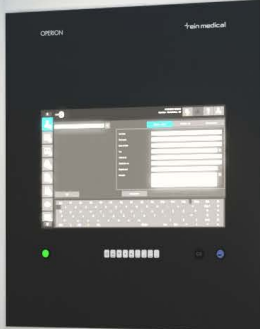




# OPERION®

WALL MONITORS AND WORKSTATIONS FOR THE OPERATING ROOM  
RECESSED OR SURFACE MOUNTING  
DISPLAY SIZES UP TO 65" UHD

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# OP-MONITOR & PC

## OPERION

### Monitors and workstations for the OR

The OPERION® concept, which has been in existence for 15 years, offers state-of-the-art digital image viewing systems for perfect integration into the walls of any operating theater.

With diagonals from 21.5" to 65", powerful PC configurations and many other options, you get the optimal system for your workflow.

### Multifunctional use

- » OR wall workstations for applications such as HIS, RIS and PACS (Digital X-ray film viewer)
- » Monitoring and control workstation for room control and video management
- » Workstation for OR documentation and nursing

### Competence, durability and sustainability

The design, development and production of all OPERION products take place at our site in Mönchengladbach, Germany. By using the latest software tools and selecting competent suppliers, we can react quickly to your project requirements.

The use of high-quality components ensures long service life and maximum availability. Combined with a high level of serviceability, they guarantee the smooth operation of your operating rooms. Together with a high degree of service-friendliness, they ensure the smooth operation of your ORs.

By offering replacement assemblies, housings and glazing from older generations of devices can continue to be used. This ensures maximum sustainability, both from an ecological and economic point of view.

OPERION

# HYGIENIC DESIGN

## Certified medical device

The OPERION is a Class 1 medical device. All monitors in this series are tested in accordance with the international standards IEC 60601-1 and IEC 60601-1-2. This means that operators can easily and safely combine our OPERIONs with medical systems in the patient environment.





## Everything under control

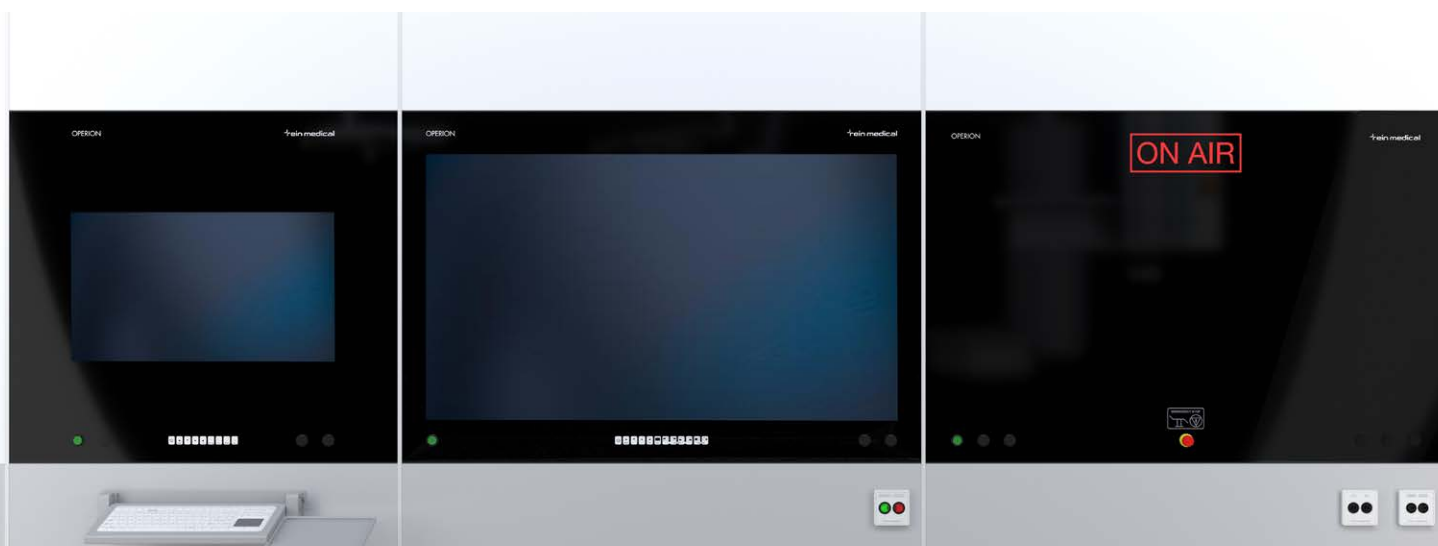
Every OPERION monitor has several video inputs of the latest standards as well as numerous useful monitor functions.

The hygienic rear glass operation enables quick access and control, which can be gradually restricted depending on the workflow.

## Hygienic and economic integration

Hygiene and design play an increasingly important role in the planning of new operating theaters. With the OPERION concept in the „FB“ design, these aspects can be implemented perfectly and extremely economically using modular wall systems. Only the protective glazing remains visible as a design element. It blends into the room concept like an original wall element.

Of course, there are still walls that are constructed using conventional drywall construction or as solid walls. We also offer an enclosure solution for these situations (see next pages).



# ONE ELECTRONIC



OPERION 24" BR, FB, BODY with or without extension

## OPERION ALL FIT and custom design

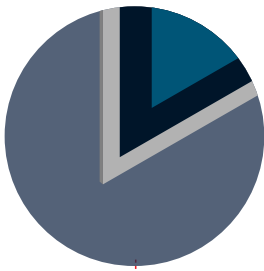
The concept of the OPERION family combines flexibility, customization and yet simplicity in one technology to offer the right solution for every operating room. Each "All-Fit model" has three housing variants (FB, BR and BODY), all with the same electronic assembly and front glass.

If you cannot find a suitable enclosure model for your existing wall recess, we can also produce customized enclosures in terms of shape and color, which are usually much more cost-effective than making structural adaptations.



# THREE DESIGNS

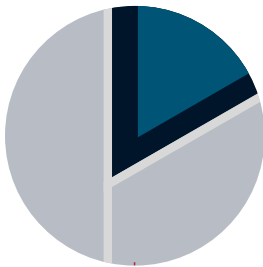
## BR (frame)



Recesses in OR walls built using conventional drywall construction almost always have rough cut edges. The mounting frames perfectly fit new and existing recesses. The frame rests completely on the OR wall. The outer dimensions of the mounting frame can be individually adapted to the conditions.

This design is also referred to as a flush mount.

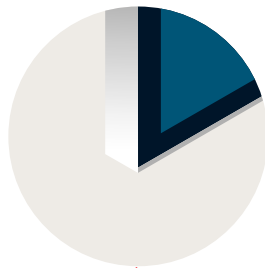
## FB (100% flush mount)



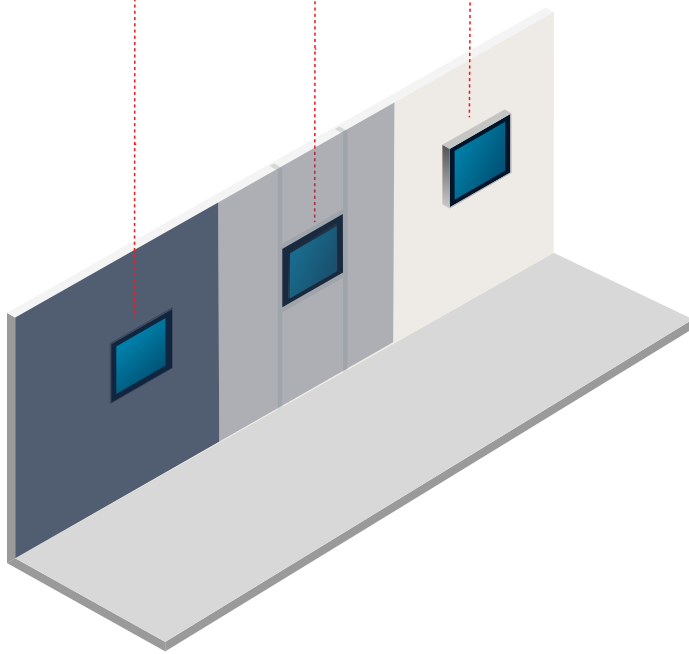
The design of the OPERION FB is based on the dimensions of modular room system manufacturers. This enables seamless, hygienic and cost-efficient integration into system walls from GHK DOMO, HT, Lindner, MAQUET, Medifa, MEDIK, and various other manufacturers.

As a result, the OR monitor visually becomes a functional part of the wall system.

## BODY (surface mount)



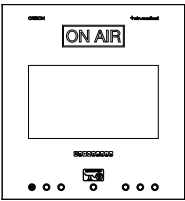
Not every OR can accommodate a recess for installing a monitor. The BODY design is an ideal solution for such cases. A fully enclosed aluminum housing is mounted on the wall. The uniform depth of 125 mm allows several units to be installed next to each other.



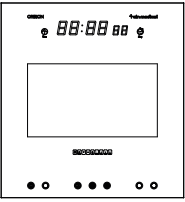
## EXTENSION



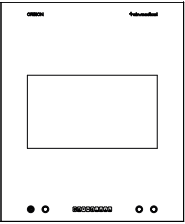
An enclosure extension for direct mounting of a keyboard or accessories is available for all enclosure types.



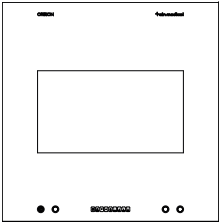
OP-324CP



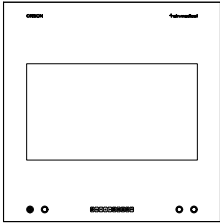
OP-324IB



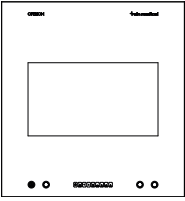
OP-424-L



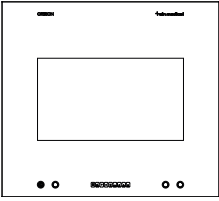
OP-427-L



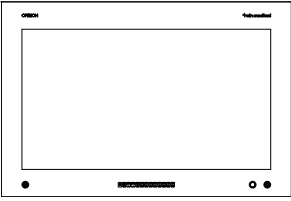
OP-332DV-L



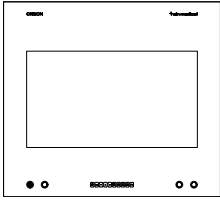
OP-424



OP-427



OP-346



OP-332DV

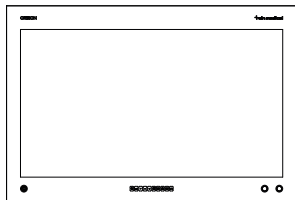
	FULL HD MODELS			
Diagonal	61 cm (24,1")	68,6 cm (27")	116,84 cm (46")	80 cm (31,5")
Resolution	Full HD Resolution 1920 x 1080 Pixel			
Brightness	300 cd/m²		700 cd/m²	450 cd/m²
Contrast	5000:1	3000:1	4000:1	3000:1
Inputs/ Outputs	DVI, DisplayPort, HDMI, VGA		DVI1, DVI2, DisplayPort, VGA, S-Video, CVBS, YPbPr/RGBS Optional: 3G-SDI in/Loop	
PC-Kit	PC Kit Standard: Intel i5-14500T(E), Q670 chipset, 16 GB DDR5 RAM, 512 GB M.2 SSD			



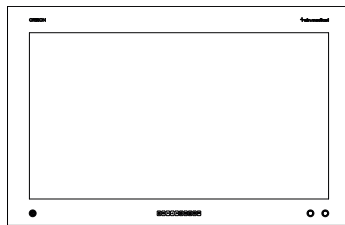
# OPERION FAMILY

## All-Fit models

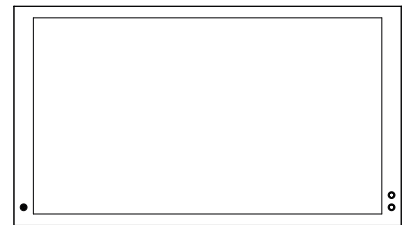
Here you will find the standard models of the OPERION series, which are available in all housing types. There are also numerous other models in various glass sizes. Especially for the replacement of old light boxes or devices from other manufacturers, we offer special models that are only available as BR models.



OP-349.4



OP-35U.4



WS-465DV

### UHD MODELS

123,2 cm (48,5")

138 cm (54,6")

165,12 cm (64,5")

UHD Resolution 3840 x 2160 Pixel

700 cd/m<sup>2</sup>

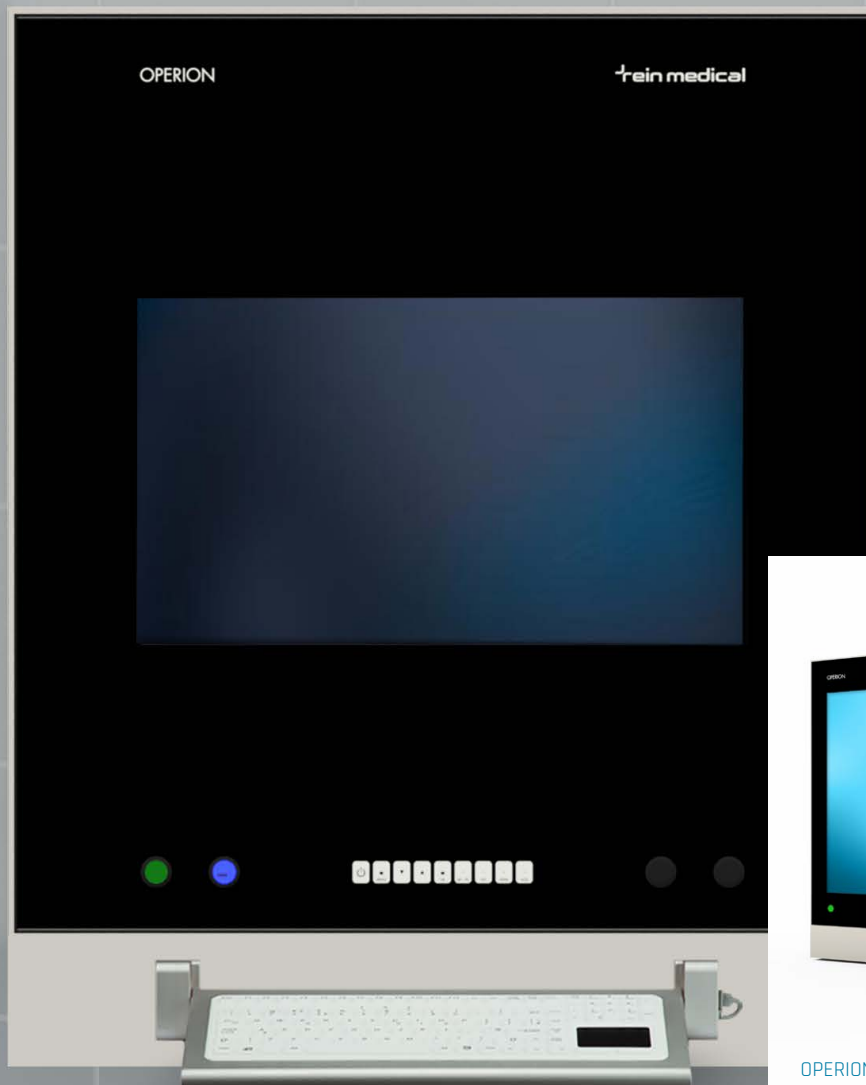
1100:1

HDMI 2.0, DVI1, DVI2, DisplayPort, VGA  
Optional: 3G-SDI in/Loop (replaces DVI 2)

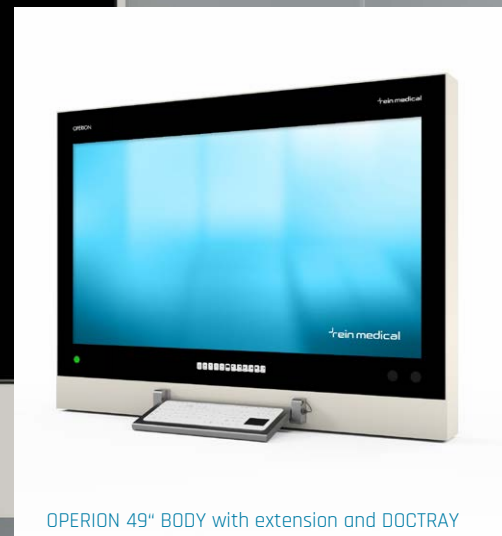
PC Kit Standard: Intel i5-14500T(E), Q670 chipset, 16 GB DDR5 RAM, 512 GB M.2 SSD



# YOUR DEVICE



OPERION 24" BODY



OPERION 49" BODY with extension and DOCTRAY

## Not just off the shelf

Due to the complex development processes involved in medical product development, OPERION offers a high degree of standardization combined with significant savings potential.

That's why our proven standard sizes are taken into account in the early planning stages.

If the installation conditions do not allow for the use of our standard devices, almost all parameters of the housing and front glass can be customized to meet the specific requirements of your project.

## Flexible housing design

Since neither the housing nor the front glass contains any critical components, and the complete device electronics form a unit that can be safely operated even outside the housing, the housing can also be adapted for use as a medical device.

This also makes it possible to use ready-to-use replacement assemblies. In just a few minutes, the complete electronics of the OPERION can be replaced by another.

# YOUR CONFIGURATION

## Touch screen: Now or later

For OPERIONs in the sizes 21.5", 24", 27", 32", 49" and 55", the front glasses are also available with the latest PCAP technology. Order your OPERION directly with a touch function or simply retrofit a touch front later in just a few minutes.

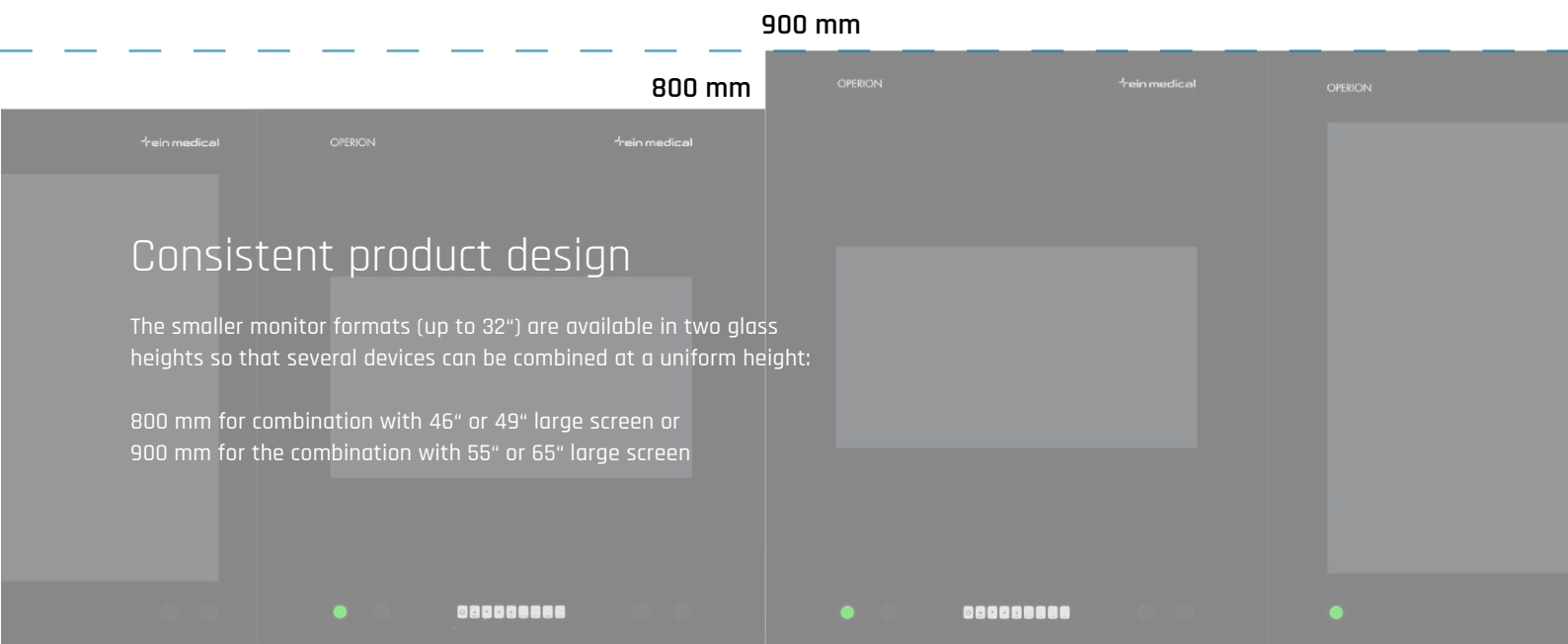
A special feature of our monitors is the „TOUCH ENABLE“ function. This allows you to specify that the touch sensor is only active when a specific image source is displayed. This prevents incorrect operation of background applications, especially when switching between image sources on the monitor.

## PC option or Thin client

All OPERION monitors can be optionally equipped with a PC system tested in accordance with the latest safety and EMC standards.

The basic configuration already has a 14th generation Intel Core i5 CPU, 16 GB DDR5 RAM and a 512 GB M.2 SSD. Numerous upgrades and extensions are available for higher performance requirements.

The integrated industrial motherboards correspond to the mini-ITX form factor and can therefore still be upgraded in many years' time.



### Consistent product design

The smaller monitor formats (up to 32") are available in two glass heights so that several devices can be combined at a uniform height:

800 mm for combination with 46" or 49" large screen or  
900 mm for the combination with 55" or 65" large screen

# ADD-ONS



## INFOBAR

The INFOBAR is a multifunctional display system based on proven LED segment displays. On request, it can include function displays for: time, stopwatch, temperature, humidity and pressure difference.



[More information](#)

## OPERION HUB



## DOCTRAY



## Connection boxes

## GPIO and RS-232-control

The OPERION can be (remotely) controlled in various ways via the GPIO interface. For example, a foot switch can be used to select between input signals.

An extensive list of control commands lets you control the entire unit via RS-232: for example, intelligent video management systems can choose between DICOM preset and BT.709, matching the source that is routed to the monitor.



## DOCTRAY TOUCH - Hygiene at the highest level

The DOCTRAY TOUCH is a fold-up hygienic keyboard developed for use in the operating theater and has been in use for over 10 years

It can be mounted directly on the OPERION housing or on the OR wall.  
Only two 25 mm holes are required for mounting on the wall, making installation on glass wall modules a well-established solution. A mouse tray and matching hygienic mouse with a short cable are also available.



## OPERION HUB - stylish and safe

In addition to the wall monitors, the OPERION HUB offers a distributor housing for wall integration in the same design. The devices required for the video integration system can be installed in this housing and wired to form a system. Depending on space requirements, HUBs are available in widths of 590, 890, 1190 or 1390 mm. Also available as FB, BR or BODY. The glass front can also be fitted with interfaces and control elements and the ON-AIR display, which is mandatory for video transmissions, can be seamlessly integrated. Other surfaces are also available as an option, e.g. adapted to the OR.

The OPERION HUB makes effective use of the available cavity in the operating theater walls for the integration of technology. Long and expensive cable runs and technical rooms become superfluous. This makes planning easier and eliminates the need to integrate other systems. Even in the event of a fault, the source of the fault can often be found much more quickly, as all video integration components can be reached within the room.



## Connection boxes for wall and supply units

Discover our range of connector panels, designed for mounting on common cavity wall sockets. From USB ports to video interfaces, audio connections and pushbuttons, the Rein Medical connector panel can hygienically accommodate and label almost any common plug-in connection.

# EFFICIENCY & QUALITY

## Color spaces and calibration

The OPERION monitors have high-precision presets for the BT.709, BT.1886 and BT.2020 color spaces. There is also a DICOM preset for viewing in accordance with DIN 6868-157 room class 4, enabling images from different playback sources to be displayed correctly.

A 3D LUT (look-up table) is used in the UHD DUAL-VIEW models to reproduce BT.2020 camera images as faithfully as possible. This allows matching colors that lie within the color reproduction space of the panel to be reproduced precisely in accordance with BT.2020.

## Automatic brightness stabilization

All OPERIONs with a display diagonal from 32 inches offer the benefits of automatic brightness stabilization of the backlight (Automatic Luminance Stabilization). ALS compensates for fluctuations in the backlight that can occur during the warm-up phase or due to temperature changes, for example.

In addition, this control also compensates for the dimming of the backlight over time.

In combination with high-quality panels, the monitors continue to deliver optimum, bright images even after many years. In addition, the activated ALS function limits the use of maximum brightness to a sensible and ergonomic level. This saves energy and increases the service life.

## DUAL VIEW

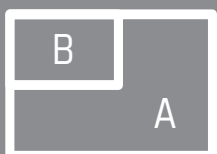
Every OPERION with a display diagonal of 32" or more is capable of displaying images from two signal sources simultaneously.

In „Picture-In-Picture“ (PIP) mode, one picture is displayed within the other picture.

In „Picture-outside-Picture“ (POP) mode, two pictures are displayed side by side.

The size and position of the sub-picture can be changed in the OSD or via the RS-232 interface.

PIP



POP



POP



Three display modes (1:1, STRETCH & CENTERZOOM) ensure that the images can be optimally displayed.

# & MODULARITY

## The customized OR solution

Our customer advisors and dealers offer professional advice when putting together the combination of devices and their arrangement in your OR and support you with drawings, 3D models and other services in all phases of your project.

### The screen types:

- > 21,5", 24", 27", 46" (Full HD)
- > 31,5", 49", 55", 65" (UHD)
- > 24" + 24" TWIN (Full HD)

### The Device type according to the area of application:

- > Wall monitor
- > Workstations (integrated PC kit, configurable)
- > Touch screen

### The design according to wall conditions:

- > FB (flush, 100%)
- > BR (frame)
- > BR combination housing (here 24" + 46" + 24")
- > BODY (surface-mounted)

### The Add-Ons:

- > DOCTRAY TOUCH (keyboard)
- > Connection boxes
- > INFOBAR (information display)
- > OPERION HUB (wall-integrated media distributor)

## CON- CLU- SION

- > Monitor sizes from 21.5" to 65"
- > Largest range of housings on the market and custom design
- > Class I medical device for safe interconnectivity
- > Hygienic control via the COMMAND BAR
- > Brightness stabilization for all devices from 32" upwards
- > High-precision color reproduction for BT.709, BT.1886, BT.2020 & DICOM
- > Picture-in-picture display
- > Components are designed for continuous operation
- > Matching input devices and system extensions

## 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

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