SPECIFICATIONS

OF

UHD Blu-ray / DVD Writer

Model BU40N

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**** This specifications can be changed for improvement without prior notice.***

Revision History

No.	Date	Brief description	Note
1	2016. 05.26	1st release	T.00
2	2016. 10.05	Delete CD/DVD+ logo on main label on p25	T.01
3	2018. 02.12	- Modifying package (p. 19) - Modifying label (p. 25)	T.02
4	2019. 10.28	Revised FDA Warning Message	T.03
5	2021. 06.17	Modifying label	1.00
6	2021. 08.11	Modifying label – UKCA, ICES	1.01
7	2023. 02.10	Modifying label – For EN50689	1.02
8	2025. 03.26	Update Support Operating System List	1.03

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0. Attention *-To export this product-*

The Shipment of this product is limited by the rules of export in each country.
The proper procedures should be taken when exporting this product.

1. Features

1.1 General

(1) 9.5mm Height Internal Ultra Slim BD/DVD writer Drive
(2) CD-R/RW, DVD-R/RW/RAM, DVD+R/RW, DVD+/-R DL, BD-R(SL/DL/TL*/QL*, LTH*), BD-RE (SL/DL/TL) read and write compatible, CD Family, DVD-ROM, BD-ROM read compatible
(3) Correspond to Serial ATA bus interface (SATA Revision 3.0/ 1.5 Gbps)
(4) Large buffer memory 4MB
(5) Buffer Under-run prevention function embedded
(6) Drawer Type manual loading / Electrical Release.
(7) Supports SATA Asynchronous Notification function
(8) Vertical and Horizontal installable
(9) Compliance with RoHS / Pb Free production
(10) Silent Play function supported
(11) AACS Bus Encryption support
(12) Zero Power ODD function
(13) BDXL media (BD multi-layer) read and write support
*LTH: BD-R SL Low to High disc, *TL: Triple Layers, *QL: Quad Layers
(14) M-Disc DVD and BD Write/Read support

1.2 Supported disc formats

(1) Reads data in each DVD-ROM, DVD-R(Ver. 2.0 for Authoring) and BD-ROM.
(2) Reads and writes in each DVD-R(Ver. 2.1 for General), DVD-R DL(Dual Layer), DVD-RW, DVD-RAM(Ver.2.2), DVD+R, DVD+R DL(Double Layer), DVD+RW, BD-R (SL/DL/TL/QL, LTH) and BD-RE (SL/DL/TL).
(3) Reads data in CD-ROM, CD-ROM XA, CD-I, Video CD, CD-Extra and CD-Text
(4) Reads data in Photo CD (Single and Multi session)
(5) Reads standard CD-DA
(6) Reads and writes CD-R discs conforming to “Orange Book Part 2”
(7) Reads and writes CD-RW discs conforming to “Orange Book Part 3”
(8) Reads and writes DVD-R/RW/RAM with CPRM
(9) Supports to read “CD layer” of Super Audio CD Hybrid type
(10) Supports to read “AVCHD” format DVD disc
(11) Supports to read and write “AVCREC” format DVD disc
(12) Supports to read “DVD layer” of Hybrid Blu-ray disc
(13) Supports to read UHD BD-ROM DL (50G/66G) and TL(100G) disc

1.3 Performance (outline)

(1) Write speed:

BD-R	SL	2x CLV, 4x PCAV, 6x CAV
	SL(M-DISC)	2x CLV, 4x PCAV
	DL	2x CLV, 4x PCAV, 6x CAV
	TL	2x CLV, 4x PCAV
	QL	2x CLV, 4x PCAV
	SL LTH	2x CLV, 4x PCAV, 6x CAV
BD-RE	SL/DL/TL	2x CLV
DVD-R	SL	2x CLV, 4x PCAV, 8x CAV
	DL	2x CLV, 4x, 6x ZCLV
DVD+R	SL	2.4x CLV, 4x PCAV, 8x CAV
	SL(M-DISC)	4x PCAV
	DL	2.4x CLV, 6x ZCLV
DVD+RW		2.4x, 3.3x CLV, 4x, 6x, 8x ZCLV
DVD-RW		2x, 3x CLV, 4x, 6x ZCLV
DVD-RAM		2x, 3x CLV, 5x PCAV
CD-R		10x CLV, 16x PCAV, 24x CAV
CD-RW		4x, 10x CLV, 16x ZCLV

(2) Read speed:

BD-ROM	SL/DL/UHD 50GB	6x CAV
	UHD DL(66G) / TL	6x PCAV
BD-R	SL/DL	6x CAV
	TL/QL	6x CAV
	SL LTH	6x CAV
BD-RE	SL/DL	6x CAV
	TL	4x PCAV
BDMV(AACS Compliant Disc)		6x CAV (SL/DL)

DVD-ROM	SL/DL	8x CAV
DVD-R	SL/DL	8x CAV
DVD+R	SL/DL	8x CAV
	SL(M-DISC)	8x CAV
DVD-RW		8x CAV
DVD+RW		8x CAV
DVD-RAM		2x, 3x ZCLV, 5x PCAV
DVD-Video (CSS Compliant Disc)		8x CAV (SL/DL)

CD-R/RW/ROM	24x / 24x / 24x CAV
CD-DA	24x CAV

(3) Sustained Transfer Max rate:

BD	26.97 MB/s (6x)
DVD	11.08 MB/s (8x)
CD	3.6 MB/s (24x)

(4) Burst Transfer rate: 1.5Gbps (10b side)
1.2Gbps (8b side)

(5) Multimedia MPC-3 compliant

1.3 Performance (outline)

Definition

Transfer Rate:

SPEED(MEDIA)	Transfer rate	UNIT
1x (BD)	4.495	MB/s (= 2^{20} bytes/s)
2x (BD XL)	8.99	
1x (DVD)	1.385	
1x (CD)	0.15	

1.4 Audio

16 bit digital data output through SATA interface

2. General description

2.1 Applicable disc formats

BD

BD-ROM (SL/DL)	25 GB / 50 GB (Ver.1.3)
UHD BD-ROM	50 GB / 66 GB / 100 GB (Ver.2.0)
BD-R (SL/DL)	25 GB / 50 GB (Ver.1.3)
BD-R (TL/QL)	100 GB / 128 GB (Ver.2.0)
BD-RE (SL/DL)	25 GB / 50 GB (Ver.2.1)
BD-RE TL	100 GB (Ver.3.0)

DVD

DVD-ROM(SL/DL)	4.7 GB / 8.5 GB (Ver.1.1)
DVD-R	4.7 GB (Ver. 2.0 for Authoring: read only)
	4.7 GB (Ver. 2.1 for General: read & write)
DVD-R DL	8.5 GB (Ver. 3.0)
DVD-RW	4.7 GB (Ver. 1.2/ Rev 1.0, 2.0, 3.0)
DVD-RAM	4.7GB/side (Ver. 2.2)
DVD+R	4.7 GB (Ver. 1.3)
DVD+R DL	8.5 GB (Ver. 1.2)
DVD+RW	4.7 GB (Vol.1 Ver.1.3, Vol.2 Ver.1.0)

CD

CD-ROM Mode-1 data disc
CD-ROM Mode-2 data disc
CD-ROM XA, CD-I, Photo-CD Multi-Session, Video CD
CD-Audio Disc
Mixed mode CD-ROM disc (data and audio)
CD-Extra
CD-Text
CD-R (Conforming to “Orange Book Part 2”: read & write)
CD-RW (Conforming to “Orange Book Part 3”: read & write)

-Note- DVD-R 3.95GB (Ver.1.0), DVD-RAM (2.6GB) are not supported.

2.2 Writing method

(1) BD-R:	Sequential Recording Mode with/without Pseudo-Overwrite
(2) BD-RE:	Random Write, Sequential Recording Mode without Pseudo-Overwrite
(3) DVD-R SL:	Disc at Once (DAO), Incremental Recording
(4) DVD-R DL:	Disc at Once (DAO), Incremental Recording, Layer Jump Recording
(5) DVD-RW:	Disc at Once (DAO), Incremental Recording, Restricted Overwrite
(6) DVD+R (SL/DL):	Sequential Recording
(7) DVD+RW:	Random Write
(8) DVD-RAM:	Random Write
(9) CD-R/RW:	Disc at Once (DAO), Session at Once (SAO), Track at Once (TAO) and Packet Writing

2.3 Disc diameter

120 mm
80 mm

2.4 Data capacity

User data / Block

BD-R/RE/ROM	2048 bytes/block
DVD-R/RW/RAM/ROM +R/RW	2048 bytes/block
CD (Yellow Book)	2048 bytes/block (Mode1 & Mode2 Form1) 2336 bytes/block (Mode2) 2328 bytes/block (Mode2 Form2) 2352 bytes/block (CD-DA)

2.5 SATA Product Capability

SATA-IO Interoperability Testing — Test ID: TBD / Interop Revision : 1.4.

Feature Support

Asynchronous Signal Recovery	Support
Software Settings Preservation	Support
Interface Power Management (device initiated)	Support
Interface Power Management (host initiated)	Support
Asynchronous Notification	Support
Spread Spectrum Clocking (SSC)	Support
ZERO Power ODD	Support
COMRESET treatment during SSP active	same as software reset

3. Drive performance

3.1 Host interface

T13 ATA/ATAPI-8
MMC-6, INF-8090i v9

3.2 Write Speed

Media (Media Speed)	Writing Speed	Transfer rate (MB/s)
BD-R SL (2x)	2x CLV	8.99
-R SL (4x)	2x CLV, 2-4x PCAV	8.99, 8.99-17.98
-R SL (6x)	2x CLV, 2-4x PCAV, 2.5-6x CAV	8.99, 8.99-17.98, 11.24-26.97
BD-R SL LTH (2x)	2x CLV	8.99
-R SL LTH (4x)	2x CLV, 2-4x PCAV	8.99, 8.99-17.98
-R SL LTH (6x)	2x CLV, 2-4x PCAV, 2.5-6x CAV	8.99, 8.99-17.98, 11.24-26.97
BD-R DL (2x)	2x CLV	8.99
-R DL (4x)	2x CLV, 2-4x PCAV	8.99, 8.99-17.98
-R DL (6x)	2x CLV, 2-4x PCAV, 2.5-6x CAV	8.99, 8.99-17.98, 11.24-26.97
BD-R TL (ALL)	2x CLV, 2-4x PCAV	8.99, 8.99-17.98
BD-R QL (ALL)	2x CLV, 2-4x PCAV	8.99, 8.99-17.98
BD-RE SL (1-2x)	2x CLV	8.99
BD-RE DL (1-2x)	2x CLV	8.99
BD-RE TL (1-2x)	2x CLV	8.99

DVD-R SL (2x)	2x CLV	2.77
-R SL (4x)	2x CLV, 3.3-4x PCAV	2.77, 4.57-5.54
-R SL (8x, 16x)	2x CLV, 3.3-8x CAV	2.77, 4.57-11.08
DVD+R SL (4x)	2.4x CLV, 3.3-4x PCAV	3.32, 4.57-5.54
+R SL (8x, 16x)	2.4x CLV, 3.3-8x CAV	3.32, 4.57-11.08
DVD-R DL (4x)	2x CLV, 2+4x ZCLV	2.77, 2.77+5.54
-R DL (8x)	2x CLV, 2+4+6x ZCLV	2.77, 2.77+5.54+8.31
DVD+R DL (2.4x)	2.4x CLV	3.32
+R DL (8x)	2.4x CLV, 2.4+4+6x ZCLV	3.32, 3.32+5.54+8.31
DVD-RW (2x)	2x CLV	2.77
-RW (4x)	2x CLV, 2+4x ZCLV	2.77, 2.77+5.54
-RW (6x)	3x CLV, 3+4x, 3+4+6x ZCLV	4.15, 4.15+5.54, 4.15+5.54+8.31
DVD+RW (4x)	2.4x CLV, 2.4+4x ZCLV	3.32, 3.32+5.54
+RW (8x)	3.3x CLV, 3.3+6x, 3.3+6+8x ZCLV	4.57, 4.57+8.31, 4.57+8.31+11.08
DVD-RAM (2x)	2x ZCLV	2.77
-RAM (3x)	3x ZCLV	4.15
-RAM (5x)	3-5x PCAV	4.15-6.93

CD-R (ALL)	10x CLV 10-16x PCAV 10-24x CAV	1.5, 1.5-2.4 1.5-3.6
CD-RW (MS : 1-4x)	4x CLV	0.6
-RW (HS: 4-10x)	10x CLV	1.5
-RW (US: 8-24x)	10x CLV, 10+16x ZCLV	1.5, 1.5+2.4
-RW (US+: 8-32x)	10x CLV, 10+16x ZCLV	1.5, 1.5+2.4

*1) “+”: change by step for ZCLV
*2) “-”: continuous change, for CAV, PCAV

3.3 Read Speed

3.3.1 Data

Media	Reading Speed	Transfer rate (MB/s)
BD-ROM SL BD-R SL	2.5-6x CAV	11.24-26.97
BD-ROM DL BD-R DL UHD DL (50G)	2.5-6x CAV	11.24-26.97
UHD DL (66G) UHD TL (100G)	3.4-6x PCAV	15.28-26.97
BD-R SL LTH BD-R TL/QL	2.5-6x CAV	11.24-26.97
BD-RE SL / DL	2.5-6x CAV	11.24-26.97
BD-RE TL	2-4x PCAV	8.99-17.98
DVD-ROM SL DVD±R SL	3.3-8x CAV	4.57-11.08
DVD±R SL (8cm)	3.3-5x CAV	4.57-6.92
DVD-ROM DL DVD±R DL	3.3-8x CAV	4.57-11.08
DVD±R DL (8cm)	3.3-5x CAV	4.57-6.92
DVD±RW	3.3-8x CAV	4.57-11.08
DVD-RAM	2x ZCLV 3x ZCLV 3-5x PCAV	2.77 4.15 4.15-6.92
DVD-RAM (8cm)	2x ZCLV	2.77
CD-R / ROM	10-24x CAV	1.5-3.6
CD-RW	10-24x CAV	1.5-3.6
CD (8cm)	6.8-10.5x CAV	1.0-1.65

-Note- Read Speed: basically finalized discs specification.

3.3.2 Video and Audio Playback

BDMV (SL)	2x CLV	8.99
BDMV (DL)	2x CLV	8.99
DVD-Video (SL)	1.6-4x CAV	2.3-5.54
DVD-Video (DL)	1.6-4x CAV	2.3-5.54
CD-DA	4-10x CAV	0.6-1.5
Video CD	6.8-16x CAV	1.0-2.4
UHD 66G, 100G	3.4-6x PCAV	15.28-26.97

-Note- UHD playback feature(SGX) was removed from Rocket Lake, the 11th generation CPU

Rotational speed (CLV, ZCLV)

BD-RE / R / ROM	1x: Approx. 1,956 (Inside) - 810 r/min (Outside)
DVD-R / RW / ROM, +R / RW	1x: Approx. 1,390 (Inside) - 580 r/min (Outside)
DVD-RAM	2x: Approx. 3,250 (Inside) - 1,380 r/min (Outside)
CD-R / RW / ROM	1x: Approx. 500 (Inside) - 210 r/min (Outside)

3.4 Burst transfer rate

SATA Gen.1	1.5 G bps

3.5 Access time (1/3 Stroke)

BD-ROM	250 ms typ. * (Note 1)
DVD-ROM	200 ms typ. * (Note 1)
CD-ROM	200 ms typ. * (Note 1)

Note :

1) Average access time is the typical value of more than 50 times including latency and error correction time.

Test Disc: DVD-ROM: ALMEDIO TDR-820A
CD-ROM: LG LGDS-01A
BD-ROM: SONY BLX-103

**) Typical value defines a measured value in normal temperature (20 ºC) and horizontal position.*

3.6 Data error rate (Measured with 5 retries maximum)

BD-ROM/R/RE	$<10^{-12}$
DVD-R/RW/ROM/RAM	$<10^{-12}$
DVD+R/+RW	$<10^{-12}$
CD-R/RW/ROM	$<10^{-12}$ (Mode-1)
	$<10^{-9}$ (Mode-2)

Condition: It is assumed that the worst case raw error rate of the disc is 10^{-3}

3.7 Spin up time without Multi-session

Spin up time (Time to drive ready mode from standby mode) :

BD-ROM(SL)	4 s typ.	(Time to drive ready mode from sleep)
DVD-ROM (SL)	4 s typ.	(Time to drive ready mode from sleep)
CD-ROM	4 s typ.	(Time to drive ready mode from sleep)

Load time (Time to drive ready mode from disc insert. : Typ)

BD-ROM (SL/DL)	28s / 28s
BD-R (SL/DL/TL/QL)	28s / 35s / 45s / 45s
BD-RE (SL/DL/TL)	28s / 35s / 45s
DVD-ROM (SL/DL)	18s / 18s
DVD-R (SL/DL)	25s / 25s
DVD-RW	25s
DVD+R (SL/DL)	25s / 25s
DVD+RW	25s
DVD-RAM	35s
CD-ROM	15s

3.8 Data buffer capacity 4 MB

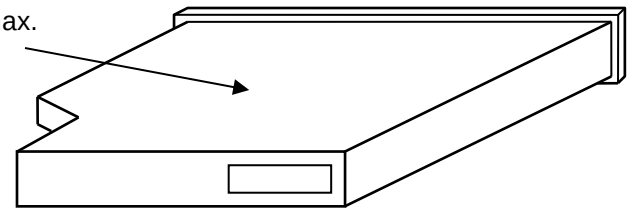
4. Environmental Conditions

4.1 Ambient Temperature

Operating	Read	5 ºC to 50 ºC
	Write	5 ºC to 45 ºC
Storage/Transportation		-40 ºC to 60 ºC

4.2 Approval Temperature Rise

Center of Top Cover 56 ºC max.



4.3 Temperature Gradient

10 ºC/h

4.4 Relative Humidity

Operating	Read	15 % to 85 % (Non-Condensing)
	Write	15 % to 80 % (Depend on the Temperature)
Storage/Transportation		5 % to 90 % (Non-Condensing)

4.5 Dew point temperature restrictions

Less than 29 ºC

4.6 Altitude

Operating	0 m to 3000 m
Non-operating	0 m to 12000 m

4.7 Vibration)

(1) Non-Operating: 19.6 m/s^2 (2.0 G) No physical and electrical damage. (No disc loaded)
(10 to 500) Hz sine wave random, 1oct./min at Each of 3 directions[1)]

** 1) 3direction : X(left and right), Y(back and front), Z(top and bottom) axis*

(2)Transportation: 8.04 m/s^2 (0.82 G) No damage must results. (Packed unit)
(5 to 50) Hz random vibration for 20min at Z-axis direction.

4.8 Shock

(1) Non-Operating: 3920 m/s^2 (400 G) No damage after shock. (No disc loaded)
2 ms at Each of 3 directions[1)]
588 m/s^2 (60 G) No damage after shock. (No disc loaded)
11 ms at Each of 3 directions[1)]

** 1) 3direction: X(left and right), Y(back and front), Z(top and bottom) axis*

4.9 Drop Impact

Less than 60 cm
Note: Bulk package, 1 Corner, 3 Edges, 6 Faces.

5. Quality and Reliability

5.1 MTBF 60 000 Power On hours (POH)

Assumption: Used in a normal office environment at room temperature.
-POH per year 3,000
-ON/OFF cycles per year 600
-Operating duty cycle 10% of Power on time (Seek: 10% of operating time)

5.2 Tray Open/Close Cycle Test 10,000 times

5.3 Access Aging 250,000 times (Full access)

5.4 MTTR (Mean Time to Repair) 0.5 h

5.5 Component Life 5 years or 2000 h of Laser radiating time

Assumption: Used in a normal office environment

6. Electro Static Discharge Susceptibility (ESD)

Up to 6 kV(contact)	No user detectable data error
Up to 8 kV(contact)	No catastrophic failure or damage
Up to 10kV (Air)	No user detectable data error
Up to 15kV (Air)	No catastrophic failure or damage

** Test Conditions : C = 150pF, R = 330 ohms, 20 times discharge*

7. Power Requirements

7.1 Source Voltage +5V±5% Ripple Less than 100 mVp-p

7.2 Current

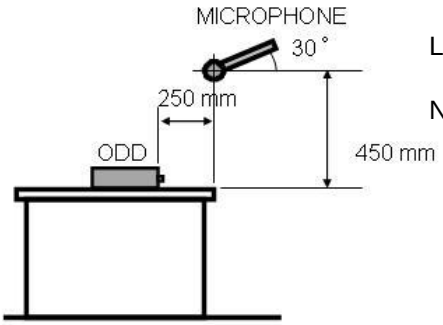
Stand-By *1	40 mA typ.	(Slumber)
Continuous Read	700 mA typ.	(CD-ROM 24x max. CAV)
	800 mA typ.	(DVD-ROM 8x max. CAV)
	800 mA typ.	(BD-ROM 6x max. CAV)
Continuous Write	750 mA typ.	(CD-R 24x max. CAV)
	750 mA typ.	(DVD+R 8x max. CAV)
	1000 mA typ.	(DVD+/-R DL 6x max. CAV)
	900 mA typ.	(BD-R 6x max. CAV)
Seek (Full)	1000 mA typ., 2000 mA max. (DVD-RAM 5x max. PCAV)	
Spin UP (Spindle motor start up)	1000 mA typ., 2000 mA max. (DVD-RAM 5x max. PCAV)	
Maximum Current	2000 mA	

-note- Inrush current within 1 ms is ignored.
*1) If Zero Power function is supported, 0mA.

7.3 Rush Current

Maximum 3.0 A / less than 1 ms

8. Acoustic Noise



Less than 50 dBA at 0.25 m away from Bezel and 0.45 m height away
(ISO7779 Seated Operator Position)

Note: 1. Disc: Less than Unbalance 0.3 g·cm
2. Installation: Horizontal
3. Ambient Temperature: Normal Temperature
4. Except loading and unloading

9. Dimensions

WxHxD 128 x 9.5 x 127 mm (Refer to Section 13.)

10. Mass

129 ± 7 g (Without Bezel)

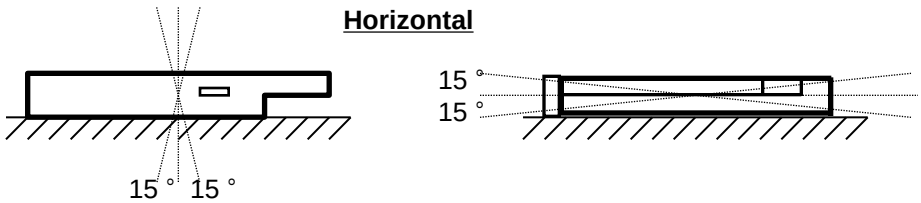
11. Mechanicals

11.1 Disc Loading

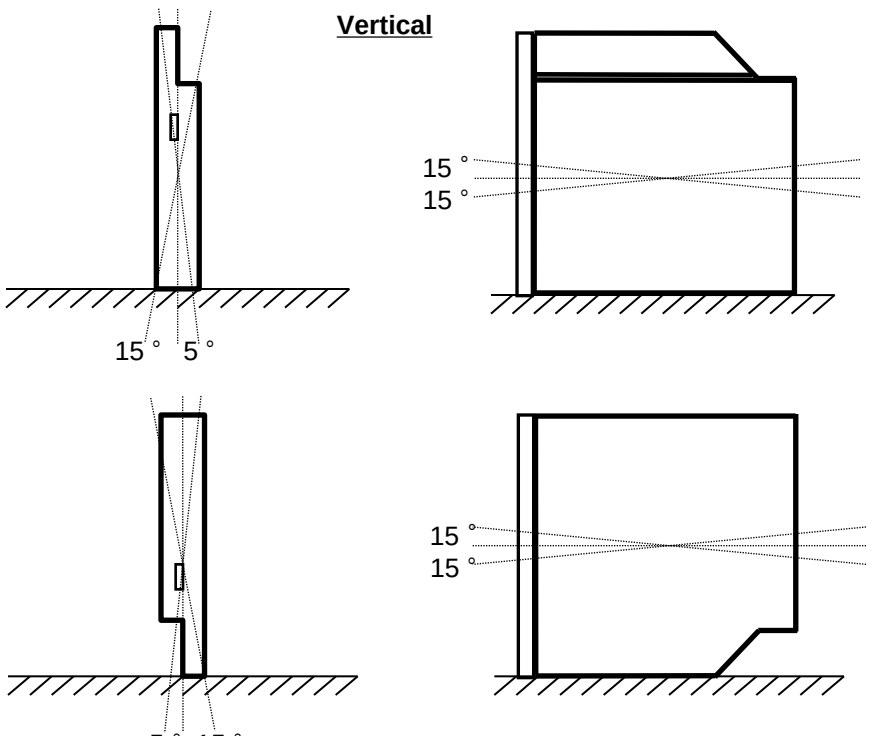
Drawer type manual load / Electrical release

11.2 Mounting Requirements

Horizontal



Vertical



-Note-

Operation with postures other than the above drawings is not guaranteed.

11.3 Installation conditions

If the drive is not installed under the following conditions, it may not operate properly or cause damage to the drive.

(1) When mounting the equipment, use tapping screw holes located on the left and right both sides of the equipment.
When using screws to fix the connector from the host computer to the equipment, use tapping screw holes located on the back side of the equipment.
- ■ Recommended screw tightening torque: 0.12 N·m
- ■ length of screws is shown in Chapter 13 Mechanical Dimensions.

(2) Do not apply an excessive force (press, pull or twist) to avoid distorting the equipment.
- ■ Recommended width of the mounting frame surface on left and right
  Dimension L: 102.6 +/- 0.2 mm (See Fig.1)
- ■ Recommended value for Top and bottom case : See Fig.1, Fig.2 and Fig.3 for detail.
- ■ After mounting the connector, do not apply excessive force the connector of the equipment in horizontal and/or vertical direction.
- ■ Tighten screws evenly.
- ■ Mounting frame surface contacted with the equipment must be flat.

(3) Allow enough space as much as possible in all directions around the equipment so the equipment does not apply any vibration, mechanical shock, etc. from peripheral instruments.
- ■ For the maximum dimension of the equipment thickness
  Recommended clearance: more than 0.5 mm
- ■ Recommended clearance around the front bezel: more than 1 mm

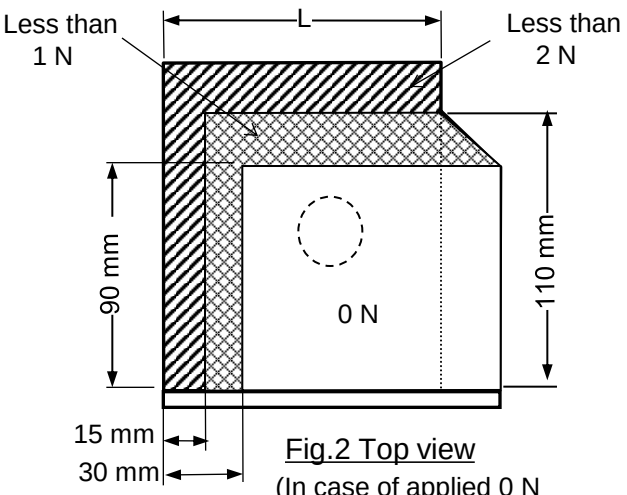


Fig.2 Top view
(In case of applied 0 N on the opposite side)

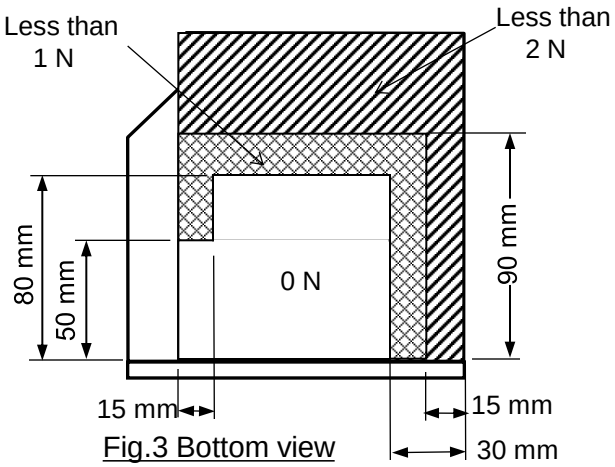


Fig.3 Bottom view
(In case of applied 0 N on the opposite side)

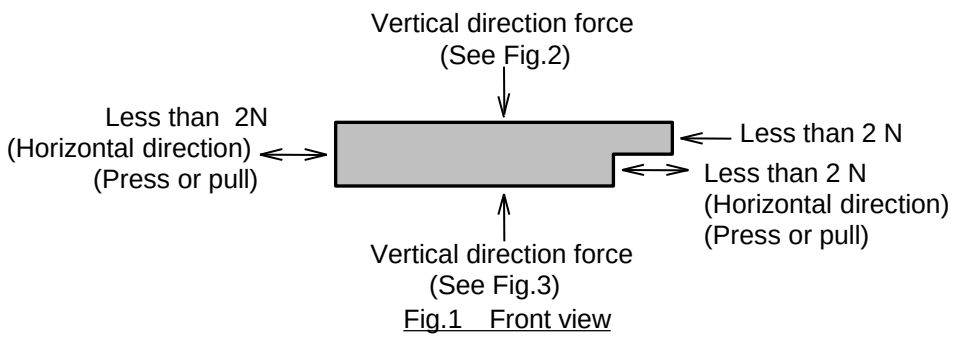
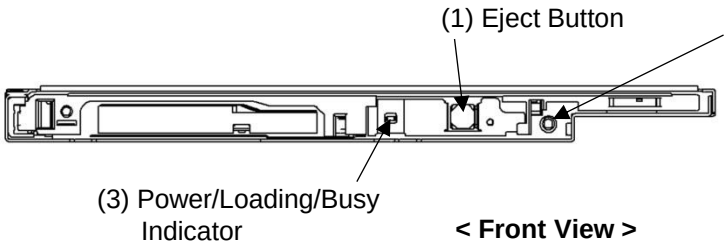


Fig.1 Front view

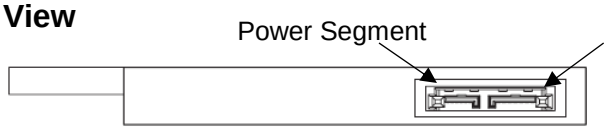
12. Controls and Functions

12.1 Front View



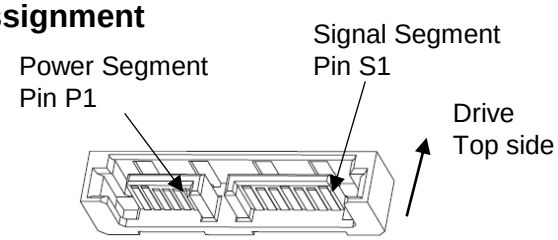
< Front View >

12.2 Rear View



< Rear View >

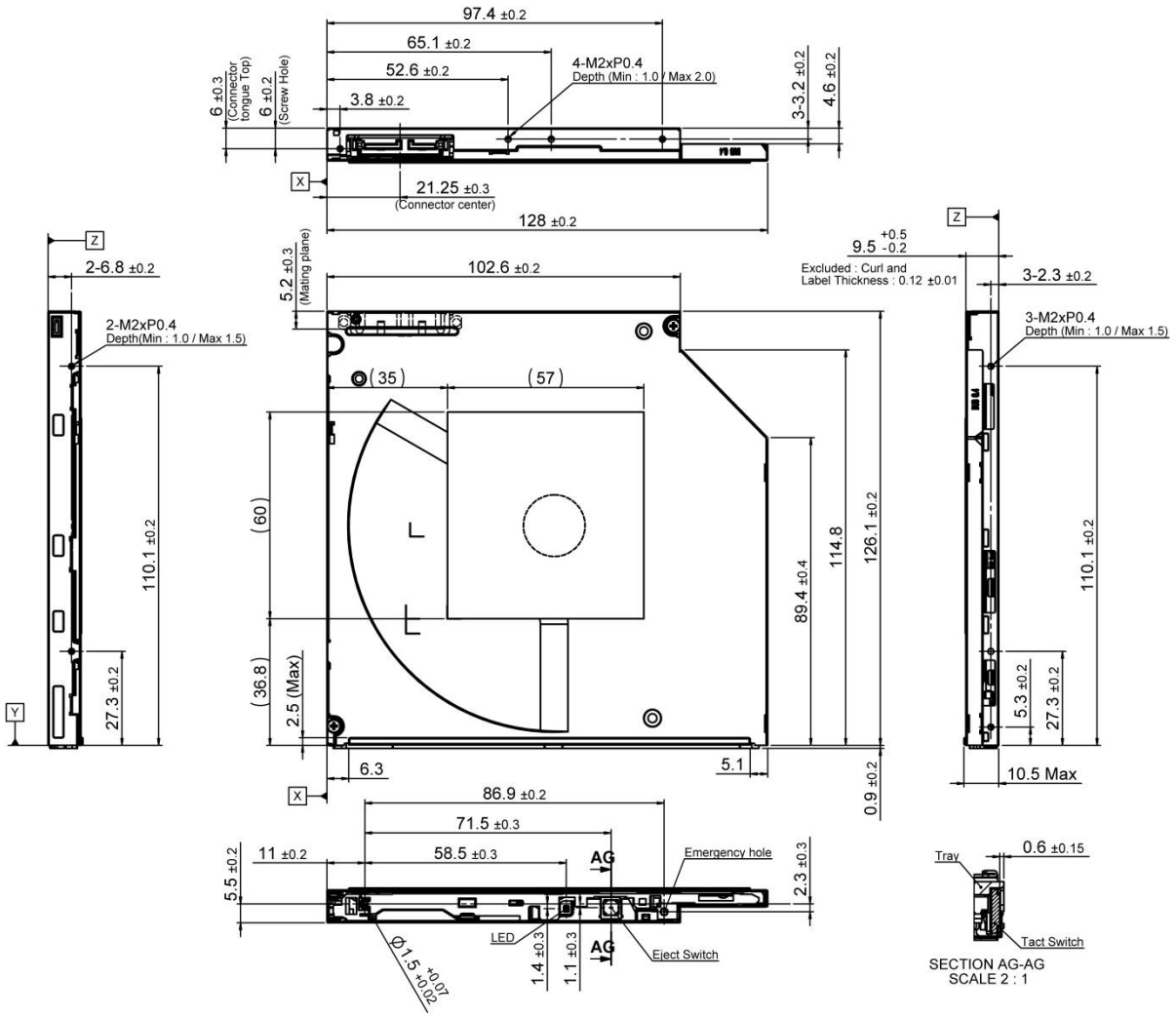
12.3 Connector Pin Assignment



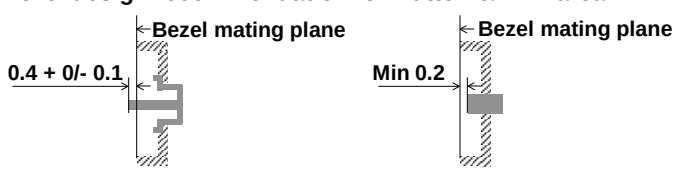
	Pin	Function		Cable Usage	Backplane Usage
Signal Segment	S1	GND		1st mate	1st mate
	S2	A+	Differential signal pair from host controller.	2nd mate	2nd mate
	S3	A-		2nd mate	2nd mate
	S4	Gnd		1st mate	1st mate
	S5	B-	Differential signal pair to host controller	2nd mate	2nd mate
	S6	B+		2nd mate	2nd mate
	S7	Gnd		1st mate	1st mate
Power Segment	P1	DP	Device Present	Last mate	Last mate
	P2	+5V		2nd mate	2nd mate
	P3	+5V		2nd mate	2nd mate
	P4	DA	Device Attention (For ZPO function)	2nd mate	2nd mate
	P5	Gnd		1st mate	1st mate
	P6	Gnd		1st mate	1st mate

DA: connect to GND, when pushing Eject button

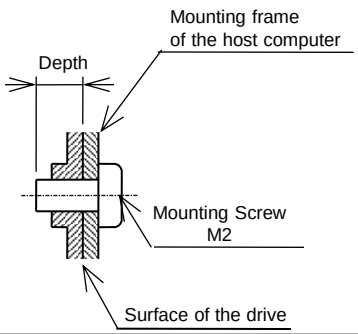
13. Mechanical Dimensions



*** Bezel design recommendation for Button & LED area**



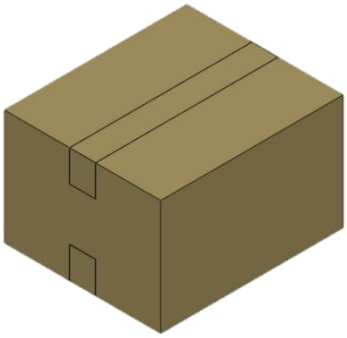
Bezel Button Knob height **LED Lens height**



Notes
1.M2 tapped holes for installation (Clamping Torque 0.2 N·m MAX.)
2.Unless otherwise specified, dimensional tolerance are +/- 0.5 mm.
3.Bezel design has to follow GBAS Spec which is specified in SFF-8552

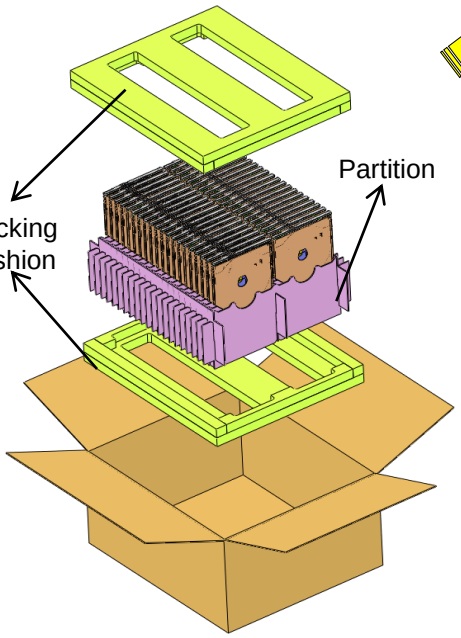
14. Packaging

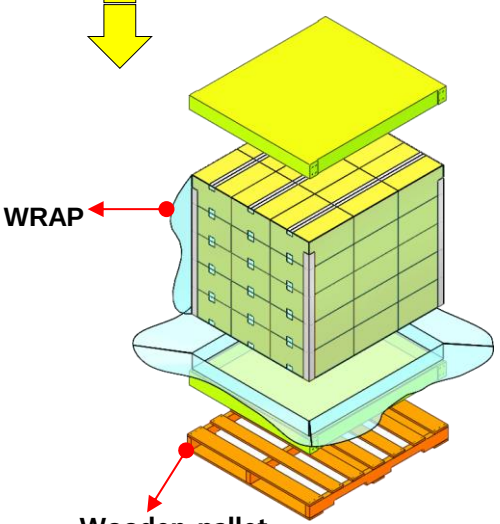




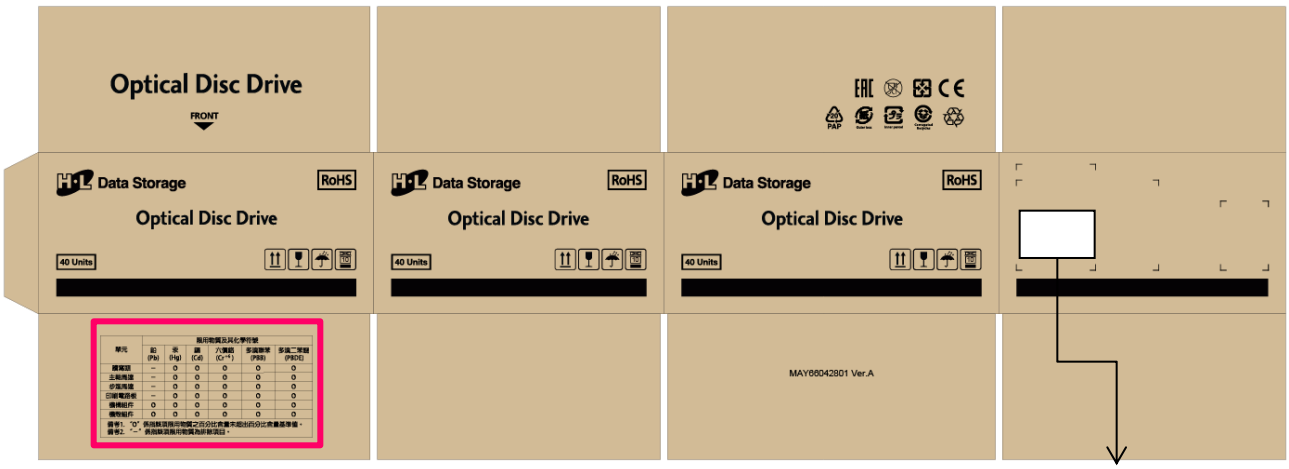
ANTI-STATIC BAG
Recycle Logo
facing Back side of set

40 units/box
386 x 335 x 195 (Outer size)





1,800 units/Pallet
1220 x 1070 x 1120(mm)



Taiwan RoHS table

Area of box label
SIZE : 90 x 60

15. Supported Command List

15.1 ATA Commands

< Command >	< Code >
(1) ATAPI Packet Command	A0h
(2) ATAPI Soft Reset	08h
(3) Check Power Mode	E5h
(4) Execute Drive Diagnostics	90h
(5) Flush Cache	E7h
(6) Identify Packet Device	A1h
(7) Idle Immediate	E1h
(8) NOP	00h
(9) Set Features	EFh
(10) Sleep	E6h
(11) Standby Immediate	E0h

15.2 ATAPI Packet Commands

< Command >	< Code >
(1) BLANK	A1h
(2) CLOSE TRACK/RZONE/SESSION/BORDER	5Bh
(3) FORMAT UNIT	04h
(4) GET CONFIGURATION	46h
(5) GET EVENT STATUS NOTIFICATION	4Ah
(6) GET PERFORMANCE	ACh
(7) INQUIRY	12h
(8) LOG SELECT	4Ch
(9) LOG SENSE	4Dh
(10) MECHANISM STATUS	BDh
(11) MODE SELECT (10)	55h
(12) MODE SENSE (10)	5Ah
(13) PAUSE/RESUME	4Bh
(14) PLAY AUDIO (10)	45h
(15) PLAY AUDIO (12)	A5h
(16) PLAY AUDIO MSF	47h
(17) PLAY AUDIO TRACK RELATIVE (10)	49h
(18) PLAY AUDIO TRACK RELATIVE (12)	A9h
(19) PREVENT ALLOW MEDIUM REMOVAL	1Eh
(20) READ (10)	28h
(21) READ (12)	A8h
(22) READ BUFFER	3Ch
(23) READ BUFFER CAPACITY	5Ch
(24) READ CAPACITY	25h
(25) READ CD	BEh
(26) READ CD MSF	B9h
(27) READ DISC INFORMATION	51h
(28) READ DVD STRUCTURE	ADh
(29) READ FORMAT CAPACITIES	23h
(30) READ HEADER	44h
(31) READ SUB-CHANNEL	42h
(32) READ TOC/PMA/ATIP	43h
(33) READ TRACK/RZONE INFORMATION	52h
(34) REPAIR RZONE	58h
(35) REPORT KEY	A4h
(36) REQUEST SENSE	03h
(37) RESERVE TRACK/RZONE	53h

< Command >	< Code >
(38) REZERO UNIT	01h
(39) SCAN	BAh
(40) SEEK	2Bh
(41) SEND CUE SHEET	5Dh
(42) SEND DVD STRUCTURE	BFh
(43) SEND KEY	A3h
(44) SEND OPC INFORMATION	54h
(45) SET CD SPEED	BBh
(46) SET READ AHEAD	A7h
(47) SET STREAMING	B6h
(48) START/ STOP UNIT	1Bh
(49) STOP PLAY/SCAN	4Eh
(50) SYNCHRONIZE CACHE	35h
(51) TEST UNIT READY	00h
(52) VERIFY(10)	2Fh
(53) VERIFY(12)	AFh
(54) WRITE(10)	2Ah
(55) WRITE(12)	AAh
(56) WRITE AND VERIFY(10)	2Eh
(57) WRITE AND VERIFY(12)	AEh
(58) WRITE BUFFER	3Bh

16. Regulations and Standards

16.1 Safety

The product will satisfy the safety standards outlined below.

UL:	UL 60950-1 Second Edition
C-UL:	CSA C22.2 No. 60950-1-07 Second Edition
TÜV:	EN 60950-1 / EN60825-1
SEMKO:	EN 60950-1 / EN60825-1

16.2 EMC

The product complies with applicable technical requirements as specified below

CE Marking
RCM
BSMI
VCCI
KCC
FCC Part 15 Class B Digital Device
ICES-003 Digital Apparatus

16.3 Laser safety

The product will satisfy all the requirements for the laser specified below.

Class 1 laser product comply with DHHS rules 21 CFR Subchapter J
Class 1 laser product to EN60825-1 / IEC 60825-1

17. Supporting Operating System & Application Software

17.1 Operating System

1) Windows Vista
2) Windows 7
3) Windows 8 & 8.1
4) Windows 10
5) Windows 11

17.2 Application Software (Data writing & Playback)

(2) Power2Go (CyberLink)
(3) PowerDVD BD (CyberLink)*

* Need BE (Bus Encryption) support to play BE BDMV disc

18. Caution

To use the drive safely and properly, the following precaution should be reserved.

18.1 Safety

(1) Disassembling and Modification

The drive includes Laser Diodes.
The disc rotates at high speed when the power is supplied to the drive**.**
Do not disassemble or modify the drive when the power is supplied.
Also the modified drives should be under the responsibility of the company or the persons who modified it.(Firmware issue should be specified separately.)

(2) POWER

Do not use the power supply other than the specific voltage(+ 5 V DC).

(3) Reserve the following instructions to avoid the electrical short or the damages.

a) Do not dispose the drive to the water or the high humidity
b) Do not open or remove the cover.
c) Do not remove the front bezel.
d) Do not let any liquid or foreign substances in the drive.
e) Do not put heavy things on the drive.

(4) In the case of the failure

In case of the following conditions, turn off the SYSTEM including the Drive
And unplug the power supply cable of the SYSTEM from the wall outlet immediately.

a) Do not disassemble or repair the drive by yourself.
b) When some liquid or some foreign substances is in the drive.
c) When the drives are wet by the water.
d) When the drive is dropped
e) When the performance of the drive is extremely degraded or when the drive does not work properly.

18.2 Dust

We can't guarantee about dirt in the state without a bezel.
The guarantee environment of dirt is a thing under the environment of 0.15 mg/m^3.

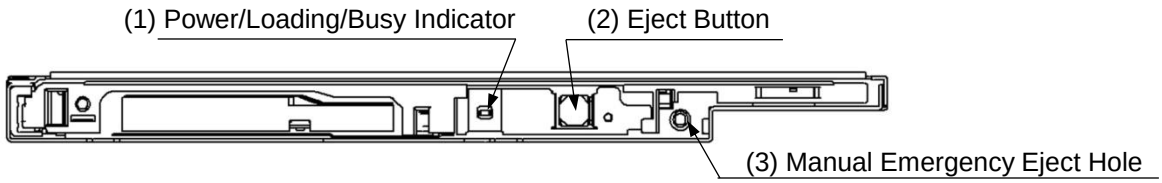
19. Production site

production site (HZ)

Appendix 1. Customized specifications

1. Bezel, Tray and Indicator

Bezel: No bezel



	Part	Color	Material	Flammability
1	Bezel & Eject Button	-	-	-
2	Tray	Black	U-ONE Com Tech PPE+PS (UWF-02F70) LG Chemical PPE+PS (LUMILOY GN4356FH)	UL94V-1
3	Power/Loading /Busy indicator	Green (LED light color)	---	---

2. Chassis

Top cover	Aluminum
Bottom cover	Steel

3. LED Blinking Specification

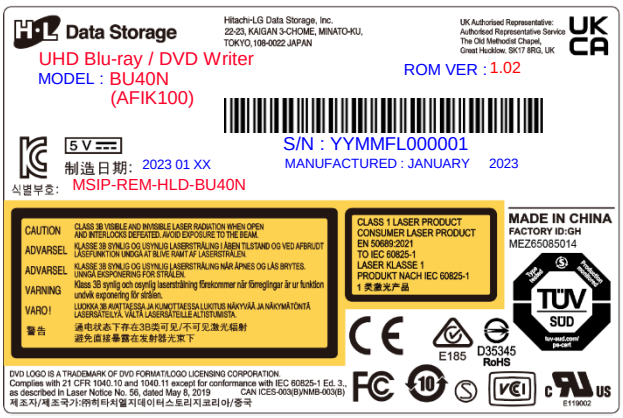
Disc recognition	Flashing
Load, Unload	Flashing
Playing audio	Flashing
Data access	On
Writing	Flashing
Polling command	Off
The others	Off

4. Region Setting

No region

Appendix 2. Rating Label

Taiwan 2nd-Tiers LABEL INFORMATION

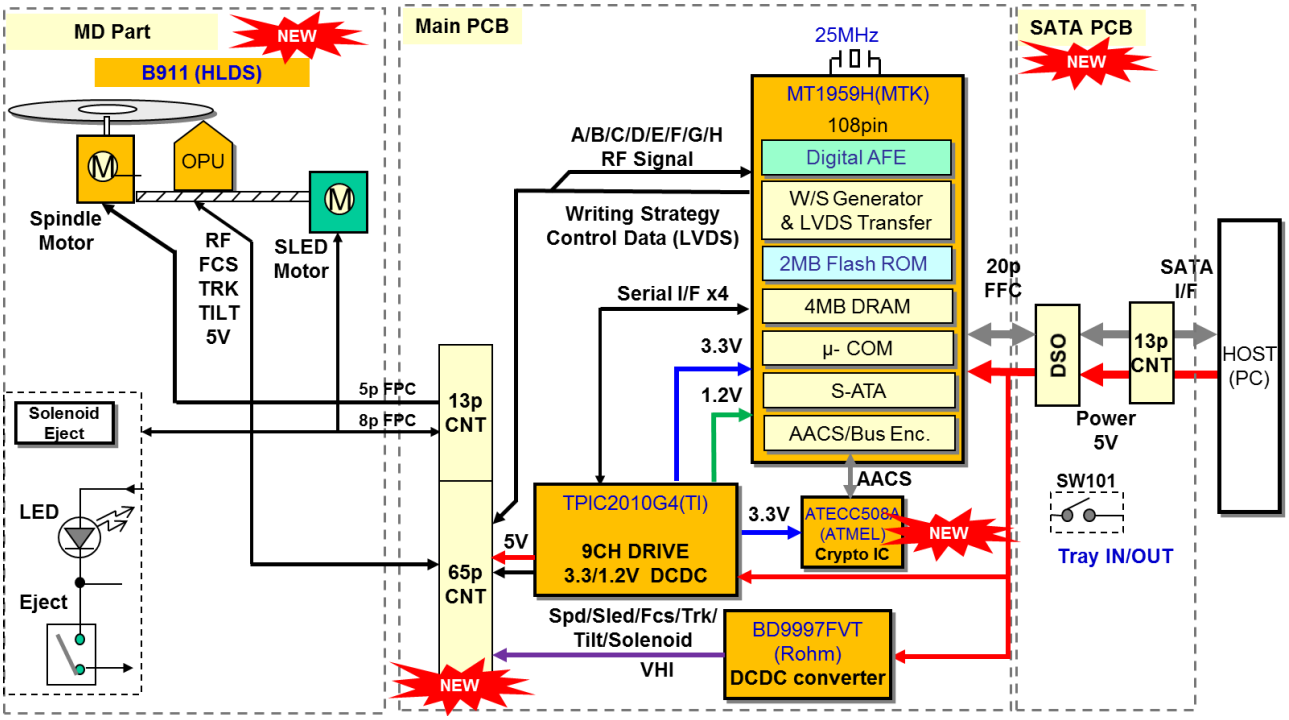


LABEL SIZE : 82(W) x 54(H) x 0.1(t)
Printing Information : Blue, Red Part
LABEL P/N : MEZ65085014

* Label Detail Printed Information *

1. **Product Name : UHD Blu-ray / DVD Writer**
2. **Model name : MODEL : BU40N**
3. **Suffix : (AFIK100)**
4. **制造日期 (YEAR, MONTH, DATE) : 2023 01 XX**
5. **KC No : MSIP-REM-HLD-BU40N**
6. **ROM VER : 1.02**
   DO NOT PRINT “XXXX” ON MAIN LABEL.
   Please refer to the F/W section or SR PAGE
7. **Barcode of Information (39Code)**
   S/N : YYMMFL000001
   - **YY : Year (2023 : 23, 2024 : 24, 2025 : 25…)**
   - **MM : Month**
   - **FL : Factory Line Code**
   - **000001 : Serial Number**
8. **MANUFACTURED : JANUARY 2023**

Appendix 3. Block Diagram



Appendix 4. Key Component List

Components	Maker	Model Name/No	Remarks
OPU	HLDS	HLP-B911	BDXL support
DSP	MTK	MT1959H	4MB DRAM 2MB Flash ROM
Motor Driver IC	TI	TPIC2010G4	with DCDC converter
Power LSI	ROHM	BD9997FVT	
Spindle Motor	HLDS (LGIT)	MSDS-W064A	
Sled Motor	Sankyo	MSCT016H05S	
	MOATECH	SPS-S07RG-207	
SATA Connector	P-TWO	121038-13241-3	
	HON HAI	LN11131-B003-7H	
	AMPHENOL	SSATA-001-0226-2-3	
	CROWN LUXURY	SLIM SATA 13P	