

DCX S-Gate20
Reference Manual
(Level 20.7)

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The DCX 860 and 870 incorporate a panel in front of the plug-in modules. This panel 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 any RFI (Radio Frequency Interference) and Safety Type Approvals.

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Preface

This manual provides information on the S-Gate20 Protocol Emulation Module.

Chapter 2 contains instructions to enable suitably qualified personnel to install S-Gate20 in a DCX network.

Chapter 3 contains full information to enable the system supervisor initially to configure, and subsequently to reconfigure, the S-Gate20 to suit the SDLC/SNA and DCX environments.

Chapter 4 contains full details of user operation of S-Gate20.

Chapter 5 contains procedures that may be used in the event of problems arising during configuration and operation of the equipment.

In general, there will be two types of personnel using S-Gate20: the Network Supervisor (referred to as 'supervisor') and the Terminal User (referred to as 'user'). The supervisor will need to be familiar with the entire S-Gate20 Reference Manual, the relevant DCX reference manuals, and the IBM reference manuals listed below. The user needs only the information in Chapter 4 of this manual and, if DCX 860 or 870 is used, the relevant user information.

References

IBM 3270 Information Display System
Reference Summary GX20-1878.

IBM 3270 Information Display System
3274 Control Unit
Description and Programmers Guide GA23-0061.

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1.1 The S-Gate20

The S-Gate20 is a Protocol Emulation Module (PEM) suitable for DCX 840/860*/870* networks. It allows asynchronous terminals to communicate with an IBM or compatible host computer over the DCX network, as illustrated in Figure 1-1.

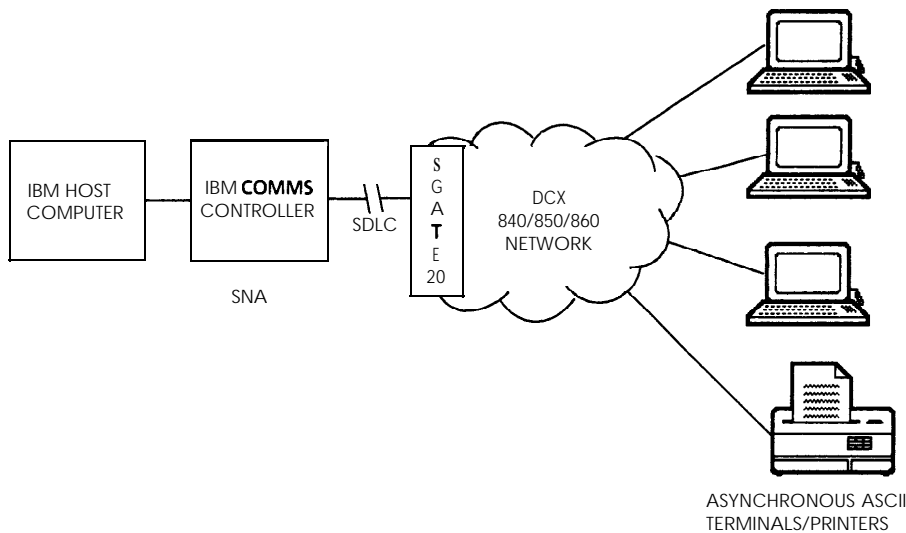


Figure 1-1 S-Gate20 in a DCX Network

S-Gate20 is a successor to the original S-Gate (now referred to as S-Gate1).

* The DCX 860 and 870 are designed to be soft-configurable, and physical **access** to the plug-in cards is unnecessary. Full details are given in the DCX 860, 870 and NCAM manuals. Physical access is prevented by a panel, which may only be removed by suitably qualified personnel for installation and maintenance purposes.

S-Gate20 emulates an IBM 327X cluster controller, making the ASCII terminals connected to it look like IBM 3278/3279 terminals, asynchronous printers appear to be IBM 3287 printers.

It can support up to a maximum of 32 terminals and printers, each operating at up to 19.2 kbps.

S-Gate20 appears to the IBM FEP as an SNA PU type 2 node with up to 32 SNA LU type 2 devices attached to it. (It cannot replace the IBM host's **FEP**.)

Thus S-Gate20 emulates IBM 327X Model Types 0 to 5, including the extended attributes of the 3270 General Data Stream, i.e. inverse video, underline, blink and seven-colour support.

It can be set to interpret and display the IBM terminal status line and supports both fixed and user-defined keyboard and display profiles.

S-Gate20 supports five national EBCDIC/universal ASCII fixed character sets: US, UK, French, German and Swedish. In addition, a single set of **EBCDIC/ASCII** tables maybe soft-configured so that any other character set may be supported. The MMI (man-machine interface) is written in English.

S-Gate20 can be connected to host computers via a single SDLC (Synchronous Data Link Control) link supporting NRZ and NRZI bit encoding, half or full duplex operation, and using XID format 0 Nodes Identification. **S-Gate20** has two ports, the first port operating V.35/V.11 at 56/64 kbps line speeds, and the second operating V.24/V.28(RS-232-C) at line speeds up to 19.2 kbps. However only one port may be used at a time.

Transmit and Receive clocks may be supplied by a modem, by S-Gate20, or be split between them with the originator of the data providing the accompanying clock.

An LU (Logical Unit) may have only one printer assigned to it. An S-Gate20 channel configured as a printer channel may also be used as the local printer for several terminals, which can output their screen contents to that printer channel when it is not in use by the host. Thus system and local printing is available.

In the unlikely event of a serious malfunction, S-Gate20 provides an auto-restart facility. It will record the failure details of up to four malfunctions. These statistics may be interpreted by engineering personnel and will

provide valuable insight into the nature of the problem. S-Gate20 can also be restarted manually from the Manager facility. It supports the loading and dumping of its configuration data, and maybe remotely managed from an NMC.

S-Gate20 has the ability to contend for printer resources with other sources of print data (e.g. Ethergate), and does this using inter-nodal requests. This means that outbound at least, it resembles a remote node.

1.2 The S-Gate20 Card

S-Gate20 is implemented as a standard sized DCX 840/860/870 card.

1.2.1 Indicators

On the front panel of the card are nine LED indicators with an overlay as shown in Figure 1-2.

The OKY indicator is green, all the others are red.



Figure 1-2 S-Gate20 Indicators

- | | |
|------------|--|
| OKY | OK indicator. Monitors the software. Lit during normal operation, goes out if a software malfunction is detected. |
| T | Trap indicator. Out during normal operation. Lights to indicate a major system error; when alight other indicators may flash to give a Trap Code. |
| D | DCX size indicator. Flashes if DCX size is lower than necessary for minimum operation. |
| DSR | V24 Data Set Ready indicator. Lit when the modem is connected and ready for use. |
| TXD | Transmitted Data indicator. Flashes to indicate that data is being transmitted. |
| CTS | Clear To Send indicator. Lights when the connected modem is ready to receive Transmitted Data. Normally lit continuously on a full-duplex channel. |

- RXD** **Received Data indicator.** Flashes when data are received from host.
- DCD** **Data Carrier Detect indicator.** Lights to indicate that the modem can accept Received Data. Steady on full-duplex channels; flashes on half-duplex channels.
- ONL** **Online indicator.** Lights when S-Gate20 is online. This indicates that emulator can now communicate with the host system.

1.3 Specification Summary

SDLC Link

Interface and Speed	V.24/V.28 :1200-19200 bps V.35/V.11 : 56/64 kbps
Clock	Transmit and receive clocks may be supplied externally by modem, or internally by S-Gate20, or split between them
Operation	Full or half duplex, point-to-point or multipoint, NRZ or NRZI

Channels

Terminals	32 channels for asynchronous terminals and printers
Manager	Accessible from any of the 32 channels (provided that the password is known), but only one at a time

Terminal Support

Emulation	IBM 3278/9 Models O to 5 synchronous terminals
Types Supported	VTIOO Pericom Monterey ANSI Colour Teletype 910 ADM 3A Beeline Three user-defined profiles

Printer Support

Emulation	IBM 3287 synchronous printers
Types Supported	Data Stream Control (DSC) and SNA Character Stream (SCS) commands Column width must be sufficient to handle users' application format

Implementation

S-Gate20 Card	Standard sized DCX card occupying one slot Located in master frame of DCX.
---------------	---

2.1 Introduction

Installation should only be undertaken by persons qualified in the configuration of the DCXS to be used.

Installation should take place in the sequence of instructions in Section 2.2 (for a DCX 840) or 2.3 (for a DCX 860 or 870). This introduction provides information about some of the steps.

2.1.1 The DCX Environment

The S-Gate20 card occupies one slot in a DCX 840,850 or 860.

Since it has high speed status, it must be installed in the master bay, which must have at least the minimum configuration:

- STC in slot 17 (840) or 20 (860 or 870),
- Master ARQ or TAC in slot 16 (840) or 19 (860 or 870),
- BUF (or BEM if expansion bay fitted) in slot 1.

It maybe located in any slot (excluding those above) which supports ARQ working. More than one S-Gate20 (or S-Gate1) may be present in a frame.

To ensure that all the link speed functionality provided by S-Gate20 is available, the interconnect cable between the rear of the S-Gate20 card and the connector panel of the DCX frame mustbeoftypeX840-402911. It must be installed with the upper ribbon cable going to the upper connector (port 1, V.24) and the lower ribbon cable going to the lower connector (Port 2, X.21).

WARNING: For installation in a DCX 860 or 870, see page O-2.

2.1.2 S-Gate20 Option Switches

Behind the card ejector lever there is a switchbank containing eight DIL switches which have the following functions.

Switch 1	OPEN	- Perform a Warm start on next reset.
	CLOSED	- Perform a Cold start on next reset.
Switch 2	OPEN	- S-Gate not installed in DCX 836.
	CLOSED	- S-Gate installed in DCX 836.
Switch 3	No Function	
Switch 4	No Function	
Switch 5	No Function	
Switch 6	No Function	
Switch 7	No Function	
Switch 8	OPEN	- Normal operation.
	CLOSED	- Hold card in reset condition.

With the card vertical, Switch 1 is at the top. OPEN = left, CLOSED = right.

2.1.3 Powering Up

When the DCX is powered up, all indicators illuminate for a short time. The green OKY LED should remain alight, and the others will assume a state determined by the condition of the controls presented to the SDLC Link interface, and online/offline status. After power up, the τ indicator should be extinguished and remain so. Switch 1 should be set to the OPEN position to ensure that a subsequent power-up will not destroy the configuration.

In the event of a major system malfunction, during power-up or subsequently, from which recovery is impossible, the system will 'Trap' (τ LED is illuminated). Note which LEDs are flashing and contact your supplier.

The Δ indicator will flash if insufficient DCX size has been allocated. Once a suitable size has been configured, normal operation will resume.

2.2 Installation Procedure for DCX 840

The following procedure is for installing S-Gate20 in a DCX 840 that has already been fully checked. You will need to refer to the relevant manuals.

1. Setup the STC map. The device number will depend on the slot in which the S-Gate20 card is to be installed. The size must be set to the number of connections required, up to a maximum of 32.
2. Remove power from the DCX frame.
3. Insert the S-Gate20 card into any suitable slot in the master frame.
4. Restore power. The S-Gate20 card should start up. If the red LEDs flash an obviously repeating pattern, then there is a problem, either with the STC map or with the card itself. Make an attempt at re-starting the card using Switch 8. If the problem persists, contact your supplier.
5. Insert the cable from the modem or modem eliminator (linked to the IBM machine) into the appropriate plug at the rear of the DCX frame. Connect the cable from the IBM machine to the modem or modem eliminator.
6. Setup the system using the configuration facility (Section 3).
7. Activate the line by entering the appropriate system command.
8. The LEDs should now be showing the line activity. The **DSR** and **ONL** LEDs should be illuminated, **RXD** and **TXD** LEDs should be flashing. For half duplex lines **CTS** and **DCD** should flash in synchronisation with **RXD** and **TXD** respectively; for full duplex lines these LEDs should be constantly illuminated.
9. Map the S-Gate20 channels to the appropriate LSC channels. Your terminals should now be displaying the Terminal Type Selection screen (Section 4.4).

2.3 Installation Procedure for DCX 860/870

The procedure for installing S-Gate20 in a DCX 860/870 is the same as that for the 840 but with additions associated with port configuration. You will need to refer to the relevant manuals.

1. Follow the procedure for DCX 840 installation.

2. Configure S-Gate20 channels.

These may be configured as UMPS or IMPs as required. (AMPs are not appropriate for devices such as S-Gate20 since they would not normally be responsible for the origination of connections.)

Relevant characteristics:

Parity	Zero (Space)
Speed	DLL (match to originator)
System Messages	Enabled only for UMPS
Echo	Enabled only for UMPS
Connection Event	None
Disconnection Event	DTR off
Output Neutral State	DSR off
DTR test when destination	No

Configuration Template:

UMP:	DEV:CHAN	ZUDIN	3/0/0/0/0
IMP:	DEV:CHAN	ZIDI	DEST NODE/PORT

3. Open the above configured ports.

3.1 Introduction

This chapter describes the procedures by which S-Gate20 can be configured by the supervisor to suit the DCX and SDLC environments and the terminals and printers.

S-Gate20 provides a series of screen-based menus by which its configuration can be defined, displayed and modified. The menus are:

Menu	Section
Manager Entry Menu	3.3
Line Control Menu	3.4
Emulation Control Menu	3.5
Node Control Menu	3.5.12 (PE3287(S) only)
Channel Control Menu	3.6
Soft Set Configuration Menu	3.7
Terminal Profiles Menu	3.8
Fault Control Menu	3.9
System Status Menu	3.10

3.1.1 Conventions Used in this Chapter

The following conventions are used in this chapter:

- S-Gate20 is abbreviated to S-Gate.
- This non-serif typefont **is** used to represent actual S-Gate output or supervisor entries that will appear on the screen.
- Upper case characters in diamond brackets represent a key entry, e.g. **<CR>** represents the RETURN key.
- Lower case characters in diamond brackets represent a non-literal entry, e.g. **<new password>** means enter the characters of a new password.

3.1.2 Using the Menus

All menus have a Command line and a Transition line.

- Commands alter configuration parameters relating to the current menu. Only the relevant parameter display is updated and not the entire screen.
- . Transitions allow you to move between the different menus listed above.

To enter a command or make a transition to another menu, it is only necessary to enter the letter(s) shown on the screen in upper case, and then press <CR >. The significant characters may be entered in either upper or lower case. You may enter any number of characters between the minimum (those in upper case) and the length of the entire command or transition, but all must match to the desired length.

If the command or transition is incorrect, the error message **Invalid Menu Selection** will be returned.

Throughout the execution of a command, S-Gate prompts for the next input. You may avoid this by entering the command and option values as one line (although a few commands will not allow you to type ahead).

To correct a typing error before a command is entered, backspace to the error and retype the command from that point, then enter it. Alternatively, in most cases it is possible to abort an input line at any position by striking **ESC**.

Each command is described in this section. The format of the whole command is shown first for quick reference, followed by a detailed stage-by-stage description.

3.2 Logging onto the Manager

From the User Main Screen (Section 4.7) there is a hidden option called 'Manager'.

At the User prompt enter:

m <CR>

and S-Gate will request the manager password:

Please Enter Manager Password

Provided that this is entered correctly you will access the Manager facility, with the Manager Entry Menu displayed. If the password is incorrect, **S-Gate** will return the message.

Incorrect Manager Password!

The system will allow only one supervisor to be logged onto the system at a time.

3.3 Manager Entry Menu (EN)

This menu is displayed when first logging on to the Manager.

```
S - GA TE20  M A N A G E R  E N T R Y  M E N U
-----
                Software Revision 1.1

Last restart : Coldstart      Security timeout (reins) : 10
Country      : United Kingdom S-Gate20 Channel Count   : 32
Banner       : S-Gate20      Power On Delay (secs)  : none
              : Advanced SNA Gateway

Commands     : PAssword  SEcurity  Banner  Oump   L0ad  C0untry
              : DElay

Transitions  : ENtry     Line      EMu1    CHanne1  S Tatus
              : SO ft_set P Rofiles  Faults  EXit

Please Enter Menu Selection :
MGR>
```

Software Revision gives details of the version of S-Gate software installed.

Last Restart indicates whether, at the last restart, the configuration was erased (Coldstart) or preserved (Warmstart).

S-Gate20 Channel Count indicates the size in channels given to the S-Gate card via DCX mapping.

3.3.1 To Change the Password

Format: PA<CR>
<new password> <CR>
<new password to confirm> <CR>

This command must not be entered as a single line entry.

To change the manager password it is necessary to enter:

PA <CR>

S-Gate will prompt with:

Please Enter New Password (Echoed as *'s and truncated to 8 characters)

Enter any combination of up to eight letters and numbers. These are not shown on the screen, just echoed as * for each character.

To ensure that the password entered is that desired, it is necessary to provide a **confirmation**. This is prompted thus:

Please confirm password (Echoed as *'s)

Enter the same password. If the second password does not match the first, the error message:

Password Incorrectly Confirmed

is returned, otherwise the new password becomes effective and the message:

New Password Set

is displayed.

Should the password be forgotten, the only way of accessing the supervisor screens is to perform a cold start (Section 5.4) which causes the password to revert to the default **<CR>** (but loses all the configuration data).

3.3.2 To Set the Security Timeout

Format: **SE <timeout> <CR>**

The security timeout indicates the time period for Manager **auto-logout** if no keyboard activity takes place within the timeout period. It can be up to thirty minutes or can be disabled by entering zero.

The security timeout may be changed by entering:

SE <CR>

S-Gate will prompt with:

Enter new security timeout in minutes (Range 1-30 or 0 to disable)

Should you return an invalid security timeout, the error message:

Invalid Security timeout value

will be returned, otherwise the value will be updated on the menu.

On cold starts, the timeout value defaults to ten minutes.

3.3.3 To Change the User Banner

Format: **B** <1st line> <CR>
 <2nd line> <CR>

This command will allow type-ahead for the 1st line only of the banner. The banner is the two lines of text that appear at the top of the User Main Screen (Section 4.5).

The banner can be changed by entering:

B <CR>

S-Gate will prompt with:

Enter 1st line of banner (60 characters maximum)

The banner line 1 will be updated with the text entered.

S-Gate will then prompt with:

Enter 2nd line of banner (60 characters maximum)

The banner line 2 will be updated with the text entered.

To enter a blank line just press <SPACE> <CR>

To leave a line unaltered just press <CR>

On cold starts, the banner defaults to the text shown in Section 4.5.

3.3.4 To Load a Configuration

Format: **LO** <CR>

The load command is used to load previously dumped configuration data into S-Gate. The format of the load data is that previously created using the Dump Command (see Section 3.3.5).

First, inform S-Gate that a configuration is to be sent to it by entering:

LO <CR>

S-Gate clears the screen and returns the message:

Awaiting data: Send dump profile or enter <ESC> to abort

It is now necessary to supply a HEX file from a previous dump (or abort the entire operation by pressing the <ESC> key). During the course of a load

operation a number of messages may be presented. These messages come in a general form.

Load Status: <message >

where <message > represents a message from the list below:

Load aborted by manager	<ESC > was pressed before or during a load.
Load completed successfully	The load was completed correctly.
No buffer space for load operation	The software was unable to obtain sufficient memory to complete the load.
Invalid Input character	A character other than an 'S' or 'O-9, A-F' was found in the load datastream.
Invalid record type	The system was presented with an invalid record type.
Invalid record length	The received record was longer than that permitted.
Invalid header record	The load data is incompatible with this product, or this version of this product.
Invalid record address	The load data referred to an illegal address space.
Invalid terminator record	The number of records in the supplied file do not match that in the terminator record.

Once the load data has been successfully sent, and the Load Status line shows that this is so, an additional line appears:

Enter <CR> to restart card, or < ESC> to return to Manager Menu:

Entering a **<CR>** will restart the software with the new configuration, whereas an **<ESC >** will return to the Manager Entry Menu with the old configuration intact.

If an error occurred during the load, the following message will appear:

Enter < ESC > to return to the Manager Menu

Entering **<ESC >** will return to the Manager Entry Menu with the old configuration still in force, whilst any other key will be ignored.

3.3.5 To Dump the Configuration

Format: D <CR>

The dump command is used to output the configuration for the S-Gate system to a magnetic storage medium so that it maybe saved and loaded again to restore the system quickly and easily, should problems occur.

The dump command is initialised by entering:

D <CR>

S-Gate clears the screen and outputs the message:

Enable capture device and enter <CR> to dump data, or <ESC> for attention

If <ESC> is entered S-Gate returns the message:

Dump status: Dump operation cancelled

Enter <ESC> to return to Manager Menu

If <CR> is entered the configuration data is sent to the connected device. (To abort the dump, enter <ESC> at any time. However, since the DCX system contains substantial buffering, the dump may not abort immediately.)

Progress messages may be output during and after the dump operation. These messages take the general form:

Dump status: <message >

where <message > represents a message from the list below:

Dump request cancelled (**<ESC>** was pressed prior to starting the dump).

Dump operation incomplete (**<ESC>** was pressed during the dump).

Dump operation completed; disable capture device

When one of the messages is output, it is followed by:

Enter <ESC> to return to Manager Menu

Pressing <ESC> at this stage returns you to the Manager Entry Menu.

3.3.6 To Change the Country Code

Format: **CO <no. of country character set> <CR>**

This command allows selection of the National Character Set of the IBM host. It maybe selected by entering:

CO <CR>

S-Gate will prompt for the digit representing the appropriate character set:

Enter char set index (0-USA, 1-UK, 2-French, 3-German, 4-Swedish, 5-Soft)

If the number input is illegal, the error message:

Invalid National Character Set Entered

will be returned, otherwise the message:

A Warm Start is required before New Country Code will take effect!

will be returned.

On cold starts, the Country Code defaults to I-UK.

3.3.7 To Change the Power On Delay

Format: **DE <no. of sees to delay> <CR>**

This command allows you to enable the power on delay feature and to set the appropriate delay. It maybe selected by entering:

DE <CR>

S-Gate will prompt for the value:

Enter Power Up Delay (0-300) sees

If the number input is illegal, the error message:

Invalid Power Up Delay (0-300) Seconds!

will be returned.

If this parameter is set to non-zero, the Power Up Delay is enabled. If used in conjunction with a particular configuration for the S-Gate port(s), the host (S-Gate) will appear to provide an immediate response to the user on connection. It does this as follows:

The particular configuration required is that Output Neutral state for the S-Gate port(s) should be set to assert DSR. This will indicate to the S-Gate that the user is already connected and so the S-Gate will power up the Logical Unit and obtain the initial screen from the host before the user is actually connected. When the user does connect, DCD signal to S-Gate will be asserted, causing S-Gate to refresh the user screen and the initial Welcome Page will appear almost instantaneously.

Whenever a user disconnects from S-Gate, the port will momentarily lower DSR and then raise it. The Power Up Delay begins when DSR is raised and only after the specified delay will the S-Gate power up the terminal. This delay enables the interval between power down and power up of a Logical Unit to be controlled, as some hosts require a certain amount of delay between the two states.

Further benefits of this feature are that the S-Gate will not assert outbound controls to the terminal until the host BINDs the session. If the port **configuration** is set to test DTR before connection, it will not be possible to connect to S-Gate channels that are handling inactive Logical Units. In addition, the S-Gate will lower outbound controls if the Host de-activates the Logical Unit. If the port **configuration** is set to disconnect on loss of DTR, this will result in the user being disconnected. The configuration of the S-Gate port(s) for use with Power Up delay should be as follows:

UMP DEV:CHAN ZUDIN 3/0/0/1/1/0

3.4 Line Control Menu (LI)

```
S- G A T E 2 0   L I N E   C O N T R O L   M E N U
-----
Link Status  : Offline  Port   : V24           Clock Source : External
Line Mode    : Point   Duplex : Full         Baud Rate   : External
SDLC Station : CI      XID    : 0200 01700000 Coding       : NRZ

Commands    : ONline  Port   Clock   Mode
              COding  SDLC stn Duplex  Xid

Transitions : E N t r y      Line   EMu1   CHenne1  Status
              : SOft_set  P R o f i l e s  Faults  EXIT

Please Enter Menu Selection :
MGR>-----
```

This menu controls the configuration of the SDLC link to the IBM host.

3.4.1 To Set the Link Status

Format: **ON <CR>** or **OFF <CR>**

This command allows the SDLC Link Status to be set either online or offline. Online means that the SDLC link handler is active and will react to activity on the line, and Offline means it is inactive and will not react to any activity on the line.

The Link Status will be changed to its alternative state by entering:

ON <CR> when link is offline:

OFF <CR> when link is online

Note that ON is illegal when link is already online and OFF is illegal when link is already offline.

The effect of the offline-to-online change is that the link handler is made active. The effect of the online-to-offline change is that all users of the S-Gate will be logged off their current host sessions. Since this can take a little while, S-Gate outputs the message:

System going offline: Please Wait!

If the desired state of any of the emulations has been changed (see Section 3.5.2) and the card has not been warm started as warned, then the **offline-to-online** transition will not be permitted and the message:

Unable to go Online, Emulation inconsistencies, Warm Start Required!

will be output.

On cold starts, the link status defaults to **Offline**.

3.4.2 To **Select the Port Interface**

Format: **PO <CR>**

This command allows you to select which of the two interface ports will be used by the SDLC link: either V.24 or V.11/V.35.

The alternative interface is selected by entering:

PO <CR>

On cold starts, the interface defaults to the V.24 port.

3.4.3 To **Select the Clock Source**

Format: **CL <clock source> <CR>**

This command allows selection of the Transmit and Receive clock source. This may be provided internally by S-Gate, externally by an attached modem, or with each end providing the transmit clock only.

The command is invoked by entering:

CL< CR>

S-Gate will prompt with:

Select: TX only, TR (Tx and Rx clocks) or External

TX only means only the transmit clock is supplied by S-Gate.

TR means both transmit and receive clocks are supplied by S-Gate.

External means the clocks are supplied by external modems or modem eliminators.

Should any illegal entry be made, S-Gate will return the message:

Invalid clock source selection, Enter Tx, TR or External Only

On cold starts, the clock source defaults to External.

3.4.4 To Select the Line Mode

Format: M <CR>

This command allows selection of either point-to-point or multidrop line mode. Point means that S-Gate exists on a point-to-point link, and Multi means that S-Gate exists on a **multidrop** link with other **SDLC** devices.

The alternative link mode is selected by entering:

M <CR>

On cold starts, the link mode defaults to Point.

3.4.5 To Select Coding

Format: CO <CR>

This command allows selection of either **NRZ** or **NRZI** bit coding.

The Bit Coding will be changed to its alternative value by entering:

CO <CR>

On cold starts, the bit coding defaults to NRZ.

3.4.6 To Define the SDLC Station Address

Format: SD <new station address> <CR>

This command allows the S-Gate SDLC station address to be defined. It is important when setting this value to avoid conflicts with other station addresses which exist on the same SDLC line.

S-Gate will prompt with:

Enter New Station Address (Range 01-FE)

If anything other than a hexadecimal number in this range is input, the error message:

Invalid Station Address Specified (01-FE Only)

is returned.

On cold starts, the address defaults to Cl.

3.4.7 To Select Duplex

Format: **D <CR>**

This command allows selection of either full duplex or half duplex line operation, which determines the way the system manipulates the link controls. Full duplex keeps RTS constantly asserted. Half duplex asserts RTS as and when needed.

The Duplex parameter is changed to its other value by entering:

D <CR>

On cold starts, the line operation defaults to Full duplex.

3.4.8 To Define the XID

Format: **X <XID> <CR>**

This command allows the SDLC exchange identification (XID) for this S-Gate to be defined. This is the XID that will be transmitted when requested by the attached IBM system. The 8 digits selectable comprise the last 8-digit node identification part of the XID (the first 4 digits are fixed to XID format O, PU-T2 sending node).

By entering:

X <CR>

the command is invoked. S-Gate then prompts for the selectable part of the XID:

Enter New Value for XID (8 digits required)

This should take the form of 8 hexadecimal digits. If a non-hexadecimal value or more than 8 digits are entered then an error message:

Illegal character in XID (O-9, A-F Only 8 digits)

is output.

On cold starts, the XID defaults to 020001700000.

3.4.9 To Set the Speed

(Only relevant when an internal clock mode is selected.)

Format: **SP <new speed> <CR>**

This command allows the baud rate of the internally generated synchronous clock(s) to be defined.

The command is invoked by entering:

SP <CR>

S-Gate then prompts:

Enter speed (1200, 2400,4800,7200,9600, **19.2K**, 56K, 64K)

If an invalid speed is entered the message:

Invalid speed entered! (1200, 2400,4800,7200,9600, **19.2K**, 56K, 64K)

will be returned.

NOTE: 56K and 64K will only be displayed if the 'port interface' is set to V.11/V.35.

If the baud change is attempted with external clock set (see Section 3.4.3), the message:

Baud rate selection may only be made on INTERNAL clock modes

will be returned.

On cold starts the baud rate defaults to External.

3.5 Emulation Control Menu (EM)

The screen formats for printer emulations differ from those for terminal emulations.

When Emulation Type is set to TE3279 the screen format is, for example:

```
S - G A T E 2 0   E M U L A T I O N   C O N T R O L   M E N U
-----
LU Address      : 4           Channel Number : 5
Emulation Type : TE3279     Desired Type : TE3279
Auto Emulation : NO        Power Off event : TERMSELF
Terminal Type  : User defined Local Printer  : NO
                                   Beep or Lock : LOCK

Commands       : LU   Des i red   Beep
                AUto  LOC print  POver  TErmina1

Transitions    : ENtry   Line      EMu1   CHanne1  SStatus
                : SOft_set PRofiles  Faults  EXit

Please Enter Menu Selection :
MGR>
```

When Emulation type is set to **PE3287** the screen format is, for example:

```

S - GA TE 20 EMULATION CONTROL MENU
-----
LU Address      : 4          Channel Number   : 5
Emulation Type  : PE3287    Desired Type   : PE3287
Flow Control    : In Band   Power Off event : LUSTAT 0831
Line Length     : 132       Form Length    : 68
SCS Transparency : Off

Commands       : LU   Oes 1 red   LEngth F0rm
                Flow  POver       Transparent

Transitions    : ENtry   Line      EMu1   CHanne1  SStatus
                SOft_set PRofiles  Faults  EXit

Please Enter Menu Selection :
MGR>
-----

```

When Emulation type is set to **PE3287(S)** the screen format is, for example:

```

S - GATE 20 EMULATION CONTROL MENU
-----
LU Address      : 4          Channel Number   : 5
Emulation Type  : PE3287(S) Desired Type   : PE3287(S)
Flow Control    : In Band   Power Off event : LUSTAT 0831
Line Length     : 132       Form Length    : 66
Target Port     : Not Configured SCS Transparency : Off

Commands       : LU   Desired   LEngth F0rm
                Flow  Power     Transparent  TArget

Transitions    : ENtry   Line      EMu1   CHanne1  SStatus
                SOft_set PRofiles  Faults  EXit   Node

Please Enter Menu Selection :
MGR>
-----

```

The menu controls the emulation parameters of the selected Logical Unit. The Charnel Number is a display-only field showing the DCX channel number of the currently selected LU. The Emulation Type is a display-only field showing the current emulation type of the selected LU, i.e. terminal or printer.

With the exception of choosing a new LU address, all commands are inhibited if the SDLC link is Online (See Section 3.4.1).

3.5.1 To Set the LU Address (all Emulations)

Format: LU <new LU address > <CR>

This command allows selection of the logical unit (LU) address in order to display the emulation control parameters of the selected LU. In addition it also adjusts the current DCX channel to be that which is used by this emulation. This means that a transition to the Channel Control Menu after this command has been issued will display the DCX channel parameters pertinent to this emulation.

The command is invoked by entering:

LU <CR>

S-Gate will prompt:

Enter New LU Address (Range 0-31)

The emulation control information displayed within this menu may vary between different LUS. If the entered value is outside the specified range the error message:

Illegal LU Address (Range 0-31)

will be returned.

On cold starts the LU address defaults to 0.

3.5.2 To Select Desired LU Emulation (all Emulations)

Format: D <new emulation selection> <CR>

This command allows selection of the desired LU emulation type for the currently selected LU. The emulation type does not take effect until a warm start of the S-Gate.

The command is invoked by entering:

D <CR>

S-Gate then prompts for the desired emulation:

Enter Desired Emulation (Terminal Printer Shared printer)

If an invalid option is entered, S-Gate returns the message:

Invalid Emulation Type Selected (Terminal Printer Shared printer only)!

On correct entry S-Gate displays the warning message:

System must be WARM-started to effect <desired type> configuration

On cold starts the desired emulation type defaults to TE3279.

3.5.3 To Select the Power-off Event (all Emulations)

Format: PO <new power off event> <CR>

This command allows selection of the SNA request/status information to be transmitted to the host on power-off of the selected LU. There are three options available: Termself, Lustat 0831, and Rshutd. The selection which should be made depends on the HOST system configuration.

The command is invoked by entering:

PO <CR>

S-Gate then prompts for the new power-off event:

Enter Power-off Event (Lustat Termself Rshutd)

If an invalid option is entered, S-Gate returns the message:

invalid Power-off Event selected (Lustat Termself Rshutd only)

On cold starts the power-off event defaults to Lustat.

3.5.4 To Select Auto Emulation Mode (TE3279 only)

Format: A <CR>

This command allows selection of the Auto-emulation mode for the currently selected LU, which determines the way the emulation is invoked. Auto-emulation means that when the user connects to S-Gate, instead of presenting the User Main Menu, S-Gate puts the user directly into emulation mode with the host. If this is not possible, the user will be presented with the User Main Screen.

The Auto-emulation parameter will toggle between YES and NO by entering:

A <CR>

On cold starts, the Auto-emulation defaults to NO.

3.5.5 To Select Local Print (TE3279 only)

Format: **LO <CR>**

Local print allows the user to direct printouts to a printer connected to the S-Gate on the specified LU Address. This command allows selection of the Local Print facility and of the associated printer LU Address. No means that the user does not have the local print facility, otherwise the local printer LU Address is displayed.

The Local Print facility and LU Address can be selected by entering:

LO <CR>

S-Gate will prompt with:

Enter LU Address for local print (No or 0-31)

where No removes local print capability.

If an illegal address is entered or the target LU is not a PE3287 Emulation the message:

Invalid LU Address or selected emulator is not a printer!

is returned.

On cold starts, the Local Print defaults to No.

3.5.6 To Select a Terminal Profile (TE3279 only)

Format: **T <profile number> <CR>**

This command allows you to select the Terminal Profile type to be fixed for use by the currently selected LU on the next and subsequent connections. The user will not be presented with the Terminal Type Selection Menu, unless you disable the profile selected.

The command is invoked by entering:

T< CR>

The terminal profiles are represented by a number 1-8 (see Section 3.8), and so S-Gate prompts with:

Enter Profile Number (1 -8 or 0 for User Selected)

and reminds you that:

Warning! Only takes effect upon NEXT connection, present unaffected!

If the number input is out of range you will receive the error message:

Invalid Profile Number Selected!

On cold starts the Terminal Type defaults to User Defined, which means that the user will be presented with the Terminal Type Selection Menu when first connecting to S-Gate.

3.5.7 To Select Beep or Lock Function (TE3279 only)

Format: **B <CR>**

This command allows selection of the action to be performed when data is entered into an inappropriate field on a formatted display. The two cases covered by this command are:

- Any data into a protected field.

Non-numeric data into a numeric field.

If the Beep or Lock function is set to LOCK, then the keyboard will lock and require a reset to **re-enable** it. A status line display will show the reason for the lock. If the Beep or Lock function is set to BEEP, the display will simply beep, and the keyboard will remain unlocked. There will be no status update to indicate the cause of the beep.

The Beep or Lock function will toggle between BEEP and LOCK by entering:

B <CR>

On cold starts the Beep or Lock function will default to LOCK (3174 standard).

3.5.8 To Select Flow Control (PE3287 & PE3287(s) only)

Format: **FL <CR>**

This command allows selection of the mechanism to be used for flow control by the PE3287 process. Serial printers may either use XON/XOFF

flow control, or alternatively may use DTR as a means of flow controlling. It is important that S-Gate knows which method is to be used, since the loss of DTR may have different connotations depending upon the flow control method used. The preferred method of printer flow control is by the use of the XON/XOFF method. This is referred to as INBAND flow control, whereas the DTR method is known as OUT OF BAND. Entry of the FL command toggles the flow control method to the alternative state.

On selection of a printer, emulation flow control defaults to INBAND.

3.5.9 To Select Line Length (PE3287 & PE3287(S) only)

Format: LE <Line Length> <CR>

This command allows you to vary the printer's maximum line length.

The line length may be in the range 132-255 characters, and so S-Gate prompts with:

Enter Printer Line Length (132-255 chars or None)

If the number input is out of range you will receive the error message:

Invalid Printer Line Length Selected!

On cold starts the Printer Line Length defaults to 132.

If None is selected, S-Gate will not automatically output a new line after any specific number of characters.

3.5.10 To Select Form Length (PE3287 & PE3287(S) only)

Format: FO <Form Length> <CR>

This command allows you to vary the printer's form length.

The page length may be in the range 10-255 lines, and so S-Gate prompts with:

Enter Printer Page Length (10-255 lines or None)

If the number input is out of range you will receive the error message:

Invalid Printer Page Length Selected!

On cold starts the Printer Page Length defaults to 66.

If None is selected, S-Gate will not automatically output a form feed after any specific number of lines.

3.5.11 To Select SCS Transparency (PE3287 & PE3287(S) only)

Format: TR <CR>

This command instructs S-Gate to pass through, untranslated, all characters within an SCS TRN order. This allows for special ASCII characters (for printer control) to be embedded within the EBCDIC data stream.

On cold starts, the default is OFF.

3.5.12 To Select a Target Point (PE3287(S) only)

Format: TA <node.port or node: SFA> <CR>

This command instructs S-Gate how to address a printer resource which it must share with other print data sources. S-Gate will use this information to construct an inter-nodal **connection** frame.

Node, Port and SFA maybe in the range 0-255 and so S-Gate prompts with:

Enter Target Port (N.P or N:S) where N = Node P = Port S = SFA!

If the values input are out of range you will receive the error message:

Invalid Target Port (N.P or N:S) where N = Node P = Port S = SFA!

To **deconfigure** select 0.0. On cold starts, the default is 0.0 (not **configured**).

3.5.13 Node Control Menu (N) (PE3287(S) only)

When the desired emulation is set for PE3287(S), an additional transition appears. This is 'Node' and displays the following menu.

```
S - G AT E20NODECONTR OL MENU
-----
Idle Timeout : 60      Fail Timeout : 300      Local Node No : 0

Commands      : Idle Fail Number

Transitions   : ENtry   Line   EMu1   CHanne1  SStatus
                : SO ft_set PRof iles  Faults  EXit

Please Enter Menu Selection :
MGR>-----
```

This menu controls the operation of the gate in relation to establishing and clearing connections to a target printer.

To Select Idle Timeout

Format: I <New timeout> <CR>

This parameter specifies (in seconds) the period of time which must elapse without any print data being received, for the connection to the printer to be deemed as no longer required. At the end of this time, the printer connection will be severed. On cold starts, the default is 60 seconds.

To Select the Fail Timeout

Format: F <New timeout> <CR>

This parameter specifies (in seconds) the period to wait before re-try, once an attempt to connect to the printer has failed by reason other than occupancy or congestion. (If the failure reason was an occupied port or a

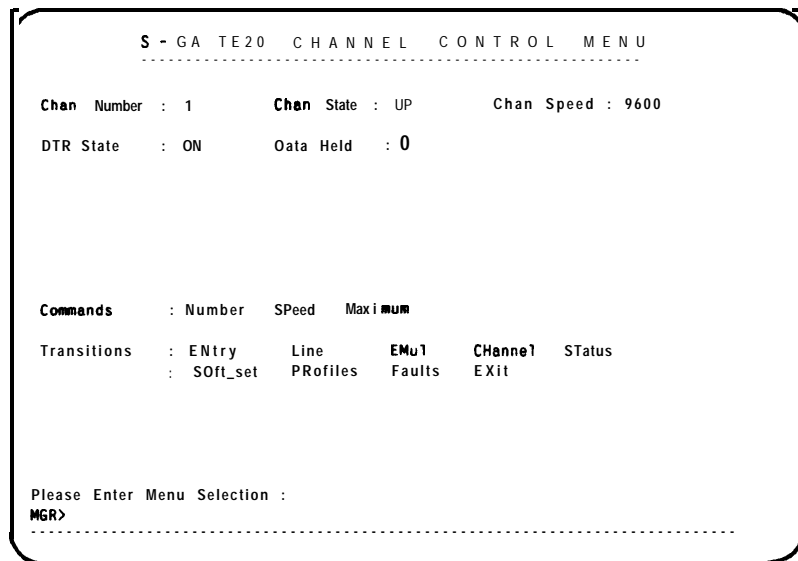
congested network, SGate will automatically re-try in 30 seconds.) On cold starts, the default is 300 seconds.

To Select the Node Number

Format: N <node number> <CR>

Since **SGate** does not accept inter-nodal connection requests, merely generates them, this parameter is only required so that sense can be made of the event log. It should be set to a unique number in the network. On cold starts, the default is 0.

3.6 Channel Control Menu (CH)



This menu controls the DCX channel parameters for each of the 32 DCX channels which are available formulation. The following are display-only fields in the menu:

Channel **State** indicates the ability of the channel to engage in conversation with the user. Channels which are down are either lacking DTR from the external LSC or alternatively may have been XOFF-ed for a long period of time.

DTR State shows the state of the Data Terminal Ready signal from the connected device.

Data Held indicates the number of data blocks currently held on queue for the selected channel whilst the channel is in the DOWN condition (see Channel State above).

3.6.1 To Select a Channel Number

Format: N <new channel number> <CR>

This command selects the number of a channel whose parameters are to be displayed. (Note that this command also adjusts the currently selected

emulation to be that which uses this channel. This means that a transition to the Emulation Control screen after this command has been issued will show the emulation parameters pertinent to this channel.)

The channel number can be changed by entering:

N <CR>

S-Gate prompts for entry with:

Enter New Channel Number (Range 1-32)

If an incorrect input is made at this point the message:

Illegal Channel Number (Range 1-32)

will be returned, otherwise the screen will be refreshed with the information pertaining to the newly selected channel.

On cold starts the channel number defaults to 1 .

3.6.2 To Change the Channel Speed

Format: **SP <new channel number> <CR>**

This command changes the channel speed value for the channel displayed. This is the speed reported to DCX.

The speed can be changed by entering:

SP <CR>

S-Gate prompts for entry with:

Enter Channel Speed (50-9600 ABR&DLL)

If an incorrect input be made at this point the message:

Illegal Channel Speed (50-9600 ABR&DLL)

will be returned, otherwise the screen will be refreshed with the new speed information.

On cold starts the channel speed defaults to 9600.

3.7 Soft Set Configuration Menu (SO)

```
S- G A T E 2 0   S O F T   S E T   C O N F I G U R A T I O N
-----
Set Name      : Soft set
No.           : ASC  EBC  ASC           No.           ASC  EBC  ASC
1.            5b  4a  5b             8.            23  7b  23
2.            21  4f  21             9.            40  7C  40
3.            5d  5a  5d            10.           22  7f  22
4.            24  5b  24            11.           7e  a1  7e
5.            5e  5f  5e            12.           7b  c0  7b
6.            7c  6a  7c            13.           7d  d0  7d
7.            60  79  60            14.           5c  e0  5c

Commands      : Mapping      Name

Transitions   : ENtry      Line      EMu1    CHanne1  SStatus
               : SOft_set  PRofiles  Faults  EXit

Please Enter Menu Selection :
MGR>
```

This menu controls the settings for the soft-configurable character set.

Except for the fourteen listed in this menu, the remaining characters do not change between different national character sets.

The use of this facility allows complete flexibility regarding the National Language variant supported by S-Gate. The first and middle columns show the ASCII → EBCDIC conversion for the ASCII character, and the middle and third column show the EBCDIC → ASCII conversion for the EBCDIC character. The use of this character set is invoked by the Country command (Section 3.3.6).

3.7.1 Mapping

Format: M <mapping number> <direction of change> <new hex value> <CR>

This command allows the actual values of the ASCII → EBCDIC and EBCDIC → ASCII conversions to be changed.

The command is invoked by entering:

```
M <CR>
```

A prompt requesting the mapping to be changed is displayed:

Enter mapping number to change (Range 1-14)

If an incorrect entry is made, the message:

Invalid Mapping Number (1-14 only)

will be returned.

A prompt for the ASCII+ EBCDIC or EBCDIC → ASCII direction is shown thus:

Enter Direction of Change (Ascii -> ebcdic, EbcDic -> ascii)

At this point a selection of:

A <CR>

for ASCII → EBCDIC, or

E <CR>

for EBCDIC → ASCII should be made.

Now that S-Gate has located the code to be changed, it prompts:

Enter New Hex Value for translation (Range 0-FF)

If a value is entered which is not in the requested range, the message:

Invalid Character value (0-FF only)

is returned.

3.7.2 To Change the Name

Format: N <new label> <CR>

This command allows the name of the configurable soft set to be changed.

The command is invoked by entering:

N <CR>

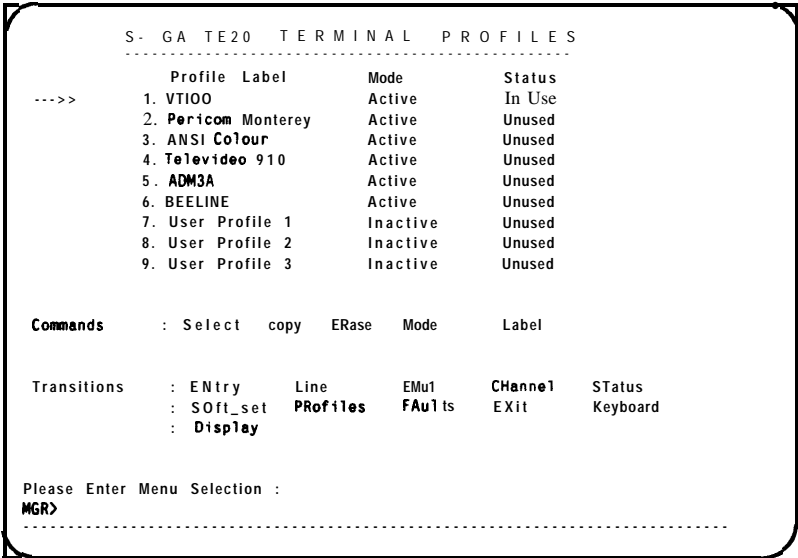
S-Gate prompts for the new title:

Enter new character set name (truncated to 20 chars)

If < CR> is entered the name becomes blank.

On cold starts the Name defaults to Soft Set.

3.8 Terminal Profile Menu (PR)



This menu can be used to display and control any of the terminal profiles, and it also allows you to configure the three definable User Profiles.

This menu displays top level information about each of the six fixed and three configurable profiles. The variable fields of this menu are:

--->>

An arrow pointing to the currently selected profile. Only the selected profile may be modified by other commands on the menu and either of the submenus Display and Keyboard. The selected profile is changed by using the Select command.

Profile Label

This is the name or title of the profile as it appears on the Terminal Type Selection menu when first connecting to S-Gate. The name of the selected profile can be changed by using the Label command.

Mode

This displays the current mode of a profile. A profile may be active or inactive. Active indicates that it has been enabled and will appear on the Terminal Type Selection menu, Inactive means it has not been

enabled and will not appear on the Terminal Type Selection menu. An Inactive profile can be edited; an Active profile cannot. The mode of a profile is changed by the Mode command.

Status

This displays the current usage status of the profile.

This menu is the top level of a set of menus. It provides a set of commands to change a profile status. Sets of sub-menus accessed by the transitions Keyboard and Display allow a selected User Profile's keyboard or display profiles to be edited. They are described in Sections 3.8.6 and 3.8.7.

3.8.1 To Select a Profile

Format: S <profile number> <CR>
or: <profile number> <CR>

This command is used to select the profile to be viewed and/or edited. It results in the pointer --- >> being moved to point to the profile number selected.

The command can be invoked by entering:

S <CR>

which then prompts for the profile number:

Enter Profile Number (1-8)

A short form of this command is also available: simply entering the profile number will select the desired profile.

3.8.2 To Copy a Profile

Format: C <profile number> <CR>

This command allows you to copy the contents of a specified fixed or configurable profile into the selected configurable one. Once copied, the new configurable profile contents can be tailored to meet a given terminal's special needs.

With the selector pointing at the configurable profile to be copied to (6, 7 or 8), the command is invoked by entering:

C <CR>

If the selected profile is fixed, S-Gate returns the message:

Selected Profile is Not User Configurable

S-Gate will also check that the selected profile is inactive, and if active will return the message:

Function not permitted whilst profile is active!

Otherwise S-Gate will prompt with:

Enter Profile Number to Copy (from 1 -9)

If an invalid number is entered, the message:

Invalid profile number selected (1-9) only

will be returned. However, if a valid number is entered, the profile will be copied and you may alter it if required. S-Gate will indicate successful copy with:

Profile Copied!

3.8.3 To Erase a Profile

Format: **E <profile number> <CR>**

Issuing this command erases the currently selected configurable profile, The profile must be inactive for it to be erased.

The command is invoked by entering:

E <CR>

If the selected profile is fixed, S-Gate will return the message:

Selected Profile is not user configurable

or if is active, will respond:

Function not permitted whilst profile is active

Otherwise S-Gate will prompt:

Are you Sure (Yes or No)?

Enter **Y<CR>** or **N<CR>** as desired. If **Y** is entered the profile is erased and the following message is displayed:

Profile Erased!

3.8.4 To Change a Profile's Mode

Format: M <CR>

Issuing this command toggles the mode of the currently selected profile to either active or inactive. The primary function of this is to prevent a user from selecting a profile which is not yet ready for use, i.e. inactive. It also prevents the editing of profiles which are currently in use by a terminal.

If this command is entered to disable a profile which is in use, then you will be given the option of logging off all users of the profile:

Profile is in use, Force Users off (Yes or No)?

You can abort the mode change by entering:

N <CR>

or log off the users of that profile by entering:

Y <CR>

If the selected profile is being used by the supervisor's terminal, the following error message will be returned:

Not allowed to disable the profile in use by the supervisor

3.8.5 To Change a Profile's Label

Format: L <new name of selected profile> <CR>

This command allows you to change the name of a selected configurable profile. The label may be up to 16 characters in length. The new label will be displayed on the Terminal Type Selection menu when the profile is enabled.

The command is invoked on the selected profile (6,7 or 8) by entering:

L <CR>

The following prompt will be returned:

Enter New Profile Label (16 chars max)

If the selected profile is fixed, you will get the error message:

Selected profile is not user-configurable

The label will be truncated if it exceeds 16 characters.

3.8.6 User Profile: Keyboard

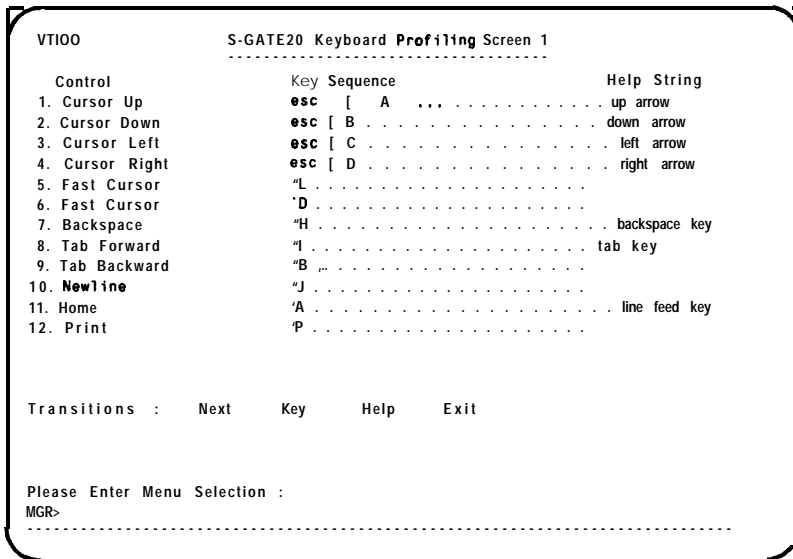
This facility allows you to specify a set of keyboard sequences for the selected User Profile (6, 7 or 8).

There are seven screens containing the key sequences. They contain Key and Help commands which enable the key sequences to be changed.

The first screen is obtained by entering **K<CR>** to specify keyboard sequences.

The screens are illustrated and described in Section 3.8.6.1. The commands are described in Sections 3.8.6.2 to 3.8.6.4.

3.8.6.1 The Keyboard Profiling Screens



VT100		S-GATE20 Keyboard Profiling Screen 2	
Control	Key Sequences	Help String	
1. Delete Character	del	delete key	
2. Erase End of Field	"x		
3. Erase End of Input	ESC X		
4. Clear Screen	"z		
5. Insert	"N		
6. Reset	"R		
7. Cancel Sequence	'c		
6. Enter	rtn	return key	
9. Attention	esc a t		
10. System Request	esc s r		
11. Status Line Mode	esc 1		
12. Exit Emulation	esc esc esc		

Transitions : Next Key Help EXit

Please Enter Menu Selection :
MGR>

VT100		S-GATE20 Keyboard Profiling Screen 3	
Control	Key Sequence	Help String	
1. Field Mark	"F		
2. Duplicate	"U		
3. Refresh	"v		
4. Numeric Override	'o		
5. Numeric Override Lock	esc n 1		
6. All Caps	esc m		
7. Null End	"E		

Transitions : Next Key Help EX t

Please Enter Menu Selection :
MGR>

```

VTIOO          S-GATE20 Keyboard Profiling Screen 4
-----
Control      Key Sequence      Help String
1. Colour    . . . . .! . . . . .      unsupported
2. Top of screen  esc t . . . . .
3. Bottom of screen  esc b . . . . .
4. Tilde Character  . . . . .
5. Immediate Logout  esc esc 1 . . . . .

Transitions : Next Key Help EXit

Please Enter Menu Selection :
HELP>
-----

```

```

VTIOO          S-GATE20 Keyboard Profiling Screen 5
-----
Control      Key Sequence      Help String
1. pf1       esc 1 rtn . . . . .
2. pf2       esc 2 rtn . . . . .
3. pf3       esc 3 rtn . . . . .
4. pf4       esc 4 rtn . . . . .
5. pf5       esc 5 rtn . . . . .
6. pf6       esc 6 rtn . . . . .
7. pf7       esc 7 rtn . . . . .
8. pf8       esc 8 rtn . . . . .
9. pf9       esc 9 rtn . . . . .
10. pf10     esc 1 0 . . . . .
11. pf11     esc 1 1 . . . . .
12. pf12     esc 1 2 . . . . .

Transitions : Next Key Help EXit

Please Enter Menu Selection :
HELP>
-----

```

```

VTIOO                S-GATE20 Keyboard Profiling Screen 6
-----
Control              Key Sequence              Help String
1. pf13              esc 1 3 .....
2. pf14             esc 1 4 .....
3. pf15              esc 1 5 .....
4. pf16              esc 1 6 .....
5. pf17              esc 1 7 .....
6. pf18             esc 1 8 .....
7. pf19             esc 1 9 .....
8. pf20              esc 2 0 .....
9. pf21              esc 2 1 .....
10. pf22             esc 2 2 .....
11. pf23             esc 2 3 .....
12. pf24             esc 2 4 .....

Transitions : Next Key Help EXit

Please Enter Menu Selection :
HELP>
-----

```

```

VTIOO                S-GATE20 Keyboard Profiling Screen 7
-----
Control              Key Sequences              Help String
1. PA1               esc O P ..... PF1 key
2. PA2               esc O Q ..... PF2key
3. PA3               esc O R ..... PF3 key

Transitions : Next Key Help EXit

Please Enter Menu Selection :
HELP>
-----

```

Each screen displays a grouping of key sequences which are described by three fields:

Control

This field describes the function that the key sequences will invoke. This is usually a function available by a single keystroke on an IBM 327x terminal, but for which there is no dedicated key on most ASCII **async** terminals. Each control is described in Appendix A.

Key Sequence

The data in this field is the character sequence to be entered to effect the function described by the Control field. Each sequence may be up to a maximum of 8 characters in length. No null characters are allowed in this sequence. The dots simply mark unused character spaces.

Help String

The help string is usually used to describe the legend on the keycap of the key providing the function.

3.8.6.2 To Move to Another Screen

It is possible to move between screens either by using the Next command,

N <RET>

to move to the next screen (screen 7 wraps to screen 1), or by entering the number of the desired screen:

<number of required screen>

to go directly to it.

3.8.6.3 To Specify Key Sequences

Format: K <option number> <new key sequence> <CR>

This command allows you to select one of the listed Controls on the current screen and alter its key sequence.

To adjust the value of a key sequence enter:

K <CR>

S-Gate will prompt with:

Enter Item Number

This is the number associated with the function listed on the screen (e.g. 7 for Backspace on Screen 1).

If the number entered is not on the current keyboard profile menu, S-Gate will display the error message:

Item Selected is Invalid

After you enter a valid number, S-Gate prompts with:

Enter the replacement sequence

You must now enter the replacement key sequence.

As most of these sequences may involve the entry of non-printing characters, there is a special way of identifying and entering them. Certain commonly-used characters are identified by three-character mnemonics. These are:

space	Spc
escape	esc
return	rtn
delete	del

All other non-printing characters are entered by prefixing them with the carat (^) symbol. Thus ^A translates to 1 (control-A) and ^Z translates to 26 (control-Z).

(The carat key (^) may itself be used as part of a key sequence. To do this you must place whitespace around it. Thus the two sequences esc ^a and esc · a are different. The first contains two characters, escape and control a, whereas the second is three characters long, escape, carat and the character a.)

DC1 and DC3 are filtered from the input.

It must be remembered that no key sequence maybe a subset of another.

Entering <CR> will erase the sequence.

The entered sequence may produce a number of error messages:

Invalid control character in entered sequence!

The sequence contained a special control sequence, e.g ^S (Xoff).

Sequence contained cancel character!

The sequence contained whatever the cancel character is, which stops the execution of the current command.

'A' - 'Z', 'a' - 'z' and 'O' to '9' not allowed as 1st char in key sequence!

Self explanatory.

Sequence is not unique!

The sequence is contained within other set key sequences.

Cancel character appears in other key sequences

When changing the cancel character, the new character appears elsewhere.

Cancel must be a single character!

The cancel sequence is more than one character long. It must be a single character.

If no error message is output, the sequence will be updated and the sequence refreshed on the screen. If the entered sequence is greater than 8 characters, it is displayed on the menu but a warning message is output:

Warning: Sequence was too long and has been truncated!

3.8.6.4 To Change the Help String

Format: H <item number> <new help text> <CR>

This command allows you to change the help information for the selected key sequence on the current screen. Each help string may be up to 13 characters in length.

The help string may be changed by entering:

H <CR>

The item prompt will be presented:

Enter Item Number

This is the number associated with the function whose help text is to be changed.

If an invalid item is selected the message:

Item Selected is Invalid

will be displayed.

S-Gate prompts for the help text:

Enter Help Text (Maximum 13 characters)

If the input string is longer than this, the following warning will be given:

Warning: Help string was too long

3.8.7 User Profile: Display

There are ten screens of display functions. They are illustrated and described in Section 3.8.7.1. The commands are described in Sections 3.8.7.2 and 3.8.7.3.

The first screen is obtained by entering `D <CR>` to specify display sequences.

Each screen displays a grouping of display commands which are described by two fields:

Display function

This is the function which the command will effect when it is sent to the terminal.

Command sequence

The sequence of characters which when received by the terminal will evoke its corresponding display function.

3.8.7.1 The Display Profiling Screens

Display Profiling Screen 1 contains the sequences to perform the basic cursor movement and clearing functions.

```
User Profile 2      S-GATE20 Display Profiling Screen 1
-----
Cursor functions          Command sequence
1. Cursor Left           .....
2. Cursor Right          .....
3. Cursor Up             .....
4. Cursor Down           .....
5. Direct Cursor Motion  .....

Clearing functions
6. Clear to end of display .....
7. Clear to end of line  .....
6. Clear screen          .....
9. Clear to beginning of line .....

Transitions : Next Change Exit

Please Enter Menu Selection :
HELP>
```

Certain terminals do not provide a 'Clear to end of display', 'Clear to end of line' or 'Clear to beginning of line' facility. (It is permissible to omit these in any profile.)

Direct Cursor Motion

The method by which to describe this sequence is similar to that used in the UNIX termcap descriptions. Though strange to read at first, it is a concise and flexible way to define this most complicated command sequence. A typical sequence (ANSI) might be described as follows:

- esc the escape character
- [the opensquare bracket
- %i address range from 1.. (not zero)
- %d column address in ASCII form
- ,

%d row address in ASCII
H capital H

This uses a mixture of the constant portions of the command sequence (which are to be output) with a set of variables, all prefixed with the percent sign (%).

The % terms and their meanings are:

- %i** Row and column addresses are offset by one, i.e. they range from 1..24 instead of 0..23
- %o d** ASCII version of an address. This means that if the address is 20 then what is output would be the two characters 2 and 0.
- %2d, %3d** Used if leading zeros are required on the %d type of address. The number specifies how many zeros. For example: an address of 7 when output in %3d form would result in 007 being sent to the display.
- %.** The address is output in its binary form. Thus, if the address were 7, the ASCII BEL (-G) character would be sent to the display.
- % + ?** This outputs the address in binary with an offset of?. For example, if the address is 20, and the offset is 32 (ASCII space), then a 5 (ASCII for 53) will be sent to the terminal.
- %o r** This means that the column address should be output before the row address. The default order is row followed by column.
- %o 00** A percent sign is to be output.

Some examples:

Profile Sequence	Address	What will be sent
esc [%i %d ; %d H	col = 0, row = 0	esc [1 ; 1 H
	col = 10, row = 5	esc [6 ; 11 H
esc = %o r %o + spc %o +	col = 0, row = 0	esc = ^@ spc ^@
	col = 10, row = 5	esc = "j spc 'e
esc %% a % + spc % + spc	col = 0, row = 0	esc % a spc spc
	col = 10, row = 5	esc % a % *

Display Profiling Screen 2 shows the parameters pertinent for **3278** Models 0 and 1 working.

```
User Profile 2      S-GATE20 Display Profiling Screen 2
-----
3278 Model 0 12 x 40 Mode      Sequence/Value

1. Number of lines on screen      24
2. Number of columns in a line    40
3. Position of Status Line        13

3278 Model 1 24 x 40 Mode      Sequence/Value
4. Number of lines on screen      24
5. Number of columns in a line    40
6. Position of Status Line        24

7. 40 column mode                  esc [ ? 5 1 . . . . .

Transitions : Next Change Exit

Please Enter Menu Selection :
MGR>
```

Assuming that the terminal is capable of switching to a 40 column display, then this sequence for effecting this change should be entered into field 7, the 40 column mode field. Since it is unlikely that a terminal can also switch the number of rows, no alternative control has been provided for this. In the line and column variables must now be entered the values for line and column which will result after the 40 column mode sequence has been sent. Note that it is not necessary for the terminal to have a 40 column capability for S-Gate to emulate a model O or I terminal. S-Gate will just use a part of an 80 column screen for the emulation.

Important. If the terminal is to connect to several hosts, each of which may expect a different terminal capability, then these 40, 80 & 132 column modes must be set appropriately. Almost, if not all, terminals have an 80 column mode, but not all have either a 40 or 132 column capability. If a mode exists for, say, 132 column mode but not 40 column (e.g. VT100), then the 40 column mode must be set the same as the 80 column mode for the terminal. The reason for this is that if the user connects to a 132 column application and then switches to a 40 column one, it is better to switch the terminal to 80

column mode and emulate using that, than to use a tiny part of a 132 column display.

Therefore the rule is this:

If 132 column mode switching sequence is defined, then also define a 40 and 80 column sequence, even if they are identical.

Position of status line

This may be any line between 0 and the number of lines, or SPECIAL if a special status line is supported (see profile display 8). It is usual to put the status line at the bottom of the screen.

Display Profiling Screen 3 provides the same facilities for 3278 Models 2 and 3 working.

```
User Profile 2      S-GATE20 Display Profiling Screen 3
-----
3278 Model 2 24 x 80 Mode      Sequence/Value
1. Number of lines on screen    24
2. Number of columns in a line  80
3. Position of Status Line      24

3278 Model 3 32 x 80 Mode      Sequence/Value
4. Number of lines on screen    24
5. Number of columns in a line  80
6. Position of Status Line      24

7. 40 column mode               esc [ ? 3 1 .....

Transitions : Next Change Exit

Please Enter Menu Selection :
MGR>
```

Not that in this case for Model 3 (which is 32 lines by 80 columns), the conceptual screen cannot fit on the physical one. Therefore the 24x80 physical display must be regarded as a window onto the virtual display. Control of the position of the window is achieved in two ways. One is by S-Gate itself intelligently displaying the top or bottom half of the conceptual screen in the window. The other is by manual use of the 'Top of Screen' and 'Bottom of Screen' keys (see Keyboard Profiling Screen 4).

Display Profiling Screen 4 provides the same facilities for 3278 Models 4 and 5 working.

```

User Profile 2      S-GATE20 Display Profiling Screen 4
-----
3278 Model 4 43 x 80 Mode      Sequence/Value
1. Number of lines on screen      24
2. Number of columns in a line    80
3. Position of Status Line        24

3278 Model 5 27 x 132 Mode     Sequence/Value
4. Number of lines on screen      24
5. Number of columns in a line    132
6. Position of Status Line        24

   80 column mode (info only)     esc [ ? 3 1 . . . . .
7. 132 column mode                esc [ ? 3 h . . . . .

Transitions : Next Change Exit

Please Enter Menu Selection :
MGR>

```

If the terminal to be configured has no 132 column capability, then the 132 column mode field must be left blank, so that S-Gate will reject Model 5 binds. In this circumstance, the host may well try to bind with a reduced size, and a functional session may be established. If the host interrogates S-Gate to determine its capability with the READPARTITION QUERY structured field, then S-Gate will correctly report its legal screen sizes.

Display Profiling Screen 5 shows editing and general function sequences .

User Profile 2		S-GATE20 Display Profiling Screen 5	
Display function		Sequence/Value	
1. Enter ins mode		
2. End insert mode		
3. Insert Single character		
4. Delete Single character		
5. Exit string		
6. Sound bell		
7. Remove danger of scrolling		
8. Return to normal mode		
9. Automatic margins?		No	
10. Backspace wraps?		No	
11. Initial modem number		2	
12. Visual attribute behaviour		0	

Transitions : Next Change Exit

Please Enter Menu Selection :
MGR>

Enter ins mode puts the terminal in a mode where it automatically shifts text along the input line. This means that S-Gate does not have to do this. If this facility is not available or does not function in a satisfactory way, then leave this field blank and allow S-Gate to perform the function itself.

End insert mode ends the automatic insertion of text.

Insert/delete character allows the insertion/deletion of a character by the terminal itself (if available).

The **Exit string** is sent to the terminal only when the user logs off S-Gate.

The **Sound bell** sequence causes the bell to be sounded at the user's terminal.

The **Remove danger of scrolling** sequence should be entered (if available) to disallow the scrolling of the screen when a character is written to the bottom right-hand character position, even if Automatic margins is defined (see below).

Automatic margins means that the terminal will automatically advance the cursor to the next line when writing a character to the right-most position on a line. Note that if automatic margins is off, then S-Gate assumes that scrolling of the screen (see above) is impossible.

Backspace wraps means that a backspace from the first column of a line will cause the cursor to move the last column of the next lineup. If a terminal has this capability, then this flag may be set to Yes.

Initial model number may be 0 to 5 and represents the 3278 model type that the TE3279 will adopt on entry. It is recommended that this be left at 2, allowing the host system to adjust it as necessary.

Visual attribute behaviour is a complicated parameter. When setting up a profile for a new terminal, first compare that terminal with the fixed profiles and try one that seems closest. This code mostly affects working with inverse video or other attributes which vary greatly in the way they work on various brands and models of terminals.

Code	Meaning/Effects
-------------	------------------------

0	Terminal does not support a 'standout' mode.
---	--

1	Permanent setting of an area into standout mode. Sending the Standout On sequence places an attribute into the display (much like the 3270 attributes work), and the place where the Standout Off sequence is issued marks the end of the field. Characters placed into the field will display in the standout mode. The attributes created also normally occupy a place in the display.
---	--

Like code 1, but the field must stop at the end of a line.

ANSI 3.64 types fall into this category. This is 'time' working as opposed to space working like the previous code types. Once the Standout On command is sent, subsequent characters are displayed in the selected video rendition, irrespective of cursor location or other sequences, until a new attribute-setting command is issued. The sending of the Standout On and Off sequences do not normally occupy a space in the display.

Same as code 3 except that screen clearing operations (such as 'erase-to-end-of-line') give blanks in the current visual

attribute, while on type 3 terminals default mode blanks are displayed.

- 5 Similar to code 3 terminals, but any cursor movement resets to normal video attributes.
- 6 Like code 2, but a single attribute sequence shifts between normal and highlighted mode.

Note that any terminal which requires a screen position to support and display visual attributes cannot support extended character attributes, and will display erroneous presentation if connected to an LU which is configured for such a capability.

Display Profiling Screen 6 shows the controls necessary for extended (non-colour) attribute handling.

```
User Profile 2      S-GATE20 Display Profiling Screen 6
-----
Attribute Control          Sequence/Value
1. Begin Blink Mode      .....
2. End Blink Mode        .....
3. Begin reverse video    .....
4. End reverse video     .....
5. Begin underscore      .....
6. End underscore        .....
7. Begin standout mode   .....
8. End standout mode     .....
9. Attributes Occupy Position?  No
10. Safe to move in standout?  Yes

Transitions : Next Change Exit

Please Enter Menu Selection :
MGR>
-----
```

Options 1 to 6 are needed for the extended attributes feature. If a terminal does not have a unique sequence for ending each attribute type (and most don't), then leave the End attributes fields blank, and put the common reset attributes sequence into the End Standout Mode field(s).

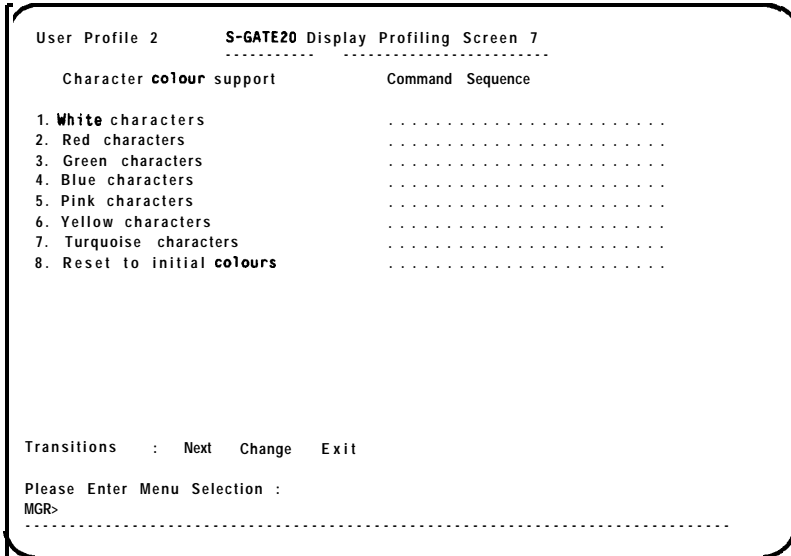
Standout mode means only that the text which follows is highlighted in some way.

End standout mode reverts to displaying characters in the normal presentation.

Attributes occupy position is normally set to be Yes for only a few terminal types. These terminals may be used only for non-extended attribute applications.

Safe to move in standout means that cursor movement operations do not cause the video attribute to return to normal.

Display Profiling Screen 7 shows the controls for colour.



These sequences are used to alter the colour of characters subsequently sent to the display. If a terminal has colour capability, then enter the appropriate control sequences here. It may be necessary, if the terminal cannot display a particular colour, to substitute an alternative (e.g CYAN for PINK). But if any colour control is entered it is wisest to enter a sequence for all the colours even if compromises have to be struck.

Display Profiling Screen 8 shows the controls for special status line handling.

```

User Profile 2      S-GATE20 Display Profiling Screen 8
-----
Status line support      Sequence/Value

1. Special status line?      NO .....
2. Special Line Load Seq      .....0.....
3. Special Line End Load Seq .....!.....
4. Display Special Status Line .....
5. Undisplay Special Status Line .....!.....
6. Encoding for Special Status      Not Coded

7. Clear OK on Norm 25th Line?      Yes
6. Min Width of Status Line      60

Transitions : Next Change Exit

Please Enter Menu Selection :
MGR>
-----

```

Special status line implies that the terminal has a special status line which is 'off the display'. Note that this mode can also be used for terminals which have the unfortunate characteristic of having 25 lines, but scrolling the screen when a character is written in the last position of the 24th line (see Pericom profile).

The **Special Line Load Sequence** is the sequence which loads the special status line if this is available. This is the sequence which pre-pends the data. Note that an extra 8 characters have been allowed for this sequence.

The **Special Line End Load Sequence** is the sequence which restores the terminal to normal on-screen working.

Display/Undisplay Special Status line: These sequences are used if the terminal requires a status line switch ON/OFF control. Enter the sequences for the display and undisplay of the special line.

Encoding for Special Status has four types:

- Not Coded
- TVI 970 format
- Upper case hex
- Lower case hex

and depends on the terminal being configured.

Clear OK on 25th line infers that a status line maybe cleared using normal clearing methods. If this is not set to YES, then S-Gate will write spaces in the status line to clear it. If a short clear is available then it should be used, since less **async** output results.

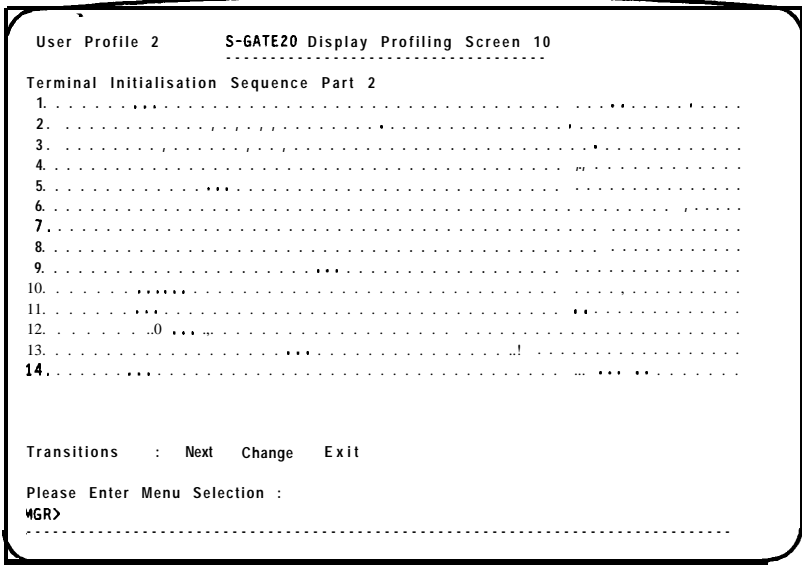
Minimum Width of Status Line is always set to the number of columns, unless using a special status line which is narrower.

Display Profiling Screens 9 & 10 display the terminal initialisation sequences. These are used for setting up the terminal from start-up.

```
User Profile 2          S-GATE20 Display Profiling Screen 9
-----
Terminal Initialisation Sequence Part 1
1. ....
2. ....
3. ....
4. ....
5. ....
6. ....
7. ....
8. ....
9. ....
10. ....
11. ....
12. ....
13. ....
14. ....

Transitions      :   Next   Change   Exit

Please Enter Menu Selection :
MGR>
```



If you wish the initialisation sequence to be used to soft-download function keystings, the initialisation sequences may become very large, and so they are broken up into 2x14 parts. The parts can be edited separately; however editing a line so that at the conclusion the line is not full, will cause the parts following it to be lost. Since this procedure is prone to error, a template has been provided in Appendix D to enable these long strings to be entered correctly. Photocopies should be made of this template and be filled in prior to starting the initialisation sequences entry.

3.8.7.2 To Move to Another Screen

It is possible to move between screens either by using the Next command:

N <CR>

to go to the next screen (screen 10 loops back to screen 1), or by entering the number of the desired screen:

<Display Screen Number> <CR>

to go directly to it.

3.8.7.3 To Change Display Commands

Format: C <option numbers> <new command sequence> <CR>

This command allows you to modify Display Command sequences. The length of the new sequence depends on its function. There are 8,16 and 255 character sequences supported by S-Gate. Command sequences should not require embedded null characters, and none are allowed. Entering <CR> will erase a sequence. The same mnemonics are used as for Keyboard Profiling, viz:

space	Spc
escape	esc
return	rtn
delete	del

3.9 Fault Control Menu (F)

If S-Gate detects some serious malfunction from which it believes that recovery is impossible, it will record important information concerning the nature of the problem in a special area of non-volatile memory, and automatically warm restart the software. This menu permits interrogation of this stored data and also allows it to be cleared. It is possible from this menu to manually re-start the software using a cold start or warm start.

```
S - G A T E 2 0 F A U L T C O N T R O L S C R E E N
-----

Fault Occurrences : 0

Fault Numbers      1st   2nd   3rd   4th
Fault Codes (dec) : 00000 00000 00000 00000

Commands :      Display  Clear  REboot

Transitions :   ENtry   Line   EMu1   CHannel  Status
                SOft_set PRofiles Faults  EXit

Please Enter Menu Selection :
MGR>
-----
```

3.9.1 To Display Stack

Format: **D** <fault number> <CR>

This command displays the stored fault data for a selected fault number by entering:

D <CR>

S-Gate will prompt:

Enter Fault Number to display associated dump

Enter the appropriate fault number (1-4), otherwise the error message:

Fault Number Invalid

will be output. If there is no fault stored for a valid fault number entered, then the same error message will result.

Record the screen display (preferably **electronically**) so that it may be used by engineering personnel for analysis.

3.9.2 To Clear Dump

Format: C <CR>

This command causes the clearing of all stored fault statistics.

3.9.3 To Reboot

Format: R <CR>

This command causes the system to be re-booted.

Since this is potentially 'dangerous', S-Gate will ask you to confirm what is required:

***** Warning ! *** System Re-Boot requested, Are you sure (Yes/No)?**

If you enter:

N <CR>

the command is abandoned. If you enter:

Y <CR>

S-Gate will prompt:

Warm or Cold Start?

Anything other than W (warm) or C (cold start) entered here will produce the error message:

Illegal Re-start Selection (Warm or Cold Only)

S-Gate performs a cold start if you enter:

C <CR>

The system will warm start if you enter:

W <CR>

If switch 1 is in the closed (coldstart) position, the warning:

Warm starting: Switch 1 in closed position (Enter to continue)

will appear. This is to show that a power-off/on of the S-Gate cardframe, or reset via Switch 8 (or the two Reset pins) behind the card ejector, will result in a cold start. If this is as desired, then the message may safely be ignored. If not, change Switch 1 (see Section 2.1.2).

The warm start will be activated on **<CR>**.

3.10 System Status Menu (ST)

The System Status Menu displays the status of each S-Gate channel. The screen status is automatically updated every 30 seconds. For example:

```

S-GATE20 SYSTEM STATUS MENU

TYPE      MODE  PC  CFG  AEM
01  ADM3A  user  --  off  off
02  VTIOO  emul  10  on   on
03  -----  init  --  off  off
04  -----
05  -----
06  -----
07  -----
08  -----
09  -----
10  printer prnt  --  ---  ---
11  -----
12  -----
13  -----
14  -----
15  -----
16  -----

17  -----
18  -----
19  -----
20  -----
21  -----
22  -----
23  -----
24  -----
25  -----
26  -----
27  -----
28  -----
29  -----
30  -----
31  -----
32  -----

COMMANDS : Refresh Exit
Please enter selection:
STAT>

```

The TYPE column displays the type of terminal in use on each channel. The word printer is displayed for printer channels.

The MODE column displays the current status of each channel. These can be:

- Terminal or printer is off
- init User has been prompted for terminal type
- user User is at the user screen
- emul User is connected to the host computer
- help User is on help screens
- prnt Printer is online
- xoff Channel is in XOFF state
- llb Channel is in local loopback
- rlb Channel is in remote loopback
- val Printer channel pending validation response
- Supv Channel is in use by the supervisor.

The PC (Printer Channel) column shows which local printers are associated with the terminal channels.

The CFG column displays on if the supervisor has configured a terminal type for this channel, or off if the supervisor has not configured a terminal type.

The AEM column shows the Autoemulation status, on or off, for each channel for which a terminal has been configured.

3.10.1 To Refresh the Display

Format: R< CR>

This command will cause a refresh of all the fields on the status display.

3.10.2 To Exit to the Main Manager Menu

Format: E <CR>

4.1 Introduction

S-Gate20 permits suitable non-IBM terminals to emulate IBM terminals and hence communicate with an IBM computer. Each user must ensure that the terminal being used is supported by the S-Gate20 configuration. Contact your network supervisor to ensure this and to ascertain your connection procedure.

Once you are connected to S-Gate20 you can perform three functions:

- Gain Help for keyboard sequences. Very few keyboards are the same as IBM's, therefore multi-key sequences are used to simulate those keys not normally found on `async` terminals. If these are forgotten, help is available.
- Commence an Emulation session.
- Logoff from S-Gate20. This usually results in disconnection from S-Gate20 in a DCX 860/870 environment. Connection remains in DCX 840 implementations.

4.1.1 Conventions Used in this Chapter

The following conventions are used in this chapter:

- . S-Gate20 is abbreviated to S-Gate.
- **This non-serif typefont** is used to represent actual S-Gate output or user entries that will appear on the screen.
- . Upper case characters in diamond brackets represent a entry, e.g. `<CR>` represents the `RETURN` key.
- . Lower case characters in diamond brackets request a non-literal entry, e.g. `<help screen number >` means enter the number of the help screen that you want.

4.1.2 Using Key Sequences

Key sequences for a particular function can differ between different types of terminals. To get the correct key sequence for a particular function on your terminal, refer to the Help screens after connecting to S-Gate. The Help screens adjust automatically to show the correct key sequences for the terminal you are using.

Appendix A describes the key sequences for each function you can perform with S-Gate. These special key sequences apply only when you are connected to the host computer and are in emulation mode. When you are at an S-Gate screen, use the normal keyboard functions for your terminal. If the key sequence begins with the CONTROL character, hold the CONTROL key down while pressing the related character.

If the sequence begins with the ESCAPE key, press each key separately in the order given.

Do not follow a key sequence with a RETURN key, unless it is part of the sequence.

The case of characters in the sequence is significant. Therefore enter the characters in either upper or lower case as described in the Help screen.

If you make an error part way through a sequence and wish to abort, use the cancel sequence to cancel your input, and start again.

4.2 User Facilities

4.2.1 Resetting a Locked Keyboard

To reset a locked keyboard, use the Reset sequence (Help screen 2).

There are many reasons why S-Gate may lock the keyboard (e.g. an attempt to enter data into a protected field). A status line message will be displayed to indicate this.

If the keyboard seems to be locked for some reason, and there is no status line display to indicate why, it is possible that you inadvertently typed **CONTROL-S**. This might cause the DCX to cease data transmission to the terminal. Type **CONTROL-Q** to see if this unlocks the terminal. If it doesn't, see your network supervisor.

4.2.2 Printing the Screen

The Print sequence prints the contents of the screen to the printer assigned to your terminal. The Print sequence locks the keyboard for some time. If the printer is available during that time, S-Gate copies the screen to the printer and unlocks the keyboard.

If the printer is occupied by the host computer or another user, the keyboard remains locked and a **PRINT FAILED** message appears in the status line. Reset the keyboard using the Reset sequence (Help screen 2) and wait until the printer is free.

4.2.3 The Status Line

The IBM 327x terminal uses a special line to display status information. Since most asynchronous terminals display only 24 lines, the status line is normally displayed on line 24. In order to do this, it must temporarily destroy the existing contents of this line. To enable the user to have some control over this a status line control sequence is provided.

When you enter a session, you can also choose whether or how to display the status line. Use the Status Line control key sequence to select another option. The options available are:

Status Line permanently ON (default for special status line terminals).

Status Line dynamically displayed when something significant happens, and suppressed when nothing to show, in which case user data is placed in line 24 (default for normal 24-line screens).

There is no display to show which option is currently selected, but this will be obvious by the behaviour of the status line.

4.2.4 Status Line Messages

The 327x terminal uses graphic characters, numbers and statements to provide status information. Since asynchronous terminals vary widely in their graphics capabilities, S-Gate uses messages and numeric error codes to provide status information. These are described in Appendix B.

4.3 Starting an S-Gate20 Session

On successful connection to S-Gate, one or more of the following screens may be displayed in sequence:

Terminal Type Selection

User Main Screen

IBM Host Logon Banner.

If your S-Gate has not been configured for you, the first thing you will see will be the Terminal Type Selection screen (Section 4.4.). If you do not see this screen, your supervisor may have set up the Terminal Type on your behalf, and you will see the User Main Screen (Section 4.5). If you do not see this screen, your channel may have been set up for Auto Emulation, and you will see the IBM host's logon banner. In this case, proceed in the usual manner.

4.4 Terminal Type Selection Menu

The following screen is an example of what you may see; it may differ depending on your system.

```
          Portions of this software are protected under
          COPYRIGHT (c) 1984, 1985 of Systems Strategies Inc. All rights reserved

Enter terminal type (1 - 5) :
1. VT100
2. Pericom Monterey
3. ANSI Colour
4. Teletideo 910
5. ADM3A
6. BEELINE
>
```

This screen asks for the type of terminal you are using. If you have any doubts concerning what it is, contact your network supervisor.

Enter the digit appropriate to your type of terminal, and press <CR>.

If the screen contains meaningless characters after you enter the terminal type, you might have selected the wrong type. Enter L to log off and then reconnect to S-Gate.

Please note that the BEELINE profile is not suitable for normal 3270 emulation purposes. It requires a special host application to communicate with, and will notecho any data keyed to it once it has entered the emulation phase. It provides a very basic EBCDIC-ASCII translation facility including the EBCDIC CR LF (OD 25) to ASCII CR LF (OD 0A) characters, and will not correctly present any formatted screens. ASCII CR LF character pairs will be converted to the FIELD MARK character: n the host data stream.

```
S-GATE20 Channel : 2
LU Address      : 1
System status   : Offline

S - G A T E 2 0
Advanced SNA Gateway

COMMANDS : Help  EMulation  Logoff

Please Enter Menu Selection :
USER>.....
```

This screen enables you to obtain help regarding the emulation session, or enter the emulation session itself. If already in emulation session, e.g. if set for AutoEmulation, you can display the help screens without ending the session by entering the End Emulation sequence, **<ESC ><ESC><ESC>**, to suspend the session and go to the User Main Screen from which the help screens are available. Then you can enter emulation mode again to return to the session. Entering **<CR>** will put you into emulation directly.

To activate a command, you need only input the character(s) shown on the screen in capital letters.

4.5.1 To Obtain Help

Format: H **<CR>**

The help screens relate to the current terminal emulation and show the key sequences you have to enter in order to perform certain functions.

These functions are described in Appendix A.

4.5.2 To Enter Emulation

Format: EM <CR>
or: <CR>

This command will enter you into emulation mode, connecting you to your host IBM computer and presenting you with the IBM logon banner screen similar to that of a IBM 327x terminal.

If this command is entered when S-Gate is offline, the following message is output:

Unable to enter emulation! System offline!

4.5.3 To Obtain the Next Screen

Format: N <CR>
or: <help screen number> <CR>

You can move within the screens by using the Next command or **by** just entering the number of the help screen required.

4.5.4 To Exit to User Main Screen

Format: EX <CR>

The Exit command returns you to the User Main Screen.

4.5.5 To Logoff

Format: L <CR>

When this command is entered the terminal is 'logged off from S-Gate. If a session was active at the time of logoff, it is terminated. You can also logoff by switching off the terminal while it is showing the User Main Screen.

5 Diagnostic and Restart Procedures

These procedures should only be undertaken by persons qualified in such procedures on the DCX being used. For DCX860, see the warning on page 0-2.

5.1 Power-Up Problems

When the DCX is powered up, the S-Gate diagnostic tests are run automatically. All LEDs should light for a time, then all except the green LED should go out. If any LEDs remain flashing, note which are flashing and reset the card with a warm start. If the LEDs continue to flash, try and warm start again. If the flashing still continues after a number of warm starts, power off the DCX and turn it back on. If the LEDs still flash, reset the card with a cold start. If this does not resolve the problem, contact your supplier.

5.1.1 Software Traps

The S-Gate LEDs report software traps on power-up. When a trap occurs, the \top indicator lights to indicate occurrence of a trap, and other LEDs begin flashing. S-Gate then attempts to reset itself by performing a warm start of the software. The next entry to the Manager will result in the fault control screen being displayed. Record the stack display and clear the faults. If the S-Gate continues to trap, note the trap code, power off the DCX and turn it back on. If traps persist, reset the card with a cold start. If this does not clear the problem, note any trap codes and contact your supplier.

5.2 Restarting the S-Gate

5.2.1 To Perform a Warm Start

A warm start resets the card, retaining all configuration information. It is usually done to implement a change in emulation type for a given channel, but may also be used to clear a software trap.

First, raise the card release lever at the top of the card and check that Switch 1 (see Section 2.1.2) is in the OPEN position (to the right with the card upright).

Reset the card by closing and re-opening Switch **8**.

Upon reset, the configuration data remain intact. After a warm start, S-Gate comes up either Online or Offline, depending on the Line Control menu status configuration when it was reset. If S-Gate comes up Offline, use the Status command at the Line Control Menu to put it Online.

5.2.2 To Perform a Cold Start

A cold start resets the card and erases all configuration information, returning it to the default values. First, raise the card release lever at the top of the card and place Switch 1 (see Section 2.1.2) in the CLOSED position (to the left with the card upright).

Reset the card by closing and re-opening Switch **8**.

Upon reset, all configuration data is erased, the S-Gate portion of the DCX map is verified and S-Gate comes up in an Offline state. The manager password is reset as the RETURN key, and all parameters return to their default values.

Return Switch 1 to the closed position.

Control	Key Sequence	Help String
1. Cursor Up	esc [A	up arrow
2. Cursor Down	esc [B	down arrow
3. Cursor Left	esc [C	left arrow
4. Cursor Right	esc [D	right arrow
5. Fast Cursor	"L	
6. Fast Cursor	"D	
7. Backspace	"H	backspace key
8. Tab Forward	"I	tab key
9. Tab Backward	"B	
0. Newline	"J	
1. Home	"A	line feed key
2. Print	"P	

Transitions : EXit EMulation Logoff

Please Enter Menu Selection :
ELP>

- Cursor Up Moves cursor one character position upwards. Cursor wraps from top to bottom.
- Cursor Down Moves cursor one character position down. Cursor wraps from bottom to top.
- Cursor Left Moves cursor one character position left. Cursor wraps from left to right and bottom to top.
- Cursor Right Moves cursor one character position right. Cursor wraps from left to right and top to bottom.
- Fast Cursor Right Moves the cursor two character positions to the right. Cursor wraps from right to left and top to bottom.

Fast Cursor Left	Moves the cursor two characters to the left. Cursor wraps from left to right and from bottom to top.
Backspace	Moves the cursor one space to the left. Cursor wraps from left to right and from bottom to top.
TabForward	Moves the cursor forward to the beginning of the next unprotected field.
Tab Backward	Moves the cursor backward to the beginning of the unprotected field, or, if already at that field, to the beginning of the preceding unprotected field.
Newline	Moves the cursor to the first unprotected field on the next line.
Home	Positions the cursor in the first unprotected field on the screen.
Print	Copies the screen to the printer assigned to the terminal.

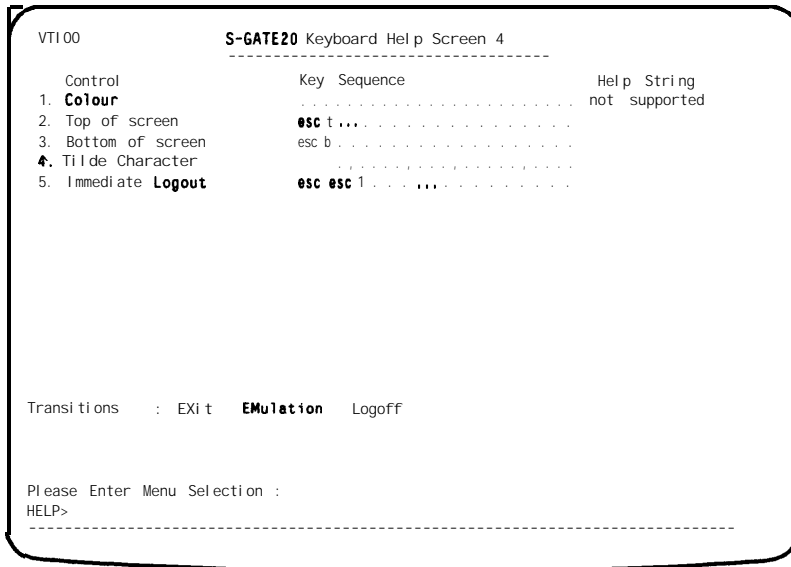
Control	Key Sequences	Help String
1. Delete Character	del	
2. Erase End of Field	"X	
3. Erase End of Input	esc x	
4. Clear Screen	-Z	
5. Insert	"N	
6. Reset	"R	
7. Cancel Sequence	"C	
8. Enter	rtn	return key
9. Attention	esc a t	
10. System Request	esc s r	
11. Status Line Mode	esc 1	
12. Exit Emulation	esc esc esc	

transitions : EXIT EMuLation Logoff

'lease Enter Menu Selection :
HELP>

- Delete Character Deletes the character at the cursor position, and shifts all characters to the right back one position.
- Erase End of Field Clears from the current cursor position to the end of that unprotected field.
- Erase End of Input Clears all unprotected fields on the screen from the current cursor position to the end of the screen.
- Clear Screen Clears the screen and positions the cursor at the upper left-hand corner.
- Insert Places the user in insert mode, so that entered characters will cause all characters to the right to be shifted one place.
- Reset Unlocks a locked terminal keyboard.
- Cancel Sequence Cancels a partially entered sequence.

Enter	Transmits the cursor position and user-added information on the screen to the host application program.
Attention	When receiving data, sends a request to transmit data. The screen is cleared when the sequence is entered.
System Request	Serves as the IBM keyboard System Request key.
Status Line Mode	The status line mode can be in one of three states: Off all the time, On all the time, or On only when something significant to show (default for terminals with no special status line).
Exit Emulation	Temporarily suspends terminal emulation, placing the operator in the User Screen.



Colour

This toggle function allows colour terminals to give a simulated monochrome output.

Top of Screen, and Bottom of Screen

For Mode 13, 4 and 5 emulations, the number of rows which must be provided for may exceed that which are physically capable of being represented on most terminals, and so the screen is divided into a top and bottom. These keyboard sequences allow the user to toggle between them.

Tilde Character

Transmits the tilde symbol. Some terminals give special significance to this character, using it to identify function key depressions (e.g. CIPHER 2605). Giving a multi-key sequence for this character (e.g. `esc ~`) eliminates this confusion.

Immediate Logout

The user is immediately logged off and the session to the host is closed.

```

VT100          S-GATE20 Keyboard Help Screen 5
-----
Control          Key Sequence          Help String
1. pf1           esc 1 rtn . . . . .
2. pf2           esc 2 rtn . . . . .
3. pf3           esc 3 rtn . . . . .
4. pf4           esc 4 rtn . . . . .
5. pf5           esc 5 rtn . . . . .
6. pf6           esc 6 rtn . . . . .
7. pf7           esc 7 rtn . . . . .
8. pf8           esc 8 rtn . . . . .
9. pf9           esc 9 rtn . . . . .
0. pf10          esc 1 0 . . . . .
1. pf11          esc 1 1 . . . . .
2. pf12          esc 1 2 . . . . .

Transitions : Exit Emulation Logoff

Please Enter Menu Selection :
HELP>
-----

```

PF1-PF12

Send ProgramFunction PF1 to PF12. The function performed depends on the application program.

```
VT100          S-GATE20 Keyboard Help Screen 6
-----
Control      Key Sequence      Help String
1. pf13      esc 1 3 .....
2. pf14      esc 1 4 .....
3. pf15      esc 1 5 .....
4. pf16      esc 1 6 .....
5. pf17      esc 1 7 .....
6. pf16      esc 1 6 .....
7. pf19      esc 1 9 .....
8. pf20      esc 2 0 .....
9. pf21      esc 2 1 .....
10. pf22     esc 2 2 .....
11. pf23     esc 2 3 .....
12. pf24     esc 2 4 .....

Transitions  :  EXit  EMuLation  Logoff

Please Enter Menu Selection :
HELP>
-----
```

PF13-PF24

Send ProgramFunction PF13toPF24. The functionperformed depends ontheapplication program.

```
VT100          S-GATE20 Keyboard Help Screen 7
-----
Control          Key Sequences          Help String
1. PA1          esc O P . . . . . PF1 key
2. PA2          esc O Q . . . . . PF2
3. PA3          esc O R . . . . . PF3

Transitions :  EXit  EMulation  Logoff

Please Enter Menu Selection :
HELP>
-----
```

PA1-PA3

SendProgramAccess KeysPAtoPA3. The function performed depends on the application program.

B.2 Error Messages

The error messages numbered 4XX identify SNA errors detected in data from the host. The error messages numbered 5XX identify SDLC errors detected in the communication line to the host.

Errors cause the keyboard to lock. To reset the keyboard, use the Reset sequence. In some instances, an error at one keyboard results in a system-wide message being sent to all connected terminals. In these instances, only the keyboard which errored is locked. Others can be cleared with the refresh screen.

● Ownership Messages

PLU	Terminal is connected to application program.
SSCP	Terminal is connected to the SSCP (SNA).
INACTIVE	Pending ACTLU(SNA)
UNOWNED	Terminal is connected to protocol process (SNA), but not to PLU or SSCP.

. Big X

x	Keyboard is locked out; use the Reset sequence.
---	---

● Clock

TIME	Communication with host is in progress.
------	---

● Reason

P*	Printing is in progress
PF	Printing failed; use the Reset sequence
1--1	Key to erase trailing blanks was pressed in a position with no trailing blanks.
SYSTEM	Keyboard is disabled by host. Wait for host, or use the Reset sequence to restore the keyboard.
-s	Symbol keyed in by operator is not recognised; use the Reset sequence.
LOCKED	Keyboard is locked out; use the Reset sequence.

OP NUM	Operator has attempted to enter non-numeric data in a field which accepts only numeric data; use the Reset sequence, or Numeric Override.
·	
?+	Requested operation is not available; use the Reset sequence.
-f	Illegal function.
<-oP->	User action performed in wrong screen location.
1---1	User entered more data in insert mode than field can hold.

- Program Check Error Codes

An error is detected in data from the host; use the Reset sequence. The code will be meaningful to your system network supervisor.

- Communications Check Error Codes

There is a problem with the communication line to the host; use the Reset sequence. The code will be meaningful to your system network supervisor.

- P The printer is printing screen buffer.
- · Insert mode is activated.
- * A host event has occurred in a session other than the current session.
- NL The numeric lock is on.
- AC The All Caps lock is on. Thus all characters input will be in upper case.

The S-Gate20 card has two 25-way D-type ports, either of which can be used for the line connection.

Port 1 (the lower connector, see Section 2.1.1) is used for X.21, or for V.35 using an external interface adaptor box.

Port 2 (the upper connector, see Section 2.1.1) is used for V.24 communications.

C.1 Port Interface Signals

C.1.1 Port 1, X.21 Interface

The interface signals are listed in Table C-1.

PIN	NAME	DIRECTION	DESCRIPTION
1	0v		Signal Ground
2	0v		Signal Ground
3	V28 CTS1	input	Clear To Send
4	V11CLKA	output	Internal Clock (A)
5	V11 CA	output	X.21 Control (A)
6	V11 TA	output	X.21 Transmit Data (A)
7	0v		Signal Ground
8	V28 DSR1	input	tData Set Ready
9	+ 12V	output	Power Supply
10	VI 1 RXCA	input	Receive Clock (A)
11	V11SA	input	X.21 Clock (A)
12	V11 RA	input	X.21 Receive Data (A)
13	V111A	input	X.21 Indication (A)
14	VI 1RTSB	output	Request To Send (B)
15			Not connected
16	V28 RI1	input	Ring Indicator
17	V11CLKB	output	Internal Clock (B)
18	C11CB	output	X.2 1 Control (B)
19	V11TB	output	X.21 Transmit Data (B)
20	V11 RTSA	output	Request To Send (A)
21	-12V	output	Power Supply
22	V11 RXCB	input	Receive Clock
23	V11IB	input	X.21 Indication (B)
24	V11SB	input	X.21 Clock (B)
25	V11RB	input	X.21 Receive Data (B)

Table C-1 X.21 Interface Pinout

C.1.2 Port 1, V.35 Interface

A **V.35** interface can be provided by connecting a Cray UIA/V.35 Interface Adapter to Port1. Full installation instructions and interface information are given in its Reference Manual X840-306851.

C.1.3 Port 2, V.24 Interface

The interface signals are listed in Table C-2. They conform to CCITT V.24/V.28 and EIA RS-232-C.

PIN NO	CCITT CCT NO	SIGNAL	MNEMONIC
1		Protective Ground	Gnd
2	103	Transmitted Data	TxD
3	104	Received Data	RxD
4	105	Request To Send	RTS
5	106	Clear To Send	CTS
6	107	Data Set Ready	DSR
7	102	Signal Ground	SG
8	109	Data Carrier Detect	DCD
15	114	Transmitter Clock	TxC
17	115	Receiver Clock	RxC
20	108/2	Data Terminal Ready	DTR
24	113	External Transmit Clock	XTXC

Table C-2 V.24 Interface Pinout

C.2 Clocking

There are three ways in which clocking for the SDLC link can be handled. The appropriate clock source must be selected in the Line Control menu, and a suitable cable must be used.

External Clock S-Gate20 expects to be provided with a synchronous clock for both Transmitted and Received Data, from an external source such as modem or modem eliminator, on pins 15 and 17 on V.24.

Internal Clock, Tx & Rx Modes S-Gate20 can provide a clock which is used internally to clock both Received and Transmitted Data, and is made available to external devices via pin 24 of the SDLC interface. The internal clock speed is set by the supervisor to 1200,2400,4800,7200, 9600,19200,56000 or 64000 bps.

Internal Clock, Tx only The synchronous line is driven on the principle that the originator of the data in each direction also provides the clock for it. S-Gate20 provides transmit clock and expects receive clock ('split clock'). The internal clock speed is set by the supervisor to 1200,2400,4800,7200, 9600,5600 or 64000 bps.

C.3 Cables

C.3.1 V.11 Connection

Port 1 S-Gate20 to modem

X840-402711 (Figure C-1)

Port 1 S-Gate20 to IBM

X840-407911 (Figure C-2)

C.3.2 V.35 Connection via Adapter Box

Port 1 S-Gate20 to modem

X84 O-102711 UIA V.35 DTE

Port 1 S-Gate20 to IBM

X84 O-103411 UIA V.35 DCE

C.3.3 V.24 Connection

Port 2 S-Gate20 to modem

X840-400911 (Figure C-3)

Port 2 S-Gate20 to IBM

X840-404411 (Figure C-4)

Port 2 S-Gate20 to IBM (Tx Only)

X840-403911 (Figure C-5)

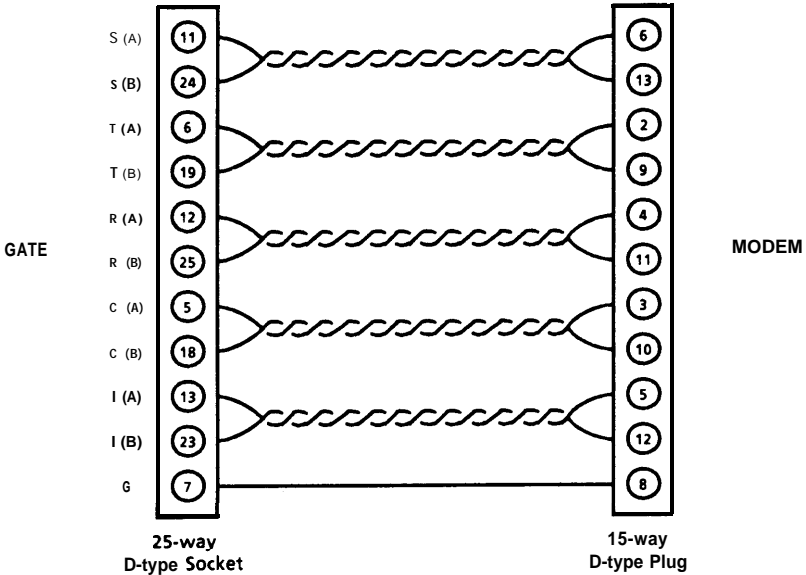


Figure C-1 Cable X840-40271 1

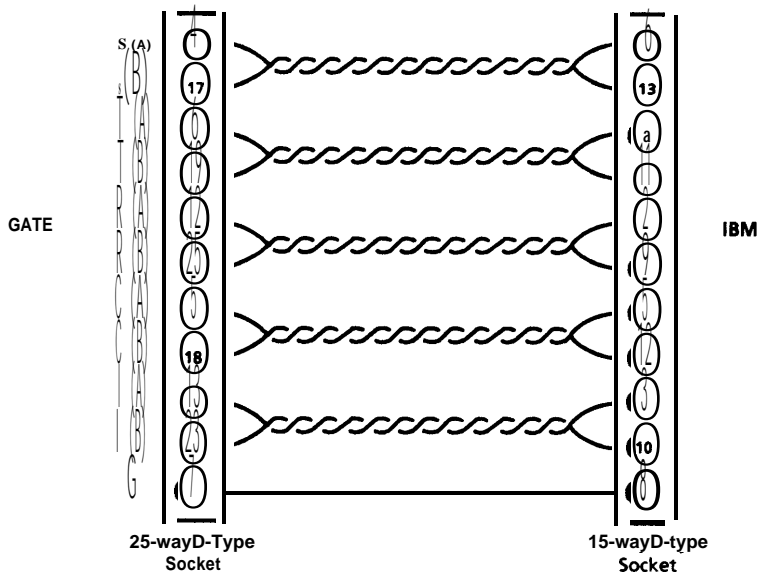


Figure C-2 Cable X840-407911

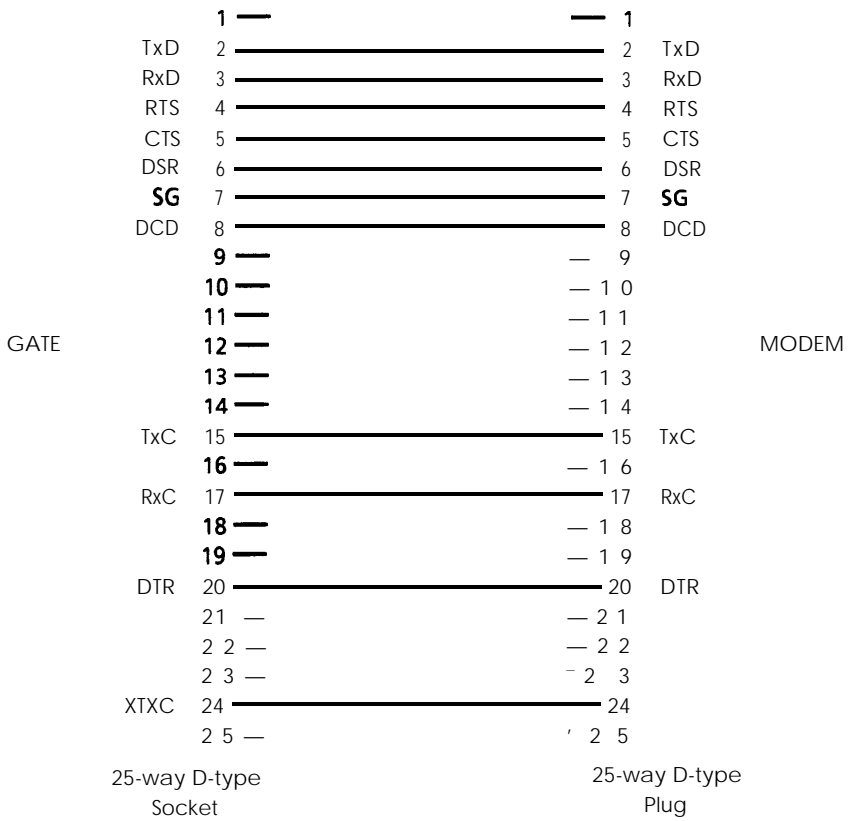


Figure C-3 Cable X840-40091 1

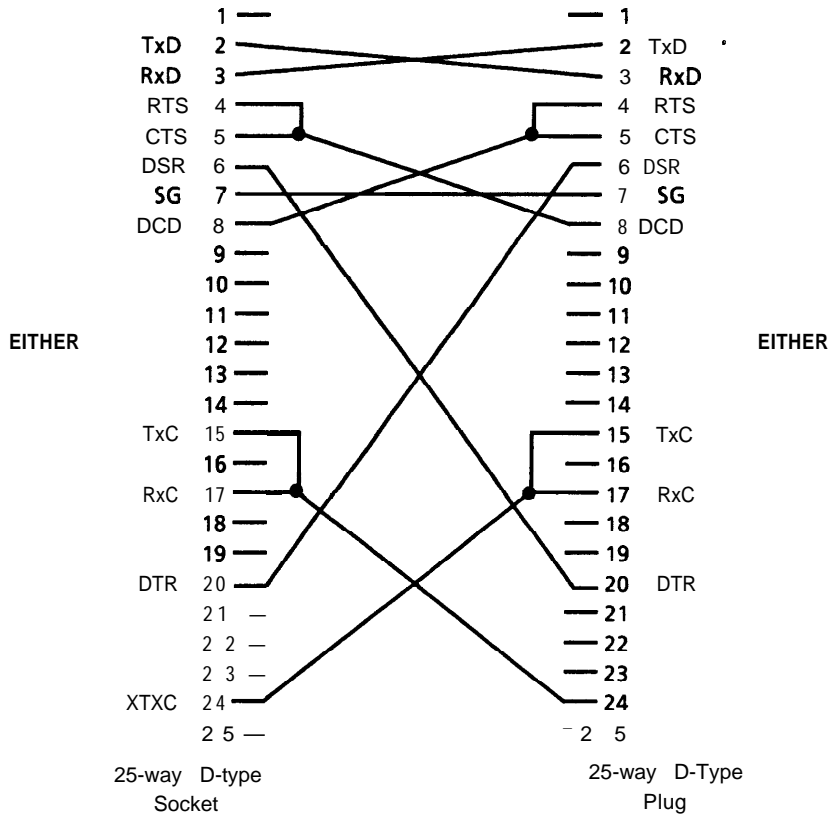
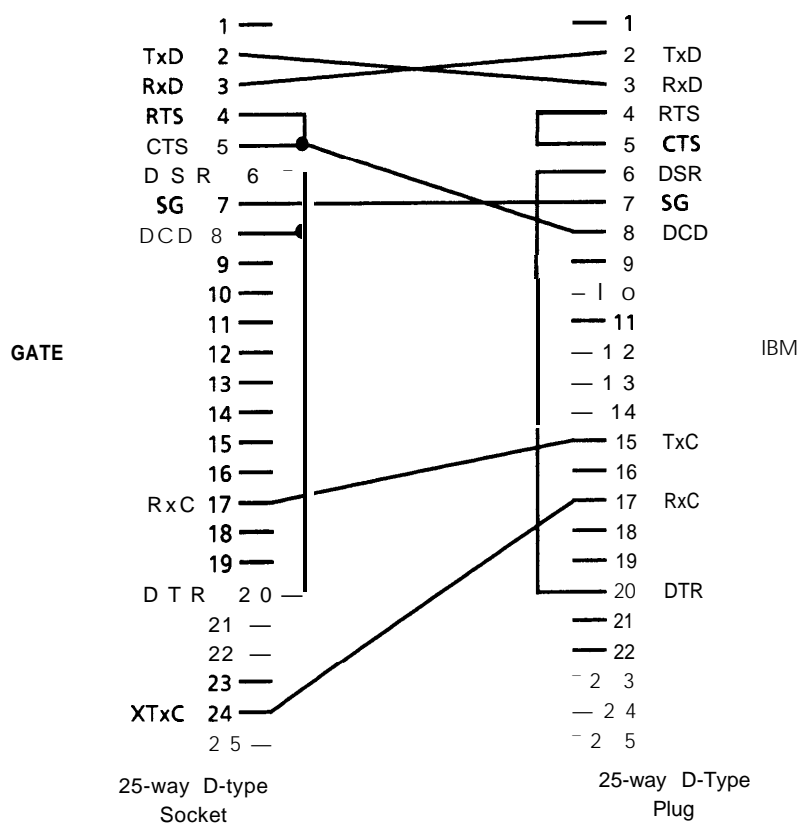


Figure C-4 Cable X840-40441 1



This cable is asymmetrical

Figure C-5 Cable X840-40391 1

Appendix D Initialise String Template

The table overleaf maybe filled in as a record.

Pos Line	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1																			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			

Mnemonics. **space = spc** **escape = esc** **return = rtn** **delete = del**