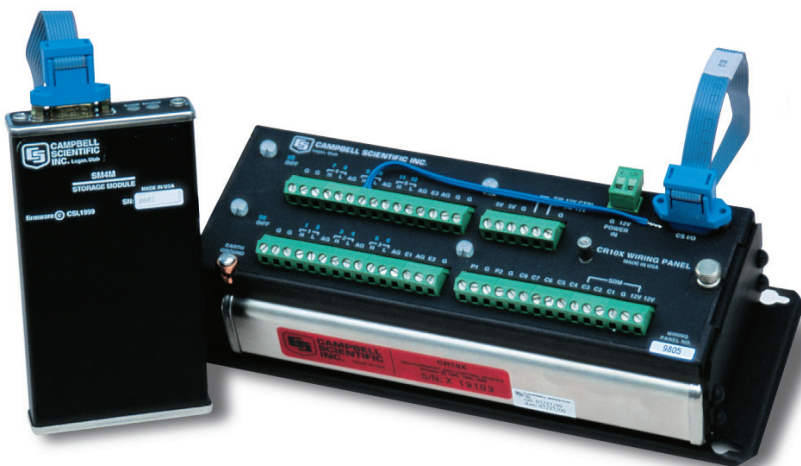


# Storage Modules for Mixed-Array Dataloggers & DSP4 Models SM4M and SM16M

The SM4M and SM16M Storage Modules:

- augment on-site data storage
- are addressable—you can direct specific or conditional data to up to four connected modules
- transport data or programs between datalogger and computer
- provide long-term redundant data and program storage
- safeguard data during transport; sealed case is nearly “bullet-proof”
- have built-in Status LEDs indicating when data transfer is occurring



The SM4M and SM16M are only compatible with mixed-array dataloggers (e.g., CR510, CR10(X), CR23X, and CR7) and the DSP4 Heads Up Display. They are NOT compatible with our CR200-series, CR800, CR850, CR1000, CR3000, CR5000, and CR9000(X) dataloggers.

*A CR10X sends historical or real-time data to an SM4M. Data can be sent automatically to a connected module or manually initiated with a keyboard display.*

## General Description

The SM4M and SM16M Storage Modules are housed in sealed canisters fitted with a single, 9-pin D-connector. The storage modules are connected to, and powered by, a datalogger via an SC12 9-pin cable or an SC12R-6 (longer version) cable. Two light emitting diodes (LEDs) are adjacent to the cable connector. A red LED indicates the operational status of the module at power-up. A green LED indicates when data is being stored. The storage modules are addressable allowing specific data to be directed to a specific storage module. Up to four storage modules can be connected to a datalogger at one time.

The modules use non-volatile flash EEPROM memory which does not require power to retain data. There is no internal battery to wear out. The flash memory retains data for approximately 10 years and can be erased and rewritten at least 100,000 times. Standard operating temperature range is -25° to +50°C; extended range is -55° to +85°C.

The SM4M and SM16M are identical except for on-board memory capacity. The memory is divided into 64 kbyte blocks (64 blocks in an SM4M and 256 blocks in an SM16M). This equates to a capacity of more than 2 million low-resolution storage values for the SM4M and more than 8 million for the SM16M. Up to four storage modules can be connected to a logger, resulting in a system storage capacity of approximately 32 million data values.

The storage module can be connected to a PC for transferring programs or data, or downloading a new storage module OS via our Web site. An SC532A interface is required. The SC532A connects to the storage module via an SC12 cable and to the computer's serial I/O port through a 9-to-25 pin or 25-to-25 pin cable.

## Support Software

Software for storage module support is provided by SMS Version 3.1 and later. SMS is bundled with LoggerNet and early versions of PC200W Software. PC200W version 2.0 or higher does not contain SMS. However, PC200W customers can download SMS, at no charge, from Campbell Scientific's Web site. Once SMS has been downloaded, it can be accessed using PC200W. LoggerNet also supports remote collection of data via telecommunication when the storage module is connected to a datalogger. Contact Campbell Scientific for further information.

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## Specifications

Storage capacity	
SM4M:	2 million low-resolution data values
SM16M:	8 million low-resolution data values
Program storage:	Up to eight programs with a total capacity of 128 kbytes (including labels). Storing programs does not affect available data storage capacity
Canister:	Sealed
Processor:	Hitachi H8S
Operating system:	64 kbytes, flash memory based, user downloadable
Operating temp. range:	-25° to +50°C (-55° to +85°C extended)
Data transfer rates	
Data storage:	9600, 76800 bps
Telecommunications:	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 bps
Memory configuration:	User selectable for either ring style or fill-and-stop; default is ring style
Power requirements:	5 ±0.3 Vdc @ 100 mA (max.)
Dimensions:	5.3" x 3" x 0.8" (135 x 75 x 20 mm)
Weight:	7 oz (200 g)
Current drain	
Active, processing (e.g., memory test):	30 to 40 mA (avg)
Active, but waiting (e.g., communications mode):	10 mA (avg)
Typical current during data storage from a logger:	15 mA (avg)
Low Power Standby State:	less than 200 µA
Peak current (flash erase):	60 mA
Maintenance:	There are no user-serviceable parts inside the storage module.
Shipped with:	SC12 cable
Available options:	Extended temperature testing; enclosure mounting bracket

