1.2, 1.4, 1.6, 1.8, and 2GB 2.5-Inch IDE Flash Drives

FEATURES

- Capacities from 1.2GB to 2GB
- Standard IDE Drive Form Factor of 2.5-Inch
- Standard IDE connector and Interface
- Configures to Master or Slave IDE device
- Replaces IDE hard drive for applications where tough environments prohibit use of traditional rotating media
- Solid-State (no moving parts)
- High Shock and Vibration Limits
- 512 Byte Sector and ECC Defect Management Compatible to IDE Hard Disk Drives
- No "Spin" Noise Compared to Traditional Rotating Media
- Available in Commercial, Extended, and Industrial Operating Temperature Ranges

ORDERING INFORMATION

SimpleTech P/N*	Capacity
• SLFLD25-1.2GBD(E/I)	1.2 GBytes
• SLFLD25-1.4GBD(E/I)	1.4 GBytes
• SLFLD25-1.6GBD(E/I)	1.6 GBytes
• SLFLD25-1.8GBD(E/I)	1.8 GBytes
• SLFLD25-2GBD(E/I)	2 GBytes

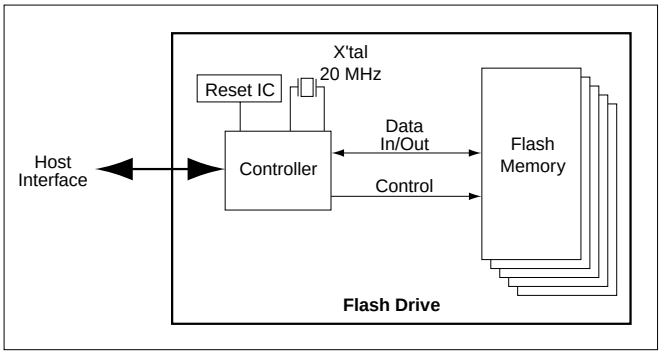
* An "E/I" suffix added to the part number selects the Extended/Industrial Operating Temperature range option. A part number without the "E/I" suffix selects the Commercial Operating Temperature range.

GENERAL DESCRIPTION

The SimpleTech SLFLD25-1.2GBD(E/I) to SLFLD25-2GBD(E/I) are solid-state flash IDE drives with capacities of 1.2GB to 2GB and with a standard 2.5-inch form factor.

The IDE drive consists of an IDE controller and an array of flash memory devices. The IDE drive supports the standard ATA register and command set.

FUNCTIONAL BLOCK DIAGRAM



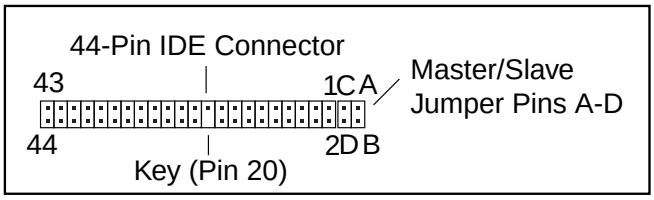
PIN CONFIGURATION

44-Pin IDE Connector Pin Symbols

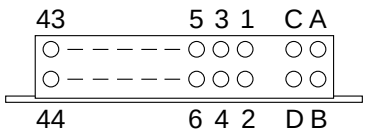
Pin Num	Pin Symbol	Pin Num	Pin Symbol
1	-RESET	23	-IOWR
2	GND	24	GND
3	D07	25	-IORD
4	D08	26	GND
5	D06	27	IORDY
6	D09	28	-CSEL
7	D05	29	-DACK
8	D10	30	GND
9	D04	31	HINT
10	D11	32	-IOIS16
11	D03	33	A1
12	D12	34	-PDIAG
13	D02	35	A0
14	D13	36	A2
15	D01	37	-CE1
16	D14	38	-CE2
17	D00	39	-DASP
18	D15	40	GND
19	GND	41	VCC
20	Key	42	VCC
21	DREQ	43	GND
22	GND	44	NC

"-" indicates signal is active low.

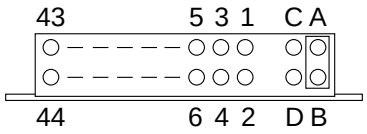
Pin Locations



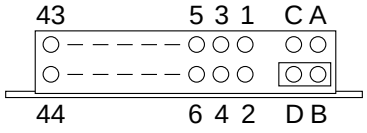
Jumper Settings



If all pins A, B, C, and D are open, the drive is in master mode.



If pin A is jumpered to pin B, the drive is in slave mode.



If pin B is jumpered to pin D, the d is determined by the -CSEL signal

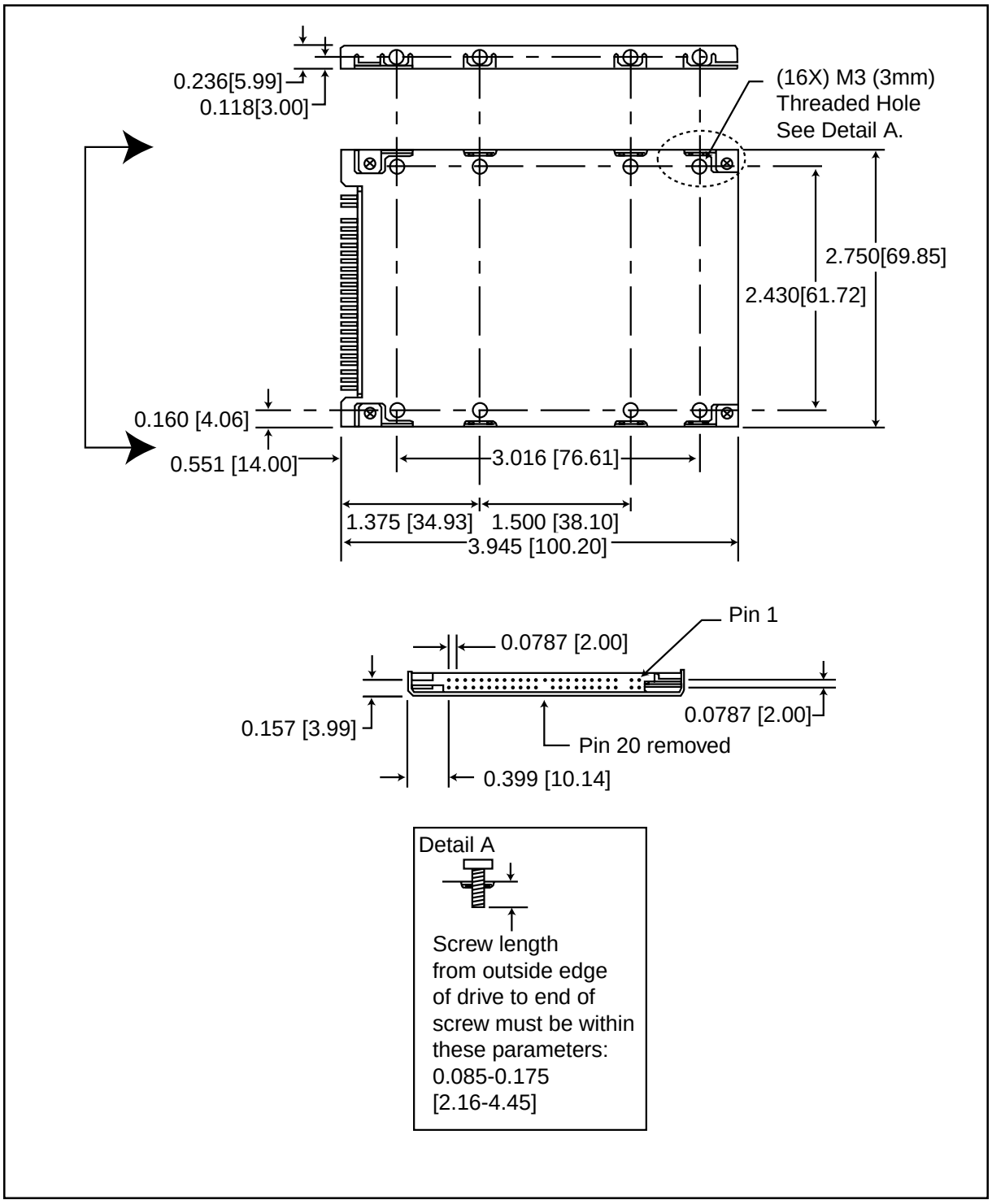
NOTE: In multiple drive configuration, it may become necessa establish master drive and slave drive. This can be dor booting the PC and using IDE HDD Auto Detection ava in CMOS setup.

Signal Description

Signal Name	Dir	Pin	Description
-DASP	I/O	39	This input/output is the Disk Active/Slave Present signal in the Master/Slave handshake protocol.
D15-D00	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 D00-D07 while all data transfers are 16 bit using D00-D15.
-IOWR	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).
-IORD	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.
HINT	O	31	Signal is the active high Interrupt Request to the host.
A2-A0	I	35, 33, 36	A[2:0] are used to select the one of eight registers in the Task File.
-CE1, -CE2	I	37, 38	-CE1 is the chip select for the task file registers while -CE2 is used to select the Alternate 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. When the pin is grounded, this device is configured as a Master. When the pin is open, this device is configured as a Slave
-IO16	O	32	This output signal is asserted low when this device is expecting a word data transfer cycle.
-PDIAG	I/O	34	This input/output is the Pass Diagnostic signal in the Master/Slave handshake protocol.
DREQ	O	21	DMA transfer request.
-DACK	I	29	DMA request acknoledge.
IORDY	O	27	This output signal may be used as IORDY.
-RESET	I	1	This input pin is the active low hardware reset from the host.
GND	—	2, 19, 22, 26 30, 40, 43	Ground.
VCC	—	41, 42	Power.
Key	—	20	This pin is keyed so that the drive can only be connected with the cable pin 1 to drive pin 1.

PACKAGE DIMENSIONS

Refer to the figure below for package dimensions of the 2.5-inch FlashDrive. The units are inches (in parenthesis, millimeters), and the tolerences are ±0.005 inches (1.27mm) unless otherwise specified.



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit	Note
All input/output voltages	Vin, Vout	-0.3 to VCC+0.3	V	1
VCC voltage	VCC	-0.3 to +6.7	V	
Storage Temperature range	Tstg	-55 to +125	°C	
1. Vin, Vout min=-2.0V for pulse width - 20 ns				

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit
Commercial operating temperature	Ta	0	25	70	°C
Extended operating temperature	Ta	-25	—	85	°C
Industrial operating temperature	Ta	-40	—	85	°C
VCC voltage	VCC	4.5 3.15	5.0 3.3	5.5 3.45	V

PERFORMANCE

Item	Performance
Start Up Times (Reset to Ready)	100 ms (max)
Start Up Times (Sleep to Idle)	2 ms (max)
Data Transfer Rate To/From Host	up to 8 MBytes/s (burst)
Controller Overhead (Command to DRQ)	2 ms (max)
Data Transfer Cycle End to Ready (Sector Write)	2 ms (typ)
Read	up to 1.3 to 1.5 MBytes/s
Write	up to 3 MBytes/s with 6-way Interleave

RELIABILITY

Item	Value
Data Write/Erase Endurance	300,000 min. cycles
Data reliability	1 in 10^{14} bits, read

CAPACITANCE (Ta=25°C, f=1MHz)

Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Input Capacitance	Cin	—	—	15	pF	(Vin=0V)
Output Capacitance	Cout	—	—	15	pF	(Vout=0V)

ENVIRONMENTAL CHARACTERISTICS

Item	Value*
Shock	500G, 3 cycles / Axis X, Y, Z / Unit
Vibration (Logarithmic Digital Sine)	freq=100-2000Hz, 20G, 3 sweeps / Axis X, Y, Z / Unit