

# **TOSHIBA**

## **DISK PRODUCTS DIVISION**

# **XM-6401B CD-ROM DRIVE PRODUCT SPECIFICATION**

**DECEMBER 1998**

**REV. 1.0**

**Specifications are subject to change without notice**

**DOCUMENT NUMBER  
11880**

**Notice**

1. This product has no over-current protection circuit.  
System should have appropriate over-current protection.  
Toshiba Corporation makes no warranty of damages caused by no over-current protection.
2. This has a little possibility of errors.  
To prevent damages and injury caused by the above, careful consideration for the safety and integrity should be taken in the system design.  
Do not use this product in a system that may cause hazard to human being or material loss caused by the failure, loss of data and/or errors of this product.
3. Do not disassemble or modify this product.  
Or, reliability, safety and performance can not be guaranteed.
4. Turn off the system power before mounting/removing this product.  
Or, it may cause failure or damage.
5. Because the DC power socket of this product allows insertion of only one side direction, ascertain direction carefully to insert the plug.
6. To build this product in an equipment, handle it only in electrostatically safe environment.  
Do not touch connecting terminals directly.  
Or, the product may be damaged by electrostatic energy.
7. This product can playback discs based on the format described in item 3.1.(1). Do not load a disc which is not based on the item (discs of which outside is cut unevenly and is not a normal circle, etc.) or a disc with its weight unbalanced excessively.  
A very high speed rotation is carried out inside the product, so abnormal vibration and malfunction may occur if disc described above is loaded.
8. When a disc cannot be ejected because of some troubles, etc., turn off the unit and eject the disc using the emergency eject mechanism after passing more than 1 minute.  
When the emergency eject is carried out while the power is on or immediately after the power off, the disc may be eject in a rotating status. We do not assure if the disc is damaged by this.
9. When you close the tray, power must not be turned off. If the tray is pushed in with the hand during power-off, a breakdown may occur because the mechanism in the product is not in the transition state during power-off.

10. As for mounting bracket to incorporate this product into an equipment,
- (1) When this product is incorporated into an equipment by using the mounting screw hole in the right and left side planes, the clearance between this product and the mounting bracket is too wide;
  - (2) When this product is incorporated into an equipment by using the screw hole mounting in the bottom, the surface of the mounting bracket is contorted.

If you use such mounting bracket as the above, this product will become deformed, which may cause operation failure. Therefore, it is necessary to take account of the mounting bracket which has the tolerances shown in Fig.1 or whose structure cannot cause this product to deform, as shown in Fig.2

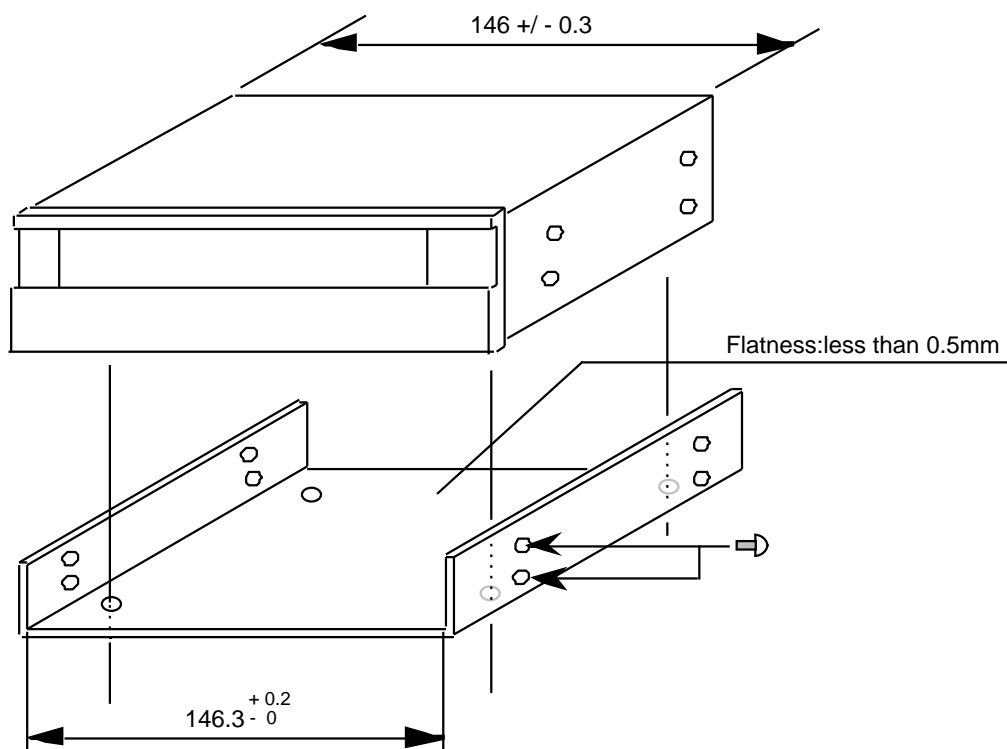


Fig.1

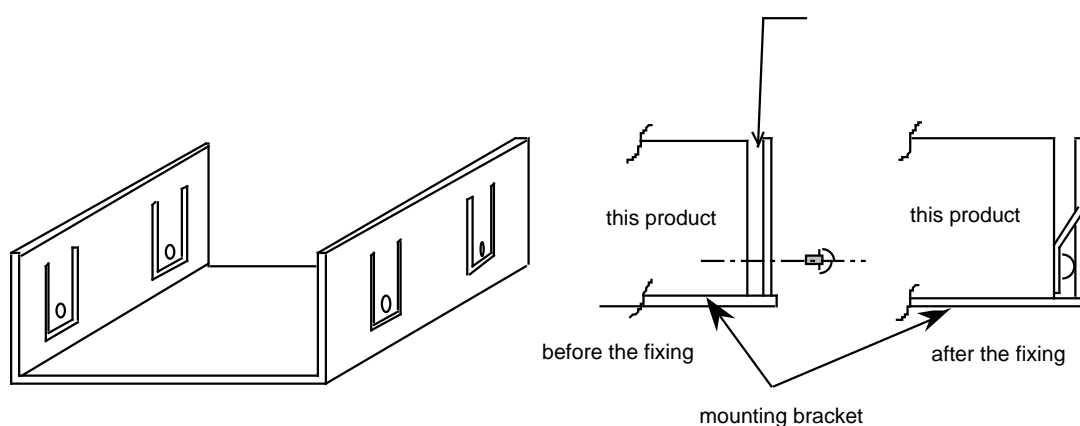


Fig.2

11. In the instruction manual of your product, statement described in "Safety Instruction Manual" attached to this product, the statement of item 2, 7 and 9 above, and other required statements should be mentioned for thorough understanding by the users.

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## 1. Introduction

This document describes TOSHIBA's XM-6401B CD-ROM Drive. This product reads digital data stored on CD-ROM discs at 17.3-40 times faster rotational speed.

The CD-ROM disc is single sided and has a 12 cm or 8 cm diameter. It typically contains approximately 600 MByte or 200 MByte of information respectively.

( 1 MByte=  $2^{20}$  Byte )

Compact Discs offer long life and high durability because the disc is read by a LASER, thereby eliminating physical contact with the disc.

A CD-ROM disc can also store other types of information in addition to digital/binary data.

It is capable of storing audio information.

The XM-6401B is therefore capable of reproducing CD-audio ( Such as music Compact Discs ) and can be used as a CD-audio player, independent of the computer system.

The XM-6401B is a new generation drive with highest performance such as 80 ms

Random Access Time and Approx 2,595-6,000 KByte/s ( 1 KByte =  $2^{10}$  Byte ) Sustained

Transfer Rate at 17.3-40X mode and 100,000 h MTBF at 20 % duty ratio etc.

This product supports SCSI synchronous transfer function and CD-DA transfer along subcode P,Q and R through W over SCSI function that host system can read CD audio data.

This product also supports Photo-CD Multisession disc compatibility.

**2. Features**

- (1) Internal 12 cm/8 cm CD-ROM Disc Drive
- (2) 5-1/4 inch half height Form Factor
- (3) Fast 80 ms Random Access Time
- (4) Fast 75 ms Random Seek Time
- (5) Supports 6-14X and 17.3-40X Rotational Modes
- (6) Approx 6,000 KByte/s Sustained Transfer Rate ( 1 KByte = 2<sup>10</sup> Byte )
- (7) Sync-Transfer on SCSI Bus
- (8) Photo-CD multisession Disc Spec ( Photo-CD, CD EXTRA ) compliant
- (9) Tray Type Electrical Load/Eject
- (10) Emergency Eject
- (11) Slant Angle : Horizontal +/-20° Vertical +0° /-10° (side to side) , +/-10° ( front to rear)  
( In vertical mount, only 12 cm CD-ROM is applicable )
- (12) Closed Enclosure
- (13) Snap-on Bezel
- (14) Built-in SCSI-2 interface Controller
- (15) CD-DA Transfer Through SCSI Bus
- (16) Subcode P,Q,R-W Transfer Through over SCSI (\*Support the Customer)
- (17) Built-in MODE-1 ECC and MODE-2 EDC
- (18) Embedded CD-ROM XA type ECC/EDC ( MODE-2 FORM-1 )
- (19) Efficient Data Transmission Throughput via Large 256 KByte Buffer Memory  
and Buffer Algorithm
- (20) Remote SCSI-ID Jumper Block
- (21) Built-in Terminator (possible ON/OFF)
- (22) Media removal prevent function
- (23) 8X Sampling & Digital Filter for CD Audio
- (24) Low Power Consumption ( Average: 10 W, Max.: 11.5 W ) excluding Terminator Power
- (25) 16-Mode Output for CD Audio
- (26) Software Volume Control ( L/R Channel Independent )
- (27) Linear Level Control for Headphones
- (28) MTBF 100,000 h
- (29) Modular Assembly for Easy Serviceability
- (30) Can be used as an Independent CD Audio Player Disconnected from PC
- (31) Vibration Cancel Spindle Motor

**3. Specifications**

3.1. Performance

(1) Applicable Disc Format *1	Red-Book, Yellow-Book, CD-ROM XA, CD-TEXT CD-I Bridge ( Photo-CD, Video CD ) ,CD-I, CD-I Ready, CD-G and Multisession ( Photo-CD,CD EXTRA ,CD-RW, CD-R)
(2) Data Capacity ( Yellow-Book ) User Data/Block	2,048 Byte/block ( Mode 1 ) 2,336 Byte/block ( Mode 2 )
(3) Rotational Speed *2	
6-14X (CAV)	Approx 3,000 rpm
17.3-40X (CAV)	Approx 8,500 rpm
(4) Transfer Rate ( 1 KByte=2 <sup>10</sup> Byte=1,024 Byte, 1 MByte=2 <sup>20</sup> Byte=1,048,576 Byte)	
Sustained Block Transfer Rate	Approx 450-1,050 Blocks/s ( 6-14X ) Approx 1,295-3,000 Blocks/s ( 17.3-40X )
Sustained Date Transfer Rate	
Mode 1	Approx 900-2,100 KBytes/s ( 6-14X ) Approx 2,595-6,000 KByte/s ( 17.3-40X )
Mode 2	Approx 1,026-2,394 KByte/s ( 6-14X ) Approx 2,958-6,840 KByte/s ( 17.3-40X )
Burst ( SCSI Interface )	20 MByte/s ( Sync ) 5 MByte/s ( Async )
(5) Access Time	
Average Random Access Time*3	80 ms Typ ( 40X )
Average Random Seek Time*4	75 ms Typ ( 40X )
Average Full Stroke Access Time*5 (Average of Forward and Backward)	135 ms Typ ( 40X )
(6) Spin up Time ( Focus Search Time and Disc Motor Start up Time )	3.5 s Typ ( 40X ) 5.5 s Max ( 40X )
(7) Data Buffer Capacity	256 KByte



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- \*1: All CD formats, except CD Red book (audio), require additional application specific software and/or hardware. The CD-ROM drive referenced in the specification is capable of reading these data formats. However, in order to run applications that use these formats you must first have the required software and/or hardware.
- \*2: 6-14X rotational speed is fixed for CD-audio (Red-Book) Format. For the other Formats, 17.3-40X or 6-14X mode is selectable by command. (Default value is 40X)
- \*3: Measured by performing multiple accesses which means reads of data blocks over whole area of the media from 00 min 02 sec 00 block to 60 min 01 sec 74 block more than 3000 times. Includes positioning, setting, latency time and ECC implementation time (if required).
- \*4: Measured by performing multiple accesses which means seeks of data blocks over whole area of the media from 00 min 02 sec 00 block to 60 min 01 sec 74 block more than 3000 times. Includes positioning, setting time which is same definition as HDD.
- \*5: Measured by performing multiple maximum accesses which means reads of data blocks from 00 min 02 sec 00 block to 60 min 01 sec 74 block more than 100 times. Includes positioning, setting, latency time and ECC implementation time (if required). Typ value is for the average drive.

(8) Load/Eject	(a) Electrical Load/Eject (Eject Button) (b) Load/Eject by SCSI command (c) Emergency Eject
(9) Air Flow	Not Required
(10) Acoustic Noise	46 dB (IEC 179 A-weighted) MAX at 1 meter
(11) Power Supply	+5 V and +12 V (details in Section 7)

### 3.2. Environmental Conditions

This drive should be used under the conditions listed below.

#### 3.2.1. Temperature and Humidity

(1) Operating Temperature	5 °C to 50 °C
(2) Storage Temperature	-10 °C to 60 °C
(3) Shipping Temperature	-40 °C to 65 °C
(4) Operating Temperature Gradient	10 °C/h (max)
(5) Storage Temperature Gradient	20 °C/h (max)
(6) Shipping Temperature Gradient	20 °C/h (max)
(7) Operating Humidity	8 % to 80 % (wet bulb 27 °C max)
(8) Storage Humidity	5 % to 95 % (wet bulb 27 °C max)
(9) Shipping Humidity	5 % to 95 % (wet bulb 27 °C max)
(10) Condensation	In all the above conditions there must be no condensation

3.2.2. Dust and Dirt	unspecified
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3.2.3.Vibration

- (1) Operating (17.3-40X) (1 Oct/min) ----- no hard error -----  
 5 to 500 Hz 2.45 m/s<sup>2</sup> [0.25 G] (0-p)  
 (excluding resonance point)
- (2) Non-operating (1 Oct/min) ----- no damage -----  
 5 to 10 Hz 5 mm (p-p)  
 10 to 500 Hz 9.8 m/s<sup>2</sup> [1 G] (0-p)
- (3) Shipping (Packaged) (1 Oct/min) ----- no damage -----  
 10 to 25 Hz 9.8 m/s<sup>2</sup> [1 G] (0-p) X Y Z/30 min each

3.2.4.Atmospheric Altitude

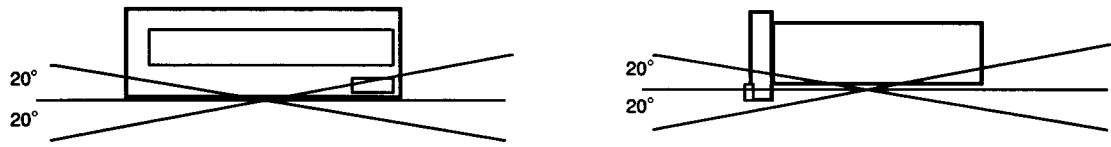
- (1) Operating 0 to 3,000 m
- (2) Shipping 0 to 12,000 m

3.2.5.Shock

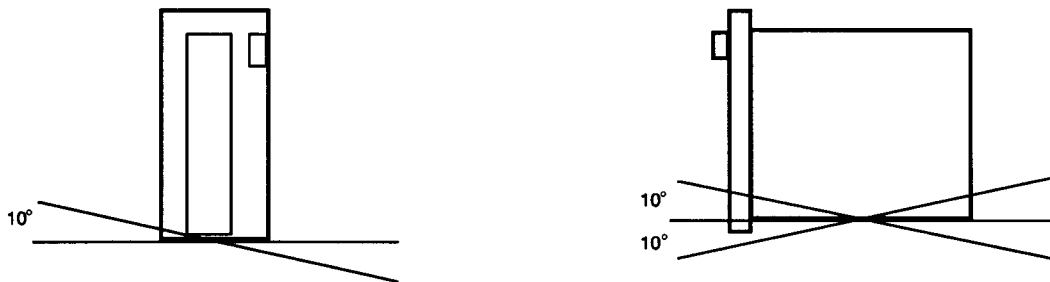
- (1) Operating (17.3-40X) ----- no hard error -----  
 14.7 m/s<sup>2</sup> [1.5 G] (Horizontal)  
 7.8 m/s<sup>2</sup> [0.8 G] (Vertical)  
 (Half sine wave 11 ms/10 s interval)
- data read recoverable -----  
 98 m/s<sup>2</sup> [10 G]  
 (Half sine wave 11 ms/10 s interval)
- (2) Non-operating (with no CD - Disc mounted) ----- no damage -----  
 490 m/s<sup>2</sup> [50 G] (Half sine wave 11 ms)
- (3) Drop (Packaged) ----- no damage -----  
 (a) Bulk Package (15/Bulk) 1 drop at 0.4 m (Bottom side only)  
 (b) Individual Package 0.9 m drop once for each  
 6-surfaces, 1-edge and 1-corner

**3.3. Installation Conditions**

Mount within 20° of the horizontal positions and within 10° of the vertical positions



a) Horizontal position



b) Vertical position

Figure 1 Installation condition

**3.4. Dimension and Mass** ----- See Figure 2 for details -----

(1) External Dimensions (W x H x D)	146 mm x 41.5 mm x 193 mm (excluding bezel)
(2) Mass (Weight)	0.76 k g (Net) 1.1 k g (Individual packaged) 12.7 k g (Bulk Packaged 15/Bulk)

XM-6401B EXTERNAL DIMENSIONS (Unit: mm)

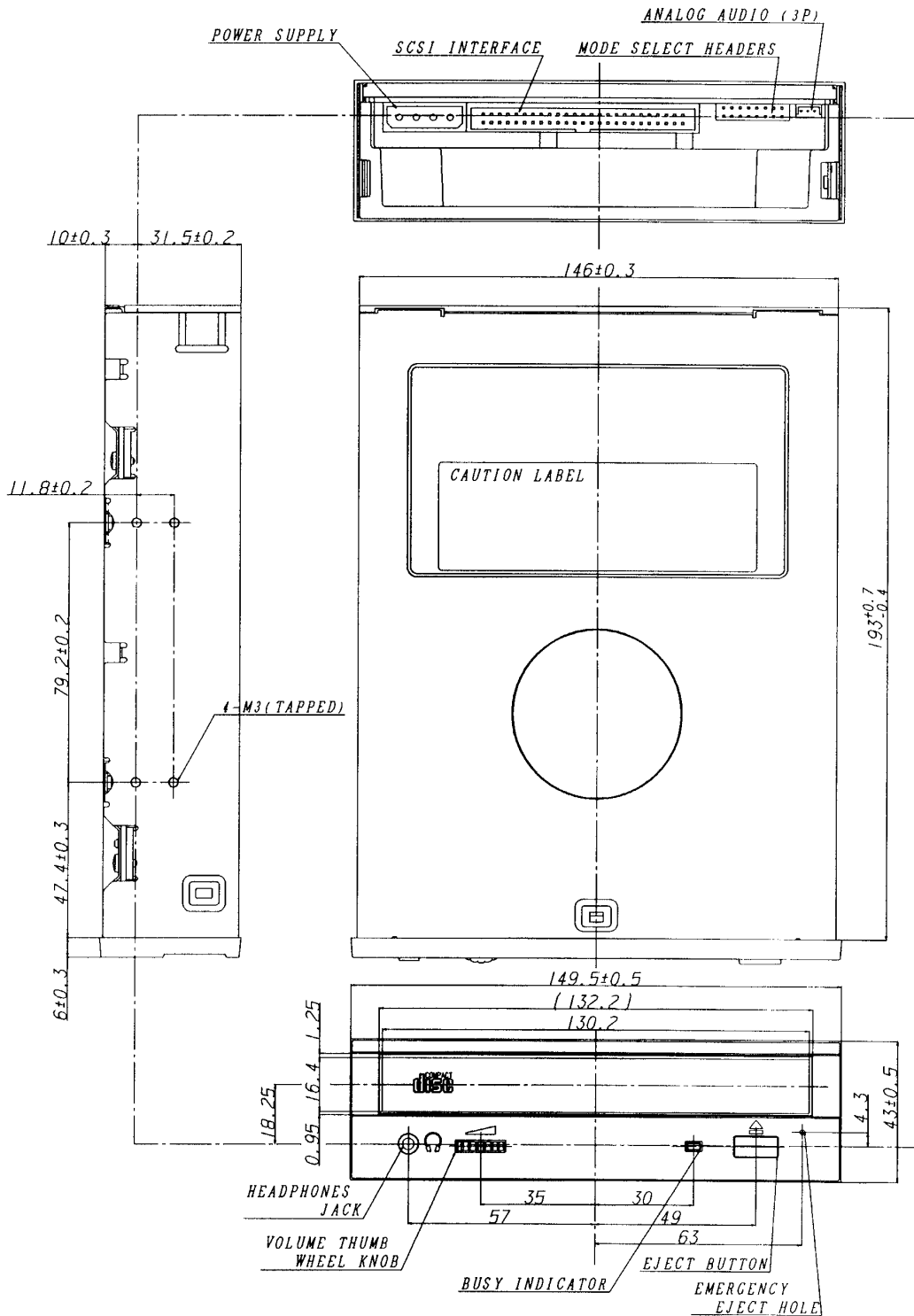


Figure 2-1 External Dimensions (Unit: mm)

XM-6401B EXTERNAL DIMENSIONS (Unit: mm)

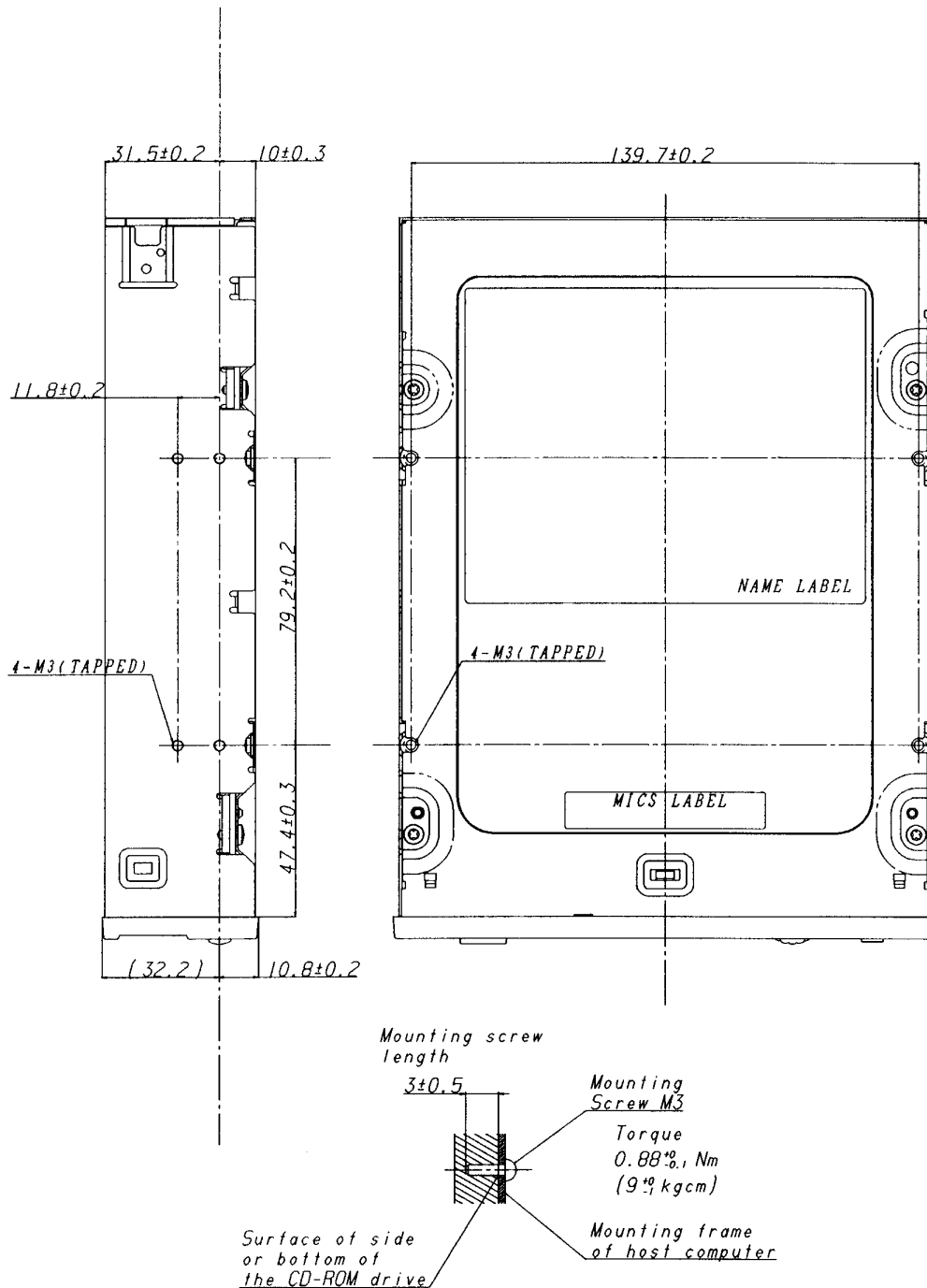


Figure 2-2 External Dimensions (Unit: mm)

**3.5. Reliabilities**

**3.5.1. Error Rate**

(1) Hard Read Error Rate (Byte Error Rate) ----- Allowing 5 Retries -----  
 Mode 1: 10<sup>-15</sup> Max  
 Mode 2: 10<sup>-12</sup> Max

(2) Seek Error Rate --- Allowing 5 Retries 10<sup>-6</sup> Max

**3.5.2. MTBF**

100,000 h  
 Assumptions Power On Hours 5,436 h/year  
 On/Off Cycles 313 cycles/year  
 Number of Access 600,000 accesses/year  
 Operating Duty Cycle 20 % of Power On Time  
 (Reading/Seeking)

**3.5.3. MTTR**

0.5 h

**3.5.4. Drive Life**

15,000 h or 5 years (earlier one)  
 (1) Load/Eject 10,000 times or more  
 (2) Interface connector Attach/Detach 20 times or more  
 (3) DC Power connector Attach/Detach 20 times or more

**4. Configuration**

See Figure 3 for details of the configurations

**4.1. Electrical Circuits**

- (1) Optical Pickup and RF Amplifier Circuit
- (2) Motor Drive Circuit
- (3) EFM Demodulator and Error Correction Circuit  
 (System Control Circuit, Digital to Analog Converter)
- (4) SCSI Control and CD - ROM Error Correction Circuit and SCSI I/O Interface Circuit
- (5) System Control Circuit

**4.2. Optical Pickup**

Semiconductor Laser and 3-beam System

**4.3. Spindle Motor**

Brushless DC Motor

**4.4. Feed Motor**

DC Motor

**4.5. Load/Eject Motor**

DC Motor

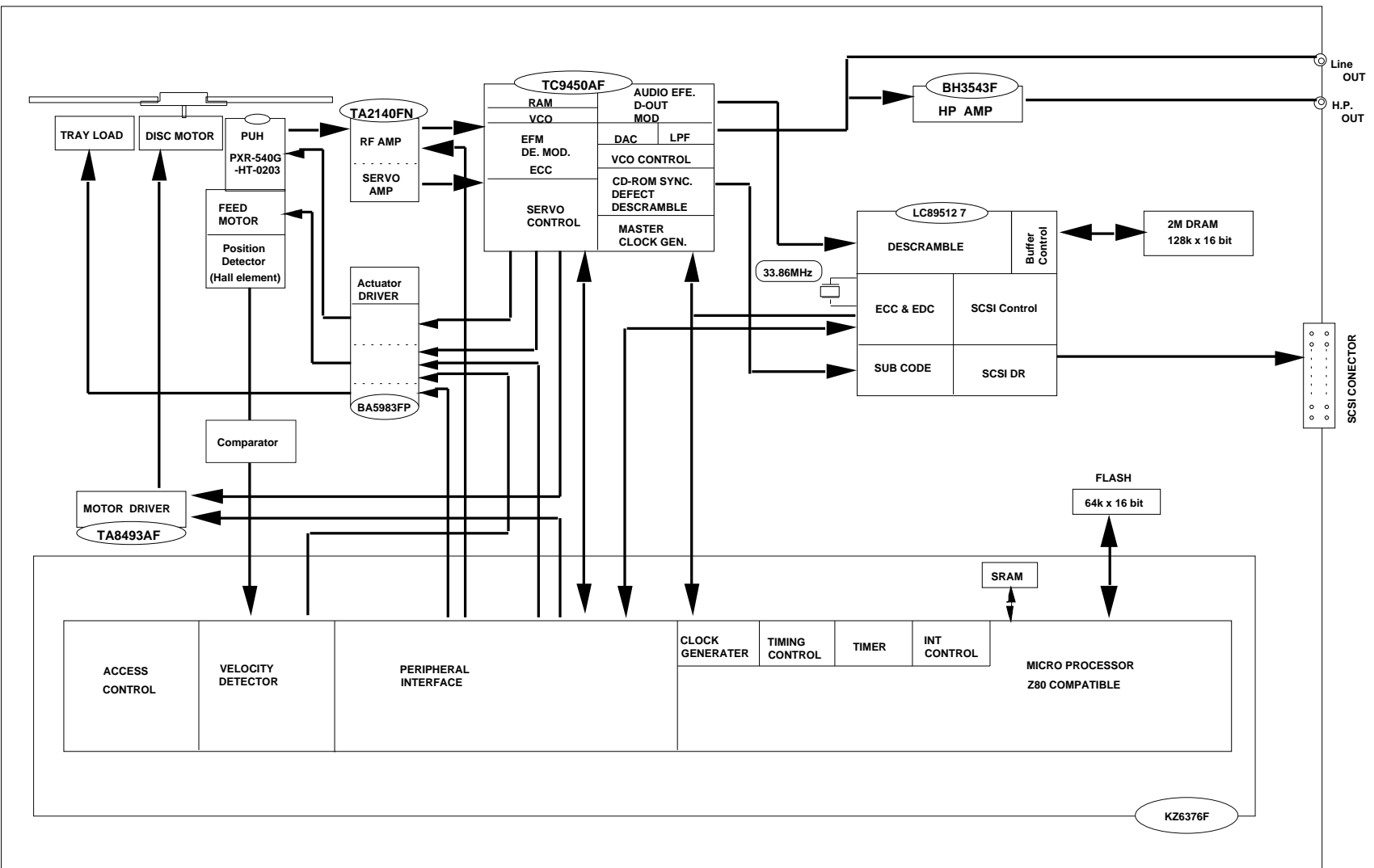


Figure 3 Configuration

10/27

XM-6401B Rev.1.0

5. Function

5.1. CD-ROM Data Configurations

Figure 4 shows how the data is structured in program units  
 1 block=1/75 s

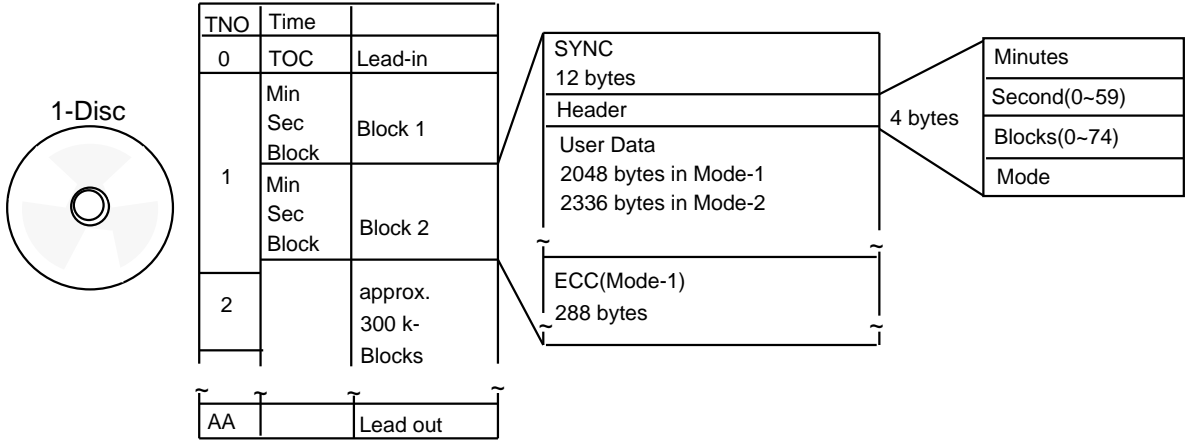


Figure 4 CD-ROM Data Configure

5.2. Power ON/OFF Timing

Figure 5 shows the initialization sequence

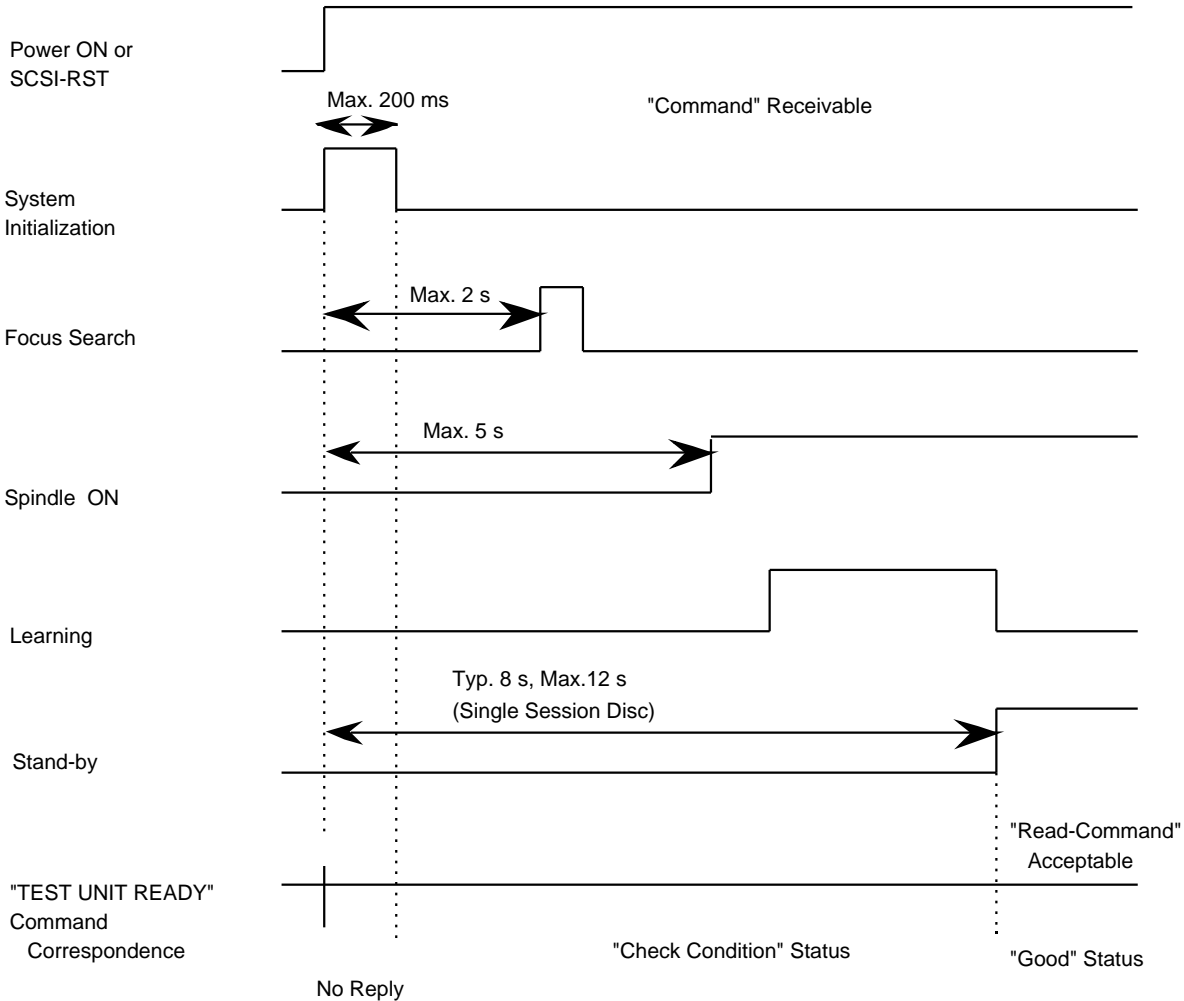


Figure 5 Initialization Sequence



**6. Interface**

- (1) The interface is based on ANSI standard X3.131-1994 and X3T9.2/375R
- (2) 42 commands are usable including CD-ROM unique commands
- (3) The CD-ROM drive supports SCSI synchronous transfer and CD-DA data transfer over SCSI function
- (4) The 256 KByte data buffer handles both high and low speed data transmission
- (5) The largest block size on playback is 2,647 Bytes (Including Error Flags)  
The data length for each block is changeable by command
- (6) On command execution, DISCONNECT processing and RECONNECT processing can be specified
- (7) Command Link functions are usable

**6.1. Signal Lines**

- (1) Logical levels of every Inputs and Output are logically false signals

Input Low = 0.0 to +0.4 V=Logic '1' (true)  
 Input High = +2.5 V to +5.25 V=Logic '0' (false)  
 Output Low  $\geq$  48 mA  
 Output High = Open collector (high impedance)

- (2) The power supply line has a protection inside of the drive to protect the power supply. This is shown in Figure 6

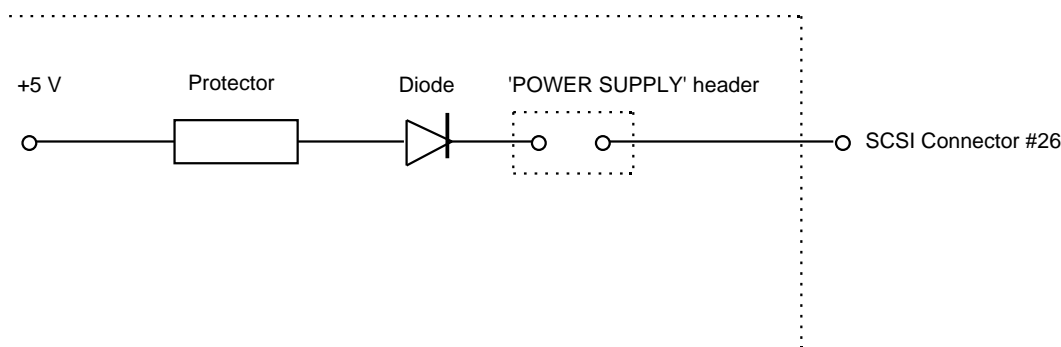


Figure 6 Power Supply Line

**6.1.1. Signal Line Termination**

Figure 7 and Figure 8 shows the method for daisy chain connection and Figure 9 and Figure 10 shows the method for radial connection.  
 Always connect the terminator for SCSI because of the open collector configuration output drive.  
 Also be sure to attach the frame ground for grounding with the host system.

**6.1.2. Receivers and Drivers**

Figure 11 shows the construction and Figure 13 shows the interface pin assignments.

**6.1.3. Connector**

Figure 12 shows the details of connector and Figure 13 shows the interface pin assignments.

**7. Power Requirements**

7.1. Source Voltage +5 V +/-5 % (operating)

+12 V +/-5 % (operating)

7.1.1. Spike 100 mV (p-p) Max

7.1.2. Ripple 100 mV (p-p) Max

7.2. Current Drain (Typical value) ----- excluding 'Term Power' current -----

+5 V

+12 V

7.2.1. Idle (Laser off, Motor off)

0.30 A

0.05A

7.2.2. Continuous Read (Data/Audio)

0.45 A (6-14X )

0.19 A (6-14X )

7.2.3. Pause (Laser on, Motor on)

0.52 A (17.3-40X )

0.22 A (17.3-40X )

7.2.4. Average (20 % Random Access)

0.60 A (17.3-40X )

0.60 A (17.3-40X )

7.2.5. Maximum (100 % Random Access)

0.62 A (17.3-4.X )

0.72 A (17.3-40X )

7.2.6. Peck in executing Access (10 to 300 ms)

1.35 A (17.3-40X )

1.21 A (17.3-40X )

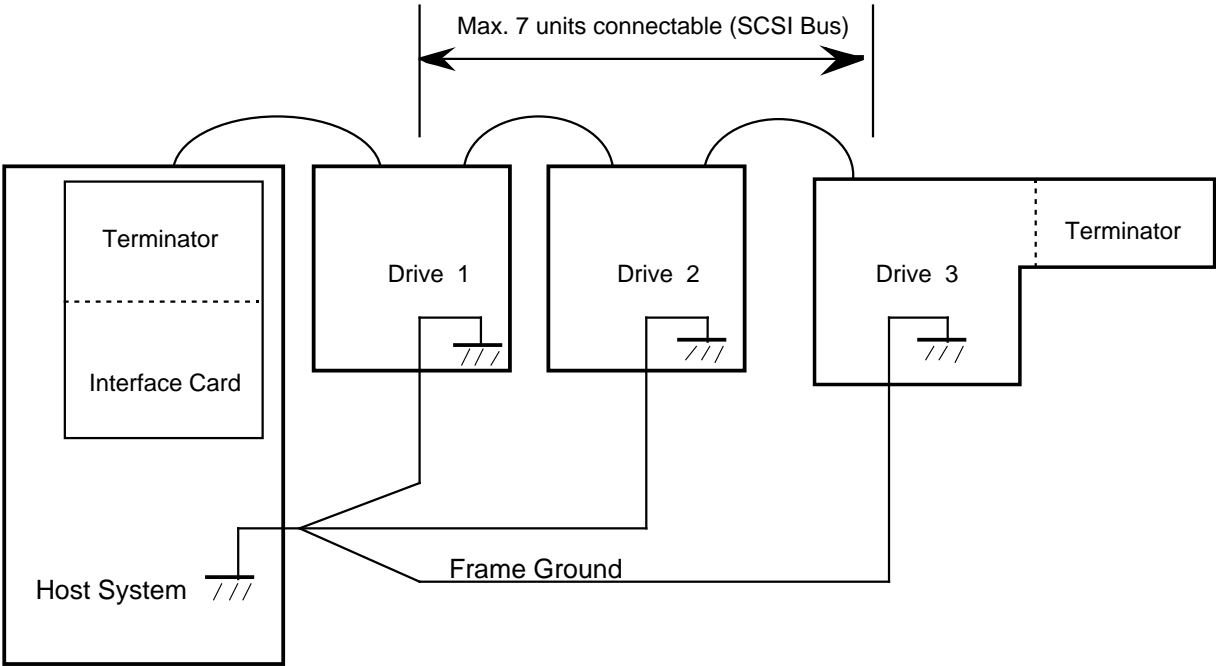


Figure 7 Daisy Chain Connection  
--- Turn off Internal Terminators from the drive if XM-6401Bs are used as Drive 1 and/or Drive 2. ----

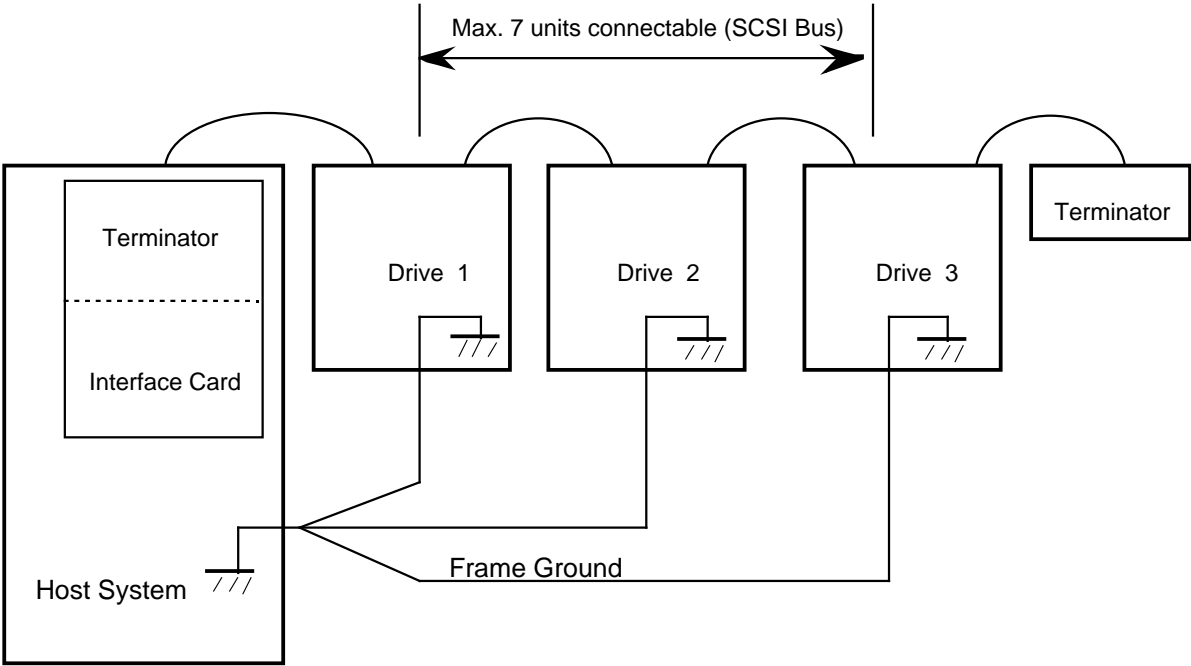


Figure 8 Daisy Chain Connection  
--- Turn off Internal Terminators from the drive according -----

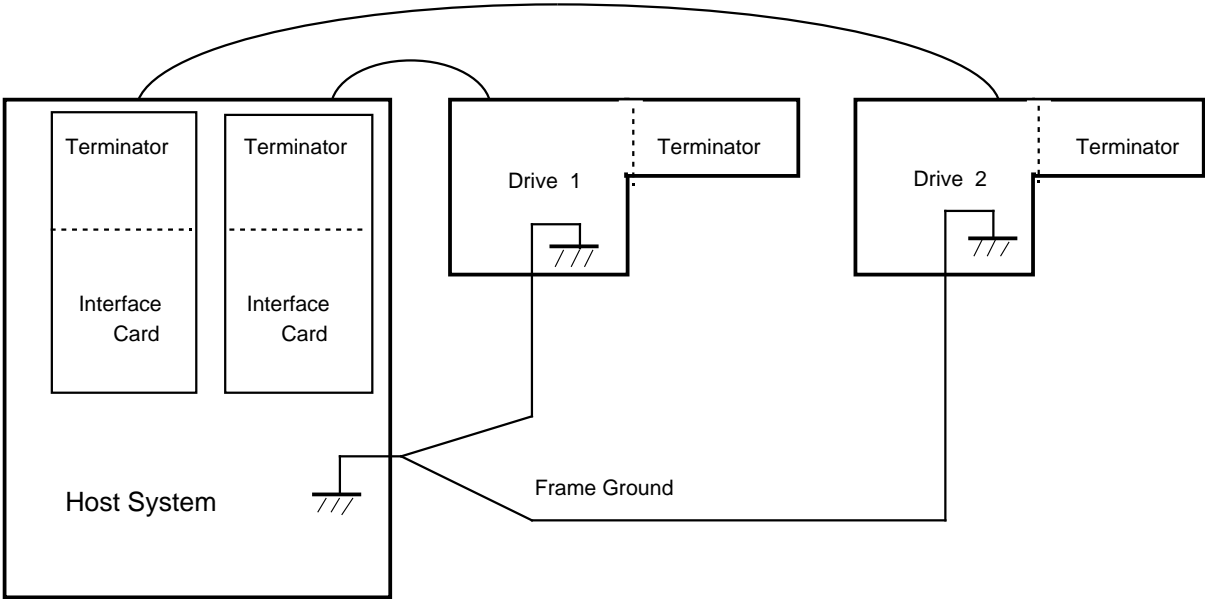


Figure 9 Radial Connection

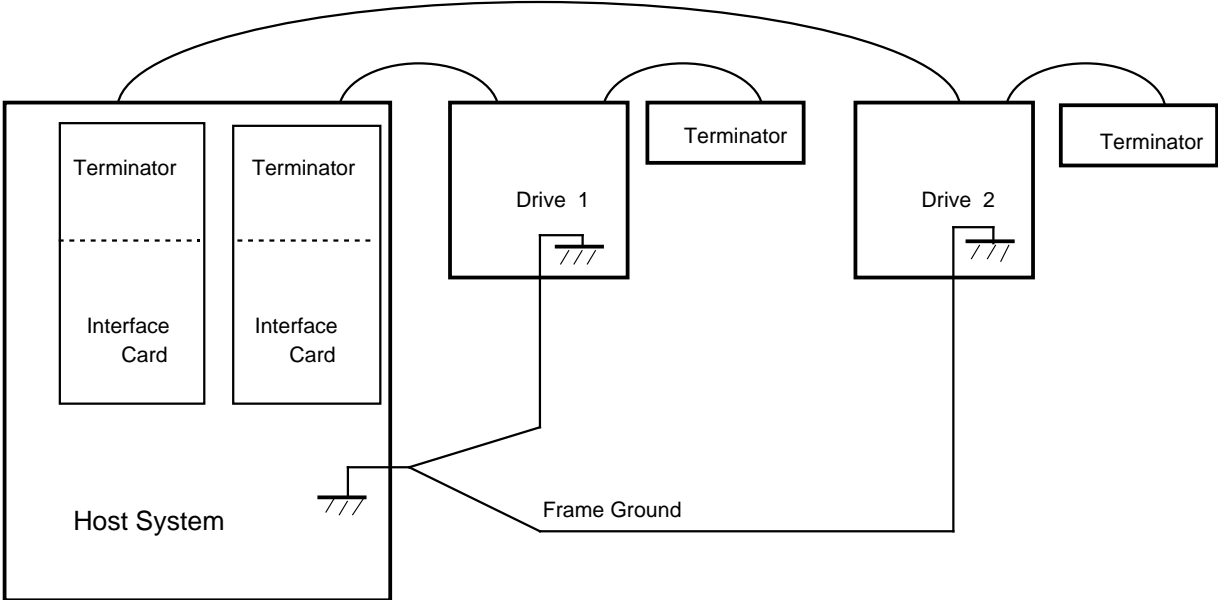
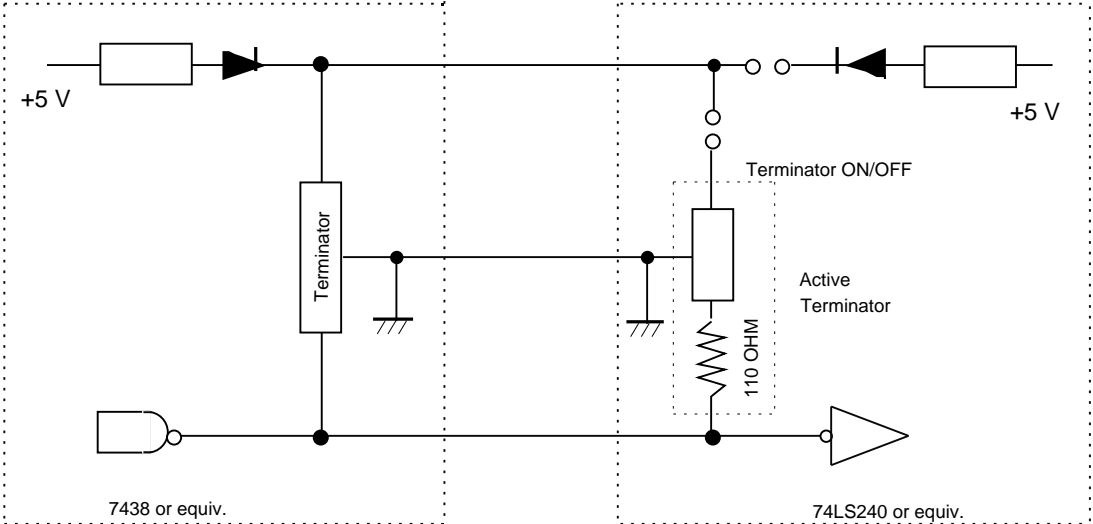
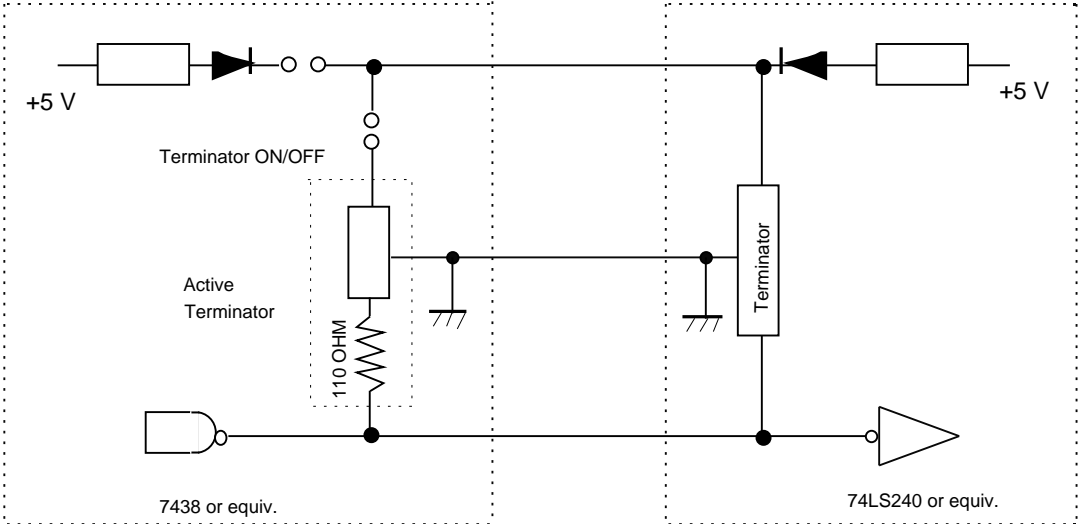


Figure 10 Radial Connection according  
----- Turn off Internal Terminators from those drives ---



Controller

CD-ROM Drive



CD-ROM Drive

Controller

Figure 11 Receivers and Drivers

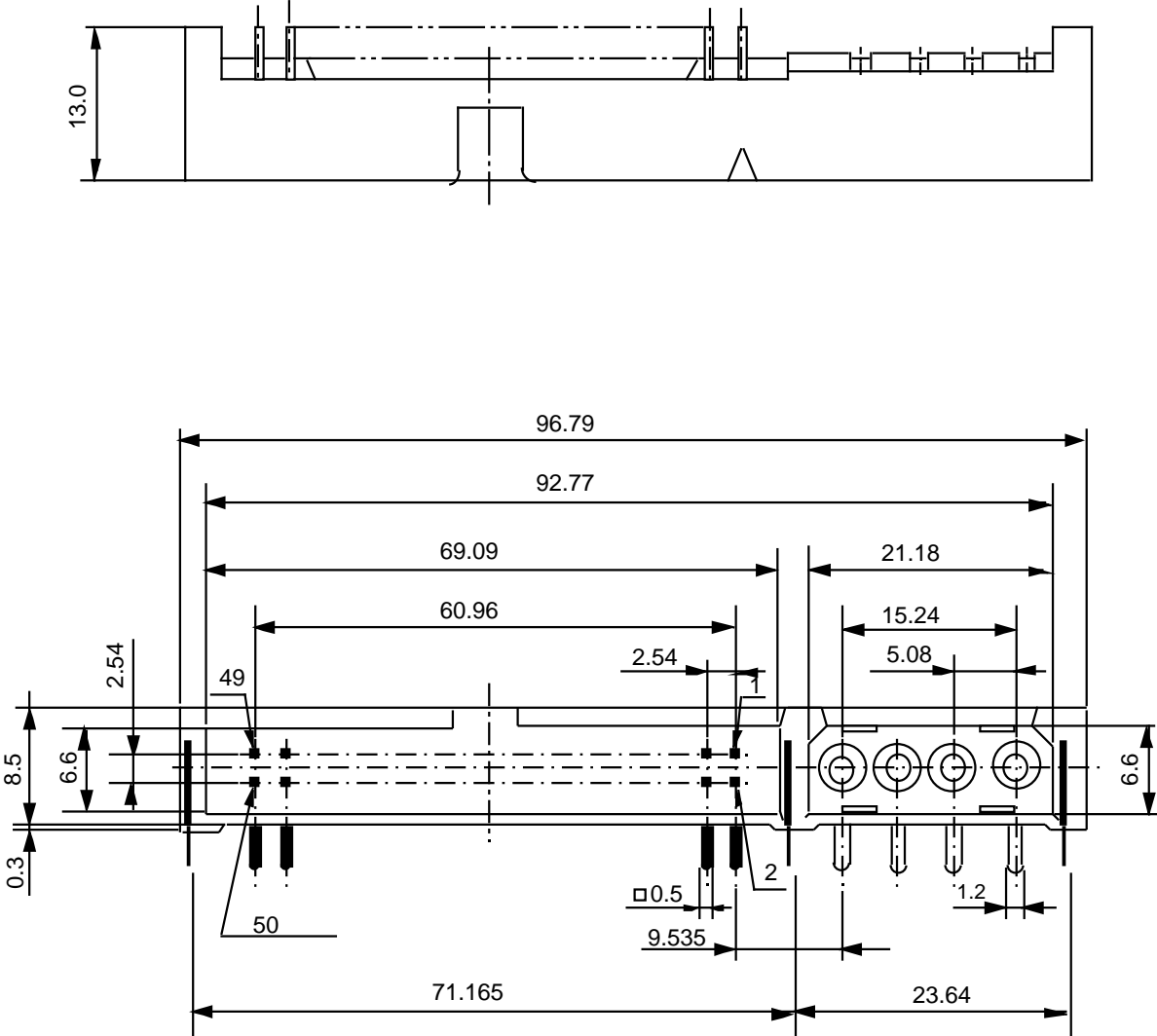


Figure 12 Interface Connector

PIN No	SIGNAL NAME	PIN No	SIGNAL NAME
2	-DB 0	1	GND
4	-DB 1	3	"
6	-DB 2	5	"
8	-DB 3	7	"
10	-DB 4	9	"
12	-DB 5	11	"
14	-DB 6	13	"
16	-DB 7	15	"
18	-DBP	17	"
20	GND	19	"
22	GND	21	"
24	GND	23	"
26	TERM POWER (+5 V)	25	NO CONNECTION
28	GND	27	GND
30	GND	29	"
32	-ATN	31	"
34	GND	33	"
36	-BSY	35	"
38	-ACK	37	"
40	-RST	39	"
42	-MSG	41	"
44	-SEL	43	"
46	-C / D	45	"
48	-REQ	47	"
50	-I / O	49	"

Figure 13 Interface Connector Pin Assignment

7.3. Connector (SCSI and Power Hybrid type)

Figure 14 shows the external appearance of the Power Supply Connector. Use IRISO ELECTRONICS P/N9047B-54Z12-GT or equivalent.

- PIN #1: +5 V
- PIN #2: GND
- PIN #3: GND
- PIN #4: +12 V

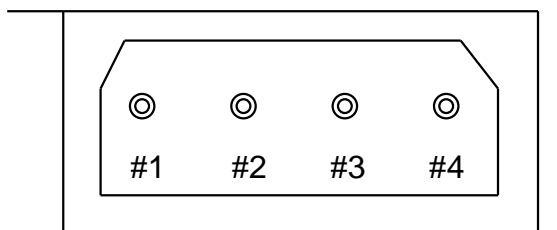


Figure 14 Power Supply Connector

**8.Audio (Test condition:Ordinary temperature)**

----- Specification for Red Book Disc -----

- Output : 2 channel (Analog Audio)
- Sampling Frequency : 44.1 kHz
- Quautization : 16 bit linear

8.1. Line Output --- in case of attenuator is set at 0 dB by the command ---

- (1) Output Level : 0.75 V (rms Typ)
- (2) Type : Unbalanced
- (3) Load Impedance : 47 kOHM min
- (4) Frequency Response : 20 Hz to 20 kH +/-3 dB
- (5) Distortion : 0.014 % Typ (at 1 kHz with 20 kHz LPF)
- (6) Signal to Noise Ratio : 83 dB Typ (IEC 179 A-weighted)

8.1.1.Connector

Figure 15 shows, the external appearance of the 3P Audio Connector (Connector, Part No. 008283031100000, made by KYOCERA ELCO Corporation is used. Use matching housing, Part No. 608283303815000, made by KYOCERA ELCO Corporation or equivalent.)

- PIN #1: GND
- PIN #2: R
- PIN #3: L

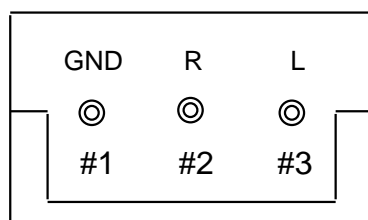


Figure 15 Audio Connector



8.2. Headphones Output

- (1) Output Level 0.8 V (rms Typ)  
(Attenuator Level is 0 dB)
- (2) Level Adjust Controller Continuous Type (Thumb Wheel Knob)
- (3) Load Impedance 100 OHM (Nominal)

8.2.1. Connector

3.5 mm dia. Stereo Headphone Jack

8.3. Audio Modes

- (1) 16 Modes including 'stereo', 'Rch Mono', and 'Mute' are selectable by command. Default mode is 'Stereo'. Audio out automatically muted in the digital area and seek state.
- (2) 128 Steps of attenuation level for the Audio Output (both Line Out and Headphones Out together) is selectable by command. Default level is 0 dB.

**9. Jumper Setting/Feature Selections**

Set up of SCSI-ID number, Parity Check function, Eject Button inhibit function and CD-Audio Playback mode etc. are available by shorting these Headers.

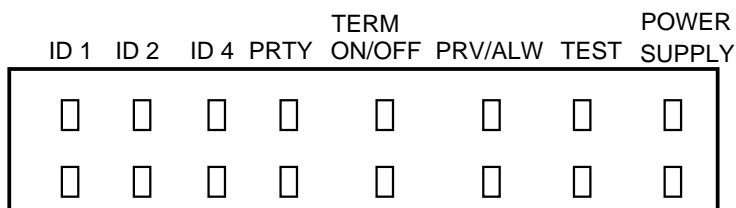


Figure 16 Mode Select Headers

9.1. SCSI-ID (ID 1, ID 2, ID4) (Default ID)

This 3 bit binary header sets the SCSI-ID number.

When setting numbers, follow the application software instructions.

Header	LSB		MSB
SCSI-ID	ID 1	ID 2	ID 4
0	O	O	O
1	S	O	O
2	O	S	O
3	S	S	O
4	O	O	S
5	S	O	S
6	O	S	S
7	S	S	S

O: Open      S: Short

9.2. Parity (PRTY)

To enhance data bus reliability, set this Header to "S" to activate the parity bit check function on SCSI data bus.

This setting cannot be used if no parity generation function is provided on the I/F card.

Header	Description
O	The drive does not check parity although the output parity is effective.
S	The drive checks parity, and also the output parity is effective.

O: Open      S: Short

9.3. Terminator Power ON/OFF (TERM ON/OFF)

This Head setting turn on or turn off the terminator.

Header	Description
O	The terminator is turn off.
S	The terminator is turn on.

O: Open      S: Short

9.4. Media Eject Prevention (PRV/ALW)

This Header setting enables or disables the eject function.

Header	Description
O	Allow the Tray eject.
S	Prevent the Tray eject. Eject button is ignored.

O: Open      S: Short

9.5. Audio Playback (TEST)

This Header setting selects the drive operation between normal CD-ROM and CD-Audio player mode. When "S" is selected, command from the host computer is ignored.

Also CD-Audio disc or audio tracks in CD-ROM disc is playable by the command when the Header is set for "O".

Header	Description
O	Normal operation mode to connect the host computer.
S	(ID 1, ID 2, ID 4 and PRTY Headers should be set for O) CD-Audio disc playback mode. Allows repeated play from beginning of the program area up to the last when the disc is loaded. Pushing the Eject Button for shorter than 1 s allows proceeding to beginning of the next track number but not acceptable during access. Pushing the button more than 2 s stops playing and ejects the Tray.

O: Open      S: Short

9.6. Power Supply (POWER SUPPLY)

This header setting switches to supply the power (+5 V) to the other equipments through the SCSI connector or not.

Header	Description
O	No power is supplied from the drive.
S	Power is supplied to the other peripherals through SCSI Connector (Pin No. 26).

O: Open      S: Short

9.7. Jumper (Part Number T/E)

Use P/N 9251H-GF made by IRISO Electronics or equivalent.

9.8. Recognition of Setting

As the setting recognition is performed only after power On, turn power off and then On again whenever change is made.

**10. Busy Indicator**

The LED at Front Bezel (Busy Indicator) indicates the drive status.

(1) After Drawer is closed, Busy Indicator start blinking at 0.8 s intervals, and then -----

(1-1) Turns off when the drive in the 'Idle' status.

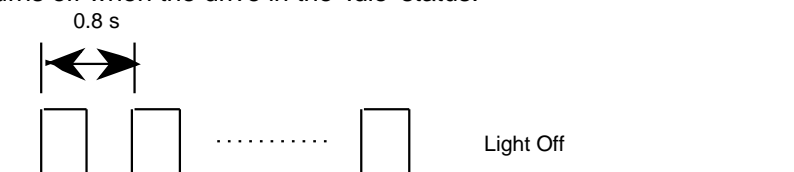


Figure 17 Idle

(1-2) Continuously off when no disc is mounted.

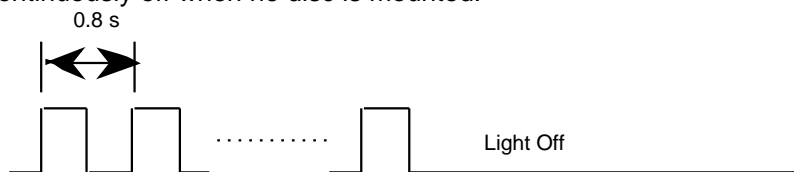


Figure 18 No disc

(1-3) Still blinking at 3.2 s intervals when cleaning for disc or optics in the drive is required.

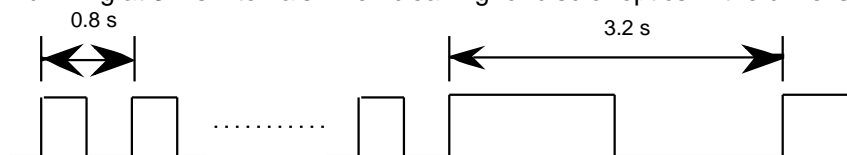


Figure 19 Maintenance Required

(1-4) Continuously on when media has problem

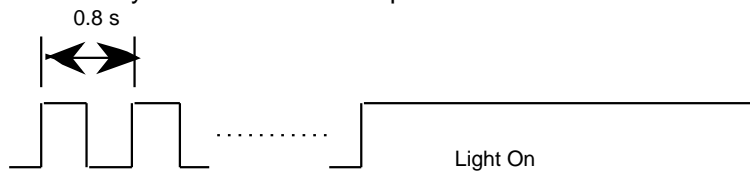


Figure 20 Media Problem

(2) When playing an audio track, Busy Indicator is blinking at 1.6 s intervals.

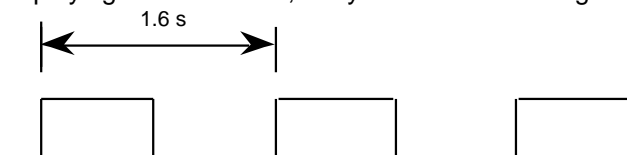


Figure 21 CD-Audio playback

(3) When performing 'Data Access' and during 'Data Transfer' Busy Indicator keeps turn On.

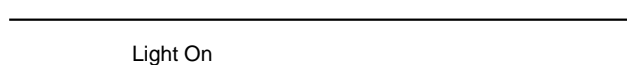


Figure 22 Data Access and Data Transfer

**11.Connection**

11.1. Power Supply Cable

- |                  |  |
|------------------|--|
| (1) Housing      | AMP JAPAN P/N 1-480424-0 or equivalent |
| (2) Contact      | AMP JAPAN P/N 170148-2 or equivalent   |
| (3) Cable Length | AWG 18 to 20<br>Max. 2 m               |

11.2. Interface Cable

- |                    |   |
|--------------------|---|
| (1) Connector      | SCSI specification  |
| (2) Cable          | 50 core type  |
| Specific Impedance | 100 OHM +/-10 % (without shield)  |
| Length             | Max of 6 m for total SCSI bus length<br>Max of 3 m for total SCSI bus length (FAST SCSI)<br>Max of 1.5 m for total SCSI bus length (Ultra SCSI) |

11.3. Audio Cable

- |                 |  |
|-----------------|--|
| (1) Capacitance | Unbalanced and shielded<br>Less than 1000 pF |
| (2) Length      | Max 3 m                                      |

**12. Maintenance**

In case of Figure 19, cleaning for disc or optics in the drive is required.

12.1. Disc

Try to avoid touching the read area (underside) of the disc as dirt and smear will degrade the disc accessing speed.  
If the disc dirty, wipe it with a soft cloth.

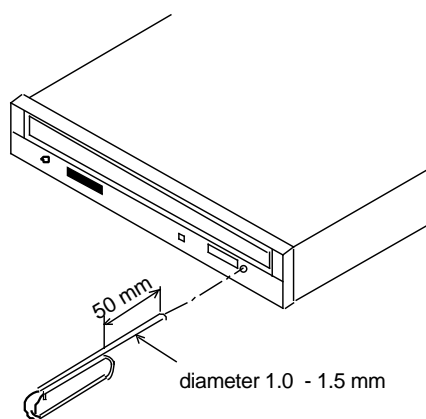
12.2. Optical Pickup

A dirty optical pickup will also degrade the access time.  
In such a care, please consult our company.

**13.Emergency Eject**

Execute following procedure only in the case of emergency (Tray will not open although pressing Eject button).

- (1) Turn the CD-ROM drive supplying power off, and then keep the this condition for 1 minute.
- (2) Insert solid bar (like paper clip) into Emergency eject hole and push as shown in Fig.23.  
Then Tray will be ejected.



Figurer 23

**14. Safety standards/Agency Approvals**

(1) Safety	EN60950 UL 1950 CAN/CSA-22.2 No.950
(2) Laser	EN60825-1, FDA 21CFR
(3) EMI	FCC 15J - B
(4) CE	EN50081-1 : 1992 [Residential, commercial & light industry] EN55022+A2 : 1994+1997 [Class B] EN55082-1 : 1997 [Residential, commercial & light industry] EN61000-4-2+A1 : 1995+1998 [CD:4 kV, ID: 4 kV, AD:8 kV] EN61000-4-3 : 1996 [3 V/m, 80-1000 MHz, 1 kHz 80 % AM ] ENV50204 : 1995 [3 V/m, 895-905 MHz, 200 Hz 50 % PM ] EN61000-4-4 : 1995 [AC-line: 1 kV, Signal-line: 0.5 kV, f: 5 kHz, Polarity: +/-] EN61000-4-5 : 1995 [AC-line: 1 kV/2 kV, Signal-line: 0.5 kV, Polarity: +/-] EN61000-4-6 : 1996 [3 V, 0.15-80 MHz, 80 % AM EN61000-4-8 : 1993 [3 A/m, 50 Hz] EN61000-4-11 : 1994 [ 30 % 10 ms, 60 % 100 ms, >95 % 5 s]

**15. Electrostatic Discharge**

Standard	EN61000-4-2
(1) Operating	Contact Discharge: 4 kV or less Air Discharge : 8 kV or less

**16. Accessories**

- 1-Safety Instruction Manual
- 5-Short Jumper (Installed in 'TERM' header and GND to GND)

**17. Packaging**

- 15 units in a bulk package
- 24 bulk packs on one pallet.
- \*All transportation is allowed with pallet.  
(Transportation is not allowed with bulk package.)

Standard packaging Specifications: IB-CD1-A80002

**18. CE Declaration of conformity**

Please refer to attached Annex 1.

**TOSHIBA**

**TOSHIBA EUROPE GMBH**

# EU-Declaration of Conformity

Product: CD-ROM Drive

Manufacturer(s): Toshiba Corporation  
 1-1, Shibaura 1-chome, Minato-ku, Tokyo 105-8001 Japan

See page 2 for other locations

Model: XM-6401B

Options: None

**Toshiba declares that the above mentioned product(s) with or without the listed options comply to the EU-Directives and standards as listed on page 2.**

Last two digits of the year in which the CE mark affixed : 98

Responsible for CE-marking: Toshiba Europe GmbH

Signed by: Mr. H.Nonaka, President of Toshiba Europe GmbH

Place: D-41460 Neuss

Date:

Signature: \_\_\_\_\_

This declaration certifies compliance with the listed directives, but does not constitute an assurance of characteristics.  
 The safety information in the supplied product documentation must be observed.

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[History if issue]	Issued	: Oct. 20, 1998	
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	Revision B	:	Ref.:
	Revision C	:	Ref.:
	Revision D	:	Ref.:

TOSHIBA EUROPE GMBH  
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 POSTFCH 101482, D-41414 NEUSS  
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 TELFAX : (02131) 158-341

GESCHAFTSUHRER  
 HISATSUGU NONAKA  
 HRB 3479 AMTSGERICHT NESS

Annex 1

## EU-Declaration of Conformity

ED-Directive	Related Standard	Issude	Level/Test condition	
899/336/EEC (EMC Directive)	EMC-emission:	EN50081-1	1992	Residential, commercial & light industry Class B
		EN55022+A2	1994+1997	
	EMC-immunity	EN50082-1	1997	Residential, commercial & light industry CD: 4 kV, ID: 4 kV, AD: 8 kV 3 V/m, 80-1000 MHz, 1 kHz 80 % AM 3 V/m, 895-905 MHz, 200 Hz 50 % PM AC-line: 1 kV, Signal-line: 0.5 kV, f: 5 kHz, Polarity: +/- AC-line: 1 kV/2 kV, Signal-line: 0.5 kV, f: 5 kHz, Polarity: +/- 3 V, 0.15-80 MHz, 80 % AM 3 A/m, 50 Hz 30 % 10 ms, 60 % 100 ms, >95 % 5 sec
		EN61000-4-2+A1	1995+1998	
		EN61000-4-3	1996	
		ENV50204	1995	
		EN61000-4-4	1995	
		EN61000-4-5	1995	
		EN61000-4-6	1996	
	EN61000-4-8	1993		
	EN61000-4-11	1994		

Product/Options	Model	Related EU-Directive 89/336/EEC
CD-ROM Drive	XM-6401B	X

Manufactuer(s) Location	Address
Toshiba Multi Media Devices Co, Ltd.	19 Minase, Fukihata Goshogawara-shi, Aomori 037-0003 Japan
Toshiba Misawa Media Devices Co, Ltd.	3-31-2779, Minami-cho, Misawa-shi, Aomori-ken 033-0036 Japan
Toshiba Information Equipment (Philippines) Inc.	103 East Main Avenue Extension, Special Export Processing Zone, Laguna Technopark, Binan, Laguna Philippines
Integrated Microelectronic Inc.	North Science Avenue Laguna Techno Park Inc. Binan, Laguna Philippines
EMS Corp.	4-5 Shoubu, Ubayachi Goshogawara-shi, Aomori 037-0015 Japan
Hokuto Communication Industrial Co., Ltd.	207 Aza Koamon, Rokugo, Rokugo-machi, Senboku-gun, Akita 019-1404 Japan
Yuzawa Denshi Kogyo Co., Ltd.	257 Nakano Yuzawa-shi, Akita 012-0041 Japan
Alpine Technology Manufacturing Inc.	61-1 Shinbori, Ohara, Onahama, Iwaki-shi, Fukushima, 971-8111 Japan
Tohoku TKR Corporation	2-106 Kitaoyamada, Towacho, Waga-gun, Aomori, 028-0107 Japan

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**TOSHIBA**



**Deviation List**

<b>Page</b>	<b>Item</b>	<b>Rev# 0.9</b>	<b>Rev# 1.0</b>
4	(10) Acoustic Noise	45 dB	46 dB
5	3.2.5. Shock (3) Drop (b) Individual Package	(b) Bulk Package (10/Bulk) 0.6 m drop.....	(b) Individual Package 0.9 m drop.....
6	3.4. Dimension and Mass (2) Mass	0.73 k g Typ.(Net) 1.1 k g Typ.(Individual.....) 12.5 k g Typ.(Bulk.....)	0.76 k g (Net) 1.1 k g (Individual.....) 12.7 k g (Bulk.....)
7	Figure 2-1	----	All of Changed
8	Figure 2-2	Non	Add Figure 2-2
10	Figure 3	----	Part of Changed
24	13. Emergency Eject	(1) Turn the CD-ROM drive supplying power off.	(1) Turn the CD-ROM drive supplying power off,and .....condition for 1 minute.
25	14. Safety standards/Agency... (2) Laser (4) (CE)	EN60825,..... (Tentative)	EN60825-1,..... Non-tentative
	15. Electrostatic..... Standard (1) Operating	6 kV or less Non	Contact Discharge: 4 kV or less Air Discharge: 8 kV or less
	2) Damage including	2) Damage including	Non
	17. Packaging	Non	Standard packaging.....
26	Annex 1	TENTATIVE	Non-tentative
27	EU-Declarration of Conformity	TENTATIVE	Non-tentative