VOLATILE & NON-VOLATILE MEMORY USED IN LUMISTAR PRODUCTS

Lumistar products utilize memory components of several types. These devices vary in their use and volatility. Memory is used in the transfer of data to host computing functions as well as to store configuration, calibration, and set up information. The following document

Memory Definitions:

It is important to understand the following concerning each memory type used in Lumistar products:

1.) The memory type or designation
2.) Data stored in the memory
3.) Volatility of the memory
4.) The Size range of the memory

Memory designation:	Types of data stored:	Volatility:	Typ. Size Range:
Static Random Access Memory (SRAM)	Real-time data transfer; FPGA logic maps;	Volatile	2K/15.9MB
Dynamic Random Access Memory (DRAM)	Operating System functions; FPGA processing data	Volatile	Up to 32GB
NOR and NAND FLASH Memory	FPGA Functional Programs; DSP Functional Programs; recorded real-time data	Non-volatile	68K/96GB
Electronically Erasable Programmable Read Only Memory (EEPROM)	PCI boot data; calibration data; hardware configuration data	Non-volatile	1K/16K
CMOS Programmable Logic Device (CPLD)	Functional logic formats	Non-volatile	4KB
Ferroelectric Random Access Memory (FRAM)	Calibration data; hardware configuration data; license data	Non-volatile	256KB
Hard Disk Drive (HDD)	Operating system; application installation	Non-volatile	Up to Multiple TB
Solid State Drives (SSD)	Operating system; application installation	Non-volatile	Up to Multiple TB

Clearing functions:

It is important to understand which memories can be cleared, and the process of clearing certain types of memory while maintaining operational capabilities of the products.

Volatile memory by definition means that the clearing process is related to the power state of the unit. Volatile memory contents are destroyed when power to the product has been removed. No further action on the user's part is necessary after power removal for clearing these types of memory.

Non-volatile memory can be divided into three categories: critical functionality non-volatile memory, non-volatile PC storage drives, and optional non-volatile memory.

Critical functionality non-volatile memory cannot be cleared by the user without destroying the functional capabilities of the unit. Critical functionality non-volatile memory cannot be used to store customer generated operational or processed data.

Non-volatile memory that is included in system deliveries that comes in the form of Hard-Disk Drives (HDDs) or Solid-State Drives (SSDs) can be configured at the time of ordering in removable drive bays to address security concerns. This category of non-volatile memory is also critical to system functionality.

Optional non-volatile memory can be used in the storage of real-time data. However, these optional memories require that the user's order the installation of these memories prior to deliver. Optional recording memory is not provided in cases where it is not specifically ordered. Non-volatile optional memory that is installed will contain user software options to clear those memory sources.

If there are additional questions concerning memory sources on Lumistar products, please contact customer support for further assistance.

Memory Provision versus Product

Model Number:	Function:	SRAM (KB)	DRAM (KB)	EEPROM (KB)	FRAM (KB)	CPLD (KB)	NAND/NOR FLASH (KB)	Optional NAND FLASH (KB)	HDD/SSD (TB)
LS-11	Test Transmitter	272		512			9		
LS-22	Multi-Oscope Board/Bit Sync Carrier	272		129					
LS-25/27	RF Receivers	1062		33			64		
LS-28M	Modular Dual Channel Receiver	27857			768		384000	196608000	
LS-26	Airborne Receivers	32		16			64		
LS-35	IF Receiver	13400	1024	1		32			
LS-38/58	IF Receiver/Decom	4030		1		16	512		
LS-40	PCM Bit Synchronizer	550		1			320		
LS-45	Dual Channel PCM Bit Synchronizer	2068		32			16384		
LS-50/55	Decommutator/Simulator	4000		3			512		
LS-68M	Multi-Channel Decom\Bit Synchronizer\Simulator	25887			768		384000	196608000	
LS-69	FM Demod/IF and Baseband Routing/Oscopes	16		16			256		
LS-70/77	PCM Simulator	4000		3			256		
LS-71	Multi-Channel DAC	2000		1			512		
System PC	Processing Integrated System (Varies)	16384000	32768000						2