

## 1. GENERAL

This is the hardware specification of the TEAC FD-235HS, 3.5" double-sided 5.3 track/mm [135tpi] micro floppy disk drive (hereinafter referred to as SFD) with a data capacity of 2MB/1MB (2 modes) and a SCSI interface board (hereinafter referred to as FC-1).

For the specification of the software, refer to "FC-1-11 Software Specification".

The outline of this SFD is shown in Table 1.

(Table 1) Specification outline

Model name	FD-235HS-1111	
TEAC P/N	19308111-11	
ROM P/N	S002617-11	
Safety standard	UL, CSA & TÜV	
Operation modes	1MB mode, write/read	2MB mode, write/read
Disk used	Normal density (DD)	High density (HD)
Data transfer rate	250k bits/s	500k bits/s
Disk speed	300rpm	
Track density	5.3 track/mm [135tpi]	
Required power	+5V single (4.75~5.25V)	
Front bezel & flap	Beige (AT)	
Eject button	Beige (AT)	
LED indicator color	Amber	
Signal interface	SCSI (Small Computer System Interface: ANSI standard X3.131-1986)	
Terminator	Provided (at factory), 220/330Ω ±5%, detachable	
Specification of parity	ON (at factory), ON/OFF switchable	
Specification of SCSI	ID=0 (at factory), SCSI ID 0 to 7 switchable	
Logical Unit Number	LUN=0 (at factory)	
Internal data buffer capacity	31K bytes	

Using two types of disk, this SFD permits two write/read modes with unformatted data capacities of 2M/1M bytes. The interface with the host system is SCSI. The SFD has a switch for the detection of the high density identification hole (HD hole) in the disk and straps for selecting the density mode system (refer to 10.8).

#### 4. DISK

(1) Work disk

3.5" micro floppy disks on Table 2 which are mutually agreed between the customer and TEAC.

(Table 2) Disk used

Operation mode	Disk type	Magnetic powder	Magnetizing method
1MB	Normal density (DD)	Co- $\gamma$ -Fe <sub>2</sub> O <sub>3</sub>	Surface recording
2MB	High density (HD)	Co- $\gamma$ -Fe <sub>2</sub> O <sub>3</sub>	Surface recording

(2) Cleaning disk

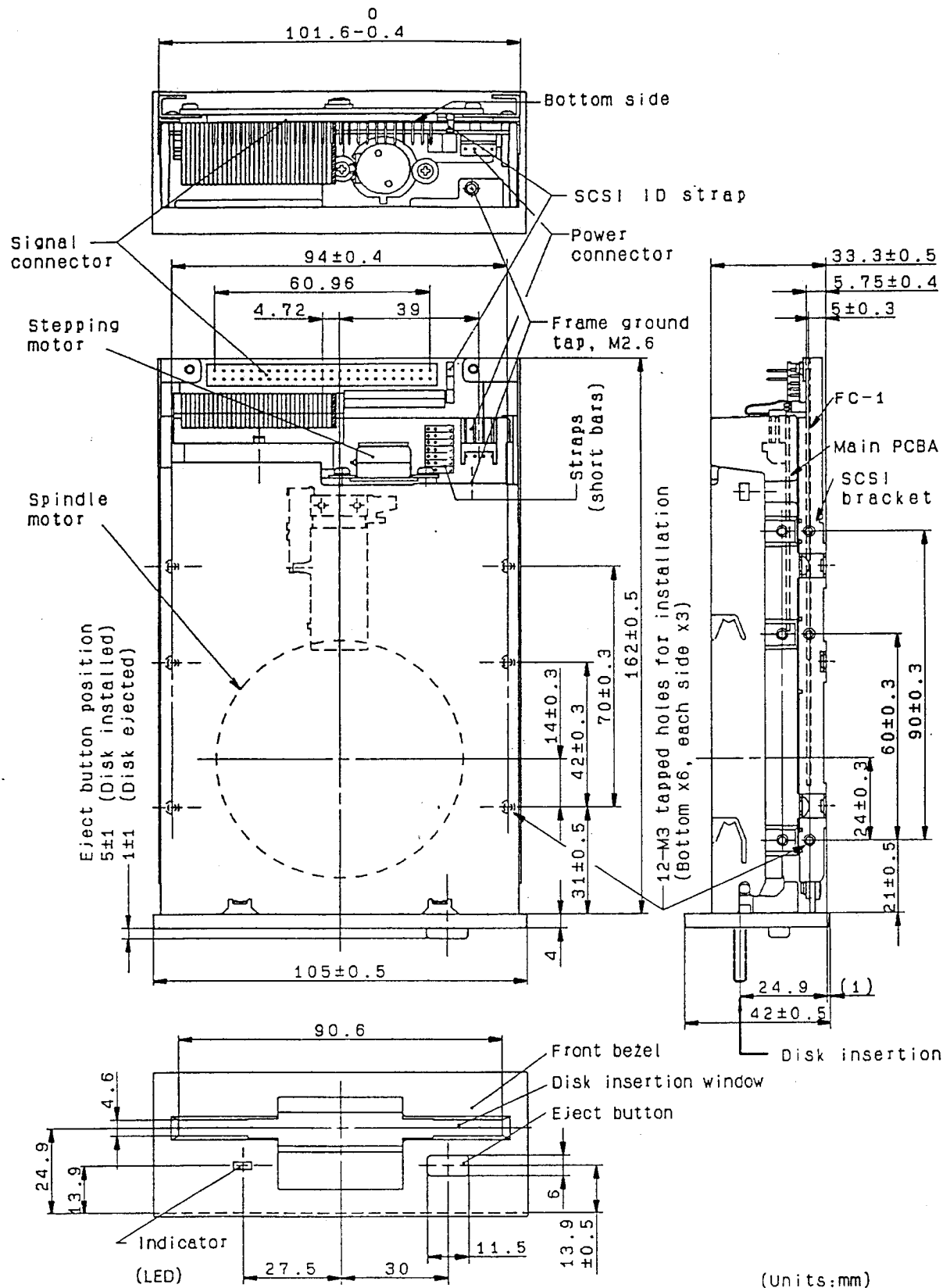
The SFD does not require any cleaning disk. However, the dry type disk which is mutually agreed between the customer and TEAC is used when requiring a cleaning disk.

#### 5. PHYSICAL SPECIFICATIONS

##### 5.1 Physical Specifications

(Table 3) Physical specification

Width	101.6mm [4.00 in], Nom.
Height	33.3mm [1.31 in], Nom.
Depth	162mm [6.38 in], Nom.
Weight	480g [1.06lbs], Nom., 500g [1.10 lbs], Max.
External view	See fig.4.
Cooling	Natural air cooling
Mounting	Mounting for the following directions are acceptable. (a) Front loading, mounted vertically. (b) Front loading, mounted horizontally with spindle motor down. (c) Mounting angle in items (a) and (b) should be less than 25° with front bezel up or down. Note: As to the other mounting directions than the above will be considered separately.
Installation	With installation holes on the frame of the SFD. Refer to Fig.4.
Material of frame (Base)	Aluminium die-cast
Material of SCSI bracket	A galvanized sheet iron
Material of front bezel	PPHOX



(Fig.4) External view

## 7. ENVIRONMENTAL CONDITIONS

(Table 12) Environmental Condition

	Operating	Storage	Transportation
Ambient temperature	4~51.7°C [39~125°F]	- 22~60°C [- 8~140°F]	- 40~65°C [- 40~149°F]
Temperature gradient	20°C [68°F] or less per hour	30°C [86°F] or less per hour	30°C [86°F] or less per hour
Relative humidity	20~80% (no condensation) Max. wet bulb temperature shall be 29.4°C [85°F]	5~90% (no condensation) Max. wet bulb temperature shall be 40°C [104°F]	5~95% (no condensation) Max. wet bulb temperature shall be 45°C [113°F]
Vibration	14.7m/s <sup>2</sup> [1.5G] or less (10~100Hz, 1 octave/m sweep rate)		19.6m/s <sup>2</sup> [2G] or less (10~100Hz, 1/4 octave/m sweep rate)
	4.9m/s <sup>2</sup> [0.5G] or less (100~200Hz, 1 octave/m sweep rate)		
	2.45m/s <sup>2</sup> [0.25G] or less (200~600Hz, 1 octave/m sweep rate)		
Shock	Write & read: 49m/S <sup>2</sup> [5G](11ms, 1/2 sine wave) or less		490m/S <sup>2</sup> [50G] (11ms, 1/2 sine wave) or less
	Read only: 98m/S <sup>2</sup> [10G](11ms, 1/2 sine wave) or less Soft errors are allowed if they are recoverable within 16 retries.		
Altitude	- 300m [- 980feet]~ 5,000m [16,400feet]		12,000m [40,000 feet] or less
	Notes: The above requirements are applied for the FDD without shipping box. When a long period is required for transportation such as by ship, storage environmental conditions should be applied.		

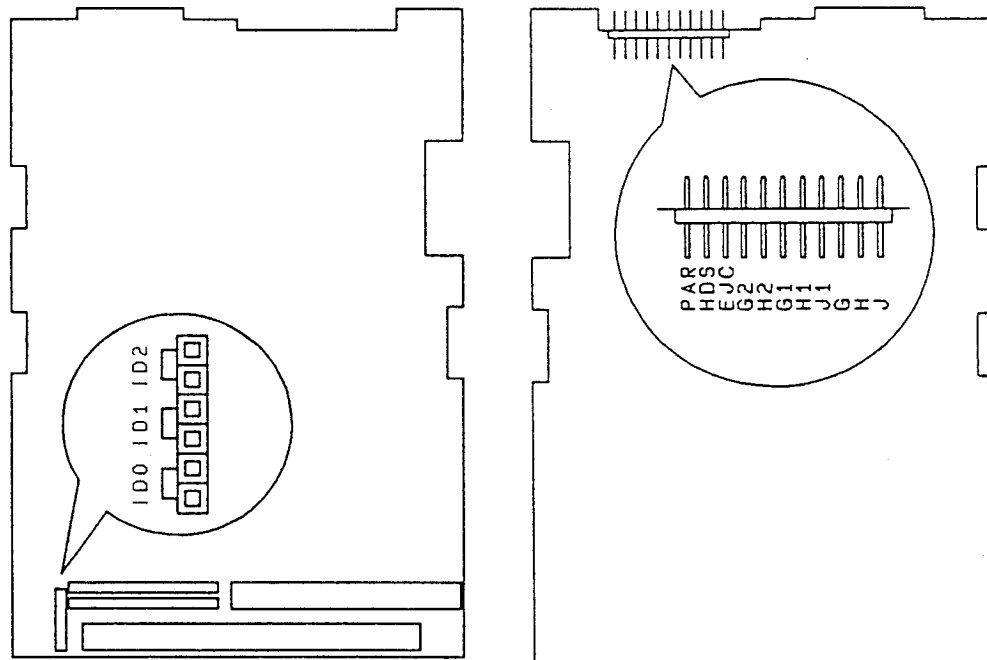
## 10.8 Customer Selectable Straps

### 10.8.1 Straps setting on the FC-1 board

There are straps on the FC-1 board as shown in Fig.28 and the state where the shorting bar is inserted is the on state. Their functions are described below.

Factory-set is follows.

H, PAR, ID0 ~ ID2: ON



(Shown when viewed from the chip side)

(Fig.28) Straps arrangement

#### (1) ID Straps Setting

Performs SCSI ID setting with "ID0", "ID1", and "ID2" on the PCBA. The relation between "ID0 ~ ID2" settings and the SCSI ID addresses are shown in Table 22.

"ID0 ~ ID2" are all factory-set to "ON" (device address = 0).

(Table 22) SCSI ID setting

SCSI ID ADDRESS	ID2	ID1	ID0
0	ON	ON	ON
1	ON	ON	OFF
2	ON	OFF	ON
3	ON	OFF	OFF
4	OFF	ON	ON
5	OFF	ON	OFF
6	OFF	OFF	ON
7	OFF	OFF	OFF

(2) SCSI parity strap

"PAR" on the PCBA is the parity strap. When "PAR" is ON, the FC-1 performs parity checking (odd number) of input data (-DB0 ~ -DB7, -DBP). Parity checking does not take place when "PAR" is OFF.

It is factory-set to "ON".

(3) J/H/G/J1/H1/G1/H2/G2 straps

These straps indicate an FDD type as shown in Table 10-4 and the LUN 0 FDD type is set by J/H/G straps, the LUN 1 FDD type by J1/H1/G1 straps or the LUN 2 FDD type by H2/G2 straps. Here, the 1MB mode is valid at all times irrespective of the LUN number.

Strap "H" is factory-preset to ON.

(Table 23) Setting the FDD type

Strap	G/G1/G2	H/H1/H2	J/J1
Mode	1.6MB mode	2MB mode	4MB mode

(4) HDS strap

Sets the initial state whether or not the mode auto setting function according to the disk type loaded in the SFD is valid using the HDS strap. If the HDS strap is ON, it is necessary to set the H1/H2 straps.

The strap is factory-preset to OFF and it is not possible to change this strap.

"HDS": ON .... Valid

OFF .... Invalid

(5) EJC strap

(Setting the output signal at pin 4 in the FD IF)

Sets the initial state whether or not the media eject function is valid using the EJC strap.

The strap is factory-preset to OFF and it is not possible to change this strap.

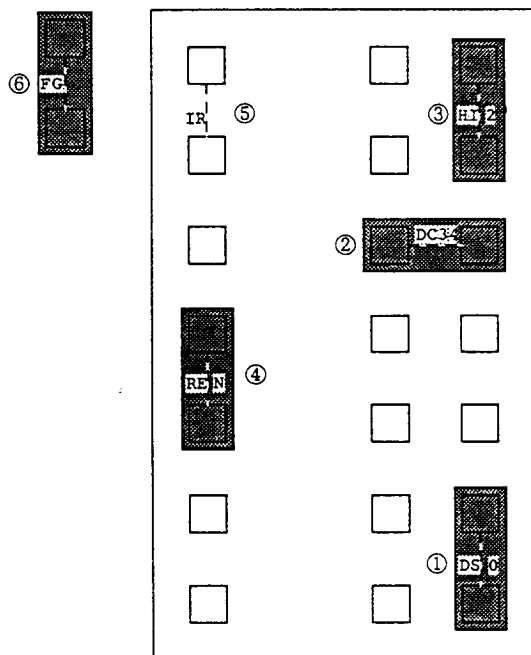
"EJC": ON .... Valid

OFF .... Invalid

### 10.8.2 Strap setting on the FDD main board

The straps on the FDD main board and an outline of their functions are given in Table 24.

If the settings of straps other than HA/IR/FG on the FDD main board are changed, the operation of this SFD is not guaranteed.



Position	Name	Outline of functions
①	DS0	DRIVE SELECT 0 input
②	DC34	PIN 34: DISK CHANGE output
③	HI2	PIN 2: HD IN input
④	REN	Auto-recalibration enable
⑤	IR	LED active condition: DRIVE SELECT * READY state
⑥	FG	Frame ground

Note: The shaded positions are the factory-preset positions.

(Table 24) Straps on the FDD main board and their functions

#### (1) HI2 strap

By using HI2 strap, the FDD density mode setting signal (HD IN) to set the FDD density mode is allocated at the pin.

The level of the mode setting signal is shown in Table 25.

For details of how to set the method of the SFD, refer to 10.7.

(Table 25) Setting signal level

Strap setting		Setting mode	FDD density mode setting signal level	Medium identification signal level	
FC-1	FDD			HD OUT	
HDS	HI2		HD IN *(PIN 2)	*(PIN 4)	*(PIN 2)
OFF	ON	1MB	LOW	LOW	—
		2.0MB	HIGH	HIGH	—

Note: With PIN 2 and 4 (marked "\*\*") of the FDD interface signal, the meaning and true level are defined by bytes 26 and 27 of PAGE code 5 of the MODE SELECT parameter.

(2) IR strap

With the IR strap, one of the following two front bezel indicator (LED) lighting conditions can be selected.

However, to prevent the lighting due to the polling operation of the DRIVE SELECT signal, the indicator does not light for 3.1ms immediately after the DRIVE SELECT signal is made true under any conditions.

(Table 26) Selecting the front bezel indicator lighting conditions

IR strap	Front bezel indicator (LED) lighting conditions
—	DRIVE SELECT
ON	DRIVE SELECT * FDD READY state

Note: Symbol of "—" indicates the state when the strap = OFF.

(3) FG strap

Connects the FDD frame to 0V DC. (For details, refer to 5.2)