5790A

AC MEASUREMENT STANDARD

Remote Programming Reference Guide

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FLUKE®

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SYNTAX RULES

SPACES:	At least one space is required between a command and a parameter. Extra spaces or tabs are optional, except no spaces are allowed within a parameter or within a number.
MULTIPLE PARAMETERS:	When a command has more than one parameter, the parameters must be separated by commas. For example: "CLOCK 133700,071791". Including too many or too few parameters causes a command error.
NUMERIC PARAMETERS:	Numeric parameters may have up 15 significant digits, and their exponents can be in the range ±1.0E±20.
NULL PARAMETERS:	Null parameters cause a command error (e.g., the adjacent commas in "CLOCK 133700,, 071791").
EXPRESSIONS:	Expressions, for example "(4+2*13)", are not allowed as parameters.
UNITS:	The following units are acceptable as units in parameters, and may be used in responses: • HZ (Frequency in units of Hz) • KHZ (Frequency in units of kHz) • MHZ (Frequency in units of MHz) • UV (Volts in units of μV) • MV (Volts in units of mV) • V (Volts in units of V) • KV (Volts in units of kV) • A (Current in units of A) • PCT (Percent) • PPM (Parts-per-million) • RATIO (Unitless)
MULTIPLE COMMANDS:	You can combine commands in one statement using a semicolon ";". For example, these program statement groups are equivalent: 20 PRINT @6,"INPUT INPUT2" 30 PRINT @6,"MEAS?" 20 PRINT @6,"INPUT INPUT2 ; MEAS?"

SYNTAX RULES (CONT)

TERMINATORS: Sent by the 5790A: LF with EOI. Received by the 5790A: Any ASCII character with EOI or NEWLINE without EOI.

RESPONSE FORMATS

DATA TYPE	DESCRIPTION
Integer	Example: CMD: ESE 123; *ESE? RESP: 123
Floating	Numbers that may have up to 15 significant figures plus an exponent that may range from ±E20. Example: CMD: CAL_CONST? FREQ_G RESP: +1.000141377406621E+00
String	Any ASCII characters including quotation mark delimiters. Example: CMD: RPTSTR "Hello World"; RPTSTR? RESP: "Hello World"
CRD	Character Response Data. This type of response is always a keyword such as PPM, PCT, or RATIO. Example: CMD; DUNIT PPM;DUNIT? RESP: PPM
IAD	Indefinite ASCII. Any ASCII characters followed by EOM (an IEEE-488 bus command). Queries with this type of response MUST be the last query in a program message. Example: CMD: *OPT? RESP: WBND CMD: *OPT?;*ESE? RESP: <none> ERR? = 1310,"488.2 Query After Indefinite Response" CMDSTR? = "*opt?;*ese?\n"

RESPONSE FORMATS (CONT)

DATA TYPE	DESCRIPTION
Binary Block Data	A special data type defined by the IEEE-488.2 standard. This type is used in *PUD? query. It is defined as follows:
	#(non-zero digit) (digits) (user data) The non-zero digit specifies the number of characters that will follow in the <digits> field. Characters allowed in the digits field are 0 through 9 (ASCII 48 through 57 decimal). The value of the number in the <digits> field in decimal defines the number of user data bytes that follow in the <user data> field. The maximum response is 64 characters. Example: CMD: *PUD "test1"; *PUD? RESP: #40005test?

NOTE:

This table applies when the 5790A is in IEEE-488 remote mode or in serial port remote control in "COMPUTER" mode.

COMMAND SUMMARY BY FUNCTION

IEEE-488.2 COMMON COMMANDS

*CLS	Clears the ESR, the ISCR, and the error queue and terminates a pending operation complete command (*OPC).
*ESE	Loads the Event Status Enable register.
*ESE?	Returns the decimal equivalent of the Event Status Enable register.
*ESR?	Returns the decimal equivalent of the Event Status Register (ESR) and clears it.
*IDN?	Returns information about installed hardware and software.
*LRN?	Returns <IAD> which when sent to 5790A restores it to the state in effect when the *LRN? command was executed.
*OPC	Generates the operation complete message in the Event Status Register when all pending device operations are complete.
*OPC?	Reply with a 1 when all pending operations are complete.
*OPT?	Queries which hardware and software options are installed.
*PUD	Stores a string of bytes in a nonvolatile location in the 5790A.
*PUD?	Returns the contents of the *PUD register.
*RCL	Restores the 5790A setup from a previous setup saved by *SAV.
*RST	Resets the state of the instrument to power-up conditions.
*SAV	Saves the current 5790A setup into setup memory for later use by *RCL.
*SRE	Loads the Service Request Enable register.

IEEE-488.2 COMMON COMMANDS (CONT)

*SRE?	Returns the decimal equivalent of the Service Request Enable register.
*STB?	Returns the decimal equivalent of the Serial Poll Status Byte.
*TRG	Triggers a measurement the same as TRIG.
*TST?	Runs some of the 5790A self tests and returns the results. Also see DIAG.
*WAI	Prevents further remote commands from being executed until all previous remote commands have been completely executed.

INSTRUMENT CONFIGURATION COMMANDS

CAL_MODE?	Returns the setting of the CALIBRATION MODE switch: 1 = SERVICE; 0 = PERIODIC.
CAL_SW?	Returns the setting of the CALIBRATION STORE switch: 1 = ENABLE; 0 = NORMAL.
CLOCK	Sets the real-time clock.
CLOCK?	Queries the value of the real-time clock.
DATEFMT	Selects the date format.
DATEFMT?	Returns the clock/calendar date format.
EOFSTR	Sets the End Of File string for use in cal reports.
EOFSTR?	Returns the End Of File string for use in cal reports.
EXTGUARD	Sets external guard.
EXTGUARD?	Returns the setting of external guard.
EXTRIG	Sets external (single) or auto (continuous) trigger mode.
EXTRIG?	Returns the setting of EXTRIG.
FIRSTIN	Stores the nonvolatile power-up configuration for the initial input (INPUT 1 or INPUT 2).

INSTRUMENT CONFIGURATION COMMANDS (CONT)

FIRSTIN?	Returns the power-up configuration for the initial input.
FORMAT	Formats the EEPROM device. Use with care!
SP_SET	Programs serial port nonvolatile settings.
SP_SET?	Returns the serial port nonvolatile settings.

MEASUREMENT AND TRANSFER COMMANDS

DELTA?	Returns the delta (transfer) value from the 5790A.
DFILT	Sets the digital filter parameters for mode and restart.
DFILT?	Returns the digital filter parameters for mode and restart.
DUNIT	Selects the delta unit.
DUNIT?	Returns the selected delta unit.
HIRES	Enables and disables higher resolution amplitude display.
HIRES?	Returns the setting of the HIRES command.
INPUT	Selects the active input connector.
INPUT?	Returns the active input connector.
MEAS?	Triggers (or in continuous trigger, restart trigger) a new measurement, waits for it to complete or (optionally) for a specified interval of time, then retrieves the value of the present input measurement (the most recently completed input measurement). Equivalent to: "TRIG; *WAI, VAL?".
RANGE	Selects the range that best measures the specified value and locks the range, or changes between locked or auto range.
RANGE?	Returns the present measurement range characteristics.

MEASUREMENT AND TRANSFER COMMANDS (CONT)

REF?	Returns the reference value and its associated parameters.
REFAVG	Sets the reference to the average of the present reference value and the present input measurement.
REFCLR	Clears the stored reference.
REFSET	Sets the reference to the value of the present input measurement.
TRIG	Triggers (EXTRIG ON) or Restarts (EXTRIG OFF) measurement.
UNCERT?	Returns the present input measurement uncertainty in ppm.
VAL?	Returns the value of the present input measurement (the most recently completed input measurement).

SERIAL REMOTE MODE ONLY COMMANDS

LOCAL	Goes to local state (IEEE-488 GTL function).
LOCKOUT	Goes to lockout state (IEEE-488 LLO function).
REMOTE	Goes to remote state (IEEE-488 REN and GTL functions).
SPLSTR	Sets the Serial Mode Serial Poll response string.
SPLSTR?	Returns the string used for serial mode Serial Poll responses.
SRQSTR	Sets the serial mode SRQ response string.
SRQSTR?	Returns the string used for serial mode SRQ responses.

CALIBRATION REPORT PRINTING/UPLOADING COMMANDS

CAL_PR	Prints a listing of a calibration report to the serial interface.

CALIBRATION REPORT PRINTING/UPLOADING COMMANDS (CONT)

CAL_RPT?	Returns a listing of a calibration report through the Remote control interface.
RPTSTR	Sets the report string.
RPTSTR?	Returns the report string.

STATUS COMMANDS

ETIME?	Gives the time in minutes that the instrument has been turned on since it was built or serviced.
ISCE0	Sets the Instrument Status 1 to 0 Change Enable register.
ISCE0?	Returns the decimal equivalent of the Instrument Status 1 to 0 Change Enable register.
ISCE1	Sets the Instrument Status 0 to 1 Change Enable register.
ISCE1?	Returns the decimal equivalent of the Instrument Status 0 to 1 Change Enable register.
ISCR0?	Returns the decimal equivalent of the Instrument Status 1 to 0 Change Register.
ISCR1?	Returns the decimal equivalent of the Instrument Status 0 to 1 Change Register.
ISR?	Returns the decimal equivalent of the Instrument Status Register.
MODE?	Returns the operating mode (MEASUREMENT, CALIBRATION, DIAGNOSTIC, CALWAITING).
MODESTR?	Returns a string describing what calibration or diagnostics is doing.
ONTIME?	Returns the time in minutes since the power was turned on.

5790A CALIBRATION, TESTING, AND DIAGNOSTICS COMMANDS	
ABORT	Aborts the current process.
CAL_AC	Begins an interactive calibration procedure for an ac range.
CAL_AC?	Lists the steps of an interactive calibration procedure requested with a CAL_AC command with the same parameters.
CAL_BACKUP	Changes a pointer so that the next CAL_NEXT command redoes the previously finished calibra tion step.
CAL_CLST?	Lists the symbolic names for all the calibration constants for a specified range.
CAL_CONST?	Returns the value of a particular calibration constant.
CAL_DATE?	Returns the date of the most recent calibration.
CAL_DAYS?	Returns the number of days elapsed since the most recent calibration.
CAL_DC	Begins a calibration procedure for a dc range.
CAL_DC?	Lists the steps of an interactive calibration procedure requested with a CAL_DC command with the same parameters.
CAL_FPT	Corrects the reference given for an ac calibration step after the fact, and as a result change the updated calibration constant or constants.
CAL_FPT?	Supplies the first two parameters to be used with a CAL_FPT to correct the next calibration step to be performed.
CAL_FREQ	Executes the frequency calibration procedure. (Service only)
CAL_I2	Begins the INPUT 2 vs. INPUT 1 calibration procedure. (Service only)

5790A CALIBRATION, TESTING, AND DIAGNOSTICS COMMANDS (CONT)	
CAL_I2?	Lists the steps in the INPUT 2 vs. INPUT 1 calibration procedure.
CAL_INPUT?	Returns the input to which the reference will be applied for the next calibration step.
CAL_INTV	Sets the calibration interval.
CAL_INTV?	Returns the calibration interval.
CAL_NEXT	Initiates the next calibration step.
CAL_NEXT?	Returns the external reference value for the next calibration step.
CAL_OFF	Cancels any interactive calibration underway.
CAL_SHIFT?	Returns the calibration shift for a single calibration point.
CAL_SKIP	Advances to the next step of an interactive procedure without executing the step.
CAL_SPEC?	Returns the uncertainty specification for a specified input, value, range, and frequency.
CAL_SLST?	Returns the calibration shifts for a group of service calibration points.
CAL_STLST?	Lists the calibration constant groups that have been altered but not yet saved with a CAL_STORE command.
CAL_STORE	Stores calibration constants into nonvolatile memory.
CAL_STORE?	Identifies calibration constant groups that have been altered but not saved. (Like CAL_STLST? except only the initial number is given).
CAL_TEMP	Sets the temperature for calibration.
CAL_TEMP?	Returns the most recent calibration temperature entered or stored temperature for a specified type of calibration.

COMMAND SUMMARY BY FUNCTION (CONT)

5790A CALIBRATION, TESTING, AND DIAGNOSTICS COMMANDS (CONT)

CAL_ZERO	Executes internal dc zeros calibration.
CMDSTR?	Returns erroneous command string.
DIAG	Runs a self-diagnostic routine or instructs 5790A to continue or abort a halted procedure.
DIAGFLT	Sets the 5790A's response to errors that occur during execution of diagnostics under remote control (nonvolatile).
DIAGFLT?	Returns the setting of the response to errors that occur during diagnostics executed under remote control.
ERR?	Returns the earliest error code and description from the 5790A error queue.
EXPLAIN?	Returns the description of the specified error code.
FAULT?	Returns an error code and takes the error off the error queue.

IEEE-488.2 COMMON COMMANDS

COMMAND	PARAMETERS	RESPONSE
*CLS	None	None
*ESE	Decimal equiv. of byte or a binary, octal, or hex number if preceded with #b, #o, or #h.	None
*ESE?	None	None
*ESR?	None	(Integer) Decimal equiv. of byte.
*IDN?	None	(String, string, string, string, string) FLUKE, 5790A, serial no., s/w rev. main CPU, s/w rev. inguard CPU.
*LRN?	None	(IAD) To be sent later as a command
*OPC	None	None
*OPC?	None	(Integer) 1
*OPT?	None	(IAD) WBND or 0
*PUD	(See manual for parameter.)	None
*PUD?	None	Binary Block Data
*RCL	0 through 15 for memory number	None
*RST	None	None
*SAV	0 through 15 for memory number	None
*SRE	Decimal equiv. of byte or a binary, octal, or hex number if preceded with #b, #o, or #h.	None

IEEE-488.2 COMMON COMMANDS (CONT)

COMMAND	PARAMETERS	RESPONSE
*SRE?	None	(Integer) Decimal equiv. of byte
*STB?	None	(Integer) Decimal equiv. of status byte
*TRG	None	None
*TST?	None	(Integer) 0 = Pass; 1 = Fail
*WAI	None	None

5790A DEVICE-DEPENDENT COMMANDS

COMMAND	PARAMETERS	RESPONSE
ABORT	None	None
CAL_AC	1. INPUT1, INPUT2, or WBND 2. (Optional) Number that defines range amplitude 3. (Optional only if parameter 1 is present; prohibited otherwise). A number that specifies which step to jump to of the procedure for the specified range.	None
CAL_AC?	Same as CAL_AC	(IAD) As follows: <# of ranges><EOL> <range 1 max>,<# of steps in range><EOL> <1st step amplitude in volts>,<1st step frequency in Hz><EOL> ... <last step amplitude>, <last step frequency> <EOL><range 2 max> etc.
CAL_BACKUP	None	None
CAL_CLST?	1. ACTIVE, STORED, OLD, or DEFAULT 2. Cal constant name, or group name, or group list name	(String) A list of the values of the calibration constants

5790A DEVICE-DEPENDENT COMMANDS (CONT)

COMMAND	PARAMETERS	RESPONSE
CAL_CONST?	The symbolic name of cal constant	(Float) Value of the constant.
CAL_DATE?	1. ACTIVE, STORED, or OLD 2. MAIN, WBND, DC, AC, AZ, WDC, WAC, or ALL, SERVICE or group	(Integer) Time and Date in the format defined by DATEFMT
CAL_DAYS?	MAIN, WBND, DC, AC, AZ, WDC, WAC, or ALL, SERVICE or group	(Integer) The number of elapsed days since the specified calibration
CAL_DC	1. INPUT1, INPUT2, or WBND 2. (Optional) Number that defines range amplitude	None
CAL_DC?	Same as CAL_DC	Same as CAL_AC?
CAL_FPT	1. A number signifying the range amplitude 2. The number of the step to correct (obtained using the CAL_FPT? command) 3. The updated reference value divided by what was given as the reference when the calibration step was run	None
CAL_FPT?	None	1. A number signifying the range amplitude (as in the RANGE command)

5790A DEVICE-DEPENDENT COMMANDS (CONT)

COMMAND	PARAMETERS	RESPONSE
CAL_FPT? (cont)		2. The number of the step to correct (obtained using the CAL_FPT? command)
CAL_FREQ	1. INPUT1 or INPUT2 2. A number signifying input frequency. If no units are given, Hz is assumed. (Must be 900 Hz to 1.1 kHz inclusive) CALIBRATION MODE switch must be set to SERVICE.	None
CAL_I2	Begins the INPUT 2 vs. INPUT 1 calibration procedure. CALIBRATION MODE switch must be set to SERVICE.	None
CAL_I2?	None	(IAD) A list of the calibration steps for the INPUT 2 vs. INPUT 1 calibration procedure
CAL_INPUT?	None	(CRD) INPUT1, INPUT2, WBND, or NONE
CAL_INTV	Days; must be 90, 365, or 730.	None
CAL_INTV?	None	(Integer) Days; 90, 365, or 730
CAL_MODE?	None	(Integer) 0 = SERVICE; 1 = PERIODIC
CAL_NEXT	(Optional) a number signifying actual reference amplitude	None

5790A DEVICE-DEPENDENT COMMANDS (CONT)

COMMAND	PARAMETERS	RESPONSE
CAL_NEXT?	None	1. (Float) The nominal amplitude (V) of the expected value for the next calibration point 2. (Float) The frequency (Hz) of the next point to be calibrated 0.0, – 1.0 if no next step.
CAL_OFF	None	None
CAL_PR	ABORT, ACTIVE, STORED, or CONSTS	None
CAL_RPT?	ACTIVE, STORED, or CONSTS	(String) The report. Bus control line EOI is asserted at the end.
CAL_SHIFT?	1. ACTIVE or STORED 2. WBND, INPUT1, INPUT2, or SHUNT 3. Value (implies range) 4. Frequency; use 0.0 for dc	(Float) Shift in PPM
CAL_SKIP	None	None
CAL_SLST?	1. ACTIVE or STORED 2. WBND, INPUT1, INPUT2, or SHUNT 3. Value signifying range	(Float) Shift in PPM
CAL_SPEC?	1. WBND, INPUT1, INPUT2, or SHUNT 2. Value signifying range 3. Frequency; use 0.0 for dc	(Float) Specification in PPM

5790A DEVICE-DEPENDENT COMMANDS (CONT)

COMMAND	PARAMETERS	RESPONSE
CAL_STLST?	DC, AC, ZC, WDC, WAC, or ALL or group	(String) The list expressed as a string. The form is: <number of groups>, <1st group>, etc.
CAL_STORE	DC, AC, ZC, WDC, WAC, ALL or group	None
CAL_STORE?	DC, AC, ZC, WDC, WAC, ALL or group	(Integer) 0 if no calibration constant groups have been updated; otherwise, the number of groups updated
CAL_SW?	None	(Integer) 0 = NORMAL; 1 = ENABLE
CAL_TEMP	Temperature in °C	None
CAL_TEMP?	(Optional) DC, AC, ZC, WDC, WAC, or ALL. No parameter returns CAL_TEMP setting.	(Integer) Temperature in °C
CAL_ZERO	None	None
CLOCK	1. 24-hr. time as HHMMSS 2. (Optional) Date as specifiedby the DATEFMT command	None
CLOCK?	None	1. (Integer) Time as HHMMSS
		2. (Integer) Date as defined by DATEFMT
CMDSTR?	None	1. (String) Erroneous command string
DATEFMT	MDY, DMY, or YMD	None

5790A DEVICE-DEPENDENT COMMANDS (CONT)

COMMAND	PARAMETERS	RESPONSE
DATEFMT?	None	(CRD) MDY, DMY, or YMD
DELTA?	None	1. (Float) the transfer value. The value is 0 if no reference has been set 2. (CRD) PPM, PCT, V, RATIO as set by the DUNIT command
DFILT	1. OFF, SLOW, MEDIUM, or FAST 2. FINE, COARSE, or MEDIUM	None
DFILT?	None	1. (CRD) OFF, SLOW, MEDIUM, or FAST 2. (CRD) FINE, COARSE, or MEDIUM
DIAG	CONT or ABORT. No parameter starts diagnostic procedure	None
DIAGFLT	HALT, ABORT, or CONT	None
DIAGFLT?	None	(CRD) HALT, ABORT, or CONT
DUNIT	PPM, PCT, V, RATIO	None
DUNIT?	None	(CRD PPM, PCT, V, or RATIO)
EOFSTR	String up to 2 characters	None
EOFSTR?	None	(String) The EOF string
ERR?	None	1. (Integer) The error code

5790A DEVICE-DEPENDENT COMMANDS (CONT)

COMMAND	PARAMETERS	RESPONSE
ERR? (cont)		2. (String) The error message
ETIME?	None	(Integer) Total number of minutes the power has been on
EXPLAIN?	The error code (an integer)	Explanation of the error code, with the parameter (if there is one) shown as a percent sign followed by d, f, or s
EXTGUARD	1 or 0 or ON or OFF	None
EXTGUARD?	None	(Integer) 0 or 1
EXTRIG	1 or 0 or ON or OFF	None
EXTRIG?	None	(Integer) 0 or 1
FAULT?	None	(Integer) The error code
FORMAT	ALL, CAL, or SETUP	None
HIRES	1 or 0 or ON or OFF	None
HIRES?	None	(Integer) 1 or 0
INPUT	INPUT1, INPUT2, SHUNT, WBND	None
INPUT?	None	(CRD) INPUT1, INPUT2, SHUNT, or WBND
ISCE0	Decimal equiv. of 16-bit word or a binary, octal, or hex number if preceded with #b, #o, or #h	None
ISCE0?	None	(Integer) Decimal equiv. of 16-bit word

5790A DEVICE-DEPENDENT COMMANDS (CONT)

COMMAND	PARAMETERS	RESPONSE
ISCE1	Decimal equiv. of 16-bit word or a binary, octal, or hex number if preceded with #b, #o, or #h	None
ISCE1?	None	(Integer) Decimal equiv. of 16-bit word
ISCR0?	None	(Integer) Decimal equiv. of 16-bit word
ISCR1?	None	(Integer) Decimal equiv. of 16-bit word
ISR?	None	(Integer) Decimal equiv. of 16-bit word
LOCAL (Serial Only)	None	None
LOCKOUT (Serial Only)	None	None
MEAS?	None	1. (Float) Amplitude,V 2. (Float) Frequency, Hz 3. (Integer) a code describing the measurement: 0 = Measurement valid 1 = Frequency underrange 2 = Frequency overrange 3 = Measurement settled, but filter not full 4 = Measurement unsettled

5790A DEVICE-DEPENDENT COMMANDS (CONT)

COMMAND	PARAMETERS	RESPONSE
MEAS? (cont)		5 = Value is underrange 6 = Value is overrange 7 = Meas. is invalid
MODE?	None	(CRD) MEASURMENT, CALIBRATION, DIAGNOSTIC, or CALWAITING
MODESTR?	None	(String) Same as the string that appears on front panel during a calibration step
ONTIME?	None	(Integer) The number of minutes the power has been on
RANGE	A value or LOCK, AUTO, UP, or DOWN	None
RANGE?		1. (Float) Nominal maximum value for range(uprange point in autorange) 2. (Float) Maximum value measurable by range 3. (Float) Minimum value measurable by range in range lock (e.g. 2.2E+00 for the 2.2V range) 4. (Float) Resolution of range 5. (Integer) 1 if autoranging, 0 if range locked

5790A DEVICE-DEPENDENT COMMANDS (CONT)

COMMAND	PARAMETERS	RESPONSE
REF?	None	1. (Float) Amplitude; V 2. (Float) Frequency; Hz 3. (Integer) Number of readings used to generate the reference value (0 = no ref) 4. (CRD) Input location
REFAVG	None	None
REFCLR	None	None
REFSET	None	None
REMOTE (Serial only)	None	None
RPTSTR	String of up to 132 characters	None
RPTSTR?	None	(String) Up to 132 characters
SPLSTR	The string up to 40 characters to print on receipt of a ^P	None
SPLSTR?	None	The serial remote mode Serial Poll string
SP_SET	1. 300, 600, 1200, 2400, 4800, 9600, 19200, or 38400 2. TERM or COMP (responses) 3 .XON, RTS, or NOSTALL 4. DBIT7 or DBIT8 (data bits)	None

5790A DEVICE-DEPENDENT COMMANDS (CONT)

COMMAND	PARAMETERS	RESPONSE
SP_SET (cont)	5. SBIT1 or SBIT2 (stop bits) 6. PNONE, EVEN, ODD 7. CR, LF, or CRLF (End-Of-Line)	
SP_SET?	None	1. (Integer) Baud rate 2. (CRD) TERM or COMP (responses) 3. (CRD) XON, RTS, or NOSTALL 4. (CRD) DBIT7 or DBIT8 (data bits) 5. (CRD) SBIT1 or SBIT2 (stop bits) 6. (CRD) PNONE, EVEN, ODD, or (parity) 7. (CRD) CR, LF, or CRLF (End-Of-Line)
SRQSTR	The serial remote mode SRQ string	None
SRQSTR?	None	(String) The serial remote mode SRQ string
TRIG	None	None
UNCERT?	None	1. Uncent value 2. Uncent unit (PPM) 3. Cal internal in days
VAL?	None	Same as for MEAS?

OPERATING STATE TRANSITIONS

FROM	TO	USE	1722A GPIB COMMAND	SERIAL GPIB COMMAND
Local	Remote REMOTE	MLA + REN	REMOTE	
Local	Local With Lockout	LLO + REN	LOCKOUT	LOCKOUT
Remote	Local "GO TO LOCAL CONTROL" softkey	GTL, or	LOCAL	LOCAL
Local With Lockout	Remote/ Lockout	MLA + REN	REMOTE, or any 5790A command	REMOTE
Remote/	LLO + REN Lockout	LOCKOUT	LOCKOUT	LOCKOUT
Remote/ Lockout	Local	REN not	LOCAL	LOCAL

STATUS REGISTER SUMMARY

CHECKING 5790A STATUS

You have access to status registers, enable registers, and queues in the 5790A to indicate various conditions in the instrument as shown in the foldout figure. In addition to the status registers, the Service Request control line, SRQ, and a 16-element buffer called the Error Queue provide status information. The following table lists the status registers and gives the read/write commands and mask registers associated with each.

Each status register and queue has a summary bit in the Serial Poll StatusByte. Enable registers are used to mask various bits in the status registers and generate summary bits in the Serial Poll Status Byte. You can use the Service Request Enable Register to assert the IEEE-488 Service Request (SRQ) control line on detection of any status condition or conditions you choose.

REGISTER	READ COMMAND	WRITE COMMAND	ENABLE REGISTER
Serial Poll Status Byte (STB)	*STB? (or SPL( ) for 1722A)	None	SRE
Service Request Enable Register (SRE)	*SRE?	*SRE	None
Event Status Register (ESR)	*ESR?	None	ESE
Event Status Enable Register (ESE)	*ESE?	*ESE	None
Instrument Status Register (ISR)	ISR?	None	None
Instrument Status 0 to 1 Change Register (ISCR1)	ISCR1?	None	ISCE1
Instrument Status 0 to 1 Change Enable Register (ISCE1)	ISCE1?	ISCE1	None
Instrument Status 1 to 0 Change Register (ISCR0)	ISCR0?	None	ISCE0

CHECKING 5790A STATUS (CONT)			
REGISTER	**READ COMMAND**	**WRITE COMMAND**	**ENABLE REGISTER**
Instrument Status 1 to 0 Change Enable Register (ISCE0)	ISCE0?	ISCE0	None

BIT DEFINITIONS FOR THE STATUS BYTE AND SRE

7	6	5	4	3	2	1	0
RID	**RQS / MSS**	**ESB**	**MAV**	**EAV**	**ISCB**	**0**	**0**

RID — Remote idle. Set to 1 when the remote interface is waiting for input process.

RQS — Requesting service. The RQS bit is set to 1 whenever bits ESB, MAV, EAV, or ISCB change from 0 to 1 and are enabled (1) in the SRE. When RQS is 1, the 5790A asserts the SRQ control line on the IEEE-488 interface. You can do a serial poll to read this bit to see if the 5790A is the source of an SRQ.

MSS — Master summary status. Set to 1 whenever bits ESB, MAV, EAV, or ISCB are 1 and enabled (1) in the SRE. This bit can be read using the *STB? command in serial remote control in place of doing a serial poll.

ESB — Set to 1 when one or more enabled ESR bits are 1.

MAV — Message available. The MAV bit is set to 1 whenever data is available in the 5790A's IEEE-488 interface output buffer.

EAV — Error available. An error has occurred and an error is available to be read from the error queue by using the ERR? query.

ISCB — One or more enabled ISCR bits are 1

BIT ASSIGNMENTS FOR THE ESR AND ESE

15	14	13	12	11	10	9	8
0	0	0	0	0	0	0	0

7	6	5	4	3	2	1	0
PON	**0**	**CME**	**EXE**	**DDE**	**QYE**	**0**	**OPC**

PON Power on. This bit is set to 1 if the line power has been turned off and on since the last time the ESR was read.

CME Command error. The 5790A's IEEE-488 interface en countered an incorrectly formed command. (The command ERR? fetches the earliest error code in the error queue, which contains error codes for the first 15 errors that have occurred.

EXE Execution error. An error occurred while the 5790A tried to execute the last command. This could be caused, for example, by a parameter being out of range. (The command ERR? fetches the earliest error in the error queue, which contains error codes for the first 15 errors that have occurred.)

DDE Device-dependent error. An error related to a device-dependent command has occurred.

QYE Query error. The 5790A was addressed to talk when no response data was available or appropriate, or when the controller failed to retrieve data on the output queue.

BIT ASSIGNMENTS FOR THE ISR, SCR, AND ISCE

15	14	13	12	11	10	9	8
0	**REMOTE**	**RPTBUSY**	**0**	**0**	**0**	**0**	**0**

7	6	5	4	3	2	1	0
0	**0**	**MCCHG**	**MDCHG**	**INPCHG**	**RNGCHG**	**VALID**	**BUSY**

REMOTE Set to 1 when the 5790A is under remote control.

RPTBUSY Set to 1 when a calibration report is being printed to the serial port.

MCCHG Set to 1 when measurement controls have changed. (Measurement controls are EXTGUARD, EXTRIG, DFILT, AUTORANGE, HIRES.)

MDCHG Set to 1 when an operating mode has changed. (Modes are MEASUREMENT, CALIBRATION, DIAGNOSTIC, and CALWAITING.) This bit is always 0 in the ISR. It changes to 1 only in the ISCR0 and ISCR1 registers.

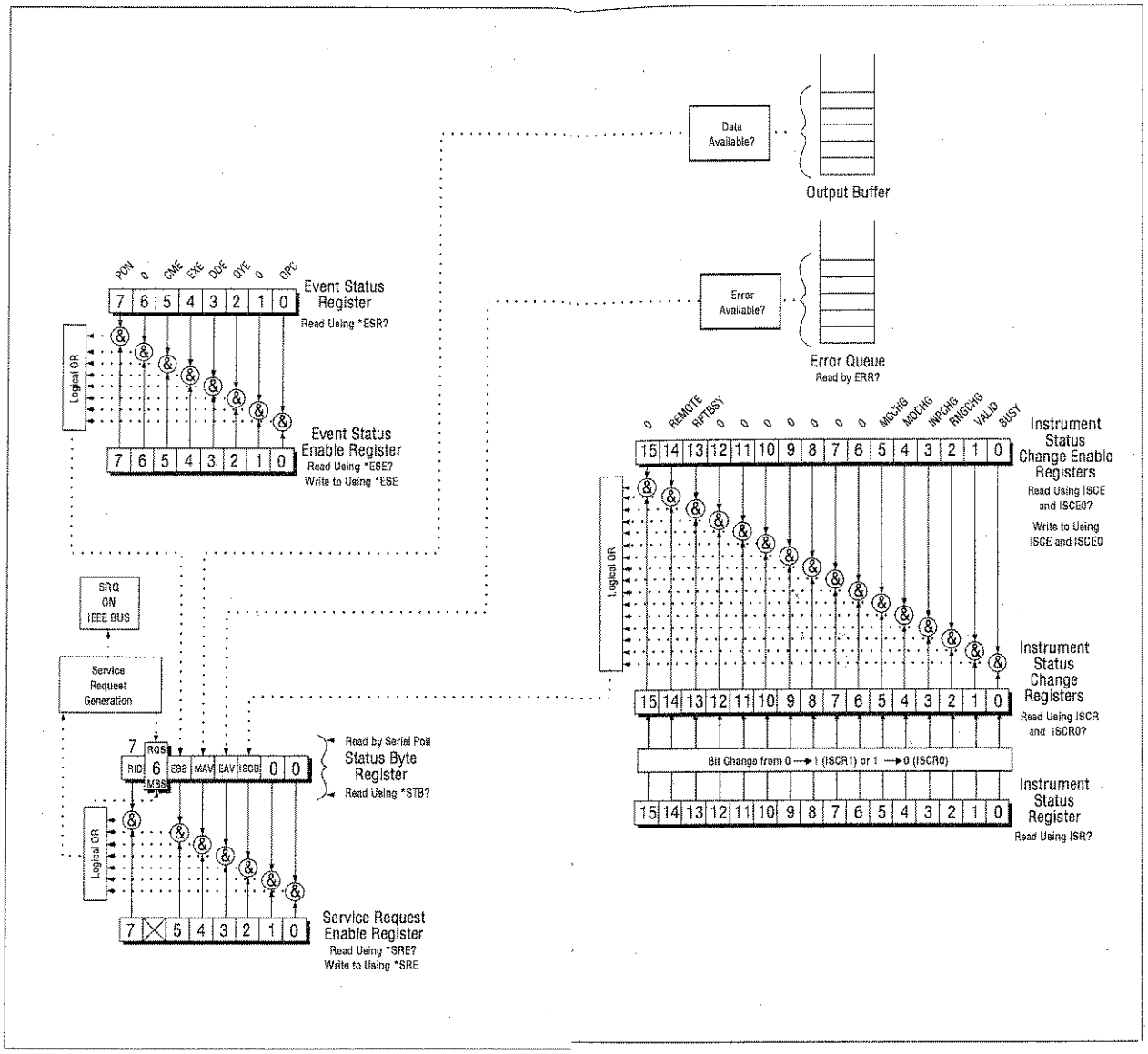
INPCHG Set to 1 when the input source has changed. This bit is always 0 in the ISR. It changes to 1 only in the ISCR0 and ISCR1 registers.

RNGCHG Set to 1 when the range has changed. This bit is always 0 in the ISR. It changes to 1 only in the ISCR0 and ISCR1 registers.

VALID Set to 1 when the present measurement is valid.

BUSY Set to 1 when the 5790A is a making a measurement, running a calibration or diagnostics procedure, or saving anything to nonvolatile memory.

STATUS REGISTER OVERVIEW



NOTES