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HP OmniBER 719

In This Book

This manual contains all the information necessary for remote control of the HP OmniBER 37719A.

1 Methods of Remote Control

Methods of Remote Control	1-2
Connecting the HP 37719A via GPIB (HP-IB)	1-3
Operating Distances	1-3
Communication with the System Controller	1-3
Connecting the HP 37719A to RS-232-C	1-4
HP OmniBER RS-232-C Port	1-4
Connecting to a Computer	1-5
Connection via a Modem	1-6
Connecting to a "Dumb" RS-232-C Terminal	1-6
Controller Type	1-6
Terminal Mode	1-7
Computer Mode	1-7
Connecting the HP 37719A to a LAN	1-8
Current Settings	1-9
New Settings (BOOTP)	1-9
New Settings (Keyboard Entry)	1-10
Controlling the HP 37719A	1-11
To Initialize the HP 37719A	1-12
Remote Control Hints & Tips	1-13
Default Settings	1-13
Instrument Coupling	1-13
Error Checking	1-13
Command Completion	1-14
Setup Delays	1-14
Status Registers	1-14
Gating Control	1-15
Frequency Offsets	1-16
User Locks	1-16

2 Common Commands

SCPI Command Format.....	2-2
Command Syntax	2-2
SCPI Long Form Command Headers.....	2-3
Linking Command Statements	2-3
Parameters	2-3
Remote Control Commands	2-5
Instrument Options	2-6
INSTRument subsystem	2-7
SOURce subsystem	2-8
SOURce subsystem - Transmitter Common Commands	2-9
INPut subsystem	2-12
SENSE subsystem	2-13
SENSE subsystem - Receiver Common Commands	2-15
SENSE subsystem - Test Timing	2-17
SENSE subsystem - Analysis Control	2-19
SENSE subsystem - Result Returning Commands	2-20
Common Results	2-20
SENSE subsystem - Trouble Scan Results.....	2-21
Common System Commands	2-23
SENSE subsystem - Configuring Stored Measurements and Graphics .	2-24
SENSE subsystem - Managing Graphics Stores	2-26
SENSE subsystem - Retrieving Graphics Store Data	2-28
SENSE subsystem - Retrieving Data for a Single Graph Element	2-32
SENSE subsystem -Obtaining Graphics End of Measurement Results .	2-34
STATus subsystem.....	2-38
SYSTEM Subsystem.....	2-41
IEEE common capabilities	2-55

3 PDH/DSn

Command Reference

PDH/DSn Command Reference	3-2
OUTPut subsystem	3-3
SOURce subsystem -Transmitter Structured PDH Commands	3-7
DS1/DS3 PDH Thru mode settings	3-13
SOURce subsystem - Transmitter SPDH Test Signal Settings Commands	3-18
SOURce subsystem - Transmitter SPDH Test Function Commands	3-27
INPut subsystem	3-45
SENSe subsystem - Receiver Structured PDH Settings	3-49
SENSe subsystem - Receiver SPDH Test Signal Settings Commands..	3-52
SENSe subsystem - Receiver SPDH Test Function Commands	3-58
SENSe subsystem - Analysis Control.....	3-59
SENSe subsystem - Alarm Scan Control.....	3-64
SENSe subsystem - SPDH Round Trip Delay Control.....	3-65
SENSe subsystem - SPDH Loop Codes Control	3-66
SENSe subsystem - Result Returning Commands	3-68
Frequency Results (SPDH).....	3-68
Structured PDH Short Term Results	3-68
Structured PDH Cumulative Results	3-69
Structured PDH and Payload G.821 Analysis Results	3-70
Structured PDH 140 Mb/s G.826 Analysis Results	3-71
Structured PDH 34 Mb/s G.826 Analysis Results	3-72
Structured PDH 8 Mb/s G.826 Analysis Results	3-73
Structured PDH 2 Mb/s G.826 Analysis Results	3-74
Structured PDH DS1 G.826 Analysis Results	3-75
Structured PDH DS3 G.826 Analysis Results	3-76
Structured PDH M.2100 Analysis Results	3-77
Structured PDH M.2110 Analysis Results	3-79
Structured PDH M.2120 ANALysis Results	3-79
Structured PDH 2 Mb/S FAS Error Analysis Results.....	3-79
Structured PDH 8 Mb/S FAS Error Analysis Results.....	3-80
Structured PDH 34 Mb/S FAS Error Analysis Results.....	3-80

Structured PDH 140 Mb/S FAS Error Analysis Results	3-81
Structured PDH CRC Error Analysis Results	3-82
Structured PDH REBE Error Analysis Results	3-82
Structured PDH Alarm Seconds Results	3-83
Structured PDH Round Trip Delay Results.....	3-84
FETCh subsystem.....	3-85

4 SONET Command Reference

SONET Command Reference	4-2
OUTPut subsystem	4-3
SOURce subsystem - Transmitter SONET Settings Commands	4-9
SONET Clock settings	4-9
Thru mode settings	4-11
SONET Mapping Settings.....	4-13
SPE Layer Selection	4-14
VT Layer Selection	4-15
Payload Layer Selection	4-15
VT Group	4-16
VT Payload and Test Pattern	4-17
Background Settings.....	4-21
SOURce subsystem - Transmitter SONET OVERHEAD SETUP	4-23
:SOURce subsystem - Transmitter SONET Test Function Commands	4-33
INPut subsystem	4-59
SENSe subsystem - Receiver SONET Settings.....	4-63
SONET Mapping settings	4-63
SPE Layer Selection	4-64
VT Layer Selection	4-64
Payload Layer Selection	4-65
VT Group	4-66
VT Payload and Test Pattern	4-67

SENSe subsystem - Receiver SONET Test Function Commands.....	4-72
SENSe subsystem - Alarm Scan Control.....	4-78
SENSe subsystem - SONET Tributary Scan Control.....	4-80
SENSe subsystem - REI-L Result Enable/Disable.....	4-81
SENSe subsystem - Result Returning Commands.....	4-82
Frequency Results (SONET).....	4-82
SONET Short Term Results.....	4-82
SONET Cumulative Results.....	4-83
SONET Section B1 BIP (CV-S) Analysis Results.....	4-84
SONET Line B2 BIP (CV-L) Analysis Results.....	4-84
SONET Line FEBE (REI-L) Analysis Results.....	4-85
If you wish to disable the REI-L measurement, see page 5-81.....	4-85
SONET Path B3 BIP (CV-P) Analysis Results.....	4-85
SONET Path FEBE (REI-P) Analysis Results.....	4-86
SONET CV-IEC Analysis Results.....	4-86
SONET Virtual Tributary Path BIP (CV-V) Analysis Results.....	4-87
SONET Virtual Tributary Path FEBE (REI-V) Analysis Results.....	4-87
SONET Block Based Bit Analysis Results.....	4-88
SONET M.2101 Analysis Results.....	4-88
SONET Service Disruption Results.....	4-90
SONET Optical Power Result.....	4-90
SONET Pointer Activity Results.....	4-90
SONET Alarm Seconds Results.....	4-91
FETCh subsystem.....	4-93

5 Status Reporting

Status Reporting.....	5-2
Status Byte.....	5-5
Standard Event Status Register.....	5-6

QUEStionable Status Register.....	5-7
OPERation Status Register.....	5-8
INSTrument Status Register.....	5-9
DATA Status Register.....	5-10
ISUMmary Status Register.....	5-11
SONet Status Register.....	5-12
SONet2 Status Register.....	5-13
SONet3 Status Register.....	5-14
JITTer Status Register.....	5-15
SPDH Status Register.....	5-16
M140 Status Register.....	5-17
M34 Status Register.....	5-18
M8 Status Register.....	5-19
M2 Status Register.....	5-20
DS3 Status Register.....	5-21
DS2 Status Register.....	5-22
DS1 Status Register.....	5-23
DISK Status Register.....	5-24
Programmed Status Reporting.....	5-27

6 General Information

General Information.....	6-2
SCPI Overview.....	6-2
GPIB (HP-IB) Universal Commands.....	6-3
Device Clear (CLEAR).....	6-3
Serial Poll (SPOLL).....	6-3
Remote Enable (REMOTE).....	6-3
Local Lockout (LOCAL LOCKOUT).....	6-4
Local (LOCAL).....	6-4

7 Application Program Examples

Initializing the HP 37719A	7-2
Setup the HP 37719A PDH Tx (Main Settings)	7-3
Setup the HP 37719A PDH Rx (Main Settings)	7-4
Setup the HP 37719A PDH Tx (Main & Structured Settings).....	7-5
Setup the HP 37719A PDH Rx (Main & Structured Settings).....	7-7
Setup the HP 37719A PDH Tx to add Errors & Alarms.....	7-8
Setup the HP 37719A PDH Rx to perform Bit Error Measurements..	7-9
Setup the HP 37719A SONET Tx.....	7-10
Setup the HP 37719A SONET Rx	7-12
Setup the HP 37719A SONET Tx to add Errors & Alarms.....	7-13
Setup the HP 37719A SONET Tx Overhead Bytes	7-14
Setup the HP 37719A SONET Tx for Overhead Byte Sequencing	7-15
Perform HP 37719A SONET Rx Measurements	7-16
Setup the HP 37719A SONET Rx to retrieve Overhead Monitor Bytes	7-17
Setup the HP 37719A SONET Rx to perform Overhead Byte Capture	7-18

8 SCPI Error Messages

SCPI Error Messages	8-2
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9 SCPI Backwards Compatibility Differences

SCPI Backwards Compatibility Differences	9-2
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General Index

Methods of Remote Control

Methods of Remote Control

Methods of Remote Control

The HP 37719A can be remotely controlled in one of four ways:

- GPIB (HP-IB)** Provides a parallel interface that allows the connection of other devices to the system for example: Frequency Counter; Printer; Signal Generator. Allows great flexibility in communicating data and controlling data and provides one of the easiest methods of constructing automatic systems. If long distance communication is required, suitable GPIB Extenders must be connected within the test system at both ends of the communication link.
- RS-232-C** Provides a serial interface that can be connected directly to the RS-232-C port of a terminal or computer. Only the controller and the HP 37719A can be connected within the system. If long distance communication is required, the HP 37719A can be connected directly to the RS-232-C port of a Modem and controlled via a telephone line.
- LAN** Provides a parallel interface that allows the connection of other instruments and controllers to the system for example: workstations; other HP 37719A's; other test sets that have a LAN interface.
- DNA** Provides control via a Front Panel displayed on a PC connected to a LAN. Other test sets that have the Virtual Remote capability can be connected to the LAN and controlled via the same PC. *See HP E4540A Manual, HP part number E4540-90004.*
- UID's** HP OmniBER Universal Instrument Drivers - please refer to the UID sales flyer (part number 5968-5608E) provided with your instrument for information on HP OmniBER UID's, which are provided on a CD-ROM with your instrument.

Methods of Remote Control

Connecting the HP 37719A via GPIB (HP-IB)

The following points should be considered when connecting the HP 37719A via GPIB:

- Operating distances
- Communication with the system controller

Operating Distances

1. The total length of GPIB cable must not exceed 2 meters (6 feet) × the number of devices in the system.
2. The total length of GPIB cable, used to interconnect all devices in the system, must not exceed 20 meters (65 feet).

Operating distances can be increased by using GPIB Extenders, as follows:

Up to 1250 meters use HP 37204A.

Over 1250 meters use two HP 37201A and two suitable Modems.

Communication with the System Controller

Each device in the system must have a unique address to allow the controller to access each one individually. On the HP 37719A the address is set on the **OTHER** display under **REMOTE CONTROL** :



To set the GPIB (HP-IB) Address press **OTHER**; **REMOTE CONTROL** and set the display as shown opposite. Address 5 has been selected but any Address in the range 0 to 30 can be selected.

FUNCTION	[REMOTE CONTROL]
REMOTE CONTROL PORT	[GPIB]
PRINTER PORT	[DISK]
ADDRESS	[5]
SQ STATE	
ERROR NUMBER	
STATUS:	
HP-IB	RS232
LAN	MULTIPLE WINDOW

Methods of Remote Control

Connecting the HP 37719A to RS-232-C

Remote control via RS-232-C requires that the HP 37719A RS-232-C interface settings match those of the terminal/computer. These settings are made on the OTHER display under REMOTE CONTROL.

Using ,  and the display softkeys set REMOTE CONTROL PORT [RS232]. Set CONTROLLER TYPE, XON/XOFF, SPEED, PARITY and STOP BITS to match the settings on your terminal/computer.

FUNCTION	[REMOTE CONTROL]
REMOTE CONTROL PORT	[RS232]
PRINTER PORT	DISK
CONTROLLER TYPE	TERMINAL
XON/XOFF	[RX & TX]
SPEED	[9600 BRUD]
PARITY (7 BIT DATA)	[ODD]
STOP BITS	[1]
ERROR NUMBER	
STATUS:	
COMPUTER	TERMINAL
MULTIPLE WINDOW	

Refer to the following pages for a list of instrument RS-232-C port connections, cable connections between the instrument and a PC, Modem or Terminal, and an explanation of controller type.

HP OmniBER RS-232-C Port

The HP 37719A acts as DCE (Data Communications Equipment), see Table 1-1 for a list of port connections.

Methods of Remote Control

Table 1-1 HP 37719A RS-232-C port connections

37719A Pin #	Signal	Input/Output
1	DCD	Output
2	RXD	Output
3	TXD	Input
4	DTR	Input
5	GND	GND
6	DSR	Output
7	RTS	Input
8	CTS	Output
9	N/A	N/A

Connecting to a Computer

Table 1-2 HP 37719A to Computer

37719A Pin #	Signal	PC Pin #	Signal
2 (O/P)	Receive Data	3 (I/P)	Receive Data
3 (I/P)	Transmit Data	2 (O/P)	Transmit Data
5	Signal Ground	5	Signal Ground

RS-232-C cable HP Part Number 24542U (9 pin to 9 pin) will provide this connection.

Methods of Remote Control

Connection via a Modem

Full Modem control is not possible and the Modem should be configured to force DSR, DCD, CTS and DTR true.

Table 1-3 HP 37719A to Modem

37719A Pin #	Signal	Modem Pin #	Signal
2 (O/P)	Receive Data	2 (I/P)	Transmit Data
3 (I/P)	Transmit Data	3 (O/P)	Receive Data
5	Signal Ground	7	Signal Ground

RS-232-C cable HP Part Number 24542G (9 pin to 25 pin) will provide this connection.

Connecting to a "Dumb" RS-232-C Terminal

Table 1-4 HP 37719A to "Dumb" RS-232-C Terminal

37719A Pin #	Signal	PC Pin #	Signal
2 (O/P)	Receive Data	3 (I/P)	Receive Data
3 (I/P)	Transmit Data	2 (O/P)	Transmit Data
5	Signal Ground	7	Signal Ground

RS-232-C cable HP Part Number 24542M (9 pin to 25 pin) will provide this connection.

Controller Type

Two methods of controlling the HP 37719A via RS-232-C are available:

Terminal Simple method of control when commands are issued manually on a command by command basis.

Computer Typically used when commands are issued via a program.

Methods of Remote Control

Terminal Mode

Terminal mode is provided to allow the HP 37719A to be controlled by a "dumb" terminal and provides the following features:

When connection is established via RS-232-C the HP 37719A responds with a "prompt".

Characters sent to the HP 37719A are echoed back to the terminal.

If a mistake is made in the command, the appropriate SCPI Error Message and the "entered" command is returned to the terminal to provide a local record.

A command history buffer is provided with a capacity of 20 commands. This allows frequently used commands to be retransmitted without having to retype the command:

To list the history buffer contents type: **!l** (lower case L)

To retransmit the last Command sent type : **!!**

To retransmit a previously sent command, type: **!n** where n = the commands listed number. If "**n**" is negative, the number is relative to the last command sent.

Computer Mode

Computer mode is provided to allow the HP 37719A to be controlled by a computer allowing programs to be run. Unlike Terminal mode commands are not echoed back and SCPI Error Messages are not returned unless the appropriate query command is issued.

Methods of Remote Control

Connecting the HP 37719A to a LAN

The following information should be obtained from the LAN System Administrator before connecting to the LAN:

- Internet address (Example 015.144.180.205)
- Subnet Mask (Example 255.255.248.0).
- Default Gateway IP Address (Example 15.144.176.1).

The PORT NUMBER and MAC ADDRESS are assigned to the HP 37719A at the time of shipment.

Connect the HP 37719A LAN interface to the LAN network.

The HP 37719A must now be configured to accept the IP address, Subnet Mask and Default Gateway IP Address.

Press **OTHER**, **REMOTE CONTROL**

and set up the display as shown opposite.
The HP 37719A can be configured to accept the IP address, Subnet Mask and Default Gateway IP Address in one of two ways:

FUNCTION	[REMOTE CONTROL]	
REMOTE CONTROL PORT		[LAN]
PRINTER PORT			DISK	
CONFIGURATION		[CURRENT SETTINGS]
IP ADDRESS			15.144.181.41	
PORT NUMBER			5001	
SUBNET MASK			255.255.248.000	
GATEWAY IP ADDRESS			15.144.176.181	
MAC ADDRESS			080090000000	
ERROR NUMBER				
STATUS:				
	HP18	RS232	LAN	MULTIPLE WINDOW

Methods of Remote Control

Current Settings

The IP Address, Subnet Mask and Gateway IP Address will adopt the current settings.

The Port Number and MAC Address are displayed for information.

FUNCTION	[REMOTE CONTROL]
REMOTE CONTROL PORT	[LAN]
PRINTER PORT		DISK	
CONFIGURATION		<input checked="" type="radio"/> CURRENT SETTINGS	
IP ADDRESS		15.144.181.41	
PORT NUMBER		5001	
SUBNET MASK		255.255.248.000	
GATEWAY IP ADDRESS		15.144.175.181	
MAC ADDRESS		080090000000	
ERROR NUMBER			
STATUS:			
<input checked="" type="radio"/> CURRENT SETTINGS		<input type="radio"/> NEW SETTINGS	<input type="radio"/> MULTIPLE WINDOW

New Settings (BOOTP)

To use BOOTP your system administrator must set up a BOOTP server on the network.

When YES is selected the power must be cycled on the HP 37719A to allow for a change of settings.



When power is restored the HP 37719A will issue BOOTP requests until it receives a reply from a suitably configured BOOTP server.



FUNCTION	[REMOTE CONTROL]
REMOTE CONTROL PORT	[LAN]
PRINTER PORT		DISK	
CONFIGURATION		<input type="radio"/> NEW SETTINGS	
USE BOOTP		<input checked="" type="radio"/> YES	
NEW Settings take effect on next power up			
ERROR NUMBER			
STATUS:			
<input type="radio"/> NO		<input type="radio"/> YES	<input type="radio"/> MULTIPLE WINDOW

The Settings of IP Address, Subnet Mask and Gateway IP Address will be adopted as the Current Settings.

Methods of Remote Control



New Settings (Keyboard Entry)

Use **DECREASE DIGIT**   and **INCREASE DIGIT** to set the IP Address, Subnet Mask and Gateway IP Address.

Use  and  to move between the IP Address, Subnet Mask and Gateway IP Address.

The New Settings will not become active until the power is cycled (power off/ power on) on the HP 37719A.

FUNCTION	[REMOTE CONTROL]
REMOTE CONTROL PORT	[LAN]
PRINTER PORT	[DISK]
CONFIGURATION	[NEW SETTINGS]
USE BOOTP	[NO]
IP ADDRESS	[15 144 180 205]
SUBNET MASK	[15 144 180 205]
GATEWAY IP ADDRESS	[15 144 180 205]
NEW Settings take effect on next power up	
ERROR NUMBER	

STATUS:
DECREASE DIGIT **INCREASE DIGIT**   **MULTIPLE WINDOW**

The entered New settings are checked to ensure they conform to the relationships that should exist between the IP Address, Subnet Mask and Gateway IP Address. If the entered data contravenes these relationships, the HP 37719A will change the data to more sensible values.

Configuration

The HP 37719A can only accept one tcp connection at a time and it cannot establish an outgoing call. The connection has to be directed to port 5001.

For Example (from a UNIX system):

```
telnet <IP address> 5001
```

If ping <IP address> is issued (from a UNIX system), commands issued will be echoed at the local end of the connection.

Methods of Remote Control

Controlling the HP 37719A

The simplest way to verify the connection and become familiar with remote RS-232-C operation is to send a few commands and observe their effect. In this example using a terminal we will:

- Take the HP 37719A under remote control
- Initialize the HP 37719A
- Read the contents of the error register
- Start a test period
- Add errors
- Obtain the result (Option dependent)
- Return the HP 37719A to local operation

NOTE

Connect the PDH OUT port to the PDH IN port for the duration of this exercise.

Table 1-5 **HP 37719A to RS-232-C Computer**

Terminal Input	Comment
:SYST:REM	Takes the HP under remote control. On the instrument the indicator above LOCAL is lit.
*RST	Default settings, registers cleared.
:SYST:ERR?	The SCPI Error Message and number can be read, even in local operation mode. (+0, "No error")
:SENS:DATA:TEL:TEST :TYPE MAN	Selects a manual test period.
:SENS:DATA:TEL:TEST ON	Starts the manual test period. On the instrument the indicator above RUN/STOP is lit.
:SOUR:DATA:TEL:ERR :BIT ONCE	Adds a single bit error.
:SOUR:DATA:TEL:ERR :BIT ONCE	Adds a single bit error.
:SOUR:DATA:TEL:ERR :BIT ONCE	Adds a single bit error.
:SENS:DATA:TEL:TEST OFF	Halts the manual test period. On the instrument the indicator above RUN/STOP is extinguished.

Methods of Remote Control

Table 1-5 HP 37719A to RS-232-C Computer

Terminal Input	Comment
:SENS:DATA? "ECO:SPDH :BIT"	Structured PDH -Returns the bit error count in numeric form, in this example 3.
:SYST:LOC	Returns the HP 37719A to local control. On the instrument the indicator above LOCAL is extinguished.

To Initialize the HP 37719A

Regardless of the current setup the following command will initialize the HP 37719A. It sets the HP 37719A to the factory default settings and clears all registers.

*RST

It is recommended that you do not rely on default settings but program each setting to what you require.

Remote Control Hints & Tips

Remote Control Hints & Tips

The following section gives some Hints & Tips on how to control the HP 37719A via remote control. Before writing any program to control the HP 37719A it may help to manually go through the steps required to setup the desired configuration. The order in which you should send the corresponding SCPI commands will usually follow the order in which you set up the HP 37719A's Front Panel. This can be seen in the Application Examples listed in the Manual. These could be used as a starting point in order to find the SCPI commands that correspond to particular HP 37719A Front Panel settings.

Default Settings

In general, default settings should not be assumed. It is recommended that each instrument setting should be explicitly programmed to the desired value.

Also commands that affect higher level settings such as Signal Rate or Payload Type should be sent before commands to set up lower level settings e.g. Pattern. This is because, in some cases, higher level setting changes can affect the values of lower settings.

Instrument Coupling

If you wish to set the HP 37719A Transmitter and Receiver to the same settings then you can save time by selecting Transmitter/Receiver Coupling and then programming the Receiver only.

To turn coupling on use the :INSTrument:COUPlE RTTX command.

Error Checking

It is recommended that, when sending SCPI commands to the HP 37719A, you also periodically send the SYSTem:ERRor? command to check for any Remote Control Errors reported by the instrument. This command returns 0, "No Error" if there are no errors in the error queue. If the SYSTem:ERRor? command is sent after every setup command then it makes debugging any reported errors much easier since you will know exactly which command caused the error.

The actual error queue within the HP 37719A can be cleared by sending the *CLS command.

Remote Control Hints & Tips

Command Completion

When programming the instrument over RS-232, it is important to realize that a buffer (of 128 bytes) exists in the HP 37719A between the RS-232 port and the SCPI parser.

The effect of this is that even if the HP 37719A accepts the last character of a command, it cannot be assumed that it will immediately be executed - there could be several commands ahead of this one waiting in the buffer.

If you need to know when a command, or sequence of commands has been accepted by the instrument, follow them with a query command. When the response to the query command is returned, then you know that all commands prior to that have been executed.

Suitable query commands to use are *OPC? or SYST:ERRor? (which also gives the additional benefit of error checking as described above).

Note that this effect does not apply with GPIB. When GPIB is used to remotely control the HP 37719A then, after the last character of a SCPI command has been accepted by the instrument, its execution is imminent. However, it is still good practice to send a SYSTem:ERRor? after each command in order to check for error free completion.

Setup Delays

Even after the HP 37719A has accepted a SCPI command it may take some time for it to execute the requested operation (e.g. payload change, single error add). It is therefore recommended that at least 200ms is allowed after the command has completed before expecting the instrument operation to occur. One way of determining if such delays exist is to perform the desired operation manually using the HP 37719A's Front Panel and checking if there is any noticeable delay in execution.

Status Registers

Status registers in general are only updated every 100ms by the HP 37719A. Therefore you should avoid reading them any faster than that since, although it does not do any harm if they are read faster, it means that less processing power will be available to update the display.

If you need to detect a status register bit that is momentarily changing state, avoid using the condition register in the hope of catching both states. Instead it is much better to program the PTRansition and NTRansition registers to catch the event of interest, and then use the event register to monitor for the event.

Remote Control Hints & Tips

For example, say you wished to detect when the K1 and K2 bytes in the Multiplex Section Line Overhead of a STM-1/STS-3 signal have changed. There is a K1K2 bit defined (DB6) in the SDH2/SONet2 Status Register that is set when these bytes change value.

However, if you monitored the SDH2/SONet2 status register simply by sending the STATus:SDH2:CONDition? or STATus:SON2:CONDition? command then it is very likely that you would miss any transition in the K1K2 bit.

A better method is as follows.

Set transition filter to pass positive transitions in K1K2 (DB6)	: STATus : SDH2 : PTR 64 ; NTR 0
Periodically read SDH2 event register.	: STATus : SDH2 : EVENT ?
Periodically read SONet2 event register	: STATus : SONet2 : EVENT ?
Check for K1K2 (DB6) being set.	

Using this technique you will detect any changes in the K1 and K2 bytes.

If you needed to monitor a number of status bits then using this method would not be ideal since it would have the disadvantage of having to regularly read a number of status registers. A general rule is to minimize the number of status register reads required and, to achieve this, use can be made of the Summary register. For details on how to use the Summary register and also the SRQ mechanism see Programmed Status Reporting on page 7- 27.

Gating Control

There are a number of status register bits that can be used to indicate the state of the HP 37719A's measurement system.

When you send the start gating command to the HP 37719A you should check the MEAS bit (DB4) in the OPERation status register. This is because the HP 37719A takes a finite period of time (the actual length of time can be affected by factors such as whether Stored Measurement Graphics is selected or not) to start gating. When the MEAS bit is set to one it means that the HP 37719A is gating.

If it is required to retrieve Short Term results while the HP 37719A is gating then the STP bit (DB6) in the INSTRument status register can be used to determine when short term results can read i.e. when the first short term test period has completed.

The EOT bit (DB2) in the INSTRument status register can be used to determine when the HP 37719A gating period is complete.

Remote Control Hints & Tips

Frequency Offsets

If the HP 37719A Transmitter's PDH signal rate or frequency offset is changed it will take some time for the Internal VCXO's to settle. This is indicated on the HP 37719A's Front Panel by a flashing status message. The state of the VCXO's can also be checked by monitoring the LOC Bit (DB8) in the SPDH Status Register.

User Locks

User locks are a mechanism used within the HP 37719A to prevent the user selecting a particular instrument feature when some other selection takes priority. An example of this would be if you tried to modify the value of a SDH/SONETOverhead byte using the :SOURce:DATA:TELEcom:SONet:OVERhead:DATA command at the same time as a sequence was being generated in the same byte. If you tried to do this manually via the HP 377'19As Front PANEL than a status message warns you that this operation is not possible. If you tried to do it via remote control then a "-200, Execution Error" would result. The solution is to switch of the particular feature (in this example sequence generation) that has priority before sending the command.

SCPI Command Format, see page 2-2.

Remote Control Commands, see page 2- 5.

Instrument Options, see page 2-6.

INSTRument subsystem, see page 2-7.

SOURce subsystem, see page 2-8.

SOURce subsystem - Transmitter Common Commands, see page 2-9.

INPut subsystem, see page 2- 12.

SENSE subsystem, see page 2-13.

SENSE subsystem - Receiver Common Commands, see page 2- 15.

SENSE subsystem - Test Timing, see page 2-17.

SENSE subsystem - Analysis Control, see page 2-19.

SENSE subsystem - Trouble Scan Results, see page 2-21.

SENSE subsystem - Configuring Graphics,see page 2- 24.

SENSE subsystem - Managing Graphics Stores, see page 2- 26.

SENSE subsystem - Retrieving Graphics Store Data, see page 2-28.

SENSE subsystem - Retrieving Data for a Single Graph, see page 2- 32.

SENSE subsystem -Obtaining Graphics End of Measurement Results, see page 2-34.

STATus Subsystem, see page 2- 38.

SYSTem Subsystem, see page 2-41.

IEEE common capabilities, see page 2- 55.

Common Commands

This chapter contains general information on SCPI commands, and detailed information on the commands that are common for all types of instrument operation, i.e. PDH, , SONET and Jitter.

Common Commands

SCPI Command Format

SCPI Command Format

Instrument functions such as making measurements, retrieving data, and querying status, are performed by stringing together SCPI "nodes" into commands. The SCPI commands are based on a hierarchical structure called a "subsystem" that comprises a top level "root" node and one or more lower-level nodes and their parameters as follows:

:INPut:TELEcom:SPDH:CODE <CMI> or <AMI> or <HDB3>

:INPut is the root node

:TELEcom is a second level node

:SPDH is a third level node

:CODE is a fourth level node

CMI, AMI and HDB3 are parameters of the fourth-level :CODE node.

Command Syntax

Commands are shown as a mix of upper and lowercase characters.

Commands can be abbreviated for shorter program line lengths. The uppercase characters define the abbreviated form of the command.

Commands are formed by linking the root node with lower-level nodes. A colon (:) is used to link nodes.

If the command requires a parameter, a space must separate the lowest level node and the parameter. If there is more than one parameter, a comma (,) is used to separate the parameters.

An example of typical commands and their abbreviated form are shown below :

:INPut:TELEcom:SPDH:CODE AMI	full Form
:INP:TEL:SPDH:CODE AMI	abbreviated form
:SOURce:DATA:TELEcom:SPDH:PAYLoad:PATTERN PRBS23	- full form
:SOUR:DATA:TEL:SPDH:PAYL:PATT PRBS23	- abbreviated form

Common Commands

SCPI Command Format

SCPI Long Form Command Headers

The general rule for SCPI long form command headers that are greater than four characters in length is as follows:

- Abbreviated short form mnemonics - the first four characters from the long form command header are used unless the fourth character is a vowel. In such cases, the vowel is dropped and only the first three characters are used.
- If the command is four characters long then all four characters are used, irrespective of whether the fourth character is a vowel or not.

Linking Command Statements

Command statements can be linked using semicolons (;). For example :

```
:INPut:TELEcom:SPDH:CODE AMI;:SOURce:DATA:TELEcom:SPDH:  
PAYLoad:PATtern PRBS23
```

Parameters

In this manual, parameters are shown in angled brackets < >. There are five parameter types used in commands as listed in table 2-1.

Table 2-1

Parameter Types

Parameter Types	Description
<numeric>	All commonly used decimal numbers including optional signs, decimal points, and scientific notation. Examples are 123, 123E2, -123, -1.23E2, .123, .123E2 and 1.2300E-01. Special cases include MINimum and MAXimum. A numeric parameter can also be specified in hex, octal, and/or binary. Examples are #H7B, #Q173 and #B11110111.
<boolean>	A single binary condition that is either true or false. Examples are ON, OFF, 1 and 0.
<discrete>	Values that are represented by a string of alphanumeric characters. Examples are INTernal and EXTernal.

Common Commands
SCPI Command Format

Table 2-1

Parameter Types

Parameter Types	Description
<string>	Any set of ASCII characters enclosed within single quotes or double quotes. Examples are '1111111111111111' and "0000000000000000".
<block>	Used to transfer large quantities of related data. Blocks can be sent as definite length blocks (#<numeric><numeric>) or indefinite length blocks (#0).

Occasionally, a command may use more than one parameter of the same type. When this occurs, the order of the parameters used in the command will map to the order of the individual parameter descriptions.

Common Commands
Remote Control Commands

Remote Control Commands

The remote control commands in this manual have been grouped into Sections that relate to instrument functions. These have then been split into Subsystems

The Subsystems used in the HP 37719A are listed in table 2-2.

Table 2-2

SCPI Subsystems

Instrument Functions	Subsystem
To control SIGNAL OUT port,/STS-1/STS-3 OUT port/ Optical OUT port .	:OUTPut
To control instrument coupling.	:INSTrument
To control the transmitter.	:SOURce
To control the SIGNAL IN port,/STS-1/STS-3 IN port/ Optical IN port.	:INPut
To control the receiver, results and graphics	:SENSe
To obtain results directly accumulated by the instrument.	:FETCh
To control the instrument OTHER functions.	:SYSTem
To control Status Reporting.	:STATus

Instrument Options

The HP 37719A Communications Performance Analyzer is a modular product allowing a wide range of test options to be fitted. SCPI commands with the following node names need the appropriate options to be fitted.

SPDH - needs structured PDH option

SONET - needs SONET option

JITTER - needs Jitter option

Commands are not valid unless the correct option has been fitted e.g.

:SOURce:DATA:TELEcom:SONet:VTGRoup <numeric> only works if the SONET option is fitted.

Common Commands
INSTrument subsystem

INSTrument subsystem

The INSTrument subsystem is used to control the coupling between the transmitter and the receiver as provided on the OTHER SETTINGS CONTROL display.

:INSTrument:COUPlE <mode>

<discrete> =	OFF	Independent
	RTTX	Coupled

After a reset the receiver and transmitter coupling will be OFF. If the instrument is testing and the receiver and transmitter are coupled, changing certain transmitter settings will generate an error because the coupled receiver setting cannot be changed because of testing lock.

The corresponding query returns the Coupling state in discrete form as listed above.

:INSTrument:COUPlE?

Returns : <discrete>

SOURce subsystem

The SOURce subsystem contains commands that allow the transmitter settings to be set.

The commands within the SOURce subsystem have been arranged as follows:

Chapter 2

SOURce subsystem - Transmitter Common Commands

Chapter 3

SOURce subsystem - Transmitter Structured PDH Commands



SOURce subsystem - Transmitter SPDH Test Signal Settings Commands



SOURce subsystem - Transmitter SPDH Test Function Commands



Chapter 5

SOURce subsystem - Transmitter SONET Settings Commands



SOURce subsystem - Transmitter SONET OVERHEAD SETUP



:SOURce subsystem - Transmitter SONET Test Function Commands



Chapter 6

SOURce subsystem - Transmitter Jitter Commands



Where commands are applicable to more than one category these are included in all the applicable categories.

SOURce subsystem - Transmitter Common Commands

:SOURce:DATA:TELEcom:SOURce <discrete>

<discrete> =	PDH	PDH Outputs
	SONet	STS-1/STS-3 electrical
	OPT1	STM-0/STM-1 Optical
	OC3	OC-1/OC-3
	OC12	OC-1/OC-3/OC-12
	OC48	OC-1/OC-3/OC-12/OC-48

Selects the output port. The output characteristics of each port are controlled by the :OUTPut subsystem.

Recommended use: This command selects which transmitter output port is in use, and also selects the TRANSMITTER OUTPUT selection on the transmitter page. The parameters refer to the physical ports on the instrument but do not select the interface rate. There are a number of different optical port parameters, one for each optical module option available. The correct optical parameter must be selected based on the optical module option fitted to the instrument.

After this command has been used to select the applicable port and interface, the interface rate commands should be used to set the required line rate. See the Associated Commands.

Associated Commands: For each parameter of this command, the command to set the interface rate is listed here.

(SPDH) :OUTPut:TELEcom:SPDH:RATE <discrete>

(SONET) :OUTPut:TELEcom:SONet:RATE <discrete>

(OC3) :OUTPut:TELEcom:OC3:RATE <discrete>

(OC12) :OUTPut:TELEcom:OC12:RATE <discrete>

Common Commands

SOURCE subsystem - Transmitter Common Commands

(OC48) :OUTPut:TELEcom:OC48:RATE <discrete>

:SOURCE:DATA:TELEcom:SOURCE?

Returns : <discrete>

:SOURCE:DATA:TELEcom:TFUNCTION <discrete>

<discrete> =	NONE	Test function off
	SONet	
	PDHPayload	requires an or SONET option
	PDH	
	SDISruption	Service Disruption

Selects the transmitter test function source.

The corresponding query returns the transmitter test function source in discrete form as shown above.

:SOURCE:DATA:TELEcom:TFUNCTION?

Returns: <discrete>

:SOURCE:DATA:TELEcom:ERROR:BIT <discrete>

<discrete> =	NONE	Off
	ONCE	Single Error Add
	RATE	1E-3

Selects the required bit error add rate.

This command is retained for backwards compatibility only. The recommended commands are:

-
- :SOURCE:DATA:TELEcom:SONet:ERROR:TYPE <discrete> and :SOURCE:DATA:TELEcom:SONet:ERROR:RATE <discrete> for SONET errors.
- :SOURCE:DATA:TELEcom:SONet:PDHPayload:ERROR:TYPE <discrete> and

Common Commands

SOURce subsystem - Transmitter Common Commands

:SOURce:DATA:TELEcom:SPDH:ERRor:TYPE <discrete> for SONET PDH payload errors, and :SOURce:DATA:TELEcom:SPDH:ERRor:TYPE <discrete> and :SOURce:DATA:TELEcom:SPDH:ERRor:RATE <discrete> for SPDH errors.

The corresponding query returns NONE or RATE.

:SOURce:DATA:TELEcom:ERRor:BIT?

Returns : <discrete>

INPut subsystem

INPut subsystem

This subsystem controls the characteristics of the instrument's input ports.

:INPut:TELEcom:LEVel <discrete>

<discrete> = TERMinate
 MONitor

Sets the input level for the SPDH or or SONET electrical input port when that port is selected by :SENSe:DATA:TELEcom:SENSe <discrete> , type= or SONET or PDH.

The corresponding query returns the input level in discrete form, as listed above.

:INPut:TELEcom:LEVel?

Returns : <discrete>

SENSe subsystem

SENSe subsystem

The SENSe subsystem contains the commands that control the Receiver. These have been arranged in the following manner:

<i>Chapter 2</i>	SENSe subsystem - Receiver Common Commands	Receive	PDH	MAIN SETTINGS
<i>Chapter 3</i>	SENSe subsystem - Receiver Structured PDH Settings	Receive	PDH	STRUCT'D PAYLOAD
	SENSe subsystem - Receiver SPDH Test Signal Settings Commands	Receive	PDH	TEST FUNCTION
	SENSe subsystem - Receiver SPDH Test Function Commands	Receive	PDH	TEST FUNCTION
<i>Chapter 5</i>	SENSe subsystem - Receiver SONET Settings	Receive	SONET	SONET
	SENSe subsystem - Receiver SONET Test Function Commands	Receive	SONET	TEST FUNCTION
<i>Chapter 6</i>	SENSe subsystem - Receiver Jitter Commands	Receive	PDH	JITTER
<i>Chapter 2</i>	SENSe subsystem - Test Timing	Receive	TIMING CONTROL	
	SENSe subsystem - Analysis Control	Other	MISC	
<i>Chapter 3</i>	SENSe subsystem - Alarm Scan Control	Results	PDH ALM SCAN	
<i>Chapter 5</i>	SENSe subsystem - SONET Tributary Scan Control	Transmit	SONET	TEST FUNCTION
<i>Chapter 3</i>	SENSe subsystem - SPDH Round Trip Delay Control	Results	PDH	TRIP DELAY
	SENSe subsystem - Result Returning Commands	Results		

Common Commands

SENSe subsystem

Chapter 2

SENSe subsystem - Trouble Scan Results

Results

SENSe subsystem - Result Returning
Commands

SENSe subsystem - Configuring Stored Measurements and Graphics

SENSe subsystem - Managing Graphics Stores

SENSe subsystem - Retrieving Graphics Store Data

SENSe subsystem - Retrieving Data for a Single Graph Element

SENSe subsystem - Obtaining Graphics End of Measurement Results

SENSe subsystem - Receiver Common Commands

SENSe subsystem - Receiver Common Commands

:SENSe:DATA:TELEcom:SENSe <discrete>

<discrete> =	PDH	SPDH
	SONet	STS-1/STS-3
	OPT1	STM-0/STM-1 Optical
	OC3	OC-1/OC-3
	OPT4	STM-0/STM-1/STM-4 Optical
	OC12	OC-1/OC-3/OC-12
	OC48	OC-1/OC-3/OC-12/OC-48

Selects the input port. The input characteristics of each port are controlled by the INPut subsystem.

Recommended use: This command selects which receiver input port is in use, and also selects the top level field on the receiver page. The parameters refer to the physical ports on the instrument but do not select the interface rate. After this command has been used to select the applicable port and interface, the interface rate commands should be used to set the required line rate. See the Associated Commands. There are a number of different optical port parameters, one for each optical module option available. The correct optical parameter must be selected based on the optical module option fitted to the instrument.

Associated Commands: For each parameter of this command, the command to set that interface's rate is listed here.

(PDH) :INPut:TELEcom:SPDH:RATE <discrete>

(SONet) :INPut:TELEcom:SONet:RATE <discrete>

(OPT1) :INPut:TELEcom:OPT1:RATE <discrete>

(OC3) :INPut:TELEcom:OC3:RATE <discrete>

(OPT4) :INPut:TELEcom:OPT4:RATE <discrete>

(OC12) :INPut:TELEcom:OC12:RATE <discrete>

Common Commands

SENSe subsystem - Receiver Common Commands

(OC48) :INPut:TELEcom:OC48:RATE <discrete>

The corresponding query returns the selected input port in discrete form, as listed above.

:SENSe:DATA:TELEcom:SENSe?

Returns : <discrete>

:SENSe:DATA:TELEcom:TEST <boolean>

<boolean> =	0 or OFF	Stop the current test
	1 or ON	Start a new test

Start/Stop the test as **RUN/STOP**.

The corresponding query returns the test state as 0 or 1.

:SENSe:DATA:TELEcom:TEST?

Returns : <boolean>

:SENSe:DATA:TELEcom:TFUNction <discrete>

<discrete>=	NONE	
	SONet	
	SDISruption	Service Disruption

Sets the Receiver test function.

The corresponding query returns the receiver test function in discrete form as listed above.

:SENSe:DATA:TELEcom:TFUNction?

Returns: <discrete>

SENSe subsystem - Test Timing

SENSe subsystem - Test Timing

:SENSe:DATA:TELEcom:TEST:TYPE <discrete>

<discrete> =	MANual	Manual Test period
	SINGle	Single Test period
	TIMed	Timed Start Test period

Selects the type of test period. If SING or TIM is selected, the duration is set using :SENS:DATA:TEL:TEST:PER. If TIM is selected, the start time is selected using :SENS:DATA:TEL:TEST:STAR.

The corresponding query returns the type of test period in discrete form, as listed above.

:SENSe:DATA:TELEcom:TEST:TYPE?

Returns : <discrete>

:SENSe:DATA:TELEcom:TEST:PERiod <numeric> <suffix>

<numeric> =	1 to 99	
<suffix> =	d	Days
	h	Hours
	m	Minutes
	s	Seconds

Sets the duration of the test period. Is only valid when :SENS:DATA:TEL:TEST:TYPE SING or TIM is selected.

The corresponding query returns the test duration.

:SENSe:DATA:TELEcom:TEST:PERiod?

Returns : <numeric> <suffix>

Common Commands

SENSe subsystem - Test Timing

:SENSe:DATA:TELEcom:TEST:STARt <numeric>,<numeric>,<numeric>,<numeric>,<numeric>

<numeric> =	1970 to 2069	Year
<numeric> =	1 to 12	Month
<numeric> =	1 to 31	Day
<numeric> =	0 to 23	Hour
<numeric> =	0 to 59	Minute

Sets the test period start time when :SENS:DATA:TEL:TEST:TYPE <TIM> is selected.

The corresponding query returns the test period start time in numeric form.

:SENSe:DATA:TELEcom:TEST:STARt?

Returns <numeric>,<numeric>,<numeric>,<numeric>,<numeric>

:SENSe:DATA:TELEcom:STERm:PERiod <numeric> <suffix>

<numeric> =	1 to 100	
<suffix> =	s	Seconds

Sets the short term results calculation period.

The corresponding query returns the short term results period.

:SENSe:DATA:TELEcom:STERm:PERiod?

Returns : <numeric> <suffix>

SENSe subsystem - Analysis Control

SENSe subsystem - Analysis Control

:SENSe:DATA:TELEcom:TEST:SUSPend <boolean>

<boolean> = 0 or OFF G821 Analysis
 1 or ON Suspend test during Signal Loss

Sets the state of Analysis Control.

The corresponding query returns the state of Analysis Control as 0 or 1.

:SENSe:DATA:TELEcom:TEST:SUSPend?

Returns : <boolean>

Common Commands

SENSe subsystem - Result Returning Commands

SENSe subsystem - Result Returning Commands

Common Results

:SENSe:DATA? <string>

<string> =	"ETIME"	Returns the elapsed Time
	"ASECconds:PLOSs"	Power loss
	"ASECconds:PSL"	Pattern Sync Loss

SENSe subsystem - Trouble Scan Results

SENSe subsystem - Trouble Scan Results

:SENSe:DATA:TELEcom:TSCan:TYPE?

Returns:	<discrete>	NTR	No Trouble
		ADET	Alarms Detected
		ERR	Errors Detected

Returns the Trouble Scan state.

:SENSe:DATA:TELEcom:TSCan:ERRors?

Returns:	<numeric>,<result>	
<numeric> =	0 to 4	Number of Troublescan error messages
<discrete> =	See Table below	Error name and number of errors

Returns the number of active Trouble Scan error messages. If no error messages are active, returns 0. If error message is active, returns the type of error and the error count separated by a comma e.g

2
FAS140 ERR, 6
BIT ERROR, 1

This indicates that 2 trouble scan error messages are active and 6 140 Mb/s frame errors and 1 bit error have occurred.

Common Commands

SENSE subsystem - Trouble Scan Results

Trouble Scan Results and Priority

SONET

CV-S (B1)
CV-L (B2)
CV-P (B3)
CV-V (V5)
A1A2 FRAME
CV-IEC
(DSn near-end
errors except BIT)
REI-L
REI-P
REI-V
BIT
(DSn far-end
errors)

SPDH

CRC
BIT
CODE
FAS 140M
FAS 34M
FAS 8M
FAS 2M
REBE

Common System Commands

SENSe subsystem - Configuring Graphics,
SENSe subsystem - Managing Graphics Stores,
SENSe subsystem - Retrieving Graphics Store Data,
SENSe subsystem - Retrieving Data for a Single Graph,
SENSe subsystem -Obtaining Graphics End of Measurement Results,
STATus Subsystem,
SYSTem Subsystem,
IEEE common capabilities

SENSe subsystem - Configuring Stored Measurements and Graphics

:SENSe:DATA:TELEcom:SMG <discrete>

<discrete> =	OFF	Storage Off
	ON or T1Second	1 Second resolution
	T1Minute	1 Minute resolution
	T15Minute	15 Minute resolution
	T1Hour	1 Hour resolution

Sets the resolution of the stored measurements and graphics (SMG).

The corresponding query returns the SMG resolution in discrete form.

:SENSe:DATA:TELEcom:SMG?

Returns: <discrete>

:SENSe:DATA:TELEcom:SMG:RESolution <discrete>

<discrete> =	COMPRESS	Storage capacity 20,000 Events
	FULL	Storage capacity 10,000 Events

Sets the resolution of the graphics storage.

The corresponding query returns the storage resolution in discrete form.

:SENSe:DATA:TELEcom:SMG:RESolution?

Returns: <discrete>

:SENSe:DATA:TELEcom:SMG:STORE <discrete>

<discrete> =	INTERNAL	Graphics store location
	DISK	Disk storage

Selects the storage location for the stored measurements and graphics (SMG).

Common Commands

SENSe subsystem - Configuring Stored Measurements and Graphics

The corresponding query returns the storage location in discrete form.

:SENSe:DATA:TELEcom:SMG:STORe?

Returns: <discrete>

SENSe subsystem - Managing Graphics Stores

SENSe subsystem - Managing Graphics Stores

:SENSe:DATA:TELEcom:SMG:CATalog?

Requests a catalogue of the SMG store data. A record, as described, is produced for each SMG store being used.

Returns: <record-1>
<record-2>
|
<record-10>
EOI

<record-n> = <numeric>,<numeric>,<numeric>,<numeric>,<numeric>,
<numeric>,<numeric>,<numeric>,<numeric>

<numeric> =	-9 to 0	Graphics Store Location
<numeric> =	1	Unused
<numeric> =	1970 to 2069	Year
<numeric> =	1 to 12	Month
<numeric> =	1 to 31	Day
<numeric> =	0 to 23	Hour
<numeric> =	0 to 59	Minute
<numeric> =	1 to 20000	Number of samples in use
<numeric> =	1, 60, 900 or 3600	Sample period in seconds

Common Commands

SENSe subsystem - Managing Graphics Stores

:SENSe:DATA:TELEcom:SMG:SIZE?

Requests the capacity of the graphics store and the number of store locations in use. The store size is a constant for a given instrument.

Returns: <numeric>,<numeric>

<numeric> =	702000	Store size
<numeric> =	0 to 702000	Stores used

:SENSe:DATA:TELEcom:SMG:DELeTe <numeric>

<numeric> =	-9 to 0	Graphics Store Location
-------------	---------	-------------------------

Deletes the given store.

:SENSe:DATA:TELEcom:SMG:DELeTe:ALL

Deletes all stores.

:SENSe:DATA:TELEcom:SMG:SINFormation? <numeric>

<numeric> =	-9 to 0	Graphics Store Location
-------------	---------	-------------------------

This command returns details of the specified SMG store.

Returns: <numeric>,<discrete>,<special>,<numeric>

<numeric> =	1, 60, 900 or 3600	Sample period in seconds
<discrete> =	COMP	Compressed format
	UNCOMP	Full resolution
<special>	00:00:00 1-JAN-1970 to 23:59:59 31-DEC-2069	Start time and date
<numeric>	1 to 86400000	Seconds since start of test

SENSe subsystem - Retrieving Graphics Store Data

SENSe subsystem - Retrieving Graphics Store Data

The data used to construct all the graphs within a given store location can be extracted from the instrument and processed by a PC. The following glossary is applicable to the commands within the following sections.

graph element: The stored graphics application presents two selectable graph elements for viewing on the display. These elements are either histograms or alarm bar graphs.

histogram : A graph element used to represent discrete counts, such as errors, versus real time. On the instrument graph display, the horizontal axis represents real time and the vertical axis represents counts obtained within that real time period.

alarm bar graph : A graph element used to represent the presence of up to eight time based events, such as alarm seconds, versus real time. On the instrument graph display, the horizontal axis represents real time and the vertical axis represents the occurrence of event(s) within that real time period.

graph label : Each graph element (histogram or alarm bar graph) is identified by a label.

alarm label : Each alarm bar graph has up to eight individual alarms/events with their own individual labels.

graph number: The ordinal value of a graph element. The total number 'n' and order being determined from the command:
:SENSe:DATA:TELEcom:SMG:LABels? <numeric>.

:SENSe:DATA:TELEcom:SMG:LABels? <numeric>

<numeric> =	-9 to 0	Graphics Store Location
	-10	Disk Storage

Returns all possible graph labels from the given SMG store even if some of those graph elements are not applicable to the particular instrument configuration at the time the measurement was made. The numerical order of the returned labels is termed the graph number and starts from '0'. This is used in some commands which make reference to specific graph elements by graph number.

Common Commands

SENSe subsystem - Retrieving Graphics Store Data

Do not rely upon the order or the total number of these labels from one version of the instrument to the next.

Returns: <numeric> {,<string> {,<string> {...}}}

<numeric> Number of strings to follow.

<string> Graph label string.

:SENSe:DATA:TELEcom:SMG:HDATA:NORMAL? <numeric>

<numeric> =	-9 to 0	Graphics Store Location
	-10	Disk Storage

Returns a series of numerics (histogram data) and 8 bit binary strings (alarm bar graph data), separated by commas. All results are returned even if some of those graph elements are not applicable to the particular instrument configuration at the time the measurement was made.

One complete record is returned for each SMG measurement sample in the selected store location. The ordinal position of the data within this record corresponds to the order of the graph labels obtained from :SENSe:DATA:TELEcom:SMG:LABels? <numeric> :

Returns:	<record-1>	Data from sample period-1
	<record-2>	Data from sample period-2
	<record-n>	Data from final sample period
	EOI	End of data indicator.

<record> = <numeric|string> {,<numeric|string> {,<numeric|string> {...}}}

Where each data point in the record is one of :

<numeric> Histogram data value for sample period

<string> Alarm bar data value for sample period.

Non-zero alarm bar graph data, e.g. "01000000", indicates that an alarm or event has occurred within the sample period.

Common Commands

SENSe subsystem - Retrieving Graphics Store Data

:SENSe:DATA:TELEcom:SMG:HDATA:PACKed? <numeric>

<numeric> =	-9 to 0	Graphics Store Location
	-10	Disk Storage

Returns a series of numerics (number of unchanged samples and histogram data) and 8 bit binary strings (alarm bar graph data), separated by commas. All results are returned even if some of those graph elements are not applicable to the particular instrument configuration at the time the measurement was made.

One complete record is returned for each SMG measurement sample in the selected store location unless the data in consecutive samples is the same. In that case only one record is returned and the first numeric value in each record indicates the number of SMG measurement samples in which the data was unchanged. The ordinal position of the data within this record corresponds to the order of the graph labels obtained from :SENSe:DATA:TELEcom:SMG:LABel? <numeric> :

Returns:	<numeric>,<record-1>	Data from first group of <numeric> sample periods.
	<numeric>,<record-2>	Data from second group of <numeric> sample periods.
	<numeric>,<record-n>	Data from final group of <numeric> sample periods.
	EOI	End of data indicator.

<record> =

<numeric or string> {,<numeric or string> {,<numeric or string> {...}}}

Where each data point in the record is one of :

<numeric>	Histogram data value for sample period
<string>	Alarm bar data value for sample period.

Non-zero alarm bar graph data, e.g. "01000000", indicates that an alarm or event has occurred within the sample period.

Common Commands

SENSe subsystem - Retrieving Graphics Store Data

:SENSe:DATA:TELEcom:SMG:ALABels? <numeric>,<numeric>

<numeric> =	-9 to 0	Graphics Store Location
	-10	Disk Storage
<numeric> =	0 to n	Graph number

Requests the alarm labels from the selected SMG store and graph number.

Do not rely upon the order or the total number of these labels from one version of the instrument to the next.

Returns: <numeric> {,<string> {,<string> {...}}}

<numeric> Number of strings to follow.

<string> Alarm label string.

SENSe subsystem - Retrieving Data for a Single Graph Element

SENSe subsystem - Retrieving Data for a Single Graph Element

The data associated with each individual graph element may be obtained using one of the following commands:

:SENSe:DATA:TELEcom:SMG:EDATa? <numeric>,<numeric>

<numeric> =	-9 to 0	Graphics Store Location
	-10	Disk Storage
<numeric> =	0 to n	Graph number

Returns the number of data points that contributed to the graph element, followed by pairs of data points which include the elapsed time since the start of the measurement and either the histogram count or binary weighted alarm data value at that elapsed time.

Returns:

<numeric> {,<numeric>,<numeric> {,<numeric>,<numeric> {...}}}

<numeric> =	0 to 20,000	Number of events to follow
{ <numeric> =	1 to 86,400,000	Seconds since start of test
<numeric> } =	0 to n	Histogram count or binary weighted alarm value

Common Commands

SENSe subsystem - Retrieving Data for a Single Graph Element

:SENSe:DATA:TELEcom:SMG:VDAta? <numeric>,<numeric>

<numeric> =	-9 to 0	Graphics Store Location
	-10	Disk Storage
<numeric> =	0 to n	Graph number

Returns the number of data points that contributed to the graph element, followed by pairs of data points which include the elapsed time since the start of the measurement absolute to January 1 1970, and either the histogram count or binary weighted alarm data value at that elapsed time.

NOTE

PCs calculate time based on January 1st 1970.

Returns:

<numeric> {,<numeric>,<numeric> {,<numeric>,<numeric> {...}}}

<numeric> =	0 to 20,000	Number of data point pairs to follow
{ <numeric> =	1 to 2,147,483,647	Seconds since January 1 st 1970
<numeric> } =	0 to n	Histogram count or binary weighted alarm value

:SENSe:DATA:TELEcom:SMG:TINformation? <numeric>,<numeric>

<numeric> =	-9 to 0	Graphics Store Location
	-10	Disk Storage
<numeric> =	0 to n	Graph number

Returns, for the graph element corresponding to the passed graph number, the validity, the number of samples and the type of graph element.

Returns:	<boolean> =	0	Graph element not valid.
		1	Graph element valid.
	<numeric> =	0 to 20000	Number of samples.
	<discrete> =	ALAR	Alarm bar graph element.
		HIST	Histogram graph element.

SENSe subsystem -Obtaining Graphics End of Measurement Results

:SENSe:DATA:TELEcom:SMG:DATA? <numeric>,<string>

<numeric> =	-9 to 0	Graphics Store Location
	-10	Disk Storage
<string> =	"ECOunt:SPDH:BIT"	SPDH bit error count
	"ECOunt:SPDH:CODE"	SPDH code error count
	"ECOunt:SPDH:M2:FAS"	SPDH 2 Mb/s FAS error count
	"ECOunt:SPDH:M8:FAS"	SPDH 8 Mb/s FAS error count
	"ECOunt:SPDH:M34:FAS"	SPDH 34 Mb/s FAS error count
	"ECOunt:SPDH:M140:FAS"	SPDH 140 Mb/s FAS error count
	"ECOunt:SPDH:PBITs"	SPDH P Parity error count
	"ECOunt:SPDH:CPBits"	SPDH CP Parity error count
	"ECOunt:SPDH:DS3:FAS"	SPDH DS3 FAS error count
	"ECOunt:SPDH:DS1:FAS"	SPDH DS1 FAS error count
	"ECOunt:SPDH:CRC"	SPDH CRC6 error count
	"ECOunt:SPDH:REBE"	SPDH FAS REBE error count
	"ECOunt:SPDH:FEBE"	DS3 FEBE error count
	"ERATio:SPDH:BIT"	SPDH bit error ratio
	"ERATio:SPDH:CODE"	SPDH code error ratio
	"ERATio:SPDH:M2:FAS"	SPDH 2 Mb/s FAS error ratio
	"ERATio:SPDH:M8:FAS"	SPDH 8 Mb/s FAS error ratio
	"ERATio:SPDH:M34:FAS"	SPDH 34 Mb/s FAS error ratio
	"ERATio:SPDH:M140:FAS"	SPDH 140 Mb/s FAS error ratio
	"ERATio:SPDH:PBITs"	SPDH P Parity error ratio
	"ERATio:SPDH:CPBits"	SPDH CP Parity error ratio

Common Commands

SENSe subsystem -Obtaining Graphics End of Measurement Results

"ERATio:SPDH:DS3:FAS"	SPDH DS3 FAS error ratio
"ERATio:SPDH:DS1:FAS"	SPDH DS1 FAS error ratio
"ERATio:SPDH:CRC"	SPDH CRC error ratio
"ERATio:SPDH:REBE"	SPDH REBE error ratio
"ERATio:SPDH:FEBE"	DS3 FEBE error ratio
"ASECnds:SPDH:PWL"	Loss of power seconds
"ASECnds:SPDH:LOS"	Loss of Signal seconds
"ASECnds:SPDH:M2:LOF"	Loss of frame seconds 2 Mb/s
"ASECnds:SPDH:M8:LOF"	Loss of frame seconds 8 Mb/s
"ASECnds:SPDH:M34:LOF"	Loss of frame seconds 34 Mb/s
"ASECnds:SPDH:M140:LOF"	Loss of frame seconds 140 Mb/s
"ASECnds:SPDH:DS1:OOF"	Out of frame seconds DS1
"ASECnds:SPDH:DS3:OOF"	Out of frame seconds DS3
"ASECnds:SPDH:DS3:EXZ"	DS3 Excess zeros
"ASECnds:SPDH:DS1:EXZ"	DS1 Excess zeros
"ASECnds:SPDH:DS3:IDLE"	DS3 Idle
"ASECnds:SPDH:MFM"	M'frame loss seconds
"ASECnds:SPDH:AIS"	AIS seconds
"ASECnds:SPDH:RAI"	Remote loss seconds
"ASECnds:SPDH:RMFR"	Remote m'frame loss seconds
"ASECnds:SPDH:PSL"	Pattern sync loss seconds
"TR1:SPDH:TRANsmit:ANALysis:M2120"	15 minute TX threshold report
"TR1:SPDH:RECEive:ANALysis:M2120"	15 minute RX threshold report
"TR2:SPDH:TRANsmit:ANALysis:M2120"	24 hour TX threshold report
"TR2:SPDH:RECEive:ANALysis:M2120"	24 hour RX threshold report
"ASECnds:SDH:TRIB:P1P0"	P1P0 Frame Synchronization Loss
"ECOunt:SONet:FRAME"	SONET Frame error count
"ECOunt:SONet:CVS"	CV-S (Section B1 BIP) error count

Common Commands

SENSE subsystem -Obtaining Graphics End of Measurement Results

"ECOunt:SONet:CVL"	CV-L (Section B2 BIP) error count
"ECOunt:SONet:REIL"	REI-L (Line FEBE) error count
"ECOunt:SONet:CVP"	CV-P (Path B3 BIP) error count
"ECOunt:SONet:REIP"	REI-P (Path FEBE) error count
"ECOunt:SONet:CVIec"	CV-IEC error count
"ECOunt:SONet:TRIB:REIV"	REI-V (VT FEBE) error count
"ECOunt:SONet:TRIB:CVV"	CV-V (VT path BIP) error count
"ERATio:SONet:FRAME"	SONET Frame error ratio
"ERATio:SONet:CVS"	CV-S (Section B1 BIP) error ratio
"ERATio:SONet:CVL"	CV-L (Line B2 BIP) error ratio
"ERATio:SONet:REIL"	REI-L (Line FEBE) error ratio
"ERATio:SONet:CVP"	CV-P (Path B3 BIP) error ratio
"ERATio:SONet:REIP"	REI-P (Path FEBE) error ratio
"ERATio:SONet:CVIec"	CV-IEC error ratio
"ERATio:SONet:TRIB:REIV"	REI-V (VT FEBE) error ratio
"ERATio:SONet:TRIB:CVV"	CV-V (VT path BIP) error ratio
"PACTivity:SONet:NDFSeconds"	SPE Pointer NDF seconds
"PACTivity:SONet:MNDFseconds"	SPE Pointer MNDF seconds
"PACTivity:SONet:PCOunt"	SPE Pointer +ve Adj Count
"PACTivity:SONet:NCOunt"	SPE Pointer -ve Adj Count
"PACTivity:SONet:TRIButary:NDFSeconds"	VT Pointer NDF seconds
"PACTivity:SONet:TRIButary:MNDFseconds"	VT Pointer MNDF seconds
"PACTivity:SONet:TRIButary:PCOunt"	VT Pointer +ve Adj Count
"PACTivity:SONet:TRIButary:NCOunt"	VT Pointer -ve Adj Count
"ASEConds:SONet:PLOSSs"	Power loss seconds
"ASEConds:SONet:LOS"	Loss of signal seconds
"ASEConds:SONet:LOF"	Loss of frame seconds
"ASEConds:SONet:SEF"	Severely Errored Frame Defect seconds

Common Commands

SENSe subsystem -Obtaining Graphics End of Measurement Results

"ASEConds:SONet:H4MF"	H4 multiframe loss seconds
"ASEConds:SONet:LOPP"	LOP-P (Loss of pointer) seconds
"ASEConds:SONet:AISL"	AIS-L (Line AIS) seconds
"ASEConds:SONet:AISP"	AIS-P (Path AIS) seconds
"ASEConds:SONet:PSLoss"	Pattern Sync Loss seconds
"ASEConds:SONet:RDIL"	RDI-L (Line FERF) seconds
"ASEConds:SONet:K1K2"	K1K2 change seconds
"ASEConds:SONet:RDIP"	RDI-P (Path FERF) seconds
"ASEConds:SONet:TRIB:LOPV"	LOP-V (VT Loss of pointer) seconds
"ASEConds:SONet:TRIB:AISV"	AIS-V (VT Path AIS) seconds
"ASEConds:SONet:TRIB:RDIV"	RDI-V (VT Path FERF) seconds
"ASEConds:SONet:TRIB:P1P0"	P1P0 Frame Synchronization Loss
"COUNT:JITT:HITS"	Jitter Hit count
"SLIPs:JITT:WANDer:FRAMe"	estimated frame slips
"SLIPs:JITT:WANDer:BIT"	estimated bit slips

STATus subsystem

STATus subsystem

This subsystem controls the status reporting registers. SCPI defined status registers QUESTIONable, OPERATION and INSTRUMENT are provided. In addition instrument defined status registers DATA, FAS, SPDH, SON, SON2 and JITT are provided. For detailed information on status reporting refer to Section 7 of this manual.

:STATus:CHIStory

Clear the contents of all History registers, and the front panel led history.

:STATus:PRESet

Sets all Status registers to the default state.

Common Commands

STATus subsystem

For each of the <**Status Registers**>'s listed in Table 5-1 (excluding the Standard Event Register) the following commands exist.

:STATus:<Status Register>:ENABle <numeric>

<numeric>

Sets the Event Enable register mask which allows true conditions in the Event register to be reported in the <**Status Register**>'s summary bit. If a bit is 1 in the Event Enable register and its associated event bit makes the transition to true, a positive transition will occur in the <**Status Register**>'s summary bit.

The corresponding query returns the current mask setting.

:STATus:<Status Register>:ENABle?

Returns : <numeric>

:STATus:<Status Register>:PTRansition <numeric>

Sets the positive Transition Filter. Setting a bit in the positive Transition filter shall cause a 0 to 1 transition in the corresponding bit of the <**Status Register**>'s Condition register to cause a 1 to be written in the corresponding bit of the <**Status Register**>'s Event register.

The corresponding query returns the current setting.

:STATus:<Status Register>:PTRansition?

Returns : <numeric>

:STATus:<Status Register>:NTRansition <numeric>

Sets the negative Transition filter. Setting a bit in the negative Transition Filter shall cause a 1 to 0 transition in the corresponding bit of the <**Status Register**>'s Condition register to cause a 1 to be written in the corresponding bit of the <**Status Register**>'s Event register.

The corresponding query returns the current setting.

:STATus:<Status Register>:NTRansition?

Returns : <numeric>

Common Commands

STATus subsystem

:STATus:<Status Register>:EVENT?

Returns : <numeric>

Returns the contents of the Event register associated with the <Status Register>. Reading this register clears its contents.

:STATus:<Status Register>:CONDition?

Returns : <numeric>

Returns the contents of the Condition register associated with the <Status Register>. Reading this register does not clear its contents.

:STATus:<Status Register>:HISTory?

Returns : <numeric>

Returns the contents of the History register associated with the <Status Register>. This is in effect a latched version of the Condition register. A bit set to 1 in the Condition register will set the corresponding bit in the History register. This register is not cleared when it is read. The only time the History register is cleared is at a start of test, when **RESET HISTORY** is pressed or when the commands *RST or :STATus:CHIStory are sent.

SYSTEM Subsystem

SYSTEM Subsystem

:SYSTEM:WINDOW<type>

Selects the display type, Single or Multiple. Selection of SINGLE results in faster remote operation.

<type> =	SINGLE	Selects single window display
	MULTIPLE	Selects multiple window display

The corresponding query returns the display type.

:SYSTEM:WINDOW?

Returns : <type>

:SYSTEM:DATE <year>,<month>,<day>

<year> =	<numeric>	1970 to 2069
<month> =	<numeric>	1 to 12
<day> =	<numeric>	1 to 31

Sets the date within the OTHER TIME & DATE function.

The corresponding query returns the date in numeric form.

:SYSTEM:DATE?

Returns : <year>,<month>,<day>

:SYSTEM:TIME <hour>,<minute>,<second>

<hour> =	<numeric>	0 to 23
<minute> =	<numeric>	0 to 59
<second> =	<numeric>	0 to 59

Sets the time within the OTHER TIME & DATE function.

Common Commands

SYSTem Subsystem

The corresponding query returns the time in numeric form.

:SYSTem:TIME?

Returns : <hour>,<minute>,<second>

:SYSTem:TRIGger <trig_source>

Where <trig_source> = NONE

 TXFRame

 RXFRame

 RSBip

 MSBip

 PBIP

:SYSTem:KLOCK <boolean>

<boolean> =	0 or OFF	Keyboard unlocked
	1 or ON	Keyboard locked

Selects the state of the OTHER KEYBOARD LOCK function.

The corresponding query returns the state of KEYBOARD LOCK as 0 or 1.

:SYSTem:KLOCK?

Returns : <boolean>

:SYSTem:LOCal

Set the HP 37719A to Local (keyboard) control.

:SYSTem:REMOte

Set the HP 37719A to Remote control.

:SYSTem:PRESet

Sets the instrument to the same state as the front panel reset key (power). This command is similar to *RST but differs in that it duplicates the action of the front panel power on/off key.

Common Commands

SYSTEM Subsystem

:SYSTEM:SERial?

The serial number is returned as a string in the form "GBnnnnnnnn". GB signifies the country of origin (Great Britain).

:SYSTEM:CONF <block>

<block> = #0 type Block

Sets the HP 37719A to the state defined by the Block data.

The corresponding query returns the instrument state in block form.

:SYSTEM:CONF?

Returns : #0<block>

:SYSTEM:VERSion?

Requests the revision state of the SCPI remote control.

The revision state is returned in the form YYYY.V. YYYY signifies the year and V signifies the revision number.

Returns : <version> = YYYY.V

:SYSTEM:ERRor?

Requests the HP 37719A remote control Error status.

The error status is returned as a numeric value and a string containing a description of the error.

Returns : <numeric>,<string>

:SYSTEM:PRINt

The current results are logged to the selected printer.

:SYSTEM:PRINt:AUTO <boolean>

<boolean> = 0 or OFF
1 or ON

Common Commands

SYSTEM Subsystem

Determines whether the selected results are logged to the selected logging device. If OFF is selected results can only be logged using :SYSTEM:PRINT. If ON is selected further selection of :SYSTEM:PRINT:PERiod <period> is required.

The corresponding query returns the logging state as 0 or 1.

:SYSTEM:PRINT:AUTO?

Returns : <boolean>

:SYSTEM:PRINT:PERiod <period>

<period> =	OFF	Log at end of test
	MIN10	Log at 10 minute intervals
	HR1	Log at 1 hour intervals
	HR24	Log at 24 hour intervals
	USER	User defined Logging interval

Determines the interval at which the results are logged to the selected logging device. If anything other than OFF is selected further selection of :SYSTEM:PRINT:RESults <type> is required. If USER is selected further selection of :SYSTEM:PRINT:UPERiod <numeric>, <discrete> is required.

The corresponding query returns the logging interval in discrete form, as listed above.

:SYSTEM:PRINT:PERiod?

Returns : <period>

:SYSTEM:PRINT:UPERiod <numeric>, <discrete>

<numeric> =	1 to 99	
<discrete> =	HR	Hours (1 - 99)
	MIN	Minutes (10 - 99)

Sets the USER defined logging period in the range 10 to 99 minutes or 1 to 99 hours.

The corresponding query returns the User defined period in numeric, discrete form, as listed above.

Common Commands

SYSTEM Subsystem

:SYSTEM:PRINT:UPERiod?

Returns : <numeric>,<discrete>

:SYSTEM:PRINT:RESults <type>

<type> =	ALL	Print All results
	SElect	Print selected results

Determines which results are logged to the selected logging device. If SEL is selected further selections of :SYSTEM:PRINT:CONTent <content> , :SYSTEM:PRINT:WHEN <select> and :SYSTEM:PRINT:SPAN <content> are required.

The corresponding query returns the logged results selection in discrete form, as listed above.

:SYSTEM:PRINT:RESults?

Returns : <type>

:SYSTEM:PRINT:CONTent <content>

<content> =	ERATio	Error Ratio results
	ANALysis	Analysis results
	BOTH	Error Ratio & Analysis results

In conjunction with :SYSTEM:PRINT:SPAN <content> determines the type of selected results to be logged to the selected logging device.

The corresponding query returns the result content in discrete form, as listed above.

:SYSTEM:PRINT:CONTent?

Returns : <content>

:SYSTEM:PRINT:SPAN <content>

<content> =	PERiod	Period results
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Common Commands
SYSTem Subsystem

CUMulative	Cumulative results
BOTH	Period & Cumulative results

In conjunction with :SYSTem:PRINt:CONTent <content> determines the type of selected results to be logged to the selected logging device.

Common Commands

SYSTem Subsystem

The corresponding query returns the result content in discrete form, as listed above.

:SYSTem:PRINt:SPAN?

Returns : <content>

:SYSTem:PRINt:WHEN <select>

<select> =	ALWayS	Logged at specified interval
	ECOut	Logged if bit error count is > 0

Determines the conditions for logging results when :SYSTem:PRINt:RESults <type> is set to <SEL>.

The corresponding query returns the logging conditions in discrete form, as listed above.

:SYSTem:PRINt:WHEN?

Returns : <select>

:SYSTem:PRINt:MODE <mode>

<mode> =	NORMAl	Normal print format
	COMPRESSED	Compressed print format

Only valid when RS232 or Parallel printer is selected. Determines the column width of the printed results.

The corresponding query returns the print mode in discrete form, as listed above.

:SYSTem:PRINt:MODE?

Returns : <mode>

:SYSTem:SELFtest:WAVelength <discrete>

<discrete> =	NM1310	1310nm
	NM1550	1550nm

Selects the relevant optical output port to be used during selftest. Only valid for dual wavelength options (option 106).

The corresponding query returns the port selected in discrete form, as listed above

Common Commands

SYSTEM Subsystem

:SYSTEM:PRINT:ESECONDS <boolean>

<boolean> = 0 or OFF
1 or ON

Determines whether occurrences of error seconds are logged on the selected logging device. The corresponding query returns the error second logging state as 0 or 1.

:SYSTEM:PRINT:ESECONDS?

Returns : <boolean>

:SYSTEM:LOGGING:DEVICE <type>

<type> =	INTERNAL	Internal printer (option 602)
	HPIB	HPIB external printer
	RS232	RS-232-C external printer
	DISK	Internal Disc Drive
	PARALLEL	Centronics external printer

Selects the logging device for results logging.

The corresponding query returns the logging device selected in discrete form as listed above.

:SYSTEM:LOGGING:DEVICE?

Returns : <type>

:SYSTEM:PRINT:DEMAND <mode>

<mode> =	RESULTS	Print results snapshot
	OVERHEAD	Print overhead snapshot
	OCAPTURE	Print overhead capture results
	PGRAPH	Print pointer graph
	TRIBSCAN	Print /SONET tributary scan
	SDUMP	Copies the current display to the internal disc drive
	ALMSCAN	Print alarm scan information

Common Commands

SYSTem Subsystem

Selects the Log on Demand item to be printed.

The corresponding query returns the log on demand item selected in discrete short form.

:SYSTem:PRINt:DEMAND?

Returns: <mode>

:SYSTem:PRINt:SDUMp:DESTination <destination>

Destination=	LID	Send screen dump information to in-lid printer
	DISK	Send screen dump information to floppy disk

Selects the destination of screen dump information.

The corresponding query returns the current selection

:SYSTem:PRINt:SDUMp:COMPression <boolean>

<boolean> =	0 or OFF	Deselect compression of screen dump information
	1 or ON	Select compression of screen dump information

:SYSTem:DISK:FORMat

Format a Disk.

:SYSTem:DISK:LABel <string>

Label the disk with a string of up to 11 alphanumeric characters e.g. "SiteB 28/5"

The corresponding query returns the filename as a string.

:SYSTem:DISK:LABel?

Returns : <string>

Common Commands

SYSTem Subsystem

:SYSTem:DISK:SAVE <extension>,<filename>,<overwrite>

<extension> =	CNF	Instrument Configuration
	SMG	Stored Measurement Graphics
	PRN	Data Logging

<filename> = Up to 8 Alphanumeric character string

<overwrite> =	0	If file exists will not overwrite
	1	Will overwrite automatically

Saves required information to disk. If PRN is selected further selection of :SYSTem:DISK:SAVE:MODE <discrete> is required.

:SYSTem:DISK:SAVE:MODE <discrete>

<discrete> =	APPend	Add to file
	OVERwrite	Overwrite existing file

Designates the position within the file to which the results are saved if the file type is PRN.

The corresponding query returns the save mode in discrete form as listed above.

:SYSTem:DISK:SAVE:MODE?

Returns : <discrete>

:SYSTem:DISK:RECall <extension>,<filename>,<confirm>

<extension> =	CNF	Instrument Configuration
	SMG	Stored Measurement Graphics

<filename> = Up to 8 Alphanumeric character string

<confirm> =	0	If Option structure is different from stored configuration will not recall.
	1	Will recall stored configuration automatically.

Common Commands

SYSTem Subsystem

Recalls stored measurement graphics or instrument configuration from Disk to instrument.

:SYSTem:DISK:FILE:COPIY:CNF

<to>,<store>,<directory>,<filename>,<overwrite>

<to> =	DISK	Copy to Disk
	MEMory	Copy to Instrument store
<store> =	1 to 4	Instrument store number

<directory> = Up to 256 Alphanumeric character string

<filename> = Up to 8 Alphanumeric character string

<overwrite> =	0	Copying to Disk: If file exists will not overwrite. Copying to Instrument: If Option structure is different from stored configuration will not copy.
	1	Copying to Disk: Will copy automatically. Copying to Instrument: Will copy automatically.

Copy instrument configuration from Disk to instrument store or from instrument store to Disk. When TO = MEMory OVERWRITE must be 1.

:SYSTem:DISK:FILE:COPIY:SMG:FORMat <type>

<type> =	NORMal	Normal SMG format
	CSV	Comma Separated Variable

Sets the format of the SMG data to be copied to Disk. This should be set before the :SYST:DISK:FILE:COPIY:SMG command is issued.

:SYSTem:DISK:FILE:COPIY:SMG:FORMat?

Returns : <discrete>

Common Commands

SYSTEM Subsystem

:SYSTEM:DISK:FILE:COPY:SMG

<store>,<directory>,<filename>,<overwrite>

<store> = -9 to 0 Instrument store number

<directory> = Up to 256 Alphanumeric character string

<filename> = Up to 8 Alphanumeric character string

<overwrite> = 0 If file exists will not overwrite

 1 Will overwrite automatically

Copy stored measurement graphics from instrument store to Disk. Set :SYSTEM:DISK:FILE:COPY:SMG:FORMat <type> to NORM or CSV before issuing this command.

:SYSTEM:DISK:FILE:DELEte <filename>

<filename> = Up to 12 Alphanumeric character string including extension

:SYSTEM:DISK:DIRectory:DELEte

Delete current directory.

:SYSTEM:DISK:FILE:REName <from_filename>,<to_dir>,<filename>,<overwrite>

<from_filename> = Up to 12 Alphanumeric character string including extension

<to_dir> = Up to 256 Alphanumeric character string

<to_filename> = Up to 12 Alphanumeric character string including extension

<overwrite> = 0 If file exists will not overwrite

 1 Will overwrite automatically

Rename file. Cannot rename directories.

:SYSTEM:DISK:DIRectory:CREate <filename>

<filename> Up to 8 Alphanumeric character string

Create a directory.

Common Commands

SYSTem Subsystem

:SYSTem:DISK:DIRectory? <extension>,<format>

<extension> =	ALL	List all files
	CNF	List only files with CNF extension
	SMG	List only files with SMG extension
	PRN	List only files with PRN extension
<format> =	SHORT	List file name only
	LONG	List file name, file size, date & time modified
	DESCRiption	list file name, file description

Returns directory list.

:SYSTem:DISK:PWD?

Returns : <string>

Returns directory name.

:SYSTem:DISK:FREE?

Returns : <numeric>

Returns free space on disk in bytes.

:SYSTem:DISK:CD <string>

<directory> =	"dir_name"	Up to 8 alphanumeric characters
	".."	CD to parent directory
	"\"	CD to root directory

Change directory.

:SYSTem:SSETting:LOCK <boolean>

<boolean> =	0 or OFF	Lock Off
	1 or ON	Lock On

Selects the state of OTHER Stored Settings lock.

Common Commands

SYSTem Subsystem

The corresponding query returns the state of Stored Settings lock as 0 or 1.

:SYSTem:SSETting:LOCK?

Returns : <boolean>

:SYSTem:SSETting:LABel <numeric>,<string>

<numeric> = 1 to 4 Stored Setting number

<string> = 1 to 24 Stored Settings store label characters

Titles the Store Setting location with the contents of the string.

The corresponding query returns the title of the selected Stored Setting location as a string.

:SYSTem:SSETting:LABel? <numeric>

Returns : <string> 1 to 24 characters

:SYSTem:BEEPer:STATe <boolean>

<boolean> = 0 or OFF Beep Off

1 or ON Beep On

Selects the state of the OTHER BEEP ON ERROR function.

The corresponding query returns the state of the BEEP ON ERROR function as 0 or 1.

:SYSTem:BEEPer:STATe?

Returns : <boolean>

Common Commands
IEEE common capabilities

IEEE common capabilities

***CLS**

Clear Status - Clears all status registers and the error queue.

***ESE <numeric>**

Event Status Enable - Sets the mask of the Event Status Register.

<numeric> =	1	Operation Complete
	2	Request Control
	4	Query Error
	8	Device Dependent Error
	16	Execution Error
	32	Command Error
	64	User Request
	128	Power On

***ESE?**

Event Status Enable Query - Returns the current mask setting.

***ESR?**

Event Status Register Query - Returns the state of the Event Status Register in numeric form.

***IDN?**

Identification Query - Returns the Manufacture Name, Model Number & Name, Serial Number, Firmware Revision Number as a string:

"HEWLETT-PACKARD, COMMUNICATIONS PERFORMANCE ANALYZER, GBnnnnnnnn, A.nn.nn" GB signifies the country of origin (Great Britain).

***LRN?**

Learn Query - Returns the instrument settings configuration in <#0 Block> form.

Common Commands

IEEE common capabilities

*OPC

Operation Complete - Masks the OPC bit in the Event Status Register.

*OPC?

Operation Complete Query - Returns a 1 when the OPC bit in the Event Status Register is set to 1 (true).

*OPT?

Option Identification Query - Returns the Option and Plug-in state of the instrument:

Option/Plug-In Fitted	Returned Result
None	0
SDH (ITU-T)	001
SONET/SDH (ANSI/ITU-T)	002
E1 in DS3 Mux/Demux	014
2.5 Gb/s, 1310 nm, BER analysis	104
2.5 Gb/s, 1550 nm, BER analysis	105
2.5 Gb/s, 1310/1550 nm, BER analysis	106
2.5 Gb/s 1310 nm, BER analysis, jitter test	204
2.5 Gb/s 1550 nm, BER analysis, jitter test	205
2.5 Gb/s, 1310/1550 nm, BER analysis, jitter test	206
RS-232-C, GP-IB and LAN remote control interfaces	601
80-column in-lid graphics printer	602

If more than one Option/Plug-In combination is fitted a complete list is returned with each list item separated by a comma :

*PSC <numeric>

Sets the value of the Power On Status Clear flag. Controls the automatic clearing of SRQ Enable register, Standard ESR & Parallel Poll Enable register after power on. See IEE 488.2 Section 10.25.

*PSC?

Returns the status of the PSC flag.

Common Commands

IEEE common capabilities

***RCL <numeric>**

Recall Stored Settings - Sets the instrument to a set of previously stored settings. Numeric is in the range 0 to 4 and determines which set of stored settings is recalled.

***RST**

Set the instrument to the Default settings listed.

***SAV <numeric>**

Save Stored Settings - Stores the current instrument settings. Numeric is in the range 1 to 4 and determines the store location.

***SRE <numeric>**

Service Request Enable - Sets the status byte mask.

<numeric> =	8	QUES Status Summary
	16	Message Available
	32	Event Status Summary
	64	Request Service
	128	OPER Status Summary

***SRE?**

Service Request Enable Query - Returns the current mask setting in numeric form.

***STB?**

Status Byte Query - Returns the value of the status byte in numeric form.

***TRG**

Trigger - Not implemented on HP 37719A .

***TRG?**

Trigger Query - Not implemented on HP 37719A .

***WAI**

Wait To Continue - Not implemented on the HP 37719A.

Common Commands
IEEE common capabilities

***TST**

Initiate Self Test

***TST?**

Self Test Query

3

OUTPut subsystem, see page 3- 3.

SOURce subsystem - Transmitter Structured PDH Commands, see page 3- 7.

SOURce subsystem - Transmitter SPDH Test Signal Settings Commands, see page 3- 18.

SOURce subsystem - Transmitter SPDH Test Function Commands, see page 3- 27.

INPut subsystem, see page 3-45.

SENSe subsystem - Receiver Structured PDH Settings, see page 3-49.

SENSe subsystem - Receiver SPDH Test Signal Settings Commands, see page 3- 52.

SENSe subsystem - Receiver SPDH Test Function Commands, see page 3- 58.

SENSe subsystem - Analysis Control, see page 3- 59.

SENSe subsystem - Alarm Scan Control, see page 3-64.

SENSe subsystem - SPDH Round Trip Delay Control, see page 3- 65.

SENSe subsystem - Result Returning Commands, see page 3-68.

FETCh subsystem, see page 3- 85.

PDH/DSn Command Reference

PDH/DSn Command Reference

PDH/DSn Command Reference

This chapter contains detailed information on the SCPI (Standard Commands for Programming Instruments) and IEEE 488.2 common commands you will use when writing programs to control your HP 37718A for PDH/DSn operation.

Please also refer to chapter 2 Common Commands for general information on SCPI command formats and for a list of commands that are common to PDH/DSn, SDH, SONET, or Jitter operation; they are as follows:

SCPI Command Format

Remote Control Commands

Instrument Options

INSTRument subsystem

SOURce subsystem

SOURce subsystem - Transmitter Common Commands

INPut subsystem

SENSe subsystem

SENSe subsystem - Receiver Common Commands

SENSe subsystem - Test Timing

SENSe subsystem - Analysis Control

SENSe subsystem - Trouble Scan Results

SENSe subsystem - Configuring Graphics,

SENSe subsystem - Managing Graphics Stores

SENSe subsystem - Retrieving Graphics Store Data

SENSe subsystem - Retrieving Data for a Single Graph

SENSe subsystem - Obtaining Graphics End of Measurement Results

STATus Subsystem

SYSTem Subsystem

IEEE common capabilities

OUTPut subsystem

This subsystem controls the characteristics of the instrument's output ports.

:OUTPut:TELEcom:SPDH:RATE <discrete>

<discrete>	M140	140Mb/s
	M34	34Mb/s
	M8	8Mb/s
	M2	2Mb/s
	DS1	1.544 Mb/s
	DS3	44.736 Mb/s

Sets the output rate for the PDH electrical output port. This command is only valid when :SOURCE:DATA:TELEcom:SOURce <discrete> is set to PDH .

The corresponding query returns the Structured PDH rate in discrete form as listed above.

:OUTPut:TELEcom:SPDH:RATE?

Returns : <discrete>

:OUTPut:TELEcom:SPDH:CODE <discrete>

<discrete> =	AMI	8 Mb/s, 2 Mb/s, DS1
	HDB3	34 Mb/s, 8 Mb/s, 2 Mb/s
	CMI	140 Mb/s only
	B3ZS	DS3
	B8ZS	DS1

Selects the Structured PDH interface line code for the transmitter.

The corresponding query returns the Structured PDH code in discrete form as listed above.

OUTPut subsystem**:OUTPut:TELEcom:SPDH:CODE?**

Returns : <discrete>

:OUTPut:TELEcom:SPDH:DROP:CODE <discrete>

<discrete> =	AMI	2Mb/s, DS1
	HDB3	2Mb/s only
	B8ZS	DS1 only

Selects the Structured PDH drop port interface line code for the receiver.

The corresponding query returns the line code in discrete form as listed above.

:OUTPut:TELEcom:SPDH:DROP:CODE?

Returns: <discrete>

:OUTPut:TELEcom:SPDH:LEVel <discrete>

<discrete> =	DSX	
	HIGH	DS3 only
	FT900	
	LOW	DS1 only

Sets the DS3/DS1 output level. The corresponding query command returns the current setting.

:OUTPut:TELEcom:SPDH:LEVel?

Returns <discrete>

:OUTPut:TELEcom:SPDH:BALance <discrete>

<discrete> =	UNBalanced	75 Ω Unbalanced
	BALanced	120 Ω Balanced

OUTPut subsystem

Selects the Structured PDH transmitter termination level. 120Ω Balanced is only allowed when :OUTPut:TELEcom:SPDH:RATE <discrete> is set to M2 .

The corresponding query returns the Structured PDH level in discrete form as listed above.

:OUTPut:TELEcom:SPDH:BALance?

Returns : <discrete>

:OUTPut:TELEcom:SPDH:STATe <boolean>

<boolean> = 0 or OFF
1 or ON

Disable or enable the transmitter output, equivalent to generating or disabling Loss Of Signal. Disabling the output is only permitted when :SOURce:DATA:TELEcom:TFUNction <discrete> is set to PDH or PDHPayload, and :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to ERRor.

The corresponding query command returns the current state of the output.

NOTE

Issuing command :OUTPut:TELEcom:SPDH:STATe <boolean> has the effect of disabling any active SPDH alarm. Similarly, issuing any SPDH alarm command, for example, :SOURce:DATA:TELEcom:SPDH:M140:ALARm <discrete> has the effect of automatically enabling the transmitter output.

:OUTPut:TELEcom:SPDH:STATe?

Returns: <boolean>

SOURce subsystem -Transmitter Structured PDH Commands

:SOURce:CLOCK:SPDH:SOURce <discrete>

<discrete> =	INTernal	Internal Clock
	EXTernal	External MTS Clock/Data
	RSTM0 or RSTS1	52Mb/s Electrical Rx
	ROPT0 or ROC1	52Mb/s Optical Rx
	RMON0 or RMN1	52Mb/s Monitor Rx
	RSTM1 or RSTS3	155Mb/s Electrical Rx
	ROPT1 or ROC3	155Mb/s Optical Rx
	RMON1 or RMN3	155Mb/s Monitor Rx
	ROPT4 or ROC12	622Mb/s Optical Rx
	RMON4 or RMN12	622Mb/s Monitor Rx
	ROPT16 or ROC48	2.4Gb/s Optical Rx
	RM140	140Mb/s Rx
	RM34	34Mb/s Rx
	RM8	8Mb/s Rx
	RM2	2Mb/s Rx
	RDS3	DS3 Rx
	RDS1	DS1 Rx

Selects the clock source for the Structured PDH transmitter.

When EXTernal is selected as the clock source, a further selection is required using :SOURce:CLOCK:SPDH:FORMat <discrete> in order to specify from where the External Reference is to be derived.

The corresponding query returns the Structured PDH clock source in discrete form as listed above.

SOURce subsystem -Transmitter Structured PDH Commands

:SOURce:CLOCK:SPDH:SOURce?

Returns : <discrete>

:SOURce:CLOCK:SPDH:FORMat <discrete>

<discrete> =	CLOCK	Clock Format
	DATA	Data Format
	K64	64 kb/s data
	DS1Bits	DS1 bit rate
	M10Ref	10 MHz Reference

Sets the format of the SPDH external timing reference signal. This command is only valid when :SOURce:CLOCK:SPDH:SOURce <discrete> is EXTERNAL.

The corresponding query returns the SDH external timing reference format in discrete form as listed above.

:SOURce:CLOCK:SPDH:FORMat?

Returns : <discrete>

:SOURce:CLOCK:SPDH:M2:FOFFset <discrete>

<discrete> =	NONE	Off
	PMAX	CCITT max +50 ppm
	NMAX	CCITT max -50 ppm
	USER	± 100 ppm

Selects the Structured PDH transmitter 2.048 MHz clock offset type. If USER is selected, the amount of offset is set using

:SOURce:CLOCK:SPDH:M2:FOFFset:OFFSet <numeric>.

The corresponding query returns the Structured PDH 2.048 MHz clock offset type in discrete form as listed above.

SOURce subsystem -Transmitter Structured PDH Commands

:SOURce:CLOCK:SPDH:M2:FOFFset?

Returns : <discrete>

:SOURce:CLOCK:SPDH:M2:FOFFset:OFFSet <numeric>

<numeric> = -100 to +100 parts per million

Sets the USER frequency offset for the Structured PDH transmitter 2.048 MHz clock if :SOURce:CLOCK:SPDH:M2:FOFFset <discrete> is set to USER is selected.

The corresponding query returns the USER 2.048 MHz clock offset in parts per million.

:SOURce:CLOCK:SPDH:M2:FOFFset:OFFSet?

Returns : <numeric>

:SOURce:CLOCK:SPDH:M8:FOFFset <discrete>

<discrete> =	NONE	Off
	PMAX	CCITT maximum +30 ppm
	NMAX	CCITT maximum -30 ppm
	USER	± 100 ppm

Selects the Structured PDH transmitter 8.448 MHz clock offset type. If USER is selected, the amount of offset is set using

:SOURce:CLOCK:SPDH:M8:FOFFset:OFFSet <numeric>.

The corresponding query returns the Structured PDH 8.448 MHz clock offset type in discrete form as listed above.

:SOURce:CLOCK:SPDH:M8:FOFFset?

Returns : <discrete>

:SOURce:CLOCK:SPDH:M8:FOFFset:OFFSet <numeric>

<numeric> = -100 to +100 parts per million

SOURCE subsystem -Transmitter Structured PDH Commands

Sets the USER frequency offset for the Structured PDH transmitter 8.448 MHz clock if :SOURCE:CLOCK:SPDH:M8:FOFFset <discrete> is set to USER.

The corresponding query returns the USER 8.448 MHz clock offset in parts per million.

:SOURCE:CLOCK:SPDH:M8:FOFFset:OFFSet?

Returns : <numeric>

:SOURCE:CLOCK:SPDH:M34:FOFFset <discrete>

<discrete> =	NONE	Off
	PMAX	CCITT max +20 ppm; DS3
	NMAX	CCITT max -20 ppm; DS3
	USER	± 100 ppm

Selects the Structured PDH transmitter 34.368 MHz clock offset type. If USER is selected, the amount of offset is set using

:SOURCE:CLOCK:SPDH:M34:FOFFset:OFFSet <numeric>.

The corresponding query returns the Structured PDH 34.368 MHz clock offset type in discrete form as listed above.

:SOURCE:CLOCK:SPDH:M34:FOFFset?

Returns : <discrete>

:SOURCE:CLOCK:SPDH:M34:FOFFset:OFFSet <numeric>

<numeric> = -100 to +100 parts per million

Sets the USER frequency offset for the Structured PDH transmitter 34.368 MHz clock if :SOURCE:CLOCK:SPDH:M34:FOFFset <discrete> is set to USER .

The corresponding query returns the USER 34.368 MHz clock offset in parts per million.

:SOURCE:CLOCK:SPDH:M34:FOFFset:OFFSet?

Returns : <numeric>

SOURce subsystem -Transmitter Structured PDH Commands

:SOURce:CLOCK:SPDH:M140:FOFFset <discrete>

<discrete> =	NONE	Off
	PMAX	CCITT maximum +15 ppm
	NMAX	CCITT maximum -15 ppm
	USER	± 100 ppm

Selects the Structured PDH transmitter 139.264 MHz clock offset type. If USER is selected, the amount of offset is set using :SOURce:CLOCK:SPDH:M140:FOFFset:OFFSet <numeric>.

The corresponding query returns the Structured PDH 139.264 MHz clock offset type in discrete form as listed above.

:SOURce:CLOCK:SPDH:M140:FOFFset?

Returns : <discrete>

:SOURce:CLOCK:SPDH:M140:FOFFset:OFFSet <numeric>

<numeric> = -100 to +100 parts per million

Sets the USER frequency offset for the Structured PDH transmitter 139.264 MHz clock if :SOUR:CLOC:SPDH:M140:FOFF <discrete> is set to USER.

The corresponding query returns the USER 139.264 MHz clock offset in parts per million.

:SOURce:CLOCK:SPDH:M140:FOFFset:OFFSet?

Returns : <numeric>

:SOURce:CLOCK:SPDH:DS3:FOFFset <discrete>

<discrete> =	NONE	Off
	PMAX	ANSI maximum +20 ppm
	NMAX	ANSI maximum - 20 ppm
	USER	± 100 ppm

SOURCE subsystem -Transmitter Structured PDH Commands

:SOURCE:CLOCK:SPDH:DS1:FOFFset:OFFSet <numeric>

<numeric> = -100 to +100 parts per million

Sets the USER frequency offset for the Structured PDH transmitter DS1 clock if :SOURCE:CLOCK:SPDH:DS1:FOFFset <discrete> is set to USER.

The corresponding query returns the USER DS1 clock offset in parts per million.

:SOURCE:CLOCK:SPDH:DS1:FOFFset:OFFSet?

Returns : <numeric>

DS1/DS3 PDH Thru mode settings

:SOURCE:DATA:TELEcom:SPDH:THRumode <discrete>

<discrete> =	INTernal	Select Normal SDH Mode
	THRu	Select DS1/DS3 PDH Thru Mode

Selects/Deselects DS1/DS3 PDH THRU mode.

The corresponding query returns the THRu mode state in discrete form as listed above.

:SOURCE:DATA:TELEcom:SPDH:THRumode?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SPDH:THRumode:ERRor:RATE <discrete>

<discrete> =	NONE	Errors off
	E_3	1E-3 Error rate
	E_4	1E-4 Error rate
	E_5	1E-5 Error rate
	E_6	1E-6 Error rate
	E_7	1E-7 Error rate

SOURce subsystem -Transmitter Structured PDH Commands

USER	User error rate
ONCE	Add single error

Sets the DS1/DS3 PDH Thru Mode Entire Frame Error Add rate. ONCE will add a single error if the current rate is NONE. This command is applicable when :SOURce:DATA:TELEcom:SPDH:THRumode <discrete> is set to THRU. Setting a preset rate will also force the user rate to be the same value.

Associated commands:

:SOURce:DATA:TELEcom:SPDH:THRumode:ERRor:RATE:USER <numeric>

The corresponding query returns the error add rate in discrete form. Note that if this query returns USER, then :SOUR:DATA:TEL:SPDH:THR:ERR:RATE:USER? must be used to discover the currently injected error rate.

:SOURce:DATA:TELEcom:SPDH:THRumode:ERRor:RATE?

Returns : <discrete>

**:SOURce:DATA:TELEcom:SPDH:THRumode:ERRor:RATE:USER
<numeric>**

<numeric> 1.1E-3 to 1.0E-9 mantissa resolution 0.1,
exponent resolution 1

Sets the user defined DS1/DS3 PDH Thru Mode Entire Frame Error Add rate. Note that if :SOURce:DATA:TELEcom:SPDH:THRumode:ERRor:RATE <discrete> is not already set to USER, then this command will automatically set it to USER.

Associated commands:

:SOURce:DATA:TELEcom:SPDH:THRumode:ERRor:RATE <discrete>

The corresponding query returns the user defined SPDH Error Add rate in numeric form.

:SOURce:DATA:TELEcom:SPDH:THRumode:ERRor:RATE:USER?

Returns: <numeric>

SOURce subsystem -Transmitter Structured PDH Commands

:SOURce:DATA:TELEcom:SPDH:PATtern <discrete>

<discrete> =	PRBS9	$2^9 - 1$
	PRBS11	$2^{11} - 1$
	PRBS15	$2^{15} - 1$
	PRBS20	$2^{20} - 1$
	QRSS	$2^{20} - 1$ with 14 zero limit (DS1 only)
	PRBS23	$2^{23} - 1$
	AZERo	All zeros
	AONE	All ones
	STRes	3-in-24 stress pattern (DS1 only)
	P1010	word 1010
	P1IN8	1-in-8 test pattern
	P2IN8	2-in-8 test pattern
	OCT55	55 octet test pattern (uses Daly pattern as per ANSI T1.403)
	P1000	word 1000
	UWORD	16 bit user word

Selects the Structured PDH transmitter data pattern. If UWORD is selected the word is set using :SOURce:DATA:TELEcom:SPDH:UWORD <string>.

The corresponding query returns the data pattern in discrete form as listed above.

:SOURce:DATA:TELEcom:SPDH:PATtern?

Returns : <discrete>

:SOURce:DATA:TELEcom:SPDH:UWORD <string>

Sets the Structured PDH transmitter user word pattern in the range "0000000000000000" to "1111111111111111".

SOURce subsystem -Transmitter Structured PDH Commands

The corresponding query returns the user word pattern as a string as listed above.

:SOURce:DATA:TELEcom:SPDH:UWORD?

Returns : <string>

:SOURce:DATA:TELEcom:SPDH:PRBS:POLarity <discrete>

<discrete> =	INVerted	CCITT conformity
	NORMAl	Non CCITT

Sets the polarity of the PRBS pattern of the Structured PDH transmitter.

The corresponding query returns the polarity in discrete form as listed above.

:SOURce:DATA:TELEcom:SPDH:PRBS:POLarity?

Returns: <discrete>

:SOURce:DATA:TELEcom:SPDH:PAYLoad:TYPE <discrete>

<discrete> =	UNFRamed	No Framing
	FRAMed	8, 34 and 140Mb/s
	PCM30	2Mb/s only
	PCM31	2Mb/s only
	PCM30CRC	2Mb/s only
	PCM31CRC	2Mb/s only
	D4	DS1 only
	ESF	DS1 only
	SLC96	DS1 only
	M13	DS3 only
	CBIT	DS3 only

Selects the Structured PDH transmitter interface rate framing.

SOURce subsystem -Transmitter Structured PDH Commands

Note that this command is not backwards compatible. To set the payload to be structured, use the command

:SOURce:DATA:TELEcom:SPDH:PAYLoad:STRucture <discrete>

The corresponding query returns the framing in discrete form as listed above.

:SOURce:DATA:TELEcom:SPDH:PAYLoad:TYPE?

Returns: <discrete>

:SOURce:DATA:TELEcom:SPDH:PAYLoad:STRucture <discrete>

<discrete> =	UNSTRuctured	All rates
	STRuctured	All framed formats

Selects whether or not the PDH signal is to have any further structure or not.

The corresponding query returns the type in discrete form as listed above.

:SOURce:DATA:TELEcom:SPDH:PAYLoad:STRucture?

Returns: <discrete>

:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:M2 <string>

<string> = 4 bit string

Selects the signaling bits for 2Mb/s CAS framing to be transmitted.

The corresponding query returns the signaling bits selected as a 4 bit binary string.

:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:M2?

Returns: <string>

**SOURce subsystem - Transmitter SPDH Test Signal Settings
Commands**

**SOURce subsystem - Transmitter SPDH Test Signal Settings
Commands**

:SOURce:DATA:TELEcom:SPDH:TSIGnal:RATE <discrete>

<discrete> =	M34	34 Mb/s
	M8	8 Mb/s
	M2	2 Mb/s
	K64	64 kb/s
	K64XN	Nx64 kb/s
	DS1	DS1
	K56	56 kb/s
	K56XN	Nx56 kb/s

Selects the Structured PDH transmitter test signal rate.
The corresponding query returns the test signal rate in discrete form as listed above.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:RATE?

Returns : <discrete>

:SOURce:DATA:TELEcom:SPDH:TSIGnal:MAPPing <discrete>

<discrete> =	M2	2 Mb/s
	DS1	DS1 rate

Selects the Structured PDH transmitter test signal mapping.

Only valid if DS3/E1 Mapping Option is fitted.

This command is only applicable when

:SOURce:DATA:TELEcom:SPDH:PAYLoad:TYPE <discrete> or
:SOURce:DATA:TELEcom:SDH:PAYLoad:TYPE <discrete> or
:SOURce:DATA:TELEcom:SONet:PAYLoad:TYPE <discrete> is set to M13 or
CBIT and :SOURce:DATA:TELEcom:SPDH:TSIGnal:RATE <discrete> is set to

PDH Command Reference

SOURce subsystem - Transmitter SPDH Test Signal Settings Commands

K64 or K64XN: determines whether the 64 kb/s timeslot(s) are mapped into a 2 Mb/s or DS1 signal within a structured DS3 signal.

The corresponding query returns the test signal mapping in discrete form as listed above.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:MAPPing?

Returns : <discrete>

:SOURce:DATA:TELEcom:SPDH:TSIGnal:PAYLoad <discrete>

<discrete> =	UNFRamed	2, 8 & 34 Mb/s
	FRAMed	8 & 34 Mb/s
	PCM30	2 Mb/s & 64 kb/s
	PCM31	2 Mb/s & 64 kb/s
	PCM30CRC	2 Mb/s & 64 kb/s
	PCM31CRC	2 Mb/s & 64 kb/s
	IM2	2 Mb/s
	D4	DS1
	ESF	DS1
	SLC96	DS1
	IDS1	Insert DS1

Selects the Structured PDH transmitter test signal framing.

The corresponding query returns the framing in discrete form as listed above.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:PAYLoad?

Returns : <discrete>

PDH Command Reference

**SOURce subsystem - Transmitter SPDH Test Signal Settings
Commands**

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M34 <discrete>

<discrete> = TRIB1
 TRIB2
 TRIB3
 TRIB4

Selects the Structured PDH transmitter 34 Mb/s tributary test signal.

The corresponding query returns the 34 Mb/s tributary test signal in discrete form.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M34?

Returns : <discrete>

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M8 <discrete>

<discrete> = TRIB1
 TRIB2
 TRIB3
 TRIB4

Selects the Structured PDH transmitter 8 Mb/s tributary test signal.

The corresponding query returns the 8 Mb/s tributary test signal in discrete form.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M8?

Returns : <discrete>

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M2 <discrete>

<discrete> = TRIB1
 TRIB2
 TRIB3
 TRIB4

PDH Command Reference

SOURce subsystem - Transmitter SPDH Test Signal Settings Commands

Selects the Structured PDH transmitter 2 Mb/s tributary test signal.

The corresponding query returns the 2 Mb/s tributary test signal in discrete form.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M2?

Returns : <discrete>

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS1 <discrete>

<discrete> = TRIB1
 TRIB2
 TRIB3
 TRIB4

Selects the Structured PDH transmitter DS1 tributary test signal. The corresponding query returns the tributary in discrete form as listed above.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS1?

Returns: <discrete>

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS2 <discrete>

<discrete> = TRIB1
 TRIB2
 TRIB3
 TRIB4
 TRIB5
 TRIB6
 TRIB7

Selects the Structured PDH transmitter DS2 tributary test signal.

**SOURce subsystem - Transmitter SPDH Test Signal Settings
Commands**

The corresponding query returns the tributary in discrete form as listed above.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS2?

Returns: <discrete>

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K56 <numeric>

<numeric> 1 to 24 Any framing

Selects the PDH transmitter 56kb/s timeslot.

The corresponding query returns the 56kb/s timeslot in numeric form.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K56?

Returns: <numeric>

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K64 <numeric>

<numeric> 1 to 24 Any framing

Selects the PDH transmitter 56kb/s timeslot.

The corresponding query returns the 56kb/s timeslot in numeric form.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K64?

Returns: <numeric>

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:M2:K64 <numeric>

<numeric> 1 to 31 PCM31 & PCM31CRC
1 to 15 & 17 PCM30 & PCM30CRC
to 31

PDH Command Reference

SOURce subsystem - Transmitter SPDH Test Signal Settings Commands

Selects the PDH transmitter 64kb/s timeslot.

The corresponding query returns the 64kb/s timeslot in numeric form.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:M2:K64?

Returns: <numeric>

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:M2:K64XN <string>

<string> = 31 bit string

Selects the 64XN kb/s timeslots of the 2mb/s test signal. a "1" in the nth position signifies selection of timeslot n. A "0" signifies deselection. E.g. to select timeslots 1,8,15,22,29 "1000000100000010000001000000100".

The corresponding query returns the 64XNkb/s timeslot as a 31 bit binary string.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:M2:K64XN?

Returns: <string>

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K64XN <string>

<string> = 24 bit string

Selects the 64XN kb/s timeslots of the DS1 signal. a "1" in the nth position signifies selection of timeslot n. A "0" signifies deselection e.g. to select timeslots 1,8,15,22 "100000010000001000000100".

The corresponding query returns the 64XNkb/s timeslot as a 24 bit binary string.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K64XN?

Returns: <string>

PDH Command Reference

SOURce subsystem - Transmitter SPDH Test Signal Settings Commands

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K56XN <string>

<string> = 24 bit string

Selects the 56XN kb/s timeslots. a "1" in the nth position signifies selection of timeslot n. A "0" signifies deselection e.g. to select timeslots 1,8,15,22 "100000010000001000000100".

The corresponding query returns the 56XNkb/s timeslot as a 24 bit binary string.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K56XN?

Returns: <string>

:SOURce:DATA:TELEcom:SPDH:TSIGnal:BACKground <discrete>

<discrete> =	AIS	Alarm Indication Sequence
	PRBS9	2 ⁹ -1 PRBS
	AS_FG	As foreground pattern

Selects the pattern to fill the non test signal tributaries.

The corresponding query returns the background pattern type in discrete form as listed above.

:SOURce:DATA:TELEcom:SPDH:TSIGnal:BACKground?

Returns : <discrete>

:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:DS1:D4 <string>

<string> = 2 bit string

Selects the signaling bits for DS1 D4 framing to be transmitted.

The corresponding query returns the signaling bits selected as a 2 bit binary string.

**SOURce subsystem - Transmitter SPDH Test Signal Settings
Commands**

:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:DS1:D4?

Returns: <string>

**:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:DS1:ESF
<string>**

<string> = 4 bit binary string

Selects the signaling bits for DS1 ESF framing to be transmitted.

The corresponding query returns the signaling bits selected as a 4 bit binary string.

:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:DS1:ESF?

Returns: <string>

**:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:DS1:NOFBit
<string>**

<string> = 4 bit string

Selects the signaling bits for DS1 'No Frame Bit' framing to be transmitted. In this case, the framing bit position associated with the mapping will be set to '0'.

The corresponding query returns the signaling bits selected as a 4 bit binary string.

:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:DS1:NOFBit?

Returns: <string>

**:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:DS1:SLC96
<string>**

<string> = 2 character string comprising 'A',
'1' or '0'.

PDH Command Reference

SOURce subsystem - Transmitter SPDH Test Signal Settings Commands

Selects the signaling bits for DS1 SLC96 framing to be transmitted. To select 'alternating' for either bit use the character 'A'.

The corresponding query returns the signaling bits selected as a 2 character string.

:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:DS1:SLC96?

Returns: <string>

See also:

:SOURce:DATA:TELEcom:SPDH:PATtern <discrete>

:SOURce:DATA:TELEcom:SPDH:UWORD <string>

:SOURce:DATA:TELEcom:SPDH:PRBS:POLarity <discrete>

SOURce subsystem - Transmitter SPDH Test Function Commands

See also common commands:

:SOURce:DATA:TELEcom:TFUNction <discrete>

:SOURce:DATA:TELEcom:TFUNction:SDISruption <boolean>

<boolean> = 0 or OFF

1 or ON

Selects the Structured PDH transmitter special service disruption mode. This command is only valid if the test function is set to service disruption with **:SOURce:DATA:TELEcom:TFUNction** <discrete>.

The corresponding query returns the special service disruption mode setting in boolean form as listed above.

:SOURce:DATA:TELEcom:TFUNction:SDISruption?

Returns: <boolean>

:SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete>

<discrete> = ERRor Errors & Alarms

 SBITs Spare Bits

Sets the Structured PDH transmitter test function type.

The corresponding query returns the current Structured PDH test function type as listed above.

:SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE?

Returns: <discrete>

SOURce subsystem - Transmitter SPDH Test Function Commands

:SOURce:DATA:TELEcom:SPDH:ERRor:TYPE <discrete>

<discrete> =	BIT	Bit Errors
	CODE	Code Errors
	FAS	Frame Errors
	MFAS	MFAS Errors (DS3)
	FASMfas	Frame & MFAS Errors (DS3)
	CRC	CRC-4 for 2M, CRC-6 for DS1
	EXZ	Excess zeros (DSn)
	FEBE	FEBE Errors (DS3)
	REBE	REBE Errors
	PBITs	P bit Errors (DS3)
	CPBits	CP bit errors (DS3)

Selects the Structured PDH transmitter error add type. Bit errors are injected at the test rate. FAS errors are injected at the line rate. The corresponding query returns the error add type in discrete form.

:SOURce:DATA:TELEcom:SPDH:ERRor:TYPE?

Returns : <discrete>

:SOURce:DATA:TELEcom:SPDH:ERRor:RATE <discrete>

<discrete> =	NONE	Errors off
	E_3	1E-3 Error rate
	E_4	1E-4 Error rate
	E_5	1E-5 Error rate
	E_6	1E-6 Error rate
	E_7	1E-7 Error rate

SOURce subsystem - Transmitter SPDH Test Function Commands

USER	User error rate
ONCE	Add single error

Sets the SPDH Error Add rate of the error type selected by :SOURce:DATA:TELEcom:SPDH:ERRor:TYPE <discrete> . ONCE will add a single error if the current rate is NONE. As ONCE is a transient case, the query form will return NONE.

This command is applicable when :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to PDH. Setting a preset rate will also force the user rate to be the same value.

Associated commands:

:SOURce:DATA:TELEcom:SPDH:ERRor:RATE:USER <numeric>

The corresponding query returns the error add rate in discrete form. Note that if this query returns USER, then

:SOURce:DATA:TELEcom:SPDH:ERRor:RATE:USER? must be used to discover the currently injected error rate.

:SOURce:DATA:TELEcom:SPDH:ERRor:RATE?

Returns : <discrete>

:SOURce:DATA:TELEcom:SPDH:ERRor:RATE:USER <numeric>

<numeric> 0.1E-3 to 9.9E-9 mantissa resolution 0.1,
exponent resolution 1

Sets the user defined SPDH Error Add rate. (Requires a SPDH module to be fitted). Note that if :SOURce:DATA:TELEcom:SPDH:ERRor:RATE <discrete> is not already set to USER, then this command will automatically set it to USER.

Associated commands:

:SOURce:DATA:TELEcom:SPDH:ERRor:RATE <discrete>

The corresponding query returns the user defined SPDH Error Add rate in numeric form.

SOURCE subsystem - Transmitter SPDH Test Function Commands

:SOURCE:DATA:TELEcom:SPDH:ERRor:RATE:USER?

Returns: <numeric>

:SOURCE:DATA:TELEcom:SPDH:ERRor:FRAMe:NERRored <discrete>

<discrete> =	ONE	1 frame
	TWO	2 frames
	THRee	3 frames
	FOUR	4 frames
	FIVE	5 frames
	SIX	6 frames

Frame Error Add only. Selects the number of frames to be errored in the Structured PDH transmitter.

The corresponding query returns the number of frames errored in discrete form.

:SOURCE:DATA:TELEcom:SPDH:ERRor:FRAMe:NERRored?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SPDH:ERRor:MFRAMe:NERRored <discrete>

<discrete> =	ONE	1 DS3 Multiframe errored
	TWO	2 DS3 Multiframes errored
	THRee	3 DS3 Multiframes errored
	FOUR	4 DS3 Multiframes errored

Sets the number of DS3 multi-frames to error.

The corresponding query command returns the current setting.

SOURce subsystem - Transmitter SPDH Test Function Commands

:SOURce:DATA:TELEcom:SPDH:ERRor:MFRame:NERRored?

Returns : <discrete>

:SOURce:DATA:TELEcom:SPDH:ERRor:EXZ:NUMBer <numeric>

<numeric> = 3 to 16

Sets the number of DS3/DS1 excess zeros sent. The corresponding query command returns the current setting.

:SOURce:DATA:TELEcom:SPDH:ERRor:EXZ:NUMBer?

Returns : <numeric>

:SOURce:DATA:TELEcom:SPDH:FEAC <discrete>

<discrete> =	OFF	No Action
	ON	Alarm burst switched to continuous
	BURSt	Selected burst length transmitted

Sets the transmitter FEAC action. Only valid if :SENSe:DATA:TELEcom:TFUNction <discrete> is set to SPDH and :SOURce:DATA:TELEcom:SPDH:DS3:ALARm <discrete> is set to FEAC . If set to 'ON' then the alarm burst will be switched to continuous. If 'BURSt' then the alarm burst length set up will be transmitted. The corresponding query command returns the current setting.

:SOURce:DATA:TELEcom:SPDH:FEAC?

Returns <discrete>

:SOURce:DATA:TELEcom:SPDH:FEAC:BURSt <numeric>

<numeric> = 0 to 15

Sets the transmitter FEAC alarm burst length. Only valid if :SOURce:DATA:TELEcom:TFUNction <discrete> is set to SPDH and :SOURce:DATA:TELEcom:SPDH:DS3:ALARm <discrete> is set to FEAC. If set to 0 then the alarm burst will be switched to continuous. Any other value (1 to 15) will set the alarm burst length to that value. The corresponding query command returns the current setting.

SOURce subsystem - Transmitter SPDH Test Function Commands

:SOURce:DATA:TELEcom:SPDH:FEAC:BURSt?

Returns : <numeric> = 0 (Indicates continuous)
 1 to 15 (Indicates burst length)

:SOURce:DATA:TELEcom:SPDH:FEAC:CODE <string>

<string> = "nnnnnn" (n = 0,1)

Sets the user configurable section of the FEAC code. Range "000000" to "111111". The corresponding query command returns the current setting.

:SOURce:DATA:TELEcom:SPDH:FEAC:CODE?

Returns : <string> = "000000" to "111111"

:SOURce:DATA:TELEcom:SPDH:FEAC:LOOPback:ACTion <discrete>

<discrete> =	DS1Deactivat	Deactivate DS1 Loopback
	DS1Activat	Activate DS1 Loopback
	DS3Deactivat	Deactivate DS3 Loopback
	DS3Activat	Activate DS3 Loopback

Sets the transmitter FEAC loopback action. Only valid if :SOURce:DATA:TELEcom:TFUNction <discrete> is set to SPDH and :SOURce:DATA:TELEcom:SPDH:DS3:ALARm <discrete> is set to FEAC. The corresponding query command returns the current setting.

:SOURce:DATA:TELEcom:SPDH:FEAC:LOOPback:ACTion?

Returns : <discrete>

:SOURce:DATA:TELEcom:SPDH:FEAC:LOOPback:MESSAge <numeric>

<numeric> = 0 to 28 Sets the transmitter FEAC DS1 channel for loopback

SOURce subsystem - Transmitter SPDH Test Function Commands

Only valid if :SOURce:DATA:TELEcom:TFUNction <discrete> is set to SPDH and :SOURce:DATA:TELEcom:SPDH:DS3:ALARm <discrete> is set to FEAC. If set to 0 then ALL will be selected. Any other value (1 to 28) will set the DS1 channel for loopback to that value. The corresponding query command returns the current setting.

:SOURce:DATA:TELEcom:SPDH:FEAC:LOOPback:MESSAge?

Returns : <numeric> = 0 (Indicates ALL)
 1 to 28 (Indicates channel number)

**:SOURce:DATA:TELEcom:SPDH:FEAC:LOOPback:BURSt
 <numeric>,<numeric>**

<numeric> = 1 to 15 Sets the FEAC loopback command durations
 <numeric> = 1 to 15 Sets the FEAC loopback message durations

Only valid if :SOURce:DATA:TELEcom:TFUNction <discrete> is set to SPDH and :SOURce:DATA:TELEcom:SPDH:DS3:ALARm <discrete> is set to FEAC. The corresponding query command returns the current setting.

:SOURce:DATA:TELEcom:SPDH:FEAC:LOOPback:BURSt?

Returns : <numeric>,<numeric>

:SOURce:DATA:TELEcom:SPDH:M140:ALARm <discrete>

<discrete> =	NONE	
	LOS	Loss of Signal
	AIS	Alarm Indication Signal
	LOFRame	Loss Of Framing
	RAI	Remote Alarm Indication

Set a 140 Mb/s transmit alarm. Command node :M139 can be used in place of :M140. Activating an alarm is only permitted when :SOURce:DATA:TELEcom:TFUNction <discrete> is set to PDH or PDHPayload, and :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to ERRor.

SOURce subsystem - Transmitter SPDH Test Function Commands

The corresponding query command returns the current 140 Mb/s transmit alarm as listed above.

:SOURce:DATA:TELEcom:SPDH:M140:ALARm?

Returns: <discrete>

:SOURce:DATA:TELEcom:SPDH:M34:ALARm <discrete>

<discrete> =	NONE	
	LOS	Loss of Signal
	AIS	Alarm Indication Signal
	LOFRame	Loss Of Framing
	RAI	Remote Alarm Indication

Sets a 34Mb/s transmit alarm. Activating an alarm is only permitted when :SOURce:DATA:TELEcom:TFUNction <discrete> is set to PDH or PDHPayload, and :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to ERRor.

The corresponding query command returns the current 34 Mb/s transmit alarm as listed above.

:SOURce:DATA:TELEcom:SPDH:M34:ALARm?

Returns: <discrete>

:SOURce:DATA:TELEcom:SPDH:M8:ALARm <alarm>

<discrete> =	NONE	
	LOS	Loss of Signal
	AIS	Alarm Indication Signal
	LOFRame	Loss Of Framing
	RAI	Remote Alarm Indication

Set an 8 Mb/s transmit alarm. Activating an alarm is only permitted when :SOURce:DATA:TELEcom:TFUNction <discrete> is set to PDH or PDHPayload,

SOURce subsystem - Transmitter SPDH Test Function Commands

and :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to ERRor.

The corresponding query command returns the current 8 Mb/s transmit alarm as listed above.

:SOURce:DATA:TELEcom:SPDH:M8:ALARm?

Returns: <discrete>

:SOURce:DATA:TELEcom:SPDH:M2:ALARm <discrete>

<discrete> =	NONE	
	LOS	Loss of Signal
	AIS	Alarm Indication Signal
	LOFRame	Loss Of Framing
	RAI	Remote Alarm Indication
	RMFR	Remote Multiframe Alarm
	CMFL	CAS Multiframe Loss

Set a 2 Mb/s transmit alarm. RMFR and CMFL are only valid when timeslot-16 CAS multiframe has been selected. Activating an alarm is only permitted when :SOURce:DATA:TELEcom:TFUNction is set to PDH or PDHPayload, and :SOURce:DATA:TELEcom:TFUNction:TYPE is set to ERRor.

The corresponding query command returns the current 2 Mb/s transmit alarm as listed above.

:SOURce:DATA:TELEcom:SPDH:M2:ALARm?

Returns: <discrete>

:SOURce:DATA:TELEcom:SPDH:DS3:ALARm <discrete>

<alarm> =	NONE	
	LOS	Loss of signal
	AIS	Alarm Indication Signal
	OOFRame	Out Of Framing

SOURce subsystem - Transmitter SPDH Test Function Commands

RAI	Remote Alarm Indication
FEAC	FEAC alarm
IDLE	Idle

Sets a DS3 transmit alarm. Activating an alarm is only permitted when :SOURce:DATA:TELEcom:TFUNction <discrete> is set to PDH or PDHPayload, and :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to ERRor.

The corresponding query command returns the current DS3 transmit alarm as listed above.

:SOURce:DATA:TELEcom:SPDH:DS3:ALARm?

Returns: <discrete>

:SOURce:DATA:TELEcom:SPDH:DS1:ALARm <discrete>

<discrete> =	NONE	
	LOS	Loss of Signal
	AIS	Alarm Indication Signal
	OOFrAmE	Out Of Framing
	RAI	Remote Alarm Indication

Sets a DS1 transmit alarm. Activating an alarm is only permitted when :SOURce:DATA:TELEcom:TFUNction <discrete> is set to PDH or PDHPayload, and :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to ERRor.

The corresponding query returns the framing in discrete form as listed above.

:SOURce:DATA:TELEcom:SPDH:DS1:ALARm?

Returns: <discrete>

:SOURce:DATA:TELEcom:SPDH:M140:SPARe <string>

<string> = "000" to "111"

Set the 140 Mb/s spare bits. This action is only permitted when :SOURce:DATA:TELEcom:TFUNction <discrete> is set to PDH or PDHPayload,

SOURce subsystem - Transmitter SPDH Test Function Commands

and :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to SBITs. Command node :M139 can be used in place of :M140.

The corresponding query command returns the current 140 Mb/s spare bit values.

:SOURce:DATA:TELEcom:SPDH:M140:SPARe?

Returns: <string>

:SOURce:DATA:TELEcom:SPDH:M34:SPARe <string>

<string> = "0" to "1"

Set the 34Mb/s spare bit. This action is only permitted when :SOURce:DATA:TELEcom:TFUNction <discrete> is set to PDH or PDHPayload, and :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to SBITs.

The corresponding query command returns the current 34 Mb/s spare bit value.

:SOURce:DATA:TELEcom:SPDH:M34:SPARe?

Returns: <string>

:SOURce:DATA:TELEcom:SPDH:M8:SPARe <string>

<string> = "0" to "1"

Set the 8 Mb/s spare bit. This action is only permitted when :SOURce:DATA:TELEcom:TFUNction <discrete> is set to PDH or PDHPayload, and :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to SBITs.

The corresponding query command returns the current 8 Mb/s spare bit value.

:SOURce:DATA:TELEcom:SPDH:M8:SPARe?

Returns: <string>

:SOURce:DATA:TELEcom:SPDH:M2:SI <string>

<string> = "0" to "1"

SOURce subsystem - Transmitter SPDH Test Function Commands

Set the 2 Mb/s Spare International bit, valid for non-CRC4 multiframe. This action is only permitted when :SOURce:DATA:TELEcom:TFUNction <discrete> is set to PDH or PDHPayload, and :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to SBITs.

The corresponding query command returns the current 2 Mb/s Spare International bit.

:SOURce:DATA:TELEcom:SPDH:M2:SI?

Returns: <string>

:SOURce:DATA:TELEcom:SPDH:M2:SIE <string>

<string> = "00" to "11"

Set the 2 Mb/s E-bits, valid for CRC4 multiframe. This action is only permitted when :SOURce:DATA:TELEcom:TFUNction <discrete> is set to PDH or PDHPayload, and :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to SBITs.

The corresponding query command returns the current 2 Mb/s E-bits.

:SOURce:DATA:TELEcom:SPDH:M2:SIE?

Returns: <string>

:SOURce:DATA:TELEcom:SPDH:M2:NFAS <string>

<string> = "00000" to "11111"

Set the 2 Mb/s NFAS Sa bits 4 to 8. This action is only permitted when :SOURce:DATA:TELEcom:TFUNction <discrete> is set to PDH or PDHPayload, and :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to SBITs. The command will generate an error if the Sa sequence is active.

The corresponding query command returns the current 2 Mb/s NFAS Sa bit values.

:SOURce:DATA:TELEcom:SPDH:M2:NFAS?

Returns: <string>

SOURce subsystem - Transmitter SPDH Test Function Commands

If the Sa sequence is active, the underlying user-defined value of the affected bit is returned rather than the "X" that appears on the instrument display.

:SOURce:DATA:TELEcom:SPDH:M2:SASequence <boolean>

<boolean> = 0 or OFF
 1 or ON

Set the 2 Mb/s NFAS Sa sequence generation ON or OFF, valid for CRC4 multiframe. The sequence that is generated is controlled by :SASequence:PATtern and the bit that it is inserted into is controlled by :SASequence:BIT. This action is only permitted when :SOURce:DATA:TELEcom:TFUNction <discrete> is set to PDH or PDHPayload, and :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to SBITs.

The corresponding query command returns the current sequence generation state.

:SOURce:DATA:TELEcom:SPDH:M2:SASequence?

Returns: <boolean>

:SOURce:DATA:TELEcom:SPDH:M2:SASequence:PATtern <string>

<string> = "00000000" to "11111111"

Set the 2 Mb/s NFAS Sa sequence pattern. The command will generate an error if the Sa sequence is active.

The corresponding query command returns the current 2 Mb/s NFAS Sa sequence pattern.

:SOURce:DATA:TELEcom:SPDH:M2:SASequence:PATtern?

Returns: <string>

:SOURce:DATA:TELEcom:SPDH:M2:SASequence:BIT <numeric>

<numeric> = 4 to 8

Set the bit in the 2 Mb/s NFAS timeslot into which the Sa sequence will be inserted. The command will generate an error if the Sa sequence is active.

SOURce subsystem - Transmitter SPDH Test Function Commands

The corresponding query command returns the currently selected bit.

:SOURce:DATA:TELEcom:SPDH:M2:SASequence:BIT?

Returns: <numeric>

:SOURce:DATA:TELEcom:SPDH:M2:CASMfm <string>

<string> = "000" to "111"

Set the 2 Mb/s MFAS spare bits 5, 7 and 8. This action is only permitted when :SOURce:DATA:TELEcom:TFUNction <discrete> is set to PDH or PDHPayload, and :SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> is set to SBITS.

The corresponding query command returns the current 2 Mb/s MFAS spare bit values.

:SOURce:DATA:TELEcom:SPDH:M2:CASMfm?

Returns: <string>

SOURce subsystem - Transmitter SPDH Test Function Commands

:SOURce:DATA:TELEcom:SPDH:INBand <discrete>

<discrete> =	OFF	Transmission of the Inband loop code is disabled.
	BURSt	Transmission of the Inband loop code is enabled.

Enables or disables transmission of the Inband loop code. When BURSt is selected, the Inband loop code is transmitted for a nominal 8 seconds.

The corresponding query returns the state of the Inband loop code transmission in the discrete form given above.

:SOURce:DATA:TELEcom:SPDH:INBand?

Returns: <discrete>

:SOURce:DATA:TELEcom:SPDH:INBand:CODE <discrete>

<discrete> =	LINact	Activate Line
	LINDeact	Deactivate Line
	PAYact	Activate Payload
	PAYDeact	Deactivate Payload
	NETact	Activate Network
	NETDeact	Deactivate Network
	USER	User Loop Code

Selects the Structured PDH transmitter Inband loop code. The corresponding query returns the Inband loop code in discrete form.

:SOURce:DATA:TELEcom:SPDH:INBand:CODE? :

Returns : <discrete>

SOURce subsystem - Transmitter SPDH Test Function Commands

:SOURce:DATA:TELEcom:SPDH:OUTBand <discrete>

<discrete> =	OFF	Transmission of the Inband loop code is disabled.
	ON	Transmission of the Inband loop code is enabled.
	BURSt	Transmission of the Inband loop code is enabled.

Enables or disables transmission of the Outband loop code. When the Outband burst length is set to CONTinuous (see below), the ON selection enables transmission and OFF disables transmission. When the Outband burst length is set to BURSt, the Outband loop code is transmitted for the specified burst count.

The corresponding query returns the state of the Outband loop code transmission in the discrete form given above.

:SOURce:DATA:TELEcom:SPDH:OUTBand?

Returns: <discrete>

:SOURce:DATA:TELEcom:SPDH:OUTBand:CODE <discrete>

<discrete> =	LINact	Activate Line
	LINDeact	Deactivate Line
	PAYact	Activate Payload
	PAYDeact	Deactivate Payload
	NETact	Activate Network
	UNIDeact	Deactivate Universal
	USER	User Loop Code

Selects the Structured PDH transmitter Outband loop code. The corresponding query returns the Outband loop code in discrete form.

SOURCE subsystem - Transmitter SPDH Test Function Commands

:SOURCE:DATA:TELEcom:SPDH:OUTBand:CODE? :

Returns : <discrete>

:SOURCE:DATA:TELEcom:SPDH:OUTBand:BURSt <numeric>

<numeric> = 0 to 15

Sets the transmitter Outband loop code burst length. If set to 0 then the Outband loop code burst will be switched to continuous. Any other value (1 to 15) will set the alarm burst length to that value. The corresponding query command returns the current setting.

:SOURCE:DATA:TELEcom:SPDH:OUTBand:BURSt?

Returns : <numeric> = 0 (Indicates continuous)
1 to 15 (Indicates burst length)

:SOURCE:DATA:TELEcom:SPDH:OUTBand:USER <string>

<string> = "000000" to "111111"

Sets the Outband loop code user word pattern.

The corresponding query command returns the current Outband loop code user word pattern.

:SOURCE:DATA:TELEcom:SPDH:OUTBand:USER?

Returns: <string>

PDH Command Reference

INPut subsystem

The corresponding query returns the line code in discrete form, as listed above.

:INPut:TELEcom:SPDH:CODE?

Returns : <discrete>

:INPut:TELEcom:SPDH:INSert:CODE <discrete>

<discrete> =	AMI	2Mb/s, DS1
	HDB3	2Mb/s only
	B8ZS	DS1 only

Selects the Structured PDH insert port interface line code for the transmitter.

The corresponding query returns the line code in discrete form as listed above.

:INPut:TELEcom:SPDH:INSert:CODE?

Returns: <discrete>

:INPut:TELEcom:SPDH:BALance <discrete>

<discrete> =	UNBalanced	75 Ω unbalanced
	BALanced	120 Ω balanced

Selects the Structured PDH receiver termination levels. BALanced is only valid when :INPut:TELEcom:SPDH:RATE <discrete> is set to M2.

The corresponding query returns the termination level in discrete form, as listed above.

:INPut:TELEcom:SPDH:BALance?

Returns : <discrete>

:INPut:TELEcom:SPDH:GAIN <discrete>

<discrete> =	DB20	All rates
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PDH Command Reference

INPut subsystem

DB26	All rates
DB30	DS1, 2Mb/s, 8Mb/s

Selects the Monitor gain for the Structured PDH receiver. Only valid when :INPut:TELEcom:LEVel <discrete> is set to MON.

The corresponding query returns the Monitor gain in discrete form, as listed above.

:INPut:TELEcom:SPDH:GAIN?

Returns : <discrete>

:INPut:TELEcom:SPDH:EQUalisation <boolean>

<boolean> = 0 or OFF
1 or ON

Selects the Monitor equalization for Structured PDH receiver. Only valid when :INPut:TELEcom:LEVel <discrete> is set to MON.

The corresponding query returns the Monitor equalization state in numeric form.

:INPut:TELEcom:SPDH:EQUalisation?

Returns : <boolean>

PDH Command Reference
INPut subsystem

SENSe subsystem - Receiver Structured PDH Settings

SENSe subsystem - Receiver Structured PDH Settings

:SENSe:DATA:TELEcom:SPDH:PATtern <discrete>

<discrete> =	PRBS9	2^9-1
	PRBS11	$2^{11}-1$
	PRBS15	$2^{15}-1$
	PRBS20	$2^{20}-1$
	QRSS	$2^{20}-1$ with 14 zero limit
	PRBS23	$2^{23}-1$
	AZERO	All Zero's
	AONE	All One's
	STress	3-in-24 stress pattern
	P1IN8	1-in-8 test pattern
	P2IN8	2-in-8 test pattern
	OCT55	55 octet test pattern (uses Daly pattern as per ANSI T1.403)
	P1010	Word 1010
	P1000	Word 1000
	UWORD	16 Bit User Word
	LIVE	Live Traffic

Selects the Structured PDH receiver data pattern. If UWORD is selected the word is set using :SENSe:DATA:TELEcom:SPDH:UWORD <string>.

The corresponding query returns the reference data pattern in discrete form, as listed above.

SENSe subsystem - Receiver Structured PDH Settings

:SENSe:DATA:TELEcom:SPDH:PATtern?

Returns : <discrete>

:SENSe:DATA:TELEcom:SPDH:UWORD <string>

Sets the user word pattern, of the Structured PDH receiver, in the range "00000000 00000000" to "1111111111111111".

The corresponding query returns the user word pattern as a string.

:SENSe:DATA:TELEcom:SPDH:UWORD?

Returns : <string>

:SENSe:DATA:TELEcom:SPDH:PRBS:POLarity <discrete>

<discrete> =	NORMAL	Non CCITT
	INVERTed	CCITT

Selects the Structured PDH receiver PRBS pattern polarity.

The corresponding query returns the PRBS pattern polarity in discrete form as listed above.

:SENSe:DATA:TELEcom:SPDH:PRBS:POLarity?

Returns : <discrete>

:SENSe:DATA:TELEcom:SPDH:PAYLoad:TYPE <discrete>

<discrete> =	UNFRamed	No framing
	FRAMed	8, 34 & 140 Mb/s
	PCM30	2 Mb/s Only
	PCM31	2 Mb/s Only
	PCM30CRC	2 Mb/s Only
	PCM31CRC	2 Mb/s Only
	D4	DS1 only

PDH Command Reference

SENSe subsystem - Receiver Structured PDH Settings

ESF	DS1 only
SLC96	DS1 only
M13	DS3 only
CBIT	DS3 only

Selects the Structured PDH receiver interface rate framing.

Note: This command is not backwards compatible, to set the framing type to be structured, use the command

:SENSe:DATA:TELEcom:SPDH:PAYLoad:STRUcture <discrete>.

The corresponding query returns the interface frame type in discrete form, as listed above.

:SENSe:DATA:TELEcom:SPDH:PAYLoad:TYPE?

Returns : <discrete>

:SENSe:DATA:TELEcom:SPDH:PAYLoad:STRUcture <discrete>

<discrete> =	UNSTRUctured	All rates
	STRUctured	All framed formats

Selects whether or not the PDH receiver is to have any further structure or not.

The corresponding query returns the type in discrete form as listed above.

:SENSe:DATA:TELEcom:SPDH:PAYLoad:STRUcture?

Returns: <discrete>

SENSe subsystem - Receiver SPDH Test Signal Settings Commands

SENSe subsystem - Receiver SPDH Test Signal Settings Commands

:SENSe:DATA:TELEcom:SPDH:TSIGnal:RATE <discrete>

<discrete> =	M34	34 Mb/s
	M8	8 Mb/s
	M2	2 Mb/s
	K64	64 kb/s
	K64XN	Nx64 kb/s
	DS1	DS1 rate
	K56	56 kb/s
	K56XN	N x 56 kb/s

Selects the Structured PDH receiver test signal rate.

The corresponding query returns the test signal rate in discrete form as listed above.

:SENSe:DATA:TELEcom:SPDH:TSIGnal:RATE?

Returns : <discrete>

:SENSe:DATA:TELEcom:SPDH:TSIGnal:MAPPING <discrete>

<discrete> =	M2	2 Mb/s
	DS1	DS1 rate

Selects the Structured PDH receiver test signal mapping.

Only valid if DS3/E1 Mapping Option is fitted.

This command is only applicable when

:SENSe:DATA:TELEcom:SPDH:PAYLoad:TYPE <discrete> or

:SENSe:DATA:TELEcom:SDH:PAYLoad:TYPE <discrete> or

:SENSe:DATA:TELEcom:SONet:PAYLoad:TYPE <discrete> is set to M13 or

CBIT and :SOURce:DATA:TELEcom:SPDH:TSIGnal:RATE <discrete> is set to

SENSe subsystem - Receiver SPDH Test Signal Settings Commands

K64 or K64XN: determines whether the 64 kb/s timeslot(s) is mapped into a 2 Mb/s or DS1 signal within a structured DS3 signal.

The corresponding query returns the test signal mapping in discrete form as listed above.

:SENSe:DATA:TELEcom:SPDH:TSIGnal:MAPPING?

Returns : <discrete>

:SENSe:DATA:TELEcom:SPDH:TSIGnal:PAYLoad <discrete>

<discrete> =	UNFRamed	2, 8 & 34 Mb/s
	FRAMed	8 & 34 Mb/s
	PCM30	2 Mb/s
	PCM31	2 Mb/s
	PCM30CRC	2 Mb/s
	PCM31CRC	2 Mb/s
	DM2	2 Mb/s Drop
	D4	DS1
	ESF	DS1
	SLC96	DS1
	DDS1	Drop DS1

Selects the Structured PDH receiver test signal framing.

The corresponding query returns the framing in discrete form as listed above.

:SENSe:DATA:TELEcom:SPDH:TSIGnal:PAYLoad?

Returns : <discrete>

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M34 <discrete>

<discrete> =	TRIB1
	TRIB2

SENSe subsystem - Receiver SPDH Test Signal Settings Commands

TRIB3

TRIB4

Selects the Structured PDH receiver 34 Mb/s tributary test signal.

The corresponding query returns the 34 Mb/s tributary test signal in discrete form.

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M34?

Returns : <discrete>

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M8 <discrete>

<discrete> = TRIB1

TRIB2

TRIB3

TRIB4

Selects the Structured PDH receiver 8 Mb/s tributary test signal.

The corresponding query returns the 8 Mb/s tributary test signal in discrete form.

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M8?

Returns : <discrete>

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M2 <discrete>

<discrete> = TRIB1

TRIB2

TRIB3

TRIB4

Selects the Structured PDH receiver 2 Mb/s tributary test signal.

The corresponding query returns the 2 Mb/s tributary test signal in discrete form.

SENSe subsystem - Receiver SPDH Test Signal Settings Commands

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M2?

Returns : <discrete>

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS1 <discrete>

<discrete> = TRIB1
TRIB2
TRIB3
TRIB4

Selects the Structured PDH receiver DS1 tributary test signal.

The corresponding query returns the tributary in discrete form as listed above.

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS1?

Returns: <discrete>

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS2 <discrete>

<discrete> = TRIB1
TRIB2
TRIB3
TRIB4
TRIB5
TRIB6
TRIB7

Selects the Structured PDH receiver DS2 tributary test signal.

The corresponding query returns the tributary in discrete form as listed above.

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS2?

Returns: <discrete>

PDH Command Reference

SENSe subsystem - Receiver SPDH Test Signal Settings Commands

In the following block of commands where an optional node has been added, the command replaces the original command which had no optional node.

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:M2:K64 <numeric>

<numeric> =	1 to 31	PCM31 & PCM31CRC
	1 to 15 & 17 to 31	PCM30 & PCM30CRC

Selects the Structured PDH receiver 64 kb/s timeslot.

The corresponding query returns the 64 kb/s timeslot in numeric form.

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:M2:K64?

Returns : <numeric>

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:M2:K64XN <string>

<string> = 31 bit binary string

Selects the NX64 kb/s timeslots of the 2Mb/s test signal. a "1" in the nth position signifies selection of timeslot n. A "0" signifies deselection e.g. to select timeslots 1,8,15,22,29 "1000000100000010000001000000100".

The corresponding query returns the NX64 kb/s timeslot as a 31 bit binary string.

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:M2:K64XN?

Returns : <string>

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K56 <numeric>

<numeric> 1 to 24 Any framing

Selects the PDH receiver 56kb/s timeslot.

The corresponding query returns the 56kb/s timeslot in numeric form.

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K56?

Returns: <numeric>

SENSe subsystem - Receiver SPDH Test Signal Settings Commands

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K64 <numeric>

<numeric> 1 to 24 Any framing

Selects the PDH receiver 64kb/s timeslot.

The corresponding query returns the 64kb/s timeslot in numeric form.

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K64?

Returns: <numeric>

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K64XN <string>

<string> = 24 bit string

Selects the NX64 kb/s timeslots of the DS1 signal. a "1" in the nth position signifies selection of timeslot n. A "0" signifies deselection e.g. to select timeslots 1,8,15,22 "100000010000001000000100".

The corresponding query returns the NX64kb/s timeslot as a 24 bit binary string.

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K64XN? <string>

Returns: <string>

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K56XN <string>

<string> = 24 bit string

Selects the 56XN kb/s timeslots of the DS1 signal. a "1" in the nth position signifies selection of timeslot n. A "0" signifies deselection e.g. to select timeslots 1,8,15,22 "100000010000001000000100".

The corresponding query returns the NX64 kb/s timeslot as a 24 bit binary string.

:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K56XN? <string>

Returns: <string>

SENSe subsystem - Receiver SPDH Test Function Commands

:SENSe:DATA:TELEcom:TFUNction:SDISruption <discrete>

<discrete>= OFF

ON

Sets the receiver service disruption mode.

The corresponding query returns the service disruption mode setting in discrete form as listed above.

:SENSe:DATA:TELEcom:TFUNction:SDISruption?

Returns: <discrete>

SENSe subsystem - Analysis Control

:SENSe:DATA:TELeom:SPDH:ANALysis:M2110 <discrete>

<discrete> =	PALlocation	Path Allocation
	USER	User Defined

Selects the structured PDH M.2110 threshold control source.

The corresponding query command returns the current control source in discrete form as listed above.

:SENSe:DATA:TELeom:SPDH:ANALysis:M2110?

Returns : <discrete>

:SENSe:DATA:TELeom:SPDH:ANALysis:M2110:PATH <discrete>

<discrete> =	SECTion	Multiplex Section Layer
	HIGH	High Order Path
	LOW	Low Order Path
	M140	140 Mb/s path
	M34	34 Mb/s path
	M8	8 Mb/s path
	M2	2 Mb/s path
	DS3	DS3 path
	DS1	DS1 path
	K64	64 Kb/s path
	K56	56 Kb/s path

Selects the path layer for analysis by the M.2110 and M.2120 analysis functions. The instrument measures and records all paths for M.2100 and M.2101.

SENSe subsystem - Analysis Control

simultaneously, but only one path is measured and analysed for M.2110 and M.2120. This command selects that path.

The corresponding query returns the current path under test in discrete form as listed above.

:SENSe:DATA:TELEcom:SPDH:ANALysis:M2110:PATH?

Returns: <discrete>

:SENSe:DATA:TELEcom:SPDH:ANALysis:M2110 :PALlocation <numeric>

<numeric> = 0.5 to 63 Percentage

Sets the Structured PDH M2110 path allocation percentage.

The corresponding query returns the current path allocation percentage in numeric form.

:SENSe:DATA:TELEcom:SPDH:ANALysis:M2110: PALlocation?

Returns : <numeric>

**:SENSe:DATA:TELEcom:SPDH:ANALysis:M2110:USER: ESECond
<discrete>, <numeric>**

<discrete> =	S1H2	S1, 2 Hours
	S2H2	S2, 2 Hours
	S1D1	S1, 24 Hours
	S2D1	S2 24 Hours
	S1D7	S1, 7 Days
	S1M15	S1, 15 Minutes
	S2M15	S2, 15 Minutes
	S1H1	S1, 1 Hour
	S2H1	S2, 1 Hour
<numeric> =	0 to 720	S1H2 & S2H2

SENSe subsystem - Analysis Control

0 to 8640	S1D1 & S2D1
0 to 60480	S1D7
0 to 90	S1M15 & S2M15
0 to 360	S1H1 & S2H1

Sets the Structured PDH user programmable M.2110 Error Second thresholds. The corresponding query returns the selected M.2110 Error Second threshold in numeric form.

:SENSe:DATA:TELEcom:SPDH:ANALysis:M2110:USER: ESECond? <discrete>

Returns : <numeric>

:SENSe:DATA:TELEcom:SPDH:ANALysis:M2110:USER: SESecond <discrete>, <numeric>

<discrete> =	S1H2	S1, 2 Hours
	S2H2	S2, 2 Hours
	S1D1	S1, 24 Hours
	S2D1	S2, 24 Hours
	S1D7	S1, 7 Days
	S1M15	S1, 15 Minutes
	S2M15	S2, 15 Minutes
	S1H1	S1, 1 Hour
	S2H1	S2, 1 Hour
	<numeric> =	0 to 720
0 to 8640		S1D1 & S2D1
0 to 60480		S1D7
0 to 90		S1M15 & S2M15
0 to 360		S1H1 & S2H1

SENSe subsystem - Analysis Control

Sets the Structured PDH user programmable M.2110 Severely Errored Seconds thresholds.

The corresponding query returns the selected user programmable M.2110 Severely Errored Seconds threshold in numeric form.

:SENSe:DATA:TELEcom:SPDH:ANALysis:M2110:USER: SESecond? <discrete>

Returns : <numeric>

:SENSe:DATA:TELEcom:SPDH:ANALysis:M2120 <discrete>

<discrete> =	PALlocation	Path Allocation
	USER	User Defined

Selects the Structured PDH M.2120 threshold control source.

The corresponding query returns the current control source in discrete form.

:SENSe:DATA:TELEcom:SPDH:ANALysis:M2120?

Returns : <discrete>

:SENSe:DATA:TELEcom:SPDH:ANALysis:M2120:MFACTor <numeric>

<numeric> = 50 to 150 % Maintenance Factor

Sets the Structured PDH M.2120 maintenance factor percentage.

The corresponding query returns the current maintenance factor value in numeric form.

:SENSe:DATA:TELEcom:SPDH:ANALysis:M2120:MFACTor?

Returns : <numeric>

:SENSe:DATA:TELEcom:SPDH:ANALysis:M2120:USER: ESECond <discrete>, <numeric>

<discrete> =	TR1	15 Minute period
	TR2	24 Hour period

PDH Command Reference

SENSe subsystem - Analysis Control

<numeric> =	0 to 900	TR1
	0 to 86400	TR2

Sets the Structured PDH user programmable M.2120 Error Seconds thresholds.

The corresponding query returns the selected user programmable M.2120 Error Second threshold in numeric form.

:SENSe:DATA:TELEcom:SPDH:ANALysis:M2120:USER: ESECond?
<discrete>

Returns : <numeric>

:SENSe:DATA:TELEcom:SPDH:ANALysis:M2120:USER: SESecond
<discrete>, <numeric>

<discrete> =	TR1	15 Minute period
	TR2	24 Hour period
<numeric> =	0 to 900	TR1
	0 to 86400	TR2

Sets the Structured PDH user programmable M.2120 Severely Errored Seconds thresholds.

The corresponding query returns the selected user programmable M.2120 Severely Errored Seconds threshold in numeric form.

:SENSe:DATA:TELEcom:SPDH:ANALysis:M2120:USER: SESecond?
<discrete>

Returns : <numeric>

SENSe subsystem - Alarm Scan Control

SENSe subsystem - Alarm Scan Control

:SENSe:DATA:TELEcom:SPDH:ASCan <boolean>

<boolean> =	0 or OFF	Stop the current alarm scan
	1 or ON	Start a new alarm scan

Start/Stop the structured PDH alarm scan. The corresponding query returns the alarm scan state as 0 or 1.

:SENSe:DATA:TELEcom:SPDH:ASCan?

Returns : <boolean> 0 or 1

SENSe subsystem - SPDH Round Trip Delay Control

SENSe subsystem - SPDH Round Trip Delay Control

:SENSe:DATA:TELeom:SPDH:RTDelay <boolean>

<boolean> = 0 or OFF Stop the round trip delay measurement

1 or ON Start a new round trip delay measurement

Start/Stop the structured PDH round trip delay measurement.

The corresponding query returns the round trip delay state as 0 or 1.

:SENSe:DATA:TELeom:SPDH:RTDelay?

Returns : <boolean> 0 or 1

SENSe subsystem - SPDH Loop Codes Control

SENSe subsystem - SPDH Loop Codes Control

:SENSe:DATA:TELEcom:SPDH:INBand:LPUP:CODE <discrete>

<discrete> =	LINact	Activate Line
	PAYact	Activate Payload
	NETact	Activate Network
	USER	User Loop Code

Selects the expected Structured PDH receiver inband Loop Up loop code. The corresponding query returns the receiver inband Loop Up loop code in discrete form.

:SOURCE:DATA:TELEcom:SPDH:INBand:LPUP:CODE? :

Returns : <discrete>

SOURCE:DATA:TELEcom:SPDH:INBand:LPUP:USER <numeric>,<string>

<numeric> =	3 to 8
<string> =	"000" to "11111111"

Sets the expected Structured PDH receiver inband Loop Up loop code, variable bit length user loop code. The first numeric parameter specifies the number of bits in the loop code to be in the range 3 to 8 bits. The second string parameter specifies the loop code and is range checked against the number of bits specified in the first parameter.

The corresponding query returns the receiver inband Loop Up loop code in discrete form.

SOURCE:DATA:TELEcom:SPDH:INBand:LPUP:USER?

Returns: <numeric>
Returns: <string>

SENSe subsystem - SPDH Loop Codes Control

:SENSe:DATA:TELEcom:SPDH:INBand:LPDN:CODE <discrete>

<discrete> =	LINDeact	Deactivate Line
	PAYDeact	Deactivate Payload
	NETDeact	Deactivate Network
	USER	User Loop Code

Selects the expected Structured PDH receiver inband Loop Down loop code. The corresponding query returns the receiver inband Loop Down loop code in discrete form.

:SOURCE:DATA:TELEcom:SPDH:INBand:LPDN:CODE? :

Returns : <discrete>

SOURCE:DATA:TELEcom:SPDH:INBand:LPDN:USER <numeric>,<string>

<numeric> =	3 to 8
<string> =	"000" to "11111111"

Sets the expected Structured PDH receiver inband Loop Down loop code, variable bit length user loop code. The first numeric parameter specifies the number of bits in the loop code to be in the range 3 to 8 bits. The second string parameter specifies the loop code and is range checked against the number of bits specified in the first parameter.

The corresponding query returns the receiver inband Loop Down loop code in discrete form.

SOURCE:DATA:TELEcom:SPDH:INBand:LPDN:USER?

Returns: <numeric>
Returns: <string>

SENSe subsystem - Result Returning Commands

Frequency Results (SPDH)

:SENSe:DATA? <"result">

Result =	"FREQuency:SPDH"	RX SPDH clock frequency
	"FOFPpm:SPDH"	RX SPDH clock offset in ppm
	"FOFHz:SPDH"	RX SPDH clock offset in Hz

Structured PDH Short Term Results

:SENSe:DATA?<"result">

Result =	"ECOut:SPDH:STERm:BIT"	Bit error count
	"ERATio:SPDH:STERm:BIT"	Bit error ratio
	"ECOut:SPDH:STERm:CODE"	Code error count
	"ERATio:SPDH:STERm:CODE"	Code error ratio
	"ECOut:SPDH:STERm:M2:FAS"	2 Mb/s FAS error count
	"ERATio:SPDH:STERm:M2:FAS"	2 Mb/s FAS error ratio
	"ECOut:SPDH:STERm:M8:FAS"	8 Mb/s FAS error count
	"ERATio:SPDH:STERm:M8:FAS"	8 Mb/s FAS error ratio
	"ECOut:SPDH:STERm:M34:FAS"	34 Mb/s FAS error count
	"ERATio:SPDH:STERm:M34:FAS"	34 Mb/s FAS error ratio
	"ECOut:SPDH:STERm:M140:FAS"	140 Mb/s FAS error count
	"ERATio:SPDH:STERm:M140:FAS"	140 Mb/s FAS error ratio
	"ECOut:SPDH:STERm:FEBE"	PDH FEBE error count
	"ERATio:SPDH:STERm:FEBE"	PDH FEBE error ratio
	"ECOut:SPDH:STERm:PBITS"	PDH DS3 P-BITs error count

PDH Command Reference

SENSe subsystem - Result Returning Commands

"ERATio:SPDH:STERm:PBITs"	PDH DS3 P-BITs error ratio
"ECOut:SPDH:STERm:CPBits"	PDH DS3 CP-Bits error count
"ERATio:SPDH:STERm:CPBits"	PDH DS3 CP-Bits error ratio
"ECOut:SPDH:STERm:DS1:FAS"	PDH Frame short term error count
"ERATio:SPDH:STERm:DS1:FAS"	PDH Frame short term error ratio
"ECOut:SPDH:STERm:DS3:FAS"	PDH Frame short term error count
"ERATio:SPDH:STERm:DS3:FAS"	PDH Frame short term error ratio
"ECOut:SPDH:STERm:CRC"	CRC error count
"ERATio:SPDH:STERm:CRC"	CRC error ratio
"ECOut:SPDH:STERm:REBE"	REBE error count
"ERATio:SPDH:STERm:REBE"	REBE error ratio

Structured PDH Cumulative Results

:SENSe:DATA? <"result">

Result = "ECOut:SPDH:BIT"	Bit error count
"ERATio:SPDH:BIT"	Bit error ratio
"ECOut:SPDH:CODE"	Code error count
"ERATio:SPDH:CODE"	Code error ratio
"ECOut:SPDH:M2:FAS"	2 Mb/s FAS error count
"ERATio:SPDH:M2:FAS"	2 Mb/s FAS error ratio
"ECOut:SPDH:M8:FAS"	8 Mb/s FAS error count
"ERATio:SPDH:M8:FAS"	8 Mb/s FAS error ratio
"ECOut:SPDH:M34:FAS"	34 Mb/s FAS error count
"ERATio:SPDH:M34:FAS"	34 Mb/s FAS error ratio
"ECOut:SPDH:M140:FAS"	140 Mb/s FAS error count
"ERATio:SPDH:M140:FAS"	140 Mb/s FAS error ratio

PDH Command Reference

SENSe subsystem - Result Returning Commands

"ECOut:SPDH:FEBE"	PDH / DS _n FEBE error count
"ERATio:SPDH:FEBE"	PDH / DS _n FEBE error ratio
"ECOut:SPDH:PBITs"	DS3 P-BITs error count
"ERATio:SPDH:PBITs"	PDH DS3 P-BITs error ratio
"ECOut:SPDH:CPBits"	DS3 CP-Bits error count
"ERATio:SPDH:CPBits"	DS3 CP-Bits error ratio
"ECOut:SPDH:DS1:FAS"	DS1 Frame error count
"ERATio:SPDH:DS1:FAS"	DS1 Frame error ratio
"ECOut:SPDH:DS3:FAS"	DS3 Frame error count
"ERATio:SPDH:DS3:FAS"	DS3 Frame error ratio
"ECOut:SPDH:REBE"	REBE error count
"ERATio:SPDH:REBE"	REBE error ratio
"ECOut:SPDH:CRC"	CRC error count
"ERATio:SPDH:CRC"	CRC error ratio

Structured PDH and Payload G.821 Analysis Results

:SENSe:DATA? <"result">

Result =	"ECOut:SPDH:BIT"	Error Count
	"ESEConds:SPDH:BIT:ANALysis"	Error Seconds
	"PESeconds:SPDH:BIT:ANALysis"	% Error Seconds
	"PESD:SPDH:BIT:ANALysis"	% Error Seconds (Annex D)
	"EFSeconds:SPDH:BIT:ANALysis"	Error Free Seconds
	"PEFSeconds:SPDH:BIT:ANALysis"	% Error Free Seconds
	"SESeconds:SPDH:BIT:ANALysis"	Severely Errored Seconds
	"PSESeconds:SPDH:BIT:ANALysis"	% Severely Errored Seconds
	"UASeconds:SPDH:BIT:ANALysis"	Unavailable Seconds
	"PUASeconds:SPDH:BIT:ANALysis"	% Unavailable Seconds

PDH Command Reference

SENSe subsystem - Result Returning Commands

"DMINutes:SPDH:BIT:ANALysis"	Degraded Minutes
"PDMinutes:SPDH:BIT:ANALysis"	% Degraded Minutes
"ESEConds:SPDH:CODE:ANALysis"	Code-errored seconds

Structured PDH 140 Mb/s G.826 Analysis Results

:SENSe:DATA? <"result">

Result = "ESEConds:SPDH:M140:TRANsmit:ANALysis:G826"	TX Errored Seconds
"SESeconds:SPDH:M140:TRANsmit:ANALysis:G826"	TX Severely Errored Seconds
"UASeconds:SPDH:M140:TRANsmit:ANALysis:G826"	TX Unavailable Seconds
"PUASeconds:SPDH:M140:TRANsmit:ANALysis:G826"	TX Path Unavailable Seconds
"ESRatio:SPDH:M140:TRANsmit:ANALysis:G826"	TX Errored Second Ratio
"SESRatio:SPDH:M140:TRANsmit:ANALysis:G826"	TX Severely Errored Second Ratio
"ESEConds:SPDH:M140:RECeive:ANALysis:G826"	RX Errored Seconds
"SESeconds:SPDH:M140:RECeive:ANALysis:G826"	RX Severely Errored Seconds
"UASeconds:SPDH:M140:RECeive:ANALysis:G826"	RX Unavailable Seconds
"PUASeconds:SPDH:M140:RECeive:ANALysis:G826"	RX Path Unavailable Seconds
"ESRatio:SPDH:M140:RECeive:ANALysis:G826"	RX Errored Second Ratio
"SESRatio:SPDH:M140:RECeive:ANALysis:G826"	RX Severely Errored Second Ratio

PDH Command Reference
SENSe subsystem - Result Returning Commands

Structured PDH 34 Mb/s G.826 Analysis Results

:SENSe:DATA? <"result">

Result = "ESECONDS:SPDH:M34:TRANSMIT:ANALYSIS:G826"	TX Errored Seconds
"SECONDS:SPDH:M34:TRANSMIT:ANALYSIS:G826"	TX Severely Errored Seconds
"UASECONDS:SPDH:M34:TRANSMIT:ANALYSIS:G826"	TX Unavailable Seconds
"PUASECONDS:SPDH:M34:TRANSMIT:ANALYSIS:G826"	TX Path Unavailable Seconds
"ESRATIO:SPDH:M34:TRANSMIT:ANALYSIS:G826"	TX Errored Second Ratio
"SESRATIO:SPDH:M34:TRANSMIT:ANALYSIS:G826"	TX Severely Errored Second Ratio
"ESECONDS:SPDH:M34:RECEIVE:ANALYSIS:G826"	RX Errored Seconds
"SECONDS:SPDH:M34:RECEIVE:ANALYSIS:G826"	RX Severely Errored Seconds
"UASECONDS:SPDH:M34:RECEIVE:ANALYSIS:G826"	RX Unavailable Seconds
"PUASECONDS:SPDH:M34:RECEIVE:ANALYSIS:G826"	RX Path Unavailable Seconds
"ESRATIO:SPDH:M34:RECEIVE:ANALYSIS:G826"	RX Errored Second Ratio
"SESRATIO:SPDH:M34:RECEIVE:ANALYSIS:G826"	RX Severely Errored Second Ratio

SENSe subsystem - Result Returning Commands

Structured PDH 8 Mb/s G.826 Analysis Results

:SENSe:DATA? <"result">

Result = "ESECONDS:SPDH:M8:TRANSMIT:ANALYSIS:G826"	TX Errored Seconds
"SECONDS:SPDH:M8:TRANSMIT:ANALYSIS:G826"	TX Severely Errored Seconds
"UASECONDS:SPDH:M8:TRANSMIT:ANALYSIS:G826"	TX Unavailable Second Counts
"PUASECONDS:SPDH:M8:TRANSMIT:ANALYSIS:G826"	TX Path Unavailable Seconds
"ESRATIO:SPDH:M8:TRANSMIT:ANALYSIS:G826"	TX Errored Second Ratio
"SESRATIO:SPDH:M8:TRANSMIT:ANALYSIS:G826"	TX Severely Errored Second Ratio
"ESECONDS:SPDH:M8:RECEIVE:ANALYSIS:G826"	RX Errored Seconds
"SECONDS:SPDH:M8:RECEIVE:ANALYSIS:G826"	RX Severely Errored Seconds
"UASECONDS:SPDH:M8:RECEIVE:ANALYSIS:G826"	RX Unavailable Seconds
"PUASECONDS:SPDH:M8:RECEIVE:ANALYSIS:G826"	RX Path Unavailable Seconds
"ESRATIO:SPDH:M8:RECEIVE:ANALYSIS:G826"	RX Errored Second Ratio
"SESRATIO:SPDH:M8:RECEIVE:ANALYSIS:G826"	RX Severely Errored Second Ratio

PDH Command Reference
SENSe subsystem - Result Returning Commands

Structured PDH 2 Mb/s G.826 Analysis Results

:SENSe:DATA? <"result">

Result = "EBCount:SPDH:M2:TRANsmit:ANALysis:G826"	TX Errored Block Count
"ESECONDS:SPDH:M2:TRANsmit:ANALysis:G826"	TX Errored Seconds
"SESeconds:SPDH:M2:TRANsmit:ANALysis:G826"	TX Severely Errored Seconds
"UASeconds:SPDH:M2:TRANsmit:ANALysis:G826"	TX Unavailable Seconds
"PUASeconds:SPDH:M2:TRANsmit:ANALysis:G826"	TX Path Unavailable Seconds
"BBECount:SPDH:M2:TRANsmit:ANALysis:G826"	TX Background Block Error Count
"ESRatio:SPDH:M2:TRANsmit:ANALysis:G826"	TX Errored Second Ratio
"SESRatio:SPDH:M2:TRANsmit:ANALysis:G826"	TX Severely Errored Second Ratio
"BBERatio:SPDH:M2:TRANsmit:ANALysis:G826"	TX Background Block Error Ratio
"EBCount:SPDH:M2:RECEive:ANALysis:G826"	RX Errored Block Count
"ESECONDS:SPDH:M2:RECEive:ANALysis:G826"	RX Errored Seconds
"SESeconds:SPDH:M2:RECEive:ANALysis:G826"	RX Severely Errored Seconds
"UASeconds:SPDH:M2:RECEive:ANALysis:G826"	RX Unavailable Seconds
"PUASeconds:SPDH:M2:RECEive:ANALysis:G826"	RX Path Unavailable Seconds
"BBECount:SPDH:M2:RECEive:ANALysis:G826"	RX Background Block Error Count
"ESRatio:SPDH:M2:RECEive:ANALysis:G826"	RX Errored Second Ratio
"SESRatio:SPDH:M2:RECEive:ANALysis:G826"	RX Severely Errored Second Ratio
"BBERatio:SPDH:M2:RECEive:ANALysis:G826"	RX Background Block Error Ratio

PDH Command Reference
SENSe subsystem - Result Returning Commands

Structured PDH DS1 G.826 Analysis Results

:SENSe:DATA? <"result">

Result = "ESECONDS:SPDH:DS1:TRANSMIT:ANALYSIS:G826"	TX Errored Seconds
"SECONDS:SPDH:DS1:TRANSMIT:ANALYSIS:G826"	TX Severely Errored Seconds
"UASECONDS:SPDH:DS1:TRANSMIT:ANALYSIS:G826"	TX Unavailable Seconds
"PUASECONDS:SPDH:DS1:TRANSMIT:ANALYSIS:G826"	TX Path Unavailable Seconds
"ESRATIO:SPDH:DS1:TRANSMIT:ANALYSIS:G826"	TX Errored Second Ratio
"SESRATIO:SPDH:DS1:TRANSMIT:ANALYSIS:G826"	TX Severely Errored Second Ratio
"EBCOUNT:SPDH:DS1:RECEIVE:ANALYSIS:G826"	RX Errored Block Count
"ESECONDS:SPDH:DS1:RECEIVE:ANALYSIS:G826"	RX Errored Seconds
"SECONDS:SPDH:DS1:RECEIVE:ANALYSIS:G826"	RX Severely Errored Seconds
"UASECONDS:SPDH:DS1:RECEIVE:ANALYSIS:G826"	RX Unavailable Seconds
"PUASECONDS:SPDH:DS1:RECEIVE:ANALYSIS:G826"	RX Path Unavailable Seconds
"BBECOUNT:SPDH:DS1:RECEIVE:ANALYSIS:G826"	RX Background Block Error Count
"ESRATIO:SPDH:DS1:RECEIVE:ANALYSIS:G826"	RX Errored Second Ratio
"SESRATIO:SPDH:DS1:RECEIVE:ANALYSIS:G826"	RX Severely Errored Second Ratio
"BBERATIO:SPDH:DS1:RECEIVE:ANALYSIS:G826"	RX Background Block Error Ratio

Structured PDH DS3 G.826 Analysis Results

:SENSe:DATA? <"result">

Result = "EBCount:SPDH:DS3:TRANsmit:ANALysis:G826"	TX Errored Block Count
"ESEConds:SPDH:DS3:TRANsmit:ANALysis:G826"	TX Errored Seconds
"SESeconds:SPDH:DS3:TRANsmit:ANALysis:G826"	TX Severely Errored Seconds
"UASeconds:SPDH:DS3:TRANsmit:ANALysis:G826"	TX Unavailable Seconds
"PUASeconds:SPDH:DS3:TRANsmit:ANALysis:G826"	TX Path Unavailable Seconds
"BBECount:SPDH:DS3:TRANsmit:ANALysis:G826"	TX Background Block Error Count
"ESRatio:SPDH:DS3:TRANsmit:ANALysis:G826"	TX Errored Second Ratio
"SESRatio:SPDH:DS3:TRANsmit:ANALysis:G826"	TX Severely Errored Second Ratio
"BBERatio:SPDH:DS3:TRANsmit:ANALysis:G826"	TX Background Block Error Ratio
"EBCount:SPDH:DS3:RECeive:ANALysis:G826"	RX Errored Block Count
"ESEConds:SPDH:DS3:RECeive:ANALysis:G826"	RX Errored Seconds
"SESeconds:SPDH:DS3:RECeive:ANALysis:G826"	RX Severely Errored Seconds
"UASeconds:SPDH:DS3:RECeive:ANALysis:G826"	RX Unavailable Seconds
"PUASeconds:SPDH:DS3:RECeive:ANALysis:G826"	RX Path Unavailable Seconds
"BBECount:SPDH:DS3:RECeive:ANALysis:G826"	RX Background Block Error Count
"ESRatio:SPDH:DS3:RECeive:ANALysis:G826"	RX Errored Second Ratio
"SESRatio:SPDH:DS3:RECeive:ANALysis:G826"	RX Severely Errored Second Ratio
"BBERatio:SPDH:DS3:RECeive:ANALysis:G826"	RX Background Block Error Ratio

PDH Command Reference
SENSe subsystem - Result Returning Commands

Structured PDH M.2100 Analysis Results

:SENSe:DATA? <"result">

Result =	"ESECONDS:SPDH:M140:TRANSMIT:ANALYSIS:M2100"	TX error seconds
	"ESECONDS:SPDH:M140:RECEIVE:ANALYSIS:M2100"	RX error seconds
	"SECONDS:SPDH:M140:TRANSMIT:ANALYSIS:M2100"	TX severely errored seconds
	"SECONDS:SPDH:M140:RECEIVE:ANALYSIS:M2100"	RX severely errored seconds
	"UASECONDS:SPDH:M140:TRANSMIT:ANALYSIS:M2100"	TX unavailable seconds
	"UASECONDS:SPDH:M140:RECEIVE:ANALYSIS:M2100"	RX unavailable seconds
	"ESECONDS:SPDH:M34:TRANSMIT:ANALYSIS:M2100"	TX error seconds
	"ESECONDS:SPDH:M34:RECEIVE:ANALYSIS:M2100"	RX error seconds
	"SECONDS:SPDH:M34:TRANSMIT:ANALYSIS:M2100"	TX severely errored seconds
	"SECONDS:SPDH:M34:RECEIVE:ANALYSIS:M2100"	RX severely errored seconds
	"UASECONDS:SPDH:M34:TRANSMIT:ANALYSIS:M2100"	TX unavailable seconds
	"UASECONDS:SPDH:M34:RECEIVE:ANALYSIS:M2100"	RX unavailable seconds
	"ESECONDS:SPDH:M8:TRANSMIT:ANALYSIS:M2100"	TX error seconds
	"ESECONDS:SPDH:M8:RECEIVE:ANALYSIS:M2100"	RX error seconds
	"SECONDS:SPDH:M8:TRANSMIT:ANALYSIS:M2100"	TX severely errored seconds
	"SECONDS:SPDH:M8:RECEIVE:ANALYSIS:M2100"	RX severely errored seconds
	"UASECONDS:SPDH:M8:TRANSMIT:ANALYSIS:M2100"	TX unavailable seconds

SENSe subsystem - Result Returning Commands

"UASeconds:SPDH:M8:RECeive:ANALysis:M2100"	RX unavailable seconds
"ESEConds:SPDH:M2:TRANsmit:ANALysis:M2100"	TX error seconds
"ESEConds:SPDH:M2:RECeive:ANALysis:M2100"	RX error seconds
"SESeconds:SPDH:M2:TRANsmit:ANALysis:M2100"	TX severely errored seconds
"SESeconds:SPDH:M2:RECeive:ANALysis:M2100"	RX severely errored seconds
"UASeconds:SPDH:M2:TRANsmit:ANALysis:M2100"	TX unavailable seconds
"UASeconds:SPDH:M2:RECeive:ANALysis:M2100"	RX unavailable seconds
"ESEConds:SPDH:DS1:TRANsmit:ANALysis:M2100"	TX error seconds
"ESEConds:SPDH:DS1:RECeive:ANALysis:M2100"	RX error seconds
"SESeconds:SPDH:DS1:TRANsmit:ANALysis:M2100"	TX severely errored seconds
"SESeconds:SPDH:DS1:RECeive:ANALysis:M2100"	RX severely errored seconds
"UASeconds:SPDH:DS1:TRANsmit:ANALysis:M2100"	TX unavailable seconds
"UASeconds:SPDH:DS1:RECeive:ANALysis:M2100"	RX unavailable seconds
"ESEConds:SPDH:DS3:TRANsmit:ANALysis:M2100"	TX error seconds
"ESEConds:SPDH:DS3:RECeive:ANALysis:M2100"	RX error seconds
"SESeconds:SPDH:DS3:TRANsmit:ANALysis:M2100"	TX severely errored seconds
"SESeconds:SPDH:DS3:RECeive:ANALysis:M2100"	RX severely errored seconds
"UASeconds:SPDH:DS3:TRANsmit:ANALysis:M2100"	TX unavailable seconds
"UASeconds:SPDH:DS3:RECeive:ANALysis:M2100"	RX unavailable seconds

PDH Command Reference
SENSe subsystem - Result Returning Commands

Structured PDH M.2110 Analysis Results

:SENSe:DATA? <"result">

Result =	"MIN15:SPDH:ANALysis:M2110"	M.2110 15 minute BIS Result
	"HOUR1:SPDH:ANALysis:M2110"	M.2110 1 hour BIS Result
	"HOUR2:SPDH:ANALysis:M2110"	M.2110 2 hour BIS Result
	"HOUR24:SPDH:ANALysis:M2110"	M.2110 24 hour BIS Result
	"DAY7:SPDH:ANALysis:M2110"	M.2110 7 day BIS Result

Structured PDH M.2120 ANALysis Results

:SENSe:DATA? <"result">

Result =	"TR1:SPDH:TRANsmit:ANALysis:M2120"	15 minute TX threshold report
	"TR2:SPDH:TRANsmit:ANALysis:M2120"	24 hour TX threshold report
	"TR1:SPDH:RECEive:ANALysis:M2120"	15 minute RX threshold report
	"TR2:SPDH:RECEive:ANALysis:M2120"	24 hour RX threshold report

Structured PDH 2 Mb/S FAS Error Analysis Results

:SENSe:DATA? <"result">

Result =	"ECOunt:SPDH:M2:FAS"	Error count
	"ESEConds:SPDH:M2:FAS:ANALysis"	Error Seconds
	"PESeconds:SPDH:M2:FAS:ANALysis"	% Error Seconds
	"EFSeconds:SPDH:M2:FAS:ANALysis"	Error Free Seconds
	"PEFSeconds:SPDH:M2:FAS:ANALysis"	% Error Free Seconds
	"SESeconds:SPDH:M2:FAS:ANALysis"	Severely Errored Seconds
	"PSESeconds:SPDH:M2:FAS:ANALysis"	% Severely Errored Seconds
	"UASSeconds:SPDH:M2:FAS:ANALysis"	Unavailable Seconds

SENSe subsystem - Result Returning Commands

"PUASeconds:SPDH:M2:FAS:ANALysis"	% Unavailable Seconds
"DMINutes:SPDH:M2:FAS:ANALysis"	Degraded Minutes
"PDMinutes:SPDH:M2:FAS:ANALysis"	% Degraded Minutes
"ESEConds:SPDH:CODE:ANALysis"	Code errored seconds

Structured PDH 8 Mb/S FAS Error Analysis Results

:SENSe:DATA? <"result">

Result =	"ECOunt:SPDH:M8:FAS"	Error count
	"ESEConds:SPDH:M8:FAS:ANALysis"	Error Seconds
	"PESeconds:SPDH:M8:FAS:ANALysis"	% Error Seconds
	"EFSeconds:SPDH:M8:FAS:ANALysis"	Error Free Seconds
	"PEFSeconds:SPDH:M8:FAS:ANALysis"	% Error Free Seconds
	"SESeconds:SPDH:M8:FAS:ANALysis"	Severely Errored Seconds
	"PSESeconds:SPDH:M8:FAS:ANALysis"	% Severely Errored Seconds
	"UASeconds:SPDH:M8:FAS:ANALysis"	Unavailable Seconds
	"PUASeconds:SPDH:M8:FAS:ANALysis"	% Unavailable Seconds
	"DMINutes:SPDH:M8:FAS:ANALysis"	Degraded Minutes
	"PDMinutes:SPDH:M8:FAS:ANALysis"	% Degraded Minutes
	"ESEConds:SPDH:CODE:ANALysis"	Code errored seconds

Structured PDH 34 Mb/S FAS Error Analysis Results

:SENSe:DATA? <"result">

Result =	"ECOunt:SPDH:M34:FAS"	Error count
	"ESEConds:SPDH:M34:FAS:ANALysis"	Error Seconds
	"PESeconds:SPDH:M34:FAS:ANALysis"	% Error Seconds
	"EFSeconds:SPDH:M34:FAS:ANALysis"	Error Free Seconds

SENSe subsystem - Result Returning Commands

"PEFSeconds:SPDH:M34:FAS:ANALysis"	% Error Free Seconds
"SESeconds:SPDH:M34:FAS:ANALysis"	Severely Errored Seconds
"PSESeconds:SPDH:M34:FAS:ANALysis"	% Severely Errored Seconds
"UASSeconds:SPDH:M34:FAS:ANALysis"	Unavailable Seconds
"PUASSeconds:SPDH:M34:FAS:ANALysis"	% Unavailable Seconds
"DMINutes:SPDH:M34:FAS:ANALysis"	Degraded Minutes
"PDMinutes:SPDH:M34:FAS:ANALysis"	% Degraded Minutes
"ESEConds:SPDH:CODE:ANALysis"	Code errored seconds

Structured PDH 140 Mb/S FAS Error Analysis Results

:SENSe:DATA? <"result">

Result =	"ECOunt:SPDH:M140:FAS"	Error count
	"ESEConds:SPDH:M140:FAS:ANALysis"	Error Seconds
	"PESeconds:SPDH:M140:FAS:ANALysis"	% Error Seconds
	"EFSeconds:SPDH:M140:FAS:ANALysis"	Error Free Seconds
	"PEFSeconds:SPDH:M140:FAS:ANALysis"	% Error Free Seconds
	"SESeconds:SPDH:M140:FAS:ANALysis"	Severely Errored Seconds
	"PSESeconds:SPDH:M140:FAS:ANALysis"	% Severely Errored Seconds
	"UASSeconds:SPDH:M140:FAS:ANALysis"	Unavailable Seconds
	"PUASSeconds:SPDH:M140:FAS:ANALysis"	% Unavailable Seconds
	"DMINutes:SPDH:M140:FAS:ANALysis"	Degraded Minutes
	"PDMinutes:SPDH:M140:FAS:ANALysis"	% Degraded Minutes
	"ESEConds:SPDH:CODE:ANALysis"	Code errored seconds

PDH Command Reference
SENSe subsystem - Result Returning Commands

Structured PDH CRC Error Analysis Results

:SENSe:DATA? <"result">

Result =	"ECount:PDH:CRc"	Error Count
	"ESEconds:SPDH:CRc:ANALySis"	Error Seconds
	"PESeconds:SPDH:CRc:ANALySis"	% Error Seconds
	"EFSeconds:SPDH:CRc:ANALySis"	Error Free Seconds
	"PEFSeconds:SPDH:CRc:ANALySis"	% Error Free Seconds
	"SESeconds:SPDH:CRc:ANALySis"	Severely Errored Seconds
	"PSESeconds:SPDH:CRc:ANALySis"	% Severely Errored Seconds
	"UASeconds:SPDH:CRc:ANALySis"	Unavailable Seconds
	"PUASeconds:SPDH:CRc:ANALySis"	% Unavailable Seconds
	"DMINutes:SPDH:CRc:ANALySis"	Degraded Minutes
	"PDMINutes:SPDH:CRc:ANALySis"	% Degraded Minutes
	"ESEconds:SPDH:CODE:ANALySis"	Code errored seconds

Structured PDH REBE Error Analysis Results

:SENSe:DATA? <"result">

Result =	"ECount:SPDH:REBE"	Error Count
	"ESEconds:SPDH:REBE:ANALySis"	Error Seconds
	"PESeconds:SPDH:REBE:ANALySis"	% Error Seconds
	"EFSeconds:SPDH:REBE:ANALySis"	Error Free Seconds
	"PEFSeconds:SPDH:REBE:ANALySis"	% Error Free Seconds
	"SESeconds:SPDH:REBE:ANALySis"	Severely Errored Seconds
	"PSESeconds:SPDH:REBE:ANALySis"	% Severely Errored Seconds
	"UASeconds:SPDH:REBE:ANALySis"	Unavailable Seconds
	"PUASeconds:SPDH:REBE:ANALySis"	% Unavailable Seconds

SENSe subsystem - Result Returning Commands

"DMINutes:SPDH:REBE:ANALysis"	Degraded Minutes
"PDMinutes:SPDH:REBE:ANALysis"	% Degraded Minutes
"ESEConds:SPDH:CODE:ANALysis"	Code errored seconds

Structured PDH Alarm Seconds Results

:SENSe:DATA? <"result">

Result =	"ASEConds:SPDH:LOS"	Loss Of Signal
	"ASEConds:SPDH:M2:LOF"	2 Mb/s Frame Loss
	"ASEConds:SPDH:M8:LOF"	8 Mb/s Frame Loss
	"ASEConds:SPDH:M34:LOF"	34 Mb/s Frame Loss
	"ASEConds:SPDH:M140:LOF"	140 Mb/s Frame Loss
	"ASEConds:SPDH:DS1:OOF"	DS1 Out Of Frame
	"ASEConds:SPDH:DS3:OOF"	DS3 Out Of Frame
	"ASEConds:SPDH:OOF"	DS1/DS3 Out of Frame
	"ASEConds:SPDH:DS3:EXZ"	DS3 Excess zeros
	"ASEConds:SPDH:DS1:EXZ"	DS1 Excess zeros
	"ASEConds:SPDH:DS3:IDLE"	DS3 Idle
	"ASEConds:SPDH:DS3:FMM"	DS3 Frame Mismatch
	"ASEConds:SPDH:AIS"	AIS
	"ASEConds:SPDH:MFM"	Multiframe Loss
	"ASEConds:SPDH:RAI"	Remote Alarm
	"ASEConds:SPDH:RMFR"	Remote Multiframe Alarm
	"ASEConds:SPDH:PSL"	Pattern Sync Loss

Structured PDH Round Trip Delay Results

:SENSe:DATA? <"result">

Result = "RTDelay:SPDH:COUNT" Round Trip Delay

FETCh subsystem

FETCh subsystem

The FETCh subsystem is used to retrieve data directly accumulated by the instrument.

:FETCh:SCALAr:DATA:TELEcom:PDH:SPARe?

Returns : <string>

Returns spare bit result as a string.

:FETCh:SCALAr:DATA:TELEcom:PDH:NFASe?

Returns : <string>

Returns NFAS word as a string.

:FETCh:SCALAr:DATA:TELEcom:PDH:CAS?

Returns : <string>

Returns CAS word as a string.

:FETCh:STRing:DATA:TELEcom:SPDH:FEAC?

Returns: <numeric>

Returns the currently detected FEAC code as a 6 bit binary string.

:FETCh:STRing:DATA:TELEcom:SPDH:FEAC:TEXT?

Returns: <string>

PDH Command Reference

FETCh subsystem

Returns the currently detected FEAC code decoded as the message types defined in ANSI T1.107-1995. Note that two additional codes which are undefined by the ANSI spec have been decoded as follows:

Code	Message
00010010 11111111	NIU Loop Up
00100100 11111111	NIU Loop Down

:FETCh:STRing:DATA:TELEcom:SPDH:FEAC:LAST?

Returns: <numeric>

Returns the last detected non-idle FEAC code as a 6 bit binary string.

:FETCh:STRing:DATA:TELEcom:SPDH:FEAC:LAST:TEXT?

Returns: <string>

Returns the last detected non-idle FEAC code decoded as the message types defined in ANSI T1.107-1995. Note that two additional codes which are undefined by the ANSI spec have been decoded as follows:

Code	Message
00010010 11111111	NIU Loop Up
00100100 11111111	NIU Loop Down

INBAND LOOP CODES

:FETCh:STRing:DATA:TELEcom:SPDH:INBand:LAST?

Returns: <numeric>

Returns the last valid Structured PDH receiver In-band loop code as a binary string.

PDH Command Reference

FETCh subsystem

:FETCh:STRing:DATA:TELEcom:SPDH:INBand:LAST:TEXT?

Returns: <string>

Returns the last valid Structured PDH receiver In-band loop code as a decode message as follows :-

Code	Message
00001	ACTIVATE LINE
001	DEACTIVATE LINE
1100	ACTIVATE PAYLOAD
1110	DEACTIVATE PAYLOAD
11000	ACTIVATE NETWORK
11100	DEACTIVATE UNIVERSAL
Unrecognised preset code from above list	USER CODE

OUTBAND LOOP CODES

:FETCh:STRing:DATA:TELEcom:SPDH:OUTBand:CURRent?

Returns: <numeric>

Returns the current Structured PDH receiver Out-of-band loop code as a 6 bit binary string.

:FETCh:STRing:DATA:TELEcom:SPDH:OUTBand:CURRent:TEXT?

Returns: <string>

Returns the current Structured PDH receiver Out-of-band loop code as a decode message as follows :-

Code	Message
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PDH Command Reference

FETCh subsystem

111000	ACTIVATE LINE
100110	DEACTIVATE LINE
010100	ACTIVATE PAYLOAD
100110	DEACTIVATE PAYLOAD
100100	ACTIVATE NETWORK
010010	DEACTIVATE UNIVERSAL
Unrecognised preset code from above list	USER CODE

:FETCh:STRing:DATA:TELEcom:SPDH:OUTBand:LAST?

Returns: <numeric>

Returns the last valid Structured PDH receiver Out-of-band loop code as a 6 bit binary string.

:FETCh:STRing:DATA:TELEcom:SPDH:OUTBand:LAST:TEXT?

Returns: <string>

Returns the last valid Structured PDH receiver Out-of-band loop code as a decode message as follows :-

Code	Message
111000	ACTIVATE LINE
100110	DEACTIVATE LINE
010100	ACTIVATE PAYLOAD
100110	DEACTIVATE PAYLOAD
100100	ACTIVATE NETWORK
010010	DEACTIVATE UNIVERSAL
Unrecognised preset code from above list	USER CODE

FETCh subsystem

:FETCh:SCALar:DATA:TELEcom:SPDH:TSLot:SIGNaling? <numeric>

Returns: <string>

<numeric> = 1 - 31 Timeslot number
1 to 24 Timeslot Number (DS1 Signalling Bits)

Returns: <string>

Returns the signalling bits for the specified timeslot as a string.

:FETCh:ARRAy:DATA:TELEcom:SPDH:ASCan:M140?

Returns : <numeric>

Retained for backwards compatibility. Returns a number indicating the status of the 140 Mb/s Alarm Scan. For new developments the command :FETCh:ARRAy:DATA:TELEcom:SPDH:ASCan? is recommended.

:FETCh:ARRAy:DATA:TELEcom:SPDH:ASCan:M34?

Returns : <numeric>,<numeric>,<numeric>,<numeric>

Retained for backwards compatibility. Returns 4 numbers, separated by commas, indicating the status of the 34 Mb/s Alarm Scan. For new developments the command :FETCh:ARRAy:DATA:TELEcom:SPDH:ASCan? is recommended.

:FETCh:ARRAy:DATA:TELEcom:SPDH:ASCan:M8?

Returns (each of <numeric>,<numeric>,<numeric>,<numeric>
rows 1 to 4):

Retained for backwards compatibility. Returns 4 rows of 4 numbers, separated by commas, indicating the status of the 8 Mb/s Alarm Scan. For new developments the command :FETCh:ARRAy:DATA:TELEcom:SPDH:ASCan? is recommended.

FETCh subsystem

:FETCh:ARRay:DATA:TELEcom:SPDH:ASCan:M2?

Returns (each of <numeric>,<numeric>,<numeric>,<numeric>
rows 1 to 16):

Retained for backwards compatibility. Returns 16 rows of 4 numbers separated by commas, indicating the status of the 2 Mb/s Alarm Scan. For new developments the command

:FETCh:ARRay:DATA:TELEcom:SPDH:ASCan? is recommended.

:FETCh:ARRay:DATA:TELEcom:SPDH:ASCan?

Returns (each of one or <numeric>{,<numeric>}
more rows):

The results returned are those for the last FULL scan. Results from partial scans are not available. If no full scan has been completed since the instrument was powered up, this command will return -1.

If data is available it is returned as a set of string arrays. The arrays are separated by a CR/LF pair. The arrays consist of comma separated numerics, one for each scanned tributary. The numeric is a boolean flag which is used as follows.

Value	State
0	No Problems detected
1	Alarms Detected

For specific signal structures, the format of the returned strings are shown below:

1) 140Mb/s Interface Rate, Structured, 2Mb/s Test Signal

Each level of the structure scanned returns its results in one array apart from the fourth level, in this case 2Mb/s, where its results are split into 4 arrays.

140Mb/s	0
34Mb/s	0,0,1,0
8Mb/s	0,1,0,1,1,0,0,1,1,1,1,0,0,0,0,0
2Mb/s	1,1,1,0,0,1,0,0,0,0,0,1,1,1,1,0

PDH Command Reference

FEtCh subsystem

0,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0

1,1,1,1,0,0,1,0,0,0,1,1,1,1,0,0

0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0

2) STM-1 Interface Rate, DS3 Payload, Structured, Nx64kb/s Test Signal

When there are less than four levels in the structure, each levels results are returned in one array.

DS3 0

DS2 0,0,1,0,1,1,1

DS1 0,1,0,1,1,0,0,1,1,1,1,0,0,0,0,0,1,0,1,1,1,0,0,0,0,0,1,1

PDH Command Reference
FETCH subsystem

SONET SCPI Command Reference

OUTPut subsystem, see page 4-3.

SOURce subsystem - Transmitter SONET Settings Commands, see page 4-9.

SONET Mapping Settings, see page 4-13.

SOURce subsystem - Transmitter SONET OVERHEAD SETUP, see page 4-23.

SOURce subsystem - Transmitter SONET Test Function Commands, see page 4-33.

INPut subsystem, see page 4-59.

SENSe subsystem - Receiver SONET Settings, see page 4-63.

SENSe subsystem - Receiver SONET Test Function Commands, see page 4-72.

SENSe subsystem - Alarm Scan Control, see page 4-78.

SENSe subsystem - SONET Tributary Scan Control, see page 4-80.

SENSe subsystem - Result Returning Commands, see page 4-82.

FETCh subsystem, see page 4-93.

SONET Command Reference

SONET Command Reference

This chapter contains detailed information on the SCPI (Standard Commands for Programming Instruments) and IEEE 488.2 common commands you will use when writing programs to control your HP 37719A for SONET operation.

Please also refer to chapter 2 Common Commands for general information on SCPI command formats and for a list of commands that are common to PDH, or SONET operation; they are as follows:

SCPI Command Format

Remote Control Commands

Instrument Options

INSTRument subsystem

SOURce subsystem

SOURce subsystem - Transmitter Common Commands

INPut subsystem

SENSe subsystem

SENSe subsystem - Receiver Common Commands

SENSe subsystem - Test Timing

SENSe subsystem - Analysis Control

SENSe subsystem - Trouble Scan Results

SENSe subsystem - Configuring Graphics

SENSe subsystem - Managing Graphics Stores

SENSe subsystem - Retrieving Graphics Store Data

SENSe subsystem - Retrieving Data for a Single Graph

SENSe subsystem - Obtaining Graphics End of Measurement Results

STATus Subsystem

SYSTem Subsystem

IEEE common capabilities

OUTPut subsystem

OUTPut subsystem

This subsystem controls the characteristics of the instrument's output ports.

:OUTPut:TELEcom:SONet:RATE <discrete>

<discrete> =	STS1	STS-1 Electrical
	STS3	STS-3 Electrical

Is only valid when :SOURce:DATA:TELEcom:SOURce <discrete> is set to SONet.

:OUTPut:TELEcom:SONet:RATE?

Returns: <discrete>

:OUTPut:TELEcom:SONet:LEVel <discrete>

<discrete> =	XCON	450 feet simulated cable
	HIGH	0 feet simulated cable
	LOW	900 feet simulated cable

Selects the signal level for the STS-1 output.

The corresponding query returns the STS-1 signal level in discrete short form.

:OUTPut:TELEcom:SONet:LEVel?

Returns: <discrete>

:OUTPut:TELEcom:OC3:RATE <discrete>

<discrete> =	OC1	OC-1 optical
	OC3	OC-3 Optical

Selects the output rate for the OC-1/OC-3 optical output port. This command is only valid when :SOURce:DATA:TELEcom:SOURce <discrete> is set to OC3.

SONET Command Reference

OUTPut subsystem

The corresponding query returns the OC-1/OC-3 output rate in discrete form as listed above. If the OC-3 port is not selected, OC3 will be returned as the default.

:OUTPut:TELeom:OC3:RATE?

Returns: <rate>

:OUTPut:TELeom:OC3:INTErface?

Returns: <discrete>

Returns the selected output port interface in discrete form - always OPTical.

:OUTPut:TELeom:OC3:WAVelength <discrete>

<discrete> =	NM1310	1310 nm
	NM1550	1550 nm

Selects the wavelength of the output optical signal on the Optical module.

The corresponding query returns the output optical wavelength in discrete form, as listed above.

:OUTPut:TELeom:OC3:WAVelength?

Returns : <discrete>

:OUTPut:TELeom:OC3:LASer <boolean>

<boolean> =	0 or OFF
	1 or ON

Controls the state of the laser (ON or OFF) on the Optical module.

The corresponding query returns the state of the laser as 0 or 1.

:OUTPut:TELeom:OC3:LASer?

Returns : <boolean> 0 or 1

SONET Command Reference

OUTPut subsystem

Controls the state of the laser (ON or OFF) on the Optical module.

The corresponding query returns the state of the laser as 0 or 1.

:OUTPut:TELEcom:OC12:LASer?

Returns : <boolean> 0 or 1

:OUTPut:TELEcom:OC48:RATE <discrete>

<discrete> =	OC1	OC-1 optical
	OC3	OC-3 Optical
	OC12	OC-12 Optical
	OC48	OC-48 Optical

Selects the output rate for the OC-1/OC-3/OC-12/OC-48 optical output port. This command is only valid when :SOURce:DATA:TELEcom:SOURce <discrete> is set to OC48.

The corresponding query returns the OC-1/OC-3/OC-12/OC-48 output rate in discrete form as listed above. If the OC-48 port is not selected, OC-48 will be returned as the default.

:OUTPut:TELEcom:OC48:RATE?

Returns : <discrete>

:OUTPut:TELEcom:OC48:INTerface?

Returns: <discrete>

Returns the selected output port interface in discrete form - always OPTical.

:OUTPut:TELEcom:OC48:WAVelength <discrete>

<discrete> =	NM1310	1310 nm
	NM1550	1550 nm

SONET Command Reference

OUTPut subsystem

Selects the wavelength of the output optical signal on the Optical module.

The corresponding query returns the output optical wavelength in discrete form, as listed above.

:OUTPut:TELEcom:OC48:WAVelength?

Returns : <discrete>

:OUTPut:TELEcom:OC48:LASer <boolean>

<boolean> = 0 or OFF
 1 or ON

Controls the state of the laser (ON or OFF) on the Optical module.

The corresponding query returns the state of the laser as 0 or 1.

:OUTPut:TELEcom:OC48:LASer?

Returns : <boolean> 0 or 1

SOURce subsystem - Transmitter SONET Settings Commands**SONET Clock settings****:SOURce:CLOCK:SONet:SOURce <discrete>**

<discrete> =	INTernal	Internal
	EXTernal	External Clock/Data
	RSTS1	STS-1 Electrical
	ROC1	OC-1 Optical
	RMN1	STS-1 Monitor
	RSTS3	STS-3 Electrical
	ROC3	OC-3 Optical
	RMN3	STS-3 Monitor
	ROC12	OC-12 Optical
	RMN12	STS-12 Monitor
	ROC48	OC-48 Optical

Selects the SONET transmitter clock sync source. If the RX is set to an STS rate, then the only received clock rate that may be selected is the one in use. This restriction does not apply if the RX is set to a non STS rate. If EXT is selected, the Format is set using :SOURce:CLOCK:SONet:FORMat <discrete>.

The corresponding query returns the transmitter SONET clock sync source in discrete form as listed above.

:SOURce:CLOCK:SONet:SOURce?

Returns : <discrete>

:SOURce:CLOCK:SONet:FORMat <discrete>

<discrete> =	CLOCK	Clock Format
	DATA	Data Format
	K64	64kb/s data

SONET Command Reference

SOURCE subsystem - Transmitter SONET Settings Commands

DS1Bits	DS1 bit rate
M10Ref	10 MHz Reference

Selects the transmitter SONET EXT clock sync source format.

The corresponding query returns the EXT clock sync source format in discrete form as listed above.

:SOURCE:CLOCK:SONet:FORMat?

Returns : <discrete>

:SOURCE:CLOCK:SONet:FOFFset <boolean>

<boolean> = 0 or OFF
1 or ON

Enables/disables the SONET Frequency Offset. The amount of Offset is set using :SOURCE:CLOCK:SONet:FOFFset:OFFSet <numeric><suffix>.

The corresponding query returns the SONET Frequency Offset state as 0 or 1.

:SOURCE:CLOCK:SONet:FOFFset?

Returns : <boolean>

:SOURCE:CLOCK:SONet:FOFFset:OFFSet <numeric><suffix>

<numeric> =	-999 to +999	Parts per Million
	-0.0999 to 0.0999	% or Ratio
<suffix> =	PPM	Parts per Million
	PCT	Percentage

Sets the amount of SONET Frequency Offset when Frequency Offset is enabled by setting :SOURCE:CLOCK:SONet:FOFFset <boolean> to ON. If Ratio is chosen as the method of specifying Offset, no suffix is required.

The corresponding query returns the amount of SONET Frequency Offset in ppm.

SOURce subsystem - Transmitter SONET Settings Commands

:SOURce:CLOCK:SONet:FOFFset:OFFSet?

Returns : <numeric>

Thru mode settings

:SOURce:DATA:TELEcom:SONet:THRumode <discrete>

<discrete> =	INTernal	Select Normal SONET Mode
	THRU	Select SONET Thru Mode

Selects/Deselects SONET THRU mode.

The corresponding query returns the THRU mode state in discrete form as listed above.

:SOURce:DATA:TELEcom:SONet:THRumode?

Returns : <discrete>

:SOURce:DATA:TELEcom:SONet:THRumode:PAYLoad:OVERwrite <discrete>

<discrete> =	OFF	Payload Overwrite Off
	STS3c	Overwrite STS-3C payload
	STS1	Overwrite STS-1 payload
	VT6	Overwrite VT-6 payload
	VT2	Overwrite VT-2 payload
	VT15	Overwrite VT-1.5 payload

Selects the type of thru-mode payload to overwrite. The payload is not overwritten until explicitly enabled by

:SOURce:DATA:TELEcom:SONet:THRumode:PAYLoad:OVERwrite:ENABLE <boolean> .

The corresponding query returns the payload overwrite state in discrete form as listed above.

SOURCE subsystem - Transmitter SONET Settings Commands

:SOURCE:DATA:TELEcom:SONet:THRumode:PAYLoad:OVERwrite?

Returns : <discrete>

**:SOURCE:DATA:TELEcom:SONet:THRumode:PAYLoad:OVERwrite:ENAB
le <boolean>**

<boolean> = 0 or OFF
1 or ON

Enable the thru-mode payload overwrite.

The corresponding query returns the payload overwrite enable state in discrete form as listed above.

**:SOURCE:DATA:TELEcom:SONet:THRumode:PAYLoad:OVERwrite:ENAB
le?**

Returns : <boolean> 0 or 1

:SOURCE:DATA:TELEcom:SONet:THRumode:COVERwrite <boolean>

<boolean> = 0 or OFF Overhead Overwrite Off
1 or ON Overhead Overwrite On

Enables/disables section overhead overwrite.

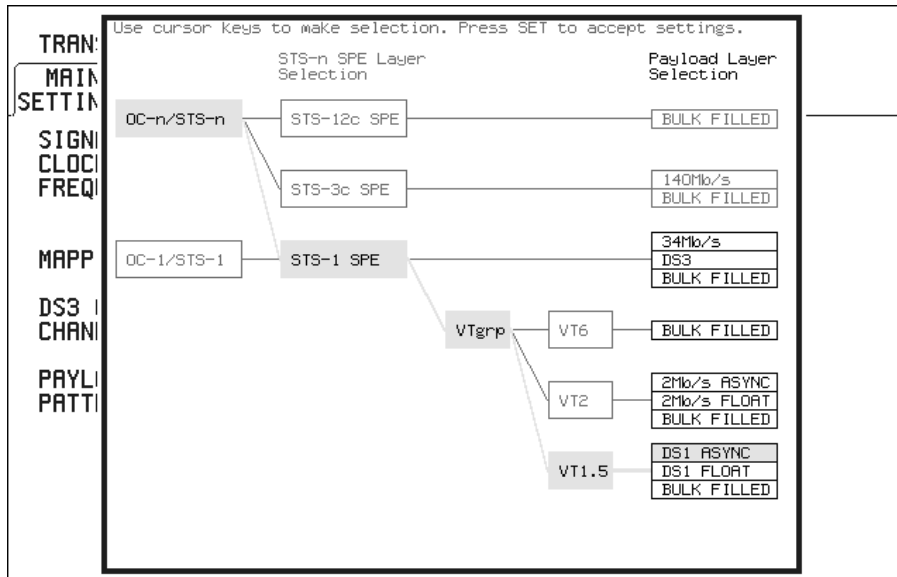
The corresponding query returns the section overhead overwrite state in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:THRumode:COVERwrite?

Returns : <boolean>

SONET Command Reference
SOURCE subsystem - Transmitter SONET Settings Commands

SONET Mapping Settings



STATUS:



:SOURCE:DATA:TELEcom:SONet:STS3 <numeric>

<numeric> = 1 to 16 STS3 number under test.

Only valid if :OUTPUT:TELEcom:OC48:RATE <discrete> is set to a rate higher than STS-3. Selects the transmitted STS-3 that is selected for test.

The corresponding query returns the STS-3 selected for test in numeric form, as listed above.

:SOURCE:DATA:TELEcom:SONet:STS3?

Returns : <numeric>

SOURce subsystem - Transmitter SONET Settings Commands

:SOURce:DATA:TELEcom:SONet:STS12c <numeric>

<numeric> = 1 to 4 STS12 number under test.

:SOURce:DATA:TELEcom:SONet:STS12c?

Returns : <numeric>

SPE Layer Selection

:SOURce:DATA:TELEcom:SONet:SPE:TYPE <discrete>

<discrete> = STS3c
STS1
STS12c
STS48c

Set the SPE mapping into an STS-N frame.

The corresponding query returns the SPE layer in discrete form as listed above.

:SOURce:DATA:TELEcom:SONet:SPE:TYPE?

Returns: <discrete>

:SOURce:DATA:TELEcom:SONet:STS1 <numeric>

<numeric> = 1 to 3 STS1 Number

Selects the SONET Transmitter active STS-1 within the STS-3.

The corresponding query returns the active STS-1 in numeric form.

:SOURce:DATA:TELEcom:SONet:STS1?

Returns : <numeric>

SOURCE subsystem - Transmitter SONET Settings Commands**:SOURCE:DATA:TELEcom:SONet:TRIButary?**

Returns : <numeric>

VT Payload and Test Pattern**:SOURCE:DATA:TELEcom:SONet:PAYLoad:TYPE <discrete>**

<discrete> =	UNFRamed	No framing
	FRAMed	8, 34 & 140 Mb/s
	PCM30	2 Mb/s Only
	PCM31	2 Mb/s Only
	PCM30CRC	2 Mb/s Only
	PCM31CRC	2 Mb/s Only
	IM2	2 Mb/s Insert
	IM34	34 Mb/s Insert
	IM140	140 Mb/s Insert
	D4	DS1 Framing Only
	ESF	DS1 Framing Only
	SLC96	DS1 Framing Only
	M13	DS3 Framing Only
	CBIT	DS3 Framing Only
	IDS1	Insert DS1
	IDS3	Insert DS3
	NOFBit	No Framing Bit (set to '0')

To set the framing type to be structured use the command

:SOURCE:DATA:TELEcom:SONet:PAYLoad:STRucture <discrete>.

Only valid if a Structured PDH transmitter is fitted.

The corresponding query returns the framing in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:PAYLoad:TYPE?

Returns : <discrete>

SOURce subsystem - Transmitter SONET Settings Commands

:SOURce:DATA:TELEcom:SONet:PAYLoad:STRucture <discrete>

<discrete> =	UNSTRuctured	All rates
	STRuctured	All framed formats

Selects whether or not the PDH payload signal is to have any further structure or not.

The corresponding query returns the transmitter PDH payload structure setting in discrete form as listed above.

:SOURce:DATA:TELEcom:SONet:PAYLoad:STRucture?

Returns: <discrete>

:SOURce:DATA:TELEcom:SONet:PAYLoad:PATtern <discrete>

<discrete> =	PRBS9	2^9-1
	PRBS11	$2^{11}-1$
	PRBS15	$2^{15}-1$
	PRBS20	$2^{20}-1$
	PRBS23	$2^{23}-1$
	QRSS	$2^{20}-1$ with 14 consecutive zero limit (DS1 only)
	AZERo	All Zeros
	AONE	All Ones
	STRess	3-in-24 stress pattern (DS1 only)
	P1IN8	1-in-8 test pattern
	P2IN8	2-in-8 test pattern
	OCT55	55 octet test pattern (uses Daly pattern as per ANSI T1.403)
	P1010	Word 1010
	P1000	Word 1000
	UWORD	16 Bit User Word

SONET Command Reference

SOURCE subsystem - Transmitter SONET Settings Commands

<suffix> =	PPM	Parts per Million
	PCT	Percentage

Sets the 140, 34, 2 Mb/s, DS3 or DS1 payload frequency offset in parts per million (ppm).

The corresponding query returns the offset in numeric form.

:SOURCE:DATA:TELEcom:SONet:PAYLoad:OFFSet?

Returns: <numeric> ppm

:SOURCE:DATA:TELEcom:SONet:TRIButary:CONCatenate <numeric>, <numeric>

<numeric> = (first parameter)	0	Concatenation Off
	2	VT6-2c
	3	VT6-3c
	4	VT6-4c
	5	VT6-5c
	6	VT6-6c
<numeric> = (second parameter)	1 to 6	VT6-2c selected
	1 to 5	VT6-3c selected
	1 to 4	VT6-4c selected
	1 to 3	VT6-5c selected
	1 to 2	VT6-6c selected

Selects the VT6 concatenation (first parameter) and starting at VT (second parameter).

The corresponding query returns the VT6 concatenation and starting at VT in numeric form as listed above.

SOURce subsystem - Transmitter SONET Settings Commands

:SOURce:DATA:TELEcom:SONet:TRIButary:CONCatenate?

Returns : <numeric>, <numeric>

Background Settings

**:SOURce:DATA:TELEcom:SONet:PRIMary:BACKground:PAYLoad
:PATtern <discrete>**

<discrete> =	PRBS9	2 ⁹ -1
	PRBS15	2 ¹⁵ -1
	NUMBered	(VT-6 or framed VT-2/VT-1.5)
	P1100	word 1100

Selects the background payload pattern for VTs within the foreground VT Group. The corresponding query returns the background pattern in discrete form as listed above.

**:SOURce:DATA:TELEcom:SONet:PRIMary:BACKground:PAYLoad
:PATtern?**

Returns: <discrete>

:SOURce:DATA:TELEcom:SONet:STS1:BACKground <discrete>

<discrete> =	UNEQuipped	Fixed at 00000000
	AS_FG	As Foreground

Selects the payload in the background (non test) STS-1s. This command only applies if the interface rate is higher than STS-1. The corresponding query returns the type of payload in the background STS-1s in discrete short form.

:SOURce:DATA:TELEcom:SONet:STS1:BACKground?

Returns: <discrete>

SOURCE subsystem - Transmitter SONET Settings Commands

:SOURCE:DATA:TELEcom:SONet:STS3:BACKground <discrete>

<discrete> =	UNEQuipped	Fixed at 00000000
	AS_FG	As Foreground

Selects the payload in the background (non test) STS-3s. This command only applies if the interface rate is higher than STS-3.

The corresponding query returns the type of payload in the background STS-3s in discrete short form.

:SOURCE:DATA:TELEcom:SONet:STS3:BACKground?

Returns: <discrete>

:SOURCE:DATA:TELEcom:SONet:STS12c BACKground <discrete>

<discrete> =	UNEQuipped	Fixed at 00000000
	AS_FG	As Foreground

Selects the payload in the background (non test) STS-12c's. This command only applies if the interface rate is higher than STS-12c.

The corresponding query returns the type of payload in the background STS-12c in discrete short form.

:SOURCE:DATA:TELEcom:SONet:STS12c:BACKground?

Returns: <discrete>

SOURce subsystem - Transmitter SONET OVERHEAD SETUP**SOURce subsystem - Transmitter SONET OVERHEAD SETUP**

Lists the settings for the commands associated with the TRANSMIT OVERHEAD SETUP display.

:SOURce:DATA:TELEcom:SONet:OVERhead:DEFault

Sets all overhead bytes to their default value :

Byte	Value	Byte	Value	Byte	Value	Byte	Value
A1	11110110	A2	00101000	J0/Z0	00000001	B1	xxxxxxxx
E1	00000000	F1	00000000	D1	00000000	D2	00000000
D3	00000000	E2	00000000	H1	xxxx10xx	H2	xxxxxxxx
H3	xxxxxxxx	B2	xxxxxxxx	K1	00000000	K2	00000000
D4	00000000	D5	00000000	D6	00000000	D7	00000000
D8	00000000	D9	00000000	D10	00000000	D11	00000000
D12	00000000	S1/Z1	00000000	M0/M1/Z2	00000000	J1	Default
B3	xxxxxxxx	C2	00000001	G1	00000000	F2	00000000
H4	00000000	Z3	00000000	Z4	00000000	N1	00000000

:SOURce:DATA:TELEcom:SONet:OVERhead:DATA <numeric>, <numeric>, <discrete>, <string>

<numeric> = STS-3 Number: range 1 to 16
(first parameter)

<numeric> = STS-1 Number: range 1 to 3
(second parameter)

<discrete> = A1|A2|J0/Z0|E1|F1|D1|D2|D3|H1|K1
K2|D4|D5|D6|D7|D8|D9|D10|D11
D12|S1/Z1|M0/M1/
Z2|E2|X11|X12|X13|X21|X22|X23|X31
X32|X33|X41|X42|X52|X53|X61|X62|X63
X71|X72|X73|X81|X82|X83|X91|X92|X93

<string> = "00000000" to "11111111"

SOURce subsystem - Transmitter SONET OVERHEAD SETUP

Sets the binary value for the selected transmitter section overhead byte. The byte number is given by its defined name if it has one. Undefined bytes are represented by "Xrc", where r is the numerical value of the bytes row in the transport overhead and c is the numerical value of the bytes column in the transport overhead.

If an STS-3 signal is being transmitted, the only applicable value of STS-3 number is 1.

The byte is set to the binary representation of the given 8 character string.

In the case of STS-1 #1 only bits 2 and 3 of H1 may be set. The value sent must however still be 8 bits long. The unused bits should be marked 'x', i.e. to set bits 2 and 3 to '11' send the value 'xxxx11xx'.

The corresponding query returns the binary value of the byte named within the selected STS-3 column.

:SOURce:DATA:TELEcom:SONet:OVERhead:DATA? <numeric>, <numeric>, <discrete>

Returns : <string>

:SOURce:DATA:TELEcom:SONet:OVERhead:DATA:HEXadecimal <numeric>, <numeric>, <discrete>, <string>

<numeric> = STS-3 Number: range 1 to 16
(first parameter)

<numeric> = STS-1 Number: range 1 to 3
(second parameter)

<discrete> = A1|A2|J0|Z0|E1|F1|D1|D2|D3|H1|K1
K2|D4|D5|D6|D7|D8|D9|D10|D11
D12|S1|Z1|M0/M1/
Z2|E2|X11|X12|X13|X21|X22|X23|X31
X32|X33|X41|X42|X52|X53|X61|X62|X63
X71|X72|X73|X81|X82|X83|X91|X92|X93

<string> = "00" to "FF"

Sets the hexadecimal value for the selected transmitter transport overhead byte. The byte number is given by its defined name if it has one. Undefined bytes are represented by "Xrc", where r is the numerical value of the bytes row in the transport overhead and c is the numerical value of the bytes column in the transport overhead.

SONET Command Reference

SOURce subsystem - Transmitter SONET OVERHEAD SETUP

If an STS-3 signal is being transmitted, the only applicable value of STS-3 is 1.

The byte is set to the hexadecimal representation of the given 2 character string.

In the case of STS-1 #1 only bits 2 and 3 of H1 may be set. Any hexadecimal value can be sent but only bits 2 and 3 will be set and all other bits will remain unchanged.

The corresponding query returns the hexadecimal value of the specified byte.

:SOURce:DATA:TELEcom:SONet:OVERhead:DATA:HEXadecimal?
<numeric>, <numeric>, <discrete>

Returns: <string>

:SOURce:DATA:TELEcom:SONet:POVerhead:DATA <discrete>, <string>

<discrete> = C2|G1|F2|H4|Z3|Z4|N1

<string> = "xx00xxx0" to "xx11xxx1" for V5

"00000000 to 11111111 not V5

Sets the binary value of the specified STS-3, STS-12C and STS-48C path overhead byte.

The corresponding query returns the value of the specified high order path overhead byte as a string, as described above.

:SOURce:DATA:TELEcom:SONet:POVerhead:DATA? <discrete>

Returns: <string>

:SOURce:DATA:TELEcom:SONet:POVerhead:SLABel <discrete>

<discrete> =	UNEQuipped	Unequipped (00000000)
	EQUipped	Equipped (00000001)
	VTSTructure	VT structure STS-1 SPE (00000010)
	LOCKed	Locked VT (00000011)
	DS3asyn	Asynchronous DS3 (00000100)
	DS4Naasyn	Asynchronous DS4NA (00010010)
	ATM	ATM (00010011)

SOURce subsystem - Transmitter SONET OVERHEAD SETUP

DQDB	DQDB (00010100)
FDDI	FDDI (00010101)
USER	User Defined

Sets the value of the STS POH path label (C2 Byte). To update the USER byte value use the :SOURce:DATA:TELEcom:SONet:POVerhead:DATA <discrete>, <string> command.

The corresponding query returns the value of the C2 byte in discrete short form.

:SOURce:DATA:TELEcom:SONet:POVerhead:SLABel?

Returns: <discrete>

:SOURce:DATA:TELEcom:SONet:POVerhead:J1:PATtern <discrete>

<discrete> =	DEFault	64 NULL characters
	TEST	HP37718A....
	USER	User Defined
	CRC7Test	HP: - GB(Serial Number)
	CRC7User	User Defined

Sets the type of pattern that is to be transmitted in the J1 byte of the STS path overhead. The pattern repeats every 64 characters (16 chars in CRC7 case) and is transmitted byte by byte in subsequent frames.

The corresponding query returns the type of pattern being transmitted in STS path overhead byte J1 in discrete form as listed above.

:SOURce:DATA:TELEcom:SONet:POVerhead:J1:PATtern?

Returns : <discrete>

:SOURce:DATA:TELEcom:SONet:POVerhead:J1 <string>

Sets the user defined pattern that is to be transmitted in the J1 byte of the STS path overhead. The pattern should be 64 characters long, terminated with CR/LF. If less than 64 characters are input, the instrument will pad with the required number of NULL characters and terminate with CR/LF. The pattern repeats every 64 characters and is transmitted byte by byte in subsequent frames.

SOURce subsystem - Transmitter SONET OVERHEAD SETUP

The corresponding query returns the value of the user defined pattern as a string, as defined above. If the string contains any non printing characters, ~ is substituted.

If CRC7 was returned in response to

:SOURce:DATA:TELEcom:SONet:POVerhead:J1:PATtern? , this query command is not valid.

:SOURce:DATA:TELEcom:SONet:POVerhead:J1?

Returns : <string>

:SOURce:DATA:TELEcom:SONet:POVerhead:J1:CRC7 <string>

This command sets the CRC7 based user defined string that is to be transmitted using the J1 byte and configures the instrument to use this string. The string can be up to 15 characters in length; remaining characters are set to NULLs. A frame marker byte with CRC7 is added to this string.

The string is transmitted byte by byte in subsequent frames. The string repeats every 16 characters. The corresponding query returns the current value of the string. If the string contains any non printing characters, ~ is substituted.

:SOURce:DATA:TELEcom:SONet:POVerhead:J1:CRC7?

Returns : <string>

:SOURce:DATA:TELEcom:SONet:POVerhead:J1:HEXadecimal?

Returns : <block>

Returns a 64 byte block of data. Each byte represents the hexadecimal value of an ASCII character of STS path overhead byte J1 in the range "00" to "FF". The 64 hexadecimal numbers are preceded by the header "#264".

If CRC7 was returned in response to

:SOURce:DATA:TELEcom:SONet:POVerhead:J1:PATtern?, this query command is not valid.

:SOURce:DATA:TELEcom:SONet:TRIButary:POVerhead:DATA <discrete>, <string>

<discrete>= V5|Z6|Z7

SONET Command Reference

SOURce subsystem - Transmitter SONET OVERHEAD SETUP

Sets the value of the specific VT-2, VT-1.5 or VT-6 path overhead byte to the value specified by string (in the range "00000000" to "11111111"). The byte is specified by the first parameter.

Only bits 3, 4 and 8 of V5 can be set but an 8 bit string must be sent with the unsettable bits set to x. To set bits 3, 4 and 8 to "1" send "xx11xxx1".

The corresponding query returns the byte specified by type in string form, as described above.

:SOURce:DATA:TELEcom:SONet:TRIButary:POVerhead:DATA?
<discrete>

Returns: <string>

:SOURce:DATA:TELEcom:SONet:OVERhead:J0:PATtern <discrete>

<discrete> =	FIXed	Fixed Byte
	TEST	HP: - GB(Serial Number)
	USER	User Defined

Sets the type of pattern that is to be transmitted in the J0 byte of the STS section overhead. The pattern repeats every 16 characters and is transmitted character by character in subsequent frames.

The corresponding query returns the type of pattern being transmitted in overhead byte J0 in discrete short form.

:SOURce:DATA:TELEcom:SONet:OVERhead:J0:PATtern?

Returns: <discrete>

:SOURce:DATA:TELEcom:SONet:OVERhead:J0 <string>

Sets the user defined pattern that is to be transmitted in the J0 byte of the regenerator overhead. The pattern should be 15 characters long. The instrument automatically appends a E.164 CRC character to make up a 16 character sequence. If less than 15 characters are input, the instrument will pad with the required number of NULL characters. The pattern repeats every 16 characters and is transmitted character by character in subsequent frames.

The corresponding query returns the value of the user defined pattern as a string, as defined above. If the string contains any non printing characters, ~ is substituted. If FIXed was returned in response

SONET Command Reference

SOURce subsystem - Transmitter SONET OVERHEAD SETUP

to:SOURce:DATA:TELEcom:SONet:OVERhead:J0:PATtern?, this query command is not valid.

:SOURce:DATA:TELEcom:SONet:OVERhead:J0?

Returns: <string>

:SOURce:DATA:TELEcom:SONet:OVERhead:J0:HEXadecimal?

Returns: <block>

Returns a 15 byte block of data. Each byte represents the hexadecimal value of an ASCII character "00" to "FF". The 15 hexadecimal numbers are preceded by the header "#215".

If FIXed was returned in response to

:SOURce:DATA:TELEcom:SONet:OVERhead:J0:PATtern?, this query command is not valid.

:SOURce:DATA:TELEcom:SONet:TRIButary:POVerhead:J2:PATtern <discrete>

<discrete> =	DEFault	15 NULL characters
	TEST	HP: - GB(Serial Number)
	USER	User Defined
	FIXed	Fixed Byte

Sets the type of pattern that is to be transmitted in the J2 byte of the VT-6, VT-2 or VT-1.5 path overhead. The pattern repeats every 16 characters and is transmitted byte by byte in subsequent frames.

The corresponding query returns the type of pattern being transmitted in VT-6 or VT-2 path overhead byte J2 in discrete form as listed above.

:SOURce:DATA:TELEcom:SONet:TRIButary:POVerhead:J2:PATtern?

Returns : <discrete>

SOURce subsystem - Transmitter SONET OVERHEAD SETUP**:SOURce:DATA:TELEcom:SONet:TRIButary:POVerhead:V5:SLABel?**

Returns : <numeric>

:SOURce:DATA:TELEcom:SONet:POVerhead:H4Sequence <discrete>

<discrete> =	LONG	Long Sequence
	SHORT	Short Sequence
	COC1	COC1 Sequence

Sets the H4 path overhead byte sequence length when

:SOURce:DATA:TELEcom:SONet:PAYLoad <discrete> is set to VT6 or VT2 or VT1.5.

The corresponding query returns the H4 byte sequence length in discrete form as listed above.

:SOURce:DATA:TELEcom:SONet:POVerhead:H4Sequence?

Returns : <discrete>

:SOURce:DATA:TELEcom:SONet:OVERhead:SBYTe <discrete>

<discrete> =	SYNChronized	Synchronized - traceability unknown (0000)
	STRatum1	Stratum 1 traceable (0001)
	STRatum2	Stratum 2 traceable (0111)
	STRatum3	Startum 3 traceable (1010)
	SONet	SONET minimum clock traceable (1100)
	NETWork	Network synchronization (1110)
	DONTusesync	Do not use for synchronization (1111)
	USER	

Selects the SONET SYNC message type (S1 Byte Bits 5 to 8). To update the USER byte value use either the :SOURce:DATA:TELEcom:SONet:OVERhead:DATA <numeric>, <numeric>, <discrete>, <string> or the

:SOURCE subsystem - Transmitter SONET Test Function Commands**:SOURCE:DATA:TELEcom:SONet:TFUNCTION:TYPE <discrete>**

<discrete> =	ERRor	Errors & Alarms
	POINter	Pointer
	SEQuence	Overhead sequences
	STESt	Optical Stress
	APSMessages	APS messages
	IDCC	Insert Datacomm
	OBERtest	Overhead BER test

Selects the SONET transmit test function type. STESt is only valid when an optical line rate selected.

The corresponding query returns the test function type in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:TFUNCTION:TYPE?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:ERROR:TYPE <discrete>

<discrete> =	FRAMe	A1A2 frame errors
	EFRAme	Entire frame or data errors
	CVS	CV-S (Section B1 BIP)
	CVL	CV-L (Line B2 BIP)
	REIL	REI-L (Line FEBE)
	CVP	CV-P (Path B3 BIP)
	REIP	REI-P (Path FEBE)

:SOURCE subsystem - Transmitter SONET Test Function Commands

CVIec	CV-IEC
CVV	CV-V (VT Path BIP)
REIV	REI-V (VT Path FEBE)

Selects SONET transmit test function error type when :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to ERR . Further selection of :SOURCE:DATA:TELEcom:SONet:ERRor:RATE <discrete> is required.

The corresponding query returns the SONET error type in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:ERRor:TYPE?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:ERRor:RATE <discrete>

<discrete> =	NONE	Errors Off
	ONCE	Single Error Add, Not Frame errors
	EALL	Error All (Not Frame)
	APSThreshold	APS Threshold (CV-L only)
	E_3	Bit, CV-L, REI-L, CV-V & REI-V only
	E_4	All except Frame errors
	E_5	All except Frame errors
	E_6	All except Frame errors
	E_7	All except Frame errors
	E_8	All except Frame errors
	E_9	All except Frame errors
	USER	User defined error rate
	ONE	Frame Errors only

SONET Command Reference

:SOURCE subsystem - Transmitter SONET Test Function Commands

TWO	Frame Errors only
THREE	Frame Errors only
FOUR	Frame Errors only

Selects the transmitter SONET Error rate of the error type selected by :SOURCE:DATA:TELEcom:SONet:ERRor:TYPE <discrete>. This command is applicable when :SOURCE:DATA:TELEcom:TFUNction <discrete> is set to SONet.

If bit errors are to be added to the PDH payload then :SOURCE:DATA:TELEcom:TFUNction <discrete> must be set to PDHP.

The corresponding query returns the selected transmitter SONET error rate in discrete form, as listed above.

:SOURCE:DATA:TELEcom:SONet:ERRor:RATE?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:PDHPayload:ERRor:TYPE <discrete>

<discrete> =	BIT	Bit errors
	FAS	PDH Frame errors
	MFAS	Multiframe errors
	FASmfas	PDH Frame and Multiframe errors
	CRC	CRC-4 errors for 2M, CRC-6 Errors for DS1
	PBITS	Parity Bit errors
	FEBE	FEBE errors
	REBE	REBE errors
	CPBits	C-Parity Bit errors
	EXZ	Excess zeroes

:SOURCE subsystem - Transmitter SONET Test Function Commands

Selects the TX PDH Payload error type. This command is applicable when :SOURCE:DATA:TELEcom:SOURCE <discrete> is set to PDHPayload.

The corresponding query returns the error type in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:PDHPayload:ERROR:TYPE?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:PDHPayload:ERROR:RATE <discrete>

<discrete> =	NONE	No errors added
	ONCE	single error added
	E_3	1.0E-3 error rate
	E_4	1.0E-4 error rate
	E_5	1.0E-5 error rate
	E_6	1.0E-6 error rate
	E_7	1.0E-7 error rate
	USER	User defined error rate

Sets the PDH Payload error rate for the error type selected by :SOURCE:DATA:TELEcom:SONet:PDHPayload:ERROR:TYPE <discrete>. This command is applicable when :SOURCE:DATA:TELEcom:SOURCE <discrete> is set to PDHPayload.

The corresponding query returns the error rate in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:PDHPayload:ERROR:RATE?

Returns: <discrete>

:SOURCE:DATA:TELEcom:SONet:PDHPayload:ERROR:RATE:USER <numeric>

<numeric>	1.1E-3 to 0.1E-9	mantissa resolution 0.1, exponent resolution 1
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SONET Command Reference

:SOURCE subsystem - Transmitter SONET Test Function Commands

Sets the user defined SONET PDH payload Error Add rate of the error type selected by :SOURCE:DATA:TELEcom:SONet:PDHPayload:ERROR:TYPE <discrete> .

This command is applicable when :SOURCE:DATA:TELEcom:SOURCE <discrete> is set to PDHPayload.

The corresponding query returns the user defined SPDH Error Add rate in numeric form.

:SOURCE:DATA:TELEcom:SONet:PDHPayload:ERROR:RATE:USER?

Returns: <numeric>

:SOURCE:DATA:TELEcom:SONet:ERROR:APSThreshold:NERRors <numeric>

<numeric> =	0 to 640 for STS 0
	0 to 1920 for STS1
	0 to 7680 for STS12
	0 to 30720 for STS48

Sets the number of errors for the APS Threshold when

:SOURCE:DATA:TELEcom:SONet:ERROR:RATE <discrete> is set to APST.

The corresponding query returns the number of errors selected for the APS Threshold in numeric form.

:SOURCE:DATA:TELEcom:SONet:ERROR:APSThreshold:NERRors?

Returns : <numeric>

:SOURCE:DATA:TELEcom:SONet:ERROR:APSThreshold:EINterval <discrete>

<discrete> =	MS10	10 milliseconds
	MS100	100 milliseconds
	S1	1 second
	S10	10 seconds
	S100	100 seconds

SONET Command Reference

:SOURce subsystem - Transmitter SONET Test Function Commands

S1000	1,000 seconds
S10000	10,000 seconds

Sets the interval between APS Threshold errors when

:SOURce:DATA:TELEcom:SONet:ERRor:RATE <discrete> is set to APST .

The corresponding query returns the APS Threshold error interval in discrete form as listed above.

:SOURce:DATA:TELEcom:SONet:ERRor:APSThreshold:EINTerval?

Returns : <discrete>

:SOURce:DATA:TELEcom:SONet:ALARm <discrete>

<discrete> =	NONE	Alarms Off
	LOS	Loss of Signal
	LOF	Loss of Frame
	SEF	Severely Errored Frame Defect
	AISL	Line AIS (AIS-L)
	RDIL	Line FERF (RDI-L)
	LOPP	Loss of Pointer (LOP-P)
	AISP	Path AIS (AIS-P)
	RDIP	Path FERF (RDI-P)
	PUNequipped	Path Unequipped (UNEQ-P)
	LOPV	VT Loss of Pointer (LOP-V)
	AISV	VT Path AIS (AIS-V)
	RDIV	VT Path FERF (RDI-V)
	LOMultiframe	Multiframe (H4) Loss
	VTUNequipped	VT Unequipped

SONET Command Reference

:SOURCE subsystem - Transmitter SONET Test Function Commands

Selects the TX Test Function alarm type when

:SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to ERR.

The corresponding query returns the SONET alarm type in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:ALARm?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:ALARm:SSEFrame

Generates a single Severely Errored Frame alarm.

:SOURCE:DATA:TELEcom:SONet:POINter <discrete>

<discrete> =	BURSt	Adds bursts
	NPOinter	New Pointer
	OFFSet	Adds offset in ppm
	T1105	Adds T1.105/GR-253 sequence

Selects the Pointer adjustment type when

:SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to POIN.

The corresponding query returns the pointer adjustment type in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:POINter?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:POINter:TYPE <discrete>

<discrete> =	SPE
	VT

Selects the TX pointer type when

:SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to POIN.

The corresponding query returns the pointer type in discrete form as listed above.

:SOURCE subsystem - Transmitter SONET Test Function Commands

:SOURCE:DATA:TELEcom:SONet:POINter:TYPE?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:POINter:DIRection <discrete>

<discrete> = INCRement
 DECRement
 ALTernate

Selects the direction of the pointer burst adjustment when
:SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to POIN.

The corresponding query returns the pointer burst direction in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:POINter:DIRection?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:POINter:IDECrement <numeric>

<numeric> = 1 to 10 SPE
 1 to 5 VT-6, VT-2, VT-1.5

Selects the number of places by which the pointer is to be incremented or decremented when :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to POIN and :SOURCE:DATA:TELEcom:SONet:POINter <discrete> is set to BURS .

The corresponding query returns the number of places in numeric form.

:SOURCE:DATA:TELEcom:SONet:POINter:IDECrement?

Returns : <numeric>

:SOURCE:DATA:TELEcom:SONet:POINter:TRANsmitted?

Returns: <numeric>

:SOURCE subsystem - Transmitter SONET Test Function Commands

Returns the currently transmitted value of the SPE pointer in numeric form.

:SOURCE:DATA:TELEcom:SONet:POINter:ACTion

Forces the new pointer value defined by
:SOURCE:DATA:TELEcom:SONet:POINter:VALue <numeric> to be adopted.

:SOURCE:DATA:TELEcom:SONet:POINter:VALue <numeric>

<numeric> = 0 to 782

Selects the SPE New Pointer value when
:SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to POIN
and :SOURCE:DATA:TELEcom:SONet:POINter <discrete> is set to NPO.

The corresponding query returns the new pointer value in numeric form as listed above.

:SOURCE:DATA:TELEcom:SONet:POINter:VALue?

Returns : <numeric>

:SOURCE:DATA:TELEcom:SONet:TRIButary:POINter:TRANsmitted?

Returns: <numeric>

Returns the currently transmitted value of the VT pointer in numeric form.

:SOURCE:DATA:TELEcom:SONet:TRIButary:POINter:VALue <numeric>

0 to 427	for VT-6
0 to 139	for VT-2
0 to 103	for VT-1.5

Selects the VT New Pointer value when
:SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to POIN
and :SOURCE:DATA:TELEcom:SONet:POINter <discrete> is set to NPO.

The corresponding query returns the new pointer value in numeric form as listed above.

:SOURCE subsystem - Transmitter SONET Test Function Commands

:SOURCE:DATA:TELEcom:SONet:TRIButary:POINter:VALue?

Returns : <numeric>

:SOURCE:DATA:TELEcom:SONet:POINter:NPOinter <discrete>

<discrete> =	NDF	With New Data Flag
	NNDF	Without New Data Flag

Selects the type of new pointer when

:SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to POIN and :SOURCE:DATA:TELEcom:SONet:POINter <discrete> is set to NPO.

The corresponding query returns the type of new pointer in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:POINter:NPOinter?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:POINter:ADJust

Adjust pointer to new settings if :SOURCE:DATA:TELEcom:SONet:POINter <discrete> is set to BURS or NPO .

:SOURCE:DATA:TELEcom:SONet:POINter:OFFSet <discrete>

<discrete> =	SIGNal	Line offset
	SPE	SPE rate offset
	VT	VT rate offset

Determines whether the Output signal rate, SPE Rate or VT rate is offset.

The corresponding query returns the signal Rate, which is offset, in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:POINter:OFFSet?

Returns : <discrete>

:SOURce subsystem - Transmitter SONET Test Function Commands

:SOURce:DATA:TELEcom:SONet:POINter:OFFSet:RATE <numeric>, <suffix>

<numeric> =	-100 to +100	parts per million
	-0.010 to +0.010	percent
<suffix> =	PPM	parts per million
	PCT	percent

Selects the amount of offset applied to the Output Signal Rate or the SPE Rate or the VT Rate when :SOURce:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to POIN and :SOURce:DATA:TELEcom:SONet:POINter <discrete> is set to OFFS.

The default suffix unit is percent.

The corresponding query returns the offset in PPM.

:SOURce:DATA:TELEcom:SONet:POINter:OFFSet:RATE?

Returns : <numeric>

:SOURce:DATA:TELEcom:SONet:POINter:T1105 <discrete>

<discrete>=	RSINgle	Repeating single (e)
	RBURst	Repeating burst (f)
	RPTRansient	Repeating phase transient
	PNORmal	Periodic normal (g/h)
	PADDED	Periodic added (g/h)
	PCANcelled	Periodic cancelled (g/h)

Selects the T1.105/GR-253 Pointer sequence adjustment type when :SOURce:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to POIN and :SOURce:DATA:TELEcom:SONet:POINter <discrete> is set to T1105 .

The corresponding query returns the T1.105/GR-253 adjustment type in discrete form as listed above.

:SOURCE subsystem - Transmitter SONET Test Function Commands

:SOURCE:DATA:TELEcom:SONet:POINter:T1105?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:POINter:T1105:PATtern <discrete>

<discrete> =	CONTInuous	No pattern
	P873	87:3 pattern
	P261	26:1 pattern

Selects the pattern of the T1.105/GR-253 pointer sequence when :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to POIN and :SOURCE:DATA:TELEcom:SONet:POINter <discrete> is set to T1105 and :SOURCE:DATA:TELEcom:SONet:POINter:T1105 <discrete> is set to PNOR, PADD or PCAN.

The corresponding query returns the T1.105/GR-253 pattern in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:POINter:T1105:PATtern?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:POINter:T1105:POLarity <discrete>

<discrete> =	NEGative
	POSitive

Selects the polarity of the T1.105/GR-253 pointer sequence when :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to POIN and :SOURCE:DATA:TELEcom:SONet:POINter <discrete> is set to T1105.

The corresponding query returns the T1.105/GR-253 polarity in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:POINter:T1105:POLarity?

Returns : <discrete>

:SOURce subsystem - Transmitter SONET Test Function Commands

:SOURce:DATA:TELEcom:SONet:POINter:T1105:INTerval <numeric>, <suffix>

<numeric> =	numeric	See text
<suffix> =	MS	milliseconds
	S	seconds

Selects the interval between T1.105/GR-253 adjustments.

(STS-3C, STS-1, STS-12C, STS-48C) Range is 7.5ms, 10ms, 20ms, 30ms, 34ms, 40ms to 100ms in 10ms steps. 100 ms to 1s in 100ms steps. 1s, 2s, 5s and 10s. .

(VT-6, VT-2, VT-1.5) Range is 200ms, 500ms, 1s, 2s, 5s and 10s.

The corresponding query returns the T1.105/GR-253 interval as listed above.

The default suffix unit is seconds.

:SOURce:DATA:TELEcom:SONet:POINter:T1105:INTerval?

Returns : <numeric>, <suffix>

:SOURce:DATA:TELEcom:SONet:POINter:T1105:SEQuence <discrete>

<discrete> =	STOP	Stop the current T1.105/GR-253 pointer sequence
	START	Start a T1.105/GR-253 pointer sequence
	INITialize	Start a T1.105/GR-253 pointer sequence preceded by initialization and cooldown

Stops/Starts the T1.105/GR-253 pointer sequence.

The corresponding query returns the sequence start state in discrete form as listed above. See also STAT:SONet2.

:SOURce:DATA:TELEcom:SONet:POINter:T1105:SEQuence?

Returns : <discrete>

:SOURCE subsystem - Transmitter SONET Test Function Commands

:SOURCE:DATA:TELEcom:SONet:SEQuence <discrete>

<discrete> =	STOP	Stop current sequence
	START	Start new sequence

Starts/Stops a Single or Repeat run Sequence.

The corresponding query returns the Sequence mode in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:SEQuence?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:SEQuence:MODE <discrete>

<discrete> =	SINGLE	Single Run
	REPeat	Repeat Run

Selects the type of SEQUENCE when

:SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to SEQ.

The corresponding query returns the type of Sequence in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:SEQuence:MODE?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:SEQuence:OHBYte <discrete>

<discrete> =	A1A2 J0 Z0 E1 F1 D1D3 BNDA1A2 X22 X23 X32 X33	Section Overhead
	K1K2 D4D12 S1 Z1 Z2 M1 M0 E2	Line Overhead
	J1 C2 G1 F2 H4 Z3 Z4 N1	Path Overhead

SONET Command Reference

:SOURCE subsystem - Transmitter SONET Test Function Commands

Selects the overhead byte into which the overhead sequence is to be inserted when :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to SEQ. Some of the parameters are only available in certain STS-1's or STS-3's.

BNDA1A2 selects the 6 middle A1A2 boundary bytes.

The corresponding query returns the sequenced byte in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:SEQUence:OHBYte?

Returns: <discrete>

:SOURCE:DATA:TELEcom:SONet:SEQUence:STS1 <numeric>

<numeric> 1 to 3 STS-1 Number of byte to sequence.

Sets the STS-1 Number of the byte to be sequenced.

The corresponding query returns the STS-1 Number in numeric form.

:SOURCE:DATA:TELEcom:SONet:SEQUence:STS1?

Returns: <numeric>

:SOURCE:DATA:TELEcom:SONet:SEQUence:STS3:SElect <numeric>

<numeric> = 1 to 16

Selects STS-3 number for channels that occur in more than one STS-3.

The corresponding query returns the STS-3 number in numeric form.

:SOURCE:DATA:TELEcom:SONet:SEQUence:STS3:SElect?

Returns: <numeric>

:SOURCE:DATA:TELEcom:SONet:SEQUence:DATA <discrete>, <string>

<discrete> = A | B | C | D | E

<string> = "00" to "FFFFFFFFFFFFFFFFFFFF"

Sets the Sequence data pattern for the designated block to the hexadecimal value contained in the string. The number of hexadecimal characters is dependent on the overhead byte or bytes selected. Two hexadecimal characters are required per byte, for Example:

SONET Command Reference

:SOURCE subsystem - Transmitter SONET Test Function Commands

E1 - 1 byte "00" to "FF"

D4D12 - 9 bytes "0000000000000000" to "FFFFFFFFFFFFFFFF"

The corresponding query returns the hexadecimal value of the designated block as a string.

:SOURCE:DATA:TELEcom:SONet:SEQuence:DATA? <discrete>

Returns : <string>

:SOURCE:DATA:TELEcom:SONet:SEQuence:ORDer <discrete>, <discrete>, <discrete>, <discrete>, <discrete>

<discrete> = A | B | C | D | E

Selects the order of transmission for the blocks of data used in the sequence.

The corresponding query returns the block order in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:SEQuence:ORDer?

Returns : <discrete>, <discrete>, <discrete>, <discrete>, <discrete>

:SOURCE:DATA:TELEcom:SONet:SEQuence:FCOunt <numeric>, <numeric>

<numeric> = 1 to 5 Block number
(first parameter)

<numeric> = 0 to 64000 Frame count
(second parameter)

Selects the number of frames in which the block of data, designated by the block_no, is to be transmitted.

The corresponding query returns the frame count of the block specified in numeric form.

:SOURCE:DATA:TELEcom:SONet:SEQuence:FCOunt? <numeric>

<numeric>= 1 to 5 Block number

Returns : <numeric> Frame count

:SOURce subsystem - Transmitter SONET Test Function Commands

:SOURce:DATA:TELEcom:SONet:STES:SPATtern <discrete>

<discrete> =	AZERos	All Zero's pattern
	AONes	All Ones pattern
	G958	G.958 sequence

Selects the pattern used in the OC-3 Optical stress test when is set to STES.

The corresponding query returns the selected pattern in discrete form as listed above.

:SOURce:DATA:TELEcom:SONet:STES:SPATtern?

Returns : <discrete>

:SOURce:DATA:TELEcom:SONet:STES:BLENght <numeric>

<numeric> =	2 to 85	OC-1
	2 to 259	OC-3
	2 to 1042	OC-12
	2 to 4174	OC-48

Selects the block length used in the SONET Optical stress test when

:SOURce:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to STES.

The corresponding query returns the block length in numeric form.

:SOURce:DATA:TELEcom:SONet:STES:BLENght?

Returns : <numeric>

:SOURce:DATA:TELEcom:SONet:APSMessages:TOPology <discrete>

<discrete> =	LINEar	Linear protection
	RING	Ring protection

Selects the type of protection topology.

The corresponding query returns the selected protection topology in discrete short form.

:SOURCE subsystem - Transmitter SONET Test Function Commands**:SOURCE:DATA:TELEcom:SONet:APSMessages:TOPology?**

Returns: <discrete>

:SOURCE:DATA:TELEcom:SONet:APSMessages:REQuest <discrete>

<discrete> =	NREQuest	No Request (0000)
	DNRevert	Do Not Revert (0001)
	RREQuest	Reverse Request (0010)
	THRee	Not Used (0011)
	EXERcise	Exercise (0100)
	FIVE	Not Used (0101)
	WTRestore	Wait To Restore (0110)
	SEVen	Not Used (0111)
	MSWitch	Manual Switch (1000)
	NINE	Not Used (1001)
	SDLPriority	Signal Degrade Low Priority (1010)
	SDHPriority	Signal Degrade High Priority (1011)
	SFLPriority	Signal Fail Low Priority (1100)
	SFHPriority	Signal Fail High Priority (1101)
	FSWitch	Forced Switch (1110)
	LOPRotectio	Lockout Of Protection (1111)

Selects the transmitter SONET APS message to be transmitted (K1 Byte, Bits 1 to 4). Only valid if :SOURCE:DATA:TELEcom:TFUNCTION <discrete> is set to SONet and :SOURCE:DATA:TELEcom:SONet:TFUNCTION:TYPE <discrete> is set to APSM. SDHPriority and SFHPriority are only valid when :SOURCE:DATA:TELEcom:SONet:APSMessages:ARCHitecture <discrete> is set to OTN.

SONET Command Reference

:SOURCE subsystem - Transmitter SONET Test Function Commands

The corresponding query returns the selected transmitter SONET APS message type in discrete form, as listed above.

:SOURCE:DATA:TELEcom:SONet:APSMessages:REQuest?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:APSMessages:CHANnel <numeric>

<numeric> =	0	NULL Channel
	1	Working Channel 1
	2	Working Channel 2
	3	Working Channel 3
	4	Working Channel 4
	5	Working Channel 5
	6	Working Channel 6
	7	Working Channel 7
	8	Working Channel 8
	9	Working Channel 9
	10	Working Channel 10
	11	Working Channel 11
	12	Working Channel 12
	13	Working Channel 13
	14	Working Channel 14
	15	Extra Traffic Channel

Selects the transmitter SONET APS message channel (K1 Byte, Bits 5 to 8). Only valid if :SOURCE:DATA:TELEcom:TFUNCTION <discrete> is set to SONet and :SOURCE:DATA:TELEcom:SONet:TFUNCTION:TYPE <discrete> is set to APSM. Working Channels 1 to 14 are only valid if :SOURCE:DATA:TELEcom:SONet:APSMessages:ARCHitecture <discrete> is set to OTN.

:SOURCE subsystem - Transmitter SONET Test Function Commands

The corresponding query returns the selected transmitter SONET APS message channel in numeric form, as listed above.

:SOURCE:DATA:TELEcom:SONet:APSMessages:CHANnel?

Returns : <numeric>

:SOURCE:DATA:TELEcom:SONet:APSMessages:BRIDge <string>

<string> = "0000" to "1111"

Selects the SONET transmitter Linear APS message bridged channel (K2 Byte, Bits 1 to 4). Only valid if :SOURCE:DATA:TELEcom:TFUNction <discrete> is set to SONet and :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to APSM and :SOURCE:DATA:TELEcom:SONet:APSMessages:TOPology <discrete> is set to LIN.

The corresponding query returns the APS messages bridged channel as a string as listed above.

:SOURCE:DATA:TELEcom:SONet:APSMessages:BRIDge?

Returns : <string>

:SOURCE:DATA:TELEcom:SONet:APSMessages:ARCHitecture <discrete>

<discrete> =	OTONe	1+1
	OTN	1:N

Selects the SONET transmitter Linear APS architecture (K2 Byte, Bit 5). Only valid if :SOURCE:DATA:TELEcom:TFUNction <discrete> is set to SONet and :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to APSM and :SOURCE:DATA:TELEcom:SONet:APSMessages:TOPology <discrete> is set to LIN.

The corresponding query returns the selected transmitter SONET APS message architecture in discrete form, as listed above.

:SOURCE:DATA:TELEcom:SONet:APSMessages:ARCHitecture?

Returns : <discrete>

:SOURCE subsystem - Transmitter SONET Test Function Commands**:SOURCE:DATA:TELEcom:SONet:APSMessages:REServed <numeric>**

<numeric> =	0	000
	1	001
	2	010
	3	011
	4	100
	5	101

Selects the SONET transmitter Linear APS messages reserved bits (K2 Byte, Bits 6 to 8) in numeric form.

Only valid if :SOURCE:DATA:TELEcom:TFUNCTION <discrete> is set to SONet and :SOURCE:DATA:TELEcom:SONet:TFUNCTION:TYPE <discrete> is set to APSM and :SOURCE:DATA:TELEcom:SONet:APSMessages:TOPology <discrete> is set to LIN.

The corresponding query returns the selected transmitter SONET APS message reserved bits in numeric form.

:SOURCE:DATA:TELEcom:SONet:APSMessages:REServed?

Returns: <numeric>

:SOURCE:DATA:TELEcom:SONet:APSMessages:RCODE <discrete>

<discrete> =	NREQuest	No Request (0000)
	RRRing	Reverse Request - Ring (0001)
	RRSPan	Reverse Request - Span (0010)
	ERINg	Exerciser - Ring (0011)
	ESPan	Exerciser - Span (0100)
	WTRestore	Wait to Restore (0101)
	MSRing	Manual Switch - Ring (0110)
	MSSPan	Manual Switch - Span (0111)
	SDRing	Signal Degrade - Ring (1000)
	SDSPan	Signal Degrade - Span (1001)
	SDPRotectioN	Signal Degrade - Protection (1010)

SONET Command Reference

:SOURCE subsystem - Transmitter SONET Test Function Commands

SFRing	Signal Fail - Ring (1011)
SFSPan	Signal Fail - Span (1100)
FSRing	Forced Switch Ring (1101)
FSSPan	Forced Switch - Span(1110)
LOPRotectio	Lockout Of Protection (1111)

Selects the transmitter Ring APS message to be transmitted (K1 Byte, Bits 1 to 4). Only valid if :SOURCE:DATA:TELEcom:TFUNction <discrete> is set to SONet and :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to APSM and :SOURCE:DATA:TELEcom:SONet:APSMessages:TOPology <discrete> is set to RING.

The corresponding query returns the selected transmitter SONET APS message type in discrete short form.

:SOURCE:DATA:TELEcom:SONet:APSMessages:RCODE?

Returns: <discrete>

:SOURCE:DATA:TELEcom:SONet:APSMessages:DNODE <string>

<string> = "0000" to "1111"

Selects the SONET transmitter Ring APS message destination node (K1 Byte, Bits 5 to 8). Only valid if :SOURCE:DATA:TELEcom:TFUNction <discrete> is set to SONet and :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to APSM and :SOURCE:DATA:TELEcom:SONet:APSMessages:TOPology <discrete> is set to RING.

The corresponding query returns the APS messages destination node as a string as listed above.

:SOURCE:DATA:TELEcom:SONet:APSMessages:DNODE?

Returns: <string>

:SOURCE:DATA:TELEcom:SONet:APSMessages:SNODE <string>

<string> = "0000" to "1111"

Selects the SONET transmitter Ring APS message source node (K2 Byte, Bits 1 to 4). Only valid if :SOURCE:DATA:TELEcom:TFUNction <discrete> is set to SONet

SONET Command Reference

:SOURCE subsystem - Transmitter SONET Test Function Commands

and :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to APSM and :SOURCE:DATA:TELEcom:SONet:APSMessages:TOPology <discrete> is set to RING.

The corresponding query returns the APS messages source node as a string as listed above.

:SOURCE:DATA:TELEcom:SONet:APSMessages:SNODE?

Returns: <string>

:SOURCE:DATA:TELEcom:SONet:APSMessages:PCODE <discrete>

<discrete> =	SHORT	Short path
	LONG	Long path

Selects the SONET transmitter Ring APS message path type (K2 bit 5). Only valid if :SOURCE:DATA:TELEcom:TFUNction <discrete> is set to SONet and :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to APSM and :SOURCE:DATA:TELEcom:SONet:APSMessages:TOPology <discrete> is set to RING.

The corresponding query returns the Ring APS messages path type in discrete short form.

:SOURCE:DATA:TELEcom:SONet:APSMessages:PCODE?

Returns: <discrete>

:SOURCE:DATA:TELEcom:SONet:APSMessages:SCODE <discrete>

<discrete> =	IDLE	Idle (000)
	BRIDged	Bridged (001)
	BASWitched	Bridged & Switched (010)
	P011	011
	P100	100
	P101	101

Selects the SONET transmitter Ring APS messages status code (K2 Byte, Bits 6 to 8). Only valid if :SOURCE:DATA:TELEcom:TFUNction <discrete> is set to SONet and :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to

SONET Command Reference

:SOURCE subsystem - Transmitter SONET Test Function Commands

APSM and :SOURCE:DATA:TELEcom:SONet:APSMessages:TOPology <discrete> is set to RING.

The corresponding query returns the selected transmitter SONET APS message status code in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:APSMessages:SCODE?

Returns: <discrete>

:SOURCE:DATA:TELEcom:SONet:APSMessages:DOWNload

Start transmission of the SONET transmitter APS message. Only valid if :SOURCE:DATA:TELEcom:TFUNction <discrete> is set to SONet and :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to APSM.

:SOURCE:DATA:TELEcom:SONet:IDCC <discrete>

<discrete> =	SDCC	Section DCC
	LDCC	Line DCC

Selects the Data Communication Channel Insert port when :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to IDCC .

The corresponding query returns the selected port in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:IDCC?

Returns : <discrete>

:SOURCE:DATA:TELEcom:SONet:OBERTest:CHANnel <discrete>

<discrete> =	C1 J0 Z0 E1 F1 D1 D2 D3	Section Overhead
	K1 K2 D4 D5 D6 D7	Line Overhead
	D8 D9 D10 D11 D12 X22	
	X23 X32 X33	
	S1 Z1 M0/M1/Z2 E2	
	J1 C2 G1 F2 H4 Z3	Path Overhead
	Z4 N1	

Selects the TX overhead byte used for the overhead BER test when :SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to OBER. M0 is valid at STS-1 only.

SONET Command Reference

:SOURCE subsystem - Transmitter SONET Test Function Commands

The corresponding query returns the overhead byte identity in discrete form as listed above.

:SOURCE:DATA:TELEcom:SONet:OBERTest:CHANnel?

Returns <discrete>

:SOURCE:DATA:TELEcom:SONet:OBERTest:STS1 <numeric>

<numeric> 1 to 3

Sets the STS-1 Number (within the currently selected STS-3) of the Section Overhead byte currently selected for the overhead bit transmitter error rate test function.

The command is only valid if

:SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to OBER.

It is only applicable when Z0 is selected by

:SOURCE:DATA:TELEcom:SONet:OBERTest:CHANnel <discrete>

The corresponding query returns the STS-1 Number in numeric form as described above.

:SOURCE:DATA:TELEcom:SONet:OBERTest:STS1?

Returns: <numeric>

:SOURCE:DATA:TELEcom:SONet:OBERTest:STS3:SElect <numeric>

<numeric> = 1 to 16

Selects STS-3 number for channels that occur in more than one STS-3:

It is only applicable when Z0 is selected by

:SOURCE:DATA:TELEcom:SONet:OBERTest:CHANnel <discrete>

The corresponding query returns the STS-3 number in numeric form.

:SOURCE:DATA:TELEcom:SONet:OBERTest:STS3:SElect?

Returns: <numeric>

SONET Command Reference

:SOURCE subsystem - Transmitter SONET Test Function Commands

:SOURCE:DATA:TELEcom:SONet:OBERtest <discrete>

<discrete> = ONCE Single error

Injects a single overhead BER error when

SOURCE:DATA:TELEcom:SONet:TFUNCTION:TYPE <discrete> is set to OBER.

INPut subsystem

INPut subsystem

This subsystem controls the characteristics of the instrument's input ports.

:INPut:TELEcom:SONet:RATE <discrete>

<discrete> =	STS1	STS-1 Electrical
	STS3	STS-3 Electrical

Is only valid when the SONET Module is fitted and
:SENSe:DATA:TELEcom:SENSe <discrete> is set to SONet.

The corresponding query returns the SONET rate in discrete short form.

:INPut:TELEcom:SONet:RATE?

Returns : <discrete>

:INPut:TELEcom:SONet:GAIN <discrete>

<discrete> =	DB20	20 dB Gain
	DB26	26 dB Gain

Selects the Monitor gain for the SONET receiver. Only valid when
:INPut:TELEcom:LEVel <discrete> is set to MON.

The corresponding query returns the Monitor gain in discrete short form.

:INPut:TELEcom:SONet:GAIN?

Returns: <discrete>

:INPut:TELEcom:OC3:RATE <discrete>

<discrete> =	OC1	OC-1 optical
	OC3	OC-3 Optical

Sets the input rate for the optical input port. :SENSe:DATA:TELEcom:SENSe
<discrete> is set to OC3.

SONET Command Reference

INPut subsystem

The corresponding query returns the OC-3 input rate in discrete form, as listed above.

:INPut:TELEcom:OC3:RATE?

Returns : <discrete>

:INPut:TELEcom:OC3:INTerface <discrete>

<discrete> =	OPTical	Optical input
	MONitor	Protected Monitor Input

Selects the input interface on the Optical modules.

The corresponding query returns the input interface in discrete form, as listed above.

:INPut:TELEcom:OC3:INTerface?

Returns: <discrete>

:INPut:TELEcom:OC12:RATE <discrete>

<discrete> =	OC1	OC-1 optical
	OC3	OC-3 Optical
	OC12	OC-12 Optical

Sets the input rate for the optical input port. :SENSE:DATA:TELEcom:SENSE <discrete> is set to OC12.

The corresponding query returns the OC-12 input rate in discrete form, as listed above.

:INPut:TELEcom:OC12:RATE?

Returns : <discrete>

:INPut:TELEcom:OC12:INTerface <discrete>

<discrete> =	OPTical	Optical input
	MONitor	Protected Monitor Input

SONET Command Reference

INPut subsystem

Selects the input interface on the Optical modules.

The corresponding query returns the input interface in discrete form, as listed above.

:INPut:TELEcom:OC12:INTerface?

Returns: <discrete>

:INPut:TELEcom:OC48:RATE <discrete>

<discrete> =	OC1	OC-1 optical
	OC3	OC-3 Optical
	OC12	OC-12 Optical
	OC48	OC-48 Optical

Sets the input rate for the optical input port.

:SENSe:DATA:TELEcom:SENSe <discrete> is set to OC48.

The corresponding query returns the OC-48 input rate in discrete form, as listed above.

:INPut:TELEcom:OC48:RATE?

Returns : <discrete>

:INPut:TELEcom:OC48:INTerface <discrete>

<discrete> =	OPTical	Optical input
	MONitor	Protected Monitor Input

Selects the input interface on the Optical modules.

The corresponding query returns the input interface in discrete form, as listed above.

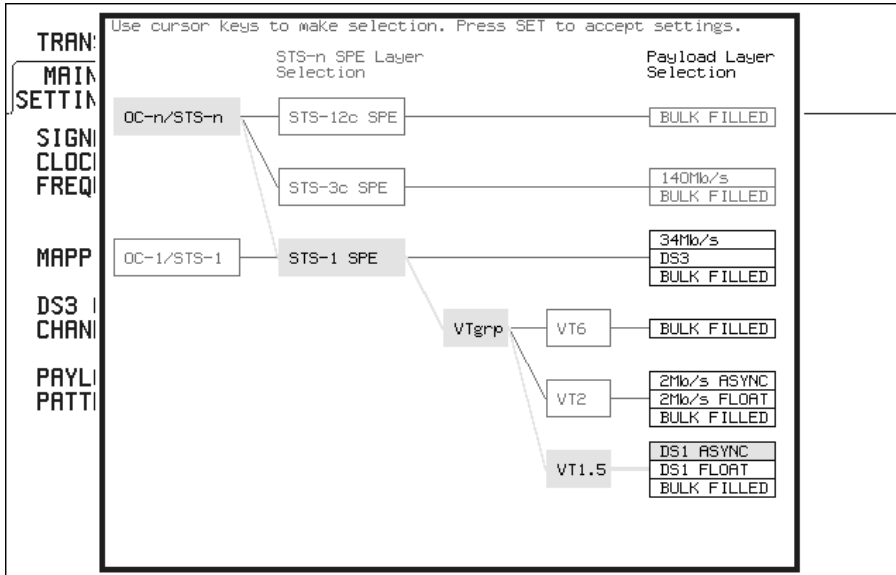
:INPut:TELEcom:OC48:INTerface?

Returns: <discrete>

INPut subsystem

SENSe subsystem - Receiver SONET Settings

SONET Mapping settings



STATUS:



:SENSe:DATA:TELEcom:SONet:STS3 <numeric>

<numeric> = 1 to 16 STS-3 Number under test

Selects the STS-3 number under test. Only valid if :INPut:TELEcom:OC3:RATE <discrete> is set a rate higher than STS3.

The corresponding query returns the test STS3 number.

:SENSe:DATA:TELEcom:SONet:STS3?

Returns : <numeric>

SENSe subsystem - Receiver SONET Settings

:SENSe:DATA:TELEcom:SONet:STS12c <numeric>

<numeric> = 1 to 4 STS-12c Number under test

SPE Layer Selection

:SENSe:DATA:TELEcom:SONet:SPE:TYPE <discrete>

<discrete> = STS3c
STS1
STS12c
STS48c

Set the SPE mapping into an STS-N frame.

The corresponding query returns the SPE layer in discrete form as listed above.

:SENSe:DATA:TELEcom:SONet:SPE:TYPE?

Returns: <discrete>

:SENSe:DATA:TELEcom:SONet:STS1 <numeric>

<numeric> = 1 to 3 STS1 Number

Selects the SONET Receiver active STS-1 within the STS-3.

The corresponding query returns the active STS-1 in numeric form.

:SENSe:DATA:TELEcom:SONet:STS1?

Returns : <numeric>

VT Layer Selection

:SENSe:DATA:TELEcom:SONet:PAYLoad <discrete>

<discrete> = STS3C or M140 140 Mb/s
STS1 STM-0
VT2 or M2 2 Mb/s

SONET Command Reference

SENSe subsystem - Receiver SONET Settings

VT6	VT-6
STS12c	
STS48c	
VT15 <i>or</i> DS1	VT-1.5

This command selects the SONET receiver mapping

The corresponding query returns the mapping in discrete form, as listed above.

:SENSe:DATA:TELEcom:SONet:PAYLoad?

Returns : <discrete>

Payload Layer Selection

:SENSe:DATA:TELEcom:SONet:MAPPing <discrete>

<discrete> =	M140	140 Mb/s (STS3c only)
	M34	34 Mb/s (STS1 Full SPE only)
	DS3	DS3 - (STS1 Full SPE only)
	BULK	Bulk Filled (STS1 or STS3c)

Selects the Receiver SONET payload for single payload cases. Only valid if :SENSe:DATA:TELEcom:SONet:PAYLoad <discrete> is set to STS1 or STS3c.

The corresponding query returns the payload in discrete form as listed above.

:SENSe:DATA:TELEcom:SONet:MAPPing?

Returns: <discrete>

:SENSe:DATA:TELEcom:SONet:TRIButary:MAPPing <discrete>

<discrete> =	ASYNc or ASM2	Asynchronous 2 Mb/s
	FBYTe or FLM2	2 Mb/s Floating Byte
	DS1 or ASDS1	Asynchronous 1.544 Mb/s DS1
	FLDS1	DS1 Floating Byte

SENSe subsystem - Receiver SONET Settings

1 to 4 Tributary number for VT-15

Selects the SONET Receiver active VT within the selected VT Group.

The corresponding query returns the receiver test tributary in numeric form.

:SENSe:DATA:TELEcom:SONet:TRIButary?

Returns : <numeric>

VT Payload and Test Pattern**:SENSe:DATA:TELEcom:SONet:PAYLoad:TYPE <discrete>**

<discrete> =	UNFRamed	No framing
	FRAMed	8, 34 & 140 Mb/s
	PCM30	2 Mb/s
	PCM31	2 Mb/s
	PCM30CRC	2 Mb/s
	PCM31CRC	2 Mb/s
	DM2	Drop 2 Mb/s
	DM34	Drop 34 Mb/s
	DM140	Drop 140 Mb/s
	D4	DS1 Framing
	ESF	DS1 Framing
	SLC96	DS1 Framing
	M13	DS3 Framing
	CBIT	DS3 Framing
	DDS1	Drop DS1
	DDS3	Drop DS3
	NOFBit	No Framing Bit (set to '0')

SONET Command Reference

SENSe subsystem - Receiver SONET Settings

AONE	All One's
STress	3-in-24 stress pattern (DS1 only)
P1IN8	1-in-8 test pattern
P2IN8	2-in-8 test pattern
OCT55	55 octet test pattern (uses Daly pattern as per ANSI T1.403)
P1010	Word 1010
P1000	Word 1000
UWORD	16 Bit User Word
LIVE	Live Traffic

Selects the receiver SONET payload data pattern.

If UWORD is selected, the word pattern is set using
:SENSe:DATA:TELEcom:SONet:PAYLoad:UWORD <string>

The corresponding query returns the receiver SONET payload data pattern in discrete form as listed above.

:SENSe:DATA:TELEcom:SONet:PAYLoad:PATtern?

Returns : <discrete>

:SENSe:DATA:TELEcom:SONet:PAYLoad:UWORD <string>

Sets the receiver user word pattern in the range "0000000000000000" to "1111111111111111".

The corresponding query returns the user word pattern as a string.

:SENSe:DATA:TELEcom:SONet:PAYLoad:UWORD?

Returns : <string>

:SENSe:DATA:TELEcom:SONet:PRBS:POLarity <discrete>

<discrete> = NORMAL

SONET Command Reference
SENSe subsystem - Receiver SONET Settings

INVerted

Selects the PRBS pattern polarity.

The corresponding query returns the PRBS pattern polarity in discrete form as listed above.

:SENSe:DATA:TELEcom:SONet:PRBS:POLarity?

Returns : <discrete>

:SENSe:DATA:TELEcom:SONet:TRIButary:CONCatenate
<numeric>,<numeric>

<numeric> = (first parameter)	0	Concatenation Off
	2	VT6-2c
	3	VT6-3c
	4	VT6-4c
	5	VT6-5c
	6	VT6-6c
<numeric> = (second parameter)	1 to 6	VT6-2c selected
	1 to 5	VT6-3c selected
	1 to 4	VT6-4c selected
	1 to 3	VT6-5c selected
	1 to 2	VT6-6c selected

Selects the VT6 concatenation level (first parameter) and starting at the VT (second parameter).

The corresponding query returns the VT6 concatenation and starting VT in numeric form as listed above.

SONET Command Reference

SENSe subsystem - Receiver SONET Settings

:SENSe:DATA:TELEcom:SONet:TRIButary:CONCatenate?

Returns : <numeric>,<numeric>

SENSe subsystem - Receiver SONET Test Function Commands

:SENSe:DATA:TELEcom:SONet:OCAPture:OHBYte <discrete>

<discrete> =	A1A2 J0/Z0 E1 F1 D1D3	Section Overhead
	BND A1A2 X22 X23 X32 X33	
	H1H2 K1K2 D4D12 S1/Z1	Line Overhead
	M1/Z1 E2	
	J1 C2 G1 F2 H4 Z3 Z4	Path Overhead
	N1	

Selects the overhead byte or bytes to be captured. Is only valid when :SENSe:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to OCAP.

BND A1A2 selects the 6 middle A1A2 boundary bytes.

The corresponding query returns the byte(s) to be captured in discrete form as listed above.

:SENSe:DATA:TELEcom:SONet:OCAPture:OHBYte?

Returns: <discrete>

:SENSe:DATA:TELEcom:SONet:OCAPture:STS1 <numeric>

<numeric> = 1 to 3

Selects the Section overhead column from which to capture. This only applies to Z1 and Z2.

The corresponding query returns the column to be captured in numeric form.

:SENSe:DATA:TELEcom:SONet:OCAPture:STS1?

<numeric>= 1 to 3

:SENSe:DATA:TELEcom:SONet:OCAPture:STS3:SElect <numeric>

<numeric> = 1 to 16

Only valid if a rate higher than STS-3 is selected. Selects STS-3 number for channels that occur in more than one STS-3.

SENSe subsystem - Receiver SONET Test Function Commands

The corresponding query returns the STS-3 number in numeric form.

:SENSe:DATA:TELEcom:SONet:OCAPture:STS3:SElect?

Returns: <numeric>

:SENSe:DATA:TELEcom:SONet:OCAPture:TRIGger <discrete>

<discrete> = OFF
ON
ONNot On Not

Selects the Overhead Capture Trigger mode. If OFF is selected, capture begins immediately. If ON is selected, capture begins when the received data matches the pattern defined by :SENSe:DATA:TELEcom:SONet:OCAPture:TRIGger:PATtern <string>. If ONN is selected, capture begins when the received data does not match the pattern defined by

:SENSe:DATA:TELEcom:SONet:OCAPture:TRIGger:PATtern <string>.

The corresponding query returns the selected Trigger mode, in discrete form as listed above.

:SENSe:DATA:TELEcom:SONet:OCAPture:TRIGger?

Returns : <discrete>

:SENSe:DATA:TELEcom:SONet:OCAPture:TRIGger:PATtern <string>

Sets the Overhead Capture Trigger Pattern to the hexadecimal value contained in the string. The number of hexadecimal characters in the string is dependent on the overhead byte or bytes selected.

Two hexadecimal characters are required per byte, for example:

E1 - 1 Byte - "00" to "FF"

D4D12 - 9 Bytes - "000000000000000000" to "FFFFFFFFFFFFFFFFFFFF"

Is only valid when :SENSe:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to OCAP and :SENSe:DATA:TELEcom:SONet:OCAPture:TRIGger <discrete> is set to ON or ONN

The corresponding query returns the Trigger Pattern selected, as a string as described above.

SENSe subsystem - Receiver SONet Test Function Commands

:SENSe:DATA:TELEcom:SONet:OCAPture:TRIGger:PATtern?

Returns : <string>

:SENSe:DATA:TELEcom:SONet:DDCC <discrete>

<discrete> = SDCC Section DCC
 LDCC Line DCC

Selects the DataCommunications channel to be dropped via the rear panel DROP port. Is only valid when :SENSe:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to DDCC.

The corresponding query returns the selected DCC, in discrete form as listed above.

:SENSe:DATA:TELEcom:SONet:DDCC?

Returns : <discrete>

:SENSe:DATA:TELEcom:SONet:PGRaph:PTYPE <discrete>

<discrete> = STS3c
 STS1
 STS12c
 STS48c
 VT6
 VT2
 VT15

Selects the type of pointer to be captured for pointer graph.

The corresponding query returns the type of pointer, in discrete short form.

:SENSe:DATA:TELEcom:SONet:PGRaph:PTYPE?

Returns: <discrete>

:SENSe:DATA:TELEcom:SONet:PGRaph:CINterval <discrete>

<discrete> = SEC1 1 second interval

SENSe subsystem - Receiver SONET Test Function Commands

SEC5	5 second interval
SEC20	20 second interval
MIN1	1 minute interval
MIN5	5 minute interval
MIN20	20 minute interval

Selects the pointer graph capture interval.

The corresponding query returns the pointer graph capture interval, in discrete form as listed above.

:SENSe:DATA:TELEcom:SONet:PGRaph:CINterval?

Returns: <discrete>

:SENSe:DATA:TELEcom:SONet:OBERtest:STS3 <discrete>

<discrete> = C1/J0 | Z0 | E1 | F1 | D1 | D2 | Section Overhead
D3
K1 | K2 | D4 | D5 | D6 | D7 | D8 | Line Overhead
D9 | D10 | D11 | D12 | S1/Z1 |
M1/Z2 | M0 |
E2|X22|X23|X32|X33
J1 | C2 | G1 | F2 | H4 | Z3 | Z4 | Path Overhead
N1

Selects the overhead byte used for the overhead BER test. Is only valid when :SENSe:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to OBER .

The corresponding query returns the Overhead byte name in discrete form as listed above.

:SENSe:DATA:TELEcom:SONet:OBERtest:STS3?

Returns: <discrete>

:SENSe:DATA:TELEcom:SONet:OBERtest:STS1 <numeric>

<numeric>= 1 to 3

SONET Command Reference

SENSe subsystem - Receiver SONET Test Function Commands

Sets the STS-1 Number (within the currently selected STS-3) of the Section overhead of the channel for the receiver overhead BER test function. This command is only valid if :SENSe:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> is set to OBER and it is only applicable when Z0 is selected by :SENSe:DATA:TELEcom:SONet:OBERtest:CHANnel <discrete>.

The corresponding query returns the STS-1 Number in numeric form as listed above

:SENSe:DATA:TELEcom:SONet:OBERtest:STS1?

Returns: <numeric>

:SENSe:DATA:TELEcom:SONet:OBERtest:STS3:SElect <numeric>

<numeric> = 1 to 16

Only valid if a rate higher than STS-3 is selected. Selects STS-3 number for channels that occur in more than one STS-3. This command is only applicable when Z0 is selected by

:SENSe:DATA:TELEcom:SONet:OBERtest:CHANnel <discrete>.

The corresponding query returns the STS-3 number in numeric form.

:SENSe:DATA:TELEcom:SONet:OBERtest:STS3:SElect?

Returns: <numeric>

SONET Command Reference
SENSe subsystem - Alarm Scan Control

SENSe subsystem - Alarm Scan Control

:SENSe:DATA:TELEcom:SONet:ASCan:MODE <discrete>

<discrete> =	AUTomatic	Automatic receiver configuration
	RSETtings	Fixed receiver configuration

Selects the SONET alarm scan mode.

The corresponding query returns the alarm scan mode in discrete short form.

:SENSe:DATA:TELEcom:SONet:ASCan:MODE?

Returns: <discrete>

:SENSe:DATA:TELEcom:SONet:ASCan:BIP <discrete>

<discrete> =	OFF	Fail if Alarm
	GTE0	Fail if alarm or any BIP error
	GTEE_6	Fail if alarm or BIP ER > 10E-6
	GTEE_3	Fail if alarm or BIP ER > 10E-3

Selects the SONET alarm scan BIP error threshold.

The corresponding query returns the alarm scan BIP error threshold in discrete short form.

:SENSe:DATA:TELEcom:SONet:ASCan:BIP?

Returns: <discrete>

:SENSe:DATA:TELEcom:SONet:ASCan <boolean>

<boolean> =	0 or OFF	Stop the current alarm scan
	1 or ON	Start a new alarm scan

Start/Stop the SONET alarm scan.

The corresponding query returns the alarm scan state as 0 or 1.

SONET Command Reference

SENSe subsystem - Alarm Scan Control

:SENSe:DATA:TELEcom:SONet:ASCan?

Returns: <boolean>

SENSe subsystem - SONET Tributary Scan Control

SENSe subsystem - SONET Tributary Scan Control**:SENSe:DATA:TELEcom:SONet:TSCan:PERiod <numeric>, <suffix>**

<numeric> =	1 to 99	
<suffix> =	d	Days
	h	Hours
	m	Minutes
	s	Seconds

Sets the test duration for each tributary.

The corresponding query returns the test duration for each tributary.

:SENSe:DATA:TELEcom:SONet:SONet:TSCan:PERiod?

Returns: <numeric>,<suffix>

:SENSe:DATA:TELEcom:SONet:TSCan:BIP <discrete>

<discrete> =	GTE0	Fail if any BIP error
	GTEE_6	Fail if BIP ER > 10E-6
	GTEE_3	Fail if BIP ER > 10E-3

Selects the SONET tributary scan BIP error threshold.

The corresponding query returns the alarm scan BIP error threshold in discrete short form.

:SENSe:DATA:TELEcom:SONet:TSCan:BIP?

Returns: <discrete>

:SENSe:DATA:TELEcom:SONet:TSCan <boolean>

<boolean> =	0 or OFF	Stop the current tributary scan
	1 or ON	Start a new tributary scan

Start/Stop the SONET tributary scan.

SONET Command Reference

SENSe subsystem - REI-L Result Enable/Disable

The corresponding query returns the alarm scan state as 0 or 1.

:SENSe:DATA:TELEcom:SONet:TSCan?

Returns: <boolean>

SENSe subsystem - REI-L Result Enable/Disable

:SENSe:DATA:TELEcom:SONet:REIL?

Returns: <boolean>

SENSe subsystem - Result Returning Commands

Frequency Results (SONET)

:SENSe:DATA? <"result">

Result = "FREQUency:SONet:GATE1S"	RX SONET clock frequency (1s gate)
"FREQUency:SONet[:GATE16S]"	RX SONET clock frequency (16s gate)
"FOFPpm:SONet[:GATE16S]"	RX SONET clock offset in ppm (16s gate)
"FOFHz:SONet[:GATE16S]"	RX SONET clock offset in Hz (16s gate)

SONET Short Term Results

:SENSe:DATA? <"result">

Result = "ECOunt:SONet:STERm:FRAMe"	Frame error count
"ERATio:SONet:STERm:FRAMe"	Frame error ratio
"ECOunt:SONet:STERm:CVS"	Section B1 BIP error count
"ERATio:SONet:STERm:CVS"	Section B1 BIP error ratio
"ECOunt:SONet:STERm:CVL"	Line B2 BIP error count
"ERATio:SONet:STERm:CVL"	Line B2 BIP error ratio
"ECOunt:SONet:STERm:REIL"	REI-L (Line FEBE) error count. See page 5-81.
"ERATio:SONet:STERm:REIL"	REI-L (Line FEBE) error ratio. See page 5-81.
"ECOunt:SONet:STERm:CVP"	Path B3 BIP error count
"ERATio:SONet:STERm:CVP"	Path B3 BIP error ratio
"ECOunt:SONet:STERm:REIP"	REI-P (Path FEBE) error count
"ERATio:SONet:STERm:REIP"	REI-P (Path FEBE) error ratio

SONET Command Reference

SENSe subsystem - Result Returning Commands

"ECOunt:SONet:STERm:CVIec"	CV-IEC error count
"ERATio:SONet:STERm:CVIec"	CV-IEC error ratio
"ECOunt:SONet:STERm:TRIB:CVV"	VT Path BIP error count
"ERATio:SONet:STERm:TRIB:CVV"	VT Path BIP error ratio
"ECOunt:SONet:STERm:TRIB:REIV"	VT FEBE error count
"ERATio:SONet:STERm:TRIB:REIV"	VT FEBE error ratio

SONET Cumulative Results

:SENSe:DATA? <"result">

Result =	"ECOunt:SONet:FRAMe"	Frame error count
	"ERATio:SONet:FRAMe"	Frame error ratio
	"ECOunt:SONet:CVS"	Section B1 BIP error count
	"ERATio:SONet:CVS"	Section B1 BIP error ratio
	"ECOunt:SONet:CVL"	Line B2 BIP error count
	"ERATio:SONet:CVL"	Line B2 BIP error ratio
	"ECOunt:SONet:REIL"	REI-L (Line FEBE) error count. See page 5-81.
	"ERATio:SONet:REIL"	REI-L (Line FEBE) error ratio. See page 5-81.
	"ECOunt:SONet:CVP"	Path B3 BIP error count
	"ERATio:SONet:CVP"	Path B3 BIP error ratio
	"ECOunt:SONet:REIP"	REI-P (Path FEBE) error count
	"ERATio:SONet:REIP"	REI-P (Path FEBE) error ratio
	"ECOunt:SONet:CVIec"	CV-IEC error count
	"ERATio:SONet:CVIec"	CV-IEC error ratio
	"ECOunt:SONet:TRIB:CVV"	VT Path BIP error count
	"ERATio:SONet:TRIB:CVV"	VT Path BIP error ratio
	"ECOunt:SONet:TRIB:REIV"	VT FEBE error count

SONET Command Reference
SENSe subsystem - Result Returning Commands

"ERATio:SONet:TRIB:REIV" VT FEBE error ratio
"ECounT:SONet:OVERhead" Overhead error count

SONET Section B1 BIP (CV-S) Analysis Results

:SENSe:DATA? <"result">

Result=	"ESEConds:SONet:CVS:ANALysis"	Error Seconds
	"SESeconds:SONet:CVS:ANALysis"	Severely Errored Seconds
	"EBCount:SONet:CVS:ANALysis"	Errored block count
	"BBECount:SONet:CVS:ANALysis"	Background block error count
	"ESRatio:SONet:CVS:ANALysis"	Error Second Ratio
	"SESRatio:SONet:CVS:ANALysis"	Severely Errored Second Ratio
	"BBERatio:SONet:CVS:ANALysis"	Background Block Error ratio
	"UASeconds:SONet:CVS:ANALysis"	Unavailable seconds

SONET Line B2 BIP (CV-L) Analysis Results

:SENSe:DATA? <"result">

Result=	"ESEConds:SONet:CVL:ANALysis"	Error Seconds
	"SESeconds:SONet:CVL:ANALysis"	Severely Errored Seconds
	"EBCount:SONet:CVL:ANALysis"	Errored block count
	"BBECount:SONet:CVL:ANALysis"	Background block error count
	"ESRatio:SONet:CVL:ANALysis"	Error Second Ratio
	"SESRatio:SONet:CVL:ANALysis"	Severely Errored Second Ratio
	"BBERatio:SONet:CVL:ANALysis"	Background Block Error ratio
	"UASeconds:SONet:CVL:ANALysis"	Unavailable seconds
	"PUASeconds:SONet:CVL:ANALysi s"	Path Unavailable seconds

SONET Command Reference
SENSe subsystem - Result Returning Commands

SONET Line FEBE (REI-L) Analysis Results

:SENSe:DATA? <"result">

Result=	"ESECONDS:SONet:REIL:ANALYSIS"	Error Seconds
	"SECONDS:SONet:REIL:ANALYSIS"	Severely Errored Seconds
	"EBCOUNT:SONet:REIL:ANALYSIS"	Errored block count
	"BBECOUNT:SONet:REIL:ANALYSIS"	Background block error count
	"ESRATIO:SONet:REIL:ANALYSIS"	Error Second Ratio
	"SESRATIO:SONet:REIL:ANALYSIS"	Severely Errored Second Ratio
	"BBERATIO:SONet:REIL:ANALYSIS"	Background Block Error ratio
	"UASECONDS:SONet:REIL:ANALYSIS"	Unavailable seconds
	"PUASECONDS:SONet:REIL:ANALYSIS"	Path Unavailable seconds

If you wish to disable the REI-L measurement, see page 5-81.

SONET Path B3 BIP (CV-P) Analysis Results

:SENSe:DATA? <"result">

Result=	"ESECONDS:SONet:CVP:ANALYSIS"	Error Seconds
	"SECONDS:SONet:CVP:ANALYSIS"	Severely Errored Seconds
	"EBCOUNT:SONet:CVP:ANALYSIS"	Errored block count
	"BBECOUNT:SONet:CVP:ANALYSIS"	Background block error count
	"ESRATIO:SONet:CVP:ANALYSIS"	Error Second Ratio
	"SESRATIO:SONet:CVP:ANALYSIS"	Severely Errored Second Ratio
	"BBERATIO:SONet:CVP:ANALYSIS"	Background Block Error ratio
	"UASECONDS:SONet:CVP:ANALYSIS"	Unavailable seconds
	"PUASECONDS:SONet:CVP:ANALYSIS"	Path Unavailable seconds

SONET Command Reference
SENSe subsystem - Result Returning Commands

SONET Path FEBE (REI-P) Analysis Results

:SENSe:DATA? <"result">

Result=	"ESECONDS:SONet:REIP:ANALYSIS"	Error Seconds
	"SESECONDS:SONet:REIP:ANALYSIS"	Severely Errored Seconds
	"EBCOUNT:SONet:REIP:ANALYSIS"	Errored block count
	"BBECOUNT:SONet:REIP:ANALYSIS"	Background block error count
	"ESRATIO:SONet:REIP:ANALYSIS"	Error Second Ratio
	"SESRATIO:SONet:REIP:ANALYSIS"	Severely Errored Second Ratio
	"BBERATIO:SONet:REIP:ANALYSIS"	Background Block Error ratio
	"UASECONDS:SONet:REIP:ANALYSIS"	Unavailable seconds
	"PUASECONDS:SONet:REIP:ANALYSIS"	Path Unavailable seconds

SONET CV-IEC Analysis Results

:SENSe:DATA? <"result">

Result=	"ESECONDS:SONet:CVIec:ANALYSIS"	Error Seconds
	"SESECONDS:SONet:CVIec:ANALYSIS"	Severely Errored Seconds
	"EBCOUNT:SONet:CVIec:ANALYSIS"	Errored block count
	"BBECOUNT:SONet:CVIec:ANALYSIS"	Background block error count
	"ESRATIO:SONet:CVIec:ANALYSIS"	Error Second Ratio
	"SESRATIO:SONet:CVIec:ANALYSIS"	Severely Errored Second Ratio
	"BBERATIO:SONet:CVIec:ANALYSIS"	Background Block Error ratio
	"UASECONDS:SONet:CVIec:ANALYSIS"	Unavailable seconds

SONET Command Reference
SENSe subsystem - Result Returning Commands

SONET Virtual Tributary Path BIP (CV-V) Analysis Results

:SENSe:DATA? <"result">

Result=	"ESECONDS:SONet:TRIB:CVV:ANALYSIS"	Error Seconds
	"SESECONDS:SONet:TRIB:CVV:ANALYSIS"	Severely Errored Seconds
	"EBCOUNT:SONet:TRIB:CVV:ANALYSIS"	Errored block count
	"BBECOUNT:SONet:TRIB:CVV:ANALYSIS"	Background block error count
	"ESRATIO:SONet:TRIB:CVV:ANALYSIS"	Error Second Ratio
	"SESRATIO:SONet:TRIB:CVV:ANALYSIS"	Severely Errored Second Ratio
	"BBERATIO:SONet:TRIB:CVV:ANALYSIS"	Background Block Error ratio
	"UASECONDS:SONet:TRIB:CVV:ANALYSIS"	Unavailable seconds
	"PUASECONDS:SONet:TRIB:CVV:ANALYSIS"	Path Unavailable seconds

SONET Virtual Tributary Path FEBE (REI-V) Analysis Results

:SENSe:DATA? <"result">

Result =	"ESECONDS:SONet:TRIB:REIV:ANALYSIS"	Error Seconds
	"SESECONDS:SONet:TRIB:REIV:ANALYSIS"	Severely Errored Seconds
	"EBCOUNT:SONet:TRIB:REIV:ANALYSIS"	Errored block count
	"BBECOUNT:SONet:TRIB:REIV:ANALYSIS"	Background block error count
	"ESRATIO:SONet:TRIB:REIV:ANALYSIS"	Error Second Ratio
	"SESRATIO:SONet:TRIB:REIV:ANALYSIS"	Severely Errored Second Ratio
	"BBERATIO:SONet:TRIB:REIV:ANALYSIS"	Background Block Error ratio
	"UASECONDS:SONet:TRIB:REIV:ANALYSIS"	Unavailable seconds
	"PUASECONDS:SONet:TRIB:REIV:ANALYSIS"	Path Unavailable seconds

SONET Command Reference
SENSe subsystem - Result Returning Commands

SONET Block Based Bit Analysis Results

:SENSe:DATA? <"result">

Result =	"ESEConds:SONet:BLKBit:ANALysis"	Error Seconds
	"SESeconds:SONet:BLKBit:ANALysis"	Severely Errored Seconds
	"EBCount:SONet:BLKBit:ANALysis"	Errored block count
	"BBECount:SONet:BLKBit:ANALysis"	Background block error count
	"ESRatio:SONet:BLKBit:ANALysis"	Error Second Ratio
	"SESRatio:SONet:BLKBit:ANALysis"	Severely Errored Second Ratio
	"BBERatio:SONet:BLKBit:ANALysis"	Background Block Error ratio
	"UASeconds:SONet:BLKBit:ANALysis"	Unavailable seconds

SONET M.2101 Analysis Results

:SENSe:DATA? <"result">

Result =	"ESEConds:SONet:LOW:RECeive:ANALysis:M2101"	Low Order Path Receive Direction Errored Seconds
	"SESeconds:SONet:LOW:RECeive:ANALysis:M2101"	Low Order Path Receive Direction Severely Errored Seconds
	"UASeconds:SONet:LOW:RECeive:ANALysis:M2101"	Low Order Path Receive Direction Unavailable Seconds
	"ESEConds:SONet:LOW:TRANsmit:ANALysis:M2101"	Low Order Path Transmit Direction Errored Seconds
	"SESeconds:SONet:LOW:TRANsmit:ANALysis:M2101"	Low Order Path Transmit Direction Severely Errored Seconds
	"UASeconds:SONet:LOW:TRANsmit:ANALysis:M2101"	Low Order Path Transmit Direction Unavailable Seconds
	"ESEConds:SONet:HIGh:RECeive:ANALysis:M2101"	High Order Path Receive Direction Errored Seconds

SONET Command Reference

SENSe subsystem - Result Returning Commands

"SESeconds:SONet:HIGh:RECEive:ANALy sis:M2101"	High Order Path Receive Direction Severely Errored Seconds
"UASeconds:SONet:HIGh:RECEive:ANALy sis:M2101"	High Order Path Receive Direction Unavailable Seconds
"ESECONDS:SONet:HIGh:TRANsmIt:ANALy sis:M2101"	High Order Path Transmit Direction Errored Seconds
"SESeconds:SONet:HIGh:TRANsmIt:ANAL ysis:M2101"	High Order Path Transmit Direction Severely Errored Seconds
"UASeconds:SONet:HIGh:TRANsmIt:ANAL ysis:M2101"	High Order Path Transmit Direction Unavailable Seconds
"ESECONDS:SONet:SECTIon:RECEive:ANA Lysis:M2101"	Section Layer Path Receive Direction Errored Seconds
"SESeconds:SONet:SECTIon:RECEive:ANA Lysis:M2101"	Section Layer Path Receive Direction Severely Errored Seconds
"UASeconds:SONet:SECTIon:RECEive:ANA Lysis:M2101"	Section Layer Path Receive Direction Unavailable Seconds
"ESECONDS:SONet:SECTIon:TRANsmIt:AN ALysis:M2101"	Section Layer Path Transmit Direction Errored Seconds
"SESeconds:SONet:SECTIon:TRANsmIt:AN ALysis:M2101"	Section Layer Path Transmit Direction Severely Errored Seconds
"UASeconds:SONet:SECTIon:TRANsmIt:AN ALysis:M2101"	Section Layer Path Transmit Direction Unavailable Seconds

SONET Command Reference
SENSe subsystem - Result Returning Commands

SONET Service Disruption Results

:SENSe:DATA? <"result">

Result = "SDTest:COUNt:LONG"	Longest error burst
"SDTest:COUNt:SHORt"	Shortest error burst
"SDTest:COUNt:LAST"	Last error burst

Returns: <range>,<value>

<range> = 0	Result invalid due to receiver configuration
1	Result valid
2	Result out of range

Value is returned in milliseconds. If the value is > 2000 or no result is available or the result is not applicable then 9.91E+37 is returned.

SONET Optical Power Result

:SENSe:DATA? <"result">

Result = "OPOwer:SONet" Optical power (dBm)

SONET Pointer Activity Results

:SENSe:DATA? <"result">

Result	"PACTivity:SONet:PVALue"	SPE Pointer value
	"PACTivity:SONet:NDFSeconds"	SPE Pointer NDF seconds
	"PACTivity:SONet:MNDFseconds"	SPE Pointer MNDF seconds
	"PACTivity:SONet:PCount"	SPE Pointer +ve Adj Count
	"PACTivity:SONet:PSEConds"	SPE Pointer +ve Adj Seconds
	"PACTivity:SONet:NCount"	SPE Pointer -ve Adj Count

SONET Command Reference

SENSE subsystem - Result Returning Commands

"PACTivity:SONet:NSEConds"	SPE Pointer -ve Adj Seconds
"PACTivity:SONet:IOFFset"	Implied SPE Offset
"PACTivity:SONet:TRIButary:PVALue"	VT Pointer Value
"PACTivity:SONet:TRIButary:NDFSeconds"	VT Pointer NDF seconds
"	
"PACTivity:SONet:TRIButary:MNDFseconds"	VT Pointer MNDF seconds
"PACTivity:SONet:TRIButary:PCOunt"	VT Pointer +ve Adj Count
"PACTivity:SONet:TRIButary:PSEConds"	VT Pointer +ve Adj Seconds
"PACTivity:SONet:TRIButary:NCOunt"	VT Pointer -ve Adj Count
"PACTivity:SONet:TRIButary:NSEConds"	VT Pointer -ve Adj Seconds

SONET Alarm Seconds Results

:SENSe:DATA? <"result">

Result =	"ASEConds:SONet:LOS"	Loss Of Signal
	"ASEConds:SONet:LOF"	Loss Of Frame
	"ASEConds:SONet:SEF"	Severely Errored Frame Defect
	"ASEConds:SONet:H4MF"	H4 Multiframe Loss
	"ASEConds:SONet:LOPP"	Loss Of Pointer (LOP-P)
	"ASEConds:SONet:AISL"	Line AIS (AIS-L)
	"ASEConds:SONet:AISP"	Path AIS (AIS-P)
	"ASEConds:SONet:PSLoss"	Pattern Synchronization Loss
	"ASEConds:SONet:RDIL"	Line FERF (RDI-L)
	"ASEConds:SONet:RDIP"	Path FERF (RDI-P)
	"ASEConds:SONet:K1K2"	K1K2 byte change
	"ASEConds:SONet:TRIB:LOPV"	VT Loss Of Pointer (LOP-V)
	"ASEConds:SONet:TRIB:AISV"	VT Path AIS (AIS-V)
	"ASEConds:SONet:TRIB:RDIV"	VT Path FERF (RDI-V)

SONET Command Reference

SENSE subsystem - Result Returning Commands

"ASEConds:SONet:TRIB:P1P0"	P1P0 Frame Synchronization Loss
"ASEConds:SONet:OPSL"	Overhead Pattern Sync Loss

FETCh subsystem

FETCh subsystem

The FETCh subsystem is used to retrieve data directly accumulated by the instrument.

:FETCh:STRing:DATA:TELEcom:SONet:J0?

Returns: <string>

The value of the STS-N Section overhead J0 byte is returned as a 16 ASCII character string if CRC7 is not detected, 15 ASCII character string if CRC7 is detected. If the string contains any non printing characters then ~ is substituted. This is a snapshot of the overhead byte and is captured once per second.

:FETCh:STRing:DATA:TELEcom:SONet:J0:HEXadecimal?

Returns: <block>

Returns the value of the STS-N Section overhead J0 byte as 16 hexadecimal numbers if CRC7 is not detected, 15 hexadecimal numbers if CRC7 is detected. Each number is in the range "00" to "FF". The block header is "#216" if CRC7 not detected, "#215" if CRC7 is detected. This is a snapshot of the overhead byte and is captured once per second.

:FETCh:STRing:DATA:TELEcom:SONet:J1?

Returns : <string>

The value of the SPE J1 path trace byte is returned as a, 64 ASCII character, string (15 ASCII characters if CRC7 is detected). If the string contains any non printing characters then ~ is substituted. This is a snapshot of the overhead byte and is captured once per second.

:FETCh:STRing:DATA:TELEcom:SONet:J1:HEXadecimal?

Returns : <block>

Returns the value of the SPE J1 path trace byte as 64 hexadecimal numbers (15 if CRC7 is detected).

SONET Command Reference

FETCh subsystem

Each number is in the range "00" to "FF". The block header is "#264" (" #215" if CRC7 is detected). This is a snapshot of the overhead byte and is captured once per second.

:FETCh:STRing:DATA:TELEcom:SONet:TRIButary:J2?

Returns: <string>

Returns the 15 or 16 byte J2 path trace as a string. The HP 37719A attempts to align the received pattern by detecting the CRC7 byte. If the CRC7 byte is detected, a 15 byte pattern is returned. If the CRC7 byte is not detected, a 16 byte pattern is returned. If the string contains any non-printing characters then ~ is substituted. This is a snapshot of the received path trace and is only updated once per second.

:FETCh:STRing:DATA:TELEcom:SONet:TRIButary:J2:HEXadecimal?

Returns: <block>

Returns the value of the J2 path trace byte as 15 or 16 hexadecimal numbers. The HP 37719A attempts to align the received pattern by detecting the CRC7 byte. If the CRC7 byte is detected, 15 hexadecimal numbers are returned. If the CRC7 byte is not detected, 16 hexadecimal numbers are returned. Each number is in the range "00" to "FF". The block header is "#215" if 15 Hex numbers and "#216" if 16 Hex numbers. This is a snapshot of the overhead byte and is captured once per second.

:FETCh:STRing:DATA:TELEcom:SONet:K1?

Returns : <string>

The value of the MPS K1 byte is returned as an 8 bit string in the range "00000000" to "11111111".

:FETCh:STRing:DATA:TELEcom:SONet:K2?

Returns : <string>

The value of the MPS K2 byte is returned as an 8 bit string in the range "00000000" to "11111111".

:FETCh:STRing:DATA:TELEcom:SONet:S1?

Returns : <string>

SONET Command Reference

FETCh subsystem

The value of the SYNC S1 byte (bits 5-8) is returned as a 4 bit string in the range "0000" to "1111".

:FETCh:SCALar:DATA:TELEcom:SONet:OVERhead?

<numeric>,<numeric>,<discrete>

<numeric> range 1 to 16

=(STS3#)

<numeric> range 1 to 3

=(STS1#)

<discrete> = A1|A2|C1|J0|Z0|B1|E1|F1|D1|D2|D3|H1|H2
H3|B2|K1|K2|D4|D5|D6|D7|D8|D9|D10|D11
D12|S1|Z1|Z2|M1|M0|E2|X13|X21|X22|X23|X31
|X32|X33|X52|X53|X61|X62|X63|X71
|X72|X73|X81|X82|X83|X93

Returns the selected overhead byte as an 8 bit binary string in the range "00000000" to "11111111". The byte number is given by its defined name if it has one. Undefined bytes are represented by <Xrc>, where r is the numerical value of the bytes row in the transport overhead and c is the numerical value of the bytes column in the transport overhead. If an STS-3 signal is being transmitted, the only applicable value of STS3# is 1.

:FETCh:SCALar:DATA:TELEcom:SONet:POVerhead:H4Sequence?

Returns: <string>

Obtains the length of the H4 byte sequence.

Returns :	<discrete>	LONG	Long sequence
		SHOR	Short sequence
		UNKN	Unknown sequence

SONET Command Reference

FETCh subsystem

:FETCh:SCALar:DATA:TELEcom:SONet:POVerhead? <discrete>

<discrete> = J1|B3|C2|G1|F2|H4|Z3|Z4|N1

Obtains the value of the named path overhead byte. The value of the named byte is returned as a string in the range "00000000" to "11111111". This is a snapshot of the overhead byte and is captured once per second.

Returns: <string>

:FETCh:SCALar:DATA:TELEcom:SONet:TRIButary:POVerhead? <discrete>

<discrete> = V5|Z6|Z7 VT-6|VT-2|VT-1.5

Obtains the value of the specified path overhead byte. The value of the named byte is returned as a string in the range "00000000" to "11111111". This is a snapshot of the overhead byte and is captured once per second.

Returns: <string>

:FETCh:SCALar:DATA:TELEcom:SONet:TRIButary:POVerhead:SLABel?

Returns the signalling label of the selected tributary in numeric form.

Returns: <numeric>

:FETCh:ARRAy:DATA:TELEcom:SONet:ASCan?

Returns (each of one or more rows): <numeric>{,<numeric>}

The results returned are those for the last FULL scan. Results from partial scans are not available. If no full scan has been completed since the instrument was powered up, this command will return -1.

If data is available it is returned as a set of string arrays one for each scanned group. The arrays are separated by a CR/LF pair. A group is defined as a set of scanned paths at either the SPE or VT level. The arrays consist of comma separated numerics, one for each path scanned. The value of the numeric indicates the status of the scanned path. The following values are valid.

SONET Command Reference

FETCh subsystem

Value	State
0	No Problems Detected
1	Alarms or Errors Detected
2	Path Unequipped
3	Loss of Pointer
4	AIS
5	RDI
6	H4 Multiframe Loss
?	Invalid

For a specific signal structure, the format of the returned strings are shown below:

a) STS-3 STS-1 VT-6

This signal consists of 3 STS-1s each of which contains 7 VT-Groups. The VT-Groups in turn each contain 1 VT-6. From the perspective of the Alarm Scan function the paths are 3 at the STS-1 level and 21 at the VT level. The STS-1 paths are defined as a group on their own while the 21 VTs are arranged as 3 groups of 7 paths with the groups corresponding to the STS-1 allocation. For this configuration, four arrays are returned with formats shown below:

```
STS-3      -> STS1#1, STS1#2, STS1#3
STS-1 #1  -> VT#1,VT#2,VT#3,VT#4,VT#5,VT#6,VT#7
STS-1 #2  -> VT#1,VT#2,VT#3,VT#4,VT#5,VT#6,VT#7
STS-1 #3  -> VT#1,VT#2,VT#3,VT#4,VT#5,VT#6,VT#7
```

For Example, the output could look like:

```
0,1,1
1,1,1,0,0,1,0
2,2,2,2,2,2,2
0,0,0,0,1,0,0
```

SONET Command Reference

FETCh subsystem

b) STS-3 STS-1 Full SPE

This signal consists of 3 STS-1s each containing 1 Full SPE. In this configuration there are 3 paths, 3 at the STS-1 level and no lower paths. For this configuration, 3 arrays are returned with the following format:

```
STS-3 -> STS1#1, STS1#2, STS1#3
```

The output will look something like:

```
0, 1, 2
```

c) STS-3 STS-1 VT-2

This signal again consists of 3 STS-1's. In this case however, the STS-1's each contain 7 VT-Groups. These VT-Groups each contain 3 VT-2's. In terms of paths the signal comprises 3 path at the STS-1 level and 63 paths at the VT-2 level. Again the STS-1s are defined as a group on their own. The 63 VT-2 paths are split into 3 groups corresponding to their allocation with the 3 STS-1's. For this configuration, four arrays are returned with the following format:

NOTE: VT-2's designated thus [STS-1# - VT-Grp# - VT#]

```
STS-3      -> STS-1#1, STS-1#2, STS-1#3
STS-1 #1   -> [1-1-1],[1-1-2],[1-1-3],[1-2-1],[1-2-2],[1-
2-3],
                [1-3-1],[1-3-2],[1-3-3],[1-4-1],[1-4-2],[1-
4-3],
                [1-5-1],[1-5-2],[1-5-3],[1-6-1],[1-6-2],[1-
6-3],
                [1-7-1],[1-7-2],[1-7-3]
STS-1 #2   -> As Above
STS-1 #3   -> As Above
```

The output will look like:

```
1, 2, 0
0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
1, 1, 1, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 0, 0
2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2
```


SONET Command Reference

FETCh subsystem

f) STS-1 VT-2

This signal again comprises 1 STS-1 containing 7 VT-Groups. However, this time the VT-Groups each contain 3 VT-2's. As before, the STS-1 path is defined as a group on its own, while the 7 VT-2 paths are also defined as one group. For this configuration, 2 groups are returned with the following format:

NOTE: VT-2's designated thus [VT-Grp# - VT-2#]

```
STS-1      -> STS-1
VT-Group   -> [1-1],[1-2],[1-3],[2-1],[2-2],[2-3],[3-1],
               [3-2],[3-3],[4-1],[4-2],[4-3],[5-1],[5-2],
               [5-3],[6-1],[6-2],[6-3],[7-1],[7-2],[7-3]
```

The output will look like:

```
0
1,1,1,0,0,0,0,0,1,1,1,1,1,1,1,1,0,0,2,0,0,0,0
```

g) STS-1 VT-1.5

This signal again comprises 1 STS-1 containing 7 VT Groups. However, this time the VT Groups each contain 4 VT-1.5's. As before, the STS-1 path is defined as a group on its own, while the 7 VT-1.5 paths are also defined as one group. For this configuration, 2 groups are returned with the following format:

NOTE: VT-1.5's designated thus [VT-Group# - VT-1.5#]

```
STS-1      -> STS-1
VT-Group   -> [1-1],[1-2],[1-3],[1-4],[2-1],[2-2],[2-
3],[2-4],[3-1],[3-2],[3-3],[3-4],[4-1],[4-2],[4-3],[4-
4],[5-1],[5-2],[5-3],[5-4],[6-1],[6-2],[6-3],[6-4],[7-
1],[7-2],[7-3],[7-4]
```

The output will look like:

```
0
1,1,1,1,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,0,0,0,2,0,0,0,0,0,1
```

h) Unrecognized Structure

When Alarm Scan is operating in AUTO mode, it is possible that due to various signal alarm conditions, it may not be able to determine the structure for a particular group of paths. When this occurs that group is marked as an "Unrecognized Structure". The string returned for such a group is the SCPI NAN - "9.91E+37"

SONET Command Reference

FETCh subsystem

:FETCh:ARRay:DATA:TELEcom:SONet:TSCan?

Returns (each of one or more rows): <numeric>{,<numeric>

The results returned are those for the last FULL scan. Results from partial scans are not available. If no full scan has been completed since the instrument was powered up, this command will return -1.

If data is available it is returned as a set of string arrays one for each scanned group. The arrays are separated by a CR/LF pair. A group is defined as a set of scanned paths at either the STS or VT level. The arrays consist of comma separated numerics, one for each tributary scanned. The value of the numeric indicates the status of the scanned tributary. The following values are valid.

Value	State
0	No Problems Detected
1	Alarms or Errors Detected

For a specific signal structure, the format of the returned strings are shown below:

a) STS-1 VT-6

This signal consists of 1 STS-1 containing 7 VT-Groups. Each VT-Group contains 1 VT-6. There are therefore 7 tributaries to be scanned. These are defined as one group and hence for this configuration, 1 array is returned with the following format:

STS-1 -> VT6#1, VT6#2, VT6#3, VT6#4, VT6#5, VT6#6, VT6#7

The output will look like:

1,1,1,0,0,0,0

b) STS-1 VT-2

This signal again comprises 1 STS-1 containing 7 VT-Groups. However, this time the VT-Groups each contain 3 VT-2's. There are therefore 21 (7*3) tributaries to be scanned. These are defined as one group and are returned in the following format:

NOTE: VT-2's designated thus [VT-Group# - VT-2#]

SONET Command Reference

FETCh subsystem

```
STS-1    -> [1-1],[1-2],[1-3],[2-1],[2-2],[2-3],[3-1],
             [3-2],[3-3],[4-1],[4-2],[4-3],[5-1],[5-2],
             [5-3],[6-1],[6-2],[6-3],[7-1],[7-2],[7-3]
```

The output will look like:

```
1,1,1,0,0,0,0,1,1,1,1,1,1,1,0,0,1,0,0,0,0
```

c) STS-1 VT-1.5

This signal again comprises 1 STS-1 containing 7 VT-Groups. However, this time the VT-Groups each contain 4 VT-1.5's. There are therefore 28 (7*4) tributaries to be scanned. These are defined as one group and are returned in the following format:

NOTE: VT-1.5's designated thus [VT-Group# - VT-1.5#]

```
STS-1      -> [1-1],[1-2],[1-3],[1-4],[2-1],[2-2],[2-
3],[2-4],[3-1],[3-2],[3-3],[3-4],[4-1],[4-2],[4-3],[4-
4],[5-1],[5-2],[5-3],[5-4],[6-1],[6-2],[6-3],[6-4],[7-
1],[7-2],[7-3],[7-4]
```

The output will look like:

```
1,1,1,0,0,0,0,1,1,1,1,1,1,1,0,0,1,0,0,0,0
```

2) STS-12/OC-12

For the STS-12/OC-12 situation, the formats are similar to those defined above for STS-1/STS-3 except that there will be data returned for all four STS-3's in the signal.

Consider a STS-12 signal with a STS-3C structure. In the STS-3 case this structure would not be considered since there is only one tributary in the signal. However in the STS-12/OC-12 case there are 4 tributaries and the scan is carried out.

In this case each STS-3C is treated as a separate group, hence 4 arrays are returned from the SCPI command:

```
STS-3 #1 STS-3C
STS-3 #2 STS-3C
STS-3 #3 STS-3C
STS-3 #4 STS-3C
```

The output will look like:

```
0
0
```

SONET Command Reference

FETCh subsystem

1

1

:FETCh:ARRay:DATA:TELEcom:SONet:PGRaph?

Returns: <numeric>,<numeric>, <numeric>,...
 <numeric>,<numeric>, <numeric>

Returns an array of 576 bytes, 2 bytes for each of the possible 288 points on the displayed pointer graph. The 2 bytes at each point indicate the maximum and minimum offset at that point. Each byte has 3 numeric entries separated by commas.

The value of the 3 numeric entries, <range bit>,<validity bit>,<offset value>, provide the following information:

Range bit	Validity Bit	Offset Value	Description
1	1	-18 to +18	Valid in range result
1	0	0	No measurement
1	1	9.91E+37	Alarms during measurement
2	1	0	Offset out of range > +18
0	1	0	Offset out of range < -18

The graph entries are arranged as shown below. Each entry has the format previously described above:

<max offset 1>,<min offset 1>,<max offset 2>,<min offset 2>,
<max offset 3>,<min offset 3>,<max offset 4>,<min offset 4>,
<max offset 5>,<min offset 5>,<max offset 6>,<min offset 6>,
.....
.....

<max offset 287>,<min offset 287>,<max offset 288>,<min offset 288>

Range of valid offset values is -18 thru +18

A typical return array might look like:

1,1,9.91E+37,1,1,9.91E+37,1,1, 0,1,1, 0,1,1, +1,1,1, -2, etc....

:FETCh:ARRay:DATA:TELEcom:SONet:OCApTure? <numeric>

<numeric> = 1 to 16 Overhead channels

SONET Command Reference

FETCh subsystem

Returns an array with the number of entries determined by <numeric> and separated by CR/LF.

Each entry consists of an alphanumeric string and a numeric separated by commas. The alphanumeric string provide the hexadecimal value of the captured data. The length of the string depends upon the overhead channel selected for capture, two hexadecimal characters/overhead byte. The numeric indicates the number of frames for which the captured data existed. If this command is issued when a capture is being performed, some entries will contain no data. In this case 9.91E+37 is returned.

The overhead byte or bytes to be captured is specified by
:SENS:DATA:TEL:OCAP: CHAN <channel>.

:FETCh:ARRAy:DATA:TELEcom:SONet:POVerhead? <numeric>

<numeric> = 1 to 9

Returns the value of the selected path overhead bytes as an array of strings. Each string is in the range "00000000" to "11111111". This is a snapshot of the overhead byte and is captured once per second.

The array always begins with byte 1 of the path overhead and ends with the byte number specified by <numeric>.

Byte Order: (1) J1 (2) B3 (3) C2 (4) G1 (5) F2 (6) H4 (7) Z3 (8) Z4 (9) N1.

Returns: <string>{,<string>}

:FETCh:ARRAy:DATA:TELEcom:SONet:OVERhead? <numeric><numeric><numeric>

<numeric> = 1 to 27 (Byte Number)
(first parameter)

<numeric> = 1 to 16 (STS-3 number)
(second parameter)

<numeric> = 1 to 3 (STS-1 number)
(third parameter)

Returns the value of the selected transport overhead bytes as an array of strings. Each string is in the range "00000000" to "11111111". This is a snapshot of the overhead byte and is captured once per second.

The array always begins with byte 1 of the transport overhead and ends with the byte number specified by the first parameter.

SONET Command Reference

FETCH subsystem

Number	Name	Number	Name	Number	Name
1	A1	10	H1	19	D7
2	A2	11	H2	20	D8
3	J0/Z0	12	H3	21	D9
4	B1	13	B2	22	D10
5	E1	14	K1	23	D11
6	F1	15	K2	24	D12
7	D1	16	D4	25	S1/Z1
8	D2	17	D5	26	M0/M1/Z2
9	D3	18	D6	27	E2

Returns (each of one or more rows): <string>,{<string>}

Status Reporting

Status Reporting

Status Reporting

The status reporting capability of the HP 37719A is provided by the Status Registers and the Status Byte. The STATus subsystem and some IEEE common capability commands control the status registers and the status byte.

Table 5-1 **Status Registers**

The following status registers are provided in the HP 37719A and conform to IEEE 488.2:

Status Register	Description
Standard Event	This register is accessed by issuing the *ESR? common capability command.
QUESTionable	Defined by SCPI.
OPERation	Defined by SCPI.
INSTrument	Monitors general instrument conditions and summarizes the DISK status register.
DATA	Summarizes the PDH, FAS, SPDH, SONet, SONet2 JIT and BIN status registers.
FAS	Monitors the condition of the Unstructured PDH FAS signal. (UPDH option).
SPDH	Summarizes the M140 , M34, M8, M2, DS3, DS2 and DS1 status registers. (SPDH option).
M140	Monitors the condition of the Structured PDH 140 Mb/s signal. (SPDH option).
M34	Monitors the condition of the Structured PDH 34 Mb/s signal. (SPDH option).
M8	Monitors the condition of the Structured PDH 8 Mb/s signal. (SPDH option).

Status Reporting

Status Register	Description
M2	Monitors the condition of the Structured PDH 2 Mb/s signal. (SPDH option).
DS1	Monitors the condition of the Structured PDH DS1 signal. (SPDH option).
DS2	Monitors the condition of the Structured PDH DS2 signal. (SPDH option).
DS3	Monitors the condition of the Structured PDH DS3 signal. (SPDH option).
SDH/SONet	Monitors the primary conditions of the SONET signal. (/SONET option).
SDH2/SONet2	Monitors miscellaneous SONET conditions. (SONET option).
SDH3/SONet3	Monitors miscellaneous SONET conditions. (SONET option).
JITTer	Monitors the condition of the Jitter/Wander signal. (Jitter/Wander option).
DISK	Monitors the disk activity.

Status Reporting

General Status Register

The status registers conform to IEEE 488.2 and each comprises 4 registers as shown in Figure 5-1. For the commands which access and control these registers, see “STATus subsystem” on page 2-38

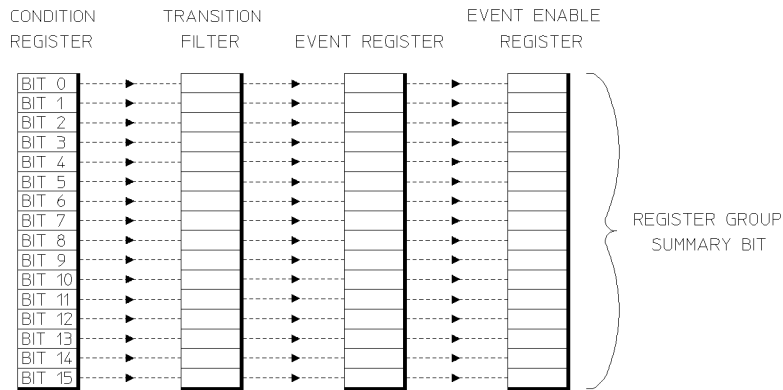


Figure 5-1

General Status Register

Condition Register

Monitors the defined status conditions. There is no latching of conditions in this register, it is updated in real time.

Transition Filter

Determines whether positive or negative transitions (true or false) in the Condition register sets the Event register.

Event Register

Latches the transient states that occur in the Condition register as specified by the Transition Filter.

Event Enable Register

Acts like a mask on the Event register. It determines which bits in the Event register set the summary bit in the Status Byte.

Status Reporting

Status Byte

*STB? or a serial poll - Returns the value of the Status Byte in numeric form.

*SRE <numeric> - Sets the Status Byte mask.

*SRE? - Returns the current mask setting in numeric form.

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
OPER	RQS	ESR	MAV	QUES	-	-	-

DB0 - DB2 Not used, always read as 0.

DB3 QUES - QUEStionable status register summary. Indicates that a bit has been set in the QUEStionable status register.

DB4 MAV - Message Available. Remains set until all output messages are read from the HP 37719A.

DB5 ESR - Event status register summary. Indicates that a bit has been set in the Event status register.

DB6 RQS - Request Service. Set when an SRQ is generated for whatever reason. Cleared by SPOLL or *STB?.

DB7 OPER - OPERation status register summary. Indicates that a bit has been set in the OPERation status register.

Status Reporting

Standard Event Status Register

*ESR? - Returns the Standard Event Status Register value in numeric form.

*ESE <numeric> - Sets the event enable register mask.

*ESE? - Returns the current mask setting.

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
PWR	URQ	CME	EXE	DDE	QUE	RQC	OPC

DB0 OPC - Operation Complete.

DB1 RQC - Request Control.

DB2 QUE - Query Error.

DB3 DDE - Device Dependent Error.

DB4 EXE - Execution Error.

DB5 CME - Command Error.

DB6 URQ - User Request.

DB7 PWR - Power On.

Status Reporting

QUEStionable Status Register

Provides a summary of the DATA status register.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:QUEStionable:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	CMW	-	-	-	-	DATA	-

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
-	-	-	-	-	-	-	-

DB0 - DB8 Not used, always read as 0.

DB9 DATA - DATA status register summary.

DB10 - DB13 Not used, always read as 0.

DB14 CMW - Command Warning

DB15 Not used, always reads as 0.

Status Reporting

OPERation Status Register

Provides a summary of the INSTRument status register, and reports when a measurement is being made.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:OPERation:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	-	INST	-	-	-	-	-

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
-	-	-	MEAS	-	-	-	-

DB0 - DB3 Not used, always reads as 0.

DB4 MEAS - Measuring. Currently making a measurement.

DB5 - DB12 Not used, always read as 0.

DB13 INST - INSTRument status register summary.

DB14 - DB15 Not used, always read as 0.

Status Reporting

INSTRUMENT Status Register

Reports the instrument status.

For related commands, see “STATUS subsystem” on page 2-38

Example: STATUS:INSTRUMENT:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	-	-	-	-	-	-	-

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
DISK	STP	STC	-	-	EOT	LQE	SMG

- DB0** SMG - Graphics Results enabled.
- DB1** LQE - Logging Queue Empty.
- DB2** EOT - End Of Test period.
- DB3** Not used, always read as 0.
- DB4** Not used, always read as 0.
- DB5** STC - Self Test complete.
- DB6** STP - Short Term Period complete.
- DB7** DISK - Disk status register summary.
- DB8 - DB15** Not used, always read as 0.

Status Reporting

DATA Status Register

Summarizes the alarm status registers shown. In addition provides a Power Failed alarm indication.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:DATA:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	PWF	-	-	-	SDH3	-	-

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
-	-	SPDH	JITT	SDH2	SDH	FAS	-

DB0 Reserved for future use, always read as 0.

DB1 FAS - FAS status register summary.

DB2 SDH - SDH status register summary.

DB3 SDH2 - SDH2 status register summary.

DB4 JITT - JITTER status register summary.

DB5 SPDH - SPDH status register summary.

DB6 - DB9 Reserved for future use, always read as 0.

DB10 SDH3 - SDH3 status register summary

DB11 - DB13 Not used, always read as 0.

DB14 PWF - Power Failed during measurement.

DB15 Not used, always read as 0.

Status Reporting

ISUMmary Status Register

Provides alarm indications summarised from SDH/SONET and SPDH status registers and should be used in preference to the SDH/SONET and SPDH status registers.

This register provides a summary of the SDH/SONET and SPDH status registers for each of the conditions shown below. Use this register to determine the status of the instrument independent of its configuration. It is recommended that for pattern loss in particular this register is used in preference to the SDH/SONET and SPDH registers as this removes the dependence on receiver payload selection.

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	ERR	PSL	-	-	-		

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
-	-	LOP	FAR	AIS	LOF	LOS	PLO

DB0	PLO - Power Loss.
DB1	LOS - LOss of Signal.
DB2	LOF - Loss of frame.
DB3	AIS - Alarm indication signal.
DB4	FAR - Far end alarms.
DB5	LOP - Loss of pPointer.
DB6	Not used
DB7	Not used
DB8	Not used
DB9	Not used
DB10	Not used
DB11	Not used
DB12	Not used
DB13	PSL - Pattern sync loss.
DB14	ERR - Errors detected.
DB15	Not used

Status Reporting

SONet Status Register

Provides primary alarm indications related to the SONET signal.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:SONet:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	ERR	RDIV	AISV	LOPV	RDIP	RDIL	H4

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
CSL	PSL	AISP	AISL	LOPP	SEF	LOF	LOS

DB0	LOS - Loss Of Signal.
DB1	LOF - Loss Of Frame.
DB2	SEF - Severely Errored Frame Defect.
DB3	LOPP - Loss Of Pointer (LOP-P).
DB4	AISL - Line AIS (AIS-L).
DB5	AISP - Path AIS (AIS-P).
DB6	PSL - Pattern Synchronization Loss.
DB7	CSL - Clock Synchronization Loss.
DB8	H4 - H4 LOM.
DB9	RDIL - Line FERF (RDI-L).
DB10	RDIP - Path FERF (RDI-P).
DB11	LOPV - VT Loss Of Pointer (LOP-V).
DB12	AISV - VT Path AIS (AIS-V).
DB13	RDIV - VT Path FERF. (RDI-V).
DB14	ERR - Errors Alarm.
DB15	Not used, always read as 0.

Status Reporting

SONet2 Status Register

Provides miscellaneous SONET monitoring.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:SONet2:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	BDL	BCL	PSA	RAS	TAS	PSI	FMU

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
ALSC	K1K2	TMNDF	TNDF	TPADJ	MNDF	NDF	PADJ

DB0	PADJ - SPE Pointer Adjust.
DB1	NDF - SPE Pointer New Data Flag.
DB2	MNDF - SPE Pointer Missing New Data Flag.
DB3	TPADJ - VT Pointer Adjust.
DB4	TNDF - VT Pointer New Data Flag.
DB5	TMNDF - VT Pointer Missing New Data Flag.
DB6	K1K2 - K1K2 change.
DB7	ALSC - SONET Alarm/Trib scan in progress.
DB8	FMU - Frequency Measurement Updated. (16s gate).
DB9	PSI - TX pointer sequence initialization.
DB10	TAS - TX Async 2 Mb/s Settling.
DB11	RAS - RX Async 2 Mb/s Settling.
DB12	PSA - TX pointer sequence active.
DB13	BCL - SONET Binary Clock Loss.
DB14	BDL - SONET Binary Data Loss.
DB15	Not used, always read as 0.

Status Reporting

SONet3 Status Register

Provides miscellaneous SONET monitoring.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:SONet3:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	-	-	-	-	-	-	FMU_1S

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
-	-	-	-	-	-	-	P1P0

- DB0** P1P0 LOM
- DB1 - DB7** Not used, always read as 0.
- DB8** FMU_1S - Frequency Measurement Updated. (1s gate).
- DB9 - DB15** Not used, always read as 0.

Status Reporting

JITTer Status Register

Provides alarm indications related to the Jitter measurement.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:JITTer:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	JTF	-			JAT	JSWP	TSET

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
ORCL	XCL	JOVR			WSL	JHT	JSL

DB0	JSL - Jitter Unlock.
DB1	JHT - Jitter Hits.
DB2	WSL - Wander Unlock.
DB3	Not Used, always 0.
DB4	Not Used, always 0.
DB5	JOVR - Jitter out of range.
DB6	XCL - Loss of External Timing Reference.
DB7	ORCL - External Timing Reference Out of Range.
DB8	TSET - Jitter transmitter settling.
DB9	JSWP - Jitter sweep in progress.
DB10	JAT - Jitter Autotolerance in progress.
DB11	Not Used, always 0
DB12	Not Used, always 0
DB13	Not Used, always 0.
DB14	JTF - Jitter Transfer in progress.
DB15	Not Used, always 0.

Status Reporting

SPDH Status Register

Provides alarm indications related to the Structured PDH signal.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:SPDH:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	ERR	PSL	ILOS	IPES	DPES	FMU	LOC

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
DS2	ALSC	DS1	DS3	M2	M8	M34	M140

DB0	M140 - M140 status register summary.
DB1	M34 - M34 status register summary.
DB2	M8 - M8 status register summary.
DB3	M2 - M2 status register summary.
DB4	DS3 - DS3 status register summary.
DB5	DS1 - DS1 status register summary.
DB6	ALSC - PDH Alarm Scan in progress.
DB7	DS2 - DS2 status register summary.
DB8	LOC - VCXO Lock Loss. Cleared when the VCXO has locked
DB9	FMU - Frequency Measurement in progress. Cleared when the frequency measurement result has updated.
DB10	DPES - 2 Mb/s Drop Port Elastic Store settled.
DB11	IPES - 2 Mb/s Insert Port Elastic Store settled.
DB12	ILOS - 2 Mb/s Insert Port Loss of Signal.
DB13	PSL - Pattern Synchronization loss.
DB14	ERR - Errors present.
DB15	Not used, always read as 0.

Status Reporting

M140 Status Register

Provides alarm indications related to the Structured PDH 140 Mb/s signal.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:M140:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	-	DEFO	IEFO	MIN	RAI	-	-

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
-	-	AIS	-	-	-	LOF	LOS

DB0 LOS - Loss Of Signal.

DB1 LOF - Loss Of Frame.

DB2 -DB4 Not used, always read as 0.

DB5 AIS - Alarm Indication Sequence.

DB6 - DB9 Not used, always read as 0.

DB10 RAI - Remote Alarm.

DB11 MIN - Minor Alarm.

DB12 IEFO - Insert port Excess Frequency Offset.

DB13 DEFO - Drop port Excess Frequency Offset.

DB14 - DB15 Not used, always read as 0.

Status Reporting

M34 Status Register

Provides alarm indications related to the Structured PDH 34 Mb/s signal.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:M34:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	-	DEFO	IEFO	MIN	RAI	-	-

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
-	-	AIS	-	-	-	LOF	LOS

DB0 LOS - Loss Of Signal.

DB1 LOF - Loss Of Frame.

DB2 -DB4 Not used, always read as 0.

DB5 AIS - Alarm Indication Sequence.

DB6 - DB9 Not used, always read as 0.

DB10 RAI - Remote Alarm.

DB11 MIN - Minor Alarm.

DB12 IEFO - Insert port Excess Frequency Offset.

DB13 DEFO - Drop port Excess Frequency Offset.

DB14 - DB15 Not used, always read as 0.

Status Reporting

M8 Status Register

Provides alarm indications related to the Structured PDH 8 Mb/s signal.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:M8:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	-	-	-	MIN	RAI	-	-

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
-	-	AIS	-	-	-	LOF	LOS

DB0 LOS - Loss Of Signal.

DB1 LOF - Loss Of Frame.

DB2 -DB4 Not used, always read as 0.

DB5 AIS - Alarm Indication Sequence.

DB6 - DB9 Not used, always read as 0.

DB10 RAI - Remote Alarm.

DB11 MIN - Minor Alarm.

DB12 - DB15 Not used, always read as 0.

Status Reporting

M2 Status Register

Provides alarm indications related to the Structured PDH 2 Mb/s signal.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:M2:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	-	-	-	MIN	RAI	-	-

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
-	-	AIS	CRC	CAS	RMFR	LOF	LOS

- DB0** LOS - Loss Of Signal.
- DB1** LOF - Loss Of Frame.
- DB2** RMFR - Remote Multiframe Alarm.
- DB3** CAS - CAS Multiframe Loss.
- DB4** CRC - CRC4 Multiframe Loss.
- DB5** AIS - Alarm Indication Sequence.
- DB6 - DB9** Not used, always read as 0.
- DB10** RAI - Remote Alarm.
- DB11** MIN - Minor Alarm.
- DB12 - DB15** Not used, always read as 0.

Status Reporting

DS3 Status Register

Provides alarm indications related to the Structured PDH DS3 signal.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:DS3:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	FMM	IDLE	EXZ	-	RAI	DEFO	IEFO

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
-	-	AIS	MFM	-	OOF	-	LOS

DB0	LOS - Loss Of Signal.
DB1	Not used, always read as 0.
DB2	OOF - Out Of Frame.
DB3	Not used, always read as 0.
DB4	MFM - Multiframe Loss.
DB5	AIS - Alarm Indication Sequence.
DB6 - DB7	Not used, always read as 0.
DB8	IEFO - Insert port Excess Frequency Offset.
DB9	DEFO - Drop port Excess Frequency Offset.
DB10	RAI - Remote Alarm. (FERF)
DB11	Not used, always read as 0
DB12	EXZ - Excess Zeros
DB13	IDLE - Idle
DB14	FMM - Frame Mismatch
DB15	Not Used, always read as 0.

Status Reporting

DS2 Status Register

Provides alarm indications related to the Structured PDH DS2 signal.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:DS2:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	-	-	-	-	-	-	-

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
-	-	-	-	-	OOF	-	-

DB2

OOF - Out Of Frame.

Status Reporting

DS1 Status Register

Provides alarm indications related to the Structured PDH DS1 signal.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:DS1:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
LPDN	LPUP	IDLE	EXZ	-	RAI	-	-

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
-	-	AIS	-	-	OOF	-	LOS

DB0	LOS - Loss Of Signal.
DB1	Not used, always read as 0.
DB2	OOF - Out Of Frame
DB3 - DB4	Not used, always read as 0.
DB5	AIS - Alarm Indication Sequence.
DB6 - DB9	Not used, always read as 0.
DB10	RAI - Remote Alarm. (FERF).
DB11	Not used, always read as 0.
DB12	EXZ - Excess Zeros.
DB13	IDLE - Idle.
DB14	DS1 Inband Loop Up code detected.
DB15	DS1 Inband Loop Down code detected.

Status Reporting

DISK Status Register

Provides miscellaneous floppy disk monitoring.

For related commands, see “STATus subsystem” on page 2-38

Example: STATus:DISK:EVENT?

DB15	DB14	DB13	DB12	DB11	DB10	DB9	DB8
-	-	-	-	-	-	-	-

DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0
-	-	-	-	-	-	-	FMT

DB0 FMT - Formatting Disk.

DB1 - DB15 Not used, always read as 0.

Status Reporting

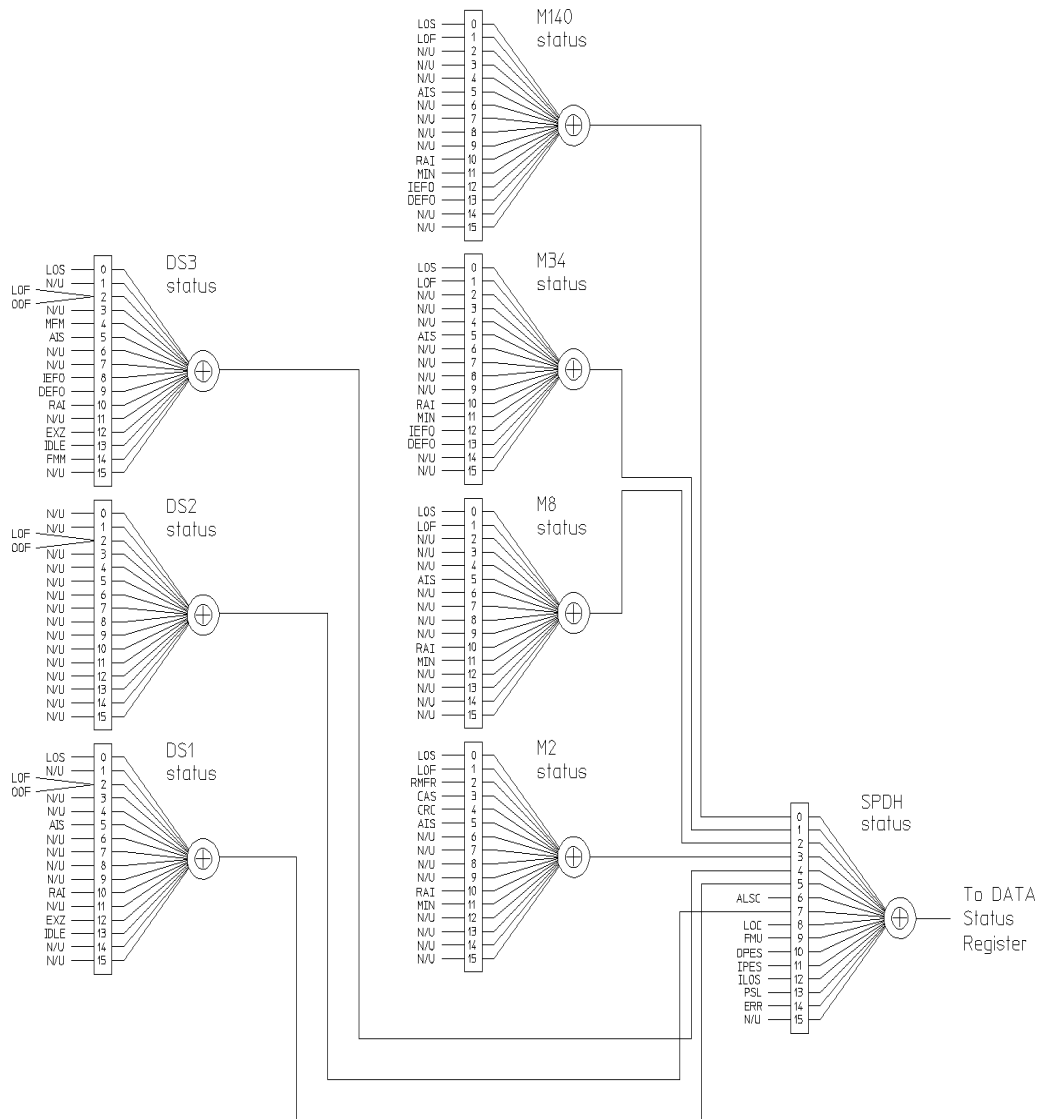


Figure 5-2

Status Registers Relationship 1

Status Reporting

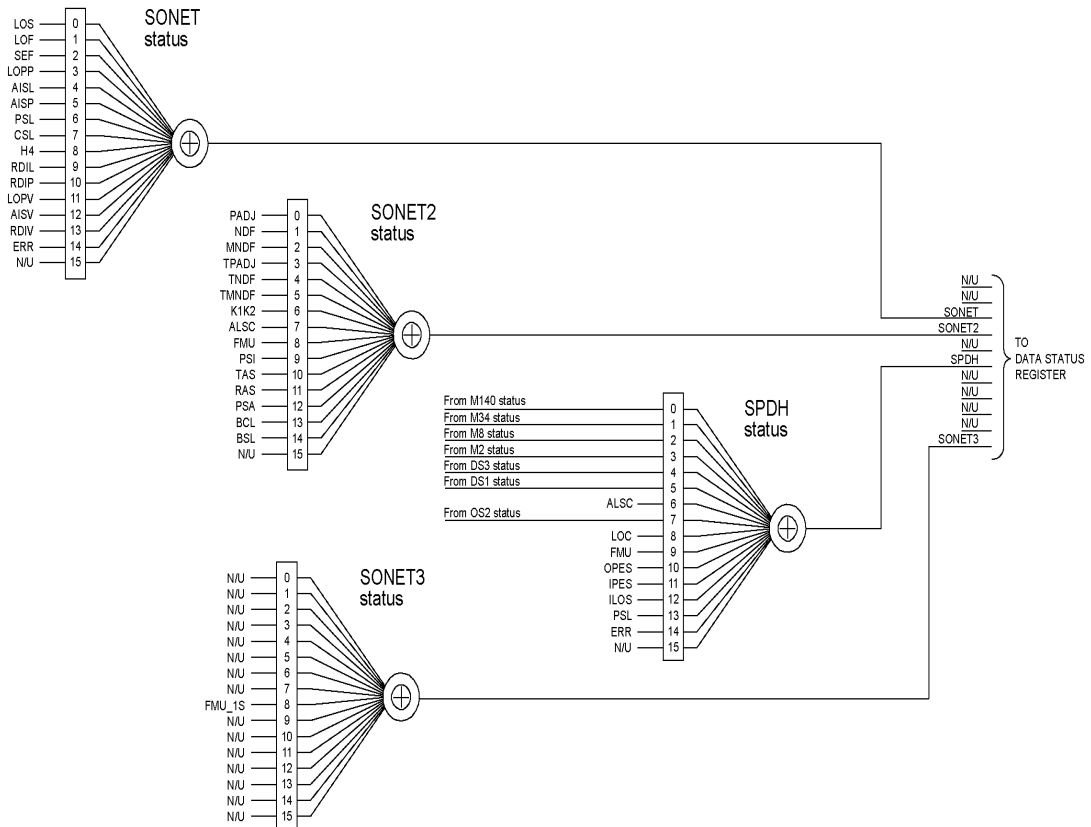
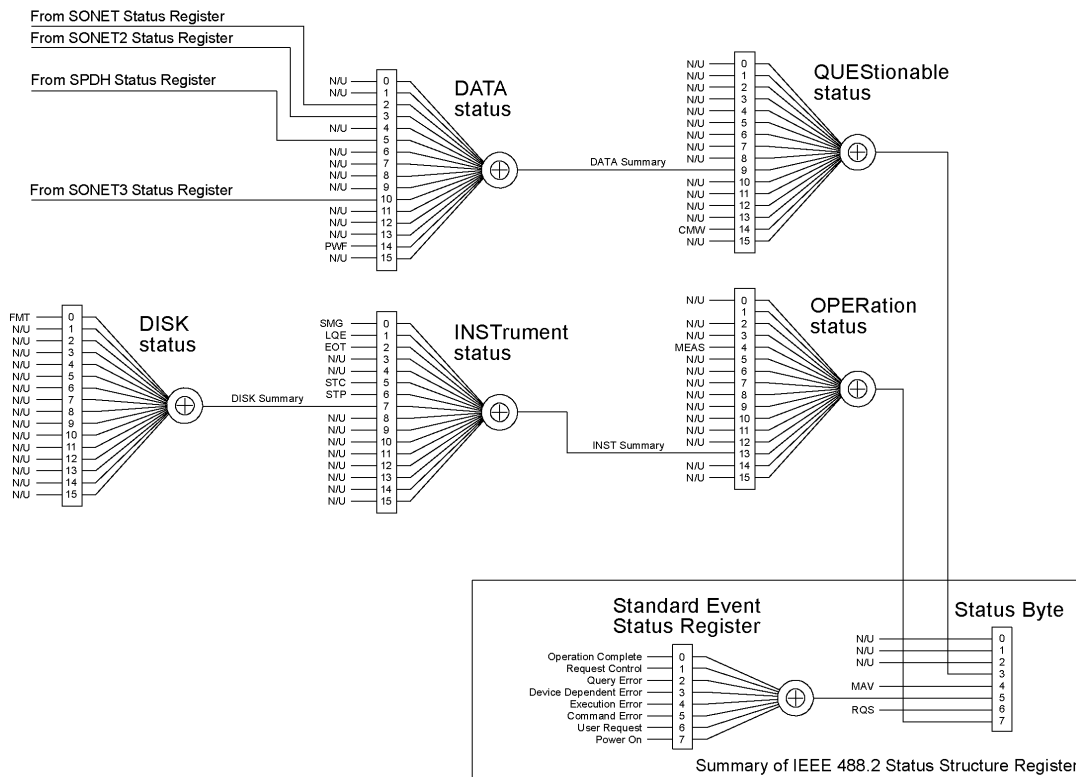


Figure 5-3

Status Registers Relationship 2

Status Reporting



The use of Bit 15 is not allowed since some controllers may have difficulty reading a 16 bit integer. The value of this bit shall always be 0.

Figure 5-4

Status Registers Relationship 3

Programmed Status Reporting

When a condition is detected, a summary bit is generated by the Status Register which detects the condition. The summary bit in most cases passes through other Status Registers before affecting the Status Byte. These other Status Registers also generate a summary bit, therefore to report a condition requires the setting of the Event Enable Register mask in all registers in the chain.

When implementing status reporting into your programming, consider the following with reference to the Status Registers Relationship diagram, see Figure 5-2 to Figure 5-4:

Status Reporting

Programming Interrupts

1) Define which conditions you want reported. To do this, set the Event Enable Register mask of the Status Register that first detects the defined conditions. Set the Event Enable Register mask of all subsequent Status Registers between the reporting Status Register and the Status Byte. Using an example from the SDH Status Register :

LOS + LOF

:STAT:SDH :ENAB 3	Set the SDH event enable register to summarize for LOF(2) + LOS (1)
:STAT:SDH :PTR 3;NTR 0	Transition filter passes positive transitions bits 0 and 1.
:STAT:DATA:ENAB 4	Set the DATA event enable register to summarize for SDH(4)
:STAT:DATA:PTR 4;NTR 0	Transition filter passes positive transitions bit 2.
:STAT:QUES:ENAB 512	Set the QUES event enable register to summarize for DATA(512)
:STAT:QUES:PTR 512;NTR 0	Transition filter passes positive transitions bit 9.

2) If you are implementing a service request/serial poll operation, set the mask of the Status Byte, for example :

***SRE 40** QUES summary + Standard Event summary

The Status Byte register will initiate a service request (RQS) when either of the masked conditions are detected.

Interpreting Interrupts

1) Check the content of the Status Byte register using the service request/serial poll operation (SPOLL) or by issuing the *STB? common capabilities command, for example :

***STB?** Returns 8 - QUES summary

Status Reporting

2) If a condition has been detected, determine which Status Register is responsible for issuing the summary bit, then use the appropriate STATUS commands to interrogate the appropriate registers, for example :

:STAT:QUES:EVENT?	Returns 512 - DATA summary
:STAT:DATA:EVENT?	Returns 4 - SDH summary
:STAT:SDH :EVENT?	Returns 3 - LOF (2) + LOS (1)

The interrogation of the status byte and status registers reveals that the cause of the interrupt was Unavailability and Pattern Synchronization Loss.

Example Program

```
10 ! Program Name : 21SRQ_DEMO
20 !
30 ! Program to illustrate the use of the Service Request Routine
31 ! in the HP 37719A .
40 ! Written by George Hossack (QTD Product Support)
50 !
60 ! The program starts a 10 second BER measurement on the HP 37719A
70 ! then continually reads and displays the HP 37719A Short-Term
80 ! BER until a Service Request is received from the HP 37719A .
90 ! When this happens, the Controller will suspend current activity
100 ! and read registers to determine the cause of the SRQ.
110 ! The maskable registers are set in the program to generate SRQ at
120 ! end of a measurement or when an HP 37719A Alarm condition occurs.
130 ! If the SRQ is found to be caused by End of Measurement then the
140 ! the program will read and print the measurement result before
150 ! continuing to read and display the received Short-Term BER.
160 ! If the SRQ is found to be caused by a masked alarm condition then
170 ! the program will read and print the alarm status then stop as it
```

Status Reporting

```
180 ! is invalid to return results when a recognized Alarm condition
190 ! exists.
191 !
200 PRINT CHR$(12) !Clear screen
210 PRINT TABXY(27,1);"Service Request - Demo Program"
220 !
230 COM Hp37719 !Common variable(s)
240 Hp37719=705 ! assign variable to default address
250 CALL Init_instr ! Sub to initialize the 377 19A
260 !
270 CALL Config_regs_14 ! Sub to configure 37718 regs for SRQ
280 !
290 ON INTR 7 CALL Read_stat_byte ! Specify interrupt routine
300 !
310 CALL Tx_setup ! Sub to set up 37719A Transmitter
320 !
330 CALL Rx_setup ! Sub to set up 37719A Receiver
340 !
350 CALL Results_setup ! Sub to setup results display
360 !
370 OUTPUT Hp37719;"*CLS" ! Clear any existing SRQ/ Remote errors
380 WAIT 3
390 ENABLE INTR 7;2 ! Enable computer to recognize interrupt
400 !
410 CALL Run_meas
420 !
430 CALL Read_short_rslt
440 END
```


Status Reporting

```
450 !
460 !
470 !
480 !
490 SUB Config_regs_14
500 ! This sub sets up the conditions for generating an SRQ.
510 ! In this case, an SRQ will occur when Signal Loss or FRame Loss
520 ! alarms are detected.
530 ! An SRQ is also set to occur at the end of the Measurement period.
540 !
550 !
560 COM Hp37719
570 !OUTPUT Hp37719;"*CLS"      ! Clear any existing SRQ/Remote errors
580 !
590 OUTPUT Hp37719;"STAT:M140:PTR 3;NTR 0"
600 ! Set the Transition Filter to pass positive transitions in
610 ! Bits 0,1 of the M140 Register
620 !
630 OUTPUT Hp37719;"STAT:M140:ENAB 3"
640 !Enable LOF and LOS bits in the M140 status register
650 !to set the telecom summary bit in the Data status register
660 !on occurrence of any of these events.
661 !
662 OUTPUT Hp37719;"STAT:SPDH:PTR 1;NTR 0"
663 ! Set the Transition Filter to pass positive transitions in Bit 0
664 !of the SPDH Data Status register.
665 OUTPUT Hp37719;"STAT:SPDH:ENAB 1"
666 !Enable the M140 data bit in the SPDH Status register to set
```

Status Reporting

667 !the SPDH summary bit in the Data status register
670 !
680 OUTPUT Hp37719;".STAT:DATA:PTR 16;NTR 0"
690 ! Set the Transition Filter to pass positive transitions in Bit 5
700 !of the Data Status register.
710 OUTPUT Hp37719;".STAT:DATA:ENAB 16"
720 !Enable the SPDH data bit in the Data Status register to set
730 !the data summary bit in the Questionable status register
740 !
750 !
760 OUTPUT Hp37719;".STAT:QUES:PTR 512;NTR 0"
770 !Set the transition filter to pass positive transitions in bit 9 of
780 !the Questionable status register
790 OUTPUT Hp37719;".STAT:QUES:ENAB 512"
800 !Enable the data summary bit in the Questionable status register
810 !to set the questionable data summary bit in the status byte
820 !
830 !
840 !
850 OUTPUT Hp37719;".STAT:INST:PTR 4;NTR 0"
860 ! Set the Transition Filter to pass positive transitions in Bit 4
870 ! (End of Test) in the Instrument Status Register
880 OUTPUT Hp37719;".STAT:INST:ENAB 4"
890 !Enable the EOT data bit in the Instrument Status register to set
900 !the data summary bit in the Operation status register
910 !
920 !
930 OUTPUT Hp37719;".STAT:OPER:PTR 8192;NTR 0"

Status Reporting

```
940 !Set the transition filter to pass positive transitions in bit 13
950 !of the Operation status register
960 OUTPUT Hp37719;":STAT:OPER:ENAB 8192"
970 !Enable the instrument summary bit in Operation status register
980 !to set the Operation register summary bit in the status byte
990 !
1000 !
1010 OUTPUT Hp37719;"*SRE 200"
1020 !Set the SRQ mask to cause an SRQ on occurrence of Bit 3 (Ques Reg)
1030 !Bit 6 (RQS) or 7 (Oper reg) being set in the Status byte.
1040 !
1050 !
1060 SUBEND
1070 !
1080 SUB Read_stat_byte
1090 !This subroutine reads the Telecom status register to determine the
1100 !reason(s) for the SRQ.
1110 COM Hp37719
1120 BEEP 700,.5
1130 DISP "SRQ detected"
1140 WAIT 1 ! allow time for registers to be updated
1150 DISP
1160 Intr_check=SPOLL(Hp37719) ! Interrogate Primary Status Byte register
1170 ! using Serial Poll method - returns value Intr_check
1180 ! DISP "interrupt check number is ";Intr_check
1190 SELECT Intr_check ! read the value of Primary Status Byte to see
1200 ! cause of interrupt
1201 !
```

Status Reporting

```
1210 CASE 0 ! interrupt from unspecified device
1220 PRINT CHR$(12)      !Clear screen
1229 PRINT TABXY(20,10);"The Controller has received an interrupt from"
1230 PRINT TABXY(20,11);"Remove all unspecified equipment from HP-IB"
1231 STOP
1232 !
1240 CASE 192 ! End of Test Period (rqs[64]+oper[128])
1250 CALL Read_meas_rslt ! measurement has ended, so read back result.
1260 !
1270 CASE 72,200 ! masked Alarm condition has occurred (with EOT?)
1280 CALL Read_m140_reg
1290 !
1300 CASE ELSE
1305 PRINT TABXY(20,10);"The Controller has received an unspecified"
1310 PRINT TABXY(20,11);"interrupt from the HP 37719A - check cause"
1311 STOP
1312 !
1320 END SELECT
1330 SUBEND
1340 !
1350 !
1360 SUB Init_instr
1370 ! sub to initialize the 37719A
1380 !
1390 !
1400 COM Hp37719
1410 DISP "Initializing HP37719A " !
1420 OUTPUT Hp37719;"*CLS"      ! Clear any existing SRQ/Remote errors
```

Status Reporting

1430 WAIT 2 ! allow time for initialization
1440 OUTPUT Hp37719;"*RST" ! set instrument to default settings
1450 WAIT 2 ! allow time for initialization
1460 DISP
1470 SUBEND
1480 !
1490 !
1500 SUB Tx_setup
1510 !
1520 !sub to setup the 37719A transmitter
1530 COM Hp37719 !Common variable(s)
1540 OUTPUT Hp37719;"OUTP:TEL:SPDH:RATE M140"
1550 OUTPUT Hp37719;"OUTP:TEL:SPDH:CODE CMI"
1560 !OUTPUT Hp37719;"OUTP:TEL:SPDH:LEV UNB"
1570 ! Set up PDH Output conditions
1580 !
1590 !
1600 OUTPUT Hp37719;"INST:COUP RTTX"
1610 ! Setup Instrument Subsystem
1620 !
1630 !
1640 OUTPUT Hp37719;"SOUR:DATA:TEL:SOUR PDH"
1650 !SOUR:DATA:TEL:SPDH:PAYL:TYPE FRAM
1660 SOUR:DATA:TEL:SPDH:PATT PRBS23
1670 ! Setup transmit (Source) conditions
1680 !
1690 !
1700 SUBEND

Status Reporting

1710 !
1720 !
1730 SUB Rx_setup
1740 !
1750 !sub to setup the 37719A Receiver
1760 COM Hp37719 !Common variable(s)
1770 ! Use default
1780 SUBEND
1790 !
1800 !
1810 SUB Results_setup
1820 !
1830 ! Sub to setup the Results page
1840 COM Hp37719 !Common variable(s)
1850 OUTPUT Hp37719;"SENS:DATA:TEL:TEST:TYPE SING"
1860 OUTPUT Hp37719;"SENS:DATA:TEL:TEST:PER 10s" !Set Test Period
1870 !
1880 SUBEND
1890 !
1900 !
1910 SUB Run_meas
1920 !
1930 ! Sub to start and run the measurement
1940 COM Hp37719 !Common variable(s)
1950 !
1960 OUTPUT Hp37719;"SENS:DATA:TEL:TEST ON"
1970 SUBEND
1980 !

Status Reporting

```
2110 SUB Read_meas_rslt
2120 !
2130 ! Sub to read back the 37719A result
2140 COM Hp37719          !Common variable(s)
2150 !
2160 WAIT 2
2170 OUTPUT Hp37719;"SENS:DATA? ""ERAT:SPDH:BIT""
2180 ! Return the measurement result BER Ratio
2190 ENTER Hp37719;Ber_ratio ! Read back bit error results
2200 PRINT TABXY(27,12); "MEASURED BER RATIO IS ";Ber_ratio
2210 CALL Run_meas
2220 OUTPUT Hp37719;"*CLS"    ! Clear any existing SRQ/Remote errors
2230 WAIT 3
2240 ENABLE INTR 7;2      ! Re-enable computer to recognize interrupt
2250 PRINT TABXY(25,12);"
2260 SUBEND
2270 !
2280 !
2290 SUB Read_short_rslt
2300 !
2310 ! Sub to read back the 37719A Short Term Results
2320 WAIT 2 ! Allow time for Short Term results update
2330 !
2340 COM Hp37719          !Common variable(s)
2350 REPEAT
2360 OUTPUT Hp37719;"SENS:DATA? ""ECO:SPDH:STER:BIT""
2370 ! Returns the short-term BER Result
2380 ENTER Hp37719;Short_rate ! Readback Short Term BER result
```

Status Reporting

```
2390 !
2400 PRINT TABXY(27,10);"SHORT-TERM BER COUNT IS ";Short_rate
2410 WAIT 1
2420 PRINT TABXY(25,10);"                               "
2430 !PRINT CHR$(12) !Clear screen
2440 UNTIL Forever
2450 SUBEND
2460 !
2470 !
2480 SUB Read_m140_reg
2490 !
2500 ! Sub to read the M140 register
2510 COM Hp37719 !Common variable(s)
2520 !
2530 !
2540 OUTPUT Hp37719;".STATUS:M140:EVENT?" !Read PDH Status register
2550 ENTER Hp37719;Alrm_reg_value
2570 SELECT Alrm_reg_value
2580 CASE 1 ! LOS detected
2590 PRINT CHR$(12) !Clear screen
2600 PRINT TABXY(20,10); "Signal loss has been detected on HP37719A "
2601 PRINT TABXY(30,11); "Results invalid"
2602 !
2610 CASE 2 ! LOF detected
2620 PRINT CHR$(12) !Clear screen
2630 PRINT TABXY(20,10); "140MFrame Loss has been detected on HP37719A
"
2660 !
2820 CASE ELSE ! unknown SRQ
```


Status Reporting

```
2830 PRINT CHR$(12)          !Clear screen
2840 PRINT TABXY(20,10);"A Status Alarm has occurred on the HP 37719A "
2843 PRINT TABXY(20,11);"Check instrument Front Panel to see cause "
2860 END SELECT
2870 !
2871 STOP
2880 !
2920 !
2930 SUBEND
```

Figure 5-5 **Status Reporting Program Example**

Status Reporting

General Information

General Information

General Information

This chapter contains general remote control information.

- **SCPI Overview** - Gives a brief overview of the SCPI Standard.
 - **HP-IB Universal Commands** - Describes the HP-IB Universal commands.
-

SCPI Overview

Standard Commands for Programmable Instruments (SCPI) is a standard of the SCPI Consortium that provides guidelines for remote programming commands for instruments. The goal of SCPI is to reduce Automatic Test Equipment (ATE) program development time. It accomplishes this by providing a consistent programming environment for instrument control and data usage. This programming environment uses defined programming messages, instrument responses, and data formats across all SCPI instruments, regardless of manufacturer.

SCPI is based on two IEEE standards:

- ANSI/IEEE Standard 488.1-1987, *IEEE Standard Digital Interface for Programmable Instrumentation*
- ANSI/IEEE Standard 488.2-1987, *IEEE Standard Codes, Formats, Protocols, and Common Commands. For use with ANSI/IEEE Standard 488.1-1987, IEEE Standard Digital Interface for Programmable Instrumentation*

General Information

GPIB (HP-IB) Universal Commands

The Required Commands perform the most basic remote functions over HP-IB and are common to all GPIB controllable instruments. The commands are as follows:-

- DEVICE CLEAR
- SERIAL POLL
- REMOTE ENABLE
- LOCAL LOCKOUT
- GO TO LOCAL

Device Clear (CLEAR)

This command will initialize the instrument HP-IB hardware.

The command format using HP 200/300 Series Basic, for example is:

CLEAR 705 (where 7 is the Bus I/O select code and 05 is the device address).

Serial Poll (SPOLL)

A serial poll will retrieve the value of the primary status byte. This byte contains useful information about the current state of the instrument.

for example :

SPOLL(705) (where 7 is the Bus I/O select code and 05 is the device address).

Remote Enable (REMOTE)

The Remote command instructs the instrument to enter the REMOTE state and be ready to accept instructions via HP-IB.

When the HP 37719A receives this command it illuminates the front panel REMOTE indicator.

for example:

REMOTE 705 (where 7 is the Bus I/O select code and 05 is the device address).

General Information

Local Lockout (LOCAL LOCKOUT)

It is recommended that the Local Lockout command is sent after the Remote command. This disables the front panel local key preventing the return to local mode and thus any interference to the instrument settings.

It should always be preceded by the REMOTE command.

for example:

LOCAL LOCKOUT 7 (will configure all the instruments on the bus to the Local Lockout condition.)

NOTE

If the instrument has been set to the LOCAL LOCKOUT condition, then the front panel LOCAL key is disabled. The instrument can only be returned to LOCAL operation by the controller sending the LOCAL command or by cycling power to the instrument.

Local (LOCAL)

The Local command returns the instrument from Remote operation to local front panel control.

for example:

LOCAL 7 or LOCAL 705 (where 7 is the Bus I/O select code and 05 is the device address).

**Application Program
Examples**

Initializing the HP 37719A

The following commands can be used to initialize the HP 37719A. They setup the HP 37719A for remote operation, retrieve various instrument details and couple the transmitter to the receiver.

Table 9-1 HP 37719A Initialization

Comment	SCPI Command	Ref.
Takes the HP 37719A under remote control.	:SYSTem:REMOte	2-42
Reset HP 37719A to Default settings	*RST	2-57
Read SCPI Error Message & Number (+0, "No error")	:SYSTem:ERRor?	2-43
Read Model Name, Serial No., Firmware Rev.etc	*IDN?	2-55
Retrieve HP 37719A Option structure	*OPT?	2-56
Retrieve HP 37719A Serial Number	:SYSTem:SERial?	2-43
Couple the HP 37719A Receiver to the Transmitter	:INSTrument:COUple RTTX	2-7
Return the HP 37719A to local control.	:SYSTem:LOCal	2-42

Setup the HP 37719A PDH Tx (Main Settings)

The following commands can be used to setup the HP 37719A PDH Transmitter to generate a 2Mb/s Unframed signal with a $2^{15}-1$ Inverted PRBS.

Table 9-2 **HP 37719A PDH Tx Setup**

Comment	SCPI Command	Ref.
Set Tx Output to PDH	SOURce:DATA:TELEcom:SOURce PDH	2-9
Set Tx Line Rate to 2Mb/s	OUTPut:TELEcom:SPDH:RATE M2	3-3
Set Clock Sync to Internal	SOURce:CLOCK:SPDH:SOURce INTERNAL	3-7
Set Termination to 75Ohm Unbalanced	OUTPut:TELEcom:SPDH:BALance UNBalanced	3-4
Set Line Code to HDB3	OUTPut:TELEcom:SPDH:CODE HDB3	3-3
Ensure Frequency Offset is OFF	SOURce:CLOCK:SPDH:M2:FOFFset NONE	3-8
Set Payload Type to Unframed	SOURce:DATA:TELEcom:SPDH:PAYLoad:TYPE UNFRamed	3-16
Set Payload Type to Unstructured	SOURce:DATA:TELEcom:SPDH:PAYLoad:STRucture UNSTRuctured	3-17
Set Pattern to $2^{15}-1$ PRBS	SOURce:DATA:TELEcom:SPDH:PATtern PRBS15	3-15
Set PRBS Polarity to be Inverted	SOURce:DATA:TELEcom:SPDH:PRBS:POLarity INVERTed	3-16

Setup the HP 37719A PDH Rx (Main Settings)

The following commands can be used to setup the HP 37719A PDH Receiver to receive a 2Mb/s Unframed signal with a $2^{15}-1$ Inverted PRBS.

Table 9-3 HP 37719A PDH Rx Setup

Comment	SCPI Command	Ref.
Set Rx Input to PDH	SENSE:DATA:TELEcom:SENSe PDH	3-15
Set Rx Line Rate to 2Mb/s	INPut:TELEcom:SPDH:RATE M2	3-45
Set Termination to 75 Ohm Unbalanced	INPut:TELEcom:SPDH:BALance UNBalanced	3-46
Set Line Code to HDB3	INPut:TELEcom:SPDH:CODE HDB3	3-45
Set the Level to Monitor	INPut:TELEcom:LEVel MONitor	2-12
Set the Monitor Equalisation ON	INPut:TELEcom:SPDH:EQUalisation ON	3-47
Set the Monitor Equalisation to 26 dB	INPut:TELEcom:SPDH:GAIN DB26	3-46
Set Payload Type to Unframed	SENSE:DATA:TELEcom:SPDH:PAYLoad:TYPE UNFRamed	3-51
Set Payload Type to Unstructured	SENSE:DATA:TELEcom:SPDH:PAYLoad:STRUcture UNSTRUctured	3-51
Set Pattern to $2^{15}-1$ PRBS	SENSE:DATA:TELEcom:SPDH:PATtern PRBS15	3-49
Set PRBS Polarity to be Inverted	SENSE:DATA:TELEcom:SPDH:PRBS:POLarity INVerted	3-50

Setup the HP 37719A PDH Tx (Main & Structured Settings)

The following commands can be used to setup the HP 37719A PDH Transmitter to generate a fully structured DS3 signal with M13 framing.

Table 9-4 HP 37719A PDH Tx Setup

Comment	SCPI Command	Ref.
Setup 'Main Settings'		
Set Tx Output to PDH	SOURCE:DATA:TELEcom:SOURCE PDH	2-9
Set Tx Line Rate to DS3	OUTPut:TELEcom:SPDH:RATE DS3	3-3
Set Clock Sync to Internal	SOURCE:CLOCK:SPDH:SOURCE INTernal	3-7
Set Output Level to DS3-HI	OUTPut:TELEcom:SPDH:LEVEL HIGH	3-4
Ensure Frequency Offset is OFF	SOURCE:CLOCK:SPDH:DS3:FOFFset NONE	3-11
Set Payload Type to M13 Framing	SOURCE:DATA:TELEcom:SPDH:PAYLoad:TYPE M13	3-16
Set Payload Type to Unstructured	SOURCE:DATA:TELEcom:SPDH:PAYLoad:STRUcture STRUctured	3-17

Table 9-4 HP 37719A PDH Tx Setup, continued

Comment	SCPI Command	Ref.
Setup 'Struct'd Settings'		
Set Structured Test Signal to be 56 kb/s timeslot	SOURce:DATA:TELEcom:SPDH:TSIGnal:RATE K56	3-18
Set DS1 Framing to be D4	SOURce:DATA:TELEcom:SPDH:TSIGnal:PAYLoad D4	3-19
Set DS2 Tributary Number to 1	SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS2 TRIB1	3-20
Set DS1 Tributary Number to 1	SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS1 TRIB1	3-20
Set 56 kb/s Timeslot Number to 1	SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K56 1	3-22
Set Pattern to 2 ¹¹ -1 PRBS	SOURce:DATA:TELEcom:SPDH:PATTern PRBS11	3-15
Set PRBS Polarity to be Normal	SOURce:DATA:TELEcom:SPDH:PRBS:POLarity NORMal	3-16
Set the non-test Tributary Pattern to AIS	SOURce:DATA:TELEcom:SPDH:TSIGnal:BACKground AIS	3-24
Set DS1 D4 Signaling Bits to be '11'	SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:DS1:D4 "11"	3-24

Setup the HP 37719A PDH Rx (Main & Structured Settings)

The following commands can be used to setup the HP 37719A PDH Receiver to receive a fully structured DS3 signal with M13 framing.

Table 9-5 HP 37719A PDH Rx Setup

Comment	SCPI Command	Ref.
Setup 'Main Settings'		
Set Rx Input to PDH	SENSE:DATA:TELEcom:SENSe PDH	2-15
Set Rx Line Rate to DS3	INPut:TELEcom:SPDH:RATE DS3	3-45
Set the Level to Terminate	INPut:TELEcom:LEVel TERMinate	2-12
Set Payload Type to M13 Framing	SENSE:DATA:TELEcom:SPDH:PAYLoad:TYPE M13	3-50
Set Payload Type to Unstructured	SENSE:DATA:TELEcom:SPDH:PAYLoad:STRUcture STRUctured	3-51
Setup 'Struct'd Settings'		
Set Structured Test Signal to be 56 kb/s timeslot	SENSE:DATA:TELEcom:SPDH:TSIGnal:RATE K56	3-52
Set DS1 Framing to be D4	SENSE:DATA:TELEcom:SPDH:TSIGnal:PAYLoad D4	3-52
Set DS2 Tributary Number to 1	SENSE:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS2 TRIB1	3-53
Set DS1 Tributary Number to 1	SENSE:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS1 TRIB1	3-54
Set 56 kb/s Timeslot Number to 1	SENSE:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K56 1	3-56
Set Pattern to 2 ¹¹ -1 PRBS	SENSE:DATA:TELEcom:SPDH:PATTern PRBS11	3-49
Set Normal PRBS Polarity	SENSE:DATA:TELEcom:SPDH:PRBS:POLarity NORMal	3-50

Setup the HP 37719A PDH Tx to add Errors & Alarms

The following commands can be used to setup the HP 37719A PDH Transmitter to add errors & alarms.

Table 9-6 HP 37719A PDH Tx Error & Alarm Add

Comment	SCPI Command	Ref.
Select PDH Test Function. See Note 1.	SOURCE:DATA:TELEcom:TFUNCTION PDH	2-16
Set Test Function to be Errors & Alarms	SOURCE:DATA:TELEcom:SPDH:TFUNCTION:TYPE ERROR	3-27
Set Error Add type to Bit	SOURCE:DATA:TELEcom:SPDH:ERROR:TYPE BIT	3-28
Add a single Bit error. Repeat if required.	SOURCE:DATA:TELEcom:SPDH:ERROR:RATE ONCE	3-28
Add a Bit error rate of 1E-4	SOURCE:DATA:TELEcom:SPDH:ERROR:RATE E_4	3-28
Add a Bit error rate of 3.8E-4. See Note 2.	SOURCE:DATA:TELEcom:SPDH:ERROR:RATE:USER 3.8E-4	3-29
Switch Bit error rate OFF	SOURCE:DATA:TELEcom:SPDH:ERROR:RATE NONE	3-28
Generate a 2 Mb/s AIS alarm	SOURCE:DATA:TELEcom:SPDH:M2:ALARM AIS	3-35
Switch alarm OFF	SOURCE:DATA:TELEcom:SPDH:M2:ALARM NONE	3-35

Note 1: If the Tx Output is set to PDH then the PDH Test Function should be selected as shown. However, if the Tx Output is set to SDH then the Test Function selection should be PDHPayload and the corresponding commands used.

Note 2: When selecting a user error rate via SCPI it is not necessary to send any command to switch the selected user rate ON. It is switched ON by default when the user error rate SCPI command is received.

Setup the HP 37719A PDH Rx to perform Bit Error Measurements

The following commands can be used to setup the HP 37719A PDH Receiver to do bit error measurements.

Table 9-7 HP 37719A PDH Rx Bit Error Measurements

Comment	SCPI Command	Ref.
Setup Results Timing Control		
Set Short Term Period to 10 seconds	SENSE:DATA:TELEcom:STERm:PERiod 10s	2-18
Set Test Timing to Single	SENSE:DATA:TELEcom:TEST:TYPE SINGLE	2-17
Set Test Period to 1 minute	SENSE:DATA:TELEcom:TEST:PERiod 1m	3-17
Start gating	SENSE:DATA:TELEcom:TEST ON	3-16
Wait for measurement to complete		
Retrieve Results		
Read back Cumulative Bit Error Count	SENSE:DATA? "ECOUNT:SPDH:BIT"	3-69
Read back Short Term Bit Error Count	SENSE:DATA? "ECOUNT:SPDH:STERm:BIT"	3-68
Read back G.821 Analysis Results	SENSE:DATA? "ESECONDS:SPDH:BIT:ANALYSIS" SENSE:DATA? "EFSECONDS:SPDH:BIT:ANALYSIS" SENSE:DATA? "SESECONDS:SPDH:BIT:ANALYSIS" SENSE:DATA? "UASECONDS:SPDH:BIT:ANALYSIS" SENSE:DATA? "DMINUTES:SPDH:BIT:ANALYSIS"	3-70

Setup the HP 37719A SONET Tx

The following commands can be used to setup the HP 37719A SONET Transmitter to generate a OC-3 Optical signal with a VT-2 PCM31 Framed payload.

Table 9-8 HP 37719A SONET Tx Setup

Comment	SCPI Command	Ref.
Set Tx Output to OC-48/12/3/1 Optical	SOURce:DATA:TELEcom:SOURce OC48	2-9
Set Tx Line Rate to OC-3 Optical	OUTPut:TELEcom:OC48:RATE OC3	4-6
Set Tx Optical Wavelength to be 1310 nm	OUTPut:TELEcom:OC48:WAVelength NM1310	4-6
Ensure that Thru Mode is not selected	SOURce:DATA:TELEcom:SONet:THRumode INTernal	4-11
Set Clock Sync to Internal	SOURce:CLOCK:SONet:SOURce INTernal	4-9
Ensure Frequency Offset is OFF	SOURce:CLOCK:SONet:FOFFset OFF	4-10
Setup F/G Mappings		
Set SPE Layer Selection to STS-1	SOURce:DATA:TELEcom:SONet:SPE:TYPE STS1	4-14
Set VT Layer Selection to VT-2	SOURce:DATA:TELEcom:SONet:PAYLoad VT2	4-15
Set the VT-2 Mapping to Asynchronous 2 Mb/s	SOURce:DATA:TELEcom:SONet:TRIButary:MAPPING ASYNc	4-16
Ensure 2M Payload Offset is 0 ppm	SOURce:DATA:TELEcom:SONet:PAYLoad:OFFset 0	4-19
Set STS-1 Number to 1	SOURce:DATA:TELEcom:SONet:STS1 1	4-14
Set VT Group Number to 1	SOURce:DATA:TELEcom:SONet:VTGRoup 1	4-16

Table 9-8**HP 37719A SONET Tx Setup, continued**

Comment	SCPI Command	Ref.
Set VT Number to 1	SOURce:DATA:TELEcom:SONet:TRIButary 1	4-16
Set VT Payload Framing to PCM31	SOURce:DATA:TELEcom:SONet:PAYLoad:TYPE PCM31	4-17
Set VT Payload Type to Unstructured	SOURce:DATA:TELEcom:SONet:PAYLoad:STRUcture UNSTRUctured	4-18
Set Pattern to 2 ¹⁵ -1 PRBS	SOURce:DATA:TELEcom:SONet:PAYLoad:PATtern PRBS15	4-18
Set PRBS Polarity to be Inverted	SOURce:DATA:TELEcom:SONet:PRBS:POLarity INVerted	4-19
Setup B/G Mappings		
Set Background STS-1 #2 to VT-2 Mapping	SOURce:DATA:TELEcom:SONet:STS1:BACKground:PAYLoad:PATtern 2,VT2	4-21
Set Background STS-1 #3 to VT-2 Mapping	SOURce:DATA:TELEcom:SONet:STS1:BACKground:PAYLoad:PATtern 3,VT2	4-21
Set Pattern in Background VT-2's within STS-1 #1 to be "1100" Word	SOURce:DATA:TELEcom:SONet:PRIMary:BACKground:PAYLoad:PATtern P1100	4-21

Setup the HP 37719A SONET Rx

The following commands can be used to setup the HP 37719A SONET Receiver to receive a OC-12 Optical signal with a VT-2 Unframed payload.

Table 9-9 HP 37719A SONET Rx Setup

Comment	SCPI Command	Ref.
Set Rx Input to OC-48/12/3/1 Optical	SENSe:DATA:TELEcom:SENSe OC48	2-15
Set Rx Line Rate to OC-12 Optical	INPut:TELEcom:OC48:RATE OC12	4-59
Set SPE Layer Selection to STS-1	SENSe:DATA:TELEcom:SONet:SPE:TYPE STS1	4-64
Set VT Layer Selection to VT-2	SENSe:DATA:TELEcom:SONet:PAYLoad VT2	4-64
Set the VT-2 Mapping to Asynchronous 2 Mb/s	SENSe:DATA:TELEcom:SONet:TRIButary:MAPPING ASYNc	4-65
Set STS-3 Number Under Test to 1	SENSe:DATA:TELEcom:SONet:STS3 1	4-63
Set STS-1 Number to 1	SENSe:DATA:TELEcom:SONet:STS1 1	4-64
Set VT Group Number to 1	SENSe:DATA:TELEcom:SONet:VTGrouP 1	4-66
Set VT Number to 1	SENSe:DATA:TELEcom:SONet:TRIButary 1	4-66
Set VT Payload to be Unframed	SENSe:DATA:TELEcom:SONet:PAYLoad:TYPE UNFRamed	4-67
Set VT Payload Type to Unstructured	SENSe:DATA:TELEcom:SONet:PAYLoad:STRUcture UNSTRUctured	4-68
Set Pattern to 2 ¹⁵ -1 PRBS	SENSe:DATA:TELEcom:SONet:PAYLoad:PATTern PRBS15	4-68
Set PRBS Polarity to be Inverted	SENSe:DATA:TELEcom:SONet:PRBS:POLarity INVERTed	4-69

Setup the HP 37719A SONET Tx to add Errors & Alarms

The following commands can be used to setup the HP 37719A SONET Transmitter to generate errors and alarms using the SONET Test Function.

Table 9-10 HP 37719A SONET Tx Error & Alarm Add

Comment	SCPI Command	Ref.
Select SONET Test Function	SOURce:DATA:TELEcom:TFUNction SONet	2-10
Set Test Function to be Errors & Alarms	SOURce:DATA:TELEcom:SONet:TFUNction:TYPE ERRor	4-33
Set Error Add type to CV-P (B3)	SOURce:DATA:TELEcom:SONet:ERRor:TYPE CVP	4-33
Add a single CV-P error. Repeat if required.	SOURce:DATA:TELEcom:SONet:ERRor:RATE ONCE	4-34
Add a CV-P error rate of 1E-4	SOURce:DATA:TELEcom:SONet:ERRor:RATE E_4	4-34
Switch CV-P error rate OFF	SOURce:DATA:TELEcom:SONet:ERRor:RATE NONE	4-34
Generate a Line FERF (RDI-L) alarm	SOURce:DATA:TELEcom:SONet:ALARm RDIL	4-38
Switch alarm OFF	SOURce:DATA:TELEcom:SONet:ALARm NONE	4-38

Setup the HP 37719A SONET Tx Overhead Bytes

The following commands can be used to setup the HP 37719A SONET Transmitter Overhead bytes. It is assumed that a OC-12 signal is selected.

Table 9-11 **HP 37719A SONET Tx Overhead Setup**

Comment	SCPI Command	Ref.
Set the Overhead bytes to their default values	<code>SOURce:DATA:TELEcom:SONet:OVERhead:DEFault</code>	4-23
Update the D1 byte in STS-3 #1	<code>SOURce:DATA:TELEcom:SONet:OVERhead:DATA 1,1,D1,"11111111"</code>	4-23
Update the M1 byte in STS-3 #3	<code>SOURce:DATA:TELEcom:SONet:OVERhead:DATA:HEXadecimal 3,1,M1,"FF"</code>	4-24
Update F2 byte in the POH of the selected STS-3	<code>SOURce:DATA:TELEcom:SONet:POVerhead:DATA F2,"11111111"</code>	4-25
Update J1 trace in POH of selected STS-3 to be HP37719A Test string	<code>SOURce:DATA:TELEcom:SONet:POVerhead:J1:PATtern TEST</code>	4-26

Setup the HP 37719A SONET Tx for Overhead Byte Sequencing

The following commands can be used to setup the HP 37719A SONET Transmitter to generate an Overhead byte sequence. It is assumed that an OC-12 signal is selected.

Table 9-12 HP 37719A SONET Tx Overhead Sequence

Comment	SCPI Command	Ref.
Select SONET Test Function.	SOURCE:DATA:TELECOM:TFUNCTION SONET	2-10
Set Test Function to be Overhead Sequences	SOURCE:DATA:TELECOM:SONET:TFUNCTION:TYPE SEQUENCE	4-33
Set Sequence Mode to be Repeat Run	SOURCE:DATA:TELECOM:SONET:SEQUENCE:MODE REPEAT	4-46
Select J0 Byte in SOH	SOURCE:DATA:TELECOM:SONET:SEQUENCE:OHBYTE J0	4-46
Set Sequence byte values to "00","01","02","03","04"	SOURCE:DATA:TELECOM:SONET:SEQUENCE:DATA A, "00" SOURCE:DATA:TELECOM:SONET:SEQUENCE:DATA B, "01" SOURCE:DATA:TELECOM:SONET:SEQUENCE:DATA C, "02" SOURCE:DATA:TELECOM:SONET:SEQUENCE:DATA D, "03" SOURCE:DATA:TELECOM:SONET:SEQUENCE:DATA E, "04"	4-47
Set the Sequence order to be A,B,C,D,E	SOURCE:DATA:TELECOM:SONET:SEQUENCE:ORDER A,B,C,D,E	4-48
Set the Frame Count for each value to be 10	SOURCE:DATA:TELECOM:SONET:SEQUENCE:FCOUNT 1,10 SOURCE:DATA:TELECOM:SONET:SEQUENCE:FCOUNT 2,10 SOURCE:DATA:TELECOM:SONET:SEQUENCE:FCOUNT 3,10 SOURCE:DATA:TELECOM:SONET:SEQUENCE:FCOUNT 4,10 SOURCE:DATA:TELECOM:SONET:SEQUENCE:FCOUNT 5,10	4-48
Start Sequence	SOURCE:DATA:TELECOM:SONET:SEQUENCE START	4-46

Perform HP 37719A SONET Rx Measurements

The following commands can be used to setup the HP 37719A SONET Receiver to perform B3 measurements.

Table 9-13 HP 37719A SONET Rx Measurements

Comment	SCPI Command	Ref.
Setup Results Timing Control		
Set Short Term Period to 10 seconds	SENSE:DATA:TELEcom:STERm:PERiod 10s	2-18
Set Test Timing to Single	SENSE:DATA:TELEcom:TEST:TYPE SINGLE	2-17
Set Test Period to 1 minute	SENSE:DATA:TELEcom:TEST:PERiod 1m	2-17
Start gating	SENSE:DATA:TELEcom:TEST ON	2-16
Wait for measurement to complete		
Retrieve Results		
Read back Cumulative CV-P Error Count	SENSe:DATA? "ECOUNT:SONet:CVP"	4-82
Read back Short Term CV-P Error Count	SENSe:DATA? "ECOUNT:SONet:STERm:CVP"	4-82
Read back some G.826 Analysis Results	SENSe:DATA? "ESECONDS:SONet:CVP:ANALYSIS" SENSe:DATA? "SECONDS:SONet:CVP:ANALYSIS" SENSe:DATA? "UASECONDS:SONet:CVP:ANALYSIS"	4-88

Setup the HP 37719A SONET Rx to retrieve Overhead Monitor Bytes

The following commands can be used to retrieve the HP 37719A SONET Receiver's Overhead Monitor byte values. .

Table 9-14 **HP 37719A SONET Rx Overhead Monitor**

Comment	SCPI Command	Ref.
Retrieve the D1 byte in STS-3 #1	FEtCh:SCALar:DATA:TELeCom:SONet:OVERhead? 1,1,D1	4-95
Retrieve the M1 byte in STS-3 #3	FEtCh:SCALar:DATA:TELeCom:SONet:OVERhead? 3,1,M1	4-95
Retrieve F2 byte in POH of selected STS-3	FEtCh:SCALar:TELeCom:SONet:POVerhead? F2	4-95
Retrieve J1 trace in POH of selected STS-3	FEtCh:STRing:DATA:TELeCom:SONet:J1?	4-93

Setup the HP 37719A SONET Rx to perform Overhead Byte Capture

The following commands can be used to setup the HP 37719A SONET Receiver to capture selected Overhead bytes.

Table 9-15 **HP 37719A SONET Rx Overhead Byte Capture**

Comment	SCPI Command	Ref.
Select SONET Test Function.	SENSE:DATA:TELEcom:TFUNCTION SONet	2-16
Set Test Function to be Overhead Sequences	SENSE:DATA:TELEcom:SONet:TFUNCTION:TYPE OCAPture	4-72
Select J0 Byte for Sequence Capture	SENSE:DATA:TELEcom:SONet:OCAPture:OHBYte J0	4-73
Set Overhead Capture to trigger on value.	SENSE:DATA:TELEcom:SONet:OCAPture:TRIGger ON	4-74
Set Overhead Capture trigger value to "02"	SENSE:DATA:TELEcom:SONet:OCAPture:TRIGger:PATTern "02"	4-74
Start Overhead Capture	SENSE:DATA:TELEcom:SONet:OCAPture START	4-72
Retrieve Overhead Capure data	FETCh:ARRAy:DATA:TELEcom:SONet:OCAPture? 16	4-103

SCPI Error Messages

SCPI Error Messages

SCPI Error Messages

The system-defined error/event numbers are chosen on an enumerated ("1 of N") basis. The SCPI defined error/event numbers and the error description portions of the ERRor query response are listed here. The first error/event described in each class (for example, -100, -200, -300, -400) is a "generic" error. In selecting the proper error/event number to report, more specific error/event codes are preferred, and the generic error/event is used only if the others are inappropriate.

No Error

This message indicates that the device has no errors.

No Error

The queue is completely empty. Every error/event in the queue has been read or the queue was purposely cleared by power-on, *CLS, etc.

Command Errors [-199, -100]

An < error/event number > in the range [-199, -100] indicates that an *IEEE 488.2* syntax error has been detected by the instrument's parser. The occurrence of any error in this class should cause the command error bit (bit 5) in the event status register (*IEEE 488.2*, section 11.5.1) to be set. One of the following events has occurred:

- An *IEEE 488.2* system error has been detected by the parser. That is, a controller-to-device message was received which is in violation of the *IEEE 488.2* standard. Possible violations include a data element which violates the device listening formats or whose type is unacceptable to the device.
 - An unrecognized header was received. Unrecognized headers include incorrect device-specific headers and incorrect or not implemented *IEEE 488.2* common commands.
 - A Group Execute Trigger (GET) was entered into the input buffer inside of an
-

SCPI Error Messages

IEEE 488.2 < PROGRAM MESSAGE >.

Events that generate command errors shall not generate execution errors, device-specific errors, or query errors.

-100

Command error

This is the generic syntax error for devices that cannot detect more specific errors. This code indicates only that a Command Error as defined in *IEEE 488.2*, 11.5.1.1.4 has occurred.

-101

Invalid character

A syntactic element contains a character which is invalid for that type; for example, a header containing an ampersand, SETUP&. This error might be used in place of errors -114, -121, -141, and perhaps some others.

-102

Syntax error

An unrecognized command or data type was encountered; for example, a string was received when the device does not accept strings.

-103

Invalid separator

The parser was expecting a separator and encountered an illegal character; for example, the semicolon was omitted after a program message unit, *ESE 1 :OUTP1:TEL:RATE 140 Mb/s

-104

Data type error

The parser recognized a data element different than one allowed; for example, numeric or string data was expected but block data was encountered.

-105

GET not allowed

A Group Execute Trigger was received within a program message (see *IEEE 488.2*, 7.7).

-108

Parameter not allowed

More parameters were received than expected for the header; for example, the *RCL common command only accepts one parameter, so receiving *RCL 0,1 is not allowed.

SCPI Error Messages

- 109 **Missing parameter**
- Fewer parameters were received than required for the header; for example, the *ESE common command requires one parameter, so receiving *ESE is not allowed.
- 110 **Command header error**
- An error was detected in the header. This error message should be used when the device cannot detect the more specific errors described for errors –111 through –119.
- 111 **Header separator error**
- A character which is not a legal header separator was encountered while parsing the header; for example, no white space followed the header, thus *ESE1 is an error.
- 112 **Program mnemonic too long**
- The header contains more than twelve characters (see *IEEE 488.2*, 7.6.1.4.1).
- 113 **Undefined header**
- The header is syntactically correct, but it is undefined by this specific device; for example, *XYZ is not defined for any device.
- 114 **Header suffix out of range**
- Indicates that a non-header character has been encountered in what the parser expects is a header element.
- 120 **Numeric data error**
- This error, as well as errors –121 through –129, are generated when parsing a data element which appears to be numeric, including the non-decimal numeric types. This particular error message should be used if the device cannot detect a more specific error.
- 121 **Invalid character in number**
- An invalid character for the data type being parsed was encountered; for example, an alpha in a decimal numeric or a “9” in octal data.

SCPI Error Messages

- 123 **Exponent too large**
The magnitude of the exponent was larger than 32000 (see *IEEE 488.2, 7.7.2.4.1*).
- 124 **Too many digits**
The mantissa of a decimal numeric data element contained more than 255 digits excluding leading zeros (see *IEEE 488.2, 7.7.2.4.1*).
- 128 **Numeric data not allowed**
A legal numeric data element was received, but the device does not accept one in this position for the header.
- 130 **Suffix error**
This error, as well as errors –131 through –139, are generated when parsing a suffix. This particular error message should be used if the device cannot detect a more specific error.
- 131 **Invalid suffix**
The suffix does not follow the syntax described in *IEEE 488.2, 7.7.3.2*, or the suffix is inappropriate for this device.
- 134 **Suffix too long**
The suffix contained more than 12 characters (see *IEEE 488.2, 7.7.3.4*).
- 138 **Suffix not allowed**
A suffix was encountered after a numeric element which does not allow suffixes.
- 140 **Character data error**
This error, as well as errors –141 through –149, are generated when parsing a character data element. This particular error message should be used if the device cannot detect a more specific error.
- 141 **Invalid character data**
Either the character data element contains an invalid character or the particular element received is not valid for the header.

SCPI Error Messages

- 144 **Character data too long**
The character data element contains more than twelve characters (see *IEEE 488.2, 7.7.1.4*).
- 148 **Character data not allowed**
A legal character data element was encountered where prohibited by the device.
- 150 **String data error**
This error, as well as errors -151 through -159, are generated when parsing a string data element. This particular error message should be used if the device cannot detect a more specific error.
- 151 **Invalid string data**
A string data element was expected, but was invalid for some reason (see *IEEE 488.2, 7.7.5.2*); for example, an END message was received before the terminal quote character.
- 158 **String data not allowed**
A string data element was encountered but was not allowed by the device at this point in parsing.
- 160 **Block data error**
This error, as well as errors -161 through -169, are generated when parsing a block data element. This particular error message should be used if the device cannot detect a more specific error.
- 161 **Invalid block data**
A block data element was expected, but was invalid for some reason (see *IEEE 488.2, 7.7.6.2*); for example, an END message was received before the length was satisfied.
- 168 **Block data not allowed**
A legal block data element was encountered but was not allowed by the device at this point in parsing.

SCPI Error Messages

–170

Expression error

This error, as well as errors –171 through –179, are generated when parsing an expression data element. This particular error message should be used if the device cannot detect a more specific error.

–171

Invalid expression

The expression data element was invalid (see *IEEE 488.2, 7.7.7.2*); for example, unmatched parentheses or an illegal character.

–178

Expression data not allowed

A legal expression data was encountered but was not allowed by the device at this point in parsing.

–180

Macro error

This error, as well as errors –181 through –189, are generated when defining a macro or executing a macro. This particular error message should be used if the device cannot detect a more specific error.

–181

Invalid outside macro definition

Indicates that a macro parameter placeholder ($\$<number>$) was encountered outside of a macro definition.

–183

Invalid inside macro definition

Indicates that the program message unit sequence, sent with a *DDT or *DMC command, is syntactically invalid (see 10.7.6.3).

–184

Macro parameter error

Indicates that a command inside the macro definition had the wrong number or type of parameters.

SCPI Error Messages

Execution Errors [-299, -200]

An < error/event number > in the range [-299, -200] indicates that an error has been detected by the instrument's execution control block. The occurrence of any error in this class should cause the execution error bit (bit 4) in the event status register (*IEEE 488.2*, section 11.5.1) to be set. One of the following events has occurred:

- A < PROGRAM DATA > element following a header was evaluated by the device as outside of its legal input range or is otherwise inconsistent with the device's capabilities.
- A valid program message could not be properly executed due to some device condition.

Execution errors shall be reported by the device after rounding and expression evaluation operations have taken place. Rounding a numeric data element, for example, shall not be reported as an execution error. Events that generate execution errors shall not generate Command Errors, device-specific errors, or Query Errors.

-200

Execution error

This is the generic syntax error for devices that cannot detect more specific errors. This code indicates only that an Execution Error as defined in *IEEE 488.2*, 11.5.1.1.5 has occurred.

-201

Invalid while in local

Indicates that a command is not executable while the device is in local due to a hard local control (see *IEEE 488.2*, 5.6.1.5); for example, a device with a rotary switch receives a message which would change the switches state, but the device is in local so the message can not be executed.

-202

Settings lost due to rtl

Indicates that a setting associated with a hard local control (see *IEEE 488.2*, 5.6.1.5) was lost when the device changed to LOCS from REMS or to LWLS from RWLS.

-210

Trigger error

SCPI Error Messages

- 211 **Trigger ignored**
- Indicates that a GET, *TRG, or triggering signal was received and recognized by the device but was ignored because of device timing considerations; for example, the device was not ready to respond. Note: a DT0 device always ignores GET and treats *TRG as a Command Error.
- 212 **Arm ignored**
- Indicates that an arming signal was received and recognized by the device but was ignored.
- 213 **Init ignored**
- Indicates that a request for a measurement initiation was ignored as another measurement was already in progress.
- 214 **Trigger deadlock**
- Indicates that the trigger source for the initiation of a measurement is set to GET and subsequent measurement query is received. The measurement cannot be started until a GET is received, but the GET would cause an INTERRUPTED error.
- 215 **Arm deadlock**
- Indicates that the arm source for the initiation of a measurement is set to GET and subsequent measurement query is received. The measurement cannot be started until a GET is received, but the GET would cause an INTERRUPTED error.
- 220 **Parameter error**
- Indicates that a program data element related error occurred. This error message should be used when the device cannot detect the more specific errors described for errors –221 through –229.
- 221 **Setting conflict**
- Indicates that a legal program data element was parsed but could not be executed due to the current device state (see *IEEE 488.2*, 6.4.5.3 and 11.5.1.1.5.)

SCPI Error Messages

- 222 **Data out of range**
- Indicates that a legal program data element was parsed but could not be executed because the interpreted value was outside the legal range as defined by the device (see *IEEE 488.2*, 11.5.1.1.5.)
- 223 **Too much data**
- Indicates that a legal program data element of block, expression, or string type was received that contained more data than the device could handle due to memory or related device-specific requirements.
- 224 **Illegal parameter value**
- Used where exact value, from a list of possibles, was expected.
- 230 **Data corrupt or stale**
- Possibly invalid data; new reading started but not completed since last access.
- 231 **Data questionable**
- Indicates that measurement accuracy is suspect.
- 240 **Hardware error**
- Indicates that a legal program command or query could not be executed because of a hardware problem in the device. Definition of what constitutes a hardware problem is completely device-specific. This error message should be used when the device cannot detect the more specific errors described for errors –241 through –249.
- 241 **Hardware missing**
- Indicates that a legal program command or query could not be executed because of missing device hardware; for example, an option was not installed. Definition of what constitutes missing hardware is completely device-specific.
- 250 **Mass storage error**
- Indicates that a mass storage error occurred. This error message should be used when the device cannot detect the more specific errors described for errors –251 through –259.

SCPI Error Messages

-251

Missing mass storage

Indicates that a legal program command or query could not be executed because of missing mass storage; for example, an option that was not installed. Definition of what constitutes missing mass storage is device-specific.

-252

Missing media

Indicates that a legal program command or query could not be executed because of a missing media; for example, no disk. The definition of what constitutes missing media is device-specific.

-253

Corrupt media

Indicates that a legal program command or query could not be executed because of corrupt media; for example, bad disk or wrong format. The definition of what constitutes corrupt media is device-specific.

-254

Media full

Indicates that a legal program command or query could not be executed because the media was full; for example, there is no room on the disk. The definition of what constitutes a full media is device-specific.

-255

Directory full

Indicates that a legal program command or query could not be executed because the media directory was full. The definition of what constitutes a full media directory is device-specific.

-256

File name not found

Indicates that a legal program command or query could not be executed because the file name on the device media was not found; for example, an attempt was made to read or copy a nonexistent file. The definition of what constitutes a file not being found is device-specific.

-257

File name error

Indicates that a legal program command or query could not be executed because the file name on the device media was in error; for example, an attempt was made to copy to a duplicate file name. The definition of what constitutes a file name error is device-specific.

SCPI Error Messages

- 258 **Media protected**
- Indicates that a legal program command or query could not be executed because the media was protected; for example, the write-protect tab on a disk was present. The definition of what constitutes protected media is device-specific.
- 260 **Expression error**
- Indicates that an expression program data element related error occurred. This error message should be used when the device cannot detect the more specific errors described for errors –261 through –269.
- 261 **Math error in expression**
- Indicates that a syntactically legal expression program data element could not be executed due to a math error; for example, a divide-by-zero was attempted. The definition of math error is device-specific.
- 270 **Macro error**
- Indicates that a macro-related execution error occurred. This error message should be used when the device cannot detect the more specific errors described for errors –271 through –279.
- 271 **Macro syntax error**
- Indicates that a syntactically legal macro program data sequence, according to *IEEE 488.2, 10.7.2*, could not be executed due to a syntax error within the macro definition (see *IEEE 488.2, 10.7.6.3*.)
- 272 **Macro execution error**
- Indicates that a syntactically legal macro program data sequence could not be executed due to some error in the macro definition (see *IEEE 488.2, 10.7.6.3*.)
- 273 **Illegal macro label**
- Indicates that the macro label defined in the *DMC command was a legal string syntax but could not be accepted by the device (see *IEEE 488.2, 10.7.3* and *10.7.6.2*); for example, the label was too long, the same as a common command header, or contained invalid header syntax.

SCPI Error Messages

- 274 **Macro parameter error**
Indicates that the macro definition improperly used a macro parameter placeholder (see *IEEE 488.2*, 10.7.3).
- 275 **Macro definition too long**
Indicates that a syntactically legal macro program data sequence could not be executed because the string or block contents were too long for the device to handle (see *IEEE 488.2*, 10.7.6.1).
- 276 **Macro recursion error**
Indicates that a syntactically legal macro program data sequence could not be executed because the device found it to be recursive (see *IEEE 488.2*, 10.7.6.6).
- 277 **Macro redefinition not allowed**
Indicates that a syntactically legal macro label in the *DMC command could not be executed because the macro label was already defined (see *IEEE 488.2*, 10.7.6.4).
- 278 **Macro header not found**
Indicates that a syntactically legal macro label in the *GMC? query could not be executed because the header was not previously defined.
- 280 **Program error**
Indicates that a downloaded program-related execution error occurred. This error message should be used when the device cannot detect the more specific errors described for errors –281 through –289.

NOTE

A downloaded program is used to add algorithmic capability to a device. The syntax used in the program and the mechanism for downloading a program is device-specific.

- 281 **Cannot create program**
Indicates that an attempt to create a program was unsuccessful. A reason for the failure might include not enough memory.

SCPI Error Messages

-282

Illegal program name

The name used to reference a program was invalid; for example, redefining an existing program, deleting a nonexistent program, or in general, referencing a nonexistent program.

-283

Illegal variable name

An attempt was made to reference a nonexistent variable in a program.

-284

Program currently running

Certain operations dealing with programs may be illegal while the program is running; for example, deleting a running program might not be possible.

-285

Program syntax error

Indicates that a syntax error appears in a downloaded program. The syntax used when parsing the downloaded program is device-specific.

-286

Program runtime error

SCPI Error Messages

Query Errors [-399, -300]

An < error/event number > in the range [-399, -300] indicates that the instrument has detected an error which is not a command error, a query error, or an execution error; some device operations did not properly complete, possibly due to an abnormal hardware or firmware condition. These codes are also used for self-test response errors. The occurrence of any error in this class should cause the device-specific error bit (bit 3) in the event status register (IEEE 488.2, section 11.5.1) to be set. The meaning of positive error codes is device-dependent and may be enumerated or bit mapped; the <error message> string for positive error codes is not defined by SCPI and available to the device engineer. Note that the string is not optional; if the designer does not wish to implement a string for a particular error, the null string should be sent (for example 42, " "). The occurrence of any error in this class should cause the device-specific error bit (bit 3) in the event status register (IEEE 488.2, section 11.5.1) to be set. Events that generate device-specific errors shall not generate command errors, execution errors, or query errors; see the other error definitions in this section.

-300

Device-specific error

This is the generic device-dependent error for devices that cannot detect more specific errors. This code indicates only that a Device-Dependent Error as defined in *IEEE 488.2*, 11.5.1.1.6 has occurred.

-310

System error

Indicates that some error, termed “system error” by the device has occurred. This code is device dependent.

-311

Memory error

Indicates that an error was detected in the device’s memory. The scope of this error is device-dependent.

-312

PUD memory lost

Indicates that the protected user data saved by the *PUD command has been lost.

SCPI Error Messages

- 313 **Calibration memory lost**
Indicates that nonvolatile calibration data used by the *CAL? command has been lost.
- 314 **Save/Recall memory lost**
Indicates that the nonvolatile data saved by the *SAV? command has been lost.
- 315 **Configuration memory lost**
Indicates that the nonvolatile data saved by the device has been lost. The meaning of this error is device-specific.
- 330 **Self-test failed**
- 350 **Queue overflow**
A specific code entered into the queue in lieu of the code that caused the error. This code indicates that there is no room in the queue and an error occurred but was not recorded.
- 360 **Communication error**
This is the generic communication error for devices that cannot detect the more specific errors described for errors -361 through -363.
- 361 **Parity error in program message**
Parity bit not correct when data received for example, on a serial port (for example, a baud rate mismatch).
- 362 **Framing error in program message**
A stop bit was not detected when data was received for example, on a serial port.
- 363 **Input buffer overrun**
Software or hardware input buffer on serial port overflows with data caused by improper or nonexistent pacing.

SCPI Error Messages

Query Errors [–499, –400]

An < error/event number > in the range [–499, –400] indicates that the output queue control of the instrument has detected a problem with the message exchange protocol described in *IEEE 488.2*, chapter 6. The occurrence of any error in this class should cause the query error bit (bit 2) in the event status register (*IEEE 488.2*, section 11.5.1) to be set. These errors correspond to message exchange protocol errors described in *IEEE 488.2*, section 6.5. One of the following is true:

- An attempt is being made to read data from the output queue when no output is either present or pending;
- Data in the output queue has been lost.

Events that generate query errors shall not generate command errors, execution errors, or device-specific errors; see the other error definitions in this section.

–400

Query error

This is the general query error for devices that cannot detect more specific errors. This code indicates only that a Query Error as defined in *IEEE 488.2*, 11.5.1.1.7 and 6.3 has occurred.

–410

Query INTERRUPTED

Indicates that a condition causing an INTERRUPTED Query error occurred (see *IEEE 488.2*, 6.3.2.3); for example, a query followed by DAB or GET before a response was completely sent.

–420

Query UNTERMINATED

Indicates that a condition causing an UNTERMINATED Query error occurred (see *IEEE 488.2*, 6.3.2.2); for example, the device was addressed to talk and an incomplete program message was received.

–430

Query DEADLOCKED

Indicates that a condition causing a DEADLOCKED Query error occurred (see *IEEE 488.2*, 6.3.1.7); for example, both input buffer and output buffer are full and the device cannot continue.

SCPI Error Messages

-440

Query UNTERMINATED after indefinite response

Indicates that a query was received in the same program message after a query requesting an indefinite response was executed (see *IEEE 488.2*, 6.5.7.5.7.)

**SCPI Backwards
Compatibility Differences**

SCPI Backwards Compatibility Differences

This chapter lists those commands for which it has not been possible to continue from a previous version of instrument software to the current version.

SCPI forward compatibility is treated with high priority when instrument features evolve. Thus, SCPI commands are written with the following prioritized guidelines:

- 1 Wherever possible, existing SCPI commands will be used and expanded to cover altered and new functionality.
- 2 The query form of an existing configuration command may be sacrificed in order to map the configuration form to both old and new capability. For example, where two “discrete” configuration parameters map to a single choice on the instrument display, the new choice will invariably be returned by the query.
- 3 If all else fails, the default is to create a new command.

The following chapter is organized by functionality differences which may affect commands across a number of subsystems. Listed are those commands which have been altered in such a way that they are incompatible with previously released versions of instrument software.

Also listed are commands which have been retained for backward compatibility but have been replaced by newer commands, the use of which is recommended.

Structured Payload Type

:SOURce:DATA:TELEcom:SPDH:PAYLoad:TYPE
:SENSe:DATA:TELEcom:SPDH:PAYLoad:TYPE
:SOURce:DATA:TELEcom:SDH:PAYLoad:TYPE
:SENSe:DATA:TELEcom:SDH:PAYLoad:TYPE

The parameter ‘STRuctured’ has been removed from both command and query. New commands has been created for this alone:

:SOURce | SENSe:DATA:TELEcom:SPDH:PAYLoad:STRucture
:SOURce | SENSe:DATA:TELEcom:SDH:PAYLoad:STRucture

Use their query form to determine if the signal is structured.

SCPI Backwards Compatibility Differences

Mixed Backgrounds

:SOURCE:DATA:TELEcom:SDH:TUG3:BACKground:PAYLoad[:PATTern]

Once, all three backgrounds could be programmed and only the two in context at any time would be in effect. The other would be masked by the foreground selection. Now, there are only two background channels, called LO and HI. LO can be channel 1 (if the foreground is not in channel 1) or 2. HI can be channel 2 or 3, depending on which channel is the foreground. Changing which channel is the foreground will change the channel selections of LO and/or HI.

The mapping selections and user words associated with HI and LO will be unaffected by such a change, but they may apply to a different channel.

For correct operation, it is recommended that the backgrounds are setup after each change of foreground channel number.

Furthermore, the TU3 background is now always of the user selectable word form instead of fixed word for the cases where TU3 was a mixed background. The effect of this is that the parameter UWORD will be converted to TU3. The effect is the same for the command, but the query will return TU3 instead of the previous behavior of returning UWORD.

Sequences and Overheads

:SOURCE:DATA:TELEcom:SDH:SEQUence:CHANnel

Command retained for backward compatibility only. The following new command is recommended: :SOURCE:DATA:TELEcom:SDH:SEQUence:OHBYte

Thru Mode

The following command/query pair is affected.

:SOURCE:DATA:TELEcom:SDH:THRumode:POVerwrite

This command both sets up and enables the thru-mode payload overwrite. This has been retained for backwards compatibility only. Thru-mode has been enhanced, such that the payload overwrite is set up and enabled separately. The recommended commands are shown below.

SCPI Backwards Compatibility Differences

:SOURce:DATA:TELEcom:SDH:THRumode:PAYLoad:OVERwrite
<discrete>

:SOURce:DATA:TELEcom:SDH:THRumode:PAYLoad:OVERwrite:ENABle
<boolean>

Fixed Jitter Masks

SOURce:DATA:TELEcom:JITTer:SDHMask | SONMask
SOURce:DATA:TELEcom:JITTer:TRANSfer:MASK:INPut
SOURce:DATA:TELEcom:JITTer:TRANSfer:MASK:PASS

Parameters ATYPE and BTYPE are replaced by G958A and G958B respectively.

User Jitter Masks

:SOURce:DATA:TELEcom:JITTer:TRANSfer:MASK:INPut:A1
:SOURce:DATA:TELEcom:JITTer:TRANSfer:MASK:INPut:A2
:SOURce:DATA:TELEcom:JITTer:TRANSfer:MASK:INPut:F1
:SOURce:DATA:TELEcom:JITTer:TRANSfer:MASK:INPut:F2
:SOURce:DATA:TELEcom:JITTer:TRANSfer:MASK:INPut:F3
:SOURce:DATA:TELEcom:JITTer:TRANSfer:MASK:INPut:F4

The feature and hence the commands which defined the Jitter Transfer Function user jitter mask have been deleted from the instrument. A new all encompassing user jitter mask feature is now provided.

Jitter Module Obsolescence

1 :SOURce:CLOCK:JITTer:FORMat

2 :SOURce:CLOCK:JITTer:BALanced

3 :INPut:TELEcom:JITTer:...

4 JITTER Status Register:

DB3: WRSL - Wander Reference Unlock.

DB4: EXW - Excess wander (>5 UI).

DB11: JLOS - SDH Loss of Signal. (Jitter optical Rx only).

DB12: JLOL - SDH Optical Loss of Light. (Jitter optical Rx only).

5 :SENSe:DATA:TELEcom:JITTer:SETTings

6 :SENSe:DATA? "PEAK:JITTer:WANDer:SECCond:PK15"

7 :SENSe:DATA? "PEAK:JITTer:WANDer:SECCond:PK24"

SCPI Backwards Compatibility Differences

Due to jitter module obsolescence, the above commands and status bits are amended as follows:

- 1 Only the parameter CLOcK is supported.
- 2 Only the parameter UNBalanced is supported.
- 3 There are no primary inputs on the upgraded jitter module and hence all of these commands are obsolete.
- 4 There are no primary inputs on the upgraded jitter module and hence all of these status bits are obsolete.
- 5 Obsolete command. No longer required.
- 6 New module returns results in units of nanoseconds.
- 7 New module returns results in units of nanoseconds.

Jitter External Clock

:SOURce:CLOCK:SPDH:SOURce
:SOURce:CLOCK:JITTer:EXTErnal:SOURce
:SOURce:CLOCK:JITTer:EXTErnal:FORMat

Due to PDH jitter module obsolescence, there is no longer an external reference clock input on a PDH jitter module. Consequently, the commands :SOUR:CLOC:JITT:EXT:SOUR and :SOUR:CLOC:JITT:EXT:FORM are now obsolete but are retained for backwards compatibility.

The existing command, :SOUR:CLOC:SPDH:SOUR is now extended in line with the :SOUR:CLOC:SDH | SON:SOUR commands. The obsolete parameter JITTer is retained for backwards compatibility.

SCPI Backwards Compatibility Differences

General Index

A

Alarms

 SONET, 4-38

Application Program Examples, 7-1

B

Backwards Compatibility, 9-1

BOOTP, 1-9

C

Cables, 1-5

Command Errors, 8-2

Command Reference, 4-2

Command Syntax, 2-2

Connecting the LAN to the Instrument Remote Control Interface, 1-10

Connecting to a LAN, 1-8

Connecting to HP-IB, 1-3

Connecting to RS-232-C, 1-4

Connection via a Modem, 1-6

D

DCC port, 4-56

Default Gateway IP Address, 1-8

Default Settings, 1-13

Device Clear (CLEAR), 6-3

DNA Option USS, 1-2

E

Error Checking, 1-13

Errors

 SONET, 4-33

Example Program, 5-29

Execution Errors, 8-8

F

FETCh subsystem, 3-85, 4-93

Frequency Offsets, 1-16

G

Gating Control, 1-15

General Information, 6-2

Graphics

 Configuring, 2-24

 Managing Stores, 2-26

 Obtaining End of Measurement Results, 2-34

General Index

Retrieving Data for a Single Graph, 2-32
Retrieving Store Data, 2-28

H

Hints & Tips, 1-13
HP-IB Communication with the System Controller, 1-3
HP-IB Operating Distances, 1-3
HP-IB Universal Commands, 6-3

I

IEEE common capabilities, 2-55
Initialization, 1-12
Initializing the HP 37718A, 7-2
INPut subsystem, 2-12, 3-45, 4-59
Instrument Coupling, 1-13
INSTrument subsystem, 2-7
Internet address, 1-8
Interpreting Interrupts, 5-28

L

LAN
 BOOTP, 1-9
 Current Settings, 1-9
 New Settings, 1-10
Linking Command Statements, 2-3
Local (LOCAL), 6-4
Local Lockout (LOCAL LOCKOUT), 6-4

M

Methods of Remote Control, 1-2
Mixed Backgrounds, 9-3, 9-4
Modem, 1-5
Modem to Instrument, 1-6
MSP messages, 4-49

O

OUTPut subsystem, 3-3, 4-3

P

Pointer moves, SONET, 4-39
Program examples, 7-3
Programming Interrupts, 5-28

Q

Query Errors, 8-15

General Index

R

Receiver

- Common Commands, 2-15
- SONET Settings, 4-63
- SONET SPE Layer Selection, 4-64
- SONET Test Function Commands, 4-72
- SONET VT Group, 4-66
- SPDH Test Function Commands, 3-58
- Structured PDH Settings, 3-49

Remote Control Commands, 2-5

Remote Control Hints & Tips, 1-13

Remote Control, Methods of, 1-2

Remote Enable (REMOTE), 6-3

Results

- common, 2-20
- Frequency, 3-68
- Frequency (Sonet), 4-82
- SONET Alarm Seconds, 4-91
- SONET Block Based Bit Analysis, 4-88
- SONET Cumulative, 4-83
- SONET CV-IEC Analysis, 4-86
- SONET CV-L Analysis, 4-84
- SONET CV-S Analysis, 4-84
- SONET Line RE-L Analysis, 4-85
- SONET Optical Power, 4-90
- SONET Path CV-P Analysis, 4-85
- SONET Pointer Activity, 4-90
- SONET REI-P Analysis, 4-86
- SONET Service Disruption, 4-90
- SONET Short Term, 4-82
- SONET Tributary Path CV-V Analysis, 4-87
- SONET Tributary Path REI-V Analysis, 4-87
- Structured PDH 140 Mb/S FAS Error Analysis, 3-81
- Structured PDH 140 Mb/s G.826 Analysis, 3-71
- Structured PDH 2 Mb/S FAS Error Analysis, 3-79
- Structured PDH 2 Mb/s G.826 Analysis, 3-74, 3-75, 3-76
- Structured PDH 34 Mb/S FAS Error Analysis, 3-80
- Structured PDH 34 Mb/s G.826 Analysis, 3-72
- Structured PDH 8 Mb/S FAS Error Analysis, 3-80
- Structured PDH 8 Mb/s G.826 Analysis, 3-73
- Structured PDH Alarm Seconds, 3-83
- Structured PDH and Payload G.821 Analysis, 3-70
- Structured PDH CRC Error Analysis, 3-82
- Structured PDH Cumulative, 3-69
- Structured PDH M.2100 Analysis, 3-77
- Structured PDH M.2110 Analysis, 3-79
- Structured PDH M.2120 ANALYSIS, 3-79

General Index

- Structured PDH REBE Error Analysis, 3-82
- Structured PDH Round Trip Delay, 3-84
- Structured PDH Short Term, 3-68
- RS232 port connections, 1-5
- RS-232-C Communication with the Terminal/Computer, 1-6
- RS-232-C Computer Mode, 1-7
- RS-232-C Computer to Instrument, 1-6
- RS-232-C Connection via a Modem, 1-6
- RS-232-C Terminal Mode, 1-7
- RS-232-C Terminal to Instrument, 1-5

- S**
- SCPI Command Format, 2-2
- SCPI Error Messages, 8-2
- SCPI Long Form Command Headers, 2-3
- SCPI Overview, 6-2
- SENSe subsystem, 2-13
- Sequences, SONET overhead, 4-46
- Serial Poll (SPOLL), 6-3
- Setup Delays, 1-14
- Signaling bits
 - 2M CAS, 3-17
 - DS1, 3-24
- SONET Mapping Settings, 4-63
- SOURce subsystem, 2-8
- SOURce subsystem - Transmitter SONET OVERHEAD SETUP, 4-23
- Status Byte, 5-5
- Status Register
 - DATA, 5-10
 - INSTrument, 5-9
 - JITTer, 5-15
 - M140, 5-17
 - M2, 5-20
 - M34, 5-18
 - M8, 5-19
 - OPERation, 5-8
 - QUEStionable, 2-39, 5-7
 - SDH2, 5-14
 - SONET2, 5-13
 - SPDH, 5-16
 - Standard Event, 5-6
- Status Registers, 1-14
- Status Registers Relationship, 5-25
- Status Reporting, 5-2
- STATus subsystem, 2-38

General Index

Subnet Mask, 1-8
SYSTEM Subsystem, 2-41

T

Terminal, 1-5
Test Timing, 2-17
to PC, 1-5
Transmitter
 Common Commands, 2-9
 SDH Settings, 3-40
 SONET Clock settings, 4-9
 SONET overhead, 4-56
 SONET Payload Layer Selection, 4-15
 SONET Settings, 4-9
 SONET SPE Layer Selection, 4-14
 SONET Test Function, 4-33
 SONET Thru mode settings, 4-11
 SONET VT Group, 4-16
 SONET VT Payload and Test Pattern, 4-17
 Structured PDH, 3-7
Trouble Scan, 2-21

U

User Locks, 1-16

V

VT Layer Selection, 4-64

General Index

Command Index

*CLS 2-55
*ESE <numeric> 2-55
*ESE? 2-55
*ESR? 2-55
*IDN? 2-55
*LRN? 2-55
*OPC 2-56
*OPT? 2-56
*PSC <numeric> 2-56
*RCL <numeric> 2-57
*RST 2-57
*SAV <numeric> 2-57
*SRE <numeric> 2-57
*SRE? 2-57
*STB? 2-57
*TRG 2-57
*TRG? 2-57
*TST 2-58
*TST? 2-58
*WAI 2-57
:FETCh:ARRAy:DATA:TELEcom:SONet:ASCan? 4-96
:FETCh:ARRAy:DATA:TELEcom:SONet:OCAPture? <numeric> 4-103
:FETCh:ARRAy:DATA:TELEcom:SONet:OVERhead? <numeric><numeric> <numeric> 4-104
:FETCh:ARRAy:DATA:TELEcom:SONet:PGRaph? 4-103
:FETCh:ARRAy:DATA:TELEcom:SONet:POVerhead? <numeric> 4-104
:FETCh:ARRAy:DATA:TELEcom:SONet:TSCan? 4-101
:FETCh:ARRAy:DATA:TELEcom:SPDH:ASCan:M140? 3-89
:FETCh:ARRAy:DATA:TELEcom:SPDH:ASCan:M2? 3-90
:FETCh:ARRAy:DATA:TELEcom:SPDH:ASCan:M34? 3-89
:FETCh:ARRAy:DATA:TELEcom:SPDH:ASCan:M8? 3-89
:FETCh:ARRAy:DATA:TELEcom:SPDH:ASCan? 3-90
:FETCh:SCALar:DATA:TELEcom:PDH:CAS? 3-85
:FETCh:SCALar:DATA:TELEcom:PDH:NFASt? 3-85
:FETCh:SCALar:DATA:TELEcom:PDH:SPARe? 3-85
:FETCh:SCALar:DATA:TELEcom:SONet:OVERhead? <numeric>,<numeric>, <discrete> 4-95
:FETCh:SCALar:DATA:TELEcom:SONet:POVerhead:H4Sequence? 4-95
:FETCh:SCALar:DATA:TELEcom:SONet:POVerhead? <discrete> 4-96
:FETCh:SCALar:DATA:TELEcom:SONet:TRIButary:POVerhead:SLABel? 4-96
:FETCh:SCALar:DATA:TELEcom:SONet:TRIButary:POVerhead? <discrete> 4-96

Command Index

:FETCh:SCALAr:DATA:TELEcom:SPDH:TSLot:SIGNAling? <numeric> 3-89
:FETCh:STRing:DATA:TELEcom:SONet:J0:HEXAdecimal? 4-93
:FETCh:STRing:DATA:TELEcom:SONet:J0? 4-93
:FETCh:STRing:DATA:TELEcom:SONet:J1:HEXAdecimal? 4-93
:FETCh:STRing:DATA:TELEcom:SONet:J1? 4-93
:FETCh:STRing:DATA:TELEcom:SONet:K1? 4-94
:FETCh:STRing:DATA:TELEcom:SONet:K2? 4-94
:FETCh:STRing:DATA:TELEcom:SONet:S1? 4-94
:FETCh:STRing:DATA:TELEcom:SONet:TRIButary:J2:HEXAdecimal? 4-94
:FETCh:STRing:DATA:TELEcom:SONet:TRIButary:J2? 4-94
:FETCh:STRing:DATA:TELEcom:SPDH:FEAC:LAST:TEXT? 3-86
:FETCh:STRing:DATA:TELEcom:SPDH:FEAC:LAST? 3-86
:FETCh:STRing:DATA:TELEcom:SPDH:FEAC:TEXT? 3-85
:FETCh:STRing:DATA:TELEcom:SPDH:FEAC? 3-85
:FETCh:STRing:DATA:TELEcom:SPDH:INBand:LAST:TEXT? 3-87
:FETCh:STRing:DATA:TELEcom:SPDH:OUTBand:CURRent:TEXT? 3-87
:FETCh:STRing:DATA:TELEcom:SPDH:OUTBand:LAST:TEXT? 3-88
:INPut:TELEcom:LEVel <discrete> 2-12
:INPut:TELEcom:OC12:INTerface <discrete> 4-60
:INPut:TELEcom:OC12:RATE <discrete> 4-60
:INPut:TELEcom:OC3:INTerface <discrete> 4-60
:INPut:TELEcom:OC3:RATE <discrete> 4-59
:INPut:TELEcom:OC48:INTerface <discrete> 4-61
:INPut:TELEcom:OC48:RATE <discrete> 4-61
:INPut:TELEcom:SONet:GAIN <discrete> 4-59
:INPut:TELEcom:SONet:RATE <discrete> 4-59
:INPut:TELEcom:SPDH:BALance <discrete> 3-46
:INPut:TELEcom:SPDH:CODE <discrete> 3-45
:INPut:TELEcom:SPDH:EQUAlisation <boolean> 3-47
:INPut:TELEcom:SPDH:GAIN <discrete> 3-46
:INPut:TELEcom:SPDH:INSert:CODE <discrete> 3-46
:INPut:TELEcom:SPDH:RATE <discrete> 3-45
:INSTRument:COUPle <mode> 2-7
:OUTPut:TELEcom:OC12:LASer <boolean> 4-5
:OUTPut:TELEcom:OC12:RATE <discrete> 4-5
:OUTPut:TELEcom:OC12:WAVelength <discrete> 4-5
:OUTPut:TELEcom:OC3:LASer <boolean> 4-4
:OUTPut:TELEcom:OC3:RATE <discrete> 4-3
:OUTPut:TELEcom:OC3:RATE? 4-4

Command Index

:OUTPut:TELEcom:OC3:WAVelength <discrete> 4-4
:OUTPut:TELEcom:OC48:LASer <boolean> 4-7
:OUTPut:TELEcom:OC48:RATE <discrete> 4-6
:OUTPut:TELEcom:OC48:WAVelength <discrete> 4-6
:OUTPut:TELEcom:SONet:LEVel <discrete> 4-3
:OUTPut:TELEcom:SONet:RATE <discrete> 4-3
:OUTPut:TELEcom:SPDH:BALance <discrete> 3-4
:OUTPut:TELEcom:SPDH:CODE <discrete> 3-3
:OUTPut:TELEcom:SPDH:DROP:CODE <discrete> 3-4
:OUTPut:TELEcom:SPDH:LEVel <discrete> 3-4
:OUTPut:TELEcom:SPDH:RATE <discrete> 3-3
:OUTPut:TELEcom:SPDH:STATe <boolean> 3-5
:SENSe:DATA:TELEcom:SENSe <discrete> 2-15
:SENSe:DATA:TELEcom:SMG <discrete> 2-24
:SENSe:DATA:TELEcom:SMG:ALABels? <numeric>,<numeric> 2-31
:SENSe:DATA:TELEcom:SMG:CATalog? 2-26
:SENSe:DATA:TELEcom:SMG:DATA? <numeric>,<string> 2-34
:SENSe:DATA:TELEcom:SMG:DELeTe <numeric> 2-27
:SENSe:DATA:TELEcom:SMG:DELeTe:ALL 2-27
:SENSe:DATA:TELEcom:SMG:EDATa? <numeric>,<numeric> 2-32
:SENSe:DATA:TELEcom:SMG:HDATa:NORMal? <numeric> 2-29
:SENSe:DATA:TELEcom:SMG:HDATa:PACKed? <numeric> 2-30
:SENSe:DATA:TELEcom:SMG:LABels? <numeric> 2-28
:SENSe:DATA:TELEcom:SMG:RESolution <discrete> 2-24
:SENSe:DATA:TELEcom:SMG:SINFormation? <numeric> 2-27
:SENSe:DATA:TELEcom:SMG:SIZE? 2-27
:SENSe:DATA:TELEcom:SMG:STORe <discrete> 2-24
:SENSe:DATA:TELEcom:SMG:TINFormation? <numeric>,<numeric> 2-33
:SENSe:DATA:TELEcom:SMG:VDATa? <numeric>,<numeric> 2-33
:SENSe:DATA:TELEcom:SONet:ASCAn <boolean> 4-78
:SENSe:DATA:TELEcom:SONet:ASCAn:BIP <discrete> 4-78
:SENSe:DATA:TELEcom:SONet:ASCAn:MODE <discrete> 4-78
:SENSe:DATA:TELEcom:SONet:DDCC <discrete> 4-75
:SENSe:DATA:TELEcom:SONet:MAPPing <discrete> 4-65
:SENSe:DATA:TELEcom:SONet:OBERTest:STS1 <numeric> 4-76
:SENSe:DATA:TELEcom:SONet:OBERTest:STS3 <discrete> 4-76
:SENSe:DATA:TELEcom:SONet:OBERTest:STS3:SELeCt <numeric> 4-77
:SENSe:DATA:TELEcom:SONet:OCAPture <discrete> 4-72
:SENSe:DATA:TELEcom:SONet:OCAPture:OHBYte <discrete> 4-73

Command Index

:SENSe:DATA:TELEcom:SONet:OCAPture:STS1 <numeric> 4-73
:SENSe:DATA:TELEcom:SONet:OCAPture:STS3:SElect <numeric> 4-73
:SENSe:DATA:TELEcom:SONet:OCAPture:TRIGger <discrete> 4-74
:SENSe:DATA:TELEcom:SONet:OCAPture:TRIGger:PATtern <string> 4-74
:SENSe:DATA:TELEcom:SONet:PAYLoad <discrete> 4-64
:SENSe:DATA:TELEcom:SONet:PAYLoad:PATtern <discrete> 4-68
:SENSe:DATA:TELEcom:SONet:PAYLoad:STRucture <discrete> 4-68
:SENSe:DATA:TELEcom:SONet:PAYLoad:TYPE <discrete> 4-67
:SENSe:DATA:TELEcom:SONet:PAYLoad:UWORD <string> 4-69
:SENSe:DATA:TELEcom:SONet:PGRaph:CINterval <discrete> 4-75
:SENSe:DATA:TELEcom:SONet:PGRaph:PTYPE <discrete> 4-75
:SENSe:DATA:TELEcom:SONet:PRBS:POLarity <discrete> 4-69
:SENSe:DATA:TELEcom:SONet:PRIMary:TS0 <boolean> 4-66
:SENSe:DATA:TELEcom:SONet:SPE:TYPE <discrete> 4-64
:SENSe:DATA:TELEcom:SONet:STS1 <numeric> 4-64
:SENSe:DATA:TELEcom:SONet:STS12c <numeric> 4-64
:SENSe:DATA:TELEcom:SONet:STS3 <numeric> 4-63
:SENSe:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> 4-72
:SENSe:DATA:TELEcom:SONet:TRIButary <numeric> 4-66
:SENSe:DATA:TELEcom:SONet:TRIButary:CONCatenate <numeric>,<numeric> 4-70
:SENSe:DATA:TELEcom:SONet:TRIButary:MAPPING <discrete> 4-65
:SENSe:DATA:TELEcom:SONet:TSCan <boolean> 4-80
:SENSe:DATA:TELEcom:SONet:TSCan:BIP <discrete> 4-80
:SENSe:DATA:TELEcom:SONet:TSCan:PERiod <numeric>,<suffix> 4-80
:SENSe:DATA:TELEcom:SONet:VTGRoup <numeric> 4-66
:SENSe:DATA:TELEcom:SPDH:ANALysis:M2110 <discrete> 3-59
:SENSe:DATA:TELEcom:SPDH:ANALysis:M2110:PATH <discrete> 3-59
:SENSe:DATA:TELEcom:SPDH:ANALysis:M2110:USER: ESECond <discrete>,<numeric> 3-60
:SENSe:DATA:TELEcom:SPDH:ANALysis:M2110:USER: SESECond <discrete>,<numeric> 3-61
:SENSe:DATA:TELEcom:SPDH:ANALysis:M2120 <discrete> 3-62
:SENSe:DATA:TELEcom:SPDH:ANALysis:M2120:MFACTOR <numeric> 3-62
:SENSe:DATA:TELEcom:SPDH:ANALysis:M2120:USER: ESECond <discrete>,<numeric> 3-62
:SENSe:DATA:TELEcom:SPDH:ANALysis:M2120:USER: SESECond <discrete>,<numeric> 3-63
:SENSe:DATA:TELEcom:SPDH:ASCAN <boolean> 3-64
:SENSe:DATA:TELEcom:SPDH:INBand:LPDN:CODE <discrete> 3-67
:SENSe:DATA:TELEcom:SPDH:INBand:LPUP:CODE <discrete> 3-66
:SENSe:DATA:TELEcom:SPDH:PATtern <discrete> 3-49
:SENSe:DATA:TELEcom:SPDH:PAYLoad:STRucture <discrete> 3-51
:SENSe:DATA:TELEcom:SPDH:PAYLoad:TYPE <discrete> 3-50

Command Index

:SENSe:DATA:TELEcom:SPDH:PRBS:POLarity <discrete> 3-50
:SENSe:DATA:TELEcom:SPDH:RTDelay <boolean> 3-65
:SENSe:DATA:TELEcom:SPDH:TSIGnal:MAPPing <discrete> 3-52
:SENSe:DATA:TELEcom:SPDH:TSIGnal:PAYLoad <discrete> 3-53
:SENSe:DATA:TELEcom:SPDH:TSIGnal:RATE <discrete> 3-52
:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS1 <discrete> 3-55
:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS2 <discrete> 3-55
:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M2 <discrete> 3-54
:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M34 <discrete> 3-53
:SENSe:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M8 <discrete> 3-54
:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K56 <numeric> 3-56
:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K56XN <string> 3-57
:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K64 <numeric> 3-57
:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K64XN <string> 3-57
:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:M2:K64 <numeric> 3-56
:SENSe:DATA:TELEcom:SPDH:TSIGnal:TSLot:M2:K64XN <string> 3-56
:SENSe:DATA:TELEcom:SPDH:UWORD <string> 3-50
:SENSe:DATA:TELEcom:STERm:PERiod <numeric> <suffix> 2-18
:SENSe:DATA:TELEcom:TEST <boolean> 2-16
:SENSe:DATA:TELEcom:TEST:PERiod <numeric> <suffix> 2-17
:SENSe:DATA:TELEcom:TEST:STARt <numeric>, <numeric>, <numeric>, <numeric>, <numeric> 2-18
:SENSe:DATA:TELEcom:TEST:SUSPend <boolean> 2-19
:SENSe:DATA:TELEcom:TEST:TYPE <discrete> 2-17
:SENSe:DATA:TELEcom:TFUNction <discrete> 2-16
:SENSe:DATA:TELEcom:TFUNction:SDISruption <discrete> 3-58
:SENSe:DATA:TELEcom:TSCan:ERRors? 2-21
:SENSe:DATA:TELEcom:TSCan:TYPE? 2-21
:SOURce:CLOCK:SONet:FOFFset <boolean> 4-10
:SOURce:CLOCK:SONet:FOFFset:OFFSet <numeric><suffix> 4-10
:SOURce:CLOCK:SONet:FORMat <discrete> 4-9
:SOURce:CLOCK:SONet:SOURce <discrete> 4-9
:SOURce:CLOCK:SPDH:DS1:FOFFset <discrete> 3-12
:SOURce:CLOCK:SPDH:DS1:FOFFset:OFFSet <numeric> 3-13
:SOURce:CLOCK:SPDH:DS3:FOFFset <discrete> 3-11
:SOURce:CLOCK:SPDH:DS3:FOFFset:OFFSet <numeric>, <discrete> 3-12
:SOURce:CLOCK:SPDH:FORMat <discrete> 3-8
:SOURce:CLOCK:SPDH:M140:FOFFset <discrete> 3-11
:SOURce:CLOCK:SPDH:M140:FOFFset:OFFSet <numeric> 3-11
:SOURce:CLOCK:SPDH:M2:FOFFset <discrete> 3-8

Command Index

:SOURce:CLOCK:SPDH:M2:FOFFset:OFFSet <numeric> 3-9
:SOURce:CLOCK:SPDH:M34:FOFFset <discrete> 3-10
:SOURce:CLOCK:SPDH:M34:FOFFset:OFFSet <numeric> 3-10
:SOURce:CLOCK:SPDH:M8:FOFFset <discrete> 3-9
:SOURce:CLOCK:SPDH:M8:FOFFset:OFFSet <numeric> 3-9
:SOURce:CLOCK:SPDH:SOURce <discrete> 3-7
:SOURce:DATA:TELEcom:ERRor:BIT <discrete> 2-10
:SOURce:DATA:TELEcom:SONet:ALARm <discrete> 4-38
:SOURce:DATA:TELEcom:SONet:ALARm:SSEFrame 4-39
:SOURce:DATA:TELEcom:SONet:APSMessages:ARCHitecture <discrete> 4-52
:SOURce:DATA:TELEcom:SONet:APSMessages:BRIDge <string> 4-52
:SOURce:DATA:TELEcom:SONet:APSMessages:CHANnel <numeric> 4-51
:SOURce:DATA:TELEcom:SONet:APSMessages:DNODE <string> 4-54
:SOURce:DATA:TELEcom:SONet:APSMessages:DOWNload 4-56
:SOURce:DATA:TELEcom:SONet:APSMessages:PCODE <discrete> 4-55
:SOURce:DATA:TELEcom:SONet:APSMessages:RCODE <discrete> 4-53
:SOURce:DATA:TELEcom:SONet:APSMessages:REQuest <discrete> 4-50
:SOURce:DATA:TELEcom:SONet:APSMessages:REServed <numeric> 4-53
:SOURce:DATA:TELEcom:SONet:APSMessages:SCODE <discrete> 4-55
:SOURce:DATA:TELEcom:SONet:APSMessages:SNODE <string> 4-54
:SOURce:DATA:TELEcom:SONet:APSMessages:TOPology <discrete> 4-49
:SOURce:DATA:TELEcom:SONet:ERRor:APSThreshold:EINTerval <discrete> 4-37
:SOURce:DATA:TELEcom:SONet:ERRor:APSThreshold:NERRors <numeric> 4-37
:SOURce:DATA:TELEcom:SONet:ERRor:RATE <discrete> 4-34
:SOURce:DATA:TELEcom:SONet:ERRor:TYPE <discrete> 4-33
:SOURce:DATA:TELEcom:SONet:IDCC <discrete> 4-56
:SOURce:DATA:TELEcom:SONet:MAPPing <discrete> 4-15
:SOURce:DATA:TELEcom:SONet:OBERTest <discrete> 4-58
:SOURce:DATA:TELEcom:SONet:OBERTest:CHANnel <discrete> 4-56
:SOURce:DATA:TELEcom:SONet:OBERTest:STS1 <numeric> 4-57
:SOURce:DATA:TELEcom:SONet:OBERTest:STS3:SElect <numeric> 4-57
:SOURce:DATA:TELEcom:SONet:OVERhead:DATA <numeric>, <numeric>, <discrete>, <string> 4-23
:SOURce:DATA:TELEcom:SONet:OVERhead:DATA:HEXadecimal <numeric>, <numeric>, <discrete>, <string> 4-24
:SOURce:DATA:TELEcom:SONet:OVERhead:DEFault 4-23
:SOURce:DATA:TELEcom:SONet:OVERhead:J0 <string> 4-28
:SOURce:DATA:TELEcom:SONet:OVERhead:J0:HEXadecimal? 4-29
:SOURce:DATA:TELEcom:SONet:OVERhead:J0:PATTern <discrete> 4-28

Command Index

:SOURCE:DATA:TELEcom:SONet:OVERhead:SBYTe <discrete> 4-31
:SOURCE:DATA:TELEcom:SONet:PAYLoad <discrete> 4-15
:SOURCE:DATA:TELEcom:SONet:PAYLoad:OFFSet <numeric> 4-19
:SOURCE:DATA:TELEcom:SONet:PAYLoad:PATtern <discrete> 4-18
:SOURCE:DATA:TELEcom:SONet:PAYLoad:STRucture <discrete> 4-18
:SOURCE:DATA:TELEcom:SONet:PAYLoad:TYPE <discrete> 4-17
:SOURCE:DATA:TELEcom:SONet:PAYLoad:UWORd <string> 4-19
:SOURCE:DATA:TELEcom:SONet:PDHPayload:ERRor:RATE <discrete> 4-36
:SOURCE:DATA:TELEcom:SONet:PDHPayload:ERRor:RATE:USER <numeric> 4-36
:SOURCE:DATA:TELEcom:SONet:PDHPayload:ERRor:TYPE <discrete> 4-35
:SOURCE:DATA:TELEcom:SONet:POINter <discrete> 4-39
:SOURCE:DATA:TELEcom:SONet:POINter:ACTIon 4-41
:SOURCE:DATA:TELEcom:SONet:POINter:ADJust 4-42
:SOURCE:DATA:TELEcom:SONet:POINter:DIRection <discrete> 4-40
:SOURCE:DATA:TELEcom:SONet:POINter:IDECrement <numeric> 4-40
:SOURCE:DATA:TELEcom:SONet:POINter:NPOinter <discrete> 4-42
:SOURCE:DATA:TELEcom:SONet:POINter:OFFSet <discrete> 4-42
:SOURCE:DATA:TELEcom:SONet:POINter:OFFSet:RATE <numeric>, <suffix> 4-43
:SOURCE:DATA:TELEcom:SONet:POINter:T1105 <discrete> 4-43
:SOURCE:DATA:TELEcom:SONet:POINter:T1105:INTerval <numeric>, <suffix> 4-45
:SOURCE:DATA:TELEcom:SONet:POINter:T1105:PATtern <discrete> 4-44
:SOURCE:DATA:TELEcom:SONet:POINter:T1105:POLarity <discrete> 4-44
:SOURCE:DATA:TELEcom:SONet:POINter:T1105:SEQuence <discrete> 4-45
:SOURCE:DATA:TELEcom:SONet:POINter:TRANsmitted? 4-40
:SOURCE:DATA:TELEcom:SONet:POINter:TYPE <discrete> 4-39
:SOURCE:DATA:TELEcom:SONet:POINter:VALue <numeric> 4-41
:SOURCE:DATA:TELEcom:SONet:POVerhead:DATA <discrete>, <string> 4-25
:SOURCE:DATA:TELEcom:SONet:POVerhead:H4Sequence <discrete> 4-31
:SOURCE:DATA:TELEcom:SONet:POVerhead:J1 <string> 4-26
:SOURCE:DATA:TELEcom:SONet:POVerhead:J1:CRc7 <string> 4-27
:SOURCE:DATA:TELEcom:SONet:POVerhead:J1:HEXadecimal? 4-27
:SOURCE:DATA:TELEcom:SONet:POVerhead:J1:PATtern <discrete> 4-26
:SOURCE:DATA:TELEcom:SONet:POVerhead:SLABel <discrete> 4-25
:SOURCE:DATA:TELEcom:SONet:PRBS:POLarity <discrete> 4-19
:SOURCE:DATA:TELEcom:SONet:PRIMary:BACKground:PAYLoad
:PATtern <discrete> 4-21
:SOURCE:DATA:TELEcom:SONet:SEQuence <discrete> 4-46
:SOURCE:DATA:TELEcom:SONet:SEQuence:DATA <discrete>, <string> 4-47
:SOURCE:DATA:TELEcom:SONet:SEQuence:FCOunt <numeric>, <numeric> 4-48

Command Index

:SOURCE:DATA:TELEcom:SONet:SEquence:MODE <discrete> 4-46
:SOURCE:DATA:TELEcom:SONet:SEquence:OHBYte <discrete> 4-46
:SOURCE:DATA:TELEcom:SONet:SEquence:ORDER <discrete>, <discrete>, <discrete>, <discrete>,
<discrete> 4-48
:SOURCE:DATA:TELEcom:SONet:SEquence:STS1 <numeric> 4-47
:SOURCE:DATA:TELEcom:SONet:SEquence:STS3:SElect <numeric> 4-47
:SOURCE:DATA:TELEcom:SONet:SPE:TYPE <discrete> 4-14
:SOURCE:DATA:TELEcom:SONet:STESt:BLENgth <numeric> 4-49
:SOURCE:DATA:TELEcom:SONet:STESt:SPATtern <discrete> 4-49
:SOURCE:DATA:TELEcom:SONet:STS1 <numeric> 4-14
:SOURCE:DATA:TELEcom:SONet:STS1:BACKground <discrete> 4-21
:SOURCE:DATA:TELEcom:SONet:STS12c <numeric> 4-14
:SOURCE:DATA:TELEcom:SONet:STS12c BACKground <discrete> 4-22
:SOURCE:DATA:TELEcom:SONet:STS3 <numeric> 4-13
:SOURCE:DATA:TELEcom:SONet:STS3:BACKground <discrete> 4-22
:SOURCE:DATA:TELEcom:SONet:TFUNction:TYPE <discrete> 4-33
:SOURCE:DATA:TELEcom:SONet:THRumode <discrete> 4-11
:SOURCE:DATA:TELEcom:SONet:THRumode:COVerwrite <boolean> 4-12
:SOURCE:DATA:TELEcom:SONet:THRumode:PAYLoad:OVERwrite <discrete> 4-11
:SOURCE:DATA:TELEcom:SONet:THRumode:PAYLoad:OVERwrite:ENABLE <boolean> 4-12
:SOURCE:DATA:TELEcom:SONet:TRIButary <numeric> 4-16
:SOURCE:DATA:TELEcom:SONet:TRIButary:CONCatenate <numeric>, <numeric> 4-20
:SOURCE:DATA:TELEcom:SONet:TRIButary:MAPPing <discrete> 4-16
:SOURCE:DATA:TELEcom:SONet:TRIButary:POINter:TRANsmitted? 4-41
:SOURCE:DATA:TELEcom:SONet:TRIButary:POINter:VALue <numeric> 4-41
:SOURCE:DATA:TELEcom:SONet:TRIButary:POVerhead:DATA <discrete>, <string> 4-27
:SOURCE:DATA:TELEcom:SONet:TRIButary:POVerhead:J2 <string> 4-30
:SOURCE:DATA:TELEcom:SONet:TRIButary:POVerhead:J2:FIXed <string> 4-30
:SOURCE:DATA:TELEcom:SONet:TRIButary:POVerhead:J2:HEXadecimal? 4-30
:SOURCE:DATA:TELEcom:SONet:TRIButary:POVerhead:J2:PATTern <discrete> 4-29
:SOURCE:DATA:TELEcom:SONet:TRIButary:POVerhead:V5:SLABel <numeric> 4-30
:SOURCE:DATA:TELEcom:SONet:VTGRoup <numeric> 4-16
:SOURCE:DATA:TELEcom:SOURce <discrete> 2-9
:SOURCE:DATA:TELEcom:SPDH:DS1:ALARm <discrete> 3-36
:SOURCE:DATA:TELEcom:SPDH:DS3:ALARm <discrete> 3-35
:SOURCE:DATA:TELEcom:SPDH:ERRor:EXZ:NUMBer <numeric> 3-31
:SOURCE:DATA:TELEcom:SPDH:ERRor:FRAMe:NERRored <discrete> 3-30
:SOURCE:DATA:TELEcom:SPDH:ERRor:MFRAMe:NERRored <discrete> 3-30
:SOURCE:DATA:TELEcom:SPDH:ERRor:RATE <discrete> 3-28

Command Index

:SOURce:DATA:TELEcom:SPDH:ERRor:RATE:USER <numeric> 3-29
:SOURce:DATA:TELEcom:SPDH:ERRor:TYPE <discrete> 3-28
:SOURce:DATA:TELEcom:SPDH:FEAC <discrete> 3-31
:SOURce:DATA:TELEcom:SPDH:FEAC:BURSt <numeric> 3-31
:SOURce:DATA:TELEcom:SPDH:FEAC:CODE <string> 3-32
:SOURce:DATA:TELEcom:SPDH:FEAC:LOOPback:ACTion <discrete> 3-32
:SOURce:DATA:TELEcom:SPDH:FEAC:LOOPback:BURSt <numeric>,<numeric> 3-33
:SOURce:DATA:TELEcom:SPDH:FEAC:LOOPback:MESSAge <numeric> 3-32
:SOURce:DATA:TELEcom:SPDH:INBand <discrete> 3-41
:SOURce:DATA:TELEcom:SPDH:M140:ALARm <discrete> 3-33
:SOURce:DATA:TELEcom:SPDH:M140:SPARe <string> 3-36
:SOURce:DATA:TELEcom:SPDH:M2:ALARm <discrete> 3-35
:SOURce:DATA:TELEcom:SPDH:M2:CASMfm <string> 3-40
:SOURce:DATA:TELEcom:SPDH:M2:CASMfm? 3-40
:SOURce:DATA:TELEcom:SPDH:M2:NFAS <string> 3-38
:SOURce:DATA:TELEcom:SPDH:M2:SASequence <boolean> 3-39
:SOURce:DATA:TELEcom:SPDH:M2:SASequence:BIT <numeric> 3-39
:SOURce:DATA:TELEcom:SPDH:M2:SASequence:BIT? 3-40
:SOURce:DATA:TELEcom:SPDH:M2:SASequence:PATTern <string> 3-39
:SOURce:DATA:TELEcom:SPDH:M2:SI <string> 3-37
:SOURce:DATA:TELEcom:SPDH:M2:SIE <string> 3-38
:SOURce:DATA:TELEcom:SPDH:M34:ALARm <discrete> 3-34
:SOURce:DATA:TELEcom:SPDH:M34:SPARe <string> 3-37
:SOURce:DATA:TELEcom:SPDH:M8:ALARm <alarm> 3-34
:SOURce:DATA:TELEcom:SPDH:M8:SPARe <string> 3-37
:SOURce:DATA:TELEcom:SPDH:OUTBand <discrete> 3-43
:SOURce:DATA:TELEcom:SPDH:OUTBand:BURSt <numeric> 3-44
:SOURce:DATA:TELEcom:SPDH:OUTBand:USER <string> 3-44
:SOURce:DATA:TELEcom:SPDH:PATTern <discrete> 3-15
:SOURce:DATA:TELEcom:SPDH:PAYLoad:TYPE <discrete> 3-16
:SOURce:DATA:TELEcom:SPDH:PRBS:POLarity <discrete> 3-16
:SOURce:DATA:TELEcom:SPDH:TFUNction:TYPE <discrete> 3-27
:SOURce:DATA:TELEcom:SPDH:THRumode <discrete> 3-13
:SOURce:DATA:TELEcom:SPDH:THRumode:ERRor:RATE <discrete> 3-13
:SOURce:DATA:TELEcom:SPDH:THRumode:ERRor:RATE:USER <numeric> 3-14
:SOURce:DATA:TELEcom:SPDH:TSIGnal:BACKground <discrete> 3-24
:SOURce:DATA:TELEcom:SPDH:TSIGnal:MAPPing <discrete> 3-18
:SOURce:DATA:TELEcom:SPDH:TSIGnal:PAYLoad <discrete> 3-19
:SOURce:DATA:TELEcom:SPDH:TSIGnal:RATE <discrete> 3-18

Command Index

:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS1 <discrete> 3-21
:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:DS2 <discrete> 3-21
:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M2 <discrete> 3-20
:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M34 <discrete> 3-20
:SOURce:DATA:TELEcom:SPDH:TSIGnal:TRIButary:M8 <discrete> 3-20
:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K56 <numeric> 3-22
:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K56XN <string> 3-24
:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K64 <numeric> 3-22
:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:DS1:K64XN <string> 3-23
:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:M2:K64 <numeric> 3-22
:SOURce:DATA:TELEcom:SPDH:TSIGnal:TSLot:M2:K64XN <string> 3-23
:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:DS1:D4 <string> 3-24
:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:DS1:ESF <string> 3-25
:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:DS1:NOFBit <string> 3-25
:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:DS1:SLC96 <string> 3-25
:SOURce:DATA:TELEcom:SPDH:TSLot:SIGNaling:DATA:M2 <string> 3-17
:SOURce:DATA:TELEcom:SPDH:UWORD <string> 3-15
:SOURce:DATA:TELEcom:TFUNction <discrete> 2-10
:SOURce:DATA:TELEcom:TFUNction:SDISruption <boolean> 3-27
:STATus:<Status Register>:CONDition? 2-40
:STATus:<Status Register>:ENABle <numeric> 2-39
:STATus:<Status Register>:EVENT? 2-40
:STATus:<Status Register>:HISTory? 2-40
:STATus:<Status Register>:NTRansition <numeric> 2-39
:STATus:<Status Register>:NTRansition? 2-39
:STATus:<Status Register>:PTRansition <numeric> 2-39
:STATus:CHIStory 2-38
:STATus:PRESet 2-38
:SYSTem:BEEPer:STATe <boolean> 2-54
:SYSTem:CONF <block> 2-43
:SYSTem:DATE <year>,<month>,<day> 2-41
:SYSTem:DISK:CD <string> 2-53
:SYSTem:DISK:DIRectory:CREate <filename> 2-52
:SYSTem:DISK:DIRectory? <extension>,<format> 2-53
:SYSTem:DISK:FILE:COPIY:CNF <to>,<store>,<directory>,<filename>,<overwrite> 2-51
:SYSTem:DISK:FILE:COPIY:SMG <store>,<directory>,<filename>,<overwrite> 2-52
:SYSTem:DISK:FILE:COPIY:SMG:FORMat <type> 2-51
:SYSTem:DISK:FILE:DELeTe <filename> 2-52
:SYSTem:DISK:FILE:REName <from_filename>,<to_dir>,<filename>,<overwrite> 2-52

Command Index

:SYSTem:DISK:FORMat 2-49
:SYSTem:DISK:FREE? 2-53
:SYSTem:DISK:LABel <string> 2-49
:SYSTem:DISK:PWD? 2-53
:SYSTem:DISK:RECall <extension>,<filename>,<confirm> 2-50
:SYSTem:DISK:SAVE <extension>,<filename>,<overwrite> 2-50
:SYSTem:DISK:SAVE:MODE <discrete> 2-50
:SYSTem:ERRor? 2-43
:SYSTem:KLOCK <boolean> 2-42
:SYSTem:LOCAL 2-42
:SYSTem:LOGGing:DEVice <type> 2-48
:SYSTem:PRESet 2-42
:SYSTem:PRINt 2-43
:SYSTem:PRINt:AUTO <boolean> 2-43
:SYSTem:PRINt:CONTent <content> 2-45
:SYSTem:PRINt:DEMAND <mode> 2-48
:SYSTem:PRINt:ESEConds <boolean> 2-48
:SYSTem:PRINt:MODE <mode> 2-47
:SYSTem:PRINt:PERiod <period> 2-44
:SYSTem:PRINt:RESults <type> 2-45
:SYSTem:PRINt:SDUMp:COMPReSSion <boolean> 2-49
:SYSTem:PRINt:SDUMp:DESTination <destination> 2-49
:SYSTem:PRINt:SPAN <content> 2-45
:SYSTem:PRINt:UPERiod <numeric>,<discrete> 2-44
:SYSTem:PRINt:WHEN <select> 2-47
:SYSTem:REMote 2-42
:SYSTem:SELFtest:WAVelength <discrete> 2-47
:SYSTem:SERial? 2-43
:SYSTem:SSETting:LABel <numeric>,<string> 2-54
:SYSTem:SSETting:LOCK <boolean> 2-53
:SYSTem:TIME <hour>,<minute>,<second> 2-41
:SYSTem:VERSion? 2-43
:SYSTem:WINDow<type> 2-41
INBAND LOOP CODES 3-86

Command Index
