Millennium HD

Millennium HD is a flexible film scanner designed to evolve as business needs expand, whilst meeting the high performance specifications demanded today. It has been developed to give users maximum choice, in a range of situations from commercial post-production, film mastering and restoration projects to unique applications in the military and defence industries.

Millennium HD is used all over the world, and our customer base includes established names in North and South America, Europe, Asia, Australia and the Pacific Rim.

Millennium HD includes a brand new set of features and benefits which ensure its performance exceeds that of the original Millennium - by some margin. Using CRT technology, **Millennium HD** produces bright, clean images, and it's unique colour control system enables accurate and precisely repeatable colour tones, which can be easily manipulated to achieve a distinctive and individual 'film look'.

At the heart of **Millennium HD** lies a new cathode ray tube light source, Hi-White, which significantly improves performance to give images which are sharper and less noisy than those using the traditional CRT package.

Millennium HD is an ideal entry-level product, which can evolve as your business requirements change. It is capable of scanning at all resolutions and in all formats - in fact it is the only commercial film scanner capable of handling film formats from Super 8 to 65/70mm.

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A Flexible Tool

In today's ever-changing environment, it is important that your scanner is able to meet whatever challenge you give it - long form or commercial post production - regardless of format. And as your scanning requirements change over the years, so your *Millennium HD* can evolve to meet these needs and delivery scanning for many years to come.

Suitable for all environments - *Millennium HD* is extremely versatile and can be used in a range of applications - including commercial post production, long form feature film and DVD mastering, television episodics and documentaries, HDTV film mastering, film effects and creative colour matching, as well as in the specialist fields of film archive and restoration.

Multi resolution and multi format - *Millennium HD* can scan film at all resolutions, from SD as standard, to HD and 2K, 3K and 4K data resolutions, and in all film formats from Super 8 to 65/70mm. *Millennium HD* includes a brand new range of optics for 16mm, 35mm and also 65/70m film - making it the only film scanner capable of handling the larger format film. These new lenses and film gates ensure increased light throughput, image resolution and geometry and reduced colour fringing - all of which give better image resolution and picture quality for users.

Evolvable - *Millennium HD* is an ideal entry-level film scanner, and is easily upgraded as the industry demands new technology and adopts new standards. Even at its most basic, its functionality and performance are outstanding, giving you incredible value for your investment.

Upgrade path - All original Millennium film scanners can be upgraded to *Millennium HD* standards.
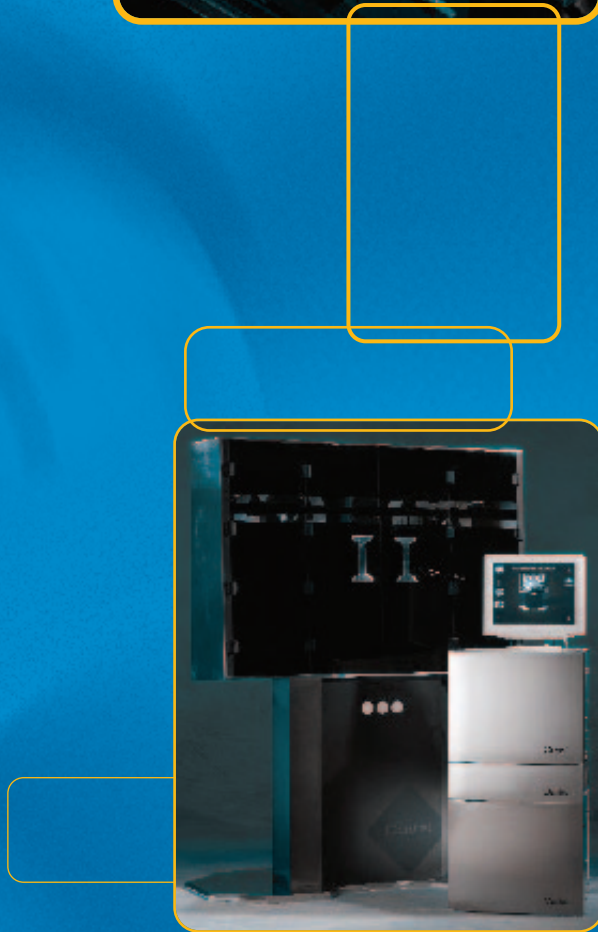
Film

Achieving the 'look'

Millennium HD gives colorists superb control and flexibility over the images they create, to produce images that have a warmth and richness of colour - the classic 'film' look.

The classic 'look' – because *Millennium HD* uses flying spot technology, it is able to capture the delicate texture of film to provide images which have depth and warmth - the classic 'film' look.

High image quality - to ensure best quality images from even the poorest quality of original camera negative, *Millennium HD* includes 'Y-Front', an inspired re-invention of the standard cell-box, which was first pioneered for the original URSA telecine.

Y-Front simplifies the light path and widens the lens system to capture diffused and refracted light, which in turn reduces the effects of scratches.

Colour accuracy and quality – using an impressive RGB colour control system, colorists can choose from an endless colour spectrum, easily and precisely isolating and repeating specific colour selections.

Powerful built-in colour correction – in-built primary and secondary colour correction gives colourists the necessary tools to control tonal expression as well as flexibility in isolating and modifying specific colours.

Advanced aperture correction – *Millennium HD*'s powerful aperture correction system splits colour correction between luminance and chrominance, to give sharper images and reduced noise without magnifying unwanted grain.

Automatic anti-aliasing - giving colorists better control over vertical definition for more detailed pictures, *Millennium HD* includes 'SCAN'dAL', an industry recognised optical anti-aliasing system, first pioneered on the URSA telecine.

Working with *Millennium HD*

Millennium HD has been designed to integrate quickly and easily into any post production suite, and to give you long term satisfaction with your investment.

Compatible – *Millennium HD* works with industry standard controllers, such as da Vinci and Pandora, which means the time taken for colorists to familarise themselves with the technology is much shorter - so you can get the most from your investment - faster.

Easy to use – *Millennium HD* has been designed to be as simple and intuitive to use as possible. Although designed from the ground-up, it was recognised that many users would have started their careers using URSA telecines, so to reduce the learning curve and get you up and running as fast as possible, we included some URSA familiarity into the local control system.

Advanced operating software – New software is designed to improve performance by providing full automated shading alignment, aperture correction, colour channel tracking and IP handling. And for ease of use, it provides preview modes and simple look-up table creation and management.

Low cost of ownership – *Millennium HD* has been designed to give you many years of trouble free, high performance film scanning. And should you experience any problems, *Millennium HD* relies on a simple, uncluttered architecture, which includes a self-diagnostics system and embedded controller for fast and efficient remote diagnostics.

Scanner

General		
Dimensions	Width x height x depth	Film Transport Cabinet: 1400 x 1750 x 650mm
		Electronics Racks:
		2 off 19" (485mm) x 9U (400mm) x 520mm,
		1 off 19" (485mm) x 3U (140mm) x 520mm
		(plus 120mm rear clearance for cabling)
	Approximate weight	Film Transport Chassis: 360 kg
		Electronics Racks: 85 kg (total)
Power supply	Mains supply	90-240 V ac Automatic switching
	Power consumption	1.5 kVA

Film Transport System

Film format	8mm, Super 8mm – single gate
	16mm, Super 16mm – single gate
	35mm, Super 35mm – single gate
	65mm, 70mm – single gate
	VISTA - please check for availability
Film drive	Continuous motion servo, controlled to provide constant film tension (tension selectable)
Film type	Negatives, intermediates, prints
	Colour, Black and White
Film gate	8mm: 8mm, Super 8mm
	16mm: 16mm, Super 16mm
	35mm: 35mm, Super 35mm, Pin registration option
	65/70mm
	All include user-definable perf settings. Air gate system
Film capacity	>2000ft, 15" – 18" diameter
Film frame rate	525 - 1 to 30fps, 48fps, 50fps, 60fps
	625 - 1 to 30fps, 48fps, 50fps, 60fps
	VISTA - up to 25fps, for 1080i (50/59.94HD) only
	2K Data, up to 15fps
	3K and 4K Data, up to 3.75fps.

Film Imaging System

Image scanning device	High resolution scanning cathode ray tube assembly
Image detection device	4" diameter PMTs
Dynamic range	0.0 to >3.3 Density range
	14-bit RGB

Image Functions

Image control	6:1 zoom range
	X and Y pans
	360° rotation
	Variable aspect ratio; fixed 4:3, 16:9, anamorphic
	Dynamic focus and astigmatism control
	X and Y scan geometry correction and control
	Default scans setting of sizing, position framing and geometry
	Scan protection
Image control (Colour)	Broadband 16-bit digital RGB colour channel
	Lift, Gamma, Gain
	Black and White compression
	YUV Aperture Correction
	6-vector Secondary Colour Correction
	Isolation: Hue, choice of vector width
	Effect: Hue, Saturation, and luminance control
	Output blanking for letterbox formats
Outputs	Analogue RGB or YUV for local WFM and picture monitoring
	Serial digital 10 bit linea or (user-definable) log switchable
	SD 4:4:4 (RGB or YUV); 4:2:2 (YUV)
	HD 22:22:22 (RGB or YUV), or 22:11:11 (YUV)
	625/50, 525/59.94 CCIR601/656
	1080i (50/59.94/60)
	1080p (23.98sF/24sF/25sF/24P/25P
	720p
	High Speed Data Link (HSDL) 2K full-frame; 3K and 4K segmented to 2K format

Cintel provides dedicated solutions for the post production and film industries. We have offices in the UK, USA and Hong Kong, along with a network of agents and distributors in over 30 countries world-wide. All of our products are supported through a global service network which includes telephone hot-line support, system updates, technical support and field engineers. Cintel's Millennium HD is part of a range of products designed specifically for the film scanning and image manipulation environment.

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