

**Memory Information and Procedures**

Product: 33220A 20 MHz Function/Arbitrary Waveform Generator

Date: October 19, 2006

<b>Memory Type:</b> SRAM	<b>Memory Size:</b> 1M Bit
<b>Memory Function:</b> Waveform RAM	
<b>User Modifiable (Y/N):</b> Yes	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> Power cycle of the unit erases all volatile memory contents.	

<b>Memory Type:</b> SDRAM	<b>Memory Size:</b> 128M Bit
<b>Memory Function:</b> System RAM contains instructions and current operating condition	
<b>User Modifiable (Y/N):</b> Yes	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> Power cycle of the unit erases all volatile memory	

<b>Memory Type:</b> SRAM	<b>Memory Size:</b> 4K Byte
<b>Memory Function:</b> I/O Bookkeeping	
<b>User Modifiable (Y/N):</b> Yes – no application-specific data	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> Power cycle of the unit erases all volatile memory	

<b>Memory Type:</b> Embedded Processor Cache SRAM	<b>Memory Size:</b> 2 x 16K Byte
<b>Memory Function:</b> I/O Instructions	
<b>User Modifiable (Y/N):</b> No	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> Power cycle of the unit erases all volatile memory	

<b>Memory Type:</b> Controller with embedded SRAM	<b>Memory Size:</b> 2 x 8580 Bits
<b>Memory Function:</b> Pixel information for display	
<b>User Modifiable (Y/N):</b> Yes	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> Power cycle of the unit erases all volatile memory. Also cleared by SYST:SEC:IMM	

<b>Memory Type:</b> IC PLD	<b>Memory Size:</b> 4K x16 bit Mod RAM
<b>Memory Function:</b> PLD Synthesis IC, Modulation RAM, System DAC Control	
<b>User Modifiable (Y/N):</b> Yes	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> Power cycle of the unit erases all volatile memory.	

<b>Memory Type:</b> FRAM	<b>Memory Size:</b> 64K bits
<b>Memory Function:</b> Calibration Constant Storage, Calibration Count, Calibration Security Code, Calibration Message, Arbitrary Waveform Names, Instrument State Storage, Instrument Power-off State Memory, I/O Configuration	
<b>User Modifiable (Y/N):</b> Yes	<b>Volatile (Y/N):</b> No

**Memory Erase Processes:**

- Calibration Constants: Information is instrument specific and is used to shift the operating point of the instrument such that the output is within specification. There is no application specific information stored in this memory.
- Calibration Count: Increments upward when each block of adjustments is completed; maximum count of 65,535. There is no application specific information stored in this memory.
- Calibration Security Code: The current code can be over-written by another code either from the front panel or the command CALibration:SECure:CODE *<new code>*
- Calibration Message: This message can be over-written by another message only from the remote-interface command CALibration:STRing *<quoted string>*
- Arbitrary Waveform Names: Names are changed to a null string when the arbitrary waveform is deleted either from the front panel or DATA:DELeTe:ALL from the bus. This is also cleared with the SYSTem:SECurity:IMMediate command.
- Instrument State Storage Memory: 4 different instrument states with associated memory names. Delete the stored states from the front panel by deleting each state one at a time. From the bus, use the command MEMory:STATe:DELeTe {1|2|3|4} to delete the specified storage location as well as the assigned name. An error will be generated if you attempt to recall a deleted or non-existent state. This is also cleared with the SYSTem:SECurity:IMMediate command.
- Instrument Power-off State Memory: Reset the instrument to the factory default conditions before turning off the instrument by selecting the “Set to Defaults” from the front panel or sending the \*RST command. MEMory:STATe:RECall:AUTO OFF. This is also cleared with the SYSTem:SECurity:IMMediate command.
- I/O Configuration: (GPIB address, baud rate, parity/data bits, and handshake) This information is used to configure the interface for programming and contains no other application specific information. Is set to factory defaults with the SYSTem:SECurity:IMMediate command.

<b>Memory Type:</b> Flash	<b>Memory Size:</b> 4MBitx16x4
<b>Memory Function:</b> Arbitrary Waveform Storage	
<b>User Modifiable (Y/N):</b> Yes	<b>Volatile (Y/N):</b> No
<b>Memory Erase Processes:</b> Delete the user-defined arbitrary waveforms from memory. DATA:DELeTe:ALL from the bus or deleting the waveforms from the front panel will remove the arbitrary waveforms. This is also erased with the SYSTem:SECurity:IMMediate command. Arbitrary waveform names are stored in FRAM and are replaced with a null string when the waveform is deleted.	

<b>Memory Type:</b> SRAM	<b>Memory Size:</b> 4Kbit x 8
<b>Memory Function:</b> USB Controller buffer memory	
<b>User Modifiable (Y/N):</b> Yes – reflects current state of instrument	<b>Volatile (Y/N):</b> Yes
<b>Memory Erase Processes:</b> Power cycle of the unit erases all volatile memory.	