27HK510S 1.1.

LG 27'' Full HD IPS Surgical Monitor 1.2

1/9

Key Features

27"FHD IPS Display (1920x1080)

sRGB 115%(Deep Red)

Brightness Stabilization

Show More

ADD TO COMPARE

OVERVIEW SPECS RESOURCES

Katalogo psl.1

A Display Optimized for Compatibility

The detailed picture quality of the LG surgical monitor meets operating room requirements. With its 27-inch Full HD IPS Display, the LG surgical monitor improves work efficiency.

IPS | 2MP | sRGB 115% | Brightness Stabilization | Flicker Safe

Optimal Image Quality

sRGB 115%(Deep Red)

The Full HD IPS display with sRGB 115% (Deep Red) is designed to fit with other Full HD surgical devices. It enables surgeons to view accurate, realistic images
especially in the red color spectrum.

1.1.2

Brightness Stabilization

The LG surgical monitor carefully measures and sets every grayscale tone to create a monitor compliant with DICOM Part 14. Furthermore, LG's surgical monitors offer
stabilized brightness settings.

* DICOM (Digital Imaging and Communications in Medicine): Standard applied to the grayscale tone characteristics of monitors used in the medical field.

OVERVIEW SPECS RESOURCES

Katalogo psl.5

Dustproof & Waterproof

To ensure protection against contact with objects such as blood or bodily fluids, LG surgical monitors are cleanable and durable, with ratings of IP35 on the front
and IP32 on the back, securing them from
any direction.

Katalogo psl.6

Protection Glass

The LG surgical monitor with protection glass provides a more durable display by safeguarding the monitor from water and bodily fluids and making it easier to clean.

Katalogo psl.7

Reduces Visual Fatigue

Flicker Safe reduces the onscreen flicker level to almost zero, which helps minimize eye strain and eye fatigue. By combining Flicker Safe with the IPS technology, users can comfortably work throughout the day.

DISPLAY

Aspect Ratio	16:9
Backlight Dimming Technology	Global Dimming
Backlight Technology	LED
Brightness (Typ.)	1000 cd/m²
Brightness (Stabilization)	600 cd/m²
Color Bit	10bit
Color Gamut (Typ.)	sRGB 115%(Area), sRGB over 99%(Coverage)
Contrast Ratio (Typ.)	1000:1
Pixel Pitch(H x V)	0.3114mm x 0.3114mm
Resolution	1920x1080
Response Time (GTG)	14ms(Off-setting), 5ms(Faster-setting)
Size (Diagonal, Inch)	27
Size (H x V)	597.89 x 336.31mm (23.54 x 13.24")

1.1.6
1.1.1
1.1.5
1.1.3
1.1.6
1.1.4

OVERVIEW SPECS RESOURCES

Katalogo psl.8

Viewing Angle (CR≥10)	178° (Right/Left), 178° (Up/Down)

FEATURE

Hot Key	Yes (2keys)
Brightness stabilization	Yes
Black Stabilizer	Yes
HW Calibration	Yes(LG Calibration Studio)
DICOM Compliant	Yes
Color Temperature	6500K / 7500K / 9300K Manual (5000K ~ 10000K)
Flicker safe	Yes
PBP	Yes (2PBP)
PIP	Yes
Failover Input Switch	Yes
Smart Energy Saving	Yes
Super Resolution+	Yes

SW APPLICATION

LG Calibration Studio (True Color Pro)	Yes

CONNECTIVITY

1.1.8

3G-SDI	Yes (3G,INx1/OUTx1)
D-Sub	Yes
DVI	DVI-D (In)/DVI-D(Out)
HDMI	Yes (1ea)
Component	Yes
RS-232	Yes (1ea)
USB Downstream Port	Yes(1ea/ver3.0)
USB Upstream Port	Yes (1ea/ver3.0)

1.1.7

POWER

AC Input	100-240Vac, 50/60Hz
DC Output	

Katalogo psl.9

Power Consumption (DC Off)	Less than 0.3W
Power Consumption (Max.)	120W
Type	External Power(Adapter)

MECHANICAL

Borderless Design	Normal
Display Position Adjustments	No Stand
Down Height	No Stand
Height Range	No Stand
Machanical Power Switch	Yes
OneClick Stand	No Stand
Pivot	No Stand
Swivel	No Stand
Tilt	No Stand
Wall Mount Size	200x100mm/100x100mm

DIMENSIONS/WEIGHT

Dimension in Shipping (W x H x D)	743x157X496 mm
Dimension with Stand (W x H x D)	No Stand
Dimension without Stand (W x H x D)	656.4x412.9x62.2mm
Pallet Stuffing (20ft/40ft/40ft HC)	420 / 900 / 900
Weight in Shipping	11.3kg(24.9lb)
Weight with Stand	No Stand
Weight without Stand	7.7kg (17lb)

STANDARD

IEC (IEC 60601-1 / IEC 60601-1-2)	Yes
EN (EN 60601-1 / EN 60601-1-2)	Yes
IEC (IEC 60950-1 & IEC 62368-1 / CISPR 32, 35)	Yes
EN (EN 62368-1 / EN 55032, 55035)	Yes
cUL (ANSI/AAMI ES 60601-1, CSA CAN/CSA-C22.2 NO. 60601-1)	Yes

FDA	Registration (Class I)
ISO13485	Yes
RoHS	Yes
REACH	Yes
WEEE	Yes
MFDS	Yes
IP(front/except for front)	IP35/IP32
Vandal-proof	IK06

ACCESSORY

Adapter	Yes
Calibration Report (Paper)	Yes
D-Sub	Yes
DVI-D	Yes
HDMI	Yes
Power Cord	Yes

PHYSICAL SPECIFICATIONS

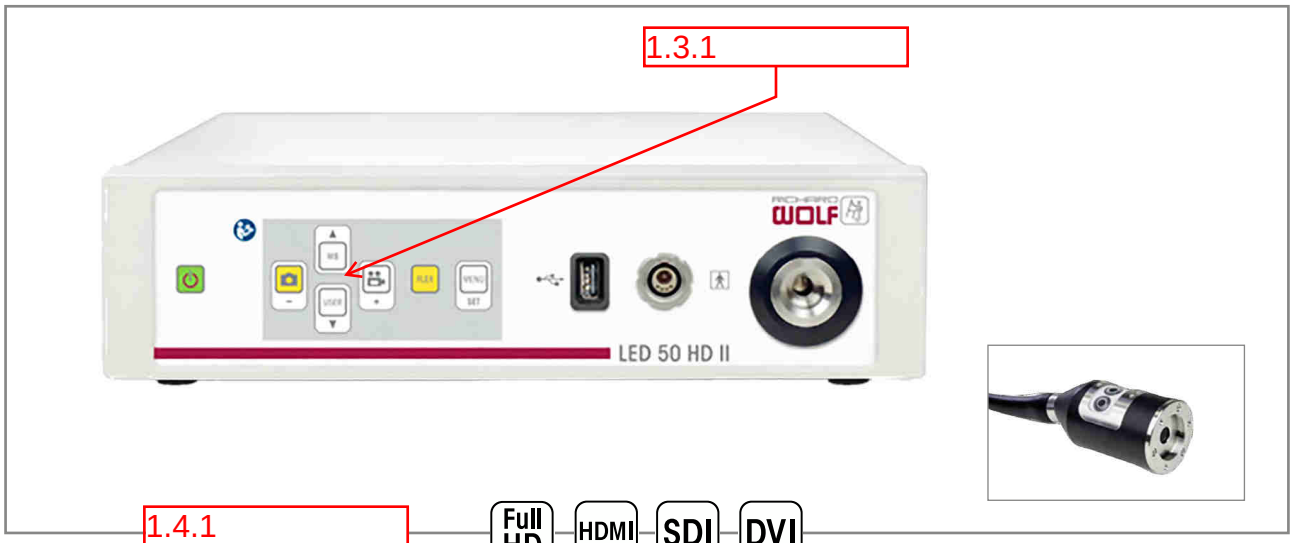
Weight(Without Stand)	7.7kg

To access more technical documentation and downloads, please visit the LG B2B Partner Portal.

Katalogo psl.11

LED 50 HD II

Camera control unit



1.4.1

Full HD | HDMI | SDI | DVI

- Camera and light source in a single device
- Small design – low space requirement
- Connection option for C-Mount lenses
- Connection of Richard Wolf light cables without light source adapter
- Image and video recordings on USB using camera head buttons
- Use-specific camera profiles

LED 50 HD II **862-2512**

Consisting of:
1x camera control unit
1x camera head (ECOHDII) with 3.05 m (10 ft) cable
1x power cable
1x HDMI-DVI cable

1.2.3

1.3.3

X24 || Subject to modifications. Please note that some products may not be available in all countries. Please always take note of the information that is provided with the product. For more detailed information, please consult with your contact partner or directly with Richard Wolf GmbH.

LED 50 HD II

Technical data of camera control unit

LED 50 HD II	862-2512
Device properties	
Max. native video signal resolution	1,920 x 1,080 pixels
Type and number of lamps	LED
Brightness in lumens	Approx. 950 lm
Light output	50 W
Digital zoom	10x max.
Operating conditions	+10 °C to +40 °C, 30 % to 75 % rel. humidity, atmospheric pressure 700 hPa to 1,060 hPa
Image format of saved pictures / videos	JPG (1,920 x 1,080) / Full HD 1,920 x 1,080
Equipment	
IP rating	IP 20
Camera head	
Sensor:	1x 1/ 2" CMOS
Operation:	3 programmable head buttons
Lens thread:	C-Mount
Sensitivity:	< 3 lux (1/1.4)
Power supply	
Mains + frequency	100–240 V AC, 50/60 Hz
Power consumption	95 VA
Regulatory standards	
Safety	US/CA: UL 2601-1 / CSA C22.2 NO.601.1, EU: EN 60601
EMC	EN 60601-1-2
Medical device class	Class 1
Classification of applied part	BF
Interfaces	
Video outputs	1x HDMI, 1x DVI, 1x SDI, 1x video
Resolution	1,920 x 1,080 / 60p (16:9)
USB port	USB
Dimensions and weights	
Weight	Device: 3 kg / camera head: approx. 180 g
Dimensions (W x H x D)	Device: 295 x 128 x 278 mm / camera head: d = 38 mm; l = 79 mm

1.3.1

1.4.2

1.3.4

1.2.4

X24 || Subject to modifications. Please note that some products may not be available in all countries. Please always take note of the information that is provided with the product. For more detailed information, please consult with your contact partner or directly with Richard Wolf GmbH.

LED 50 HD II
Instructions for use

Digital HD camera (1CMOS)
with integrated LED light source
for endoscopic applications

Katalogo psl.14

Device data

Technical data

General data	
Mains voltage:	100–240 VAC
Power consumption:	95 VA
Mains fuses:	Microfuses, 5x20 mm, slow-blow 3.15 AH, 250V With high switching capacity (Ia = 1500 A)
Dimensions (W x H x D):	Control unit: 295 x 128 x 278 mm Camera head with buttons: approx. Ø38 x 79 mm (without sleeve)
Weight:	Control unit: approx. 3 kg Camera head with buttons: approx. 180 g
Light source	
LED	LED unit, comparable to 50 W (lifetime 30.000h)
Camera	
Sensor:	1/2" CMOS
TV system:	50 Hz, 60 Hz (Rolling Shutter)
Image resolution:	1920 x 1080 (Full HD) (camera system incl. sensor)
TV resolution:	>900 TV lines; horizontal
USB Interface, device front	max 256 GB (USB Stick only)
Imaging ratio:	16:9
Min. Sensitivity:	< 3 lux (1/1.4)
Connections	
Video outputs:	1 x HDMI 1 x DVI 1 x SDI 1 x VIDEO

1.2.1.

1.2.2.

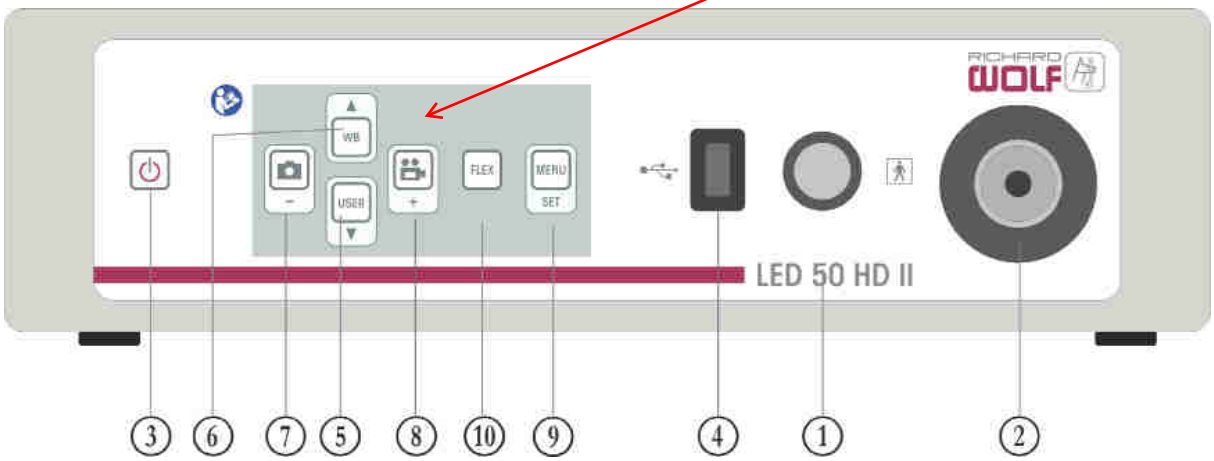
Katalogo psl.15

Operating elements/Connections

1.3.2

View from the front

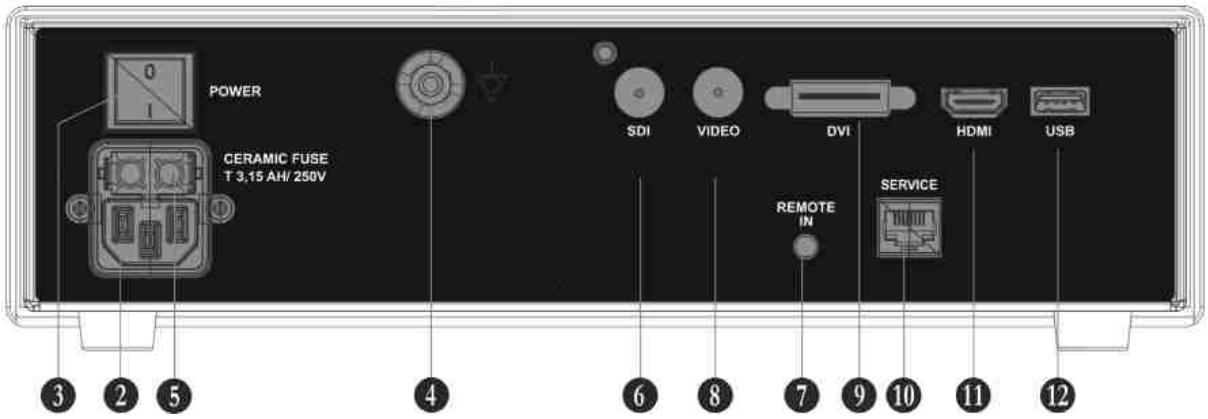
⚠ Note the labelling style for the front view: "⓪"



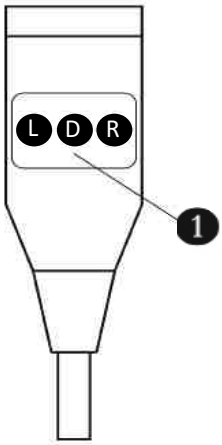
Rear view

⚠ Note the labelling style for the rear view: "❶"

⚠ Attention! Only connect medical devices to the interfaces (Signal-In-Put/Signal-Out-Put) on the rear of the device!

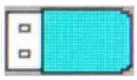


Camera head



Katalogo psl.16

Description of connections and control elements

① **Camera socket:**	The camera cable plug is connected to the socket. The plug has anti-twist protection so that the plug can only be inserted in one position. ⚠ **Attention!** Only use the camera head/camera cable included in the scope of delivery!
② **Light guide connection**	The light guide is connected here. The device is supplied with a STORZ® adapter. ⚠ **Attention!** Using incorrect light guides can endanger the device, the accessories used and also the patient.
③ **Standby:**	Pressing this button switches the device to operating mode. (The mains switch ❸ on the rear of the device must be switched on beforehand) Pressing the button once (briefly) switches the device on. The operating status is indicated by the button lighting up green. Pressing the button repeatedly (approx. 3 seconds) switches off the device (standby mode).
④ **USB connection:**	The USB port is used to connect the device to external USB storage media (USB sticks) for recording data If a USB flash drive is connected to this port, the following message appears in the lower right corner of the screen:  When a USB flash drive is disconnected from this port, the following message appears in the lower right corner of the screen:
⑤ **User** **/Scroll:**	Four different user presets can be selected by pressing this button. The currently activated preset is displayed when the button in the upper left corner of the monitor is pressed. Loading the preset takes approx. 4 seconds. For more information, see “Operating the device/presets” ––– When the menu is activated: These buttons can be used to select various menu items.
⑥ **White balance (WB)** **/Scroll:**	The white balance of the camera is performed with the “WB” button (see “Operation→White balance”). “AWB HOLD” appears in the upper left corner of the monitor while the function is running. An “AWB DONE” appears when the function has been successfully completed. ––– When the menu is activated: These buttons can be used to select various menu items.

Katalogo psl.17

⑦ **1. Image storage/** **2. Change values/** **3. Decrease light intensity**	**1.** By pressing this button, images can be saved in JPEG format (1920x1080) or settings can be configured within the menu. • To save the current camera image, hold the endoscope still. Pressing the button saves the current video image. During saving (approx. 3 sec.), the button flashes and the information on image storage appears in the upper right corner of the screen Note: In order to use the memory function, a USB storage medium must be connected to the corresponding connection ④ on the front of the device ––– **2.** Values of selected menu items can be changed within the menu. ––– **3.** Reduce light intensity: see chapter "Operation of the device – Brightness control"
⑧ **1. Video storage/** **2. Change values/** **3. Increase light intensity**	**1.** By pressing this button, videos can be saved on the USB storage medium connected to the device (MPEG-4) or settings can be made within the menu. • If you want to record a video clip, press this button once to start recording. The saving process is signalled by a flashing “REC” in the upper corner of the screen and the button flashes. Press the button again to stop recording. Wait a few seconds while the video is being saved. You can press this button again to start recording a new video clip, etc. • Note: In order to use the memory function, a USB storage medium must be connected to the corresponding connection ④ on the front of the device. ––– **2.** When the menu is activated: Values of selected menu items can be changed within the menu ––– **3.** Increase light intensity: see chapter "Operation of the device – Brightness control"
⑨ **Menu/confirmation:**	User settings can be configured via a menu. Pressing this button calls up the camera menu. The button lights up when the menu is activated. Set values can be saved within the menu using the "SET" function
⑩ **Flex (FIBRESCOPE)**	This quick selection button can be used to call up the preset for the use of flexible endoscopes. (FIBRESCOPE) A confirmation appears in the upper left corner of the screen. The button remains illuminated as long as the “Fibrescope” preset is activated. Pressing the button again automatically reactivates the previously active preset.
❶ **Camera buttons (optional):** **(remote control)**	These buttons allow for remote control of the camera functions from the camera head. For the head buttons 3 functions are possible. The assignment of the head buttons can be defined via the menu (see "Menu settings – option "Shortcut key").
❷ **Mains connection socket**	The plug of the mains connection cable is connected to this cold device mains connection. Always use the earthed mains cable supplied.

Katalogo psl.18

❸ **Main power switch** **(Power)**	Pressing the power switch switches the device to standby mode. The power switch has two switch positions: • I (ON – switched on) • O (OFF – switched off) When the device is switched on, a green indicator lamp lights up in the switch.
❹ **Potential equalisation**	This connection is used to connect the device to the central potential equalisation of the operating theatre or equipment cart.
❺ **Fuse holder**	The device fuses are located in the fuse holder. Use only the fuses specified on the type plate! Replacement of the fuses is described in the service section of these instructions for use (see "Replacing the mains fuses").
❻ **Video output**	SDI
❼ **Remote input**	The Remote-IN socket is used to connect a foot switch (optional).
❽ **Video output**	VIDEO
❾ **Video output**	DVI
❿ **Service**	Service/diagnosis/maintenance
⓫ **Video output**	HDMI
⓬ **USB**	Service/diagnosis/maintenance

Katalogo psl.19

Operating the device

Switching on

Once all cable connections have been established, the camera can be put into operation. Switch on the camera at the power switch ❸. The green light in the power switch lights up.

Standby mode is indicated by the standby button ③ lighting up yellow. Pressing the standby button switches the device to operating mode.

The device performs a self-test when it is started up. This is visualised by a light sequence in the control elements on the front panel.

The operating mode is indicated by the standby button ③ lighting up green.

⚠ **Attention!** Before each use or after changing the view/settings, it must be ensured that the view through the endoscope provides a real-time image (instead of a saved image) and the correct orientation of the image.

Note: The camera head can exceed a temperature of 41°C during operation and heat up to 60°C under unfavourable operating conditions.

Brightness control

The integrated light source has a manual brightness control. On delivery, the preset illumination is approx. 80%.

The light intensity can be adjusted as follows:

- Press and hold the Menu ⑨ button for more than 2 seconds.
- The two buttons ⑦ and ⑧ are now in the setting mode for brightness.
- You can now gradually decrease the brightness by pressing the ⑦ button and gradually increase it by pressing the ⑧ button. The brightness levels can be changed more quickly by pressing and holding the buttons for more than 2 seconds.
- Press the ⑨ button again to exit the setting mode.

White balance

The "WB" button ⑥ is used to set the white balance of the camera. To do this, hold the camera head (with the lens and endoscope screwed on) on an evenly illuminated white area (e.g. sheet of paper) and simultaneously press button ⑥. Make sure that the white area is not overexposed or darkened. This can be recognised, for example, by the fact that the fibre structure of the paper is visible on the monitor. Correct colour reproduction is only guaranteed if the white balance has been carried out correctly.

The current setting is saved in the camera and is retained even after switching off. If the “White balance” function is selected, the “WB” button flashes. “AWB HOLD” appears in the upper left corner of the OSD while the function is running. “AWB DONE” appears when the function has been successfully completed

Presets/User

The present HD camera can manage 4 presets/USER settings. These can be selected by pressing the “User” button ⑤ The currently activated preset is displayed when the button in the upper left corner of the monitor is pressed. Loading the preset takes 4 seconds. The settings for the individual presets can be adjusted in the menu under “Menu/Endoscope ”, whereby the desired preset must be selected.

The following presets are available as default settings when delivered from the factory:

- **Laparoscopy Wolf:** Presetting for laparoscopy (zoom lens, 5 mm fusion, 10 mm ultra optics)
- **GYN/URO Wolf:** Presetting for urology and gynaecology (14 mm lens, 2.5 mm light guide, 4 mm optics)
- **Arthroscopy Wolf:** Presetting for arthroscopy (14 mm lens, 2.5 mm light guide, 4 mm optics)
- **Flex/Fibrescope Wolf:** Presetting for flexible endoscope (14 mm lens, 2.5 mm light guide)

Katalogo psl.20

Wolf presets – overview

Equipment	Zoom lens, 5 mm fusion, 10 mm ultra optics	14 mm lens, 2.5 mm light guide, 4 mm optics	14 mm lens, 2.5 mm light guide, flexible endoscope	14 mm lens, 2.5 mm light guide, 4 mm optics
Profile	Laparoscopy Wolf	Gyn/Uro Wolf	Fibresco/Flex Wolf	Arthro Wolf
Brightness	12	12	12	13
Colour Gain	4	3	3	4
Colour	Standard	Standard	Standard	Standard
Sharpness	2	2	2	4
Gain	3	1	1	2
DNR	0	1	1	1
Contrast	2	2	2	2
Exposure	Central Peak 1 (middle measurement window)	Central Peak 2 (smallest measurement window)	Central Peak 2 (smallest measurement window)	Central Peak 2 (smallest measurement window)
Enhance	Off	Off	Off	Off
Red 1	62	58	58	55
Red 2	125	125	125	125
Yellow 1	68	80	80	65
Yellow 2	187	187	187	187
Blue 1	82	72	72	63
Blue 2	128	128	128	128
Green 1	85	86	86	75
Green 2	128	128	128	128
Button 3 **R**	Video	Video	Video	Video
Button 4 **L**	Photo	Photo	Photo	Photo
Button 5 **D**	Freeze	Freeze	Freeze	Freeze

Menu settings

Various functions and parameters can be changed in the menu according to individual requirements.

Note: Depending on the version of the software, individual menu items may differ from those described in these instructions for use.

To enter the menu mode, press the corresponding "Menu" button ⑨. In Menu mode, the buttons on the front panel have the following functions:

- ⑤ ⑥ Selecting the menu items
- ⑦ ⑧ Changing the settings
- ⑨ Activating the functions and sub-menus

The "Scroll" buttons ⑤ ⑥ and ⑦ ⑧ can be used to navigate within the menu or to change settings. All operations are completed with the "MENU" button ⑨. The next MENU item is selected or activated by repeatedly pressing the MENU button.

The "BACK" menu item must be used to exit the menu.

Katalogo psl.21

Operating the device

Switching on

Once all cable connections have been established, the camera can be put into operation. Switch on the camera at the power switch ❸. The green light in the power switch lights up.

Standby mode is indicated by the standby button ③ lighting up yellow. Pressing the standby button switches the device to operating mode.

The device performs a self-test when it is started up. This is visualised by a light sequence in the control elements on the front panel.

The operating mode is indicated by the standby button ③ lighting up green.

⚠ **Attention!** Before each use or after changing the view/settings, it must be ensured that the view through the endoscope provides a real-time image (instead of a saved image) and the correct orientation of the image.

Note: The camera head can exceed a temperature of 41°C during operation and heat up to 60°C under unfavourable operating conditions.

1.4.3

Brightness control

The integrated light source has a manual brightness control. On delivery, the preset illumination is approx. 80%.

The light intensity can be adjusted as follows:

- Press and hold the Menu ⑨ button for more than 2 seconds.
- The two buttons ⑦ and ⑧ are now in the setting mode for brightness.
- You can now gradually decrease the brightness by pressing the ⑦ button and gradually increase it by pressing the ⑧ button. The brightness levels can be changed more quickly by pressing and holding the buttons for more than 2 seconds.
- Press the ⑨ button again to exit the setting mode.

White balance

The "WB" button ⑥ is used to set the white balance of the camera. To do this, hold the camera head (with the lens and endoscope screwed on) on an evenly illuminated white area (e.g. sheet of paper) and simultaneously press button ⑥. Make sure that the white area is not overexposed or darkened. This can be recognised, for example, by the fact that the fibre structure of the paper is visible on the monitor. Correct colour reproduction is only guaranteed if the white balance has been carried out correctly.

The current setting is saved in the camera and is retained even after switching off. If the “White balance” function is selected, the “WB” button flashes. “AWB HOLD” appears in the upper left corner of the OSD while the function is running. “AWB DONE” appears when the function has been successfully completed

Presets/User

The present HD camera can manage 4 presets/USER settings. These can be selected by pressing the “User” button ⑤ The currently activated preset is displayed when the button in the upper left corner of the monitor is pressed. Loading the preset takes 4 seconds. The settings for the individual presets can be adjusted in the menu under “Menu/Endoscope ”, whereby the desired preset must be selected.

The following presets are available as default settings when delivered from the factory:

- **Laparoscopy Wolf:** Presetting for laparoscopy (zoom lens, 5 mm fusion, 10 mm ultra optics)
- **GYN/URO Wolf:** Presetting for urology and gynaecology (14 mm lens, 2.5 mm light guide, 4 mm optics)
- **Arthroscopy Wolf:** Presetting for arthroscopy (14 mm lens, 2.5 mm light guide, 4 mm optics)
- **Flex/Fibrescope Wolf:** Presetting for flexible endoscope (14 mm lens, 2.5 mm light guide)

Katalogo psl.22

FLUID CONTROL Arthro 2204

Suction and irrigation pump for arthroscopy with automatic tube recognition

FLUID CONTROL Arthro
is a new pump system for arthroscopy and fully endoscopic spinal surgery. The particular strength of this system lies in a practical combination of high performance and a cost-effective overall concept. The new software and technical enhancements make the **FLUID CONTROL Arthro** ideal for diagnostic and therapeutic arthroscopies.

FLUID CONTROL Arthro has already been prepared for integration in core, the digital OR from Richard Wolf.

VI21 || Subject to modifications. Please note that some products may not be available in all countries. For more detailed information, please consult with your contact partner or directly with Richard Wolf GmbH.

RICHARD WOLF
spirit of excellence

FLUID CONTROL Arthro 2204

Suction and irrigation pump for arthroscopy
with automatic tube recognition

Arthro/spine suc./irrig.pump bndl
for arthroscopy **22040011**

Comprising:
1 x arthro/spine suc./irrig.pump 200mmHG..... 2204001
1 x irrigation tube set spike 8171223
1 x tube set for vacuum, incl. filter 2206207
1 x protection filter for gas filtration 4171.121
1 x power cable 2440.03

Arthro/spine suc./irrig.pump bndl
with Spine Mode software module for arthroscopy and
fully endoscopic spinal surgery **22040012**

Comprising:
1 x arthro/spine suc./irrig.pump 200mmHG 2204001
1 x Spine mode software module 2204101
1 x irrigation tube set spike 8171223
1 x tube set for vacuum, incl. filter 2206207
1 x protection filter for gas filtration 4171.121
1 x power cable 2440.03

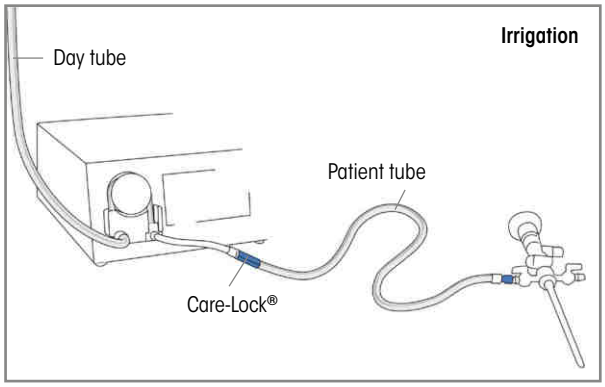
Recommended accessories		Product no.
Footswitch		2204901

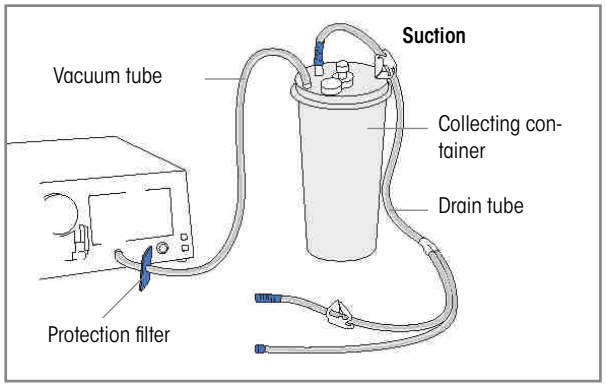
VII21 || Subject to modifications. Please note that some products may not be available in all countries. For more detailed information, please consult with your contact partner or directly with Richard Wolf GmbH.

FLUID CONTROL Arthro 2204

Irrigation and suction pump for arthroscopy with automatic tube recognition

Day-patient tube set
From two interventions/patients per day:
Use the **day-patient tube set,** which comprises a day tube and a connected patient tube. The day tube remains in the pump throughout the day, while the patient tube has to be changed for each operation. The irrigation fluid bag can remain on the pump until it has been completely used up. **This significantly reduces the amount of waste and cuts costs.**
Further tube versions are available to complement the system.
Note: The use of the day-patient tube set has not been approved for the Spine Mode application.





Irrigation			Product no.
Accessories – reusable	Irrigation tube set spike	With Luer-Lock connection, autoclavable, incl. 10 spare membranes, reusable for 20 reprocessing cycles	8171223
Accessories – disposable	Irrigation tube set with spike L 3 m	(PACK= 10 PCS), with Luer-Lock connection, sterile, disposable product	4171223
	Irrigation tube set CARE-LOCK, L 3 m	(PACK= 10 PCS), sterile, disposable product	4171224
	Day irrigation tube set	(PACK= 10 PCS), with piercing spike, sterile disposable product, PVC	4171226
	Patient irrigation tube set L 3m	(PACK= 10 PCS), with Luer-Lock connection, sterile, disposable product, PVC	4171227
	Note: Day tube and patient tube can only be used together. A new patient tube is required for each patient – the day tube can be used for up to 20 patients.		

1.5.5

Suction			Product no.
Accessories – reusable	Tube set for vacuum, incl. filter	with integrated hygiene filter, PACK= 10 PCS, service life of 30 days (connected to irrigation pump)	2206207
Accessories – disposable	Secretion container, 2 L	2 liters, no lid	8170.6551
	Secretion container, 2.5 L	2.5 liters (PACK= 2 PCS)	41706566
	Tube set for suction (with 2 ports)	sterile, disposable, (PACK= 10 PCS) for connecting instruments to collecting container	T0503-01

VI21 || Subject to modifications. Please note that some products may not be available in all countries. For more detailed information, please consult with your contact partner or directly with Richard Wolf GmbH.

RICHARD WOLF
spirit of excellence

Technical Data

FLUID CONTROL Arthro 2204

Arthro/spine suc./irrig.pump 200mmHG	2204001
Power supply connection	100–240 VAC, 50/60 Hz
Power consumption	118 VA
Protection class to VDE 0750 / IEC 601	1
Classification	CF
Pressure range (infinite preselection)	15–200 mmHg
Delivery rate (can be preselected in 50 ml increments)	0–2 l/min
Dimensions (W x H x D)	300 x 157 x 436 m
Weight	8.3 kg
Interfaces	USB / CAN bus (core) service interface

1.5.1

1.5.2

VII21 || Subject to modifications. Please note that some products may not be available in all countries. For more detailed information, please consult with your contact partner or directly with Richard Wolf GmbH.

Instructions for Use

EN

FLUID CONTROL Arthro 2204
Software Module SPINE - Mode

RICHARD WOLF

Katalogo psl.27

EN

3 General Information

3.1 Device Description: ARTHRO

Technical application scope

- The nominal pressure can be preset ranging from
  - 15-200 mmHg for EU/Rest of World
  - 15-150 mmHg for USA
- The nominal flow can be preset ranging from 0.1 to 2.0 l/min.
- The device features an instrument recognition function.
- To improve visibility within a joint, the device features a "Wash" function.
- The device is equipped with an integrated vacuum pump to suction with suction container.
- The pump reacts to pressures greater than the set nominal pressure by emitting warnings. The pump therefore features safety thresholds.

1.5.3

The user can preset the desired joint pressure.

The pump attempts to reach and maintain the preset pressure in the joint by supplying irrigation fluid. If the joint cannot be drained (e.g. because closed valve at instrument), and if the preset pressure has been reached, the pump reduces the influx of fluid and attempts to maintain the preset pressure. If the intra-articular pressure falls below the selected value, fluid automatically continues to be supplied.

Recommended pressure range

The preset pressure should be based on the average blood pressure of the patient to prevent bleeding in the joint. The manufacturer recommends the following pressure settings for the following application areas:

Knee joint	**60 mmHg**
Hip joint	**60 mmHg**
Shoulder joint	**50 mmHg**
Small joints	**30 mmHg**

Each surgery and each patient require different parameters. The values indicated by the manufacturer are therefore only recommendations and are not intended to substitute or replace the expertise of the surgeon.

3.2 Intended Use and Contraindications: ARTHRO

3.2.1 Intended Use

The product FLUID CONTROL Arthro 2204 PUMP is an irrigation pump for diagnostic and /or surgical arthroscopic procedures. Such procedures may include:

- Ligament injuries
- Meniscus injuries
- Cartilage injuries
- Surgical plans and follow-up exams

The irrigation pump serves to distend and irrigate joints in the knee, shoulder, hip, elbow, as well the wrist and ankle joint.

3.2.2 Contraindications

Contraindications

Use of this device to inject fluid into a joint is prohibited whenever arthroscopy is contraindicated. Refer to your endoscope's manual for absolute and relative contraindications.

Arthroscopy is contraindicated in the following cases: