CHAPTER 5 GENERAL DESCRIPTION

5.1 FEATURE SUMMARY

① Embedded ATAPI Interface.
② Automatic Loading with tray.
③ Horizontal and Vertical Installation.
(Vertical : Vertical installation type only, 12 cm Disc only)
④ Both DVD & CD-R/RW media readable or writable
⑤ MS-DOS CD-ROM Extensions Available.
⑥ 5 1/4” Half Height Design.

5.2 SYSTEM SET UP

The ATAPI Devices are selected by the Address field in the Drive Select Register. When a single Device is attached to the interface, it shall be set as Device 0. When the ATAPI Device is attached along with an ATA Mass Storage Device, the ATAPI Device will be set as Device 1 and respond as a Slave.

5.3 POWER SAVING

① When the drive waits for a command from the Host for more than two minutes, then the drive enters Power Save Mode. Laser and Spindle motor stop.

② Re-start is automatic when the Host Command is received or eject button is pushed.

NOTE :
- **ATAPI :** AT Attachment Packet Interface.
- **MS-DOS** and **MS Windows** are trademarks or registered trademarks of Microsoft Corporation.
- **IBM PC-AT** is a registered trademark of International Business Machines Corporation.

CHAPTER 6 SPECIFICATION SUMMARY

6.1 PERFORMANCE

① Disc diameter — 12cm, 8cm (CD-ROM / DVD-ROM)

② Disc speed

CD-ROM (CAV mode) *1	8560 r/min
DVD (CAV mode)	6895 r/min

③ Data capacity

CD : 703 / 797 Mbytes [typical] (Mode 1/ Mode 2)
(79 min and 58 sec disc)

DVD : 4.7 Gbytes (DVD-R)
4.7 Gbytes (Single Layer)
8.5 Gbytes (Dual Layer)
9.4 Gbytes (Single Layer Double Side)

④ Data transfer Rate

<u>CD reading</u>	
CD-ROM (CAV mode)	2597 ~ 6000 Kbytes/s (Mode 1)
	2961 ~ 6840 Kbytes/s (Mode 2)
CD-RW (CAV mode)	2070 ~ 4800 Kbytes/s (Mode 1)
	2365 ~ 5484 Kbytes/s (Mode 2)
<u>CD-RW writing</u>	
10x CLV mode *2	1500 Kbytes/s (Mode 1)
	1710 Kbytes/s (Mode 2)
<u>CD-R writing</u>	
10x–16x ZCLV mode *3	1500 ~ 2400 (Mode 1)
	1710 ~ 2736 (Mode 2)
<u>DVD reading</u>	
DVD-5 (CAV mode)	6.7 ~ 16.2 MBytes/s
DVD-9 (CAV mode)	4.5 ~ 10.8 MBytes/s
DVD-R (CAV mode)	4.5 ~ 10.8 MBytes/s
From buffer	16.67 Mbytes/s (PIO Mode 4 without IORDY)
	16.67 Mbytes/s (Multi-word DMA Mode 2)
	33.3 Mbytes/s (Ultra DMA Mode 2)

⑤ Access time

Random access time (CD CAV mode) *4	90 ms [typical]
Fullstroke access time (CD CAV mode) *5	180 ms [typical]
Random access time (DVD CAV mode) *6	105 ms [typical]
Fullstroke access time (DVD CAV mode) *7	210 ms [typical]

⑥ Buffer Size — 2 MBytes

MTBF — 125,000 POH (duty 20%)

NOTE:

*1 CAV : Constant Angular Velocity

*2 CLV: Constant Linear Velocity

*3 ZCLV: Zoned Constant Linear Velocity

*4 Random access time (CD) : Average Data read over the complete area from 00 min. 02 sec. 00 block to 59 min. 58 sec. 74 blocks, more than 2000 times including latency and layered error correction time.

*5 Fullstroke access time (CD) : From 00 min. 02 sec. 00 block to 59 min. 58 sec. 74 blocks including latency and layered error correction time.

*6 Random access time (DVD) : Average Data read over the complete area from starting data recorded area(LBA:0) to maximam data recorded area(LBA:23197F), more than 2000 times including latency and layered error correction time.

*7 Fullstroke access time (DVD) : From starting data recorded area (LBA:0) to maximam data recorded area (LBA:23197F) including latency and layered error correction time.

6.2 ERROR RATES

• Soft read errors	Less than 10^{-9}
• Hard read errors	Less than 10^{-12}

6.3 AUDIO PERFORMANCE

(1) Analog audio

① Number of channels	2
② Frequency response	100 Hz ~ 20 kHz (Headphone) 20 Hz ~ 20 kHz (Line-out)
③ SN Ratio	More than 80 dB (Headphone/ Line-out)
④ Distortion	
• Line-out	Less than 0.1 % (1 kHz)
• Headphone	Less than 0.2 % (1 kHz)
⑤ Output level	0.60 Vrms [typical] (Headphone/ Line-out)

(2) Digital audio

① Output level	3.3V CMOS level
② Data format	Base a decision on IEC-958

6.4 GENERAL PERFORMANCE

①	Power rating	+5 V ⎓ 1.0 A +12 V ⎓ 2.0 A
②	Dimensions (W x H x D)	146 x 41.3 x 190 mm (exclude Front Bezel)
③	Weight	915 g [typical]

6.5 ENVIRONMENTAL CONDITIONS

Operating

• Temperature	5 ~ 50 °C
• Humidity	5 ~ 90 %RH (Max. wet bulb temp. is 29 °C, Non-condensation)

Non-operating

• Temperature	– 30 ~ 65 °C
• Humidity	5 ~ 90 %Rh (Non-condensation)

6.6 PICK UP LASER

① for DVD-ROM or DVD-RAM

• Type	Semiconductor laser InGaAlP / GaAs
• Wave Length	650 ± 15 nm
• Divergence	θ = 20 ° ~ 35 ° (Typical 27 °)
• Output power	0.33 mW

② for CD-R/RW or CD-ROM

• Type	Semiconductor laser GaAlAs
• Wave Length	785 ± 5 nm
• Divergence	θ = 15 ° ~ 18 ° (Typical 16 °)
• Output power	Read = 1.0 mW Write = 64 mW

CHAPTER 7 BEFORE REQUESTING SERVICE

7.1 TROUBLESHOOTING

(1) There are many kinds of problems caused by misuse. When a problem occurs, check the table below which describes possible problems occurring with your DVD-ROM & CD-R/RW Combination drive.

(2) If the DVD-ROM & CD-R/RW Combination drive is not operating correctly and you cannot restore operation by following the detailed procedures in the table below, do not remove the cover of the units or adjust further.

(3) In the case of (2) above, unplug the unit and consult with your dealer or the nearest service station.

TROUBLE	CORRECTION
• DVD-ROM & CD-R/RW Combination drive does not operate and Busy Indicator does not light.	① Confirm that the connection between the DVD-ROM & CD-R/RW Combination drive and the host computer is correct. ② Confirm that the program is correct. ③ Confirm that the setting drive select switch is correct. ④ Confirm that the disc has been inserted label side up. ⑤ Confirm that foreign objects have not been inserted.