

CD-RW Drive

CRD-BP1500U40X

OWNER'S MANUAL

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. Operation is subject to the following two conditions. (1) This device may not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Move the equipment away from receiver.
- Plug the equipment into an outlet and circuit different from that which powers the receiver.
- If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions.

CAUTION:

Use of controls or adjustments, or performance of procedures other than those specified herein may result in hazardous radiation exposure.

The equipment should not be adjusted or repaired by anyone except qualified service personnel.

Any changes or modifications to the equipment by the user not expressly approved by the manufacturer could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

LE PRÉSENT APPAREIL NUMÉRIQUE N'ÉMET PAS DE BRUITS RADIOÉLECTRIQUES DÉPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMÉRIQUES DE CLASSE B PRESCRITES DANS LE RÉGLEMENT SUR LE BROUILLAGE RADIOÉLECTRIQUE ÉDICTÉ PAR LE MINISTÈRE DES COMMUNICATIONS DU CANADA.

Document No. (1/1)	Document Name Included Document List	
---------------------------	----------------------------------------------------	--

2. Included Document List

Document Name	Document No.	Page No.
General Description	1/3 ~ 3/3	4 ~ 6
Dimensions, External View and Names and Functions of Each Part	1/2 ~ 2/2	7 ~ 8
Terminal Description	1/3 ~ 3/3	9 ~ 11
Environmental Conditions	1/1	12
Reliability	1/3 ~ 3/3	13 ~ 15
Lot No. Reliability Description	1/1	16
Safety Standards	1/1	17
Electrical Characteristics	1/3 ~ 3/3	18 ~ 20
Function Description	1/3 ~ 3/3	21 ~ 23
Handling Manual	1/1	24
Notes for Handling	1/5 ~ 5/5	25

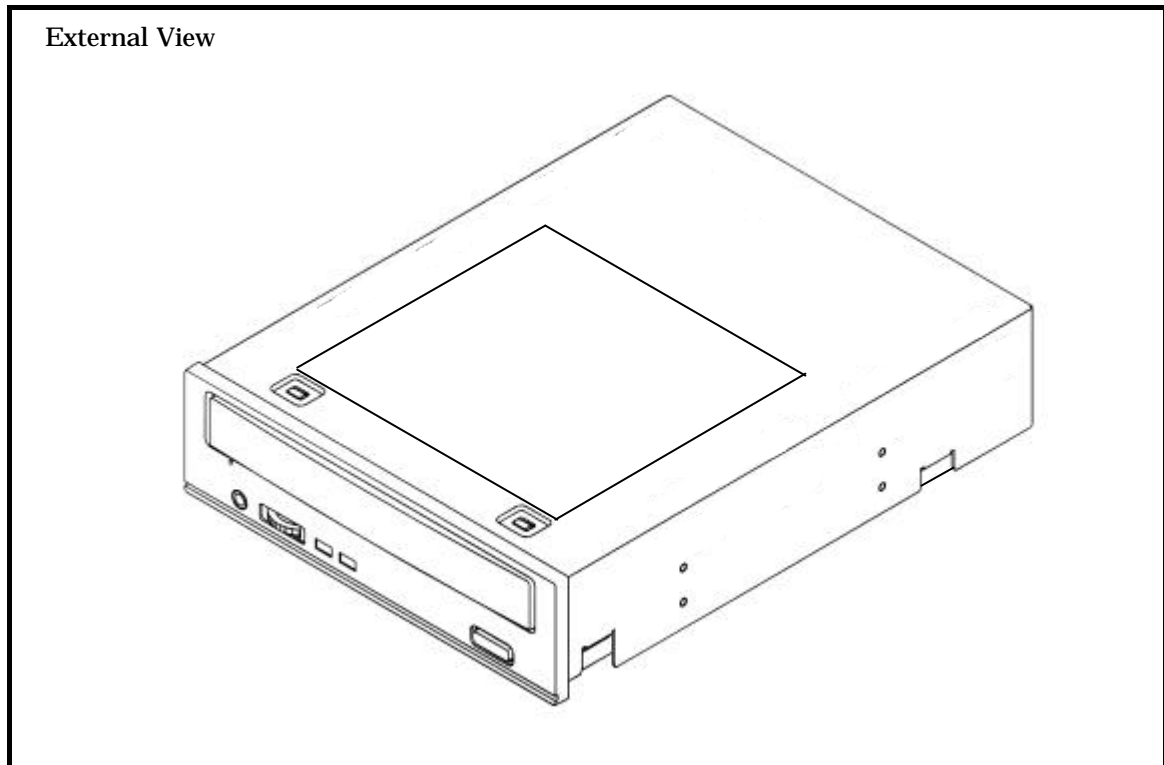
Document No. (1/3)	Document Name General Description	
---------------------------	-------------------------------------------------	--

General Description

(1) Model Name: CRD-BP1500U40X

(CD-R drive with MAX $\times 48$ speed reading, $\times 40$ speed writing, and $\times 12$ speed rewriting)

(2) External View



(3) General Specifications

1) Characteristics

- * Half-height and built-in type
- * Conforms to Orange Book Part 2, 3
- * Equipped with the newly developed automatic strategy LSI with the data reliability enhanced.
- * MAX $\times 48$ CAV speed reading, $\times 40$ speed writing (ZCLV), and $\times 12$ speed rewriting
- * USB2.0 is employed to enable high speed data transmission.
- * Automatic loading mechanism
- * Vertical operation feasible.
- * Emergency disc ejecting function
- * Data verifying function
- * Media condition check function
- * CD-DA read function
- * BURN-Proof Technology implemented

"BURN-Proof" stands for Proof against Buffer Under Run, not for proof against burning

Document No. (2/3)	Document Name General Description	
---------------------------	-------------------------------------------------	--

(4) Applications

Wide range of applications available, such as image data filing, management of CAD/CAM, drawing data and financial affairs, audio data storage and electronic publication.

(5) Main Specifications

Items	Specifications
Dimensions	146 (W) x 188.5 (D) x 41.3 (H) mm
Mass	1020 g
Recording Form	Orange-book part 2, 3 Fixed packet Disc-at-once Variable packet Track-at-once
Front Panel	Eject key, Emergency eject pinhole, LED (busy and write) Headphone jack, Volume
Eject	Automatic loading
Power Supply	DC 5 × (1 ± 5 %) V DC 12 × (1 ± 10 %) V

(6) Operational environment for the “write/rewrite” application software

Items	Specifications
Host Machine	IBM compatible PC (Pentium 166 MHz or more) (Note 1)
OS	MS-Windows 95/98/98SE/ME/2000/NT4.0/XP (Note 2)
Memory	MS-Windows 95/98/98SE/ME/NT: 64 MB required. 128 MB recommended. MS-Windows2000/WindowsXP: 128 MB required. 256 MB recommended
Hard disc	Empty Storage Capacity: 100 MB or more Average seek time: 20 ms or less Transmission rate: 2 MB/s or more Do not use the HDD which calibrates thermally during operation.
Recommended Media	CD-R (×4 ~ ×40) : RITEK, CMC, DAXON, MBI, MITSUI CHEMICAL , MITSUBISHI CHEMICAL, HITACHI MAXELL CD-RW (×4 ,×10, ×12) :MITSUBISHI CHEMICAL, RICOH (T.B.D) (Note 3)(Note 4)

(Note 1) If any problem occurs, negotiation is required to settle the matter.

(Note 2) (1) Install “Device Driver of USB 2.0” in OS. (A thing for the board of USB 2.0 which you chose.)

(2) Install USB 2.0 Storage Driver (TPPinst.exe). Please, Download this site.

www.in-system.com/SW_License.html

(Note 3) We intend to add the proper media one by one in the near future.

(Note 4) Please refer to the latest information on the web: www.burn-proof.com.

Document No. (3/3)	Document Name General Description	
---------------------------	-------------------------------------------------	--

(7) Scope

These delivery specifications are applied to the CD-R/RW drive “CRD-BP1500U40X” which is sold by SANYO Electric Co., Ltd.

(8) Contents

1) Model No. CRD-BP1500U40X

2) Performance Write function onto CD-R/RW disc in combination with the write application software and CD-ROM read function, in combination with the CD-ROM application software.

3) Applications Write onto and read of the CD-R/RW disc.
Read of CD-ROM disc.

4) Dimensions Refer to the item “Dimensions and Dimensional Drawing”.

5) Notes for handling
 Refer to the Manual and Notes for Handling.

6) Others

- a. The specifications of this product are the same as in the delivery specifications.
If any fault or malfunction of the product occurs when it is used under any conditions except for our guaranteed conditions, our company has no responsibility for the claim.
Service and the term of guarantee shall be described in the attached memorandum.
- b. For the legal regulations for this product, refer to the attached document.
- c. The specifications of this product are subject to change to enhance the performance.
- d. The change of notice is issued when the specification is changed only.
- e. If any doubt occurs regarding the contents of the specifications, negotiation is required to settle the matter.

Document No. (1/2)	Document Name Dimensions, External View and Names and Functions of Each Part	
---------------------------	---------------------------------------------------------------------------------	--

1. Dimensions and External View

(1) External View

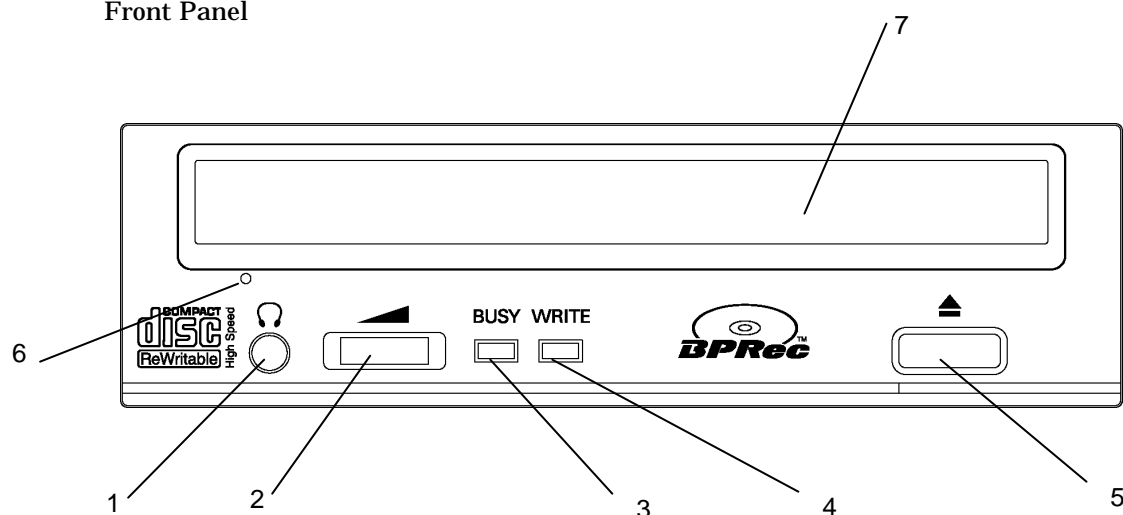
Refer to the "General Description".

(2) Dimensions and Dimensional Drawing

Refer to the attached document "Dimensions and Dimensional Drawing".

(3) Names and Functions of Each Part on the Front Panel

Front Panel

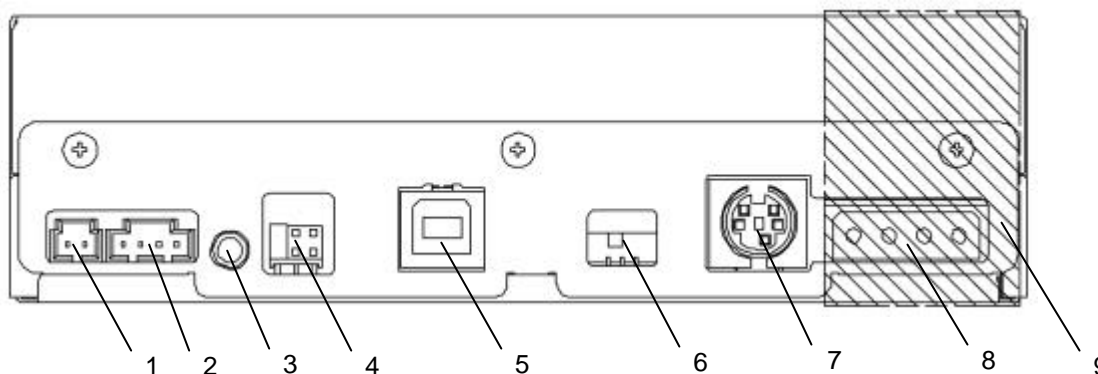


- | | | |
|----------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Headphone Terminal | : | The headphone with a stereo mini plug is connected through this terminal. |
| 2. Headphone Volume | : | The volume of the headphone connected to the headphone terminal is adjusted using this volume dial. When the volume dial is turned right, the volume becomes louder. |
| 3. BUSY indicator | : | Command executing. (Power indicator) |
| ON | : | Power-On |
| ON-AND-OFF(Slow) | : | TOC reading condition & Eject condition |
| OFF | : | Power-Off |
| 4. WRITE indicator | : | This is ON when the data is written onto the disc. |
| 5. EJECT key | : | The disc is ejected, using this key. This key is available even when the tray is moving. When the PRV command is transmitted from HOST or during writing, this key is not available. |
| 6. Emergency eject pinhole | : | If the disc is not ejected when the key is pressed, because of power failure or run away of the software, this pinhole is used to take out the disc. |
| 7. Disc tray | : | The disc is placed on this tray. |

<p>Document No. (2/2)</p>	<p>Document Name Dimensions, External View and Names and Functions of Each Part</p>	
------------------------------------	-----------------------------------------------------------------------------------------	--

(4) Names and Functions of Each Part on the Rear Panel

Rear Panel



1. DIGITAL AUDIO Connector (Note 1)
2. ANALOG AUDIO Connector
3. Stereo Jack 3P
4. Factory use only Pins
5. USB 2.0 Connector (Not BUS Powerd)
6. Power Switch (When using DC Connector 5 P.)
7. DC Connector 5 P (Note 2)
8. DC Connector 4 P (Note 2)
9. TAPE DC 4P (Note 3)

(Note 1)

- (1) Digital Audio output is under control of firmware. A default is OFF.

(Note 2)

- (1) Switch OFF position on the Power Switch when using DC Connector 4P.
- (2) Don't connect both of Connector 4P and Connector 5P at the same time.

(Note 3)

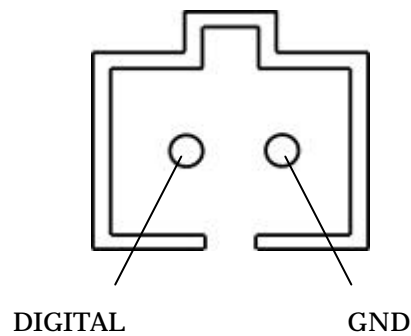
- (1) Remove the tape when using.
- (2) The Power through DC connector 4P is always available.

Document No. (1/3)	Document Name Terminal Description	
---------------------------	--------------------------------------------------	--

1. DIGITAL AUDIO Connector

The audio digital signal output connector.

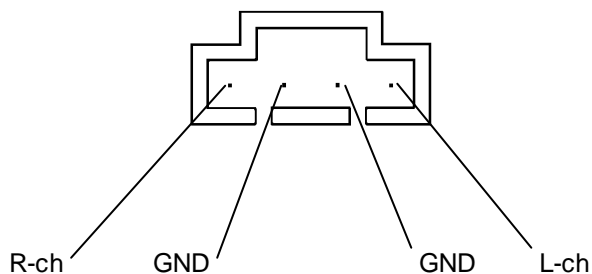
Connect the personal computer's audio internal cable here.



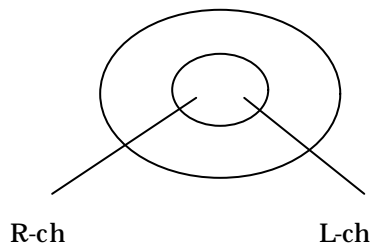
2. ANALOG AUDIO Terminals

The audio signal is output through these terminals. These terminals are used when the sound board applicable to these terminals, is attached to the personal computer.

Connect the personal computer's audio internal cable here



3 . Audio(Line out) connector

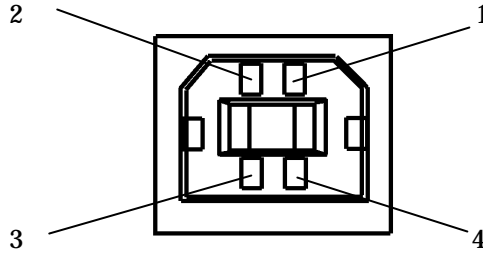


Connect the personal computer's audio external cable here

Document No. (2/3)	Document Name Terminal Description	
---------------------------	--------------------------------------------------	--

3. IDE Connector Terminals (USB2.0 CONNECTOR)

USB2.0 is connected to the host computer.

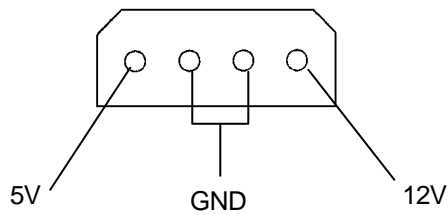


PIN NO.	SIGNAL NAME
1	VBUS
2	D -
3	D +
4	GND

4. DC Connector Terminals (DC INPUT) 4 P

The DC power supply cable is connected through these terminals.

(Connect the personal computer's DC power cable here)

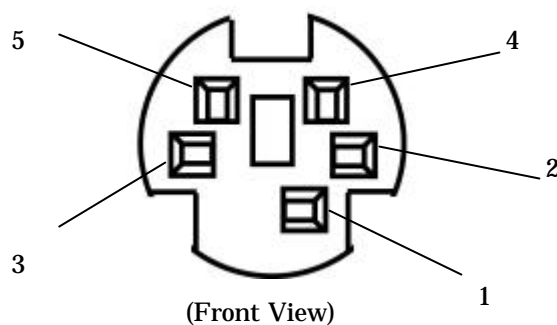


Document No. (3/3)	Document Name Terminal Description	
---------------------------	--------------------------------------------------	--

5. DC Connector Terminals (DC INPUT) 5 P

The DC power supply cable is connected through these terminals.

The DC power supply external cable is connected through these terminals.



PIN NO.	SIGNAL NAME
1	+12 V
2	GND
3	+5 V
4	GND
5	+5 V

Document No. (1/1)	Document Name Environmental Conditions	
---------------------------	------------------------------------------------------	--

Environmental Conditions

Items	Environmental Conditions
Temperature	Operation : 5 °C < t _o < 40 °C Storage : -30 °C < t _{NO} < 60 °C
Humidity	Operation : (20 to 80) % (non-condensing) Storage : 90 % (40 °C, 48 h)
Mean-Time-Between-Failure (MTBF)	30000 POH DUTY 20 % (read operation) (Note 1)
Life	Tray loading : 20000 cycles Traverse mechanism : 1000000 seek
Vibration	Operation: Read 0.98 m/s ² (0.1 G) [(10 to 500) Hz] Random Vibration Without operation (transportation): 800 cpm (13.3 Hz), 3 mm (1.06 G), Up/Down 20 min.
Impact	Drop Impact: 490 m/s ² (50 G), 3 directions, 6 ms

(Note 1) POH : Power On Hour (live current time)

DUTY : Actual operation time

Document No. (1/3)	Document Name Reliability	
---------------------------	-----------------------------------------	--

1. Estimate Conditions

1) Standard test position

For the standard test position, the + side of the Z axis shall be in the upper direction, provided that the Z axis shall be the outgoing beam and the direction of the outgoing beam shall be + side.

2) Standard Estimate Environments

Temperature : (22 ±2) °C

Humidity : (50 ±5) % RH

However, when no doubt occurs regarding the judgment, the test may be performed under the following conditions.

Temperature : (15 to 30) °C

Humidity : (45 to 85) % RH

3) Disc to be estimated

Test Disc made by ALMEDIO Inc. ROM DISK, DA DISK, CD-R DISK (RICOH),
CD-RW (RICOH, MITSUBISHI CHEMICAL)

However, when no doubt occurs regarding the judgment, TCD-784 made by ALMEDIO Inc. may be used.

4) Power Supply Voltage

Power supply : DC 5 × (1 ±5 %) V

Power supply : DC 12 × (1 ±10 %) V

2. Reliability

The results should conform to the criteria of each item after the test has been performed under the following conditions.

There shall be no crack, deformation or distortion from the external view of the product after the test.

Unless otherwise specified, the measurement conditions of this test for each item shall be subject to the above estimate conditions.

However, the temperature in this test shall be specified to the surrounding temperature of the drive unit, rather than the surrounding temperature of the set unit where this product is built-in.

Document No. (2/3)	Document Name Reliability	
---------------------------	-----------------------------------------	--

Test items	Test conditions	Criteria
1. Operating temperature test	Operation under low temperature: +5 °C Operation under high temperature: +40 °C Leave the product for 4 hours without operation in the environmental temperatures, as above. Turn on the power and leave the product for 10 minutes. Immediately after that, check the performance under the same environmental temperatures as above. However, there should be no dew condensation.	The performance should conform to the standards described in the Reliability Estimation Standard Table.
2. Practical operation temperature test	Operation under low temperature: +5 °C Operation under high temperature: +40 °C Leave the product for 4 hours without operation in the environmental temperatures, as above. Turn on the power of the product and leave the product for 10 minutes. Immediately after that, check the performance under the same environmental temperatures as above. However, there should be no dew condensation.	There should be no errors in the practical operation. When this product is built in the set unit, make sure that the temperature does not exceed the range described on the left.
3. Storage test under low temperature.	Temperature: $(-30 \pm 2) ^\circ\text{C}$ Leave the product for 24 hours without operation in the above environmental temperature range, and then leave it at normal temperature for 24 hours. After that, measure the characteristic change. However, there should be no dew condensation.	The characteristics should conform to the standards described in the Reliability Estimation Standards Table.
4. Storage test under high temperature	Temperature: $(60 \pm 2) ^\circ\text{C}$ Leave the product for 24 hours without operation in the above environmental temperature range, and then leave it at normal temperature for 24 hours. After that, measure the characteristic change. However, there should be no dew condensation.	The characteristics should conform to the standards described in the Reliability Estimation Standards Table.
5. Storage under high temperature and high humidity	Temperature and humidity: $(40 \pm 2) ^\circ\text{C}$, $(90 \pm 2) \% \text{RH}$ Leave the product for 24 hours without operation in the above environmental temperature range, and then leave it at normal temperature for 24 hours. After that, measure the characteristic change. However, there should be no dew condensation.	The characteristics should conform to the standards described in the Reliability Estimation Standards Table.
6. Unit Vibration (without operation)	Amplitude: 800 cpm (13.3 Hz) 3 mm (1.06 G) The above amplitude is applied to the product for 20 minutes for Up/Down direction.	The characteristics should conform to the standards described in the Reliability Estimation Standards Table.
7. Unit Impact (without operation)	Impact: 490 m/s^2 (50 G), 3 directions Impact time: 6 ms Measure the performance after applying the above impact for each direction.	The characteristics should conform to the standards described in the Reliability Estimation Standards Table.
8. Pick-up Slide Operation	Random Seek After 1000000 times operation, the performance is checked.	There should be no errors in the practical operation.
9. Jamming	When the product is built in the set unit, the level of electromagnetic wave which is emitted from the unit shall conform to the local radio wave standards. (When any problems occurs, the negotiation is required to support the counter measures).	

Document No. (3/3)	Document Name Reliability	
---------------------------	-----------------------------------------	--

The following table shows the reliability standards for the main parts (units) which are used in this product.

Test items	Test conditions	Criteria
10. Laser diode life	Check the recorded power after 1000 hours of operation at 60 °C. (except for breakage caused by static electricity)	The error rate should be 1 % or less.
11. Spindle motor life	Measure the current in the motor after 1000 hours operation.	The initial value should be +35 % or less.
12. Feeder motor life	After the pick-up slide operation as described in item 8, measure the consumption current in the motor.	The values should conform to the minimum start-up volume (500 PPS Vc: 1.0 V or less) and pull-out torque [2000 PPS 6.86×10^{-4} N-m (7 gf-cm) or more].

6. Reliability Standards

The change in values after estimation under the reliability conditions, should conform to the values in the following table.

Items		Before Test	Change in Values after Test	Remarks
1/3 stroke mean access time	×48 CAV speed	0.27 s or less	0.35 s or less	Mean value measured after reciprocating operation for (0 to 20) min. (one way value)

Document No. (1/1)	Document Name Lot No. Reliability Description	
---------------------------	-------------------------------------------------------------	--

Lot No. Description

[Serial No. Indication]

1	2	3	4	5	6	7	8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
A	B	C	D	D	D	D	D

- | | |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| A. Factory: | Korea Tokyo Electronics: 6,
Sanyo Media Tech: 3, SSHQ: 8 |
| B. Year of manufactured: | (1996: 6, 1997: 7, 1998: 8, 1999: 9, 2000: 0, 2001: 1,
2002: 2, 2003: 3, 2004: 4, 2005: 5) |
| C. Month of manufactured: | Form Jan. to Sep.: 1 ~ 9 & Form Oct. to Dec.:X ~Z
(Jan: 1, Feb: 2, Mar: 3, Apr: 4, May: 5, Jun: 6, Jul: 7,
Aug:8, Sep: 9, Oct: X, Nov: Y, Dec: Z) |
| D. Manufacturing Serial No.:
(5 digits) | Start from 00001.
When the number reach to 99999, the next is 00000,
then 00001 again. |

Document No. (1/3)	Document Name Electrical Characteristics	
---------------------------	--------------------------------------------------------	--

Electrical Performance

Items	Specifications		
Reading speed	×16 ~ ×48 (CAV) speed : 2.4 MB/s (disc in side) to (Note 1) 7.2 MB/s (disc out side) (typical)		
Writing speed	CD-R ×4, ×8, ×16, ×20 CLV, ×20 ~ ×40 (ZCLV) CD-RW ×4, ×10, ×12 CLV		
Mean random seek time	130 ms (typical)		
Buffer size	4 MB		
Photo CD	Applied		
Audio	Sampling Frequency	44.1 kHz	
	T.H.D. (Total Harmonic Distortion)	Line Out	Headphone
		0.15 % (1 kHz)	0.4 % (1 mW, 1 kHz)
	Channel Separation	60 dB	28 dB
	S/N ratio	70 dB	65 dB
	Max Output	0.6 V (typical)	0.8 V (typical)
Error rate	< 10 ⁻⁹ (soft read error)		
	< 10 ⁻¹² (hard read error)		

Power Consumption

Item	Specifications	
Power Consumption	DC 5 V	2.0 A (Peak)
	DC 12 V	2.0 A (Peak)

(Note 1) Reading speed x48 : +5%/-10%

Document No. (2/3)	Document Name Electrical Characteristics	
---------------------------	--------------------------------------------------------	--

Mechanisms

Items	Specifications
Pick-up	NA : 0.50 Focus : Astigmatism Tracking : DPP Wave length : 783 nm (standard)
Traverse mechanism	Stepping motor
Spindle motor	DC brushless motor
Loading mechanism	Automatic loading system

Document No. (3/3)	Document Name Electrical Characteristics	
---------------------------	--------------------------------------------------------	--

Application Discs

Items	Specifications
CD-ROM	mode 1
CD-ROMXA (Video CD)	mode 2 form 1, mode 2 form 2
CD-DA	Applicable
Photo CD	Single session, multi-session
CD-I, CD-G, CD-TEXT	Applicable
CD Extra	2 Session First Session : CD-DA Second Session : Data
Disc dia.	12 cm, 8 cm
Storage capacity	12 cm : 656 MB (mode 1) 748 MB (mode 2) 8 cm : 180 MB
Disc thickness	1.2 mm
Track pitch	1.6 μ m

Interface

Items	Specifications
Interface	USB2.0
Transfer Rate	480 MB/s

Connector

Item	Specifications
I/O terminal (rear panel)	Power connector (4 P), (5 P) USB2.0 terminal Audio out (4 P), (2 P)

Document No. (1/3)	Document Name Function Description	
<p>1. External View/Mechanism</p> <p>(1) Tray type disc loading system The disc is loaded on the TRAY.</p> <p>(2) LED Indicator BUSY : ON —Power ON ON-AND-OFF (Slow) —TOC reading condition & Eject condition ON-AND-OFF (Fast) —Reading disc and accessing condition. OFF—Power OFF</p> <p>WRITE : ON —Recording condition OFF —Others</p> <p>(3) EJECT key The disc is taken out using this key. This key is available even when the tray is moving. However, this key is not available under the recording condition or when the PRV command is transmitted from the HOST.</p> <p>(4) 8 cm/12 cm disc applicable. The read of 8 cm and 12 cm pit discs and the write of 12 cm pit discs of the CD-R disc are available.</p> <p>2. Data read processing</p> <p>(1) Read speed The standard, $\times 16 \sim \times 48$ CAV are applicable. Arbitrary speed can be set using the ATAPI command.</p> <p>(2) Read data mode (Note 1-1) MODE 1 MODE 2 / Form 1 MODE 2 / Form 2 CD-DA ISRC Media catalogue No. Sub-codeQ R-W</p> <p>(3) Audio playback TNO playback (MSF search) PAUSE function</p> <p>(Note 1-1) Audio playback becomes possible by using the host application. (as per ATAPI command specifications)</p>		

Document No. (2/3)	Document Name Function Description	
<p>3. Data write processing</p> <p>(1) Write speed</p> <p>i. CD-R $\times 4$, $\times 8$, $\times 16$, $\times 20$, $\times 20 \sim \times 40$ (ZCLV) write speed are applicable. (mastering write)</p> <p>ii. CD-RW $\times 4$, $\times 10$, $\times 12$ (CLV), write speed are applicable.</p> <p>Arbitrary speed can be set using the ATAPI command.</p> <p>(2) Write system</p> <p>Track-at-once</p> <p>Disc-at-once</p> <p>Packet write (variable-length/fixed-length)</p> <p>(3) Write data mode</p> <p>MODE 1</p> <p>MODE 2</p> <p>MODE 2 / Form 1</p> <p>MODE 2 / Form 2</p> <p>MODE 2 / Combination of Form 1 and Form 2 (Note 2-1)</p> <p>CD-DA (Note 2-2)</p> <p>ISRC</p> <p>Media catalogue No.</p> <p>CD-TEXT</p> <p>(4) Optimum write function</p> <p>The strategy and write laser power are set automatically according to the characteristics of the disc. This is performed when the disc is replaced or the CLV speed is changed.</p> <p>In addition, the write condition is checked during writing the data, and the running OPC function which sets the optimum laser power, is performed.</p> <p>(5) BURN-Proof</p> <p>Seamless Linking is defined for the action and the signal quality to stop and start recording in the one EFM recording.</p> <p>(Note 2-1) This is applicable only within the approved range of the CD-ROM and CD-ROM XA.</p> <p>(Note 2-2) Host computer makes and transfers the RAW data which includes pre-gap in the case of the disc-at-once writing.</p> <p>At this time, the track management information needs to provide instructions to transfer the start and end address of the actual audio data portion.</p>		

Document No. (3/3)	Document Name Function Description	
---------------------------	--------------------------------------------------	--

4. Servo/access

(1) Servo Automatic Adjustment

When the disc is loaded, the focus, tracking offset and servo gain are adjusted automatically.

(2) Sled Control using the Stepping Motor Driving

The mechanisms and circuits related to the sled are simplified. The micro step operation is controlled using the micro computer when the access-time-specific trapezoidal driving occurs and the read/write operation is performed.

(3) High speed access using the learning function

The number of tracks calculated from the CLV speed and pick-up position are corrected so that the disc program area is kept at the access time accompanied with the travel of the sled. Then, the corrected number of tracks is stored and the final number of tracks on the disc are calculated in order to reduce the number of seeks.

5. Other Functions

(1) Multi-volume applicable

To switch the sessions, the SESSION SELECTOR is used.

(2) Disc identification codes

The discs produced by each manufacturer are identified using the disc identification codes prepared by the Orange Society for the Research. This is referred to when the laser power and strategy are decided, when the writing operation is performed.

(3) Device type

Device type is 05 (CD-ROM) only.

6. CRD-BP1500U40X Interface

The host computer interface of the CRD-BP1500U40X conforms to the USB2.0.

7. BURN-Proof

In some case of disc condition, an error may happen by the failer of BURN-Proof function because it controls previous recorded data and new recording data by the advanced signal management system. In addition to the stated above, a BURN-Proof function also does not work correctly due to the unexpected accident like a power cut and a malfunction of PC and so forth.

Document No. (1/1)	Document Name Handling Manual	
<p>(1) Installation of the device driver</p> <p>In order to use this product, the device driver for the CD-R drive has to be installed. Before using this product, install the device driver according to the device driver "Install Manual" attached to the "OS" or "Mother Board".</p> <p>(2) Connection to the audio equipment</p> <p>When the sound is played back through your stereo amplifier, connect the stereo mini plug of the cable to the headphone terminal of this product.</p> <p>(3) How to use</p> <p>Before using this product, make sure that the device driver for the CD-R driver is installed in the personal computer.</p> <p>1) How to insert the disc.</p> <ol style="list-style-type: none"> i. Turn on the power of the main machine where the product is attached. ii. Press the eject key to open the disc tray. iii. Place the disc on the tray so that the printed side is upside. iv. Press the eject key to close the disc tray. v. Read the disc. The read indicator goes on-and-off during the TOC read operation. Then the indicator goes on. <p style="padding-left: 40px;">Write the data onto the disc. The write indicator goes on while the data is written.</p> <p>2) How to take out the disc.</p> <ol style="list-style-type: none"> i. Make sure that each indicator is OFF. ii. Press the eject key to open the disc tray. iii. Take out the disc. iv. Press the eject key to close the disc tray. <p>3) How to take out the disc in an emergency.</p> <p>When the disc can't be ejected because of power failure or run-away of the software, take the following measures to force the take out of the disc.</p> <ol style="list-style-type: none"> i. Prepare a steel paper clip. Extend the paper clip. ii. Insert the end of the paper clip into the emergency eject hole and press it strongly to eject the disc tray. iii. Pull the disc tray toward you and take out the disc. <p style="padding-left: 40px;">Push back the disc tray.</p> <p>(4) Product ID, Vender ID Product ID: CRD-BP1700U , Vender ID: GENERIC</p> <p>(5) USB ID(Fixd) Vender ID:0x0474h Product ID:0x0401h</p>		

Document No. (1/6)	Document Name Notes for Handling	
<p>1. Don't look at the laser beam. Don't look at the laser beam source. If the laser beam hits your eyes, it might cause damage to your eyes.</p> <p>2. Don't use deformed or cracked CDs. Don't use cracked, deformed CDs or CDs repaired with adhesives. As the disc turns with high speed within the product, broken pieces might scatter and hurt you.</p> <p>3. Don't touch the inside components of this product. Don't disassemble or modify this product. It might cause the breakdown of this product.</p> <p>4. Don't touch the connector parts. If you touch the connector parts of this product, it might cause a contact fault or breakdown because of the oil from your hands or static electricity. Also, don't touch the connector part on the personal computer when this product is connected or disconnected.</p> <p>5. Don't connect and disconnect this product excessively. When this product is connected and disconnected repeatedly, the connector part becomes heavily loaded and this might cause the breakdown of this product. Don't connect and disconnect this product excessively, except for necessary cases.</p> <p>6. How to prevent the breakdown</p> <ul style="list-style-type: none">(1) Don't impact or vibrate this product.(2) Keep the product where no fluid or alien substances can enter into this product.(3) Don't use this product on an incline.(4) Don't move this product with the disc inside. <p>7. Installation Place Avoid the following places for using this product.</p> <ul style="list-style-type: none">(1) Places of high temperature or great changes in temperature.(2) Places where sunlight can hit the product directly.(3) Places with strong vibrations.(4) Places with uneven surfaces.		

Document No. (2/6)	Document Name Notes for Handling	
---------------------------	------------------------------------------------	--

8. Maintenance

- (1) The dirt on this product should be cleaned off lightly with a soft cloth with some water or diluted neutral detergent.
- (2) Make sure not to use volatile chemicals such as benzine and thinner, because they might cause deformation and color change of the product.

9. Notes for the Handling of the Disc.

- (1) When you carry the disc, don't touch the side where no letters are printed.
- (2) Don't write letters on the disc or attach paper or a seal.
- (3) Dust or finger prints on the side without any printing should be cleaned off by a soft cloth.
- (4) When the disc is cleaned, always clean from the center to the outer rim.
- (5) Don't use benzine, thinner, cleaner for analog LP or a static electricity preventing agent, because these might cause damage to the disc.
- (6) Keep the discs in the disc case. Don't put the disc in a place where sunlight can hit directly or the temperature increases.

10. It is prohibited from copying, selling and transferring datas and programs that are protected by the copyright to the authorities without permission.

However, personal use of the sound and images that are recorded with this product is permitted.

11. Application

The following applications may be supported by this product, in future.

(Therefore, we are not responsible for any defects or damages using other applications. Also, some version no. of above Applications may not recognize the drive. Please contact to the Application maker.)

- NERO (AHEAD Software gmbh)
- InCD (AHEAD Software gmbh)
- Media Player (Microsoft Windows)
- CD Player (Microsoft Windows)
- Kodak Photo CD Player V2.0 or more (Kodak)

12. Recommended accessory

(1) Case

Company	Product No.
Do Top Technology	DEL-1831, DEL-2002

Document No. (3/6)	Document Name Notes for Handling	
---------------------------	------------------------------------------------	--

(2) USB 2.0 PCI board

Company	Product No.
Ratoc SYSTEM	REX-PCIU2, REX-CBU2
MELCO INC.	IFC-USB2P
Adaptec INC	AUA-3100LP, AUA-5100
Orange Micro	Orange USB 2.0 Hi-Speed PCI Board Orange USB 2.0 Hi-Speed Card Bus PC Card
ATEN International	IC-250U 5 port USB2.0 PCI Host Controller IC-230U / USB 2.0 Low Profile PCI card (3 ports)

(3) AC Adaptor

Company	Product No.
NIDEC POTRANS CORPORATION	SKB2505B, SKB2505A, SMB2505A
AK TECHNOLOGY CO., LTD.	A25B1-02MP, A25F2-02MI
DELTA ELECTRONICS, INC.	ADP-30RB

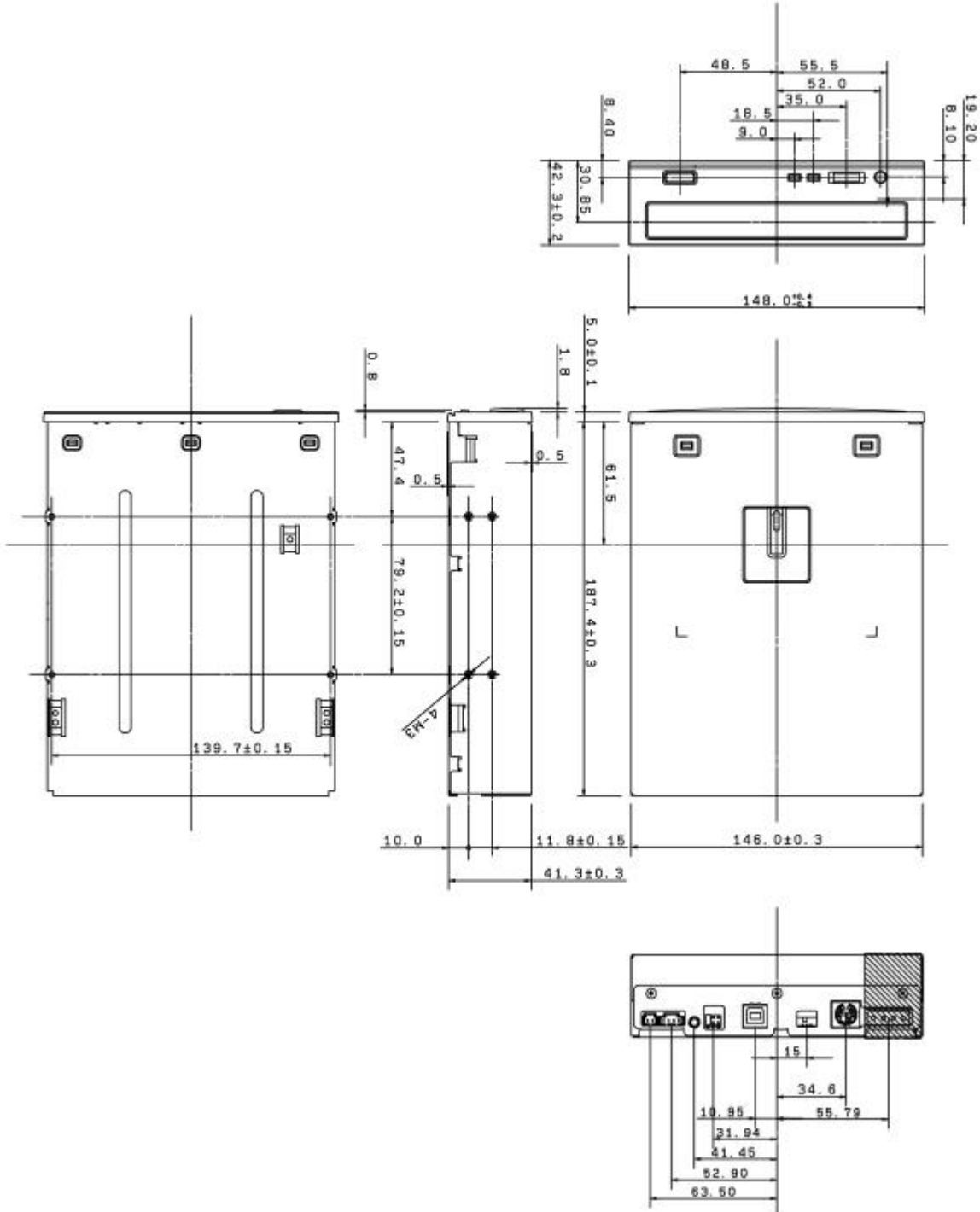
13. Drive Mount

This drive has holes for heat radiation at top cabinet and side cabinet. Please do not fill these ventilation holes.

Please avoid any components from these ventilation holes over 5mm in order to keep circulation.

Document No. (4/6)	Document Name Notes for Handling	
---------------------------	------------------------------------------------	--

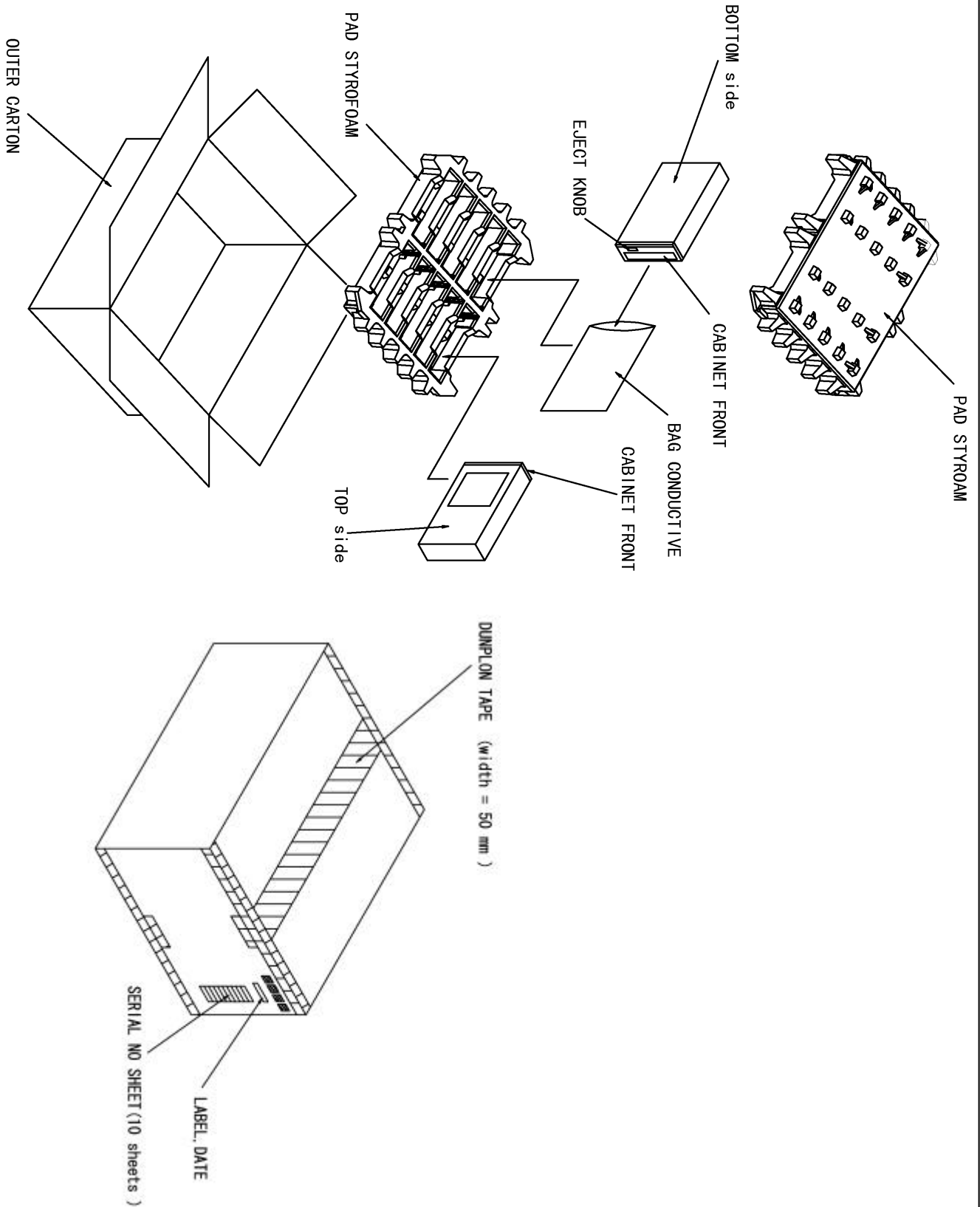
Dimensions



- The following items should be considered when enclosure chassis for this drive is designed.
1. Over 5 mm space should be needed between top of drive and enclosure chassis.
 2. Don't press the production label even if there are any reasons.

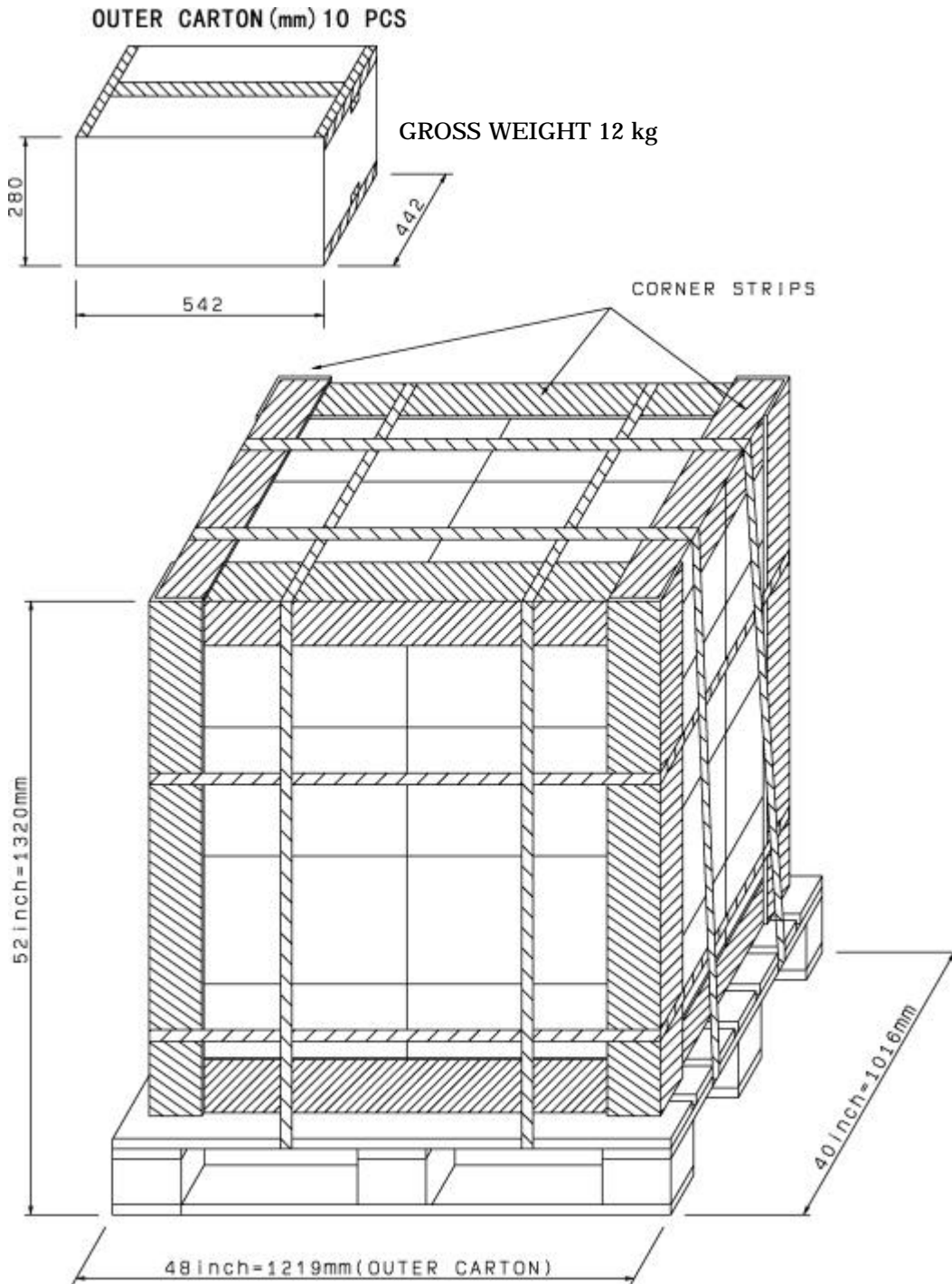
<p>Document No. (5/6)</p>	<p>Document Name Notes for Handling</p>	
------------------------------------	----------------------------------------------------	--

Package



Document No. (6/6)	Document Name Notes for Handling	
---------------------------	------------------------------------------------	--

Package Configuration



160 unit 1 pallet: 4 box × 4 stack (16 box)
Pallets are to be banded and stretch-wrapped.
Corner strips are attached.