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Quick Reference Guide

HP 8510C
Network Analyzer

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Introduction

Use this alphabetical list of the analyzer programming mnemonics as a quick reference to the syntax requirements and general function of the individual commands. Refer to the *HP 8510C Keyword Dictionary* for more information on the individual entries.

Notation

Symbols used in this document are:

BOLD Upper case bold characters represent the program keywords which must appear exactly as shown with no embedded spaces.

[ ] Square brackets indicate that whaever is enclosed in the bracket is optional

[suffix] Optional programmer entry units terminator for frequency and time units:

Frequency Suffix	**Time Suffix**	**Voltage**
GHz	fs	mV
MHz	ps	V
kHz	ns	
Hz us (µs)		
	ms	
	s	

; semicolon is the required terminator character for each program instruction.

, the comma is used in program instructions to separate a series of values.

(range of values) lower case text enclosed in parenthesis describes the range of values which may be input for the selected function.

value a constant or pre-assigned simple or complex numeric or string variable transferred to the analyzer.

variable a simple or complex numeric or string variable which receives the value returned by the analyzer.

(Preset) Value or state after a network analyzer *[FACTORY PRESET]*.

Example

GATECENT [value [time suffix]];
Mnemonic may be written as

GATECENT;
Makes gate center the active function.

GATECENT 1;
Makes gate center the active function, sets gate center to 1 second. (If no units, default to basic units.)

GATECENT 1 ns;
Makes gate center the active function, sets gate center to 1 nanosecond.

Once a function is active, it remains active until **[ENTRY OFF]** or another active function is selected, and any value input will change its value. For example, sending the string

```
STAR 10 GHz;
```

makes **start** the active function. As long as the function is active, sending the string

```
2 GHz;
```

will set the **start** function to 2 GHz.

Alphabetical List of Programming Codes

ABORPRIP;
Abort a print or plot output to RS-232 port 1 or 2.

ADAP1;
ADAP2;
Specify calibration kit containing adapter in adapter removal modify calibration set.

ADAR;
Select adapter removal modify calibration set.

ADDR8510 [value];
HP-IB address of analyzer. (0-30)

ADDRDISC [value];
External disc unit System Bus address. (0-7)

ADDRPASS [value];
System Bus address of device to send/receive data via analyzer System Bus HP-IB address. (0-31)

ADDRPLOT [value];
Digital plotter System Bus address. (0-30)

ADDRPRIN [value];
Printer System Bus address. (0-30)

ADDRPOWE [value];
System Bus address of power meter. (0 - 30)

ADDRRFS [value];
System Bus address of RF switch for dual test set switching (0-31).

ADDRSOUR [value];
ADDRSOUR2 [value];
Source 1 (RF)/2 (LO) System Bus address. (0-31)

ADDRSYSB [value];
HP-IB address of analyzer System Bus. (0-30)

ADDRTESS [value];
Test set System Bus address. (0-31)

ANAOOFF;
ANAOON;
Analog output off/on.

ASEG;
Measure all frequency list segments.

ATTP1 [value];
Port 1 attenuator. (0-90 dB, 10 dB steps)

ATTP2 [value];
Port 2 attenuator. HP 8514, 8515 only, if attenuators installed. (0-90 dB, 10 dB steps)

AUTD;
Automatic setting of electrical delay to balance phase.

AUTO;
Automatic selection of **[REF VALUE]** and **[SCALE]** for current channel to position trace for viewing.

AUXV;
Source set to start frequency; measurement synchronized to aux out. stimulus controls set characteristics of digital ramp at AUX OUT connector.

AVEROFF;
Turn off averaging for selected channel. (Preset)

AVERON [value];
Turn on averaging for selected channel. (1-4096; 1, 2, 4, 8, ... 4096 sequence)

BACI [value];
Set the background intensity of the CRT. (0 – 100)

BEEPOFF;
BEEPON;
Turn caution/warning beep off/on. (on = Preset)

C0 [value]; $x10^{-15}F$
C1 [value]; $x10^{-27}F/Hz$
C2 [value]; $x10^{-36}F/Hz^2$
C3 [value]; $x10^{-45}F/Hz^3$
Open circuit capacitance model values.

CAL1;
CAL2;
Begin measurement calibration using calibration kit 1/2.

CALF;
Perform a flatness correction calibration routine.

CALIFUL2;
Select full 2-port calibration.

CALIONE2;
Select one-path 2-port calibration.

CALIRAI;
Select response and isolation calibration.

CALIRESP;
Select response calibration.

CALIS111;
CALIS221;
Select S_{11}/S_{22} 1-port calibration.

CALITRL2;
Select TRL 2-port calibration.

CALK1;
CALK2;
Calibration kit 1/2 data type under **[TAPE]/[DISC]**.

CALS1;
CALS2;
CALS3;
CALS4;
CALS5;
CALS6;
CALS7;
CALS8;
Under **[DISC]**, calibration set data type. Under **[CAL]**, select or delete a calibration set. Under ***[ADAPTER REMOVAL]*** , specify port 1 and port 2 calibration set and storage for modified calibration set.

Limited Calibration Set Instrument State
Parameter(s) Corrected (1,2)
Frequency Range (1)
Number of Points (1)
Source Power (3)
Sweep Time (3)
Power Slope (3)
Ramp/Step/Single sweep mode(3)
Trim Sweep (3)

1. Correction turned off if changed and new parameter not included.
2. Does not turn Correction On if current parameter not included.
3. `CAUTION: CORRECTION MAY BE INVALID` is displayed if changed.

CALSALL;
Calibration sets 1-8 data type under **[TAPE]/[DISC]**. (Usable only to disc.)

CALSPORT1;
CALSPORT2;
Select port 1 or port 2 calibration set in adapter removal modify calibration set, followed by `CALSn;`.

CALZLINE;
TRL Z_0 referenced to line Z_0.

CALZSYST;
TRL Z_0 referenced to system Z_0 `(SETZ;)`

CBRI [value];
Set the brightness of active color. (0 - 100)

CENT [value [suffix]];
Set center frequency stimulus value.

CHAC;
Change calibration type.

CHAN1;
CHAN2;
Select **[CHANNEL 1]/[CHANNEL 2]**.

CHAS;
Change and save a 1-port calibration from a current 2-port calibration set, followed by `CALSn;`.

CLAD;
Current standard class is specified.

CLASS11A;
CLASS11B;
CLASS11C;
CLASS22A;
CLASS22B;
CLASS22C;

Select calibration standard class. Measure if single standard in class.

CLEL;

Clear frequency list.

CLES;

Clear analyzer status bytes to 0,0.

COAD;

Select coaxial (linear phase) electrical delay and port extensions. (Preset)

COAX;

Coaxial (linear phase) calibration standard.

Select Calibration Standard Class

Mnemonic	Standard 2.4mm, 3.5mm & 7mm Labels	
CLASS11A	S_{11} OPEN	(1st S_{11} std class)
CLASS11B	S_{11} SHORT	(2nd S_{11} std class)
CLASS11C	S_{11} LOADS	(3rd S_{11} std class)
CLASS22A	S_{22} OPEN	(1st S_{22} std class)
CLASS22B	S_{22} SHORT	(2nd S_{22} std class)
CLASS 22C	S_{22} LOADS	(3rd S_{22} std class)
FWDT	FWD. TRANS. THRU	
FWDM	FWD. MATCH THRU	
REVT	REV. TRANS. THRU	
REVM	REV. MATCH THRU	

FWDI	FWD. ISOL'N ISOL'N STD.
REVI	REV. ISOL'N ISOL'N STD
RAIRESP	RESPONSE STD. In RESP & ISOL'N Cal
RAIISOL	ISOL'N STD. In RESP & ISOL'N Cal
TRLT	THRU
TRLR1	S_{11} RELECT SHORT
TRLR2	S_{22} REFLECT SHORT
TRLL	2 to 18 GHz LINE

COLRSOFT;
COLRWARN;
COLRS11D;
COLRS22D;
COLRS21D;
COLRS12D;
COLRGRAT;
COLRMARK;
COLRNU09;
COLRS11M;
COLRS22M;
COLRS21M;
COLRS12M;
COLRNU14;
COLRSTIM;
Select display element to modify.

COLOR [value];
Adjust the degree of whiteness in specified color. (0 – 100)

COMPSYNC;
Set external video synchronization to composite video.

CONF [value];
Constant frequency value, multiple source. (0 to end of source frequency range)

CONT;
Continual sweep. (Preset)

CONV1S;
Convert to 1/S.

CONVS;
Convert to S-parameter. (Preset)

CONVY;
Convert to Y.

CONVZ;
Convert to Z.

CORROFF;
CORRON;
Correction off/on for current parameter set. (Follow `CORRON;` with `CALSn;`.)

COUC;
Couple channel 1 and channel 2 stimulus and calibration sets. (Preset)

CRES;
Create and save a frequency subset calibration set. Followed by `CALn;`.

CRTO;
Turn analyzer CRT off. (Preset turns on)

CWFREQ [value [freq suffix]];
Frequency list CW frequency.

DATACHAN1;
DATACHAN2;
Trace math uses data from channel 1/2. (dual channel mode)

DATADATA;
Corrected Data type under **[TAPE]/[DISC]**.

DATAFORM;
Formatted Data type under **[TAPE]/[DISC]**.

DATARAW;
Raw Data type under **[TAPE]/[DISC]**. (All appropriate selected channel Raw Data arrays)

DATETIMEOFF;
DATETIMEON;
Turn off/on real-time clock annotation. (on = Preset)

DATI;
Transfer selected channel corrected data array to default trace memory.

DEBUOFF;
DEBUON;
Turn off/on debug mode.

DEFA;
Multiple source default equation. (Preset)

DEFC;
Select default display colors.

DEFIRECV;
Multiple source define receiver equation.

DEFISOUR1;
Multiple source define RF source #1 (test signal) equation.

DEFISOUR2;
Multiple source define LO source #2 (local oscillator) equation.

DEFM1;
DEFM2;
DEFM3;
DEFM4;
DEFM5;
DEFM6;
DEFM7;
DEFM8;
Define memory used for memory operations on selected channel. Memories 1, 2, 3, 4 are non-volatile. Memories 5, 6, 7, 8 are volatile.

DEFPENCOLR;
Set default pen colors for plots.

DEFS stdno;
Define the number of the calibration standard to be modified. (stdno = 1-21)

DELA;
Delay format.

DELC;
Delete calibration set, followed by `CALSn;`.

DELE;
Delete disc file, followed by data type and `FILEn;`.

DELO;
Δ mode off.

DELR1;
DELR2;
DELR3;
DELR4;
DELR5;
Select Δ Ref = delta mode reference marker.

DELT;
Delay table data type under **[TAPE]/[DISC]**.

DENOA1; a_1
DENOA2; a_2
DENOB1; b_1
DENONOR; denominator = 1
Select denominator for current parameter.

DETENORB;
Select the 10 kHz IF path and detectors.

DETEWIDB;
Select the 3 MHz IF bandwidth path and detectors. Pulsed-RF applications.

DIRE;
Display directory for current tape cartridge or disc.

DISCUNIT [value];
Disc unit number under disc setup. Usually 0 (left drive), 1 (right drive).

DISCVOL [value];
Disc volume number under disc setup.

DISF "filename";
Delete disc filename. Load disc filename. Store/replace disc filename.

Select data type filename under disc store/load/delete operations. Maximum 7 characters, does not include filename data type prefix.

DISPDATA;
Display current data only.

DISPDATM;
Display current data and memory.

DISPMATH;
Display current data with math.

DISPMEMO;
Display memory only.

DIVI;
Select complex divide trace math.

DONE;
Current standard class done during measurement calibration.

DOWN;
Decrease current active function one step.

DRIVNONE;
DRIVPORT1;
DRIVPORT2;
Select drive port for current parameter.

DUPD;
Frequency list delete duplicate points.

DUPM;
Frequency list measure duplicate points. (Preset)

DUTC [value];
Set the duty cycle of the internally generated trigger. Wideband IF option 008 only. (0 – 100)

DWET [value [time suffix]];
Set the dwell time in step or frequency list. (0 – 10)

EDITDONE;
Edit frequency list done.

EDITLIST;
Edit frequency list.

EDITMULS;
Edit multiple source equations.

ELED [value [time suffix]];

ELED [value [time suffix]];
Set electrical delay for current parameter on selected channel. (See COAD; and WAVD;)

ENTO;
Entry off.

EXTTOFF;
Select internal trigger.

EXTTPOIN;
Select external measurement trigger.

EQUA;
Set current active function equal to current active marker value.

FACTPRES;
Execute a factory preset.

FASC;
Select fast CW data aquisition (externally triggered).

FILE1;
FILE2;
FILE3;
FILE4;
FILE5;
FILE6;
FILE7;
FILE8;
Select data type file number under **[TAPE]/[DISC]** store/load/delete operations.

FIRP;
First page of tape directory and operating parameters. (HP 8510B only)

FIXE;
Define load standard type as fixed.

FLATOFF;
Turn off flatness correction calibration. (Preset)

FLATON;
Enable flatness correction calibration.

FORM1;
HP 8510 internal binary (6 bytes/point).

FORM2;
IEEE 32 bit fp (8 bytes/point).

FORM3;
IEEE 64 bit fp (16 bytes/point).

```
FORMAT OFF
DIM Data(Number of points,2)
INTEGER Preamble, Size
Output Nwa;"FORM3; OUTPDATA;"
Enter Nwa_data;Preamble, Size, Data(*)
```

```
FORMAT OFF
Output Nwa;"FORM3;INPUDATA;"
Enter Nwa;Preamble, Size, Data(*)
```

Preamble = Standard Block Header, #A.
Size = Number of Bytes in Block.
Data(*) = x,y pairs.

FORM4;
ASCII (strings separated by comma).

```
FORMAT ON
DIM Data(Number of points,2)
Output Nwa;"FORM4; OUTPDATA;"
Enter Nwa_data; Data(*)
  Output Nwa;"FORM4; INPUDATA;";
  Enter Nwa; Data(*)

    Data(*) = x,y pairs.
    Supress CR/LF after Output
```

FORM5;
MS-DOS 32 bit fp (8 bytes/point).

FOUPOVER;
Select four parameter overlay display format.

FOUPSPLI;
Select four parameter split display format.

FREO;
Turn off display of frequency values. Turn on by ***[FACTORY PRESET]*** or recall Instrument State.

FREQ;
Select Frequency Domain.

FRER;
Free-run selected sweep mode. (Preset)

FRES;
Begin creation of frequency subset, under modify calibration set.

FREU;
Update frequency annotation with no sweep.

FULP;
Select full page plot.

FWDI;
Measure forward isolation isolation standard.

FWDM;
Measure forward match standard.

FWDT;
Measure forward transmission standard.

GAIN0;
GAIN1;
GAIN2;
GAIN3;
GAIN4;
GAINAUTO;
Service only. Select ref or test IF gain.
(Auto = Preset)

GATECENT [value [time suffix]];
Set gate center.

GATEOFF;
GATEON;
Turn off time domain gating.
Turn on time domain gating. Display Time Domain gate markers.

GATESPAN [value [time suffix]];
GATESTAR [value [time suffix]];
GATESTOP [value [time suffix]];
Set gate span/start/stop.

GATSMAXI;
GATSMINI;
GATSNORM;
GATSWIDE;
Select gate shape.

Gate Characteristics				
Gate Shape	**Passband Ripple**	**Sidelobe Levels**	**Cutoff Time T2 = T3**	**Minimum Gate Span T1**
MINIMUM	±0.40 dB	-24 dB	$0.6/f_{span}$	$1.2/f_{span}$
NORMAL	±0.40 dB	-45 dB	$1.4/f_{span}$	$2.8/f_{span2}$
WIDE	±0.02 dB	-52 dB	$4.0/f_{span}$	$8.0/f_{span}$
MAXIMUM	±0.01 dB	-80 dB	$11.2/f_{span}$	$22.4/f_{span}$
f_{span} = Hz				

GREESYNC;
External video set to synchronize on green.

HARS;
Hardware State data type under **[TAPE]/[DISC]**. Complete multiple source Hardware State and HP-IB addresses.

HOLD;
Hold mode, sweep is stopped.

HVSYNC;
External video set to synchronize on horizontal and vertical.

IMAG;
Imaginary Cartesian format.

INID;
Begin LIF disc initialization.

INIS;
Begin DOS disc initialization.

INIT;
Begin tape initialization. (HP 8510B only)

INPUCALC01;
INPUCALC02;
INPUCALC03;
INPUCALC04;
INPUCALC05;
INPUCALC06;
INPUCALC07;
INPUCALC08;
INPUCALC09;
INPUCALC10;
INPUCALC11;
INPUCALC12;

Store measurement calibration error coefficient set real/imaginary pairs input via HP-IB into analyzer memory. Select appropriate calibration type then input necessary coefficient sets (see `OUTPCALCn;`), then issue `SAVC; CALSn;` to save in a calibration set. Issue `CORRON; CALSn;` to turn correction on.

INPUDATA;

Store selected channel corrected data trace memory real/imaginary pairs input via HP-IB. To input to memory, "`INPUDATA; DATI;`"

INPUDELA;

Input delay table real,imaginary pairs for selected channel via HP-IB.

INPUFORM;

Store selected channel formatted trace memory input via HP-IB. Cartesian: x = basic units, y = 0. Polar and Smith: real/imaginary pairs.

INPULEAS;

Store FORM1 analyzer Learn String, previously output by `OUTPLES;`, input via HP-IB. Set analyzer to Learn String state.

INPURAW1;
INPURAW2;
INPURAW3;
INPURAW4;
Store selected channel Raw Data trace memory real/imaginary pairs input via HP-iB. (See OUTPRAWn;)

INSS1;
INSS2;
INSS3;
INSS4;
INSS5;
INSS6;
INSS7;
INSS8;
Single Instrument State data type under **[TAPE]/[DISC]**.

INSSALL;
All Instruments States 1–8 data type.

INTE [value];
Select the intensity level of the display. (0 – 100)

INVS;
Inverted Smith chart format.

ISOD;
2-port isolation done.

ISOL;
Begin 2-port isolation calibration.

KEYC value;
Press analyzer front panel key. See OUTPKEY;.

KITD;
Kit done (modified). Store current calibration kit definition.

L0 [value]; $x10^{-12}H$
L1 [value]; $x10^{24}H/Hz$
L2 [value]; $x10^{-33}H/Hz^2$
L3 [value]; $x10^{-42}H/Hz^3$
Short circuit inductance model values.

LABEADAP ["string"];
LABEFWDI ["string"];
LABEFWDM ["string"];
LABEFWDT ["string"];
LABERESP ["string"];
LABEREVI ["string"];
LABEREVM ["string"];
LABEREVT ["string"];
LABES11A ["string"];
LABES11B ["string"];
LABES11C ["string"];
LABES22A ["string"];
LABES22B ["string"];
LABES22C ["string"];
LABETRLL ["string"];
LABETRLR ["string"];
LABETRLT ["string"];
Up to ten character standard class label. Standard class label is displayed only when more than one standard in class.

LABK ["string"];
Label kit. Up to ten character label for current calibration kit.

LABS ["string"];
Label standard. Up to ten character label for current calibration standard.

LASP;
Last page of tape directory. (HP 8510B only)

LEFL;
LEFU;
Left lower/upper plot.

LINM;
Linear magnitude Cartesian format.

LINP;
Linear marker on Polar format.

LISALL;
List all S-parameters for the selected channel to a printer.

LISAUTFOFF;
LISAUTFON;
Turn off/on the automatic paper feed on a printer for listing S-parameters. (on = Preset)

LISFORF;
Immediately eject a page from a printer.

LISFREQ;
Select frequency list sweep mode.

LISSKIP [value];
Set the skip factor of a printed frequency list. (1 - 401, 4 = Preset)

LIST;
List trace values to printer.

LISCOL1DECP [value];
LISCOL2DECP [value];
Set the number of digits after the decimal point in column 1/2 data.(1 - 15, 2 = Preset)

LISCOL1WID [value];
LISCOL2WID [value];
Set the total number of characters printed in column 1/2. (1 - 15, 10 = Preset)

LISPARM;
Print system parameters or operating parameters to a line printer.

LISSTIMDECP [value];
Set the number of digits after the decimal point printed for frequency data.(1 - 15, 2 = Preset)

LISSTIMWIDT [value];
Set the total number of characters printed for frequency data. (1 - 31, 12 = Preset)

LISSTIUGIGA;	GHz
LISSTIUKILO;	KHz
LISSTIUMEGA;	MHz
LISSTIUMICR;	µs
LISSTIUMILI;	ms, mV
LISSTIUNANO;	ns
LISSTIUPICO;	ps
LISSTIUUNIT;	Hz, s, V

Specify the units for the stimulus values on a data list.

LOAD;
Load tape/disc data file into analyzer memory.

LOAN;
Measure load no offset.

LOAO;
Measure load offset.

LOCKA1;
LOCKA2;
LOCKNONE;
Select phaselock input for current parameter.

LOCSFAST;
Select fast system phaselock.

LOCSNORM;
Select normal system phaselock. (Preset)

LOCTEXTE;.
LOCTINTE;
Select system 1st IF phaselock to external/internal LO. (internal = Preset)

LOCTNONE;
Do not phaselock 1st IF.

LOGM;
Logarithmic magnitude Cartesian format.

LOGP;
Logarithmic marker on Polar format.

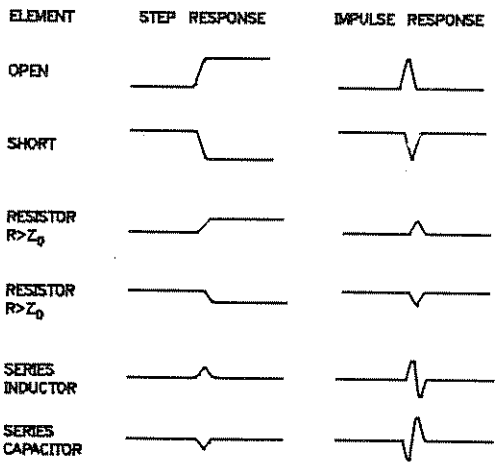
LOWF [value [freq suffix]];
Specify TRL lowband frequency.

LOWPIMPU;
LOWPSTEP;
Time Domain low pass, impulse/step.

Approximate Formulas for Step Rise Time and Impulse Width (Response-Resolution)

LOW PASS STEP RISE TIME = $(0.45/f_{span})$ (10% – 90%)	X	1.0 (WINDMINI) 2.2 (WINDNORM) 3.3 (WINDMAXI)
LOW PASS IMPULSE WIDTH = $(0.60/f_{span})$ (50%)	X	1.0 (WINDMINI) 1.6 (WINDNORM) 2.4 (WINDMAXI)
BANDPASS IMPULSE WIDTH = $(1.20/f_{span})$ (50%)	X	1.0 (WINDMINI) 1.6 (WINDNORM) 2.4 (WINDMAXI)

Time Domain Low Pass Reflections
LOW PASS REFLECTIONS
(REAL Format)



LOWR;
Begin TRL 2-port lowband reflection calibration. (Full 2-port reflection)

MACD;
Machine dump data type under **[TAPE]/[DISC]**. Complete instrument state and all memories. (Usable only to disc).

MAGO [value]**;**
Set magnitude offset, dB, for current parameter on selected channel.

MAGS [value];
Set magnitude slope, dB/GHz, for current parameter on selected channel.

MARK1 [value [suffix]];
MARK2 [value [suffix]];
MARK3 [value [suffix]];
MARK4 [value [suffix]];
MARK5 [value [suffix]];
Select active marker and move it to specified stimulus value.

MARKCONT;
Continuous markers (linear intepolation between measured points).

MARKDISC;
Discrete markers (only measured points). (Preset)

MARKMAXI;
MARKMINI;
Active marker to maximum/minimum trace value.

MARKOFF;
Turn all markers off.

MARKTARG;
Active marker to target trace value. (Search starts from lowest stimulus value.)

MAXF [value [freq suffix]];
Maximum frequency of current calibration standard.

MEMO1;
MEMO2;
MEMO3;
MEMO4;
MEMO5;
MEMO6;
MEMO7;
MEMO8;
MEMOALL;
Trace memory data type under **[TAPE]**/**[DISC]**.

MENUCAL;
Present **[CAL]** menu.

MENUCOPY;
Present **[COPY]** menu.

MENUDISC;
Present **[DISC]** menu.

MENUDISP;
Present **[DISPLAY]** menu.

MENUDOMA;
Present **[DOMAIN]** menu.

MENUFORM;
Present **[FORMAT]** menu.

MENUMARK;
Present **[MARKER]** menu.

MENUOFF;
MENUON;
Turn off/on normal display of menus. (on = Preset)

MENUPARA;
Present **[PARAMENTER]** menu.

MENUPRIO;
Present **[PRIOR]** menu.

MENURECA;
Present **[RECALL]** menu

MENURESP;
Present **[RESPONSE]** menu.

MENUSAVE;
Present **[SAVE]** menu.

MENUSTIM;
Present **[STIMULUS]** menu.

MENUSYST;
Present **[SYSTEM]** menu.

MENUTAPE;
Present **[TAPE]** menu.

MENUTEST;
Present test menu. (HP-IB activity suspended.)

MINF [value [freq suffix]];
Minimum frequency of current calibration standard. (F_{co} for waveguide type)

MINU;
Minus. Complex subtraction trace math for selected channel.

MKRLFIVM;
Select 5 marker display list.

MKRLFOUP;
Select marker list for four parameter display, the active marker per parameter.

MKRLISTOFF;
MKRLISTON;
Turn the marker list off/on. (on = Preset)

MODI1;
MODI2;
Modify calibration kit 1/2 label.

MODS;
Modify selected calibration sets and save, follow with `CALSn;`.

MONI;
For Service Use Only. (TEST or cycle LINE power to exit)

MULD [value];
MULN [value];
Multiple source multipler denominator/numerator.

MULSOFF;
MULSON;
Turn off/on multiple source, and save into Hardware State.

MULT;
Multiply. Complex multiplication trace math for selected channel.

NEGASYNC;
Set external video synchronization to negative-logic TTL.

NEXP;
Next page tape directory. (HP 8510B only)

NORMSTEP;
Select normal data aquistion cycle. (Preset for HP 8350 and 8340 series sources)

NUMEA1;
NUMEA2;
NUMEB1;
NUMEB2;
Select numerator for current parameter.

NUMG value;
Number of groups. Execute the specified number of groups of sweeps.

OFFD [value [time suffix]];
Offset delay of current calibration standard = physical length/C (C = 299.79 mm/s x Velocity Factor)

OFFF [value [freq suffix]];
Multiple source offset frequency.

OFFL [value];
Offset loss of current calibration standard. (GΩ/s at 1 GHz)
Series resistance per unit length.

$RF = R@1GHz\ \sqrt{F/1GHz}$

(Not used for waveguide type.)

OFFS;
Define load or arbitrary impedance standard type as offset type.

OFFZ [value];
Real Z of offset calibration standard (Ω). (Use Z_0 for waveguide type.)

OFLD;
Offset load done.

OMII;
2-port omit isolation calibration step.

OPEP;
Display operating parameters.

OUTPACTI;
Output current active function value. (One FORM4 ASCII number.)

OUTPCALC01;
OUTPCALC02;
OUTPCALC03;
OUTPCALC04;
OUTPCALC05;
OUTPCALC06;
OUTPCALC07;
OUTPCALC08;
OUTPCALC09;
OUTPCALC10;
OUTPCALC11;
OUTPCALC12;
Output measurement calibration error coefficient set real/imaginary pairs for current calibration set to external controller via HP-IB. (See "Internal Calibration Error Coefficent Storage" table for assignments.)

OUTPDATA;
Output selected channel corrected data array real/imaginary pairs.

OUTPDELA;
Output delay table real,imaginary pairs.

OUTPERRO;
Output number and message of current caution/tell message to external controller, clear status bytes, clear caution/tell message, no change to Status Request Mask. (See SRQM.)

Internal Calibration Error Coefficient Storage				
Input Output Mnemonic	Calibration Type			
	Response	Response and Isolation	1-port	2-port
CALC01	E_R or E_T	E_R or E_T	E_D	E_{DF}
CALC02		E_D or E_X	E_S	E_{SF}
CALC03			E_R	E_{RF}
CALC04				E_{XF}
CALC05				E_{LF}
CALC06				E_{TF}
CALC07				E_{DR}
CALC08				E_{SR}
CALC09				E_{RR}
CALC10				E_{XR}
CALC11				E_{LR}
CALC12				E_{TR}

OUTPFORM;
Output selected channel formatted data array pairs. Cartesian: x = basic units of selected format, y = 0. Polar and Smith: real/imaginary pairs.

OUTPFREL;
Output frequency list.

OUTPIDEN;
Output analyzer identification ASCII string. (Same string as displayed for `SOFR;`)

OUTPKEY;
Output integer number for last key pressed. (See *Keyword Dictionary*)

OUTPLEAS;
Output 4390–byte FORM1 analyzer Learn String. (Same contents as Instrument State)

OUTPMARK;
Output active marker trace value. (Two FORM4 ASCII numbers.)

Marker Units for all Display Formats

Format	Marker Basic Units	Outpmark A, b Value
LOG MAG	dB	dB, 0
PHASE	degrees (°)	degrees, 0
DELAY	seconds (s)	seconds, 0
SMITH CHART	R ± jX (Ω)	ohms, ohms
SWR	(unitless)	SWR, 0
LINEAR MAGNITUDE	ρ (unitless) (refl.) τ (unitless (trans.)	lin mag, 0 lin mag, 0
LIN MKR on POLAR	$\rho\angle\phi$ (refl.) $\tau\angle\Theta^{\circ}$ (trans.)	lin mag, degrees lin mag, degrees
LOG MKR on POLAR	dB$\angle\phi^{\circ}$	log mag degrees
Re/Im MKR on POLAR	jy	real, Imag
INVERTED SMITH	G ± jB	Siemens, Siemens
REAL	x (unitless)	real, 0
IMAGINARY	jy (unitless)	real, 0

OUTPMEMO;
Output currently selected trace memory real/imaginary pairs.

OUTPPLOT;
Output complete screen including menu as variable-length HPGL strings to analyzer HP-IB.

OUTPRAW1;
OUTPRAW2;
OUTPRAW3;
OUTPRAW4;
Output trace data from currently selected channel Raw Data array real/imaginary pairs.

OUTPSTAT;
Output analyzer Status Bytes (2 ASCII integers), and clear Status Bytes. (See SQRM)

OUTPTITL;
Output current active title, calibration kit label, standard label, standard class label, or standards in class. ASCII string.

OVER;
Dual channel overlay display.

PAGP;
Page parameters. Display next page of operating parameters list.

PARL ["string"];
Parameter label. Label current user parameter using up to eight characters. (User parameters only)

PEEK;
Examine contents of memory specified by peek/poke location. Active functionis contents of specified memory location. Service Use Only.

PEEL memory address;.
Peek/poke location. Specify peek and poke memory address. Service Use Only.

PEN1;
PEN2;
PEN3;
PEN4;
PEN5;
PEN6;
PEN7;
PEN8;
Select pen for current plot type for selected channel.

PENNMONO;
Monochromatic pen selection.

PENNSOFT;
PENNWARN;
PENNS11D;
PENNS22D;
PENNS21D;
PENNS12D;
PENNGRAT;
PENNMARK;
PENNNU09;
PENNS11M;
PENNS22M;
PENNS21M;
PENNS12M;
PENNNU14;
PENNSTIM;
Select pen colors for the various display elements to plot to a color plotter.

PHAO [value];
Phase offset for current parameter on selected channel.

PHAS;
Phase Cartesian format.

PLOP;
Plot current page of operating parameters listing using digital plotter.

PLOT4S;
Plot all four S-parameters using a digital plotter.

PLOTALL;
Plot complete measurement display including user display using digital plotter.

PLOTAUTFOFF;
PLOTAUFON;
Turn off/on the automatic paper feed on a plotter.

PLOTDATA;
Plot trace data only using a digital plotter.

PLOTFORF;
Immediately eject a page from a plotter.

PLOTGRAT;
Plot graticule only using digital plotter.

PLOTHPIB [value];
Set address of plotter on System Bus. (1 - 30)

PLOTMARK;
Plot marker(s) only using digital plotter.

PLOTMEMO;
Plot the memory trace only using a digital plotter.

PLOTMENUOFF;
Turn off the ability to plot the softkey menus.

PLOTMENUON;
Plot the softkey menus only using a digital plotter.

PLOTRSP1;
Set the digital plotter interface connection to RS-232 port 1.

PLOTRSP2;
Set the digital plotter interface connection to RS-232 port 2.

PLOTTEXT;
Plot text only using a digital plotter.

PLOTTITL;
Plot the title only using a digital plotter.

PLOTTRAC;
Plot trace only using a digital plotter.

PLOTTYPECOLR;
Identify the plot type as a color plot. (Preset)

PLOTTYPEMONO;
Identify the plot type as monochromatic.

PLUS;
Plus. Complex addition trace math for selected channel.

POIN;
Make total number of measured points active function.

POIN [value];
Current frequency list segment edit.

POIN51;
POIN101;
POIN201;
POIN401;
POIN801;
Select number of points for both channels. (Preset)

POKE value;
Change contents of memory location specified by peek/poke location. Service Use Only.

PORT1 [value [time suffix]];
PORT2 [value [time suffix]];
Reference plane extensions. Additive with ELED;. (See COAD; and WAVD;) PORT1 extends S_{11}, S_{21}, S_{12}. PORT2 extends S_{22}, S_{12}, S_{21}.

POSISYNC;
Set external video synchronization to positive-logic TTL.

POWE [value];
POW2 [value];
Set source 1/2 power dBm.

PREC;
[Press to Continue] softkey during one-path 2-port measurement.

PREP;
Previous page. Display previous page of tape directory. (HP 8510B only).

PRES;
Recalls Instrument State 8.

PRINALL;
Print the complete plot to a graphics printer.

PRINAUTFOFF;
PRINAUTFON;
Turn automatic form feed off/on in a graphics printer. (on = Preset)

PRINFORF;
Immediately eject a page from a graphics printer.

PRINHPIB [value];
Set address of printer on System Bus. (1 - 31)

PRINMENUOFF;
Turn off the ability to print the softkey menus using a graphics printer.

PRINMENUON;
Print the softkey menus using a graphics printer.

PRINORIELAN;
PRINORIEPOR;
Set the graphics printer page orientation to landscape/portrait. (portrait = Preset)

PRINRESO [value];
Set the printer resolution in dots per inch. (0 - 400, 96 = Preset)

PRINRSP1;
PRINRSP2;
Set the graphics printer interface connection to RS-232 port 1/2.

PRINSIDMAR [value];
Set either left or right margin distance of printer plots. Left margin set in portrait orientation, right margin set in landscape orientation. (0 - 1.0 m)

PRINTOPMAR [value];
Set top margin distance for printer plots. (0 - 1.0 m)

PRINTYPECOLR;
Define the print type as a plot dump to a color printer.

PRINTYPEMONO;
Define the print type as a plot dump to a single-color printer.

PRINWID [value];
Set the total width of a printed plot. (0 - 1.0 m)

PRIP;
Print parameters. Print current page of operating or system parameters using printer.

PULOHIGH;
PULOLOW;
Set pulse output active high/low.

PULP;
Select Pulse Profile Domain.

PULW [value [time suffix]];
Set width of internally-generated pulse. Wideband option 008 only. (0 - 40.88 ms)

QUICSTEP;
Select the quick-step phaselock mode.

RAID;
Response and isolation calibration done, followed by `CALSn;`.

RAIRESP;
RAIISOL;
Measure response/isolation standard in response and isolation calibration.

RAMP;
Ramp sweep mode.

REAL;
Real Cartesian format.

RECA1;
RECA2;
RECA3;
RECA4;
RECA5;
RECA6;
RECA7;
RECA8;
Recall previously stored Instrument State from specified internal memory. (Restores standard Basic parameter definitions, selects `DISPDATA;`.)

RECO;
Recall previously saved CRT colors.

REDD;
Redefine done. Store current parameter definition.

REFA;
Reference amplifier gain. See `GAINn;`.

REFD;
Reflection done. All 2-port reflection standard classes are measured.

REFL;
Begin 2-port reflection measurement calibration steps.

REFP [value];
Reference position. (0 - 10)

REFV [value];
Reference value.

REIP;
Real/Imaginary on Polar format.

RESC;
Resume calibration at point calibration menu structure was exited.

RESD;
Restore display after `DIRE;`, `OPEP;`, or `SYSP;`.

RESI;
Reset IF correction. Initiate automatic IF gain calibration. Reset timer.

REST;
Measurement restart at beginning of group.

REVI;
Measure reverse isolation isolation standard.

REVM;
REVT;
Begin reverse match/transmission measurement calibration step. Measure if single standard in class.

RIGL;
RIGU;
Right lower/upper plot quadrant.

RSCO;
Set the selected color to the default values.

S11;
S12;
S21;
S22;
Select S-parameter on current channel.

SADD;
Add a frequency list segment.

SAV1;
SAV2;
Save 1-port/2-port measurement calibration, followed by `CALSn;`.

SAVC;
Store calibration coefficients loaded using `INPUCALCn;`. Followed by `CALSn;`.

SAVE1;
SAVE2;
SAVE3;
SAVE4;
SAVE5;
SAVE6;
SAVE7;
SAVE8;
Save current Instrument State in specified internal memory.

SAVT;
Save TRL 2-port measurement calibration, followed by `CALSn;`.

SAVUASCI;
SAVUBINA;
Select ASCII/binary format for tape operation. (ASCII = Preset) (HP 8510B only)

SCAL [value];
Scale Y-axis and Polar scale/division.

SDEL [value];
Delete current or specified frequency list segment. (value = 1-31)

SDON;
Current frequency list segment edit done. If in frequency list sweep mode, update trace.

SEAL;
Active marker search left from current position for selected minimum, maximum, or target.

SEAR;
Active marker search right from current position for selected minimum, maximum, or target.

SEDI [value];
Edit current or specified frequency list segment.

SEGM [value];
Choose frequency list segment to edit.

SERVADCG;
SERVDETG;
SERVREFC;
SERVTEMP1;
SERVTEMP2;
SERVTESC;
SERVVCAL;
SERVVREF;
Service Use Only.

SETDAY [value];
Set the day of the month for the real-time clock. (1 - 31)

SETF;
Set frequency low pass. Start/stop frequencies may change. Issue once after `CAL1;` or `CAL2;`. Included in `TIML;`.

Minimum Frequency Ranges for Time Low Pass

Number of Points (n)	Minimum Frequency Range (GHz)		
		Stop	
	Start	2-Point	DC
51	0.045	1.170	2.295
101	0.045	2.295	4.545
201	0.045	4.545	9.045
401	0.045	9.045	18.045
801	0.045	18.045	36.045

SETHOUR [value];
Set the hour part of the real-time clock. (0 - 24)

SETMIN [value];
Set the minutes part of the real-time clock. (0 - 60)

SETMTH [value];
Set the month part of the real-time clock. (1 - 12)

SETYEAR [value];
Set the year part of the real-time clock. (00 - 99)

SETRREFL;
TRL reflection standard sets reference plane.

SETRTHRU;
TRL thru standard sets reference plane.

SETZ [value];
Set Z_0 of Smith Chart, Inverted Smith, load calibration standards, convert to Z and convert to Y. (Preset selects $Z_0 = 50\Omega$)

SIMS;
In TRIG mode, with calibration standard selected, move Raw Data to calibration coefficient storage. (Simulate measurement of calibration standard)

SINC;
Single channel display.

SING;
Single sweep. Execute one group of sweeps, then hold.

SINP;
Single point mode. Use [CENT [value[suffix]]; to set frequency.

SLID;
Sliding load done.

SLIL;
Specify the current standard load calibration standard as sliding.

SLIS;
Slide is set, measure one slide position. 5 slides minimum; 6–12 slides recommended.

SLOPOFF;
Source 1 (RF) power slope off.

SLOP2OFF;
Source 2 (LO) power slope off.

SLOPON [value];
Set source 1 (RF) power slope (dB/GHz).

SLOP2ON [value];
Set source 2 (LO) power slope (dB/GHz).

SMIC;
Smith Chart format.

SMOOOFF;
Smoothing off for selected channel.

SMOOON [value];
Smoothing on for selected channel. (Value = percent of span: 0.1, 0.2, 0.5,... 20 sequence) Cartesian displays only.

SOFR;
Display operating system software revision.

SOFT1;
SOFT2;
SOFT3;
SOFT4;
SOFT5;
SOFT6;
SOFT7;
SOFT8;
Press softkey. Execute current labeled function.

SOU1EXTE;
SOU2EXTE;
Select source 1 (RF)/2 (LO) external leveling.

SOU1INTE;
SOU2INTE;
Select source 1 (RF)/2 (LO) internal leveling.

SOU1MM;
SOU2MM;
Select source 1 (RF)/2 (LO) mm-wave leveling.

SPAN [value [suffix]];
Set stimulus span.

SPECADAP stanAno [, stanBno ... [, stanGno]];
SPECFWDI stanAno [, stanBno ... [, stanGno]];
SPECFWDM stanAno [, stanBno ... [, stanGno]];
SPECFWDT stanAno [, stanBno ... [, stanGno]];
SPECRESP stanAno [, stanBno ... [, stanGno]];
SPECREVI stanAno [, stanBno ... [, stanGno]];
SPECREVM stanAno [, stanBno ... [, stanGno]];
SPECREVT stanAno [, stanBno ... [, stanGno]];
SPECS11A stanAno [, stanBno ... [, stanGno]];
SPECS11B stanAno [, stanBno ... [, stanGno]];
SPECS11C stanAno [, stanBno ... [, stanGno]];
SPECS22A stanAno [, stanBno ... [, stanGno]];
SPECS22B stanAno [, stanBno ... [, stanGno]];
SPECS22C stanAno [, stanBno ... [, stanGno]];
SPECTRLL stanAno [, stanBno ... [, stanGno]];
SPECTRLR stanAno [, stanBno ... [, stanGno]];
SPECTRLT stanAno [, stanBno ... [, stanGno]];

Specify one to seven standards in each class.
stanAno = stdno of first standard in class.
stanGno = stdno of seventh standard in class.

SPLI;
Dual channel split display format.

SRQM bytea,byteb;
Set SRQ mask. Mask selected bits of the Status Bytes to enable analyzer SRQ. Mask does not affect OUTPSTAT;.

bytea = primary status byte, 0–255;
byteb = secondary status byte, 0–255.

HP 8510 Status Bytes				
PRIMARY STATUS BYTE (#1)				
Bit #	**7**	**6**	**5**	**4**
Decimal Value	**128**	**64**	**32**	**16**
Function	Reason In Extended Byte	RQS (SRQ Issued)	Syntax Error	SING, NUMB, complete
Bit #	**3**	**2**	**1**	**0**
Decimal Value	**8**	**4**	**2**	**1**
Function	Waiting for GET after reverse device	TRIG waiting for GET FASC; Issued, ready for external trigger	Data entry complete	CAUTION message displayed

PRIMARY STATUS BYTE (#2)				
Bit #	**7**	**6**	**5**	**4**
Decimal Value	**128**	**64**	**32**	**16**
Function	Not Used	Not Used	Not Used	Not Used
Bit #	**3**	**2**	**1**	**0**
Decimal Value	**8**	**4**	**2**	**1**
Function	Not used	Power ON sequence complete	Key pressed	Not used

SSEG [value];
Measure single frequency list segment.
(value = segment number)

STANA;
STANB;
STANC;
STAND;
STANE;
STANF;
STANG;
Measure calibration standard in class. (See Cal Kit Standard Class Assignments)

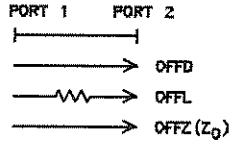
STAR [value [suffix]];
Set start stimulus value.

STDD;
Standard done, defined. All necessary characteristics of current standard are defined.

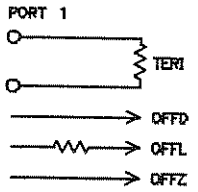
STDTARBI; arbitrary impedance
STDTDELA; delay/thru
STDTLOAD; load
STDTOPEN; open
STDTSHOR; short
Specify current standard type.

Standard Types

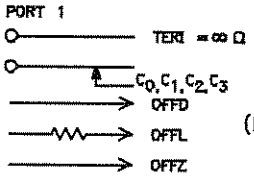
DELAY/THRU



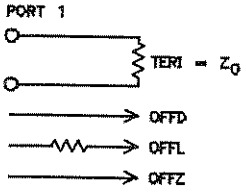
ARBITRARY IMPEDANCE
(Fixed, Sliding, or Offset)



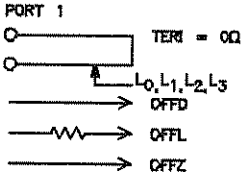
OPEN



LOAD
(Fixed, Sliding, or Offset)



SHORT



STEP;
Step sweep mode.

STOIDISC;
Select external disc on System Bus for store/load/delete operations. (HP 8510B only)

STOIEXT;
STOIINT;
Select external/internal disc drive for store/load/delete operations . (internal = Preset)

STOITAPE;
Select internal tape for store/load/delete operations. (Applies to HP 8510B only)

STOP [value [suffix]];
Set stop stimulus value.

STOR;
Store tape/disc data file.

STPSIZE [value [freq suffix]];
Specify current frequency list segment frequency step size.

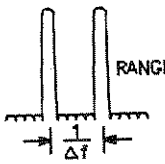
SUBSCENT [value [suffix]];
SUBSSPAN [value [suffix]];
Set frequency subset center frequency/span value, part of modify calibration set.

SUBSSTAR [value [suffix]];
SUBSSTOP [value [suffix]];
Set frequency subset start/stop frequency, part of modify calibration set.

SVCO;
Save the current CRT color selections in the "user's color" memory part of the Hardware State.

SWET [value [time suffix]];
Set sweep time.

SWR;
SWR Cartesian format.



$$\text{RANGE(sec)} = \frac{1}{\Delta f} = \frac{\text{NUMBER of POINTS} - 1}{f_{span}\,(\text{Hz})}$$

$$\text{RANGE (m)} = \left(\frac{1}{\Delta f}\right) \times (2.997925 \times 10^8\ \text{m/s}) \times (\text{vf})$$

Δf = Hz
vf = Velocity Factor

TINT [value];
Set the tint for the color being modified. (0 - 100)

TITL ["string"];
Title.

TRAD;
Transmission done. All necessary 2-port transmission and match standard classes are measured.

TRAN;
Begin 2-port transmission measurement calibration steps.

TRID [value [time suffix]];
Set measurement trigger delay for all domains except pulse profile. Wideband IF option 008 only. (-1 us minimum to +40.88 ms maximum)

TRIG;
Select triggered data acquisition. Waits for HP-IB Group Execute Trigger command to make next measurement, or `SIMS;`. Exit using `FRER;` or `PRES;`. See SRQM.

TRIS [value];
Trim sweep. (Applies to HP 8350-series and 8340-series sources only).

TRLL;
Measure TRL line calibration standard.

TRLO;
Modify calibration kit, TRL options defined.

TRLR1;
TRLR2;
Measure TRL port 1/2 reflection standard.

TRLT;
Measure TRL thru standard.

TWOPS11;
TWOPS22;
Create an S_{11}/S_{22} 1-port calibration set from a currently active 2-port calibration set, part of modify calibration set.

UNCC;
Uncoupled channels.

UNDE;
Undelete last deleted disk file.

UP;
Increase current active function one step.

USED;
User display disk data type.

USER1;
USER2;
USER3;
USER4;
Select user parameter.

USERPRES;
Execute a user preset.

VELOFACT [value];
Velocity factor used in supplementary distance displays for Frequency Domain electrical delay, port extensions, delay marker value, Time Domain marker value, and gate marker value. (Range 0.01 - 500; 1 = Speed of Light = 299.7925 x 10^6 m/s)

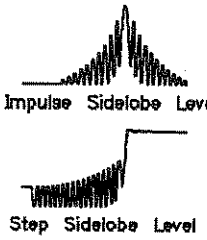
WAIT;
Hold off execution of next instruction until current instruction is complete.

WAVD [cutoff freq [freq suffix]];
Select waveguide phase for electrical delay and port extensions. Make cut off frequency active function. (Standard rectangular waveguide phase)

WAVE;
Waveguide calibration standard. (Standard rectangular waveguide.)

WINDMAXI; maximum.
WINDMINI; minimum.
WINDNORM; normal
Time Domain window type.

Window Characteristics



WINDOW TYPE	IMPULSE SIDELOBE LEVEL	STEP SIDELOBE LEVEL
MINIMUM	−13 dB	−21 dB
NORMAL	−44 dB	−60 dB
MAXIMUM	<−90 dB	<−90 dB

Example Window Characteristics
18 GHz Frequency Span

Window Characteristics		Rise Time 10%-90% (18 GHz Span)	Impulse Width 50% (18 GHz Span)	Sidelobe Level
Low Pass Step	Min	25 psec		-21 dBc
	Norm	55 psec		-61 dBc
	Max	81 psec		<-90 dBc
Low Pass Impulse	Min		33 psec	-13 dBc
	Norm		54 psec	-44 dBc
	Max		77 psec	<-90 dBc
Band Pass Impulse	Min		66 psec	-13 dBc
	Norm		108 psec	-44 dBc
	Max		154 psec	<-90 dBc

HP 8510 QUERY COMMANDS

NOTE: Response is given in parentheses.
␣ represents a single space.

ANAO?;
Analog On/Off
(1 = on, 0 = off)

AVER?;
Averaging
(1 = on, 0 = off)

BEEP?;
Beeper
(1 = on, 0 = off)

CALI?;
Active Cal Type
("RESPONSE", "RESPONSE␣&␣ISOL'N",
"S11␣1-PORT", "S22␣1-PORT", "2-PORT", or
"UNDEFINED")

CALS?;
Active Cal Set
(0 = no active cal set, or 1, 2, 3, 4, 5, 6, 7, 8)

CALSDIRE?;
Stored Cal Sets
("list of cal sets saved" example: "1,2,3")

CALZ?;
TRL Cal Z_0
("THRU" or "SYSTEM")

CHAN?;
Selected Channel
(1 or 2)

CONV?;
Parameter Conversion
("S", "1/S", "Z", or "Y")

CORR?;
Correction
(1 = on, 0 = off,)

COUP?;
Coupled Channels
(1 = coupled , 0 = uncoupled)

CRT?;
CRT On/Off
(1 = on, 0 = off)

DATESTR?
Date/Time String
("DD␣MMM␣YY")

DATETIME?;
Date/Time Clock On/Off
(1 = on, 0 = off)

DEBU?;
Debug On/Off
(1 = on, 0 = off)

DEFM?;
Default Memory
(1, 2, 3, 4, 5, 6, 7 or 8, or
"DATA␣from␣CHANNEL␣1", or "CHANNEL␣2")

DELM?;
Electrical Delay
("COAXIAL", "WAVEGUIDE", or "TABLE")

DELR?;
Delta Ref Marker
(0 = Δ␣Mode␣Off or 1, 2, 3, 4, 5)

DENO?;
Parameter Denominator
(a1, a2, b1, or "NO␣RATIO")

DETE?;
Detector Bandwidth
("NORMAL␣BW" or "WIDE␣BW")

DISP?;
Display Trace
("DATA", "MEMORY", "DATA␣and␣MEMORY",
"MATH␣(␣+␣)", "MATH␣(␣&MINUS;␣)",
"MATH␣(␣ ␣)", or "MATH␣(␣/␣)")

DOMA?;
Domain
("FREQUENCY", "TIME␣LOW␣PASS",
"TIME␣BAND␣PASS", "AUX.␣VOLT␣OUTPUT",
or "PULSE␣PROFILE")

DRIV?;
Parameter Drive
("PORT␣1", "PORT␣2", or "NONE")

DUPP?;
Duplicate Points
("DELETED", or "MEASURED")

EXTT?;
Measurement Trigger mode
("INTERNAL" or "EXTERNAL")

LISTAUTF?;
List Autofeed On/Off
(1 = on, 0 = off)

LOAT?;
Load Type
("FIXED", "SLIDING", or "OFFSET")

LOCK?;
Parameter Lock To
(a1, a2, or "NONE")

LOCKS?;
Lock Speed
("NORMAL" or "FAST")

LOCT?;
System Phase Lock
("INTERNAL", "EXTERNAL", or "NONE")

LOWP?;
Time Stimulus
("STEP" or "IMPULSE")

LOWPSET?;
Set Freq (Low Pass)
(1 = yes, 0 = no)

MARK?;
Active Marker
(0 = All Off, 1, 2, 3, 4, 5)

MARKMODE?;
Marker Mode
("CONTINIOUS" or "DISCRETE")

MARKSEAR?;
Search Mode
("TARGET", "MINIMUM", or "MAXIMUM")

MATH?;
Trace Math
("PLUS", "MINUS", "MULTIPLY", or "DIVIDE")

MEDT?;
Cal Std Media Type
("COAX" or "WAVEGUIDE")

MENU?;
Menu On/Off
(1 = on, 0 = off)

MKRLIST?;
Marker List On/Off
(1 = on, 0 = off)

MKRLISTTYPE?;
Marker List Type
("FOUR␣PARAM", or "FIVE␣MKR")

MULS?;
Multiple Source
(1 = on, 0 = off)

NUME?;
Parameter Numerator
(b1, b2, a1, a2, "TEST␣CAL", "REF␣CAL",
"DETECTOR␣GROUND", "ADC␣GROUND",
"VCAL", "VREF", "TEMP␣1", or "TEMP␣2")

NUMS?;
Freq List Segments
(<number of segments in frequency list>)

PARA?;
Parameter
("S11", "S21", "S12", "S22", "USER1", "USER2",
"USER3", or "USER4")

PEN?;
Pen Select
(1, 2, 3, 4, 5, 6, 7, 8)

PLOTAUTF?;
Plotter Autofeed On/Off
(1 = on, 0 = off)

PLOTMENU?;
Plot Menus On/Off
(1 = on, 0 = off)

PLOTTYPE?;
Plotter Type
("MONOCHROME" or "COLOR")

PRINAUTF?;
Printer Autofeed On/Off
(1 = on, 0 = off)

PRINMENU?;
Print Menus On/Off
(1 = on, 0 = off)

PRINORIE?;
Print Orientation
("PORTRAIT" or "LANDSCAPE")

PRINTYPE?;
Printer Type
("MONOCHROME" or "COLOR")

PULO?;
Pulse Output
("HIGH" or "LOW")

QUAD?;
Select Quadrant
("UPPER␣LEFT", "LOWER␣LEFT"
"UPPER␣RIGHT", "LOWER␣RIGHT", or
"FULL␣PAGE")

SAVU?;
Save Using
("ASCII" or "BINARY")

SEG?;
Segment Measured
("ALL␣SEGMENTS" or "SINGLE␣␣␣SEGMENTS")

SETR?;
TRL Cal Ref. Plane
("THRU" or "REFLECT")

SLOP?;
Power Slope of RF Source 1
(1 = on, 0 = off)

SLOP2?;
Power Slope of LO Source 2
(1 = on, 0 = off)

SMOO?;
Smoothing
(1 = on, 0 = off)

SOU1LEV?;
Leveling Type of RF Source 1
("INTERNAL" or "EXT.␣LEVEL")

SOU2LEV?;
Leveling Type of LO Source 2
("INTERNAL" or "EXT.␣LEVEL")

STDT?;
Standard Type
("OPEN", "SHORT", "LOAD", "DELAY/THRU", or
"ARBITRARY␣IMPEDANCE")

STES?;
Step Type
("QUICK" or "NORMAL")

STOI?;
Storage is
("TAPE" or "DISC". HP 8510C responds "TAPE"
only.)

STOIC?;
Storage is
(HP 8510C responds "INTERNAL" or "EXTERNAL")

SWEM?;
Sweep Mode
("RAMP", "STEP", "SINGLE␣POINT",
"FREQUENCY␣␣LIST" or "FAST␣CW")

SYNM;
System Sync Mode
("TRIGGERED␣STEP" or "FREE␣RUN")

SYSB?;
System Bus
("'LOCAL'" or "'REMOTE'")

TIMESTR?;
Time String
(HH:MM:SS)

TRAM?;
Single/Dual Channel
"SINGLE␣␣␣CHANNEL", "SPLIT", "OVERLAY",
("FOUR␣PARAM␣OVERLAY", or
"FOUR␣PARAM␣SPLIT")

WIND?;
Window
("MAXIMUM", "MINIMUM", or "NORMAL")

User Display

(ADDRPASS 31; send data to System Bus address)

CS;
Turn off measurement display.

DF;
Set to default state (PU, PA).

KP;
Turn off user display.

LB string CNTL C;
Label text. ASCII string terminated with CONTROL C.

PA x1,y1[,x2,y2 ...[,xn,yn]];
Plot absolute.
$0 \leq x \leq 5377$,
$0 \leq y \leq 4095$.

PD;
Pen down.

PG;
Clear (erase) user display.

PR x1,y1[,x2,y2 ...[,xn,yn]];
Plot relative.

PU;
Pen up.

RP;
Turn on user display.

RS;
Turn on measurement display.

CIRCUIT MODELING PROGRAM

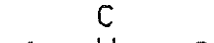
Statements

nnn PORT node (50 ohm termination)

nnn **R** node1 node2 resistance

nnn **L** node1 node2 inductance

nnn **C** node1 node2 capacitance



nnn **TL** node1 node2 Z len Er series corfreq shunt

nnn **FREQ** fstart fstop numsteps

nnn **FREQ LOWPASS** fstop numsteps

nnn **OUTPUT** Snn Send S-parameter data to HP 8510.

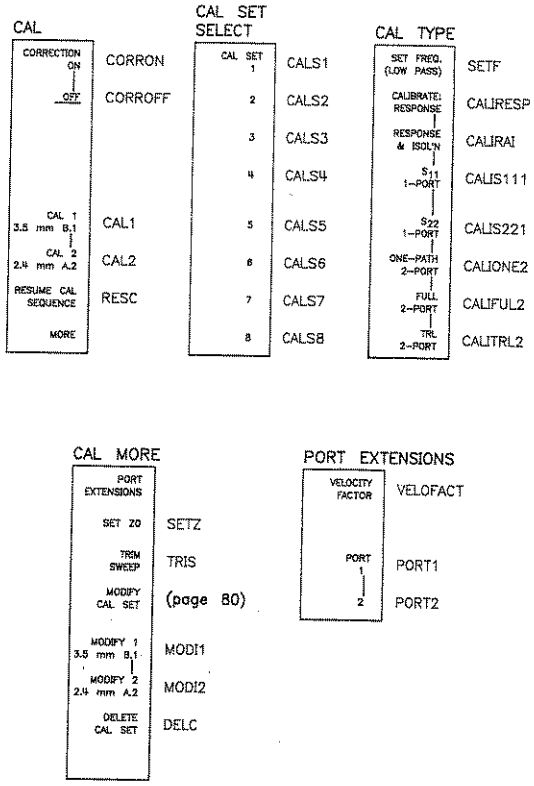
nnn **PLOT S** *nn* [,S*nn*] Plot data on Controller CRT.

NOTE: nnn represents a line number.
nn represents S-parameter notation.
OUTPUT and PLOT can also be used as commands after the program has been RUN once.

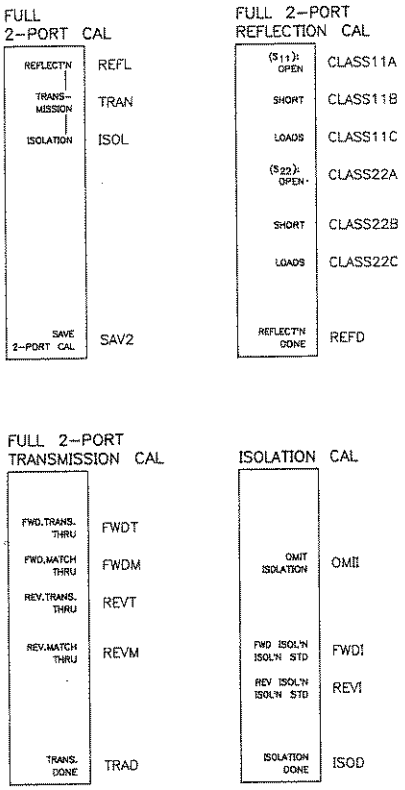
The controller key CLR I/O interrupts an executing command and returns the program to user control.

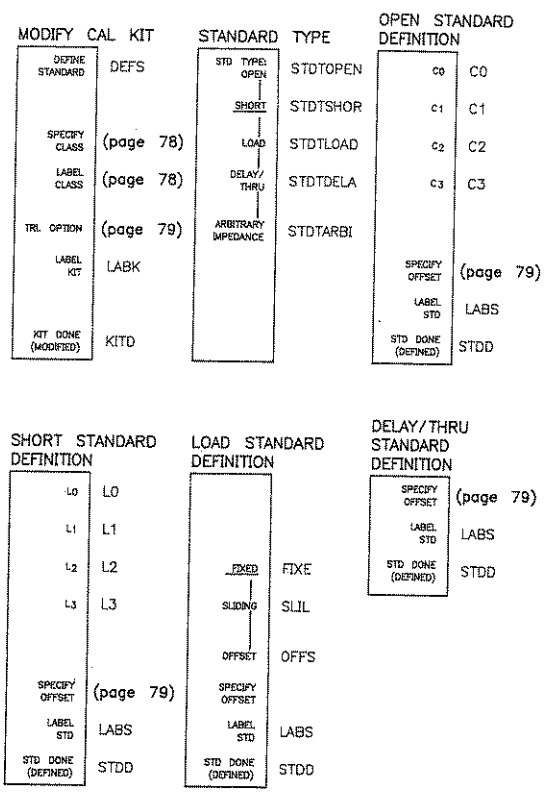
COMMANDS

CAT [volume specifier]
DEL
GET filename
HELP [statement or command]
LIST
RUN
SAVE
PURGE filename
OUTPUT Snn
PLOT Snn [, Snn] ...
END
BYE
EXIT
QUIT

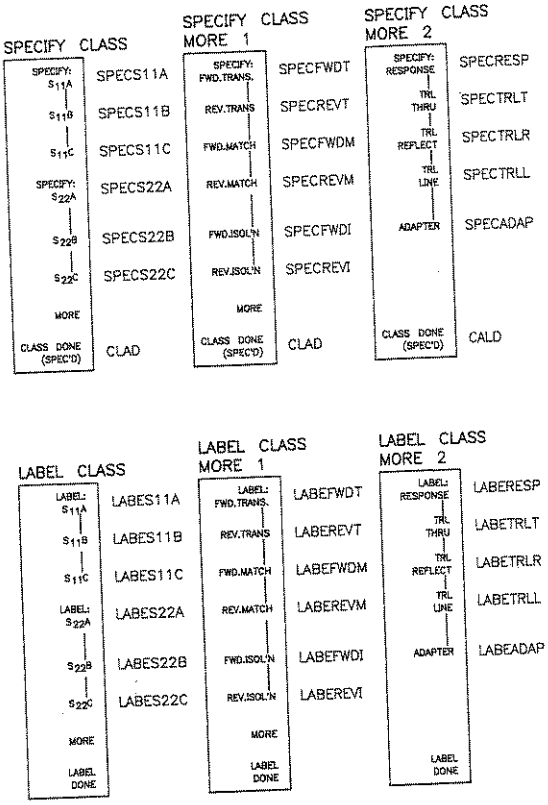

CAL
CORRECTION ON
OFF
CORRON
CORROFF
CAL 1 3.5 mm B,1
CAL 2 2.4 mm A,2
CAL1
CAL2
RESUME CAL SEQUENCE
RESC
MORE
CAL SET SELECT
CAL SET 1
2
3
4
5
6
7
8
CALS1
CALS2
CALS3
CALS4
CALS5
CALS6
CALS7
CALS8
CAL TYPE
SET FREQ. (LOW PASS)
SETF
CALIBRATE: RESPONSE
CALIRESP
RESPONSE & ISOLN
CALIRAI
S11 1-PORT
CALIS111
S22 1-PORT
CALIS221
ONE-PATH 2-PORT
CALIONE2
FULL 2-PORT
CALIFUL2
TRL 2-PORT
CALITRL2
CAL MORE
PORT EXTENSIONS
SET ZO
SETZ
TRM SWEEP
TRIS
MODIFY CAL SET
(page 80)
MODIFY 1 3.5 mm B,1
MODI1
MODIFY 2 2.4 mm A,2
MODI2
DELETE CAL SET
DELC
PORT EXTENSIONS
VELOCITY FACTOR
VELOFACT
PORT 1
PORT1
2
PORT2

CAL FULL 2-PORT CAL




MODIFY CAL KIT
DEFINE STANDARD
DEFS
SPECIFY CLASS
(page 78)
LABEL CLASS
(page 78)
TRL OPTION
(page 79)
LABEL KIT
LABK
KIT DONE (MODIFIED)
KITD
STANDARD TYPE
STD TYPE: OPEN
STDTOPEN
SHORT
STDTSHOR
LOAD
STDTLOAD
DELAY/ THRU
STDTDELA
ARBITRARY IMPEDANCE
STDTARBI
OPEN STANDARD DEFINITION
C0
C0
C1
C1
C2
C2
C3
C3
SPECIFY OFFSET
(page 79)
LABEL STD
LABS
STD DONE (DEFINED)
STDD
SHORT STANDARD DEFINITION
L0
L0
L1
L1
L2
L2
L3
L3
SPECIFY OFFSET
(page 79)
LABEL STD
LABS
STD DONE (DEFINED)
STDD
LOAD STANDARD DEFINITION
FIXED
FIXE
SLIDING
SLIL
OFFSET
OFFS
SPECIFY OFFSET
LABEL STD
LABS
STD DONE (DEFINED)
STDD
DELAY/THRU STANDARD DEFINITION
SPECIFY OFFSET
(page 79)
LABEL STD
LABS
STD DONE (DEFINED)
STDD

CAL MODIFY CAL KIT



ARBITRARY IMPEDANCE STANDARD DEFINITION

TERMINAL IMPEDANCE	TERI
FIXED / SLIDING	FIXE / SLIL
OFFSET	OFFS
SPECIFY OFFSET	
LABEL STD	LABS
STD DONE (DEFINED)	STDD

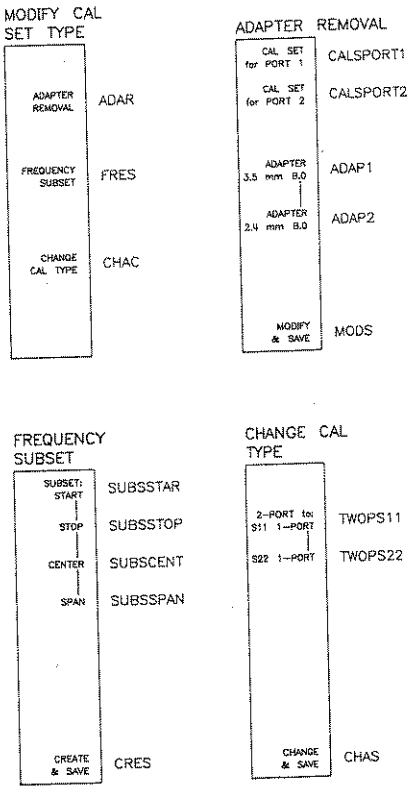
SPECIFY OFFSETS

OFFSET DELAY	OFFD
OFFSET LOSS	OFFL
OFFSET Z_0	OFFZ
MINIMUM FREQUENCY	MINF
MAXIMUM FREQUENCY	MAXF
COAX / WAVEGUIDE	COAX / WAVE
STD OFFSET DONE	

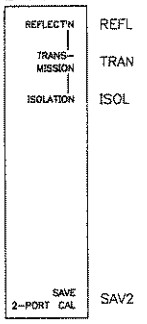
TRL OPTIONS

CAL Z_0: LINE Z_0 / SYSTEM Z_0	CALZLINE / CALZSYST
SET REF.: THRU / REFLECT	SETRTHRU / SETRREFL
LOWBAND FREQUENCY	LOWF
TRL OPTION DEFINED	TRLO

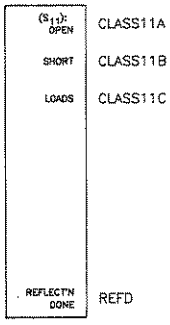
CAL MODIFY CAL SET



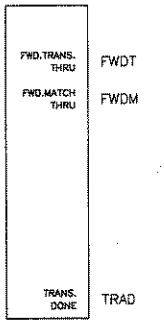
ONE-PATH
2-PORT CAL



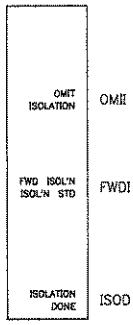
ONE-PATH
REFLECTION CAL



ONE-PATH
TRANSMISSION CAL

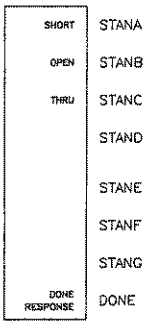


ONE-PATH
ISOLATION CAL



CAL RESPONSE CAL

FREQUENCY RESPONSE CAL

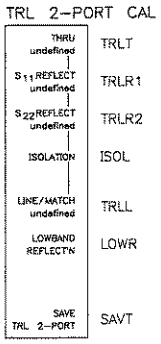


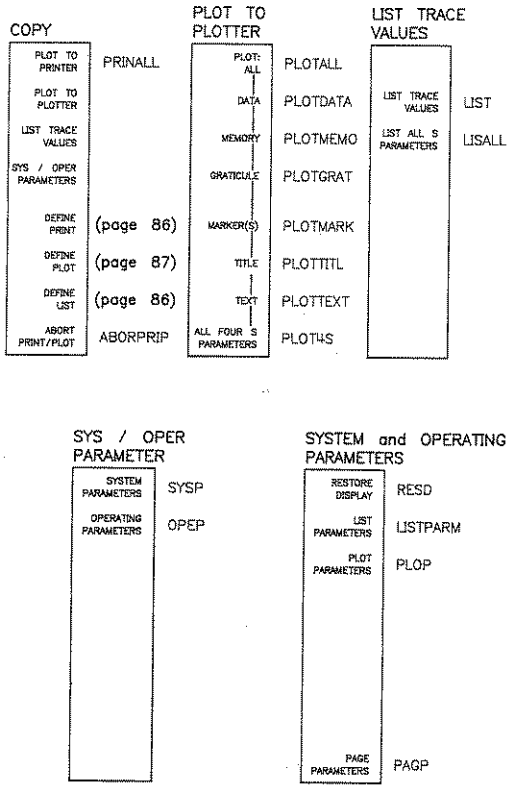
CAL RESPONSE AND ISOLATION CAL

RESPONSE & ISOLATION CAL

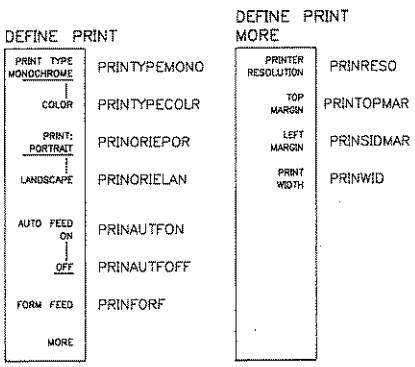
RESPONSE STANDARD SELECT

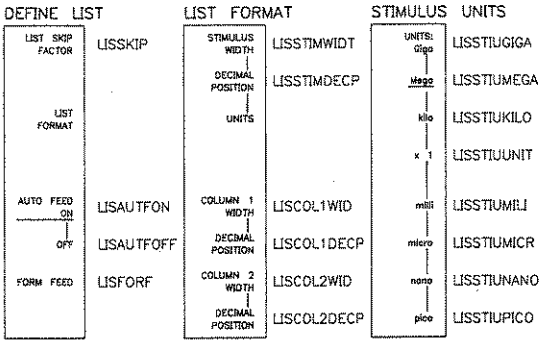
CAL TRL 2-PORT



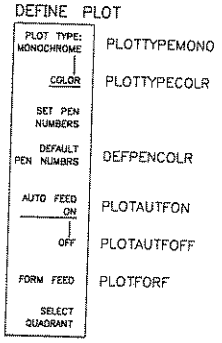

COPY
PLOT TO PRINTER
PRINALL
PLOT TO PLOTTER
LIST TRACE VALUES
SYS / OPER PARAMETERS
DEFINE PRINT
(page 86)
DEFINE PLOT
(page 87)
DEFINE LIST
(page 86)
ABORT PRINT/PLOT
ABORPRIP
PLOT TO PLOTTER
PLOT: ALL
PLOTALL
DATA
PLOTDATA
MEMORY
PLOTMEMO
GRATICULE
PLOTGRAT
MARKER(S)
PLOTMARK
TITLE
PLOTTITL
TEXT
PLOTTEXT
ALL FOUR S PARAMETERS
PLOTHS
LIST TRACE VALUES
LIST TRACE VALUES
LIST
LIST ALL S PARAMETERS
LISALL
SYS / OPER PARAMETER
SYSTEM PARAMETERS
SYSP
OPERATING PARAMETERS
OPEP
SYSTEM and OPERATING PARAMETERS
RESTORE DISPLAY
RESD
LIST PARAMETERS
LISTPARM
PLOT PARAMETERS
PLOP
PAGE PARAMETERS
PAGP

COPY

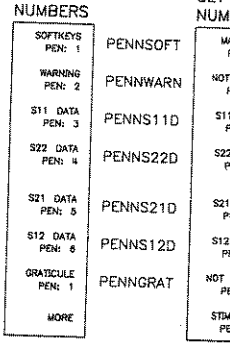

DEFINE PRINT
PRINT TYPE MONOCHROME
COLOR
PRINTYPEMONO
PRINTYPECOLR
PRINT: PORTRAIT
LANDSCAPE
PRINORIEPOR
PRINORIELAN
AUTO FEED ON
OFF
PRINAUTFON
PRINAUTFOFF
FORM FEED
PRINFORF
MORE
DEFINE PRINT MORE
PRINTER RESOLUTION
PRINRESO
TOP MARGIN
PRINTOPMAR
LEFT MARGIN
PRINSIDMAR
PRINT WIDTH
PRINWID


DEFINE LIST
LIST SKIP FACTOR
LISSKIP
LIST FORMAT
AUTO FEED ON
OFF
LISAUTFON
LISAUTFOFF
FORM FEED
LISFORF
LIST FORMAT
STIMULUS WIDTH
DECIMAL POSITION
UNITS
LISSTIMWIDT
LISSTIMDECP
COLUMN 1 WIDTH
DECIMAL POSITION
COLUMN 2 WIDTH
DECIMAL POSITION
LISCOL1WID
LISCOL1DECP
LISCOL2WID
LISCOL2DECP
STIMULUS UNITS
UNITS: Giga
Mega
kilo
x 1
milli
micro
nano
pico
LISSTIUGIGA
LISSTIUMEGA
LISSTIUKILO
LISSTIUUNIT
LISSTIUMILI
LISSTIUMICR
LISSTIUNANO
LISSTIUPICO

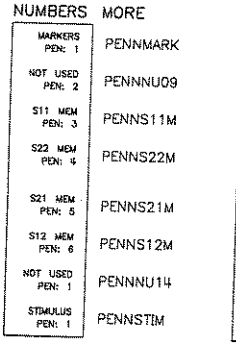
DEFINE PLOT



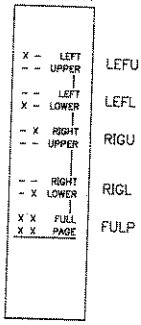
SET PEN NUMBERS



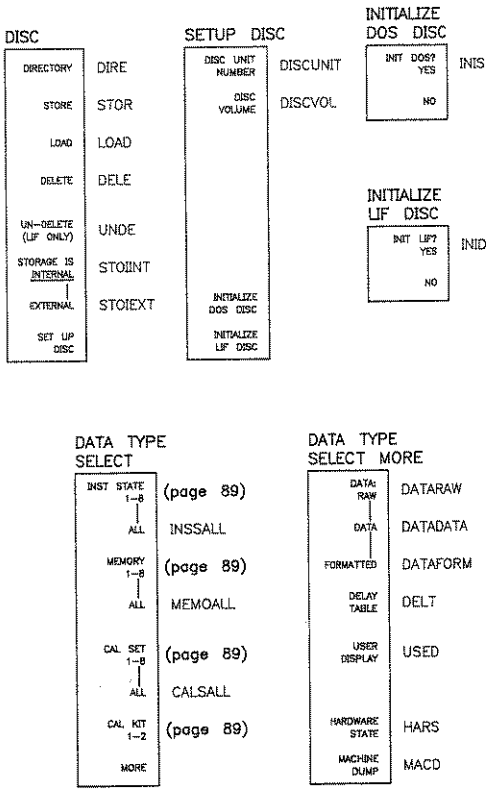
SET PEN NUMBERS MORE



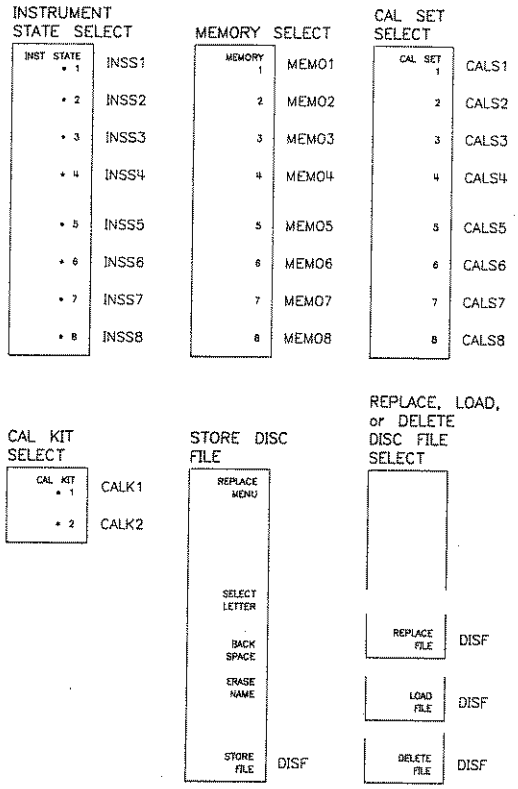
SELECT QUADRANT



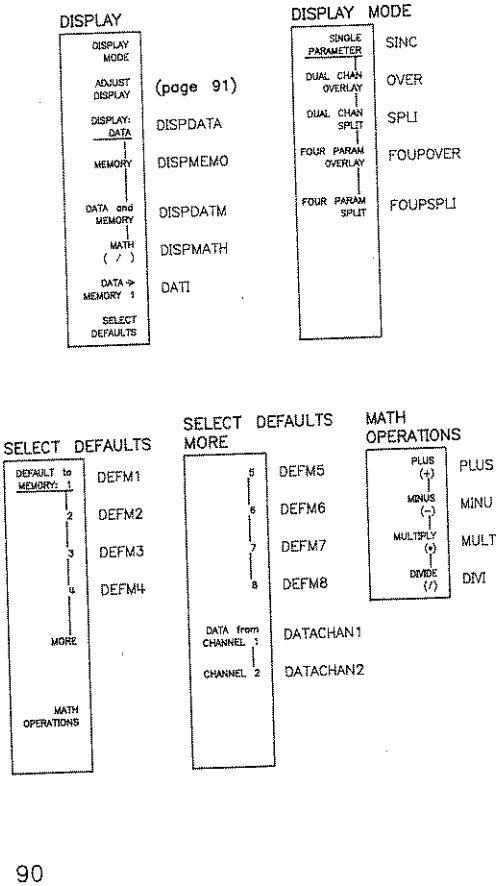
DISC

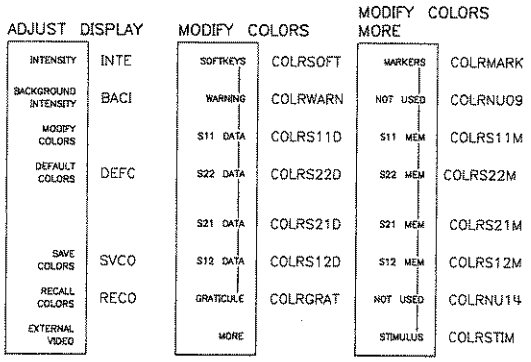

DISC
DIRECTORY
DIRE
STORE
STOR
LOAD
LOAD
DELETE
DELE
UN-DELETE (LIF ONLY)
UNDE
STORAGE IS INTERNAL
STOIINT
EXTERNAL
STOIEXT
SET UP DISC
SETUP DISC
DISC UNIT NUMBER
DISCUNIT
DISC VOLUME
DISCVOL
INITIALIZE DOS DISC
INITIALIZE LIF DISC
INITIALIZE DOS DISC
INIT DOS? YES
NO
INIS
INITIALIZE LIF DISC
INIT LIF? YES
NO
INID

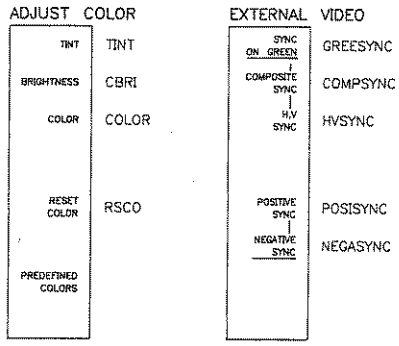
DATA TYPE SELECT
INST STATE 1–8
(page 89)
ALL
INSSALL
MEMORY 1–8
(page 89)
ALL
MEMOALL
CAL SET 1–8
(page 89)
ALL
CALSALL
CAL KIT 1–2
(page 89)
MORE
DATA TYPE SELECT MORE
DATA: RAW
DATARAW
DATA
DATADATA
FORMATTED
DATAFORM
DELAY TABLE
DELT
USER DISPLAY
USED
HARDWARE STATE
HARS
MACHINE DUMP
MACD


INSTRUMENT STATE SELECT
INST STATE
• 1
• 2
• 3
• 4
• 5
• 6
• 7
• 8
INSS1
INSS2
INSS3
INSS4
INSS5
INSS6
INSS7
INSS8
MEMORY SELECT
MEMORY
1
2
3
4
5
6
7
8
MEMO1
MEMO2
MEMO3
MEMO4
MEMO5
MEMO6
MEMO7
MEMO8
CAL SET SELECT
CAL SET
1
2
3
4
5
6
7
8
CALS1
CALS2
CALS3
CALS4
CALS5
CALS6
CALS7
CALS8
CAL KIT SELECT
CAL KIT
• 1
• 2
CALK1
CALK2
STORE DISC FILE
REPLACE MENU
SELECT LETTER
BACK SPACE
ERASE NAME
STORE FILE
DISF
REPLACE, LOAD, or DELETE DISC FILE SELECT
REPLACE FILE
DISF
LOAD FILE
DISF
DELETE FILE
DISF

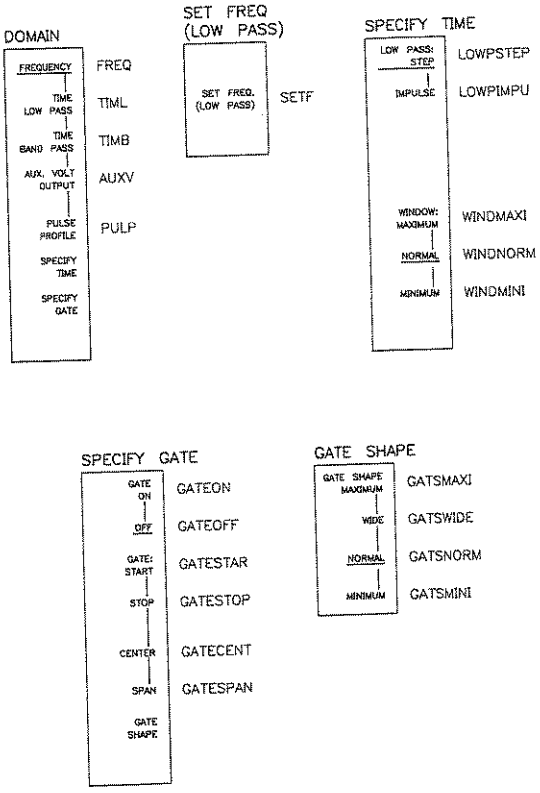
DISPLAY


DISPLAY
DISPLAY MODE
ADJUST DISPLAY
(page 91)
DISPLAY: DATA
DISPDATA
MEMORY
DISPMEMO
DATA and MEMORY
DISPDATM
MATH (/)
DISPMATH
DATA -> MEMORY 1
DATI
SELECT DEFAULTS
DISPLAY MODE
SINGLE PARAMETER
SINC
DUAL CHAN OVERLAY
OVER
DUAL CHAN SPLIT
SPLI
FOUR PARAM OVERLAY
FOUPOVER
FOUR PARAM SPLIT
FOUPSPLI
SELECT DEFAULTS
DEFAULT to MEMORY: 1
DEFM1
2
DEFM2
3
DEFM3
4
DEFM4
MORE
MATH OPERATIONS
SELECT DEFAULTS MORE
5
DEFM5
6
DEFM6
7
DEFM7
8
DEFM8
DATA from CHANNEL 1
DATACHAN1
CHANNEL 2
DATACHAN2
MATH OPERATIONS
PLUS (+)
PLUS
MINUS (-)
MINU
MULTIPLY (*)
MULT
DIVIDE (/)
DIVI

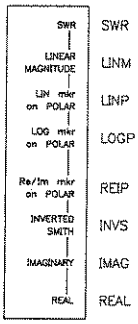

ADJUST DISPLAY
INTENSITY
INTE
BACKGROUND INTENSITY
BACI
MODIFY COLORS
DEFAULT COLORS
DEFC
SAVE COLORS
SVCO
RECALL COLORS
RECO
EXTERNAL VIDEO
MODIFY COLORS
SOFTKEYS
COLRSOFT
WARNING
COLRWARN
S11 DATA
COLRS11D
S22 DATA
COLRS22D
S21 DATA
COLRS21D
S12 DATA
COLRS12D
GRATICULE
COLRGRAT
MORE
MODIFY COLORS MORE
MARKERS
COLRMARK
NOT USED
COLRNU09
S11 MEM
COLRS11M
S22 MEM
COLRS22M
S21 MEM
COLRS21M
S12 MEM
COLRS12M
NOT USED
COLRNU14
STIMULUS
COLRSTIM


ADJUST COLOR
TINT
TINT
BRIGHTNESS
CBRI
COLOR
COLOR
RESET COLOR
RSCO
PREDEFINED COLORS
EXTERNAL VIDEO
SYNC ON GREEN
GREESYNC
COMPOSITE SYNC
COMPSYNC
H,V SYNC
HVSYNC
POSITIVE SYNC
POSISYNC
NEGATIVE SYNC
NEGASYNC

DOMAIN


DOMAIN
FREQUENCY
TIME LOW PASS
TIME BAND PASS
AUX. VOLT OUTPUT
PULSE PROFILE
SPECIFY TIME
SPECIFY GATE
FREQ
TIML
TIMB
AUXV
PULP
SET FREQ (LOW PASS)
SET FREQ. (LOW PASS)
SETF
SPECIFY TIME
LOW PASS: STEP
IMPULSE
WINDOW: MAXIMUM
NORMAL
MINIMUM
LOWPSTEP
LOWPIMPU
WINDMAXI
WINDNORM
WINDMINI
SPECIFY GATE
GATE ON
OFF
GATE: START
STOP
CENTER
SPAN
GATE SHAPE
GATEON
GATEOFF
GATESTAR
GATESTOP
GATECENT
GATESPAN
GATE SHAPE
GATE SHAPE MAXIMUM
WIDE
NORMAL
MINIMUM
GATSMAXI
GATSWIDE
GATSNORM
GATSMINI

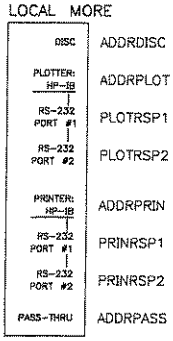
FORMAT



LOCAL

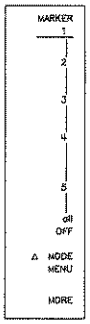
LOCAL

LOCAL MORE



MARKER

MARKER



MARK1
MARK2
MARK3
MARK4
MARK5
MARKOFF

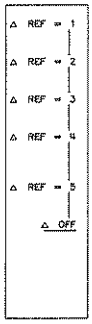
MARKER MORE

TARV
MARKTARG
MARKMINI
MARKMAXI
SEAL
SEAR

MARKER MORE 2

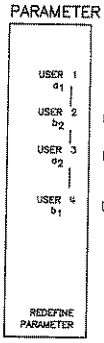
MKRLISTON
MKRLISTOFF
MKRLFOUP
MKRLFIVM
MARKDISC
MARKCONT

DELTA MODE



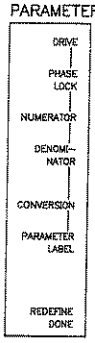
DELR1
DELR2
DELR3
DELR4
DELR5
DELO

PARAMETER



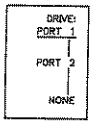
USER1
USER2
USER3
USER4

REDEFINE PARAMETER



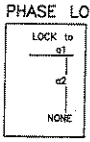
(page 96)
(page 96)
(page 96)
PARL
REDD

DRIVE



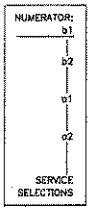
DRIVPORT1
DRIVPORT2
DRIVNONE

PHASE LOCK



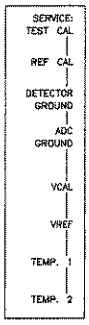
LOCKA1
LOCKA2
LOCKNONE

NUMERATOR



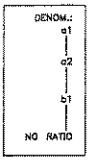
NUMEB1
NUMEB2
NUMEA1
NUMEA2

SERVICE SELECTIONS



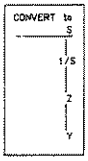
SERVTESC
SERVREFC
SERVDETG
SERVADCG
SERVVCAL
SERVVREF
SERVTEMP1
SERVTEMP2

DENOMINATOR

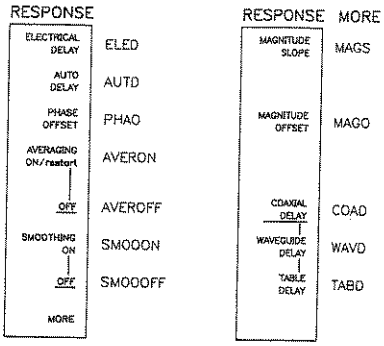


DENOA1
DENOA2
DENOB1
DENONOR

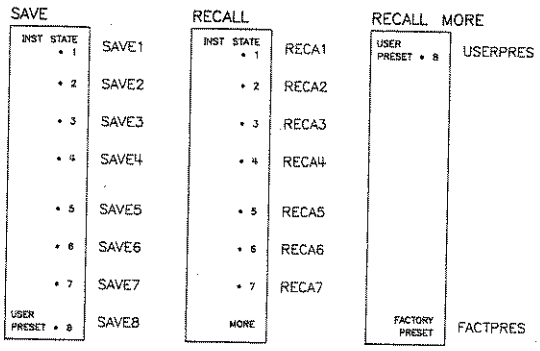
CONVERSION



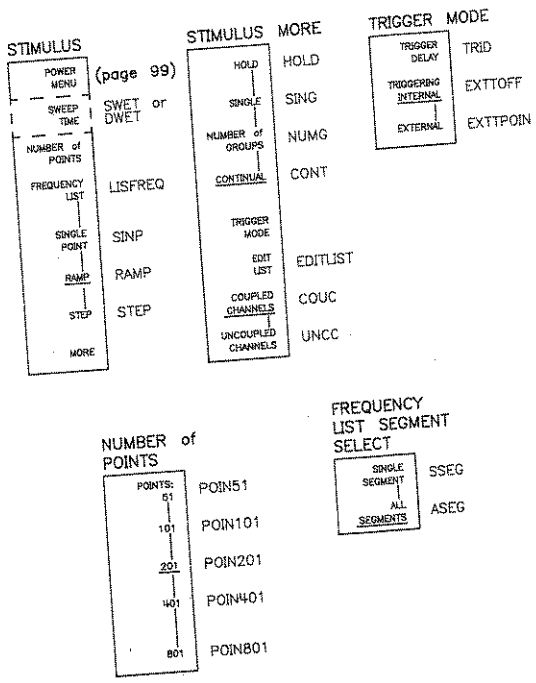
CONVS
CONV1S
CONVZ
CONVY

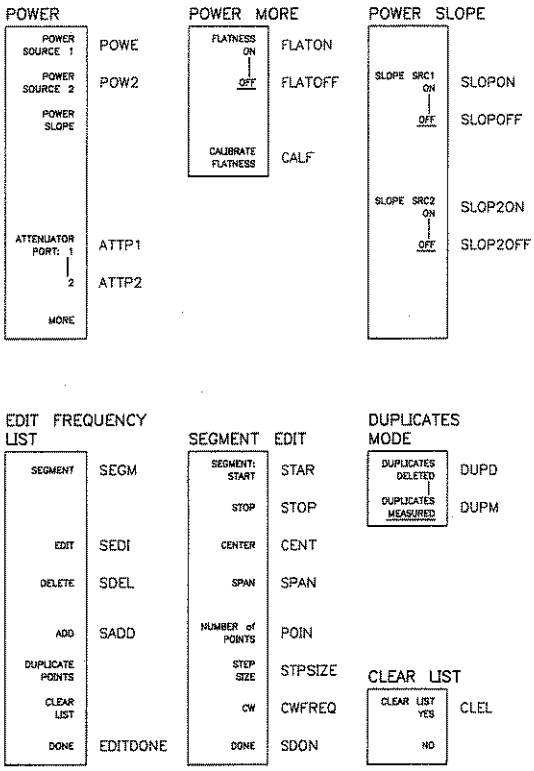

RESPONSE
ELECTRICAL DELAY
ELED
AUTO DELAY
AUTD
PHASE OFFSET
PHAO
AVERAGING ON/restart
AVERON
OFF
AVEROFF
SMOOTHING ON
SMOOON
OFF
SMOOOFF
MORE
RESPONSE MORE
MAGNITUDE SLOPE
MAGS
MAGNITUDE OFFSET
MAGO
COAXIAL DELAY
COAD
WAVEGUIDE DELAY
WAVD
TABLE DELAY
TABD

SAVE/RECALL

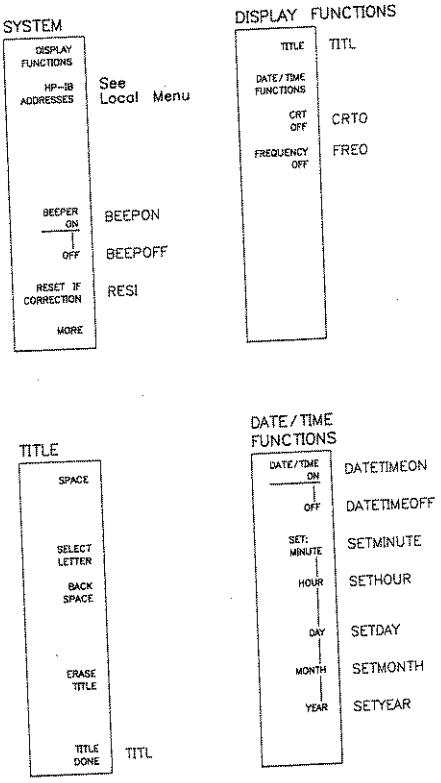

SAVE
INST STATE • 1
SAVE1
• 2
SAVE2
• 3
SAVE3
• 4
SAVE4
• 5
SAVE5
• 6
SAVE6
• 7
SAVE7
USER PRESET • 8
SAVE8
RECALL
INST STATE • 1
RECA1
• 2
RECA2
• 3
RECA3
• 4
RECA4
• 5
RECA5
• 6
RECA6
• 7
RECA7
MORE
RECALL MORE
USER PRESET • 8
USERPRES
FACTORY PRESET
FACTPRES

STIMULUS

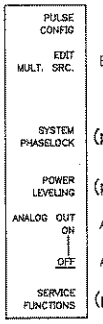

STIMULUS
POWER MENU
(page 99)
SWEEP TIME
SWET or DWET
NUMBER of POINTS
FREQUENCY LIST
LISFREQ
SINGLE POINT
SINP
RAMP
RAMP
STEP
STEP
MORE
STIMULUS MORE
HOLD
HOLD
SINGLE
SING
NUMBER of GROUPS
NUMG
CONTINUAL
CONT
TRIGGER MODE
EDIT LIST
EDITLIST
COUPLED CHANNELS
COUC
UNCOUPLED CHANNELS
UNCC
TRIGGER MODE
TRIGGER DELAY
TRID
TRIGGERING INTERNAL
EXTTOFF
EXTERNAL
EXTTPOIN
NUMBER of POINTS
POINTS: 51
POIN51
101
POIN101
201
POIN201
401
POIN401
801
POIN801
FREQUENCY LIST SEGMENT SELECT
SINGLE SEGMENT
SSEG
ALL SEGMENTS
ASEG


POWER
POWER SOURCE 1
POWE
POWER SOURCE 2
POW2
POWER SLOPE
ATTENUATOR PORT: 1
2
ATTP1
ATTP2
MORE
POWER MORE
FLATNESS ON
OFF
FLATON
FLATOFF
CALIBRATE FLATNESS
CALF
POWER SLOPE
SLOPE SRC1 ON
OFF
SLOPON
SLOPOFF
SLOPE SRC2 ON
OFF
SLOP2ON
SLOP2OFF
EDIT FREQUENCY LIST
SEGMENT
SEGM
EDIT
SEDI
DELETE
SDEL
ADD
SADD
DUPLICATE POINTS
CLEAR LIST
DONE
EDITDONE
SEGMENT EDIT
SEGMENT: START
STAR
STOP
STOP
CENTER
CENT
SPAN
SPAN
NUMBER of POINTS
POIN
STEP SIZE
STPSIZE
CW
CWFREQ
DONE
SDON
DUPLICATES MODE
DUPLICATES DELETED
DUPLICATES MEASURED
DUPD
DUPM
CLEAR LIST
CLEAR LIST YES
NO
CLEL

SYSTEM


SYSTEM
DISPLAY FUNCTIONS
HP-IB ADDRESSES
See Local Menu
BEEPER ON
BEEPON
OFF
BEEPOFF
RESET IF CORRECTION
RESI
MORE
TITLE
TITL
DATE/TIME FUNCTIONS
CRT OFF
CRTO
FREQUENCY OFF
FREQ
TITLE
SPACE
SELECT LETTER
BACK SPACE
ERASE TITLE
TITLE DONE
TITL
DATE/TIME FUNCTIONS
DATE/TIME ON
DATETIMEON
OFF
DATETIMEOFF
SET: MINUTE
SETMINUTE
HOUR
SETHOUR
DAY
SETDAY
MONTH
SETMONTH
YEAR
SETYEAR

SYSTEM MORE



EDITMULS

(page 102)

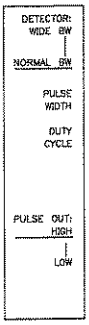
(page 102)

ANAOON

ANAOOFF

(page 98)

PULSE CONFIGURE



DETEWIDB

DETENORB

PULW

DUTC

PULOHIGH

PULOLOW

EDIT MULTIPLE SOURCE

DEFISOUR1

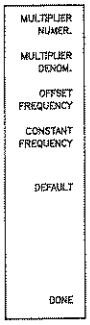
DEFISOUR2

DEFIRECV

MULSON

MULSOFF

DEFINE FREQUENCIES



MULN

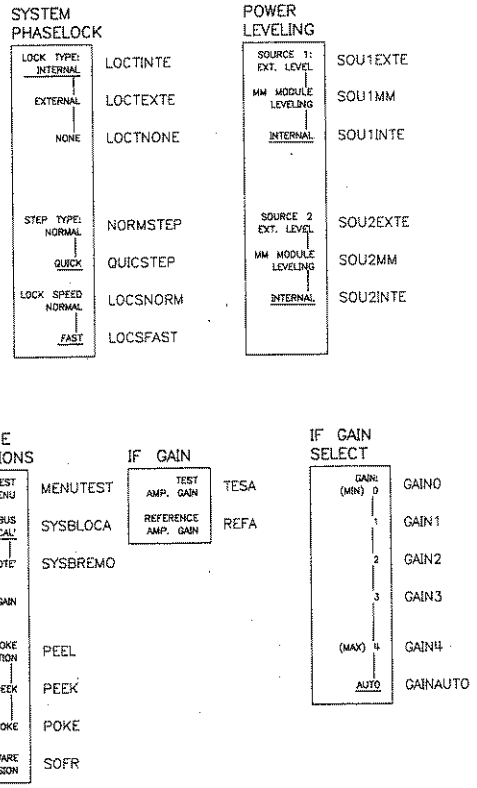
MULD

OFFF

CONF

DEFA

SYSTEM


SYSTEM PHASELOCK
LOCK TYPE: INTERNAL
EXTERNAL
NONE
LOCTINTE
LOCTEXTE
LOCTNONE
STEP TYPE: NORMAL
QUICK
LOCK SPEED NORMAL
FAST
NORMSTEP
QUICSTEP
LOCSNORM
LOCSFAST
POWER LEVELING
SOURCE 1: EXT. LEVEL
MM MODULE LEVELING
INTERNAL
SOURCE 2 EXT. LEVEL
MM MODULE LEVELING
INTERNAL
SOU1EXTE
SOU1MM
SOU1INTE
SOU2EXTE
SOU2MM
SOU2INTE
SERVICE FUNCTIONS
TEST MENU
SYSTEM BUS 'LOCAL'
'REMOTE'
IF GAIN
PEEK/POKE LOCATION
PEEK
POKE
SOFTWARE REVISION
MENUTEST
SYSBLOCA
SYSBREMO
PEEL
PEEK
POKE
SOFR
IF GAIN
TEST AMP. GAIN
REFERENCE AMP. GAIN
TESA
REFA
IF GAIN SELECT
GAIN: (MIN) 0
1
2
3
(MAX) 4
AUTO
GAIN0
GAIN1
GAIN2
GAIN3
GAIN4
GAINAUTO