper is inserted into the correct DCE or DTE position to meet your requirements. In the majority of cases when synchronous serial communications is used, the DCE will provide the 'Clock Signal' to the DTE device, therefore the A600 supports the following two configurations of X.21 and V.35:

- (i) X.21-DTE (Terminal) to V.35-DCE (Modem)
- (ii) X.21-DCE (Modem) to V.35-DTE (Terminal)

these configurations are selected by removing the cover of the A600 and inserting the 50-pin jumper into the appropriate socket, J201 or J202, located on the Printed Circuit Board (PCB) of the A600 as shown below:

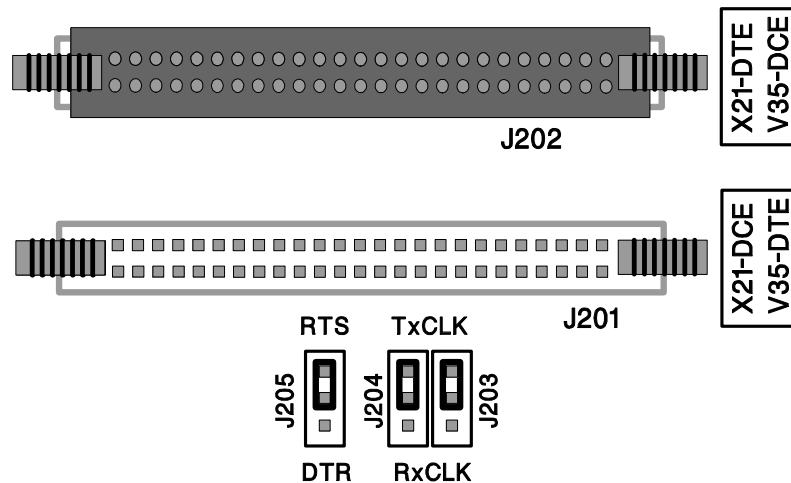


Figure 2-1 Configuration jumper blocks on A600 PCB

WARNING: 240Volt power must be removed from the A600 before the cover is removed and the 50-pin jumper re-located.

Two combinations which are NOT supported by the A600 are as follows:

- (iii) X.21-DTE (Terminal) to V.35-DTE (Terminal)
- (iv) X.21-DCE (Modem) to V.35-DCE (Modem)

In the case of DTE to DTE (iii), no timing source exists for synchronous communications as timing is normally supplied by the DCE device.

In the case of DCE to DCE (iv), there are two timing sources which will create an ambiguous situation.

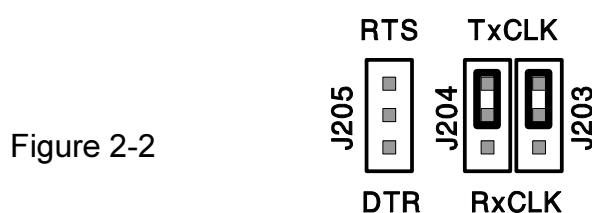
2.2 Selecting V.35 Clock Source

The V.35 interface has two differential clock sources, Serial Clock Transmit (SCT) and Serial Clock Receive (SCR). In the X.21 (DCE) to V.35 (DTE) case, one of the two clock sources must be selected as a source for the X.21 interface Signal Element Timing signal.

Because the clock source is a differential signal it requires two lines. Therefore the A600 provides a pair of jumper blocks, J203 and J204 (shown in Figure 2-2), to select the two lines. These jumpers **must always be moved as a pair**.

To select V.35 (SCT) as the clock source, move the pair of jumpers to the 'TxCLK' position. To select V.35 (SCR) as the clock source, move the pair of jumpers to the 'RxCLK' position.

The factory default setting is V.35 (SCT) with jumpers in the 'TxCLK' position.



2.3 Selecting V.35 Handshaking Lines

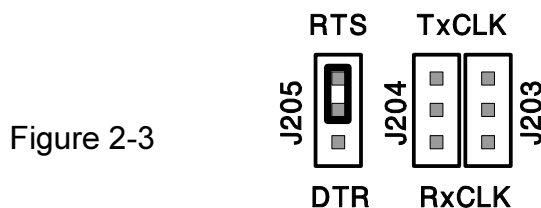
The X.21 interface Control line is used to drive the V.35 interface DTR or RTS handshaking lines. The J205 jumper block has two positions to define which of the handshaking lines, DTR or RTS, is driven by the X.21 Control line.

The settings for J205 are shown in Figure 2-3 and are used in the following two situations:

- if the A600 is set for X.21 (DCE) and V.35 (DTE) then the jumper in J205 may be set for either DTR or RTS, according to your requirements.
- if the A600 is set for X.21 (DTE) and V.35 (DCE) then the jumper in J205 **must** be set to the RTS position.

In both cases the line which is not selected is pulled to +12V via a 4.7K Ω resistor.

The factory default for jumper J205 is the RTS position.



2.4 Front Panel LED Indicators

The LED indicators in the A600 provide a function similar to that of a breakout box. They show the level of the appropriate TTL signal rather than a level directly present on the communications line. The signal names correspond to the port which is selected as DTE. For example, if the A600 is configured as X.21 (DTE) / V.35 (DCE) and the 'RD' LED is active then this refers to the activity on the X21 port 'Ra / Rb' line pair.

The advantage of this approach is that all communication line signals are converted internally by the A600 to TTL levels and then converted to a level specific to either the X.21 or V.35 interface. The TTL level signals therefore provide a common reference to both ends of the converter and show the signals as seen by the converter regardless of the type of interface configuration.

The A600 has six LED indicators on its front panel. The LED marked 'Power' is Yellow and indicates that the A600 has operating power. The other five LEDs are Red/Green bi-colour indicators with the following meanings:

Configured for X.21 (DCE) and V.35 (DTE)

- Clock - Data Clock signal from V.35 lines STR(a/b) or SCT(a/b)
- DCD - Data Carrier Detect from V.35 device
- RTS - Handshaking signal to V.35 device, RTS or DTR
- RD - Data received from V.35 device
- TD - Data sent to V.35 device

Configured for X.21 (DTE) and V.35 (DCE)

- Clock - Data Clock signal from X.21 line S(a/b)
- IND - Indicator signal to X.21 device
- CTRL - Control signal to V.35 device
- RD - Data received from X.21 device
- TD - Data sent to X.21 device

The convention used on these bi-colour LEDs is as follows:

- Bi-colour LED is 'RED' if corresponding TTL signal is 'HIGH'.
- Bi-colour LED is 'GREEN' if corresponding TTL signal is 'LOW'.

2.5 Rear Panel LED Indicators

The two bi-colour LEDs on the rear panel are shown in Figure 1-1. They identify the DTE or DCE status of the port closest to that LED and are determined by the internal 50-pin jumper. These LEDs provide a convenient method of identifying the status of each port without opening the case:

- Bi-colour LED is 'RED' if corresponding port is 'DTE'.
- Bi-colour LED is 'GREEN' if corresponding port is 'DCE'.

3.0 CABLE REQUIREMENTS

Alfatron Pty Ltd recommends the use of shielded cable with all of its products. Shielding reduces Electro Magnetic 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 (SG) but in this case always use a separate wire for ground which is connected at both ends.

If a metalised backshell is used then it is preferred that the cable shield make 360^o contact with the backshell at the point of entry.

- The shield must be connected at both ends of the cable.

4.0 FACTORY SETTINGS

The A600 is factory pre-set to the following configuration:

- X.21 (DCE) to V.35 (DTE)
- V.35 Clock Source (J203 and J204) is set to 'TxCLK'
- V.35 Handshaking Line (J205) is set to RTS

5.0 INTERFACE PIN ASSIGNMENTS**5.1 X.21 Interface Pin Assignments**

The direction of the signal lines depends on the selection of the X.21 port as either DTE or DCE via the 50-pin jumper, please refer to Section 2.1.

Pin No.	Signal Name	Full Signal Name	A600 Port X.21 - DTE	A600 Port X.21 - DCE
1	FG	Frame Ground	-	-
2	Ta	Transmit (a)	Output	Input
3	Ca	Control (a)	Output	Input
4	Ra	Receive (a)	Input	Output
5	Ia	Indicator (a)	Input	Output
6	Sa	Signal Clock (a)	Input	Output
7	-	Not assigned	-	-
8	SG	Signal Ground	-	-
9	Tb	Transmit (b)	Output	Input
10	Cb	Control (b)	Output	Input
11	Rb	Receive (b)	Input	Output
12	Ib	Indicator (b)	Input	Output
13	Sb	Signal Clock (b)	Input	Output
14	-	Not assigned	-	-
15	-	Not assigned	-	-

5.2 V.35 Interface Pin Assignments

The direction of the signal lines depends on the selection of the V.35 port as either DTE or DCE via the 50-pin jumper, please refer to Section 2.1.

Pin No.	Signal Name	Full Signal Name	A600 Port V.35 - DTE	A600 Port V.35 - DCE
A	FG	Frame Ground	-	-
B	SG	Signal Ground	-	-
C	RTS	Request To Send	Output	Input
D	CTS	Clear To Send	Input	Output
E	DSR	Data Set Ready	Input	Output
F	DCD	Data Carrier Detect	Input	Output
H	DTR	Data Terminal Ready	Output	Input
P	SD(a)	Send Data (a)	Output	Input
R	RD(a)	Receive Data (a)	Input	Output
S	SD(b)	Send Data (b)	Output	Input
T	RD(b)	Receive Data (b)	Input	Output
V	SCR(a)	Signal Clock Receive (a)	Input	Output
X	SCR(b)	Signal Clock Receive (b)	Input	Output
Y	STR(a)	Signal Clock Transmit (a)	Input	Output
AA	STR(b)	Signal Clock Transmit (b)	Input	Output

Note: DTE external clock (SCTE) pair, pins U and W, is not supported by the A600.

6.0 SPECIFICATIONS

X.21 Port: X.21 bis
Select as DTE or DCE
DB-15 female connector

V.35 Port: CCITT V.35 Compatible
Select as DTE or DCE
34-pin V.35 female connector

Front LED Indicators:

Clock	(Bi-colour Red/Green)
X.21 (IND) / V.35 (DCD)	(Bi-colour Red/Green)
X.21 (CTRL) / V.35 (RTS)	(Bi-colour Red/Green)
Receive Data X.21 and V.35	(Bi-colour Red/Green)
Transmit Data X.21 and V.35	(Bi-colour Red/Green)
Power	(Yellow)

Rear LED Indicators:

X.21 Port Status, DTE or DCE	(Bi-colour Red/Green)
V.35 Port Status, DTE or DCE	(Bi-colour Red/Green)

Power Supply: 240V AC 50Hz
Standard IEC male socket

Dimensions: 45mm x 120mm x 190mm

Weight: 920 grams

Operating Temperature: 0° to 40° C

Storage Temperature: -20° to 70° C

All specifications subject to change without notice



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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 X.21 to V.35
Interface Converter

Model Number: A600

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