

# SENTINEL PC CARD FLASH MEMORY

## Severe Environment Flash Memory Card

- ✓ **Up To 16 Gigabyte Per Card**
- ✓ **Utilizes COTS Technology**
- ✓ **Standard PC-ATA Command Set**
- ✓ **Memory Cards Hermetically Sealed In Stainless Steel**
- ✓ **Survives & Operates In Severe Environments**
- ✓ **Adaptable To Future PC Card Advances**

## SYSTEM DESCRIPTION

As a world leader in rugged mass data storage and transfer systems for over 30 years, Kaman developed the *Sentinel*® memory card for use in severe environmental applications where data reliability is required both in the user system or in transport.

Utilizing the latest in Flash memory, the *Sentinel* card provides up to 16 Gigabyte per card and is designed to adapt to further technology advances as they become available. Weighing only 2 ounces, the PCMCIA (Personal Computer Memory Card International Association)/PC Card compatible *Sentinel* Type II cards are hermetically sealed in stainless steel to protect the memory from a wide range of environmental extremes. The patented design guarantees survival and operation in conditions such as shock, humidity, immersion, contamination, temperature extremes, handling, torsional stress and electromagnetic radiation.

*Sentinel* cards utilize the PC-Card ATA standard command set and are compatible with PCMCIA

equipped computers and laptops for programming and down loading purposes.

The flash memory is configured in 512 byte erasable sectors for maximum compatibility with existing operating systems. An intelligent controller, including all hardware and software for reading and writing are contained in the *Sentinel* card. The *Sentinel* card can also be operated as a storage device connected to an IDE controller.

The *Sentinel* card supports various declassification commands for use in highly sensitive applications that require erasure of all data. Contact Kaman Aerospace for additional information.

Kaman is committed to expanding its leadership role in ruggedized PCMCIA technology. With the *Sentinel* card and the wide range of interfaces and drive products available, Kaman can provide complete solutions for your memory system requirements.

## PERFORMANCE CHARACTERISTICS

## System Environments

Vibration	20G per MIL-STD-202
Shock	1500G per MIL-STD-202
Drop	72 inches
Temperature: (Operating)	-40 <sup>0</sup> C to +85 <sup>0</sup> C
(Non-Operating)	-54 <sup>0</sup> C to +85 <sup>0</sup> C
Altitude	80,000 feet
Humidity	MIL-STD- 810 100% condensing
Rain	MIL-STD-810
Immersion	30 feet
Salt Spray	MIL-STD-202
Sand and Dust	MIL-STD-202
Hydraulic Fluids	RTCA-DO-160D
EMI	MIL-STD-461

## Data Rate

Read Transfer Rate	8.0 MBps (typical)
Write Transfer Rate	6.0 MBps (typical)
Burst Transfer Rate	16.7 MBps (maximum)

## Access Time

Reset to Ready	200ms (typical)/400 ms (maximum)
Controller overhead (command to DRQ)	2ms (maximum)
Delay active to sleep	Programmable

## Interface

PCMCIA, PC Card ATA-3, True IDE

## Power

DC Input Voltage (VCC)	3.3 +/- 10% 100mv max. ripple (p-p)	5.0 +/- 10% 100mv max. ripple (p-p)
Sleep (Standby Current)	<0.5mA	<1.0mA
Read (Typical /Peak)	20mA/75mA	30mA/100mA
Write (Typical/Peak)	30mA/75mA	40mA/100mA

Note: 16 GB capacity available in 5V only

## Physical Information

Size: 3.620”L x 2.126”W x 0.196”H

Weight: <2 ounces

## Reliability and Maintenance

Memory Life	>2,000,000 Write Cycles minimum per sector
Data Reliability	<1 non-recoverable error in 10 <sup>14</sup> bits read
MTBF	>4,000,000 hours @ 25 °C
Data Retention	10 years