

Hornet [A0⁺] X semi-robotic

The high-end large format scanner

... many good reasons



... speak for it

Preserving the Cultural Heritage

Only he who knows the past has a future

Wilhelm von Humboldt (1767-1835)



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Digitization has become a vital contribution to the protection of our cultural heritage.

Based on decades of experience, **book2net** offers customized scanning solutions that are used by archives, museums, libraries, universities, public administrations and service providers worldwide.

In close cooperation with our customers we are continuously developing our large product portfolio according to the latest technology and environmental standards to ensure an ideal balance between the necessary conservatory, ecological and economical requirements. Quality, productivity and ergonomics, are our priorities.

Our specially adapted software allows an optimal workflow and integration of metadata for a systematic evaluation of the digitized objects.

Equipped with our pioneering **X** Matrix Sensor Technology, our systems are setting new standards regarding image quality, resolution and processing time.

They are providing ideal conditions for the most gentle, contactless digitization of very precious and fragile books, documents or objects as well as very sensitive artworks.

Whether you wish to digitize **autographs, books, maps, architectural plans, notes, prints, photographs, miniatures, coins, jewelry, archaeological finds, scientific specimens** or **archival and documentary material** such as **glass plate negatives** - **we offer customized and innovative solutions!**

Hornet [A0+] X semi-robotic

... meets the highest standards

With our large format scanner **book2net Hornet**, we developed a high-performance device, which is particularly suitable for the use in mass digitization of large format, inconvenient or especially heavy originals (e.g. periodicals) and, at the same time, guarantees a high level of gentle treatment.



A0 full area scans
Layout section 860 x 1200 mm

High Quality & Speed

The **Hornet A0 semi-robotic** is equipped with a motor driven, PLC-controlled glass plate in A0 format, thus ensuring the most gentle and productive use of large format books and documents.

The combination of our pioneering **CMOS 71 MP Sensor** and our **semi-robotic technology** provides maximum quality and performance for the highest conservation standards.



- **X Matrix Sensor Technology**
High performance area sensors
- Available versions
 - X 300 dpi
 - X 400 dpi
- Highly modern PLC control
- Most precise drive
(1/100 mm exact)
- Variable control:
 - fully automatic
 - semi-automatic
 - manual
 - time controlled
 - action controlled
 - user controlled
- Programmable scan operational processes
- Traverse paths, independent of book sizes
- Wear free precision guidance of the glass plate
- Sensitive fully electronically pressure control
- High user safety
- Non-reflective glass for shadow-free results (with museum glass on demand)
- Usable with or without glass plate

X71 — CMOS 71 MP Camera

Cutting-edge technology « *Made by MICROBOX* »



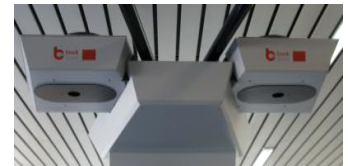
... guaranteeing the highest quality and performance!

The new **X71** camera, developed by **MICROBOX book2net**, does represent world-leading technology in modern digital cameras.

Our **CMOS 71 MP** sensor technology is considered as the key technology of the future, allowing high-resolution images with superior image quality, ease of use and incredible speed.

... integrated in the **Hornet A0 semi-robotic**

The use of our pioneering technology brings you additional advantages in image quality and productivity.



Enjoy the benefits:

- Double CMOS 71 MP sensor with BSI technic
- Exceptional image quality with perfect color management
- High resolution
- 12 cm depth of field
- Fast imaging
- Reduced processing times
- Automatic exposure control
- Minimal lighting requirements
- USB 3.0 interface (for optimal transfer rate)
- Optimized signal to noise relation



Exceptional depth of field

Semi-robotic – Smooth Productivity!

The mass digitization of large-format books and documents involves a high throughput rate. This requires high productivity as well as the highest possible relief of the user at his work station. Hence, while developing the **Hornet A0 semi-robotic**, we placed particular emphasis on the rationalization of a smooth workflow.

Streamlining of the entire workflow



- Innovative **X Matrix Sensor Technology**
- High performance area sensors
- **300 dpi / 400 dpi** versions available
- **0.3 sec.** Scanning time (A0 Color / 300 dpi)
- **3.5 sec.** Processing time (scanning + imaging + storage)
- SSD
- USB 3.0 Interface
- Extremely high throughput
- Longevity
- Downtimes are history now!
 - No mechanical wear parts
 - Electronic shutter
- **Best contrast (signal-to-noise-relation) for**
 - Reduced file size
 - Faster post-processing
 - Faster OCR recognition

Maximum user friendliness



- High degree of ergonomics
- Easy handling (foot or hand control)
- Working height definable
- **Semi-robotic**
 - PLC control & linear drive
 - Motor driven book cradle
 - Motor driven pressure system
 - Manual, semi-automatic or fully automatic control on demand
- **Gentle LED lighting system**
 - Low light radiation
 - <=2500 lux
- Low-noise

Ergonomics & Security

In close cooperation with selected partners, we have developed a highly accurate system that is taking particular account on the **production requirements**, while ensuring **high flexibility and ease of use**.

The **Hornet A0 semi-robotic** is **controlled by PLC** (Programmable Logic Controller). Thus, the unit can be adjusted to the requirements of the specific application for **best operator support**.

The system provides **3 different modes for fully automatic, semi-automatic or manual operation**. The **travel distances are optimized according to the book format**.

The **Hornet A0 semi-robotic** is designed as a **comfortable sitting workstation** ensuring a productive and stress-free operation for many hours:

- The height of the book cradle is specially tailored to the requirements of a sitting workstation
- Operation is possible either by hand- and/or foot-controller or via the external PC
- The operator can choose the preferred control mode by manual control
- Thanks to the LED light source there is **no heat emission** or UV/IR radiation (according to EN60825-1)
- The LED lighting is completely glare-free
- With a **noise emission** of only **44 dB(A)** the **Hornet A0 semi-robotic** is extremely silent so that there is no stress to the operator
- The operator safety is guaranteed by automatic shutdown upon contact of the hand in the layout zone



Comfortable workstation



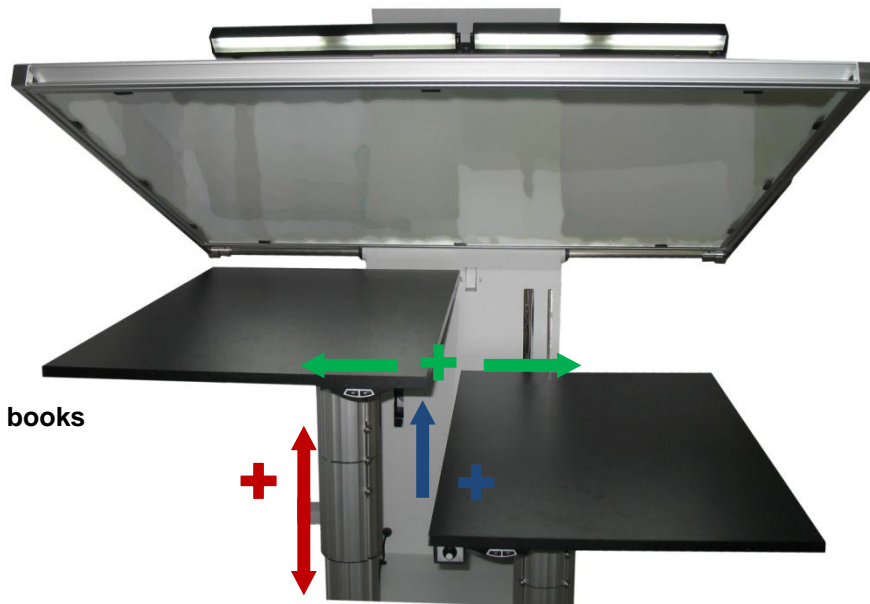
True to Scale Capturing

Especially for thick large-format books with wide spines, a height adjustment by the book cradle is essential in order to achieve a **true-scale digitization**.

Thanks to the dual laser system, the **Hornet A0 semi-robotic** can be set to the ideal focus level within seconds.

Industrial precision guidance, linear drive and PLC control ensure a smooth and steady guidance and adjustment of all moving parts. The book cradle as well as the additional conservational LED illumination system can easily be adjusted exactly to each book:

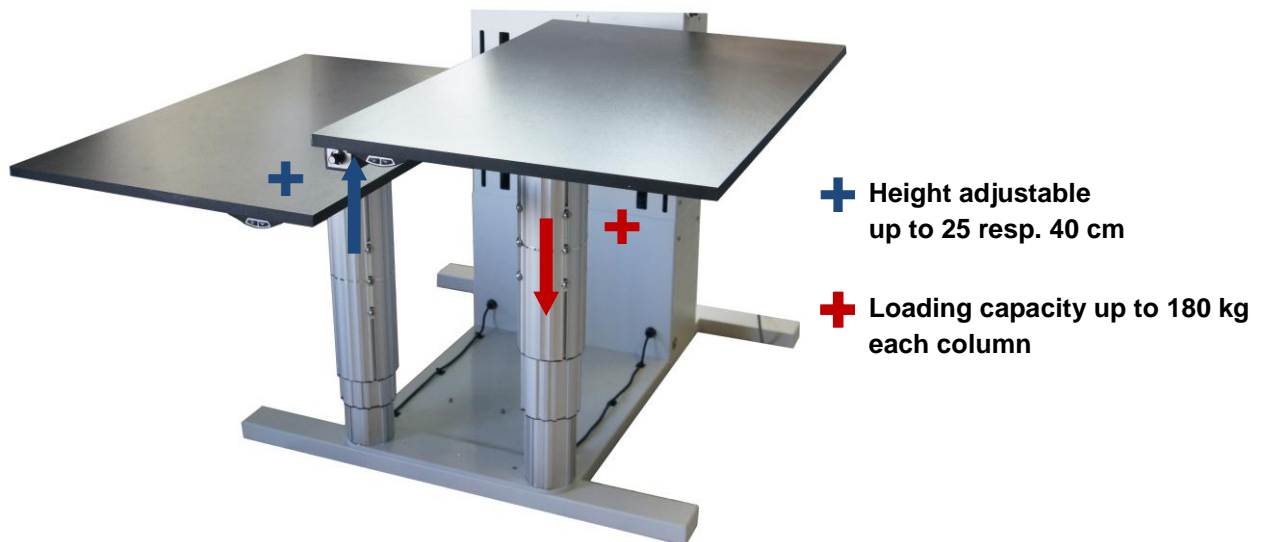
- +** Height adjustable layout section
- +** Book cradle for books up to 40 cm
- +** Book spine support for books up to 25 cm



The motor driven glass plate guarantees a comfortable working process for hours. It can be locked easily, if working without pressure system is desired. As the light distribution remains constant even in this case, new white balance and color matching are not necessary when using the glass plate again.

Precise & Powerful

Through their **PLC controlled spindle drive**, the specially developed **motor driven profile lifting columns** of the new **Hornet A0 semi-robotic** enable a precise height adjustment of the book table up to 25 cm resp. 40 cm if desired. Designed for a payload of up to 180 kg each, they comfortably support the scanning of thick and large books. Thanks to the integrated micro sensors, they can be operated either by hand- or foot switch.



Motorized height adjustment

With the flexible layout section and the motorized height adjustment, the **Hornet A0 semi-robotic** does not only offer an exceptionally gentle scanning solution for large-format originals and heavy books, but is also particularly user friendly and meets the requirements of a modern, ergonomic work station.

Control Modules

... tailored to your needs!

Following customer requests, we have developed different control modules and additional options for the glass pressure system and book cradle of the **Hornet A0 semi-robotic** to specifically meet the complex requirements of various originals and working processes:

Motorized glass pressure system via precision guided drive

- A0+ glass pressure system
- Gentle treatment of originals through pressure support
- Adjustable pressure sensitivity
- PLC controlled process flows with integrated motion monitoring

Glass pressure controller (module 1)



Controller for the optimization of the aperture angle of the pressure system with automatic adjustment to the book size. The glass plate lifts as far as needed for a comfortable turning of the pages. This facilitates maximum efficiency and reduced processing times.

Glass pressure controller (module 2)

Controller for optional control of the fully automatic, semi-automatic and manual operation:

- Program 1: **fully automatic** flow of the entire process (automated pressure procedure and initiation of scan within a programmed time period)
- Program 2: **semi-automatic** process (automated pressure procedure and manual initiation of scan)
- Program 3: **manual process** (each function is controlled manually)

Control Modules

Motorized book cradle with precision-guided linear drive

- Double profile lifting columns for precise height regulation of the layout table
- Loading capacity of 180 kg each column
- Height regulation up to 25 cm resp. 40 cm on demand
- PLC controlled spindle drive
- Micro sensors switchable via foot or hand control



Book cradle controller (module 3)

Controller for the automated guidance of book thickness adjustment

- Electronically controlled book cradle function
- Synchronized height compensation of the right and left side of the book cradle



Electronic weighing function



LED Illumination

The **Hornet A0 semi-robotic** is equipped with a 160 power dual illumination system which ensures a constant color temperature during the scan process and therefore an accurate color reproduction. Thanks to the built-in Fresnel lenses, a uniform light distribution is guaranteed. Die LED light source is glare free as well as UV/IR-free, so there will be no radiation exposure to the operator in accordance with EN60825-1.

Less is more!

... and better for your books

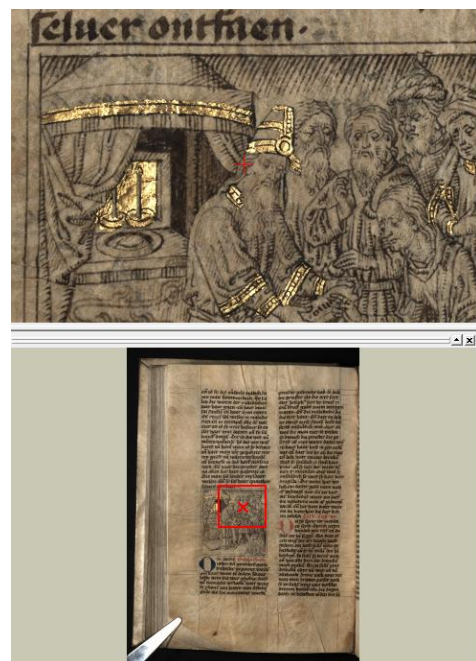
When old books and manuscripts are exposed to high light intensity, it may lead to the initiation of biochemical processes which can, depending on the time period and luminosity, change the structure of paper, ink and color and thereby cause irreversible damages. Conventional methods, which require a light intensity of up to 14000 lux, carry a high risk of valuable material being damaged through the digitization. In contrast, the **matrix sensor technology** we use guarantees a gentle capture of the originals:

Thanks to the innovative process optimization, the **Hornet A0 semi-robotic** works with a much reduced lighting period of **< 0.5 sec. at a scanning speed of 0.3 sec.**

The specially developed **Light-Control-Module** for the **Hornet A0 semi-robotic** also offers you the possibility of adapting the lighting to your conservatory requirements, by low levels of light intensity of **<= 2500 lux.**



Light intensity
<= 2500 lux



Let your treasures shine in a special light!

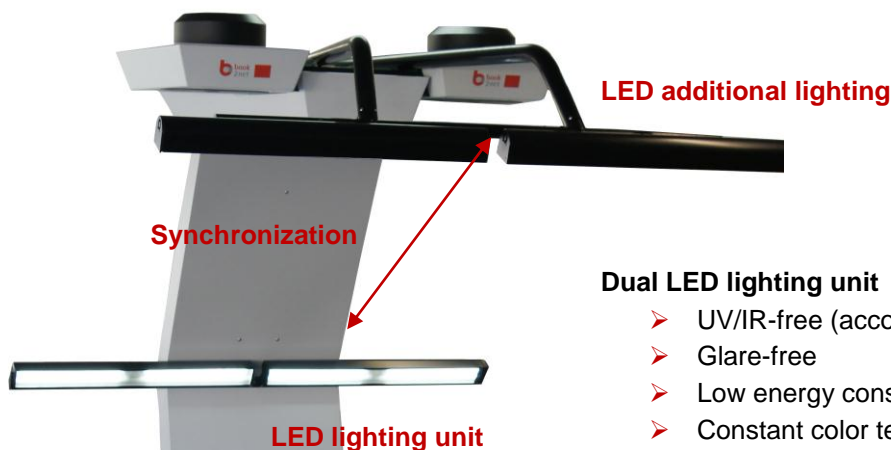
Valuable, old books require special attention to put their beauty in its true light. Heightened and waved surfaces, special inks and colors and especially gold grounds and gildings require more than standard illumination.

To meet these special requirements, the **book2net Hornet** is equipped with an additional lighting system for the glare- and shadow-free capture of specially structured surfaces, which can be integrated, mounted or controlled externally.



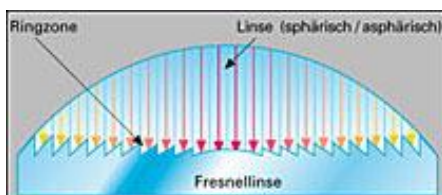
Light Controller Module

Dual LED lighting unit equipped with high quality **Fresnel lenses** and integrated control module for the precise synchronization of both light sources.



Dual LED lighting unit

- UV/IR-free (according EN60825-1)
- Glare-free
- Low energy consumption < 100 W
- Constant color temperature
- Durable (10.000 working hours)



Fresnel lenses

- Uniform area illumination with soft edges
- Smooth regulation of the beam angle

True Color Management

In the field of color reproduction, the **Hornet A0 semi-robotic** meets highest requirements according to **Metamorfoze** and **NARA guidelines** and is way ahead of conventional linear sensor technology.

The following diagram shows the performance of **book2net** by means of a target/actual comparison. Compared are the measured results of a scan of an X-Rite ColorChecker® 24 Patch Classic target against the provided manufacturer reference data. All results are measured in the sRGB (IEC 61966-2-1) color working space for illuminate D65.¹⁾

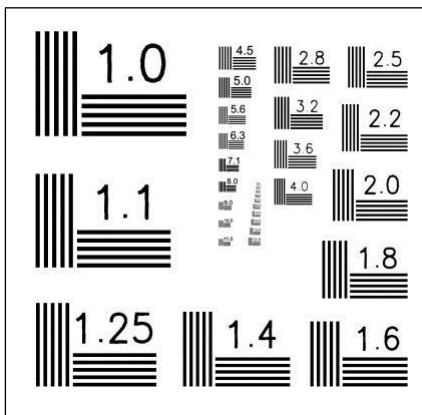
Mean Difference	book2net Hornet			X-Rite ColorChecker®			Color Name
	Actual Value (7x7 Average)			Theoretical Value			
-1,67	116	84	70	115	82	68	Dark skin
2,67	193	144	129	194	150	130	Light skin
4,00	94	119	152	98	122	157	Blue sky
-1,33	91	110	65	87	108	67	Foliage
4,00	130	126	170	133	128	177	Blue flower
3,67	103	184	164	103	189	170	Bluish green
-3,67	215	125	55	214	126	44	Orange
0,00	80	91	166	80	91	166	Purplish blue
-1,00	195	82	108	193	90	99	Moderate red
-3,00	99	64	108	94	60	108	Purple
-2,33	155	190	71	157	188	64	Yellow green
3,67	215	164	43	224	163	46	Orange yellow
2,00	51	63	147	56	61	150	Blue
-1,00	77	148	69	70	148	73	Green
-3,33	179	52	68	175	54	60	Red
2,67	227	199	27	231	199	31	Yellow
-2,67	191	85	154	187	86	149	Magenta
-0,67	14	129	161	8	133	161	Cyan
2,00	241	241	240	243	243	242	White (.05)
3,33	195	200	195	200	200	200	Neutral 8 (.23)
2,33	154	162	157	160	160	160	Neutral 6.5 (.44)
2,33	119	121	118	122	122	121	Neutral 5 (.70)
2,00	82	85	82	85	85	85	Neutral 3.5 (1.05)
2,67	49	50	49	52	52	52	Black (1.50)
0,69							

¹⁾ The reference scans have been done with **book2net Hornet** serial no 2100001

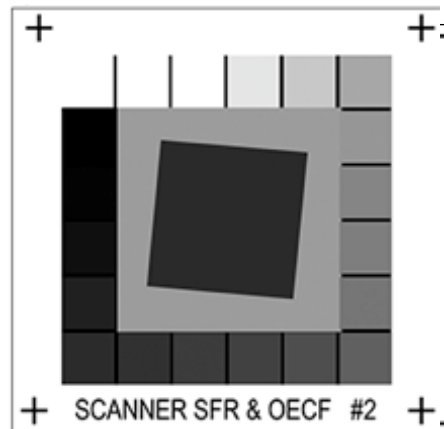
Measurable Quality

Resolution, grey scale & color matching

To provide our clients with constant, measurable quality, we work with ISO standard test charts for the calibration of resolution, grayscale and color.



Applied Image Inc® ISO Resolution Chart No. 2



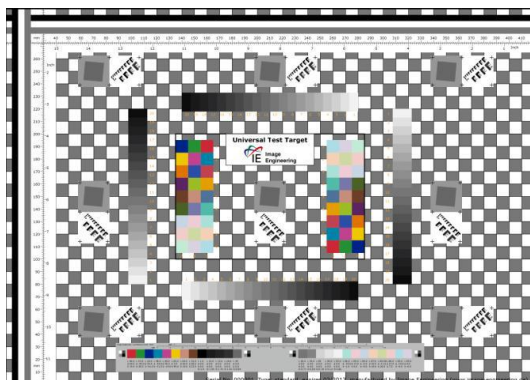
Imatest™ Grey Stepchart (ISO 16067-1-QA-61)



X-Rite® GretagMacbeth Color Checker



X-Rite® GretagMacbeth Color Checker SG



Universal Test Target (UTT)

Easy Scan Professional

Intuitive, fast and unrivaled user-friendly!

Easy Scan Professional is exceptionally intuitive and easy to use. The multilingual user interface can be customized according to your specific requirements just by enabling or disabling features. All configuration parameters are visible at a glance, without unnecessary branching into endless sub-menus. Finger removal, type-area and page recognition, automatic cutting and straightening and book-fold optimization are performed by *Easy Scan Professional* in the range of milliseconds.

With the integrated image enhancement, *Easy Scan Professional* meets the highest standards of quality and performance in the areas of digitization of cultural heritage as well as high volume digitization.

The software allows the storage of images in multiple file-/color-formats and resolutions with just one scan. It couldn't be easier!

Customizable user interface

... by easily enabling or disabling features



- Multilingual (selectable and definable language drop-down menu)
- Thumbnail display
- Drag & Drop (insert, view, delete)
- Choice of color (COL, GS, BW)
- Choice of format (TIFF, PDF, JPEG)
- Multipage
- Adaptation of the center
- Automatic deskewing
- Full size scan
- Page separation Left side / right side
- Setting frames
- Print defined sections
- Contrast control
- Zoom function
- Book fold optimization and book curve correction
- Finger removal
- Direct keys (for the most used settings)

Easy Scan Professional

... to streamline you workflow!



Choose your options by easily unroll the menu by a simple touch!

- Scan in color, grayscale and black and white
- Thumbnail display & features
 - insert, delete, replace by scan or re-scan, replacing with pictures from file, placeholder left side or right side
 - direct reorganization of view and count to actions such as inserting or deleting files
 - automatic numbering
- Job history list to reload already processed scan jobs, including used job parameters
- Multiple processing of digitized scan jobs
 - scan once – process multiple times
 - generating different storage formats
 - change color depth etc.
- Automatic cutting, aligning and sharpening
- Adjustment of brightness / contrast
- Clipping and quick selection between the print sizes A3/A4
- One Touch for setting both frames with the same size
- Page separation, with mid shift of the dividing line
- 1:1 Quick view
- 3D-Analyser - Software for geometric book analysis
 - finger removal, edge detention
 - page recognition, type area recognition
- Book fold optimization and book curve correction
- OCR
- Tonal value correction
- Color profiling according to ICC
- Different storage formats
 - TIFF, JPEG, PDF
 - multipage PDF, multipage TIFF, PDF-A
- Fast storage to local hard disc, USB or SMB network shares

Easy Scan Professional

Comfortable and individual image processing

Our *Easy Scan Professional* software is also an excellent tool to support the individual manipulation of your images.

- Cropping
... the software allows to define regions of interest by setting frames. Once adjusted the settings can be applied to a set of images.
- Add, insert, replace pages (e.g. with text or copyright notification)
- Manual deskewing
- Rotation
- OCR
- Large file format support (e.g. for files >1 GB)
- Insert watermarks (optional)
- Insert footers or headers (optional)



Easy Scan Professional

... and efficient project management!

Easy Scan Professional can be easily integrated into the post-processing workflow. An intelligent job processing with job creation, job retention, job continuation and job post-processing, provides a basis for a wide variety of uses. Routines for error prevention and intelligent management framework also ensure a smooth workflow.

The add-on module *Easy Scan OCR* is accessible for more than 120 languages and allows the fast and easy generation of searchable or editable documents by pressing either in single-page mode or in job mode.



It couldn't be easier!

- Name files and documents
- Define different projects simultaneously
- Close and open projects/jobs as needed
- Continue from the end automatically
- Choose the storage format
- Add, insert, delete or replace pages easily due to the
- Automatic numbering
- Job history list to reload already processed scan jobs, including used job parameters
- Multiple processing of digitized scan jobs
 - scan once – process multiple times
 - generating different storage formats
 - change color depth etc.
- Export files
- Raw data
- Uncompressed TIFF
- Fast storage to local hard disc, USB or SMB network shares

Watch our video on:

<https://www.youtube.com/watch?v=c1G2emE6Rk8>

Hornet [A0⁺] X semi-robotic

... the maximum for your digitization project!



We are looking forward to supporting your project!

