50-15946-01
Rev. D

T-BERD 310
REMOTE CONTROL
USER'S MANUAL
FOR THE
310-S USER INTERFACE

SEPTEMBER 1999

This manual addresses the T-BERD 310 Remote Control Commands
for use with the T-BERD 310 Communications Analyzer
Revision L-S.XX or earlier software

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1.1 INTRODUCTION

The purpose of the *T-BERD 310 Remote Control User's Manual* is to enable the user to quickly and easily identify remote control commands that are part of the T-BERD 310 Communications Analyzer capabilities. Instructions and applications within this document relate specifically to the *T-BERD 310 User's Manual*, for Revision L-S.XX or earlier software.

During normal operation, the T-BERD 310 can be setup and controlled through either an RS-232-compatible or an IEEE-488-compatible remote control device. The following information describes the remote control capabilities and setup procedures to configure the T-BERD 310 for remote control operation. Table 1-1 lists the interface capabilities available from the T-BERD 310.

Table 1-1. T-BERD 310 Remote Control Capabilities

Function	Capabilities
Remote Interfaces	RS-232-C — female 25-pin D connector. IEEE-488 — parallel connector
Data Rate	RS-232-C — 110, 300, 600, 1200, 2400, 4800, or 9600 b/s. IEEE-488 — 300 words per second.
Character Length	RS-232-C — 7 bits with parity or 8 bits without parity. IEEE-488 — 8 bits.
Line Terminator	RS-232-C — CR, LF, or CRLF. IEEE-488 — CR, LF, or CRLF with EOI.
Flow Control	RS-232-C — DTR/CTS or in-band XON/XOFF supported.
Parity	RS-232-C — ODD, EVEN, or NONE.
Interface Configuration	RS-232-C — DCE. IEEE-488 — addressable.
Start Bits	RS-232-C — 1 bit.
Stop Bits	RS-232-C — 1 bit on transmit, 1 or more on receive.
Column Width	40 or 80.
Timing	RS-232-C — Asynchronous.
Character Format	ASCII character set.

Table 1-2 lists the PRINT auxiliary group parameters used to configure the RS-232-C and IEEE-488 interfaces for remote control operation. The presentation of the T-BERD 310 test result, front panel controls, and alarm and status message printouts sent to the remote control device are described in the *T-BERD 310 User's Manual*.

Table 1-2. PRINT Auxiliary Group Parameters

Auxiliary Function	Definition	Selections
BAUD RATE	RS-232 Interface Baud Rate	110, 300, 600, 1200, 2400, 4800, or 9600.
PARITY[1]	RS-232 Interface Parity	EVEN, ODD, or NONE.
TERMINATOR[2]	Printout Line Terminator	CR, LF, or CRLF.
WIDTH	Printout Line Width	40 or 80.
PORT	Printer/Remote Control Interface Port Selection	RS-232, IEEE-488/bus 0 to 30, or 488 T/O.

1. Word length is controlled by the parity selection, 7 bits for odd or even parity and 8 bits for no parity.
2. When entering remote control operation, the line terminator defaults to CRLF.

1.2 RS-232 REMOTE CONTROL OPERATION

The RS-232-C interface enables the user to remotely control the T-BERD 310 from either a dumb terminal or a computer. The RS-232 interface is a 25-pin female D connector located on the side panel. It is configured to function as data communication equipment (DCE) and it can be connected directly to data terminal equipment (DTE). Connecting to another DCE is possible with the use of an adaptor cable. Auxiliary functions select the baud rate, parity error detection format, and line terminator. Refer to the *T-BERD 310 User's Manual* for a description of the RS-232 connector pin assignments.

1.2.1 Setup for Remote Control Operation

Before entering remote control through the RS-232 interface, the baud rate, line termination character, and parity must be set to ensure the T-BERD 310 is properly configured to communicate with the remote control device. The baud rate and parity can only be configured manually from auxiliary functions or the autobaud function. The following information describes how to setup the T-BERD 310 for manual or autobaud operation.

1.2.1.1 Manual Setup for Remote Control Operation

Use the following procedure to manually set the baud rate and parity from the front panel to match the settings of the intended remote control device.

1. **Press AUX switch**
   Select the auxiliary functions.

2. **Press MODE switch**
   Select the PRINT auxiliary group.

3. **Press PATTERN switch to select PRINT-BAUD RATE auxiliary function**
   Press the **RESULTS I Results** switch to select one of the following baud rates: 110, 300, 600, 1200, 2400 (default), 4800, or 9600.

4. **Press PATTERN switch to select PRINT-PARITY auxiliary function**
   Press the **RESULTS I Results** switch to select one of the following parity types: ODD, EVEN, or NONE. When setting PARITY to ODD or EVEN, the number of data bits equals seven; when PARITY is set to NONE, the number of data bits equals eight.

5. **Press PATTERN switch to select PRINT-TERMINATOR auxiliary function**
   Press the **RESULTS I Results** switch to select one of the following line termination characters: CR, LF, or CRLF.

6. **Press AUX switch**
   Leave the auxiliary functions.

7. **Terminal or remote operation**
   For terminal mode operation, at the remote device, press the < . > (period) key and <RETURN>, or enter the **TERminal** command and <RETURN>. The following messages appear when the T-BERD 310 and remote control device enter terminal mode. The prompt (>) indicates the T-BERD 310 is ready to receive commands.

```
Terminal mode activated.
Enter "HELP" or "?" followed by <RETURN> for help.
>
```

   For remote mode operation, at the remote device, press the < , > (comma) key and <RETURN>, or enter the **REMote** command and <RETURN>. The following message appears when the T-BERD 310 and remote control device enter the remote mode. Commands are entered in the dark; character echo is disabled.

```
Remote control activated, now in control.
```

1.2.1.2 *Autobaud Setup for Terminal or Remote Control Operation*

The autobaud function allows baud rate, number of data bits, and parity values to be automatically configured. The autobaud function offers possible baud rates of 300, 600, 1200, 2400, 4800, and 9600 and possible parity settings of even, odd, or none. The number of data bits is determined by the parity setting. To establish communication between the remote control unit and the T-BERD 310 through the autobaud function, perform the following procedure from the remote device.

NOTE

The remote device must be capable of sending a BREAK signal to the T-BERD 310 to use the autobaud feature. The autobaud function must be completed within 30 seconds. If autobaud is not acquired within the 30-second period, the autobaud function is aborted and the message *Autobaud aborted.* is printed to the remote device using the current the communication settings.

1. **Press <BREAK> key once**
   The following message should appear.

```
Autobaud sequence initiated...
Press <BREAK> again, then hold down the <SPACEBAR> to enter autobaud
mode; or press <SPACEBAR> to abort.
```

2. **Press <BREAK> key again, then press <SPACEBAR> once a second until this message appears**

```
Autobaud achieved. Press <ESCAPE> to continue.
```

3. Press <ESCAPE> key once

The following messages appear when the T-BERD 310 and remote control device are ready to enter remote or terminal mode.

```
Character format determined.
New baud rate now in effect.
```

4. Terminal or remote operation

For terminal mode operation, at the remote device, press the < . > (period) key or enter the **TERminal** command and <RETURN>. The following messages appear when the T-BERD 310 and remote control device enter terminal mode. The prompt (>) indicates the T-BERD 310 is ready to receive commands.

```
Terminal mode activated.
Enter "HELP" or "?" followed by <RETURN> for help.
>
```

For remote mode, at the remote device, press the < , > (comma) key or enter the **REMote** command and <RETURN>. The following message appears when the T-BERD 310 and remote control device enter remote mode. Commands are entered in the dark; character echo is disabled.

```
Remote control activated, now in control.
```

1.2.2 Remote Control Modes

When operating in remote control through the RS-232 interface, the T-BERD 310 functions in either an interactive terminal mode or non-interactive remote mode.

The interactive terminal mode is used with either a dumb terminal or an interactive communications package on a personal computer emulating a dumb terminal that is connected directly to the T-BERD 310. The terminal mode (1) provides a prompt string whenever the T-BERD 310 is ready to receive a command, (2) echoes all characters back to the remote device as they are keyed in, and (3) enables access to the test results from the front panel. After entering the terminal mode, the **LOCal** command returns control of the T-BERD 310 to the front panel. The message *232 REMOTE CONTROL* flashes in the MODE/PATTERN window while the T-BERD 310 is in terminal mode.

The non-interactive remote mode allows direct interaction between the remote computer and the T-BERD 310 without interruption from the T-BERD 310. The remote mode does *not* (1) provide a prompt character, (2) echo characters back, and (3) provide front panel access. Commands are entered in the dark and automatic printouts and error messages are sent to the remote computer only upon request. The message *232 REMOTE CONTROL* flashes in the MODE/PATTERN window while the T-BERD 310 is in remote mode. After entering the remote mode, the **LOCal** command returns control of the T-BERD 310 to the front panel.

1.2.3 Prompts in Terminal Mode

Three possible prompts can be generated by the T-BERD 310 in the terminal mode: default greater than sign (>), user-defined, and printer-hold plus sign (+) prompts. The default ">" prompt appears when the T-BERD 310 is first placed in terminal mode. A user-defined prompt (up to 32 characters) can be created to replace the default prompt.

The user-defined prompt is created by sending the **PROmpt STRing <prompt string>** command (where **<prompt string>** are ASCII characters). This can also be used to create a prompt that identifies the T-BERD 310 attached to the terminal. A user-defined prompt is saved when the T-BERD 310 power is turned OFF.

The printer-hold "+" prompt replaces the previous prompt in response to the **HOLd** command. The "+" prompt indicates that the print buffer is not sending printouts to the terminal. Sending the **RELease** command releases the printer hold, which allows printouts to be generated again and returns the prompt to its pre-hold state.

1.2.4 Terminating Terminal or Remote Control Operation

To end any remote operation and return the T-BERD 310 to local control, send either **LOCal** or "*!*" followed by a <RETURN>. The T-BERD 310 front panel controls are returned to local control and the *232 REMOTE CONTROL* message is no longer displayed.

NOTE

Turning the power OFF also aborts a remote operating mode.

1.3 IEEE-488 REMOTE CONTROL OPERATION

The 310-6 IEEE-488 Option interface allows the T-BERD 310 to be connected to an IEEE-488 bus. The IEEE-488 interface and operating mode (addressable or talk-only) is selected through the PRINT-PORT auxiliary function.

In the addressable mode, the T-BERD 310 IEEE-488 bus address (a value between 0 and 30) must be set in the PRINT-PORT auxiliary function. The T-BERD 310 address allows the controller to designate the T-BERD 310 as a "listen" (receive remote commands) or "talk" (send data) device. The IEEE-488 interface connection is located on the T-BERD 310 side panel above the RS-232-C interface connector. Refer to the *T-BERD 310 User's Manual* for information on the IEEE-488 connector pin assignments.

1.3.1 Remote Control Setup Procedure

The following setup procedure applies to configuring the IEEE-488 interface for remote control operation.

1. **Press AUX switch**
   Select the auxiliary functions.

2. **Press MODE switch**
   Select the PRINT auxiliary group.

3. **Press PATTERN switch**
   Select the PRINT-PORT auxiliary function.

4. **Press RESULTS I Results switch**
   Select one of the following port configurations:

   488 T/O — Refer to the *T-BERD 310 User's Manual* for the IEEE-488 talk-only printer operation.
   IEEE-488 — Continue with the IEEE-488 addressable setup procedure.

5. **Press RESULTS II Results switch**
   Select the bus address from 0 to 30. The address should be unique to this instrument.

6. **Press PATTERN switch to select PRINT-TERMINATOR auxiliary function**
   Select one of the following line termination characters: CR, LF, or CRLF.

7. **Press AUX switch**
   Leave the auxiliary functions.

1.3.2 Remote Control Mode

Prior knowledge of IEEE-488 controller programming and operation is recommended before attempting to operate the T-BERD 310 through the IEEE-488 connector. The following sections describe how to set up and operate the T-BERD 310 from an IEEE-488 controller.

In the IEEE-488 addressable remote control mode, the T-BERD 310 bus address must be set to a value between 0 and 30. This address is used by the controller to determine which device is being addressed.

Unlike an RS-232 connection, the IEEE-488 bus requires that one device on the bus act as a controller. All other devices connected to the bus must act as slaves to that controller. The T-BERD 310 can only act as a slave; another intelligent device must act as the bus controller.

NOTE

When in remote control mode, the **DISPLAY HOLD** switch enables the user to return to Local mode. The action of returning to Local mode causes the key to blink.

The following steps are typically performed during a remote control input sequence.

- The controller device addresses the T-BERD 310.
- The controller sends a valid remote control command.
- The controller sends a valid remote control line terminator.
- When the line terminator is received, the T-BERD 310 analyzes the remote command and performs the appropriate action.

When the characters are received, the ASCII null characters are discarded and the remaining characters are saved until the line terminator is received. Upon receipt of the line terminator, the received command is analyzed. If no error is detected, the T-BERD 310 performs the appropriate action and then prepares to receive another command. However, if an error is detected in the command string, an SRQ is asserted and the Least Significant Bit (LSB) of the serial poll register is set. If a response is appropriate, the Most Significant Bit (MSB) is set and an SRQ is asserted.

The line terminator transmitted from the T-BERD 310 can be set to carriage return (CR), linefeed (LF), or both (CRLF). Regardless of the mode or line terminator selection, the EOI signal is asserted with the final character of an entire output.

1.3.3 IEEE-488 Programming Hints

Before attempting to read data from a device, it is necessary to know if the device has data to send. The controller has two ways of determining that the T-BERD 310 has data: (1) Bit 7 of the serial poll register (DAV) is set whenever a line of data is available and (2) the T-BERD 310 sends an SRQ to the IEEE-488 controller whenever it has data available. An SRQ can also occur when any remote control error is detected.

The statement used to read data from the T-BERD 310 must be able to terminate the read operation when it encounters the last character of the line. The most foolproof way to detect the last character is by sensing the EOI signal.

1.3.4 Remote Control Commands

The following remote control commands *cannot* be used when controlling the T-BERD 310 from an IEEE-488 controller. An error message may occur when attempting to use any of these commands.

ECHo	Echo in Terminal Mode
LOCal	Return Control to the Front Panel
PROmpt	Prompts in Terminal Mode

1.4 T-BERD 310 REMOTE CONTROL COMMANDS

This section presents the formats and entry sequence for remote control commands, as well as an alphabetical list of all the remote control commands. The T-BERD 310 remote control commands are described in Section 2 in alphabetical order.

Three primary command types are available with the T-BERD 310 remote control facility:

- Switch commands set the T-BERD 310 front-panel switches.
- Auxiliary commands set the T-BERD 310 auxiliary functions.
- Control commands pertain exclusively to remote control operation.

1.4.1 Command Formats and Entry Sequence

The general format for any remote control command is:

command_name or
command_name [parameter]

The **command_name** entry specifies the name of the executed command. The **command_name** may be abbreviated to the first three characters (e.g., **TERminal**), however some **command_names** require additional characters (e.g., **RESTART**). Multiple word **command_names** require a space between each word.

The **[parameter]** entry specifies any parameter(s) associated with the command. A **[parameter]** must be separated from the **command_name** by at least one space. The **[parameter]** may be abbreviated to the first three characters (e.g., **TRAnsmit TIMing [EXTernal]**), however some **[parameters]** require additional characters (e.g., **DS1 LP CODe [FAC1]** or **PATTern [USER1]**). Multiple word **[parameters]** require a space between each word. The on-line **HELP <command>** page displays the required characters in UPPERCASE and the optional characters in lowercase.

NOTE

The DS1/DS0 Analyzer Option commands require an "@" character to precede each command to distinguish the command from the T-BERD 310 mainframe commands. Refer to Section 1.5 for additional information.

Most remote control commands can be used to select a new command state or to display the status of the command. To select a new command state, enter both the **command_name [parameter]** string on the command line. To display the current state of a command, enter the **command_name** only or follow it with a space and a question mark (**?**). Note, however, that some commands (e.g., **CLS**) are "executable only" and have no current or changeable state. The **command_name [parameter]** string should always be followed by a <RETURN>.

Error messages are generated by improper command and parameter syntax, parameters out-of-range, or improper configurations. Error messages are formatted with the prefix "*****ERROR**" or "*****WARNING**", the message indicating the problem, and in some cases the improperly entered command or parameter. Error messages are available in all modes. The error and warning messages are described in Appendix A.

Remote control commands are divided into three basic groups: switch commands, auxiliary function commands, and remote control-only commands. The command groups are described in the following sections.

1.4.2 Front-Panel Switch Commands

The T-BERD 310 switch commands control the functions normally associated with the front panel switches. Mnemonics represent the first three characters of the switch name or switch position as it appears on the front panel. Table 1-3 lists the switch commands that apply to the mainframe switches. The brackets ([ ]) indicate the availability of associated parameters. The parameters associated with each command are described in Section 2.2.

Table 1-3. Front-Panel Switch Commands

Command	Switch Name	Description
ATM HEC ERRor INSert [ ]	ERROR INSERT-ATM HEC	Insert ATM HEC errors
DISplay HOLd [ ]	DISPLAY HOLD	Locks out front panel result or LED updates. (When in remote control mode, it enables user to return to local mode. When pressed, the key blinks.)
DS1 DROp CHAnnel [ ]	Channel Control DS3-DS1 (Drop)	Select DS1 Channel to be dropped from a DS3 signal.
DS1 INSert CHAnnel [ ]	Channel Control DS3-DS1 (Insert)	Select DS1 Channel to be inserted into a DS3 signal.
DS3 SOUrce [ ]	DS3 SOURCE	Specify EXT or SONET as the source of the DS3 signal to analyze.
ERRor INSert BPV	ERROR INSERT-BPV	Insert DS3 BPV errors.
ERRor INSert FRAme	ERROR INSERT-FRAME	Insert DS3 Frame errors.
ERRor INSert LOGic	ERROR INSERT-LOGIC	Insert DS3 Logic bit errors.
HIStory RESet	HISTORY RESET	Reset History SONET, ATM and DS3 LEDs.
MODe [ ]	Setup - DS3 (Mode)	Specify DS3 Framing Mode.
PATTern [ ]	Setup - DS3 (Pattern)	Specify DS3 Pattern type.
RES1 [ ]	RESULTS I	Set front panel results display to a category.
RES2 [ ]	RESULTS II	Set front panel results display to a category.
RESTART	RESTART	Restart a mainframe test.
RESULTS	PRINT RESULTS	Generate Test Results Printout

Table 1-3. Front-Panel Switch Commands (Continued)

Command	Switch Name	Description
SONet ALArm [ ]	ALARM INSERT	Insert a SONET Alarm.
SONet DROp [ ]	Setup - SONET RX (Payload)	Specify a SONET Payload type to receive.
SONet DS1 CHAnnel RX[ ]	Channel Control - STS-VT (Drop)	Specify a VT1.5 channel to analyze in the selected STS-1.
SONet DS1 CHAnnel TX[ ]	Channel Control - STS-VT (Insert)	Specify a VT1.5 channel to insert in the selected STS-1.
SONet ERRor INSert	ERROR INSERT-SONET	Insert a SONET error.
SONet INPut	SETUP - SONET RX (Rate)	Specify a SONET rate to receive.
SONet INSert	SETUP - SONET TX (Payload)	Specify a SONET payload type to transmit.
SONet OUTput	SETUP - SONET TX (Rate)	Specify a SONET rate to transmit.
SONet STS ID RX	Channel Control SONET-STS (Drop)	Specify a SONET STS-1 channel to receive.
SONet STS ID TX	Channel Control SONET-STS (Insert)	Specify a SONET STS-1 channel to insert.
SONet TIMing [ ]	SONET TRANSMIT TIMING	Specify a timing source to transmit a SONET signal.
TRAnsmit TIMing [ ]	DS3 TRANSMIT TIMING	Specify a timing source to transmit a DS3 signal.

1.4.3 Auxiliary Function Commands

The T-BERD 310 auxiliary function commands set the parameters of the auxiliary functions. Table 1-4 lists the auxiliary function commands that apply to the mainframe auxiliary functions. The brackets ([ ]) indicate the availability of associated parameters. The parameters associated with each command are described in Section 2.2.

Table 1-4. Auxiliary Function Commands

Command	Auxiliary Function Name	Description
ATM CELl BANdwidth [ ]	ATM TX-CELL BANDWDTH	Select the transmitted ATM cell test profile bandwidth.
ATM CORrelation [ ]	ATM TX-CORRELATION	Transmitted ATM Correlation Tag control.
ATM HEC ERRor INSert [ ]	ATM TX-HEC ERR INS	Transmitted ATM Header Error Control Error Insert control.
ATM HEC ERRor RATe [ ]	ATM TX-HEC ERR RATE	Transmitted ATM Header Error Control Error Rate.
ATM OAM FLOw [ ]	ATM TX-OAM FLOW	Transmitted ATM OAM Flow control.
ATM OAM INSert [ ]	ATM TX-OAM INSERT	Transmitted ATM OAM Insert control.
ATM PEAk BANdwidth [ ]	ATM TX-PEAK BANDWDTH	Select the transmitted ATM cell test profile peak bandwidth.
ATM PEAk DURation [ ]	ATM TX-PEAK DURATION	Transmitted ATM cell test profile peak duration.
ATM RX BANdwidth PERiod [ ]	ATM RX-BW PERIOD	Select the received ATM cell test profile bandwidth.
ATM RX NETwork INTerface [ ]	ATM RX-NETWORK I/F, Select	Select the received ATM network interface.
ATM RX PREview	ATM RX-PREVIEW	Received ATM cell test profile preview selection.
ATM RX PROfile [ ]	ATM RX-PROFILE P1	Transmitted ATM cell test profile control.
ATM RX SCRamble [ ]	ATM RX-NETWORK I/F, Scramble	Receiver 43-Bit Cell Payload Descrambler Control.
ATM RX TESt MASk [ ]	ATM RX-TEST MASK	Received ATM Cell Test Mask Control.
ATM TX NETwork INTerface [ ]	ATM TX-NETWORK I/F, Select	Transmitted ATM network interface selection.

Table 1-4. Auxiliary Function Commands (Continued)

Command	Auxiliary Function Name	Description
ATM TX PROfile [ ]	ATM TX-PROFILE P1	Transmitted ATM cell test profile control.
ATM TX SCRamble [ ]	ATM TX-NETWORK I/F, Scramble	Transmitter 43-Bit Cell Payload Scrambler control.
ATM TX TESt PROfile [ ]	ATM TX-TEST PROFILE	Transmitted ATM cell test profile selection.
BEEp CRIteria [ ]	MISC-BEEP CRI	Configure the automatic beep on selected events.
BLUe SIGnal CRIteria [ ]	MISC-BLU SIG CRI	Select the blue signal criteria for 1010 or Stuck C-Bit algorithms.
CONtrols [ ]	CONTROLS	Generate a Mainframe Controls printout.
DS1 BITs CLK [ ]	MISC-DS1 BITS CLK	Select an input termination setting for the BITS clock input jack; term or bridge.
DS1 DROp OUT [ ]	SONET RX-DS1 DROP OUT	Set up the side panel DS1 DROP OUT connection by using a DS1 from SONET or DS3.
DS1 LINecode [ ]	MISC-DS1 LINECODE	Select a DS1 line coding for AMI or B8ZS from the mainframe.
DS1 LP CODe [ ]	MUXED TX-DS1 LP CODE	Sets the DS1 loopback in Muxed DS3 mode to CSU, FAC1, FAC2 or User.
DS1 SIGnaling BITs [ ]	MISC-DS1 SIG BITS	Configure the SONET receiver for pass through or outslot treatment of signaling bits in byte sync mode.
DS1/VT MAP [ ]	MISC-DS1/VT MAP	Configure the SONET DS1 mappings either sequentially, according to Bellcore, or similar to M13 mux equipment.
ERRor THReshold [ ]	ERR RECEIVE-ERROR THR	Sets the error rate threshold for DS3 Severely Errored Seconds.
FEAc ALArms [ ]	MISC-FEAC ALARMS	Generate Far End Alarms in DS3 C-Bit mode.
FEAc LOOp [ ]	MISC-FEAC LOOP	Generate Far End Loop Codes in DS3 C-Bit mode.
FRAme ERRor [ ]	ERR INSERT-FRAME ERROR	Sets the DS3 Frame Error Insert function to 1/M-Frame or 2/M-Frame.
FRaMe LOSs THReshold [ ]	ERR RECEIVE-FRM LOSS THR	Sets the DS3 Frame Loss Threshold at 3 of 15 frames or 6 of 15 frames.
JITter FILter [ ]	JITTER-JIT FILTER	Select a filter to analyze DS3 Jitter, Highband, Wideband or automatically cycle between both filters.
JITter SCAle [ ]	JITTER-JIT SCALE	Select a scale to analyze DS3 Jitter; 20, 5, 2 unit intervals, or automatically select the best scale.
JITter THReshold [ ]	JITTER-JIT THRESH	Select a threshold of incoming jitter after which the jitter result appears in the Summary category.
LCD CONtrast	MISC-LCD CONTRAST	Adjust the contrast of the 310-1 Option (not available on older units).
LOG/bpv BURst [ ]	ERR INSERT-LOG/BPV BUR	Set Logic/BPV Burst Duration.
LOG/bpv RaTe [ ]	ERR INSERT-LOG/BPV RT	Sets the DS3 Logic and BPV Error Insert Rate.
OPTical POWer WAVelength [ ]	OPTICAL TEST-OPTICAL PWR	Select 1310 or 1550 wavelength to calculate Optical Power.
OPTical RETurn LOSs REFerence [ ]	OPTICAL TEST-RTN LOSS TYPE, Store Reference	Return Loss Measurement Set reference.
OPTical RETurn LOSs TYPe [ ]	OPTICAL TEST-RTN LOSS TYPE, Select	Return Loss Measurement Type selection.
OPTical SOUrce [ ]	OPTICAL TEST-OPTICAL SRC	Select 1310 or 1550 wavelength to transmit as a stable source and to calculate Optical Return Loss.

Table 1-4. Auxiliary Function Commands (Continued)

Command	Auxiliary Function Name	Description
ORDerwire [ ]	SONET TX-ORDERWIRE	Select the SONET Orderwire channel to Drop or Insert from Section or Line to the side panel connector.
PARity ERRor RT [ ]	ERR RECEIVE-PAR ERR RT	Sets DS3 Parity Error Calculation for Bit or Block mode.
PATH TRAce [ ]	SONET TX-PATH TRACE	Select a Path Trace message to transmit in the SONET signal.
PATTern LOSs THReshold [ ]	ERR RECEIVE-PAT LOSS THR	Sets the DS3 Pattern Loss Threshold for Fast or Slow.
PGM LPDn [ ]	MUXED TX-PGM LPDN	Programs the User DS1 Loop Down code.
PGM LPUp [ ]	MUXED TX-PGM LPUP	Programs the User DS1 Loop Up code.
PRInt BAUd RATe	PRINT-BAUD RATE	Print RS-232 interface baud rate.
PRInt CUStom [ ]	PRINT-CUSTOM	Configure a custom Results printout.
PRInt EVEnt [ ]	PRINT-EVENT	Set up a print event operation, including timed, errored second, test end, 15 minute, 30 minute.
PRInt FORmat [ ]	PRINT-FORMAT	Select a Test Results printout format, normal, summary or custom.
PRInt GRAph	PRINT-GRAPH	Print a DS3 Pulse Shape graph
PRInt INTerval [ ]	PRINT-INTERVAL	Set a custom print interval in hours:minutes.
PRInt MODe [ ]	PRINT-MODE	Select a printer results mode; Delta or Continuous.
PRInt PARity	PRINT-PARITY	Print RS-232 interface parity
PRInt TERminator [ ]	PRINT-TERMINATOR	Set line termination character: cr, lf or crlf.
PRInt WIDth [ ]	PRINT-WIDTH	Set a printout and display line width of 40 or 80 characters.
PULse MASk [ ]	MISC-PULSE MASK	Select a specification to evaluate the DS3 Pulse Shape against; 1991 ANSI, 1993 ANSI or CCITT.
RECeive INPut	MISC-D53 LEVEL	Configure the DS3 Receive Input setting for DSX, HIGH or LOW.
RESUlts	RESULTS	Generate a Mainframe Results printout.
SET DATe [ ]	TIME-SET DATE	Sets the calendar date.
SET TIMe [ ]	TIME-SET TIME	Set the time of day.
SONet ALArm [ ]	SONET TX-SONET ALARM	SONET Alarm Insertion Select.
SONet DCC [ ]	SONET RX-SONET DCC	Select the SONET DCC to Drop or Insert from Section or Line to the side panel connector.
SONet DROp [ ]	SONET RX-SONET DROP	SONET Dropped Payload Format
SONet DS1 CHAnnel RX [ ]	SONET RX-SONET DS1 CH	SONET DS1 Channel Select
SONet DS1 CHAnnel TX [ ]	SONET TX-SONET INSERT, DS1 Channel	SONET Insert Signal Source, DS1 Channel
SONet ERRor RATe [ ]	SONET TX-SONET ERR RT	Configure a SONET Error Rate.
SONet FRAme ERRor [ ]	SONET TX-SONET ERR RT, Frame Error	SONET Error Rate Select, Frame Error; select the number of SONET Frame Word errors to insert.
SONet INPut [ ]	SONET RX-SONET INPUT	SONET Input Signal Source.
SONet INSert [ ]	SONET TX-SONET INSERT	SONET Insert Signal Source.
SONet OUTput [ ]	SONET TX-SONET OUTPUT	SONET Output Signal Source.
SONet STS ID RX [ ]	SONET RX-SONET INPUT, STS ID	SONET Input Signal Source, STS ID.
SONet STS ID TX [ ]	SONET TX-SONET OUTPUT, STS ID	SONET Output Signal Source, STS ID.
SONet TIMing [ ]	SONET TX-SONET TIMING	SONET Transmit Timing Source.

Table 1-4. Auxiliary Function Commands (Continued)

Command	Auxiliary Function Name	Description
SONet TRAnsmit WAVelength OC-12	SONET TX - TX WAVE-LENGTH, OC-12	Select 1310 or 1550 nm wavelength to transmit for SONET at OC-12.
SONet TRAnsmit WAVelength OC-3	SONET TX - TX WAVE-LENGTH, OC-3	Select 1310 or 1550 nm wavelength to transmit for SONET at OC-1 and OC-3.
SPE POInter [ ]	SONET TX-SPE POINTER	Configure the Path Pointer to increment or decrement.
STS RX LEVel [ ]	SONET RX-STS RX LEVEL	Select an STS-1 receive level as HIGH or DSX.
STS TX LEVel [ ]	SONET TX-STS TX LEVEL	Select a STS-1 Transmit level at HIGH or DSX.
TESt [ ]	TEST LENGTH	Configures a test for timed or continuous operation.
TESt LENgth [ ]	TIME-TEST LENGTH	Configures a test length for a timed test.
TRAnsmit OUTput	MISC-D53 LEVEL	Configure the DS3 Transmit Output setting for DSX, HIGH or LOW.
TX X-Bit [ ]	MISC-TX X-BIT	Configure the transmitted X-Bits as 11, 00 or emulate to automatically send yellow as needed.
USER1 [ ]	MISC-USER1	Program a DS3 user test pattern to transmit.

1.4.4 Remote Control-Only Commands

The T-BERD 310 remote control-only commands have no front panel or auxiliary function equivalent. These commands are used to obtain information from the T-BERD 310 or to modify the remote control/printer protocol. Table 1-5 lists the remote control-only commands. The brackets ([ ]) indicate the availability of associated parameters. The parameters associated with each command are described in Section 2.2.

Table 1-5. Remote Control-Only Commands

Command	Description
ALArms [ ]	Select whether or not alarms are automatically generated by remote on the printer.
ATM LEDs	Generates a report of all ATM Status and Alarm LEDs.
CLEar PRInt BUFfer	Clears the print buffer.
CLS	Clears the remote controlled screen.
DISplay [ ]	Set RESULTS Switches control controls whether or not the local user can scroll results while the unit is under remote control.
ECHo [ ]	Set Terminal Echo Mode.
FIRST POWERUP	Restore T-BERD 310 to factory default settings. However, this command allows the unit to retain prior settings for print device, print baud rate, parity, line terminator, and IEEE-488 address.
HELLO	Generates a report of all installed options and the hardware and software revision codes.
HELP [ ]	Displays on-line Help for any remote control command.
HOLd	Holds all printouts in the print buffer until Release is entered.
LASt ERRor	Prints the last remote control error message sent to the user.
LEDs	Generates a report of all DS3 Status and Alarm LEDs.
LOCAL (/)	Return control to the front panel; gives the local user control over the test set.
PRInt [ ]	Print selected test result.
PROmpt [ ]	Set Terminal Mode prompt.
RELease	Release all printer output.
REMote (,)	Enter Remote Control Mode.
SONet LEDs	Generates a report of all SONET Status and Alarm LEDs.
TERminal (.)	Enter Terminal Mode.

1.4.5 Input Sequence

A remote command consists of an ASCII character string followed by either a CR, LF, or CRLF. When specifying a remote control command, the following rules apply:

- Commands can be entered either in uppercase, lowercase, or mixed case characters.
- Spaces must be inserted between the **command_name(s)** and **[parameter(s)]**.
- Entering a <CTRL> <C> (Control C) or a <CTRL> <X> (Control X) before issuing a <RETURN> cancels the input line. (<CTRL> <C> also aborts all printing.)
- Entering a <CTRL> <H> (Control H) or a <BACKSPACE> erases the last character entered. This is available for the RS-232 interface only.
- Up to 20 previously entered commands can be recalled by using <ESCAPE>. When the number of previously sent commands exceeds 20, the earliest command entries are overwritten. This is available for the RS-232 and IEEE-488 interface.

After receiving a line terminator, the T-BERD 310 analyzes the data in its input buffer. It checks the data for parity, overrun, framing, overflow, and syntax errors as it is received. If any error is detected, the appropriate error message is returned through the interface. If no error is detected, the command is executed and the appropriate response generated.

If the **ECHo** command is enabled, the entered character string is echoed back to the controller. If the **PROmpt** command is enabled, the default prompt (>) or a user-defined prompt is used to indicate that the previous command has been processed and that the T-BERD 310 is ready to accept another command.

NOTE

The **TERminal** command automatically enables **ECHo** and **PROmpt** when entering the terminal mode. With either the **PROmpt** or **ECHo** command enabled, any characters used to cancel a line are echoed to the remote control unit. The prompt and echo features are only applicable for the RS-232 interface.

1.4.6 Output Sequence

The following rules apply for output sequences:

- All remote control output sequences have a higher priority than the print buffer.
- The **HOLd** command suspends the printer output until the **RELease** command is sent. When sending the **HOLd** command and the prompt is ON, the prompt character automatically changes to a "+" to indicate that data is waiting to be printed. After sending the **RELease** command and if the prompt is ON, the default prompt (>) or the user-defined prompt is returned. Note that the remote control output is not affected by **HOLd**.
- <CTRL> <S> suspends all output. Sending a <CTRL> <Q> (Control Q), releases the printer output suspended by the <CTRL> <S>. These control characters only apply for RS-232 controllers.
- Sending a <CTRL> <C> (Control C) clears the entire print buffer.

1.5 DS1/DS0 ANALYZER OPTION REMOTE CONTROL COMMANDS

This section describes the 310-1 DS1/DS0 Analyzer Option remote control commands used to control the DS1/DS0 Analyzer Option from a remote device.

All DS1/DS0 Analyzer Option commands must be preceded with an "@" character to distinguish them from T-BERD 310 mainframe commands. The DS1/DS0 Analyzer Option commands are divided into three categories: front-panel switch commands, auxiliary function commands, and remote control-only commands. The DS1/DS0 Analyzer Option commands are described in alphabetical order in Section 2.3.

When remote control is activated (enter valid command), both the DS1/DS0 Analyzer Option and the T-BERD 310 are placed under remote control. The same applies to exiting remote control. While in remote control, the front-panel switches on both panels are disabled except for the **RESULTS** switches.

1.5.1 Front-Panel Switch Commands

The DS1/DS0 Analyzer Option switch commands control the functions normally associated with the front panel switches. Mnemonics represent the first three characters of the switch name or switch position as it appears on the front panel. The front-panel switch commands are listed alphabetically in Table 1-6.

Table 1-6. Front-Panel Switch Commands

Command	Switch Name	Description
@CODe	CODE	Set DS1 Line Code Type
@CONtrols	PRINT CONTROLS	Generate Controls Printout
@DISplay HOLd [ ]	DISPLAY HOLD	Set Display Hold
@DS0 DROp CHAnnel [ ]	DS0 DROP CHANNEL	Set Dropped DS0 Channel
@DS1 SOUrce [ ]	DS1 SOURCE	Set DS1 Input Source
@ERRor INSert BPV [ ]	BPV ERROR INSERT	Execute BPV Insertion
@ERRor INSert LOGic [ ]	LOGIC ERROR INSERT	Execute Logic Error Insertion
@HIStory RESet	HISTORY RESET	Clear History Alarm LEDs
@LOOp DOWn [ ]	LOOP DOWN	Generate Loop-Down Code
@LOOp UP [ ]	LOOP UP	Generate Loop-Up Code
@MODe [ ]	MODE	Set Transmit and Receive Operating Mode
@PATtern [ ]	PATTERN	Set Data Pattern
@PRInt RESults	PRINT RESULTS	Generate Test Results Printout
@RECeive INPut [ ]	RECEIVE INPUT	Set DS1 Receive Input Level
@RES1 [ ] or @RES2 [ ]	RESULTS I or II	Result Display I/II Control
@RESTART	RESTART	Initiate Test Restart
@RESUlts	PRINT RESULTS	Generate Test Results Printout
@TRAnsmit TIMing [ ]	DS3 TRANSMIT TIMING	Set DS1 Transmit Timing Source

1.5.2 Auxiliary Function Commands

The DS1/DS0 Analyzer Option auxiliary function commands set the parameters of the auxiliary functions. The auxiliary function commands are listed alphabetically in Table 1-7.

Table 1-7. Auxiliary Function Commands

Command	AUX Name	Description
@CHAnnel FMT [1]	AUX-CHAN FMT, Format	Channel Format Select
@CONTIguous [1]	AUX-CONTIg	FT1 Contiguous Channel Select
@DATaport [ ]	AUX-DATAPORT	Set DATAPORT Output
@ESF LOOp [ ] [1]	AUX-ESF LOOP	ESF Loop Code Select
@FRActional-t1 TYPe [1]	AUX-CHAN FMT, 64xN	FT1 Channel Format Select
@LOOp CODe [ ]	AUX-LP CODE	Set DS1 Loop Code Type
@NON CONtiguous [1]	AUX-N-CONTIG	FT1 Non-Contiguous Channel Select
@PGM LPDn [ ]	AUX-PGM LPDN	Set Programmable Loop-Down Code
@PGM LPUp [ ]	AUX-PGM LPUP	Set Programmable Loop-Up Code
@PRInt CUStom [ ]	AUX-CUSTOM	Set Custom Results Printout
@PRM EMUlate [ ] [1]	AUX-PRM	Set PRM Transmission Control
@PRM RECeive [ ] [1]	AUX-PRM	PRM Results Analysis Control
@SCAN TRIgger [ ]	AUX-SCAN TRIG	Set Triggered DS1 Scan Mode Criteria
@SLIp REFerence [ ] [1]	AUX-SLIP REF	DS1 Timing Slip Reference Source
@USER1 [ ]	AUX-USER1	Set User-Programmable Test Pattern

1. Requires the 310-9B option.

1.5.3 Remote Control-Only Commands

The DS1/DS0 Analyzer Option remote control-only commands have no front panel or auxiliary function equivalent. These commands are used to obtain information from the DS1/DS0 Analyzer Option or to modify the remote control/printer protocol. The remote control-only commands are listed alphabetically in Table 1-8.

Table 1-8. Remote Control-Only Commands

Command	Description
@HELP	Display On-Line Help
@LEDs	Print State of Status and Alarm LEDs
@PRInt [ ]	Print Selected Test Result

1.5.4 Error Messages

A command entered without the "@" character can be interpreted as a T-BERD 310 command or as invalid. If an invalid command is entered, the T-BERD 310/310-1 sends an error message indicating the error. Refer to Appendix A for additional error messages.

SECTION 2
REMOTE CONTROL COMMANDS

2.1 INTRODUCTION

This appendix describes the T-BERD 310 mainframe and DS1/DS0 Analyzer Option remote control commands in alphabetical order. Unless otherwise indicated, the remote control commands apply to the T-BERD 310 mainframe. Remote control commands that require an option to be installed are identified by the option number as follows:

- 310-1 — DS1/DS0 Analyzer Option
- 310-2 — E1 Drop Option
- 310-3 — DS1 Insert/Secondary DS3 Option
- 310-5 — DS3 Jitter Option
- 310-9B — Enhanced DS1 Testing Option
- 310-10 — G.821 Results Option
- 310-12-1300 — SONET OC-12/12c Transmit/Receive Option
- 310-12-DUAL — SONET OC-12/12c Dual Wavelength Option
- 310-13R — SONET STS-1 Receive Option
- 310-13T — SONET STS-1 Transmit Option
- 310-14R — SONET STS-1, OC-1/3/3c Receive Option
- 310-14T - 1300 — SONET STS-1, OC-1/3/3c Transmit Option
- 310-14T-DUAL — SONET OC-1/OC-3 Dual Wavelength Option
- 310-15 — OC-3c ATM Analysis Option
- 310-16 — Optical Media Test Option
- 310-17A — DS1/DS3 ATM Analysis Option
- 310-18 — Manufacturing Software Option
- 310-20 — OC-12c ATM Analysis Option
- 310-21- 1500 — SONET OC-48/48c Transmit/Receive Option
- 310-21- DUAL — SONET OC-48/48c Transmit/Receive Option
- 310-22 — DWDM Channel Monitor Option

2.2 T-BERD 310 MAINFRAME COMMANDS

The following remote control commands apply to the T-BERD 310 mainframe controls, indicators, connections, displays, and auxiliary functions.

ALArms — Set Alarm Message Printout Control

ALA ?

Print current alarm message printout status.

ALA ON

Enable alarm message printout control. Alarm, status, and note messages are printed when a print event is selected. When the **PRInt EVEnt** command is **OFF**, the **ALArms ON** command is not functional.

ALA OFF

Disable alarm message printout control. Alarm, status, and note messages are not printed when a print event is selected.

ATM CELl BANdwidth — Transmitted ATM Primary Cell Profile Bandwidth Select

ATM CEL BAN ?

Print current primary profile cell bandwidth: test, background, and idle. This command requires the 310-15 option, 310-17A, or 310-20 option. The command is only valid when the test set is configured to transmit ATM cells.

ATM CEL BAN <test,background>

Set primary test and background profile cell bandwidth. This command requires the 310-15 option, 310-17A, or 310-20 option. Enter **<test,background>** where test and background parameters go from 0% to 100% in 0.1% steps for OC-3c and OC-12c and 0.4% steps for DS1 and DS3. The command is only valid when the test set is configured to transmit ATM cells.

See also: **ATM RX BANdwidth PERiod, ATM PEAk BANdwidth, ATM PEAk DURation,** and **SONet INPut**

ATM CORrelation — Transmitted ATM Correlation Tag Control

ATM COR ?

Print transmitted correlation tag. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to transmit ATM cells.

ATM COR xxxx

Set correlation tag from 0000 to FFFF. **x** equals 0 to F. This allows multiple T-BERD 310s to be differentiated from one another. The correlation tag is two bytes long. The entered value is transmitted from left to right.

See also: **SONet INPut**

ATM HEC ERRor INSert — Transmitted ATM Header Error Control Error Insert Control

ATM HEC ERR INS ?

Print current HEC error rate type and insertion rate. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to transmit ATM cells.

ATM HEC ERR INS [NON | COR] BUR

Insert a non-correctable or correctable burst of HEC errors. Set burst duration with the **ATM HEC ERRor RATe BURst** command and error rate with the **ATM HEC ERRor RATe x** command.

ATM HEC ERR INS [NON | COR] OFF

Disable inserted non-correctable or correctable HEC errors.

ATM HEC ERR INS [NON | COR] RAT

Insert non-correctable or correctable HEC errors at specified error rate. Set error rate with the **ATM HEC ERRor RATe** command.

See also: **ATM HEC ERRor RATe** and **SONet INPut**

ATM HEC ERRor RATe — Transmitted ATM Header Error Control Error Rate

ATM HEC ERR RAT ?

Print current HEC error rate and the number of consecutive cells affected by the inserted errors. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to transmit ATM cells.

ATM HEC ERR RAT <rate,burst>

Set HEC error rate and burst rate. Enter the **<rate,xx>** parameter from **2** to **9** or **C** (continuous). Entering the **C** inserts a bit error in every transmitted cell. Enter the **<xx,burst>** parameter from **1** to **10** (no leading zero). Insert HEC errors with the **ATM HEC ERRor INSert** command.

See also: **ATM HEC ERRor INSert** and **SONet INPut**

ATM LEDS — Print State Of ATM LEDs

ATM LEDS

This command prints the state of the ATM LEDs, and information on the state of other ATM events reported in the display of the unit. Below is an example of the type of printout:

```
> atm leds

 ______________________________________________________________________
|             - alarms -             |            - status -           |
|                                    |                                 |
|    OFF  OFF  ocd                   |          OFF cell sync          |
|    OFF  OFF  ais                   |_________________________________|
|    OFF  OFF  rdi                   |
|    OFF  OFF  lcd                   |
|    OFF  OFF  lcd fail              |
|    OFF  OFF  plcp rdi              |
|    OFF  OFF  all idle cells        |
|    OFF  OFF  no masked cells       |
|     |                              |
|     |______  history  ____________|
|____________________________________|
```

ATM OAM FLOw — Transmitted ATM OA&M Flow Control

ATM OAM FLO ?

Print current OA&M format and signal function for the alarm or loopback selected from the **ATM OAM INSert** command (select signal first). This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to transmit ATM cells.

ATM OAM FLO [VPC | VCC] END

Send OA&M signal for a virtual path connection (VPC) or a virtual channel connection (VCC) in an end-to-end test.

ATM OAM FLO [VPC | VCC] SEG

Send OA&M signal for a virtual path connection (VPC) or a virtual channel connection (VCC) in a segmented test.

See also: **ATM OAM INSert** and **SONet INPut**

ATM OAM INSert — Transmitted ATM OA&M Insert Control

ATM OAM INS ?

Print current OA&M fault management signal. Refer to the **ATM OAM FLOw** command to set signal format and function. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to transmit ATM cells.

ATM OAM INS AIS

Send OA&M AIS signal.

ATM OAM INS LOO

Send OA&M loopback cells.

ATM OAM INS OFF

Disable OA&M signal.

ATM OAM INS RDI

Send OA&M RDI signal.

See also: **ATM OAM FLOw** and **SONet INPut**

ATM PEAk BANdwidth — Transmitted ATM Cell Test Profile Peak Bandwidth Select

ATM PEA BAN

Print current percentage of burstiness for the primary test profile peak bandwidth. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to transmit ATM cells.

ATM PEA BAN xx

Set the percentage of burstiness for the primary test profile peak bandwidth. xx equals 0% to 100% in 0.1% steps for OC-3c and OC-12c, and 0.4% steps for DS1 and DS3.

See also: **ATM CELl BANdwidth, ATM RX BANdwidth PERiod, ATM PEAk DURation,** and **SONet INPut**

ATM PEAk DURation — Transmitted ATM Cell Test Profile Peak Duration Select

ATM PEA DUR ?

Print current peak pulse duration for the peak bandwidth. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to transmit ATM cells.

ATM PEA DUR x.x

Set and send peak pulse duration for the peak bandwidth. **x.x** equals 0.1 to 9.9 seconds in 0.1 second steps. The peak pulse duration is sent when the duration is entered.

ATM PEA DUR STO

Stop peak pulse duration.

See also: **ATM CELl BANdwidth, ATM RX BANdwidth PERiod, ATM PEAk BANdwidth,** and **SONet INPut**

ATM PROfile BASe — Set Test Profile Programming Mode

ATM PRO BAS ?

Print the current profile programming mode. This command sets the decimal or hexadecimal ATM VPI/VCI addressing to be entered through the **ATM RX PROfile**, **ATM TX PROfile**, and **ATM RX TESt MASk** commands. This command requires the 310-15, 310-17A, or 310-20 options.

ATM PRO BAS DEC

Set programming mode for decimal format (00000 to 65535).

ATM PRO BAS HEX

Set programming mode for hexadecimal format (0000 to FFFF).

NOTE

Changing the programming mode causes a test restart. Changing from one mode to the other automatically converts values for the selected mode; although, when an X is used, the entire field defaults to X.

ATM PLCp ERRor INSert — DS1/DS3 ATM PLCP Error Insert Control

ATM PLC ERR INS ?

Prints current PLCP error insert control status. This command sets or prints either the DS1 or DS3 ATM Physical Layer Convergence Protocol (PLCP) error insert control. The command is only valid when the **MODe** command is set to **M13** or **C-Bit** and the **ATM RATe SELect** command is set to **DS3,** or when the **DS1 Framing** (see **@ MODe** command) is set to **T1 D4, SLC,** or **ESF** and the **ATM RATe SELect** command is set to **DS1.** This command requires the 310-17A option.

ATM PLC ERR INS SENd

Send configured ATM PLCP errors.

ATM PLC ERR INS STOp

Stop configured ATM PLCP errors.

See also: **ATM PLCp ERRor TYPe, ATM PLCp ERRor RATe, ATM RATe SELect,** and **PATtern.**

ATM PLCp ERRor RATe — DS1/DS3 ATM PLCP Error Rate Control

ATM PLC ERR RAT ?

Prints current PLCP error insert control status. This command sets or prints either the DS1 or DS3 ATM Physical Layer Convergence Protocol (PLCP) error rate control. The command is only valid when the **MODe** command is set to **M13** or **C-Bit** and the **ATM RATe SELect** command is set to **DS3,** or when the **DS1 Framing** (see **@ MODe** command) is set to **T1 D4, SLC,** or **ESF** and the **ATM RATe SELect** command is set to **DS1.** This command requires the 310-17A option.

ATM PLC ERR RAT [3 to 9 or SIN]

Set PLCP error rate from 3 to 9 or single.

See also: **ATM PLCp ERRor TYPe, ATM PLCp ERRor INSert, ATM RATe SELect,** and **PATtern.**

ATM PLCp ERRor TYPe — DS1/DS3 ATM PLCP Error Type Control

ATM PLC ERR TYP ?

Print current PLCP error type control status. This command sets or prints either the DS1 or DS3 ATM Physical Layer Convergence Protocol (PLCP) error type control. The command is only valid when the **MODe** command is set to **M13** or **C-Bit** and the **ATM RATe SELect** command is set to **DS3**, or when the **DS1 Framing** (see **@ MODe** command) is set to **T1 D4, SLC,** or **ESF** and the **ATM RATe SELect** command is set to **DS1.** This command requires the 310-17A option.

ATM PLC ERR TYP [BIP | RDI]

Set PLCP error type to either BIP or RDI.

See also: **ATM PLCp ERRor RATe, ATM PLCp ERRor INSert, ATM RATe SELect,** and **PATtern**.

ATM RATe SELect — ATM Rate Selection Control

ATM RAT SEL ?

Prints current rate selection control status. This command sets or prints the ATM rate selection control. This command requires more than one of the following options to be installed: the 310-15, 310-17A, or 310-20 options.

ATM RAT SEL DS1

Set rate for DS1.

ATM RAT SEL DS3

Set rate for DS3.

ATM RAT SEL OC3c

Set rate for OC-3c.

ATM RAT SEL OC12c

Set rate for OC-12c.

ATM RX BANdwidth PERiod — Received ATM Cell Test Profile Bandwidth Select

ATM RX BAN PER ?

Print current period for bandwidth measurements being taken. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to receive ATM cells.

ATM RX BAN PER x.x

Set period to measure bandwidth from 0.2 seconds to 9.9 seconds in 0.1 second steps.

See also: **ATM CELl BANdwidth, ATM PEAk BANdwidth, ATM PEAk DURation,** and **SONet DROp**

ATM RX NETwork INTerface — Received ATM Network Interface Select

ATM RX NET INT ?

Print current received ATM network interface being tested. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to receive ATM cells.

ATM RX NET INT NNI

Configure ATM receiver to receive the network node interface or network-to-network interface cell format.

ATM RX NET INT UNI

Configure ATM receiver to receive the user network interface cell format.

See also: **ATM RX SCRamble, ATM TX SCRamble, ATM TX NETwork INTerface,** and **SONet DROp**

ATM RX PREview — Received ATM Cell Test Profile Preview Select

ATM RX PRE ?

Print current ATM preview status. An initial indication of the bandwidth usage and cell type can be monitored through the MASK CELL BW, HEC ERRORS, and ATM Status test results. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to receive ATM cells.

ATM RX PRE VPI NEX

Increment VPI to the next detected higher VPI.

ATM RX PRE VPI PRE

Decrement VPI to the next detected lower VPI.

ATM RX PRE VCI NEX

Increment VCI to the next detected higher VCI.

ATM RX PRE VCI PRE

Decrement VPI/VCI to the next detected lower VCI.

See also: **ATM TX TESt PROfile, ATM TX PROfile, ATM RX PROfile, SONet INSert,** and **SONet DROp**

ATM RX PROfile — Received ATM Cell Test Profile Control

ATM RX PRO Pn ?

Print current ATM test profile where **Pn** equals **P1**, **P2**, **P3**, **P4,** or **SEArch**. This command sets or prints the ATM receiver for up to four specific test cell profiles (n = 1 to 4). This enables the ATM cell header fields — GFC, VPI, VCI, PTI, and CLP — to be preprogrammed four different ways with any value. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to transmit ATM cells.

NOTE

SEArch allows users to program the parameter values of the search mask.

ATM RX PRO Pn <mode, gfc/vpi, vpi, vci, pti, clp>

<mode> — Set the programming mode for the ATM address for either **hex** or **dec**. Selecting the specific mode requires the address to be entered in that format; hexadecimal or decimal.

<gfc/vpi> — Set the value for the GFC/VPI fields. For UNI cell format, the GFC range is 0 to F (hex), 00 to 15 (dec), or X. For NNI cell format, this field is used to enter the most significant four bits of the VPI value.

Separate the mode with a space and the other fields with a comma as follows:
hex x,xx,xxxx,x,x or dec x,xx,xxxx,x,x. Select **X** when you don't care what value is received.

<vpi> — Set value for the VPI field. For UNI cell format, VPI range is 00 to FF (hex), 000 to 255 (dec), or XXX (256 virtual paths). For NNI cell format, this field contains the least significant 8 bits of the VPI value. The combined GFC/VPI and VPI fields range is 000 to FFF (hex), 0000 to 4096 (dec), or XXXX (4097 virtual paths).

<vci> — Set the value for the VCI field. VCI range is 0000 to FFFF (hex), 00000 to 65535 (dec), or X (65,536 virtual channels for each VPI).

<pti> — Set the value for the PTI value. PTI range is 0 to 7 (hex or dec) or X. PTI value defined as follows:

0 - User Data Cell, congestion not experienced, SDU-type.

1 - User Data Cell, congestion not experienced, SDU-type.

2 - User Data Cell, congestion experienced, SDU-type.

3 - User Data Cell, congestion experienced, SDU-type.

4 - Segment OAM F5 flow cell (for VC loop backs and alarms).

5 - End-to-end OAM F5 flow cell (for VC loop backs and alarms).

6 - Reserved for future traffic control and remote monitoring functions.

7- Reserved for future functions.

X - Don't care what value is received.

<clp> — Set the CLP value, CLP range is 0 or 1 (hex or dec) or X. 1 allows cell to be classified low priority and may be dropped. 0 classifies the cell as high priority and usually prevents cell from being dropped. ATM switches can change the CLP value when they detect congestion.

See also: **ATM TX TESt PROfile, ATM TX PROfile, ATM RX TESt MASk, SONet INPut,** and **SONet DROp**

ATM RX SCRamble — Receiver 43-Bit Cell Payload Descrambler Control

ATM RX SCR ?

Print current configuration of the receiver 43-bit cell descrambler. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to receive ATM cells.

ATM RX SCR OFF

Disable receiver 43-bit cell payload descrambler.

ATM RX SCR ON

Enable receiver 43-bit cell payload descrambler.

See also: **ATM RX NETwork INTerface, ATM TX SCRamble, ATM TX NETwork INTerface,** and **SONet DROp**

ATM RX TESt MASk — Received ATM Cell Test Mask Control

ATM RX TES MAS ?

Print current cell test mask format to look for in the received signal. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to receive ATM cells.

ATM RX TES MAS AIS SEA

Search for the transmitted OA&M test cell.

ATM RX TES MAS SEA

Use the Search Mask to perform Results Analysis.

ATM RX TES MAS Pn

Selects the cell profile. **Pn** can be P1 to P4.

ATM RX TES MAS PRE

Enter Preview Mode.

ATM RX TES MAS PRE USE

Store the current VPI/VCI detected in Preview mode as the Search Profile.

ATM RX TES MAS PRE NEX

Increments to the next VPI/VCI in Preview Mode.

ATM RX TES MAS RDI SEA

Search for the transmitted OA&M RDI test cell.

ATM RX TES MAS TTC SEA

Search for the transmitted OA&M TTC test cell.

ATM RX TES MAS TX

Selects the signal transmitted from the T-BERD 310 as the received mask.

ATM RX TES MAS AIS NEX

Increment to the next VPI/VCI in the AIS Search Mode.

ATM RX TES MAS RDI NEX

Increment to the next VPI/VCI in the RDI Search Mode.

ATM RX TES MAS TTC NEX

Increment to the next VPI/VCI in the TTC Search Mode.

ATM RX TES MAS AIS USE

Store the current VPI/VCI detected in AIS Search Mode as the Search Profile.

ATM RX TES MAS RDI USE

Store the current VPI/VCI detected in RDI Search Mode as the Search Profile.

ATM RX TES MAS TTC USE

Store the current VPI/VCI detected in TTC Search Mode as the Search Profile.

ATM RX TES MAS RES NOR

Set the receiver to normal results analysis mode.

ATM RX TES MAS RES CDV

Set the receiver to delay variation results analysis mode.

ATM RX TES MAS RES ?

Returns the current setting for the receiver results analysis mode. Possible values are normal and delay variation.

See also: **ATM TX TESt PROfile, ATM TX PROfile, ATM RX PROfile, SONet INSert,** and **SONet DROp**

ATM TX NETwork INTerface — Transmitted ATM Network Interface Select

ATM TX NET INT ?

Print current transmitted ATM network interface to be tested. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to transmit ATM cells.

ATM TX NET INT NNI

Configure ATM transmitter to send the network node interface or network-to-network interface cell format.

ATM TX NET INT UNI

Configure ATM transmitter to send the user network interface cell format.

See also: **ATM RX NETwork INTerface, ATM TX SCRamble, SONet DROp,** and **SONet INPut**

ATM TX PROfile — Transmitted ATM Cell Test Profile Control

ATM TX PRO Pn ?

Print the current ATM test profile where **Pn** equals **P1**, **P2**, **P3**, or **P4**. This command sets or prints the four specific test cell profiles (n = 1 to 4). This enables the ATM cell header fields — GFC, VPI, VCI, PTI, and CLP — to be preprogrammed four different ways with any value. The test profiles are selected and transmitted with the **ATM TX TESt PROfile** command. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to transmit ATM cells.

ATM TX PRO Pn <mode, gfc/vpi, vpi, vci, pti, clp>

<mode> — Set the programming mode for the ATM address for either **hex** or **dec**. Selecting the specific mode requires the address to be entered in that format; hexadecimal or decimal.

<gfc/vpi> — Set the value for the GFC/VPI fields. For UNI cell format, the GFC range is 0 to F (hex), 00 to 15 (dec), or X. For NNI cell format, this field is used to enter the most significant four bits of the VPI value.

<vpi> — Set value for the VPI field. For UNI cell format, VPI range is 00 to FF (hex) or 000 to 255 (dec) (256 virtual paths). For NNI cell format, this field contains the least significant 8 bits of the VPI value. The combined GFC/VPI and VPI fields range is 000 to FFF (hex), 0000 to 4096 (dec), or XXXX (4097 virtual paths).

<vci> — Set the value for the VCI field. VCI range is 0000 to FFFF (hex) or 00000 to 65535 (dec) (65,536 virtual channels for each VPI).

<pti> — Set the value for the PTI value. PTI range is 0 to 7 (hex or dec). PTI value defined as follows:

0 - User Data Cell, congestion not experienced, SDU-type.

1 - User Data Cell, congestion not experienced, SDU-type.

2 - User Data Cell, congestion experienced, SDU-type.

3 - User Data Cell, congestion experienced, SDU-type.

4 - Segment OAM F5 flow cell (for VC loop backs and alarms).

5 - End-to-end OAM F5 flow cell (for VC loop backs and alarms).

6 - Reserved for future traffic control and remote monitoring functions.

7- Reserved for future functions.

X - Don't care what value is received.

<clp> — Set the CLP value, CLP range is 0 or 1 (hex or dec). 1 allows cell to be classified low priority and may be dropped. 0 classifies the cell as high priority and usually prevents cell from being dropped. ATM switches can change the CLP value when they detect congestion.

See also: **ATM TX TESt PROfile, ATM RX TESt MASk, ATM RX PROfile, SONet INSert, SONet INPut,** and **PATtern**

ATM TX SCRamble — Transmitter 43-Bit Cell Payload Scrambler Control

ATM TX SCR ?

Print current configuration of the transmitter 43-bit cell payload scrambler. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to transmit ATM cells.

ATM TX SCR OFF

Disable transmitter 43-bit cell payload scrambler.

ATM TX SCR ON

Enable transmitter 43-bit cell payload scrambler.

See also: **ATM RX SCRamble, ATM TX NETwork INTerface,** and **SONet INPut**

ATM TX TESt PROfile — Transmitted ATM Cell Test Profile Select

ATM TX TES PRO ?

Print current ATM test profiles to be transmitted. The test profiles are created with the **ATM TX PROfile** command. This command requires the 310-15, 310-17A, or 310-20 option. The command is only valid when the test set is configured to transmit ATM cells.

ATM TX TES PRO Pn

Select test profile to be transmitted. **Pn** equals **P1** to **P4**.

See also: **ATM TX PROfile, ATM RX TESt MASk, ATM RX PROfile, SONet INSert,** and **SONet INPut**

BEEp CRIteria — Set Beep Criteria

BEE CRI ?

Print current beep criteria status for specific events.

BEE CRI ALL [ON | OFF]

Enable/Disable all of the beep criterion.

BEE CRI ERR EVE [ON | OFF]

Enable/Disable T-BERD 310 to beep on an error event.

BEE CRI PAT SYN [ON | OFF]

Enable/Disable T-BERD 310 to beep on pattern synchronization.

BEE CRI THR ERR SEC [ON | OFF]

Enable/Disable T-BERD 310 to beep on an errored second.

BEE CRI DS1 SCANTRIG [ON | OFF]

Enable/Disable T-BERD 310 to beep when an event specified in the **@SCAn TRIgger** command occurs during a triggered DS1 scan mode test. This command requires the 310-1 option.

BLUe SIGnal CRIteria — Set Blue Signal Detection Criteria

BLU SIG CRI ?

Print current Blue Signal detection criteria. Changing command parameter causes a test restart.

BLU SIG CRI 1010

Set Blue Signal detection to the 1010 criteria.

BLU SIG CRI STU C

Set Blue Signal detection to the stuck C-bit criteria.

CLEar PRInt BUFfer — Clear Print Buffer

CLE PRI BUF

This command clears all printouts from the print buffer.

CLS — Clear Terminal Screen

CLS

This command clears the terminal screen with 30 carriage returns.

CONtrols — Generate Controls Printout

CON

This command generates a controls printout of the T-BERD 310 front panel configuration. The **PRInt CONtrols** command performs the same function.

See also: **PRInt CONtrols**

DISplay HOLd — Set Display Hold

DIS HOL ?

Print current display hold status.

DIS HOL ON

Activate display hold function. The results and Status and Alarm LEDs are frozen.

DIS HOL OFF

Disable display hold function. The results and Status and Alarm LEDs are released and updated.

NOTE

While **DISplay HOLd** command is ON, updated results can be checked with the **RES1** or **RES2** command.

See also: **PRInt** and **RESUlts**

DISplay — Set RESULTS Switches Control

DIS ?
Print current **RESULTS** switches control status on the T-BERD 310 and 310-1.

DIS LOC
Set **RESULTS** switches for local front-panel and remote control operation.

DIS REM
Set **RESULTS** switches for remote control operation only.

DS1 BITs CLK — DS1 BITS Clock Termination

DS1 BIT CLK ?
Print current DS1 BITS CLOCK connector input termination. This command requires the 310-13T or 310-14T option.

DS1 BIT CLK TER
Select to terminate an unterminated input signal across 100 ohms.

DS1 BIT CLK BRI
Select to terminate input signal across 1000 ohms to bridge terminated lines.

DS1 DROp CHAnnel — Set Dropped DS1/E1 Channel

DS1 DRO CHA ?
Print current dropped DS1/E1 channel.

DS1 DRO CHA [1 | 2 to 28]
Select DS1 channel to be dropped. DS1 channels are entered with numbers from 1 to 28.

DS1 DRO CHA [E1 | E2 to E21]
Select E1 channel to be dropped. E1 channels are entered with numbers from E1 to E21. This command requires the 310-2 option.

NOTE

When AIS indication is detected on the dropped DS1 channel, three decimal points appear in the **DS3-DS1 CHANNEL DROP** switch display. This indication is not reported during remote control operation.

DS1 DROp OUT — Set Dropped DS1 Channel Source

DS1 DRO OUT ?
Print current dropped DS1 channel source status (DS3 or SONET) for the side-panel DS1 DROP jack. Requires a SONET option.

DS1 DRO OUT DS3
Set dropped DS1 channel source to the received DS3 signal. The DS1 signal is dropped from the DS3 RECEIVE jack.

DS1 DRO OUT SON
Set dropped DS1 channel source to the received SONET signal. The DS1 signal is dropped from the side-panel STS-1, OC-1/3/3c, or OC-12 RECEIVE connection depending on the installed SONET option.

DS1 INSert CHAnnel — Set DS1 Insert Channel

DS1 INS CHA ?
Print current inserted DS1 channel selection. The command is also used to insert a DS1 channel into the secondary DS3 signal when the DS1 INSERT mode is selected.

DS1 INS CHA [1 | 2 to 28]
Select DS1 channel into which the DS1 signal is to be inserted.

DS1 INS CHA ALL
Insert DS1 signal into all DS1 channels. This command only applies to MUXED M13 and MUXED C-BIT modes.

DS1 INS CHA NON
No DS1 channels are inserted. In the MUXED modes, this command leaves an All Ones pattern in all the DS1 channels. In the DS1 INSERT mode (requires 310-3 option), the command allows the entire secondary DS3 signal to pass unaffected and prevents the DS1 signal from being inserted.

See also: **MODe**

DS1 LINecode — Set DS1 Transmitted Line Coding

DS1 LIN ?
Print current DS1 line coding for the side-panel DS1 DROP output jack.

DS1 LIN AMI
Set DS1 line code to AMI.

DS1 LIN B8Z
Set DS1 line code to B8ZS.

DS1 LP CODe — Set DS1 Loop Code Type

DS1 LP COD ?
Print current transmitted DS1 loop code type. The command only applies when operating in the MUXED M13 or MUXED C-BIT mode and the T1D4 or T1ESF LPUP or LPDN pattern is selected.

DS1 LP COD CSU

Set DS1 loop code type to CSU. The loop-up code is 10000 and the loop-down code is 100.

DS1 LP COD FAC1

Set DS1 loop code type to Facility 1. The loop-up code is 1100 and the loop-down code is 1110.

DS1 LP COD FAC2

Set DS1 loop code type to Facility 2. The loop-up code is 11000 and the loop-down code is 11100.

DS1 LP COD PGM

Set loop code type to Programmable. Use the **PGM LPDn** and **PGM LPUp** commands to program the loop codes.

See also: **MODe**, **PGM LPUp**, and **PGM LPDn**

DS1 SIGnaling BITs — DS1 Signaling Bits Transfer Mode

DS1 SIG BIT ?

Print current DS1 signaling bits transfer mode for DS1 signals carried in the VT1.5 byte-synchronous channel. The selected function affects both drop and insert signals. The **SONet INSert DS1 BYTe** command must be selected to make this command functional. This command requires the 310-13R, 310-13T, 310-14R, or 310-14T option.

DS1 SIG BIT PAS

Select to allow the embedded DS1 signaling bits (if any) to pass through with the DS1 signal. This is appropriate for clear channel DS0s.

DS1 SIG BIT OUT

Select to allow out-of-slot DS1 signaling. On inserted DS1 signal, the DS1 signaling bits are removed and placed within the VT overhead. On dropped DS1 signal, the DS1 signaling bits are inserted into the DS1 robbed bit frames.

See also: **SONet INSert**

DS1 VT MAP — DS1/VT Mapping Select

DS1 VT MAP ?

Print current DS1/VT mapping being used in the **SONet INSert** and **SONet DROp** commands.

DS1 VT MAP M13

Enables DS1 signals to be selected sequentially through the seven VT1.5 groups with the first four channels in the first group, the second four channels in the second group, and so forth.

DS1 VT MAP TR-253

Enables DS1 signals to be selected sequentially through the seven VT1.5 groups with the first channel in each first group numbered first, the second four channels in the second group, and so forth.

DS1 VT MAP SEQ

Enables DS1 signals to be selected sequentially using DS1 channel numbers from 1 to 28.

See also: **SONet INSert** and **SONet DROp**

DS3 SOUrce — Set DS3 Input Source

DS3 SOU ?
Print current DS3 input source status. Requires a SONET option.

DS3 SOU EXT
Set DS3 input source to the DS3 RECEIVE jack.

DS3 SOU SON
Set DS3 input source to the DS3 signal dropped out of a side-panel STS-1, OC-1/3/3c, or OC-12 RECEIVE connection (depends on installed SONET option).

ECHo — Set Terminal Echo Mode

ECH ?
Print current terminal echo mode.

ECH ON
Enable terminal echo mode. All characters entered from a terminal are echoed back from the T-BERD 310. The command is automatically enabled in terminal mode.

ECH OFF
Disable terminal echo mode. All characters entered from a terminal are *not* echoed back from the T-BERD 310. The command is automatically disabled in remote mode.

See also: **REMote** and **TERminal**

ERRor INSert BPV — Execute BPV Insertion

ERR INS BPV ?
Print current BPV insertion setting.

ERR INS BPV OFF
Disable continuous BPV insertion.

ERR INS BPV BUR
Insert a burst of BPVs. Set burst length with the **LOG/bpv BURst** command. Set insertion rate with the **LOG/bpv RT** command.

ERR INS BPV RAT
Insert continuous BPVs. Set insertion rate with the **LOG/bpv RT** command.

ERR INS BPV SIN
Insert a single BPV.

See also: **LOG/bpv BURst** and **LOG/bpv RT**

ERRor INSert FRAme — Execute Frame Error Insertion

ERR INS FRA ?
Print current DS3 frame error insertion setting.

ERR INS FRA OFF

Stop all frame error insertion.

ERR INS FRA MUL

Insert multiple frame errors into one M-frame. Set number of frame errors with the **FRAme ERRor** command.

ERR INS FRA CON

Insert multiple frame errors continuously. Set number of frame errors with the **FRAme ERRor** command.

ERR INS FRA SIN

Insert a single frame error.

See also: **FRAme ERRor**

ERRor INSert LOGic — Execute Logic Error Insertion

ERR INS LOG ?

Print current DS3 logic error insertion setting.

ERR INS LOG OFF

Disable continuous logic error insertion.

ERR INS LOG BUR

Insert a burst of logic errors. Set burst duration with the **LOG/bpv BURst** command. Set insertion rate with the **LOG/bpv RT** command.

ERR INS LOG RAT

Insert continuous logic errors. Set insertion rate with the **LOG/bpv RT** command.

ERR INS LOG SIN

Insert a single logic error.

See also: **LOG/bpv BURst** and **LOG/bpv RT**

ERRor THReshold — Set Errored Second Threshold

ERR THR ?

Print current DS3 errored second threshold status for the BIT THR ES, FRM THR ES, and BPV THR ES results.

ERR THR [1E-2 | 1E-3 to 1E-7]

Set errored second threshold from 1E-2 to 1E-7.

FEAc ALArms — FEAC Message Alarm Control

FEA ALA ?

Print current Far-End Alarm and Control (FEAC) alarm status. The alarm message is transmitted for 1 second. Set **MODe** command to **C-Bit** to send FEAC alarms.

FEA ALA STO

Halt selected FEAC alarm message.

FEA ALA DS3 EQU FAI SA

Select and send DS3 Equipment Failure, Service Affecting (Type 1 equipment failure) alarm message.

FEA ALA DS3 LOS

Select and send DS3 Loss-of-Signal/High Bit Error Ratio alarm message.

FEA ALA DS3 OUT OF FRA

Select and send DS3 Out-of-Frame, Loss of DS3 Frame Synchronization alarm message.

FEA ALA DS3 AIS REC

Select and send DS3 Alarm Indication Signal Received alarm message.

FEA ALA DS3 IDL REC

Select and send DS3 Idle Signal Received alarm message.

FEA ALA DS3 EQU FAI NSA

Select and send DS3 Equipment Failure, Non-Service Affecting (Type 2 equipment failure) alarm message.

FEA ALA COM EQU FAI NSA

Select and send Common Equipment Failure, Non-Service Affecting (Type 2 equipment failure) alarm message.

FEA ALA MUL DS1 LOS

Select and send Multiple DS1 Loss-of-Signal/High Bit Error Ratio alarm message.

FEA ALA DS1 EQU FAI SA

Select and send DS1 Equipment Failure, Service Affecting (Type 1 equipment failure) alarm message.

FEA ALA SIN DS1 LOS

Select and send Single DS1 Loss-of-Signal/High Bit Error Ratio alarm message.

FEA ALA DS1 EQU FAI NSA

Select and send DS1 Equipment Failure, Non-Service Affecting (Type 2 equipment failure) alarm message.

See also: **FEAc LOOp** and **MODe**

FEAc LOOp — FEAC Message Loopback Control

FEA LOO ?

Print current FEAC message loop code status. Set **MODe** command to **C-Bit** to send FEAC message loop codes.

FEA LOO UP DS3 LIN

Select and send DS3 line loop-up code.

FEA LOO DOW DS3 LIN

Select and send DS3 line loop-down code.

FEA LOO UP ALL DS1s

Select and send DS1 line loop-up code to loop up all low-speed DS1 channels.

FEA LOO DOW ALL DS1s

Select and send DS1 line loop-down code to loop down all low-speed DS1 channels.

FEA LOO UP DS1 [1 | 2 to 28]

Select and send DS1 line loop-up code to loop up indicated low-speed DS1 channel.

FEA LOO DOW DS1 [1 | 2 to 28]

Select and send DS1 line loop-down code to loop down indicated low-speed DS1 channel.

FEA LOO UP DS3 NIU

Select and send DS3 NIU loop-up code.

FEA LOO DOW DS3 NIU

Select and send DS3 NIU loop-down code.

See also: **FEAc ALArms** and **MODe**

FIRST POWERUP — Restore T-BERD 310 to Factory Defaults/Retained Settings

FIRST POWERUP

This command reinitializes the T-BERD 310 (and all options) to its factory default settings and/or it allows the unit to retain prior settings for print device, print baud rate, parity, line terminator, and IEEE-488 address. It also takes the instrument out of remote control.

FRAme ERRor — Set Number of M-Frame Errors Inserted

FRA ERR ?

Print current number of frame errors per M-frame to be inserted when the **ERRor INSert FRAme** command is used.

FRA ERR [1 | 2]

Set number of frame errors per M-frame from 1 to 2.

See also: **ERRor INSert FRAme**

FRaMe LOSs THReshold — Set Frame Synchronization Loss Threshold

FRM LOS THR ?

Print current DS3 frame synchronization loss threshold.

FRM LOS THR 3

Set threshold to 3 frame errors out of 15 framing bits received.

FRM LOS THR 6

Set threshold to 6 frame errors out of 15 framing bits received.

HELLO — Display T-BERD 310 Software and Hardware Revision Levels

HELLO

Print current software revision level and installed options of the T-BERD 310. This information is useful to verify the T-BERD 310 configuration before calling TTC for assistance.

EXAMPLE:

```
> HELLO

Software version E.02 11/05/94

Installed boards/options and module codes:

   PROCESSOR     BOARD: Module code = 01
   IEEE-488     OPTION: Not installed
   TRANSMITTER   BOARD: Module code = 00
   RECEIVER      BOARD: Module code = 00
   FRAMING       BOARD: Module code = 00
   E1 DROP      OPTION: Installed
   DS1 BERTS    OPTION: Module code = 02
   ENHANCED ESF OPTION: Module code = 02
   DS1 INSERT   OPTION: Not installed
   SONET DROP   OPTION: Not installed
   SONET DROP FPGA    : Not installed
   OPTICAL I/F  OPTION: Not installed
   JITTER       OPTION: Not installed
   DS3 USER I/F  BOARD: Module code = 00
   DS1 USER I/F OPTION: Module code = 00
   G.821 RESLTS OPTION: Installed
   SONET RCVR   OPTION: Module code = 00
   SON RCVR OPTIC  OPT: Installed
   SON RCVR FPGA      : Module code = 1E
   SONET XMIT   OPTION: Module code = 00
   SON XMIT OPTIC  OPT: Installed
   SON XMIT FPGA      : Module code = 10
   SONET OC-12  OPTION: Module code = 00

>
```

HELP — Display On-Line Help

HELP (?)

Use **HELP** or **?** to print introduction to the T-BERD 310 on-line help pages. The help page identifies command syntax for entering commands and a list of available help page commands. The "**?**" can be used in place of **HELP** in the following commands. Use page number (e.g., **? 4**) or page name (e.g., **? FRO**) to select the required help page.

HELP !

List all available T-BERD 310 remote control commands.

HELP [0 | MIS]

List T-BERD 310 (and 310-1) miscellaneous remote control commands.

HELP [1 I FRO]
List T-BERD 310 front-panel remote control commands.

HELP [2 I AUX1]
List page 1 of T-BERD 310 auxiliary function remote control commands.

HELP [3 I AUX2]
List page 2 of T-BERD 310 auxiliary function remote control commands.

HELP [4 I MAI]
List remote control commands that affect the operation of T-BERD 310 (and 310-1).

HELP [5 I 232/488]
List remote control commands that affect the operation of RS-232 and IEEE-488 (requires 310-6 option) interfaces.

HELP <command-name>
Describe **<command-name>** and any parameters in detail.

See also: **@HELp**

HIStory RESet — Clear History Alarm LEDs

HIS RES
Clear any illuminated Primary (and Secondary) History Alarm LED.

EXAMPLE:

```
> LED (Print state of Status and Alarm LEDs.)
 ____________________________________________________________________________
|              - alarms -                 |            - status -           |
|   primary                   secondary   | primary               secondary |
|   ON    ON   signal     loss  OFF  OFF  |  OFF   signal    present  OFF   |
|   ON    ON   frame      loss  OFF  OFF  |  OFF   frame     sync     OFF   |
|   OFF   ON   ds2 frame  loss  OFF  OFF  |  OFF   c-bit     frame    OFF   |
|   OFF   OFF  pattern    loss         |  |  OFF   idle      present  OFF   |
|   OFF   OFF  blue      (AIS)  OFF  OFF  |  OFF   ds2 frame sync     OFF   |
|   OFF   OFF  yellow           OFF  OFF  |  OFF   pattern   sync           |
|   OFF   OFF  far-end  alarm OFF  OFF    |  OFF   sonet     present        |
|  OFF   OFF  sonet     loss          |   |_________________________________|
|  OFF        power     loss          |   |
|     |                               |   |
|     |________ history ______________|   |
|_________________________________________|
```

```
> HIS RES (Reset History Alarm LEDs.)
> LED (Print state of Status and Alarm LEDs.)

 ___________________________________________________________________________
|              - alarms -                    |           - status -         |
|    primary                     secondary   | primary           secondary  |
|    OFF  OFF  signal     loss  OFF  OFF     |  ON   signal     present  OFF|
|    OFF  OFF  frame      loss  OFF  OFF     |  ON   frame      sync     OFF|
|    OFF  OFF  ds2 frame  loss  OFF  OFF     |  ON   c-bit      frame    OFF|
|    OFF  OFF  pattern    loss        |      |  OFF  idle       present  OFF|
|    OFF  OFF  blue       (AIS) OFF  OFF     |  ON   ds2 frame  sync     OFF|
|    OFF  OFF  yellow           OFF  OFF     |  OFF  pattern    sync        |
|    OFF  OFF  far-end    alarm OFF  OFF     |  OFF  sonet      present     |
|    OFF  OFF  sonet      loss        |      |____________________________|
|    OFF       power      loss        |      |
|     |                               |      |
|     |__________ history ____________|      |
|____________________________________________|
>
```

HOLd — Hold All Printer Output

HOL

This command places a temporary hold on the following print buffer outputs: result prints, controls prints, and alarm, status, and note messages. When command is executed, the prompt changes from the ">" (greater than) or user-defined prompt to a "+" (plus). The "+" indicates that the print buffer is temporarily on hold.

When the "+" prompt appears, command responses (except for **CONtrols** and **RESUlts**), help pages, and syntax error messages continue to be generated. The results, controls, and message printouts are generated and stored in the print buffer.

Use the **RELease** command to release print buffer and print all stored printouts. Turning power off and on performs the same function as the **RELease** command.

See also: **RELease** and **PROmpt**

JITter FILter — Set Jitter Bandpass Filter

JIT FIL ?

Print current jitter bandpass function status for the jitter test results. This command requires the 310-5 option.

JIT FIL WID

Select wideband filter (10 Hz to 400 kHz).

JIT FIL HIG

Select highband filter (30 kHz to 400 kHz).

JIT FIL AUT

Select automatic bandpass filter function. This selection alternates between both filters to provide continuous measurement for both frequency ranges.

See also: **JITter SCAle** and **JITter THReshold**

JITter SCAle — Set Jitter Amplitude Scale

JIT SCA ?

Print current jitter amplitude scale status for the jitter test results. Enter the scale parameter by the number itself, e.g., **2**, **5**, or **20**, or by the complete parameter, e.g., **2 UI P-P**. This command requires the 310-5 option.

JIT SCA 2

Set scale to the 2 UIp-p range.

JIT SCA 5

Set scale to the 5 UIp-p range.

JIT SCA 20

Set scale to the 20 UIp-p range.

JIT SCA AUT

Set scale for autoranging. This command selects the appropriate scale for the most accurate measurements.

See also: **JITter FILter** and **JITter THReshold**

JITter THReshold — DS3 Jitter Threshold Select

JIT THR ?

Print current jitter threshold for the HB JIT or WB JIT test results. When the threshold is exceeded, the test result appears in the Summary category. This command requires the 310-5 option.

JIT THR <threshold>

Set jitter **<threshold>** as follows:

0.01 to 0.05 in 0.01 UI steps.

0.05 to 0.2 in 0.05 UI steps.

0.2 to 1.0 in 0.2 UI steps.

1.0 to 5.0 in 0.5 UI steps.

5.0 to 20.0 in 5.0 UI steps.

See also: **JITter FILter** and **JITter SCAle**

LASt ERRor — Print Last Error Message

LAS ERR

This command prints and clears the last error message generated by remote control.

EXAMPLE:

```
> LAS ERR

*** ERROR: Remote Control cannot modify this setting.
> LAS ERR

No Error.
```

LCD CONtrast — Set 310-1 LCD Contrast

LCD CON ?

Print current contrast setting for the 310-1 display. This command is only available on newer 310-1 options.

LCD CON [1 to 10]

Adjust 310-1 display viewing between ten different levels of contrast.

LEDs — Print State of Status and Alarm LEDs

LED

This command prints the state of the Status and Alarm LEDs.

EXAMPLE:

```
> LED
 __________________________________________________________________________
|                - alarms -                  |          - status -         |
|    primary                  secondary      | primary              secondary |
|    ON    ON    signal     loss  OFF  OFF   |   OFF   signal     present  OFF |
|    ON    ON    frame      loss  OFF  OFF   |   OFF   frame      sync     OFF |
|    OFF   ON    ds2 frame  loss  OFF  OFF   |   OFF   c-bit      frame    OFF |
|    OFF   OFF   pattern    loss         |   |   OFF   idle       present  OFF |
|    OFF   OFF   blue       (AIS) OFF  OFF   |   OFF   ds2 frame  sync     OFF |
|    OFF   OFF   yellow           OFF  OFF   |   OFF   pattern    sync         |
|    OFF   OFF   far-end    alarm OFF  OFF   |   OFF   sonet      present      |
|    OFF   OFF   sonet      loss         |   |_________________________________|
|    OFF         power      loss         |   |
|     |                                  |   |
|     |__________  history  ____________|   |
|___________________________________________|

>
```

LOCal — Return Control to the Front Panel

LOC (/)

This command returns the T-BERD 310 (and 310-1) to local front panel control from terminal or remote mode. The message *232 REMOTE CONTROL* stops flashing in the MODE/PATTERN window. The T-BERD 310 always monitors the remote control interface for commands from the remote control device. When any command is received, the T-BERD 310 goes into remote mode.

See also: **TERminal** and **REMote**

LOG/bpv BURst — Set Logic/BPV Burst Duration

LOG BUR ?

Print current logic error or BPV insertion burst duration.

LOG BUR [0.025 | 0.050 to 5.0]

Set burst duration from 0.025 to 1.0 second in 0.025 second steps and from 1.0 to 5.0 seconds in 0.100 second steps. For whole seconds (1 to 5), drop the zero.

LOG BUR [25 | 50 to 5000]

Set burst duration from 25 to 1000 ms in 25 ms steps and from 1000 to 5000 ms in 100 ms steps.

LOG BUR SIN

Set burst duration for a single logic error or BPV.

See also: **ERRor INSert BPV** and **ERRor INSert LOGic**

LOG/bpv RT — Set Logic/BPV Error Insertion Rate

LOG RT ?

Print current DS3 logic error or BPV insertion rate.

LOG RT [1E-2 | 1E-3 to 1E-9]

Set insertion rate from 1E-2 to 1E-9.

See also: **ERRor INSert BPV** and **ERRor INSert LOGic**

MODe — Set Transmit and Receive Operating Mode

MOD ?

Print current DS3 transmit and receive operating mode.

MOD AUT

Select automatic configure frame and pattern mode.

MOD C-B

Select DS3 C-bit parity frame formatted mode.

MOD DS1 INS

Select DS1 INSERT mode.

MOD M13

Select DS3 M13 frame formatted mode.

MOD MUX C-Bit
Select demultiplexable DS3 C-bit frame formatted mode.

MOD MUX M13
Select demultiplexable DS3 M13 frame formatted mode.

MOD THR
Select through mode.

MOD UNF
Select unframed DS3 mode.

See also: **PATTern**

OPTical POWer WAVelength — Optical Power Measurement Wavelength Select

OPT POW WAV ?
Print current optical power measurement wavelength for the POWER METER connector. This command requires the 310-16 option.

OPT POW WAV 1310
Select 1310 nm wavelength for the optical power detector and optical power measurement test result.

OPT POW WAV 1550
Select 1550 nm wavelength for the optical power detector and optical power measurement test result.

OPTical RETurn LOSs REFerence — Optical Return Loss Measurement Reference Control

OPT RET LOS REF ?
Print current use of the RETURN LOSS/SOURCE connector. This command sets the return loss measurement reference when the **OPTical RETurn LOSs TYPe** command is set to **REFerence**. This command requires the 310-16 option.

OPT RET LOS REF CLE
Clear the stored return loss offset from the RETURN LOSS/SOURCE connector.

OPT RET LOS REF SET
Measure and store the return loss of the RETURN LOSS/SOURCE connector. Before executing the command, wrap the fiber cable in a tight loop around a pencil 5 to 10 times to create a mandrel wrap. The mandrel wrap cancels out the fiber and allows the T-BERD 310 to measure the return loss of the RETURN LOSS/SOURCE connector. Unwrap the fiber to measure the return loss of the cable.

See also: **OPTical SOUrce** and **OPTical RETurn LOSs TYPe**

OPTical RETurn LOSs TYPe — Optical Return Loss Measurement Type Select

OPT RET LOS TYP ?
Print current use of the RETURN LOSS/SOURCE connector. This command sets the type of return loss measurement being performed when the **OPTical SOUrce** command is set to **1310** or **1550**. This command requires the 310-16 option.

OPT RET LOS TYP ABS

Configure the return loss measurement to measure all return loss starting with the RETURN LOSS/SOURCE connector.

OPT RET LOS TYP REF

Configure the return loss measurement to measure all return loss except from the RETURN LOSS/SOURCE connector. Set stored reference with the **OPTical RETurn LOSs REFerence** command.

See also: **OPTical SOUrce** and **OPTical RETurn LOSs REFerence**

OPTical SOUrce — Optical Stable Source Select

OPT SOU ?

Print current use of the RETURN LOSS/SOURCE connector. This command sets the wavelength of the RETURN LOSS/SOURCE connector. Use the **OPTical RETurn LOSs TYPe** command to set return loss type. This command requires the 310-16 option.

OPT SOU 1310

Select 1310 nm wavelength for the RETURN LOSS/SOURCE connector and return loss measurement test result.

OPT SOU 1550

Select 1550 nm wavelength for the RETURN LOSS/SOURCE connector and return loss measurement test result.

OPT SOU OFF

Disable the RETURN LOSS/SOURCE connector.

See also: **OPTical RETurn LOSs**

ORDerwire — Orderwire Channel Control

ORD ?

Print current in-use orderwire channel. This command sets the drop and insert capabilities for the appropriate orderwire channel. The orderwire channel is accessed through the HANDSET connector. This command requires the 310-13T or 310-14T option and is limited to orderwire insert only. The 310-13R/T pair or 310-14R/T pair option is required for full orderwire drop and insert capabilities.

ORD NON

Disable the drop of either orderwire channel. A quiet tone is placed in the transmitted Line and Section orderwire channel.

ORD LIN

Select Line orderwire channel to be dropped and inserted.

ORD SEC

Select Section orderwire channel to be dropped and inserted.

PARity ERRor RT — Set Parity Error Rate Calculation Criteria

PAR ERR RT ?
Print current PARITY error rate calculation criteria.

PAR ERR RT BIT ERR
Set PARITY error rate calculation criteria to BIT error mode.

PAR ERR RT BLO ERR
Set PARITY error rate calculation criteria to BLOCK error mode.

PATH TRAce — Path Trace Message Insertion Control

PATH TRA ?
Print current path trace message number (USER 1, 2, or 3). This command sets one of three default or user-defined messages to be transmitted over the path trace byte (J1) of the currently inserted STS-1 signal. The path trace message is a 64-character ASCII message which includes alphanumeric characters, spaces, null characters, and CR/LF line terminator.

The user-defined messages can be up to 62-characters long. The T-BERD 310 automatically pads the transmitted message with nulls and the CR/LF line terminator to make up the 64-character message. The default message strings are 64-characters long.

This command requires the 310-13T or 310-14T option to insert the message. The 310-13R/T pair or 310-14R/T pair option is required for full drop and insert path trace capabilities.

PATH TRA USER1
Send the current USER1 path trace message.

PATH TRA GET USER1 ?
Print current USER1 path trace messages.

PATH TRA SET USER1 <text>
Enter a user-defined path trace message for USER1.

PATH TRA USER2
Send the current USER2 path trace message.

PATH TRA GET USER2 ?
Print current USER2 path trace messages.

PATH TRA SET USER2 <text>
Enter a user-defined path trace message for USER2.

PATH TRA USER3
Send the current USER3 path trace message.

PATH TRA GET USER3 ?
Print current USER3 path trace messages.

PATH TRA SET USER3 <text>
Enter a user-defined path trace message for USER3.

The default messages include the following:

USER1 — The quick brown fox jumps over the lazy dog 1234567890 !@#$%&*

USER2 — Telecommunications Techniques Corporation... Expect Excellence

USER3 — T-BERD 310: Communications Analyzer for SONET, DS3, DS1, & DS0

PATTern LOSs THReshold — Set Pattern Loss Threshold Criteria

PATT LOS THR ?

Print current DS3 pattern loss threshold criteria.

PATT LOS THR FAS

Set pattern loss threshold to FAST. Pattern loss occurs when 1024 or more bit errors are counted in 32,767 bits received.

PATT LOS THR SLO

Set pattern loss threshold to SLOW. Pattern loss occurs when 250,000 or more bit errors are counted in 1,000,000 bits received.

PATTern — Set Data Pattern

PATT ?

Print current transmitted DS3 test pattern. The following patterns are divided into three groups: non-channelized patterns, channelized patterns, and DS1 insert patterns. The test pattern does not need to be set when the AUTO or THRU mode is selected.

PATT <pattern>

Select appropriate test pattern from the following list.

Non-channelized Test Patterns — The following patterns only apply to the M13, UNFRAMED, and C-BIT modes.

2^15-1 — Select 32,767-bit pseudorandom pattern.

2^20-1 — Select 1,048,575-bit pseudorandom pattern.

2^23-1 — Select 8,388,607-bit pseudorandom pattern.

1010 — Select fixed framed or unframed alternating marks (1) and spaces (0) pattern.

1100 — Select fixed framed or unframed repeating two marks (1) and two spaces (0) pattern.

1111 — Select fixed framed or unframed all marks (1) pattern.

USER1 — Select fixed 3- to 24-bit user-programmable test pattern. Use the **USER1** command to set the test pattern.

Channelized Test Patterns — The following patterns only apply to the MUXED M13 and MUXED C-BIT modes.

T1D4 1:7 — Select T1 D4 formatted 1:7 pattern

T1D4 3/24 — Select T1 D4 formatted 3 IN 24 pattern.

T1D4 1004 — Select T1 D4 formatted 1004 Hz tone.

T1D4 LPD — Select T1 D4 formatted loop-down code pattern.

T1D4 LPU — Select T1 D4 formatted loop-up code pattern.

T1D4 QRS — Select T1 D4 formatted QRSS pattern.

T1E 1:7 — Select T1 ESF formatted 1:7 pattern.

T1E 3/24 — Select T1 ESF formatted 3 IN 24 pattern.

T1E 1004 — Select T1 ESF formatted 1004 Hz tone.

T1E LPD — Select T1 ESF formatted loop-down code pattern.

T1E LPU — Select T1 ESF formatted loop-up code pattern.

T1E QRS — Select T1 ESF formatted QRSS pattern.

DS1 Insert Source — The following selections only apply to the DS1 INSERT mode. This command requires the 310-3 option.

EXT DS1 — Select side-panel DS1 RECEIVE jack signal as the DS1 signal source to be inserted into the secondary DS3 signal.

INT DS1 — Select 310-1 as the DS1 signal source to be inserted into the secondary DS3 signal.

DS3 ATM Framing Mode — The following selections only apply to the M13 and C-BIT modes. This command requires the 310-17A option.

ATM HEC — Select ATM Header Error Correction (HEC) framing format.

ATM PLCP — Select ATM Physical Layer Convergence Protocol (PLCP) framing format.

NOTE

If **PATTern** is queried, ATM OFF may appear if the **ATM RATe SELect** command is set to DS1, OC-3c, or OC-12C instead of DS3.

See also: **MODe**

PGM LPDn — Set Programmable Loop-Down Code

PGM LPD ?

Print current DS1 3- to 8-bit programmable loop-down code. The command only applies when operating in the MUXED M13 or MUXED C-BIT mode and the T1D4 LPDN or T1ESF LPDN pattern is selected. Set **DS1 LP CODe** command to **PGM** to select the loop code. The pattern is transmitted from left to right.

PGM LPD [000 | 001 to 11111111]

Set loop-down code in a binary format from 000 to 11111111.

See also: **DS1 LP CODe** and **PATTern**

PGM LPUp — Set Programmable Loop-Up Code

PGM LPU ?

Print current DS1 3- to 8-bit programmable loop-up code. The command only applies when operating in the MUXED M13 or MUXED C-BIT mode and the T1D4 LPUP or T1ESF LPUP pattern is selected. Set **DS1 LP CODe** command to **PGM** to select the loop code. The pattern is transmitted from left to right.

PGM LPU [000 | 001 to 11111111]

Set loop-up code in a binary format from 000 to 11111111.

See also: **DS1 LP CODe** and **PATTern**

PRInt BAUd RATe — Print RS-232 Interface Baud Rate

PRI BAU RAT

Prints the RS-232 interface baud rate. The baud rate can only be changed from the front panel (PRINT-BAUD RATE auxiliary function).

PRInt BYTE — Print Specified TOH Byte

PRInt <variable> BYTE

Possible variables are: ?, A1, A2, C2, D1, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, F1, F2, G1, K1, K2, Z1, Z2, Z3, Z4, and Z5.

NOTE

The A1 or A2 byte, while in OC-12 transmit mode, cannot be set.

PRInt CONtrols — Generate Controls Printout

PRI CON

This command prints the front-panel controls and auxiliary function configuration for the T-BERD 310. The **CONtrols** command performs the same function.

See also: **CONtrols**

PRInt CUStom — Set Custom Results Printout

PRI CUS ?

Print current test results for the custom results printout. Select custom results printout with the **PRInt FORmat** command. The custom results printout is generated with the **PRInt RESults** or **RESUlts** command.

PRI CUS <result name> ON

Set **<result name>** to ON. A **<result name>** that is set to ON is printed in the custom results printout.

PRI CUS <result name> OFF

Set **<result name>** to OFF. A **<result name>** that is set to OFF is not printed in the custom results printout.

PRI CUS ALL ON

Set ALL the **<result names>** and Status and Alarm LEDs to ON. The custom results printout lists all the test results.

PRI CUS ALL OFF

Set ALL the **<result names>** and Status and Alarm LEDs to OFF. The custom results printout header is generated without the results.

PRI CUS SEC <result name> ON

Set secondary DS3 **<result name>** to ON. A **<result name>** that is set to ON is printed in the custom results printout.

PRI CUS SEC <result name> OFF

Set secondary DS3 **<result name>** to OFF. A **<result name>** that is set to OFF is not printed in the custom results printout.

Refer to the following list for Status and Alarm DS3, ATM (DS1, DS3, OC-3c, or OC-12c), and SONET LED **<result names>**. Refer to the **PRInt** command for a list of test **<result names>**.

DS3 Status LEDs <result names>

C-BIT FRAME*	C-bit Frame Status LED
DS2 FRM SYNC*	DS2 Frame Sync Status LED
FRAME SYNC*	Frame Sync Status LED
IDLE PRES*	Idle Present Status LED
PATTERN SYNC	Pattern Sync Status LED
SIGNAL PRES*	Signal Present Status LED

DS3 Alarm LEDs <result names>

BLUE (AIS)*	Blue (AIS) Alarm LED
DS2 FRM LOSS*	DS2 Frame Loss Alarm LED
FAR-END ALRM*	Far-End Alarm LED
FRAME LOSS*	Frame Loss Alarm LED
PATTERN LOSS	Pattern Loss Alarm LED
POWER LOSS	Power Loss Alarm LED
SIGNAL LOSS*	Signal Loss Alarm LED
SONET LOSS	SONET Loss Alarm LED (SONET option required)
YELLOW*	Yellow Alarm LED

DS3 FEAC Codes <result names>

FEAC CODES*	FEAC Codes (prints detected codes)

SONET Status <result names> (SONET option required)

SONET FRAME	SONET Frame Sync
SONET P PTR	SONET Path Pointer
SONET SIGNAL	SONET Signal Present
SONET VT PTR	SONET VT Pointer
CONCAT	Concatenated Payload Detected
SON PAT SYNC	SONET Payload Pattern Synchronization

SONET Alarms <result names> (SONET option required)

SONET L AIS	SONET Line Alarm Indication Signal
SONET L RDI	SONET Line Remote Defect Indication
SONET LOF	SONET Loss Of Frame
SONET LOS	SONET Signal Loss
SONET P AIS	SONET Path Alarm Indication Signal
SONET P LOP	SONET Path Loss Of Pointer
SONET P RDI	SONET Path Remote Defect Indication
SONET SEF	SONET Severely Errored Frame
SONET VT AIS	SONET VT Alarm Indication Signal
SONET VT LOP	SONET VT Loss Of Pointer
SONET VT RDI	SONET VT Remote Defect Indication
SON LINE BIP	SONET Line BIP Alarm
SON PAT LOSS	SONET Payload Pattern Loss Alarm
SON PATH BIP	SONET Path BIP Alarm
SON SECT BIP	SONET Section BIP Alarm
SON VT BIP	SONET Virtual Tributary BIP Alarm

OC-3c, DS1, DS3, or OC-12c ATM Status LEDs <result names> (310-15, 310-17A, or 310-20 Option)

CELL SYNC	ATM Cell Synchronization Status

OC-3c, DS1, DS3, or OC-12c Alarm LEDs <result names> (310-15, 310-17A, or 310-20 Option)

ATM AIS	ATM OAM Alarm Indication Signal
ATM ALL IDLE	ATM All Idle Cells Receive Alarm
ATM LCD	ATM Loss of Cell Delineation Alarm (formally ATM SYN LOSS)
ATM LCD FAIL	ATM Loss of Cell Delineation Failure Alarm (formally ATM SYN FAIL)
ATM NO MASKD	ATM No Test Mask Cells Received Alarm
ATM OCD	ATM Out of Cell Delineation Alarm (formally ATM OOS)
ATM PLCP RDI	ATM Physical Layer Convergence Protocol Remote Defect Indication Alarm (310-17A Option)
ATM RDI	ATM OAM Remote Defect Indication Alarm

*Valid DS3 Secondary <result names>.

See also: **PRInt FORmat, PRInt RESults,** and **RESUlts**

PRInt EVEnt — Set Print Event Function

PRI EVE ?
Print current print event setting.

PRI EVE OFF
Set print event to OFF. Press <CTRL> <C> to clear the print buffer.

PRI EVE 15 MIN
Set print event for 15 minutes.

PRI EVE 30 MIN
Set print event for 30 minutes.

PRI EVE ERR SEC
Set print event for errored seconds.

PRI EVE TES END
Set print event for test end. The **TESt** command must be set to **TIMed**.

PRI EVE TIM
Set print event function for timed. Set print interval with **PRInt INTerval** command.

See also: **TESt** and **PRInt INTerval**

PRInt FORmat — Set Test Results Printout Format

PRI FOR ?
Print current test results printout format for the T-BERD 310 and 310-1. Generate the selected results printout with the **PRInt RESults** or **RESUlts** command.

PRI FOR CUS
Set test results printout format to CUSTOM. Select custom results with the **PRInt CUStom** command.

PRI FOR NOR

Set test results printout format to NORMAL. The normal results printout lists the state of all Status and Alarm LEDs and test results.

PRI FOR SUM

Set test results printout format to SUMMARY. The summary results printout lists the state of all Status and Alarm LEDs and the test results that appear in the SUMMARY category.

See also: **PRInt CUStom, PRInt RESults,** and **RESUlts**

PRInt GRAph — Print Pulse Shape Graph

PRI GRA

This command generates a pulse shape graph. A graphics compatible printer must be used to generate the pulse shape graph. Otherwise, this command will cause generated responses to be unreadable. Refer to the *T-BERD 310 User's Manual* for information on generating a pulse shape graph.

See also: **PULse MASk**

PRInt INTerval — Set Timed Print Event Interval

PRI INT ?

Print current timed print interval between printouts when the **PRInt EVEnt** command is set to **TIMed**.

PRI INT <hh:mm>

Set print interval from 00:01 to 24:59.

See also: **PRInt EVEnt**

PRInt MODe — Set Printout Mode

PRI MOD ?

Print current print mode. The command selects how the test results are accumulated when the **PRInt EVEnt** command is set to **TIMed**, **ERRored SECond**, **15 MINutes**, or **30 MINutes**.

PRI MOD CON

Set print mode to CONTINUOUS. Test results are accumulated for the duration of the test.

PRI MOD DEL

Set print mode to DELTA. Test results are accumulated from a test restart or the previous delta printout. As the printout is sent to the print buffer, all test result counters are reset to zero.

See also: **PRInt EVEnt** and **RESUlts**

PRInt PARity — Print RS-232 Interface Parity

PRI PAR

Prints the RS-232 interface parity. The parity can only be changed from the front panel (PRINT-PARITY auxiliary function).

PRInt RESults — Generate Test Results Printout

PRI RES
This command generates a T-BERD 310 test results printout.

See also: **RESUlts**

PRInt TERminator — Set Line Terminator

PRI TER ?
Print current line terminator.

PRI TER CR
Set line terminator to a carriage return.

PRI TER LF
Set line terminator to a linefeed.

PRI TER CRL
Set line terminator to a carriage return and linefeed.

PRInt TOH BYTES — Print All Received Overhead Bytes

PRI TOH BYTES
Print all received overhead bytes in table format.

PRInt WIDth — Set Printout and Display Line Width

PRI WID ?
Print current line width of printouts. The command does not affect commands that do not generate printouts, e.g., help pages.

PRI WID 40
Set print line width to 40 characters per line.

PRI WID 80
Set print line width to 80 characters per line.

PRInt — Print Selected Test Result

PRI <result name>
Print current primary T-BERD 310 test result value.

PRI SEC <result name>
Print current secondary T-BERD 310 test result value. This command requires the 310-3 option.

NOTE

The **<result name>** must be keyed in as indicated.

Primary DS3 Result Names

LOGIC Category

AV BIT ERT	Average Bit Error Rate
BIT %EFS	Bit, Percentage of Error-Free Seconds
BIT ERR RT	Bit Error Rate
BIT ERR SEC	Bit Errored Seconds
BIT ERRORS	Bit Errors
BIT THR ES	Bit, Threshold Errored Seconds
SLIPS	Pattern Slips
SYNC ES	Synchronous Errored Seconds
SYNC L SEC	Synchronization Loss Seconds

LOGIC Category, 310-10 Option

% AVAIL SEC	% Available Seconds
% DEG MIN	% Degraded Minutes
% SEVERR SEC	% Severely Errored Seconds
AVAIL SEC	Available Seconds
CSES	Consecutive Severely Errored Seconds
DEG MIN	Degraded Minutes
SEV ERR SEC	Severely Errored Seconds
UNAVAIL SEC	Unavailable Seconds

BPV Category

AV BPV ERT	Average BPV Error Rate
BPV %EFS	BPV, Percentage of Error-Free Seconds
BPV ERR RT	BPV Error Rate
BPV ERR SEC	BPV Errored Seconds
BPV THR ES	BPV Threshold Errored Seconds
VIOLATIONS	Bipolar Violations

PARITY Category

AV C-BIT ERT	Average C-Bit Error Rate
AV FEBE RT	Average Far-End Block Error Rate
AV PAR ERT	Average Parity (P-Bit) Error Rate
C-BIT %EFS	C-Bit, Percentage of Error-Free Seconds
C-BIT ERR RT	C-Bit Error Rate
C-BIT ERRORS	C-Bit Errors
C-BIT TYPE A	C-Bit Errored Seconds, Type A
C-BIT TYPE B	C-Bit Errored Seconds, Type B
C-BIT TYPE C	C-Bit Errored Seconds, Type C
FEBE %EFS	Far-End Block Error, Percentage of Error-Free Seconds
FEBE	Far-end Block Errors
FEBE RT	Far-end Block Error Rate
FEBE TYPE A	Far-End Block Error, Errored Seconds, Type A
FEBE TYPE B	Far-End Block Error, Errored Seconds, Type B
FEBE TYPE C	Far-End Block Error, Errored Seconds, Type C
PAR %EFS	Parity (P-Bit), Percentage of Error-Free Seconds
PAR ERR RT	Parity (P-Bit) Error Rate
PAR ERR SEC	Parity (P-Bit) Errored Seconds
PAR ERRORS	Parity (P-Bit) Errors

FRAME Category

AV FRM ERT	Average Frame Error Rate
DS2 AV F ERT	DS2 Average Frame Error Rate
DS2 FRM ERR	DS2 Frame Errors
DS2 FRM ERT	DS2 Frame Error Rate
FEOOF SEC	Far-End Out-of-Frame Seconds
FRM %EFS	Frame, Percentage of Error-Free Seconds
FRM ERR RT	Frame Error Rate
FRM ERR SEC	Frame Errored Seconds
FRM ERRORS	Frame Errors
FRM LOSS CNT	DS3 Frame Loss Count
FRM THR ES	Frame Threshold Errored Seconds
NEOOF SEC	Near-End Out-of-Frame Seconds
RX X-BIT	Received X-Bit
TX X-BIT	Transmitted X-Bit

SIGNAL Category

FALL TIME	DS3 Pulse Fall Time
LEVEL	Received Signal Level, Vp
POWER	Received Signal Power Measurement
PULSE SHAPE	DS3 Pulse Shape Status
PULSE WIDTH	DS3 Pulse Width
RISE TIME	DS3 Pulse Rise Time
RX FREQ	Received Frequency
SIG L SEC	Signal Loss Seconds
TX FREQ	Transmitted Frequency
dBdsx LEVEL	Receive Signal Level in dBdsx

SIGNAL Category, 310-5 Option

HB JITTER	Highband Jitter
MAX HB JIT	Maximum Highband Jitter
MAX WB JIT	Maximum Wideband Jitter
WB JITTER	Wideband Jitter

SIGNAL Category, 310-16 Option

OPTICAL PWR	Optical Power
RETURN LOSS	Optical Return Loss

TIME Category

DATE	Current Date
ELAPSED TIME	Elapsed Time
TEST LENGTH	Timed Test Length
TIME	Current Time of Day
TIME LEFT	Timed Test Time Left

SONET Category, 310-12, 310-13R, and 310-14R Options

APS CONFIG	APS Configuration (Line Category)
APS INFO	APS Information (Line Category)
APS MSG CNT	APS Message Count (Line Category)
FRM WORD ERR	Frame Word Errors (Section Category)
LINE AIS SEC	Line AIS Seconds (Line Category)
LINE BIP ERR	Line BIP Errors (Line Category)
LINE BIP ES	Line BIP Errored Seconds (Line Category)

LINE BIP ESA	Line BIP Errored Seconds, Type A (Line Category)
LINE BIP ESB	Line BIP Errored Seconds, Type B (Line Category)
LINE BIP SES	Line BIP Severely Errored Seconds (Line Category)
LINE EQU BER	Line Equivalent Bit Error Rate (Line Category)
LINE FEBE	Line FEBE (Line Category)
LINE FEBE RT	Line FEBE Rate (Line Category)
LINE UAS	Line Unavailable Seconds (Line Category)
PATH AIS SEC	Path AIS/LOP Seconds (Path Category)
PATH BIP ERR	Path BIP Errors (Path Category)
PATH BIP ES	Path BIP Errored Seconds (Path Category)
PATH BIP ESA	Path BIP Errored Seconds, Type A (Path Category)
PATH BIP ESB	Path BIP Errored Seconds, Type B (Path Category)
PATH BIP SES	Path BIP Severely Errored Seconds (Path Category)
PATH EQU BER	Path Equivalent Bit Error Rate (Path Category)
PATH FEBE	Path FEBE (Path Category)
PATH FEBE RT	Path FEBE Rate (Path Category)
PATH TRACE	Path Trace Message (Path Category)
PATH UAS	Path Unavailable Seconds (Path Category)
POINTER DATA	Pointer Data (Line Category)
POINTER DEC	Pointer Decrements (Line Category)
POINTER INC	Pointer Increments (Line Category)
POINTER JUST	Pointer Justifications (Line Category)
POINTER NDF	Pointer New Data Flags (Line Category)
POINTER SIZE	Pointer Size Bits (Line Category)
SECT BIP ERR	Section BIP Errors (Section Category)
SECT BIP ES	Section BIP Errored Seconds (Section Category)
SECT BIP ESA	Section BIP Errored Seconds, Type A (Section Category)
SECT BIP ESB	Section BIP Errored Seconds, Type B (Section Category)
SECT BIP SES	Section BIP Severely Errored Seconds (Section Category)
SECT EQU BER	Section Equivalent Bit Error Rate (Section Category)
SIGNAL LABEL	Signal Label (Path Category)
SON LOS SEC	SONET Loss of Signal Seconds (Section Category)
SON RX FREQ	SONET Receive Frequency (Section Category)
SON SEF SEC	SONET Severely Errored Frame Seconds (Section Category)
SON TX FREQ	SONET Transmit Frequency (Section Category)
SYNC MSG	Z1 Byte Synchronization Message (Line Category)
SON BIT ERR	SONET Bit Errors (Path Category)
SON BIT ERT	SONET Bit Error Rate (Path Category)
SONET STATUS	SONET Payload Status Message (Path Category)
VT AIS SEC	VT AIS/LOP Seconds (VT Category)
VT BIP ERR	VT BIP Errors (VT Category)
VT BIP ES	VT BIP Errored Seconds (VT Category)
VT BIP ESA	VT BIP Errored Seconds, Type A (VT Category)
VT BIP ESB	VT BIP Errored Seconds, Type B (VT Category)
VT BIP SES	VT BIP Severely Errored Seconds (VT Category)
VT EQU BER	VT Equivalent Bit Error Rate (VT Category)
VT FEBE	VT FEBE (VT Category)
VT PTR DATA	VT Pointer Data (VT Category)
VT PTR DEC	VT Pointer Decrements (VT Category)
VT PTR INC	VT Pointer Increments (VT Category)
VT PTR JUST	VT Pointer Justifications (VT Category)
VT PTR NDF	VT Pointer New Data Flags (VT Category)
VT UAS	VT Unavailable Seconds (VT Category)

ATM Category: 310-15, 310-17A, and 310-20 Options

% CLP=1	Percent of Cells with CLP Equals One
% DROP'D	Percent of Dropped Received Mask Cells (TTC)
% OUT OF SEQ	Percent of Out Of Sequence Cells (TTC)
%MISINSERTED	Percent of Misinserted Cells (TTC)
AIS SECONDS	AIS Alarm Seconds
ATM STATUS	ATM Status Results, Summary Category
AVG DLAY VAR	Average Cell Delay Variation
BKGRD BW	Background Bandwidth
BKGRD RT	Background Rate
BURST BW	Burst Bandwidth
BURST RATE	Burst Rate
CLP=1	Cells with CLP Equals One
CORR TAG	Correlation Tag (TTC)
CORRECT ERRS	Correctable HEC Errors
CORRECT RATE	Correctable HEC Error Rate
CSF SECONDS	Cell Synchronization Failure Seconds
DROP'D CELLS	Dropped Received Mask Cells (TTC)
HEC ERR RATE	Header Error Control Error Rate
HEC ERRORS	Header Error Control Errors
IDLE BW	Idle Bandwidth
IDLE RT	Idle Cell Rate
IN-USE BW	In-Use Bandwidth
IN-USE RT	In-Use Rate
LOOP END-END	Loopback End-to-End
LOOP SEGMENT	Loopback Segment
MASK CELL BW	Mask Cell Bandwidth
MASK CELL RT	Mask Cell Rate
MASK CELLS	Mask Cells
MASK CONGEST	Received Mask Cells Marked Congested
MAX DLAY VAR	Maximum Cell Delay Variation
MAX BW	Maximum Bandwidth
MAX RATE	Maximum Rate
MIN DLAY VAR	Minimum Cell Delay Variation
MIN BW	Minimum Bandwidth
MIN RATE	Minimum Rate
MISINSERTED	Misinserted Cells (TTC)
NON-COR ERRS	Non-Correctable HEC Errors
NON-COR RATE	Non-Correctable HEC Error Rate
OUT OF SEQ	Out Of Sequence Cells (TTC)
RDI SECONDS	RDI Alarm Seconds
TOTL CONGEST	Total received ATM Cells Marked Congested

ATM Category, 310-17A Option only

AVG RT DELAY	Average Round Trip Delay
ERR'D CELLS	Errored Cell Count
ERR'D RATE	Errored Cell Rate
MAX RT DELAY	Maximum Round Trip Delay
PLCP BIP ERR	PLCP Bit Interleaved Parity Error Count
PLCP BIP RT	PLCP Bit Interleaved Parity Error Rate
PLCP FEBE	PLCP Far-End Block Errors
PLCP FRM ERR	PLCP Frame Word Error Count

Secondary DS3 Result Names (requires 310-3 option)

BPV Category

AV BPV ERT	Average BPV Error Rate
BPV %EFS	BPV, Percentage of Error-Free Seconds
BPV ERR RT	BPV Error Rate
BPV ERR SEC	BPV Errored Seconds
VIOLATIONS	Bipolar Violations

PARITY Category

AV C-BIT ERT	Average C-bit Parity Error Rate
AV FEBE RT	Average Far-End Block Error Rate
AV PAR ERT	Average Parity (P-bit) Error Rate
C-BIT %EFS	C-bit Parity, Percentage of Error-Free Seconds
C-BIT ERR RT	C-bit Parity Error Rate
C-BIT ERRORS	C-bit Parity Errors
C-BIT TYPE A	C-bit Parity Errored Seconds, Type A
C-BIT TYPE B	C-bit Parity Errored Seconds, Type B
C-BIT TYPE C	C-bit Parity Errored Seconds, Type C
FEBE %EFS	Far-End Block Error, Percentage of Error-Free Seconds
FEBE	Far-End Block Errors
FEBE RT	Far-End Block Error Rate
FEBE TYPE A	Far-End Block Errored Seconds, Type A
FEBE TYPE B	Far-End Block Errored Seconds, Type B
FEBE TYPE C	Far-End Errored Seconds, Type C
PAR %EFS	Parity (P-bit), Percentage of Error-Free Seconds
PAR ERR RT	Parity (P-bit) Error Rate
PAR ERR SEC	Parity (P-bit) Errored Seconds
PAR ERRORS	Parity (P-bit) Errors

FRAME Category

AV FRM ERT	Average Frame Error Rate
FRM %EFS	Frame, Percentage of Error-Free Seconds
FRM ERR RT	Frame Error Rate
FRM ERR SEC	Frame Errored Seconds
FRM ERRORS	Frame Errors

SIGNAL Category

RX FREQ	Received Frequency in Hertz

PROmpt — Set Terminal Mode Prompt

PRO ?

Print current terminal mode prompt. A ">" (greater than sign) indicates the T-BERD 310 is ready to accept a command. The ">" is the prompt default. A "+" (plus sign) indicates when the T-BERD 310 is ready to accept a command and the **HOLd** command has been executed. A user-defined prompt can also be created.

PRO ON

Turn the prompt ON.

PRO OFF

Turn the prompt OFF.

PRO STR <prompt string>

Create a user-defined prompt. The **<prompt string>** can be 32 characters in length. The **<prompt string>** is stored in NOVRAM. The prompt can be removed by creating a new prompt or executing the **FIRST POWERUP** command.

See also: **HOLd** and **RELease**

PULse MASk — Set Pulse Shape Mask Specification

PUL MAS ?

Print current DS3 pulse shape mask setting. The selected mask is generated along with the normalized pulse shape in the pulse shape graph printout. The SIGNAL category PULSE SHAPE result is affected by the selected pulse mask.

PUL MAS NON

Set pulse mask to NONE. The pulse shape continues to be analyzed but is not compared to a pulse mask.

PUL MAS ANS

Set pulse mask to the ANSI T1.102-1991 pulse mask specification.

PUL MAS 93A

Set pulse mask to the ANSI T1.102-1993 pulse mask specification.

PUL MAS CCI

Set pulse mask to the proposed ITU-T G.703 pulse mask recommendation.

See also: **PRInt GRAph**

RAW LEDs — Raw DS3 Signal LED Status

RAW LED

Print current status of the DS3 signal status and alarm LEDs in a seven byte hexadecimal format. Each byte represents the on (1) or off (0) status of the individual DS3 status and alarm LEDs as indicated in Table 2-1. Each byte (XX) relates to a specific group of LEDs. The table describes the seven bytes, starting with the first byte, and the individual LED bit positions within each byte. The "XX" and "X" represent the specific hexadecimal byte and bit position for the specified LED. The following example identifies Byte 6 as having a hex value of 23 with a bit sequence of 0010 0011. This command is a hexadecimal equivalent to the **LEDs** command.

1	2	3	4	5	6	7	Byte Number	
00	00	00	00	00	23	00	Displayed Hex Bytes	
0010 0011							Bit Pattern for Byte 6	
						1	Signal Present	ON
					1		Frame Sync	ON
				0			C-bit Frame	OFF
			0				Idle Present	OFF
		0					DS2 Frame Sync	OFF
	1						Pattern Sync	ON
0							SONET Present	OFF

Table 2-1. DS3 Status and Alarm RAW LEDs Command

XX 00 00 00 00 00 00	Byte 1 - Primary Alarm History	
0000 000X	Bit 0	Signal Loss History
0000 00X0	Bit 1	Frame Loss History
0000 0X00	Bit 2	DS2 Frame Loss History
0000 X000	Bit 3	Blue Alarm History
000X 0000	Bit 4	Yellow Alarm History
00X0 0000	Bit 5	Far-End Alarm History
0X00 0000	Bit 6	Pattern Loss History
X000 0000	Bit 7	SONET Loss History
00 XX 00 00 00 00 00	**Byte 2 - Power Loss History**	
0000 000X	Bit 0	Power Loss History
00 00 XX 00 00 00 00	**Byte 3 - Primary Alarms**	
0000 000X	Bit 0	Signal Loss
0000 00X0	Bit 1	Frame Loss
0000 0X00	Bit 2	DS2 Frame Loss
0000 X000	Bit 3	Blue Alarm
000X 0000	Bit 4	Yellow Alarm
00X0 0000	Bit 5	Far-End Alarm
0X00 0000	Bit 6	Pattern Loss
X000 0000	Bit 7	SONET Loss
00 00 00 XX 00 00 00	**Byte 4 - Secondary Alarms**	
0000 000X	Bit 0	Signal Loss
0000 00X0	Bit 1	Frame Loss
0000 0X00	Bit 2	DS2 Frame Loss
0000 X000	Bit 3	Blue Alarm
000X 0000	Bit 4	Yellow Alarm
00X0 0000	Bit 5	Far-End Alarm

00 00 00 00 XX 00 00	Byte 5 - Secondary Alarm History	
0000 000X	Bit 0	Signal Loss History
0000 00X0	Bit 1	Frame Loss History
0000 0X00	Bit 2	DS2 Frame Loss History
0000 X000	Bit 3	Blue Alarm History
000X 0000	Bit 4	Yellow Alarm History
00X0 0000	Bit 5	Far-End Alarm History
00 00 00 00 00 XX 00	**Byte 6 - Primary Status**	
0000 000X	Bit 0	Signal Present
0000 00X0	Bit 1	Frame Sync
0000 0X00	Bit 2	C-bit Frame
0000 X000	Bit 3	Idle Present
000X 0000	Bit 4	DS2 Frame Sync
00X0 0000	Bit 5	Pattern Sync
0X00 0000	Bit 6	SONET Present
00 00 00 00 00 00 XX	**Byte 7 - Secondary Status**	
0000 000X	Bit 0	Signal Present
0000 00X0	Bit 1	Frame Sync
0000 0X00	Bit 2	C-bit Frame
0000 X000	Bit 3	Idle Present
000X 0000	Bit 4	DS2 Frame Sync

RAW ATM LEDs — Raw ATM Signal LED Status

RAW ATM LED

Print current status of the DS1, DS3, OC-3c, or OC-12c ATM signal status and alarm LEDs in a five byte hexadecimal format. Each byte represents the on (1) or off (0) status of the individual ATM status and alarm LEDs as indicated in Table 2-2. Each byte (XX) relates to a specific group of LEDs. The table describes the five bytes, starting with the first byte, and the individual LED bit positions within each byte. The "XX" and "X" represent the specific hexadecimal byte and bit position for the specified LED. The following example identifies Byte 5 as having a hex value of 01 with a bit sequence of 0000 0001. Requires the 310-15, 310-17A, or 310-20 option.

1	2	3	4	5			**Byte Number**
00	00	00	00	01			**Displayed Hex Bytes**
0000 0001							**Bit Pattern for Byte 5**
						1	**Cell Sync** **ON**

Table 2-2. ATM Status and Alarm RAW LEDs Command

XX 00 00 00 00	Byte 1 - Alarm History 1	
0000 000X	Bit 0	OCD History
0000 00X0	Bit 1	AIS History
0000 0X00	Bit 2	RDI History
0000 X000	Bit 3	LCD History
000X 0000	Bit 4	LCD Fail History
00X0 0000	Bit 5	Combo (No Cell Sync) History
0X00 0000	Bit 6	PLCP RDI History
X000 0000	Bit 7	All Idle History
00 XX 00 00 00	**Byte 2 - Alarm History 2**	
0000 000X	Bit 0	No Masked Cells History

00 00 XX 00 00	Byte 3 - Alarms 1	
0000 000X	Bit 0	OCD
0000 00X0	Bit 1	AIS
0000 0X00	Bit 2	RDI
0000 X000	Bit 3	LCD
000X 0000	Bit 4	LCD Fail
00X0 0000	Bit 5	Combo (No Cell Sync)
0X00 0000	Bit 6	PLCP RDI
X000 0000	Bit 7	All Idle
00 00 00 XX 00	**Byte 4 - Alarms 2**	
0000 000X	Bit 0	No Masked Cells
00 00 00 00 XX	**Byte 5 - Status**	
0000 000X	Bit 0	Cell Sync

RAW SONet LEDs — Raw SONET Signal LED Status

RAW SON LED

Print current status of the SONET signal status and alarm LEDs in a seven byte hexadecimal format. Each byte represents the on (1) or off (0) status of the individual SONET status and alarm LEDs as indicated in Table 2-3. Each byte (XX) relates to a specific group of LEDs. The table describes the seven bytes, starting with the first byte, and the individual LED bit positions within each byte. The "XX" and "X" represent the specific hexadecimal byte and bit position for the specified LED. The following example identifies Byte 5 as having a hex value of 23 with a bit sequence of 0010 0011.

This command is a hexadecimal equivalent to the **SONet LEDs** command. Requires a SONET option.

	1	2	3	4	5	6	7	Byte Number	
	00	00	00	00	23	00	00	Displayed Hex Bytes	
0010 0011								Bit Pattern for Byte 5	
							1	VT AIS	ON
						1		VT RDI	ON
					0			VT LOP	OFF
				0				Section BIP	OFF
			0					Line BIP	OFF
		1						Path BIP	ON
	0							VT BIP	OFF
0								Pattern Sync Loss	OFF

Table 2-3. SONET Status and Alarm RAW LEDs Command

XX 00 00 00 00 00 00	Byte 1 - Alarms History 1	
0000 000X	Bit 0	Loss of Signal History
0000 00X0	Bit 1	OOF History
0000 0X00	Bit 2	LOF History
0000 X000	Bit 3	Line AIS History
000X 0000	Bit 4	Line RDI History
00X0 0000	Bit 5	Path AIS History

00 00 00 XX 00 00 00	Byte 4 - Alarms 1	
0000 000X	Bit 0	Loss of Signal
0000 00X0	Bit 1	OOF
0000 0X00	Bit 2	LOF
0000 X000	Bit 3	Line AIS
000X 0000	Bit 4	Line RDI
00X0 0000	Bit 5	Path AIS

Table 2-3. SONET Status and Alarm RAW LEDs Command (Continued)

0X00 0000	Bit 6	Path RDI History	0X00 0000	Bit 6	Path RDI
X000 0000	Bit 7	Path LOP History	X000 0000	Bit 7	Path LOP
00 XX 00 00 00 00 00	**Byte 2 - Alarms History 2**		**00 00 00 00 XX 00 00**	**Byte 5 - Alarms 2**	
0000 000X	Bit 0	VT AIS History	0000 000X	Bit 0	VT AIS
0000 00X0	Bit 1	VT RDI History	0000 00X0	Bit 1	VT RDI
0000 0X00	Bit 2	VT LOP History	0000 0X00	Bit 2	VT LOP
0000 X000	Bit 3	Section BIP History	0000 X000	Bit 3	Section BIP
000X 0000	Bit 4	Line BIP History	000X 0000	Bit 4	Line BIP
00X0 0000	Bit 5	Path BIP History	00X0 0000	Bit 5	Path BIP
0X00 0000	Bit 6	VT BIP History	0X00 0000	Bit 6	VT BIP
X000 0000	Bit 7	Pattern Sync Loss History[1]	X000 0000	Bit 7	Pattern Sync Loss[1]
00 00 XX 00 00 00 00	**Byte 3 - Alarms History 3**		**00 00 00 00 00 XX 00**	**Byte 6 - Alarms 3**	
0000 000X	Bit 0	Path PTR Adjust History	0000 000X	Bit 0	Path PTR Adjust
0000 00X0	Bit 1	VT PTR Adjust History	0000 00X0	Bit 1	VT PTR Adjust
			00 00 00 00 00 00 XX	**Byte 7 - Status**	
			0000 000X	Bit 0	Frame Sync
			0000 00X0	Bit 1	Signal Present
			0000 0X00	Bit 2	Path PTR Present
			0000 X000	Bit 3	VT PTR Present
			000X 0000	Bit 4	Concat Present
			00X0 0000	Bit 5	Pattern Sync[1]

1. Pattern Sync and Pattern Sync Loss only apply when the K-S or higher software revision is installed.

RECeive INPut — Set Primary DS3 Receive Input Level

REC INP ?

Print current DS3 RECEIVE jack receive input level.

REC INP HIG

Set receive input to HIGH.

REC INP DSX

Set receive input to DSX.

REC INP LOW

Set receive input to LOW.

RELease — Release All Printer Output

REL

This command disables the **HOLd** command and releases the print buffer output. The prompt changes from + to > when the buffer hold is released. Any printouts generated during the hold are printed.

See also: **HOLd** and **PROmpt**

REMote — Enter Remote Control Mode

REM (,)

This command places the T-BERD 310 in the remote control mode from the local or terminal mode. The command disables the following functions: **PROmpt**, **ECHo**, and front-panel switches (except **RESULTS** switches). The message "232 REMOTE CONTROL" flashes in the MODE/PATTERN window. The comma (,) can be used in place of **REMote**.

See also: **LOCal, TERminal, PROmpt,** and **ECHo**

EXAMPLE 1 (local to remote mode):

(The T-BERD 310 (and 310-1) is in local mode. Enter the **REM** command. The command is not echoed from the T-BERD 310.)

```
Remote Control activated, now in control
```

(The T-BERD 310 responds with the above message and is placed in remote control mode. The **PROmpt**, **ECHo**, and front-panel switches (except **RESULTS** switches) are disabled. *232 REMOTE CONTROL* flashes in the MODE/PATTERN window.)

Enter **PRI TIM** (This is not echoed.)

12:34:23 (The T-BERD 310 responds with the current time.)

EXAMPLE 2 (terminal to remote mode):

> rem (The T-BERD 310 (and 310-1) is in local mode. Enter the **REM** command. The command is echoed from the T-BERD 310.)

```
Terminal mode deactivated.
```

(The T-BERD 310 responds with the above message and is in remote control mode. The **PROmpt**, **ECHo**, and front-panel switches (except **RESULTS** switches) are disabled. *232 REMOTE CONTROL* flashes in the MODE/PATTERN window.)

Enter **PRI TIM** (This is not echoed.)

12:34:23 (The T-BERD 310 responds with the current time.)

RES1 or RES2 — Test Results Display I/II Control

RES1 or RES2 ?

Print current test result displayed in the RESULTS I or RESULTS II window. Refer to the **PRInt** command for a list of valid **<result names>**.

RES1 or RES2 <result name>

Display the primary DS3 **<result name>** in the RESULTS I or RESULTS II window.

RES1 or RES2 SECondary <result name>

Display the secondary DS3 **<result name>** in the RESULTS I or RESULTS II window. This command requires the 310-3 option.

See also: **PRInt**

RESTART — Initiate Test Restart

RESTART

This command restarts the T-BERD 310 mainframe test. All SONET, DS1, and DS3 ATM test results are set to zero. All 310-1 test results continue to accumulate until the **@RESTART** command is executed. If **ATM RATe SELect** is set to DS1, then the RESTART command will also restart the 310-1 Lid Option.

See also: **@RESTART**

RESUlts — Generate Test Results Printout

RESU

This command generates a T-BERD 310 test results printout.

See also: **PRInt RESults** and **PRInt EVEnt**

SET DATe — Set Calendar Date

SET DAT ?

Print current calendar date.

SET DAT <mmm dd>

Set calendar date with the correct month and day. Enter the month (mmm) from JANuary to DECember. Enter the date (dd) from 1 to 31.

SET TIMe — Set Time of Day

SET TIM ?

Print current time of day.

SET TIM <hh:mm>

Set time of day in hours and minutes using the 24 hour clock format.

SONet ALArm — SONET Alarm Insertion Select

SON ALA ?

Print current SONET alarms being transmitted over the SONET signal. This command requires the 310-13T or 310-14T option. Use the **SONet LEDs** command to report on the status of the received alarms.

SON ALA LIN AIS

Insert a Line alarm indication signal alarm.

SON ALA LIN RDI

Insert a Line remote defect indication alarm.

SON ALA OFF

Disable the transmitted alarm.

SON ALA PAT AIS
Insert a Path alarm indication signal alarm.

SON ALA PAT LOP
Insert a Path loss of pointer alarm.

SON ALA PAT RDI
Insert a Path remote defect indication alarm.

SON ALA VT AIS
Insert a VT alarm indication signal alarm.

SON ALA VT LOP
Insert a VT loss of pointer alarm.

SON ALA VT RDI
Insert a VT remote defect indication alarm.

See also: **SONet LEDs**

SONet DCC — SONET Data Communication Channel Drop and Insert Control

SON DCC ?
Print current drop and insert capabilities for the data communication channel (DCC). The DCC is accessed through the DCC DROP/INSERT connector on the 310-13R or 310-14R option. This command requires the 310-13R/T pair or 310-14R/T pair option for full DCC drop and insert capabilities.

SON DCC NON
Disable the insert function of the selected DCC. An all zeros signal is placed in the transmitted Line and Section DCC.

SON DCC LIN
Select Line DCC to be dropped and inserted.

SON DCC SEC
Select Section DCC to be dropped and inserted.

SONet DROp — SONET Dropped Payload Format

SON DRO ?
Print current SONET dropped payload signal format selection. If lowercase characters appear, the **SONet DROp AUTo** command has been executed. For the DS1 payload formats, use the **SONet DS1 CHAnnel RX** command to select the dropped channel. This command requires the 310-13R or 310-14R option.

SON DRO <payload >
Select SONET payload signal format and connection to be dropped from the following list:

ATM3c — Drop an ATM tributary from the selected STS ID of an OC-3, OC-12, or OC-48 signal. The command is only valid when the SONet INPut command is set to OC-3. This command requires the 310-15 option.

ATM12c — Drop an ATM tributary from the selected STS ID of an OC-12 or OC-48 signal. The command is only valid when the **SONet INPut** command is set to OC-12. This command requires the 310-20 option.

CON3c — Drop an OC-3c tributary from the selected OC-3, OC-12, or OC-48 signal. The command is only valid when the **SONet INPut** command is set to OC-3. This command requires the 310-14R, -14T options.

CON12c — Drop an OC-12c tributary from the selected OC-12 and OC-48 signal. The command is only valid when the **SONet INPut** command is set to OC-12. This command requires the 310-12 option.

CON48c — Drop an OC-48c tributary from the selected OC-48 signal. The command is only valid when the **SONet INPut** command is set to OC-48. This command requires the 310-21 option.

AUT — Enable the automatic payload detection function.

DS1 ASY — Drop a DS1 asynchronous payload from the selected STS ID.

DS1 BIT — Drop a DS1 bit-synchronous payload from the selected STS ID.

DS1 BYT — Drop a DS1 byte-synchronous payload from the selected STS ID.

DS3 ASYn — Drop a DS3 asynchronous payload from the selected STS ID.

2^23-1 (3c) — Drop an OC-3c 2^23-1 test pattern from the selected STS ID.

i2^23-1 (3c) — Drop an inverted OC-3c 2^23-1 test pattern from the selected STS ID.

2^23-1 (12c) — Drop an OC-12c 2^23-1 test pattern from the selected STS ID.

i2^23-1 (12c) — Drop an inverted OC-12c 2^23-1 test pattern from the selected STS ID.

2^23-1 (48c) — Drop an OC-48c 2^23-1 test pattern from the selected STS IDp.

i2^23-1 (48c) — Drop an inverted OC-48c 2^23-1 test pattern from the selected STS ID.

2^31-1 (48c) — Drop an OC-48c 2^31-1 test pattern from the selected STS ID.

i2^31-1 (48c) — Drop an inverted OC-48c 2^31-1 test pattern from the selected STS ID.

See also: **SONet DS1 CHAnnel RX**, **SONet INSert**, **SONet INPut**, **SONet DS1 CHAnnel TX**, and **DS1 SIGnaling BITs**

SONet DS1 CHAnnel RX — SONET DS1 Channel Select

SON DS1 CHA RX ?

Print current DS1 channel (in "group channel" format) from the SONET DS1 signal. Select the DS1 payload format with the **SONet DROp** command. Set channel type with the **DS1 VT MAP** command. This command requires the 310-13R or 310-14R option.

SON DS1 CHA RX x,y

Set SONET DS1 channel to the selected group and VT, **x** is the group and **y** is the channel. Refer to the *T-BERD 310 User's Manual* for valid **x** (group), **y** (channel) numbers.

See also: **SONet DROp** and **DS1 VT MAP**

SONet DS1 CHAnnel TX — SONET Insert Signal Source, DS1 Channel

SON DS1 CHA TX ?

Print current SONET DS1 payload to be inserted. Use the **SONet INSert** command to select the SONET payload signal format: **DS1 ASYn**, **DS1 BIT**, or **DS1 BYTe**. The **SONet DS1 CHAnnel TX** is not valid when the **SONet INSert** command is set to **DS3 ASYn** or **UNEquipped**. Set channel type with the **DS1 VT MAP** command. This command requires the 310-13T or 310-14T option.

SON DS1 CHA TX x,y

Set SONET DS1 channel to the selected group and VT, **x** is the group and **y** is the channel. Refer to the *T-BERD 310 User's Manual* for valid **x** (group), **y** (channel) numbers.

SON DS1 CHA TX ALL

Insert the DS1 test signal into all VT1.5 channels.

See also: **SONet INSert** and **DS1 VT MAP**

SONet ERRor INSert — SONET Error Insertion Select

SON ERR INS ?

Print current SONET BIP, FEBE, or frame word error being inserted. Only one **<error_type>** can be inserted at a time. Use the **SONet ERRor RATe** command to set the error insertion rate. Use the **SONet FRAme ERRor** command to set the number of consecutive frame word errors to insert. This command requires the 310-13T or 310-14T option.

SON ERR INS OFF

Disable selected BIP, FEBE, or frame word error insertion selection.

SON ERR INS <error_type> <insertion_type>

Insert indicated **<error_type>** and **<insertion_type>** from the following selections.

Select an **<error_type>**:

FRA WOR — Insert frame word errors at the indicated insertion rate.

LIN BIP — Insert Line BIP errors at the indicated insertion rate.

LIN FEB — Insert Line FEBEs at the indicated insertion rate.

PAT BIP — Insert Path BIP errors at the indicated insertion rate.

PAT FEB — Insert Path FEBEs at the indicated insertion rate.

SEC BIP — Insert Section BIP errors at the indicated insertion rate.

VT BIP — Insert VT BIP errors at the indicated insertion rate.

VT FEB — Insert VT FEBEs at the indicated insertion rate.

LOG — Insert logic errors at the indicated insertion rate into the 2^23-1 (3c) or I2^23-1 (3c) pattern. Only the SIN and RAT insertion types are allowed.

NOTE

VT errors can only be inserted when VT1.5 mapping is selected with the **SONet INSert** command.

Select an **<insertion_type>**:

SIN — Insert a single BIP or FEBE error with the indicated error type.

RAT — Insert continuous BIP or FEBE errors with the indicated error type at the error rate selected with the **SONet ERRor RATe** command.

BUR — Insert a single burst of consecutive frame word errors. Select number of consecutive frame word errors with the **SONet FRAme ERRor** command.

CON — Insert continuous consecutive frame word errors. Select number of consecutive frame word errors with the **SONet FRAme ERRor** command.

See also: **SONet ERRor RATe** and **SONet FRAme ERRor**

SONet ERRor RATe — SONET Error Insertion Rate Select, BIP and FEBE Errors

SON ERR RAT ?

Print current SONET error insertion rate for inserting BIP errors and FEBEs in the transmitted SONET signal. This error rate applies to the **SONet ERRor INSert BIP** and **FEBe** commands. This command requires the 310-13T or 310-14T option.

SON ERR RAT <insertion_rate>

Select SONET error insertion rate as follows: 1E-4, 1E-5, 1E-6, 1E-7, 1E-8, and 1E-9.

See also: **SONet ERRor INSert**

SONet FRAme ERRor — SONET Error Insertion Rate Select, Frame Word Errors

SON FRA ERR ?

Print current number of consecutive frame word errors being inserted. This error rate applies to the **SONet ERRor INSert FRAme WORd** command. This command requires the 310-13T or 310-14T option.

SON FRA ERR [1 | 2 | 3 | 4 | 5]

Select number of consecutive frame word errors to be inserted: 1, 2, 3, 4, or 5.

See also: **SONet ERRor INSert**

SONet INPut — SONET Input Signal Source

SON INP ?

Print current SONET input receive rate and connection to be analyzed. This command requires the 310-12, 310-13R, 310-14R option, or 310-21option.

SON INP STM-1

Select the side-panel OC-1/3 RECEIVE connector on the 310-14R option to analyze the STM-1 signal.

SON INP STS-1

Select side-panel STS-1 RECEIVE connector on the 310-13R or 310-14R option to analyze an STS-1 signal. Use the **STS RX LEVel** command to set receive level.

SON INP OC-1

Select side-panel OC-1/3 RECEIVE connector on the 310-14R option to analyze an OC-1 signal.

SON INP OC-3

Select side-panel OC-1/3 RECEIVE connector on the 310-14R option to analyze an OC-3 signal or OC-3c or ATM tributary. Use the **SONet STS ID RX** command to select the STS-1 to be analyzed.

SON INP OC-12

Select side-panel OC-12 RECEIVE connector on the 310-12 option to analyze an OC-12 signal or OC-12c or ATM tributary. Use the **SONet STS ID RX** command to select the STS-1 to be analyzed.

SON INP OC-48

Select side-panel OC-48 RECEIVE connector on the 310-21 option to analyze an OC-48 signal or OC-48c or ATM tributary. Use the **SONet STS ID RX** command to select the STS-1 to be analyzed.

See also: **STS RX LEVel, SONet STS ID RX, SONet OUTput,** and **SONet STS ID TX**

SONet INSert — SONET Insert Signal Source

SON INS ?

Print current SONET payload signal format and connection to be inserted. Use the **SONet DS1 CHAnnel TX** command to select the VT1.5 channel to insert the DS1 signal. The **SONet INSert** command is not applicable with the **SONet OUTput THRu** command. This command requires the 310-13T or 310-14T option. The DS1 commands require the 310-1 option.

SON INS <payload>

Select SONET payload signal format and connection to be inserted from the following list.

NOTE

When writing DTM scripts, drop parentheses from the following command (parentheses conflict with script syntax): SON INS ATM(3C).

ATM3c — Insert (or generate) an ATM signal. The command is only valid when **SONet OUTput** command is set to OC-3, OC-12, or OC-48. This command requires the 310-15 option.

ATM12c — Insert (or generate) an ATM signal. The command is only valid when **SONet OUTput** command is set to OC-12 or OC-48. This command requires the 310-20 option.

CON3c — Insert an OC-3c tributary into an OC-3, OC-12, or OC-48 signal.

CON12c — Insert an OC-12c tributary into an OC-12 or OC-48 signal.

CON48c — Insert an OC-48c tributary into an OC-48 signal.

DS1 ASY EXT — Insert an externally generated DS1 asynchronous signal from the 310-1 DS1 RECEIVE jack into the selected STS ID.

DS1 ASY INT — Insert a 310-1 internally generated DS1 asynchronous signal into the selected STS ID.

DS1 BIT EXT — Insert an externally generated DS1 bit-synchronous signal from the 310-1 DS1 RECEIVE jack into the selected STS ID.

DS1 BIT INT — Insert a 310-1 internally generated DS1 bit-synchronous signal into selected STS ID.

DS1 BYT EXT — Insert an externally generated DS1 byte-synchronous signal from the 310-1 DS1 RECEIVE jack into the selected STS ID.

DS1 BYT INT — Insert a 310-1 internally generated DS1 byte-synchronous signal into the selected STS ID.

DS3 ASY EXT — Insert an externally generated DS3 asynchronous signal from the DS3 RECEIVE jack into the selected STS ID.

DS3 ASY INT — Insert a 310-1 internally generated DS3 asynchronous signal into the selected STS ID.

PAT UNE — Insert a Path unequipped signal. The test signal is not inserted and the selected STS ID payload is marked unequipped.

VT1.5 UNE — Insert a VT1.5 unequipped signal. The test signal is not inserted and the each VT1.5 signal is marked unequipped.

SON INS 2^23-1 3c — Insert an OC-3c 2^23-1 test pattern into all STS ID groups.

SON INS I2^23-1 3c — Insert an inverted OC-3c 2^23-1 test pattern into all STS ID groups.

SON INS 2^23-1 12c — Insert an OC-12c 2^23-1 test pattern into all STS ID groups.

SON INS I2^23-1 12c — Insert an inverted OC-12c 2^23-1 test pattern into all STS ID groups.

SON INS 2^23-1 48c — Insert an OC-48c 2^23-1 test pattern into all STS ID groups.

SON INS I2^23-1 48c — Insert an inverted OC-48c 2^23-1 test pattern into all STS ID groups.

SON INS 2^31-1 48c — Insert an OC-48c 2^31-1 test pattern into all STS ID groups.

SON INS I2^31-1 48c — Insert an inverted OC-48c 2^31-1 test pattern into all STS ID groups.

See also: **SONet DS1 CHAnnel TX** and **SONet OUTput**

SONet LEDs — Print State of SONET Status and Alarm LEDs

SON LED

This command prints the state of the SONET Status and Alarm LEDs.

See also: **LEDs**

EXAMPLE:

```
>SON LED (Print state of the SONET Status and Alarm LEDs.)

- SONET alarms - H   C
SEF              OFF OFF
LOF              OFF OFF
LINE AIS         OFF OFF
LINE RDI         OFF OFF
PATH AIS         OFF OFF
PATH RDI         OFF OFF
PATH LOP         OFF OFF
VT AIS           OFF OFF
VT RDI           OFF OFF
VT LOP           OFF OFF

>
```

SONet OUTput — SONET Output Signal Source

SON OUT ?

Print current SONET output transmit rate and connection used. This command requires the 310-12, 310-13T, 310-14T, or 310-21option.

NOTE

To disable the OC-1/3/3c, OC-12/12c, or OC-48/48c transmitter, select STS-1.

SON OUT STM-1

Select the side-panel OC-1/3 TRANSMIT connector on the 310-14T option to transmit the STM-1 signal.

SON OUT STS-1

Select side-panel STS-1 TRANSMIT connector on the 310-13T or 310-14T option to transmit an STS-1 signal. Use the **STS TX LEVel** command to set transmit level.

SON OUT OC-1

Select side-panel OC-1/3 TRANSMIT connector on the 310-14T option to transmit an OC-1 signal.

SON OUT OC-3

Select side-panel OC-1/3 TRANSMIT connector on the 310-14T option to transmit an OC-3 signal. Use the **SONet STS ID TX** command to select the STS-1 being inserted.

SON OUT OC-12

Select side-panel OC-12 TRANSMIT connector on the 310-12 option to transmit an OC-12 signal. Use the **SONet STS ID TX** command to select the STS-1 being inserted.

SON OUT OC-48

Select side-panel OC-48 TRANSMIT connector on the 310-21 option to transmit an OC-48 signal. Use the **SONet STS ID TX** command to select the STS-1 being inserted.

SON OUT THR

Connect a SONET receiver input with the appropriate SONET transmitter output, i.e., STS-1 in to STS-1 out, OC-1 in to OC-1 out, OC-3 in to OC-3 out, and OC-12 in to OC-12 out. Set rate and select the connections with the **SONet INPut** command. Select STS-1 signal to be tested with the **SONet STS ID RX** command. Insert frame word errors, Section BIP errors, or Line BIP errors with the **SONet ERRor INSert** command. This command requires the 310-12, 310-13R/T pair, or 310-14R/T pair option.

See also: **STS TX LEVel, SONet STS ID TX, SONet INPut, SONet STS ID RX,** and **SONet ERRor INSert**

SONet STS ID RX — SONET Input Signal Source, STS ID

SON STS ID RX ?

Print current OC-3, OC-12, or OC-48 STS ID to be analyzed. Use the **SONet INPut** command to select the input signal. This command requires the 310-12, 310-14R, or 310-21 option.

SON STS ID RX [1 to 3]

Select STS ID to be analyzed from an OC-3 signal.

SON STS ID RX [1 to 12]

Select STS ID to be analyzed from an OC-12 signal. This command requires the 310-12 option.

SON STS ID RX [1 to 48]

Select STS ID to be analyzed from an OC-48 signal. This command requires the 310-21 option.

NOTE

If you select an STS ID that is part of an OC-3c tributary, the entire OC-3c signal is analyzed.

See also: **SONet INPut**

SONet STS ID TX — SONET Output Signal Source, STS ID

SON STS ID TX ?

Print current OC-3, OC-12, or OC-48 STS ID to be inserted. Use the **SONet OUTput** command to select the output signal. This command requires the 310-12, 310-14R, or 310-21 option.

SON STS ID TX [1 to 3]

Select STS ID to be inserted in an OC-3 signal.

SON STS ID TX [1 to 12]

Select STS ID to be inserted in an OC-12 signal. This command requires the 310-12 option.

SON STS ID TX [1 to 48]

Select STS ID to be inserted in an OC-48 signal. This command requires the 310-21 option.

NOTE

This command is not applicable when inserting (or generating) an OC-3c tributary. The same OC-3c tributary signal is generated for the OC-3 payload.

See also: **SONet INPut**

SONet TIMing — SONET Transmit Timing Source

SON TIM ?

Print current SONET transmit timing source. If a DS1 bit-synchronous or DS1 byte-synchronous payload is inserted into the SONET signal, the message "(payload)" appears and the timing cannot be changed. This command requires the 310-13T or 310-14T option.

SON TIM DS1 BIT CLK

Select timing source connected to the side-panel DS1 BITS CLOCK connector.

SON TIM INT

Select internal clock to transmit the SONET signal.

SON TIM REC

Select recovered clock generated from the received SONET signal which is selected through the **SONet INPut** command. This command requires the 310-13R or 310-14R option.

See also: **SONet INPut** and **SONet INSert**

SPE POInter — Synchronous Payload Envelope Pointer Control

SPE POI ?

Print current synchronous payload envelope (SPE) payload pointer. The SPE pointer cannot be manipulated while in SONET THRU mode, or inserting Line or Path AIS or LOP. This command requires the 310-13T or 310-14T option.

SPE POI DEC

Decrement the SPE payload pointer by one from 782 to 0.

SPE POI INC

Increment the SPE payload pointer by one from 0 to 782.

SPE POI NDF [+2 | -2]

Change the NDF to adjust the SPE payload pointer by +2 or -2 bytes.

See also: **SONet INPut** and **SONet INSert**

STS RX LEVel — STS Receive Level

STS RX LEV ?

Print current STS input signal level range for the side-panel STS-1 RECEIVE connector. This command requires the 310-13R or 310-14R option.

STS RX LEV DSX

Select for signal levels received at a DSX level.

STS RX LEV HIG

Select for signal levels received at a high level.

STS TX LEVel — STS Transmit Level

STS TX LEV ?

Print current STS output signal level for the side-panel STS-1 TRANSMIT connector. This command requires the 310-13T or 310-14T option.

STS TX LEV DSX

Select to transmit the STS signal at a DSX level.

STS TX LEV HIG

Select to transmit the STS signal at a high level.

SONet TX TOH — Print All Transmitted SONET Overhead Bytes

SON TX TOH

Prints all transmitted SONET Overhead bytes (in Hex form) in table format.

SONet USER1 BYTe — Set Transmitted SONET USER1 Byte

SON USER1 BYT

Sets the transmitted SONET USER1 byte in Hex value.

SONet USER2 BYTe — Set Transmitted SONET USER2 Byte

SONet USER2 BYTe

Sets the transmitted SONET USER2 byte in Hex value.

TERminal — Enter Terminal Mode

TER (.)

This command places the T-BERD 310 in the terminal control mode from the local or remote mode. The command enables the **PROmpt** and **ECHo** commands and disables front-panel switches (except **RESULTS** switches). The command also sets the **PRInt TERminator** command to **CRLf** and the **PRInt WIDth** command to **80**. The message *232 REMOTE CONTROL* flashes in the MODE/PATTERN window. A period (.) can be used in place of **TER**.

See also: **PROmpt, ECHo, LOCal,** and **REMote**

EXAMPLE (local to terminal mode):

(Enter **TER** or ".". The T-BERD 310 (and 310-1) enters local mode. The command is not echoed back from the T-BERD 310.)

```
Terminal mode activated.
Enter "HELP" or "?" followed by <RETURN> for help.
>
```

TESt LENgth — Set Timed Test Length

TES LEN ?

Print current timed test length. This command is required when the **TESt** command is set to **TIMed**. If the **PRInt EVEnt** command is set to **TESt END**, a timed test result printout is generated at the end of the test.

TES LEN <hhh:mm>

Set test length time in hours and minutes from 000:01 to 999:59.

See also: **TESt** and **PRInt EVEnt**

TESt — Set Test Duration

TES ?

Print current test duration of the test being performed.

TES CON

Set to continuous testing. The test results indicate accumulative counts since test restart.

TES TIM

Set to timed testing. Set test length with the **TESt LENgth** command. The test results indicate accumulative counts since test restart.

TOH BYTe — Set Transmitted SONET Overhead Byte

TOH BYTe [<variable> <range>]

Possible variables are: A1, A2, C2, D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, F1, F2, G1, K1, K2, Z1, Z2, Z3, Z4, and Z5.

TRAnsmit OUTput — Set DS3 Transmit Output Level

TRA OUT ?

Print current DS3 transmit output level. This command controls the output of the front- and side-panel DS3 outputs.

TRA OUT HIG

Set DS3 transmit output level to HIGH.

TRA OUT DSX

Set DS3 transmit output level to DSX.

TRA OUT LOW

Set DS3 transmit output level to LOW.

TRAnsmit TIMing — Set DS3 Transmit Timing Source

TRA TIM ?

Print current DS3 transmit timing source. If the DS1 INSERT mode is selected, the DS3 transmit timing source defaults to recovered timing.

TRA TIM INT

Set DS3 transmit timing source to INTERNAL.

TRA TIM EXT

Set DS3 transmit timing source to EXTERNAL.

TRA TIM REC

Set DS3 transmit timing source to RECOVERED.

TX X-Bit — Set Transmitted X-Bit Pattern

TX X-B ?

Print current transmitted X-bit setting.

TX X-B [00 | 11]

Set transmitted X-bits to 00 or 11 (X_0 X_1).

TX X-B EMU

Set transmitted X-bit setting to EMULATE. EMULATE causes the T-BERD 310 to automatically transmit the X-bits according to the received signal frame status.

USER1 — Set User-Programmable Test Pattern

USER1 ?

Print current user-programmable 3- to 24-bit test pattern. The command only applies when the **USER1** test pattern is selected with the **PATTern** command. The pattern is transmitted from left to right.

USER1 [000 | 001 to 111111111111111111111111]

Set test pattern in a binary format from 000 to 111111 111111 111111 111111.

See also: **PATTern**

WDM RX MODe — Set Dense Wavelength Division Multiplexing Receive

WDM RX MODe ?

Print current DWDM receive operating mode. This command requires the 310-22 option.

WDM RX MOD SCAn

Enables contiguous channel scanning of DWDM optical signals for spectral analysis measurements.

WDM RX MOD DROp

Enable single channel to be isolated and dropped for DWDM optical analysis.

WDM RX UNIts — Set Dense Wavelength Division Multiplexing Units

WDM RX UNIts ?

Print current WDM Receive measurement units for either wavelength (nanometers) or frequency (Tera-hertz). This command requires the 310-22 option.

WDM RX UNI NM

Select the display units for WDM RX Channels. Set **NM** as the valid selection in the units window to measure wavelength.

WDM RX UNI THZ

Select the display units for WDM RX Channels. Set **THZ** as the valid selection in the units window to measure frequency.

WDM RX CHAnnel — Set Dense Wavelength Division Multiplexing Channel Select

WDM RX CHAnnel ?

Print current DWDM Receive channel selected from the valid, available channels in the Channel Scan Mode.

WDM RX CHA NEXt

Selects next available channel as the valid selection in the units window.

WDM RX CHA PREv

Selects previous available channel as the valid selection in the units window.

WDM RX PEAk THReshold — Set Wavelength Division Multiplexing Peak Threshold

WDM RX PEAk THReshold ?

Print current peak threshold detecting criteria used to identify DWDM channels. This command requires the 310-22 option.

WDM RX PEA THR < parameters between 0 - 40 dB >

Sets peak threshold (measured in nm) to valid selection used to measure wavelength (see T-BERD 310 Communications Analyzer User's Guide, Section 2.75.4).

WDM RX PEAk EXCursion — **Set Wavelength Division Multiplexing Peak Excursion**

WDM RX PEAk EXCursion ?

Prints current peak excursion detecting criteria used to identify DWDM channels. This command requires the 310-22 option.

WDM RX PEA EXCursion < parameters between 1 - 30 dB >

Sets peak excursion (measured in THZ) to the valid selection to measure frequency (see T-BERD 310 Communications Analyzer User's Guide, Section 2.74.4).

2.3 310-1 DS1/DS0 ANALYZER OPTION COMMANDS

The following remote control commands apply to the T-BERD 310-1 DS1/DS0 Analyzer Option controls, indicators, connections, displays, and auxiliary functions. Note that each command begins with "@" unless otherwise indicated.

@CHAnnel FMT — **Channel Format Select**

@CHA FMT ?

Print current channel format for full T1 or Fractional-T1 (FT1) testing. This command requires the 310-9B option.

@CHA FMT FUL

Select full T1 channel format. All of the other operating modes can be selected.

@CHA FMT NX64

Select Nx64 FT1 channels. Use the **@FRACtional-t1 TYPe** command to select the contiguous or non-contiguous channel format.

See also: **@MODe** and **@FRACtional-t1 TYPe**

@CODe — **Set DS1 Line Code Type**

@COD ?

Print current transmitted DS1 line code status.

@COD AMI

Set DS1 line code to alternate mark inversion (AMI).

@COD B8Z

Set DS1 line code to B8ZS encoding.

See also: **@MODe**

@CONTIguous — FT1 Contiguous Channel Select

@CONTI ?

Print current FT1 contiguous base channel and bandwidth. Select FT1 testing with the **@CHAnnel FMT** command. Enable contiguous FT1 testing with the **@FRActional-t1 TYPe** command. This command requires the 310-9B option.

@CONTI <base_channel,bandwidth>

Select **<base_channel,xx>** from 1 to 24. Select **<xx,bandwidth>** from 24 to 1.

See also: **@FRActional-t1 TYPe, @CHAnnel FMT,** and **@NON CONtiguous**

@CONTRols — Generate Controls Printout

@CONTR

This command generates a controls printout of the 310-1 front panel configuration. The **@PRInt CONtrols** command performs the same function.

See also: **@PRInt CONtrols**

@DATaport — Set DATAPORT Output

@DAT ?

Print current side-panel DATAPORT output status.

@DAT DAT

Set DATAPORT output to access either the ESF, optional ESFz, or SLC-96 datalink. The **MODe** command must be set to either T1 ESF, optional T1 ESFz, or T1 SLC-96 respectively.

@DAT DS0

Set DATAPORT output to access a DS0 channel. The DS0 channel is selected with the **@DS0 DROp CHAnnel** command.

See also: **@DS0 DROp CHAnnel** and **@MODe**

@DISplay HOLd — Set Display Hold

@DIS HOL ?

Print current display hold status.

@DIS HOL ON

Activate the display hold function. The results and the Status and Alarm LEDs are frozen.

@DIS HOL OFF

Disable the display hold function. The results and the Status and Alarm LEDs are released and updated.

NOTE

While the **@DISplay HOLd** command is ON, updated results can be checked with the **@RES1** or **@RES2** command. Additionally, when in IEEE-488 remote control mode, the **DISPLAY HOLD** switch allows the user to return to local mode. The switch flashes when pressed to indicate an action is taking place.

See also: **@PRInt** and **@RESUlts**

@DS0 DROp CHAnnel — Set Dropped DS0 Channel

@DS0 DRO CHA ?
Print current dropped DS0 channel.

@DS0 DRO CHA 1 to 24
Select DS0 channel to be dropped. DS0 channels are entered with numbers from 1 to 24.

@DS0 DRO CHA NON
Set DS0 channel to be dropped to none.

@DS1 SOUrce — Set DS1 Input Source

@DS1 SOU ?
Print current DS1 source input status.

@DS1 SOU DS3 DRO
Set DS1 source input source to the received DS3 signal. The DS1 signal is dropped from the DS3 signal received at the DS3 RECEIVE connector.

@DS1 SOU EXT INP
Set DS1 source input to the external input. The DS1 signal is received from the side-panel DS1 RECEIVE connector.

@DS1 SOU SON DRO
Set DS1 input source to the received SONET signal. The DS1 signal is dropped from the side-panel STS-1, OC-1/3/3c, OC-12/12c, or OC-48/48c RECEIVE connection. Requires a SONET option.

@ERRor INSert BPV — Execute BPV Insertion

@ERR INS BPV ?
Print current BPV insertion setting.

@ERR INS BPV OFF
Disable the continuous BPV insertion. This command only applies when the **RATe** parameter is used.

@ERR INS BPV RAT
Insert continuous BPVs at a 10^{-3} error rate.

@ERR INS BPV SIN
Insert a single BPV.

See also: **@ERRor INSert LOGic**

@ERRor INSert LOGic — Execute Logic Error Insertion

@ERR INS LOG ?
Print current DS1 logic error insertion setting.

@ERR INS LOG OFF

Disable the continuous logic error insertion. This command only applies when the **RATe** parameter is used.

@ERR INS LOG RAT

Insert continuous logic errors at a 10^{-3} error rate.

@ERR INS LOG SIN

Insert a single logic error.

See also: **@ERRor INSert BPV**

@ESF LOOp — Set ESF Loop Code Type

@ESF LOO ?

Print current ESF loop code type setting. This only applies when transmitting loop codes in the T1 ESF mode and the 310-9B option is installed.

@ESF LOO IN BAN

Select ESF in-band loop codes.

@ESF LOO OUT OF BAN

Select ESF out-of-band loop codes.

See also: **@LOOp CODe** and **@MODe**

@FRActional-t1 TYPe — FT1 Channel Format Select

@FRA TYP ?

Print current channel format for Fractional-T1 (FT1) testing. Enable FT1 testing with the **@CHAnnel FMT NX64** command. This command requires the 310-9B option.

@FRA TYP CON

Select Nx64 contiguous FT1 channels. Set base channel and bandwidth with the **@CONTIguous** command.

@FRA TYP N-C

Select Nx64 non-contiguous FT1 channels. Set timeslots with the **@NON CONtiguous** command.

See also: **@CHAnnel FMT, @CONTIguous,** and **@NON CONtiguous**

@HELP — Display On-Line Help

@HELP (?)

Use **@HELP** or **@?** to print current introduction to the 310-1 help pages. The help page identifies the command syntax for entering commands and a list of the available help page commands. The "**@?**" can be used in place of **@HELP** in the following commands. Use the page number (e.g., **? 4**) or the page name (e.g., **? FRO**) to select the required help page.

@HELP !

List all the available 310-1 remote control commands.

@HELP [7 | FRO]

List the 310-1 front-panel remote control commands.

@HELP [8 | AUX]

List the 310-1 auxiliary function remote control commands.

@HELP <command-name>

Describe the **<command-name>** and any parameters in detail. Do not use the **@** sign in the **<command-name>**.

See also: **HELP**

@HIStory RESet — Clear History Alarm LEDs

@HIS RES

Clear any illuminated 310-1 History Alarm LEDs.

See also: **@LEDs**

@LEDs — Print State of Status and Alarm LEDs

@LED

This command prints the state of the Status and Alarm LEDs.

See also: **@HIStory RESet**

EXAMPLE:

```
> @LED
 _____________________________________________________________
|          - alarms -            |       - status -           |
|   OFF  OFF  signal  loss       |   ON   T1 pulses           |
|   OFF  OFF  frame   loss       |   ON   frame    sync       |
|   OFF  OFF  pattern loss       |   ON   pattern sync        |
|   ON   OFF  excess zeros       |   ON   b8zs                |
|   OFF  OFF  yellow alarm       |____________________________|
|   OFF  OFF  all ones           |
|    |                           |
|    |_____   history            |
|________________________________|
>
```

@LOOp CODe — Set DS1 Loop Code Type

@LOO COD ?

Print current DS1 loop code transmitted through DS1 in-band (CSU, FAC1, FAC2, and PGM) and ESF out-of-band (**LINe**, **NETwork**, and **PAYload**) loop code. The ESF out-of-band loop codes only apply when transmitting loop codes in the T1 ESF and optional T1 ESFz modes and the 310-9B option is installed.

@LOO COD CSU

Set loop code type to CSU.

@LOO COD FAC1

Set loop code type to Facility 1.

@LOO COD FAC2
Set loop code type to Facility 2.

@LOO COD PGM
Set loop code type to Programmable. Use the **@PGM LPDn** and **@PGM LPUp** commands to program the loop codes.

@LOO COD LIN
Set ESF out-of-band loop code type to LINE.

@LOO COD NET
Set ESF out-of-band loop code type to NETWORK.

@LOO COD PAY
Set ESF out-of-band loop code type to PAYLOAD.

See also: **@ESF LOOP, @LOOp DOWn, @LOOp UP, @PGM LPDn,** and **@PGM LPUp**

@LOOp DOWn — Generate Loop-Down Code

@LOO DOW ?
Print current generated loop-down code status.

@LOO DOW ON
Transmit the loop-down code.

@LOO DOW OFF
Disable the transmitted loop-down code.

See also: **@ESF LOOp, @LOOp CODe,** and **@LOOp UP**

@LOOp UP — Generate Loop-Up Code

@LOO UP ?
Print current generated loop-up code status.

@LOO UP ON
Transmit the loop-up code.

@LOO UP OFF
Disable the transmitted loop-up code.

See also: **@ESF LOOp, @LOOp CODe,** and **@LOOp DOWn**

@MODe — Set Transmit and Receive Operating Mode

@MOD ?
Print current 310-1 transmit and receive operating mode. Enable full T1 or FT1 testing with the **@CHAnnel FMT** command.

@MOD AUT
Select automatic configure frame and pattern mode.

@MOD T1 D4
Select T1 D4 mode.

@MOD T1 ESF

Select T1 ESF mode.

@MOD T1 SLC

Select T1 SLC mode.

@MOD T1

Select T1 unframed mode.

@MOD SCA

Select DS1 scan mode.

See also: **@CHAnnel FMT**

@NON CONtiguous — FT1 Non-Contiguous Channel Select

@NON CON ?

Print current non-contiguous FT1 channel format. Select FT1 testing with the **@CHAnnel FMT** command. Enable contiguous FT1 testing with the **@FRActional-t1 TYPe** command. This command requires the 310-9B option.

@NON CON <123456789012345678901234>

Select non-contiguous FT1 channel by entering 1s for the FT1 channel and 0s for the idle channels. For example, to enter an FT1 channel starting with the base channel 4 and a bandwidth of 5 which includes every third timeslot, enter the command as follows:

```
>@NON CON 000100100010001000000000
 (chan    123456789012345678901234)
```

See also: **@CONTIguous** and **@CHAnnel FMT**

@PATtern — Set Data Pattern

@PAT ?

Print current transmitted test pattern.

@PAT <pattern>

Select test pattern from the following list.

1:1 — Select 1:1 pattern.

1:7 — Select 1:7 pattern.

2^15-1 — Select 32,767-bit pseudorandom pattern.

2^20-1 — Select 1,048,575-bit pseudorandom pattern.

2^23-1 — Select 8,388,607-bit pseudorandom pattern.

3/24 — Select 3 IN 24 pattern.

55OCTET — Select 55 Octet pattern. Requires 310-9B option.

ALL ONE — Select All Ones pattern.

ALL ZER — Select All Zeros pattern.

ATM (PLCP) — Selects the DS1 ATM payload patterns to PLCP format while in T1 D4, T1 ESF, or T1 SLC framing. Requires the 310-17A option.

ATM (HEC) — Selects the DS1 ATM payload patterns to HEC format while in T1 D4, T1 ESF, or T1 SLC framing. Requires the 310-17A option.

CON — Select continuous DS1 scan mode.

IDLe code — Select Idle Code. Must select **@MODe T1D4** or **@MODe T1ESF** to transmit pattern.

MINMAX — Select Minimum/Maximum pattern. Requires 310-9B option.

QRS — Select QRSS pattern.

T12 — Select T1-2 pattern. Do not use pattern in T1 D4 or T1 SLC framing. Requires 310-9B option.

T13 — Select T1-3 pattern. Requires 310-9B option.

T14 — Select T1-4 pattern. Requires 310-9B option.

T15 — Select T1-5 pattern. Requires 310-9B option.

T1DALY — Select T1-DALY pattern. Requires 310-9B option.

TRI — Select triggered DS1 scan mode. Requires 310-1 option.

USER1 — Select fixed 3- to 24-bit user-programmable test pattern. Use the **@USER1** command to set test pattern.

See also: **@USER1** and **@MODe**

@PGM LPDn — Set Programmable Loop-Down Code

@PGM LPD ?

Print current DS1 3- to 8-bit programmable loop-down code. Set **@LOOp CODe** command to **PGM** to select loop code. Set **@LOOp DOWn** command to **ON** to transmit the loop code. The pattern is transmitted from left to right.

@PGM LPD [000 | 001 to 11111111]

Set loop-down code in a binary format from 000 to 11111111.

See also: **@LOOp CODe** and **@LOOp UP**

@PGM LPUp — Set Programmable Loop-Up Code

@PGM LPU ?

Print current DS1 3- to 8-bit programmable loop-up code. Set **@LOOp CODe** command to **PGM** to select loop code. Set **@LOOp UP** command to **ON** to transmit the loop code. The pattern is transmitted from left to right.

@PGM LPU [000 | 001 to 11111111]

Set loop-up code in a binary format from 000 to 11111111.

See also: **@LOOp CODe** and **@LOOp DOWn**

@PRInt CONtrols — Generate Controls Printout

@PRI CON

This command generates a controls printout of the 310-1 front panel configuration. The **@CONTRols** command performs the same function.

See also: **@CONTRols**

EXAMPLE:

```
> @PRI CON (Print 310-1 front-panel configuration.)

            DS1 CONTROLS PRINT

AUG 12                              12:18:12

  DS1 PANEL SETTINGS

    Mode:                              T1
    Pattern:                         QRSS
    DS1 Source:                   DS3 DROP
    TX Timing:                    INTERNAL
    Code:                             AMI
    Logic Err Insert:                 OFF
    BPV Err Insert:                   OFF
    Loop Up Code:                     OFF
    Loop Down Code:                   OFF
    DS0 Drop Channel:                  24
    RX Input:                        TERM

  AUX FUNCTIONS

    User1:                         100000
    Pgm Loop Up:                    10000
    Pgm Loop Down:                    100
    Loop Code:                        CSU
    Data Port:                        DS0
                    .
                    .
                    .

            END OF PRINTOUT
>
```

@PRInt CUStom — Set Custom Results Printout

@PRI CUS ?

Print current selected test results for the custom results printout. The custom results printout is selected with the T-BERD 310 **PRInt FORmat** command set to **CUStom.** The custom results printout is generated with the **@PRInt RESults** or **@RESUlts** command.

@PRI CUS <result name> ON

Set **<result name>** to ON. A **<result name>** that is set to ON is printed in the custom results printout.

@PRI CUS <result name> OFF

Set **<result name>** to OFF. A **<result name>** that is set to OFF is not printed in the custom results printout.

@PRI CUS ALL ON

Set ALL the **<result names>** and Status and Alarm LEDs to ON. The custom results printout lists all the test results.

@PRI CUS ALL OFF

Set ALL the **<result names>** and Status and Alarm LEDs to OFF. The custom results printout header is generated without the results.

Refer to the following list for 301-1 Status and Alarm LED **<result names>**. Refer to the **@PRInt** command for a list of test **<result names>**.

DS1 Status LEDs

T1 PULSES

FRAME SYNC

PATTERN SYNC

B8ZS

DS1 Alarm LEDs

SIGNAL LOSS

FRAME LOSS

PATTERN LOSS

EXCESS ZEROS

YELLOW ALARM

ALL ONES

See also: **@PRInt RESults** and **@RESUlts**

@PRInt RESults — Generate Test Results Printout

@PRI RES

This command generates a 310-1 test results printout.

See also: **@RESUlts**

EXAMPLE:

```
> @PRI RES (Print test results.)

            NORMAL RESULTS PRINT

Manual                                  AUG 12
Continuous                             12:23:58

              DS1 TEST RESULTS

  DS1 STATUS

    T1 Pulses:                          ON
    Frame Sync:                         OFF
    Pattern Sync:                       ON
    B8ZS:                               OFF

                          .
                          .
                          .
              END OF PRINTOUT

>
```

@PRint — Print Selected Test Result

@PRI <result name>

This command prints the selected 310-1 test result value.

LOGIC Category

%EFS	Percentage of Error-Free Seconds
ASYNC ERR SEC	Asynchronous Errored Seconds
BIT ERR RT	Bit Error Rate
BIT ERRORS	Bit Errors
CSES	Consecutive Severely Errored Seconds
SEV ERR SEC	Severely Errored Seconds
SLIPS	Pattern Slips
SYNC ERR SEC	Synchronous Errored Seconds
SYNC L SEC	Out-of-Synchronization Seconds

LOGIC Category, G.821 Results Option

% AVAIL SEC	% Available Seconds
% DEG MIN	% Degraded Minutes
% SEVERR SEC	% Severely Errored Seconds
AVAIL SECOND	Available Seconds
DEG MIN	Degraded Minutes
UNAVAIL SEC	Unavailable Seconds

BPV Category

BPV ERR RT	Bipolar Violation Rate
BPV ERR SEC	Bipolar Violation Seconds
VIOLATIONS	Bipolar Violations

BPV Category, Enhanced DS1 Testing Option

FAR BPV SEC	Far-End BPV Seconds

FRAME Category

CRC ERR RT	Cyclic Redundancy Check Error Rate
CRC ERR SEC	Cyclic Redundancy Check Errored Seconds
CRC ERRORS	Cyclic Redundancy Check Errors
CRC SES	Cyclic Redundancy Check Severely Errored Seconds
FRM ERR RT	Frame Error Rate
FRM ERR SEC	Frame Errored Seconds
FRM ERRORS	Frame Errors
FRM L SEC	Frame Loss Seconds
FRM SES	Frame Severely Errored Seconds

FRAME Category, Enhanced DS1 Testing Option

FAR CRC ERR	Far-End CRC Error Events
FAR FRM ES	Far-End Frame Error Seconds
FAR FRM SES	Far-End Severely Errored Framing Seconds
FAR SLIP SEC	Far-End Controlled Slip Seconds
FCRC 1	Far-End CRC 1 Bin
FCRC 2-5	Far-End CRC 2 to 5 Bin
FCRC 6-10	Far-End CRC 6 to 10 Bin
FCRC 11-100	Far-End CRC 11 to 100 Bin
FCRC 101-319	Far-End CRC 101 to 319 Bin
FCRC >319	Far-End CRC 320 to 333 Bin
PAYLOAD SOURCE	Far-End Payload Source/Loopback

SIGNAL Category

RX FREQ	Received Frequency in Hertz
RX LVL dBdsx	Received Signal Level in dBdsx
SIG BIT	Channel A/BC/D Signaling Status
SIG L SEC	Signal Loss Seconds
VF LVL dBm	Received Signal Level in dBm

SIGNAL Category, Enhanced DS1 Testing Option

TIMING SLIPS	DS1 Timing Slips
SYNC MSG	ESF Datalink Synchronization Message

TIME Category

DATE	Current Date
ELAPSED TIME	Elapsed Time
TEST LENGTH	Timed Test Length
TIME	Current Time of Day
TIME LEFT	Timed Test Time Left

TIME Category, Enhanced DS1 Testing Option

FAR PRM SEC	Far-End Performance Report Seconds

See also: **@PRInt RESults, @RESUlts,** and **@RES1** or **@RES2**

@PRM EMUlate — Set PRM Transmission Control

@PRM EMU ?

Print current PRM transmission control function. The command only applies when operating in the T1 ESF and optional T1 ESFz modes and the 310-9B option is installed.

@PRM EMU CAR

Set PRM transmission control function to carrier emulation.

@PRM EMU CUS

Set PRM transmission control function to customer emulation.

@PRM EMU OFF

Turn the PRM transmission control function OFF.

See also: **@PRM RECeive** and **@MODe**

@PRM RECeive — PRM Results Analysis Control

@PRM REC ?

Print current PRM results analysis control function. The command only applies when operating in the T1 ESF and optional T1 ESFz modes and the 310-9B option is installed.

@PRM REC ON

Turn the PRM results analysis control function ON.

@PRM REC OFF

Turn the PRM results analysis control function OFF.

See also: **@PRM EMUlate, @PRInt,** and **@MODe**

@RAW LEDs — Raw DS1/DS0 Signal LED Status

@RAW LED

Print current status of the DS1/DS0 signal status and alarm LEDs in a three byte hexadecimal format. Each byte represents the on (1) or off (0) status of the individual DS1/DS0 status and alarm LEDs as indicated in Table 2-4. Each byte (XX) relates to a specific group of LEDs. The table describes the three bytes, starting with the first byte, and the individual LED bit positions within each byte. The "XX" and "X" represent the specific hexadecimal byte and bit position for the specified LED. The following example identifies Byte 2 as having a hex value of 23 with a bit sequence of 0010 0011. This command is a hexadecimal equivalent to the **@LEDs** command. Requires the 310-1 option.

	1	2	3			**Byte Number**	
	00	23	00			**Displayed Hex Bytes**	
0010 0011						**Bit Pattern for Byte 2**	
					1	**Signal Loss**	**ON**
				1		**Frame Loss**	**ON**
			0			**Pattern Loss**	**OFF**
		0				**Excess Zeros**	**OFF**
	0					**Yellow Alarm**	**OFF**
1						**All Ones Alarm**	**ON**

Table 2-4. DS1/DS0 Status and Alarm RAW LEDs Command

XX 00 00	Byte 1 - Alarm History	
0000 000**X**	Bit 0	Signal Loss History
0000 00**X**0	Bit 1	Frame Loss History
0000 0**X**00	Bit 2	Pattern Loss History
0000 **X**000	Bit 3	Excess Zeros History
000**X** 0000	Bit 4	Yellow History
00**X**0 0000	Bit 5	All Ones History

00 XX 00	Byte 2 - Alarm	
0000 000**X**	Bit 0	Signal Loss
0000 00**X**0	Bit 1	Frame Loss
0000 0**X**00	Bit 2	Pattern Loss
0000 **X**000	Bit 3	Excess Zeros
000**X** 0000	Bit 4	Yellow
00**X**0 0000	Bit 5	All Ones

00 00 XX	Byte 3 - Status	
0000 000**X**	Bit 0	Signal Present
0000 00**X**0	Bit 1	Frame Sync
0000 0**X**00	Bit 2	Pattern Sync
0000 **X**000	Bit 3	B8ZS

@RECeive INPut — Set DS1 Receive Input Level

@REC INP ?
Print current DS1 RECEIVE connector receive input level.

@REC INP BRI
Set receive input to BRIDGE.

@REC INP DSX
Set receive input to DSX-MON.

@REC INP TER
Set receive input to TERM.

@RES1 or @RES2 — Test Results Display I/II Control

@RES1 or @RES2 ?
Print current test result displayed in the RESULTS I or RESULTS II windows. Refer to the **@PRInt** command for a list of valid **<result names>**.

@RES1 or @RES2 <result name>
Display the **<result name>** in the RESULTS I or RESULTS II window.

See also: **@PRInt, @PRInt RESults,** and **@RESUlts**

@RESTART — Initiate Test Restart

@RESTART
This command restarts the 310-1 test.

@RESUlts — Generate Test Results Printout

@RESU

This command generates a 310-1 test results printout.

See also: **@PRInt RESults**

EXAMPLE:

```
> @RESU (Print current test results.)

            NORMAL RESULTS PRINT

Manual                                  AUG 12
Continuous                            12:23:58

              DS1 TEST RESULTS

  DS1 STATUS

    T1 Pulses:                          ON
    Frame Sync:                         OFF
    Pattern Sync:                       ON
    B8ZS:                               OFF

                          .
                          .
                          .
              END OF PRINTOUT
>
```

@SCAn TRIgger — Set Triggered DS1 Scan Mode Criteria

@SCA TRI ?

Print current triggered DS1 scan mode test criteria. One or all events can be enabled or disabled.

@SCA TRI ALL ONE [ON | OFF]

Enable/Disable the 310-1 to trigger on an All Ones signal.

@SCA TRI CRC ERR [ON | OFF]

Enable/Disable the 310-1 to trigger on a CRC error.

@SCA TRI FRA ERR [ON | OFF]

Enable/Disable the 310-1 to trigger on a frame error.

@SCA TRI FRA LOS [ON | OFF]

Enable/Disable the 310-1 to trigger on a frame loss.

@SCA TRI FRA SYN [ON | OFF]

Enable/Disable the 310-1 to trigger on a frame synchronization.

@SCA TRI TM SLI [ON | OFF]

Enable/Disable the 310-1 to trigger on a timing slip.

@SCA TRI YEL ALA [ON | OFF]

Enable/Disable the 310-1 to trigger on a Yellow Alarm.

@SLIp REFerence — DS1 Timing Slip Reference Source

@SLI REF ?

Print current DS1 timing slip reference source for the TIMING SLIP result. Select DS1 test signal source with the **@DS1 SOUrce** command. Refer to the *T-BERD 310 User's Manual* for the relationship between the test signal source and the reference signal source. This command requires the 310-9B option.

@SLI REF PRI DS3 DRO

Select DS1 channel that is internally dropped from the DS3 RECEIVE connector. The DS1 channel is selected with the **DS1 DROp CHAnnel** command.

@SLI REF SEC DS3 DRO

Select DS1 channel that is internally dropped from the SECONDARY DS3 RECEIVE connector on the 310-3 option. The DS1 channel is selected with the **DS1 INSert CHAnnel** command.

@SLI REF SON DRO

Select DS1 channel that is internally dropped from the side-panel STS-1, OC-1/3/3c, OC-12/12c, or OC-48/48c RECEIVE connection. Select SONET DS1 payload channel through the **SONet DS1 CHAnnel RX** command. For the 310-13R or 310-14R option, select DS1 payload format with the **SONet DROp** command. Requires a SONET option.

@SLI REF DS1 REC

Select DS1 signal from the DS1 RECEIVE jack on the 310-1 option.

@SLI REF DS1 INS

Select DS1 signal from DS1 INSERT INPUT jack on the 310-3 option.

@SLI REF DS1 BIT CLK

Select DS1 clock rate signal from the side-panel DS1 BITS CLOCK jack on the 310-13T or 310-14T option.

See also: **DS1 DROp CHAnnel, DS1 INSert CHAnnel, SONet DS1 CHAnnel, @DS1 SOUrce,** and **@PRInt**

@TRAnsmit TIMing — Set DS1 Transmit Timing Source

@TRA TIM ?

Print current DS1 transmit timing source.

@TRA TIM INT

Set DS1 transmit timing to INTERNAL.

@TRA TIM REC

Set DS1 transmit timing to RECOVERED.

@USER1 — Set User-Programmable Test Pattern

@USER1 ?

Print current user-programmable 3- to 24-bit test pattern. The command only applies when the **@USER1** test pattern is selected with the **@PATtern** command. The pattern is transmitted from left to right.

@USER1 [000 | 001 to 111111111111111111111111]

Set test pattern in a binary format from 000 to 111111 111111 111111 111111.

See also: **@PATtern.**

APPENDIX A
REMOTE CONTROL MESSAGES

A.1 INTRODUCTION

The following error, warning, and general messages appear when entering commands and/or parameters incorrectly. The error and warning messages are formatted with an ****ERROR* or ****WARNING* header, the problem, and in some cases the improperly entered command or parameter.

A.2 ERROR MESSAGES

Already transmitting FEAC control message — A FEAC message or loop code is being transmitted. Use the **FEAc ALArms** or **FEAc LOOp** command to halt the transmission of the message or loop code.

Bad command syntax — The **command_name** was entered improperly. Reenter the first three characters of the **command_name** or as required. See the **HELP !** command for a list of valid **command_names**.

Bad configuration parameter: xxxxx — The indicated **[parameter]** was an invalid parameter for the setup configuration. Reenter the entire command string with the correct **[parameter]**. See the **HELP <command-name>** command for a list of valid **[parameters]**.

Bad parameter: xxxxx — The indicated **[parameter]** was entered improperly. Reenter the entire command string with the correct **[parameter]**. See the **HELP <command-name>** command for a list of valid **[parameters]**.

Command line too long (255 character limit) — The number of characters entered in the command line exceeds the 255 character limit. Reduce the character count and reenter the command.

Framing errors not allowed in DS1 Insert mode — Attempted to insert framing errors in the DS1 INSERT mode. Either do not insert framing errors in the DS1 INSERT mode or change the operating mode.

Framing errors not allowed in Thru & Auto modes — Attempted to insert framing errors in either the THRU or AUTO mode. Either do not insert framing errors in the THRU or AUTO mode or change the operating mode.

Framing errors not allowed in Unframed mode — Attempted to insert framing errors in the UNFRAMED mode. Either do not insert framing errors in the UNFRAMED mode or change the operating mode.

Multiple required options not installed — Option-specific text was detected in the command line. The previous command is only valid when the appropriate options are installed, i.e., the **PATTern INTernal DS1** command requires the 310-3 DS1 Insert Option and the 310-1 DS1/DS0 Analyzer Option.

No such command: xxxxx — The indicated **command_name** is not a valid command. See the **HELP !** command for a list of valid **command_names**.

No such help page: xxxxx — The indicated help page is not valid. See the **HELP** command for a list of valid page names and numbers.

Not allowed in IEEE-488 mode — The **command_name** is not allowed when operating the T-BERD 310 from an IEEE-488 controller, i.e., the **PRInt GRAph** command cannot be executed from an IEEE-488 controller.

Not enough command words specified — The **command_name** is incomplete. See the **HELP !** command for a list of valid **command_names**.

Not enough letters specified: xxxxx — The **command_name** does not have enough characters entered. See the **HELP <command-name>** command for a list of valid **command_names** or **[parameters]**.

Not enough parameters specified — The **[parameter]** in the command is incomplete. Use the **HELP <command-name>** command to list the valid **[parameters]** for the command.

Operation not allowed; not originating frame — The T-BERD 310 is not generating framing, i.e., AUTO or THRU mode, and the entered operation is not allowed, i.e., inserting a pattern, FEAC messages, or frame errors in AUTO mode.

Operation not allowed; not transmitting C-bit — The T-BERD 310 is not generating C-bit framing and the entered operation is not allowed, i.e., inserting FEAC messages.

Page name too long: xxxxx — The indicated help page name is longer than the longest valid help page name. See the **HELP** or **@HELP** command for a list of valid page names and numbers.

Parameter out of range: xxxxx — The previous **[parameter]** exceeds the command parameter limits. Reenter the entire command string with the correct **[parameter]**. See the **HELP <command>** command for a list of valid **[parameters]**.

Parameter(s) required — The **command_name** requires a **[parameter]**. See the **HELP <command>** command for a list of valid **[parameters]**.

Pattern not changeable in current mode — The selected pattern cannot be changed in the current operating mode. Either change the test pattern or operating mode.

Pattern not supported by current mode — The previous test pattern is not valid for the current operating mode. Change either the test pattern or operating mode.

Remote Control cannot modify this setting — An attempt was made to modify the **PRInt PARity** or **PRInt BAUd RATe** command.

Required option not installed — Option-specific text was detected. The previous command is only valid when the appropriate option is installed.

Result not supported by current ROM revision — The current software does not support the selected test result.

That operation is not relevant to the current mode — The previous operation does not apply to the current operating mode. The operation succeeded, but it has no effect on the current mode.

Too many command words specified — The **command_name** is too long. See the **HELP !** command for a list of valid **command_names**.

Too many parameters specified — The number of **[parameters]** exceeds the command requirements. Use the **HELP <command-name>** command to list the valid **[parameters]** for the command.

A.3 WARNING MESSAGES

Current configuration forces Recovered Timing mode — The transmit timing mode was changed to either internal or external and the configuration requires recovered timing. The instrument defaults to recovered timing.

DS1's present in selected DS2; channel may differ — An E1 channel number was entered with the **DS1 DROp CHAnnel** command and the DS2 frame actually contains DS1 channels.

E1's present in selected DS2; channel may differ — A DS1 channel number was entered with the **DS1 DROp CHAnnel** command and the DS2 frame actually contains E1 channels.

Prompt string too long, truncated — The entered **<prompt string>** exceeds the 32 character length limit and was truncated.

Seconds value ignored — Seconds were entered in the **PRInt INTerval** command and none were required.

T1 linecode forced to AMI when transmitting ZBTSI — The **@CODe B8Zs** command was entered when the **@MODe T1 ESFZ** command is established. The DS1/DS0 Analyzer Option defaults to AMI coding when the T1 ESFz mode is selected.

A.4 GENERAL MESSAGES

Result N/A — The selected test result does not apply to the current configuration. See the **PRI**, **RES1,** or **RES2** command.

Result unavailable — The selected test result is not available. See the **PRI**, **RES1,** or **RES2** command.

INDEX

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— E —

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— S —

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