ARRISCAN

Pushing Film into the Digital World

ARRISCAN

ARRI has combined cutting edge technology with a new scanning philosophy emphasizing quality, efficiency and reliability to create the ARRISCAN motion picture film scanner.

The ARRISCAN enables digital laboratories and postproduction houses to drastically increase their productivity and experience a new standard of quality in film scanning.

Due to its innovative design, the ARRISCAN is suitable for almost any scanning application, including Digital Intermediate, visual effects, restoration work and archiving.

ARRI's vision is to leverage the technical expertise, experience and logistics infrastructure of the worldwide ARRI team to bring unparalleled products and services to the digital film marketplace.

Matching Innovation to Markets

ARRI understands the postproduction process and offers an attractive business model that opens up new vistas for many clients.

The ARRISCAN is a workhorse that can handle short-form projects, long-form documentaries and feature films, digital dailies and archiving work. The applications are numerous, ensuring a short return-on-investment cycle.

Flexible Customization

The parameters of any given application can easily be set and defined with the ARRISCAN software. Whether a client wants to have maximum quality scans for visual effects shots or just needs a quick preview of the film roll, the parameters are all controllable and adjustable, depending on the application.

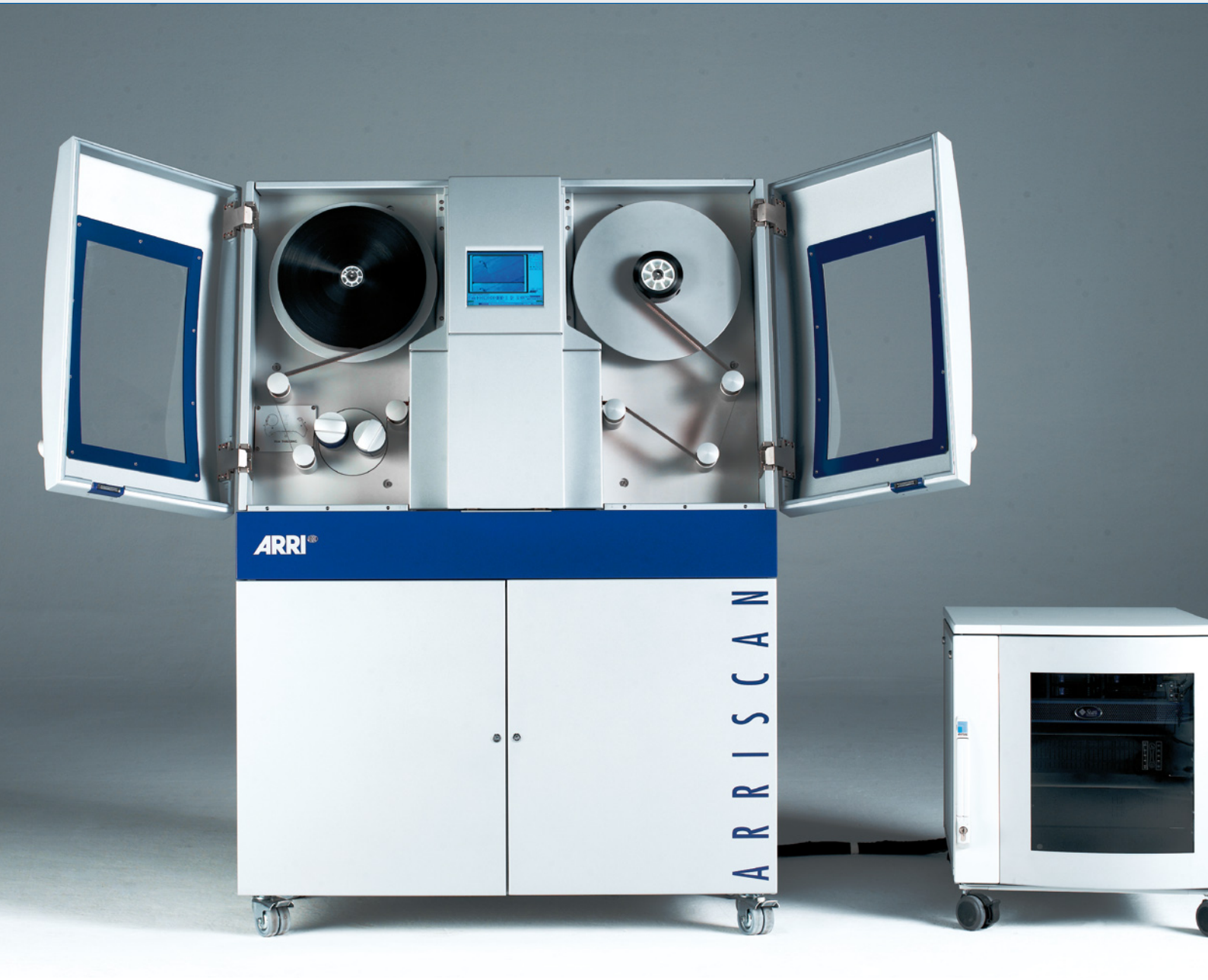
The level of user adaptability and flexibility of the ARRISCAN is unequalled in the market.

Efficiency & Productivity

The ARRISCAN enhances postproduction workflows by reading keycode, importing edit decision lists (EDLs), managing jobs efficiently and utilizing easy-to-use Linux-based software. The integrated touchscreen display allows for rapid film loading and minimal set up time. With a competitive scanning speed the ARRISCAN reduces costs per frame dramatically and has become the preferred choice for digital dailies applications.

PUSHING FILM
INTO THE DIGITAL WORLD

ARRI
CERTIFIED FOR
ARRISCAN



Certify for Quality!

ARRI has initiated a Partner Certification Program in support of the constant growth of the DI market and the continued increase of possible infrastructure combinations. The program identifies industry partners whose products link closely with the ARRISCAN, ARRICUBE and ARRILASER.

Such partners include suppliers of any hardware or software tools that are compatible with ARRI file formats and systems. A complete list of these partners can be requested from the ARRI DI sales department.

Solid ARRI Engineering & Worldwide Support

Crucial to a stable and efficient workflow is a solid and robust system. ARRI's world renowned tradition of producing reliable and durable equipment is evident in every element of the ARRISCAN, from the CMOS sensor to the film transport mechanism.

A well established, worldwide ARRI sales and service structure is in place to provide customers with dependable support and absolute peace of mind.

Digital Dailies

In recent years more and more production companies have come to see the disadvantages of a typical telecine-based workflow. Colors, geometries and the complete look of the offline image data can be dramatically different to how the final result will appear after high resolution scans. Very often the director or DoP will be puzzled by inconsistencies between the offline cut and the final online edit.

With the ARRISCAN these inconsistencies need no longer exist. Dailies can be scanned at a reduced resolution very quickly and stored on disks for further use. Once the edit decision list is available the film can be scanned at a higher resolution and higher dynamic range, and the results will match the color and geometry of the lower resolution dailies.

The ARRISCAN has opened up dramatic workflow enhancements:

- Dailies and high resolution scans will match in color and geometry
- Grading of digital dailies can be easily reproduced in the final grading process
- Digital dailies data can be used for direct low res distribution
- 2K dailies data can even be used for final results
- Data can be directly stored on mass storage, with no transfer engine or color space conversion required
- One device (ARRISCAN) can be used for dailies and finals

Digital Dailies Base Package

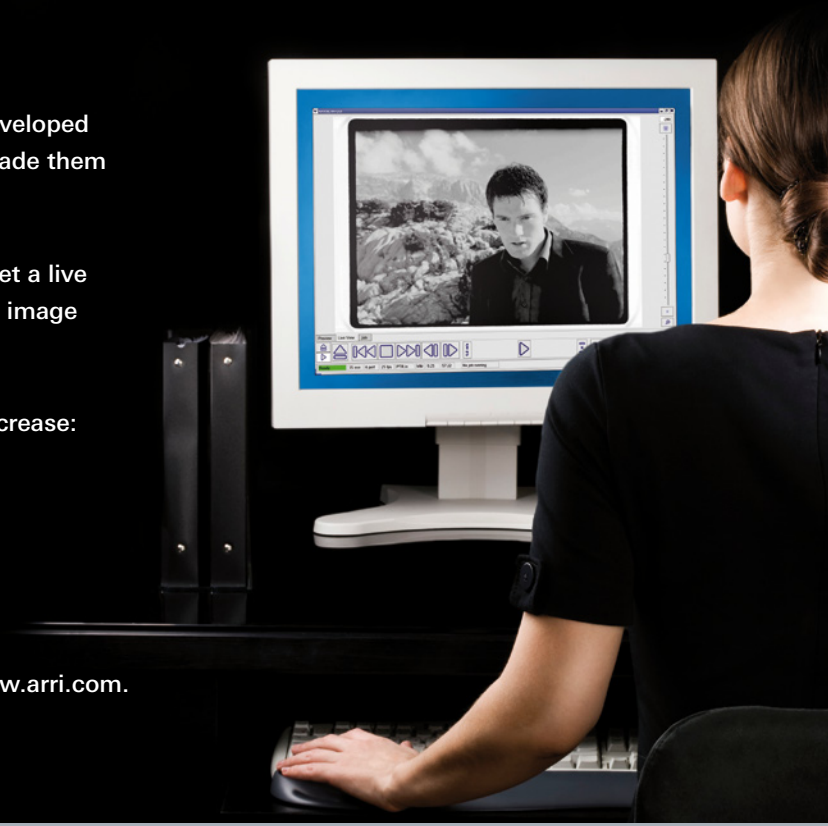
In addition to these advantages, the ARRI team has developed specific features for the digital dailies workflow and made them available in the Digital Dailies Base Package option.

In this software update, the ARRISCAN operator will get a live preview while winding. This preview is a monochrome image showing the content of a film reel 'on-the-fly'.

The base package also includes an additional speed increase:

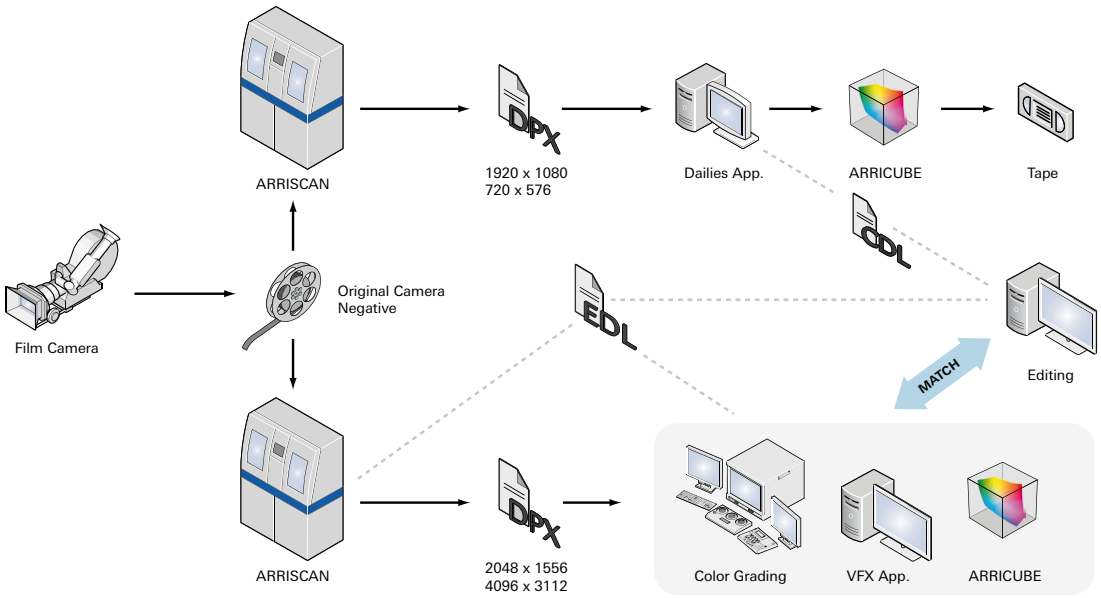
- 1.5 fps for 6K oversampled to 4K and 6K oversampled to 2K
- 5 fps for 3K oversampled to 2K

Please find further information in the Digital Dailies Base Package product data sheet at www.arri.com.

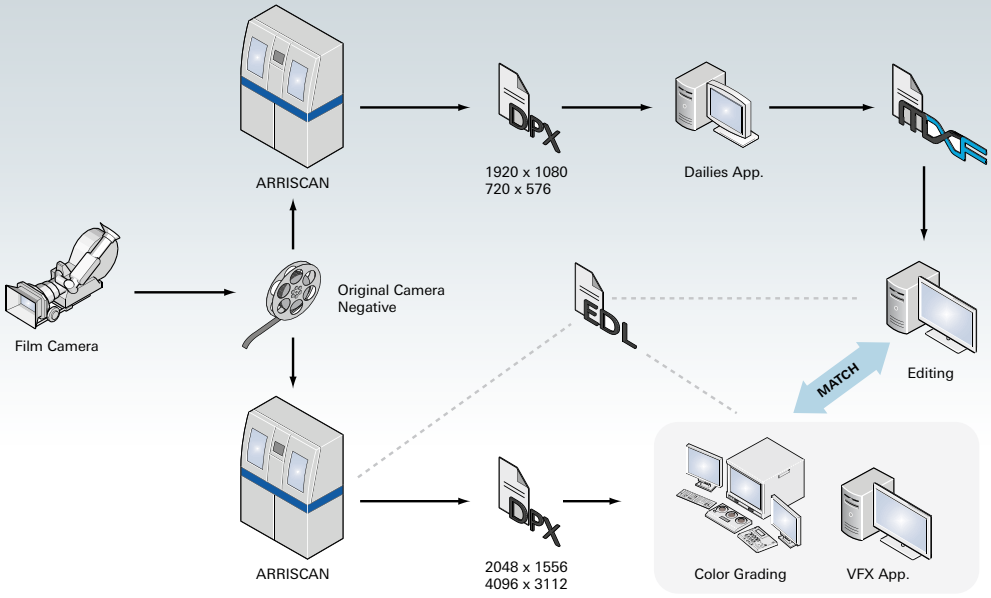


MATCH COLOR AND GEOMETRY

Digital Dailies



Digital Dailies Tapeless



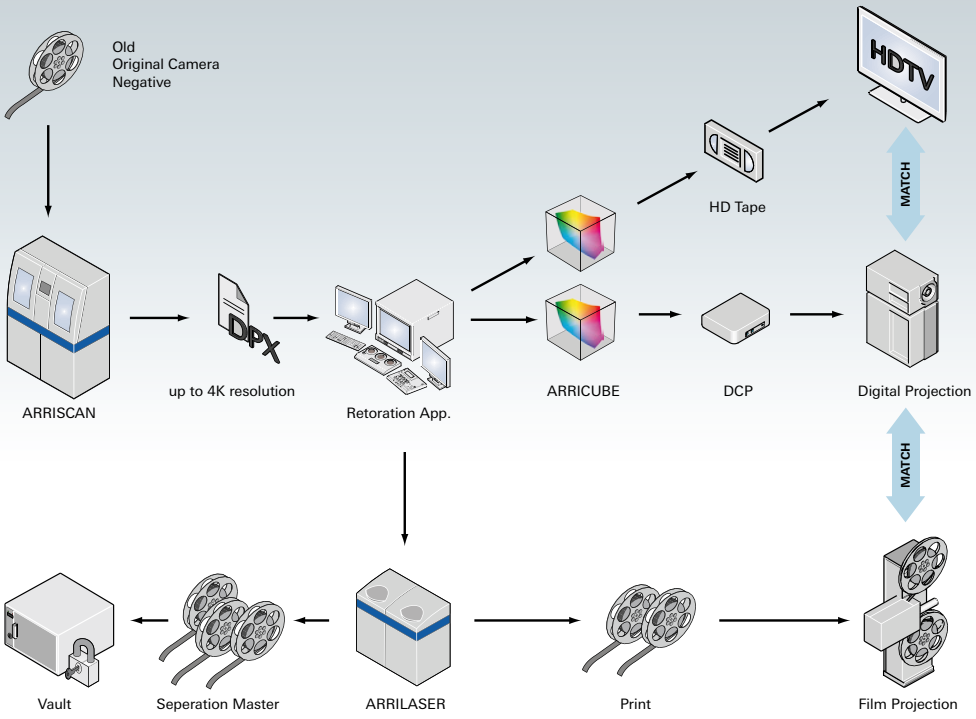
Archive & Restoration

Millions of meters of film are stored in film archives worldwide. Some material is in very good condition, but as film ages it can show signs of becoming damaged, shrunken and brittle. It is especially for this kind of material that the ARRISCAN has the option to be operated in various extra gentle film transport modes.

Mechanical pin registration can be deactivated and the transport speed slowed down to cope with certain types of damage. The LEDs inside the ARRISCAN are known as a cold light source so there is no thermal stress on the film, which is a crucial requirement when dealing with nitrate film for example.

The current features at a glance:

- Extra safe film loading procedure
- Transport speed can be decreased for brittle material
- Controllable film tension
- Mechanical pins can be retracted for shrunken film



Restoration application using ARRISCAN data in up to 4K resolution.

For color filmstock:

- corrected image by Kodak Digital ICE + IR information
- severe artefacts are not corrected but indicated in the defect matte

HIGH-END FILM SCANNING

Commercials

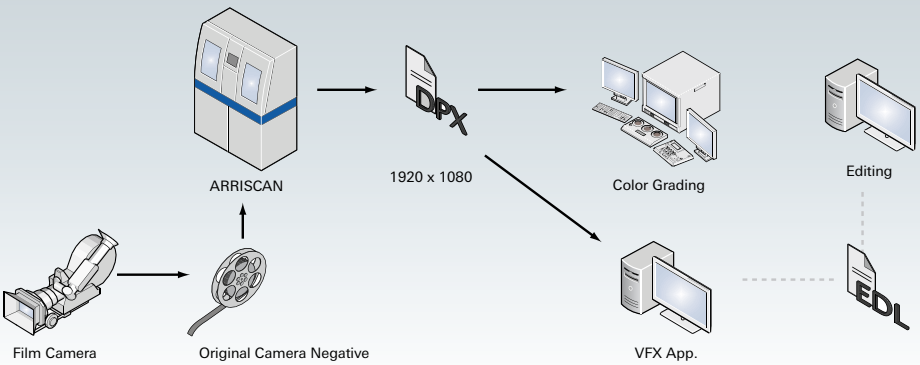
Most commercials are finished in HD resolution and therefore do not require resolutions higher than 2K. The ARRISCAN Speed3K model features a maximum scanning resolution of 3K (oversampled to 2K) and is designed for precisely these kinds of applications. It delivers high end image quality at a superior speed and fits seamlessly into a tapeless workflow.

Scanning in 2K resolution and simultaneously storing 1K proxies allows for a highly paralleled workflow. The 1K proxies are used for best-light color correction because many agencies like to work with material that already has the 'look' of the commercial in the edit suite. The deliverables for the edit can be generated traditionally as tapes or rendered in DNxHD format, which allows for fast import into an Avid system.

What makes this workflow so interesting is the fact that visual effects work and color grading can begin before editing is finished, because all the footage is present on disks with the full latitude and in high resolution. Tape-to-tape color correction processes such as a first transfer become obsolete and the time that is apparently lost by using a non real-time film scanner can easily be regained.

The advantages for a commercials workflow at a glance:

- Complete negative information will be transferred to digital data
- No artist is necessary for the scanning processes
- Full grading can be done on the scans
- No additional equipment like a transfer engine is necessary
- Oversampling delivers sharper SD images
- Special ARRISCAN Speed3K model is available



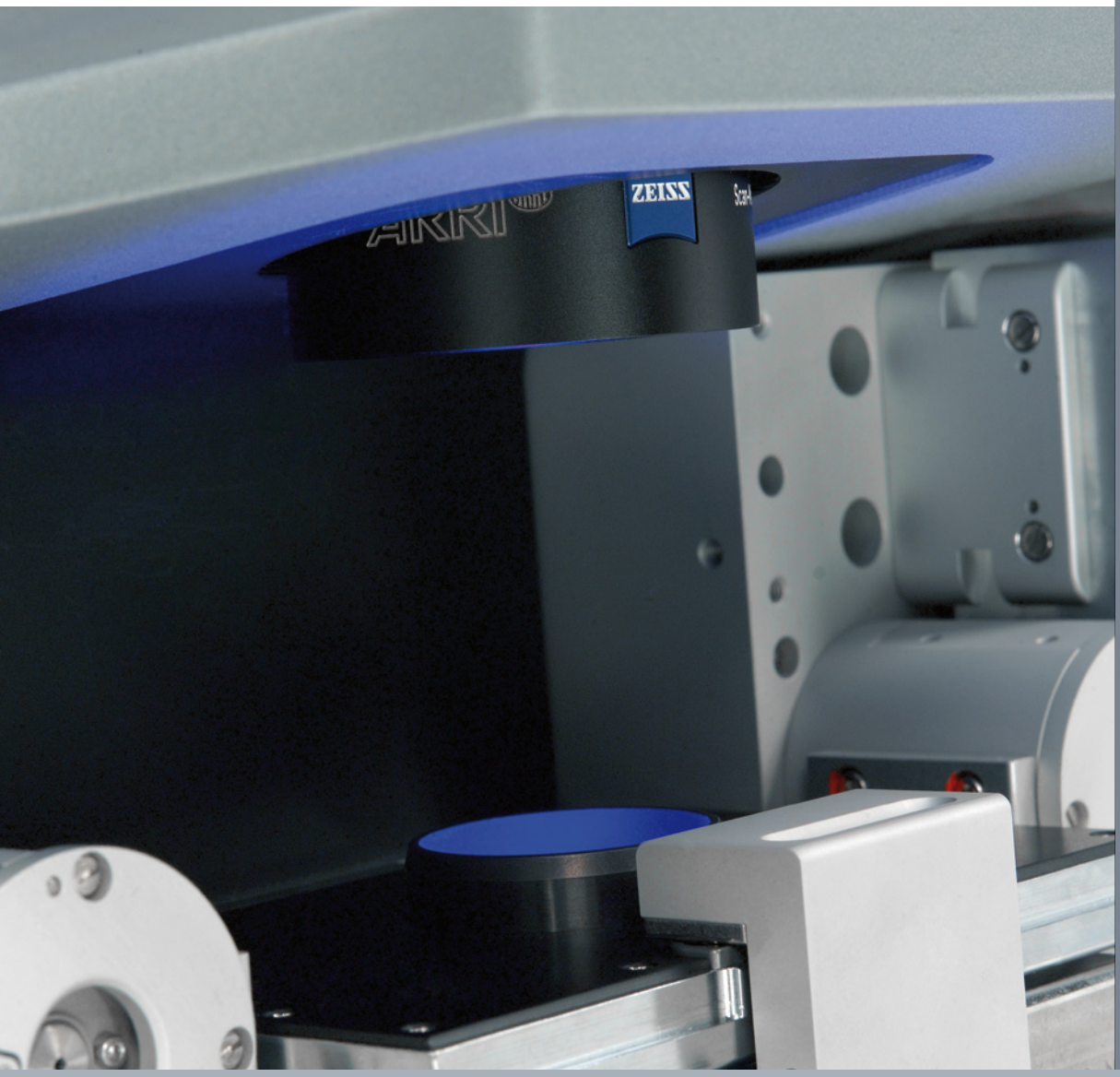
Illumination

The key to excellent color reproduction is the illumination system. For a light source the ARRISCAN uses an array of LEDs, which are characterized by low power consumption, high efficiency, excellent color separation and great durability. LEDs guarantee perfect image quality and place the lowest possible strain on the film by minimizing thermal dissipation.

The illumination is digitally adjusted and optimized to suit different film stocks via a closed loop regulation system. In addition LEDs will not change their spectral characteristics; there is no drift and no ageing.

A database keeps track of the illumination parameters used with a given film stock and the results achieved by an ARRISCAN will be repeatable over time with different machines

STATE OF THE ART TECHNOLOGY



Infrared Against Scratches

Besides the RGB illumination unit, the ARRISCAN uses an additional infrared illumination channel to identify film defects. Since film color dyes are transparent for infrared light, the ARRISCAN sees only film defects (such as dust, lint and scratches) in the infrared image, which means such defects can quickly be isolated and corrected.

Kodak's DIGITAL ICE Technology uses the infrared channel of the ARRISCAN to automatically remove dust, scratches and blemishes from a scanned image. First, DIGITAL ICE identifies all defects in the image and then reconstructs the true color information wherever possible; the number of blemishes is thereby reduced significantly. Remaining defects that are too severe to be reconstructed perfectly are marked in an additional defect map, which can either be stored as a matte or embedded into the scanned image. Downstream workflow productivity both in terms of labor and time is significantly improved.

Optimized for the ARRISCAN image processing chain, DIGITAL ICE is seamlessly embedded into the data path and is applied to the images on-the-fly while scanning.

The DIGITAL ICE package is available as an additional option for the ARRISCAN.

Original scan

Defect matte is created

Corrected image
Image scanned by ARRISCAN using KODAK DIGITAL ICE Technology

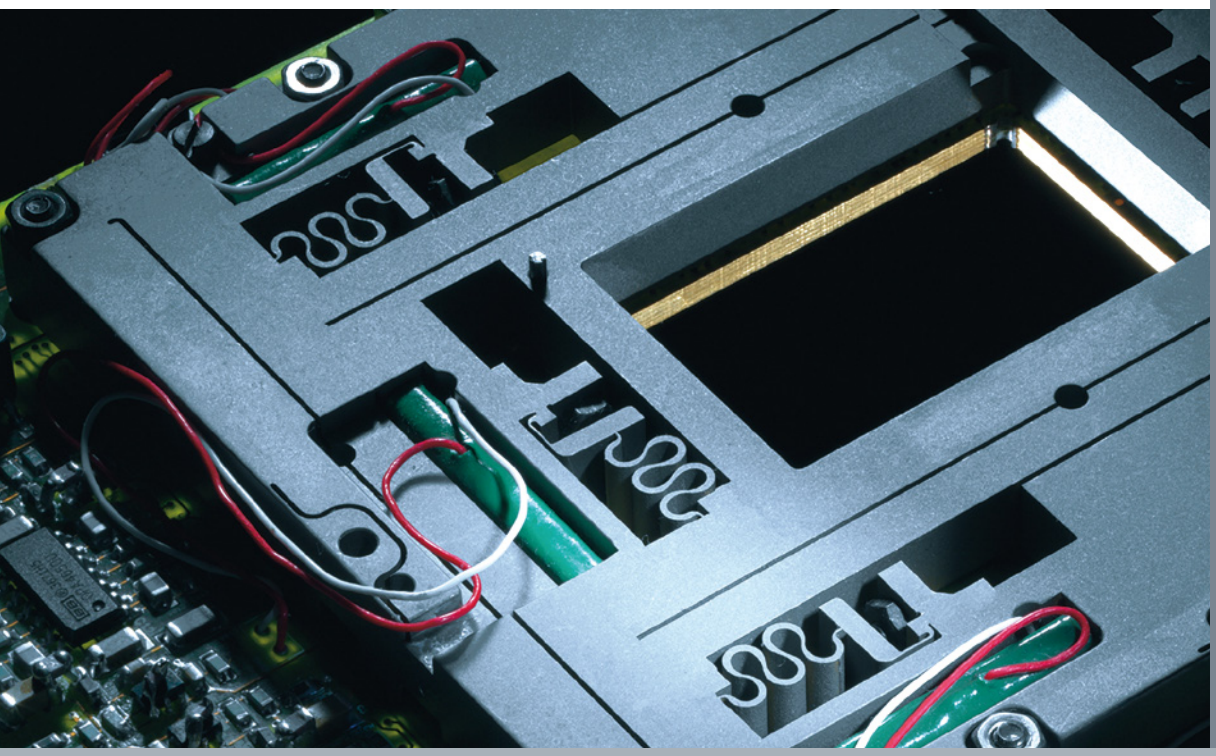
Image Capture

For capturing the image a custom-designed CMOS area sensor is utilized. CMOS technology presents several advantages: high speed performance by parallel data outputs, flexible output modes through active-pixel-technology and film protection through short exposure times.

The ARRI-designed CMOS chip sensor is optimized for speed and for quality. It is a robust 35 mm area sensor with low power consumption and can be operated at much higher speeds than traditional sensors. Combined with the LED light source it represents an ideal method of capturing high quality images.

Extended Dynamic Range

When utilizing the 'double exposure' method, each frame of film is exposed twice at different light levels. Both of these images are digitized and composited into one output image. This method is used mainly for film stocks with a high density range; it ensures excellent signal quality (signal-to-noise ratio), even in the most demanding situations.

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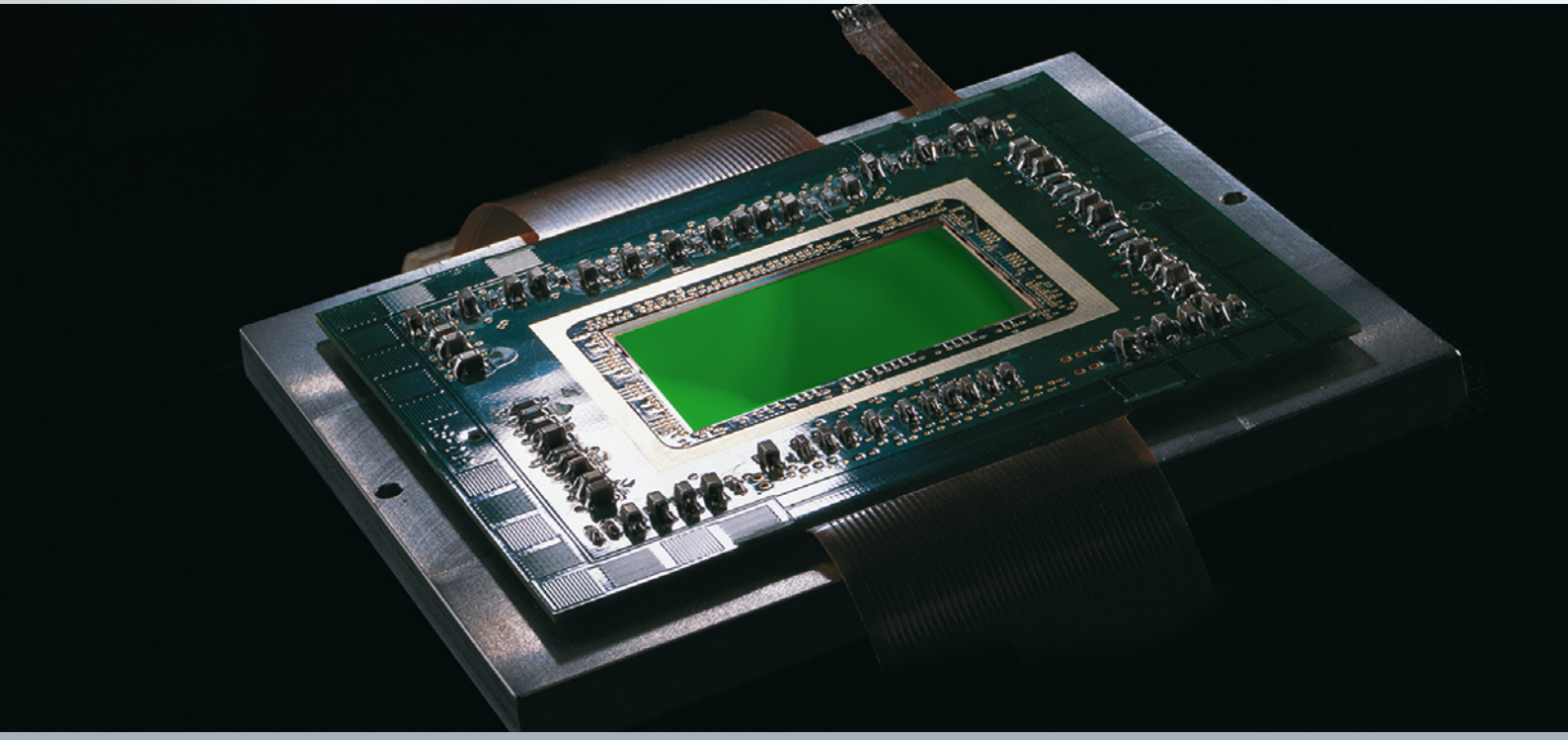

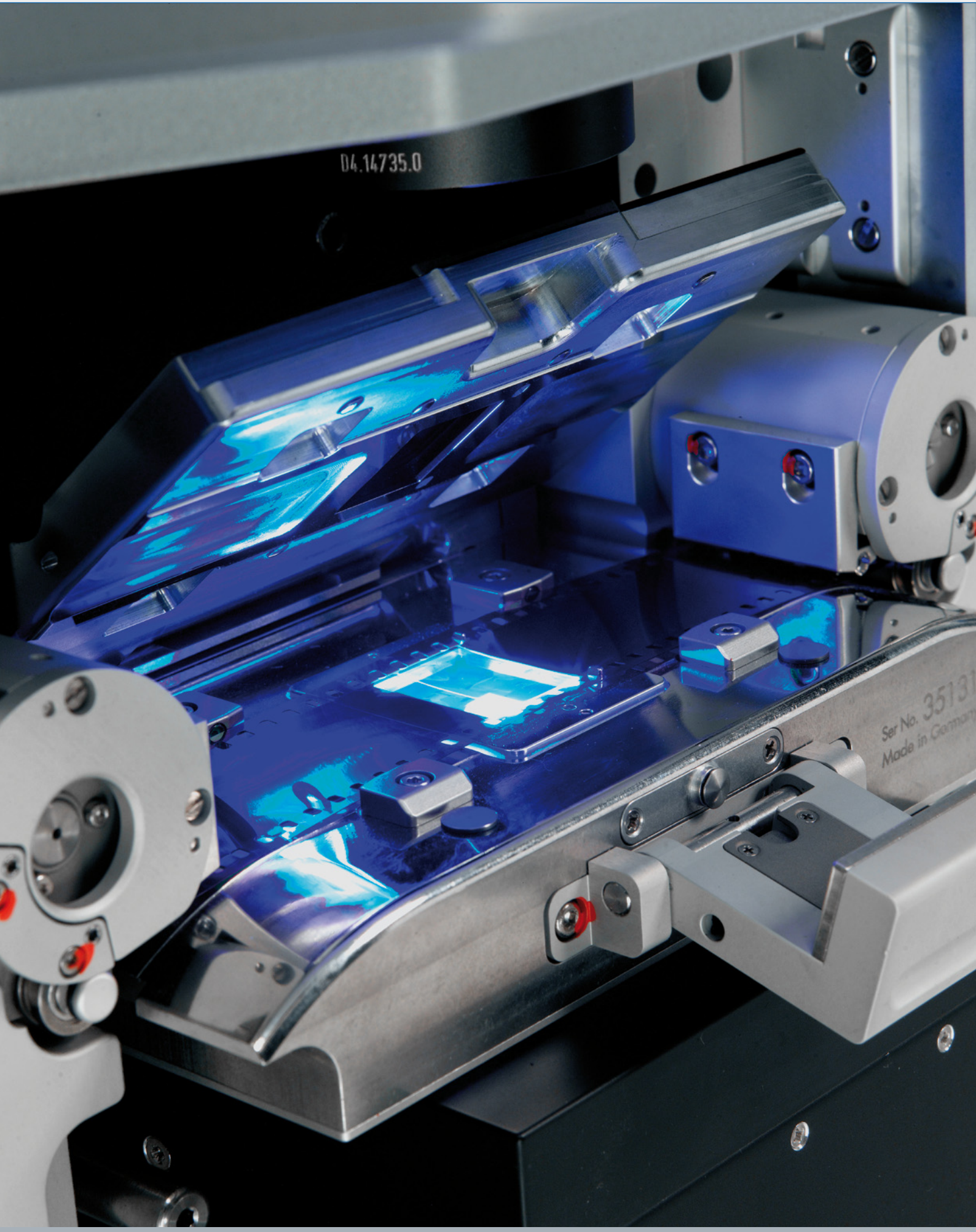
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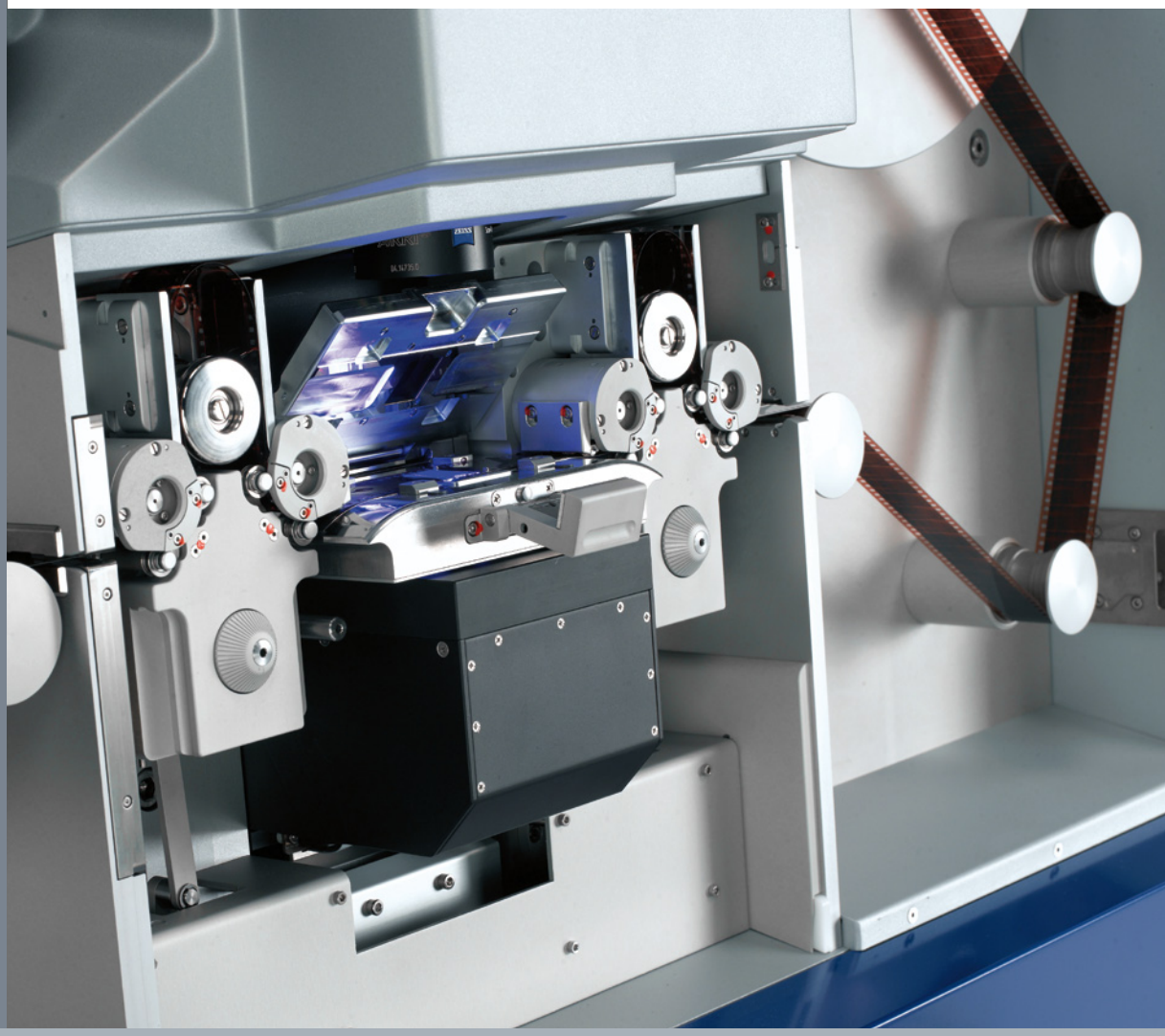
Film Transport

The fast and pin-registered film transport of the ARRISCAN is another innovation in itself.

Designed and manufactured by ARRI, the transport mechanism is a precision system that ensures film safety at all times and guarantees maximum image steadiness. The exchangeable film gate makes it very easy to switch from 35 mm to 16 mm or to switch to future ARRISCAN film gate options.

The transportation unit is constantly monitored to maximize the safety of potentially irreplaceable film negatives. Benefiting from ARRI's 90 years of experience in camera design, the ARRISCAN film transport is robust and reliable; even shrunken film can be put through the mechanism and will be transported with the necessary caution.



Technical Data

Film formats	35 mm 2, 3, 4-perforation 16 mm and Super 16 (option)
Imaging device	Custom CMOS area sensor with piezo actuator for microscanning Native resolution: 3K x 2K Max. resolution with microscanning: 6K x 4K
Illumination	High power LEDs (R, G, B, IR) with feedback control for optimum long-term stability
Optical system	Custom Zeiss/ARRI lens with Adjustable pitch and Autofocus
Resolutions	2K downsampled from 3K or 6K 4K downsampled from 6K 3K native 6K native
Bit depth	Single exposure: 14-bit Double exposure: true 16-bit
Downsample filters	User adjustable from crisp to soft Film characteristics are preserved Optimized for high contrast, intermediate, camera negative
Film transport	Mechanical pin registration Fully computerized transport with adjustable parameters (speed, ramping, tension), 2 PTRs
Shuttle speed	0.3 m/s, 1.0 m/s, 2.0 m/s (35 mm only)
Frame rate (Standard configuration)	2K (3K native): 1 fps 4K, 2K (6K native): 0.25 fps
Frame rate (Speed Pack 1 option)	2K (3K native): 4 fps 4K, 2K (6K native): 1 fps
Frame rate (Digital Dailies Base Package option)	2K (3K native): 5 fps 2K (single exposure): 8 fps 4K, 2K (6K native): 1.3 fps
Data formats	Cineon 10-bit log DPX 10-bit log, 16-bit log, 16-bit lin TIFF 16-bit TIFF 8-bit (proxies only)
Color calibration	Status M density, printing density, custom matrix, custom LUT
Application software	GUI on local touch screen and on remote PC via standard network connection; Interactive job editor; Fast, automatic grey balance and base calibration; Live preview during shuttling (Dailies Package only)
Workflow	Customizable EDL importer Keycode-based scanning GUI and script-based job management
Storage	Direct connection to SAN via FC (ADIC, CXFS) Native support for Quantel Gene Pool NAS connection via 1G Ethernet (single or multi channel) or InfiniBand Direct support of ftp protocol BrightClip enabled
Host OS	RHEL 4 (kernel 2.6.9)
Remote OS	Windows XP
Options	Speed Pack 1 Digital Dailies Base Package 16 mm gate (and loop builders) Kodak Digital Ice Technology for automated dust removal

Technical data are subject to change without notice.

Germany

Arnold & Richter Cine Technik (Headquarters, Sales & Service)
Türkenstraße 89, D-80799 Munich, Germany
Tel: +49 (0)89 3809 0, Fax: +49 (0)89 3809 1245

Great Britain

ARRI GB Limited (Sales & Service)
2 Highbridge, Oxford Road, Uxbridge, Middlesex, UB8 1LX, Great Britain
Imaging Equipment Sales: Allan Fyfe, afyfe@arri-gb.com
Tel: +44 (0)1895 457 000, Fax: +44 (0)1895 457 001

Italy

ARRI Italia S.r.l. (Sales & Service, Milan)
Viale Edison 318, 20099 Sesto San Giovanni (Milano), Italy
General Manager: Antonio Cazzaniga, acazzaniga@arri.it
Tel: +39 (02)262 271 75, Fax: +39 (02)242 1692

ARRI Italia S.r.l. (Sales & Service, Rome)
Via Placanica 97, 00040 Morena (Roma), Italy
Camera Sales: Mauro Sembroni, msembroni@arri.it
Tel: +39 (06)79 89 021, Fax: +39 (06)79 89 02 206

USA

ARRI Inc. (Sales & Service, East Coast)
617 Route 303, Blauvelt, NY 10913-1109, USA
Vice President: Jürgen Schwinzer, jschwinzer@arri.com
Tel: +1 (845)353 1400, Fax: +1 (845)425 1250

ARRI Inc. (Sales & Service, West Coast)
600 North Victory Blvd., Burbank, CA 91502-1639, USA
Vice President: Bill Russell, brussell@arri.com
Tel: +1 (818)841 7070, Fax: +1 (818)848 4028

Canada

ARRI Canada Limited (Sales & Service)
415 Horner Ave. Unit 11 & 12, Toronto, Ontario M8W 4W3, Canada
Accounts Manager, Camera & Digital Systems:
Sébastien Laffoux, seb@arrican.com
Tel: +1 (416)255 3335, Fax: +1 (416)255 3399

Asia

ARRI Asia Limited
3B, 29/F, The Centrium, 60 Wyndham Street, Central, Hong Kong
General Manager: Paul Ivan, pivan@arriasia.hk
Tel: +852 2571 6288, Fax: +852 2875 9181

Australia

ARRI Australia PTY Limited
Unit 6C, 5 Talavera Road, Macquarie Park NSW 2113, Sydney, Australia
General Manager: Stefan Sedlmeier, ssedlmeier@arri.com.au
Tel: +61 (2)9855 4308, Fax: +61 (2)9855 4301

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Arnold & Richter Cine Technik GmbH & Co. Betriebs KG · Türkenstrasse 89 · D-80799 Munich · phone +49 (0)89 3809 0 · fax +49 (0)89 3809 1245 · www.arri.com