



# ioi®

WORKFLOW OPTIMIZED IMAGE MANAGEMENT  
4K ENCODER FOR AUDIO AND VIDEO IN REAL-TIME TRANSMISSION  
FLEXIBILITY FOR EXISTING AND FUTURE OPERATING ROOMS

# SAFE & RELIABLE

# MEDIA TRANSMISSION TO OR

## The digital operating theater

Due to the wide variety of medical devices we can find in operating rooms and the different modalities between manufacturers to support the various medical procedures, this is one of the biggest challenges in system integration.

Rein Medical focuses on functionality, flexibility, ease of maintenance and ease of use. Rein Medical's iOi technology offers decisive advantages in the field of medical video integration in terms of standardization (see below), hygiene (page 4), ergonomics (see page 5) and safety (page 6).

## Standardization - The iOi concept

Our motivation for developing the iOi encoder and decoder solutions was to eliminate the unmanageable and difficult-to-handle number of different video standards for doctors and nursing staff. Particularly with mobile modalities that are not permanently wired, it used to be necessary to plan, train and operate numerous video connection panels in the operating theaters. These were also usually mechanically sensitive, difficult to clean and therefore unhygienic and unreliable.

By using an iOi video encoder on each modality, the integration of mobile imaging systems such as endoscopy trolleys, C-arms or video microscopes is greatly simplified.

# iOi

INFORMATION  
OVER  
IP

## What does iOi stand for?

iOi [Information over IP] stands for real-time video transmission and the provision and optimization of information in operating theaters. Rein Medical offers the right solution for every application. From point-to-point solutions as stand-alone consisting of encoder and decoder to complex OR integration requirements, we will find the right concept for you.







## Multiview

iOi products, in combination with our Smart OR management software, offer the option of creating layouts in a pre-defined manner. For example, for video conferences, reference images with PACS systems or the recording of multiple video sources. PiP, PbP and Quad are the layouts commonly used in operating theaters.

## Hygienic

The robust aluminum housing of the iOi encoders has all connections on the back and, like most Rein Medical products, is coated with the highly effective germicidal STERIDUR powder coating.



## Connection variety

The transmission systems specially developed by Rein Medical are hardware solutions for modalities on mobile carts and stationary systems, trolleys and stationary systems. The extensive product portfolio includes video modalities, USB-HID, triggers and audio connections.

## Encoder

The versatile iOi encoders convert both analog and digital video signals into an IP data stream. The data packets are distributed via OM3 optical fibers over a standard Ethernet network and sent to the corresponding decoder. The iOi control is handled by our Smart OR software management system.

## Decoder

The decoder converts the received IP streams into a standard video signal. Thanks to the downscaling function, the iOi decoder is able to display 4K signals on a 4K monitor as well as on an existing Full HD monitor. This flexibility ensures easy integration into existing OR scenarios.

## Trigger

The iOi encoders have two trigger channels for triggering image recordings: One for starting and stopping a video recording and the second for single image recordings.

Pressing the buttons on the handset or a foot switch is transmitted to the video integration system with the encoded IP signal and immediately triggers recordings.

## Ergonomics with plug & play

All signal sources are standardized to an IP-based standard and a uniform connector. The connection cable on the iOi encoder uses the robust OpticalConDUO hybrid connector system from Neutrik. A hybrid cable combines two optical fibers and power cables, eliminating the need for additional power cabling.

## State-of-the-art fiber optic technology and planning freedom

Our iOi encoders and decoders are connected via state-of-the-art fiber optic cables that lead to a central 10 GB switch. This technology represents the current state of the art and offers numerous advantages that guarantee a secure investment in the future.

In addition, the optical fiber always provides galvanic isolation and at the same time offers maximum planning freedom for the location of the system. For example, central technology rooms can be implemented just as easily as local accommodation in an OPERION HUB.

## Features

- > Aluminum housing with STERIDUR powder coating
- > Transmission of signals via a dedicated network switch
- > Ultra-low-latency 4K video transmission
- > Downscaling from 4K to HD signals
- > Additional control signals are also transmitted, e.g. trigger via endoscopy buttons
- > Converts analog video signals into digital signals
- > Multi-layout function (PiP, PbP, Quad)
- > Transmission of 3D video content
- > Multicast functions for different media data types: HDMI-SDI embedded audio, line-in audio, USB-HDI, RS232)



## Reliable

The high bandwidth and reliability of this technology ensure that your infrastructure will be able to cope with the demands of tomorrow.

Overall, fiber optic lines not only offer a secure and future-proof investment, but also the necessary flexibility and planning freedom for any type of medical facility.

## Security

The mobile iOi encoders have been specially designed for safe use on an equipment trolley.

The image source is connected once and permanently to the video input of the encoder. Plugging the hybrid cable into an iOi wall connection supplies the device with power and ensures fast initialization of the integrated encoder to make the image signal available in the routing network as quickly as possible.

The OpticalConDUO system offers maximum protection for the connections thanks to a locking mechanism when unplugged. The cable is extremely robust and even suitable for outdoor applications, ensuring particularly high availability of the entire system.

# CONCLUSION

- > MULTI-ENCODER WITH HYBRID CONNECTION, POWER, DATA AND TRIGGER
- > APPLICATIONS: MOBILE CART, STATIONARY MODALITIES
- > SIGNAL TRANSMISSION VIA UNIVERSAL AND ROBUST CONNECTORS (IMPROVED WORKFLOW)
- > HIGH BANDWIDTHS VIA FIBER OPTICS (FUTURE-PROOF)
- > INTUITIVE OPERATION
- > ELECTRICAL SAFETY THROUGH GALVANIC DECOUPLING
- > HYGIENIC HOUSING
- > IMPLEMENTATION IN EXISTING LANDSCAPES
- > SERVICE-FRIENDLY AS ACTIVE COMPONENTS ARE EASILY ACCESSIBLE

## Who are we?

At Rein Medical, we drive innovation. Our German company with a team of 100 employees has been involved in medical IT for more than three decades. Nowadays, we're a system service provider that implements customized IT solutions from planning to handover from a single source. We also accelerate the digital transformation in practices, clinics and other medical facilities. We develop and produce individual all-in-one computer solutions, high-resolution displays, customized IT wall modules for operating rooms as well as video/audio and image management systems. Rein Medical has been part of the JVC Kenwood Corporation since March 2018 and is a globally active company.

## Quality through the international standard ISO 13485

Rein Medical is the proud holder of ISO 13485 certification, which demonstrates our high-quality standards and commitment to continuous improvement in quality management systems. The successful certification confirms our commitment to providing our customers with the highest quality products and services. We are proud to be able to back this up with a certified QM system.

## Future „Made in Germany“

We stand for quality and set a hygienic benchmark with our certified IT. From the design, development and production of our hardware to the programming of our software, we realize our IT solutions at the Mönchengladbach site. With our worldwide partnerships, we offer innovative holistic solutions for an optimized workflow, ensuring smooth and reliable processes in the operating room.

### Headquarters in Germany

**Rein Medical GmbH**  
Monforts Quartier 23  
41238 Mönchengladbach  
Deutschland  
Tel.: +49 2161 6984-0  
Fax: +49 2161 6984-259  
E-mail: [info@reinmedical.com](mailto:info@reinmedical.com)

### Switzerland

**Rein Medical AG**  
Büfelderstrasse 1  
8370 Sirmach TG  
Schweiz  
Tel.: +41 71 929-55-99  
Fax: +41 71 929-55-90  
E-mail: [info.ch@reinmedical.com](mailto:info.ch@reinmedical.com)

### Spain

**Rein Medical Systems S.A.**  
C/ Téllez, 30  
1ª Planta, Oficina 1 Puerta 2  
28007 Madrid, Spain  
Tel.: +34 91 530-88-24  
Fax: +34 91 574-32-93  
E-mail: [info.es@reinmedical.com](mailto:info.es@reinmedical.com)

