

# SFD1/2/4/8/16GB18/18M

## 1GB - 16GBytes

### 1.8 " IDE Flash Drive

#### General Description

The IDE Flash Drive SFD1/2/4/8/16GB18/18M series is an IDE interface flash memory drive that features a flash disk controller chip and NAND type flash memory devices. The SFD series is available in 1GB, 2GB, 4GB, 8GB and 16GB capacities in 1.8 inch type. The drive operate in 5-volts power supply and support Mode 4 PIO data transfer. The IDE Flash Drive is geared specifically to the industrial market for use in such products as ATM, factory automation machines, POS terminals, measuring products, ticket-vending machines, parking systems and other industrial products that require high tolerance to environmental condition.

#### Features

- Capacity : 1GB up to 16GB
- Form factor : 1.8inch-type type (HDD compatible)
- IDE interface : Mode 4 PIO ATA command set compatible
- Power supply : Vcc = 5.0V ± 10%
- Operating Temperature: Commercial : -0°C to + 70°C  
Industrial : -40°C to + 85°C
- Performance : Burst data transfer rate (Drive-Host) 16.6MB/sec (max)  
Sequential write speed 6.0 MB/sec (max)  
Sequential read speed 10.2 MB/sec (max)
- Shock : 9800m/s (max) [Non-operating]
- Vibration : 147m/s peak (25-2000Hz)[Operating]

#### Specifications

- Compatibility : Full IDE hard disk compatible
- OS Support : All
- Package : Complete plastic or metal housing
- IDE Interface Command : Meets ATA-4 (PIO mode 0 ~ 4)
- Reliability :
  - MTBF : > 1,000,000 hours
  - Data reliability : Built-in EDC/ECC function
- Endurance :
  - Write/Erase: 100,000 cycles (typ.)
  - Read : Unlimited
- System Performance :
  - Access time : < 0.1ms
  - Track to track seek time : < 0.1ms
  - Bus transfer speed : 16.6Mbytes/Sec (Peak time).

#### 1.8 inch - type

Capacity	Model No.
1GB	SFD1GB18/18M
2GB	SFD2GB18/18M
4GB	SFD4GB18/18M
8GB	SFD8GB18/18M
16GB	SFD16GB18/18M

#### REVISION HISTORY

Aug. 22 , 2006

Rev - A Product brief released.

#### Power Consumption :

Mode	Value
Sleep	<500µA
Read	<50mA
Write	<60mA

#### Table of each IDE model :

Temperature	Model	Description
Commercial Temperature	SFD1/2/4/8/16GB18	w/ Plastic Casing
Industrial Temperature	SFD1/2/4/8/16GB18M	w/ Metal Casing

#### Pin Assignment 44 Pin IDE Flash Drive

PIN	SYMBOL	PIN	SYMBOL
1	/RESET	2	GND
3	HD7	4	HD8
5	HD6	6	HD9
7	HD5	8	HD10
9	HD4	10	HD11
11	HD3	12	HD12
13	HD2	14	HD13
15	HD1	16	HD14
17	HD0	18	HD15
19	GND	20	Key
21	DMARQ	22	GND
23	/IOW	24	GND
25	/IOR	26	GND
27	WAIT	28	CSEL
29	/DMACK	30	GND
31	IRQ	32	/IOIS16
33	HA1	34	/PDIAG
35	HA0	36	HA2
37	/CS0	38	/CS1
39	/DASP	40	GND
41	Vcc	42	Vcc
43	GND	44	N/C

## CONFIGURATION DESCRIPTIONS

Signal Name	Dir	Pin	Description
HA[2:0]	I	36, 33, 35	A2-A0 are used to select the one of eight registers in the Task File.
/CS[1:0]	I	38, 37	/CS0 is the chip select for the Task File registers while /CS1 is used to select the Alternative Status Register and the Device Control Register.
CSEL	I	28	This internally pulled-up signal is used to configure this device as a Master or a Slave, if J_CSEL_-EN is grounded by a jumper from B to D. When the pin is grounded, this device is configured as a Master. When the pin is open, this device is configured as a Slave.
HD[15:0]	I/O	18, 16, 14, 12, 10, 8, 6, 4, 3, 5, 7, 9, 11, 13, 15, 17	All Task File operations occur in byte mode on the low order bus HD[7:0] while all data transfers are 16 bit using HD[15:0].
/DASP	I/O	39	This input/output is the Disk Active/Slave Present signal in the Master/Slave handshake protocol.
DMARQ	O	21	DMA transfer request.
/DMACK	I	29	DMA request acknowledge.
/IOW:STOP	I	23	The I/O Write strobe pulse is used to clock I/O data on the Card Data bus into the Drive controller registers when the Drive is configured to use the I/O interface. The clocking will occur on the negative to positive edge of the signal (trailing edge). During Ultra DMA, this is the stop signal.
/IOR: HDMARDY/ HSTROBE	I	25	This is an I/O Read strobe generated by the host. This signal gates I/O data onto the bus from the Drive. Ultra DMA control signal used to extend host transfer cycles.
IRQ	O	31	Signal used to interrupt host when service is requested.
/IOIS16	O	32	This output signal is asserted low when this device is expecting a word data transfer cycle.
IRDY: DDMARDY/ DSTROBE	O	27	This output signal may be used as IORDY. Ultra DMA control signal used to extend host transfer cycles.
/PDIAG	I/O	34	This input/output is the Pass Diagnostic signal in the Master/Slave handshake protocol.
/RESET	I	1	This input pin is the active low hardware reset from the host.
GND	--	2, 19, 22, 24, 26, 30, 40, 43	Ground
Key	--	20	This pin is keyed so that the drive can only be connected with the cable pin 1 to drive pin 1.
N/C	--	44	No connect
Vcc	--	42, 41	+5V

## ABSOLUTE MAXIMUM RATINGS

SYMBOL	RATING		VALUE	UNIT
V <sub>CC</sub>	Power Supply Voltage		-0.3 to 6.5	V
V <sub>IN</sub>	Input Voltage		-0.5 to V <sub>CC</sub> +0.5	V
T <sub>STG</sub>	Storage Temperature		-65 to 150	°C
TOPR	Operating Temperature	Commercial	-0 to 70	°C
		Industrial	-40 to 85	

## RECOMMENDED DC OPERATING CONDITIONS

SYMBOL	PARAMETER	MIN	TYP.	MAX	UNIT
V <sub>CC</sub>	Power Supply Voltage	4.5	5.0	5.5	V
V <sub>IH</sub>	High Level input Voltage	2.0	–		V
V <sub>IL</sub>	Low Level Input Voltage		–	0.8	V

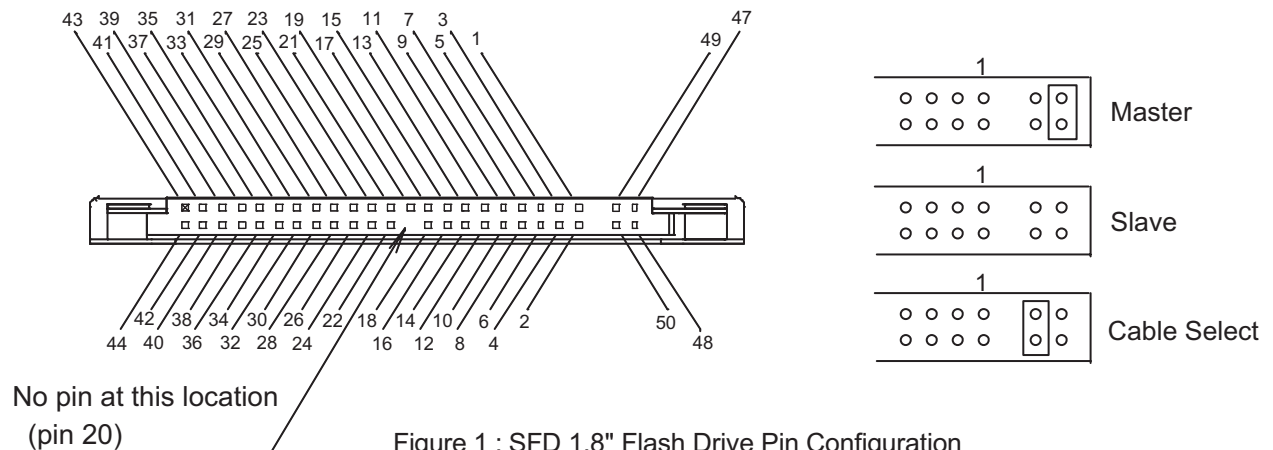
## DC CHARACTERISTICS (T<sub>a</sub> = -40°C to 85°C , V<sub>CC</sub> = 5V ± 10%)

SYMBOL	PARAMETER	MIN	TYP.	MAX	UNIT
I <sub>CCO</sub>	Operating Current		40		µA
I <sub>CCS</sub>	Sleep Mode Current			1.2	
V <sub>OH</sub>	High Level Output Voltage	V <sub>CC</sub> -0.8	–	–	V
V <sub>OL</sub>	Low Level Output Voltage	–	–	0.4	V

## System Requirements

In order to install the SFD 1.8" Flash Drive in your system, ensure that you have the following items:

- System mounting hardware
- 44 pin ribbon IDE cable



**Mechanical Specification**

