

METIS SYSTEMS

HIGH QUALITY SCANNERS



SynchroLight Lighting

DRS 5070

ENG v.0310-1.1

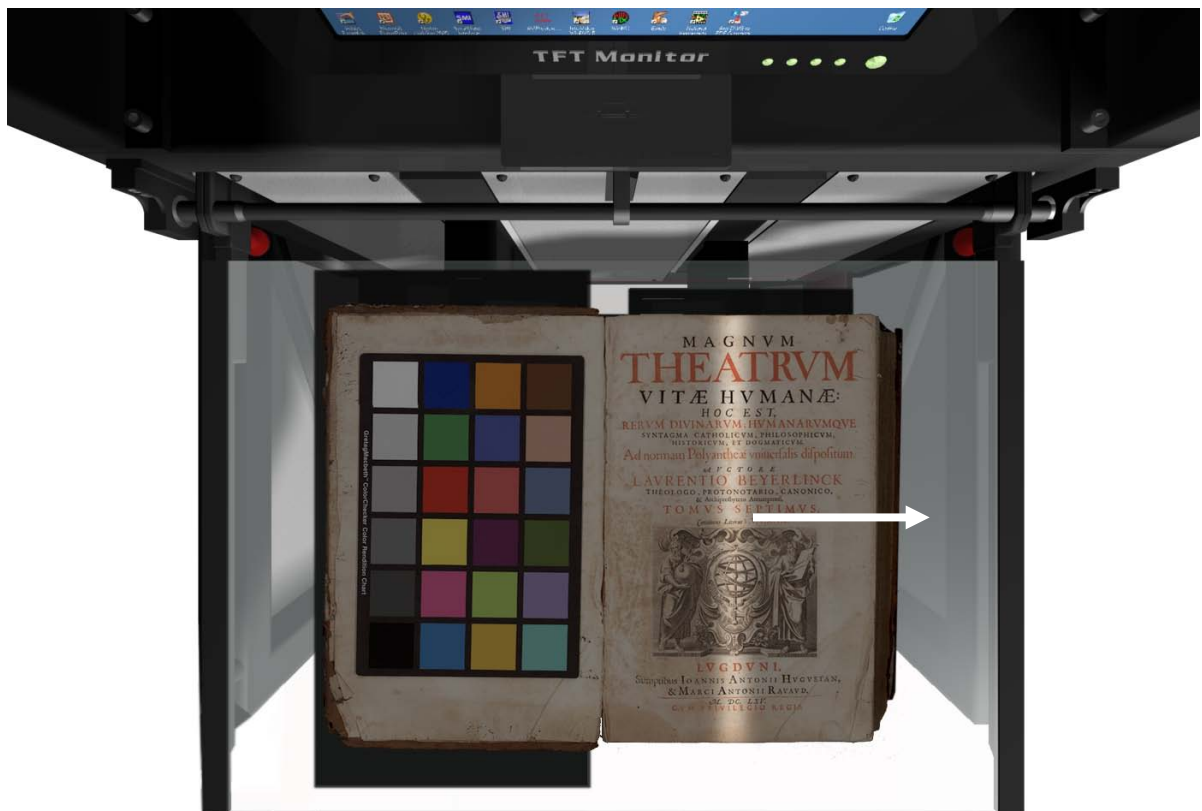
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INTRODUCTION

The SynchroLight lighting system integrated into the DRS 5070 system is the result of years of research, development and improvement made by Metis. Among the main features of the SynchroLight there are:

- Light is focused and concentrated into synchronized light blades. The unique technique of light concentration, implemented into the DRS 5070, vastly reduces the amount of light radiated on the document during the scan, and almost totally eliminate the scattered light in the working environment and towards the operator. The light is in fact concentrated in a thin line (a few cm wide) corresponding to the CCD line. During the scan the light moves on the original in perfect synchronization with the CCD in order to provide a perfectly uniform and homogeneous illumination.



METIS SYSTEMS

HIGH QUALITY SCANNERS

- Unlike traditional lighting systems, based on fluorescent or CCFL light sources, the DRS 5070 SynchroLight integrate special Xenon lamps which are virtually insensitive to temperature changes in the environment and lead to a more constant illumination over time; furthermore, these light sources also have a very long lifetime and ages very low in colorimetric terms compared to other existing technologies.
- The SynchroLight is active practically only during the scan (instantaneously power On/Off).
- The original also remains exposed to the light only for the few seconds needed to complete the acquisition.
- Light CRI (Color Rendering Index) of the SynchroLight is among the highest available today. The light also has an ideal color temperature of 5400° K perfectly suitable for professional reproduction purposes and perfectly matched on the specific sensitivity of the CCD used.
- Light emitted is completely IR/UV free.
- The SynchroLight have been designed in order to provide a higher level of light uniformity (compared to most systems available on the market).
- The SynchroLight provides up to 15 different lighting schematic in order to allow the light to be adapted to specific needs of reproduction such as: glossy originals, gold, parchments, etc.. This is a unique feature, in fact most scanners in the market provides only one (fixed) light schematics resulting in one unique possible result.

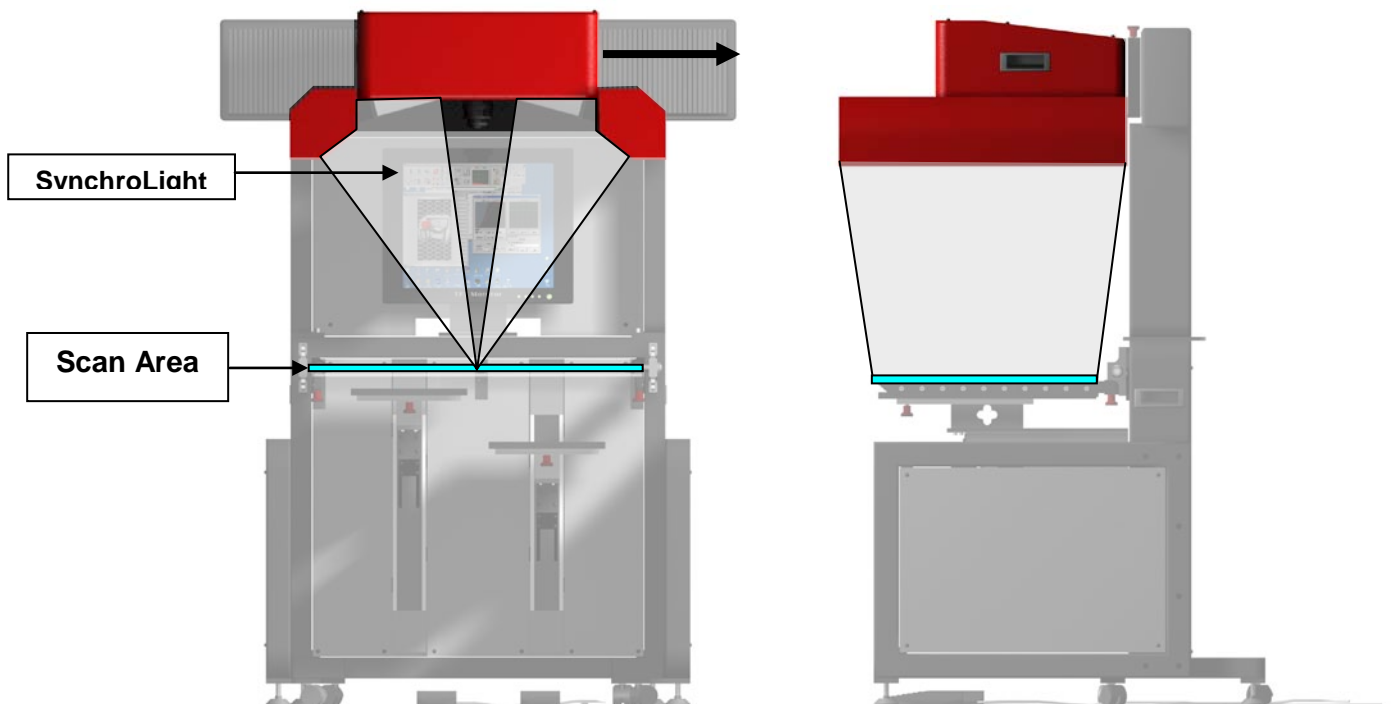
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Light requirements

Light distribution over the scan area is very important in order to obtain optimal results and color uniformity. The SynchroLight integrated into the DRS 5070 system is the perfect solution to various needs such as :

- the need to radiate the maximum amount of light in a very small area (the focused light line) in order to provide the CCD sensor an optimal amount of light even at faster scan times and without causing the introduction of noise into the images.
- the need to provide an uniformly distributed enlightening over the entire scan area.
- the need to provide optimal enlightening schematics (light angles) in order to control the reflections over the different type of originals (the DRS 5070 allows 15 different light schematics).
- the need to provide constant direction and intensity of light over the entire scanning surface (the light intensity and angle should not vary throughout the scan area otherwise the reflections are out of control).

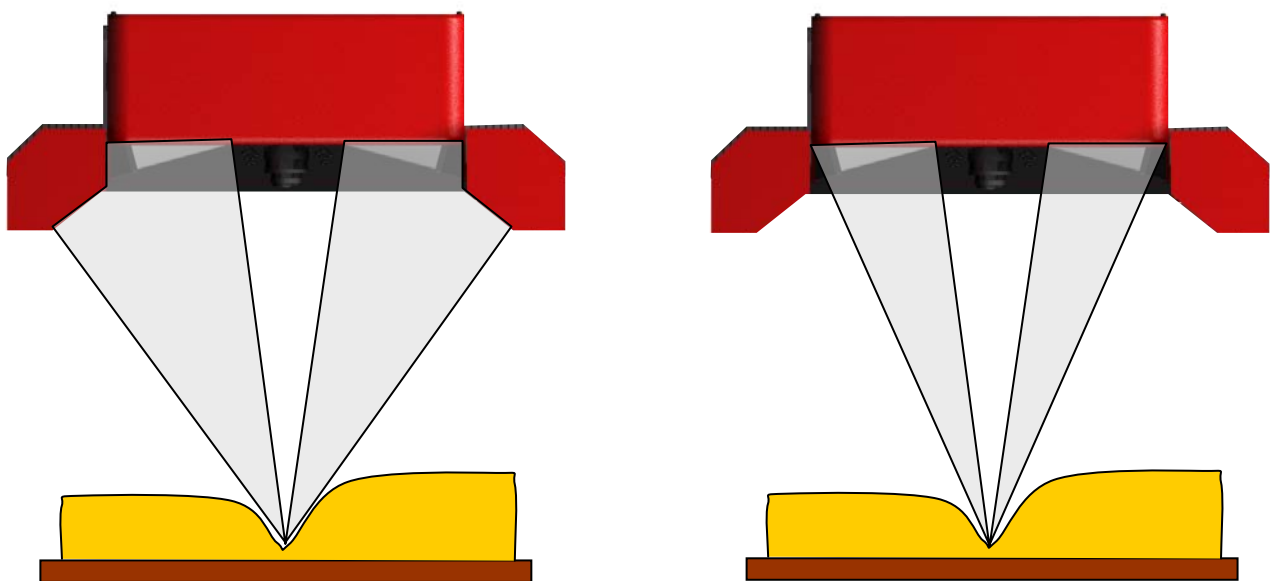


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Books

SynchroLight lighting is particularly optimized for enlightening the inside of a book as the light angulations have been selected in order to find a good balance between the need of minimizing reflections on glossy originals and the need for reducing shadows inside the book. The result is very good and generally the internal part of the book is perfectly enlightened while reflections are minimized.



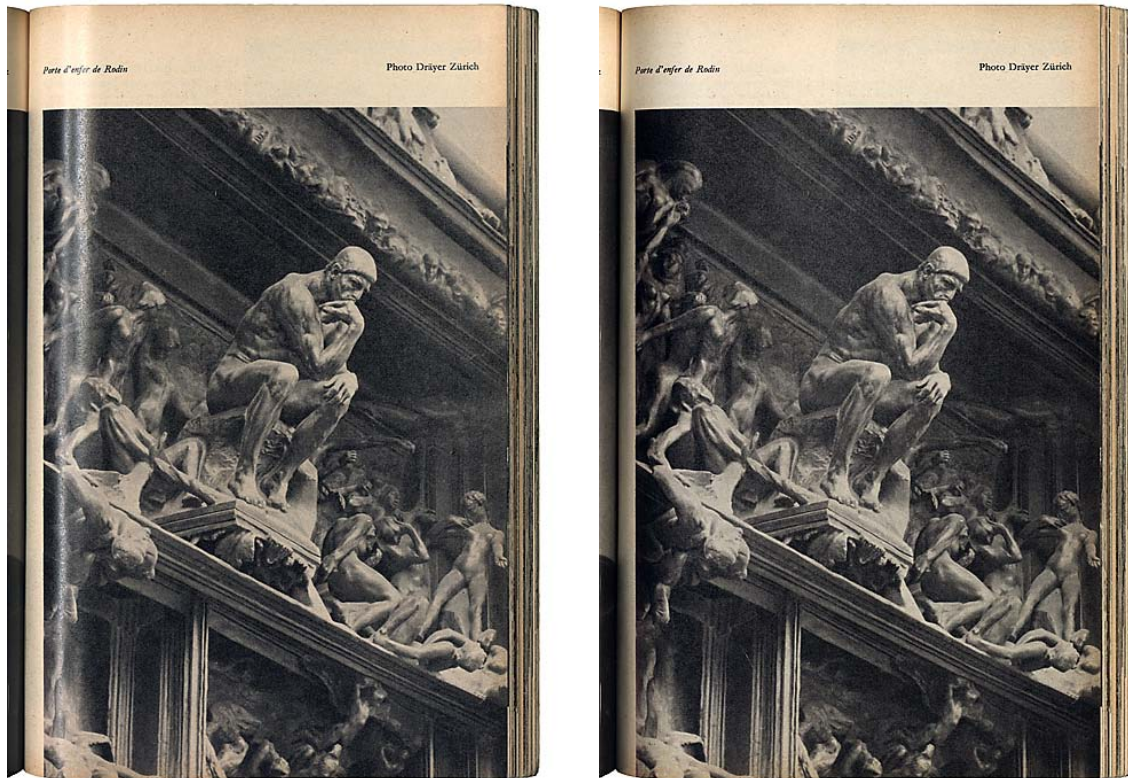
15 Lighting Schematics

The SynchroLight integrated into DRS 5070 system provides 15 different lighting schematic useful in optimizing the digital reproduction of particular types of originals. In fact not all originals respond similarly to the light and in order to accentuate or otherwise mitigate some aspects of their nature (or perhaps to eliminate unwanted reflections) it's required to be able to adjust the lighting angles. Within the DRS 5070 specific user selectable light schematics allow optimizing for glossy originals in order to avoid and even completely eliminate unwanted reflections (it depends from the original and the selected schematic).

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The following image show 2 different results obtained with 2 possible SynchroLight schematics :



In the DRS 5070 system, by selecting the proper light schematics (usually an “unbalanced” light coming from one side only), it’s also possible to emphasize the document texture and even the smaller details or at the opposite to deliver a more uniform background that maximize document readability.

Usually balanced light provide the best solution for general reproduction purposes as it reduces the impact of the texture over the final image by maximizing the contrast between the written text and the background and by consequence the readability of the document.

Anyway reproducing some particular type of documents (as papyrus, parchments which may present interesting and valuable information in the texture) may require an unbalanced lighting which is also allowed into the DRS 5070 system. Scanning books with limited opening angle may also require an “unbalanced” light schematic

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HIGH QUALITY SCANNERS

as the light on one side may otherwise cause unwanted shadows or reflections over the pages.

DRS SynchroLight allow for up to 3 different light schematics for “balanced” light (which should be used for more uniform enlightening and maximizing document readability). Furthermore up to 12 different Light schematics may be created for “unbalanced” effect (i.e. as usually required in order to maximize texture and media details or to avoid specific reflections).

The following images show 9 of the 15 possible light schematics within the DRS 5070 system:



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The following images show a detail of the same original scanned with 3 different “balanced” light schematics available from the DRS 5070 SynchroLight. In the images different texture and reflection levels are visible depending on the selected schematics (furthermore more details in the texture/background would also be possible with an unbalanced lighting).

