

Product System (PS)

Subject:	Product Engineering Specifications	Part No.:	94-058-0000XX	Rev.:	2
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Model Name:	CW058D	Release Date:	Dec.20'01		
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Description:

CW058D Product Engineering Specifications

Reason For Release:

Change SPEC.

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Correlation Dept.:

PM / SM / RD / PE / TSD / QA

Approved By /	Reviewed By /	Prepared By /
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## 1. Introduction

This document describes the engineering specifications of CyberDrive CD-R/RW drive CW058D. The CW058D drive is an internal type, 5.25-inch, half-height, IDE/ATAPI interface, and has read speeds up to 48x, and write up to 32x and re-write speeds up to 12x. Furthermore, the CW058D utilizes the High Precise Sledge Control (HPSC) type traverse mechanism in order to improve access time to around 100 ms and also reduce acoustic seeking noise. The general features of this CW058D CD-R/RW drive are:

- Internal 5.25-inch, half-height, CD-Recordable and CD-ReWritable drive
- Compatible with MS-DOS, Windows NT/2000, Windows 95/98/ME/XP, Linux, OS/2 Warp
- Enhanced IDE (E-IDE) / ATAPI interface
- MMC compatible
- Compliant to Orange Book Part II and III
- ISO 9660 compliant
- Supports Disc At Once (DAO), Track At Once (TAO) and Session At Once (SAO) recording
- Fully supports both variable and fixed packet reading and writing (CD-UDF compatible)
- Supported disk formats: CD-DA, CD-ROM, CD-ROM / XA, mixed mode, Video-CD, Photo CD, Enhanced CD, CD Plus, CD-G, CD-Text.
- Supports disk diameters of 12 cm and 8 cm (pressed media)
- 48x maximum read speed
- 4x, 8x, 12x, 16x (CLV) and 20x, 24x, 28x, 32x (ZCLV) write speed for CD-R and 4x, 8x, 12x (CLV) for CD-RW disc
- High speed (4x) audio play (buffered to normal audio)
- Maximum 40x (CAV) audio extraction
- Average access time is around 100 ms (typical)
- Fully embedded Optimum Power Control (OPC)
- Supports PIO mode 4 and UDMA mode 2
- 2 MB internal buffer
- Built-in headphone jack and CD-Audio volume control
- Back panel analog line-out and digital-out
- Power saving feature
- Power tray loading with emergency disk unload
- Supports both horizontal and vertical mounting
- Flash memory (firmware upgrade possibility)
- Can be as a boot device
- ExacLink technology to avoid Buffer Under Run error

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## 2. General Specification

2.1 Dimension	148.5 x 42.5 x 206.5 mm(WHD) with bezel 146 x 41.7 x 202.5 mm(WHD) without bezel
2.2 Weight	1025 g
2.3 Front panel	EJECT button, Emergency eject pin hole, green LED, Headphone jack, Volume control knob
2.4 Rear panel	Power connector (+5V & +12V, 4P), IDE interface connector (40P), Device configuration jumper (Master, Slave, CSEL), Analog audio line out (4P), Digital audio out (2P)
2.5 Installation	Supports both horizontal and vertical tray loading
2.6 Power supply	DC +5V ?5%, DC +12V ?10%

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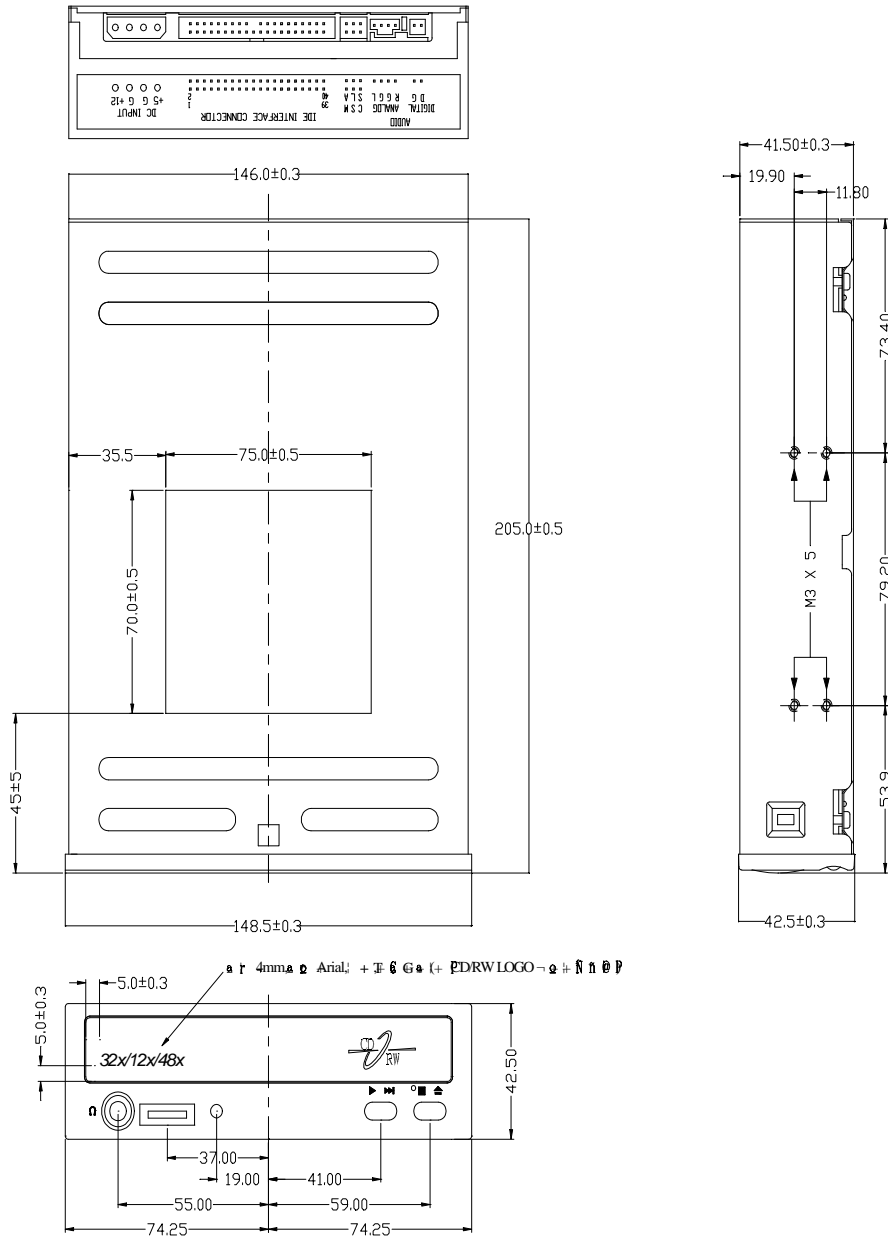
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**Figure 1. Mechanical Dimensions**



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### 3. Performance

3.1 Read speed	48x for closed sessions. 16x for open sessions. Maximum 40x for audio extraction
3.2 Write speed	4x, 8x, 12x, 16x (CLV) and 20x, 24x, 28x, 32x (ZCLV) for CD-R media. 4x, 8x and 12x (CLV) for CD-RW media
3.3 Average access time	100 ms typical for random access 100 ms typical for 1/3 stroke access
3.4 Buffer memory	2 MB
3.5 Error rate	10 <sup>-9</sup> soft read error 10 <sup>-12</sup> hard read error
3.6 MTBF	> 100,000 POH (25% duty, seek and read)
3.7 Load / eject life	> 30K cycles

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## 4. Audio Interface

### 4.1 General

Number of channels	2 (stereo)
Sampling frequency	44.1 KHz

### 4.2 Analog audio line out

Output	0.7 Vrms typical
Frequency response	20 Hz ~ 20 KHz (+0.5 dB, -3.0 dB)
Signal to noise ratio	> 65 dB (f = 1 KHz)
Distortion	< 0.1% (LPF 20 KHz, f = 1 KHz)
Channel Separation	> 65 dB (LPF 20 KHz, f = 1 KHz)

### 4.3 Headphone output:

Output	0.7 Vrms typical
Frequency response	20 Hz ~ 20 KHz (+0.5 dB , -3.0 dB)
Signal to noise ratio	> 65 dB (f = 1 KHz)
Distortion	< 0.1% (LPF 20 KHz, f = 1 KHz)
Channel Separation	> 65 dB (LPF 20 KHz, f = 1 KHz)

### 4.4 Digital audio out:

Format	EBU (conforms to IEC-958 EIAJ CP-1201)
Output	4.0 Vp-p

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## 5. Playability and Readability

### 5.1 CD-DA Playability

Item	Typical specification
Interruption	1.0 mm
Black Dot	?0.8 mm
Finger Printer	?75 ?m
Scratch	1.0 mm
Vertical Deviation	1.0 mm
Eccentric	210 ?m

### 5.2 CD-ROM Readability

Item	Typical specification
Unbalance for pressed media	8 g-mm
Unbalance for CD-R/RW media	6 g-mm

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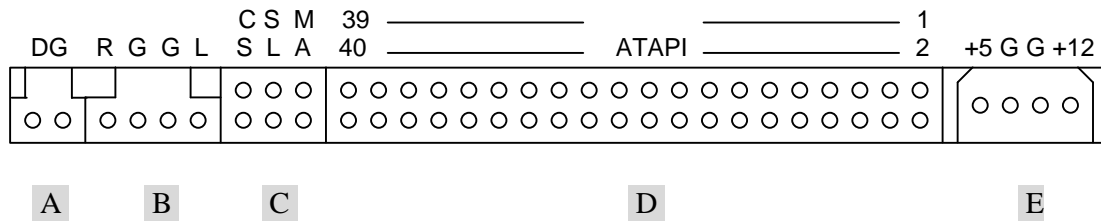
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**6. Electrical Specification**

6.1 Power Supply

Voltage	DC +5V	DC +12V
Tolerance	? 5%	? 10%
Ripple	? 100 mV	? 200 mV
Current (typical)	950 mA	600 mA
Current (maximum)	1500 mA	1500 mA

6.2 Connectors



- A. Digital audio out
- B. Analog audio line out
- C. Device configuration
  - CS : Cable select
  - SL : Slave
  - MA : Master
- D. IDE interface connector
- E. Power connector



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**Figure 2. IDE Interface Connector**

PIN	Signal	PIN	Signal
1	/HRESET	2	GND
3	DB7	4	DB8
5	DB6	6	DB9
7	DB5	8	DB10
9	DB4	10	DB11
11	DB3	12	DB12
13	DB2	14	DB13
15	DB1	16	DB14
17	DB0	18	DB15
19	GND	20	NC
21	DDRQ	22	GND
23	/DWR	24	GND
25	/DRD	26	GND
27	DIORDY	28	CSEL
29	/DDMACK	30	GND
31	DIRQ	32	/DIOCS16
33	DA1	34	/PDIAG
35	DA0	36	DA2
37	DCS1FX	38	DCS3FX
39	/DASP	40	GND

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## 7. Interface Description

7.1 IDE/ATAPI Interface (compliant to ANSI X3T13 1153D Rev.2 and SFF 8020 Rev.2.6)

7.2 ATAPI Command Set

CODE	COMMAND NAME
00h	TEST UNIT READY
03h	REQUEST SENSE
12h	INQUIRY
1Bh	START / STOP UNIT
1Eh	PREVENT / ALLOW MEDIUM REMOVAL
23h	READ FORMAT CAPACITIES
25h	READ CD-ROM CAPACITY
28h	READ (10)
2Bh	SEEK (10)
2Fh	VERIFY (10)
3Bh	WRITE BUFFER
3Ch	READ BUFFER
42h	READ SUB-CHANNEL
43h	READ TOC/PMA/ATIP
44h	READ HEADER
45h	PLAY AUDIO (10)
46h	GET CONFIGURATION
47h	PLAY AUDIO MSF
4Ah	GET EVENT/STATUS NOTIFICATION
4Bh	PAUSE / RESUME
4Eh	STOP / PLAY SCAN
55h	MODE SELECT (10)
5Ah	MODE SENSE (10)
A5h	PLAY AUDIO (12)
A8h	READ (12)
B9h	READ CD MSF
BBh	SET CD SPEED
BDh	MECHANISM STATUS
BEh	READ CD

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### 7.3 IDE ATA Command Set

CODE	COMMAND NAME
00h	NOP
08h	ATAPI SOFT RESET
90h	EXECUTE DRIVE DIAGNOSTIC
A0h	ATAPI PACKET
A1h	ATAPI IDENTIFY DEVICE
E0h	STANDBY IMMEDIATE
E1h	IDLE IMMEDIATE
E2h	STANDBY
E5h	CHECK POWER MODE
E6h	SLEEP
ECh	IDENTIFY DEVICE
EFh	SET FEATURES

### 7.4 MMC CD-RW Command Set

CODE	COMMAND NAME
04h	FORMAT UNIT
2Ah	WRITE (10)
35h	SYNCHRONIZE CACHE
51h	READ DISC INFORMATION
52h	READ TRACK INFORMATION
53h	RESERVE TRACK
54h	SEND OPC INFORMATION
5Bh	CLOSE TRACK/SESSION
5Ch	READ BUFFER CAPACITY
5Dh	SEND CUE SHEET
A1h	BLANK
ACh	GET PERFORMANCE
AAh	Write (12)

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## 8. Environmental Condition

8.1 Temperature	Operating	5°C ~ 45°C
	Storage	-20°C ~ 60°C
	Gradient	10 °C/hr
8.2 Humidity	Operating	20% ~ 80% RH
	Storage	20% ~ 90% RH
8.3 Vibration	Operating	> 0.35g (Sine wave, 5~500 Hz, 1/4 Oct/min)
	Non-operating Hz)	> PSD = .008 g <sup>2</sup> /Hz (2.0g RMS, random, 5~500
8.4 Self-Vibration	Operating	0.25G RMS under 6g-mm unbalance disk
8.5 Shock	Operating	> 2.0g (11ms, half sine wave)
	Non-operating	> 60g (11ms, half sine wave)
8.6 ESD	Operating	10 KV (No intervention required)
		15 KV (No damage may occur)
8.7 Noise	Operating	< 46 dBa (1m distance)
		< 55 dBa (0.25m distance)
8.8 Drop	Packaged	76 cm height (1 corner, 3 edges, 6 surfaces, and 10 sets in one carton)

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## 9. Agency Certifications

.UL	1950, 3rd Edition
.C-UL	CSA C22.2 950-1995, 3rd Edition
.TUV	EN60950 and EN60825-1
.FDA	Federal regulations 21, CFR 1040.01 and 1040.11
.FCC	FCC CFR47, Part 15 class B
.CE	CISPR 22 : 1993 / EN 55022 : 1995 EN50082-1 (1992) EN61000-4-2 (1995), Test level : Air Discharge (2KV-8KV) Direct Contact (2KV-4KV) EN61000-4-3 (1996), Test level : Level 2 (3V/m) Unmodulated 27-500MHz EN61000-4-4 (1995), Test level : Power Supply (0.5KV- 1KV) EN61000-4-5 (1995), Test level : Level 3 ( $\pm 1.0/\pm 2.0$ KV) EN61000-4-6 (1996), Test level : Level 2 (3V/m) modulated 1KHz,80% EN61000-4-8 (1993), Test level : AC230V,50HZ EN61000-4-11 (1994), Test level : AC230V,50HZ
.AUSTEL	CISPR 22 : 1993 / AS/NZS3548