



OPERION®

WALL MONITORS AND WORKSTATIONS FOR OR
RECESSED AND SUR-FACE MOUNTING
DISPLAY SIZES UP TO 65" UHD

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OR-MONITOR & PC

OPERION Monitors and workstations for the OR

For 10 years now, the OPERION® concept has been offering state-of-the-art digital image viewing systems that can be perfectly integrated into the walls of any OR.

Available with 24 to 65-inch screens and featuring powerful PC equipment along with numerous other options, they're the ideal systems for your workflow.

Multifunctional use

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

Competence, durability and sustainability

All OPERION products are designed, developed and produced at the Mönchengladbach site. By using the latest software tools and selecting competent suppliers, we can also respond quickly to your project requirements.

We use high-quality components to ensure a long service life and the best possible availability and, together with a high degree of serviceability, to guarantee the smooth operation of your ORs.

By offering replacement assemblies, the housings and glazing of older generations of units can continue being used. This ensures maximum sustainability, both ecologically and economically.

OPERION

DESIGN MEETS HYGIENE

Certified medical device

The OPERION is a class 1 medical device. All units of this series are tested according to the international standards IEC 60601-1 and IEC 60601-1-2. This allows operators to easily and safely combine our OPERIONs with medical systems in the near-patient environment.





Everything under control

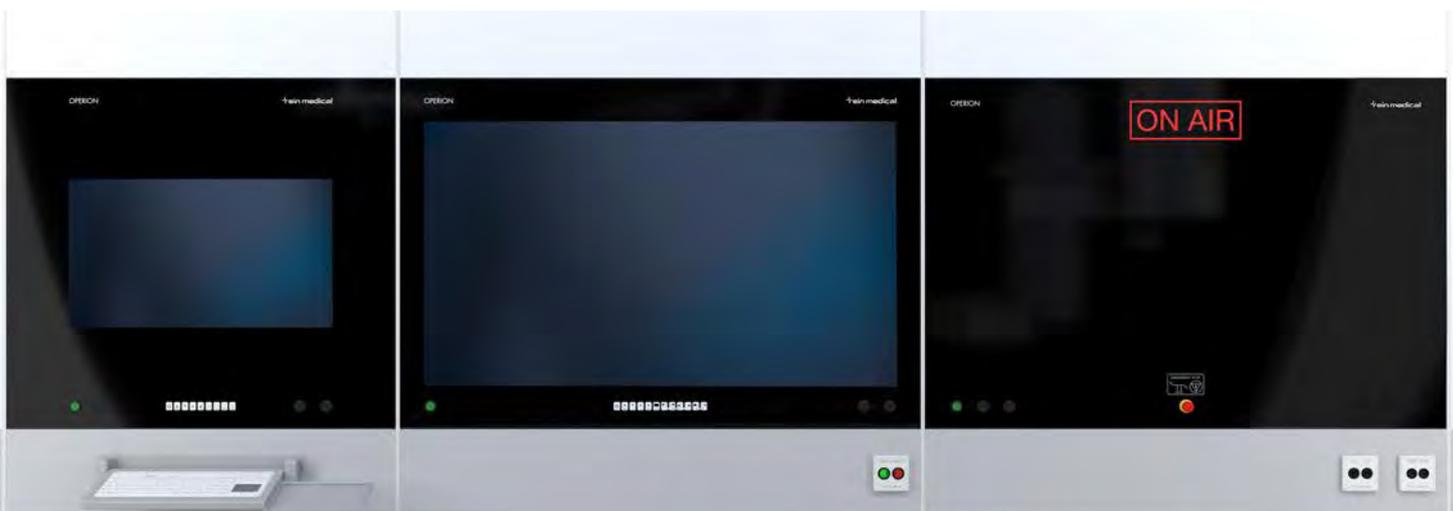
Each OPERION monitor features multiple up-to-date video inputs as well as various useful monitor functions.

The hygienic behind-glass operation offers you quick access and control, which can be restricted in stages depending on the workflow.

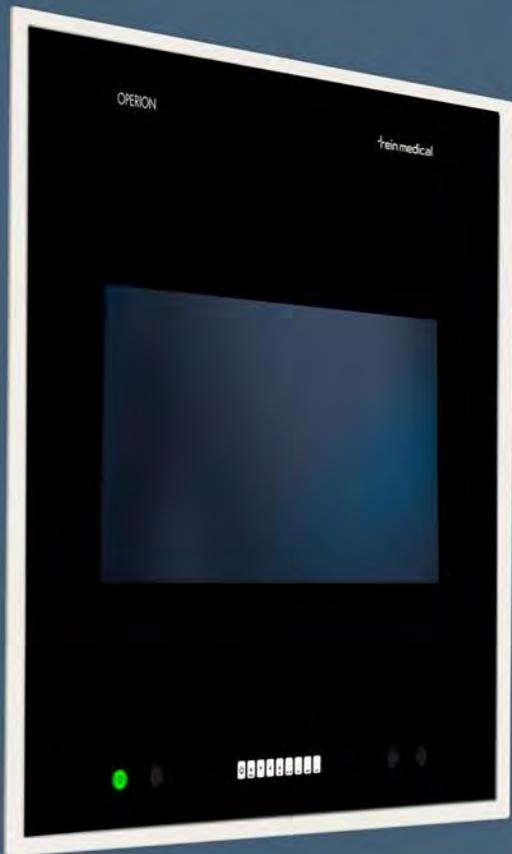
Hygienic and economical integration

Hygiene and design play an increasingly important role when planning new ORs. If modular wall systems are used, these aspects can only be implemented perfectly and economically with the OPERION concept in the „FB“ design. In this design, the only visible part of the unit is the protective glazing, which fits into the concept like an original wall element.

Of course, you can also use walls built with conventional dry construction or solid walls. We also have an enclosure solution for these conditions (see following 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, customisation and yet simplicity in one technology to offer the right solution for every operating room.

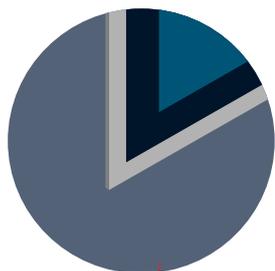
Each „All-Fit model“ has three housing variants (FB, BR and BODY), all with the same electronic assembly and front glass).

If you can't find a suitable enclosure model for your existing wall recess, we can also produce customised enclosures in terms of shape and colour, which are usually much cheaper than making structural adaptations.



THREE DESIGNS

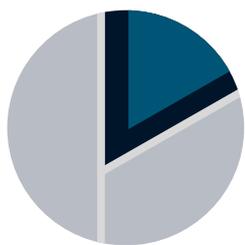
BR (frame)



Recesses in OR walls built using conventional drywall construction almost always have rough cut edges. The mounting frames perfectly line 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 flush mount.

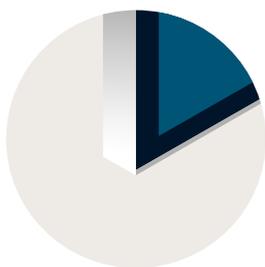
FB (100% flush mount)



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.

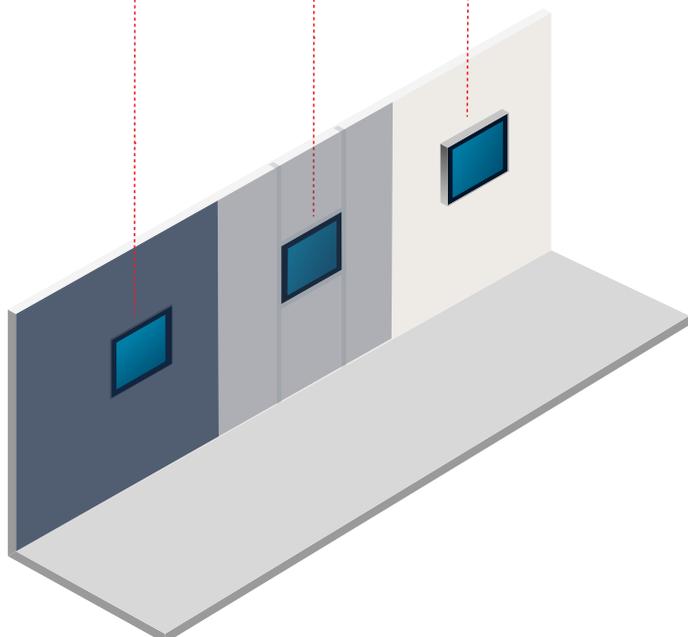
As a result, the OR monitor visually becomes a functional part of the wall system.

BODY (surface mount)

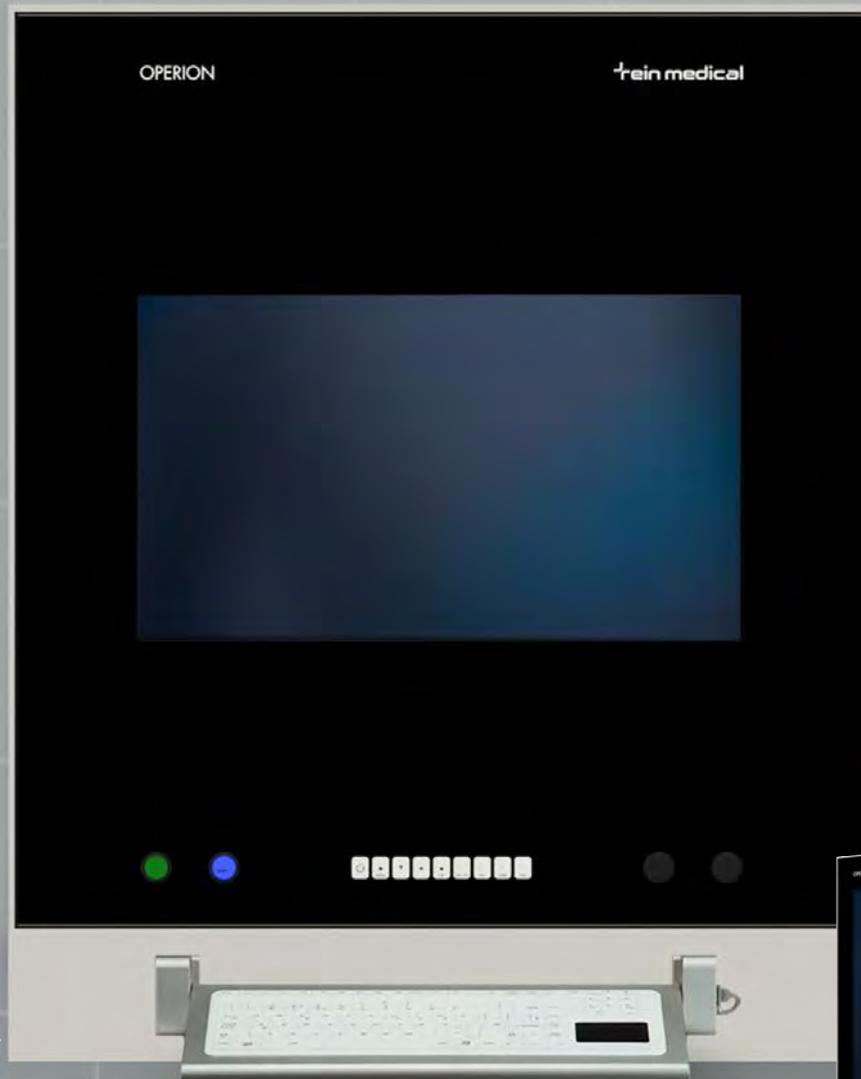


Not every OR can accommodate a recess for installing a monitor. The BODY design is the optimal solution for such cases.

A fully enclosed aluminium housing is mounted on the wall. The uniform depth of 125 mm allows several units to be installed next to each other.



YOUR DEVICE



OPERION 24" BODY



OPERION 49" BODY mit Extension und DOCTRAY

Not just off the shelf

Medical devices have very complex development processes, so OPERION offers a high degree of standardisation and huge potential for savings. This is why our established standard sizes come into play in early planning. If our standard devices cannot be installed, almost all parameters of the housing and glass pane can be adapted to the project.

Flexible enclosure design: How do we do it?

Since there are no critical components mounted either in the enclosure or on the glass pane, but the complete electronic unit is a device that can be operated safely even outside the enclosure, the enclosure can also be adapted as a medical product.

This also makes it possible to use ready-to-use replacement assemblies.

The entire electronics of the OPERION can be replaced in just a few minutes.

YOUR CONFIGURATION

Touch Screen: Now or later

The front glasses are also available with the latest PCAP technology for OPERIONs in sizes 24", 27", 32", 49" and 55". Order your OPERION directly with the touch function or easily retrofit a touch panel later.

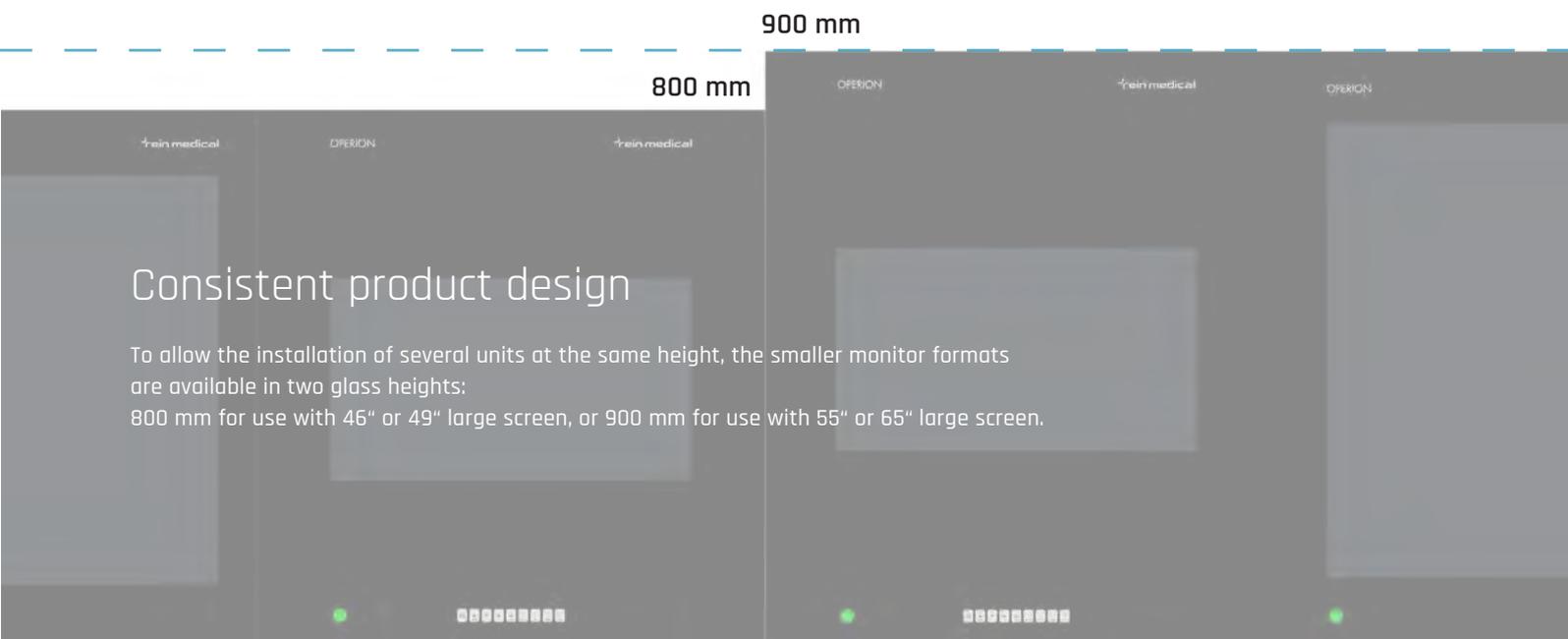
A panel can be exchanged within a few minutes.

One special feature of our monitors is the „TOUCH ENABLE“ function. With this function, you can make sure that the touch sensor is only active when a certain image source is displayed. This avoids operating errors in 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. Our high-quality and Windows 11-compatible hardware will future proof your investment.

The integrated industrial motherboards correspond to the mini-ITX form factor which makes them upgradeable for many years to come. The basic configuration has a 9th generation Intel i5 CPU (12th generation from Q1/2023), 8 GB RAM and a 256 GB M.2 SSD. Various upgrades and extensions are available for performance-enhancing applications. In addition to the PC system, we also offer a hardware kit certified by IGEL Technology.



900 mm

800 mm

Consistent product design

To allow the installation of several units at the same height, the smaller monitor formats are available in two glass heights: 800 mm for use with 46" or 49" large screen, or 900 mm for use with 55" or 65" large screen.

ADD ONS



Mehr Informationen

INFOBAR

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



DOCTRAY

OPERION HUB



Connector boxes

GPIO and RS-232-control

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

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 - Optimum hygiene

The DOCTRAY TOUCH is a keyboard developed for use in the OR. It can be mounted directly on the OPERION housing or on the OR wall. Only two 25 mm holes are required for wall mounting, which also makes mounting on glass wall modules a well-established option.



OPERION HUB - Stylish & secure

In addition to the wall monitors, the OPERION HUB offers a distribution housing in the same design that can be integrated into the wall. The devices required for the video integration system can be installed in this housing and wired to form a system. This eliminates the need for long and often expensive cable runs to technical rooms and allows otherwise often wasted hollow space in the walls to be put to good use.

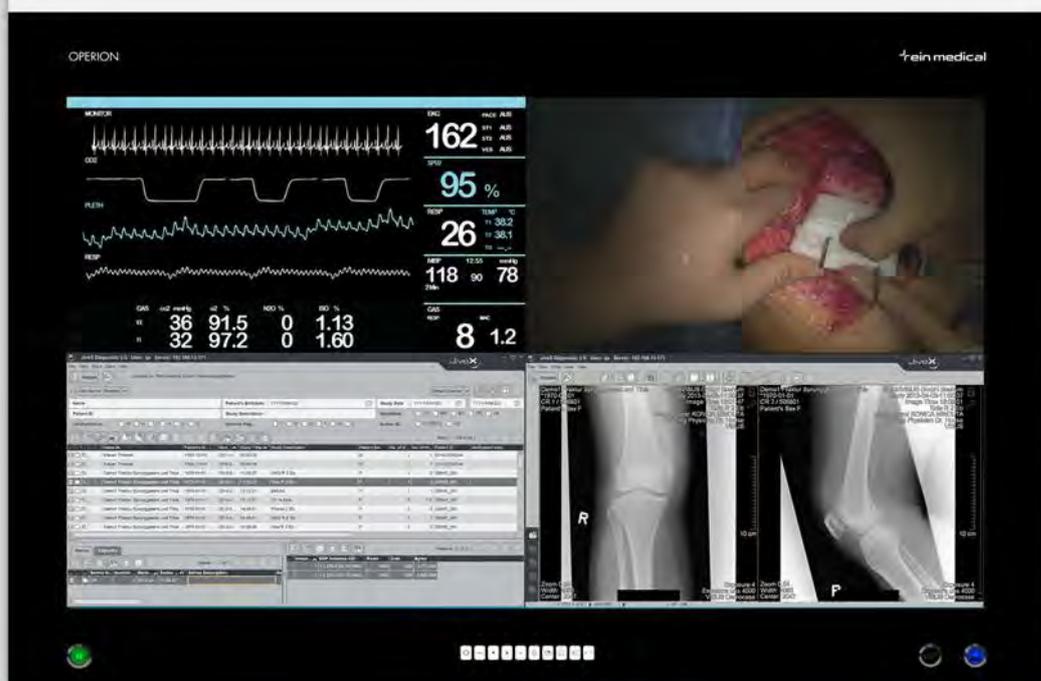
Even in the event of a fault, the source can be found quickly because all the technology is accessible within one room. In addition, the glass front can be equipped with interfaces and control elements and the ON-AIR display required for video transmissions can be integrated. Other surfaces are also available as an option, such as ones adapted to the OR.



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



OPERION 55" FB with DOCTRAY TOUCH



QUAD VIEW

OPERIONs are available as QUAD VIEW models with 49", 55" and 65" displays. The screen surface featuring UHD resolution can be divided into four quadrants on which all input signals (4 x DVI-D, 2 x DisplayPort, 1 x VGA) can be displayed in any position.

You can assign a colour mode to each quadrant.

For example, the DICOM preset can be selected for the PACS image and BT.709 for the OR field camera.



QUALITY

Colour spaces and calibration

In order to display images from different sources correctly, OPERION monitors feature precise presets for the BT.709, BT.1886 and BT.2020 colour spaces, as well as a DICOM preset for viewing in accordance with DIN 6868-157 space class 4. The UHD DUAL VIEW models use a 3D LUT (Look-Up-Table) to reproduce BT.2020 camera images as faithfully as possible. This allows matching colours that lie within the colour reproduction space of the panel to be reproduced precisely in accordance with BT.2020.

Automatic luminance stabilisation

All OPERIONs with 32" or larger display feature automatic luminance stabilisation.

ALS compensates for fluctuations in the backlighting that may occur, for example, during the warm-up phase or due to temperature changes. In addition, this control also compensates for the backlight dimming due to running time.

Combined with high-quality panels, the monitors deliver optimal, bright images even after many years of use. In addition, the activated ALS function limits the use of the monitor's maximum brightness, which saves a considerable amount of energy and increases the lifespan.

DUAL VIEW

Every OPERION with a 32" or larger display is capable of displaying images from two signal sources simultaneously. The picture-in-picture (PIP) mode displays one image within the other.

The size and position of the sub-picture can be changed. Picture-outside-picture (POP) displays two images next to each other. Three modes (1:1, STRETCH & CENTERZOOM) help to optimally display the images.



OPERION

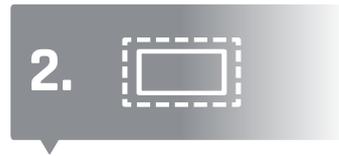
The customised OR solution

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



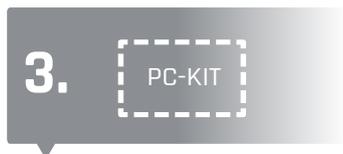
the screen types:

- 22" ^{1*)}, 24", 27", 32", 46" (FULL HD)
- 49", 55", 65" (UHD Quadview)
- Twin (24" + 24")
- BR-combination housing (e.g. : 24" + 49") ✓



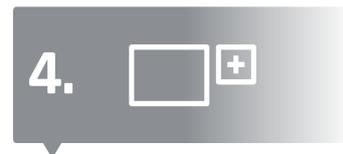
the design according to wall conditions:

- FB (flush mount)
- BR (frame) ✓
- BODY (surface mount)



the type of unit according to application:

- Wall monitors
- Workstations (integrated PC-Kit, configurable)
- Combined console ✓



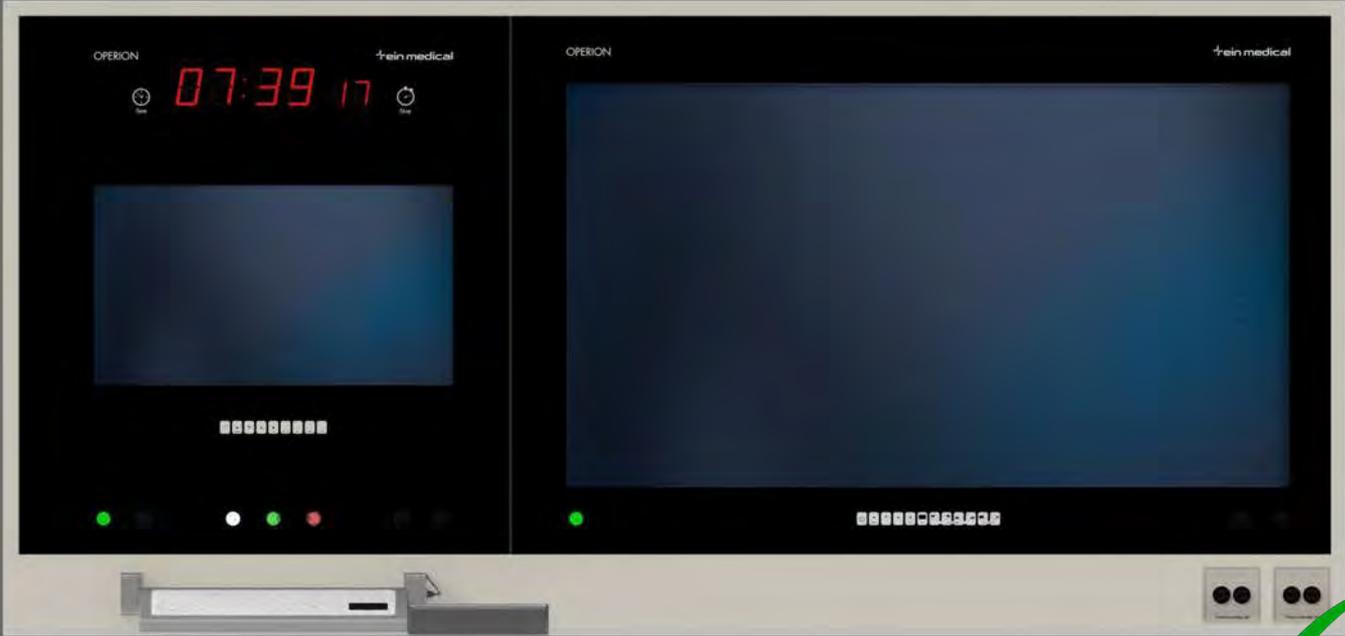
the add ons:

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



1*) All-in-One-Computer, Projektmodell

STANDS FOR MODULARITY



7000 UNITS WORLDWIDE



OPERION 24" FB and OPERION 24" FB Twin with two integrated PC kits, add-ons: two keyboards, Maria Hilf Mönchengladbach



OPERION 55" BODY with dust chute for displaying internal information, Boehringer Ingelheim

SMART OR for YOUR smart OR

The OPERION unleashes its full potential in combination with SMART OR: SMART OR manages all video sources in the OR, displays them on different output devices and makes the images available in the hospital network. SMART OR also lets you archive the video streams and connect them to HIS, RIS and PACS. The flexibility of the OPERION series ensures compatibility with manufacturer-independent software.

See also:



OPERION



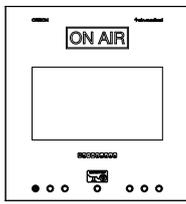
Two OPERION 24" BR and OPERION 46" BR with customised special enclosures, add-ons: connection panels, DOCTRAY and 890 mm INFOBAR, Hohwaldklinik



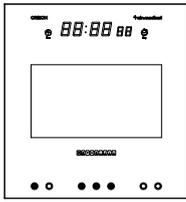
OPERION 55" BR, add-ons: MEDIGENIC keyboard, keyboard tray, HFR Fribourg

Customised special housing for two OPERION 24" and OPERION 46", Add On: Connection panels, DOCTRAY and 890 mm INFOBAR, Weilheim-Schongau Hospital

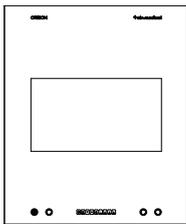




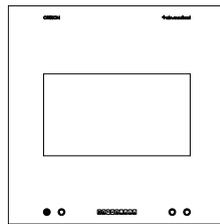
OP-324CP



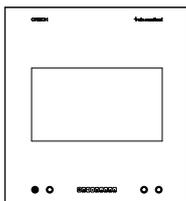
OP-324IB



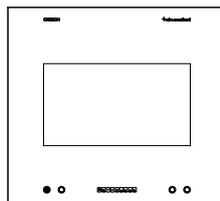
OP-424-L



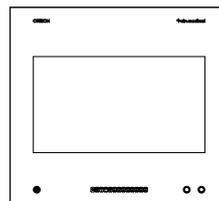
OP-427-L



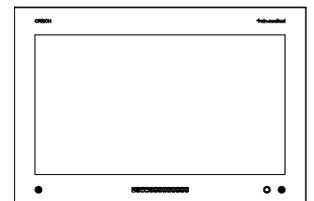
OP-424



OP-427



OP-332



OP-346

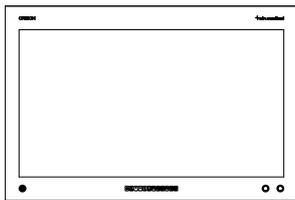
Diagonal	61 cm (24,1")	68,6 cm (27")	80 cm (31,5")	116,84 cm (46")
Resolution	FHD Resolution 1920 x 1080 pixels		FHD Resolution 1920 x 1080 pixels	
Brightness	300 cd/m ²		450 cd/m ²	700 cd/m ²
Contrast	5000:1	3000:1	3000:1	4000:1
Inputs/ Outputs	DVI, DisplayPort, HDMI, VGA		DVI1, DVI2, DisplayPort, VGA, S-Video, CVBS, YPbPr/RGBS Optional: 3G-SDI in/Loop	
PC-Kit	Standard PC kit: Intel i5-9xxxT(E), Q370 chipset, 8 GB DDR4 RAM, 250 GB M.2 SSD Alternatives PC Kit: Intel i5-9xxxT(E), H310 chipset, 8 GB DDR4 RAM, 250 GB M.2 SSD PC Kit Thin Client: IGEL certified, Intel® J5005, 8 GB RAM, 120 GB M.2 SSD			

General

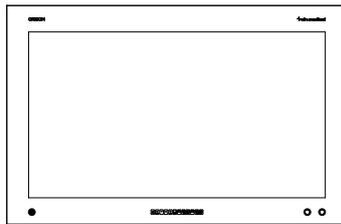
- Flexible housing design
- Hygienic design
- Optional touch
- Optional Infobar elements
- Certified medical device
- Optional PC kit
- Optional wall keyboard

Take advantage of our 12 years of experience with wall integration projects by consulting us!

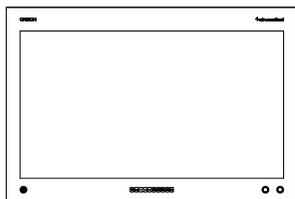
OPERION FAMILY



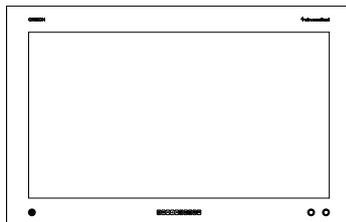
OP-349.3



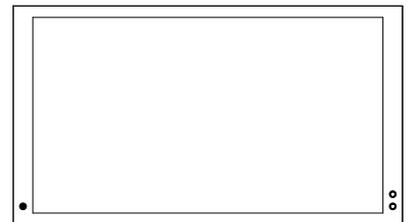
OP-35U.3



OP-349.4



OP-35U.4



WS-465DV

123,2 cm (48,5")

138 cm (54,6")

165,12 cm (64,5")

UHD Resolution 3840 x 2160 pixels

700 cd/m²

1100:1

QUAD VIEW models (.3)

DVI1, DVI2, DVI3, DVI4, DisplayPort1, DisplayPort2, VGA

DUAL VIEW models (.4/DV)

DVI1, DVI2, HDMI 2.0, DisplayPort, VGA
Optional: 3G-SDI in/Loop anstatt DVI2

Intel i5-9xxxT(E), H310 chipset, 8GB DDR4 RAM, 250 GB M.2 SSD
Alternatives PC Kit: Intel i5-9xxxT(E), H310 chipset, 8 GB DDR4 RAM, 250 GB M.2 SSD

CONCLUSION

- Monitor sizes from 22" to 65"
- UHD resolution for 49", 55" and 65" displays
- Brightness stabilisation for all devices from 32" upwards
- DICOM and colour presets (BT.709, BT.1886 & BT.2020)
- Hygienic control via the COMMAND BAR
- Picture-in-Picture and UHD QuadView display
- Components are designed for continuous operation
- Different designs suitable for every operating theatre
- Suitable input devices and system extensions

OPERION

Who are we?

At Rein Medical, we drive innovation. Our German company with a team of almost 100 employees has been involved in medical IT for more than two decades. Nowadays, we're a system service provider that implements customised 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, customised 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.

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 realise our IT solutions at the Mönchengladbach site. With our worldwide partnerships, we offer innovative holistic solutions for an optimised workflow, ensuring smooth and reliable processes in the operating room.

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