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DMS–100 Family

Extended Peripheral Module

International Operational Measurements Reference Manual

XPM09 and up Standard 07.01 March 1998

NORTEL
NORTHERN TELECOM

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About this document

How to check the version and issue of this document

The version and issue of the document are indicated by numbers, for example, 01.01.

The first two digits indicate the version. The version number increases each time the document is updated to support a new software release. For example, the first release of a document is 01.01. In the *next* software release cycle, the first release of the same document is 02.01.

The second two digits indicate the issue. The issue number increases each time the document is revised but rereleased in the *same* software release cycle. For example, the second release of a document in the same software release cycle is 01.02.

To determine which version of this document applies to the software in your office and how documentation for your product is organized, check the release information in *Product Documentation Directory,* 297-8991-001.

This document is written for all DMS-100 Family offices. More than one version of this document may exist. To determine whether you have the latest version of this document and how documentation for your product is organized, check the release information in *Product Documentation Directory,* 297-8991-001.

References in this document

The following documents are referred to in this document:

- *Operational Measurements Reference Manual*
- *Product Documentation Directory,* 297-8991-001

What precautionary messages mean

The types of precautionary messages used in NT documents include attention boxes and danger, warning, and caution messages.

An attention box identifies information that is necessary for the proper performance of a procedure or task or the correct interpretation of

information or data. Danger, warning, and caution messages indicate possible risks.

Examples of the precautionary messages follow.

ATTENTION Information needed to perform a task

ATTENTION

If the unused DS-3 ports are not deprovisioned before a DS-1/VT Mapper is installed, the DS-1 traffic will not be carried through the DS-1/VT Mapper, even though the DS-1/VT Mapper is properly provisioned.

DANGER Possibility of personal injury

DANGER

Risk of electrocution

Do not open the front panel of the inverter unless fuses F1, F2, and F3 have been removed. The inverter contains high-voltage lines. Until the fuses are removed, the high-voltage lines are active, and you risk being electrocuted.

WARNING Possibility of equipment damage

WARNING

Damage to the backplane connector pins

Align the card before seating it, to avoid bending the backplane connector pins. Use light thumb pressure to align the card with the connectors. Next, use the levers on the card to seat the card into the connectors.

CAUTION Possibility of service interruption or degradation

CAUTION

Possible loss of service

Before continuing, confirm that you are removing the card from the inactive unit of the peripheral module. Subscriber service will be lost if you remove a card from the active unit.

How commands, parameters, and responses are represented

Commands, parameters, and responses in this document conform to the following conventions.

Input prompt (>)

An input prompt (>) indicates that the information that follows is a command:

>BSY

Commands and fixed parameters

Commands and fixed parameters that are entered at a MAP terminal are shown in uppercase letters:

>BSY CTRL

Variables

Variables are shown in lowercase letters:

>BSY CTRL ctrl_no

The letters or numbers that the variable represents must be entered. Each variable is explained in a list that follows the command string.

Responses

Responses correspond to the MAP display and are shown in a different type:

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

The following excerpt from a procedure shows the command syntax used in this document:

1 Manually busy the CTRL on the inactive plane by typing

>BSY CTRL ctrl_no
and pressing the Enter key.

where

ctrl_no is the number of the CTRL (0 or 1)

Example of a MAP response:

```
FP 3 Busy CTRL 0: Command request has been submitted.
FP 3 Busy CTRL 0: Command passed.
```

International XPM OMs

XPM product related operational measurements

Operational measurements (OM) consist of monitoring and counting the occurrences of events in the Digital Multiplex System (DMS) switch. These events include such items as call counts, usage, errors, and faults. Selected OMs should be printed on a periodic basis and should be used as a supplementary method of trouble detection and identification.

Scheduling and routing of OMs to output devices is performed by modifying the contents of certain system data tables with either the table editor or command interpreter (CI) commands. For a description of the CI commands, system data tables, and OM registers, their use in scheduling and routing, and for an explanation of all the OMs and their registers, refer to *Operational Measurements Reference Manual*.

Product related OMs

This document provides information on OMs that are associated with an XPM product or feature. Specific OMs concerning a particular XPM product are presented in the respective chapters. A description of the OMs and any associated logs are provided. For a complete description of all OMs refer to the *North American DMS-100 Operational Measurements Reference Manual*.

Remote Switching Center-SONET International OMs

RSC-S (INTL) related operational measurements

Operational measurements (OM) record the number of times an event occurs or the number of times a resource, such as a line, is used. This information is used for traffic provisioning, service monitoring, accounting allocation, and market evaluation. OMs are a useful source for fault indication, identification, and location.

OMs can be scheduled and routed to output devices by modifying the contents of certain system data tables using table editor or command interpreter (CI) commands. The following table lists OMs associated with the Remote Switching Center-Synchronous Optical Network (SONET), or RSC-S. For an explanation of all the OMs and their registers, refer to *Operational Measurements Reference Manual*.

RSC-S (INTL) operational measurements

Group	Information
DTSRPM	**Description:** Dial tone speed recording, on a peripheral module (PM) basis, provides information on dial tone speed recording for each PM for all line concentrating devices. **Associated logs:** None
ESP	**Description:** This group counts calls on essential service lines and failures to process essential line calls because of resource shortages. **Associated logs:** None

—continued—

RSC-S (INTL) operational measurements (continued)

Group	Information
ISGBD	**Description:** The ISDN service group Bd channel performance summary OM group monitors traffic handling on Bd-type D-channels in ISDN offices that have ISDN-equipped peripherals. A Bd channel is a D-channel used to carry data to a packet handler. **Associated logs:** None
ISGBRA	**Description:** This group monitors traffic on basic rate (BRA) D-channels in ISDN offices that have ISDN-equipped peripherals. **Associated logs:** None
ISGCPU	**Description:** This group measures the processor occupancy of an ISG. The first ten registers form a histogram of the average processor occupancy of an ISG. **Associated logs:** None
ISGOVLD	**Description:** This group measures the degree an ISG is overloaded. **Associated logs:** None
LMD	**Description:** This group counts call attempts and call attempt failures. **Associated logs:** LINE106, LINE108, LINE138, and NET130
PCMCARR	**Description:** Provides information on pulse code modulation 30 (PCM-30) carriers. PCM-30 is a transmission standard defining characteristics of international digital trunks and transmission links. **Associated logs:** PM109 and PM110
PM	**Description:** This group counts errors, faults, and maintenance state transitions for DMS switch peripheral modules with node numbers. **Associated logs:** NET101, NET102, PM100, PM101, PM102, PM107, PM108, PM109, PM110, PM113, PM114, PM115, PM116, PM117, PM118, PM119, PM122, PM124, PM125, PM126, PM128, PM152, PM180, PM181, PM183, and PM185
RSCIS	**Description:** Group RSCIS is used to evaluate traffic loads on intraswitching channels in a Remote Switching Center-SONET(RSC-S). **Associated logs:** None

—continued—

RSC-S (INTL) operational measurements (continued)

Group	Information
SITE	**Description:** Group SITE provides information about traffic-related counts and dial tone speed recording information for remote sites. **Associated logs:** None
XPMOCC	**Description:** Reports processor occupancy, and origination and termination counts for the universal processor (UP) and enhanced ISDN signaling pre-processor (EISP). **Associated logs:** None
XPMOVLD	**Description:** Counts the number of call attempts impacted, discarded or significantly delayed, by the XPM flow control system. The number of calls impacted is used to determine when the XPM enters the overload state and provides information regarding severity of XPM overload events. **Associated logs:** PM106 and 128
	—end—

Global Peripheral Platform OMs

This chapter describes Global Peripheral Platform (GPP) related operational measurements (OM).

GPP related operational measurements

The GPP supports European Telecommunications Standards Institute (ETSI) V5 interfaces between local exchanges (LE) and AccessNetworks (AN) connected to cable TV systems. Digital Multiplex Systems (DMS) with V5 capabilities provide support of public switched telephone networks (PSTN) analog, custom local access subscriber services (CLASS), and Merdian Centrex services to subscribers connected to ANs.

OMs consist of monitoring and counting the occurrences of traffic and maintenance events within the DMS switch. These events include such items as call counts, usage, errors, and faults. Selected OMs should be printed on a periodic basis and used as a supplementary method of trouble detection and identification.

OMs unique to the GPP count events occurring at the V5.2 (data link level 2) and V5.3 (network level 3) of call processing. Refer to *Operational Measurements Reference Manual* for detailed information on operational measurements used to monitor GPP performance.

The OM groups identified in the following table are associated with the GPP system. A description of the OM and associated logs if any are provided.

GPP operational measurements

Group	Information
AMA	**Description:** This group records the total number of initial automatic message accounting (AMA) record entries generated for downstream processing. This group also records the number of occurrences of emergency transfer between AMA tape units, and the number of times an AMA call is routed to a Traffic Operator Position System (TOPS). **Associated logs:** None
ANN	**Description:** This group provides information on traffic for recorded announcement machines. **Associated logs:** None
CP	**Description:** This group provides information on the use of call processing software resources such as call condense blocks, call processes, call process letters, multi–blocks, wake–up blocks, and long buffers. **Associated logs:** None
DTSR	**Description:** This group provides information on the ability of the DMS switch to return a dial tone within three seconds. **Associated logs:** None
DTSRPM	**Description:** This group provides information on dial tone speed recording for each peripheral module (PM) for all line concentrating devices. **Associated logs:** None
LMD	**Description:** This group counts call attempts and call attempt failures. **Associated logs:** None
OFZ	**Description:** This group provides information for traffic analysis. This group summarizes the composition of traffic that arrives at an office, the initial routing, and the routing of outgoing traffic. Registers count calls depending on the source of the call (trunk or line) and the intended destination, rather than the actual destination. **Associated logs:** None

—continued—

GPP operational measurements (continued)

Group	Information
PCMCARR	**Description:** Provides information on pulse code modulation 30 (PCM30) carriers. PCM30 is a transmission standard used to define the characteristics of international digital trunks and transmission links. **Associated logs:** None
PM	**Description:** This group counts errors, faults, and maintenance state transitions for DMS switch PMs with node numbers. **Associated logs:** NET101, NET102, PM100, PM101, PM102, PM107, PM108, PM109, PM110, PM113, PM114, PM115, PM116, PM117, PM118, PM119, PM122, PM124, PM125, PM126, PM128, PM152, PM180, PM181, PM183, and PM185
PMOVLD	**Description:** This group tracks call traffic when the GPP has entered overload. **Associated logs:** PM106 and PM128
PMTYP	**Description:** This group counts PM errors, faults, and state transitions for a group of PMs of the same type. **Associated logs:** PM100, PM102, PM108, PM109, PM110, PM111, PM125, PM128, PM151, PM179, PM180, PM181, PM182, PM183, PM185, 221, PM222, PM223, PM600 and UTR100
TFCANA	**Description:** This group provides information on call attempts, call set–up time, and call–connect time at source–traffic separation, and destination–traffic separation intersections. **Associated logs:** None
UTR	**Description:** This group counts and records call processing requests from lines for universal tone receivers (UTR). **Associated logs:** None

—continued—

GPP operational measurements (continued)

Group	Information
V5L2	**Description:** This group contains information for layer 2 events. V5L2 allows operating companies to verify V5.2 transit. Counts of total frames transmitted, received, rejected, receiver not ready (RNR), transmitter not ready (TNR), cyclic redundancy (CRC) errors, buffer overflow errors, and sequencing errors are registered. **Associated logs:** None
V5L3	**Description:** This group contains information for layer 3 events. V5L3 allows operating companies to track the compatibility between the AN and LE, the correct application of the V5.2 protocol, and states of the calls. Expiration of timers for PSTN events, bearer channel control (BCC) rejects and errors, link control errors, and protection protocol errors are registered. **Associated logs:** None
—end—	

RSC Multi-Access OMs

This chapter describes Remote Switching Center Multi-access (RSC-M) related operational measurements (OM).

RSC-M related operational measurements

The RSC-M supports European Telecommunications Standards Institute (ETSI) interfaces between the digital multiplex switching (DMS) system and the Access Multiplexer Capability (AMC) nodes. A DMS with AMC capabilities provides support for channel associated signaling (CAS), custom local access subscriber services (CLASS), and Merdian Digital Centrex services to subscribers.

OMs consist of monitoring and counting the occurrences of traffic and maintenance events within the DMS switch. These events include such items as call counts, usage, errors, and faults. Selected OMs should be printed on a periodic basis and used as a supplementary method of trouble detection and identification.

OMs can be scheduled and routed to output devices by modifying the contents of certain system data tables using table editor or command interpreter (CI) commands. The following table lists OMs associated with the Remote Switching Center Multi-access (RSC-M) For an explanation of all the OMs and their registers, refer to *Operational Measurements Reference Manual*.

The OM groups identified in the following table are associated with the RSC-M. A description of the OM and any associated logs are provided.

RSC-M operational measurements

Group	Information
DTSRPM	**Description:** Dial tone speed recording, on a peripheral module (PM) basis, provides information on dial tone speed recording for each PM for all line concentrating devices. **Associated logs:** None
ESP	**Description:** This group counts calls on essential service lines and failures to process essential line calls because of resource shortages. **Associated logs:** None
ISGCPU	**Description:** This group measures the processor occupancy of an ISG. The first ten registers form a histogram of the average processor occupancy of an ISG. **Associated logs:** None
ISGOVLD	**Description:** This group measures the degree an ISG is overloaded. **Associated logs:** None
LMD	**Description:** This group counts call attempts and call attempt failures. **Associated logs:** LINE106, LINE108, LINE138, and NET130
PCMCARR	**Description:** Provides information on pulse code modulation 30 (PCM-30) carriers. PCM-30 is a transmission standard defining characteristics of international digital trunks and transmission links. **Associated logs:** PM109 and PM110
PM	**Description:** This group counts errors, faults, and maintenance state transitions for DMS switch peripheral modules with node numbers. **Associated logs:** NET101, NET102, PM101, PM102, PM107, PM108, PM109, PM110, PM113, PM114, PM115, PM116, PM117, PM118, PM119, PM122, PM124, PM125, PM126, PM128, PM152, PM180, PM181, PM183, and PM185

—continued—

RSC-M operational measurements (continued)

Group	Information
RSCIS	**Description:** Group RSCIS is used to evaluate traffic loads on intraswitching channels in a Remote Switching Center Multi-access (RSC-M). **Associated logs:** None
SITE	**Description:** Group SITE provides information about traffic-related counts and dial tone speed recording information for remote sites. **Associated logs:** None
XPMOCC	**Description:** Reports processor occupancy, and origination and termination counts for the unified processor (UP). **Associated logs:** None
XPMOVLD	**Description:** Counts the number of call attempts impacted, discarded or significantly delayed, by the XPM flow control system. The number of calls impacted is used to determine when the XPM enters the overload state and provides information regarding severity of XPM overload events. **Associated logs:** PM106 and 128
	—end—

DMS–100 Family

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International Operational Measurements

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