

Highly compatible to the original DVD format  
as easy as your 20 years' sense of VCR operation.

# espejo R301

Philips single chip pnx7100 MPEG2 AV graphic CODEC  
VAE8020 DVD+R/RW video recorder engine



## Reasons to go DVD+RW

- **Right time to the market :**
  - Improved quality base on experience
  - low cost single chip solution
- **Ease of use :**
  - Single format recording mode
  - Close to VCR operation
- **Long recording time :**
  - 6 hrs VCR quality per disc side
- **Software sharing :**
  - Highly compatible to DVD & DVD-ROM
- **Dominant US, EU market share**
- **Wide PC application support quicker cost reduction**
- **The fastest recording TODAY with 2.4x**

## DVD+RW recording time - up to 6 hours

Overview recording times (single-sided disc):  
Recording length (Variable) Bit-rate  
quality description

1 Hour	10 Mb/s	DV camcorder
2 Hours	5 Mb/s	DVD
3 Hours	3.4 Mb/s	S-VHS
4 Hours	2.5 Mb/s	> VHS
6 Hours	1.7 Mb/s	VHS

## Smart Variable Bit Rate

CBR and VBR encoding

CBR: Constant picture quality, but need more storage space. Lower efficiency

VBR: Higher efficiency, but lower correlation between playtime and amount of storage.

SMART VBR is best compromise between VBR and CBR

Controls target average bit rate (over a long period) through a virtual VBR buffer

## DVDRW manufacturer support to format

	AV	Data	
DVD+RW	Philips <b>MICO</b>	Philips Ricoh Yamaha Mitsumi	DVD+-RW
DVD-RW	Pioneer Sharp	Pioneer Toshiba TEAC	Sony NEC
DVD-RAM	Panasonic Hitachi	Panasonic Toshiba	Panasonic Toshiba Samsung
			Multi



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## Record Once Format Overview

Feature	DVD+R	DVD-R Compatible mode
Recording Time (per side)	1,2,3, and 4 hours or 1, 2.5, 4 and 6 hours <sup>1)</sup>	1 and 2 hours <sup>2)</sup> or 1, 2, 4 and 6 hours <sup>3)</sup>
Picture quality	Variable Bit rate	Constant Bit Rate <sup>2)</sup> or Variable Bit
Finalising Time	1 minute	5-15 minutes
Manually add chapter stops during recording	Yes-DVD-Video Compatible	No
Manually add chapter stops after recording	Yes-proprietary <sup>4)</sup>	No
Editing (define playlist of chapters)	Yes-proprietary <sup>4)</sup>	No
Index Picture menu on D/V D player	Yes	Text only
Change index picture after recording	Yes	n/a
Uninitialized discs are interchangeable between recorders	Yes	No

## Other features

- Highest level of integration in the industry : Unified Memory Architecture & Integrated Digital encoders (DENC), meets aggressive price points
- Interlaced and progressive Scan output
- Glue-less interface to SACD solution
- Picture in picture
- One independent platform for DVD+RW and PVR software stack
- High performance 32-bit, 133 MHz MIPS RISC (MIPS3940) + sub-system for application and embedded control
- Platform used is NEXPERIA compatible and both Hardware and Software is re-used between STB, DVD and DTV

## Format Overview

Feature	DVD+RW	DVD-R(W) <sup>2)</sup> Compatible mode		DVD-RAM Non Compatible
		Unfinalised	Finalised	
Recording Time (per side)	1,2,3, and 4 hours or 1, 2.5, 4 and 6 hours <sup>1)</sup>	1 and 2 hours only		1-6 hours
Picture quality	Variable Bit rate	Constant Bit rate		Variable Bit rate
Finalising Time	Not needed, always immediately compatible	5-15 minutes	—	Yes
Recording cycles	1000	1000		100 000
Index picture screen on DVD recorder/player	Yes	Text only		Yes/No (3)
Erase old recordings	Yes	No (only last title)		Yes
Add new recordings to disc	Yes	No	No	Yes
Caddy	No	No		Yes



## Specification

### Disc formats

DVD+R/+RW (playback and record)  
DVD-V, DVD-R, CD, CD-RW, CD-DA,  
VCD, SVCD (playback only)

### Audio formats

Stereo AC3, Stereo MPEG (recording)  
LPCM, Stereo AC-3, Stereo MPEG,  
MP3 (playback)  
DTS (by-pass on SPDIF output)

### Video format

MPEG2 MP@ML (playback and record)  
MPEG 1 (playback)

### Playback mode

Normal play, pause, resume,  
fast forward/reverse  
Step forward/backward, Slow  
Direct Title / track access  
Next / previous Title / track / chapter  
Repeat (Title / chapter / all) or (Track / all)  
A-B repeat, Intro scan  
Time search, Auto resume

### Recording control

1, 2, 3, 4 & 6 hours recording modes  
NAFTA record control /  
European record control, 6 timers  
Auto-search and  
manual sort channel installation  
One touch recording, Record Append

### Video Editing

Erase Title  
Highlight play (Favorite Scene Selection) &  
Full title play  
Automatic/manual Chapter marker insertion  
Manual Chapter marker deletion  
Disc write protection  
Edit Title name, Disc name

### User interface

Direct user interface with local front panel  
and TV  
Customizable top level user interface  
Various looks (bitmaps, strings)  
Alternate menus (languages, text, bitmaps)  
Customizable colors, backgrounds, icons  
Languages includes : left to right, ideograms  
Adaptable local display, subset of icons & buttons  
TV shape selection (16/9, 4/3 letterbox & pan scan)  
Clock calendar, Time display

### Disc menu

3 key frames, vertically oriented  
Alternate color, background, icons  
Alternate fonts, text, additional languages, Disc bar  
Customizable icons for channel, time  
Key frame selection supported

### Input / Output

S-Video and Composite video input  
Stereo analog audio input / output  
Y Pb Pr, Y Cb Cr, S-Video, Composite video output  
Digital audio output