

Technical Note

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3410 Series Memory Security



This document gives a full description of the types of memory devices contained in the 3410 Series signal generator and information on how to clear memory stores for when the instrument is removed from a secured application.

3410 Series Memory Security

There are occasions where instruments are required to be used in a secured environment. This means that no test instruments can leave the area e.g. for calibration, unless all memory settings are erased.

This technical note describes the methods available to erase the memory settings in the 3410 Series signal generators and then goes on to describe the types of memory used.

A full description of each memory type is given indicating which sub-assembly the device(s) is located with its reference designator. A brief description of the contents of the device(s) is given. The statement of volatility indicates where memory is maintained or lost during power-down. The statement of accessibility indicates whether or not the memory can be accessed, either by a user or service personnel.

Clearing Instrument Settings Stores

THIS OVERWRITES ALL STORE SETTINGS WITH 'Fs'

From the front panel:

[UTIL] | Security | 0:Lock/Unlock | Unlock Instrument - enter six-digit password as shown in operating manual, chapter 3, under Security.

[/...] | 1:Memory Clear | Erase All Stores

Remotely by sending the following command:

SYSTem:SETTings:FULL:CLEar:ALL

Clearing ARB Waveforms

THIS OVERWRITES THE STORE SETTINGS WITH 'F's

From IQCreator waveform creation application:

34xx | View Arb Memory... | Format... (select the number of wide sectors to be reserved as narrow sectors)

OK

This process can take at least 15 minutes.

From the front panel:

Each waveform may be deleted in turn by selecting the appropriate waveform in the ARB catalog list then pressing:

[-] ENTER

Remotely by sending the following command:

IQ:ARB:WAVeform:DELEte:ALL

Memory Types - Control Board

Model Serial Numbers

3412/3/4 341001/037 - 341001/256

3413/4 341300/001 - 341300/036

Instruments Fitted with the 44830/368 or /496 Control Board

Description	Qty. 2 DRAM - MT4LC1M16E5, 2 x 1Mb x 16 (4MB total): IC9 & IC10
Volatility	Volatile - contents lost on power-down
Contents	Program execution - part of 20M total RAM
Accessibility	Non-user accessible

Description	Qty. 2 DRAM - MT4LC4M16R6, 2 x 4Mb x 16 (16MB total): IC11 & IC12
Volatility	Volatile - contents lost on power-down
Contents	Program execution - part of 20M total RAM
Accessibility	Non-user accessible

Description	Qty. 4 FLASH EEPROM, 29LV033, 4 x 4Mb x 8: IC5,6,7,8
Volatility	Non-volatile
Contents	Operating firmware and, on instruments fitted with option 8, RTBB band FPGA programs and configurations
Accessibility	Operating firmware may be downloaded from a PC via the RS-232 interface using a download application software package

Description	Qty. 1 EEPROM, 28C256, 64k x 8: IC31
Volatility	This electrically alterable non-volatile memory is retained at power-down but may be changed as required.
Contents	<ul style="list-style-type: none"> i) Instrument ID (serial number, type number, option configuration etc.) ii) Instrument operating hours iii) Module identity Data - use for checking cal integrity iv) Frequency standard cal data v) Options store vi) Configuration settings - e.g. GPIB address, frequency standard settings etc. vii) Instrument settings stores - 1 to 99 (see "Clearing Memory Stores" above) viii) Instrument RPP trip store, ix) BB FPGA version store - the version numbers of the last FPGA programs that were used - i.e. a cache, x) Temperature control parameters store (version 4.05 onwards)
Accessibility	<p>Frequency standard calibration data is non-user accessible but may be accessed via GPIB.</p> <p>Memory stores and instrument configuration settings are user-accessible. Instrument ID information is protected by an administrator password which is not released to users.</p> <p>All other information is read-only.</p>

Description	Qty. 1 EPROM, 27C512, 64k x 8: IC30
Volatility	Non-volatile UV erasable memory
Contents	Boot code
Accessibility	Non-user accessible

Description	Qty. 8 SDRAM, CY7C1399, 32k x 8: IC81,82,83,84,111,112,113,114
Volatility	Volatile - contents lost on power-down
Contents	DSP RAM - DSP program execution
Accessibility	Non-user accessible

Instruments Fitted with the 44830/473 or /552 or /578 Control Board

Model Serial Numbers

3412/3/4 341001/257 - 341001/267

3416 341003/020 - 341003/063

3413 341004/001 - 341004/010

3412/3/4/6 341005/005 - 341005/152

3412/3/4/6 341006/001 onwards

Description	Qty. 1 EEPROM, 24C64, 8k x 8: IC602
Volatility	Non-volatile
Contents	USB descriptor - not used
Accessibility	Non-user accessible

Description	Qty. 1 EEPROM, 29LV033, 4M x 8: IC804
Volatility	Non-volatile
Contents	<ul style="list-style-type: none"> i) Boot code (Bios and Boot) ii) 44830/473, /552, /578 board FPGA configurations iii) Board ID and Build State iv) Instrument ID (serial number, type number, option configuration etc.) v) Operating hours vi) Options vii) Frequency standard cal data
Accessibility	<p>Frequency standard calibration data is non-user accessible but may be accessed via GPIB.</p> <p>Instrument ID information is protected by an administrator password which is not released to users.</p> <p>All other information is read-only.</p>

Description	Qty. 1 EEPROM, 93C46, 64k x 16: IC651
Volatility	Non-volatile
Contents	Ethernet interface - MAC address and Ethernet chip configuration
Accessibility	User accessible as part of Ethernet interface configuration

Description	Qty. 1 COMPACT FLASH, 44533/497, 128MB: PLCF
Volatility	Non-volatile
Contents	<p>File System containing:</p> <ul style="list-style-type: none"> i) Operating firmware ii) Test firmware iii) Network settings iv) RTBB FPGA configurations v) Module identity data - use for checking cal integrity vi) Configuration settings - e.g. GPIB address, Frequency standard settings etc. vii) Instrument settings stores - 1 to 99 (see "Clearing Memory Stores" above) viii) Instrument RPP trip Store ix) BB FPGA version store - the version numbers of the last FPGA programs that were used - i.e. a cache x) Temperature control parameters store (version 4.05 firmware onwards)
Accessibility	<p>Operating firmware may be downloaded from a PC via the RS-232 or LAN interface using a download application software package.</p> <p>Memory stores and instrument configuration settings are user-accessible.</p> <p>All other information is read-only or non-user accessible.</p>

Description	Qty. 1 SDRAM, 32M: SKSDC
Volatility	Volatile - contents lost on power-down
Contents	CPU RAM - Program execution
Accessibility	Non-user accessible

Description	Qty. 1 SDRAM, 32M: SKSDD
Volatility	Volatile - contents lost on power-down
Contents	DSP RAM - Program execution
Accessibility	Non-user accessible

Memory Types - ARB (instruments fitted with option 5)

Description	Qty. 24 FLASH EEPROM, M29W320ET70ZE6E, 4Mbytes x 8 (32Mbits): IC2a - IC25a
Volatility	Non-volatile
Contents	Arbitrary waveforms downloaded from IQCreator waveform creation software. Factory calibration data and ID/build-state information
Accessibility	User accessible

Description	Qty. 2 FLASH EEPROM, M29W320ET70ZE6E, 4Mbytes x 8 (32Mbits): IC26 & IC27
Volatility	Non-volatile
Contents	ARB boot code
Accessibility	Non-user accessible

Memory Types - Diff IQ Board (instruments fitted with option 9)

Description	Qty. 1 EEPROM, 93C86, 2k x 8: IC3
Volatility	Non-volatile
Contents	Factory calibration data and ID/build-state information
Accessibility	Non-user accessible

Memory Types - RTBB Board (instruments fitted with option 8)

Description	Qty. 1 EEPROM, 93C86, 2k x 8: IC2
Volatility	Non-volatile
Contents	Factory calibration data and ID/build-state information
Accessibility	Non-user accessible

Description	Qty. 1 SRAM, CY7C1399, 32k x 8: IC20
Volatility	Volatile
Contents	FPGA RAM - Program execution
Accessibility	Non-user accessible

Description	Qty. 4 DRAM, K4S416326, 1M x 16 x 4: IC14,15,17,18
Volatility	Volatile
Contents	DSP RAM - Program Execution
Accessibility	Non-user accessible

Memory Types - RF board

Description	Qty. 1 EEPROM, 28C513, 64k x 8: IC107
Volatility	Non-volatile
Contents	Factory calibration data and ID/build-state information
Accessibility	Non-user accessible

Memory Types - Driver Board

Description	Qty. 1 EEPROM, 93C86, 2k x 8: IC1204
Volatility	Non-volatile
Contents	Factory calibration data and ID/build-state information
Accessibility	Non-user accessible

Memory Types - Attenuator Interface Board

Description	Qty. 1 EEPROM, 28C256, 32k x 8: IC14
Volatility	Non-volatile
Contents	Factory calibration data and ID/build-state information
Accessibility	Non-user accessible

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