

GL500 Interface Commands

Outline

Interface commands are a group of commands that are used to connect the GL500 to a PC via LAN or USB, change internal settings, and perform control functions when measurement data, etc., is received.

Interface Command Types

There are two types of interface commands sent from the PC to control the GL500: Setting commands and Query (Response) commands.

• Setting commands

Setting commands are commands that are used to change settings and to perform processing. These commands are sent from the PC but do not need to be received by the GL500.

• Query commands

Depending on the type of command, a Query command sent from the PC may require a query (response) to be returned from the GL500. Whenever a query command is sent from the PC, it must be received by the GL500.

Interface Command Format

Interface commands are formatted using ASCII character strings, and there is no distinction made between upper-case and lower-case characters. Moreover, all the query commands from the GL500 are in a uniformly abbreviated upper-case character format. A New Line code is appended to each command, according to the New Line code format specified at the GL500. The format will be CR+LF, CR, or LF.



Command characters

The ASCII characters within this symbol represent a command for sending/receiving data. The character string comprises both upper-case and lower-case characters, and the upper-case characters are in an abbreviated format.



Query character

When the Query character is appended to a command, the command becomes a query command and is sent to the GL500.



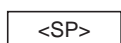
Connection character (colon)

Used to connect command characters.



Continuation character (semicolon)

Used for continuous transmission without any breaks between the commands (please limit the number of characters sent at one time to 512).



Blank space character

The blank space character indicates a space that is the size of one alphanumeric number.



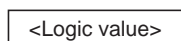
Integer value

The integer value is an ASCII text string. Used for GL500 settings.



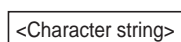
Decimal point, exponent, value with a unit attached

Represents a decimal value (such as 1.234), an exponent (such as 1E-6) or a value with a unit attached (such as IKHZ). As its use varies according to the command, please refer to the command flow chart for details.



Logic value

Represented by 1/0, ON/OFF, Enable/Disable, TRUE/FALSE, YES/NO, SET/RESET. Any of these can be used.



Character string

A character string must be enclosed in double quotation marks (" ").

Example: :ANN:TITL "DEMO RECORD"

Error Query

If an invalid command or a command that cannot be set is sent, an error occurs at the GL500 and an error query is generated. The :STAT:ERR? error query can be used to search for the error. Moreover, since up to 255 error queries are stored in the buffer, errors starting with the oldest error are sent in response whenever a :STAT:ERR? command is sent. Please refer to the Status Report section for further details on the errors.

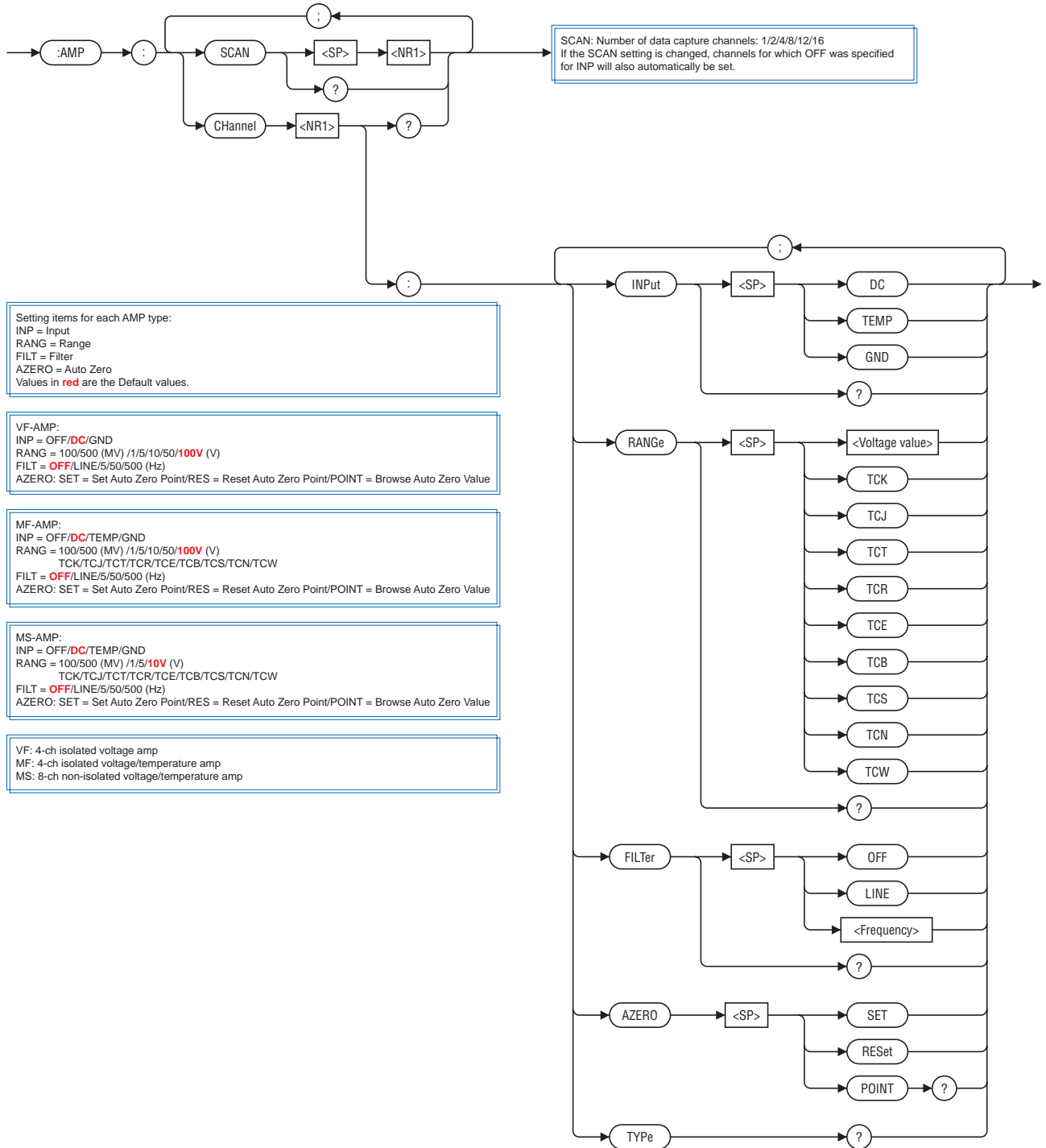
Status Command

The status command is used to check the status of the GL500. :STAT:COND? can be used to search for each status, but at high-speed operations, such as when the GL500 is capturing data to memory at a rate that doesn't even reach 1 second, the status condition changes too quickly from 0 → 1 → 0 to enable an accurate confirmation to be made of the 1 status. At this time, it is recommended that you use :STAT:FILT to enable the status changes to be saved.

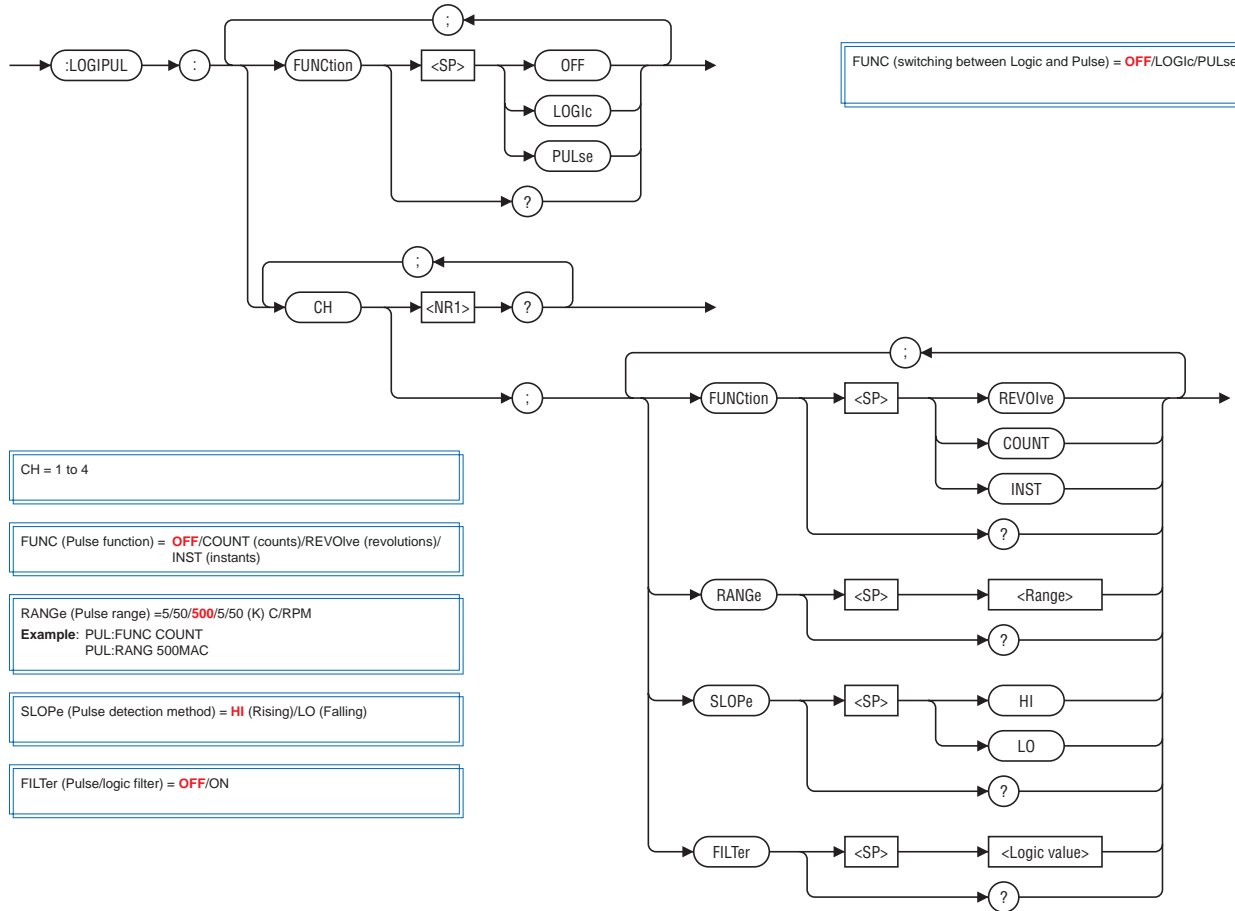
Command Examples

Command Sent from the PC	Commands Received from the GL500	Explanation
:AMP:CH?	:AMP:CH1:INP DC;RANG 50MV:FILT OFF:TYP V	Queries the Input, Range, Filter, and Amp Type for CH1.
:AMP:CH1:RANG 50MV	None	Sets the Range for CH1 to 50mV.
:AMP:CH5:RANG TCK:RANG?	:AMP:CH5:RANG TCK	Sets the Range for CH5 to TCK, and queries the range for the same channel.

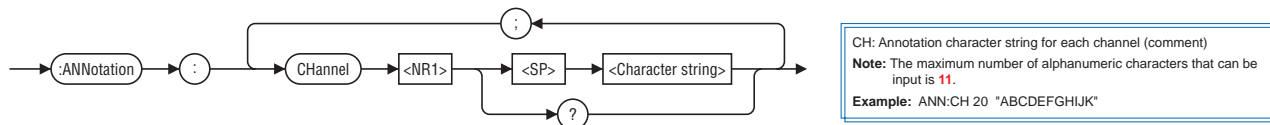
1. AMP Group



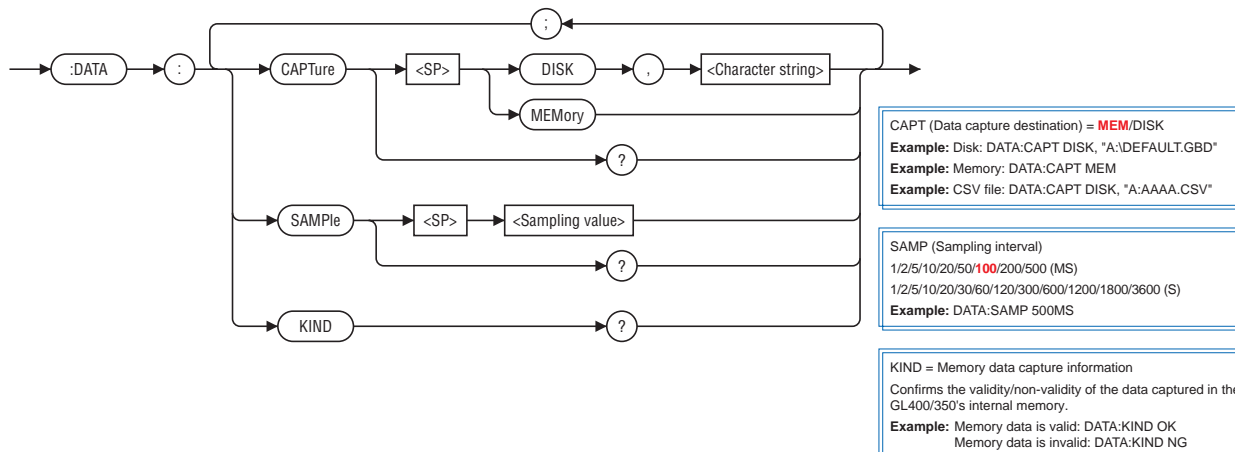
2. LOGIC/PULse Group



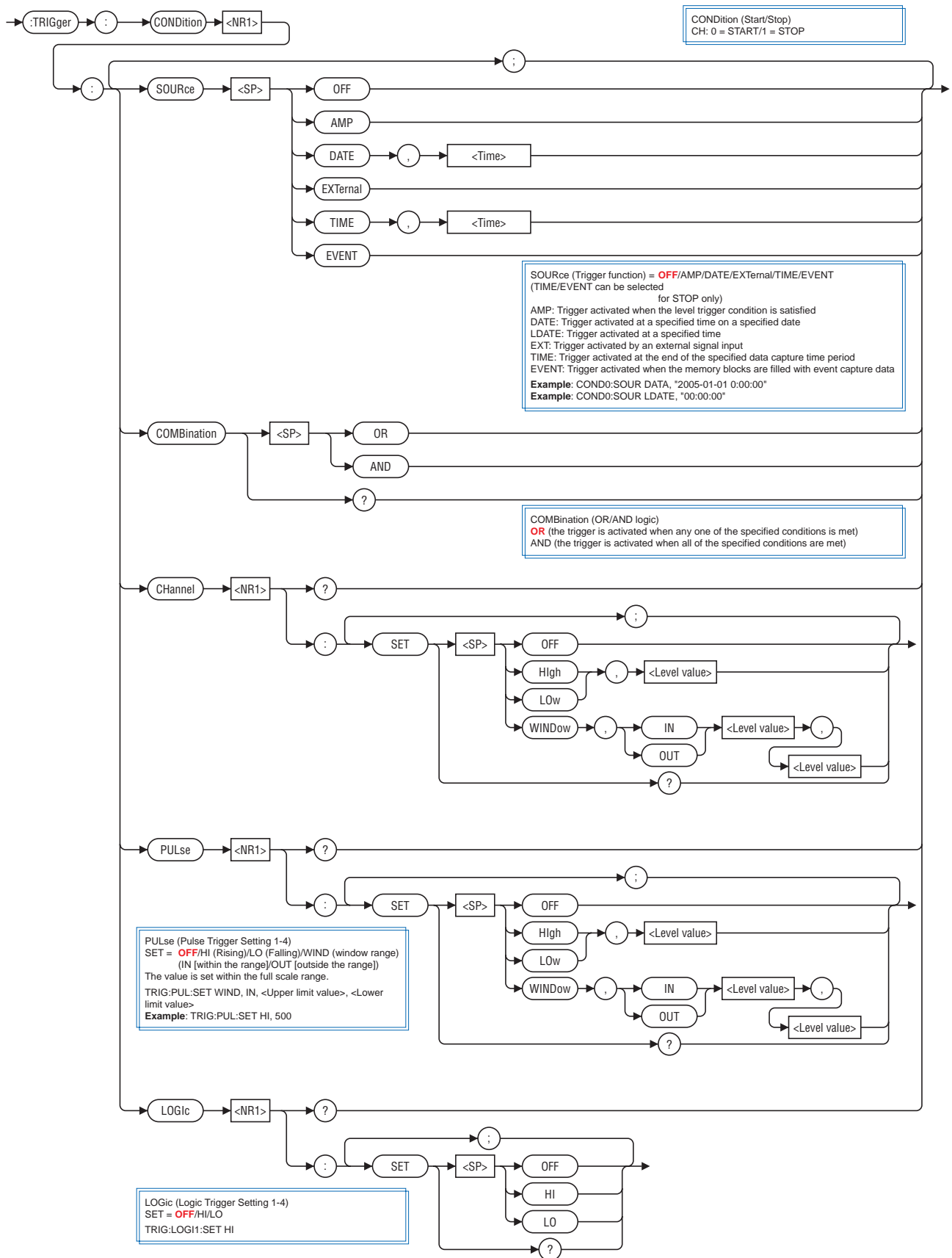
3. ANNotation Group



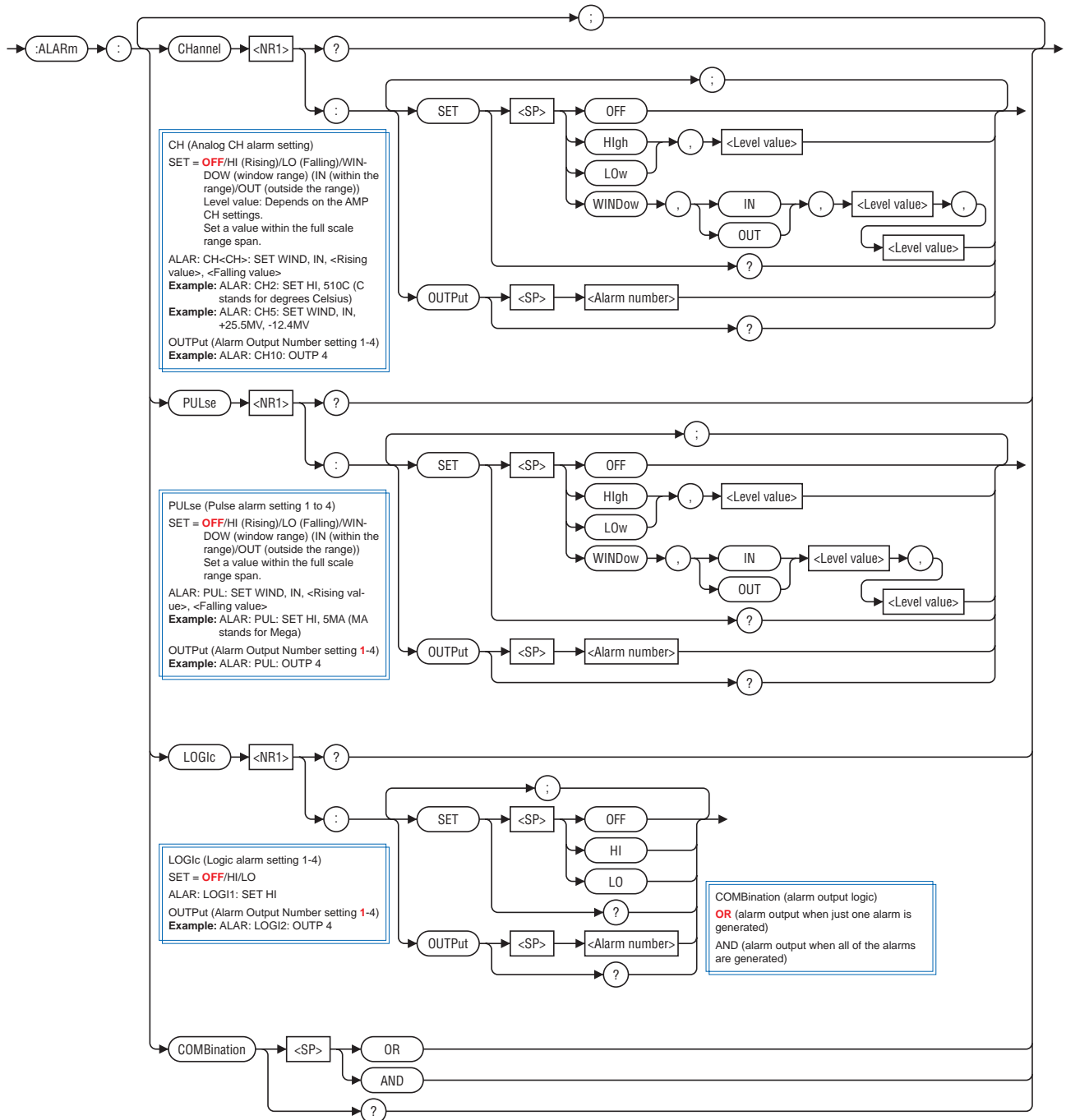
4. DATA Group



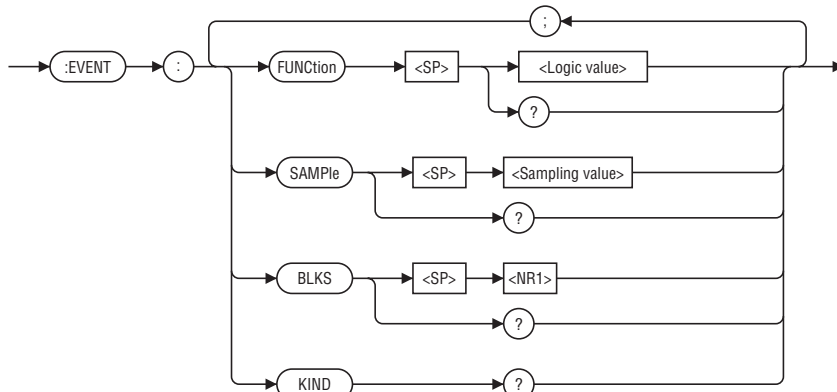
5. TRIGger Group



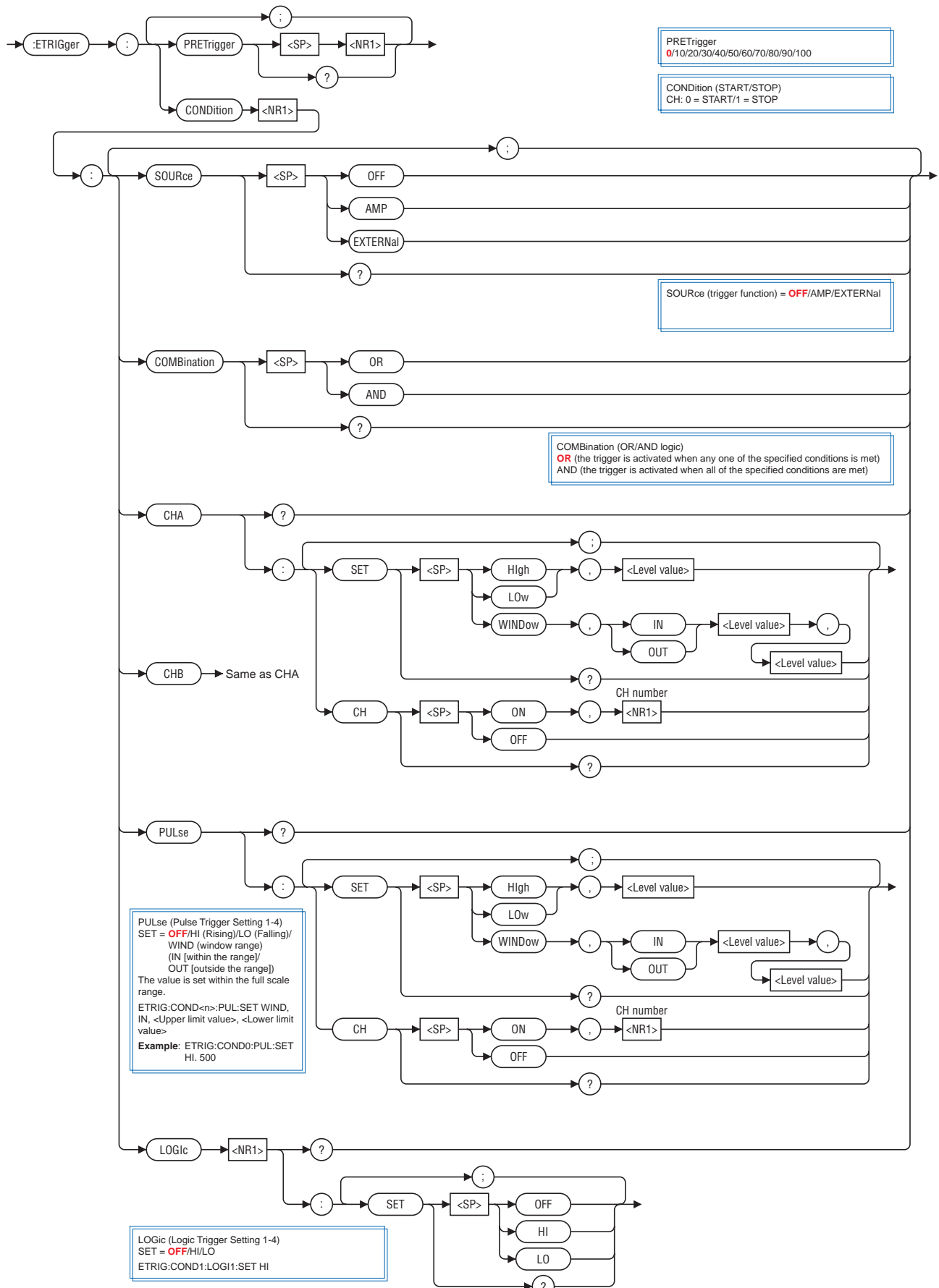
6. ALARm Group



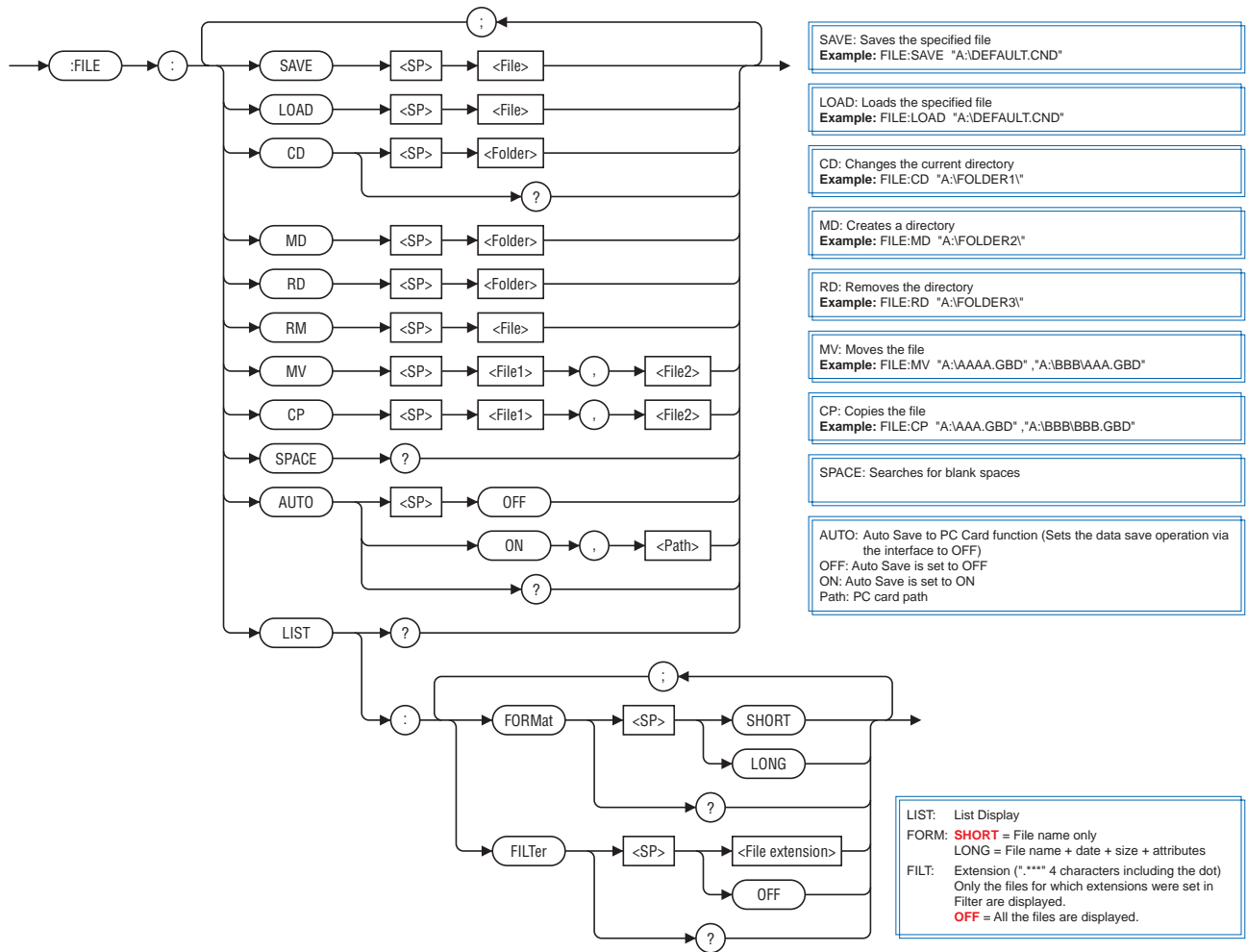
7. EVENT Group



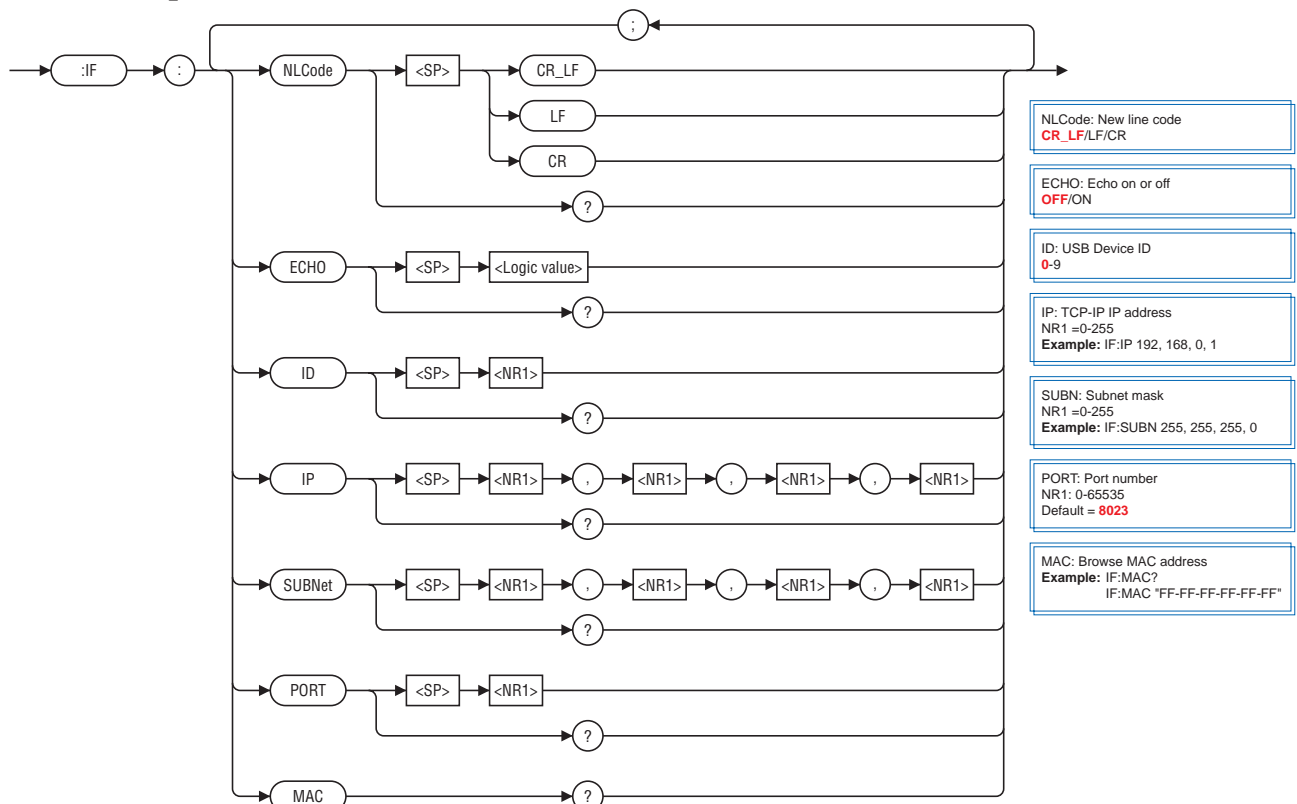
8. Event TRIGger Group



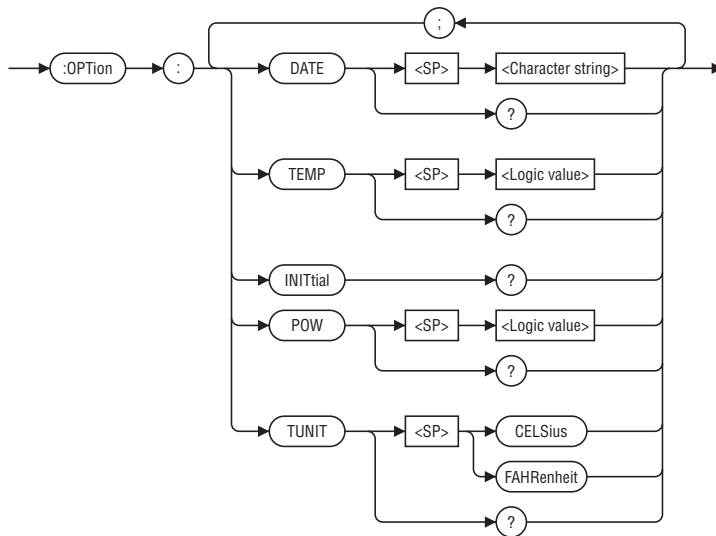
9. FILE Group



10. IF Group



11. OPTion Group



DATE: Date
Example: "2005-02-12 11:22:33"

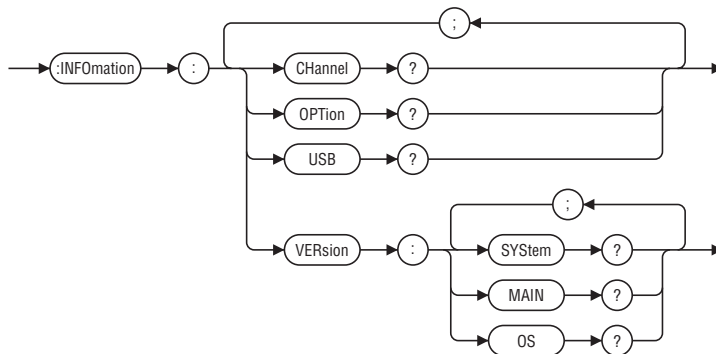
TEMP: Room temperature compensation
ON = Internal/OFF = External

INITial: Factory default settings
Settings are returned to the factory default setting after this command has been executed and "OK" is returned.
Note: As the internal settings will be changed after the command has been executed, please reconnect the interface.

POW: Power on start
In this mode, data capture starts as soon as the power is turned on.

TUNIT: Celsius/Fahrenheit display switching
CELSius: Celsius
FAHRenheit: Fahrenheit

12. INFOrmation Group



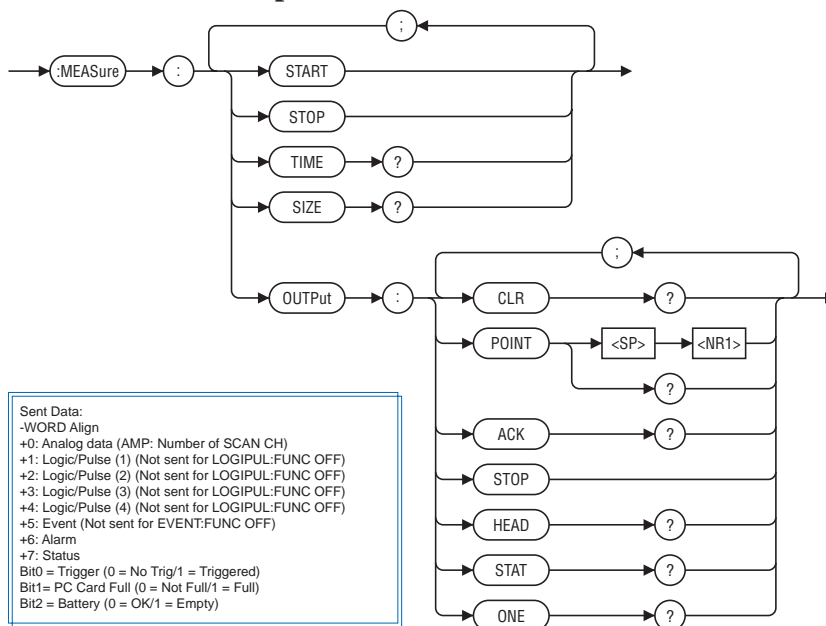
CH: Total number of channels

OPT: Not used

USB: USB connection speed: USB1.1 = 1/USB2 = 2

VER: Version information
SYS = System Control FPGA
MAIN = Main CPU Firmware
OS = Operating System Version

13. MEASure Group



Sent Data:
-WORD Align
+0: Analog data (AMP: Number of SCAN CH)
+1: Logic/Pulse (1) (Not sent for LOGIPUL:FUNC OFF)
+2: Logic/Pulse (2) (Not sent for LOGIPUL:FUNC OFF)
+3: Logic/Pulse (3) (Not sent for LOGIPUL:FUNC OFF)
+4: Logic/Pulse (4) (Not sent for LOGIPUL:FUNC OFF)
+5: Event (Not sent for EVENT:FUNC OFF)
+6: Alarm
+7: Status
Bit0 = Trigger (0 = No Trig/1 = Triggered)
Bit1 = PC Card Full (0 = Not Full/1 = Full)
Bit2 = Battery (0 = OK/1 = Empty)

START: Starts data capture

STOP: Stops data capture

TIME: Measurement start time, measurement stop time

SIZE: Number of sent data records

CLR: Clears the data transmission buffer
Perform this function before starting measurement

POINT: Data buffer number
1-1000/0 = ring buffer

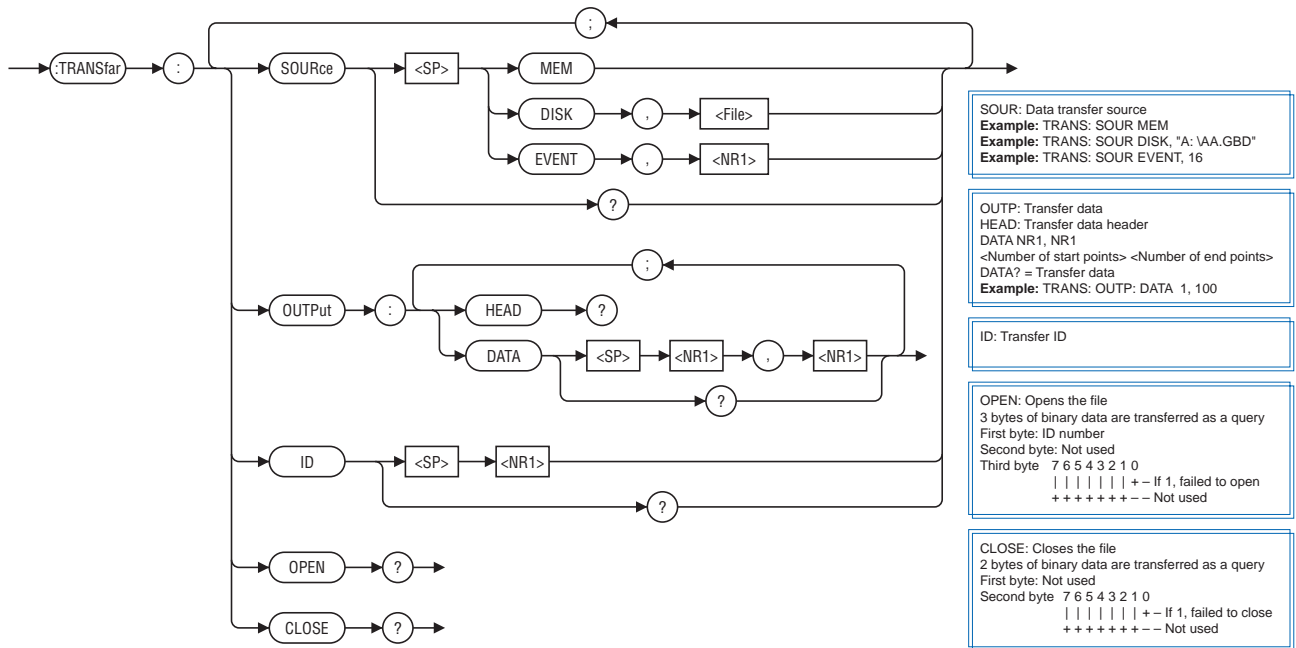
ACK: Requests data transmission

STOP: Stops data transmission

STAT: Transmission status
STAT <BufferSize>, <DataNo>, <Break>
<BufferSize> = Number of data in the buffer
<DataNo> = Data number
<Break> = Number of data interrupts

ONE: 1 record output

14. TRANSfer Group



OUTP:DATA? Contents (when the model is a 8-channel model)
 #6***** (8 bits, ***** represents the number of bytes)
 +0: Binary status (16 bits, not used)
 Size part repeated (up to here)
 +1 to 8: Analog data (excluding channels for which MeasOff has been specified)
 +9 Logic/Pulse (1) (Not when OFF has been specified. Determined by HEAD)
 +A Logic/Pulse (2) (Not when OFF has been specified. Determined by HEAD)
 +B Logic/Pulse (3) (Not when OFF has been specified. Determined by HEAD)
 +C Logic/Pulse (4) (Not when OFF has been specified. Determined by HEAD)
 +D Event (Not when OFF has been specified. Not when EVENT has been selected. Determined by HEAD)
 +E Alarm (always sent)
 Size part repeated (up to here)
 +nn Checksum (16 bits)

TRANSfer commands

SOUR:

Selects the file to be transferred from the GL500 to the PC. Either data captured to Memory or to Disk can be selected. MEM indicates current memory, DISK indicates PC card data, and EVENT indicates event memory blocks.

ID:

IDs are used when transferring multiple files. This command is used to perform ID setting and searching.

OPEN:

Opens the Memory or Disk file that was selected for SOUR. A Query is used to indicate the ID of the opened file, by issuing an ID number (from 1 to 16) for that file when the file is opened. Moreover, when the file is opened, an ID is set for that file in the same way as the ID (ID number) was issued by the ID setting command.

CLOSE

Closes the open memory or disk file after the data has been transferred. Always use CLOSE after using OPEN to open a file.

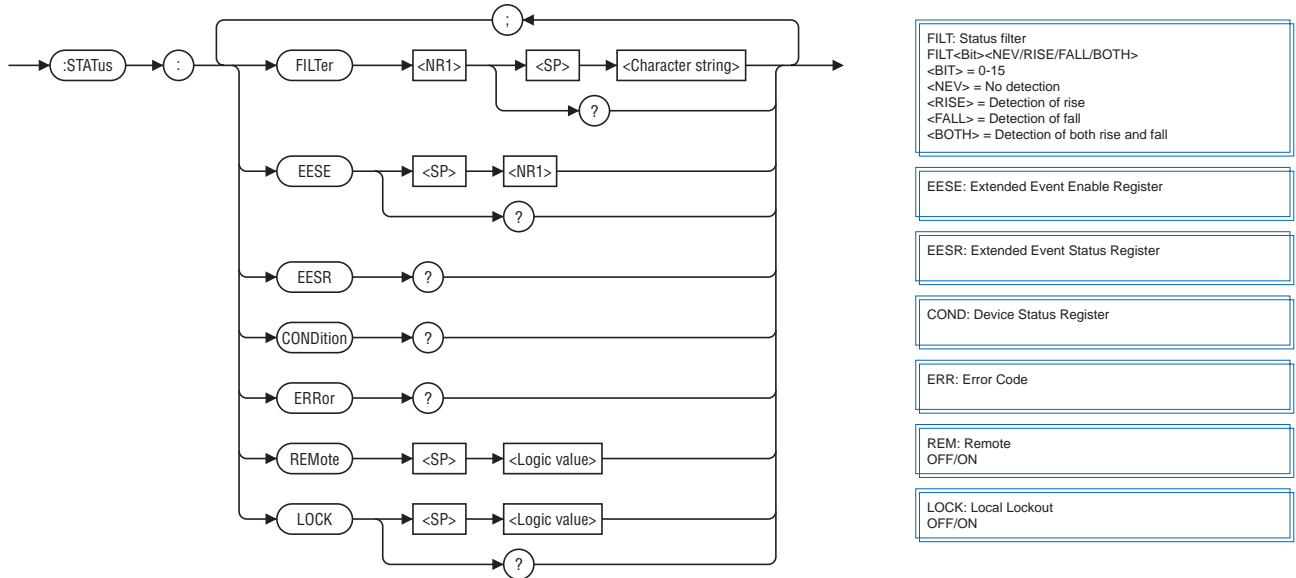
[Normal procedure]:

Specify Memory or Disk as the source of the data you want to transfer. → Use OPEN to open the file. → Use Query to return an ID. → Use OUTP: HEAD? to get the header. → Use OUTP: DATA<NR1>,<NR1> to set the file points to get. → Use OUTP: DATA? to get the data. → Use CLOSE to close the file after data transfer.

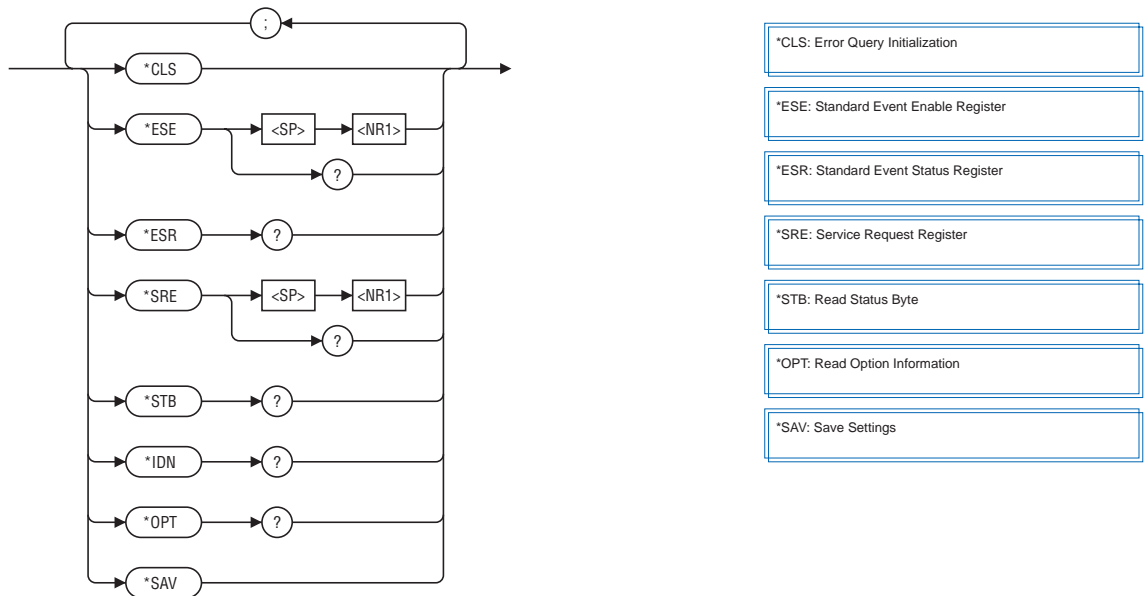
[ID Usage Example]:

Use SOUR to select file A, then OPEN to open file A (ID1). → Use SOUR to select file B, then OPEN to open file B (ID2). → Use ID1 to set the ID to 1. → Use OUTP: HEAD? to get the file A header. → Use ID2 to set the ID to 2. → Use OUTP: HEAD? to get the file B header. → Set the ID to ID1. → Use OUTP: DATA<NR1>,<NR1> to set the file A points. → Set the ID to ID2. → Use OUTP: DATA<NR1>,<NR1> to set the file B points. → Set the ID to ID1. → Use OUTP: DATA? to get the file A data. → Set the ID to ID2. → Use OUTP: DATA? to get the file B data. → Set the ID to ID1. → Use CLOSE to close file A. → Set the ID to ID2. → Use CLOSE to close file B.

15. STATUS Group (Please refer to Section 17, Status Report, for further details on some of these commands)



16. COMMON Commands (Please refer to Section 17, Status Report, for further details on some of these commands)



17. Status Report

Displays a table showing the Status Group and Common Command operations.
Before using each register, perform *CLS to clear any buffered information in the error queue, etc.

