

Series 8000 Application Module Installation Guide

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0-1

Rev.2

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STATUTORY NOTICES

APPROVED for connection to telecommunication systems specified in the instructions for use subject to the conditions set out in them.

NS/1282/1/L/601830 (8425)
NS/1282/1/L/601696 (8525)

WARNINGS

The 8425 and 8525 have panels in front of the plug-in modules. These panels may only be removed by suitably qualified personnel for installation or maintenance purposes, and must be replaced afterwards. Removal under any other circumstance would invalidate the RFI (Radio Frequency Interference) and Safety Type Approvals.

Please refer to Appendix C of this manual for installation of KiloStream ports in the 8425 and 8525.

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

The lithium used in the battery of this unit will react violently with water and most gases. Discharged batteries must not be crushed, incinerated or disposed of in the normal waste. Used batteries should be collected and disposed of in an approved land fill. The manufacturer and your local waste authority will provide more detailed information about their disposal.

Accidental charging and short circuiting of the battery may cause overheating and possible rupture.

Replace only with the same or equivalent type recommended by the equipment supplier.

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Preface

This manual provides information for network managers to install the Series 8000 Application Module in an 8425 or 8525 Packet Switch Exchange.

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The Series 8000 Application Module consists of a multi-purpose Processor Card (with a Port Access Module), that plugs into the Cray 8425 and 8525 Packet Switch Exchanges. The module, with the relevant software, forms the basis for a number of X.25 products:

Name	Description/protocols supported
8160 Module	8-port triple-X PAD
8225 Module	8-port X.25 concentrator
8295 Module	3270 SNA, 3270 BSC, 3270 SNA/SDLC, VIP 7700/VIP 7800 synchronous PAD

The module also forms the basis for the 8260, 8270, 8280 and 8290 products, whose operation is very similar to the 8295 (see above).

It is assumed that the person installing the Application Module is familiar with the installation and configuration of the 8425 or the 8525 PSE, described in the relevant guides.

2.1 The Processor Card

The Processor Card is ACM-shaped and consists of a 68000 processor, RAM, battery-backed RAM (BRAM) and EPROM. There are four LED indicators on the front of the card and two 96-way connectors on the rear as shown in Figure 2-1.

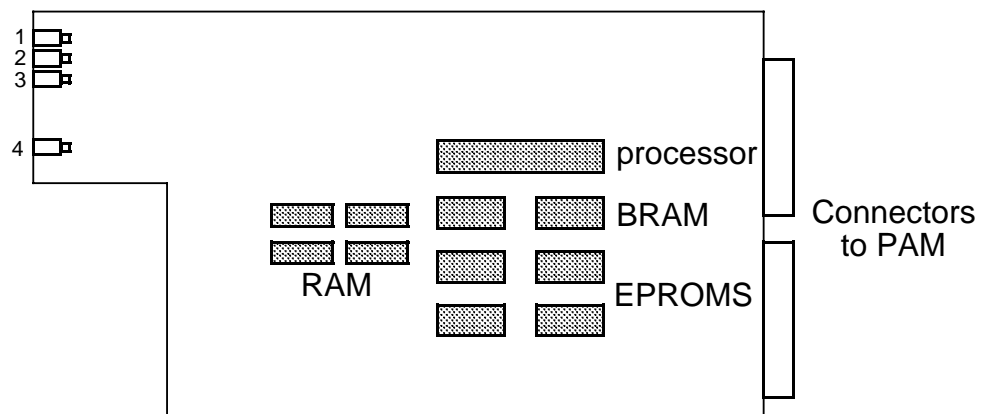


Figure 2-1 The Processor Card (X890-606211/12)

Indicators

The Processor Card has four LED indicators at the front. When the Application Module is powered up a number of these are illuminated.

LEDs 1 to 3 (the red, yellow and green LEDs) have differing meanings depending on the software running on the processor card.

For the 8160 and 8225:

RED indicator	ON:	Hardware failure.
	FLASHING:	Software failure.
	OFF:	Normal.
YELLOW indicator	ON:	Power up tests in progress.
	OFF:	Normal.
GREEN indicator	ON:	X.25 link (composite) 'up'.
	FLASHING:	X.25 link (composite) 'down'.

OFF: Power failure.

For the 8295:

RED indicator ON: Power up tests in progress.
FLASHING: Hardware failure.
OFF: Normal.

YELLOW indicator ON: X.25 link B (port 9) 'up'.
FLASHING: X.25 link B (port 9) 'down'.
OFF: Power failure.

GREEN indicator ON: X.25 link A (composite) 'up'.
FLASHING: X.25 link A (composite) 'down'.
OFF: Power failure.

LED 4 (bottom green LED) is the watchdog timer indicator. If when the Module is powered up this LED is extinguished, it implies that the watchdog timer has expired and a serious software error has occurred.

2.2 The Port Access Module

The Processor Card requires an Application Port Access Module (PAM), illustrated in Figure 2-2, for making connections to other equipment.

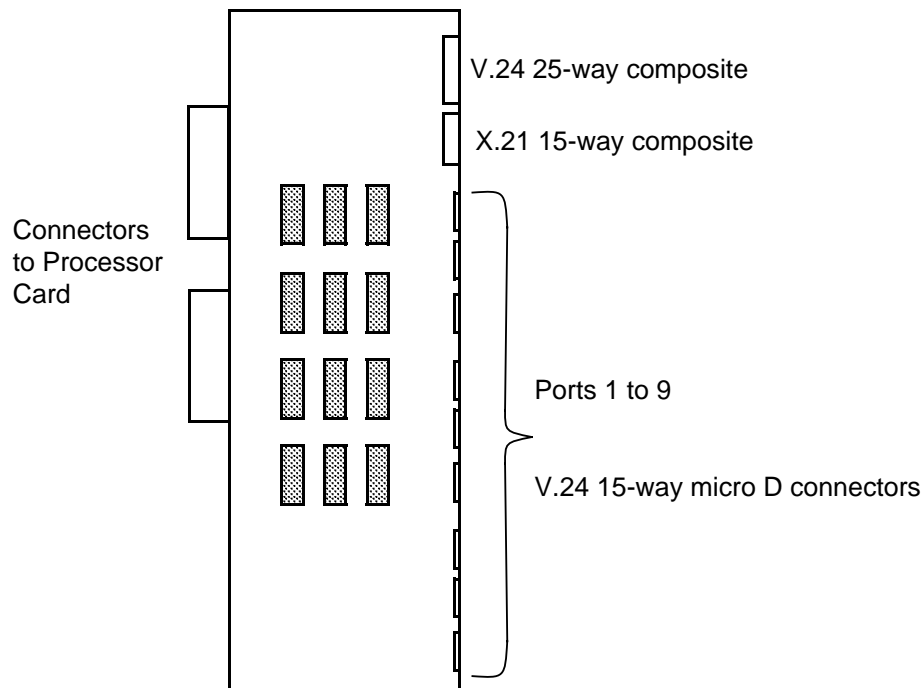


Figure 2-2 The Application PAM (X890-606311)

Connections to other equipment, modems, terminals etc., are made via nine 15-way micro D-type, one 15-way normal D-type, and one 25-way normal D-type connectors on the PAM.

After unpacking, inspect for damage and check that the following are present:

- A Processor Card with 8160, 8225 or 8295 software (this can be identified by a label below LED4).

- An Application Port Access Module (PAM).

- A cable for connection to a terminal.

- An X.25 link cable.

- The appropriate reference manual, and binder.

3.1 Fitting the Cards

Install the Processor Card into the 8425 or 8525 in accordance with the directions for installing an ACM card in the relevant installation guide.

Note: The Processor Card does not require a UPM card in the lower half of the 8425/8525 unit.

The Processor Card may be added or removed whilst the PSE is powered on. Insert only one card at a time.

Install the Application PAM in accordance with the directions for installing an X.25 PAM in the relevant 8425 or 8525 installation guide.

3.2 Switching On

1. Turn on the mains power to the 8425 or 8525 unit, if not already on.
2. The green watchdog indicator (**LED 4**) should illuminate solidly. The other three indicators (**LEDs 1 to 3**) should illuminate solidly for a moment, and then start cycling on and off for a few seconds while power-up diagnostics are being performed.
3. Eventually, the following should result:

8160/Module and 8225/Module:

The red and yellow indicators should extinguish and the green will remain on or flashing. If the red indicator remains on then the Application Module is faulty.

8295/Module

The red indicator should extinguish and the green and yellow should remain on or flashing. If the red indicator remains on or flashing then the Application Module is faulty.

4.1 Locally

The method of logging on locally varies slightly depending on the software running on the processor card. In each case a VT100 compatible terminal is required, which is referred to as the 'supervisor terminal'. Connections to the supervisor terminal from each card should be made using cable X890-409911 (see Appendix B).

4.1.1 8160 Module

1. Attach the supervisor terminal to any of ports 1 to 8. The supervisor terminal must have the following attributes:-
 - speed: 1200, 2400, 4800, 9600 or 19k2 bps
 - data bits: 7 with space parity, or 8 with no parity
 - stop bits: 1
2. Enter <CR>. A beep should be heard indicating auto baud rate detect.
3. Enter <CR>. The 8160 will display the banner and give a prompt.
4. Type `logon` and enter <CR>. A password will be prompted for. Enter <CR> again (as there is no default password). The 8160 will then display the top level menu.

4.1.2 8225 Module

1. Attach the supervisor terminal to port 9. The supervisor terminal must have the following attributes:
 - speed: 2400 bps
 - data bits: 7 with space parity, or 8 with no parity
 - stop bits: 1
2. Enter <CR>. The 8225 will display a banner and prompt for a password. Enter <CR> again. The 8225 will then display the top level menu.

4.1.3 8295 Module

1. Attach the supervisor terminal to port 8. The supervisor terminal must have the following attributes:
 - speed: 1200, 2400, 4800, 9600 or 19k2 bps
 - data bits: 8
 - parity: none
 - stop bits: 1
2. Enter <CR>. A prompt message will be displayed. Type 99L and enter <CR>. A screen will be displayed.
3. At the password prompt, enter <PF1>. The 8295 will display the top level menu.

4.2 From X.25

The 8160, 8225 or 8295 'manager' software may be accessed remotely from an X.25 triple-X PAD. If the triple-X PAD's X.3 parameters are configurable then the following values are recommended:

- Parameter 2: 0 (echo off)
- Parameter 3: 2 (packet forwarding on CR)
- Parameter 4: 4 (packet forwarding on timeout)

The 8425/8525 mini-PAD is ideally suited for remotely logging on to the Application module.

4.2.1 Connecting to the PSE

An X.25 port on the 8425/8525 must be assigned to the Application Module. This must be either a V.24 port connected to the V.24 composite port on the Application PAM using cable X890-410711, an X.21 DCE port connected to the X.21 composite port on the Application PAM using cable X890-410611, or an X.21 DTE port connected to the X.21 composite port on the Application PAM using cable X818-400511. (See Appendix B).

The 8425/8525 and Application Module X.25 ports should be configured via the 'manager', so that the link comes up and calls can be made to the Module.

Note that the Application Module X.25 port defaults to the V.24 composite port, external clock, level 2 DTE, level 3 DTE with INSVC=LCN 1 and 2-way SVC=LCN 1024 to 1031.

4.2.2 8160 and 8225

1. Make a call using an X.121 address that matches the remote manager address. The default subaddress is 99.
2. If no password is configured then the top-level menu will be displayed. Otherwise a password will be prompted for. Enter the correct password followed by <CR>. The top-level menu will be displayed.
3. If the password is incorrectly entered four times, or it takes longer than a minute, then the call will be automatically cleared.

4.2.3 8295

1. Make a call using an X.121 address that matches the remote manager address. The default subaddress is 99.
2. A welcome screen will be displayed and prompt for a password. Enter the correct password followed by <PF1>. The top-level menu will be displayed.
3. If the password is incorrectly entered four times, or it takes longer than a minute to enter it, then the call will be automatically cleared.

Refer to the relevant user guide for configuration information.

B.1 Cable Summary

Figure B-1 gives a general guide to cable requirements.

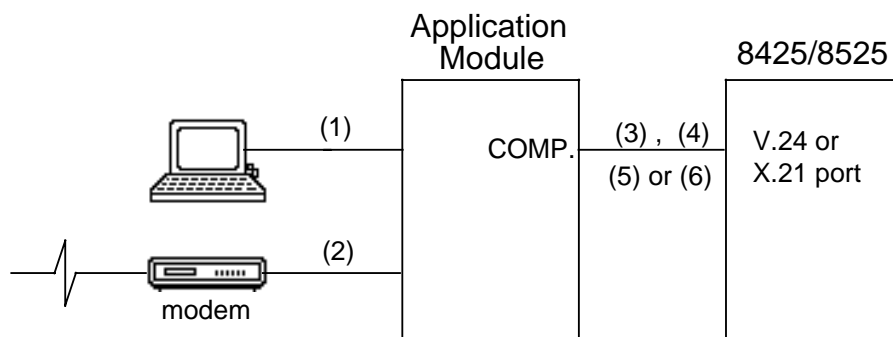


Figure B-1 Cable Usage

For Application Module Channels 1-9

- (1) Application Module to DTE (e.g. terminal). Use cable X890-409911, Figure B-2.
- (2) Application Module to DCE (e.g. modem). Use cable X890-410111, Figure B-3.

For Application Module Composite

- (3) Application Module to V.24 DTE. Use cable X890-410711, Figure B-4.
- (4) Application Module to V.24 DCE. Use cable X890-403111, Figure B-5.
- (5) Application Module to X.21 DTE. Use cable X818-400511, Figure B-6.
- (6) Application Module to X.21 DCE. Use cable X890-410611, Figure B-7.

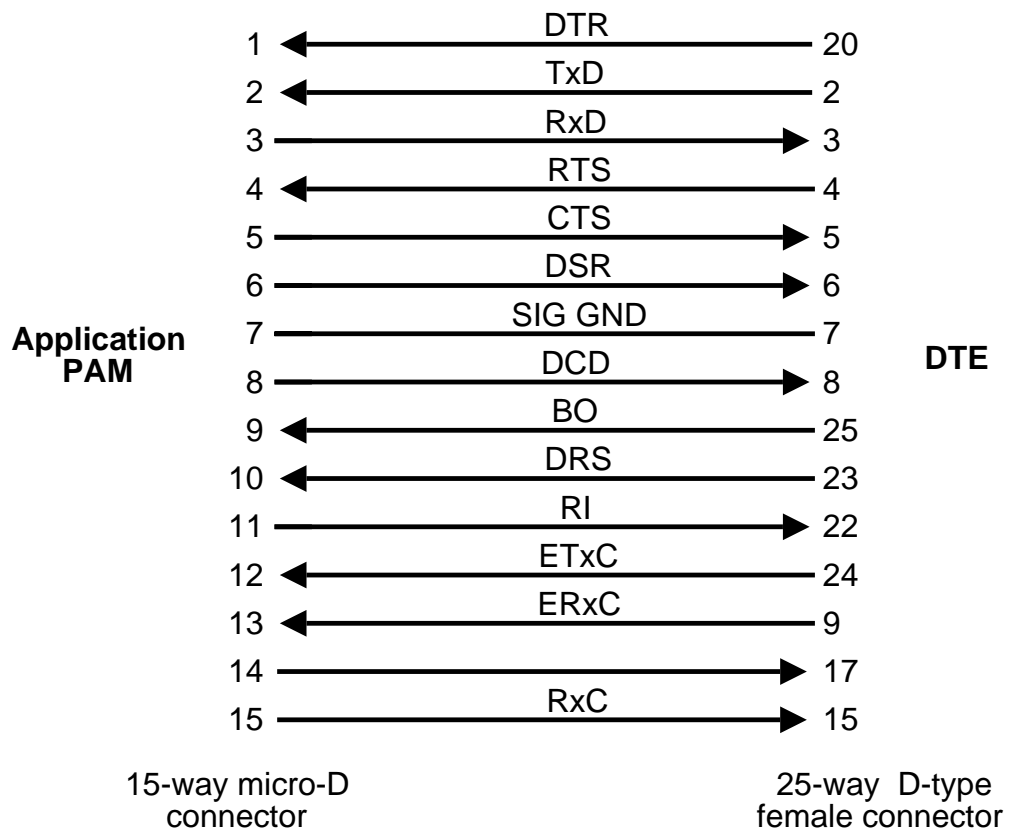


Figure B-2 Micro-D to V.24 DTE cable

Cray Part No: X890-410311 (m)
 X890-409911 (3 m)
 X890-410011 (5 m)

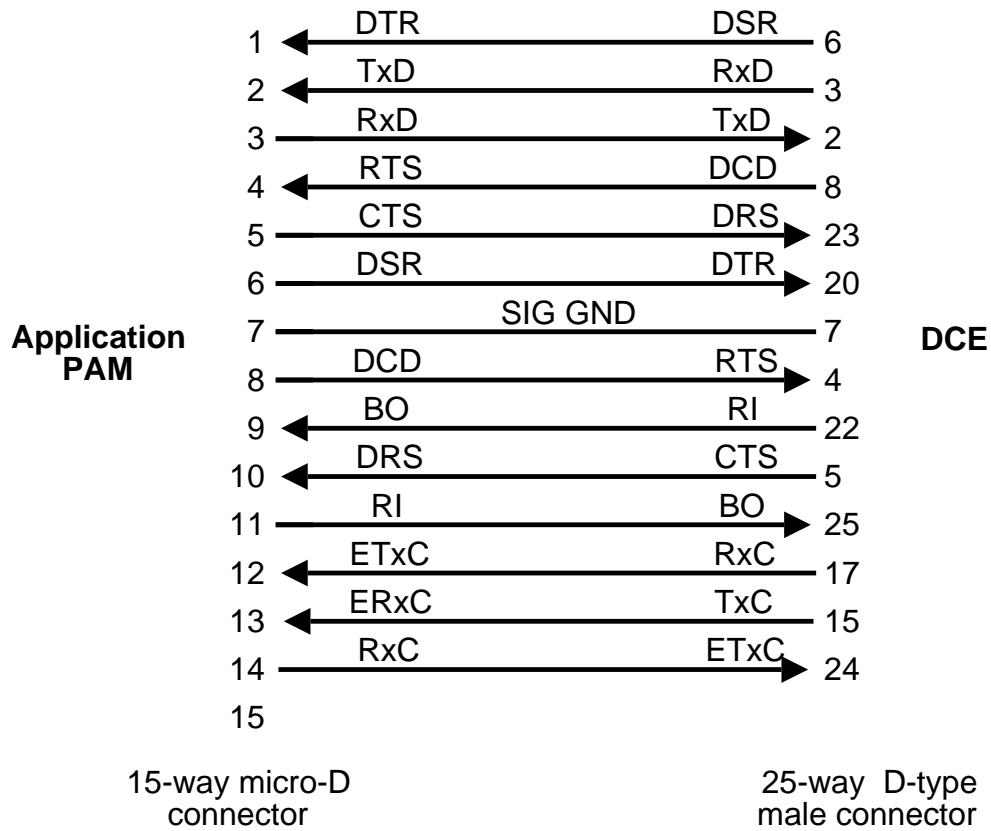


Figure B-3 Micro-D to V.24 DCE Cable

Cray Part No: X890-410111 (3 m)
 X890-410211 (5 m)

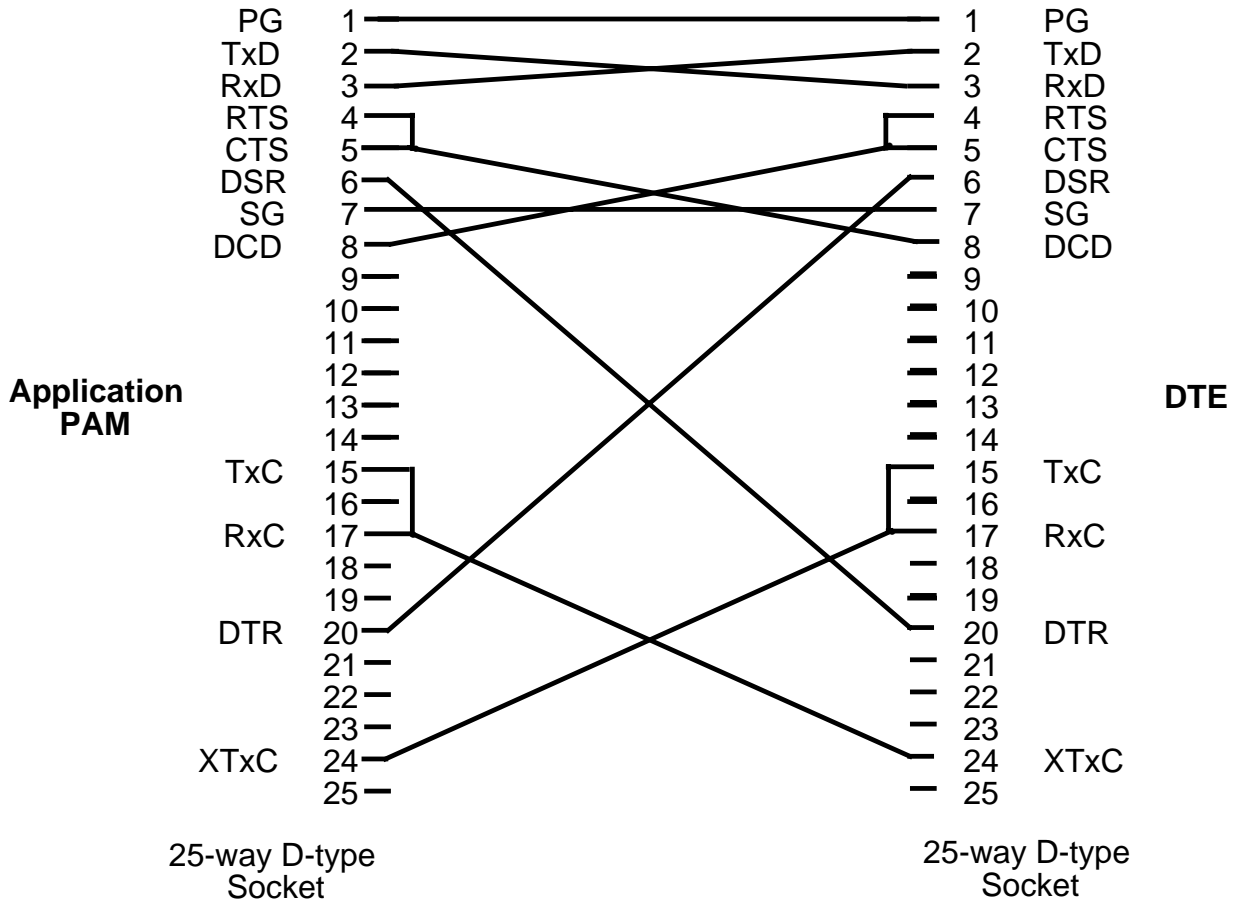


Figure B-4 Composite to V.24 DTE Cable

Cray Part No: X890-410711 (m)
 X890-403011 (3 m)
 X890-408711 (5 m)

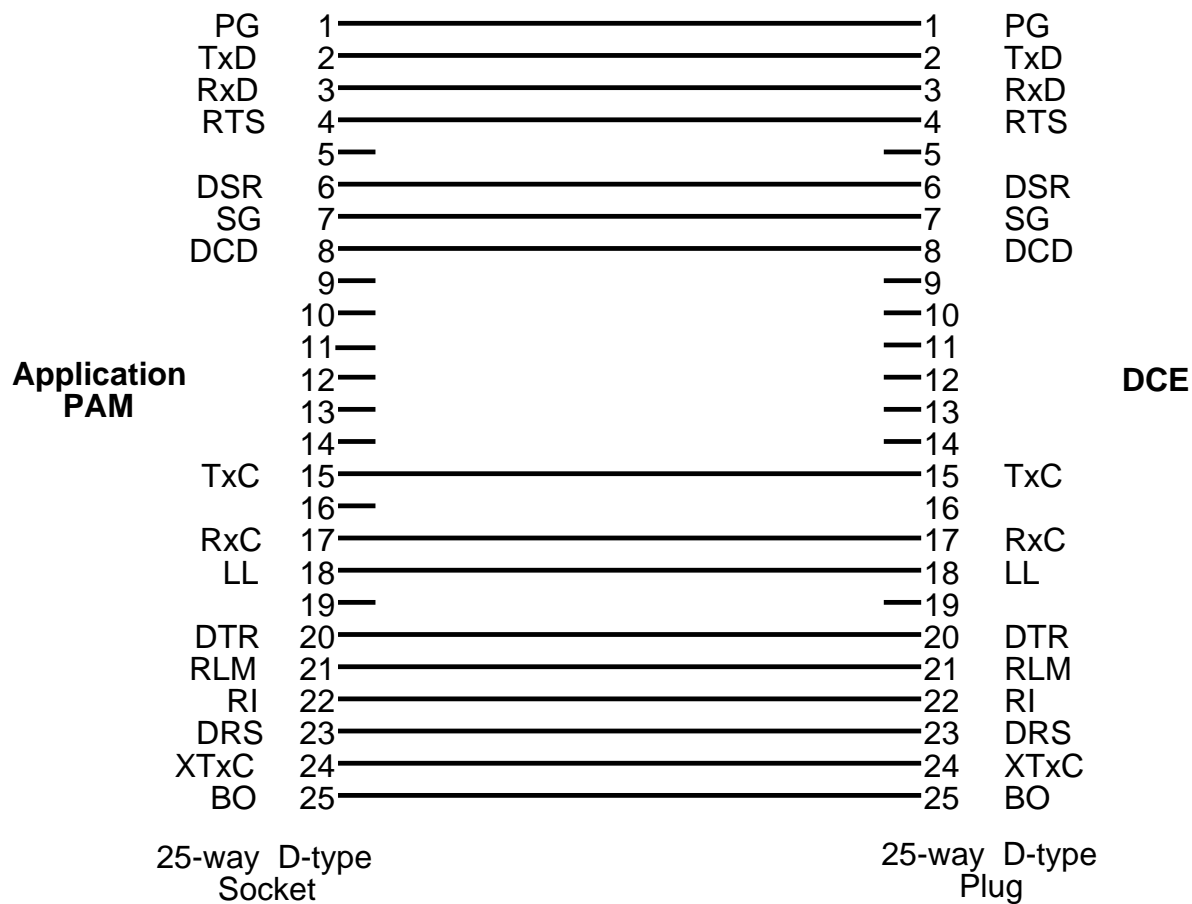


Figure B-5 Composite to V.24 DCE Cable

Cray Part No: X890-403111 (3 m)
X890-408611 (5 m)

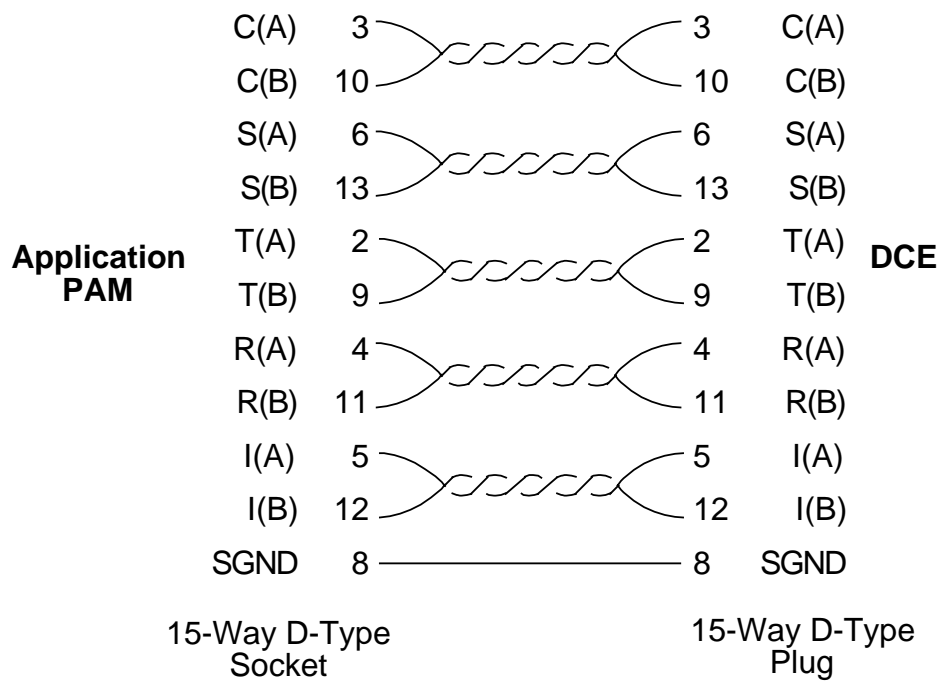


Figure B-7 Composite to X.21 DCE Cable

Cray Part No: X890-410611 (m)
 X890-401011 (3 m)
 X890-408811 (5 m)

Appendix C UK PSS and KiloStream

C.1 General

Ports labelled "SAFETY WARNING See Instructions For Use" do not provide isolation sufficient to satisfy the requirements of the relevant parts of BS 6301. Apparatus connected to these ports must itself either be approved to the relevant parts of BS 6301 or have previously been evaluated against British Telecom (Post Office) Technical Guide 2 or 26 and been granted permission for attachment. **Other usage will invalidate any approval given to this apparatus.**

In order to meet the safety requirements of our PSS/KiloStream approval it is important to make sure that the equipment is correctly installed and maintained.

When delivered from the factory for use in the UK the physical interfaces of ports which can be connected to PSS and KiloStream are given in Table C-1.

INTERFACE TYPE	LINE SPEED	CONNECTOR TYPE	CABLE PART NUMBER
V.24	≤ 19200 bps	1 × 25-way D-type male (DTE)	X818-401211
X.21	≤ 64 kbps	1 × 15-way D-type male (DTE)	X890-408411
V.24 Channels 1-9	≤ 19200 bps	9 × 15-way micro-D male (DTE)	X890-410511

Table C-1 Permissible UK PSS/KiloStream Connections

Connection to PSS and KiloStream NTUs must be made with the cables specified in Table C-1, and they must be installed by a competent engineer.

If **any** connections on a PAM are connected to PSS or KiloStream then **all other** connections on that PAM must be to apparatus that has either been approved to the relevant parts of BS 6301 or has previously been evaluated against British Telecom (Post Office) Technical Guide 2 or 26 and been

granted permission for attachment. **Other usage will invalidate any approval given to this apparatus.** If there is any doubt as to the suitability of the equipment, then the advice of a competent engineer should be sought.

C.2 NET1 Considerations

The X.21 interfaces on the Application Module **do not** provide 'DTE Uncontrolled NOT READY'.

V.24 composite and X.21 interfaces are approved for direct connection to digital networks using the cables specified in Table C-1.

V.24 Channel 1-9 interfaces are approved for connection only to a relevant Branch System. For the purposes of approval, the network cable (X890-410511) constitutes the Branch System.

The V.24 composite and channels 1-9 interfaces are for connection to PTO Service Category 1.

The V.24 interface can only operate up to 9K6 bps for PSS connection, but up to 19K2 bps for KiloStream connection.

C.3 NTU Pin Assignments

Tables C-2 and C-3 show the V.24 and X.21 interface pin assignments presented to a PSS/KiloStream NTU at the NTU end of the cables specified in Table C-1. For the pinouts at the PAM end of the cables refer to Appendix B.

PIN NO.	DIRECTION	ASSIGNMENT
2	Output	Transmit Data (TxD)
3	Input	Receive Data (RxD)
4	Output	Request To Send (RTS)
5	Input	Clear To Send (CTS)
6	Input	Data Set Ready (DSR)
7	–	Signal Ground (SGND)
8	Input	Data Carrier Detect (DCD)
15	Input	Transmit Clock (TxC)
17	Input	Receive Clock (RxC)
20	Output	Data Terminal Ready (DTR)

**Table C-2 V.24 Interface Pin Assignments
(At NTU End of Cables X818-401211 and X890-410511)**

PIN NO.	DIRECTION	ASSIGNMENT
3	Output	Control (CA)
10	Output	Control (CB)
6	Input	Signal Element Timing (SA)
13	Input	Signal Element Timing (SB)
2	Output	Transmit Data (TA)
9	Output	Transmit Data (TB)
4	Input	Receive Data (RA)
11	Input	Receive Data (RB)
5	Input	Indication (IA)
12	Input	Indication (IB)
8	–	Signal Ground (G)

**Table C-3 X.21 Interface Pin Assignments
(At NTU End of Cable X890-408411)**

C.4 Cable Pinouts

Figures C-1 to C-3 give the pinouts of the three PSS/KiloStream cables listed in Table C-1.

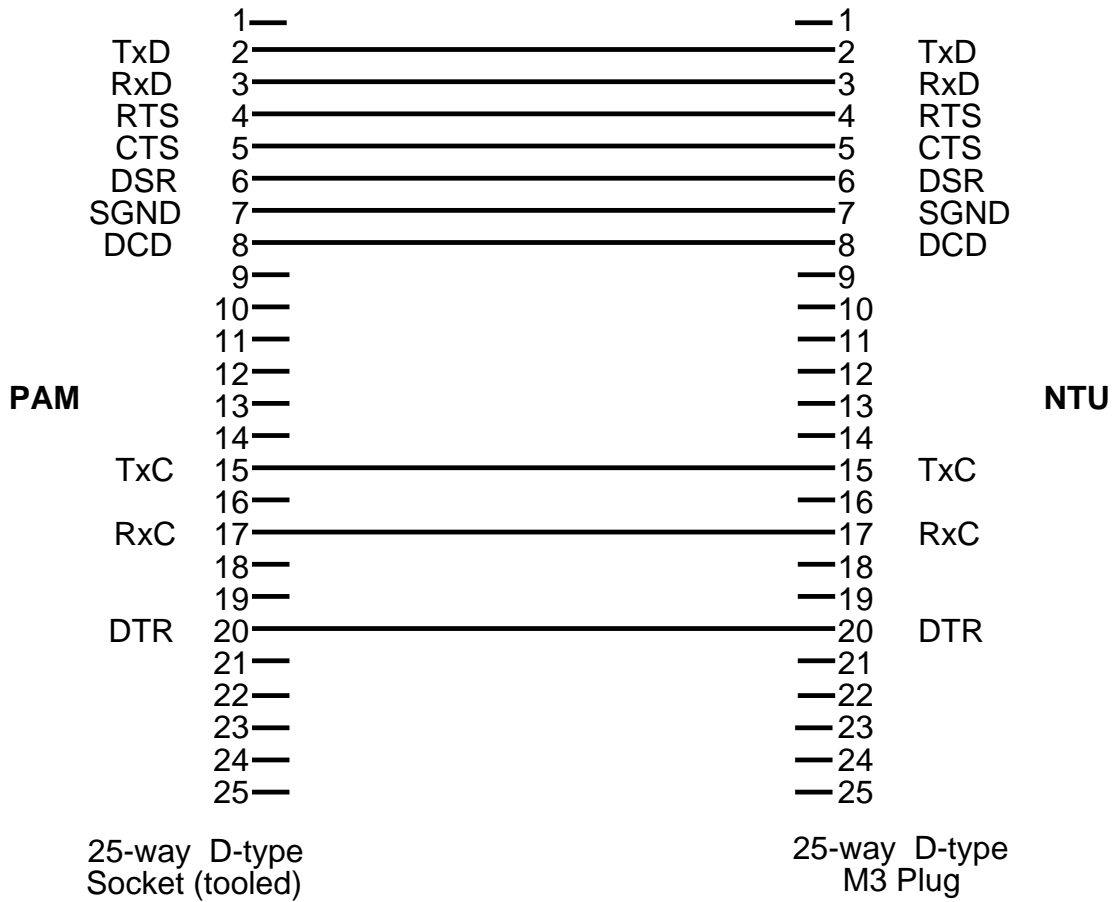


Figure C-1 V.24 PSS/KiloStream Cable X818-401211

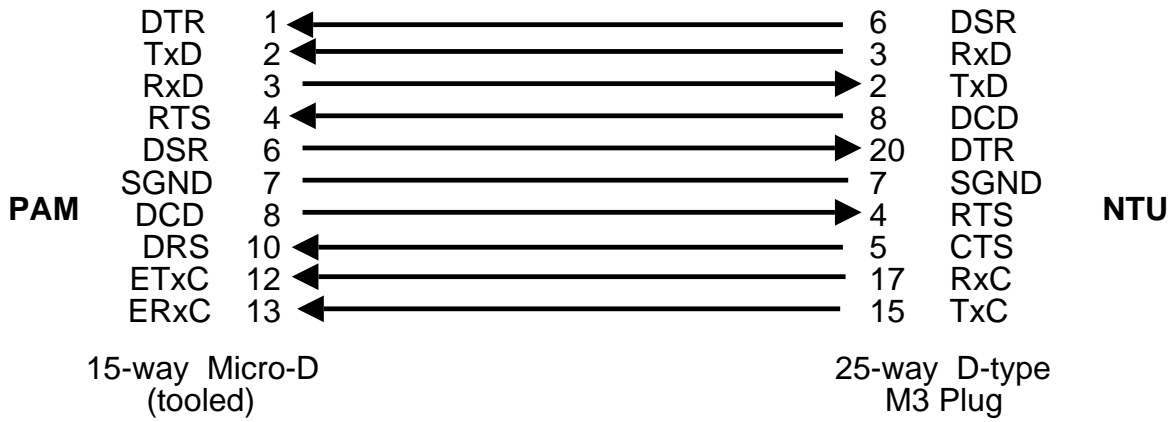


Figure C-2 V.24 PSS/KiloStream Cable X890-410511

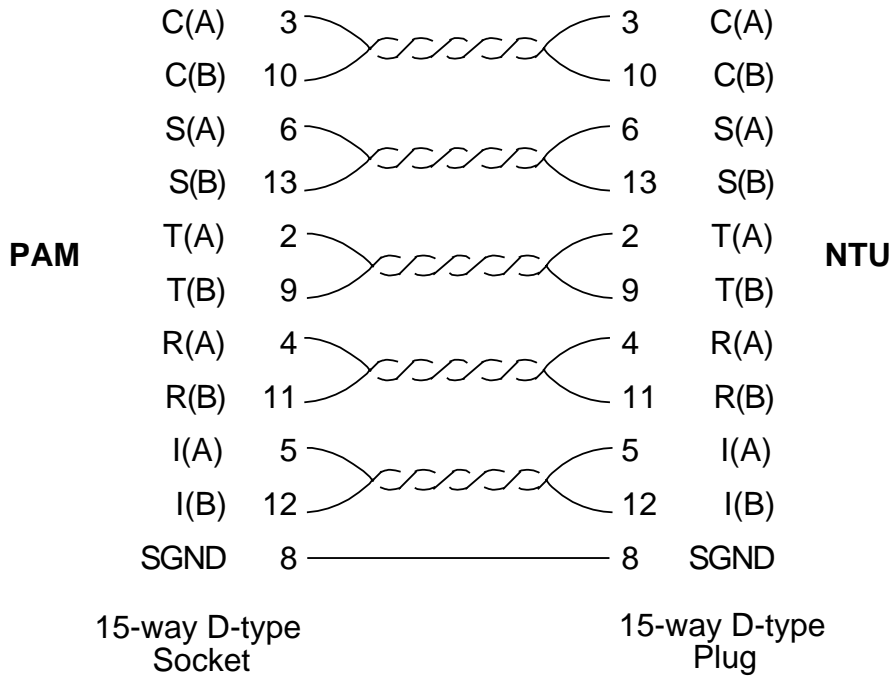


Figure C-3 X.21 PSS/KiloStream Cable X890-408411