DSC110 / DSC210

SIGNALLING CONVERTER

USER MANUAL

IMPORTANT INFORMATION

The information in this manual is supplied without warranty as to its accuracy. DataKinetics is not responsible or liable for any loss or damage of whatever kind arising from the use of the converter and its documentation.

WARNINGS

For safety the ground connection should always be made.

The CPU card is fitted with a Lithium Battery that contains toxic substances. This battery is NOT rechargeable.

CAUTION

Danger of explosion if battery is incorrectly replaced. User should not replace battery, the card must be returned to the supplier for rework.

This equipment contains Electrostatic Sensitive Devices. (ESDs) which may be permanently damaged if incorrectly handled. If modules are removed from the chassis they must be handled in accordance with the EN100-015 Part 1 General Requirements.

For warnings in German see Appendix.

APPLICABILITY

This manual is applicable to DSC110 and DSC210 units with software V5.08 and later installed.

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Revision History

ISSUE	DATE	CHANGES
1	14-May-97	Added ANSI ISUP Functionality. Added C7 Routing Functionality. Added C7 Link set change Command. Minor changes to the prerequisites, values, and parameters.
2	26-Aug-97	Digit analysis functionality added to allow route selection depending on called party number. Default routes added to points of origin to simplify configuration. Further hunting algorithms added to allow sharing of load between groups. Allowed inhibiting of C7 links for temporary deactivation. Enforced circular routing for circuit map hunting to avoid user providing inconsistent data. Allows telnet for remote login to MML session.
3	26-Sep-97	Allows timers to be configured for signalling systems. Added NUP signalling system. Allows NI to be changed for a linkset and DPC for a C7 route. New hunt type added to allow test calls to particular circuits.
4	24-Nov-97	Traffic measurements commands for routes and circuit groups added (MSCGP & MSORP). Description of new commands for Remote Data Centre option added. This option supports transfer of Billing Records, Call Failure Records and Periodic Traffic Measurements to be transferred over Ethernet to a Remote Data Centre. Allows the specification of multiple Q931 circuit groups on a single Q931 link.
5	09-Mar-98	Introduces support for calling party number authorisation tables where the calling party number is required to be authorised before the call is allowed to proceed. Allows the default configuration to be selected when restarting system. Allows billing records to be saved to hard disk. Increases the number of calling a called party number prefix digits that can be added. Support for transmission of alarms to remote data added. New Zealand ISUP added. When RTHSP is entered without parameters then hunt sequences for all routes are printed. The TUP signalling system is now supported.
6	22-May-98	Configuration of concurrent ITU and ANSI operation introduced. Allows configuration of multiple OGRs in circuit mapping mode. Partner Maintenance blocking is supported. Inhibiting of single circuits is allowed. T1 Boards can now be configured. New circuit group parameters (L1, OHEC, INT) are added to enhance the configuration of signalling parameters. A new outgoing route parameter (CGMD) added to enhance the configuration of signalling parameters. Outgoing routes and Circuit Group now print 2 pages of data. New command STCGP added to provide status on a per group basis. Configuration to allow the converter to act as a DUAL added.

7	02-Jul-98	Semi-permanent cross connection functionality added using new commands: CNXCI, CNXCE and CNXCP. Monitoring of signalling links added using new MML commands: CNMOI, CNMOE and CNMOP. Preventive Cyclic Retransmission (PCR) method of error correction added on a per-link basis for C7signalling links.
8	18-Dec-98	PCM configuration enhanced by addition of new parameters LC (Line Code) and FF (Frame Format) and the ability to select T1. New Circuit Group configuration parameters U2U, ISMD & IHEC Maximum number of Points of Origin and Outgoing Routes increased to 90. New Outgoing Route parameter NEXT added. RDC operation enhanced to allow individual primary and secondary RDC's to be configured (RDC1, RDC2) for each Continuous Record and Periodic Report. New commands CNRDC, RDCRC, and RDPRC. Improved IP support allowing user configuration of sub-net mask (SUBNET) and default router (GATEWAY). New CGMD modes to avoid requesting a CLI if one is not present in the initial setup message.
9	27-Aug-99	Manual now documents both Revision 1 and Revision 2 hardware and the compact version of the converter – the DSC110. Revision 2 hardware uses a different CPU card and Solid State Memory card and requires different switch settings for the signalling cards. Monitor card now referred to as the Alarm card. New table id parameters LSTAB and ISTAB so that local and user service control can both access multiple tables. Local service control function "calling party number authorisation" is now supported on the point of origin as well as the outgoing route. Added local service control function "calling party number insertion" to allow the user to insert a calling party number taken randomly from a table of calling party numbers. Digit analysis can now analyse up to 16 digits. Clearing cause and CPC mapping tables added. New NUP variant supporting SIM interchange added. Command grouping now arranged in alphabetical order. New command STBOP displays board status.

10	19-May-00	DPNSS signalling system added. Added custom profiles to configure specific indicators for the calling and called party number using the CPCGI, CPCGC, CPCGE, CPCGP, CPCDI, CPCDC, CPCDE, and CPCDP commands. Added the ability for the user to added/change a second calling party number using the CG2PRE, CG2DL parameters. Moved the ability to set the calling number restriction indication from the CGMD to the calling party number profile. Moved the ability to request a calling party number parameter from the CGMD to the new RCG parameter. Moved the ability to set the called number nature of address indicator from the CDMD parameter to the called party number profile. Increased the number of prefix digits supported by CDPRE to 16. Allow User to set a default CPC on a per circuit group basis. Supports the ability to transit continuity indicators using new parameter COT. Allows the ability to upload from the remote data centre a customised set of clearing cause mapping tables. The USC, USM and USTAB parameter have been changed to be ISC, ISM and ISTBL respectively. Added CHG to the outgoing route to control the setting of the charge indication in the backward direction. Added CONV timers T12, T13 and T14 and added TANS to the outgoing route to allow the user to control the time to answer on an outgoing route basis. Added optional password control of the second serial and 2 telnet ports using the new PASSWORD parameter specified on a per system basis. Introduced the LSM parameter on a point of origin and outgoing route basis to allow the user to specify the local service mode. This parameter will be used to specify cli authorisation and insertion instead of using the CGMD parameter. When uploading local service control table a DTYPE of LSC will be used instead of CLIAUTH. Introduced number translation as part of local service control which is activated using the TRANS parameter specified on a per system basis. Added transmission medium requirement mode to allow the user to modify the values of the transmission medium requirement parameter.

11	25-May-00	Added announcements to allow the configuration of WAV format voice announcements using the CNANI, CNANC, CNANE and CNANP. The playing of these announcements is managed by the CNVRI, CNVRE, CNVRP, and STVRP commands. A new CONV timer, T15, is also provided for the management of announcements. Added ENC to circuit group configuration to allow encapsulation of ISUP parameters in Q.931 messages. Japanese TTC ISUP protocol added, including support for 16 bit point codes. Support for the UK Calling Line Identity Blocking Indicator for UK ISUP. The CBI indicator can be manipulated with the CGCB parameter. Added support for DPNSS Call Diversion. Support for 56k operation on access side links. New calling party number mode (CGMD) to add CGPRE prefix to the calling party number if one is received. System software disks and configuration data disks must be placed in the floppy disk drive in a five second window during start-up. This window is indicated by the three red alarm LEDs flashing off for five seconds. Added new HUNT mode to indicate that no hunting will occur.

12	12-Oct-01	Allows the user to allocate b CIC of 0 or above to any device on the system by supporting negative BCICs. Added the ability to specify a default Japan Specific Carrier information code by making user of the CG2PRE parameter. Support for on box calling party number validation added using LSM. Support for the North American ISDN protocol (NI2) as well as T1 on ISDN boards. CNUPI modified to support the ability to perform remote software and configuration update from a remote data centre or locally from floppy disk. CNBUI modified to back up configuration to a remote data center. Software update procedures to provide support for multiple distribution binaries. Enhance routing capabilities so the user is able to route on the calling party number, CPC, called party number nature of address and calling party number nature of address by allowing the configuration of a DAMD on a Point of Origin basis. Added secondary points of origin (SPOR) on points of origin or in digit analysis to allow support for multi stage routing allowing the user to analyse different selection criteria (e.g. CPC, called party number) before selecting the outgoing route. Allow the user to manipulate satellite indicators in initial address messages using the SAT parameter on a per circuit group basis. Allow the user to generate a bearer capability parameter based of a received transmission medium requirement parameter using the TMRM parameter on a circuit group basis. Support new ASTYPE variants Q931-1 and Q931-2 to support partner blocking on the Q931 side so that when hardware blocking occurs on the SS7 side the Q931 signalling link is taken out of service. Allow the user to configure the maximum number (k) of I frames on Q921 by configuring the L2K parameter on a per circuit group basis. Support new COT mode to allow incoming continuity checks.. Configuration added to allow the user configure and generate an ‘early’ address complete message by using the BWM parameter on a per outgoing route basis. Support compatibility CRC4 operation (to allow interworking to non CRC4). New ASTYPEs DPNSS-2 and DPNSS-3 introduced to allow data calls.

CONTENTS

1. OVERVIEW

1.1 General Description

The DSC110 and DSC210 Advanced Signalling Converters provide conversion between network signalling protocols and access signalling protocols. On the network side they support various Signalling System Number 7 (SS7) protocols whilst on the access side they support various DSS1 and DPNSS protocols.

The converter is available in two chassis types, the DSC110 and DSC210. The DSC110 supports up to 2 signalling cards and the DSC210 up to 16, providing a migration path to larger scale systems. The operation and application interface for both units is identical. The term DSC210 is used in the general sense to describe both units.

1.1.1 Signalling Modes

The converter has two basic modes of operation: Signalling Only mode and Voice and Signalling mode.

In Signalling Only mode the converter processes only the signalling channels. The voice channels do not pass through the converter. This mode allows for the maximum density in a single chassis by supporting (in the case of SS7 to ISDN conversion) up to 30 access side signalling links, each channel mapping to a corresponding channel on the SS7 side. In signalling only mode the converter does not perform any circuit selection but instead maps access side circuits to SS7 circuits in a fixed one to one mapping.

In Voice and Signalling mode the voice circuits also pass through the converter. Whilst this mode does not allow for such a high density of signalling links, it does allow the converter full control of the voice circuits. This means that the converter can be used to select an outgoing circuit on a call by call basis. One application of this functionality is to provide a concentration function where many access side circuits are served on a demand basis by fewer SS7 side circuits. The converter supports dynamic routing based on digit analysis of the called party number it also supports retry.

It is possible to mix Signalling Only and Voice and Signalling modes at the same time on the converter.

1.1.2 Connectivity

Signalling (and voice where applicable) can be connected to the converter using balanced or unbalanced 2048kbit/sec (E1) connections in accordance with G.703 or 1544kbit/sec (T1) balanced connections in accordance with G.733. A fully populated converter contains 16 signalling cards each with two E1/T1 ports giving a total of 32 ports.

Each channel on any port can be physically connected within the converter in a non-blocking manner to any channel on any of the 32 ports or any of the internal signalling processors.

1.1.3 User Interface

The DSC210 provides serial port(s) and telnet connections for configuration and management. All ports provide identical functionality and operate using text based MML (Man Machine Language) commands in accordance with CCITT recommendations.

The serial ports allow the user to configure the converter for operation and to carry out subsequent modifications to the configuration. They allow the user to read the current status of the various signalling entities and to view the current active alarms and a history of past alarm events.

The converter has alarm indicators on the front panel and alarm relays for connection to an integrated management system.

1.1.4 Configuration and Program storage

All configuration data is stored in non-volatile memory and may optionally be dumped to floppy disk for backup purposes or to allow a previous configuration to be re-loaded.

All program storage is in non-volatile solid state memory. The operating software can be updated by inserting a new software release in the floppy disk drive. Following a software update the converter will automatically use the saved configuration data so there is no need to re-enter the configuration parameters.

1.2 Functional Summary

1.2.1 SS7 Signalling

The converter supports up to 16 SS7 signalling links in up to 8 signalling linksets. This allows the converter to be connected up to a maximum of 8 other signalling points. When a linkset contains two signalling links the converter supports load sharing and the full changeover and changeback procedures in accordance with ITU-T Q.704.

The converter supports the Message Transfer Part (MTP) in accordance with ITU Recommendations Q.700 .. Q.704 and Q.707 and ANSI operation in accordance with ANSI T1.111.

If required, each signalling link in a linkset can be terminated on a separate signalling card providing additional resilience.

The converter currently supports the following User Part variants:

ETSI ISUP Version 2
Q.767 ISUP
ANSI ISUP
NUP (UK National User Part)
UK ISUP
Australian Interconnect ISUP
New Zealand Interconnect ISUP (2 Variants)
Japanese TTC ISUP
Blue Book TUP
China TUP
SSUTR2 (French TUP)

1.2.2 Access Signalling

On the access side the converter supports up to 30 access side signalling links. Layers 2 and 3 of the access side signalling protocol are implemented on the signalling cards. Access side call control is implemented on the central processor.

Currently the converter supports the following access signalling:

ETSI Euro ISDN (Network Side)
ETSI Euro ISDN (User Side)
North American ISDN (Network Side)
North American ISDN (User Side)
ETSI QSIG
DPNSS

1.2.3 Signalling Conversion

Signalling Conversion takes place on the central processor card. The signalling conversion functionality receives messages from the User Part on the SS7 side and from the ISDN/DPNSS call control module on the access side. It performs the necessary conversion selecting a suitable outgoing route and controlling the voice paths as necessary before sending the signalling messages to either the User Part module or the ISDN/DPNSS call control module.

1.2.4 Configuration Model

The basic unit of configuration is a **circuit group**. All configured circuits (or **devices**) on an access side signalling link are configured into a circuit group. On the SS7 side groups of not more than 32 circuits (or devices) are configured into circuit groups. It is usual (although not essential) for a circuit group to contain all the voice circuits on an E1/T1 port.

When an incoming call arrives at the converter the decision on how to process the call comes from the **Point of Origin** configuration data. Each circuit group is assigned a single point of origin (although a single point of origin may be used by several circuit groups). The point of origin data contains several parameters which allow for the addition or removal of digits to both the calling and called party numbers and also specify either a **Digit Analysis Index** which is used to carry out (dynamic) routing of the call or a **Default outgoing route** when routing is not required (this is always true in signalling only mode).

The digit analysis index is used to select a suitable outgoing route on which the call should be placed. This may be one of several outgoing routes selected on the basis of the dialled digits contained in the called party number.

The outgoing route may have an associated **Next** route. If present the next route provides the ability to route to a different destination if all devices on the first outgoing route are unavailable or an indication has been received from a subsequent exchange indicating a problem. Since a next route is a route in its own right a chain of routes can be formed to find the best route to a destination.

The outgoing route data contains further parameters that allow the called and calling party numbers to be modified and a **Hunt** mode that controls the algorithm used to select an outgoing circuit.

Finally the **hunt sequence** associated with the outgoing route is used to select a **circuit group** for the outgoing call.

In this manner the converter affords considerable flexibility in the way that calls are routed from an incoming circuit to an eventual outgoing circuit allowing for the possibility of alternative routing in the event of network failure or congestion.

1.2.5 Cross Connections

The converter allows the user to set up cross connections (semi-permanent connections) between an incoming timeslot on one PCM port and an outgoing timeslot on any PCM port. These connections can either be simplex or duplex.

1.2.6 Monitoring

The converter allows the user to monitor both Access Side and Network Side signalling links by dropping a copy of the signalling to a spare PCM port. This allows for a protocol analyser to be left connected to one PCM port and gives the user the ability to control remotely which signalling links are monitored. Each monitored signalling link requires two timeslots on the spare PCM port, one to monitor the send direction and the other for the receive direction.

1.2.7 Alarm log

The converter logs any alarm events in an Alarm Log. All alarm events have a ‘fault title’ and are assigned to one of 4 classes, in decreasing order of status:

- Urgent assigned to class 3
- Prompt assigned to class 2
- Minor assigned to class 1
- Disabled assigned to class 0

The operator may change the class of any alarm event under MML command.

Urgent alarms cause the Urgent alarm relay to be activated whilst prompt alarms cause the Prompt relay to be activated. Minor alarms just appear in the alarm log whilst disabled alarms do not even get logged to the alarm log.

The Alarm Log has the capacity for up to 200 entries, each entry detailing the alarm class, fault title, occurrence time, status (active or cleared), and cleared time (if appropriate). If a new fault occurs when the log is full, the oldest entry which is either cleared, of lower class, or equal class is overwritten, in that order of preference.

The operator may request a display of the log at any time and may remove entries that have cleared status.

1.2.8 Remote Data Centres

The converter can optionally be equipped to support the transfer of billing records, call failure records, alarm reports and periodic measurements over Ethernet to a remote location – The Remote Data Centre (RDC).

Multiple RDC's can be configured by specifying an IP address and a user name and password for the converter to use to 'logon' to the RDC.

Data transfer to the RDC uses the File Transfer Protocol (FTP).

Billing records, call failure records and alarm reports are transferred to the RDC in near real time with the provision to back up the billing records to hard disk in the event of Ethernet failure. Measurement reports are made on a configurable periodic basis.

1.2.9 Announcements

The converter can optionally play pre-recorded WAV format sound files without the need for additional equipment. These announcements (ANNC) are loaded onto the converter from a Remote Data Centre.

In order to play announcements the converter requires Voice Resources (VRS). Voice resources can be configured on any signalling cards not used to process signalling. Announcements can then be routed to and played on a per Outgoing Route basis.

2. SPECIFICATION – DSC110

2.1 Electrical

2.1.1 Power supply (DC Version)

Voltage:	46V to 56V DC (nominal 48V)
Power:	50W fully equipped
Current:	4 Amps maximum

2.1.2 Power Supply (AC Version)

Voltage	Selectable: 100V-120V AC (nominal 110V) 200V-240V AC (nominal 220V)
Frequency	50/60Hz
Power	50W (fully equipped)

2.1.3 PCM interface

Data rate:	2048kbit/s
Connector:	75 ohm BNC (unbalanced version) 120 ohm RJ45 (balanced version)
Pulse shape:	CCITT G.703
Framing:	CCITT G.732

2.1.4 Serial Port

Connector:	9-pin D-type male.
Flow control:	XON/XOFF.
Data bits:	7 or 8 user configurable.
Parity:	Odd, Even or None, user configurable.
Stop Bits:	1 or 2, user configurable
Baud rate:	300, 600, 1200, 2400, 4800, 9600 or 19200 bits/s, user configurable.

2.1.5 Alarm Outputs

Type:	Two relays which under normal (non-alarm) conditions are energised. Upon detection of an alarm condition or loss of power the relay changes to the de-energised state.
Designation:	Urgent and Prompt

Contacts:	Single, break before make changeover, voltage free
Contact rating:	60V DC 0.5 Amps
Connector:	15-way D-type socket

2.1.6 Visual Indicators

Power:	Green LED on front panel indicating power on.
Alarms:	3 red LEDs on front panel indicating Signalling, PCM and System alarms.
Disk Drive:	LED in disk drive housing indicating floppy disk access in progress.

2.1.7 Ethernet Interface

Connector:	BNC / RJ45 (autodetect)
Data Rate:	10Mbit/s

2.2 Physical

Height:	87mm
Depth:	430mm
Width:	432mm (at chassis)
Weight:	12kg (fully equipped)

2.3 Signalling Capability

SS7 Side:	4 signalling links and 4 linksets. Maximum of two links in each linkset.
Access Side:	Up to 4 signalling links

2.4 Environmental

Operating temperature:	10 to 45 degrees Celsius
Storage temperature:	-20 to 80 degrees Celsius
Humidity:	20% to 80% non-condensing
Vibration:	1.5G (5Hz to 2kHz)
Note:	Operation of the floppy disk drive is excluded as the floppy disk drive is not required for normal operation.

3. SPECIFICATION – DSC210

3.1 Electrical

3.1.1 Power supply

Voltage:	46V to 56V DC (nominal 48V)
Power:	200W fully equipped
Current:	4 Amps maximum
Fuse type:	8A HRC (located at rear of unit)

3.1.2 PCM interface

Data rate:	2048kbit/s
Connector:	75 ohm BNC (unbalanced version) 120 ohm RJ45 (balanced version)
Pulse shape:	CCITT G.703
Framing:	CCITT G.732

3.1.3 Serial Ports

Connector:	9-pin D-type male.
Flow control:	XON/XOFF.
Data bits:	7 or 8 user configurable.
Parity:	Odd, Even or None, user configurable.
Stop Bits:	1 or 2, user configurable
Baud rate:	300, 600, 1200, 2400, 4800, 9600 or 19200 bits/s, user configurable.

3.1.4 Alarm Outputs

Type:	Two relays which under normal (non-alarm) conditions are energised. Upon detection of an alarm condition or loss of power the relay changes to the de-energised state.
Designation:	Urgent and Prompt
Contacts:	Single, break before make changeover, voltage free
Contact rating:	60V DC 0.5 Amps
Connector:	15-way D-type socket

3.1.5 Visual Indicators

Power:	Green LED on front panel indicating power on.
Alarms:	3 red LEDs on front panel indicating Signalling, PCM and System alarms.
Disk Drive:	LED in disk drive housing indicating floppy disk access in progress.

3.1.6 Ethernet Interface

Connector:	BNC / RJ45 (autodetect)
Data Rate:	10Mbit/s

3.2 Physical

Height:	177mm
Depth:	600mm
Width:	432mm (at chassis)
Weight:	26kg (fully equipped)

3.3 Signalling Capability

SS7 Side	Up to 16 signalling links in 8 linksets. Maximum of two links in each linkset.
Access Side:	Up to 30 signalling links

3.4 Environmental

Operating temperature:	10 to 45 degrees Celsius
Storage temperature:	-20 to 80 degrees Celsius
Humidity:	20% to 80% non-condensing
Vibration:	1.5G (5Hz to 2kHz)
Note:	Operation of the floppy disk drive is excluded as the floppy disk drive is not required for normal operation.

4. TECHNICAL DESCRIPTION

4.1 Mechanical – DSC110

The DSC110 is designed for 19 inch rack mounting and is provided with slides to allow top access for maintenance purposes. No side access is required. All cable connections are at the rear of the equipment and are described in Section 5.

The DSC110 is intended for use with an extending cable carrier that should be attached between the rear of the 19 inch rack and the converter. All cables should then be attached to the carrier that extends and retracts as the converter is moved forward and backwards on its slides.

The chassis contains 6 board positions and cards are positioned as detailed in the following table. The board position numbers are marked along the rear panel of the converter.

BOARD POSITION	CARD
1	Alarm Card
2	Network Card
3	Central Processor Card
4	Solid State Memory Card
5	Signalling Processor CS6
6	Signalling Processor CS6

Table 4.1 DSC110 Physical Card Positions

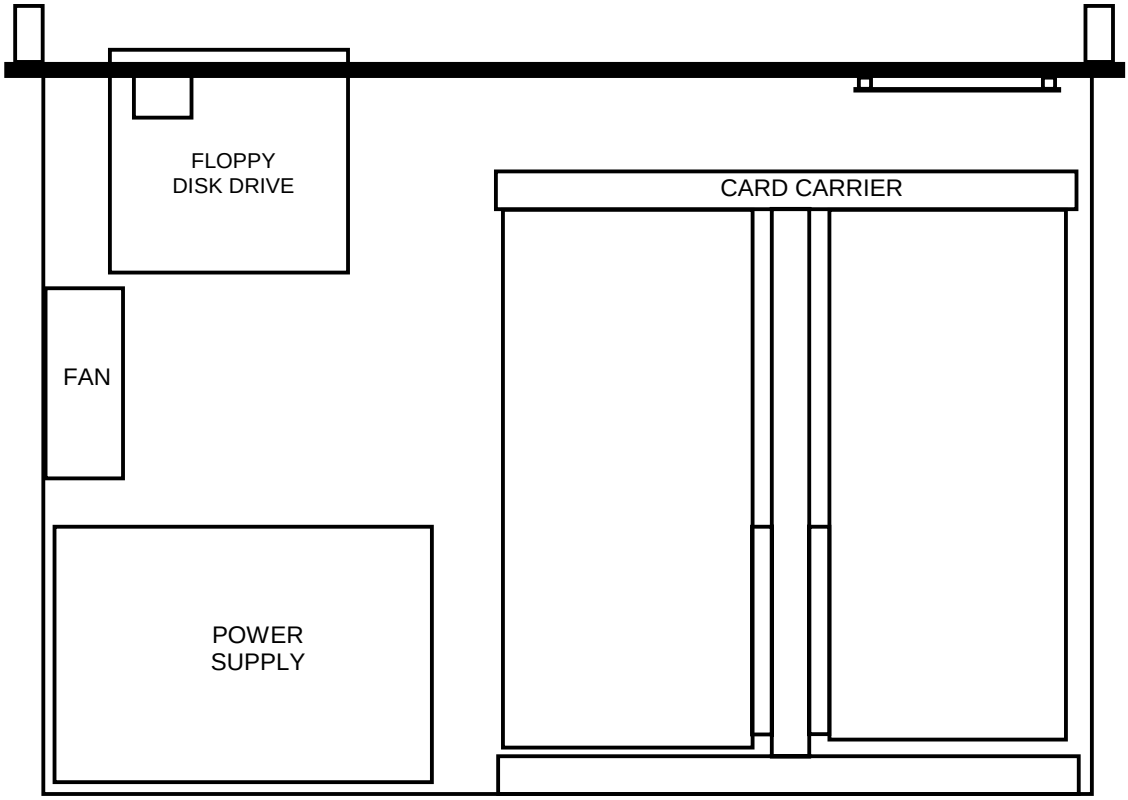

Figure 4.1 - Top view of DSC110 with cover removed

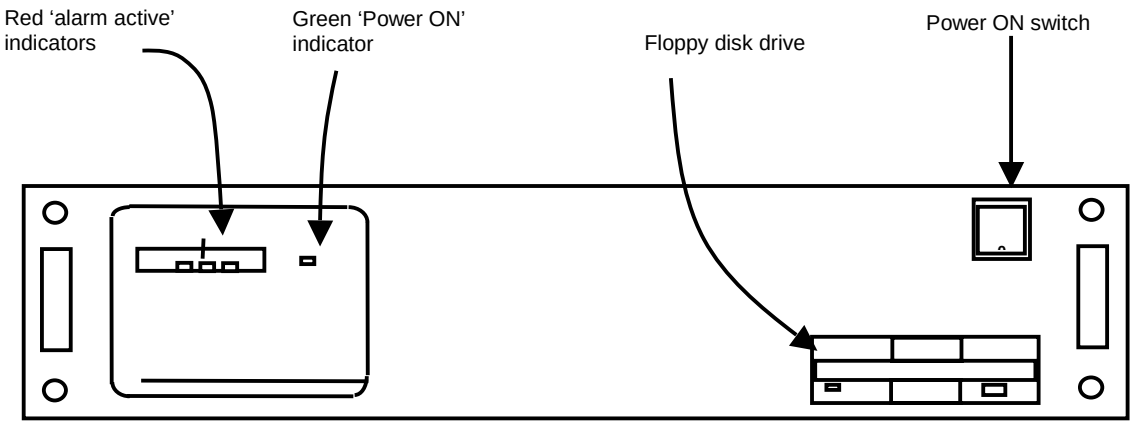

Figure 4.2 DSC110 front panel

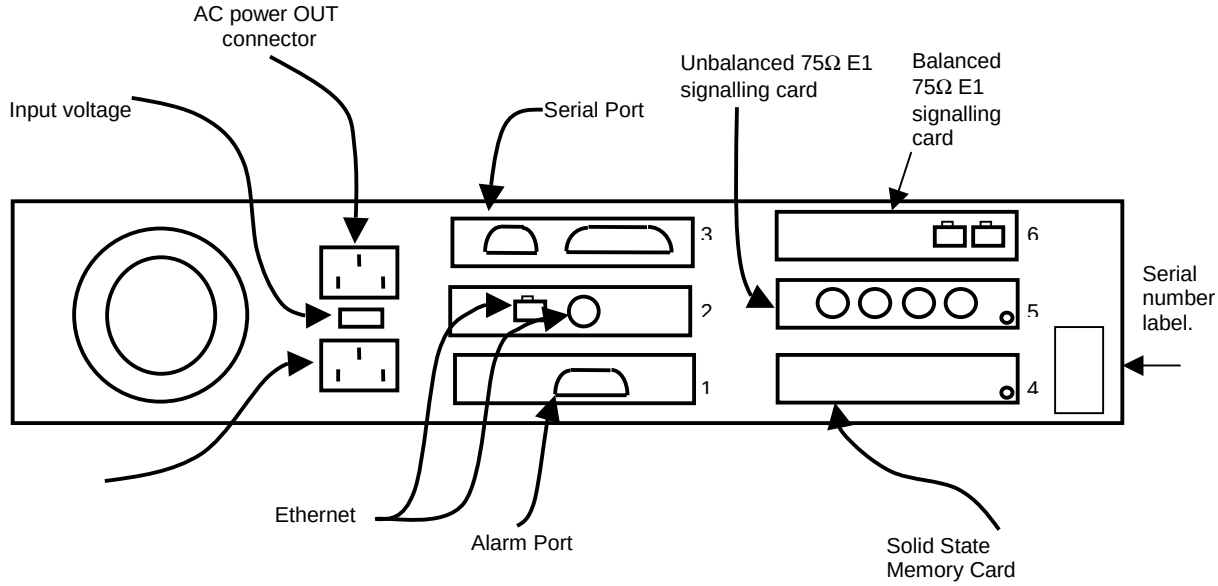

Figure 4.3 DSC110 Rear panel

4.2 Mechanical – DSC210

The DSC210 is designed for 19 inch rack mounting and is provided with slides to allow top access for maintenance purposes. No side access is required. All cable connections are at the rear of the equipment and are described in Section 5.

The DSC210 is intended for use with an extending cable carrier that should be attached between the rear of the 19 inch rack and the converter. All cables should then be attached to the carrier that extends and retracts as the converter is moved forward and backwards on its slides.

The chassis contains 20 board positions and cards are positioned as detailed in the following table. The board position numbers are marked along the front of the board slots and on the rear panel of the converter.

BOARD POSITION	CARD
1	Alarm Card
2	Network Card
3	Central Processor Card
4	Solid State Memory Card
5	Signalling Processor CS6
6	Signalling Processor CS6
7	Signalling Processor CS6
8	Signalling Processor CS6
9	Signalling Processor CS6
10	Signalling Processor CS6
11	Signalling Processor CS6
12	Signalling Processor CS6
13	Signalling Processor CS6
14	Signalling Processor CS6
15	Signalling Processor CS6
16	Signalling Processor CS6
17	Signalling Processor CS6
18	Signalling Processor CS6
19	Signalling Processor CS6
20	Signalling Processor CS6

Table 4.2 DSC210 Internal Layout

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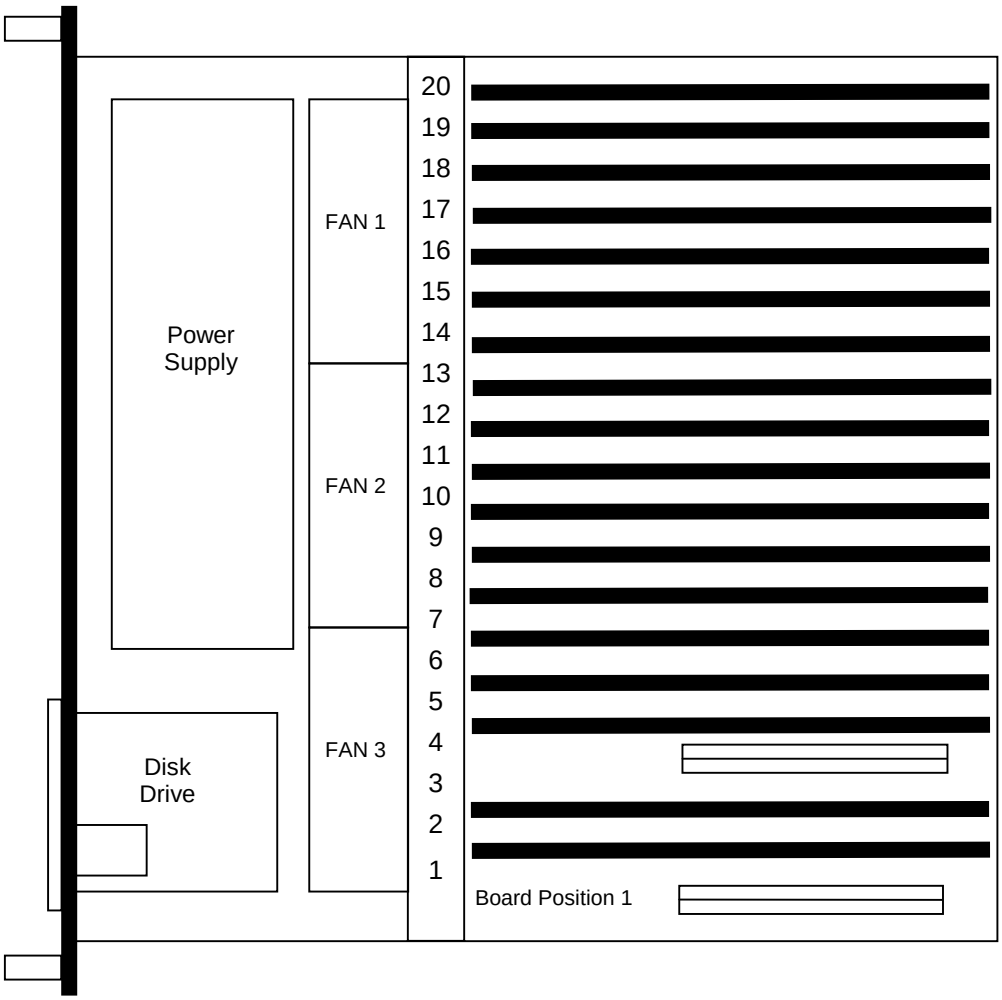

Figure 4.4 - Top view of DSC210 with cover removed

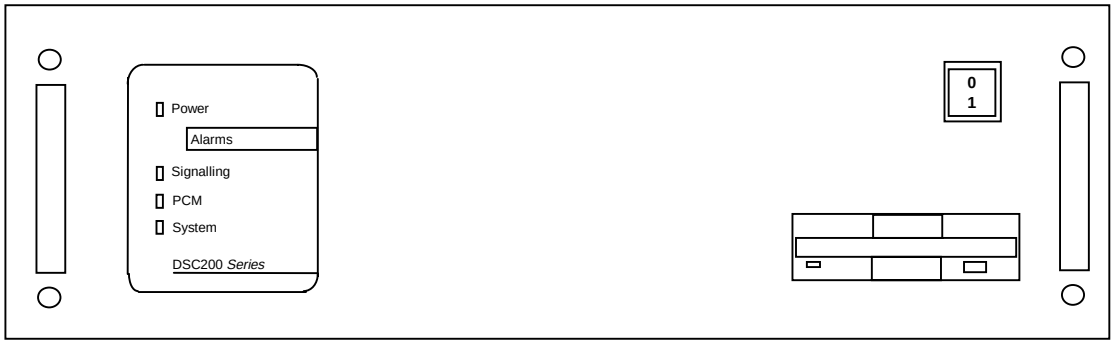

Figure 4.5 - DSC210 Front panel

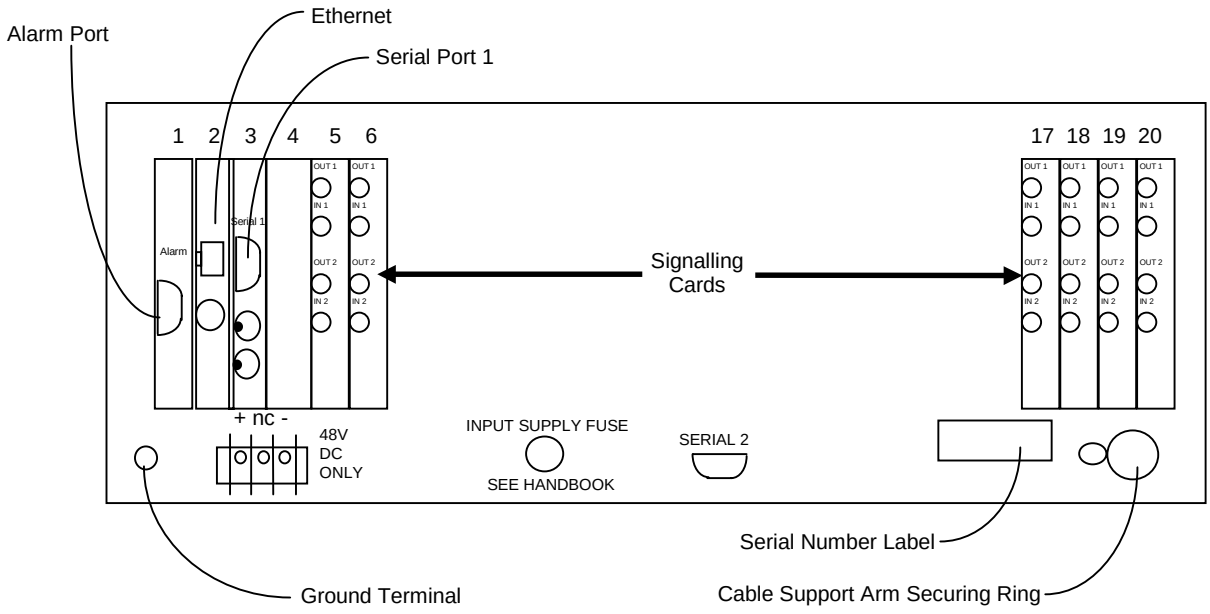

Figure 4.6 DSC210 Rear Panel

4.3 Electrical

The converter consists of a chassis and the following plug in cards:

- Central processor card
- Solid state memory card
- Signalling processor cards type CS6
- Alarm card
- Network card

4.3.1 DSC110 Chassis and Power Supply

The DSC110 is constructed from a number of cards that plug horizontally into both sides of a card carrier fixed to the base and rear of the chassis. The chassis is fitted with a cooling fan, hard disk, a power supply, a floppy disk drive and a front panel display card.

The power supply converts either a nominal –48V DC supply or a switchable 110V/230V AC supply to regulated +5V, +12V, -5V and –12V DC supplies as required by the converters electrical circuits. The input to this supply is switched ON and OFF by the front panel switch.

The floppy disk drive is mounted at the front of the equipment, and may be used with standard DOS format 3½ inch diskettes formatted to 1.44Mbytes. When the disk drive is being accessed, the front panel disk drive indicator is illuminated. The floppy disk drive is used for loading a new software release onto the converter and for saving configuration data to disk for backup purposes.

The converter is cooled by a fan attached to the chassis also a fan that is internal to the power supply.

4.3.2 DSC210 Chassis and Power Supply

The DSC210 chassis comprises a 20 slot passive backplane along with a power supply module, floppy disk drive, fan power distribution and failure detection module and a front panel display card.

The power supply converts the nominal –48V DC supply to regulated +5V, +12V, -5V and –12V DC supplies as required by the DSC210 electrical circuits. The input to this supply is switched ON and OFF by the front panel switch.

The floppy disk drive is mounted at the front of the equipment, and may be used with standard DOS format 3½ inch diskettes formatted to 1.44Mbytes. When the disk drive is being accessed, the front panel disk drive indicator is illuminated. The floppy disk drive is used for loading a new software release onto the converter and for saving configuration data to disk for backup purposes.

The converter has three fans that run directly from the –48V DC supply. A small circuit board situated under the fan tray provides power distribution to each of the three fans and a fan failure detection mechanism that allows fan failure to be reported in the alarm log.

4.3.3 Central processor card

The central processor card is a single board computer that runs the main operating software for the converter. This includes the electrical interfaces to the two serial ports and an integral floppy disk controller.

This processor runs the configuration and management software and the signalling conversion software. The lower levels of the protocol software are run on separate signalling cards.

On power up or following a system restart, the central processor card downloads the operating code and configuration to each of the Signalling Processors cards and configures the unit using the current configuration data.

Two different versions of the CPU card are in use. The KE18 card is used only on Revision 1 DSC210 hardware whilst the KE30 card is a higher performance card used on Revision 2 DSC210 hardware and the DSC110. Care should be taken to use the correct spares.

4.3.4 Solid state memory card

The converter operating software is stored in flash memory on a solid state memory card. The operating software comprises the operating system, the operating program that includes the signalling converter functionality and the operating code for each of the signalling processor cards. With the exception of the operating system that remains fixed, all other operating software is updated in a single operation.

Two different versions of the solid state memory card are in use. The KE17 card is used in conjunction with KE18 CPU cards whilst KE37 is used in conjunction with KE30 CPU cards.

4.3.5 Signalling Card Type CS6

Both network side (SS7) signalling cards and access side Q.931 signalling cards are designated as CS6 type cards. The CS6 card provides two E1 2048kbit/s or 2 T1 1544kbit/s PCM line interfaces using either BNC connectors or RJ45 connectors.

Each signalling card contains a signalling processor that can handle up to two signalling links or voice resources. The signalling card communicates with the central processor using shared memory that appears in the memory map of the central processor.

Timeslots from each PCM are routed to an inter-card PCM highway which uses a ribbon cable connected along the top edge of all the signalling cards. This PCM highway is used in conjunction with digital cross-connect switches on each signalling card to allow any PCM timeslot to be routed to any signalling resource within the converter or to any other PCM port in the converter. The inter-card PCM highway is used for both voice connections and signalling connections.

Each PCM port in the system can be designated as a potential clock source and assigned a relative priority. The PCM port with the highest clock priority that currently contains a valid PCM signal is used as the synchronisation reference for the converter. All other outputs from the converter are synchronised to this reference source. In the event of the active synchronisation source failing, the converter will select the next highest priority input source as the synchronisation source. If no inputs contain a valid PCM signal then the converter will use a locally generated clock reference as the synchronisation source.

Changes of PCM status are reported by the CS6 card to the central processor card allowing alarms to be entered in the system alarm log

4.3.6 Alarm card

The Alarm card performs a supervisory function within the converter. It contains the alarm relays and front panel LED driver circuitry to pass alarm indications to the user and monitoring circuitry for the power supply output rails, the fan fail detection circuitry and a temperature sensor.

Connection to the alarm relay contacts is via a 15 way D-type socket mounted at the rear of the Alarm card. Two relays are provided designated “Prompt” and “Urgent”. In the event of a power failure the alarms both fall back into the alarming state.

The fan fail detector, temperature and power supply output monitor circuits are used to detect system failures that are then reported to the central processor. Such failures are indicated to the user by entries in the Alarm Log and the respective front panel indicators being switched on.

4.3.7 Network card

The network card allows connection to the converter via Ethernet. This is used to provide a telnet MML interface for configuring the converter from a remote location and to transfer data to a Remote Data Centre.

5. INSTALLATION

5.1 Unpacking and mounting

Prior to commencing installation, unpack the equipment and check for any physical damage. In the event of damaged or missing hardware notify both the carrier and DataKinetics immediately.

The equipment should be mounted in a suitable 19-inch rack mount cabinet, with sufficient clearances to allow correct operation of the cooling fan(s).

For the DSC110 air is drawn into the unit through the left-hand side of the unit and exhausted through the right hand side. For the DSC210 air is drawn into the equipment through both sides of the chassis, and is exhausted at the top of the rear panel.

It is recommended that the chassis be mounted at least 500mm above the floor and not more than 1400mm high. This allows for access underneath the chassis and avoids the need for steps to gain access to the top of the unit.

All electrical connections are made to the rear of the unit.

5.2 Power Wiring

Correct bonding of the chassis to earth is important if the converter is not to be effected by electromagnetic interference (EMI). A separate earth connection must be made between the earth post provided at the rear of the chassis and the system earth point. The resistance between the chassis and the system earth point should be no greater than 0.03 Ohms, as measured by an earth bonding tester.

5.2.1 DSC110 Power Wiring (DC version)

Connection is by means of a two terminal screw connector block mounted at the rear of the DSC110. The top connector is positive (+), the lower terminal negative (-), as shown on the rear of the chassis. There is no internal connection between the earth terminal and the power supply inputs, either pole may be connected to earth to suit the system requirements.

The power supply is fitted with an internal fuse, which is not user replaceable.

5.2.2 DSC110 Power Wiring (AC version)

The AC power supply is dual voltage, selectable by a slider switch at the rear of the unit. This switch is marked 230 for connection to 220-240V AC supplies, and 115 for connection to 100-120V AC supplies. This switch must be set to the correct position before power is applied to the unit.

Connection is by means of a standard 3-pin IEC mains inlet on the rear of the chassis. This includes a ground connection, which must be connected to a suitable system earth. The power outlet provides a restricted nominal 230V AC or 115V AC supply for connection to ancillary equipment. The capability of this output is labelled on the rear of the equipment. This port should not be used.

The power supply is fitted with an internal fuse, which is not user replaceable.

5.2.3 DSC210 Power wiring

Connection is by means of a three terminal screw connector block mounted at the rear of the converter. The protective cover must first be removed from the front of the terminal block, and subsequently replaced when the connection has been made. (Note that only the outer two of the three terminals are used). The power requirements are detailed in the specification section.

There is no internal connection between the earth terminal and the power supply inputs, either pole may be earthed to suit the system requirements.

5.3 Alarm Port

Connection to the alarm port is by means of a 15-way D-type socket, located at the rear of the alarm card. The pin assignment is given in the following table:

Pin No.	Function
15	URGENT Alarm Common
7	URGENT Alarm normally open
8	URGENT Alarm normally closed
9	PROMPT Alarm common
2	PROMPT Alarm normally open
1	PROMPT Alarm normally closed

Table 5.1 Alarm Port Connections

5.4 PCM Ports

The PCM port connections depend upon the type of interface ordered. Each CS6 card has two PCM ports with the first port being towards the top of the card.

For unbalanced operation the connectors are 75ohm BNC coaxial connectors. Each PCM port uses two such connectors where the output from the converter is towards the top of the card. The screen connection for the output is connected to earth at the converter whilst no connection is made to the screen connection of the input connector.

For balanced operation the connector is an RJ45 type connector with the following pinout. Note that pin 1 is the bottom most pin.

Pin No.	Direction	Function
1	Input	Receive Tip
2	Input	Receive Ring
3		GND
4	Output	Transmit Tip
5	Output	Transmit Ring
6		GND
7		No Connection
8		No Connection

Table 5.2 RJ45 PCM Port Connections

5.5 Serial Ports

Connection to both serial ports is by means of a 9-way chassis mounting D-type plug, one located near the bottom edge of the converter, the other at the rear of the CPU card. The pin allocation is listed in the following table:

Pin	Name	Direction	Mnemonic	V24 Circuit number
3	Transmitted Data	Output	TXD	103
2	Received Data	Input	RXD	104
7	Request to Send	Not Used	RTS	105
8	Clear to Send	Not Used	CTS	106
6	Data Set Ready	Input	DSR	107
4	Data Terminal Ready	Output	DTR	108/2
5	Signal Ground	GND		102

Table 5.3 Serial Port Connections

5.6 Ethernet Port

Two ports are provided for access to the Ethernet card in the converter. Connection may be made to either the standard RJ45-type socket, or the 50 ohm coaxial BNC connector.

6. HARDWARE CONFIGURATION

6.1 Signalling Card Switch Configuration

Multiple CS6 cards are fitted to the converter, each card has an 8 stage switch on the top edge of the card that needs to be set up to identify the board position.

The board position setting depends on the type of CPU card used in the system. The following tables identify the board settings for a particular central processor card.

6.1.1 CS6 Switch Settings for use in conjunction with KE18 CPU

BOARD POSITION	S1 Setting 8	7	6	5	4	3	2	1
5	OFF	ON	ON	ON	ON	ON	ON	ON
6	OFF	ON	ON	ON	ON	ON	ON	OFF
7	OFF	ON	ON	ON	ON	ON	OFF	ON
8	OFF	ON	ON	ON	ON	ON	OFF	OFF
9	OFF	ON	ON	ON	ON	OFF	ON	ON
10	OFF	ON	ON	ON	ON	OFF	ON	OFF
11	OFF	ON	ON	ON	ON	OFF	OFF	ON
12	OFF	ON	ON	ON	ON	OFF	OFF	OFF
13	OFF	ON	ON	ON	OFF	ON	ON	ON
14	OFF	ON	ON	ON	OFF	ON	ON	OFF
15	OFF	ON	ON	ON	OFF	ON	OFF	ON
16	OFF	ON	ON	ON	OFF	ON	OFF	OFF
17	OFF	ON	ON	ON	OFF	OFF	ON	ON
18	OFF	ON	ON	ON	OFF	OFF	ON	OFF
19	OFF	ON	ON	ON	OFF	OFF	OFF	ON
20	OFF	ON	ON	ON	OFF	OFF	OFF	OFF

Table 6.1 CS6 Card S1 Configuration when using KE18 CPU

6.1.2 CS6 Switch Settings for use in conjunction with KE30 CPU

BOARD POSITION	S1 Setting 8	7	6	5	4	3	2	1
5	OFF	OFF	ON	ON	OFF	ON	ON	ON
6	OFF	OFF	ON	ON	OFF	ON	ON	OFF
7	OFF	OFF	ON	ON	OFF	ON	OFF	ON
8	OFF	OFF	ON	ON	OFF	ON	OFF	OFF
9	OFF	OFF	ON	ON	OFF	OFF	ON	ON
10	OFF	OFF	ON	ON	OFF	OFF	ON	OFF
11	OFF	OFF	ON	ON	OFF	OFF	OFF	ON
12	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF
13	OFF	OFF	ON	OFF	ON	ON	ON	ON
14	OFF	OFF	ON	OFF	ON	ON	ON	OFF
15	OFF	OFF	ON	OFF	ON	ON	OFF	ON
16	OFF	OFF	ON	OFF	ON	ON	OFF	OFF
17	OFF	OFF	ON	OFF	ON	OFF	ON	ON
18	OFF	OFF	ON	OFF	ON	OFF	ON	OFF
19	OFF	OFF	ON	OFF	ON	OFF	OFF	ON
20	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF

Table 6.2 CS6 Card S1 Configuration when using KE30

6.2 Signalling Card Hardware Settings (BNC version)

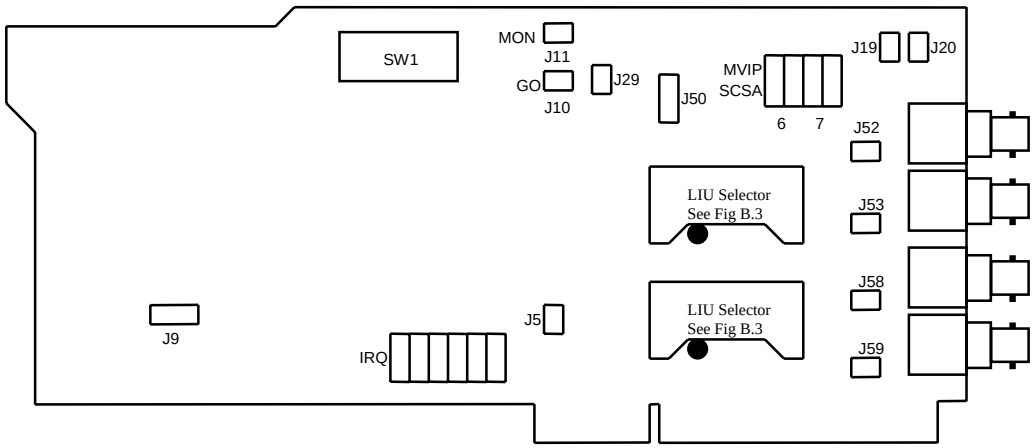

Figure 6.1 CS6 Card Link Positions (Cards with BNC connectors)

Jumper ID	POSITION
J5	not fitted
IRQ	link fitted in position 15
J9	This jumper position only exists on early revision boards. Where the jumper exists it should be set to position 128.
J10 (GO)	fitted
J11 (MON)	not fitted
J19	fitted
J20	fitted
J29	fitted
MVIP/SCSA (4 jumpers)	Set to 'SCSA'
J50	fitted in the 'top' position
J52	fitted
J53	not fitted
J58	fitted
J59	not fitted
LIU Selector	For boards with BNC connectors both LIU Selectors should be set to the E1 75ohm position.

6.3 Signalling Card Hardware Settings (RJ45 version)

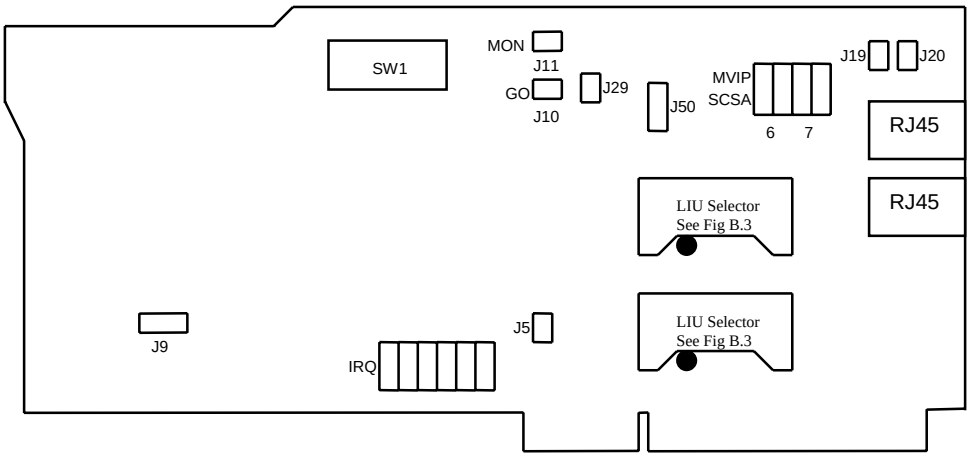

Figure 6.2 CS6 Card Link Positions (Cards with RJ45 connectors)

Jumper ID	POSITION
J5	not fitted
IRQ	link fitted in position 15
J9	This jumper position only exists on early revision boards. Where the jumper exists it should be set to position 128.
J10 (GO)	fitted
J11 (MON)	not fitted
J19	fitted
J20	fitted
J29	fitted
MVIP/SCSA (4 jumpers)	Set to 'SCSA'
J50	fitted in the 'top' position
LIU Selector	For boards with RJ45 connectors the LIU Selectors can be set to either the E1 120 ohm position or the T1 position depending on whether E1 or T1 operation is required. The selected option is indicated by the post fitted to the main board. The LIU selector nearest the top of the board applies to the 1st LIU port. It is not necessary to set both ports to the same type.

6.4 Signalling Card E1 / T1 Selection

All CS6 signalling cards are fitted with two small plug in daughter boards designated ‘LIU Selectors’. These can be plugged into three different positions allowing different line impedance to be selected.

All boards with BNC connectors are shipped with the LIU Selectors in the E1 75 ohm position and they should not be moved by the user.

All boards with RJ45 connectors are shipped with the LIU Selectors in either the E1 120 ohm position or the T1 position (depending on the part number used when the board was ordered). The user may move the LIU Selector to the alternative position to switch between E1 and T1 operation as required.

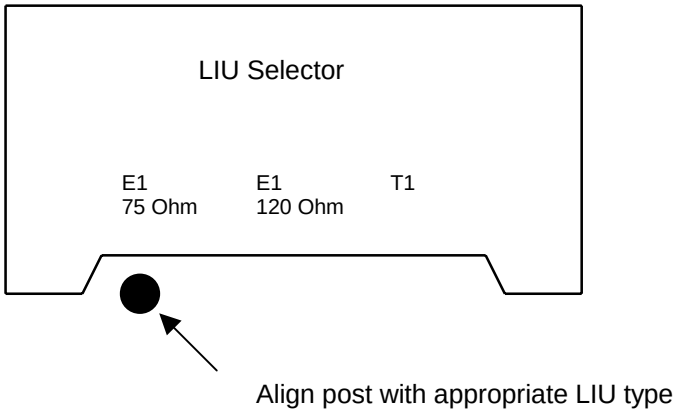

Figure 6.3 LIU Selector

7. OPERATION

7.1 General

The DSC210 may be configured by the user from either of the two serial ports or by using telnet over the Ethernet interface. Each serial port may be configured over a range of baud rates and parity as described in the Command Definitions. The default configuration for both ports is 9600 bits/s, 8 data bits, 1 stop bit, and no parity.

The commands that make up the converter Man-Machine Interface Language (MML) are based on the CCITT blue book recommendations Z.311 to Z.317.

In the following description, input text, numerals and characters that the user is expected to enter are shown in **bold text** and responses displayed on the screen are shown in fixed width text. Syntax elements that are further defined are shown in angle brackets, e.g. <time of day>.

7.2 Log On/Off procedure

To initiate a dialogue with the converter, the operator must “log on” to one of the MML interfaces.

To log on to a serial port that configured to use DTR/DSR the connected terminal should assert DSR. The converter will assert DTR in response and the user may then enter into a dialogue with the converter. The session is ended by operator command to the converter, or by the terminal de-asserting DSR or at the expiry of an auto log off timer. The converter will de-assert DTR in response to any one of these three. To log on again, DSR must first be de-asserted.

To log onto a serial port that is not configured to use DTR/DSR the carriage return key should be entered. The session is ended by operator command to the converter or at the expiry of an auto log off timer.

The two telnet connections provided are accessed using a standard telnet utility. Ports 8102 or 8103 should be used for the connection (rather than the default port 23).

If a password is specified for the system then when logging on the password will be required before being allowed to continue. If an incorrect password is entered the system will again prompt for a password. If an incorrect password is entered 3 times then the port will disconnected. For safety the password is never required for serial port 1.

When the connection has been established, a message, consisting of the system identity followed by

`logged on at` <calendar date> <time of day**>**

is output, followed by the command prompt, which is the less than sign “<” The log on session is ended either by operator command or at the end of an auto log off time out.

The system maintains two timers during the log on session, a “auto log off warning” timer and a “auto log off “ timer. Both are restarted each time a new command is input. When the auto log off warning time out expires an auto log off warning message is output to the terminal and any partially entered command discarded. The system will then output a command prompt to the terminal. If no command is input before the auto log off time out expires, the log on session is ended. The duration of both these timers is user-configurable and can even be disabled completely.

When log off is initiated, a message consisting of the system identity followed by

`logged off at` <calendar date> <time of day>

is output to the operator’s terminal. The converter will then initiate the appropriate procedure to end the connection to the operator’s terminal.

7.3 Command Character Set and Syntax

The only characters used for commands and parameters are:

The letters **A** to **Z** and **a** to **z**, referred to as <letter>. The case of characters in command names and parameter names is not significant.

The digits **0** to **9**, referred to as <digit>

- (hyphen), CR (FE5), SP (space), **$**(dollar), **&** (ampersand), ***** (asterisk), **:** (colon), **;** (semicolon) **/** (solidus), **.** (full stop/period) and **=** (equals sign)

The DEL (Delete) character or the BS (Backspace) character is used to delete characters on the current line.

The CAN character (control X) is used as an abort character.

It is possible to indicate several simple values for the same parameter by grouping parameter arguments using the operators **&** or **&&**. For example **3&6** indicates the simple parameter arguments 3 and 6. A sequence of consecutive simple parameter arguments is indicated by writing the lower and upper simple parameter arguments separated by **&&**, hence **4&&8** indicates the simple parameter arguments 4, 5, 6, 7 and 8.

Comments are allowed in command input, and may appear in any position on the command line. A comment is defined as a character string enclosed between the separators **/*** (solidus asterisk) and ***/** (asterisk solidus), where the character string may contain any characters except the format effector characters (HT – Horizontal Tab, LF – Line Feed, VT – Vertical Tab, FF – Form Feed and CR – Carriage Return) and the sequence ***/**.

7.4 Command Formats

To allow easy command recognition and familiarisation, all the commands share a common five character format:

XXYYZ

where:

XX	=	Command group
YY	=	Function within group
Z	=	Operation code

The following operation codes are used:

C	=	Change
E	=	End
I	=	Initiate
P	=	Print
R	=	Remove
S	=	Set

Note that the term “print” refers to output to the serial port in use for the dialogue procedure.

7.5 Command Entry

Each character entered is echoed to the operator’s terminal. The BS or DEL character may be used to delete characters entered within the current line. This will cause the converter to output the sequence BS space BS. On a visual display terminal, this will have the effect of deleting the last character entered from the display.

Commands may be entered whenever the command prompt has been output. Commands are terminated by a semicolon **;** followed by CR. Commands may exceed one line on the terminal but may not exceed 100 characters.

If a command takes parameters, a colon is used to separate the command from the parameters. A comma is used to separate multiple parameters.

To ensure correct operation of the character deletion, the maximum number of characters entered on a single command line should be no greater than the number of characters that can be displayed on a single line of the terminal (to prevent text “wrap around”). If a command is longer than one line, each line before the last should be terminated with a complete parameter value followed by a comma and CR. The command may then continue on the next line.

A partially entered command may be aborted using the CAN character. The system will output an indication that the command has been aborted, followed by a prompt for new command input. The CAN character may also be used to abort an output listing on the operators terminal.

7.6 Dangerous Commands

Commands which affect the converter operation are considered DANGEROUS commands. When a DANGEROUS command is entered the converter outputs the following on a new line:

```
Are you sure? [Y/N]
```

The operator must enter **Y** followed by CR to continue the execution of the command. Any other valid input character apart from SP or CR, followed by CR, will cause the command to be aborted.

7.7 Changing Configuration Data

Many configuration commands require that certain other commands have been entered first (for example to block a link before removing a boards configuration). These rules are described on a per-command basis as prerequisites.

Configuration data which affects SS7 signalling links can only be changed by restarting the MTP. Therefore, it is necessary to block all SS7 links before attempting to change SS7 link configuration data.

7.8 Command Responses

The converter does not, in general, produce output unless in response to an operator command. The only exception to this is the auto log off warning message and the log off message (when log off is initiated automatically).

The auto log off warning message is as follows:

```
WARNING: Auto log off imminent!
```

When a syntactically correct command has been issued to the converter, acceptance is indicated by the Command Executed output as follows:

```
EXECUTED
```

An invalid command will not be acted upon. The converter indicates command rejection by issuing one of the following responses. Note that only the first error detected in a command will be indicated.

RESPONSE	REASON FOR REJECTION
UNACCEPTABLE COMMAND	The command is valid but not in the current state of the equipment (e.g. changing a signalling link configuration without blocking).
UNKNOWN COMMAND	The command is not recognised.
NO SYSTEM RESOURCES	The requested command cannot be executed due to unavailable system resources.
INVALID PARAMETER NAME	A parameter name has been entered which is not valid for this command.
EXTRA PARAMETERS	Too many parameters have been entered.
MISSING PARAMETER	A required parameter has not been input.
INCONSISTENT PARAMETER	The parameters input are not valid together for the command.
MISSING DATA	A parameter has no data.
INCONSISTENT DATA	The values of parameters are inconsistent with each other or with data already entered into the system.
RANGE ERROR	The value assigned to a numeric parameter is outside the valid range.
INVALID INFORMATION GROUPING	The type of information grouping used in the input of the parameter value is not valid.
INVALID INDICATOR	This command contains a 'format character' (':', ';', etc.) which is not valid for this command.
GENERAL ERROR	Command unable to execute due to external error (e.g. Missing or write protected floppy disk).
INTERNAL ERROR	Command failed to complete due to internal error.
INVALID INFORMATION UNIT	The value entered for a parameter is not valid for that parameter.
UNKNOWN SEPARATOR	The character used to separate two parameters is not recognised.

Table 7.1 Command Rejection Responses

7.9 Updating System Software

The configuration data, stored in non-volatile memory, is not affected by a software update.

The software update procedures uses MML to update the software. While a software update can take place while phone calls are in progress the new software will not be activated until the system is restarted.

On completion of the software update the user will be required to perform a system restart. MML commands will be restricted to the following ‘safe’ mode commands CNSYS, CNUPI and STRDP commands as well as the alarm log and configuration print commands.

If the user aborts the software update or the software update process fails the system alarm “SW mismatch” will be activated and the user will be restricted to ‘safe’ mode commands. If the user restarts the system in this state the system will restart in ‘safe’ mode running limited configuration only software.

The latest version of DSC210 software can be download from the DataKinetics website at www.datakinetics.co.uk. The software distribution consists of 2 files ascbin.F and asc02.F where ascbin.F is the first distribution file and asc02.F is the second distribution file. When saving these files to floppy disk use a floppy disk drive known to be functioning well and only new, DOS formatted floppy disks.

7.9.1 Software Update from Floppy Disk

The procedure for a software update from multiple floppy disks is as follows

The user should enter:

CNUPI:DTYPE=SOFTWARE;

to request that the software be updated from floppy disk.

The user will be asked first if they are certain they wish to upgrade the software and then asked to put the first software update disk in the floppy drive.

The user should place the first floppy disk in the floppy drive containing the file ascbin.F and confirm that it is in place.

The software will upload the first distribution disk onto the DSC210.

The user will then be prompted for subsequent disks (starting with asc02.F) in a similar manner to the first disk.

Once all the disks have been read in by the user the user should restart the system by cycling the power supply of the converter (switched OFF, wait 5 seconds, then back ON) to cause a processor restart (alternatively the user may cause a processor restart using the MNRSI command).

7.9.2 Software Update from Remote Data Centre

The procedure for a software update the RDC will be as follows

The user should enter:-

CNUPI:DTYPE=SOFTWARE,RDC=<rdc id>,DIRECTORY=< subdirectory>;

to request that the software be updated from a RDC where the software update files are stored in a subdirectory in the ftproot.

Once the user has confirmed that the software should be upgraded the distribution files will be transferred to the converter without further interaction with the user. The unit will indicate that all files have been successfully transferred by displaying the “EXECUTED” response to the CNUPI command.

On completion the user should restart the system by cycling the power supply of the converter (switched OFF, wait 5 seconds, then back ON) to cause a processor restart (alternatively the user may cause a processor restart using the MNRSI command).

7.9.3 Software Update from V4.10 and Older

When upgrading from a version of software prior to version 5 an additional, initial, step is required.

The user must first cycle the power supply of the converter (switched OFF, wait 5 seconds, then back ON) to cause a processor restart (alternatively the user may cause a processor restart using the MNRSI command). After the central processor starts up the three red alarm LEDs will flash off for a period of five seconds. It is during this five second window that the first distribution disk supplied by DataKinetics (containing the file ascbin.F)should be placed in the floppy disk drive. The distribution disk will be detected in the disk drive and will re-program the contents of the solid state memory card with the new system software.

When the update procedure has finished the three red alarm LEDs on the front panel will flash in sequence. This will occur approximately three minutes after starting the procedure. When finished, the update disk should be removed from the disk drive and the converter restarted by cycling the power. The converter will now run in ‘safe’ mode awaiting the normal software update procedure using the CNUPI command.

7.10 Updating Configuration Data

Valid configuration data must first be stored on a floppy by a converter (by using the CNBUI command)

7.10.1 Configuration Update on Startup

Configuration data is updated by first cycling the power supply of the converter (switched OFF, wait 5 seconds, then back ON) to cause a processor restart (alternatively the user may cause a processor restart using the MNRSI command). After the central processor starts up the three red alarm LEDs will flash off for a period of five seconds. It is during this five second window that the configuration disk should be placed in the floppy disk drive. The converter will identify the configuration data on the disk as it starts up, and will load this into the internal non-volatile memory before starting the main converter software.

7.10.2 Configuration Update from Floppy Disk

The procedure for a configuration update from floppy disk using MML will be as follows

The user should enter:

CNUPI:DTYPE=CONFIG,FILE=<filename>;

to request that the configuration file be updated from floppy disk.

The configuration file <filename>.CF2 will uploaded from floppy disk.

Once all the disks have been read in by the user the user should restart the system by cycling the power supply of the converter (switched OFF, wait 5 seconds, then back ON) to cause a processor restart (alternatively the user may cause a processor restart using the MNRSI command).

7.10.3 Configuration Update from Remote Data Centre

The procedure for a configuration update the RDC will be as follows

The user should enter:-

CNUPI: DTYPE=CONFIG,RDC=<rdc id>,
DIRECTORY=< subdirectory>,FILE=<filename>;

to request that the configuration be updated from a RDC where the configuration update file <filename.SD2> is stored in a subdirectory in the ftproot.

Once the user has confirmed that the configuration should be upgraded the configuration file will be transferred to the converter without further interaction with the user. The unit will indicate that the file has been successfully transferred by displaying the “EXECUTED” response to the CNUPI command.

On completion the user should restart the system by cycling the power supply of the converter (switched OFF, wait 5 seconds, then back ON) to cause a processor restart (alternatively the user may cause a processor restart using the MNRSI command).

7.11 Parameter Definitions

7.11.1 Parameter Table

The following table lists all parameters and details the possible values.

All numeric parameters are entered and output in decimal notation.

<text character> is either <lower case letter>, <upper case letter>, <digit>, **$** , or hyphen. The use of quotation marks to delimit text strings is not required.

NAME	DESCRIPTION	RANGE	NOTES
ALP	Sequential reference number of an entry in the Alarm Log.	1:9999	
ANNOUNCE	Whether the announcement option is available on the converter.	Y,N	Default = N
ANNC	Logical reference for an announcement.	1:32	
ASLINK	Logical reference for an Access side signalling link.	1:32	
ASTYPE	The Access Side signalling system associated with a link. Format xxxx-yy xxxx = Access Side signalling system. yy = Variant of Access Side signalling system. The following combinations are currently supported: Q931-x where x is a value between 0 and 13. QSIG- x where x is a value between 0 and 13. NI2 - x where x is a value between 0 and 13. DPNSS- x where x is a value between 0 and 3 See Section 7.11.18 for a fuller description of the Access Side variants.	xxxx: Q931,QSIG,NI2, DPNSS yy: 0:13	
BCIC	The circuit identification code of an SS7 circuit that is the base CIC of a circuit group.	-31:4095	
BPOS	Board position number (for signalling cards).	5:20	
BRDTYPE	Board type descriptor, format: xxx-y-z xxx = board type y = number of signalling processors on the board z = number of PCM ports on the board.	xxx – CS6 y – 0,2 z – 2:2	

BWM	Backwards mode 0 – No action 1- Generate early address complete message on determination of completion of sending digits.	0:1	Default = 0
C7LINK	Logical reference for an SS7 signalling link.	1:16	
C7RT	Logical reference of an SS7 route.	1:32	
CC	Clearing Cause mapping. Format :- xx-yy xx = mapping table for received external release values yy = mapping table for sent external release values. Zero means provide default mapping. See Section 7.11.2 for a description of the mapping algorithms.	xx – 0:99 yy – 0:99	Default = 0-0
CDDL	The number of prefix digits to be deleted from the called party number.	0:22	Default = 0
CDMD	Reserved.	0	Default = 0
CDNA	Called party number nature of address mode. See 7.11.11	0:7	Default = 0
CDNP	Called party number numbering plan mode. See 7.11.12	0:7	Default = 0
CDPRE	Prefix digits to be added to the called party number.	0:16 digits	Default = 0 digits
CDST	The start moment i.e. The number of called party digits that have to be received before routing can occur. Zero indicates that a stop digit must be received before routing can occur.	0:22	Default = 1
CGDL	The number of prefix digits to be deleted from the calling party number.	0:22	Default = 0
CGCB	Calling party number blocking mode Used to manipulate the CBI blocking indicator used in UK ISUP:- 0 – If present transit the blocking indication otherwise set it to indicate no blocking information. 1 – If present transit the blocking indication otherwise set it to indicate blocking available. 2 – Set the blocking indicator to no blocking information. 3 – Set the blocking indicator to blocking available.	0:3	Default = 0

CGMD	Calling party number handling mode. See 7.11.3	0:3	Default = 0
CGMX	Maximum number of calling party number digits. If the maximum number of digits is exceeded then the calling number is discarded.	1:32	Default = 32
CGNA	Calling party number nature of address mode. See 7.11.8	0:7	Default = 0
CGNP	Calling party number numbering plan mode. See 7.11.10	0:7	Default = 0
CGPR	Calling party number presentation restriction mode. See 7.11.9	0:3	Default = 0
CGPRE	Prefix digits to be added to the calling party number.	0:16 digits	Default = 0 digits
CGRP	Circuit group number.	1:90	
CG2DL	The number of prefix digits to be deleted from the 2nd calling party number.	0:22	Default = 0
CG2NA	2nd Calling party number nature of address mode. See 7.11.8	0:7	Default = 0
CG2NP	2nd Calling party number numbering plan mode. See 7.11.10	0:7	Default = 0
CG2PR	2nd Calling party number presentation mode. See 7.11.9	0:3	Default = 0
CG2PRE	Prefix digits to be added to the 2nd calling party number.	0:20 digits	Default = 0 digits
CHG	Charging mode. Format :- x-y x = Processing of the charge indicator in the address complete message (and any further messages up to answer) y = Processing of the charge indicator in the answer message. See 7.11.13	x = 0:7 y = 0:7	Default = 0-0
CIC	The circuit identification code of an SS7 circuit.	0:4095	
CLA	Alarm class number. 0 = do not log 1 = minor 2 = prompt 3 = urgent	0:3	
CLIAUTH	Whether calling line identity authorisation is activated on the converter. The calling party number authorisation purchasable option is required before this option can be selected.	Y,N	Default = N
CODE	Fault code of a system alarm.	1:999	

COT	Continuity check mode Format :- x-x x = mapping table for received continuity check indications. y = mapping table for sent continuity check indications. 0 – Drop continuity check indications 1 – Transit continuity check indications 2 – Perform incoming continuity check	Range for x – 0:2 Range for y – 0:1	Default = 0-0
CPC	CPC mapping. Format :- xx-yy xx = mapping table for received external calling party categories. yy = mapping table for sent calling party categories. Zero means provide default mapping specified by DCPC. Other values are for user defined mappings See Section 7.11.6 for a description of the mapping algorithms.	Range for xx and yy – 0:99	Default = 0-0
CPCD	Called party number custom profile.	0,1-20	Default = 0
CPCG	Calling party number custom profile.	0,1-20	Default = 0
CRTYPE	The type of continuous record BILLING – records of calls that have been answered CFL – records of calls that were released prior to answer. ALARM – alarms that have been reported to the alarm log.	BILLING, CFL ALARM	
DAI	Digit analysis index. Zero indicates that there is no DAI.	0,1:99	
DAMD	Digit analysis mode. See section 7.11.16 of the digit analysis modes.	0:4	Default=0
DATE	Calendar date format:- xxxx-yy-zz xxxx – 4 digit year. yy - 2 digit month. zz – 2 digit day.	xxxx:1997:2036 yy:01:12 zz:01:31	
DBITS	Number of data bits on V24 port.	7:8	Default = 8

DCPC	Default calling party category xxx = Default internal token to be used when the received external CPC mapping table is 0. yyy = Default calling party category to be used when send external CPC mapping table is 0.	Range for xxx and yyy - 0-255	10-2 for NUP circuit groups. 10-10 for other circuit groups.
DEV	Device number within a circuit group. For Access Side a device is a timeslot on a voice trunk. For Network Side device 0 corresponds to the base CIC. If the circuit group has been allocated a PCM the device corresponds to a timeslot on the PCM.	0:31	
DIGS	Called party number digit string to be analysed.	0:16 digits	
DIRECTORY	Directory name on a remote data centre.	0:12<text character>	
DISCARD	Whether data can be discarded	Y,N	Default = N
DIV	Call Diversion mode. Format :- x-y-zz x = Diversion mode. See section 7.11.15 for a description of diversion modes. y = Maximum number of diversion attempts. zz = The number of 'pull through' digits from the B Party number for use as a prefix to a C party number.	x – 0:2 y – 0:5 zz – 0:16	Default = 0-0-0
DOGR	Default Outgoing Route Index indicating a particular default route to a destination. Zero indicates no route has been assigned.	0,1:90	Default = 0
DPC	SS7 Destination point code	0:16777215	
DPNSS	Whether DPNSS is activated on the converter.	Y,N	Default = N
DTYPE	The type of saving/loading operation to be performed from a remote data centre. See 7.11.5	LSC CCTAB SOFTWARE CONFIG	
DUAL	Refer to DataKinetics for use of dual converter operation.	0:2	Default = 0
DUPLEX	Specifies whether a connection is duplex (Y) or simplex (N).	Y,N	Default = N

ENC	Parameter Encapsulation See section 7.11.17 for a description of this parameter.	Y,N	Default = N
END	Specifies which end the access signalling is acting as (either Network or User for Q931/NI2 or A or B for DPNSS).	N,U,A,B	
EQU	Signalling processor hardware identifier, format x-y x = board position (BPOS) y = signalling processor	x: 5:20 y: 1:2	
FF	PCM frame format:- G704 – Normal E1 format described in G.704. CRC4 – Normal E1 format with CRC4 checksum generation. CRC4C - Normal E1 format with CRC4 checksum generation. Is compatible with non CRC4 operation. SF – 12 frame multiframe (D3/D4). ESF – 24 frame multiframe. CRC6 – ESF format with CRC6 checksum generation. SLC96 – 72 frame multiframe. F4 – 4 frame multiframe.	G704, CRC4, CRC4C SF, ESF, CRC6, SLC96, F4	Default = G704 for an E1 on a board of SIGTYPE SS7, DPNSS or NONE. CRC4 for an E1 on a board of SIGTYPE Q931/ISDN. ESF for a T1 on a board of SIGTYPE ISDN SF for a T1 on a board of SIGTYPE SS7
FILE	File name on a remote data centre.	0:12<text character>	
GATEWAY	The default IP gateway used to reach other networks when the destination is not on the local sub-net. Specified using dot notation: www.xxx.yyy.zzz	www-0:255 xxx – 0:255 yyy – 0:255 zzz – 0:255	Default = 0.0.0.0
HTSEQ	Hunt sequence number used for associating circuit groups with routes such that hunting takes place in certain order.	1:32	
HUNT	The hunting algorithms used for searching for the next outgoing circuit. The algorithms are specified in Section 7.11.4.	0:9,	Default = 0
IBI	In-band information mode 0 – No action 1- Generate an inband indication in the first backward message.	0:1	Default = 0

IHEC	The setting of the incoming half echo cancellor indication Format x-y x – processing for received values y – processing for sent values 0 – Pass the indication transparently 1 – Set value to indicate incoming half echo cancellor not included. 2 – Set value to indicate incoming half echo cancellor included.	X:0:2 y:0:2	Default = 0-0
INT	The setting of the national/international indicator Format x-y x – processing for received values y – processing for sent values 0 – Pass the indication transparently 1 – Set value to indicate national call. 2 – Set value to indicate international call.	X:0:2 y:0:2	Default = 0-0
IPADDR	Internet Protocol (IP) Address of the converter specified using dot notation: www.xxx.yyy.zzz	www – 0:255 xxx - 0:255 yyy - 0:255 zzz - 0:255	Default = 0.0.0.0
ISC	Intelligent Service Control Used to activate ISC on the DSC210.	Y,N	Default = N
ISM	Intelligent Service Mode Used to select a particular ISC service	1:10	Default = 0
ISMD	Integrated services mode:- 0 = Unchanged level of service 1 = Reduce level of service to SS7 2 = Reduce level of service to POTS 3 = Reduce level of service from ISDN	0:3	Default = 0
ISTAB	Table id used by Intelligent Service Control	0,1-50	Default = 0
ISUP	Whether ISUP is activated on the converter.	Y,N	Default = N
ITS	The input timeslot in a cross connection (in the case of a duplex cross connection this is also the output timeslot for the reverse direction). Format: xx-y-zz xx = board position (BPOS) y = PCM within a board zz = Timeslot	xx: 5:20 y: 1,2 zz: 1:31	
LCMD	Reserved.	0:2	Default = 0

L1	The setting of the layer 1 protocol indication in the bearer capability. Format x-y x – processing for received values y – processing for sent values 0 – Pass layer 1 protocol transparently. 1 – Force layer 1 protocol to indicate A-Law. 2 – Force layer1 protocol to indicate Mu-law	x:0:2 y:0:2	Default = 0-0
L2K	Layer 2 K window size	1,7	Default=7
LABEL	Text label.	0:12 <text character>	
LC	PCM line coding.	HDB3, AMI, B8ZS	Default = HDB3 for E1 B8ZS for T1
LINES	Lines per Page.	10:99	Default = 25
LSH	Load share across linksets	Y,N	Default = N
LS	Logical reference of an SS7 Link set which can contain a number of signalling links.	1:8	
LS1	Primary linkset associated with an SS7 Route.	1:8	
LS2	Secondary linkset associated with an SS7 Route.	1:8	
LSSIZE	Maximum number of SS7 links allowed in the linkset.	1:2	
LSM	Local service mode. See 7.11.14	0,1-4	Default = 0
LSTAB	Table id used by local service control	0,1-50	Default = 0
M56K	56kbits Signalling Mode:- 0 – 56kbits/s mode disabled (64 kbits/s used). 1 – 56kbits/s enabled (bit 8 not used). 2 – 56kbits/s enabled (bit 7 not used). N.B. mode 2 may be usedfor 48kbits/s operation when configured on a special 48kbits/s board.	0:4	Default = 0 M56K modes 3 and 4 can only be set on boards with SIGTYPE=SS 7
MESSAGE	Text message	0:24 <text character> or space.	
MINREC	The minimum number of records held by the converter before transfer.	100:200	
NEXT	Next Route index for a route to a particular destination. Zero indicates that there is no route.	0,1:90	Default = 0

NI	Network Indicator for an SS7 Link Set.	0:3	
NTTYPE	The Network Side signalling system associated with a group. Format xxxx-yy xxxx = Network Side signalling system. yy = Variant of Network Side signalling system. The following combinations are supported: ISUP-0 = ETSI ISUP Version 2 ISUP-1 = Q.767 ISUP ISUP-2 = Australian interconnect ISUP-3 = ANSI ISUP (1992 format) ISUP-4 = New Zealand ISUP ISUP-5 = New Zealand ISUP(PSTN) ISUP-6 = UK ISUP ISUP-7 = Japanese TTC ISUP ISUP-8 = ANSI ISUP (1995 format) ISUP-9 = ETSI ISUP Version 2 for 'type A' exchanges. N.B. Other variants of ISUP will assume ETSI ISUP version 2 characteristics. NUP-0 – UK national user part. NUP-1 – UK national user part with SIM interchange. NUP-9 – Reserved. N.B. Other versions of NUP will assume UK national user part characteristics. TUP-0 = Blue Book TUP. TUP-1 = China TUP. TUP-2 = SSUTR2 TUP. N.B. Other versions of TUP will assume Blue Book TUP characteristics.	Xxxx = ISUP,NUP yy = 0:10	
NUP	Whether UK national user part is activated on the converter	Y,N	Default = N
OGR	Outgoing Route Index indicating a particular route to a destination.	0,1:90	Default=0

OHEC	The setting of the outgoing half echo cancellor indication Format x-y x – processing for received values y – processing for sent values 0 – Pass the indication transparently 1 – Force value to indicate outgoing half echo cancellor not included. 2 – Force value to indicate outgoing half echo cancellor included.	X:0:2 y:0:2	Default = 0-0
OPC	SS7 Originating point code.	0:16777215	
OTS	The output timeslot in a cross connection (in the case of a duplex cross connection this is also the input timeslot for the reverse direction). Format: xx-y-zz xx = board position (BPOS) y = PCM within a board zz = Timeslot	xx: 5:20 y: 1,2 zz: 1:31	
PAGE	The page of data to be printed	1:10	Default = 1
PARITY	Parity option on V24 port. Affects transmit parity only, parity is ignored on receive	ODD, EVEN, NONE	Default = NONE
PASSWORD	Used to specify the password for either remote login access or to provide password control for DSC210 MML.	0:12 <text character>	
PCM	PCM interface on a board, format xx-y xx = board position (BPOS) y = PCM within a board.	Xx:- 5-20 y:-1:2	
PCMTYPE	The type of PCM in use.	E1, T1	
PCR	Preventive Cyclic Retransmission	Y,N	Default = N
PER	Personality configuration.	0:255	Default = 0
PERIOD	A period of time. Format xx:yy:zz xx = 2 digit hour. Yy = 2 digit minute. Zz = 2 digit second.	Xx – 00:24 yy – 00:59 (yy must be 00 when xx is 24) zz – 00:59 (zz must be 00 when xx is 24)	
POR	Point of origin.	1:90	
PORT	V24 port identifier.	1:2	

PRI	Dual seizure call priority. The options are:- For SS7 circuit groups only:- NORM –, priority assignment based on point code: i.e. The signalling point with the higher point code will control all even-numbered circuits (CIC) and the other signalling point the odd-numbered circuits. OUT – Outgoing calls have priority IN – Incoming calls have priority For DPNSS circuit groups X – Outgoing calls have priority Y – Incoming calls have priority	NORM, OUT, IN X Y	DPNSS Default: = X Other Default = NORM
PRTYPE	The type of periodic report MSOGR – periodic reporting of traffic measurements for outgoing routes. MSCGRP – periodic reporting of traffic measurements for circuit groups.	MSOGR, MSCGRP	
PTMODE	Mode for serial port.	NONE DTRDSR TELNET	Default = DTRDSR (for ports 1 and 2) TELNET (for ports 3 and 4)
Q931	Whether ISDN is activated on the converter.	Y,N	Default = N
RCG	Request calling party number mode:- 0 – Do not request calling party number. 1 – Request calling party number if not present. 2 – Reserved.	0:2	Default = 0
RDC	Remote Data Centre Identifier	1:4	
RDC1	First choice RDC for .a continuous record or periodic report Zero indicates no route is assigned.	1:4	
RDC2	Second choice RDC for. A continuous record or periodic report Zero indicates no RDC is assigned.	0,1:4	Default = 0
RECORD	The identifier for a continuous data collection record.	1:4	
REMOTE	Whether the Remote Data Centres option is activated.	Y:N	Default = N

REPEAT	The maximum number of times an announcement is to be repeated. Zero indicates the announcement will repeat until the call is released.	0:20	Default = 0
REPORT	The identifier for a periodic data collection report	1:4	
RESET	Performs a reset operation	Y:N	Default = N
RTS	A timeslot within a PCM interface on a board used for monitoring information received by the monitored object. Format: xx-y-zz xx = board position (BPOS) y = PCM within a board zz = Timeslot	xx: 5:20 y: 1,2 zz: 1:31	
SAT	Satellite mode Used to set the setting of the satellite indicator in SS7. Format x-y x – processing for received values y – processing for sent values 0 – Pass the satellite indicator transparently. 1 – Force the satellite indicator to 0. 2 – Force the satellite indicator to 1. 3 – Force the satellite indicator to 2.	x:0-3 y:0-3	Default=0-0
SBITS	Number of stop bits on V24 port	1:2	Default = 1
SIGTYPE	Type of software loaded onto signalling card.	SS7, Q931, DPNSS, VOICE, ISDN NONE	
SLC	Signalling link code uniquely identifying a signalling link within a linkset.	0:15	
SPOR	Secondary point of origin indicating a subsequent point of origin that has been determined by analysis of the incoming message.. Zero indicates no secondary point of origin has been assigned.	0,1:90	Default = 0
SS7MODE	SS7 Signalling Mode. ITU14 – ITU operation with 14 bit point code ITU16 – ITU operation with 16 bit point code ITU24 – ITU operation with 24 bit point code ANSI – ANSI operation with 24 bit point code	ITU14, ITU16 ITU24 ANSI	

SUBNET	Subnet mask for the network to which the converter is connected specified using dot notation:- www.xxx.yyy.zzz	www – 0:255 xxx - 0:255 yyy - 0:255 zzz - 0:255	Default = 255.255.255.0
SYNCPRI	The priority the PCM is given to provide clock synchronisation. 0 – Indicates never provide clock synchronisation 1 – Highest priority that PCM should provide clock synchronisation. 32 – Lowest priority i.e. other PCMs have precedence.	0:32	Default = 0
SYSID	System identity.	0:12 <text character>	
STS	A timeslot within a PCM interface on a board used for monitoring for monitoring information sent by the monitored object. Format: xx-y-zz xx = board position (BPOS) y = PCM within a board zz = Timeslot	xx: 5:20 y: 1,2 zz: 1:31	
SYSREF	The system reference number	0:999	Default = 0
TANS	The timer to be used when waiting for answer.	T2, T12, T13, T14	Default = T2
TEXT	Text string identities Format x-y x – Text id of string to sent on the forward direction. y – Text id of string to sent on the backward direction.	x and y have the range 0,1-30	
TEXTID	Identifier for a text string	1-30	
TIME	Time of day in format : xx:yy:zz xx – 2 digit hour. yy – 2 digit minute. zz – 2 digit second.	xx – 00:23 yy – 00:59 zz – 00:59	
TLO	Auto log off time (in minutes).	1:60	Default = 30
TLOW	Log off warning time (in minutes)	0:60	Default = 25

TMRM	Transmission medium requirement mode in format:- x-y x – processing for received values y – processing for sent values 0 – Do nothing 1 – If transmission medium requirement is speech change it to 3.1kHz audio 2 - If the TMR mode is 2 then discard any bearer capability. 3 - If the TMR mode is 3 then discard any bearer capability parameter and replace it with one generated from the TMR.	x – 0:3 y – 0:3	Default = 0-0
TMSEC	Timer values in milliseconds associated with a timer number (resolution is 100ms).	DEFAULT, 100:10000 (integer multiples of 100).	
TO	Signalling system dependent timer number. As specified in the particular signalling system's list of timers.	1:999	
TRANS	Whether called party number translation is active on the converter. The called party number translation purchasable option is required before this option can be selected.	Y,N	Default = N
TS	A timeslot within a PCM interface on a board, format xx-y-zz xx = board position (BPOS) y = PCM within a board zz= Timeslot	xx :- 5:20 y :-1,2 zz :-1:31	
TSEC	Timer values in seconds associated with a timer number.	DEFAULT, 1:3000	
TTYPE	Timer Type Signalling systems timers are defined as per signalling system specification. See 7.11.7 for definitions of converter "CONV" specific timers.	ISUP, ISUPA NUP, CONV, Q931N, Q931U, Q921, MTP3 MTP3A	
TUP	Whether TUP is activated on the converter.	Y,N	Default = N
USER	User Name	0:12 <text character>	

U2U	Whether a User to User service is active, format x-y-z x = User to User service 1 y = User to User service 2 z = User to User service 3	x :- Y,N y :- Y,N z :- Y,N	Default N-N-N
VRS	Voice Resource Identifier	1:32	

7.11.2 Clearing Cause Mappings

Clearing cause mapping tables are used to convey clearing causes received on one side of a call into the appropriate clearing cause for transmission to the far side.

When a clearing cause (or release reason) is received it is mapped to an Internal Token using the Receive Clearing Cause Mapping Table. The Internal Token is then conveyed across the converter and mapped using the Transmit Clearing Cause Mapping Table into the appropriate clearing cause (or release reason) for transmission.

In addition when the converter determines that a call should be released, it generates an Internal Token which is then mapped using the Transmit Clearing Cause Mapping Table into the appropriate clearing cause for transmission.

Call failure records generated by the converter always use the Internal Token to identify the reason for call failure.

The clearing cause mapping tables are configured on a per-circuit group basis using the **CC** parameter, separate tables can be configured for the received and for the send side.

The user can select either one of the fixed mapping tables or generate (using the REMCFG tool) and upload from the remote data centre a customer specific clearing cause mapping table.

The mapping tables are:-

CC table	Description
0	Transit all values transparently
1	ETSI ISDN cause values.
2	ETSI ISUP version 2 cause values.
3	Q767 ISUP cause values.
4	Australian Interconnect ISUP cause values.
5	ANSI cause values.
6	UK National user part.
7	Blue Book TUP cause values.
8	SSUTR2 cause values.
9	China TUP cause values.
10	DPNSS cause values.
11 - 90	Reserved for future use.
90 - 99	User customised clearing cause tables uploaded from the remote data centre.

The definition of the values and mappings provided by the fixed mapping tables are given in ANNEX B.

7.11.3 Calling Party Number Modes

The following are the allowed calling party number modes:-

CGMD	Description
0	Do not pass on the calling party number. Generate calling party number from prefix digits and use parameters from the calling party number custom profile.
1	Pass on calling party number if present (adding prefix if any). Use calling party number custom profile to adjust parameter as necessary.
2	If the calling party number is received then prefix the calling party number digits using the CGPRE parameter and use custom profile to adjust parameters as necessary. If prefixing causes the calling party number to exceed max digits then behave as if no calling party number has been received. If no calling party number has been received the use CG2PRE as a default number using the 2nd calling party number parameter values from the custom profile.
3	Pass on calling party number unless it is restricted. If restricted then drop the calling party number. If a prefix is present then generate calling party number using prefix digits and the customer calling party number profile.
4	If the calling party number is received then prefix the calling party number digits using the CGPRE parameter and use custom profile to adjust parameters as necessary. If prefixing causes the calling party number to exceed max digits then behave as if no calling party number has been received. If there is no calling party number the prefix digits will not be used.

7.11.4 Hunting Algorithms

The possible hunting algorithms are:-

HUNT	Description
0	No hunting will occur. (e.g. for announcements)
1	Circuit mapping where the timeslot on an incoming circuit group directly relates to the corresponding circuit in an outgoing circuit group (Note: Only one circuit group can be assigned to a route in this case).
2	2 way forward where the converter will search from the lowest numbered circuit in the group with the lowest numbered hunt sequence upwards until it finds an available outgoing circuit to route on.
3	2 way backward where the converter will search from the highest numbered circuit in the group with the highest numbered hunt sequence downwards until it finds an available outgoing circuit to route on.
4	2 way forward (modified) which is the same as two way forward except the starting point for hunting is the most recent circuit in the route used.
5	2 way backward (modified) which is the same as two way backward except the starting point for hunting is the most recent in the route used.
6	Group spread where the converter will, based on the last successful circuit selected, start hunting upwards from the first circuit in the next circuit group in the hunt sequence.
7	Least used where the converter will start hunting from the first circuit in the circuit group which has the least number of circuits in use.
8	Most free where the converter will start hunting from the first circuit in the circuits which has the most number of circuits that are not busy and not blocked.
9	Test call circuit selection. This option allows the selection of the outgoing circuit by embedding the circuit group number and device within the group as part of the digits dialled. The device within a group will be the last 3 prefix digits that have been deleted (the number of delete digits having been specified by the CDDL parameter) and the group will be the 3rd, 4th and 5th last digits that have been deleted. E.g. If the route has CDDL = 7 and the called party number digits were 010601612345 then the circuit selected would be group 6 device 16.

7.11.5 Remote Operations

The possible remote operation types are:

DTYPE	DESCRIPTION
SOFTWARE	Selecting this operation allows the user to upload a new software version
CONFIG	Selecting this operation allows the user to upload a previously backed up version of the configuration.
LSC	Selecting this operation type allows the user to upload a database of subscriber numbers from the remote data centre onto the converter.
CCTAB	Selecting this operation type allows the user to upload a database of customised clearing cause mappings onto the DSC210.

7.11.6 CPC Mapping

Calling party category mapping tables are used to convey calling party categories received on one side of a call into the appropriate calling party category for transmission to the far side.

When a calling party category is received it is mapped to an Internal Token using the Receive Calling Party Category Mapping Table. The Internal Token is then conveyed across the converter and mapped using the Transmit Calling Party Category Mapping Table into the appropriate CPC for transmission.

The calling party category mapping tables are configured on a per-circuit group basis using the **CPC** parameter, separate tables can be configured for the received and for the send side. The mapping tables are:-

CPC table	Description
0	Use default CPC
1	ETSI ISUP version 2 CPC values
2	Q767 CPC Values
3	Australian Interconnect CPC values
4	ANSI CPC values.
5	UK National User Part CPC values.
6	Russian ISUP CPC values.
7	Default to “Ordinary Subscriber”.
8	Default to “Comstar Subscriber”.
9	SSUTR2 CPC Values
11-99	Reserved

The definition of the values and mappings provided by the tables are given in ANNEX C.

7.11.7 Converter Specific Timers

T0	Range (seconds)	Default (seconds)	Description
1	1-900	60	Wait for alerting guard timer. This timer starts when a call is initiated and stops when an alerting indication is received. On timer expiry it releases the call using internal token 129.
2	15-900	300	Wait for answer guard timer. This timer starts when alerting is received for a call and stops when an answer indication is received. On timer expiry it report an event to the alarm log and releases the call using internal token 130. This timer can be selected using the TANS timer on an outgoing route basis.
3	1-900	120	Wait for release complete guard timer. This timer starts when either a release is received for a call or when a release is generated. It is stopped when call control receives a release complete indication. On timer expiry it re-attempts a release using internal token 134 and restarts the timer. After 5 attempts if no release complete is received it resets the circuit.
4	1-900	300	Wait for resume guard timer. This timer starts when a suspend indication is received and stops when a resume indication is received. On timer expiry it releases the call using internal token 132.
5	5-20	7	Wait for board response guard timer. This timer starts when internal messages are sent to a signalling board and stopped when an acknowledgement is received. On timer expiry it reports and error. If the internal message sent to a board related to setting up a speech path for a call then the call is released using internal token 135.
6	1-900	5	Campon busy circuit timer. If no circuit is available on the outgoing side the outgoing circuit is ‘camped on’ and the timer started. If the outgoing circuit becomes idle the timer is stopped and the held call is routed over the outgoing circuit. On timer expiry the call is released using internal token 133.
7	2-10	3	MML wait for maintenance confirmation timer. The timer is started when a MML maintenance request is performed. It is stopped when a confirmation from the remote site to the maintenance request is received. On timer expiry a confirmation to the request is internally generated allowing further MML commands to be entered.
8	1-900	7	Wait for signalling failure stabilisation timer. This timer is started when signalling loss is detected. It is stopped when a signalling resume is received. On timer expiry all circuits using that signalling link are reset.
10	1-900	60	Wait for stop digit timer. The timer is started when an initial address message without a stop ‘f’ digit is received by the converter. It is stopped when a subsequent address message is received with a stop digit or a backward address complete message is received. If a subsequent address message is received which does not contain digits then the timer is stopped and started again. On timer expiry stop digit is generated in a subsequent address message.
11	5-20	10	User service control request timer. This timer is started when the converter requests that for a call the user service control application on a remote system perform a call processing action. It is stopped when the user service control application responds to the request. On timer expiry the call is released.

12	15-900	300	Selectable wait for answer timer. This timer starts when alerting is received for a call and stops when an answer indication is received. On timer expiry it releases the call using internal token 130. This timer can be selected using the TANS timer on an outgoing route basis.
13	15-900	300	Selectable wait for answer timer. This timer starts when alerting is received for a call and stops when an answer indication is received. On timer expiry it releases the call using internal token 130. This timer can be selected using the TANS timer on an outgoing route basis.
14	15-900	300	Selectable wait for answer timer. This timer starts when alerting is received for a call and stops when an answer indication is received. On timer expiry it releases the call using internal token 130. This timer can be selected using the TANS timer on an outgoing route basis.
15	4-900	40	Announcement timer. This timer is started when a call is routed to an announcement and stops when the call is released. On timer expiry the announcement stops playing and releases the call using internal token 171.

7.11.8 Calling Party Number Nature Of Address Mode

The possible calling party number nature of address modes are:

CGNA/ CG2NA	Description
0	Pass the nature of address transparently if present otherwise set it to indicate ‘national number’ if generated.
1	Pass the nature of address transparently if present otherwise set it to indicate ‘subscriber number’ if generated.
2	Pass the nature of address transparently if present otherwise set it to indicate ‘unknown number’ if generated.
3	Pass the nature of address transparently if present otherwise set it to indicate international number if generated.
4	Set the nature of address to ‘national number’.
5	Set the nature of address to ‘subscriber number’.
6	Set the nature of address to ‘unknown number’.
7	Set the nature of address to ‘international number’.

7.11.9 Calling Party Number Presentation Restriction Mode

The possible calling party number presentation restriction modes are:-

CGPR/ CG2PR	Description
0	Pass the presentation indication transparently if present otherwise set it to indicate allowed if generated.
1	Pass the presentation indication transparently if present otherwise set it to indicate restricted if generated.
2	Mark calling party number as allowed.
3	Mark calling party number as restricted.

7.11.10 Calling Party Number Numbering Plan Mode

The possible calling party number numbering plan modes are:-

CGNP/ CG2NP	Description
0	Pass the numbering plan indication transparently if present otherwise default to ISDN numbering plan if generated.
1	Pass the numbering plan indication transparently if present otherwise default to Unknown numbering plan if generated.
2	Pass the numbering plan indication transparently if present otherwise default to Data numbering plan if generated.
3	Pass the numbering plan indication transparently if present otherwise default to Telex numbering plan if generated.
4	Mark the numbering plan indication as ISDN numbering plan.
5	Mark the numbering plan indication as Unknown.
6	Mark the numbering plan indication as Data numbering plan.
7	Mark the numbering plan indication as Telex numbering plan.

7.11.11 Called Party Number Nature Of Address Mode

The possible called party number nature of address modes are:-

CGNA/ CG2NA	Description
0	Pass the nature of address transparently if present otherwise set it to indicate ‘national number’ if generated.
1	Pass the nature of address transparently if present otherwise set it to indicate ‘subscriber number’ if generated.
2	Pass the nature of address transparently if present otherwise set it to indicate ‘unknown number’ if generated.
3	Pass the nature of address transparently if present otherwise set it to indicate international number if generated.
4	Set the nature of address to ‘national number’.
5	Set the nature of address to ‘subscriber number’.
6	Set the nature of address to ‘unknown number’.
7	Set the nature of address to ‘international number’.

7.11.12 Called Party Number Numbering Plan Mode

The possible second calling party number numbering plan modes are:-

CDNP	Description
0	Pass the called party number numbering plan indication transparently if present otherwise default to ISDN numbering plan if generated.
1	Pass the called party number numbering plan indication transparently if present otherwise default to Unknown numbering plan if generated.
2	Pass the called party number numbering plan indication transparently if present otherwise default to Data numbering plan if generated.
3	Pass the called party number numbering plan indication transparently if present otherwise default to Telex numbering plan if generated.
4	Mark the called party number numbering plan indication as ISDN numbering plan.
5	Mark the called party number numbering plan indication as Unknown.
6	Mark the called party number numbering plan indication as Data numbering plan.
7	Mark the called party number numbering plan indication as Telex numbering plan.

7.11.13 Charge Mode

The possible settings for the charge indication mode are:-

CHG	Description
0	Transparently carry the charge indication. If the indication is being generated inherit it from previous charge indication sent.
1	Transparently carry the charge indication. If the indication is being generated default it to no indication.
2	Transparently carry the charge indication. If the indication is being generated default it to charge.
3	Transparently carry the charge indication. If the indication is being generated default it to no charge.
4	Always provide a charge indication. If the charge indicator is not present then inherit its value from the previous charge indicator sent.
5	Do not provide a charge indication.
6	Always generate the charge indicator with the indication set to charge.
7	Always generate the charge indicator with the indication set to no charge

7.11.14 Local Service Mode

The possible setting for the local service mode are:-

LSM	Description
0	No local service mode active
1	Validate the calling party number against the permitted database of calling party numbers for the called party number before allowing the call to proceed. The database can be generated by use of the REMCFG tool on the RDC and uploaded using the CNUPI command. This service requires the presence of the calling party number authorisation purchasable option.
2	Randomly select a calling party number from a table of calling party numbers and insert it into the initial address message. The database can be generated by use of the REMCFG tool on the RDC and uploaded using the CNUPI command. This service requires the presence of the calling party number authorisation purchasable option.
3	Translate the called number to a number specified in the database. If the called number is not present allow the call to proceed with original number. The database can be generated by use of the REMCFG tool on the RDC and uploaded using the CNUPI command. This service requires the presence of the number translation purchasable option.
4	Translate the called number to a number specified in the database. If the called number is not present reject the call. The database can be generated by use of the REMCFG tool on the RDC and uploaded using the CNUPI command. This service requires the presence of the number translation purchasable option.
5	Validate the calling party number against the permitted database of calling party numbers. If the calling number IS NOT present then reject the call. The database can be generated by use of the REMCFG tool on the RDC and uploaded using the CNUPI command. This service requires the presence of the number translation purchasable option.
6	Validate the calling party number against the permitted database of calling party numbers. If the calling number IS present then reject the call. The database can be generated by use of the REMCFG tool on the RDC and uploaded using the CNUPI command. This service requires the presence of the number translation purchasable option.

7.11.15 Call Diversion Mode

The possible settings for the call diversion mode are:-

DIV mode	Pre-Alerting Diversion Indication (receipt of DVT-I and DVT-B)	Post-Alerting Diversion Indication (receipt of DVT-R)
0	Discard all diversion information received in the backward direction and continue with the original call attempt	Discard all diversion information received in the backward direction and continue with the original call attempt
1	Clear the first call and make a new call to the C Party. If unable to select an outgoing circuit then release the call.	Discard all diversion information received in the backward direction and continue with the original call attempt
2	Clear the first call and make a new call to the C Party. If unable to select an outgoing circuit then release the call.	Clear the first call and make a new call to the C Party. If unable to select an outgoing circuit then ignore the diversion attempt and continue with the original call.

7.11.16 Digit Analysis Mode

The possible settings for the digit analysis mode are:-

DAMD	Description
0	Perform digit analysis on the called number.
1	Perform digit analysis on the calling number.
2	Perform digit analysis on the calling party category.
3	Perform digit analysis on the nature of address from the called number.
4	Perform digit analysis on the nature of address from the calling party number.
5	Perform digit analysis on transmission medium requirement.

7.11.17 SS7 Transparency over Q931

The setting of the ENC parameter allows the ability to convey certain SS7 parameters that are not supported by the Q.931 protocol over Q931 where there is a DSC210 at each end.

This mode of operation is targeted specifically at users implementing Voice over IP networks. In many cases the VoIP protocol interworking equipment is not capable, of supporting full SS7 transparency because the protocols used (eg Q.931, H.323 etc) do not support all the parameters present at the SS7 signalling gateway.

The DSC210 enhances the transparency by encapsulating the SS7 parameters in the Q.931 signalling using the User to User Information Element.

The following parameters are currently supported:

Calling Party Category

Forward Call Indicators

Backward Call Indicators

Nature of Connection Indicators

This mode of operation is only useful when there is a DSC210 at each end of the VoIP section of the call.

7.11.18 Access Side Types

The possible settings for the Access Side type are:-

ASTYPE Variant	Description
Q931-0	ETSI Q.931
Q931-1	ETSI Q.931 where Q931 acts as a transit network.
Q931-2	ETSI Q.931 and can be partner blocked
Q931-3	ETSI Q.931 where Q931 acts as a transit network and can be partner blocked.
Q931-10 to Q931-13	Q931-10 to Q931-13 are reserved for proprietary use
QSIG-0	QSIG
QSIG -1	QSIG where QSIG acts as a transit network.
QSIG -2	QSIG and can be partner blocked
QSIG -3	QSIG where QSIG acts as a transit network and can be partner blocked.
QSIG -10 to QSIG -13	QSIG -10 to QSIG -13 are reserved for proprietary use
NI2 -0	North American ISDN 2.
NI2 -1	ETSI Q.931 where NI2 acts as a transit network.
NI2 -2	ETSI Q.931 and can be partner blocked
NI2 -3	ETSI Q.931 where NI2 acts as a transit network and can be partner blocked.
NI2 -10 to NI2 -13	NI2 -10 to NI2 -13 are reserved for proprietary use
DPNSS -0	Level 2 taken out of service whenever the circuits need to be blocked (PCM Loss or partner blocking). Data call not supported.
DPNSS -1	Level 2 remains in service and calls are cleared whenever the circuits need to be blocked (PCM Loss or partner blocking). Data call not supported..
DPNSS -2	Level 2 taken out of service whenever the circuits need to be blocked (PCM Loss or partner blocking). Data calls supported.
DPNSS -3	Level 2 remains in service and calls are cleared whenever the circuits need to be blocked (PCM Loss or partner blocking). Data calls supported.

7.12 Command Definitions

7.12.1 Command Groups

The commands are broken down into a number of command groups as follows:-

Alarms
Access Side Signalling
Circuit Assignment
Configuration
SS7 Signalling
MMI
Maintenance
Measurements
Remote Data Centre
Routing
Status

7.12.2 Command Notation

The following conventions are used in the command definitions:

- Items in square brackets [ ] are optional.
- Items separated by a vertical bar | are alternatives, only one of which may be used.
- Curly brackets { } are used to designate a group of optional items of which at least one must be selected.
- The sequence of three dots … is used to indicate that a number of values may be entered, linked by the **&** or **&&** operator.

7.12.3 Command Attributes

The following symbols are used to indicate command attributes:

CONFIG The command affects configuration data.

PROMPT A “DANGEROUS” command which must be confirmed by the operator.

RDC This command only applies when the Remote Data Centre Option is fitted.

7.13 Alarms

7.13.1 Alarm Class Set

ALCLS	Alarm Class Set
	This command assigns an alarm class value to the specified fault code(s).
Syntax	**ALCLS:CLA=,CODE=…;**
Attributes	**CONFIG**
Example	ALCLS:CLA=1,CODE=20;

7.13.2 Alarm Class Print

ALCLP	Alarm Class Print
	This command gives a print-out of the fault codes belonging to a particular alarm class. If the parameter CLA is omitted, all fault codes are printed out.
Syntax:	**ALCLP[:CLA=];**
Attributes:	None.
Example:	ALCLP; ALCLP:CLA=2;

Output format

```
Alarm Fault Codes
CODE  CLA  TITLE
11    2    Processor1 fail
12    2    Processor2 fail
EXECUTED
```

7.13.3 Alarm Fault Code Print

ALFCP Alarm Fault Code Print

This command gives a print-out of the alarm class of specified fault code(s).

Syntax: **ALFCP[:CODE=…];**

Attributes: None.

Example: ALFCP;

ALFCP:CODE=8;

Output Format

```
Alarm Fault Codes
CODE        CLA       TITLE
8           2         In-band AIS
EXECUTED
```

7.13.4 Alarm List Print

ALLIP Alarm List Print

This command gives a print-out of all ACTIVE fault codes stored in the system's alarm log.

Syntax **ALLIP;**

Attributes None.

Example ALLIP;

Output Format

```
SYSTEMIDENT1 Alarm List (active alarms) 1996-12-01 00:00:54
ALP  CODE ID DIAG CLA OCCURRED            CLEARED             TITLE
107     1  0 0043 1 A 1994-10-30 10:54:48                    PCM loss
 74    20  0 1211 2 A 1994-10-30 10:54:27                    -12v fault
EXECUTED
```

Note: The meaning of the ID field depends on the alarm code and is described in ANNEX A.

7.13.5 Alarm Log Print

ALLOP Alarm Log Print

This command gives a print-out of the alarm log. If no code or class is entered the whole log is output.

Where alarms exist within the specified fault code or class the following print-out is presented.

Syntax **ALLOP[:CODE=…];**

ALLOP[:CLA=…];

Attributes None.

Example ALLOP:CODE=20;

ALLOP:CLA=1&&2;

ALLOP;

Output Format

```
SYSTEMIDENT1 Alarm Log 1996-12-01 00:00:54
ALP  CODE ID DIAG CLA OCCURRED            CLEARED             TITLE
107    1   0 0043 1 C 1994-10-30 10:54:48 1994-10-30 10:55:20 PCM loss
 74   20   0 1211 2 A 1994-10-30 10:54:27                     -12v fault
EXECUTED
```

Note: the C or A character in the CLA field indicates the current status as A (active) or C (cleared). The meaning of the ID field depends on the alarm code and is described in ANNEX A.

7.13.6 Alarm Receipt Initiate

ALREI Alarm Receipt Initiate

If parameter ALP is omitted, then all alarms with status CLEARED are removed.

Attempts to remove alarms which do not have the status CLEARED will be rejected.

Syntax **ALREI[:ALP=];**

Attributes None

Example ALREI:ALP=100;

ALREI;

7.13.7 Alarm Test Initiate

ALTEI	Alarm Test Initiate
	Generates an active test alarm of the specified class, which will be entered in the alarm log.
Syntax	**ALTEI:{[CLA=2][CLA=3]};**
Attributes	None
Prerequisites	Only one test alarm may be active at any one time. Test alarms may only be generated for classes 2 and 3.
Example	ALTEI:CLA=3;

7.13.8 Alarm Test End

ALTEE	Alarm Test End
	Clears a test alarm.
Syntax	**ALTEE;**
Attributes	None
Prerequisites	The alarm test must already have been initiated.
Example	ALTEE;

7.14 Access Side Signalling

7.14.1 Access Side Signalling Link Initiate

ASSLI	Access Side Signalling Link Initiate
	This command is used to initiate an Access Side signalling link.
Syntax	**ASSLI:ASLINK=,EQU =,TS=,END=,ASTYPE=,[M56K=][L2K=];**
Prerequisites	The specified link has not already been initiated.
	The specified PCM time slot is not already assigned elsewhere in the system.
	The PCM on which the timeslot exists has been initiated.
	The board on which the EQU exists has been initiated.
	The timeslot is a valid timeslot for the PCM type (up to 31 for an E1 PCM and 24 for a T1 PCM).
	If the access type is Q931, NI2 or QSIG then the end must be N or U.
	If the access type is DPNSS then the end must be A or B.
	If M56K is set to a non zero value then all links on the same board for which M56K is non zero must also use the same M56K value (i.e. Only one mode of 56kbits/s operation is supported on any board at one time. However it is possible for some links to operate at 64kbits/s whilst others operate at 56kbits/s).
	Only EQU signalling processors 1 and 2 can be used.
	Only M56K modes 1 and 2 can be used.
	The signalling processor specified by the EQU parameter must be equipped with a valid board type and not already assigned to a link.
Attributes	**CONFIG**
Example	ASSLI:ASLINK=4,EQU=5-1,TS=5-1-16,END=N,ASTYPE=Q931-0;

7.14.2 Access Side Signalling Link Change

ASSLC Access Side Signalling Link Change

This command is used to change the attributes of an Access Side signalling link.

Syntax **ASSLC:ASLINK=,{[EQU=,][TS=,][END=,][ASTYPE=,][M56K=][L2K=];};**

Prerequisites The specified link has already been initiated.

The specified PCM time slot is not already assigned elsewhere in the system.

The PCM on which the timeslot exists has been initiated.

The board on which the EQU exists has been initiated.

The timeslot is a valid timeslot number for the PCM type (up to 31 for an E1 PCM and 24 for a T1 PCM).

The signalling processor specified by the EQU parameter must be equipped with a valid board type and not already assigned to a link.

The signalling link must be blocked.

If the access type is Q931, NI2 or QSIG then the end must be N or U.

If the access type is DPNSS then the end must be A or B.

If M56K is set to a non zero value then all links on the same board for which M56K is non zero must also use the same M56K value (i.e. Only one mode of 56kbits/s operation is supported on any board at one time. However it is possible for some links to operate at 64kbits/s whilst others operate at 56kbits/s).

Only EQU signalling processors 1 and 2 can be used.

Only M56K modes 1 and 2 can be used.

Attributes **CONFIG**

Example ASSLC:ASLINK=4,EQU=5-1,TS=5-1-16,END=U,ASTYPE=Q931-0;

7.14.3 Access Side Signalling Link End

ASSLE Access Side Signalling Link End

This command is used to end an Access Side signalling link.

Syntax **ASSLE:ASLINK=;**

Prerequisite No circuit groups are assigned to the signalling link.

The signalling link must be blocked.

The signalling link must not be monitored.

Attributes **CONFIG**

Example ASSLE:ASLINK=1;

7.14.4 Access Side Signalling Link Print

ASSLP Access Side Signalling Link Print

This command is used to obtain a print-out of the attributes of Access Side Signalling Link(s). If no link is specified, all initialised links are output.

Syntax **ASSLP:[ASLINK=…];**

Attributes None.

Example ASSLP:ASLINK=1;

ASSLP;

Output format

```
Access Side Signalling Link Configuration
ASLINK EQU     TS      END   ASTYPE  M56K       L2K
1      5-1     6-1-1   N     Q931-0  0          7
2      5-2     6-1-2   U     Q931-0  0          7
3      6-1     6-1-3   A     DPNSS-0 0
4      6-2     6-1-4   A     DPNSS-0 0
EXECUTED
```

7.15 Circuit Assignment

7.15.1 Circuit Assignment Circuit Group Initiate

CACGI Circuit Assignment Circuit Group Initiate

This command is used to initiate a Circuit Group.

If a PCM is specified then the group will use the PCM's timeslots for voice/data traffic.

Syntax **CACGI:CGRP=, POR=,{[ASLINK=],[C7RT=,BCIC=,NTTYPE=,]} [PCM=,][CPC=,][CC=,][POR=,][PRI=,][NTTYPE=,][L1=,][TMRM=,] [INT=,][OHEC=,][IHEC=,][ENC=,][U2U=,][ISMD=,][COT=,][DCPC=,] [DIV=,][TEXT=,] [SAT=,] [LABEL=,];**

Prerequisites The CGRP value must not already have been assigned

If a PCM is specified it should already be initiated.

If assigning the group to a link (Access Side) the link must already be initiated and blocked.

If assigning the group to a C7 Route (Network Side) the C7 Route must already be initiated.

The point of origin must already be initiated.

PRI can only be entered for the Network Side or DPNSS on the Access Side.

NUP and TUP circuit groups cannot be assigned a C7 route that has ANSI linksets.

NUP circuit groups cannot be assigned a C7 route that has 24 bit point codes.

A circuit group cannot be initiated if a route from it is of hunt type circuit mapping and its partner circuit group is unblocked.

COT cannot be set to a value other than zero except for TUP and ISUP.

Incoming COT check can only be set if there is a PCM present.

ENC can only be set if User to User Service 1 is set to Y.

TMRM can only be set to 2 if the circuit group is ISUP and is not ANSI.

Attributes **CONFIG**

Example CACGI:CGRP=1,PCM=5-1,C7RT=1,BCIC=241,NTTYPE=ISUP-2,POR=3,CC=1-4;

7.15.2 Circuit Assignment Circuit Group Change

CACGC Circuit Assignment Circuit Group Change

This command is used to change the attributes of a CGRP.

If a PCM is specified then the group will use the PCM's timeslots for voice/data traffic.

Syntax **CACGC:CGRP=,**
[PCM=,][CPC=,][CC=,][POR=,][PRI=,][NTTYPE=,][L1=,][TMRM=,][INT=,]
[OHEC=,][IHEC=,][ENC=,][U2U=,][ISMD=,][COT=,][DCPC=,][DIV=,]
[TEXT=,]SAT=,][LABEL=,];

Prerequisites If specified, the PCM must already have been initiated and the timeslots on the PCM must not be already in use elsewhere on the system.

If specified, the point of origin must already be initiated.

The circuit group must be blocked unless only the label is changed.

PRI can only be entered for the Network Side or DPNSS on the Access Side.

If the POR is specified and the circuit group is circuit mapped to a far circuit group the POR can only be changed if the far circuit group is blocked.

If the POR is specified and the POR goes to a route that is circuit mapped then the POR can only be changed if the new partner group is blocked.

An E1 PCM cannot be changed to a T1 PCM if the devices on the group are outside the range 1-24.

NUP and TUP circuit groups cannot be assigned a C7 route that has ANSI linksets.

NUP circuit groups cannot be assigned a C7 route that has 24 bit point codes.

COT cannot be set to a value other than zero except for TUP and ISUP.

Incoming COT check can only be set if there is a PCM present.

ENC can only be set if User to User Service 1 is set to Y.

TMRM can only be set to 2 if the circuit group is ISUP and is not ANSI.

Limitations This command cannot be used to remove a PCM from a circuit group.

Attributes **CONFIG**

Example CACGC:CGRP=1,CC=3-5;

7.15.3 Circuit Assignment Circuit Group End

CACGE Circuit Assignment Circuit Group End

This command is used to end a Circuit Group.

Syntax **CACGE:CGRP=;**

Prerequisites No circuits must be assigned to the Circuit Group.

The circuit group must not be attached to a hunt sequence.

The circuit group must be blocked.

If the circuit group is circuit mapped then it can only be ended if its partner circuit group is blocked.

A circuit group cannot be ended if it is associated with a periodic report.

Attributes

Example CACGE:CGRP=1;

7.15.4 Circuit Assignment Circuit Group Print

CACGP Circuit Assignment Circuit Group Print

This command is used to print-out the attribute of Circuit Groups(s). If no Circuit Group(s) is specified, data for all initialised Circuit Groups will be output.

If the PAGE parameter is specified then that particular page of data will be output. If no page is specified then page 1 will be output.

Syntax **CACGP:[PAGE=,][CGRP=…];**

Attributes None.

Example CACGP:CGRP=1;
CACGP:CGRP=1&2;
CACGP
CACGP:PAGE=2;

Output format

```
Page 1 of 3 Circuit Group Configuration
CGRP ASLINK C7RT NTTYPE   BCIC   PCM   CPC  CC   POR  PRI     LABEL
22          1    ISUP-1   230    5-1   0-0  1-1  5    NORM    BERLIN
33   3                           6-2   0-0  1-2  6            DURHAM
EXECUTED

Page 2 of 3 Circuit Group Configuration
CGRP DCPC    ISMD TMRM L1  OHEC IHEC INT COT SAT TEXT  LABEL
22   10-10   0    2-0  0-0 0-1  0-0  0-0 0-0 0-0 0-0   BERLIN
33   10-10   0    0-0  0-0 0-0  0-0  0-0 0-0 0-0 0-0   DURHAM
EXECUTED

Page 3 of 3 Circuit Group Configuration
CGRP DIV   ENC U2U   LABEL
22   0-0-0 N   N-N-N BERLIN
33   0-0-0 N   N-N-N DURHAM
```

7.15.5 Circuit Assignment Device Initiate

CADEI Circuit Assignment Device Initiate

This command is used to add a device or CIC to a circuit group.

Syntax **CADEI:CGRP=,DEV=…;**

CADEI:CGRP=,CIC=…;

Prerequisites The circuit group must already have been initiated.

All devices or CICs specified must not already have been assigned to a circuit group.

If the circuit group exists on a PCM then the device being assigned must be in a valid range for the PCM type (up to 1:31 for E1 PCMs and 1:24 for T1 PCMs).

CICs cannot be specified for Access Side Groups.

For voice groups, since devices directly relate to timeslots, device 0 cannot be specified.

For voice devices the timeslot relating to the device must not be assigned elsewhere on the system.

Since Access Side links use timeslot 16 for signalling this device cannot be specified for Access Side groups.

The first device number + the base cic number must not result in a negative number.

The associated circuit group must be blocked.

Attributes CONFIG

Example CADEI:CGRP=1,DEV=14;

7.15.6 Circuit Assignment Device End

CADEE Circuit Assignment Device End

This command is used to remove a device or CIC from a circuit group.

Syntax **CADEE:CGRP=,DEV=…;**

CADEE:CGRP=,CIC=…;

Prerequisites All devices or CICs specified must already have been assigned to the circuit group.

CICs cannot be specified for Access Side circuit groups.

The associated circuit group should be blocked.

The first device number + the base CIC number must not result in a negative number.

If a CIC is initiated then it must not be less than the base CIC of the group or greater than the groups base CIC + 31.

Attributes CONFIG

Example CADEE:CGRP=2,DEV=20

CADEE:CGRP=3,DEV=1&5;

7.15.7 Circuit Assignment Device Print

CADEP Circuit Assignment Device Print

This command is used to list the devices that have been assigned to specific circuit groups. For SS7 the base CIC is provided and the devices represent an offset from the base CIC.

When listing by circuit group, only those devices assigned to that group are displayed. Circuits within a circuit group that been assigned for signalling only operation are marked with a 'S'. Circuits that carry voice or data are marked with a 'B' (Bearer). Circuits not assigned to the group are marked with '-'.

Syntax **CADEP:[CGRP=];**

Attributes None.

Example CADEP:CGRP=1;

CADEP;

Output format

Listing by CGRP:

```
Device Configuration
                Device:             1 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 3 3
CGRP CIC        0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
1    526        - B B B B B B B B B B B B B B – B B B B B B B B B B B B B B
2               - S – S S S – S – S S - - S - - - S S S – S S S S S S S S - - -
EXECUTED
```

7.16 Configuration

7.16.1 Configuration Announcement Initiate

CNANI	Configuration Announcement Initiate
	This command is used to initiate an announcement on the converter. The operation involves reading a announcement .WAV file data from a remote data centre (if specified) or floppy disk and downloading it a board that can provide announcements. Valid file formats for announcements are: CCITT A-Law 8.000 kHz, 8 Bit, Mono. CCITT Mu-Law 8.000 kHz, 8 Bit, Mono. The file name given should file name of the file without the suffix. The suffix is .WAV for an ALAW or Mu Law encoded .WAV file. Note: During execution of this command there may not be a response from the system for up to 3 minutes while the command is being executed.
Prerequisites	The RDC should be initiated and not blocked. The ANNC cannot already be initiated.
Syntax	**CNANI:ANNC=,** **[RDC=,** **DIRECTORY=,]** **FILE=,** **[LABEL=,]** **[REPEAT=,],**
Attributes	RDC,CONFIG
Example	CNANI:ANNC=1,RDC=1,DIRECTORY=AUTH,FILE=EMERG,LABEL=EMERG;

7.16.2 Configuration Announcement Change

CNANC	Configuration Announcement Change
	This command is used to change data parameters associated with an announcement on the converter.
Prerequisites	The ANNC must already be initiated.
Syntax	**CNANC:ANNC=,** **[LABEL=],** **[REPEAT=,];**
Attributes	CONFIG
Example	CNANC:ANNC=1,LABEL=EMERG,REPEAT=5;

7.16.3 Configuration Announcement End

CNANE Configuration Announcement End

This command is used to end the assignment of an announcement.

Syntax **CNANE:ANNC=;**

Prerequisites The announcement must already have been initiated.

The announcement must not be associated with an outgoing route.

Attributes CONFIG

Example CNANE:ANNC=1;

7.16.4 Configuration Announcement Print

CNANP Configuration Announcement Print

This command is used to obtain a print-out of the attributes for announcements.

Syntax **CNANP:[ANNC=];**

Attributes None.

Example CNANP;

CNANP:ANNC=2;

Output format

```
Announcement Configuration
ANNC REPEAT LABEL
3    0      Test
4    5      Emergency
EXECUTED
```

7.16.5 Configuration Back Up Date Print

CNBDP Configuration Back Up Date Print

This command prints the date and time the configuration data on the disk in the floppy disk drive was saved to disk.

Prerequisites The floppy disk must already be formatted.

Syntax **CNBDP;**

Attributes None.

Example CNBDP;

Output format

```
1995-10-23 11:07:53
EXECUTED
```

7.16.6 Configuration Board Initiate

CNBOI Configuration Board Initiate

This command defines a new board on the system.

Note: Boards that are used for voice only should be configured with a SIGTYPE of NONE.

Syntax **CNBOI:BPOS=,BRDTYPE=,SIGTYPE=;**

Prerequisites No board has already been defined for the specified board position.

A board must physically exist for the board position and be licensed for the signalling type.

Attributes CONFIG

Example CNBOI:BPOS=4,BRDTYPE=CS6-2-2,SIGTYPE=SS7;
CNBOI:BPOS=6,BRDTYPE=CS6-2-2,SIGTYPE=Q931;
CNBOI:BPOS=6,BRDTYPE=CS6-2-2,SIGTYPE=ISDN;
CNBOI:BPOS=8,BRDTYPE=CS6-2-2,SIGTYPE=VOICE;
CNBOI:BPOS=7,BRDTYPE=CS6-2-2,SIGTYPE=NONE;

7.16.7 Configuration Board End

CNBOE Configuration Board End

This command de-assigns a board from a board position.

Syntax **CNBOE:BPOS=;**

Prerequisites A board has been defined for the specified board position.

No signalling processor on the board has been allocated to a signalling link or a voice resource.

No PCM on the board is configured.

The board has been blocked.

Attributes CONFIG

Example CNBOE:BPOS=4;

7.16.8 Configuration Board Print

CNBOP Configuration Board Print

This command gives a print out of all configured boards.

Syntax **CNBOP;**

Attributes None

Example CNBOP;

Output format

```
Board Configuration
BPOS  BRDTYPE  SIGTYPE
5     CS6-2-2  SS7
7     CS6-2-2  Q931
EXECUTED
```

7.16.9 Configuration Back Up Initiate

CNBUI	Configuration Back Up Initiate
	This command dumps all configuration data to either the disk in the floppy disk drive or to a remote data centre (if specified).
Syntax	**CNBUI:[RDC=,DIRECTORY=,FILE=,];**
Prerequisites	The floppy disk must already be formatted.
	If the RDC is specified it should be initiated and not blocked.
Attributes	
Example	CNBUI;

7.16.10 Configuration Monitor Initiate

CNMOI	Configuration Monitor Initiate
	This command initiates the monitoring of an object on the converter. An object is currently either a C7LINK or an ASLINK.
	For signalling the STS will monitor information sent from the EQU of the signalling link and the RTS will monitor information received by the signalling link.
Prerequisites	If specified the ASLINK has already been initiated.
	If specified the C7LINK has already been initiated.
	The PCM on which STS exists must have already been initiated and STS must be within the correct range for the PCM type (0-31 for E1 and 1-24 for T1 PCMs).
	The PCM on which RTS exists must have already been initiated and RTS must be within the correct range for the PCM type (0-31 for E1 and 1-24 for T1 PCMs).
	STS is not already assigned elsewhere on the system for output.
	RTS is not already assigned elsewhere on the system for output.
	A signalling can only be monitored once.
Syntax	**CNMOI:{[ASLINK=]|[C7LINK=]},STS=,RTS=;**
Attributes	CONFIG
Example	CNMOI:C7LINK=1,STS=5-1-15,RTS=5-1-16;

7.16.11 Configuration Monitor End

CNMOE Configuration Monitor End

This command ends the monitoring of an object. An object is currently only an signalling link.

Prerequisites The C7LINK or ASLINK is being monitored.

Syntax **CNMOE:{[ASLINK=]|[C7LINK=]};**

Attributes CONFIG

Example CNMOE:ASLINK=1;

7.16.12 Configuration Monitor Print

CNMOP Configuration Monitor Print

This command is used to obtain a print out of the objects being monitored. An object is currently only a signalling link.

For signalling the STS will monitor information sent from the EQU of the signalling link and the RTS will monitor information received by the signalling link.

Syntax **CNMOP;**

Attributes None

Example CNMOP;

Output format

```
Monitoring Configuration
ASLINK C7LINK STS    RTS
1             19-1-1  19-1-2
       3      19-1-3  19-1-4
EXECUTED
```

7.16.13 Configuration PCM Initiate

CNPCI	Configuration PCM Initiate
	This command configures a PCM on a board such that it is available for signalling or voice and optionally configures the PCM to be used as a potential synchronisation source for the system. The command also allows the frame format and line code to be configured.
Syntax	**CNPCI:PCM=,PCMTYPE=,[SYNCPRI=,][FF=,][LC=,];**
Prerequisites	The board on which the PCM exists has been initiated. The PCM has not already been initiated. The board has been blocked. In hardware the board has been configured to the PCMTYPE selected. For a PCMTYPE of E1 the LC may be set to HDB3. For a PCMTYPE of T1 the LC may be set to AMI or B8ZS. For a PCMTYPE of E1 the FF may be set to G704 or CRC4. For a PCMTYPE of T1 the FF may be set to SF, ESF, CRC6, SLC96 or F4. If the SIGTYPE on the board indicates Q931 then T1 cannot be specified and the FF may only be set to CRC4.
Attributes	CONFIG
Example	CNPCI:PCM=5-1,PCMTYPE=E1,SYNCPRI=1;

7.16.14 Configuration PCM Change

CNPCC	Configuration PCM Change
	This command allows changes to the configuration of a PCM.
Syntax	**CNPCC:PCM=,{[PCMTYPE=,]|[SYNCPRI=,][FF=,][LC=,]};**
Prerequisites	The PCM has already been initiated. The board on which the PCM exists has been blocked. In hardware the board has been configured to the PCMTYPE selected. For a PCMTYPE of E1 the LC may be set to HDB3. For a PCMTYPE of T1 the LC may be set to AMI or B8ZS. For a PCMTYPE of E1 the FF may be set to G704 or CRC4. For a PCMTYPE of T1 the FF may be set to SF, ESF, CRC6, SLC96 or F4. If the SIGTYPE on the board indicates Q931 then T1 cannot be specified and the FF may only be set to CRC4.
Attributes	CONFIG
Example	CNPCC:PCM=5-1,SYNCPRI=3;

7.16.15 Configuration PCM End

CNPCE Configuration PCM End

This command ends the configuration of a PCM such that it is unavailable for voice or signalling.

Syntax **CNPCE:PCM=;**

Prerequisites No timeslot on the PCM has been assigned to voice, signalling monitoring or cross connections.

The board on which the PCM exists has been blocked.

Attributes CONFIG

Example CNPCE:PCM=1-1;

7.16.16 Configuration PCM Print

CNPCP Configuration PCM Print

This command gives a print-out of all the configured PCM's

Syntax **CNPCP;**

Attributes None

Example CNPCP;

Output format

```
PCM Configuration
PCM     PCMTYPE LC      FF      SYNCPRI
5-2     E1      HDB3    G704    6
7-2     E1      HDB3    G704    1
8-1     T1      B8ZS    SF      2
EXECUTED
```

7.16.17 Configuration Remote Data Centre Initiate

CNRDI	Configuration Remote Data Centre Initiate
	This command is used to configure Remote Data Centre (RDC) so that data from periodic report or continuous recording can be transferred to that location. The connection itself is established when the RDC is unblocked.
	Note: If an RDC has previously been ended but a file transfer was already in progress subsequent CNRDIs using that RDC will fail with “NO SYSTEM RESOURCES” until the file transfer has completed.
Prerequisites	The Remote data Centre is not already initiated.
	The IP address is not already in use.
	Remote Data Operation must be allowed by the system.
Syntax	**CNRDI:RDC=,IPADDR=,USER=,PASSWORD=,[LABEL=,];**
Attributes	CONFIG
Example	CNRDI:RDC=1,IPADDR=255.123.0.124,USER=JOHN,PASSWORD=BAZZA123;

7.16.18 Configuration Remote Data Centre Change

CNRDC	Configuration Remote Data Centre Change
	This command is used to change the configuration of a Remote Data Centre (RDC).
Prerequisites	The RDC is already initiated and blocked.
	If specified, the IP address is not already in use.
	Remote Data Operation must be allowed by the system.
Syntax	**CNRDC:RDC=,{[IPADDR=,][USER=,][PASSWORD=,][LABEL=,]};**
Attributes	CONFIG
Example	CNRDC:RDC=1,IPADDR=255.123.0.124,USER=JOHN,PASSWORD=BAZZA123;

7.16.19 Configuration Remote Data Centre End

CNRDE Configuration Remote Data Centre End

This command is used to end a Remote Data Centre.

Prerequisites The Remote Data Centre is already initiated.

The Remote Data Centre is blocked.

The Remote Data Centre is not attached to a continuous record or periodic report.

Syntax **CNRDE:RDC=;**

Attributes CONFIG

Example CNRDE:RDC=1;

7.16.20 Configuration Remote Data Centre Print

CNRDP Configuration Remote Data Centre Print

This command is used to print out the Remote Data Centre parameters.

The password is not printed.

Syntax **CNRDP;**

Attributes

Example CNRDP;

```
Remote Data Centre Configuration
RDC  IPADDR           USER         PASSWORD      LABEL
1    25.03.203.52     JOHN         ********      PRIMARY
2    102.03.211.140   JOHN         ********      SECONDARY
EXECUTED
```

7.16.21 Configuration Remote Label Print

CNRLP Configuration Remote Label Print

This command outputs the labels of configuration data loaded from a remote data centre. If, for an update type, configuration data has not been loaded then the output will be blank.

Syntax **CNRLP;**

Attributes None

Example CNRLP

Output format

```
Remote Version Configuration
DTYPE   DATE       TIME     LABEL
LSC     1999-08-25 13:49:56 NT5CA8
CCTAB   Not configured
EXECUTED
```

7.16.22 Configuration Software Print

CNSWP Configuration Software Print

This command is used print out the version numbers of all software components in the system.

Syntax **CNSWP;**

Attributes

Example CNSWP;

```
Software Configuration
Host CPU:  DSC210 V4.04
SS7:       MTP76 V1.03
Q931:      PCCS6-Q931 V1.11
DPNSS:     DPNSS76 V1.00
EXECUTED
```

7.16.23 Configuration System Set

CNSYS Configuration System Set

This command is used to enter the system identity string, personality setting, IP address of the converter, system reference number, and to turn on and off certain features and signalling systems on the converter.

The personality parameter is used to select customer-specific, non-standard operating functionality for the converter. To achieve the standard operating functionality the personality should be set to the default value (i.e. zero). Unless otherwise notified all customers should select the standard operating functionality.

When a password is specified all new MML sessions apart from serial port 1 will require the password before entry.

After changing any parameter other than the system identity the system MML will deny access to all configuration maintenance and status command with the exception of the CNSYS, CNANI, CNUPI, STRDP and CNRDx commands. Access to the alarm log and configuration print will also be allowed.

Prerequisites

When changing the personality or activating/deactivating signalling protocols all boards and groups within the system must be blocked.

There must be no Remote Data Centres present when changing the remote data centre allowed option.

After changing any parameter other than the system identity the system must be restarted using the MNRSI command or by power cycling the unit.

The ISC option cannot be changed if the service is active elsewhere in the system.

Syntax

CNSYS:{[SYSID=,][PER=,][IPADDR=,][ISUP=,][NUP=,][Q931=,][DPNSS=,]
[REMOTE=,][SYSREF=,][TUP=,][ISC=,][CLIAUTH=,][TRANS=,]
[ANNOUNCE=,][SUBNET=,][GATEWAY=,][PASSWORD=,];

Attributes

CONFIG

Example

CNSYS:SYSID=STATION1,PER=2,IPADDR=255.123.0.123;

7.16.24 Configuration System Print

CNSYP Configuration System Print

This command is used to print out the system configuration parameters.

Syntax **CNSYP;**

Attributes

Example CNSYP;

```
System Configuration
SYSID:      Station1
SYSREF      53
PASSWORD:   ********
PER:        0
IPADDR:     195.193.185.56
SUBNET:     255.255.255.0
GATEWAY:    0.0.0.0
Q931:       Y
DPNSS:      Y
ISUP:       N
NUP:        N
TUP:        N
REMOTE:     N
CLIAUTH:    N
TRANS:      N
ISC:        Y
ANNOUNCE:   Y
EXECUTED
```

7.16.25 Configuration Time and Date Set

CNTDS Configuration Time and Date Set

This command is used to enter optionally both time and date.

Syntax **CNTDS:{[DATE=,][TIME=,]};**

Prerequisite The date cannot be changed if periodic reports or continuous records are configured.

Attributes CONFIG

Example CNTDS:DATE=1998-10-03, TIME=18:32:21;

7.16.26 Configuration Time And Date Print

CNTDP Configuration Time And Date Print

This command is used print out the system date and time.

Syntax **CNTDP;**

Attributes

Example CNTDP;

```
1998-10-03 09:04:02
EXECUTED
```

7.16.27 Timeout Value Set

CNTOS Configuration Timeout Value Set

This command is used to change the value of a timer for a particular signalling system. Note some signalling system timer values are not changeable.

Syntax **CNTOS:TTYPE=,TO=,{TSEC=|TMSEC=};**

Attributes CONFIG

Example CNTOS:TTYPE=CONV,TO=7,TSEC=30;

7.16.28 Configuration Timeout Value Print

CNTOP Configuration Timeout Value Print

This command is used to print the value of either a single timer or all the timers for a particular protocol module.

Syntax **CNTOP:TTYPE=,[TO=,];**

Attributes

Example CNTOP:TTYPE=ISUP,TO=7;

CNTOP:TTYPE=TUP;

Output Format

```
Timeout Values:
TTYPE  TO    TSEC   TMSEC
CONV   1     60
CONV   2     360
CONV   3     120
CONV   4     360
CONV   5     5
CONV   6     5
CONV   7     3
CONV   8     5
CONV   10    60
EXECUTED
```

7.16.29 Configuration Timeslot Print

CNTSP Configuration Timeslot Print

This command is used to print the configuration of all timeslots on a PCM.

A timeslot on a PCM can be allocated to signalling, voice, cross connect, monitoring or can be unallocated. Data is printed for a timeslot when it is acting as an outgoing timeslot.

A timeslot can act as an outgoing timeslot for the following types:-

SIG - Carries signalling information. It will form a duplex connection.

DEV - Carries voice information for a device on a circuit group. It will form a duplex connection.

OTS - Acts as an outgoing timeslot for a cross connection. It may form a duplex connection.

STS - The outgoing timeslot monitoring the send direction of an object.

RTS - The outgoing timeslot monitoring the receive direction of an object.

N.B. An object is currently only a signalling link.

For signalling the STS will monitor information sent from the EQU of the signalling link and the RTS will monitor information received by the signalling link.

Syntax **CNTSP:PCM=;**

Attributes None.

Example CNTSP:PCM=5-1;

Output format

```
PCM Timeslot Configuration
TS      TYPE C7LINK ASLINK CGRP DEV CIC ITS
5-1-1   DEV                62   2   2
5-1-2   DEV                22   2
5-1-22  SIG  6
5-1-23  SIG         4
5-1-24  OTS                              6-2-4
5-1-25  RTS  6
5-1-25  STS  6
EXECUTED
```

7.16.30 Configuration Text Set

CNTXS Configuration Text Set

This command is used to enter a text string that is associated with text id.

Text id's can then be associated with circuit groups to allow the user insert strings into protocol messages for signalling systems that support display strings.

Syntax	**CNTXS:TEXTID=,MESSAGE=;**
Prerequisites	None
Attributes	CONFIG
Example	CNTXS:TEXTID=1,MESSAGE=LONDON GROUP 1;

7.16.31 Configuration Text Print

CNTXP Configuration Text Print

This command is used to list the text string associated with a text id.

Syntax	**CNTXP:[TEXTID=];**
Attributes	None.
Example	CNTXP:TEXTID=1; CNTXP;

Output format

```
Text String Configuration
TEXTID MESSAGE
1      London Group 1
2      London Group 2
3      London Group 3
4      London Group 4
11     Edinburgh Group 1
12     Edinburgh Group 2
21     Berlin Group 1
22     Berlin Group 2
23     Berlin Group 3
EXECUTED
```

7.16.32 Configuration Update Initiate

CNUPI Configuration Update Initiate

This command is used to update configuration data or software on the converter. The operation involves reading files containing either configuration data or software from a remote data centre (if specified) or floppy disk and and loading it into memory.

The file name given should file name of the file without the suffix. The suffix is determined by the DTYPE. For example, the file CGV.CV1 for a DTYPE of LSC would be entered as CGV.

The filename suffix for DTYPE=LSC is .CV1

The filename suffix for DTYPE=CCTAB is .MT1

The filename suffix for DTYPE=CONFIG is .CF1

For software update the filenames are fixed to those supplied by DataKinetics.

For software update from floppy disk the user will prompt for each disk in turn.

For software update from the RDC all software binaries must exist in the specified directory on the RDC.

Note: During execution of this command there may not be a response from the system for up to 3 minutes while the command is being executed.

Prerequisites	If the RDC is specified it should be initiated and not blocked. If the DTYPE is SOFTWARE then no filename should be specified. If the DTYPE is not SOFTWARE then a filename must be specified.
Syntax	**CNUPI:DTYPE=,[RDC=,DIRECTORY=,][FILE=,];**
Attributes	CLIAUTH,RDC,CONFIG
Example	CNUPI:RDC=1,DTYPE=LSC,DIRECTORY=AUTH,FILE=CGV;

7.16.33 Configuration Voice Resource Initiate

CNVRI	Configuration Voice Resource Initiate
	This command is used to initiate a voice resource.
Syntax	**CNVRI:VRS=,EQU=;**
Prerequisites	The specified voice resource has not already been initiated.
	The board on which the EQU exists has been initiated and the EQU must be within the range supported by the board.
	The board on which the EQU exists must have a signalling type of VOICE
	The voice processor specified by the EQU parameter must not be assigned elsewhere in the system.
	Only EQU signalling processors 1 and 2 can be used.
Attributes	CONFIG
Example	CNVRI:VRS=1,EQU=5-1;

7.16.34 Configuration Voice Resource End

CNVRE	Configuration Voice Resource End
	This command is used to end the assignment of a voice resource.
Syntax	**CNVRE:VRS=;**
Prerequisites	The voice resource must already have been initiated.
	The voice resource must be blocked.
Attributes	CONFIG
Example	CNVRE:VRS=1;

7.16.35 Configuration Voice Resource Print

CNVRP Configuration Voice Resource Print

This command is used to obtain a print-out of the attributes of a voice resource. If no voice resource is specified, all initialised resources are output.

Prerequisites: If specified, the voice resource must already have been initiated.

Syntax: **CNVRP:[VRS=…];**

Attributes: None.

Example: CNVRP:VRS=1;

CNVRP;

Output format

```
Voice Resource Configuration
VRS    EQU
1      5-1
2      5-2
3      6-1
4      6-2
EXECUTED
```

7.16.36 Configuration Cross Connect Initiate

CNXCI Configuration Cross Connect Initiate

This command initiates a Cross Connect path across the converter between 2 PCM timeslots.

If DUPLEX is not set to Y then a SIMPLEX Cross Connect is initiated from ITS to OTS.

Prerequisites	The PCM on which the OTS exists must have already been initiated and the OTS must be within the correct range for the PCM type (0-31 for E1 and 1-24 for T1 PCMs). The PCM on which the ITS exists must have already been initiated and the ITS must be within the correct range for the PCM type (0-31 for E1 and 1-24 for T1 PCMs). OTS is not already assigned elsewhere on the system for output. ITS is not already assigned elsewhere on the system for input.
Syntax	**CNXCI:OTS=,ITS=,[DUPLEX=];**
Attributes	CONFIG
Example	CNXCI: OTS=5-1-16,ITS=5-1-16,DUPLEX=Y;

7.16.37 Configuration Cross Connect End

CNXCE Configuration Cross Connect End

This command ends a Cross Connect connection across the converter.

Prerequisites	The OTS must already be initiated as an OTS in a Cross Connect connection path. If DUPLEX=Y is specified then a duplex connection must already exist for the specified OTS.
Syntax	**CNXCE:OTS=,[DUPLEX=,];**
Attributes	CONFIG
Example	CNXCE:OTS=5-1-16;

7.16.38 Configuration Cross Connect Print

CNXCP Configuration Cross Connect Print

This command is used to obtain a print out of Cross Connect connection path(s).

Syntax **CNXCP:PCM=;**
CNXCP:OTS=;
CNXCP;

Attributes None

Example CNXCP:PCM=5-2;
CNXCP:OTS=5-1-16;
CNXCP;

Output format

```
Path Configuration
OTS     ITS     DUPLEX
5-1-16  6-1-16  Y
EXECUTED
```

7.17 Custom Profiles

7.17.1 Custom Profile Called Number Initiate

CPCDI	Custom Profile Called Number Initiate
	This command is used to initiate a called party number custom profile. The profile is used on a point of origin or outgoing route basis to modify fields within the called party number prior to transmission in a signalling protocol message.
Syntax	**CPCDI: CPCD=,[CDNA=,][CDNP=,][LABEL=,];**
Prerequisites	The called party number custom profile has not already been initiated.
Attributes	CONFIG
Example	CPCDI:CPCD=16,CDNP=2,CDNA=1;

7.17.2 Custom Profile Called Number Change

CPCDC	Custom Profile Called Number Change
	This command is used to change a called party number custom profile The profile is used on a point of origin or outgoing route basis to modify fields within the called party number prior to transmission in a signalling protocol message.
Syntax	**CPCDI:CPCD=,[CDNA=,][CDNP=,][LABEL=,];**
Prerequisites	The called party number custom profile has already been initiated.
Attributes	CONFIG
Example	CPCDI:CPCD=16,CDNP=2,CDNA=1;

7.17.3 Custom Profile Called Number End

CPCDE	Custom Profile Called Number End
	This command is used to end a called party number profile.
Syntax	**CPCDE: CPCD=;**
Prerequisites	The specified called party number profile must already have been initiated. The profile cannot be attached to a point of origin or outgoing route.
Attributes	CONFIG
Example	CPCDE:CPCD=3;

7.17.4 Custom Profile Called Number Print

CPCDP Custom Profile Called Number Print

This command is used to obtain a print out of called party number profile(s). If no outgoing route is specified then all combinations are output.

Syntax **CPCDP: [CPCD=];**

Prerequisites If specified, the called party number profile must already have been initiated.

Attributes

Example CPCDP;
CPCDP:CPCD=3;

Output format

```
Custom Profile Called Number Configuration
CPCD CDNA CDNP LABEL
1    7    4    Intl
2    6    5    Unknown
EXECUTED
```

7.17.5 Custom Profile Calling Number Initiate

CPCGI Custom Profile Calling Number Initiate

This command is used to initiate a calling party number custom profile The profile is used on a point of origin or outgoing route basis to modify fields within the calling party number prior to transmission in a signalling protocol message.

Syntax **CPCGI: CPCG=,[CGMX=,][CGNA=,][CGPR=,][CGNP=,][CG2NA=,][CG2PR=,]**
[CG2NP=,][CGCB=,][LABEL=,];

Prerequisites The calling party number custom profile has not already been initiated.

Attributes CONFIG

Example CPCGI:CPCG=16,CGNP=2,CGPR=1;

7.17.6 Custom Profile Calling Number Change

CPCGC Custom Profile Calling Number Change

This command is used to change a calling party number custom profile The profile is used on a point of origin or outgoing route basis to modify fields within the calling party number prior to transmission in a signalling protocol message.

Syntax **CPCGI:CPCG=,[CGMX=,][CGNA=,][CGPR=,][CGNP=,][CG2NA=,][CG2PR=,] [CG2NP=,][CGCB=,][LABEL=,];**

Prerequisites The calling party number custom profile has already been initiated.

Attributes CONFIG

Example CPCGI:CPCG=16,CGNP=2,CGPR=1;

7.17.7 Custom Profile Calling Number End

CPCGE Custom Profile Calling Number End

This command is used to end a calling party number profile.

Syntax **CPCGE: CPCG=;**

Prerequisites The specified calling party number profile must already have been initiated.

The profile cannot be attached to a point of origin or outgoing route.

Attributes CONFIG

Example CPCGE:CPCG=3;

7.17.8 Custom Profile Calling Number Print

CPCGP Custom Profile Calling Number Print

This command is used to obtain a print out of calling party number profile(s). If no outgoing route is specified then all combinations are output.

Syntax **CPCGP**: **[CPCG=];**

Prerequisites If specified, the calling party number profile must already have been initiated.

Attributes

Example CPCGP:CPCG=2;
CPCGP;

Output format

```
Custom Profile Calling Number Configuration
CPCG CGMX CGNA CGPR CGNP CG2NA CG2PR CG2NP CGCB LABEL
1    20   0    0    0    2     3     4     0    network
16   32   1    1    2    0     0     0     0    London
EXECUTED
```

7.18 SS7 Signalling

7.18.1 CCS SS7 Link Set Initiate

C7LSI	CCS SS7 Link Set Initiate
	This command is used to initiate the SS7 linkset. Note that the DPC (destination point code) is the adjacent point code for the linkset.
Syntax	**C7LSI:LS=,OPC=,DPC=,LSSIZE=,NI=,SS7MODE=,[DUAL=];**
Prerequisites	The SS7 linkset has not already been initiated.
	All configured SS7 links must be blocked.
Limitations	DPC must be different for all linksets.
	If SS7MODE indicates 14 bit point code then OPC and DPC must be less than or equal to 16383.
	If SS7MODE indicates 16 bit point code then OPC and DPC must be less than or equal to 65535.
Attributes	CONFIG
Example	C7LSI:LS=1, OPC=1,DPC=2,LSSIZE=2,SS7MODE=ITU14,NI=0;

7.18.2 CCS SS7 Link Set Change

C7LSC	CCS SS7 Link Set Change
	This command allows changes to the configuration of an SS7 Link Set.
Syntax	**C7LSC:LS=,{[OPC=,][DPC=,][LSSIZE=,][SS7MODE=,][NI=,][DUAL=]};**
Prerequisites	The SS7 linkset has already been initiated.
	All configured SS7 links must be blocked.
	The LSSIZE cannot be set to less than the number of links attached to the linkset.
	The OPC, NI and SS7MODE can only be changed if the circuit groups that use a route that uses this linkset are blocked.
Limitations	DPC must be different across linksets.
	If SS7MODE indicates a 14 bit point code the OPC and DPC must be less than or equal to 16383.
Attributes	CONFIG
Example	C7LSC:LS=1, OPC=1,DPC=2,LSSIZE=2;

7.18.3 CCS SS7 Link Set End

C7LSE CCS SS7 Link Set End

This command is used to end the SS7 linkset.

Syntax **C7LSE:LS=;**

Prerequisites There should be no signalling links attached to the linkset.

All configured SS7 links must be blocked.

There are no C7 Routes using this linkset.

Attributes CONFIG

Example C7LSE:LS=1;

7.18.4 CCS SS7 Link Set Print

C7LSP CCS SS7 Link Set Print

This command obtains a print-out of the attributes for the SS7 linkset. If no link is specified then the values for all linksets are shown.

Syntax **C7LSP:[LS=,];**

Attributes None

Example C7LSP;

Output format

```
CCS SS7 Link Set
LS  OPC      DPC       LSSIZE SS7MODE  NI DUAL
1   1        3         2      ITU14    2  0
2   2        4         1      ANSI     2  0
EXECUTED
```

7.18.5 CCS SS7 Route Initiate

C7RTI	CCS SS7 Route Initiate
	This command is used to configure an SS7 route to a destination point code. It identifies which linkset should be used for traffic destined for the destination given.
Syntax	**C7RTI:C7RT=,DPC=,LS1=,[LS2=,][LSH=,][LABEL=,];**
Prerequisites	All SS7 signalling links must be blocked. If specified, LS2 must have same SS7MODE, NI and OPC as LS1. DPC must be different for each route. The linkset specified has already been initiated.
Attributes	CONFIG
Example	C7RTI:C7RT=1,LS1=1,DPC=130,LABEL=ROUTE130;

7.18.6 CCS SS7 Route Change

C7RTC	CCS SS7 Route Change
	This command is used to change the attributes of an SS7 Route.
Syntax	**C7RTC:C7RT=,[DPC=,][LS1=,][LS2=,][LSH=,][LABEL=,];**
Prerequisites	If changing any parameter other than the LABEL then all SS7 signalling links must be blocked. If changing the DPC then all circuit groups associated with the route should be blocked. If specified, LS2 must have same SS7MODE, NI and OPC as LS1. If specified, LS1 must have same SS7MODE, NI and OPC as LS2. The specified route has already been initiated. Any linkset specified has already been initiated.
Attributes	CONFIG
Example	C7RTC:C7RT=1,LS1=2;

7.18.7 CCS SS7 Route End

C7RTE CCS SS7 Route End

This command is used to end an SS7 Signalling Route.

Syntax **C7RTE:C7RT=;**

Prerequisites All SS7 signalling links must be blocked.

The specified route has already been initiated.

There are no circuit groups using the SS7 route.

Attributes CONFIG

Example C7RTE:C7RT=1;

7.18.8 CCS SS7 Route Print

C7RTP CCS SS7 Route Print

This command shows the attributes of the specified SS7 Route. If no route is specified, then the values for all routes are shown.

Syntax **C7RTP:[C7RT=];**

Attributes None

Example C7RTP;

Output format

```
CCS SS7 Signalling Route Configuration
C7RT     DPC      LS1  LS2 LSH  LABEL
1        2        1    3   Y    LONDON
2        3        2    4   N    EDINBURGH
EXECUTED
```

7.18.9 CCS SS7 Signalling Link Initiate

C7SLI CCS SS7 Signalling Link Initiate

This command is used to initiate an SS7 signalling link.

Syntax **C7SLI:C7LINK=, LS=,SLC=,EQU=,TS=,[M56K=,][PCR=,];**

Prerequisites The specified link has not already been initiated.

The specified PCM time slot is not already assigned elsewhere in the system.

The PCM on which the timeslot exists has been initiated.

The board on which the EQU exists has been initiated.

The timeslot is a valid timeslot for the PCM type (up to 31 for an E1 PCM and 24 for a T1 PCM).

The signalling processor specified by the EQU parameter must be equipped with a valid board type and not already assigned to a link.

The linkset has already been initiated.

The board position specified by EQU must be blocked.

If M56K is set to either 1 or 2 then all links on the same board for which M56K is set to 1 or 2 must also use the same M56K value (i.e. Only one mode of 56kbits/s operation is supported on any board at one time. However it is possible for some links to operate at 64kbits/s whilst others operate at 56kbits/s).

Attributes CONFIG

Example C7SLI:C7LINK=4,EQU=5-1,TS=5-1-17,LS=1,SLC=5;

7.18.10 CCS SS7 Signalling Link Change

C7SLC CCS SS7 Signalling Link Change

This command is used to change the attributes of an SS7 signalling link.

Syntax	**C7SLC:C7LINK=,{[EQU=,][TS=,][M56K=,][PCR=,]};**
Prerequisites	The specified link has already been initiated.
	The specified PCM time slot is not already assigned elsewhere in the system.
	The PCM on which the timeslot exists has been initiated.
	If specified, the Board on which the EQU exists has been initiated.
	If specified, the PCM on which the timeslot exists has been initiated.
	The timeslot is a valid timeslot number for the PCM type (up to 31 for a E1 PCM and 24 for a T1 PCM).
	The signalling processor specified by the EQU parameter must be equipped with a valid board type and not already assigned to a link.
	The signalling link must be blocked.
	If the EQU is specified the board given within the EQU must be blocked.
	All links within the linkset must be blocked.
	If M56K is set to either 1 or 2 then all links on the same board for which M56K is set to 1 or 2 must also use the same M56K value (i.e. Only one mode of 56kbits/s operation is supported on any board at one time. However it is possible for some links to operate at 64kbits/s whilst others operate at 56kbits/s).
Attributes	CONFIG
Example	C7SLC:C7LINK=4,EQU=2-1,TS=5-1-17,M56K=1;

7.18.11 CCS SS7 Signalling Link End

C7SLE CCS SS7 Signalling Link End

This command is used to end an SS7 signalling link.

Syntax	**C7SLE:C7LINK=;**
Prerequisite	The signalling link must be blocked.
	The signalling link must not be monitored.
Attributes	CONFIG
Example	C7SLE:C7LINK=1;

7.18.12 CCS SS7 Signalling Link Print

C7SLP CCS SS7 Signalling Link Print

This command is used to obtain a print-out of the attributes of SS7 Signalling Link(s). If no link is specified, all initialised links are output.

Syntax **C7SLP:[C7LINK=…];**

Attributes None.

Example C7SLP:C7LINK=1;

C7SLP;

Output format

```
Signalling Link Configuration
C7LINK EQU     TS      LS   SLC  M56K  PCR
1      5-1     05-1-4  1    4    0     N
2      5-2     05-1-5  1    6    0     N
3      6-1     05-1-16 2    2    1     N
EXECUTED
```

7.19 MMI

7.19.1 MMI Log Off Initiate

MMLOI	MMI Log Off Initiate
	This command ends the current log-on session.
Syntax	**MMLOI;**
Attributes	CONFIG
Example	MMLOI;

7.19.2 MMI Log Off Print

MMLOP	MMI Log Off Print
	This command prints the current log-on time-out parameters.
Syntax	**MMLOP:[PORT=];**
Attributes	None.
Example	MMLOP;
	MMLOP:PORT=1;

Output format

```
Log on time-outs
PORT    TLO  TLOW
1       30   25
2       25   20
3       25   30
4       25   35
EXECUTED
```

7.19.3 MMI Log Off Set

MMLOS	MMI Log Off Set
	This command sets the current log-on time-out parameters. If TLOW is set to zero the automatic time-out is disabled. If port is omitted the command applies to all ports
Syntax	**MMLOS:{[TLO=,][TLOW=,]}[PORT=,];**
Attributes	CONFIG
Example	MMLOS:TLO=35;
	MMLOS:TLOW=19;

7.19.4 MMI Port Change

MMPTC MMI Port Change

This command sets the format of the data on the other serial data port to the one being used for the current log-on session.

Syntax **MMPTC:PORT=,{[BAUD=,][DBITS=,][PARITY=,][SBITS=,][LINES=,] [PTMODE=,]};**

Prerequisites No user must be logged on to the port affected.

For the telnet ports only the LINES parameter may be changed.

Attributes CONFIG

Example MMPTC:PORT=1,BAUD=300;

MMPTC:PORT=2,SBITS=2;

7.19.5 MMI Port Print

MMPTP MMI Port Print

This command gives a print-out of the attributes of the serial port. Where the parameter PORT is omitted, the print-out provided will be for all ports.

The connected port executing this command is marked with a “*”.

Syntax **MMPTP[:PORT=];**

Attributes None.

Example MMPTP:PORT=1;

MMPTP;

Output format

```
Serial Port Configuration
PORT    BAUD    DBITS   SBITS   PARITY  LINES   PTMODE   CONNECTED
1       9600    8       1       NONE    20      DTRDSR   *
2       1200    7       2       EVEN    8       NONE
3                                       25      TELNET
4                                       25      TELNET
EXECUTED
```

7.20 Maintenance

7.20.1 Maintenance Blocking Initiate

MNBLI Maintenance Blocking Initiate

This command initiates blocking for boards, signalling links, voice resources, remote data centres and groupings of both voice and signalling timeslots. A blocking command will remove from use the board, voice resource, link or timeslots covered by the command, it will also remove their configuration data from the lower levels of the converter and only configuration management will maintain knowledge of their existence. For voice circuits all calls will be immediately released and no new calls will be allowed.

Possible grouping are:-

Access side signalling links.
SS7 signalling links.
Circuit groups.
Boards.
Remote Data Centres.
Voice Resources.

If the grouping being blocked is already in the blocked state then no action is taken.

If a group is blocked and it is circuit mapped to a Network Side group then the Network Side group will be made partner hardware blocked.

If a circuit group, voice resource, or C7 link has been inhibited the inhibiting will be removed as part of the blocking action.

Syntax

MNBLI:ASLINK=…;
MNBLI:C7LINK=…;
MNBLI:CGRP=…;
MNBLI:BPOS=…;
MNBLI:RDC=…;
MNBLI:VRS=…;

Prerequisites

The item being blocked has been initiated.

When blocking a board all SS7 links, Voice Resources, Access Side links and circuit groups on the board must already be blocked.

When blocking an Access Side Link all circuit groups on the link must already be blocked.

If this is the last remote data centre to be blocked then it cannot be blocked until all continuous records and periodic reports are ended.

Attributes

CONFIG,PROMPT

Example

MNBLI:ASLINK=12;
MNBLI:C7LINK=4;

Output format

```
Blocking ASLINK 1
Blocking ASLINK 2
EXECUTED
```

7.20.2 Maintenance Blocking End

MNBLE Maintenance Blocking End

This command ends the blocked condition of boards, links, voice resources, remote data centres or circuits and brings them into service. The command restores configuration data to the lower levels of the converter and brings the timeslots into service. Possible grouping are:-

Access side signalling links.
SS7 signalling links.
Circuit groups.
Boards.
Remote Data Centres.
Voice Resources.

If the grouping being unblocked is already in the unblocked state then no action is taken.

If a group is unblocked and it is circuit mapped to a Network Side group then the Network Side group will clear it's partner hardware blocking.

N.B. If a RDC has previously been blocked but a file transfer was already in progress subsequent MNBLE's using that RDC will fail with "NO SYSTEM RESOURCES" until the file transfer is complete.

Syntax

MNBLE:ASLINK=…;
MNBLE:C7LINK=…;
MNBLE:CGRP=…;
MNBLE:BPOS=…;
MNBLE:RDC=…;
MNBLE:VRS=…;

Prerequisites

The item being unblocked has been initiated and is currently blocked.

When unblocking Access Side or Network Side links both the board containing the signalling processor and the board containing the signalling timeslot must already be unblocked.

When unblocking a Voice Resource the board containing the processor must already be unblocked.

A circuit group must have at least one device associated with it before it can be unblocked.

An Access Side circuit group can only be unblocked if the Access Side link it is on is already unblocked.

An SS7 link cannot be unblocked until all the boards processing the SS7 signalling are blocked and then unblocked.

If a circuit group has a PCM associated with it then it can only be unblocked if that PCM is on a board that is already unblocked.

A C7 link cannot be unblocked if it is on a C7 route that has more than one linkset and those linksets have either different OPCs, SS7MODE's or Nis.

A Circuit group cannot be unblocked if it is on a C7 route that has more than one linkset and those linksets have either different OPCs, SS7MODE's or Nis.

Only configured signalling systems can be unblocked.

For a circuit group if any route from the group involves circuit mapping (i.e. if it has a route from it that has a hunt type of circuit mapping) then:-

a) The set of devices must equal those of its partner group..

b) The route(s) from the circuit group to be unblocked (either the default outgoing route from the groups point of origin or one selected by digit analysis) must select the same partner circuit group over which the calls will be routed and must all be circuit mapped.

c) The route(s) from the partner of the circuit group to be unblocked (either the default outgoing route from the groups point of origin or one selected by digit analysis) must select the group that is being unblocked to route its calls and must all be circuit mapped.

Attributes

CONFIG

Example

MNBLE:CGRP=23;

MNBLE:ASLINK=13;

Output format

```
Unblocking ASLINK 1
Unblocking ASLINK 2
EXECUTED
```

7.20.3 Maintenance Inhibit Initiate

MNINI Maintenance Inhibit Initiate

This command initiates the inhibiting of a group of circuits, a Voice Resource or SS7 signalling.

Circuits in a circuit group will be marked as maintenance blocked and no new calls will be allowed.

The C7 signalling link will be deactivated and no further signalling allowed.

The Voice Resource will not play any new announcements.

There is no change to the circuit configuration data held at the lower levels.

If a group is inhibited and it is circuit mapped to a Network Side group then the Network Side group will be made partner maintenance blocked.

Syntax

MNINI:CGRP=…;
MNINI:CGRP=,DEV=;
MNINI:CGRP=,CIC=;
MNINI:C7LINK=…;
MNINI:VRS=…;

Prerequisites

The circuit groups(s) or C7 links have been initiated.

Circuit groups and C7 links are not blocked.

A CIC can only be given for a network side group.

Attributes

CONFIG,PROMPT

Example

MNINI:CGRP=23&&32;
MNINI:CGRP=1,DEV=5;
MNINI:CGRP=2,DEV=23;
MNINI:C7LINK=5;

Output format

```
Inhibiting CGRP 23
Inhibiting CGRP 32
EXECUTED
```

7.20.4 Maintenance Inhibit End

MNINE Maintenance Inhibit End

This command ends the inhibiting of a group of circuits or C7 links.

All circuits in the grouping are put in service and calls are allowed (unless the circuits are also out of service for reasons other than inhibit).

The C7 link is activated and signalling is allowed to proceed.

The Voice Resource is activated and announcements can now be played.

If a group is uninhibited and it is circuit mapped to a Network Side group then the Network Side group will clear its partner maintenance blocking.

Syntax

MNINE:CGRP=…;
MNINE:CGRP=,DEV=;
MNINE:CGRP=,CIC=;
MNINE:C7LINK=…;
MNINE:VRS=…;

Prerequisites

Circuits in the circuit groups have been initiated and are inhibited.

The C7 links have been initiated and are inhibited.

Attributes

CONFIG

Example

MNINE:CGRP=23&&32;
MNINE:CGRP=1,DEV=5;
MNINE:CGRP=2,DEV=23;
MNINE:C7LINK=5;

Output format

```
Uninhibiting CGRP 23
Uninhibiting CGRP 32
EXECUTED
```

7.20.5 Maintenance Reset Circuit Initiate

MNRCI Maintenance Reset Circuit Initiate

	This command is used to initiate a reset circuit to bring a circuit or a number of circuits to idle.
Syntax	**MNRCI:CGRP=,[DEV=];** **MNRCI:CGRP=,[CIC=];**
Prerequisites	The item being reset is in service.
	The circuits within a circuit group have been initiated.
	The circuit group is not blocked or it's circuits inhibited.
	A CIC can only be given for a network side group.
Attributes	CONFIG,PROMPT
Example	MNRCI:CGRP=33,DEV=3; MNRCI:CGRP=32,CIC=141;

7.20.6 Maintenance Restart System Initiate

MNRSI Maintenance Restart System Initiate

	This command will restart the entire system. The current log-on session will be terminated. If a software update disk is present in the floppy disk drive then the software update procedure will commence. If no software update disk is present but a disk containing a configuration dump is present then this configuration will be loaded into memory and the system will restart. In all other cases, no change to the system configuration will occur and the state of all links will automatically be restored. If RESET is set to Y then all configuration data will be removed.
Prerequisite	None
Syntax	**MNRSI:[RESET=Y];**
Attributes	PROMPT
Example	MNRSI;

7.21 Measurements

7.21.1 Measurements Circuit Group Print

MSCGP Measurements Circuit Group Print

This command prints out traffic measurements for circuit groups.

The fields have the following meanings:-

CGRP - Circuit Group.

ICOFF - Number of incoming calls initiated

ICANS - Number of incoming calls answered.

OGOFF - Number of outgoing calls initiated.

OGANS - Number of outgoing calls answered.

MAXDEV - Maximum number of devices busy at one time.

ACCUM - Total accumulated call duration (hours) for calls in the group.

PERIOD - Time since measurements on the group were last reset. Specified in hours, minutes and seconds.

If RESET=Y then the traffic measurement data will be reset.

Syntax **MSCGP:[CGRP=,][RESET=,];**

Prerequisites If specified the circuit group must be initiated.

If specified the circuit group must not be blocked.

Attributes

Example MSCGP:CGRP=1;
MSCGP;

```
Circuit Group Traffic Measurements
CGRP ICOFF    ICANS    OGOFF    OGANS    MAXDEV ACCUM    PERIOD
1    5000     4500     6000     5500     24     5        01:00:00
2    5432     5432     6333     6333     30     6        01:00:00
3    2400     2400     0        0        6      1        01:00:00
EXECUTED
```

7.21.2 Measurements Outgoing Route Print

MSORP Measurements Outgoing Route Print

This command prints out traffic measurements for Outgoing Routes.

The fields have the following meanings:

OGR - Outgoing Route.

ICOFF- Number of incoming calls initiated

ICANS - Number of incoming calls answered.

OGOFF - Number of outgoing calls initiated.

OGANS - Number of outgoing calls answered.

MAXDEV - Maximum number of devices busy at one time.

ACCUM - Total accumulated call duration (in hours) for calls in the route.

PERIOD - Time since measurements on the route were last reset. Specified in hours, minutes and seconds

Syntax **MSORP:[OGR=,][RESET=,];**

Prerequisites If specified the outgoing route must be initiated

Attributes

Example MSORP:OGR=1;
MSORP;

```
Outgoing Route Traffic Measurements
OGR OGOFF    OGANS    MAXDEV ACCUM    PERIOD
1   6000     5500     24     9        24:00:00
2   6333     6333     30     25       24:00:00
3   0        0        0      0        24:00:00
EXECUTED
```

7.22 Remote Data Centre

7.22.1 Remote Data Centre Continuous Data Initiate

RDCDI	Remote Data Centre Continuous Data Initiate
	This command attaches a point of origin (for call failure records) or outgoing route (for billing records) to a continuous record.
Prerequisites	The record has already been initiated.
	The specified point of origin or outgoing route has already been initiated.
	Points of origin can only be specified for CFL records.
	Outgoing routes can only be specified for BILLING records.
	The point of origin or outgoing route must not already be attached to another record.
	An association between the record and the point of origin or route has not already been initiated.
	Data cannot be initiated for alarm continuous records.
Syntax	**RDCDI:RECORD=,{[POR=…,]|[OGR=…,]}**
Attributes	CONFIG, RDC
Example	RDCDI:RECORD=1,OGR=1;

7.22.2 Remote Data Centre Continuous Data End

RDCDE	Remote Data Centre Continuous Data End
	This command ends the attachment between a point of origin or outgoing route to a continuous record
Prerequisites	The record has already been initiated.
	The specified point of origin or outgoing route has already been initiated.
	An association between the record and the point of origin or route has already been initiated.
Syntax	**RDCDE:RECORD=,{[POR=…,]|[OGR=…,]};**
Attributes	CONFIG, RDC
Example	RDCDE:RECORD=1,POR=1;

7.22.3 Remote Data Centre Continuous Data Print

RDCDP Remote Data Centre Continuous Data Print

This command prints out the circuit groups or outgoing routes associated with a continuous record.

The command will print out either a list of points of origin or outgoing routes depending on the continuous record type for the report.

Prerequisites The continuous record has been initiated.

Syntax **RDCDP:RECORD=;**

Attributes CONFIG, RDC

Example RDCDP:RECORD=1;

```
Remote Data Centre Continuous Data
RECORD POR
1      1
1      2
1      3
1      5
1      8
EXECUTED
```

7.22.4 Remote Data Centre Continuous Record Initiate

RDCRI	Remote Data Centre Continuous Record Initiate
	This command initiates a continuous record collection for which collected data is transferred via Ethernet to a Remote Data Centre (RDC). Continuous records can be specified for billing or call failures. The period is the maximum amount of time allowed before the transfer of a block of continuous records must be performed. The minimum number of records that must be collected before the transfer of records can be performed should be specified. The label will be used as the directory name on the remote data centre the files are written to. Data can be added/deleted from the continuous records using the RDCDI/RDCDE commands.
Prerequisites	The record has not already been initiated. The converter must have an IPADDR. If the record is an alarm record then an alarm record must not already exist. RDC1 must already be initiated. If specified RDC2 must already be initiated If specified RDC2 must not equal RDC1.
Limitations	Before transfer to a RDC can take place the directory, represented by the label, must exist on the remote site. PERIOD must be in the range 30 seconds to 30 minutes.
Syntax	**RDCRI:RECORD=,CRTYPE=,PERIOD=,MINREC=,RDC1=,LABEL=,[RDC2=,];**
Attributes	CONFIG, RDC
Example	RDCRI:RECORD=1,CRTYPE=BILLING,PERIOD=00:05:00,MINREC=100, RDC1=1,LABEL=BILLING;

7.22.5 Remote Data Centre Continuous Record Change

RDCRC Remote Data Centre Continuous Record Change

This command changes the parameters for a continuous record collection for which collected data is transferred via Ethernet to a Remote Data Centre (RDC).

Continuous records can be specified for billing or call failures.

The period is the maximum amount of time allowed before the transfer of a block of continuous records must be performed.

The label will be used as the directory name on the remote data centre the files are written to.

Data can be added/deleted from the continuous records using the RDCDI/RDCDE commands.

Prerequisites	The record must already be initiated.
	If specified RDC1 must already be initiated.
	If specified RDC2 must already be initiated
	If specified RDC2 must not equal RDC1.
Limitations	Before transfer to a RDC can take place the directory, represented by the label, must exist on the remote site.
	PERIOD must be in the range 30 seconds to 30 minutes.
Syntax	**RDCRC:RECORD=,[PERIOD=,][MINREC=,][RDC1=,][RDC2=,][LABEL=];**
Attributes	CONFIG, RDC
Example	RDCRC:RECORD=1,PERIOD=00:05:00,MINREC=100,
	RDC1=1,LABEL=BILLING;

7.22.6 Remote Data Centre Continuous Record End

RDCRE Remote Data Centre Continuous Record End

This command ends a continuous record

If DISCARD is set to Y then any data associated with the continuous record will be discarded. If the DISCARD is not set to Y then if there is data awaiting transfer the end continuous record will be rejected.

Prerequisites The report has already been initiated.

There is no continuous data associated with the continuous record.

Syntax **RDCRE:RECORD=,DISCARD=Y;**

Attributes CONFIG, RDC

Example RDCRE:RECORD=1;

7.22.7 Remote Data Centre Continuous Record Print

RDCRP Remote Data Centre Continuous Record Print

This command prints out data relating to a continuous record for which collected data is transferred to a Remote Data Centre.

Prerequisites

Syntax **RDCRP;**

Attributes CONFIG, RDC

Example RDCRP;

```
Remote Data Centre Continuous Record
RECORD CRTYPE     PERIOD     MINREC  RDC1 RDC2 LABEL
1      BILLING    00:05:00   100     2    1    BILLING
2      CFL        00:05:00   100     1    0    CFL
EXECUTED
```

7.22.8 Remote Data Centre Periodic Data Initiate

RDPDI	Remote Data Centre Periodic Data Initiate
	This command attaches a circuit group or outgoing route to a periodic report.
Prerequisites	The report has already been initiated.
	The specified circuit group or outgoing route has already been initiated.
	Circuit groups can only be specified for MSCGRP reports.
	Outgoing routes can only be specified for MSOGR reports.
	An association between the report and the circuit group or route has not already been initiated.
Syntax	**RDPDI:REPORT=,{[CGRP=…,]|[OGR=…,]}**
Attributes	CONFIG, RDC
Example	RDPDI:REPORT=1,OGR=1&&8;

7.22.9 Remote Data Centre Periodic Data End

RDPDE	Remote Data Centre Periodic Data End
	This command ends the attachment between a circuit group or outgoing route to a report
Prerequisites	The report has already been initiated.
	The specified circuit group or outgoing route has already been initiated.
	An association between the report and the circuit group or route has already been initiated.
Syntax	**RDPDE:REPORT=,{[CGRP=..,]|[OGR=…,]};**
Attributes	CONFIG, RDC
Example	RDPDE:REPORT=1,CGRP=1;

7.22.10 Remote Data Centre Periodic Data Print

RDPDP Remote Data Centre Periodic Data Print

This command prints out the circuit groups or outgoing routes associated with a periodic data collection report.

The command will print out either a list of circuit groups or outgoing routes depending on the periodic report type for the report.

Prerequisites The periodic report has been initiated.

Syntax **RDPDP:REPORT=;**

Attributes CONFIG, RDC

Example RDPDP:REPORT=1;

```
Remote Data Centre Periodic Data
REPORT CGRP
1      1
1      2
1      3
1      5
1      8
EXECUTED
```

7.22.11 Remote Data Centre Periodic Report Initiate

RDPRI Remote Data Centre Periodic Report Initiate

This command initiates a report collection period for which data is collected and transferred over Ethernet to a Remote Data Centre (RDC).

Reports for circuit group and outgoing route traffic measurements can be specified.

The label is used as the directory name on the remote data centre the files are written to.

The period is the interval between which data is collected, it will be rounded to the nearest 5 minute interval.

Data can be added/deleted from the periodic report using the RDPDI/RDPDE commands.

Prerequisites	The report has not already been initiated. If specified RDC2 cannot have the same value as RDC1. RDC1 must already have been initiated. If specified RDC2 must already be initiated.
Limitations	Before transfer to a RDC can take place the directory, represented by the label, must exist on the remote site.
Syntax	**RDPRI:REPORT=,PRTYPE=,PERIOD=,LABEL=,RDC1=,[RESET=,][RDC2=,];**
Attributes	CONFIG, RDC
Example	RDPRI:REPORT=1,PRTYPE=MSOGR,PERIOD=01:00:00,RDC1=1, LABEL=ROUTES;

7.22.12 Remote Data Centre Periodic Report Change

RDPRC Remote Data Centre Periodic Report Change

This command changes parameters relating to a report collection period for which data is collected and transferred over Ethernet to a Remote Data Centre (RDC).

Reports for circuit group and outgoing route traffic measurements can be specified.

The label is used as the directory name on the remote data centre the files are written to.

The period is the interval between which data is collected, it will be rounded to the nearest 5 minute interval.

Data can be added/deleted from the periodic report using the RDPDI/RDPDE commands.

Prerequisites

The report must already be initiated.

If specified RDC2 cannot have the same value as RDC1.

If specified RDC1 must already be initiated.

If specified RDC2 must already be initiated.

Limitations

Before transfer to an RDC can take place the directory, represented by the label, must exist on the remote site.

Syntax **RDPRC:REPORT=,[PERIOD=,][LABEL=,][RDC1=,][RDC2=,][RESET=,];**

Attributes CONFIG, RDC

Example RDPRC:REPORT=1,PRTYPE=MSOGR,PERIOD=01:00:00,RDC1=1, LABEL=ROUTES;

7.22.13 Remote Data Centre Periodic Report End

RDPRE Remote Data Centre Periodic Report End

This command ends a periodic report.

Prerequisites

The report has already been initiated.

There is no periodic data associated with the periodic report.

Syntax **RDPRE:REPORT=;**

Attributes CONFIG, RDC

Example RDPRE:REPORT=1;

7.22.14 Remote Data Centre Periodic Report Print

RDPRP Remote Data Centre Periodic Report Print

This command prints out data relating to a periodic report collection period for which collected data is transferred to a Remote Data Centre.

Prerequisites

Syntax **RDPRP;**

Attributes CONFIG, RDC

Example RDPRP;

```
Remote Data Centre Periodic Report Configuration
REPORT PRTYPE PERIOD   RESET RDC1 RDC2 LABEL
1      MSOGR  01:00:00 Y     1    2    ROUTES
2      MSCGRP 01:00:00 Y     2    0    GROUPS
EXECUTED
```

7.23 Routing

7.23.1 Routing Digit Analysis Initiate

RTDAI	Routing Digit Analysis Initiate
	This command is used to initiate a digit analysis mapping. A number (who's meaning is determined by the digit analysis mode associated with the digit analysis index's point of origin) forms a unique key with the digit analysis index to select a particular outgoing route or secondary point of origin. If the digits in the called party number do not match the digits for the digit analysis index then an attempt will be made to route using the default route or secondary point of origin provided on the point of origin. N.B. If a calling party category or nature of address is specified in the DIGS field then it must left filled with 0's so that the digit string is 3 digits long e.g. a CPC of 10 would be digits 010.
Syntax	**RTDAI: DAI=,DIGS=,[OGR=,]][SPOR=,];**
Prerequisites	The specified digit analysis index and digit combination has not already been initiated. The combination is also not allowed if the digits form the prefix of a previously specified digit string or a previously specified digit string forms the prefix of the specified digit string (e.g. "DAI 1", "DIGS 01" cannot be initiated if "DAI 1", DIGS "01425" have previously been initiated. And vice versa). Either a default outgoing route or secondary point of origin must be specified and. if specified, already initiated. Both a default outgoing route and secondary point of origin cannot be specified. If the outgoing route or secondary point of origin leading to an outgoing route is circuit mapped then the circuit groups involved must be blocked.
Limitations	Routing using a secondary point of origin can only result in up to 5 secondary points of origin before achieving an outgoing route.
Attributes	CONFIG
Example	RTDAI:DAI=2,DIGS=01425,OGR=23;

7.23.2 Routing Digit Analysis Change

RTDAC	Routing Digit Analysis Change
	This command is used to change the outgoing route or secondary point of origin that is associated with an already existing digit analysis index/called party digits key. N.B. If a calling party category or nature of address is specified in the DIGS field then it must left filled with 0's so that the digit string is 3 digits long e.g. a CPC of 10 would be digits 010.
Syntax	**RTDAI: DAI=,DIGS=,[OGR=,][SPOR=,];**
Prerequisites	The specified digit analysis index and digit combination has not already been initiated. The combination is also not allowed if the digits form the prefix of a previously specified digit string or a previously specified digit string forms the prefix of the specified digit string (e.g. "DAI 1", "DIGS 01" cannot be initiated if "DAI 1", DIGS "01425" have previously been initiated. And vice versa). As a result of this command either a default outgoing route or secondary point of origin must be specified and. if specified, already initiated. As a result of this command both a default outgoing route and secondary point of origin cannot be specified. If the changing outgoing route or secondary point of origin leading to an outgoing route is circuit mapped then the circuit groups involved must be blocked. If the new route secondary point of origin is circuit mapped then the circuit groups involved must be blocked.
Limitations	Routing using a secondary point of origin can only result in up to 5 secondary points of origin before achieving an outgoing route.
Attributes	CONFIG
Example	RTDAC:DAI=1,DIGS=01425,OGR=22;

7.23.3 Routing Digit Analysis End

RTDAE Routing Digit Analysis End

This command is used to end a digit analysis mapping.

Syntax **RTDAE:DAI=,DIGS=;**

Prerequisites The digit analysis index and digit string combination must already have been initiated.

If this is the only digit analysis index and digit string combination for the digit analysis index then there can be no point of origin using this digit analysis index.

If the outgoing route involved is circuit mapped then the circuit groups involved must be blocked.

Attributes CONFIG

Example RTDAE:DAI=2,DIGS=01425;

7.23.4 Routing Digit Analysis Print

RTDAP Routing Digit Analysis Print

This command is used to obtain a print out of digit analysis indices and digit tree combinations. If no digit analysis index, secondary point of origin or outgoing route is specified then all combinations are output.

Syntax **RTDAP:[DAI=,|OGR=|SPOR=];**

Prerequisites If specified, the digit analysis index, secondary point of origin or outgoing route must already have been initiated.

Attributes

Example RTDAP:DAI=1;
RTDAP:OGR=5
RTDAP:SPOR=2;

RTDAP;

Output format

```
Digit Analysis Mapping
DAI  DIGS             OGR SPOR
1    01725            4   0
1    01425            5   0
2    0800             0   1
EXECUTED
```

7.23.5 Routing Hunt Sequence Initiate

RTHSI Routing Hunt Sequence Initiate

This command is used to specify the order in which groups are to be considered to belong to an outgoing route. The significance of this order (the hunt sequence) depends on the hunt mode selected.

Syntax **RTHSI:OGR=,HTSEQ=,CGRP=;**

Prerequisites The outgoing route has already been initiated.

The specified Circuit Group has already been initiated.

For circuit map hunting only 1 circuit group can be assigned to a route and when assigned it must be assigned to sequence number 1.

A circuit group cannot be specified in more than one hunt sequence position.

The outgoing route/hunt sequence combination must not already be initiated.

If the outgoing route is circuit mapped then the circuit groups involved must be blocked.

Hunt sequences cannot be initiated if the outgoing route has no hunt mode.

Attributes CONFIG

Example RTHSI:OGR=4,HTSEQ=1,CGRP=56;

7.23.6 Routing Hunt Sequence End

RTHSE Routing Hunt Sequence End

This command is used to clear a hunt sequence number of a circuit group.

Syntax **RTHSE:OGR=,HTSEQ=;**

Prerequisites The specified route index has already been initiated.

There is a circuit group attached to the hunt sequence number.

If the hunt sequence is involved in circuit mapping then it can only be ended if the circuit groups involved are blocked.

The outgoing route/hunt sequence combination must already be initiated.

If the outgoing route is circuit mapped then the circuit groups involved must be blocked.

Attributes CONFIG

Example RTHSE:OGR=4,HTSEQ=1;

7.23.7 Routing Hunt Sequence Print

RTHSP Routing Hunt Sequence Print

This command is used to obtain the association between routes and Circuit Groups. It will be provided on an outgoing route basis, circuit group basis or be given for all combinations.

Syntax **RTHSP:OGR=;**

RTHSP:CGRP=;

RTHSP;

Prerequisites If specified, outgoing route should be initialised.

If specified the circuit group should be initialised.

Attributes

Example RTHSP:OGR=23;

RTHSP:CGRP=50;

RTHSP;

Output format:

```
Route hunting sequence table
OGR  OGR LABEL  HTSEQ    CGRP  CGRP LABEL
23   BERLIN     1        53    FIRSTGRP
23   BERLIN     2        22    SECGROUP
23   BERLIN     3        12    THIRDGROUP
23   BERLIN     15       21    FOURTHGROUP
EXECUTED
```

7.23.8 Routing Outgoing Route Initiate

RTORI Routing Outgoing Route Initiate

This command is used to initiate a route.

Syntax

RTORI: OGR=,{[HUNT=],[ANNC=]}
[CDST=,][CDDL=,][CDPRE=,][CGMD=,][CGDL=,][CGPRE=,][CPCD=,]
[CPCG=,][CG2PRE=,][CG2DL=,][LCMD=,][[NEXT=,][CDMD=,][LSTAB=,]
[LSM=,][ISTAB=,][ISM=,][CHG=,][TANS=,][BWM=,][IBI=,][LABEL=,];

Prerequisites

The outgoing route has not already been initiated and cannot have a value of 0.

The start moment must be greater than or equal to the number of called party number delete digits.

If the hunting algorithm indicates circuit mapping no next route index can be given.

ISM can only be set to a value other than 0 if ISC is set to Y by CNSYS command.

If specified the next route must already have been initiated.

If specified the announcement must already have been initiated.

If an announcement is specified no next route index can be given.

If specified the routing chain that follows from the next route cannot eventually lead to the outgoing route.

If the local service mode is greater than 0 then the local service control table must also be greater than 0. If the calling party number mode equals 0 then the local service control table must also equal 0.

If specified the calling party number profile must already have been initiated.

If specified the called party number profile must already have been initiated.

N.B. If HUNT is specified as well as ANNC the converter will first search for an available circuit before playing the announcement. If only ANNC is specified the announcement will play immediately.

N.B. When an outgoing circuit group from a route is Japan TTC ISUP and CG2PRE is set the digits from the CG2PRE will form the carrier information code sent in the IAM. The user should not set CGMD=2 when the route goes to an outgoing Japan TTC ISUP circuit group.

Attributes

CONFIG

Example

RTORI:OGR=16,HUNT=1,CDST=5,CDDL=3,CDPRE=01425;

7.23.9 Routing Outgoing Route Change

RTORC Routing Outgoing Route Change

This command is used to change the data associated with a route

Syntax **RTORC: OGR=,**
[HUNT=,][ANNC=,][CDST=,][CDDL=,][CDPRE=,][CGMD=,][CGDL=,]
[CGPRE=,][CPCD=,][CPCG=,][CG2PRE=,][CG2DL=,][LCMD=,]
[NEXT=,][CDMD=,][LSTAB=,][LSM=,][ISTAB=,][ISM=,][CHG=,]
[TANS=,][BWM=,][IBI=,][LABEL=,];

Prerequisites The outgoing route has already been initiated.

The start moment must be greater than or equal to the number of called party number delete digits.

If the route is involved in circuit mapping then no next route index can be given and the hunt type or next route can only be changed if the circuit groups involved are blocked.

ISM can only be set to a value other than 0 if ISC is set to Y by CNSYS command.

If specified the next route must already have been initiated.

If specified the routing chain that follows from the next route cannot eventually lead to the outgoing route.

If specified the announcement must already have been initiated.

If an announcement is specified no next route index can be given.

If the local service mode is greater than 0 then the local service control table must also be greater than 0. If the calling party number mode equals 0 then the local service control table must also equal 0.

If specified the called party number and calling party number profiles must already have been initiated.

N.B. When an outgoing circuit group from a route is Japan TTC ISUP and CG2PRE is set the digits from the CG2PRE will form the carrier information code sent in the IAM. The user should not set CGMD=2 when the route goes to an outgoing Japan TTC ISUP circuit group.

Attributes CONFIG

Example RTORC:OGR=16,HUNT=1,CGMD=1,CGDL=5,CGPRE=01425;

7.23.10 Routing Outgoing Route End

RTORE	Routing Outgoing Route End
	This command is used to end a route. It will also remove the association of a circuit group to the route.
Syntax	**RTORE:OGR=;**
Prerequisites	The specified route must already have been initiated. The route cannot be attached to any digit analysis mapping. If the route is involved in circuit mapping then it can only be ended if the circuit groups involved are blocked. The outgoing route cannot be ended if it is associated with a periodic report or continuous record. An outgoing route cannot be ended if it is a next route associated with another outgoing route.
Attributes	CONFIG
Example	RTORE:OGR=3;

7.23.11 Routing Outgoing Route Print

RTORP Routing Outgoing Route Print

This command is used to obtain a print out of outgoing route(s). If no outgoing route is specified then all combinations are output.

If the PAGE parameter is specified then that particular page of data will be output. If no page is specified then page 1 will be output.

Syntax **RTORP:[PAGE=,][OGR=,];**

Prerequisites If specified, the route index must already have been initiated.

Attributes

Example RTORP:PAGE=2;

Output format

```
Page 1 of 3 Outgoing Route Configuration
OGR HUNT NEXT ANNC CDMD CPCD CDST CDDL CDPRE            LABEL
1   1    0    0    0    0    4    0    0181            LONDON
2   1    0    0    0    0    1    0    0172            YORK
3   1    3    0    0    0    1    0    0131            EDINBURGH
EXECUTED

Page 2 of 3 Outgoing Route Configuration
OGR CGMD CPCG CGDL CGPRE            CG2DL CG2PRE              LABEL
1   1    0    0                      0                        LONDON
2   1    0    0                      0                        YORK
3   1    0    0                      0                        EDINBURGH
EXECUTED

Page 3 of 3 Outgoing Route Configuration
OGR LCMD ISM ISTAB LSM LSTAB TANS BWM IBI CHG LABEL
1   0    0   0     0   0     T2     1   1 0-0 LONDON
2   0    0   0     0   0     T2     0   0 0-0 YORK
2   0    0   0     0   0     T2     0   0 0-0 EDINBURGH
EXECUTED
```

7.23.12 Routing Point of Origin Initiate

RTPOI Routing Point of Origin Initiate

This command is used to initiate a point of origin.

Syntax

RTPOI:POR=,{[DAI=,][DOGR=,][SPOR]}
[DAMD][CDST=,][CDDL=,][CDPRE=,][CGMD=,][CGDL=,][CPCD=,]
[CPCG=,][CG2PRE=,][CG2DL=,][LCMD=,][RCG=,][CGPRE=,]
[ISM=,][LSTAB=,][LSM=,][ISTAB=,][LABEL=,];

Prerequisites

The specified point of origin has not already been initiated.

If an outgoing route, secondary point of origin digit analysis index, calling party number profile or called party number profile are specified then they must have already been initiated.

Either a digit analysis index, default outgoing route or secondary point of origin must be specified.

Both a default outgoing route and secondary point of origin cannot be specified.

A specified secondary point of origin cannot cause a routing loop that results in the original point of origin specified in this command.

If the digit analysis index, secondary point of origin or default outgoing route are specified and they route to a circuit group which is circuit mapped then the groups associated with the circuit mapping must be blocked.

ISM can only be set to a value other than 0 if ISC is set to Y by the configure system command.

If the local service mode is greater than 0 then the local service control table must also be greater than 0. If the calling party number mode equals 0 then the local service control table must also equal 0.

N.B. When an incoming circuit group from a route is Japan TTC ISUP and CG2PRE is set the digits from the CG2PRE will form the carrier information code sent in the ACM. The user should not set CGMD=2 when the point of origin comes from an outgoing Japan TTC ISUP circuit group.

Limitations

Routing from a point of origin can only result in up to 5 secondary points of origin before achieving an outgoing route.

Attributes

CONFIG

Example

RTPOI:POR=1,DAI=2,CDST=1,CDDL=5,CDPRE=01425;

7.23.13 Routing Point of Origin Change

RTPOC Routing Point of Origin Change

This command is used to change the attributes in a point of origin.

Syntax

RTPOC:POR=,
[DAI=,][DOGR=,][SPOR=,],[DAMD=,][CDST=,][CDDL=,][CDPRE=,]
[CGMD=,][CGDL=,][CGPRE=,][CPCD=,][CPCG=,][CG2PRE=,]
[CG2DL=,][LCMD=,][RCG=,][ISM=,][LSTAB=,][LSM=,]
[ISTAB=,][LABEL=,];

Prerequisites

If an outgoing route, secondary point of origin digit analysis index, calling party number profile or called party number profile are specified then they must have already been initiated.

Either a digit analysis index, default outgoing route or secondary point of origin must exist as a result of this command.

Both a default outgoing route and secondary point of origin cannot exist as a result of this command.

A specified secondary point of origin cannot cause a routing loop that results in the original point of origin specified in this command.

If a digit analysis index, secondary point of origin or default outgoing route are specified the point of origin must not currently route to a circuit mapped group where either it or its partner is unblocked.

If the local service mode is greater than 0 then the local service control table must also be greater than 0. If the calling party number mode equals 0 then the local service control table must also equal 0.

ISM can only be set to a value other than 0 if ISC is set to Y by the configure system command.

N.B. When an incoming circuit group from a route is Japan TTC ISUP and CG2PRE is set the digits from the CG2PRE will form the carrier information code sent in the ACM. The user should not set CGMD=2 when the point of origin comes from an outgoing Japan TTC ISUP circuit group.

Limitations

Routing from a point of origin can only result in up to 5 secondary points of origin before achieving an outgoing route.

Attributes

CONFIG

Example

RTPOC:POR=1,DAI=2,CGMD=1,CGDL=5,CGPRE=01425;

7.23.14 Routing Point of Origin End

RTPOE	Routing Point of Origin End
	This command is used to end a point of origin.
Syntax	**RTPOE**:**POR=**;
Prerequisites	The point of origin must already have been initiated.
	There are no circuit groups using the point of origin.
	If the point of origin is involved with circuit mapping then it can only be ended if the circuit groups involved are blocked.
	A point of origin cannot be ended if it is associated with a continuous record.
Attributes	CONFIG
Example	RTPOE:POR=1;

7.23.15 Routing Point of Origin Print

RTPOP Routing Point of Origin Print

This command is used to obtain a print out of point of origin(s). If no point of origin is specified then all combinations are output.

If the PAGE parameter is specified then that particular page of data will be output. If no page is specified then page 1 will be output.

Syntax **RTPOP:[PAGE=,][POR=];**

Prerequisites If specified, the point of origin must already have been initiated.

Attributes

Example RTPOP:POR=1;

RTPOP;

Output format

```
Page 1 of 3 Point of Origin Configuration
POR DOGR DAI DAMD SPOR CPCD CDST CDDL CDPRE            LABEL
1   2    0   0    0    0    1    0                    GERMANY
2   0    1   1    0    0    1    2    0800            LOCAL
3   4    0   0    0    0    1    0                    FREEPHONE
EXECUTED

Page 2 of 3 Point of Origin Configuration
POR RCG CGMD CPCG CGDL CGPRE            CG2DL CG2PRE               LABEL
1   0   1    0    0    00               0                          GERMANY
2   0   1    0    0                     0                          LOCAL
3   0   2    1    0                     0     08004545454          FREEPHONE
4   0   1    0    0                     0
EXECUTED

Page 3 of 3 Point of Origin Configuration
OR LCMD ISM ISTAB LSM LSTAB LABEL
1   0    0   0     0   0     LONDON
2   0    0   0     0   0     YORK
3   0    0   0     0   0     EDINBURGH
EXECUTED
```

7.24 Status

7.24.1 Status Access Link Print

STASP Status Access Link Print

This command requests a status report of the Access Side signalling links.

Syntax **STASP:[ASLINK=…];**

Attributes None.

Example STASP:ASLINK=1;
STASP;

Output format

```
Access Side Link Status
ASLINK  EQU    TS       L3 STATUS      L2 Status
3       5-1    6-1-1    Blocked
4       5-2    6-1-2    Active         OK
5       6-1    6-1-3    Active         TEI Assigned
EXECUTED
```

7.24.2 Status Board Print

STBOP Status Board Print

This command requests a status report of boards on the system.

Syntax **STBOP:[BPOS=…];**

Prerequisites If specified the board should already have been initiated.

Attributes None.

Example STCGP:BPOS=5;

Output format

```
Board Status
BPOS STATUS
5    Active
6    Active
7    Blocked
20   Failed
EXECUTED
```

7.24.3 Status Circuit Group Print

STCGP Status Circuit Group Print

This command requests a status of a circuit group

Definitions for device status:-

PGRP - The partner circuit group if the group is circuit mapped. If the group is not circuit mapped then no group is given .

DEVS - The number of devices assigned to the circuit group

MAINT - If the circuit group is blocked then marked as BLOCKED otherwise the number of circuits that do not have calls in progress and have an active maintenance state (and therefore not available for selection).

ACTIVE - The number of circuits that have calls in progress. Blank if the circuit group is blocked.

IDLE – The number of circuits that do not have calls in progress but are available for selection. Blank if the circuit group is blocked.

Syntax **STCGP:[CGRP=…];**

Prerequisites If specified the circuit group should already have been initiated.

Attributes None.

Example STCGP:CGRP=1;

Output format

```
Circuit Group Status
CGRP    PGRP    DEVS    MAINT   ACTIVE  IDLE
1       2       15      3       5       7
2       1       15      3       5       7
3               15      BLOCKED
EXECUTED
```

7.24.4 Status C7 Link Print

STC7P Status C7 Link Print

This command requests a status report of the SS7 signalling links or SS7 linksets.

Syntax **STC7P:[C7LINK=…];**

STC7P:[LS=…];

Attributes None.

Example STC7P;

Output format

```
SS7 Link Status
C7LINK  LINK SET   EQU     TS       L3 STATUS   L2 STATUS
  1            1   5-1     5-1-16   Blocked
  2            1   5-2     5-1-31   Available   In service
  3            2   6-1     6-1-16   Unavailable Init Align
  4            2   6-2     7-1-16   Deactivated Out of Service
EXECUTED
```

7.24.5 Status Device Print

STDEP Status Device Print

This command requests a status of a device.

If a device has not been initiated, attached to a group or unblocked a status will not be given. The CIC is only given for SS7 devices.

If a PAGE parameter is specified then that particular page of data will be output. In no page is specified then page 1 will be output. For DPNSS page 1 will be used to provide status for real circuits while page 2 will be used to provide status for virtual circuits.

Definitions for device status:-

CALL STATE: - The current call control state for a device .

PROTOCOL STATE: - The current protocol state for a device.

IC_SEIZED	- Incoming circuit has been seized
IC_WROUTE	- Initial address message received. Awaiting further information before routing.
IC_SETUP	- Incoming side, call has routed and is awaiting alerting.
OG_SETUP	- Outgoing side, call has routed and is awaiting alerting.
IC_ALERT	- Incoming side awaiting answer.
OG_ALERT	- Outgoing side awaiting answer.
CONNECT	- Call answered and in progress.
RELEASE	- Call has been released and is awaiting release completion.

L2 STATUS:- The Status of Level 2 (for DPNSS).

BLOCKING STATUS

RS – Device has blocked while undergoing circuit reset.
LM – Device has been inhibited by MML.
LH – Device has been locally hardware blocked due to PCM Loss.
PM – Device has been maintenance blocked by its partner circuit in circuit mapping.
PH – Device has been hardware blocked partner circuit in circuit mapping.
RM – Device has been remotely maintenance blocked.
RH – Device has been remotely hardware blocked.

Syntax **STDEP:CGRP=,[DEV=,][PAGE=,];**

STDEP:CGRP=,[CIC=,][PAGE=,];

Prerequisites The circuit group should already have been initiated.

Page 2 can only be specified for DPNSS circuits.

Attributes None.

Example STDEP:CGRP=1;

STDEP:CGRP=5,CIC=123;

Output format

```
Page 1 of 2 Real Device Status
CGRP DEV  CIC  CALL STATE  PROTOCOL STATE  L2 STATUS  BLOCKING STATUS
43  1     33  IC_ALERTING IC_W_ANM                    -- -- -- -- -- -- --
44  2     34  IDLE        IDLE                        RS LM LH PM PH RM RH
45  3         IC_SETUP    IC_W_ACM                    -- -- -- -- -- -- --
52  8     36  IDLE        IDLE                        RS -- -- -- -- -- --
EXECUTED

Page 2 of 2 Virtual Device Status
CGRP DEV  CIC  CALL STATE  PROTOCOL STATE  L2 STATUS  BLOCKING STATUS
41   1         IDLE        IDLE            RESET_OK   -- -- -- -- -- -- --
41   2         IDLE        IDLE            RESET_OK   -- -- -- -- -- -- --
41   3         IDLE        IDLE            RESET_OK   -- -- -- -- -- -- --
EXECUTED
```

7.24.6 Status PCM Print

STPCP Status PCM Print

This command requests a status report of the PCMs. The PCM status is one of the following:-

OK	- Normal operational state.
PCM Loss	- Loss of signal.
Sync Loss	- Loss of frame alignment.
RAI	- Remote alarm indication.
AIS	- Alarm indication signal.

(Note that some signalling software types currently support only Sync Loss and OK)

The Clock field is one of the following:-

OK - The board is detecting a valid PCM signal which could potentially be used for synchronisation.

Active - The board is detecting a valid PCM signal which is currently providing synchronisation for the converter.

Not OK – The input to the board is not currently suitable for use as a synchronisation source.

Fault - A fault has been detected on the board which prevents it being used as a synchronisation source.

Syntax **STPCP;**

Prerequisites None

Attributes CONFIG

Example STPCP;

Output format

```
PCM Status
PCM SYNCPRI PCM Status  Clock
5-1 1       PCM Loss    Fault
5-2 2       SYNC Loss   Not OK
6-1 3       AIS         Not OK
6-2 4       RAI         OK
7-1 1       OK          Active
7-2 1       OK          OK

EXECUTED
```

7.24.7 Status Remote Data Centre Print

STRDP Status Remote Data Centre Print

This command requests a status report for the Remote Data Centres. The status can be one of the following:-

OK	- The RDC is available to receive data.
Initiating	- Initiating connection to remote data centre.
Failed	- The RDC is not available to receive data.
Blocked	- The RDC is user blocked from receiving data.

File transfer will be to the lowest numbered available RDC.

N.B. If the system does not have an IPADDR then status will indicate OK for communication with the RDC however no data can be transferred.

Syntax **STRDP;**

Attributes

Example STRDP;

```
Remote Data Centre Status
RDC  IPADDR           RDCSTAT
1    25.03.203.52     Initiating
2    102.03.211.140   OK
EXECUTED
```

7.24.8 Status Voice Resource Print

STVRP Status Voice Resource Print

This command requests a status report for all voice resources. If no voice resource is specified, all initialised resources are output. The status can be one of the following:-

Available - The VRS is able to play announcements.
Playing - An announcement is currently being played.
Inhibited - The VRS is user inhibited from playing new announcements.
Failed - The VRS is not able to play announcements.
Blocked - The VRS is user blocked from playing announcements.
Seized - - The VRS has been reserved but no announcement is playing.
Awaiting Download – The VRS is not available until download of announcements to board is complete.
Downloading - The VRS is unavailable whilst announcement download is in progress.

Syntax **STVRP:[VRS =…];**

Attributes None.

Example STVRP:VRP=1;

STVRP;

Output format

```
Voice Resource Status
VRS    EQU    STATUS  ANNC
1      5-1    Playing 1
2      5-2    Blocked
3      6-1    Failed
5      7-1    Seized
EXECUTED
```

8. MAINTENANCE

8.1 ESD Warning

This equipment contains Electro-static Sensitive Devices (ESD). Earthed, male 10mm diameter studs are provided on each side of the equipment to facilitate attachment of a wrist strap during maintenance.

8.2 Fault Diagnosis

The converter has the ability to detect and log various faults and events. Under most circumstances, these fault entries will be sufficient to identify the faulty system component.

8.3 Repair Procedure – DSC210

8.3.1 General

Access to the converter is gained by fully extending the mounting slides and removing the lid from the chassis. This will be the only access required for most maintenance and repair procedures.

Once a faulty module has been identified it should be removed from the equipment and replaced with a module of the same type. Any software configuration of the replacement unit will be performed automatically by the converter.

If the solid state memory card requires replacing, the configuration data will be lost and the equipment will require re-configuring. This can be loaded from disk if a configuration dump is available.

The option link and switch settings of any replacement CS6 card must be verified against that listed in this manual before being installed in the equipment, taking care to use the correct setting depending on the CPU card in use.

8.3.2 Equipment preparation for maintenance procedures

The equipment should be switched off and isolated from the power source. The screws securing the front panel of the equipment to the mounting rack should be removed and placed to one side for re-fitting when the maintenance operation is complete. The unit should be withdrawn from the cabinet by fully extending the slides.

The seven lid retaining screws should be loosened (but not removed) so that the lid can slide backwards until the lid is positioned such that the screw heads are directly above the relief holes at the end of each fixing point slot. The lid may then be removed by lifting upwards.

If any electrical circuit board is to be replaced, a wrist strap should be connected to the equipment earth stud or other suitable earth point, and worn by the person carrying out the maintenance procedure.

All replacement boards will be supplied enclosed in an electro-static protective bag which should be used when carrying boards from station to station. The board should remain in its protective packaging until it is to be installed in the equipment and should be unpacked in an electrostatic free environment, using wrist straps and dissipative mats. If such an environment is not available, the board should be placed on its protective bag during any work.

When the sub-assembly has been replaced, the chassis lid should be re-fitted and the retaining screws tightened. The equipment should then be pushed back into the mounting rack and the rack fixings replaced.

8.3.3 Replacement of Signalling Processor type CS6

CS6 signalling cards are fitted in board position 5 .. 20, each board position is listed across the card guide front plate and on the rear of the unit. Before the board can be removed all connections to the two PCM interface ports must be disconnected, noting which cable is connected to each connector.

The 26-way ribbon cable header should be removed from the connector at the top of the board. The ribbon cable should be removed from each board between the board being removed and one end of the ribbon cable. The header may be removed from the connector by applying gentle upward pressure to the ribbon cable just as it enters the header. Do not use excessive force or the connector strip will be damaged.

The end bracket retaining screw should then be removed and kept to one side for re-fitting. The faulty board may then be removed from the chassis.

The replacement card should be unpacked, its link settings verified against those listed in this manual and the address switch set to the correct setting for the selected board position. When the settings are correct, the board should be inserted in the correct position in the chassis and the end plate retaining screw fitted. The ribbon cable header should be positioned over the connector block and refitted by applying gentle downward pressure. The PCM interface connectors should be re-fitted to the rear of the card.

8.3.4 Replacement of central processor card

The CPU card is fitted in board position 3. If a terminal is connected to the Serial Port mounted on the rear of this card, that connector should be removed.

Before the faulty card can be removed, a 34-way ribbon header and a 10-way ribbon header require removal from connector blocks at the top edge of the card.

The faulty card should be withdrawn from the chassis and the replacement unpacked. All link options on the board are factory set and must not be modified.

The new CPU card should be inserted into the equipment and the end plate retaining screw re-fitted. Take care to replace the CPU card with the same type of card.

After a new CPU card is fitted it is necessary to reconfigure the converter (using a disk of the dumped configuration as detailed in Section 6).

8.3.5 Replacement of the solid state memory card

Remove the screw securing the end plate and ease the card from the connector.

Insert the replacement card into the connector and re-fit the screw in the end panel. Take care to replace the card with the same type of card.

After a new solid state memory card is fitted it is necessary to install the current version of the operating software (detailed in Section 6).

8.3.6 Replacement of Alarm card

The alarm card is fitted in board position 1.

Before the faulty board is removed, the Alarm Port connector should be unplugged from the rear of the unit. The two ribbon connectors should be withdrawn from the back edge of the card using the ejectors. Do not use excessive force as this may damage the connector.

The end plate retaining screw should be removed and the faulty board withdrawn. The replacement should then be unpacked and inserted in the unit, and the two ribbon cable headers reconnected to the board in the same positions that they were removed from the faulty card. The Alarm Port connector should be re-connected to the rear of the unit.

8.3.7 Replacement of Ethernet Card

The Ethernet card is fitted in board position 2.

Before the faulty board is removed, the Ethernet connector should be unplugged from the rear of the unit.

The end plate retaining screw should be removed and the faulty board withdrawn. The replacement should then be unpacked and inserted in the unit, The Ethernet connector should be re-connected to the rear of the unit.

8.3.8 Fan Replacement

The fans are bolted to a fan tray which can be easily removed from the chassis to allow replacement of a faulty fan. The fan tray is fixed by three countersunk screws accessed from the underside of the chassis and two pan head screws fixing to the top card guide support bracket (containing board position numbering legend).

After removing these screws, the fan tray can be lifted upwards until the bottom of the tray is clear of the power supply unit (PSU). At this point the Power Fail alarm connector (grey/black cable) and the fan supply connector (orange/black cable) should be unplugged from the small circuit board located beneath Fan 2. The ribbon cable connected to this circuit board is an integral part of the circuit board and has to be removed from the lower connector on the back edge of the alarm card using the ejectors. It may be necessary to withdraw the alarm card from the chassis to gain access to this connector. Once the ribbon cable is free, it should be drawn back through the card guide support assembly and the fan tray completely removed from the chassis.

Each fan can be removed from the fan tray by removing the four corner nuts and bolts; this also frees the fan finger guards. Each fan has a supply and alarm connector which can be unplugged from the IFC assembly. The lower fixing bolts of Fan 2 also secure the IFC assembly fixing bracket.

The bottom two bolts fixing Fan 1 and Fan 2 together with the bottom left hand bolt fixing Fan 3 are shorter than the other fan fixing bolts; they should not be mixed on re-assembly. Each fan should be connected to the IFC assembly, the wire tidied and cable tied as necessary before the fan tray is refitted to the chassis.

Re-fitting the fan tray is the reverse of the removal procedure. Remember to connect the Power Fail and Fan Supply connectors as the tray is lowered into position.

8.3.9 PSU replacement

The PSU is located at the front of the unit and is fixed by four screws from the underside of the chassis.

The cables connecting the PSU to the rest of the system should be removed. There are two ‘spade terminal’ and one ‘screw terminal’ connector blocks, the fixing screws of which can be accessed through a slot in the PSU lid. All cables should be removed from these connectors, cable positions are detailed in figure 7-1. The four fixing screws should then be removed, allowing the PSU to be withdrawn from the chassis.

Replacement of a new PSU unit is the reverse of this procedure ensuring that cables are replaced in their correct positions.

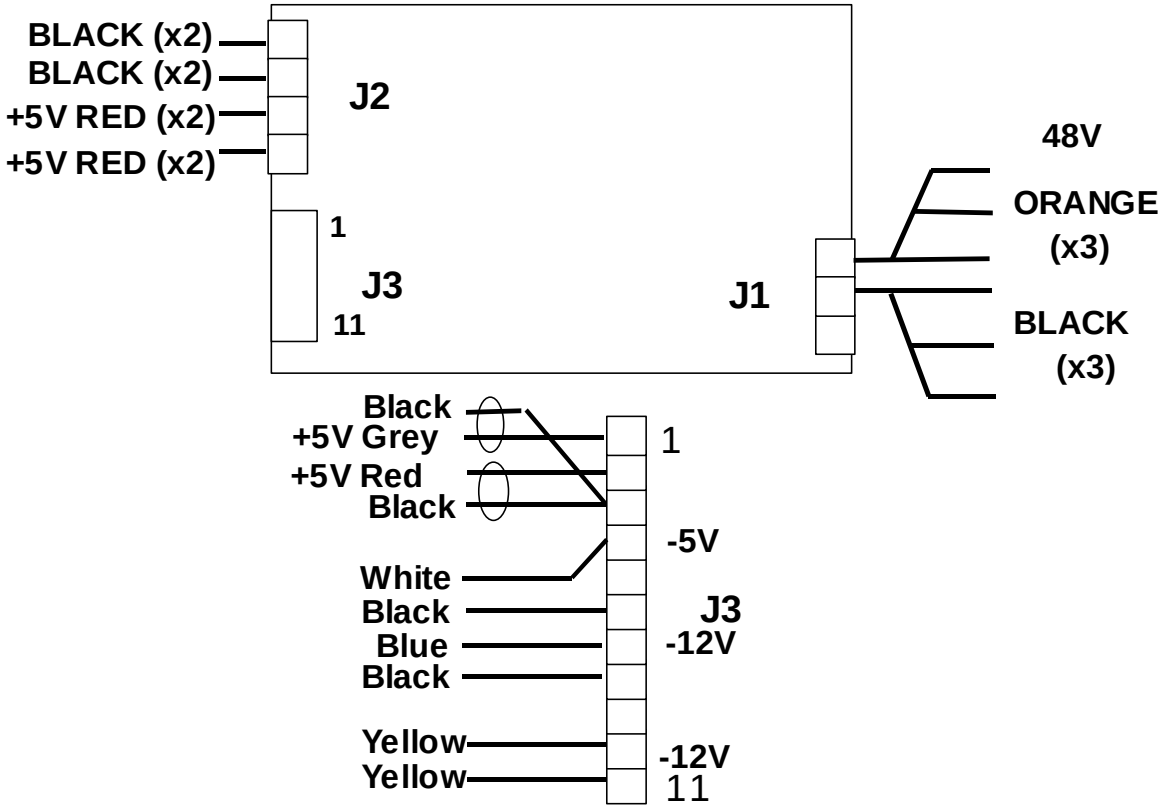

Figure 8-1 Power supply wiring diagram

8.3.10 Floppy disk drive replacement.

The floppy disk drive is situated at the front right of the unit. Before the unit may be replaced, the power supply connector and ribbon cable header must be removed. The ribbon cable connector may be removed by applying gentle pressure to the ribbon cable just as it enters the connector block in the direction to release it from the disk drive unit. Do not use excessive force as this may damage the cable and the connector.

The four screws fixing the disk drive mounting plate screws should then be removed from the underside of the chassis and the drive and its mounting plate removed from the inside of the chassis. The disk drive unit may then be separated from its mounting plate by removing the four screws from the slots in the mounting plate sides.

Replacement of a new disk drive unit is the reverse of this procedure.

9. ANNEX A: Alarm Fault Code Listing

Note: The meaning of individual event codes (in particular the coding of the DIAG field) may be changed in subsequent releases of the converter software without prior notification.

CODE	EVENT	ID	DIAG	CATEGORY
1	PCM loss Loss of signal at PCM input port.	PCM	0	PCM
2	AIS PCM input port contains the Alarm Indication Signal (All ones on all timeslots).	PCM	0	PCM
3	Frame sync loss Loss of frame alignment on PCM port.	PCM	0	PCM
4	Frame slip A frame slip occurred on the PCM port. This alarm event is given for each occurrence of a frame slip.	PCM	0	PCM
5	Remote alarm PCM port is receiving a Remote Alarm Indication. This usually indicates that the remote end is either failing to achieve frame alignment or that it is experiencing a high bit error rate on the received signal.	PCM	0	PCM
6	BER > 1:10^5 The input PCM signal contains a Bit Error Rate in excess of 1 in 100,000 as measured on the frame alignment pattern. This is usually due to faulty cabling or a faulty PCM card at the remote end.	PCM	0	PCM
7	BER > 1:10^3 The input PCM signal contains a Bit Error Rate in excess of 1 in 1000 as measured on the frame alignment pattern. This is usually due to faulty cabling or a faulty PCM card at the remote end.	PCM	0	PCM
8	Reserved			
9	C7 link fail An SS7 signalling link has failed. Usually due to incorrect configuration (signalling timeslot), connectivity fault or inactive signalling terminal at the remote end.	C7LINK	0	SIG
10	Reserved			
11	Link set fail All signalling links in an SS7 signalling linkset have failed. Usually due to incorrect configuration (point codes or signalling timeslots), connectivity fault or inactive signalling terminal at the remote end.	LS	0	SIG

12	Processor1 fail The converter has detected a fault with a signalling processor. This may either be due to a faulty signalling processor card or due to the converter performing a controlled shutdown of a signalling processor following persistent overload of the processor in order to prevent the overload affecting the remainder of the system. Usually due to faulty card (which can be confirmed by changing SS7/Q931 links to an alternative processor card using the C7SLC/ASSLC command) or unusual signalling conditions which may be due to incorrect configuration or a mismatch of configuration between the converter and the remote end. This alarm condition can only be cleared by manual intervention, the user should block and unblock the affected board. (Note that a Processor Fail entry will always appear in the alarm log when a board is unblocked, this condition is identified by an event with identical Occurred and Cleared times).	BPOS	0	SYS
13	Reserved			
14	Self Test fail The converter has detected a self test failure which prevents normal operation. Usually the CPU card should be replaced.	0	0	SYS
15	Fan failure The converter has detected a failure of one of the cooling fans. The cooling will remain adequate during this condition but the fan should be replaced at the next convenient opportunity.	FAN ID	0	SYS
16	Multiple fan failure The converter has detected a failure of more than one cooling fan. The faulty fans should be replaced immediately.	0	0	SYS
17	Alarm Test 2 This event indicates that the user has invoked the alarm test for alarm class 2 using the ALTEI command.	0	0	SYS
18	Alarm Test 3 This event indicates that the user has invoked the alarm test for alarm class 3 using the ALTEI command.	0	0	SYS
19	System Restart This event indicates the time at which a system restart occurred.	0	0	SYS
20	Over temp The internal temperature exceeds a pre-set threshold indicating either an internal fault of failure of the cooling arrangements. Inspection should take place immediately.	0	0	SYS

21	+5V fault The internal +5 volt power rail is out of range. This is usually due to either a faulty power supply module or a faulty card causing excessive current consumption.	0	0	SYS
22	+12V fault The internal +12 volt power rail is out of range. This is usually due to either a faulty power supply module or a faulty card causing excessive current consumption	0	0	SYS
23	-5V fault The internal –5 volt power rail is out of range. This is usually due to either a faulty power supply module or a faulty card causing excessive current consumption	0	0	SYS
24	-12V fault The internal +12 volt power rail is out of range. This is usually due to either a faulty power supply module or a faulty card causing excessive current consumption	0	0	SYS
25	ISUP maint ind Diagnostic event relating to ISUP operation. Persistent events of this type should be reported to DataKinetics.			NONE
26	ISUP err ind Diagnostic event relating to ISUP operation. Persistent events of this type should be reported to DataKinetics.			NONE
27	CNV event ind. Diagnostic event relating to call control and signalling conversion. Persistent events of this type should be reported to DataKinetics.	CGRP times 100 plus DEV		NONE
28	CNV err ind Diagnostic event relating to call control and signalling conversion. Persistent events of this type should be reported to DataKinetics.			NONE
29	AS CC err ind Diagnostic event relating to Access Side call control. Persistent events of this type should be reported to DataKinetics.			NONE
30	AS BRD err ind Diagnostic event relating to Access Side signalling card. Persistent events of this type should be reported to DataKinetics.			NONE
31	AS link fail Loss of signalling on an Access Side signalling link. Usually due to incorrect configuration (signalling timeslot), connectivity fault or inactive signalling terminal at the remote end.	ASLINK		SIG

32	Overload The converter has detected the onset of an internal overload condition. This is usually due either to exceptionally high traffic rates or failure conditions causing additional invocation of maintenance procedures. During overload the converter will continue to operate as normal. Should the condition occur on a frequent basis (e.g.: during the busy hour every day) the condition should be reported to DataKinetics.	0	0	SYS
33	Sync failure None of the PCM ports that have been configured as possible clock sources contain a valid PCM signal. Under these conditions the converter will generate synchronisation using a local oscillator.	0	0	PCM
34	New sync source The converter has selected a new PCM as the clock synchronisation source.	PCM		PCM
35	PCM error ind Diagnostic event relating to the PCM functionality. Persistent events of this type should be reported to DataKinetics.			NONE
36	PCM event ind Diagnostic information relating to PCMs.			NONE
37	NUP maint ind Diagnostic event relating to NUP functionality. Persistent events of this type should be reported to DataKinetics.			NONE
38	NUP err ind Diagnostic event relating to NUP functionality. Persistent events of this type should be reported to DataKinetics.			NONE
39	System restart req The user has changed configuration parameters that require the system to be restarted before they can take effect. The alarm will persist until the system is restarted.	0	0	SYS
40	RDC failure Failure of communication with a remote data centre. Usually due to incorrect configuration (IP address, username or password), connectivity fault or inactive equipment at the remote end.	RDC	0	SIG
41	All RDC fail Failure of communication with all remote data centres. Continuous records will be written to hard disk or discarded as appropriate. Periodic report data will be discarded. It is important to note that on failure of all RDCs any billing records (if enabled) will be written to local hard disk which has a limited capacity.	0	0	SYS

42	RDC err ind Diagnostic event relating to the transfer of data to an RDC. Persistent events of this type should be reported to DataKinetics.			NONE
43	AS restart fail Failure to restart one or more channels on an Access Side link. The converter will automatically attempt to restore the channels on a periodic basis.	ASLINK	0	SIG
44	CR send fail The converter is unable to transfer information to an RDC for a Continuous Record. Possible problems include: no RDCs available, directory does not exist on RDC for this CR, write failure on RDC. If the problem clears, this alarm will persist until any records saved on the hard disk during the failure have been successfully transferred to an RDC.	RECORD	Diagnostic code	NONE
45	PR send fail The converter is unable to transfer information to an RDC for a Periodic Report. Possible problems include: no RDCs available, directory does not exist on RDC for this PR, write failure on RDC. If the problem clears, then the alarm will clear at the next successful transfer of data for the Periodic Report.	REPORT	Diagnostic code	NONE
46	Hard disk fail Interaction with the hard disk is no longer possible. No further use of the hard disk will be attempted until the system is restarted. The most likely cause is a physical failure of the hard disk drive.	0	Diagnostic code	SYS
47	Hard disk full The hard disk drive capacity for a Continuous Record has reached its limit. Either there is no more space on the hard disk drive to store data, or this continuous record has the maximum amount of data stored for it on the hard drive. In both cases, records will be discarded until an RDC recovers and all stored records are transferred from the converter. The alarm will then clear.	RECORD		
48	SVC event ind. Diagnostic event relating to services performed on the converter. Persistent events of this type should be reported to DataKinetics.			NONE
49	SVC err ind Diagnostic event relating to services performed on the converter. Persistent events of this type should be reported to DataKinetics.			NONE

50	Board cong A board has reached a congestion threshold. Boards repeatedly entering congestion indicate a need to increase the dimensioning of the switch.	BPOS		SYSTEM
51	TUP maint ind Diagnostic event relating to NUP functionality. Persistent events of this type should be reported to DataKinetics.			NONE
52	TUP err ind Diagnostic event relating to NUP functionality. Persistent events of this type should be reported to DataKinetics.			NONE
53	PCM mismatch The PCMTYPE setting is inconsistent with the hardware settings on the board.	PCM	0	SYSTEM
54	DP4 event Diagnostic event relating to DPNSS functionality. Persistent events of this type should be reported to DataKinetics.			NONE
55	DP3 event Diagnostic event relating to DPNSS functionality. Persistent events of this type should be reported to DataKinetics.			NONE
56	DP2 event Diagnostic event relating to DPNSS functionality. Persistent events of this type should be reported to DataKinetics.			NONE
57	DLC failure Failure of 1 or more DLCs on a DPNSS signalling link.	ASLINK	0	SIG
58	ANN event Diagnostic event relating to Announcement functionality. Persistent events of this type should be reported to DataKinetics.			NONE
59	ANN error Diagnostic event relating to Announcement functionality. Persistent events of this type should be reported to DataKinetics.			NONE
60	Announcement failure The announcement WAV file has become invalid. The indicated ANNC should be removed.	ANNC	0	NONE
61	SW mismatch The system has only partially been upgraded and a full software update is required. The system is running in ‘safe’ mode running limited management software. No circuits have been brought into service.	0	0	SYSTEM
62	C7 link Cong A SS7 signalling link is encountering congestion.	C7LINK	0	SIG

10. ANNEX B: Clearing Cause Mappings

This section lists each of the Internal Tokens both by number and description and then details the entire contents of the pre-configured Receive Clearing Cause Mapping Tables and the Transmit Clearing Cause Mapping Tables.

10.1 Definitions of Internal Tokens

The following table defines the meaning of all Internal Clearing Cause Tokens.

Internal Token	Definition
0	NULL Clearing Cause
1	Unallocated number
2	No route to specified transit network
3	No route to destination
4	Send special information tone
5	Misdialled trunk prefix
6	Channel unacceptable
7	Call awarded and being delivered in an established channel
8	Pre-emption(ANSI CS 0)
9	Pre-emption – circuit reserved for reuse
10-15	Reserved for future ITU use
16	Normal call clearing
17	User busy
18	No user responding
19	No answer from user (user alerted)
20	Absent subscriber
21	Call rejected
22	Number changed
23	Unallocated destination group (ANSI CS 2)
24	Undefined business group (ANSI CS 2)
25	Exchange routing error (ANSI CS 2)
26	Non selected user clearing
27	Destination out of order
28	Address incomplete
29	Facility rejected
30	Response to STATUS ENQUIRY
31	Normal unspecified
32-33	Reserved for future ITU use
34	No circuit available
35-37	Reserved for future ITU use
38	Network out of order
39-40	Reserved for future ITU use
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested channel not available
45	Pre-emption(ITU) Pre-emption(ANSI CS 2)
46	Precedence call blocked(ITU) Precedence call blocked(ANSI CS 2)
47	Resource unavailable – unspecified
48	Reserved for future ITU use
49	Quality of service unavailable
50	Request facility not subscribed
51	Call type incompatible with service request (ANSI CS 2)
52	Call blocked due to group restrictions (ANSI CS 2)

Internal Token	Definition
53	Outgoing calls barred within CUG
54	Reserved for future ITU use
55	Incoming calls barred within CUG
56	Reserved for future ITU use
57	Bearer capability not authorised
58	Bearer capability not presently available
61	Reserved for future ITU use
62	Inconsistency in designated outgoing access information and subscriber class
63	Service/option not available – unspecified
64	Reserved for future ITU use
65	Bearer capability not implemented
66	Channel type not implemented
67-68	Reserved for future ITU use
69	Requested facility not implemented
70	Only restricted digital information bearer capability is available
71-78	Reserved for future ITU use
79	Service or option not implemented., unspecified
80	Reserved for future ITU use
81	Invalid call reference
82	Identified channel does not exist
83	A suspended call exists, but this call identity does not
84	Call identity in use
85	No call suspended
86	Call having the requested call identity has been cleared
87	Called user not member of a CUG
88	Incompatible destination
89	Reserved for future ITU use
90	Non existent CUG
91	Invalid transit network selection
92-94	Reserved for future ITU use
95	Invalid message – unspecified
96	Mandatory information element is missing
97	Message type non existent or not implemented
98	Message not compatible with call state or message type non existent or not implemented
99	Parameter non existent or not implemented – discarded
100	Invalid information element contents
101	Message type not compatible with call state
102	Recovery on timer expiry
103	Parameter non existent or not implemented – passed on
104-109	Reserved for future ITU use
110	Message with unrecognised parameter discarded
111	Protocol error – unspecified
112-126	Reserved for future ITU use
127	Interworking unspecified
128	Reserved for future ITU use
129	Alerting timer expiry
130	Ringing timer expiry
131	Repeat attempt request
132	Suspend timer expiry
133	Failure to route a call
134	Wait for release complete timeout
135	Failed to set up a path across the system
136	Error in the called party number
137	Illegal TMR value

Internal Token	Definition
138	Invalid preference indicator
139	Failure to access an internal system resource
140	User data setup error
141	Rejection of the user to user service
142	Rejection of a CUG call
143	Failure during suspend
144	Internal software error
145	Busy circuit detected
146	Required IS route not found
147	Failure due to invalid CPC
148	Number Unobtainable
149	Failed to analyse digits
150	Failed CLI authorisation
151	Address incomplete detected on the incoming side
152	Address incomplete detected on the outgoing side
153	Protocol error detected by call control
154	Rejection of the user to user service 1
155	Rejection of the user to user service 2
156	Rejection of the user to user service 3
157	Rejection of the user to user service 1(not implemented)
158	Rejection of the user to user service 2(not implemented)
159	Rejection of the user to user service 3(not implemented)
160	Subscriber line busy
161	Subscriber trunk busy
162	Timeout of query request
163	General failure of query mechanism
164	Invalid information provided by query
165	Incoming call denied
166	Outgoing call denied
167	Network out of service
168	Switching equipment congestion
169	Announcement completed
170	Forced announcement release
171	Announcement timer expiry
172	Released diverting
173	Released not diverting
174	Calls permanently barred
175-255	Reserved for future use

10.2 Receive Clearing Cause Mapping Tables

This section details the contents of the 10 pre-configured Received Clearing Cause to Internal Token Mapping Tables. Currently tables 0 – 5 and 7 are all identical and Table 6, 8, 9 and 10 are different.

Received Cause	Table 0-5,7	Table 6	Table 8	Table 9	Table 10
0	0	148	0	0	1
1	1	28	1	1	28
2	2	41	2	2	31
3	3	63	3	3	63
4	4	1	4	4	88
5	5	1	5	5	22
6	131	41	131	131	63
7	7	131	7	7	42
8	8	17	8	8	17
9	9	168	9	9	27
10	10	1	10	10	88
11	11	41	11	11	88
12	12	41	12	12	41
13	13	1	13	13	41
14	14	1	14	14	41
15	15	47	15	15	41
16	16	17	16	16	41
17	17	27	17	17	41
18	18	41	18	18	111
19	19	1	19	19	88
20	20	41	20	20	16
21	21	41	21	21	99
22	22	41	22	22	99
23	23	41	23	23	41
24	24	1	24	24	50
25	25	41	25	25	21
26	26	41	26	26	97
27	27	41	27	27	88
28	28	41	28	28	38
29	29	41	29	29	16
30	30	1	30	30	28
31	31	19	31	31	18
32	32	16	32	32	16
33	33	41	33	33	41
34	34	1	34	34	44
35	35	41	35	35	34
36	36	1	36	36	16
37	37	41	37	37	41
38	167	41	167	167	41
39	39	41	39	39	41
40	40	41	40	40	41
41	41	1	41	41	88
42	168	41	168	168	41
43	43	41	43	43	41
44	131	41	131	131	41
45	45	1	45	45	27
46	46	1	46	46	27
47	47	0	47	47	41

Received Cause	Table 0-5,7	Table 6	Table 8	Table 9	Table 10
48	48	16	48	48	16
49	49	41	49	49	41
50	50	41	50	50	34
51	51	41	51	51	111
52	52	41	52	52	41
53	53	17	53	53	41
54	54	1	54	54	41
55	55	1	55	55	41
56	56	174	56	56	41
57	57	1	57	57	41
58	58	41	58	58	41
59	59	41	63	59	41
60	60	41	31	60	41
61	61	41	61	61	41
62	62	41	62	62	41
63	63	41	63	63	41
64	64	41	64	64	41
65	65	41	65	65	41
66	66	41	66	66	41
67	67	41	67	67	41
68	68	41	68	68	41
69	69	41	69	69	41
70	70	41	70	70	41
71	71	41	71	71	41
72	72	41	72	72	41
73	73	41	73	73	41
74	74	41	74	74	41
75	75	41	75	75	41
76	76	41	76	76	41
77	77	41	77	77	41
78	78	41	78	78	41
79	79	41	79	79	41
80	80	41	80	80	41
81	81	41	81	81	41
82	82	41	82	82	41
83	83	41	83	83	41
84	84	41	84	84	41
85	85	41	85	85	41
86	86	41	86	86	41
87	87	41	87	87	41
88	88	41	88	88	41
89	89	41	89	89	41
90	90	41	90	90	41
91	91	41	91	91	41
92	92	41	92	92	41
93	93	41	93	93	41
94	94	41	94	94	41
95	95	41	95	95	41
96	96	41	96	96	41
97	97	41	97	97	41
98	98	41	98	98	41
99	99	41	99	99	41
100	100	41	100	100	41
101	101	41	101	101	41
102	102	41	102	102	41
103	103	41	103	103	41

Received Cause	Table 0-5,7	Table 6	Table 8	Table 9	Table 10
104	104	41	104	104	41
105	105	41	105	105	41
106	106	41	106	106	41
107	107	41	107	107	41
108	108	41	108	108	41
109	109	41	109	109	41
110	110	41	110	110	41
111	111	41	111	111	41
112	112	41	112	112	41
113	113	41	113	113	41
114	114	41	114	114	41
115	115	41	115	115	41
116	116	41	116	116	41
117	117	41	117	117	41
118	118	41	118	118	41
119	119	41	119	119	41
120	120	41	120	120	41
121	121	41	121	121	41
122	122	41	122	122	41
123	123	41	123	123	41
124	124	41	124	124	41
125	125	41	125	160	41
126	126	41	126	161	41
127	127	41	127	127	41

10.3 Transmit Clearing Cause Mapping Tables

This section details the contents of the 10 pre-configured internal Token to Transmit Clearing Cause Mapping Tables. The appropriate table for the signalling system in use should be selected (Refer to the CC parameter definition for further details).

Internal Token	Table 0	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9	Table 10
0	0	31	31	31	31	31	47	21	21	21	2
1	1	1	1	1	1	1	57	1	1	1	0
2	2	2	2	31	31	2	0	21	21	21	2
3	3	3	3	3	3	3	0	21	21	21	2
4	4	31	4	4	31	4	0	4	4	4	2
5	5	31	5	31	5	31	0	5	5	5	2
6	6	6	31	31	31	31	2	21	21	21	2
7	7	7	31	31	31	31	2	21	21	21	2
8	8	31	31	31	31	8	2	21	21	21	2
9	9	31	31	31	31	9	2	21	21	21	2
10	10	31	31	31	31	31	2	21	21	21	2
11	11	31	31	31	31	31	2	21	21	21	2
12	12	31	31	31	31	31	2	21	21	21	2
13	13	31	31	31	31	31	2	21	21	21	2
14	14	31	31	31	31	31	2	21	21	21	2
15	15	31	31	31	31	31	2	21	21	21	2
16	16	16	16	16	16	16	48	21	21	21	32
17	17	17	17	17	17	17	8	17	17	17	8
18	18	18	18	18	18	18	2	21	21	27	31
19	19	19	19	19	19	19	31	21	21	21	2
20	20	31	20	31	31	20	2	21	21	21	2
21	21	21	21	21	21	21	3	21	21	55	25
22	22	22	22	22	22	22	0	21	21	21	5
23	23	31	31	31	31	23	2	21	21	21	2
24	24	31	31	31	31	24	2	21	21	21	2
25	25	31	31	31	31	25	2	21	21	21	2
26	26	26	31	31	31	31	2	21	21	21	2
27	27	27	27	27	27	27	9	27	27	27	9
28	28	28	28	28	28	28	0	28	21	28	1
29	29	29	29	29	29	29	2	21	21	21	2
30	30	30	31	31	31	31	2	21	21	21	2
31	31	31	31	31	31	31	2	31	31	31	2
32	32	47	47	47	47	47	7	21	21	21	7
33	33	47	47	47	47	47	7	21	21	21	7
34	34	34	34	34	34	34	7	34	34	34	35
35	35	47	47	47	47	47	7	21	21	21	7
36	36	47	47	47	47	47	7	21	21	21	7
37	37	47	47	47	47	47	7	21	21	21	7
38	38	38	38	38	38	38	9	38	38	38	28
39	39	47	47	47	47	47	7	21	21	21	7
40	40	47	47	47	47	47	7	21	21	21	7
41	41	41	41	41	41	41	2	41	41	42	2
42	42	42	42	42	42	42	7	42	42	42	7
43	43	43	47	47	43	43	2	21	21	21	7
44	44	44	44	44	44	44	7	21	21	21	7
45	45	47	47	47	47	45	7	21	21	21	7
46	46	47	47	47	47	46	7	21	21	21	7

Internal Token	Table 0	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9	Table 10
47	47	47	47	47	47	47	7	21	21	21	7
48	48	63	63	63	63	63	3	21	21	21	3
49	49	49	63	63	63	63	3	21	21	21	3
50	50	50	63	63	63	50	3	21	21	21	24
51	51	63	63	63	63	51	3	21	21	21	3
52	52	63	63	63	63	63	3	21	21	21	3
53	53	63	63	63	63	63	3	21	21	21	3
54	54	63	63	63	63	54	3	21	21	21	3
55	55	63	55	55	63	63	3	55	55	55	3
56	56	63	63	63	63	63	3	21	21	21	3
57	57	57	57	57	57	57	57	21	21	21	3
58	58	58	58	58	58	58	3	21	21	21	3
59	59	63	63	63	63	63	3	21	63	21	3
60	60	63	63	63	63	63	3	21	31	21	3
61	61	63	63	63	63	63	3	21	21	21	3
62	62	63	63	63	63	62	3	21	21	21	3
63	63	63	63	63	63	63	3	21	21	21	3
64	64	79	79	79	79	79	3	21	21	21	3
65	65	65	65	65	65	65	3	65	31	65	3
66	66	66	79	79	79	79	3	21	21	21	3
67	67	79	79	79	79	79	3	21	21	21	3
68	68	79	79	79	79	79	3	21	21	21	3
69	69	79	69	79	79	69	3	21	21	21	3
70	70	70	70	79	70	70	3	21	21	21	3
71	71	79	79	79	79	79	3	21	21	21	3
72	72	79	79	79	79	79	3	21	21	21	3
73	73	79	79	79	79	79	3	21	21	21	3
74	74	79	79	79	79	79	3	21	21	21	3
75	75	79	79	79	79	79	3	21	21	21	3
76	76	79	79	79	79	79	3	21	21	21	3
77	77	79	79	79	79	79	3	21	21	21	3
78	78	79	79	79	79	79	3	21	21	21	3
79	79	79	79	79	79	79	3	21	21	21	3
80	80	95	95	95	95	95	2	21	21	21	3
81	81	81	95	95	95	95	2	21	21	21	3
82	82	82	95	95	95	95	2	21	21	21	3
83	83	83	95	95	95	95	2	21	21	21	3
84	84	84	95	95	95	95	2	21	21	21	3
85	85	85	95	95	95	95	2	21	21	21	3
86	86	86	95	95	95	95	2	21	21	21	3
87	87	95	87	87	95	95	2	21	21	21	3
88	88	88	88	88	88	88	2	21	21	21	27
89	89	95	95	95	95	95	2	21	21	21	3
90	90	95	95	95	95	95	2	21	21	21	3
91	91	91	91	95	95	91	2	21	21	21	3
92	92	95	95	95	95	95	2	21	21	21	3
93	93	95	95	95	95	95	2	21	21	21	3
94	94	95	95	95	95	95	2	21	21	21	3
95	95	95	95	95	95	95	2	95	31	95	22
96	96	96	111	111	111	111	2	21	21	21	2
97	97	97	97	111	97	97	2	21	21	21	27
98	98	98	111	111	111	111	2	21	21	21	2
99	99	99	99	111	99	99	2	21	21	21	2
100	100	100	111	111	111	111	2	21	21	21	2
101	101	101	111	111	111	111	2	21	21	21	2
102	102	102	102	102	102	102	2	21	21	21	2

Internal Token	Table 0	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9	Table 10
103	103	111	103	111	103	103	2	21	21	21	2
104	104	111	111	111	111	111	2	21	21	21	2
105	105	111	111	111	111	111	2	21	21	21	2
106	106	111	111	111	111	111	2	21	21	21	2
107	107	111	111	111	111	111	2	21	21	21	2
108	108	111	111	111	111	111	2	21	21	21	2
109	109	111	111	111	111	111	2	21	21	21	2
110	110	111	110	111	110	110	2	21	21	21	2
111	111	111	111	111	111	111	2	21	21	21	2
112	112	127	127	127	127	127	2	21	21	21	2
113	113	127	127	127	127	127	2	21	21	21	2
114	114	127	127	127	127	127	2	21	21	21	2
115	115	127	127	127	127	127	2	21	21	21	2
116	116	127	127	127	127	127	2	21	21	21	2
117	117	127	127	127	127	127	2	21	21	21	2
118	118	127	127	127	127	127	2	21	21	21	2
119	119	127	127	127	127	127	2	21	21	21	2
120	120	127	127	127	127	127	2	21	21	21	2
121	121	127	127	127	127	127	2	21	21	21	2
122	122	127	127	127	127	127	2	21	21	21	2
123	123	127	127	127	127	127	2	21	21	21	2
124	124	127	127	127	127	127	2	21	21	21	2
125	125	127	127	127	127	127	2	21	21	21	2
126	126	127	127	127	127	127	2	21	21	21	2
127	127	127	127	127	127	127	2	21	21	21	2
128	128	128	128	128	128	128	128	21	21	21	2
129	102	102	102	102	102	102	0	21	21	21	2
130	102	102	102	102	102	102	31	21	21	21	34
131	34	34	34	34	34	34	7	34	34	34	2
132	102	102	102	102	102	102	0	21	21	21	0
133	34	34	34	34	34	34	7	34	34	34	7
134	102	102	102	102	102	102	0	21	21	21	2
135	41	41	41	41	41	41	2	41	41	41	2
136	28	28	28	28	28	28	1	28	21	28	1
137	65	65	65	65	65	65	0	65	21	65	4
138	111	111	111	111	111	111	0	21	21	21	2
139	41	41	41	41	41	41	2	41	41	41	2
140	111	111	111	111	111	111	2	21	21	21	2
141	29	29	29	29	29	29	0	31	31	31	2
142	29	29	29	29	29	29	0	21	21	21	2
143	31	31	31	31	31	31	0	31	31	31	2
144	41	41	41	41	41	41	2	41	41	41	2
145	17	17	17	17	17	17	8	17	17	17	8
146	65	65	65	65	65	65	0	65	21	65	27
147	111	111	111	111	111	111	0	21	21	21	2
148	1	1	1	1	1	1	0	1	1	1	0
149	1	1	1	1	1	1	57	1	1	1	0
150	63	63	63	63	63	63	3	21	21	21	0
151	28	28	28	28	28	28	0	28	21	28	1
152	28	28	28	28	28	28	0	28	21	28	1
153	111	111	111	111	111	111	2	21	21	21	2
154	29	29	29	29	29	29	0	21	21	21	3
155	29	29	29	29	29	29	0	21	21	21	3
156	29	29	29	29	29	29	0	21	21	21	3
157	69	69	69	79	69	69	0	21	21	21	19

Internal Token	Table 0	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9	Table 10
158	69	69	69	79	69	69	0	21	21	21	19
159	69	69	69	79	69	69	0	21	21	21	19
160	17	17	17	17	17	17	8	17	17	125	8
161	17	17	17	17	17	17	8	17	17	126	8
162	102	102	102	102	102	102	0	21	21	21	2
163	31	31	31	31	31	31	2	21	21	21	2
164	1	1	1	1	1	1	57	1	1	1	41
165	63	63	63	63	63	63	3	21	21	21	10
166	63	63	63	63	63	63	3	21	21	21	11
167	38	38	38	38	38	38	9	38	38	38	28
168	42	42	42	42	42	42	7	42	42	42	7
169	16	16	16	16	16	16	48	16	16	16	32
170	41	41	41	41	41	41	2	41	41	41	2
171	102	102	102	102	102	102	0	21	21	21	2
172	31	31	31	31	31	31	2	21	21	21	32
173	31	31	31	31	31	31	2	21	21	21	2
174	31	31	31	31	31	31	56	21	21	21	3

11. ANNEX C: Calling Party Category Mappings

This section lists each of the Internal Tokens both by number and description and then details the entire contents of the pre-configured Receive Calling Party Category Mapping Tables and the Transmit Calling Party Category Mapping Tables.

11.1 Definitions of Internal Tokens

The following table defines the meaning of all Internal Calling Party Category Tokens.

Internal Token	Definition
0	Unknown Calling Party Category
1	French Operator
2	English Operator
3	German Operator
4	Russian Operator
5	Spanish Operator
6	Reserved Value 6
7	Reserved Value 7
8	Reserved Value 8
9	National Operator
10	Ordinary Calling party
11	Calling Party with priority
12	Data call
13	Test Call
14	Reserved Value 14
15	Payphone
16	Australian reserved 1
17	Australian reserved 2
18	Australian reserved 3
19	Australian reserved 4
20	Australian reserved 5
21	Australian reserved 6
22	Australian reserved 7
23	Australian reserved 8
24	Australian reserved 9
25	Australian reserved 10
26	Australian reserved 11
27	Australian reserved 12
28	Emergency
29	High Priority
30	NSEP subscriber
31	Comstar subscriber
32	Hotel
33	Freephone
34	Service subscriber
35	Local Subscriber
36	Local coinbox
37	French Reserved
38	OSS Operator

11.2 Receive Calling Party Category Mapping Tables

This section details the contents of the 9 pre-configured Receive Calling Party Category Mapping Tables.

Received CPC	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9
0	0	10	10	0	0	0	10	31	0
1	1	1	10	0	10	1	10	31	0
2	2	2	10	0	10	2	10	31	0
3	3	3	10	0	15	3	10	31	0
4	4	4	10	0	10	4	10	31	0
5	5	5	10	0	10	5	10	31	0
6	6	6	10	6	10	6	10	31	0
7	7	7	10	7	10	7	10	31	0
8	8	8	10	8	15	8	10	31	0
9	9	10	10	9	15	9	10	31	9
10	10	10	10	10	15	10	10	31	10
11	11	11	10	0	10	11	10	31	11
12	12	12	10	0	10	12	10	31	12
13	13	13	10	13	38	13	10	31	13
14	0	10	10	0	9	0	10	31	15
15	15	15	10	15	9	15	10	31	37
16	0	10	10	0	0	0	10	31	0
17	0	10	10	0	0	0	10	31	0
18	0	10	10	0	0	0	10	31	0
19	0	10	10	0	0	0	10	31	0
20	0	10	10	0	0	0	10	31	0
21	0	10	10	0	0	0	10	31	0
22	0	10	10	0	0	0	10	31	0
23	0	10	10	0	0	0	10	31	0
24	0	10	10	0	0	0	10	31	0
25	0	10	10	0	0	0	10	31	0
26	0	10	10	0	0	0	10	31	0
27	0	10	10	0	0	0	10	31	0
28	0	10	10	0	0	0	10	31	0
29	0	10	10	0	0	0	10	31	0
30	0	10	10	0	0	0	10	31	0
31	0	10	10	0	0	0	10	31	0
32	0	10	10	0	0	0	10	31	0
33	0	10	10	0	0	0	10	31	0
34	0	10	10	0	0	0	10	31	0
35	0	10	10	0	0	0	10	31	0
36	0	10	10	0	0	0	10	31	0
37	0	10	10	0	0	0	10	31	0
38	0	10	10	0	0	0	10	31	0
39	0	10	10	0	0	0	10	31	0
40	0	10	10	0	0	0	10	31	0
41	0	10	10	0	0	0	10	31	0
42	0	10	10	0	0	0	10	31	0
43	0	10	10	0	0	0	10	31	0
44	0	10	10	0	0	0	10	31	0
45	0	10	10	0	0	0	10	31	0
46	0	10	10	0	0	0	10	31	0
47	0	10	10	0	0	0	10	31	0
48	0	10	10	0	0	0	10	31	0
49	0	10	10	0	0	0	10	31	0
50	0	10	10	0	0	0	10	31	0

Received CPC	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9
51	0	10	10	0	0	0	10	31	0
52	0	10	10	0	0	0	10	31	0
53	0	10	10	0	0	0	10	31	0
54	0	10	10	0	0	0	10	31	0
55	0	10	10	0	0	0	10	31	0
56	0	10	10	0	0	0	10	31	0
57	0	10	10	0	0	0	10	31	0
58	0	10	10	0	0	0	10	31	0
59	0	10	10	0	0	0	10	31	0
60	0	10	10	0	0	0	10	31	0
61	0	10	10	0	0	0	10	31	0
62	0	10	10	0	0	0	10	31	0
63	0	10	10	0	0	0	10	31	0
64	0	10	10	0	0	0	10	31	0
65	0	10	10	0	0	0	10	31	0
66	0	10	10	0	0	0	10	31	0
67	0	10	10	0	0	0	10	31	0
68	0	10	10	0	0	0	10	31	0
69	0	10	10	0	0	0	10	31	0
70	0	10	10	0	0	0	10	31	0
71	0	10	10	0	0	0	10	31	0
72	0	10	10	0	0	0	10	31	0
73	0	10	10	0	0	0	10	31	0
74	0	10	10	0	0	0	10	31	0
75	0	10	10	0	0	0	10	31	0
76	0	10	10	0	0	0	10	31	0
77	0	10	10	0	0	0	10	31	0
78	0	10	10	0	0	0	10	31	0
79	0	10	10	0	0	0	10	31	0
80	0	10	10	0	0	0	10	31	0
81	0	10	10	0	0	0	10	31	0
82	0	10	10	0	0	0	10	31	0
83	0	10	10	0	0	0	10	31	0
84	0	10	10	0	0	0	10	31	0
85	0	10	10	0	0	0	10	31	0
86	0	10	10	0	0	0	10	31	0
87	0	10	10	0	0	0	10	31	0
88	0	10	10	0	0	0	10	31	0
89	0	10	10	0	0	0	10	31	0
90	0	10	10	0	0	0	10	31	0
91	0	10	10	0	0	0	10	31	0
92	0	10	10	0	0	0	10	31	0
93	0	10	10	0	0	0	10	31	0
94	0	10	10	0	0	0	10	31	0
95	0	10	10	0	0	0	10	31	0
96	0	10	10	0	0	0	10	31	0
97	0	10	10	0	0	0	10	31	0
98	0	10	10	0	0	0	10	31	0
99	0	10	10	0	0	0	10	31	0
100	0	10	10	0	0	0	10	31	0
101	0	10	10	0	0	0	10	31	0
102	0	10	10	0	0	0	10	31	0
103	0	10	10	0	0	0	10	31	0
104	0	10	10	0	0	0	10	31	0
105	0	10	10	0	0	0	10	31	0
106	0	10	10	0	0	0	10	31	0

Received CPC	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9
107	0	10	10	0	0	0	10	31	0
108	0	10	10	0	0	0	10	31	0
109	0	10	10	0	0	0	10	31	0
110	0	10	10	0	0	0	10	31	0
111	0	10	10	0	0	0	10	31	0
112	0	10	10	0	0	0	10	31	0
113	0	10	10	0	0	0	10	31	0
114	0	10	10	0	0	0	10	31	0
115	0	10	10	0	0	0	10	31	0
116	0	10	10	0	0	0	10	31	0
117	0	10	10	0	0	0	10	31	0
118	0	10	10	0	0	0	10	31	0
119	0	10	10	0	0	0	10	31	0
120	0	10	10	0	0	0	10	31	0
121	0	10	10	0	0	0	10	31	0
122	0	10	10	0	0	0	10	31	0
123	0	10	10	0	0	0	10	31	0
124	0	10	10	0	0	0	10	31	0
125	0	10	10	0	0	0	10	31	0
126	0	10	10	0	0	0	10	31	0
127	0	10	10	0	0	0	10	31	0
128	0	10	10	0	0	0	10	31	0
129	0	10	10	0	0	0	10	31	0
130	0	10	10	0	0	0	10	31	0
131	0	10	10	0	0	0	10	31	0
132	0	10	10	0	0	0	10	31	0
133	0	10	10	0	0	0	10	31	0
134	0	10	10	0	0	0	10	31	0
135	0	10	10	0	0	0	10	31	0
136	0	10	10	0	0	0	10	31	0
137	0	10	10	0	0	0	10	31	0
138	0	10	10	0	0	0	10	31	0
139	0	10	10	0	0	0	10	31	0
140	0	10	10	0	0	0	10	31	0
141	0	10	10	0	0	0	10	31	0
142	0	10	10	0	0	0	10	31	0
143	0	10	10	0	0	0	10	31	0
144	0	10	10	0	0	0	10	31	0
145	0	10	10	0	0	0	10	31	0
146	0	10	10	0	0	0	10	31	0
147	0	10	10	0	0	0	10	31	0
148	0	10	10	0	0	0	10	31	0
149	0	10	10	0	0	0	10	31	0
150	0	10	10	0	0	0	10	31	0
151	0	10	10	0	0	0	10	31	0
152	0	10	10	0	0	0	10	31	0
153	0	10	10	0	0	0	10	31	0
154	0	10	10	0	0	0	10	31	0
155	0	10	10	0	0	0	10	31	0
156	0	10	10	0	0	0	10	31	0
157	0	10	10	0	0	0	10	31	0
158	0	10	10	0	0	0	10	31	0
159	0	10	10	0	0	0	10	31	0
160	0	10	10	0	0	0	10	31	0
161	0	10	10	0	0	0	10	31	0
162	0	10	10	0	0	0	10	31	0

Received CPC	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9
163	0	10	10	0	0	0	10	31	0
164	0	10	10	0	0	0	10	31	0
165	0	10	10	0	0	0	10	31	0
166	0	10	10	0	0	0	10	31	0
167	0	10	10	0	0	0	10	31	0
168	0	10	10	0	0	0	10	31	0
169	0	10	10	0	0	0	10	31	0
170	0	10	10	0	0	0	10	31	0
171	0	10	10	0	0	0	10	31	0
172	0	10	10	0	0	0	10	31	0
173	0	10	10	0	0	0	10	31	0
174	0	10	10	0	0	0	10	31	0
175	0	10	10	0	0	0	10	31	0
176	0	10	10	0	0	0	10	31	0
177	0	10	10	0	0	0	10	31	0
178	0	10	10	0	0	0	10	31	0
179	0	10	10	0	0	0	10	31	0
180	0	10	10	0	0	0	10	31	0
181	0	10	10	0	0	0	10	31	0
182	0	10	10	0	0	0	10	31	0
183	0	10	10	0	0	0	10	31	0
184	0	10	10	0	0	0	10	31	0
185	0	10	10	0	0	0	10	31	0
186	0	10	10	0	0	0	10	31	0
187	0	10	10	0	0	0	10	31	0
188	0	10	10	0	0	0	10	31	0
189	0	10	10	0	0	0	10	31	0
190	0	10	10	0	0	0	10	31	0
191	0	10	10	0	0	0	10	31	0
192	0	10	10	0	0	0	10	31	0
193	0	10	10	0	0	0	10	31	0
194	0	10	10	0	0	0	10	31	0
195	0	10	10	0	0	0	10	31	0
196	0	10	10	0	0	0	10	31	0
197	0	10	10	0	0	0	10	31	0
198	0	10	10	0	0	0	10	31	0
199	0	10	10	0	0	0	10	31	0
200	0	10	10	0	0	0	10	31	0
201	0	10	10	0	0	0	10	31	0
202	0	10	10	0	0	0	10	31	0
203	0	10	10	0	0	0	10	31	0
204	0	10	10	0	0	0	10	31	0
205	0	10	10	0	0	0	10	31	0
206	0	10	10	0	0	0	10	31	0
207	0	10	10	0	0	0	10	31	0
208	0	10	10	0	0	0	10	31	0
209	0	10	10	0	0	0	10	31	0
210	0	10	10	0	0	0	10	31	0
211	0	10	10	0	0	0	10	31	0
212	0	10	10	0	0	0	10	31	0
213	0	10	10	0	0	0	10	31	0
214	0	10	10	0	0	0	10	31	0
215	0	10	10	0	0	0	10	31	0
216	0	10	10	0	0	0	10	31	0
217	0	10	10	0	0	0	10	31	0
218	0	10	10	0	0	0	10	31	0

Received CPC	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9
219	0	10	10	0	0	0	10	31	0
220	0	10	10	0	0	0	10	31	0
221	0	10	10	0	0	0	10	31	0
222	0	10	10	0	0	0	10	31	0
223	0	10	10	0	0	0	10	31	0
224	0	10	10	28	0	31	10	31	0
225	0	10	10	29	0	32	10	31	0
226	0	10	10	30	0	33	10	31	0
227	0	10	10	0	0	34	10	31	0
228	0	10	10	0	0	35	10	31	0
229	0	10	10	0	0	36	10	31	0
230	0	10	10	0	0	0	10	31	0
231	0	10	10	0	0	0	10	31	0
232	0	10	10	0	0	0	10	31	0
233	0	10	10	0	0	0	10	31	0
234	0	10	10	0	0	0	10	31	0
235	0	10	10	0	0	0	10	31	0
236	0	10	10	0	0	0	10	31	0
237	0	10	10	0	0	0	10	31	0
238	0	10	10	0	0	0	10	31	0
239	0	10	16	0	0	0	10	31	0
240	0	10	10	0	0	0	10	31	0
241	0	10	17	0	0	0	10	31	0
242	0	10	17	0	0	0	10	31	0
243	0	10	19	0	0	0	10	31	0
244	0	10	20	0	0	0	10	31	0
245	0	10	21	0	0	0	10	31	0
246	0	10	10	0	0	0	10	31	0
247	0	10	22	0	0	0	10	31	0
248	0	10	10	0	0	0	10	31	0
249	0	10	23	0	0	0	10	31	0
250	0	10	24	0	0	0	10	31	0
251	0	10	25	0	0	0	10	31	0
252	0	10	10	0	0	0	10	31	0
253	0	10	26	0	0	0	10	31	0
254	0	10	27	0	0	0	10	31	0
255	0	10	10	0	0	0	10	31	0

11.3 Transmit Calling Party Category Mapping Tables

This section details the contents of the 9 pre-configured Transmit Calling Party Category Mapping Tables. The appropriate table for the signalling system in use should be selected (Refer to the CPC parameter definition for further details).

Internal Token	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6	Table 7	Table 8	Table 9
0	0	10	10	0	0	0	10	224	0
1	1	1	10	10	2	1	10	224	10
2	2	2	10	10	2	2	10	224	10
3	3	3	10	10	2	3	10	224	10
4	4	4	10	10	2	4	10	224	10
5	5	5	10	10	2	5	10	224	10
6	6	6	10	6	2	6	10	224	10
7	7	7	10	7	2	7	10	224	10
8	8	8	10	8	2	8	10	224	10
9	9	10	10	9	15	9	10	224	9
10	10	10	10	10	2	10	10	224	10
11	11	11	10	10	2	11	10	224	11
12	12	12	10	10	2	12	10	224	12
13	13	13	10	13	2	13	10	224	13
14	10	10	10	10	2	10	10	224	10
15	15	15	10	15	3	15	10	224	14
16	10	10	239	10	2	10	10	224	10
17	10	10	240	10	2	10	10	224	10
18	10	10	241	10	2	10	10	224	10
19	10	10	242	10	2	10	10	224	10
20	10	10	243	10	2	10	10	224	10
21	10	10	244	10	2	10	10	224	10
22	10	10	245	10	2	10	10	224	10
23	10	10	246	10	2	10	10	224	10
24	10	10	247	10	2	10	10	224	10
25	10	10	248	10	2	10	10	224	10
26	10	10	249	10	2	10	10	224	10
27	10	10	250	10	2	10	10	224	10
28	10	10	10	224	2	10	10	224	10
29	10	10	10	225	2	10	10	224	10
30	10	10	10	226	2	10	10	224	10
31	10	10	10	10	2	224	10	224	10
32	10	10	10	10	2	225	10	224	10
33	10	10	10	10	2	226	10	224	10
34	10	10	10	10	2	227	10	224	10
35	10	10	10	10	2	228	10	224	10
36	10	10	10	10	2	229	10	224	10
37	10	10	10	10	2	10	10	224	15
38	10	10	10	10	13	10	10	224	10

12. ANNEX D: Remote Data Centre (RDC) Operation

The RDC purchase-time option allows the transfer data between the converter and a remote computer located at a remote management centre. Data is transferred over a local or wide area network using the FTP protocol.

Up to 4 different Remote Data Centres can be configured and each report can be configured to use two RDC's (one as the primary RDC and the other as the backup RDC). This ensures continuity of service in case the connection to the primary RDC fails.

The RDC option uses the FTP file transfer mechanism to exchange data with the remote site, the remote site requires only an industry standard FTP server to handle the file transfer and does not require any proprietary software on the remote computer. The converter 'logs on' to the remote computer using a user-configured user name and password.

Two categories of report are made to the RDC, Continuous Records and Periodic Reports. In each case there are several report types as detailed below.

The data transferred for each report type is stored in a different directory on the remote system using a new file for each day's information. The directory name is user configurable.

12.1 Continuous Records

Continuous records provide the capability to transfer records to an RDC on a continuous basis in near real time. The minimum number of records collected prior to transfer and the maximum time interval before the transfer is attempted are configured by the user. This allows the user complete control over when records are transferred to the remote data centre, within system limits.

Continuous recording can be configured to support the per call transfer of billing records and call failure records to an RDC and the occurrence and clearing of alarms to an RDC. The records are formatted as a comma separated variable (CSV) text file.

12.1.1 Billing Records

Billing records are generated (if enabled) for all calls that have reached the answered state. Billing records are enabled on an outgoing route basis by associating the OGR with the configured Continuous Record.

Should communication with the primary RDC for the Continuous Record fail then the converter will automatically transfer those records to the secondary RDC. In the event that both the primary and secondary RDCs fail, billing records are stored locally on the hard disk until the one of the RDCs recover. The records saved on the hard disk are then automatically transferred to the recovered RDC.

12.1.2 Call Failure Records

Call failure records are sent on a per call basis for calls that release prior to reaching the answered state. Call failure records can be enabled selectively on a point of origin basis.

12.1.3 Unsolicited Alarm Recording

Alarms are stored as an alarm log on the converter. A continuous record of these alarms can also be sent to a remote data centre.

12.2 Periodic Reporting

Periodic reports can be configured to support the transfer to an RDC of data at User defined intervals, typically allowing, for example, hourly reports of traffic measurements on a per group basis. The reports are formatted as a CSV file.

12.2.1 Circuit Group Traffic Measurements

Measurements collected on a per group basis can be transferred periodically to the RDC. These measurements can optionally be reset at the expiry of each interval.

12.2.2 Outgoing Route Traffic Measurements

Measurements collected on a per-outgoing route basis can be transferred periodically to the RDC. These measurements can optionally be reset at the expiry of each interval.

12.3 RDC File Formats

This section specifies the file formats for records that are sent from the converter to a Remote Data Centre. As shown in the examples the records are provided in CSV (Comma Separated Variable) text file format.

12.3.1 Alarm Record File Format:

10,11,1,0,3,A,1970-01-01,00:00:35,,,Linkset fail
11,9,1,0,2,A,1970-01-01,00:00:35,,,C7 link fail
2,44,1,3,2,C,1970-01-01,00:00:28,1970-01-01,00:00:36,CR send fail
11,9,1,0,2,C,1970-01-01,00:00:35,1970-01-01,00:00:36,C7 link fail
10,11,1,0,3,C,1970-01-01,00:00:35,1970-01-01,00:00:36,Linkset fail

Field	Title	Example	Range	Description
1	ALP	10	1:9999	Sequence reference number of an entry in the alarm log.
2	CODE	11	1:999	Fault code of a system alarm
3	ID	1	0:9999	Identifier for alarm (usage depends on the alarm code).
4	DIAG	0	0:9999	Diagnostic of the alarm (usage depends on the alarm code).
5	CLA	3	0-3	Alarm class number
6	ACTIVE	C	A,C	Indication whether the alarm is Active or Cleared.
7	DATE OCCURRED	1970-01-01	yyyy-mm-dd	Date the alarm occurred.
8	TIME OCCURED	00:00:35	hh:mm:ss	Time the alarm occurred.
9	DATE CLEARED	1970-01-01	yyyy-mm-dd	Date the alarm cleared.
10	TIME CLEARED	00:00:36	hh:mm:ss	Time the alarm cleared.
11	TITLE	Linkset fail	Up to 12 text characters	Title of the alarm.

12.3.2 Billing File Format:

1997-12-31,13:07:25,1425655050,13402000213,134,123,5218,21,31,6,1
1997-12-31,13:07:50,1234123456,13403008000,130,123,5219,21,30,16,20
1997-12-31,13:08:05,1425655050,13402000213,137,123,5220,22,21,7,1
1997-12-31,13:06:23,1234123456,13403008000,2612,123,5221,2,15,7,6

Field	Field	Example	Range	Description
1	Date	1997-12-31	yyyy-mm-dd	Date at time of answer
2	Time	13:07:25	hh:mm:ss	Time of answer
3	Calling Number	1425655050		Calling party number (after any POR processing)
4	Called Number	13402000213	Digits	Called party number (after any POR processing)
5	Call Duration	134	Whole seconds	Call duration rounded to the nearest second.
6	Equipment reference	123	0 .. 999	Reference number of the converter (user configuration parameter)
7	Call Sequence Number	5218	1 .. N	Sequence number of call for given day, Allocated at time of call termination.
8	Incoming circuit group	21	1 .. n	CGRP number of the incoming circuit group.
9	Incoming device	31	1 .. 31	DEV number of incoming circuit within the CGRP.
10	Outgoing circuit group	6	1 .. n	CGRP number of the outgoing circuit group.
11	Outgoing device	1	1 .. 31	DEV number of outgoing circuit within the CGRP.

12.3.3 Call Failure File Format:

1997-12-31,13:07:25,1425655050,13402000213,134,123,5218,21,31,6,1,1
1997-12-31,13:07:50,1234123456,13403008000,130,123,5219,21,30,16,20,34
1997-12-31,13:08:05,1425655050,13402000213,137,123,5220,22,21,0,0,134

Field	Field	Example	Range	Description
1	Date	1997-12-31	yyyy-mm-dd	Date at time of failure
2	Time	13:07:25	hh:mm:ss	Time of failure
3	Calling Number	1425655050		Called party number (after any POR processing)
4	Called Number	13402000213	Digits	Called party number (after any POR processing)
5	Call Duration	134	Whole seconds	Call duration rounded to the nearest second.
6	Equipment reference	123	0 .. 999	Reference number of the converter (user configuration parameter)
7	Call Sequence Number	5218	1 .. N	Sequence number of call for given day, Allocated at time of call termination.
8	Incoming circuit group	21	1 .. n	CGRP number of the incoming circuit group.
9	Incoming device	31	1 .. 31	DEV number of incoming circuit within the CGRP.
10	Outgoing circuit group	6	0,1 .. n	CGRP number of the outgoing circuit group (set to 0 when the outgoing group does not exist).
11	Outgoing device	1	0 .. 31	DEV number of outgoing circuit within the CGRP.
12	Cause Release Token	17	0 .. 255	Cause Value Internal Token Representing the reason for release.

12.3.4 Circuit Group File Format:

1997-12-31,13:07:25,600,5,50,1000,20,500,24,1000000
1998-01-01,01:01:00,86400,90,5000,1000,1000,1000,30,20000000
1997-11-22,19:07:38,3600,1,0,0,0,0,0,0

Field	Field	Example	Range	Description
1	Date	1997-12-31	yyyy-mm-dd	Date when measurements collected
2	Time	13:07:25	hh:mm:ss	Time when measurements collected
3	Period	600	0:4294967295	Duration of measurement period in seconds
4	Circuit group	5	1:90	CGRP number of the circuit group.
5	Incoming calls offered	50	0:4294967295	Number of incoming calls offered.
6	Incoming calls answered	1000	0:4294967295	Number of incoming calls answered.
7	Outgoing calls offered	20	0:4294967295	Number of outgoing calls offered.
8	Outgoing calls answered.	500	0:4294967295	Number of outgoing calls answered.
9	Maximum Devices	24	0:31	Maximum active devices (DEV's) at any time.
10	Accumulated call duration	1000000	0:4294967295	Accumulated call duration in seconds.

12.3.5 Outgoing Route File Format:

1997-12-31,13:07:25,600,5,0,0,20,500,24,1000000
1998-01-01,01:01:00,86400,32,0,0,5000,1000,30,20000000
1997-11-22,19:07:38,3600,1,0,0,0,0,0,0

Field	Field	Example	Range	Description
1	Date	1997-12-31	yyyy-mm-dd	Date when measurements collected
2	Time	13:07:25	hh:mm:ss	Time when measurements collected
3	Period	600	0:4294967295	Duration of measurement period in seconds
4	Outgoing route	5	1:90	OGR number of the outgoing route.
5	Spare 1	0	0	Reserved for future use
6	Spare 2	0	0	Reserved for future use.
7	Outgoing calls offered	20	0:4294967295	Number of outgoing calls offered.
8	Outgoing calls answered.	500	0:4294967295	Number of outgoing calls answered.
9	Maximum Devices	24	0:31	Maximum active devices (DEV's) at any time.
10	Accumulated call duration	1000000	0:4294967295	Accumulated call duration in seconds.

13. ANNEX E: SAFETY

This section documents miscellaneous safety points that should be observed to ensure the proper and safe use of the equipment worldwide.

The terminology in this section relates to various international safety standards.

13.1 AC Power Safety Warning

The Power Cord Connector is the Mains disconnect device.

For plugable equipment the socket-outlet shall be installed near the equipment and shall be easily accessible

For your safety, the power cord provided with your chassis has a grounded plug. Always connect the power source to a properly grounded outlet to avoid the risk of electric shock.

The chassis is also provided with a separate Earth ground connection stud. An Earth ground connection should be installed prior to the application of power or peripheral connections and should never be disconnected while power or peripheral connections are made.

Warning: You must disconnect all power cords and peripheral connections before working on the chassis. Do not operate the system with the cover removed.

13.2 Lithium Battery

The CPU card is fitted with a Lithium Battery that contains toxic substances. This battery is NOT rechargeable.

Caution, there is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturers instructions.

13.3 Connector Classification

13.3.1 DSC110A

Type	Description	Status
RJ45	Ethernet	SELV
BNC	Ethernet	SELV
15 Way D-Type	Alarm Port	SELV
9 Way D-Type	Serial Port 1	SELV
DIN	CPU	SELV
Ports BNC or RJ45	PCM	SELV

13.3.2 DSC110D

Type	Description	Status
Rear Panel Terminal Block	DC supply input	SELV
RJ45	Ethernet	SELV
BNC	Ethernet	SELV
15 Way D-Type	Alarm Port	SELV
9 Way D-Type	Serial Port 1	SELV
DIN	CPU	SELV
Ports BNC or RJ45	PCM	SELV

13.3.3 DSC210

Type	Description	Status
Rear Panel; Terminal Block	DC Supply Input	SELV
Board Position 1; 15 Way D-Type	Alarm Port	SELV
Board Position 2; RJ45	Ethernet	SELV
Board Position 2; BNC	Ethernet	SELV
Board Position 3; 9 Way D-Type	Serial Port 1	SELV
Board Position 3; 25 Way D-Type	CPU (not used)	SELV
Board Position 5 .. 20; Ports BNC or RJ45	PCM	SELV
Rear Panel D Connector	Serial Port 2	SELV

13.4 Australia and New Zealand specific

To comply with the relevant safety requirements in these countries, connection of this equipment MUST be via a Line Isolation Unit with a telecommunications compliance label.

13.5 USA and Canada specific

To comply with the relevant safety requirements in these countries, connection of this equipment to the public network MUST be via a network terminating device. (i.e. the unit must NOT be directly connected to the external public line).

13.6 German specific

Aus Sicherheitsgründen sollte das Gerät immer geerdet sein.

Die CPU-Karte ist mit einer Lithium-Batterie ausgestattet, die giftige Substanzen enthält. Die Batterie ist nicht wieder aufladbar.

VORSICHT! Explosionsgefahr, wenn die Batterie unsachgemäß ersetzt wird. Anwender sollten die Batterie nicht selbst ersetzen. Die Karte muß für eine Überarbeitung zum Auslieferer zurückgeschickt werden.

Teile dieses Gerätes reagieren empfindlich auf elektrostatisch sensitiven Produkten (ESPs), die dauerhaft beschädigt werden können, wenn sie unsachgemäß gehandhabt werden. Wenn Module aus dem Gehäuse entfernt werden, muß das im Einklang mit EN 100-015 Teil 1 Allgemeine Bestimmungen geschehen.

14. ANNEX F: Command Summary

ALARMS

ALCLS	Alarm Class Set
ALCLP	Alarm Class Print
ALFCP	Alarm Fault Code Print
ALLIP	Active Alarm List Print
ALLOP	Alarm Log Print
ALREI	Alarm Receipt Initiate
ALTEI	Alarm Test Initiate
ALTEE	Alarm Test End

ACCESS SIDE SIGNALLING

ASSLI	Access Side Signalling Link Initiate
ASSLC	Access Side Signalling Link Change
ASSLE	Access Side Signalling Link End
ASSLP	Access Side Signalling Link Change

CIRCUIT ASSIGNMENT

CACGI	Circuit Assignment Circuit Group Initiate
CACGC	Circuit Assignment Circuit Group Change
CACGE	Circuit Assignment Circuit Group End
CACGP	Circuit Assignment Circuit Group Print
CADEI	Circuit Assignment Device Initiate
CADEE	Circuit Assignment Device End
CADEP	Circuit Assignment Device Print

CONFIGURATION

CNSYS	Configuration System Set
CNSYP	Configuration System Print
CNTDS	Configuration Time and Date Set
CNTDP	Configuration Time and Date Print
CNSWP	Configuration Software Print
CNBUI	Configuration Back Up Initiate
CNBDP	Configuration Back Up Date Print
CNBOI	Configuration Board Initiate
CNBOE	Configuration Board End
CNBOP	Configuration Board Print
CNPCI	Configuration PCM Initiate
CNPCC	Configuration PCM Change
CNPCE	Configuration PCM End
CNPCP	Configuration PCM Print
CNTSP	Configuration Timeslot Print
CNTOE	Configuration Timeout Value Set
CNTOP	Configuration Timeout Value Print
CNXCI	Configuration Cross Connect Initiate
CNXCE	Configuration Cross Connect End
CNXCP	Configuration Cross Connect Print
CNMOI	Configuration Monitor Initiate
CNMOE	Configuration Monitor End
CNMOP	Configuration Monitor Print
CNRDI	Configuration RDC Initiate
CNRDC	Configuration RDC Change
CNRDE	Configuration RDC End
CNRDP	Configuration RDC Print
CNTXS	Configuration Text Set
CNTXP	Configuration Text Print
CNANI	Configuration Announcement Initiate
CNANC	Configuration Announcement Change
CNANE	Configuration Announcement End
CNANP	Configuration Announcement Print
CNVRI	Configuration Voice Resource Initiate
CNVRE	Configuration Voice Resource End
CNVRP	Configuration Voice Resource Print

SS7 SIGNALLING

C7LSI	CCS SS7 Link Set Initiate
C7LSC	CCS SS7 Link Set Change
C7LSE	CCS SS7 Link Set End
C7LSP	CCS SS7 Link Set Print
C7RTI	CCS SS7 Route Initiate
C7RTC	CCS SS7 Route Change
C7RTE	CCS SS7 Route End
C7RTP	CCS SS7 Route Print
C7SLI	CCS SS7 Signalling Link Initiate
C7SLC	CCS SS7 Signalling Link Change
C7SLE	CCS SS7 Signalling Link End
C7SLP	CCS SS7 Signalling Link Print

CUSTOM PROFILES

CPCDI	Custom Profile Called Number Initiate
CPCDC	Custom Profile Called Number Change
CPCDE	Custom Profile Called Number End
CPCDP	Custom Profile Called Number Print
CPCGI	Custom Profile Calling Number Initiate
CPCGC	Custom Profile Calling Number Change
CPCGE	Custom Profile Calling Number End
CPCGP	Custom Profile Calling Number Print

REMOTE DATA CENTRES

RDPRI	RDC Periodic Report Initiate
RDPRC	RDC Periodic Report Change
RDPRE	RDC Periodic Report End
RDPRP	RDC Periodic Report Print
RDPDI	RDC Periodic Data Initiate
RDPDE	RDC Periodic Data End
RDPDP	RDC Periodic Data Print
RDCRI	RDC Continuous Record Initiate
RDCRC	RDC Continuous Record Change
RDCRE	RDC Continuous Record End
RDCRP	RDC Continuous Record Print
RDCDI	RDC Continuous Data Initiate
RDCDE	RDC Continuous Data End
RDCDP	RDC Continuous Data Print

ROUTING

RTPOI	Routing Point of Origin Initiate
RTPOC	Routing Point of Origin Change
RTPOE	Routing Point of Origin End
RTPOP	Routing Point of Origin Print
RTDAI	Routing Digit Analysis Initiate
RTDAC	Routing Digit Analysis Change
RTDAE	Routing Digit Analysis End
RTDAP	Routing Digit Analysis Print
RTORI	Routing Outgoing Route Initiate
RTORC	Routing Outgoing Route Change
RTORE	Routing Outgoing Route End
RTORP	Routing Outgoing Route Print
RTHSI	Routing Hunt Sequence Initiate
RTHSE	Routing Hunt Sequence End
RTHSP	Routing Hunt Sequence Print

MMI

MMPTC	MMI Port Change
MMPTP	MMI Port Print
MMLOI	MMI Log Off Initiate
MMLOP	MMI Log off Print
MMLOS	MMI Log Off Set

MAINTENANCE

MNRSI	Maintenance Restart System Initiate
MNBLI	Maintenance Blocking Initiate
MNBLE	Maintenance Blocking End
MNINI	Maintenance Inhibit Initiate
MNINE	Maintenance Inhibit End
MNRCI	Maintenance Reset Circuit Initiate

STATUS

STPCP	Status PCM Print
STASP	Status Access Side Print
STC7P	Status C7 Link Print
STCGP	Status Circuit Group Print
STDEP	Status Device Print
STBOP	Status Board Print
STRDP	Status Remote Data Centre Print
STVRP	Status Voice Resource Print

MEASUREMENTS

MSORP	Measurements Outgoing Route Print
MSCGP	Measurements Circuit Group Print

15. ANNEX G: List of Part Numbers

15.1 Common Equipment Spares

Care should be taken when ordering spares as there are 2 slightly different hardware revisions of the DSC210 in use, in some cases the spares have different part numbers depending on the revision of hardware in use. In addition, the compact version, the DSC110 also uses different part numbers for some spares.

The units can be identified by the type number which appears on the serial number label as follows:

Label Designation	Description
DSC210	DSC210 (Revision 1 Hardware)
DSC210/02	DSC210 (Revision 2 Hardware)
DSC110	DSC110

Part number for use with DSC210 Revision 1 Hardware	Part number for use with DSC210 Revision 2 Hardware	Part Number for use with DSC110 Hardware	Description
KE09	KE09	KE09	Network Card
PMC1	PMC1	PMC1	Alarm card
KE18	KE30	KE30	CPU card
KE19	KE37	KE38	Solid state memory card
KE02	KE02	KE17	48V DC PSU
N/A	N/A	KE16	110V/240V AC PSU
KE03	KE03	KE03	Floppy disk drive
KE05	KE05	N/A	Fan
KE22	KE22	N/A	26 way ribbon cable (16 way)
N/A	N/A	KE23	26 way ribbon cable (2 way)
KE12	KE12	KE12	Cable Carrier
KE26	KE26	KE26	Hard Disk Drive

15.2 Signalling Cards

The following signalling cards are suitable for use in all DSC210 and DSC110 hardware revisions:

Note: The only difference between ASC62EBM and ASC62TBM is the default settings of the E1/T1 interface selector module. The user may move this module to select either E1 or T1 operation with either board type.

Part Number	Description
ASC62EUM	CS6 E1 signalling card for SS7 operation (BNC connectors)
ASC62EUI	CS6 E1 signalling card for Q931 operation (BNC connectors)
ASC62EBM	CS6 E1/T1 signalling card for SS7 operation (RJ45 connectors) Factory set to E1 although can be changed to T1 by the user
ASC62TBM	CS6 E1/T1 signalling card for SS7 operation (RJ45 connectors) Factory set to T1 although can be changed to E1 by the user
ASC62EBI	CS6 E1/T1 signalling card for Q931 operation (RJ45 connectors) Factory set to E1 although can be changed to T1 by the user
ASC62TBI	CS6 E1/T1signalling card for Q931 operation (RJ45 connectors) Factory set to T1 although can be changed to E1 by the user

16. ANNEX H: Glossary of Terms

AIS	Alarm Indication Signal
ANSI	American National Standards Institute
BER	Bit Error Rate
CCITT	The International Telegraph and Telephone Consultative Committee
CCS	Common Channel Signalling
CIC	Circuit Identification Code
CPU	Central Processing Unit
DC	Direct Current
DSR	Data Set Ready
DTE	Data Terminal Equipment
DTR	Data Terminal Ready
EMI	Electromagnetic Interference
ESD	Electrostatic Sensitive Devices
FAW	Frame Alignment Word
ITU	International Telecommunication Union
LIU	Line Interface Unit
MML	Man-Machine Interface Language
MTP	Message Transfer Part (of SS7 signalling)
PBX	Private Branch Exchange
PCM	Pulse Code Modulation
POTS	Plain Old Telephone Service
PSU	Power Supply Unit
RDC	Remote Data Centre
SS7	Signalling System Number 7