



353 Corporate Woods Parkway  
Vernon Hills, IL 60061  
Phone: (800) 323 - 9653  
Fax: (847) 913 - 1488

John Wehn  
111 Bremen Lane  
McMurray, PA 15317  
Phone: 412-980-8958  
Fax: 724-941-9346  
Email: jjw@wehnever.com

Price  
Quote

**WelchHDVideoQuote3-4-**

Account ID: 49390700-000  
WELCH EMERGENCY HOSPITAL  
454 MCDOWELL STREET

P.O. #: \_\_\_\_\_

Contact: DEBBIE ALTIZER  
Phone: 304-436-8830  
Fax: 304-436-6380  
Email: deborah.l.altizer@wv.gov

WELCH, WV 24801

Terms: Net 30 - FOB Vernon Hills, IL  
Date Quoted: 3/4/2013  
Date Expires: 4/30/2013

Qty	Item	Description	Price	Net	% off List	Extended Net
1	5550.654	CAMERA CCU, HD KIT TO INCLUDE: CAMERA CCU 5550.751, CAMERA HEAD 85550.975,	\$43,260.00	\$10,000.00	76.88 %	\$10,000.00
1	85550.975	CAMERA HEAD, 3CCD HD, AUTOCLAVABLE, INTEGRATED COUPLER,5 FUNCTION ROCK ERSWITCH	\$29,870.00	\$7,000.00	76.57 %	\$7,000.00
1	5132.012	LIGHT SOURCE, 300 W XENON, W/DIALOG FEATURE AND CAN-BUS, INCLUDES: (1) POWER CORD N710154	\$11,330.00	\$3,800.00	66.46 %	\$3,800.00
1	8061.456	CABLE, FIBER LIGHT, 4.5MM, 3M, INCLUDES: WOLF LIGHT SOURCE ADAPTERS 8095.05 &8095.07	\$510.00	\$350.00	31.37 %	\$350.00
1	2236.6011	INSUFFLATOR, CO2, 40 L/MIN, 120V, WITH POWER CORD, ALSO INCLUDES: CO2 HOSE 2026.62;	\$14,323.00	\$8,000.00	44.15 %	\$8,000.00
1	5365.855	USB DIGITAL THERMAL PRINTER, 8" X 12"	\$2,266.00	\$1,800.00	20.56 %	\$1,800.00
1	5365.7361	SONY DIGITAL HD RECORDER KIT, HVO-1000, INCL: 5365.736 DIGITAL HD RECORDER, 5365.7363 MEDICAL GRADE	\$11,325.00	\$9,000.00	20.53 %	\$9,000.00
1	31113.701	GLIDER-OR VIDEO CART WITH ARTICULATING ARM, ISOLATION TRANSFORMER, DUAL CO2 TANK HOLDER AND	\$5,047.00	\$3,000.00	40.56 %	\$3,000.00
1	31113.602	MONITOR ROLL STAND, ADJUSTABLE HEIGHT, VESA 100MM MOUNT, HANDLE INCLUDED FOR MOVING AND	\$1,700.00	\$800.00	52.94 %	\$800.00
2	5371.6266	MONITOR, 26" WITH FREEZE FRAME PICTURE IN PICTURE, AND IMAGE COUNTER, INCLUDE: MONITOR DUST	\$6,900.00	\$3,500.00	49.28 %	\$7,000.00
1	5371.60011	ZERO WIRE KIT, WIRELESS SIGNAL TRANSMISSION, INCLUDES: 1X ZERO WIRE TRANSMITTE R/RECEIVER SET (5371.6004),	\$6,400.00	\$4,160.00	35.00 %	\$4,160.00
<b>Total</b>						<b>\$54,910.00</b>

Does not include applicable taxes and freight charges.



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Comments:

Authorized Signature \_\_\_\_\_ Printed Name \_\_\_\_\_  
Title \_\_\_\_\_ Date \_\_\_\_\_

- ✓ 3.1.1.1 Must be equipped with high-resolution high definition television (HDTV) and Narrow Band Imaging (NBI) capabilities.
- ✓ 3.1.1.2 Must have at least two (2) types of structure enhancement. One (1) for larger mucosal structures with high contrast and one (1) for smaller structures, such as capillaries.
- ✓ 3.1.1.3 Must have electronic magnification that enlarges moving images at the touch of a button on the scope and on the keyboard.
- ✓ 3.1.1.4 Must have High Definition (HD)/Secure Digital (SD) serial digital interface (SDI) output for high-quality video image transfer.
- ✓ 3.1.1.5 Must have digital-to-digital recording of both the still and moving images.
- ✓ 3.1.1.6 Must have automatic Iris that eliminates the need for switching between peak and average.
- ✓ 3.1.1.7 Must have convenient index display for documentation.
- ✓ 3.1.1.8 Must have picture-in-picture display for different combination of images.
- ✓ 3.1.1.9 Must have HDTV signal output.
- ✓ 3.1.1.10 Must have SDTV signal output.
- ✓ 3.1.1.11 Must have white balance adjustment.
- ✓ 3.1.1.12 Must have color tone adjustment.
- ✓ 3.1.1.13 Must have automatic gain control (AGC).
- ✓ 3.1.1.14 Must have image enhancement setting.
- ✓ 3.1.1.15 Must have switching for enhancement modes.



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WEH14017 Laparoscopy System

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- ✓ 3.1.1.16 Must have image size selection.
- ✓ 3.1.1.17 Must have image "freeze" capability.
- ✓ 3.1.1.18 Must have ability to control ancillary equipment from the front panel, keyboard, and endoscopes remote switches
- ✓ 3.1.1.19 Must have ability to display patient data on monitor by keyboard.
- ✓ 3.1.1.20 Must have ability to perform advance registration of patient data of at least 40 patients.
- ✓ 3.1.1.21 Must have personal computer (PC) card capability. *pg 142*
- ✓ 3.1.1.22 Must have ability to memorize select settings
- ✓ 3.1.2 One (1) Olympus Item #CLV-180: EVIS EXERA II high intensity 300W xenon light source or equal.

3.1.2.1 Must be equipped with specially coated filters for Narrow Band Imaging (NBI).

3.1.2.2 Must have lamp that can be turned on/off without turning off the equipment.

✓ 3.1.2.3 Must automatically adjust light intensity to achieve ideal illumination for observation of the gastrointestinal tract.

✓ 3.1.2.4 Must have a 300 watt (w) lamp.

✓ 3.1.2.5 Must have backlit front panel indicators and controls to improve operability.

✓ 3.1.2.6 Must have automatic brightness control.

✓ 3.1.2.7 Must have air feeding pump with pressure switching at four (4) levels (off, low, mid, and high).



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3.1.2.8 Must have water feeding with air pressurization or detachable water container.

3.1.2.9 Must have indicators on front panel that reports absence of emergency lamp, disconnection and use of emergency lamp.

3.1.2.10 Must have indicators on front panel that indicates normal observation and when under NBI observation. correct

3.1.2.11 Must have indicator on control panel that indicates if a special filter is installed in the light source.

3.1.2.12 Must leave memory settings even when the light source is off.

3.1.2.13 Must have examination lamp.

3.1.2.14 Must have ignition method with switching regulator.

3.1.2.15 Must have brightness adjustment.

3.1.2.16 Must have forced-air cooling.

3.1.2.17 Must have color conversion capability.

3.1.2.18 Must have emergency lamp.

3.1.2.19 Must have a voltage (v) of 120.

3.1.2.20 Voltage (v) fluctuation Must be within +/- ten (10) percent (%).

3.1.2.21 Must have frequency of 50/60 hertz (Hz).

3.1.2.22 Frequency fluctuation must be within +/- one Hz.

3.1.3 One (1) Olympus Item #OEP-4: Olympus HD color printer or equal.

N/A  
We are not performing procedures  
Gastrointestinal procedures  
with this equipment

Same as  
3.1.2.8

Same as  
3.1.2.8

N/A  
N/A

N/A

REQUEST FOR QUOTATION  
WEH14017 Laparoscopy System

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- 3.1.4 Two (2) Olympus Item #OEV-261H: Olympus 26" full HD LCD Monitor or equal.
- 3.1.5 Two (2) Olympus Item #OTV-S7PROH-HD-12E: Visera Pro High-Definition, autoclavable camera head, 1.2X, eye-piece type or equal.
- 3.1.6 One (1) Olympus Item #WA03210A: Light guide no less than 4 mm x 3 m no greater than 7mm x 3 m autoclavable without condenser or equal.
- 3.1.7 One (1) Olympus Item #K10021769: WM-NP2 workstation GI CO2, standard set or equal.
- 3.1.8 One (1) high flow insufflator 40 L or equal.
- 3.1.9 One (1) Olympus Item #MAJ-884 Printer cable Set A: Connects CV-160/180 with Mavigraph containing RS-232C terminal; Includes MH-984 RGB cable, MH-995 remote cable for RS-232C terminal, MB-677 BNC cable or equal.
- 3.1.10 One (1) Olympus Item #55556L25-1: 25 foot BNC cable or equal.
- 3.1.11 One (1) Olympus Item #N3808200: PC Card adapter set w/1GB CF Card or equal.
- 3.1.12 One (1) monitor roll stand.
- 3.1.13 Installation.
- 3.1.13.1 Must include all hardware necessary for installation, (cords and cables). Vendor shall install within thirty (30) days after receiving a purchase order.
- 3.1.14 Must include manual/CDs for trouble shooting equipment problems. Must have ability to buy parts for repair from bid winner.
- 3.1.15 Warranty.

REQUEST FOR QUOTATION  
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**3.1.15.1** Equipment valued over \$1,000.00 must have pricing for one (1) year warranty. Items valued under \$1,000.00 will be sufficient with manufacturer ninety (90) day Warranty.

**3.1.16** Delivery.

**3.1.16.1** Vendor shall deliver within thirty (30) days after receiving a purchase order.

**3.1.16.2** Must include all hardware necessary for installation, (cords and cables).

**3.1.17** In-Service Training

**3.1.17.1** Vendor shall provide in-house staff training and education of equipment for up to fifteen (15) users to include all surgical personnel including surgeons, nurses, and central sterile on use, cleaning, and care of the product within thirty (30) days after receiving a purchase order.

**4. CONTRACT AWARD:**

**4.1 Contract Award:** The Contract is intended to provide Agencies with a purchase price for the Contract Items. The Contract shall be awarded to the Vendor that provides the Contract Items meeting the required specifications for the lowest overall total cost as shown on the Pricing Pages.

**4.2 Pricing Page:** Vendor should complete the Pricing Page by inserting a purchase price for the desired items. Vendor should complete the Pricing Page in full as failure to complete the Pricing Page in its entirety may result in Vendor's bid being disqualified.

**5. PAYMENT:**

**5.1 Payment:** Vendor shall accept payment in accordance with the payment procedures of the State of West Virginia.



REQUEST FOR QUOTATION  
WEH14017 Laparoscopy System

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11.2.1 Cancellation of the Contract.

11.2.2 Cancellation of one or more release orders issued under this Contract.

11.2.3 Any other remedies available in law or equity.

**12 MISCELLANEOUS:**

**12.1 Contract Manager:** During its performance of this Contract, Vendor must designate and maintain a primary contract manager responsible for overseeing Vendor's responsibilities under this Contract. The Contract manager must be available during normal business hours to address any customer service or other issues related to this Contract. Vendor should list its Contract manager and his or her contact information below.

Contract Manager: Lori Frizelle  
Telephone Number: 800-323-9653 Ext. 6373  
Fax Number: 847-913-1988  
Email Address: lfrizelle@richardwolfusa.com

2 camera heads Total. 30

Description/Equipment	Quantity	Cost Per Unit	Total Cost
1. Olympus Item #CV-180: EVIS EXERA II video system center or equal	1 Plus Head	10,000	10,000.00
2. Olympus Item #CLV-180: EVIS EXERA II high intensity 300W xenon light source or equal <i>R. Wolf 300 W Xenon Light</i>	1 Source	\$3,800.00	3,800.00
3. Olympus Item #OEP-4: Olympus HD color printer or equal <i>USB Digital Thermal Printer color.</i>	1	\$1,800.00	1,800.00
4. Olympus Item #OEV-261H: Olympus 26" full HD LCD Monitor or equal <i>26" HD LED color Monitor</i>	2	\$3,500.00	7,000.00
5. Olympus Item #OTV-S7PROH-HD-12E: Visera Pro High-Definition, autoclavable camera head, 1.2X, eye-piece type or equal, <i>Wolf 3 chip HD Autoclave Camera head</i>	2 other camera head Included with camera box	\$7,000.00	7,000.00
6. Olympus Item #WA03210A: Light guide no less than 4 millimeter (mm) x 3 m, no greater than 7 millimeter (mm) x 3 meter (m) autoclavable without condenser or equal <i>Wolf light cord</i>		\$350.00	\$350.00
7. Olympus Item #K10021769: WM NP2 workstation GI CO2, standard set or equal <i>Sony Digital HVO-1000</i>	1	\$9,000.00	9,000.00
8. High flow insufflator 40 L	1	\$8,000.00	\$8,000.00
9. Olympus Item #MAJ-884 Printer cable Set A: or equal <i>Wolf printer cable</i>	1	Included	<del>Free</del> N/A
10. Olympus Item #55556L25-1: 25 foot BNC cable or equal <i>Wolf BNC cable Not Necessary with Zero wire</i>	1	N/A	N/A
11. PC Card adapter set w/1GB CF Card or equal <i>4GB</i>	1	<del>Free</del> N/A	<del>Free</del> N/A
12. Monitor roll stand	1	\$800.00	\$800.00
13. Installation	1	Free	Free
14. Manual/CDs	1	Included	Included
15. Warranty	1	1 year	Included
16. Delivery <i>Same Day</i>	1	Free	Free
17. In-service and Training	1	Included	Included
Overall Total Cost			

Evaluation and Award Criteria: Contract shall be awarded to the Vendor that provides the Desired Items meeting the required specifications for the lowest overall total cost.

*Richard Wolf Medical Instruments* 353 Corporate Woods Parkway  
Vernon Hills, IL 60061

Vendor Name (Printed)  
353 Corporate Woods Pkwy.  
Vernon Hills, IL 60061

Purchase Order Address

Vendor Remit-To Address:

*John J. Wehn*  
Vendor Authorized Representative (Printed)

Signature

Date

412-980-8958

724-941-9346

*jw@wehnever.com*

Telephone

Fax

E-mail

7-16-13

RFQ No. WEH14017STATE OF WEST VIRGINIA  
Purchasing Division**PURCHASING AFFIDAVIT**

**MANDATE:** Under W. Va. Code §5A-3-10a, no contract or renewal of any contract may be awarded by the state or any of its political subdivisions to any vendor or prospective vendor when the vendor or prospective vendor or a related party to the vendor or prospective vendor is a debtor and: (1) the debt owed is an amount greater than one thousand dollars in the aggregate; or (2) the debtor is in employer default.

**EXCEPTION:** The prohibition listed above does not apply where a vendor has contested any tax administered pursuant to chapter eleven of the W. Va. Code, workers' compensation premium, permit fee or environmental fee or assessment and the matter has not become final or where the vendor has entered into a payment plan or agreement and the vendor is not in default of any of the provisions of such plan or agreement.

**DEFINITIONS:**

**"Debt"** means any assessment, premium, penalty, fine, tax or other amount of money owed to the state or any of its political subdivisions because of a judgment, fine, permit violation, license assessment, defaulted workers' compensation premium, penalty or other assessment presently delinquent or due and required to be paid to the state or any of its political subdivisions, including any interest or additional penalties accrued thereon.

**"Employer default"** means having an outstanding balance or liability to the old fund or to the uninsured employers' fund or being in policy default, as defined in W. Va. Code § 23-2c-2, failure to maintain mandatory workers' compensation coverage, or failure to fully meet its obligations as a workers' compensation self-insured employer. An employer is not in employer default if it has entered into a repayment agreement with the Insurance Commissioner and remains in compliance with the obligations under the repayment agreement.

**"Related party"** means a party, whether an individual, corporation, partnership, association, limited liability company or any other form or business association or other entity whatsoever, related to any vendor by blood, marriage, ownership or contract through which the party has a relationship of ownership or other interest with the vendor so that the party will actually or by effect receive or control a portion of the benefit, profit or other consideration from performance of a vendor contract with the party receiving an amount that meets or exceeds five percent of the total contract amount.

**AFFIRMATION:** By signing this form, the vendor's authorized signer affirms and acknowledges under penalty of law for false swearing (W. Va. Code §61-5-3) that neither vendor nor any related party owe a debt as defined above and that neither vendor nor any related party are in employer default as defined above, unless the debt or employer default is permitted under the exception above.

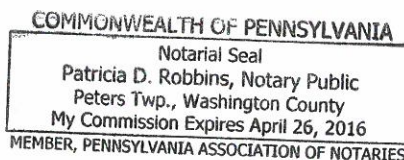
**WITNESS THE FOLLOWING SIGNATURE:**Vendor's Name: Richard Wolf Medical InstrumentsAuthorized Signature: [Signature] Date: 7-16-13State of PennsylvaniaCounty of Washington, to-wit:Taken, subscribed, and sworn to before me this 19 day of July, 2013.My Commission expires 4-26, 2016.

AFFIX SEAL HERE

NOTARY PUBLIC

Patricia D Robbins

Purchasing Affidavit (Revised 07/01/2012)

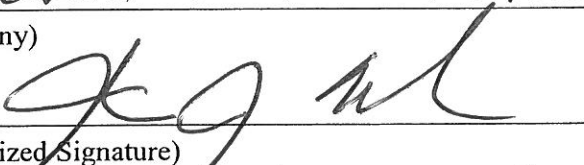




**CERTIFICATION AND SIGNATURE PAGE**

By signing below, I certify that I have reviewed this Solicitation in its entirety; understand the requirements, terms and conditions, and other information contained herein; that I am submitting this bid or proposal for review and consideration; that I am authorized by the bidder to execute this bid or any documents related thereto on bidder's behalf; that I am authorized to bind the bidder in a contractual relationship; and that to the best of my knowledge, the bidder has properly registered with any State agency that may require registration.

Richard Wolf Medical Instruments  
(Company)

  
(Authorized Signature)

John F. Wehn, Principal  
(Representative Name, Title)

712-980-8958      724-941-9346  
(Phone Number)      (Fax Number)

7-16-13  
(Date)

**ADDENDUM ACKNOWLEDGEMENT FORM**  
**SOLICITATION NO.: WEH14017**

**Instructions:** Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

**Acknowledgment:** I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

**Addendum Numbers Received:**

(Check the box next to each addendum received)

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6  |
| <input type="checkbox"/> Addendum No. 2            | <input type="checkbox"/> Addendum No. 7  |
| <input type="checkbox"/> Addendum No. 3            | <input type="checkbox"/> Addendum No. 8  |
| <input type="checkbox"/> Addendum No. 4            | <input type="checkbox"/> Addendum No. 9  |
| <input type="checkbox"/> Addendum No. 5            | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Richard Wolf Medical Instruments  
 Company  
[Signature]  
 Authorized Signature  
7-19-13  
 Date



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<b>Total</b>						<b>\$54,910.00</b>

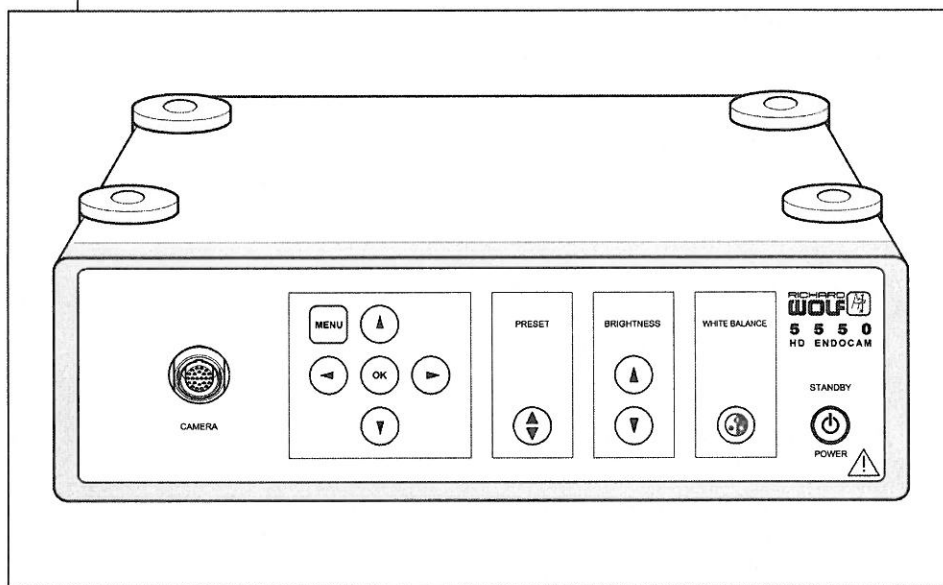
Does not include applicable taxes and freight charges.



LINE # 7

5550.654 KIT # INCLUDES  
PRODUCT # 5550.751

## Instruction Manual



3 CCD HD ENDOCAM

5550.751

Valid for devices with SN ending with "B"

THESE 2 PRODUCTS MAKE UP THE KIT #  
550.654 LISTED ON LINE ITEM # 1

RICHARD  
**WOLF** 

# 11 Technical data

LINE # 1

LINE # 2

Camera head	for Camera controller	autoclavable (camera head)
85550.913 85550.975	5550.751	yes

Classification of applied part	BF
Degree of protection against the ingress of liquids	IP X7
Weight of camera head	0.230 kg (0.505 lbs)
Weight with camera cable	0.460 kg (1.1 lbs)
Dimensions of camera head	dia. locking mechanism approx. 47 mm housing of camera head, w x h approx. 38 x 50 mm length with strain relief approx. 130 mm strain relief 25°
Length of camera cable	approx. 3.0 m
Integrated lens with locking mechanism	f = 13.0 mm (85550.913) f = 18.5 mm (85550.975)

# 12 Spare parts and accessories

Product no.	Designation
15135.248	Protection cap for locking mechanism
	♦ further accessories on request

# 13 Operating, storage and transport and shipping conditions

Operating conditions	+10°C to +40°C , 30% to 75% rel. humidity, atmospheric pressure 700 hPa to 1060 hPa
Storage, transport and shipping conditions	- 20°C to +60°C , 30% to 90% rel. humidity, atmospheric pressure 700 hPa to 1060 hPa

## NOTE!

To prevent damage during transport or shipment of the products we recommend using the original packaging material.

## 13.1 Disposal of product, packaging material and accessories

For the disposal observe the regulations and laws valid in your country.

♦ For further information please contact the manufacturer.

## Configuring System Settings

Be sure to configure the system settings before you begin operating the unit. The system settings should be configured by the system administrator.

For details on system settings, see "System Administrator Settings" (page 58).

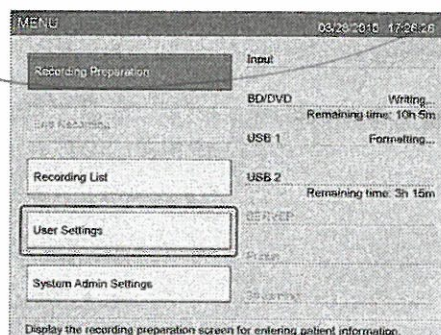
## Configuring Recording Settings (User Settings)

Select image inputs and configure image quality and print settings in the [User Settings] screen.

You can navigate the menus using the navigation buttons on the front panel of the unit or on the infrared remote control unit.

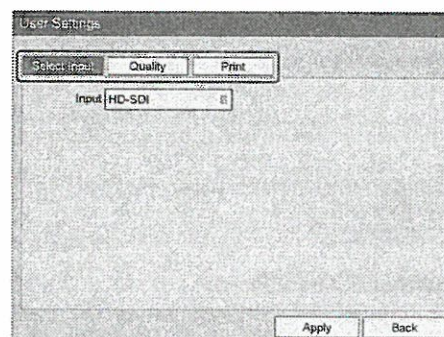
### Displaying the [User Settings] Screen

- 1 Press the MENU button.  
The [MENU] screen appears.
- 2 Use the  $\uparrow$  and  $\downarrow$  buttons to select [User Settings], and press the ENTER button.



The [User Settings] screen appears.

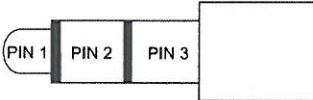
- 3 Use the  $\leftarrow$  and  $\rightarrow$  buttons to select a tab, and press the ENTER button.



- 4 Configure the settings in each tab as necessary.
- 5 When you finish configuration, use the  $\uparrow$ ,  $\downarrow$ ,  $\leftarrow$ , and  $\rightarrow$  buttons to select [Apply], and press the ENTER button.



### 7.2.1 Interfaces

	Video output connectors	PAL output levels	NTSC output levels
	All specified levels with color bar signal (75% color bars)		
Analog video	Video (BNC) composite	1,0 V <sub>p-p</sub> / 75 Ohm	1,0 V <sub>p-p</sub> / 75 Ohm
	S-Video (Mini-DIN 4-pin)	Y: 1,0 V <sub>p-p</sub> / 75 Ohm C: 0,30 V <sub>p-p</sub> Burst / 75 Ohm	Y: 1,0 V <sub>p-p</sub> / 75 Ohm C: 0,286 V <sub>p-p</sub> Burst / 75 Ohm
	Remote output connector	2 x 3.5 mm mini stereo plug Normally open contact : Between PIN 1 (max.15 V DC pull-up) and PIN 3 (GND) PIN 2 must not be assigned ! 	
	<b>HDTV video outputs</b>	<b>Output format</b>	
Digital video	DVI	1280 x 720 (50 Hz / 60 Hz) 1920 x 1080 (50 Hz / 60 Hz) 1920 x 1080 (50 Hz / 60 Hz)	Progressive Progressive Interlaced
	HD SDI	1280 x 720 (50 Hz / 60 Hz) 1920 x 1080 (50 Hz / 60 Hz)	Progressive Interlaced

### 7.3 Operating, storage, transport and shipping conditions

Operating conditions	+ 10°C to + 40°C , 30% to 75% rel. humidity, atmospheric pressure 700 hPa to 1060 hPa
Storage, transport and shipping conditions	- 20°C to + 60°C , 10% to 90% rel. humidity, atmospheric pressure 700 hPa to 1060 hPa

**NOTE!**

















To prevent damage during the transport or shipment of the products we recommend using the original packaging material.

### 7.4 Spare parts and accessories

Units	Model/type/ product no.	Designation
1	N610032	Device fuse T 1.0A 250V - USA
1	N710154	Power cable (USA), 8.0 ft
1	5352.56	Video cable BNC, 1.5 m
1	5363.17	Video cable, S-VHS, 2.5 m
1	5502.991	Remote control cable, 1.5 m
1	41065.5006	DVI-D cable, 1.5 m
		♣ further accessories on request

# 1 General information

## 1.1 Symbols

Symbols	Meaning
	Attention, consult ACCOMPANYING DOCUMENTS
	Power switch
	Equipotentiality
	Fuse
	Alternating current (AC)
	TYPE BF APPLIED PART
	Automatic White Balance (AWB)
	"LEFT"
	"RIGHT"
	"UP" or "PLUS"
	"DOWN" or "MINUS"
	Display or change current preset menu
	Display menu
	Confirm input
	Do not place product in general waste bin. Recycle separately.
	A Registered Trademark of ETL, a Recognized Testing Laboratory, confirm the compliance to the standard of Medical Electrical Equipment CAN/CSA C 22.2 No. 601.1 (c) and UL 60601-1 (us)

## 1.2 Intended use

The 3 CCD HD ENDOCAM 5550 has been designed for video endoscopy and can be used for both diagnostic and therapeutic interventions.

In conjunction with video recorders, video printers and other video devices it can be used for recording and storing video images.



**CAUTION!**

**Possible device failure.**

***In the case of therapeutic use, a second camera with similar features should be available.***

## 1.3 Indications and field of use

The product may only be used by adequately qualified and trained medical personnel.

The 3 CCD HD Endocam 5550 is intended for use in a variety of endoscopic surgical procedures including but not limited to orthopedic, gynecologic, laparoscopic, urologic, sinusoscopic, plastic, and as an accessory for microscopic surgery.



**NOTE!**

*We recommend reading relevant literature on the planned application.*

## 1.4 Contraindications

Contraindications directly related to the product are presently unknown. On the basis of the patient's general condition the doctor in charge must decide whether the planned application is possible or not. For further notes and instructions see the latest medical literature.

## 1.5 Combinations



**IMPORTANT!**

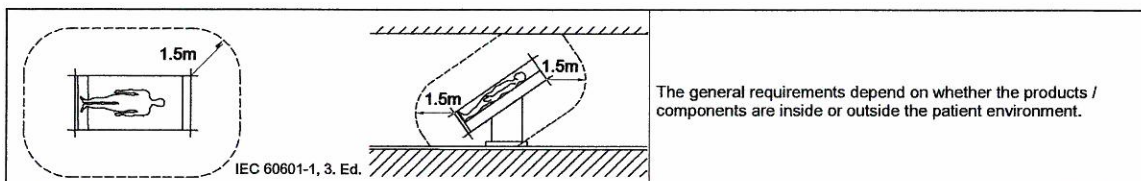
*In addition to this instruction manual follow the manuals of the products used in combination with this product.*

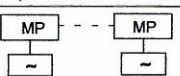
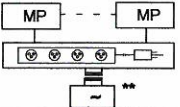
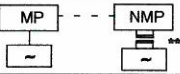
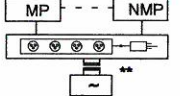
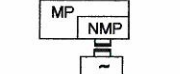
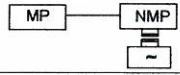
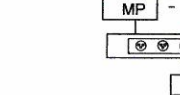
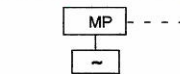
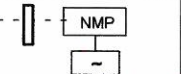
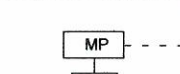

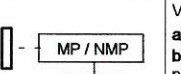
### 1.5.1 Potential equalization



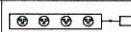
The potential equalization cable establishes a direct connection between the medical electrical device and an equipotential bonding rail.

It serves to avoid / equalize differences in potential between bodies of electrical devices and firmly installed conductive parts of the patient environment.

### 1.5.2 General requirements on the products / components of a combination



Medically used room		Non-medically used room	Requirements / measures
inside the patient environment	outside the patient environment		Leakage currents in accordance with section 16.6 IEC/EN 60601-1 *
	-	-	Verification of the total patient leakage current
	-	-	Verification of leakage currents <b>a)</b> additional protective earth connection (consult the corresponding manufacturer), <b>or</b> <b>b)</b> additional isolating transformer for medical applications **
	-	-	
	-	-	
	-	-	
	-	-	
	-	-	Verification of leakage currents <b>a)</b> no plugs with metal housing, <b>or</b> <b>b)</b> additional isolation device (to avoid voltage differentials)
		-	Verification of leakage currents <b>a)</b> common protective earth connection, <b>or</b> <b>b)</b> additional protective earth connection at MP (clarify with the corresponding manufacturer), <b>or</b> <b>c)</b> additional isolation device (to avoid voltage differentials), <b>or</b> <b>d)</b> no plugs with metal housing in the patient environment
			

 ** additional "isolating transformer" to IEC/ EN 60601-1	 additional isolating device to IEC/ EN 60601-1	 Multiple socket strip
- - - Functional connection	~ Power supply grid	
MP = medical electrical device to IEC/ EN 60601-1, UL 60601-1, CSA C22.2 No. 601		
NMP = non-medical electrical device in accordance with product-specific IEC/EN/UL standards		
* When connected via a joint power line, under normal conditions the earth leakage current of the system must not exceed 500 µA.		
** e.g. Richard Wolf video cart with "isolating transformer"		



### 1.5.3 Specific requirements on the products/components of a combination

**IMPORTANT!**

*Persons combining products to form a system are responsible for not impairing the system's compliance with the performance and safety requirements, and that the technical data and the intended use are adequately fulfilled.*

*Electromagnetic interference or other types of interference occurring between this product and other products can cause failures or malfunctions.*

*When selecting the system components ensure that they meet the requirements for the medical environment they are used in, in particular IEC/ EN 60601-1-1. In case of doubt contact the manufacturer(s) of the system components.*

*Do not touch connecting devices for electrical connections between the different components (such as signal input and output connections for video signals, data exchange, control circuits, etc.) and the patient at the same time.*

## 1.6 Electromagnetic compatibility (EMC)

**NOTE:** The device or system in the following called **product** always relates to the 3 CCD HD ENDOCAM 5550

### Guidance and manufacturer's declaration - electromagnetic emissions


The product is intended for use in the environment specified below. The user should assure that the product is used in such an environment.		
Emissions measurement/test	Compliance	Electromagnetic environment - Guidance
HF emissions to C1CPR 11	Group 1	The product uses HF energy for its internal function. The HF emission level is extremely low and it is not likely to cause any interference in nearby electronic equipment.
HF emissions to C1SPR 11	Class B	The product is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions to IEC 61000-3-2	Class A	
In conformity with IEC 61000-3-3 "Voltage fluctuations / flicker emissions"		

### Guidance and manufacturer's declaration - electromagnetic immunity

The product is intended for use in the environment specified below. The user should assure that the product is used in such an environment.			
Immunity tests	IEC 60601 test level	Compliance	Electromagnetic environment - guidance
Electrostatic Discharge (ESD) to IEC 61000-4-2	± 6 KV contact ± 8 KV air	Yes	Floors should be wood, concrete or ceramic tile. If the floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transients, bursts to IEC 61000-4-4	± 2 KV for power supply lines ± 1 KV for input/output lines	Yes	Mains/line power quality should be that of a typical commercial or hospital environment.
Surge voltage (surges) to IEC 61000-4-5	± 1 KV differential mode ± 2 KV common mode	Yes	Mains/line power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines to IEC 61000-4-11	Voltage dip for 0.5 cycle > 95% U <sub>T</sub> * Voltage dip for 5 cycles > 60% U <sub>T</sub> * Voltage dip for 25 cycles > 30% U <sub>T</sub> * Voltage dip for 5 sec > 95% U <sub>T</sub> *	Yes	Mains/line power quality should be that of a typical commercial or hospital environment. If the user of the product requires continued operation during power mains/line interruptions it is recommended that the product be powered from an uninterruptible power supply or battery.
Power frequency (50/60 Hz) magnetic field, to IEC 61000-4-8	3 A/m	Yes	Power frequency magnetic fields should be at levels characteristic of a typical location in a commercial or hospital environment.
* NOTE: U <sub>T</sub> is the line/mains voltage prior to application of the test level.			



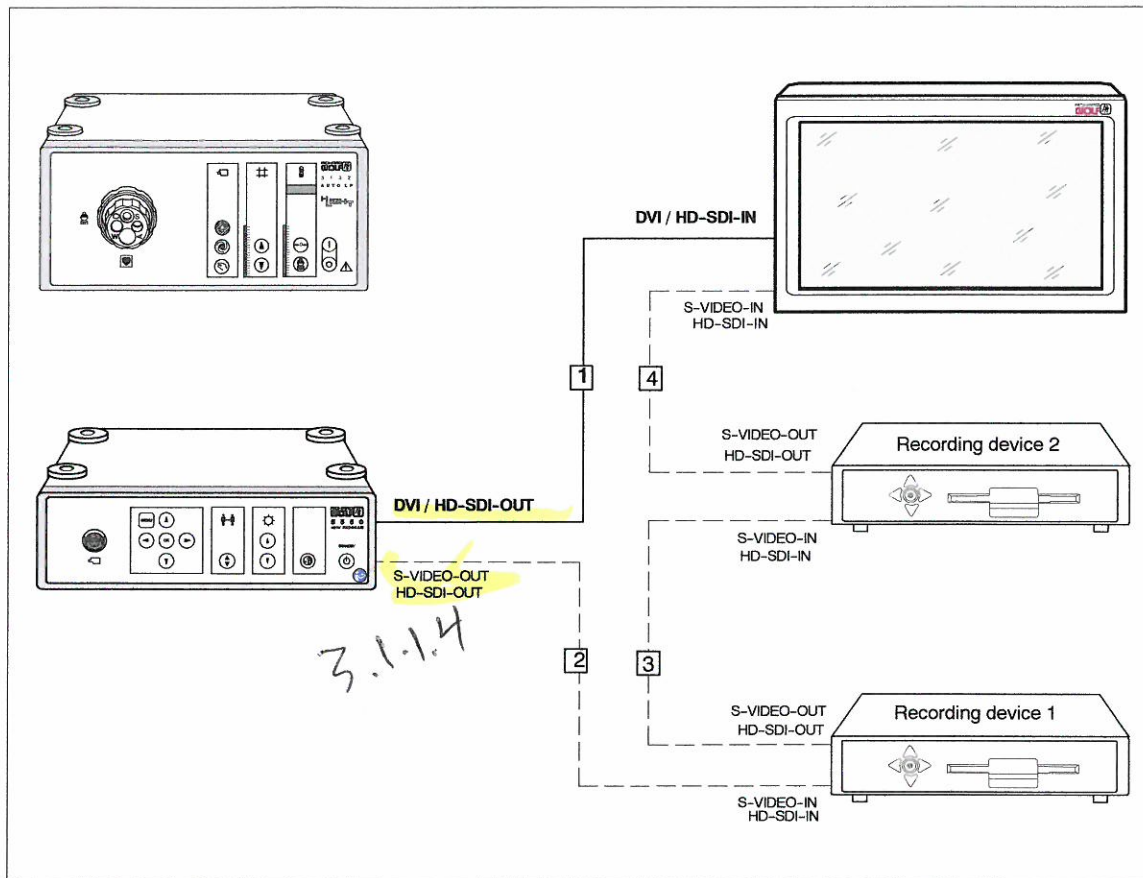
# Guidance and manufacturer's declaration - electromagnetic immunity for products that are not life-supporting

The product is intended for use in the environment specified below. The user should assure that the product is used in such an environment.			
Immunity test	IEC 60601 test levels	Compliance level	Electromagnetic environment - guidance
<p>Conducted HF interference to IEC 61000-4-6</p> <p>Radiated HF interference to IEC 61000-4-3</p>	<p>3 V<sub>rms</sub> 150kHz to 80 MHz</p> <p>3 V/m 80 MHz to 2.5 GHz</p>	Yes	<p>Portable and mobile RF communications equipment should be used no closer to any part of the product, including cables, than the recommended separation distance calculated from equation applicable to the frequency of the transmitter.</p> <p><b>Recommended separation distance:</b></p> <p><math>d = 1.2 \sqrt{P}</math></p> <p><math>d = 1.2 \sqrt{P}</math> for 80 MHz to 800 MHz</p> <p><math>d = 2.3 \sqrt{P}</math> for 800 MHz to 2.5 GHz</p> <p>P = Nominal power output rating of the transmitter in watts (W) (according to the transmitter manufacturer)</p> <p>d = recommended separation distance in meters (m)</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey<sup>1</sup>, should be less than the compliance level in each frequency range<sup>2</sup>.</p> <p>Interference may occur in the vicinity of devices with the following symbol:</p> 
<p><b>REMARKS:</b> At 80 MHz and 800 MHz the higher frequency range applies.</p> <p>These guidelines may not apply in all situations, as the propagation of electromagnetic waves is affected by absorption and reflection from buildings, objects and people.</p>			
<p><b>1 =</b> The field strength of fixed transmitters (e.g. base stations for radio telephones, land mobile radios, amateur radio, radio broadcast and TV broadcast, ...), cannot be predicted theoretically with accuracy. To assess the EMC environment due to fixed transmitters an electromagnetic site survey should be conducted. If the measured field strength in the location in which the product is used exceeds the applicable compliance level above, the product should be observed to verify normal operation. If abnormal performance is observed, additional measures may be required, such as reorienting or relocating the product.</p> <p><b>2 =</b> Over the frequency range between 150 kHz and 80 MHz the field strength should be below 3 V/m.</p>			

## The recommended separation distances between portable and mobile HF telecommunication devices and devices which are not life-supporting

The product is intended for use in an electromagnetic environment with HF disturbances are controlled. The user can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile HF telecommunications equipment and the product.			
Rated nominal output power of the transmitter (Watts)	Separation distance as a function of transmitter frequency (m)		
	150 kHz to 80 MHz $d = 1.2 \sqrt{P}$	80 MHz to 800 MHz $d = 1.2 \sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3 \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23
<p>For transmitters rated at a nominal output power not listed in the table above, the recommended separation distance (d) in meters (m) can be determined using the applicable equation (observe frequency). P = nominal power of the transmitter in Watts (W).</p> <p><b>REMARKS:</b> At 80 MHz and 800 MHz the higher frequency range applies.</p> <p>These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from buildings, objects and people.</p>			

### 1.6.1 Video mode via DVI / HD-SDI connections



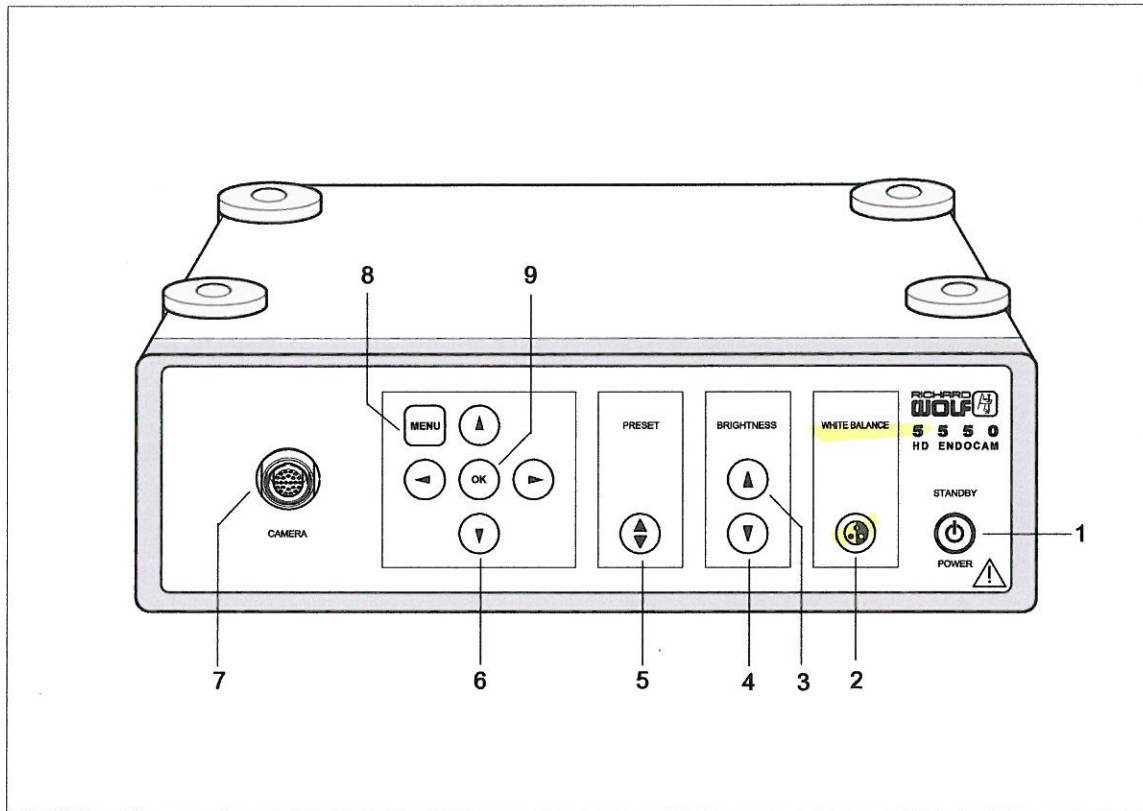
**NOTE!**  
Connect only the cables listed in the table.

— Direct connection  
DVI cable or  
BNC cable [1]

--- Connection via recording devices  
S-video cable [2], [3] and [4] or  
BNC cable (HD-SDI) [2], [3] and [4]

## 2 Illustration

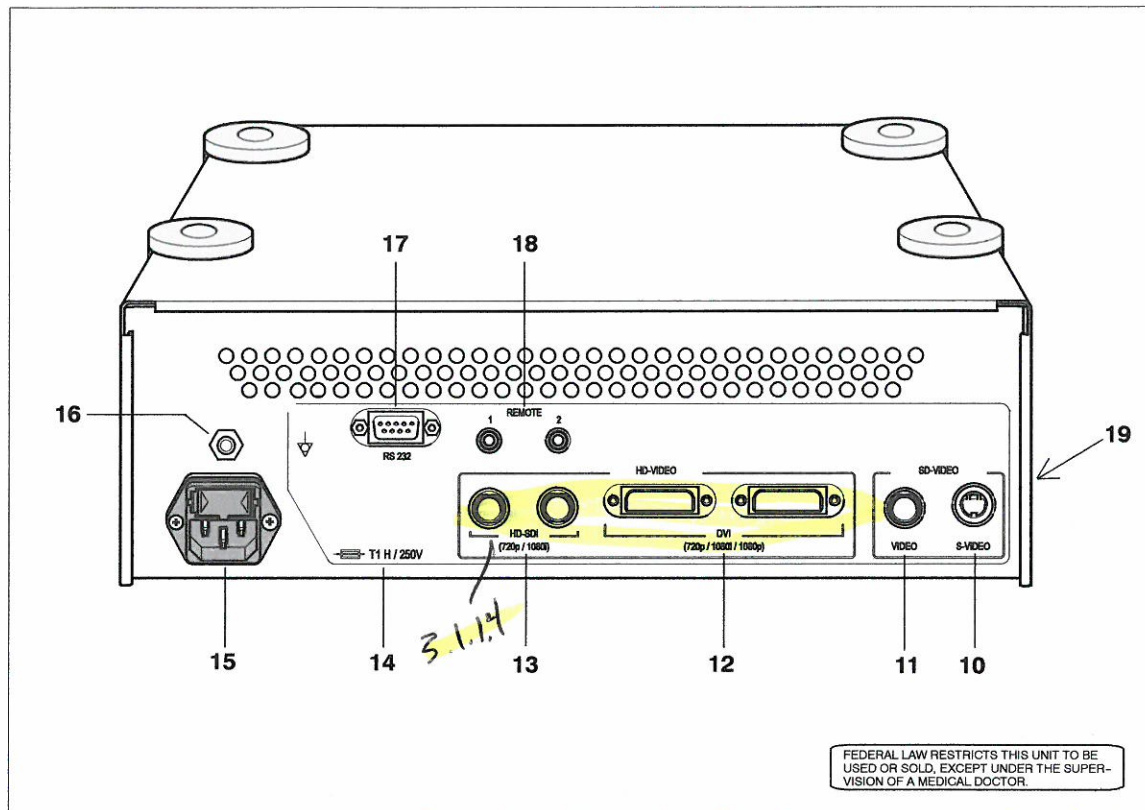
### 2.1 Front panel



#### 2.1.1 Legend

- |   |   |   |                                    |
|---|---|---|------------------------------------|
| 1 | Power switch (STANDBY)                  | 6 | Control buttons for menu selection |
| 2 | "Automatic White Balance" (AWB) button  | 7 | Camera socket                      |
| 3 | "Brightness PLUS" button                | 8 | "Display menu" button              |
| 4 | "Brightness MINUS" button               | 9 | "Confirm input" button             |
| 5 | Display or change current "Preset" menu |   |                                    |

## 2.2 Rear panel



### 2.2.1 Legend

- |    |   |    |  |
|----|---|----|--|
| 10 | S-Video output                                      | 15 | Power input receptacle with fuse holder  |
| 11 | Video output  | 16 | Equipotential connector  |
| 12 | DVI output (digital HDTV)                           | 17 | System connector<br>(CAN INTERFACE SERIAL DEVICES,<br>Software module HD / HDTV ENDOCAM) |
| 13 | HD-SDI output (digital HDTV)<br>(not in 1080p mode) | 18 | REMOTE outputs<br>(e.g. remote control for recorder/printer)                             |
| 14 | Fuse rating   | 19 | Identification label   |



## 3 Setup



### **WARNING!**

*The device is not protected against explosions.  
Explosion hazard.*

*Do not operate this device in areas where there is a danger of explosion.*



### **NOTE!**

*Check that the line voltage is the same as the voltage specified on the identification plate. Connect the device only using the supplied power cable or a power cable meeting the same specifications.*



### **CAUTION!**

*Danger of faults and malfunctions.*

*To guarantee the safety of the user, the patient and others use only accessories and spare parts specified by the manufacturer of this product. Other accessories or spare parts can cause the emission of increased electromagnetic radiation or reduced immunity against interference.*



### **IMPORTANT!**

*Medical devices are subject to special precautions with regard to electromagnetic compatibility (EMC).*

*Make sure you observe the notes on EMC for installation and operation. Medical electrical devices can be influenced by mobile HF communication devices.*

*If it is necessary to stack the devices or place them next to each other and HF interference is observed, make sure you observe the intended use of the devices.*



### **WARNING!**

*Power switch ON/OFF.*

*After switching off using the power switch, the device is in standby mode.*

*The device is only completely disconnected from the mains/power supply if the power plug is unplugged from the socket.*

### 3.1 Preparation



### **IMPORTANT!**

*Never direct the camera head at the sun or at bright light sources in the vicinity. High-energy radiation in the visible and ultraviolet wave lengths can damage the CCD chip surface which may result in incorrect color rendering and image noise.*

*If the camera head is not used make sure that the protection cap is installed.*

- ◇ Connect the auxiliary devices such as the monitor and the light projector in accordance with the connection diagrams in section 1.
- ◇ Switch on the 3 CCD HD ENDOCAM.
- ◇ The color bar test pattern appears on the monitor.
- ◇ Prepare the attachable camera head or endoscope for connection (for this make sure you follow the corresponding manual)
- ◇ Connecting the camera head to the camera controller:
  - ◆ Hold the camera controller firmly in one hand. Make sure that the reference point of the camera plug is aligned with the marking of the camera controller. Then insert the camera plug with your other hand as far as it will go.

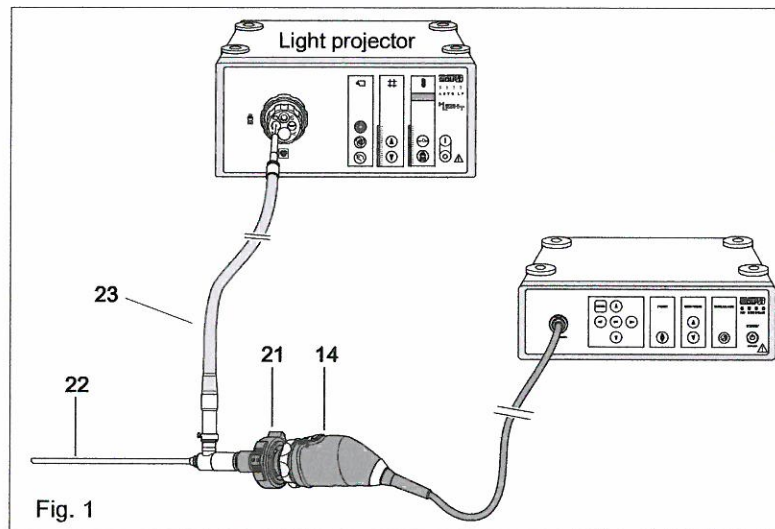
- ◆ Do **not** press the buttons on the camera head when connecting the camera plug because this may cause a functional failure of the buttons (wrong initialization by the camera controller)
- ◇ Separating the camera head from the camera controller:
  - ◆ Hold the camera controller firmly in one hand, then pull out the camera plug in axial direction with the other hand.



**IMPORTANT!**

*Never pull by the camera cable.*

*Never pinch, compress or excessively bend the camera cable, because this can damage the wiring which will result in image failure.*



**3.1.1 Legend**

14	Camera head	22	Endoscope
21	Objective (integrated)	23	Light cable

### 3.2 Color bar test image

3.1.1.12

The color bar test pattern of the camera is used to check color intensity (chroma) and tint (hue) of the monitor. Via the color bar signal, video and S-video signals can be adjusted to optimum color rendition.

- ◇ To switch from the camera image to the color bar signal, pull out the camera plug.

### 3.3 Adjustment of LCD Monitors

Changing the settings for brightness, contrast, color saturation, chroma, etc. influence the color rendition of LCD monitors.

For optimum image results in conjunction with a Richard Wolf ENDOCAM we recommend using exclusively LCD monitors offered by Richard Wolf.

These LCD monitors are preset in the factory, i.e. their color balance has been properly adjusted.

## 4 Checks



### **IMPORTANT!**

*Run through the checks before and after each use.  
Do not use products which are damaged, incomplete or have loose parts.  
Return damaged products together with any loose parts for repair.  
Do not attempt to do any repairs yourself.*

### 4.1 Visual check

- ◇ Check the devices, instruments and accessories for damage, loose or missing parts, hygienic condition and completeness.
- ◇ Check all connection cables for damage.
- ◇ Any lettering, labeling or identification necessary for the safe intended use must be legible.
  - ◆ Missing or illegible lettering, labeling or identification which may lead to wrong handling and reprocessing must be restored.

### 4.2 Function check



### **IMPORTANT!**

*Before use check all devices for proper functioning.*



- ◇ Connect the camera head to the camera controller and attach the endoscope to the objective lens.
- ◇ Check that the connections are firmly seated.
- ◇ Switch on the camera controller.
  - ◆ The LED of the power switch changed from yellow "standby" to green "on".
- ◇ Switch on all other video devices.
- ◇ Switch on the light source and connect the light cable to the endoscope.
  - ◆ Direct the endoscope at an object and check the image on the monitor, ensuring sufficient image brightness.



### **CAUTION!**

***Danger of dazzle.***

***Do not look into the open end of the light cable or scope when it is connected.***

- ◇ Vary the distance between the endoscope and the object. Make sure you observe the working distances typical for the endoscope used.
  - ◆ Automatic brightness control will keep the brightness of the monitor image constant over a wide range.



## 5 Use

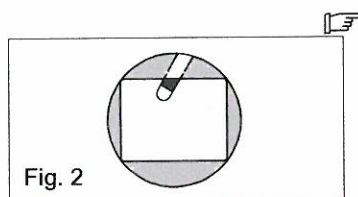
### 5.1 Operating principle

The HD camera controller provides a digital HD-video signal which especially operate with 16:9 LCD monitor for display purpose.

The color properties of the illumination are referred to as color temperatures and are measured in Kelvin (K). Higher color temperatures are bluish, lower color temperatures are reddish.

In order to reproduce a picture in true colors it is necessary to perform white balance before the first use and after each change of the light projector or endoscopic equipment. White balance is a procedure where the color gain for the red and blue portions of the video image is adjusted in such a way that it suits the color temperature of the light projector and that the 3 CCD HD ENDOCAM provides optimum colors. This includes that white objects are rendered as completely white.

In the 3 CCD HD ENDOCAM the white balance can be performed for a temperature range of 2300 K to 6000 K.



#### **IMPORTANT!**

*Depending on the focal length of the objective lens, image information may be lost if full format is displayed.*

*In the case of full format, parts of the endoscopic image do not appear on the monitor (Fig.2).*

### 5.2 Controls and modes



- ◇ The "Auto White Balance" (AWB) button serves to start the automatic white balance procedure.

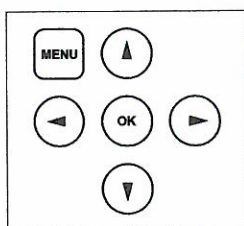


- ◇ "Preset" button (user settings) - initial press will display the active preset (preset 1 to preset 4).

◆ If this button is pressed again, it will change to the next preset.



- ◇ The "Brightness" selection buttons serve to increase or decrease the basic brightness for automatic brightness control (shutter function).



- ◇ "Menu" Button - initial press of the menu button will access the menu. Use the arrow buttons to navigate and the "OK" button to change the selection.

◆ Pressing the "Menu" button will exit the menu.

## 5.3 Operation of the device

### 5.3.1 White balance



#### **IMPORTANT!**

*After each reboot or camera head plug in the user is asked to perform a white balance.*

- ◇ Switch on the light projector and direct the endoscope at a white surface.
  - ◆ Make sure that no extraneous light and no colored objects are in the camera's field of view.
- ◇ For an initial white balance setting the user can keep depressed either the "WHITE BALANCE" button of the controller, or any other camera head button for more than 1 second while "WHITE BALANCE" is displayed.
  - ◆ During white balance a "WHITE BALANCE" message displays and the writing AWB is blinking.
  - ◆ If white balance is completed successfully the white balance symbol is displayed in green and a green "OK" is shown.
  - ◆ If white balance is completed unsuccessfully the white balance symbol is displayed in red and a red "FAIL" is shown. The user is asked to check the setup and to repeat the procedure. If white balance was not successfully completed it is not possible to use the camera head button again (except when the head button is programmed for white balance function). Instead the "WHITE BALANCE" button at the front of the controller has to be used.

### 5.3.2 Automatic brightness control



The automatic brightness control (shutter function or shutter mode) of the 3 CCD HD ENDOCAM allows the use of light projectors without light control and light projectors with deactivated video control.



Advantage of the shutter function: very fast response to image brightness.

3.1.1.6




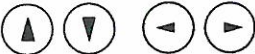




#### **IMPORTANT!**

*To avoid unnecessary heating of the endoscope when using the shutter function, set the light intensity of the light projector to a middle value. The shutter function should not be used together with the video control of the light projector (switch off video control), because this would lead to undesirable fluctuations in image brightness.*

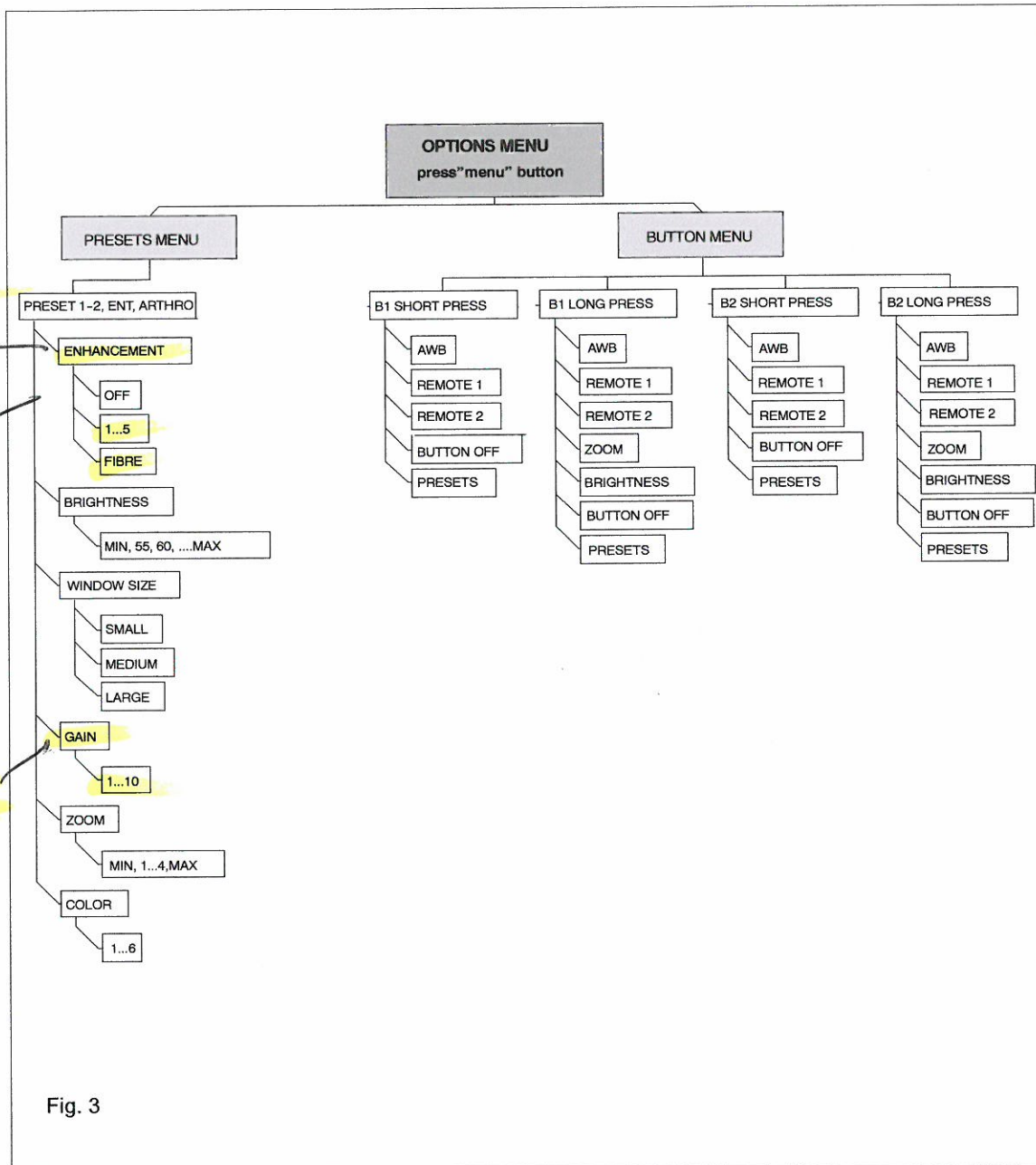
## 5.4 Menu Operation

### To navigate through the various menus:

- 
  - Press the "MENU" button. This displays the "OPTIONS MENU". The "OPTIONS MENU" allows access to the "PRESETS MENU" and the camera head "BUTTON MENU".
- 
  - If the "PRESETS MENU" or "BUTTON MENU" are selected, their associated menus will be displayed.
- 
  - The "OK"-button is used for selecting and confirm input menu items.
- 
  - The "UP"- and "DOWN"- , "LEFT"- and "RIGHT"-buttons are used to navigate through the menus or menu items.
- 
  - While in menu mode, pressing the "LEFT" button will exit one step back.
- 
  - Pressing the "MENU" button will exit out of all menus.

#### 5.4.1 Overview "OPTIONS MENU"

Several menus are available to enable the user to customize the camera to best fit their needs.













## 5.4.2 "PRESETS MENU"

The "PRESETS MENU" allows users to customize the "PRESETS" (1 to 2) and ENT, ARTHRO that can be accessed via the "PRESET"-button at the camera controller front panel. The last used setting determines what "PRESETS" will be active at start up. Preset 5 to 8 are fixed.

### To select the appropriate Preset:












-  ◇ Press the "MENU" button. This displays the "OPTIONS MENU".
-  ◇ Use the "OK"-button to confirm the "PRESETS MENU".
-  ◇ Use the "ARROW"- buttons for navigation through the menu "PRESET 1" to "PRESET 2", ENT, ARTHRO.
- ◇ The function presently programmed is highlighted.
-  ◇ When a suitable function is highlighted, press the "OK" button to confirm.
-  ◇ Use the "UP" and "DOWN" buttons to scroll through the functions until a suitable preset setting is highlighted.
  - ◆ **"ENHANCEMENT"-level:** Increasing enhancement improves and accentuates fine details in the picture. Decreasing enhancement softens the edges of an object.  
If instruments with image guides are used there is an anti-Moiré setting called "FIBRE".
  - ◆ **"BRIGHTNESS"-level:** The brightness can be adjusted by the user to obtain the appropriate brightness level for optimal picture quality.
  - ◆ **"WINDOW SIZE":** The window size defines what portion of the image is utilized by the camera controller to determine the brightness level. Small Window-determines the brightness based on the inner one-third portion of the image. Large Window- determines the brightness based on the entire image.
  - ◆ **"GAIN"-factor:** Gain can be utilized to increase light sensitivity under low light situations (if there is sufficient light, gain will not be active even if set to high). There are ten different gain settings. Turning gain from "1" to "10" can possibly increase the noise level of the picture.
  - ◆ **"ZOOM"-factor:** electronic zoom factor can be customized from "Min to 1,2,3,4, Max". Zoom is not working in the "1080i" mode.
  - ◆ **"COLOR" (color setting):**  
This function allows changing the color intensity.
-  ◇ Press the "OK"-button for selection.
-  ◇ Adjustment of the selected function, due to the "UP"-and "DOWN"-buttons, is now possible.
-  ◇ Press the "OK"-button for confirmation.

3.1.1.2

### 5.4.3 "BUTTON MENU"

The button menu allows the user to customize the functions of the camera head buttons. There are two camera head buttons and both can be used for 2 functions, these can be activated by either pressing and releasing the button (short press) or pressing and holding the button (long press).

#### To program the button functions:

-  ◇ Press the "MENU" button. This displays the "OPTIONS MENU".
-  ◇ Use the "DOWN" button to select the "BUTTON MENU" menu.
-  ◇ Use the "OK"-button to confirm the "BUTTON MENU".
-     ◇ Use the arrow buttons for navigation through the menu.
  - "HEAD BUTTON 1 SHORT PRESS" (Press head button 1 briefly)
  - "HEAD BUTTON 1 LONG PRESS" (Press head button 1 for more than a second)
  - "HEAD BUTTON 2 SHORT PRESS" (Press head button 2 briefly)
  - "HEAD BUTTON 2 LONG PRESS" (Press head button 2 for more than a second)
-  ◇ Press "OK" to activate the highlighted head button to set the button function.
-   ◇ Use the "UP"-and "DOWN"-buttons to scroll through the functions:
  - ◆ "AWB"; "PRESETS"; "REMOTE 1"; "REMOTE 2"; "BUTTON OFF" - for **short** button presses.
  - ◆ "PRESETS"; "ZOOM"; "AWB"; "BRIGHTNESS"; "REMOTE 1"; "REMOTE 2" and "BUTTON OFF" - for **long** button presses.
-  ◇ When the appropriate function is highlighted, press the "OK"-button for confirmation.

### 5.4.4 Electronic Zoom

1  
3.1.1.3

In order to operate the electronic zoom feature, the camera head buttons must be programmed properly in the "Options Menu".

#### Adjusting the zoom level:

- ◇ Press and hold the camera head button that is programmed for zoom to display the "Zoom Level" adjustment screen.
- ◇ To zoom "in", press camera head button 1.
  - ◆ The cursor will move to the right with each press until maximum zoom is obtained.
- ◇ To zoom "out", press camera head button 2.
  - ◆ The cursor will move to the left with each press until minimum zoom (neutral) is obtained.
  - ◆ The "Zoom Level" adjustment screen disappears after a few seconds when no further action is taken.



#### NOTE!

Zoom default at start up is the neutral zoom level.  
Electronic zoom is **not** available in the "1080i" mode !

#### 5.4.5 Display and changing Presets

**NOTE:** Users can customize the parameters in the presets 1 to 2 (see diagram chapter 5.4.1).

The parameters of presets 5 to 8 are fixed.

##### Presets 1 to 2:

The camera controller has different preset configurations designed to give the user the optimal image quality for different types of procedures and different types of scopes.



- ◇ Initial press will display the active preset.
- ◇ Press the "PRESET"-button again and the camera will change to the next preset configuration.

##### Presets 3 to 8:

The parameters of the presets 3 to 8 are application-specific adjusted and Preset 5 to 8 can not be modified.

- Preset 3: ENT
- Preset 4: ARTHRO
- Preset 5: LAPAROSCOPY 1
- Preset 6: LAPAROSCOPY 2
- Preset 7: SMALL SCOPES
- Preset 8: FIBRE

3.1.1.15

#### 5.4.6 Printer Note

- ◇ If Printer is programmed for either the camera head button 1 or head button 2, the remote cable must be connected between the camera controller "Remote" (18) connector and the printer.

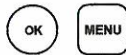
#### 5.4.7 Recorder Note

- ◇ If Recorder is programmed for either the camera head button 1 or head button 2, the remote cable must be connected between the camera controller "Remote" (18) connector and the recorder.

#### 5.4.8 Shutdown

- ◇ To shut down the device switch off the mains / power switch and disconnect the power cable.

## 5.4.9 Overview “SETUP”



◇ To activate the “setup” menu first press and hold “OK” and then press “MENU”-button.

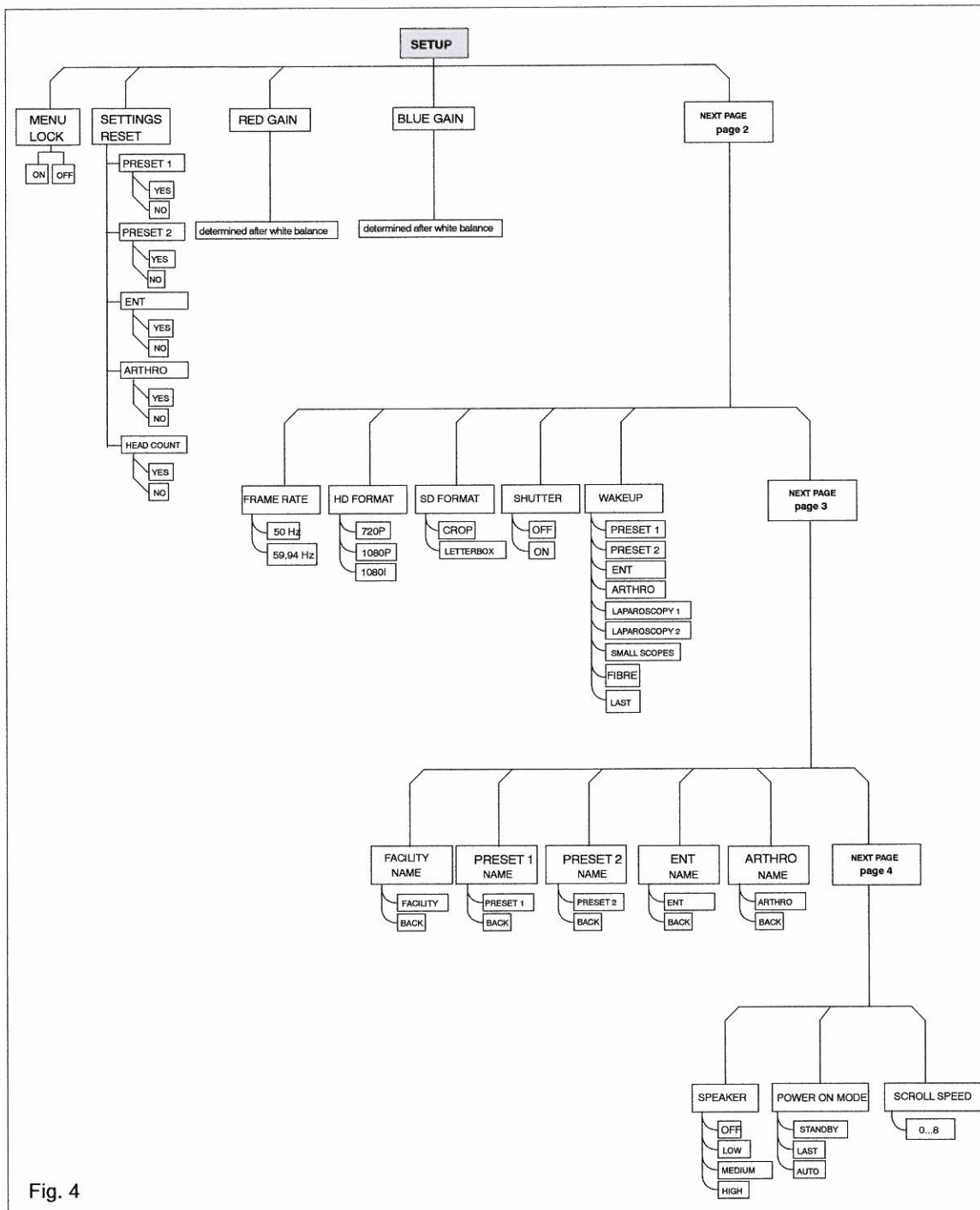


Fig. 4



## 6 Reprocessing and maintenance

### 6.1 Reprocessing of device



**WARNING!**

*Make sure that no humidity enters the device.*

*Danger of electric shock.*

*Before reprocessing switch off the device and disconnect it from the power supply.*

Clean the device with a soft cloth moistened with surface disinfectant, alcohol or spirit.

Follow the disinfectant manufacturer's instructions.



**IMPORTANT!**

*Make sure that no humidity enters the device. Do not use any cleaning agents, scouring agents or solvents on this device.*

### 6.2 Maintenance



**IMPORTANT!**

*In the case of inquiries or in your correspondence please always indicate the product number and the series number listed on the identification plate. Further documentation is available from the manufacturer on request.*

#### 6.2.1 Maintenance intervals



**IMPORTANT!**

*To avoid any incidents or damage caused by aging and wear it is necessary to service the product and the accessories at adequate intervals. Depending on the frequency of use, but at least once a year, have an expert check the functional and operational safety of the equipment.*

## 7 Technical description

### 7.1 Troubleshooting



#### **IMPORTANT!**

*If you cannot eliminate the problems with the help of this table please contact the service department, or return the device for repair.*

*⚡ Do not attempt to do any repairs yourself!*

Fault	Possible cause	Remedy
Device will not function	The power switch is not ON The power cable is not connected Device fuse defective No mains/line voltage	⚡Activate the mains/power switch ⚡Connect the power cable ⚡Replace the fuse ⚡Check in-house power supply
Wrong color rendition Automatic white balance In general	Automatic white balance incorrect Wrong color setting on monitor Light projector hasn't been allowed to warm up	⚡Perform automatic white balance ⚡Readjust color intensity (chroma) and color phase (tint) ⚡After switching on the light projector wait 3 min, then perform white balance
Image flickers Shutter function and video-controlled light projector	Video control on light projector is active	⚡Switch light projector to manual mode
Image overly bright In general	No 75 Ohm termination Monitor incorrectly adjusted Small image circle diameter Automatic brightness control (shutter) is OFF.	⚡Terminate the last device of the video daisy chain with 75 Ohm. ⚡Readjust contrast and brightness on the monitor. ⚡Switch on endoscopic image adaptation for the small image circle diameter. ⚡Set the "Shutter" option in the setup to ON.
Image too dark In general	Light transmission not optimal Lamp service life (light sources) exceeded.	⚡Clean light entry and exit points of endoscope and light cable ⚡Replace the lamp
Grainy image or image noise	Brightness incorrectly adjusted	⚡Increase brightness of light projector or adjust brightness
Image out of focus / blurred	Objective lens not focused Endoscope, camera or objective window soiled	⚡Set the objective lens to maximum sharpness ⚡Clean window or endoscope window, respectively

Fault	Possible cause	Remedy
No image	No connection between camera output socket and monitor  No power supply  Camera head or controller defective  LCD monitor cannot display the HDTV signal 720p, 1080i or 1080p.	◆ Check video cable connection  ◆ Check the connection between the power cable and the power input socket. Switch on the monitor and the components in the video daisy chain.  ◆ Return the device with the camera head for repair.  ◆ Set up the LCD monitor or HDTV signal correctly in the camera controller.
- Analog video output (Video/S-Video)	Running or offset image	◆ The frame rate (screen frequency) is incorrectly set on the camera controller when connecting a CRT monitor  ◆ For PAL monitors (which cannot be switched over) set the camera controller to 50 Hz (see section 5.4).  ◆ For NTSC monitors (which cannot be switched over) set the camera controller to 60 Hz (59.94 Hz) (see section 5.4).
No image via HD-SDI output	Screen resolution is set to "1080p"	◆ The HD-SDI signals are out of range – only DVI and analog video connection is possible. Switch to 1080i or 720p (Setup)
Zoom function is deactivated	Screen resolution is set to "1080i"	◆ Switch camera controller to different screen resolution.
Blurred image or stripes	Endoscope, camera or objective window soiled	◆ Clean endoscope and window
Image interference when moving the camera cable	Camera cable defective	◆ Return camera head with cable for repair
Stripes on the monitor if HF devices are used at the same time.	HF cable(s) too close to camera or video cables  3 CCD HD ENDOCAM and HF devices are connected to the same power circuit	◆ Place HF cables at some distance from the other cables and avoid that the cables are in parallel.  ◆ Connect power cables of HF device and video devices to different power circuits. Connect the power cables of all video devices in the chain to the same power circuit. Connect the potential equalization line.
Buttons on camera head do not function	When connecting the camera plug the buttons on the camera head were pressed (Incorrect initialization of camera controller)	◆ Let go of buttons on camera head, disconnect camera plug, then connect again.
White balance is not triggered	On-screen display remains on monitor	◆ Push the camera head buttons for more than 1 second



## 7.2 Technical data

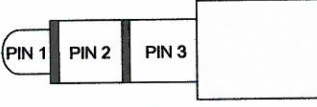
Camera Controller	TV standard	Voltage V ~	Frequency Hz	Power consumption VA	Current rating A	Fuse A
5550.751	PAL / NTSC	100 – 120 200 – 240	50/60	50	0.5	T 1.0 H

Electromagnetic compatibility (EMC) in accordance with	EN / IEC 60601-1-2
Medical Devices Directive 93/42/EEC	Class I
Protection against electric shock	see identification of camera head
Protection class in acc. with EN / IEC 60601-1; (UL 2601-1 / CSA C22.2 No.601.1 - for USA)	I
Degree of protection against the ingress of liquid	IP 20 (Not protected)
Mode of operation	Continuous operation
Degree of protection when flammable gasses are present	This device is not protected against explosions (Do not operate this device in areas where explosive substances are present)
Weight	12lbs 3oz (4.6 kg)
Dimensions WxHxD	330 mm x 100 mm x 360 mm
Frame rate	50 Hz (PAL) , 60 Hz (NTSC)
Auto shutter speed	1/60 s to 1/10.000 s
Color control	Automatic white balance, button-triggered
Brightness control	Automatic shutter control + automatic gain control
White balance	Temperature range from 2300 K to 6000 K
Maximum gain	10 dB
Maximum resolution	1920x1080 pixel

 **NOTE!**  
For the technical data of the camera heads please refer to the corresponding manuals.



### 7.2.1 Interfaces

	Video output connectors	PAL output levels	NTSC output levels
	All specified levels with color bar signal (75% color bars)		
Analog video	Video (BNC) composite	1,0 V <sub>p-p</sub> / 75 Ohm	1,0 V <sub>p-p</sub> / 75 Ohm
	S-Video (Mini-DIN 4-pin)	Y: 1,0 V <sub>p-p</sub> / 75 Ohm C: 0,30 V <sub>p-p</sub> Burst / 75 Ohm	Y: 1,0 V <sub>p-p</sub> / 75 Ohm C: 0,286 V <sub>p-p</sub> Burst / 75 Ohm
	Remote output connector	2 x 3.5 mm mini stereo plug Normally open contact : Between PIN 1 (max.15 V DC pull-up) and PIN 3 (GND) PIN 2 must not be assigned ! 	
	HDTV video outputs	Output format	
Digital video	DVI	1280 x 720 (50 Hz / 60 Hz) 1920 x 1080 (50 Hz / 60 Hz) 1920 x 1080 (50 Hz / 60 Hz)	Progressive Progressive Interlaced
	HD SDI	1280 x 720 (50 Hz / 60 Hz) 1920 x 1080 (50 Hz / 60 Hz)	Progressive Interlaced

### 7.3 Operating, storage, transport and shipping conditions

Operating conditions	+ 10°C to + 40°C , 30% to 75% rel. humidity, atmospheric pressure 700 hPa to 1060 hPa
Storage, transport and shipping conditions	- 20°C to + 60°C , 10% to 90% rel. humidity, atmospheric pressure 700 hPa to 1060 hPa

**NOTE!**

To prevent damage during the transport or shipment of the products we recommend using the original packaging material.

### 7.4 Spare parts and accessories

Units	Model/type/ product no.	Designation
1	N610032	Device fuse T 1.0A 250V - USA
1	N710154	Power cable (USA), 8.0 ft
1	5352.56	Video cable BNC, 1.5 m
1	5363.17	Video cable, S-VHS, 2.5 m
1	5502.991	Remote control cable, 1.5 m
1	41065.5006	DVI-D cable, 1.5 m
		♦ further accessories on request

## 7.5 Replacing parts

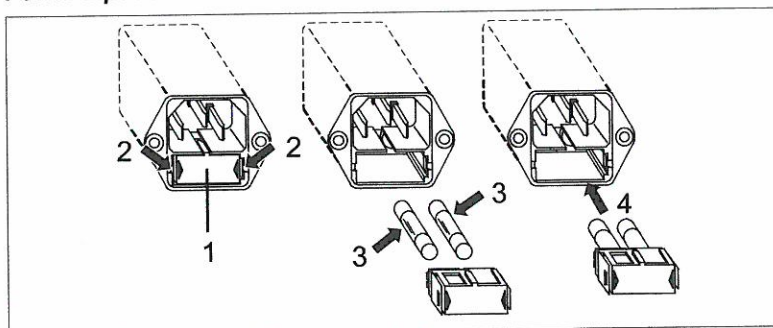
### 7.5.1 Device fuses



**CAUTION!**

*The specification of the fuses in the device must correspond with the fuse ratings on the identification plate.  
Use only the fuses specified in the spare parts list.*

★ **Power input connector with fuse holder**



- ◇ Switch off the device and disconnect the power cable from the wall socket and from the power input connector of the device.
- ◇ Push together the clamps [2] of the fuse holder [1] and pull out the fuse holder.
- ◇ Pull out and replace fuses [3].
- ◇ Reinsert fuse holder [4] and push it in until it snaps into place.

### 7.5.2 Disposal of the product, packaging material and accessories

For the disposal observe the relevant regulations and laws valid in your country.

- ◆ For further information please contact the manufacturer.

## 8 Warranty and Customer Service

Richard Wolf guarantees our instruments to be free from any defects in materials and workmanship under normal use and service for one year. Richard Wolf general terms and conditions may be found on the back of our invoice.

Parts delivered separately by Richard Wolf are subject to all of the same general terms and conditions for our products, including the limitations of warranty and liability.

All products should be returned to Richard Wolf for any necessary or desired repair or part replacement. No product repair or part replacement should be done other than by Richard Wolf unless the care and instruction manual or other written information indicates that repair or part replacement is authorized. If authorized, parts must be replaced only by parts supplied or specified by Richard Wolf, and product repair and part replacement must be done in strict conformance with Richard Wolf specifications and instructions for repair and part replacement, including post replacement testing and recalibration. Failure to follow this requirement in any way can be dangerous to you, your personnel and your patients and voids the warranty for the product repaired or the product in which the part was replaced and if the part was supplied by Richard Wolf, for that part.

Delivery by Richard Wolf of technical documents such as circuit or other design diagrams does not constitute authorization for product repair or part replacement. Richard Wolf instruments and other products should never be modified or altered under any circumstances.

Contact Richard Wolf if you have any question (1) whether replacement of a part or a repair is authorized by Richard Wolf, or (2) whether you have complete instructions and specifications for part replacement or repair.

These instructions do not attempt to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation, or maintenance. Should further information be required or should problems arise which are not covered sufficiently for the purchaser's purpose, the matter should be referred to Richard Wolf Medical Instruments Corporation.

Our national sales and service offices, as well as our manufacturing facility, are located in Illinois. Trained manufacturer's representatives are located throughout the U.S. to serve you. For any questions regarding these instruments, or to place an order, contact Richard Wolf customer service department at 847-913-1113 or 800-323-WOLF (9653).

### **INSTRUMENT ORDERING POLICY**

Richard Wolf reserves the right to make substitutions, if necessary, without prior notice.

### **REPAIR POLICY**

Defective merchandise will be repaired or replaced at no charge to the customer, provided the customer delivers such defective merchandise prepaid. Any repairs, maintenance or servicing of Richard Wolf merchandise by anyone other than a factory authorized representative will render our warranty null and void.

### **REPAIR SHIPMENTS**

When returning your instrument for repair, we suggest that you prevent shipping damage to the instrument by reusing the box that it was originally shipped in. Richard Wolf also recommends that the instrument be insured for an amount to cover the cost of replacement.

### **IMPORTANT**

For general safety and health reasons, Richard Wolf requires that you clean and sterilize all instruments before returning them for repair. If instruments are received in an unsanitary condition, Richard Wolf will clean and sterilize each instrument and add a \$ 100.00 cleaning charge for each instrument requiring cleaning.





353 Corporate Woods Parkway  
Vernon Hills, IL 60061  
Phone: (800) 323 - 9653  
Fax: (847) 913 - 1488

John Wehn  
111 Bremen Lane  
McMurray, PA 15317  
Phone: 412-980-8958  
Fax: 724-941-9346  
Email: jjw@wehnever.com

Price  
Quote

**WelchHDVideoQuote3-4-**

Account ID: 49390700-000  
WELCH EMERGENCY HOSPITAL  
454 MCDOWELL STREET

P.O. #: \_\_\_\_\_

Contact: DEBBIE ALTIZER  
Phone: 304-436-8830  
Fax: 304-436-6380  
Email: deborah.l.altizer@wv.gov

WELCH, WV 24801

Terms: Net 30 - FOB Vernon Hills, IL  
Date Quoted: 3/4/2013  
Date Expires: 4/30/2013

Qty	Item	Description	Price	Net	% off List	Extended Net
1	5550.654	CAMERA CCU, HD KIT TO INCLUDE: CAMERA CCU 5550.751, CAMERA HEAD 85550.975,	\$43,260.00	\$10,000.00	76.88 %	\$10,000.00
1	85550.975	CAMERA HEAD, 3CCD HD, AUTOCLAVABLE, INTEGRATED COUPLER,5 FUNCTION ROCK ERSWITCH	\$29,870.00	\$7,000.00	76.57 %	\$7,000.00
1	5132.012	LIGHT SOURCE, 300 W XENON, W/DIALOG FEATURE AND CAN-BUS, INCLUDES: (1) POWER CORD N710154	\$11,330.00	\$3,800.00	66.46 %	\$3,800.00
1	8061.456	CABLE, FIBER LIGHT, 4.5MM, 3M, INCLUDES: WOLF LIGHT SOURCE ADAPTERS 8095.05 & 8095.07	\$510.00	\$350.00	31.37 %	\$350.00
1	2236.6011	INSUFFLATOR, CO2, 40 L/MIN, 120V, WITH POWER CORD, ALSO INCLUDES: CO2 HOSE 2026.62;	\$14,323.00	\$8,000.00	44.15 %	\$8,000.00
1	5365.855	USB DIGITAL THERMAL PRINTER, 8" X 12"	\$2,266.00	\$1,800.00	20.56 %	\$1,800.00
1	5365.7361	SONY DIGITAL HD RECORDER KIT, HVO-1000, INCL: 5365.736 DIGITAL HD RECORDER, 5365.7363 MEDICAL GRADE	\$11,325.00	\$9,000.00	20.53 %	\$9,000.00
1	31113.701	GLIDER-OR VIDEO CART WITH ARTICULATING ARM, ISOLATION TRANSFORMER, DUAL CO2 TANK HOLDER AND	\$5,047.00	\$3,000.00	40.56 %	\$3,000.00
1	31113.602	MONITOR ROLL STAND, ADJUSTABLE HEIGHT, VESA 100MM MOUNT, HANDLE INCLUDED FOR MOVING AND	\$1,700.00	\$800.00	52.94 %	\$800.00
2	5371.6266	MONITOR, 26" WITH FREEZE FRAME PICTURE IN PICTURE, AND IMAGE COUNTER, INCLUDE: MONITOR DUST	\$6,900.00	\$3,500.00	49.28 %	\$7,000.00
1	5371.60011	ZERO WIRE KIT, WIRELESS SIGNAL TRANSMISSION, INCLUDES: 1X ZERO WIRE TRANSMITTE R/RECEIVER SET (5371.6004),	\$6,400.00	\$4,160.00	35.00 %	\$4,160.00
<b>Total</b>						<b>\$54,910.00</b>

Does not include applicable taxes and freight charges.



## 8.2 Technical Data

LINE ITEM #3

3.1.2.19 3.1.2.20

Product no.	Voltage V	Frequency Hz	Power consumption VA	Current rating A	Fuse A
5132.002	100 - 240	50 / 60	700	6.0 - 2.8	T 6.3 H / 250V
5132.012 (USA)	100 - 240	50 / 60	700	6.0 - 2.8	T 6.3 H / 250V

3.1.2.21

Electromagnetic compatibility (EMC) in acc. with	IEC / EN 60601-1-2
Medical Devices Directive 93/42/EEC	Class I
Protection class in acc. with IEC / EN 60601-1; (UL 60601-1 / CSA C22.2 No.601.1 - for USA)	I
Protection against electric shock	Type CF applied part
Noise level	50 dB(A)
Duty cycle	Continuous operation
Degree of protection against the ingress of liquid	IP 20 (Not protected)
Degree of protection when flammable gasses are present	This device is not protected against explosions (Do not operate this device in areas where explosive substances are present)
Weight	10.0 kg (22.0 lbs)
Dimensions WxHxD	332 mm x 155 mm x 380 mm

### 8.2.1 Technical data of Xenon lamp

3.1.2.4

Model / type	Xenon short-arc lamp, 300W
Color temperature	6000 K
Service life	500 h

### 8.2.2 Interfaces

Video control	Input, output FBAS (composite): 1 x BNC each
CAN BUS input	Sub-D socket, 9-pin
CAN BUS output	Sub-D socket, 9-pin

## 8.3 Operating, storage, transport and shipping conditions

Operating conditions	+ 10°C to + 40°C , 30% to 75% rel. humidity, atmospheric pressure 700 hPa to 1060 hPa
Storage, transport and shipping conditions	- 20°C to + 60°C , 10% to 90% rel. humidity, atmospheric pressure 700 hPa to 1060 hPa

**NOTE!**

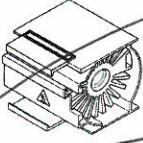
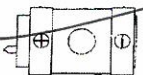
To prevent damage during the transport or shipment of the products we recommend using the original packaging material.

**IMPORTANT!**

When shipping the lamp module, the **original** packaging **must** be used because the lamp is pressurized. Danger of explosion!

#### 8.4 Spare parts and Accessories

*Emergency Lamp - 3.1.2.18*

Illustration	Units	Product no.	Designation
	1	2431.121	Lamp module with Xenon lamp, 300W (new)
	1	2431.122	Exchange module with Xenon lamp, 300W When sending in the used module: new lamp
	1	2412.117	Xenon lamp 300W <b>without</b> lamp module
	1	64268.010	Device fuse T 6.3 H / 250V (10/pkg)
	1	N610041	Device fuse T 6.3A / 250V - USA
	1	2440.03	Power cable (Europe), 3.0 m
	1	N710006	Power cable (USA), 8.0 ft
	1	103.701	CAN BUS connection cable, 0.5 m long
	1	5590.989	CAN BUS termination
	1	8061.16	Flexible light cable dia. 1.6 mm, length 1.8 m
	1	8061.253	Flexible light cable dia. 2.5 mm, length 2.3 m
	1	8061.353	Flexible light cable dia. 3.5 mm, length 2.3 m
	1	8061.453	Flexible light cable dia. 4.5 mm, length 2.3 m
	1	8063.353	Highly temperature-resistant light cable dia. 3.5 mm, length 2.3 m
◆ Further accessories on request			

## 8.2 Technical Data

Product no.	Voltage V ~	Frequency Hz	Power consumption VA	Current rating A	Fuse A
5132.002	100 - 240	50 / 60	700	6.0 - 2.8	T 6.3 H / 250V
5132.012 (USA)	100 - 240	50 / 60	700	6.0 - 2.8	T 6.3 H / 250V

Electromagnetic compatibility (EMC) in acc. with	IEC / EN 60601-1-2
Medical Devices Directive 93/42/EEC	Class I
Protection class in acc. with IEC / EN 60601-1; (UL 60601-1 / CSA C22.2 No.601.1 - for USA)	I
Protection against electric shock	Type CF applied part
Noise level	50 dB(A)
Duty cycle	Continuous operation
Degree of protection against the ingress of liquid	IP 20 (Not protected)
Degree of protection when flammable gasses are present	This device is not protected against explosions (Do not operate this device in areas where explosive substances are present)
Weight	10.0 kg (22.0 lbs)
Dimensions WxHxD	332 mm x 155 mm x 380 mm

### 8.2.1 Technical data of Xenon lamp

Model / type	Xenon short-arc lamp, 300W
Color temperature	6000 K
Service life	500 h

### 8.2.2 Interfaces

Video control	Input, output FBAS (composite): 1 x BNC each
CAN BUS input	Sub-D socket, 9-pin
CAN BUS output	Sub-D socket, 9-pin

## 8.3 Operating, storage, transport and shipping conditions

Operating conditions	+ 10°C to + 40°C , 30% to 75% rel. humidity, atmospheric pressure 700 hPa to 1060 hPa
Storage, transport and shipping conditions	- 20°C to + 60°C , 10% to 90% rel. humidity, atmospheric pressure 700 hPa to 1060 hPa



#### NOTE!

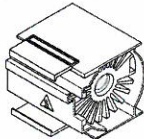

To prevent damage during the transport or shipment of the products we recommend using the original packaging material.



#### IMPORTANT!

When shipping the lamp module, the **original** packaging **must** be used because the lamp is pressurized. Danger of explosion!

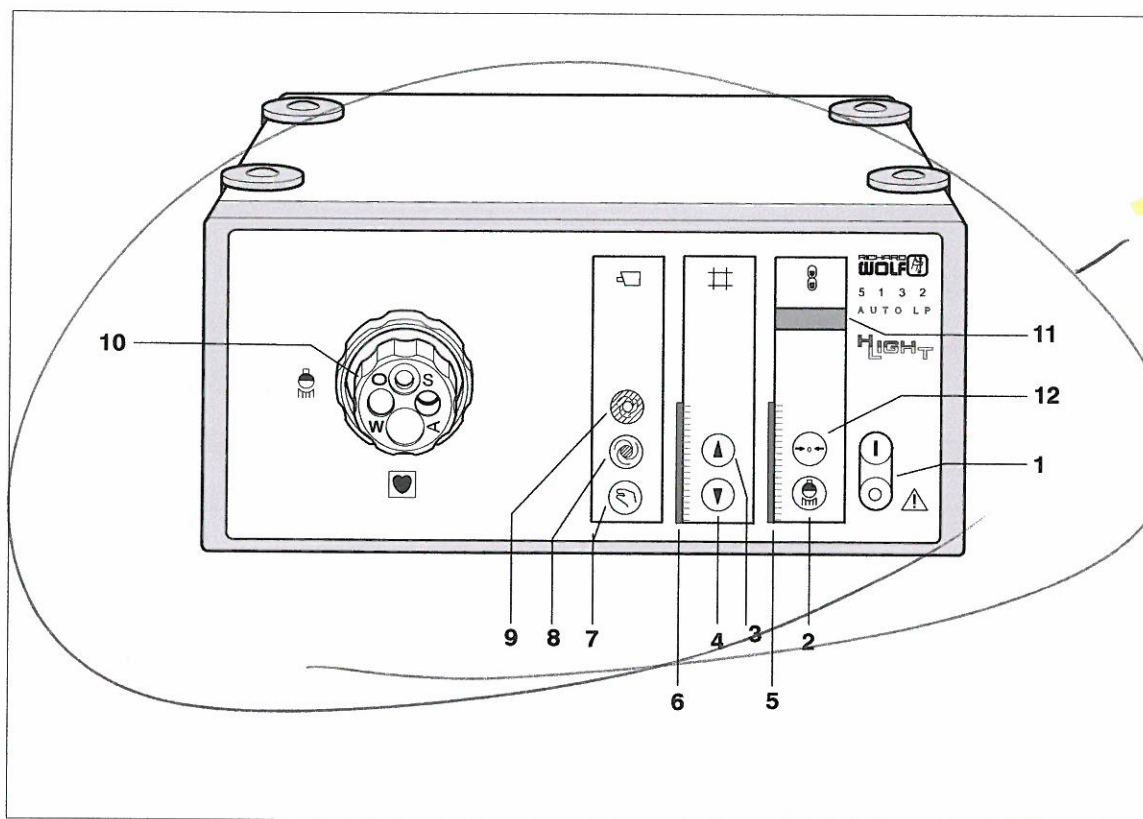
## 8.4 Spare parts and Accessories

Illustration	Units	Product no.	Designation
	1	2431.121	Lamp module with Xenon lamp, 300W (new) <b>3.1.2.18</b>
	1	2431.122	Exchange module with Xenon lamp, 300W When sending in the used module: new lamp
	1	2412.117	Xenon lamp 300W <b>without</b> lamp module
	1	64268.010	Device fuse T 6.3 H / 250V (10/pkg)
	1	N610041	Device fuse T 6.3A / 250V - USA
	1	2440.03	Power cable (Europe), 3.0 m
	1	N710006	Power cable (USA), 8.0 ft
	1	103.701	CAN BUS connection cable, 0.5 m long
	1	5590.989	CAN BUS termination
	1	8061.16	Flexible light cable dia. 1.6 mm, length 1.8 m
	1	8061.253	Flexible light cable dia. 2.5 mm, length 2.3 m
	1	8061.353	Flexible light cable dia. 3.5 mm, length 2.3 m
	1	8061.453	Flexible light cable dia. 4.5 mm, length 2.3 m
	1	8063.353	Highly temperature-resistant light cable dia. 3.5 mm, length 2.3 m
◆ Further accessories on request			



## 2 Illustration

### 2.1 Front panel



#### 2.1.1 Legend

- |   |                                       |    |  |
|---|---------------------------------------|----|--|
| 1 | Power switch                          | 7  | "Manual" button                              |
| 2 | "Xenon lamp ON / OFF" button          | 8  | "Auto spot measurement" button               |
| 3 | "Increase brightness" button          | 9  | "Auto integral measurement" button           |
| 4 | "Reduce brightness" button            | 10 | Rotary selector with light connection socket |
| 5 | Actual value indication of brightness | 11 | Operating hours indicator                    |
| 6 | Set value indication of brightness    | 12 | Reset button for "operating hours counter"   |
- 3.1.2.15
- 3.1.2.6
- 3.1.2.12

#### 6.5.4 Main menu

In the main menu, all devices connected to the RIWO-NET system are listed. By selecting a specific device, the corresponding device menu is called up.

If only a light projector and no camera is connected to the RIWO-NET system, the "ENDOLIGHT" menu is displayed, see Section 6.5.2. If a camera and a light projector are connected, a combined "ENDOPICTURE" or "ENDOPICTURE *dialog*" selection menu for both devices is displayed, see Section 6.5.3.

#### 6.5.5 Control function

- ◇ The following control options for brightness can be selected:
  - endolight
  - endocamera
  - manual
- ◆ If "Endocamera" is selected with a camera connected, the shutter function is activated and the automatic control of the light projector is switched off. Selecting "manual" deactivates both control options.
- ◆ This is not possible if the *dialog* function is activated.

#### 6.5.6 Control type function

- ◇ After selecting the "control type" menu function, the light source parameters can be adapted to the size of the image circle diameter using "integral" or "spot" mode via the available input media.
- ◆ This is not possible if the *dialog* function is activated.

#### 6.5.7 Endolight function

- ◇ The "endolight" menu function serves to switch the light source ON and OFF via the available input media.

#### 6.5.8 Brightness function

- ◇ The "brightness" menu function serves to adjust the brightness via the available input media.
- ◆ This is **not** possible if the *dialog* function is activated.

3.1.2.3

## 4 Checks



### **IMPORTANT!**

*Run through the checks before and after each use.  
Do not use products which are damaged, incomplete or have loose parts.  
Return damaged products together with any loose parts for repair.  
Do not attempt to do any repairs yourself.*

### 4.1 Visual check

- ◇ Carry out the following checks:
  - ◆ Check the device and accessories for damage, hygiene and completeness.
  - ◆ Check the power cable for damage
  - ◆ Check that any labelling or identification is complete and easily legible.
  - ◆ Check the operating hours of the Xenon lamp on the operating hours counter at regular intervals.

### 4.2 Function check

#### 4.2.1 Device function after switch-on



#### **CAUTION!**

***Danger of dazzling.***

***Do not look into the open end when the light cable is connected.***

- ◇ Switch on the power switch.
  - ◆ The power switch LED should be lit.
  - ◆ The Xenon lamp is not ON.
  - ◆ The device cooling fans will only start operating when the Xenon lamp is switched on.
  - ◆ The mode last selected is active (button is lit).

#### 4.2.2 Switching on the Xenon lamp



#### **IMPORTANT!**

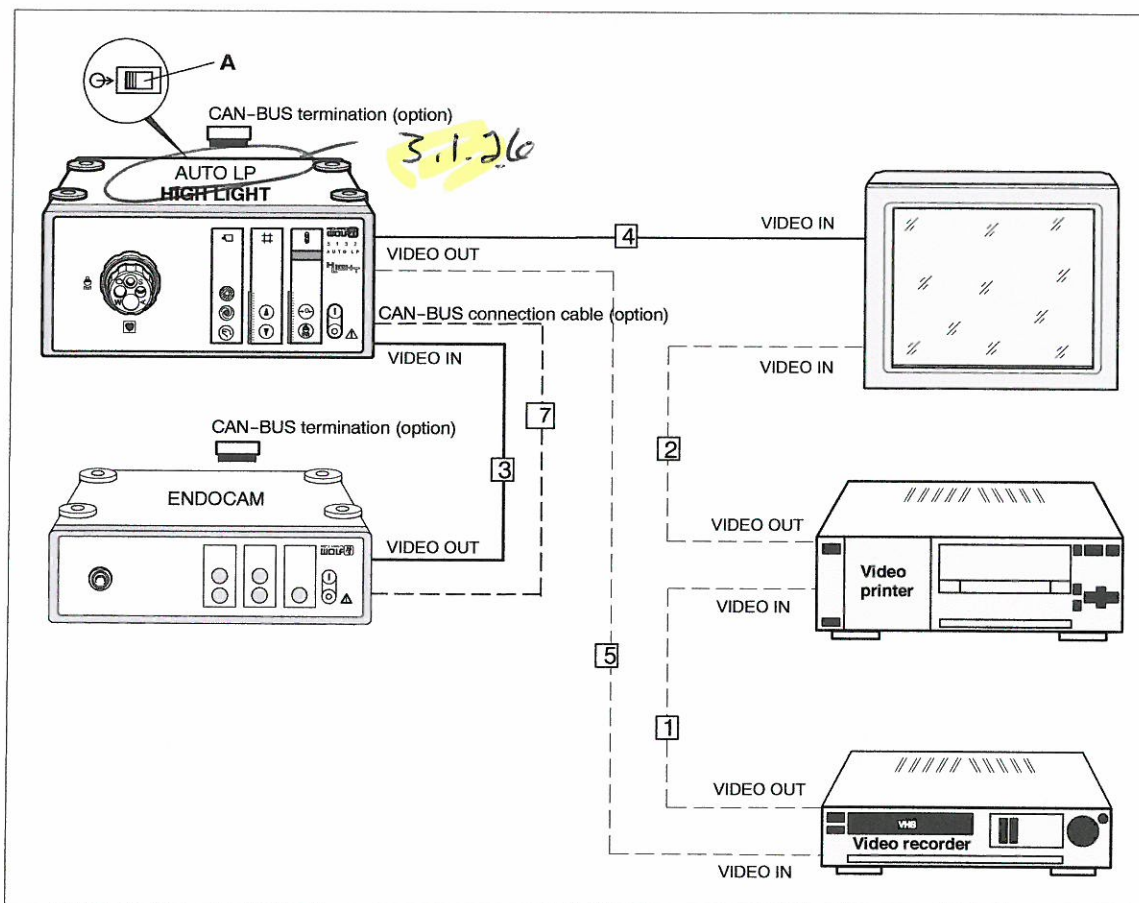
*After switching off, wait at least 3 minutes before you switch on again to allow the unit to cool down. If you switch on and off frequently, this will considerably reduce the service life of the Xenon lamp.*



- ◇ Push the Xenon lamp "ON / OFF" button to ignite the lamp.
- ◇ After switching off the Xenon lamp, the cooling fans will continue running.

3.1.2.1

### 1.4.1 Light projector in video mode with BNC connections



**IMPORTANT!**

If you connect the CAN BUS cable, make sure you terminate the open CAN BUS connections of both devices with the CAN BUS termination resistors.

———— Direct connection  
BNC cables [3] and [4]

----- Connection via video recorder / printer  
BNC cables [1] , [2] , [3] and [5]

CAN BUS connection cable (103.701) [7] – connection **only** with *dialog*-capable camera controller.

Connection of light projector, camera and monitor **using a BNC cable:**  
Set the **75 Ohm switch** on the rear of the light projector to "⊗" (OFF) (A).



## 8.5.2 Exchanging the lamp module



### **WARNING!**

*The Xenon lamp may explode.  
Danger of injury from lamp fragments.  
Always wear protection gloves and safety goggles when you change the lamp module.*



### **CAUTION!**

*During operation, the lamp is extremely hot.  
Danger of burns when touching the lamp.  
Before you change the lamp module, allow the light projector and lamp to cool down sufficiently.*



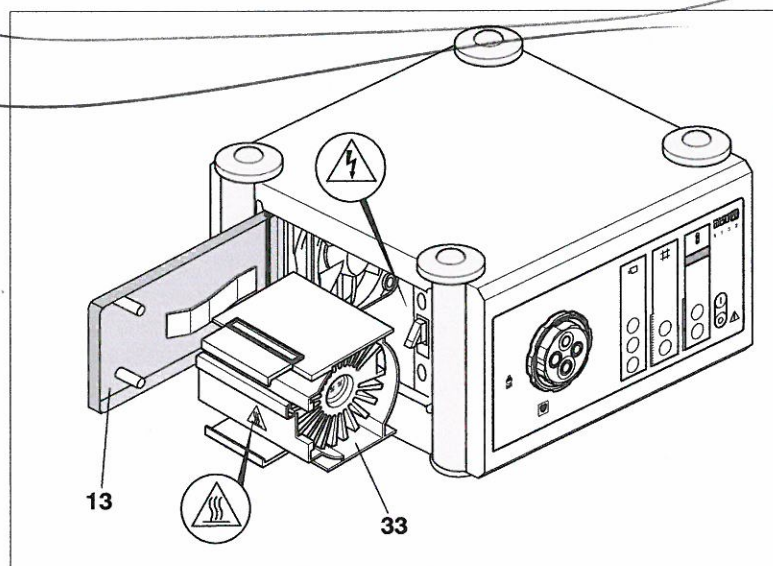
- ◇ Switch off the power/mains switch and disconnect the power plug.
- ◇ Open the access door (13) by pushing it briefly.  
(Access door unlocks automatically).
- ◇ Open the access door completely and pull out the lamp module (33).
- ◇ Insert a new lamp module (ensure firm seating of lamp).
- ◇ Close the access door by pushing it slightly  
(Access door locks automatically).
- ◇ Connect the power plug.



### **NOTE!**

*The access door for the lamp module is equipped with a safety switch.  
If the device cannot be taken into operation after exchanging the lamp module, check that the access door is correctly locked.*

3.1.2.9



### 5.2.5 "dialog" function

The *dialog* function allows communication between AUTO LP 5132 **HIGH LIGHT** and a *dialog*-capable camera controller.

This requires a connection between the devices using a CAN BUS cable in accordance with connection diagram, Section 1.

The automatic brightness control "ELC" of the camera controller must be switched on.

The camera controller automatically controls the brightness adjustment on the light projector, manual brightness adjustment on the light projector is not possible.

#### Deactivating the *dialog* function:



- ◇ Push the "increase brightness" and "decrease brightness" buttons simultaneously and keep them depressed for at least 5 seconds.
  - ◆ The procedure is acknowledged by **two** signals being sounded.
  - ◆ The status line of the monitor reads "**d-OFF**".

#### Activating the *dialog* function:



- ◇ Push the "increase brightness" and "decrease brightness" buttons simultaneously and keep them depressed for at least 5 seconds.
  - ◆ The procedure is acknowledged by a signal being sounded **once**.
  - ◆ The status line of the monitor reads "**d-ON**".



#### **NOTE!**

We recommend to always work with activated *dialog* function.

### 5.2.6 Temperature protection

Blocked rear panel vent slots, a defective fan or insufficient air circulation may cause increased temperatures inside the AUTO LP 5132 **HIGH LIGHT** light projector.

The device temperature is therefore monitored by a temperature protection circuit. If necessary, the Xenon lamp is shut down to avoid major damage.

3.1.2.16

## 6.6 System messages



### **IMPORTANT!**

*If you cannot eliminate possible problems with the help of this Table, please contact the service department or return the device for repair.  
⚡ Do not attempt to do any repairs yourself!*

★ Depending on the operating or fault condition, the AUTO LP 5132 **HIGH LIGHT** displays the following messages on the RIWO-NET menu monitor:

### 6.6.1 Additional notes and instructions for use

Message type	Message text	Possible cause	Corrective action
Operator's note 1	Please replace Xenon lamp + voice output	500 operating hours of the Xenon lamp exceeded	⚡ Replace Xenon lamp and reset operating hours counter
Operator's note 2	Video signal not active	Video signal missing	see Section 8.1.4
Operator's note 3	<i>Dialog</i> control active, switch-over not possible		
Operator's note 4	Brightness is not controlled in <i>dialog</i> mode		
Operator's note 5	Lower brightness limit reached	Lower brightness set value is reached	
Operator's note 6	Upper brightness limit reached	Upper brightness set value is reached	
Operator's note 7	Reactivate after cooling down of lamp module + voice output	Thermo switch has been triggered	⚡ Check vent slots for free passage

" + voice output " = System messages marked like this are accompanied by a sound message.  
(only if "voice output" option is available).

### 6.6.2 Warnings

Message type	Message text	Possible cause	Corrective action
Warnings 31 - 36	Data transmission error	Data loss during communication between RIWO-NET system and light projector	⚡ Check connections ⚡ Replace CAN BUS cable ⚡ Contact the service department



353 Corporate Woods Parkway  
Vernon Hills, IL 60061  
Phone: (800) 323 - 9653  
Fax: (847) 913 - 1488

John Wehn  
111 Bremen Lane  
McMurray, PA 15317  
Phone: 412-980-8958  
Fax: 724-941-9346  
Email: jjw@wehnever.com

Price  
Quote

**WelchHDVideoQuote3-4-**

Account ID: 49390700-000  
WELCH EMERGENCY HOSPITAL  
454 MCDOWELL STREET

P.O. #: \_\_\_\_\_

Contact: DEBBIE ALTIZER  
Phone: 304-436-8830  
Fax: 304-436-6380  
Email: deborah.l.altizer@wv.gov

WELCH, WV 24801

Terms: Net 30 - FOB Vernon Hills, IL  
Date Quoted: 3/4/2013  
Date Expires: 4/30/2013

Qty	Item	Description	Price	Net	% off List	Extended Net
1	5550.654	CAMERA CCU, HD KIT TO INCLUDE: CAMERA CCU 5550.751, CAMERA HEAD 85550.975,	\$43,260.00	\$10,000.00	76.88 %	\$10,000.00
1	85550.975	CAMERA HEAD, 3CCD HD, AUTOCLAVABLE, INTEGRATED COUPLER,5 FUNCTION ROCK ERSWITCH	\$29,870.00	\$7,000.00	76.57 %	\$7,000.00
1	5132.012	LIGHT SOURCE, 300 W XENON, W/DIALOG FEATURE AND CAN-BUS, INCLUDES: (1) POWER CORD N710154	\$11,330.00	\$3,800.00	66.46 %	\$3,800.00
1	8061.456	CABLE, FIBER LIGHT, 4.5MM, 3M, INCLUDES: WOLF LIGHT SOURCE ADAPTERS 8095.05 &8095.07	\$510.00	\$350.00	31.37 %	\$350.00
1	2236.6011	INSUFFLATOR, CO2, 40 L/MIN, 120V, WITH POWER CORD, ALSO INCLUDES: CO2 HOSE 2026.62;	\$14,323.00	\$8,000.00	44.15 %	\$8,000.00
1	5365.855	USB DIGITAL THERMAL PRINTER, 8" X 12"	\$2,266.00	\$1,800.00	20.56 %	\$1,800.00
1	5365.7361	SONY DIGITAL HD RECORDER KIT, HVO-1000, INCL: 5365.736 DIGITAL HD RECORDER, 5365.7363 MEDICAL GRADE	\$11,325.00	\$9,000.00	20.53 %	\$9,000.00
1	31113.701	GLIDER-OR VIDEO CART WITH ARTICULATING ARM, ISOLATION TRANSFORMER, DUAL CO2 TANK HOLDER AND	\$5,047.00	\$3,000.00	40.56 %	\$3,000.00
1	31113.602	MONITOR ROLL STAND, ADJUSTABLE HEIGHT, VESA 100MM MOUNT, HANDLE INCLUDED FOR MOVING AND	\$1,700.00	\$800.00	52.94 %	\$800.00
2	5371.6266	MONITOR, 26" WITH FREEZE FRAME PICTURE IN PICTURE, AND IMAGE COUNTER, INCLUDE: MONITOR DUST	\$6,900.00	\$3,500.00	49.28 %	\$7,000.00
1	5371.60011	ZERO WIRE KIT, WIRELESS SIGNAL TRANSMISSION, INCLUDES: 1X ZERO WIRE TRANSMITTE R/RECEIVER SET (5371.6004),	\$6,400.00	\$4,160.00	35.00 %	\$4,160.00
<b>Total</b>						<b>\$54,910.00</b>

Does not include applicable taxes and freight charges.



10 Technical data and order data

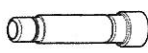





PRODUCT NO.	DESIGNATION, TECHNICAL DATA Fiber bundle diameter = Ø working length = WL	ADAPTER FOR LIGHT CABLE						
		projector end			endoscope end			
		(A <sub>1</sub> )	(A <sub>2</sub> )	(A <sub>3</sub> )	(B <sub>1</sub> )	(B <sub>2</sub> )	(C <sub>1</sub> )	(C <sub>2</sub> )
		8095.07	8096.631	8083.10	8095.05	8095.90	809506	809509
4070.253	Fluid light cable, complete; dia. Ø = 3.0 mm; WL = 2.3 m	●	○	○	●	○	○	○
8061.16	Fiber light cable, complete; dia. Ø = 1.6 mm; WL = 1.8 m	●	○	○	○	●	○	●
8061.25	Fiber light cable, complete; dia. Ø = 2.5 mm; WL = 1.8 m	●	○	○	●	○	●	○
8061.253	Fiber light cable, complete; dia. Ø = 2.5 mm; WL = 2.3 m	●	○	○	●	○	●	○
8061.256	Fiber light cable, complete; dia. Ø = 2.5 mm; WL = 3.0 m	●	○	○	●	○	●	○
8061.35	Fiber light cable, complete; dia. Ø = 3.5 mm; WL = 1.8 m	●	○	○	●	○	●	○
8061.353	Fiber light cable, complete; dia. Ø = 3.5 mm; WL = 2.3 m	●	○	○	●	○	●	○
8061.356	Fiber light cable, complete; dia. Ø = 3.5 mm; WL = 3.0 m	●	○	○	●	○	●	○
8061.453	Fiber light cable, complete; dia. Ø = 4.5 mm; WL = 2.3 m	●	○	○	●	○	●	○
8061.456	Fiber light cable, complete; dia. Ø = 4.5 mm; WL = 3.0 m	●	○	○	●	○	●	○
8061.853	Fiber light cable, complete; dia. Ø = 4.5 mm; WL = 2.3 m	●	○	○	●	○	●	○
8061.933	Fiber light cable, complete; dia. Ø = 3.5 mm; WL = 2.3 m	●	○	○	●	○	●	○
8062.35	Double fiber light cable, complete; Ø = 2x3.5 mm; WL = 1.8 m	●	○	○	●	○	●	○
8062.251	Fiber light cable, complete; dia. Ø = 2.5 mm; WL = 2.3 m	●	○	○	●	○	●	○
8062.351	Fiber light cable, complete; dia. Ø = 3.5 mm; WL = 2.3 m	●	○	○	●	○	●	○
8062.451	Fiber light cable, complete; dia. Ø = 4.5 mm; WL = 2.3 m	●	○	○	●	○	●	○
8063.353	Fiber light cable, complete; high-temperature resistant; dia. Ø = 3.5 mm; WL = 2.3 m	○	●	○	●	○	○	○

Legend: ● = combination possible ○ = combination not possible

The products can be combined as required provided the relevant technical data and intended uses are observed. For the general overview, please refer to the latest catalog sheets, brochures or contact Richard Wolf or your representative.

LINE ITEM  
# 4

## 11 Spare parts

ILLUSTRATION	PRODUCT NO.	DESIGNATION
		<b>ADAPTER FOR LIGHT CABLE</b>
	8095.07	on projector end (A <sub>1</sub> )
	8096.631	on projector end (A <sub>2</sub> ) only for 8063.353
	8083.10	on projector end (A <sub>3</sub> ) only for 8077.xxx
	8095.05	on endoscope end (B <sub>1</sub> )
	8095.90	on endoscope end (B <sub>2</sub> ) only for fiber light cable dia. Ø = 1.6 mm
	809506	on endoscope end (C <sub>1</sub> ) quick-release coupling (ring-operated), long version
	809509	on endoscope end (C <sub>2</sub> ) quick-release coupling (ring-operated), short version only for fiber bundle dia. Ø = 1.6 mm
	9500.116	<b>ASSEMBLY WRENCH FOR 8070.00</b>

## 12 Operating, storage, transport and shipping conditions

Operating conditions:	+10°C to +40°C, 30% to 75% rel. Humidity, atmospheric pressure 700 hPa to 1060 hPa
Storage, transport and shipping conditions: Fiber light cable	-20°C to +60°C, 10% to 90% rel. Humidity, atmospheric pressure 700 hPa to 1060 hPa
Storage, transport and shipping conditions: Fluid light cable	-5°C to +35°C, 30% to 100% rel. Humidity, atmospheric pressure 700 hPa to 1060 hPa



### NOTE!

To prevent damage during transport or shipment of the products we recommend using the original packaging material.

### 12.1 Disposal of product, packaging material and accessories

For the disposal observe the laws and regulations valid in your country.

♦ For further information please contact the manufacturer.



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Vernon Hills, IL 60061  
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McMurray, PA 15317  
Phone: 412-980-8958  
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Email: jjw@wehnever.com

Price  
Quote

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Email: deborah.l.altizer@wv.gov

WELCH, WV 24801

Terms: Net 30 - FOB Vernon Hills, IL  
Date Quoted: 3/4/2013  
Date Expires: 4/30/2013

Qty	Item	Description	Price	Net	% off List	Extended Net
1	5550.654	CAMERA CCU, HD KIT TO INCLUDE: CAMERA CCU 5550.751, CAMERA HEAD 85550.975,	\$43,260.00	\$10,000.00	76.88 %	\$10,000.00
1	85550.975	CAMERA HEAD, 3CCD HD, AUTOCLAVABLE, INTEGRATED COUPLER,5 FUNCTION ROCK ERSWITCH	\$29,870.00	\$7,000.00	76.57 %	\$7,000.00
1	5132.012	LIGHT SOURCE, 300 W XENON, W/DIALOG FEATURE AND CAN-BUS, INCLUDES: (1) POWER CORD N710154	\$11,330.00	\$3,800.00	66.46 %	\$3,800.00
1	8061.456	CABLE, FIBER LIGHT, 4.5MM, 3M, INCLUDES: WOLF LIGHT SOURCE ADAPTERS 8095.05 &8095.07	\$510.00	\$350.00	31.37 %	\$350.00
1	2236.6011	INSUFFLATOR, CO2, 40 L/MIN, 120V, WITH POWER CORD, ALSO INCLUDES: CO2 HOSE 2026.62;	\$14,323.00	\$8,000.00	44.15 %	\$8,000.00
1	5365.855	USB DIGITAL THERMAL PRINTER, 8" X 12"	\$2,266.00	\$1,800.00	20.56 %	\$1,800.00
1	5365.7361	SONY DIGITAL HD RECORDER KIT, HVO-1000, INCL: 5365.736 DIGITAL HD RECORDER, 5365.7363 MEDICAL GRADE	\$11,325.00	\$9,000.00	20.53 %	\$9,000.00
1	31113.701	GLIDER-OR VIDEO CART WITH ARTICULATING ARM, ISOLATION TRANSFORMER, DUAL CO2 TANK HOLDER AND	\$5,047.00	\$3,000.00	40.56 %	\$3,000.00
1	31113.602	MONITOR ROLL STAND, ADJUSTABLE HEIGHT, VESA 100MM MOUNT, HANDLE INCLUDED FOR MOVING AND	\$1,700.00	\$800.00	52.94 %	\$800.00
2	5371.6266	MONITOR, 26" WITH FREEZE FRAME PICTURE IN PICTURE, AND IMAGE COUNTER, INCLUDE: MONITOR DUST	\$6,900.00	\$3,500.00	49.28 %	\$7,000.00
1	5371.60011	ZERO WIRE KIT, WIRELESS SIGNAL TRANSMISSION, INCLUDES: 1X ZERO WIRE TRANSMITTE R/RECEIVER SET (5371.6004),	\$6,400.00	\$4,160.00	35.00 %	\$4,160.00
<b>Total</b>						<b>\$54,910.00</b>

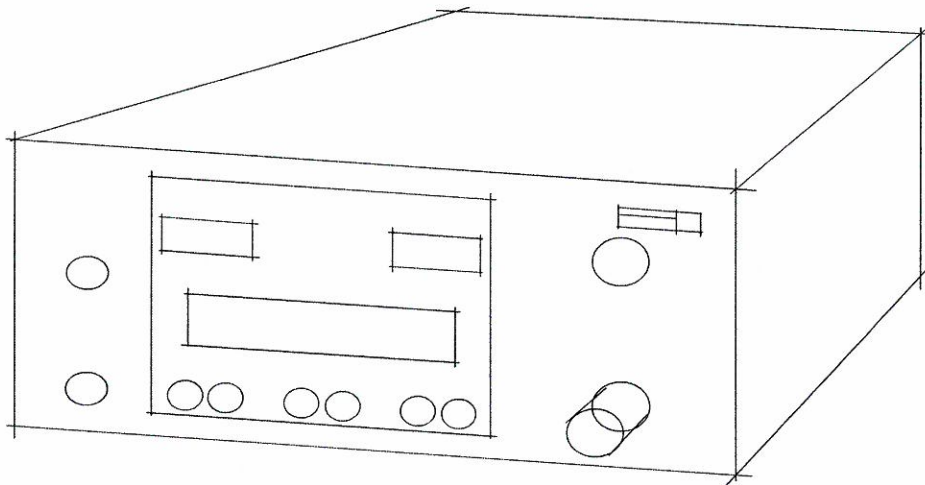
Does not include applicable taxes and freight charges.

# Instruction Manual

EN

## Manual de Instrucciones

ES



LINE ITEM #5-

2236.6011

**LAPAROSCOPIC CO2 INSUFFLATOR 40 L/min**

RICHARD  
**WOLF**





## 12 Technical Data

EN

Power connection:	100-240 V AC
	Mains fuse T 3,15 A
	Connection for potential equalization
Frequency:	50-60 Hz
Max. power consumption:	with reusable heater tube
	145 VA
Max. current consumption:	with reusable heater tube
	110 V: 1300 mA
	230 V: 600 mA
Classification according to Directive 93/42/EEC:	Ila
Protection class:	I
Protection level:	Type BF
Moisture protection:	IP40
Dimensions:	Width x height x depth
	267 x 138 x 410 [mm] / 10.51 x 5.43 x 16.14 [in]
Weight:	approx. ca. 7 kg / 15.43 lb
Operating conditions:	10-40 °C / 50-104 °F
	30-75% rel. humidity
Storage and transportation conditions:	-40 to +70 °C / -40 to +158 °F
	10-85% rel. humidity
	85 to 100% rel. humidity (14 days)
Manufactured and tested according to:	EN 60601-1
EMC:	EN 60601-1-2
Insufflation medium:	Medical CO <sub>2</sub>
Maximum output pressure:	55 mm Hg (1 mm Hg = 1.33 mbar = 133 Pa)
Maximum gas supply pressure:	80 bar/1160 PSI
Minimum gas supply pressure (bottle):	15 bar/218 PSI
Minimum gas supply pressure (house gas):	3.4 bar/50 PSI
Measurement range of gas supply:	0-50 bar/0-725 PSI
Maximum gas flow:	Refer to device data plate located on rear of the device
Pressure range:	1-30 mm Hg
Accuracy of pressure measurement:	5%
Accuracy of gas flow measurement:	5%
Accuracy of volume measurement:	10%
Accuracy of gas supply pressure measurement:	10%
Connections (optional):	Video S-VHS IN/OUT
	Video C-SCC (comp. sgn. color corr.) IN/OUT
	Video RGB IN/OUT
	Data input/output
	Device interface



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Fax: (847) 913 - 1488

John Wehn  
111 Bremen Lane  
McMurray, PA 15317  
Phone: 412-980-8958  
Fax: 724-941-9346  
Email: jjw@wehnever.com

Price  
Quote

**WelchHDVideoQuote3-4-**

Account ID: 49390700-000  
WELCH EMERGENCY HOSPITAL  
454 MCDOWELL STREET

P.O. #: \_\_\_\_\_

Contact: DEBBIE ALTIZER  
Phone: 304-436-8830  
Fax: 304-436-6380  
Email: deborah.l.altizer@wv.gov

WELCH, WV 24801

Terms: Net 30 - FOB Vernon Hills, IL  
Date Quoted: 3/4/2013  
Date Expires: 4/30/2013

Qty	Item	Description	Price	Net	% off List	Extended Net
1	5550.654	CAMERA CCU, HD KIT TO INCLUDE: CAMERA CCU 5550.751, CAMERA HEAD 85550.975,	\$43,260.00	\$10,000.00	76.88 %	\$10,000.00
1	85550.975	CAMERA HEAD, 3CCD HD, AUTOCLAVABLE, INTEGRATED COUPLER,5 FUNCTION ROCK ERSWITCH	\$29,870.00	\$7,000.00	76.57 %	\$7,000.00
1	5132.012	LIGHT SOURCE, 300 W XENON, W/DIALOG FEATURE AND CAN-BUS, INCLUDES: (1) POWER CORD N710154	\$11,330.00	\$3,800.00	66.46 %	\$3,800.00
1	8061.456	CABLE, FIBER LIGHT, 4.5MM, 3M, INCLUDES: WOLF LIGHT SOURCE ADAPTERS 8095.05 &8095.07	\$510.00	\$350.00	31.37 %	\$350.00
1	2236.6011	INSUFFLATOR, CO2, 40 L/MIN, 120V, WITH POWER CORD, ALSO INCLUDES: CO2 HOSE 2026.62;	\$14,323.00	\$8,000.00	44.15 %	\$8,000.00
1	5365.855	USB DIGITAL THERMAL PRINTER, 8" X 12"	\$2,266.00	\$1,800.00	20.56 %	\$1,800.00
1	5365.7361	SONY DIGITAL HD RECORDER KIT, HVO-1000, INCL: 5365.736 DIGITAL HD RECORDER, 5365.7363 MEDICAL GRADE	\$11,325.00	\$9,000.00	20.53 %	\$9,000.00
1	31113.701	GLIDER-OR VIDEO CART WITH ARTICULATING ARM, ISOLATION TRANSFORMER, DUAL CO2 TANK HOLDER AND	\$5,047.00	\$3,000.00	40.56 %	\$3,000.00
1	31113.602	MONITOR ROLL STAND, ADJUSTABLE HEIGHT, VESA 100MM MOUNT, HANDLE INCLUDED FOR MOVING AND	\$1,700.00	\$800.00	52.94 %	\$800.00
2	5371.6266	MONITOR, 26" WITH FREEZE FRAME PICTURE IN PICTURE, AND IMAGE COUNTER, INCLUDE: MONITOR DUST	\$6,900.00	\$3,500.00	49.28 %	\$7,000.00
1	5371.60011	ZERO WIRE KIT, WIRELESS SIGNAL TRANSMISSION, INCLUDES: 1X ZERO WIRE TRANSMITTE R/RECEIVER SET (5371.6004),	\$6,400.00	\$4,160.00	35.00 %	\$4,160.00
<b>Total</b>						<b>\$54,910.00</b>

Does not include applicable taxes and freight charges.

SONY®

4-118-614-11(1)

# ***Digital Color Printer***

---

Instructions for Use

LINE ITEM **5365.855**  
# 6

CE

**UP-DR80MD**

# Specifications

## Power requirements

100 to 240 V AC, 50/60 Hz

Input current 3.4 to 1.4 A

## Operating temperatures

5 °C to 35 °C (41 °F to 95 °F)

## Operating humidity

20% to 80% (no condensation)

## Operating pressure

700 hPa to 1,060 hPa

## Storage and transport temperature

-20 °C to +60 °C (-4 °F to +140 °F)

## Storage and transport humidity

20% to 80% (no condensation)

## Storage and transport pressure

700 hPa to 1,060 hPa

Dimensions Approx. 317 × 425 × 207 mm (w × d × h)

Weight Approx. 11.5 kg

Printing system Dye transfer sublimation thermal printing

Thermal head 11.83 dot/mm, 2,560 dots (301 dpi)

Gradations 8-bit (256-level) processing each for yellow, magenta, and cyan

## Maximum print size

A4 size: 202 × 287 mm

Letter size: 208 × 269 mm

## Picture elements

A4 size: 2,392 dots × 3,400 dots

Letter size: 2,464 dots × 3,192 dots

Printing time Approximately 76 seconds (A4 size)

Approximately 72 seconds (Letter size)

Interface Hi-Speed USB (USB 2.0)

## Accessories supplied

Paper holder (pink) (1)

Paper holder (blue) (1)

Cleaning ribbon (1)

USB cable 1-824-211-41 (SONY) (1)

Before Using this Printer (1)

CD-ROM (1)

Software License Agreement (1)

## Optional accessories

Ink ribbon/paper roll

Self-Laminating Color Printing Pack

UPC-R80MD

Self-Laminating Color Printing Pack

UPC-R81MD

Design and specifications are subject to change without notice.

## Medical Specifications

Protection against electric shock:

Class I

Protection against harmful ingress of water:

Ordinary

Degree of safety in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide:

Not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide

Mode of operation:

Continuous

## Notes

- Always verify that the unit is operating properly before use. SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF FAILURE TO PRINT CONTENT OF ANY TYPE OR LOSS OF DATA DUE TO FAILURE OF THIS UNIT OR ITS PRINTING MEDIA, ASSOCIATED SOFTWARE, EXTERNAL STORAGE, OR OTHER EXTERNAL DEVICE.
- SONY WILL NOT BE LIABLE FOR DAMAGES OF ANY KIND INCLUDING, BUT NOT LIMITED TO, COMPENSATION OR REIMBURSEMENT ON ACCOUNT OF THE LOSS OF PRESENT OR PROSPECTIVE PROFITS DUE TO FAILURE OF THIS UNIT, EITHER DURING THE WARRANTY PERIOD OR AFTER EXPIRATION OF THE WARRANTY, OR FOR ANY OTHER REASON WHATSOEVER.

Miscellaneous

## About the Self-Laminating Color Printing Pack (UPC-R80MD/R81MD)

### Caution

When you dispose of the unit or accessories, you must obey the laws in the relative area or country and the regulations in the relative hospital.

### For the customers in Europe

The manufacturer of this product is Sony Corporation, 1-7-1 Konan, Minato-ku, Tokyo, Japan.

The Authorized Representative for EMC, Medical devices, and product safety is Sony Deutschland GmbH,

Hedelfinger Strasse 61, 70327 Stuttgart, Germany.

TEL: (0)711 5858 0 FAX: (0)711 5858 235

### Precautions

- Store unopened paper rolls in a cool dark place.
- Open paper rolls only when ready to use.
- Please refer to the printer's instruction manual about how to load the paper roll.
- Promptly load the paper roll into the tray and place into the printer.
- This paper roll is specifically designed for Sony printers. Do not use with printers from other manufacturers.





353 Corporate Woods Parkway  
Vernon Hills, IL 60061  
Phone: (800) 323 - 9653  
Fax: (847) 913 - 1488

John Wehn  
111 Bremen Lane  
McMurray, PA 15317  
Phone: 412-980-8958  
Fax: 724-941-9346  
Email: jjw@wehnever.com

Price  
Quote

**WelchHDVideoQuote3-4-**

Account ID: 49390700-000  
WELCH EMERGENCY HOSPITAL  
454 MCDOWELL STREET

P.O. #: \_\_\_\_\_

Contact: DEBBIE ALTIZER  
Phone: 304-436-8830  
Fax: 304-436-6380  
Email: deborah.l.altizer@wv.gov

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<b>Total</b>						<b>\$54,910.00</b>

Does not include applicable taxes and freight charges.

## Features

The HVO-1000MD HD Video Recorder is an HD/SD-compatible video recorder intended for use in recording images from surgical procedures and medical examinations. The unit allows you to record images from endoscopic devices and cameras used in the operating room, and transmit these images to doctors' offices in real time via the hospital network.

### Improved efficiency during and after medical procedures

#### Video and still image recording

Record videos and still images from endoscopic devices and cameras used in the operating room. HD/SD-compatibility allows recording and playback in high definition.

#### Simultaneous saving to two storage media

Data saving to up to two external storage media is completed at roughly the same timing as the end of the surgical procedure or examination.

#### Printer connectivity

Connect the unit to a printer, and print images for medical reports via simple controls from the [Recording List] screen or a foot switch, for example. You can also configure settings to print images when they are captured.

#### Vital sign monitor recording

Input images for vital sign monitoring to the unit and record them.

#### Note

To input vital sign monitoring images, the monitoring device must support RGB output.

### Support for a variety of external storage media

Record simultaneously to USB-compatible external hard drives and USB memory devices via simple controls, or copy the data at a later time. This is useful when you want to edit recorded images on a computer.

### Network file transfer

Transfer recorded data from the operating room directly to computers within the hospital network.

### Hospital-wide updates of surgical procedures

### Real-time transmission

Improve workflow efficiency by using the streaming function to transmit real-time images from endoscopic devices and cameras used in the operating room and images from vital sign monitoring to staff in doctors' offices and ICUs.

#### Note

The Sony NSR-1000 series network surveillance server and the RealShot Manager Advanced Intelligent Monitoring Software are required for streaming transmissions.



# Recording Preparation

Before starting to record, enter information regarding the patient of the surgical procedure or examination, configure the storage destination and quality settings for recorded data, and then perform a test recording.

You can prepare for recording and test record in the [Recording Preparation] screen.

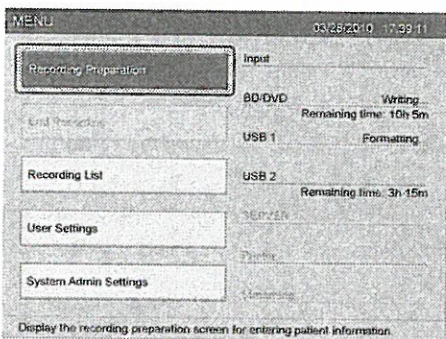
## Patient Information and Data Storage Settings

Enter information regarding the patient of the surgical procedure or examination, and configure the storage destination and quality settings for recorded data.

- 1 Press the MENU button.

The [MENU] screen appears.

- 2 Use the  $\uparrow$  and  $\downarrow$  buttons to select [Recording Preparation], and press the ENTER button.

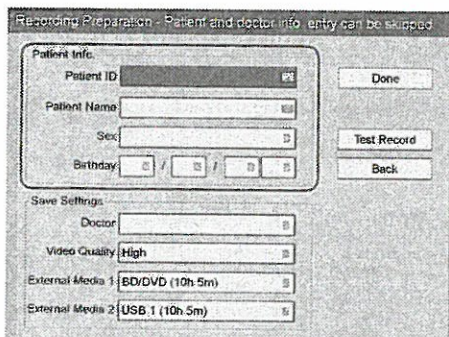


The [Recording Preparation] screen appears.

- 3 Enter patient information.

Select an item using the  $\uparrow$ ,  $\downarrow$ ,  $\leftarrow$ , and  $\rightarrow$  buttons, and press the ENTER button to display the setting screen for that item.

[Patient Info] entry can be skipped.



### [Patient ID]

Enter an identification number for the patient using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

#### Note

Certain symbols (\ / : ? \* " < > |) cannot be used for the patient ID. When data is scanned with a card reader or other such device and these characters exist, the characters will be automatically replaced with underscores (\_). In addition, the front panel will not display characters other than ASCII characters 0x20 to 0x7D.

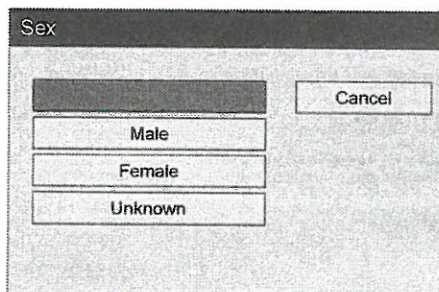
### [Patient Name]

Enter the patient's name using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

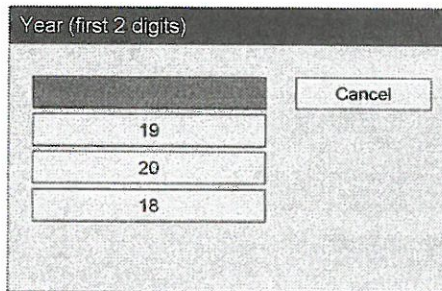
### [Sex]

Select the patient's sex in the setting screen that appears, and press the ENTER button.



### [Birthday]

Select the year, month, and day in the setting screens that appear, and press the ENTER button.





# Using the On-Screen Keyboard (Text Entry)

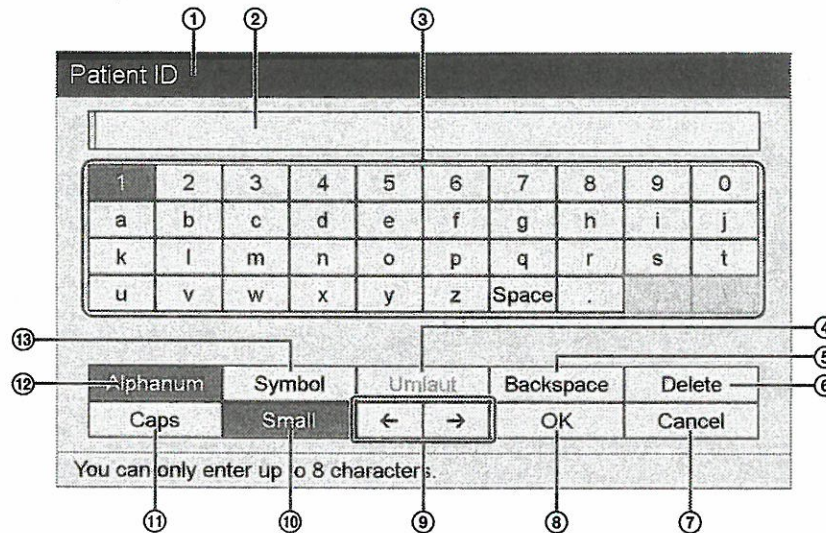
When text entry is necessary, an on-screen keyboard appears.

## Names and Functions of Parts (On-Screen Keyboard)

You can display an alphanumeric, symbol, or umlaut character set on the on-screen keyboard.

The name and function of each part on the keyboard is as follows.

### Example: On-screen keyboard during alphanumeric character display



#### ① Title bar

The name of the setting item for which the on-screen keyboard was opened is displayed here.

#### ② Entry box

Characters selected on the keyboard are entered here.

#### Note

Characters input on a hardware keyboard are also entered here.

#### ③ Keyboard

When you select a character you want to input using the  $\uparrow$ ,  $\downarrow$ ,  $\leftarrow$ , and  $\rightarrow$  buttons and then press the ENTER button, the character is entered in the ② entry box.

#### ④ [Umlaut]

Select this and press the ENTER button to switch the keyboard to umlaut character display.

#### ⑤ [Backspace]

Select this and press the ENTER button to discard the character immediately preceding the cursor.

#### ⑥ [Delete]

Select this and press the ENTER button to discard the character immediately following the cursor.

#### ⑦ [Cancel]

Select this and press the ENTER button to cancel text entry and close the on-screen keyboard.

#### ⑧ [OK]

When you select this and press the ENTER button, the text that appears in the entry box is applied and input in the settings screen.

#### ⑨ $\leftarrow / \rightarrow$

Select this and press the ENTER button to move the cursor one space to the left or right.

#### ⑩ [Small]

Select this and press the ENTER button to switch the keyboard to lower case display.

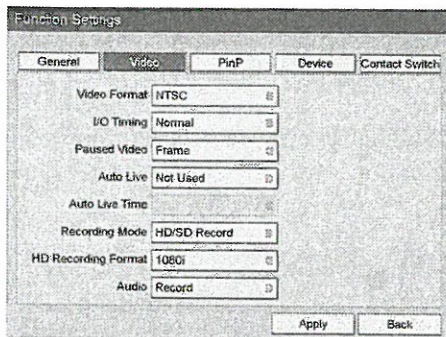


## [Video] Tab

Configure recording settings.

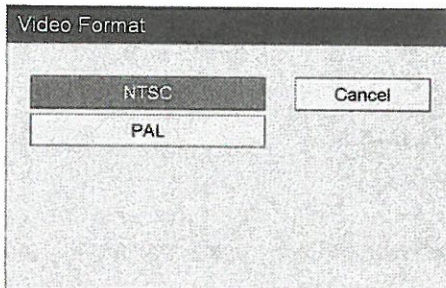
- 1 Use the ◀ and ▶ buttons to select the [Video] tab.
- 2 Configure each setting.

Select an item using the ▲ and ▼ buttons, and press the ENTER button to display the setting screen for that item.



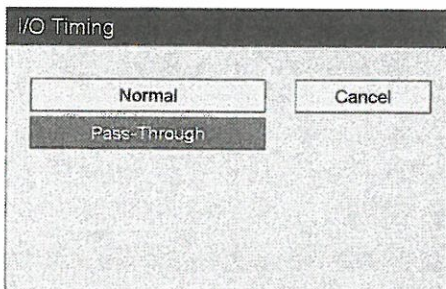
### [Video Format]

Select [NTSC] or [PAL] in the setting screen that appears, and press the ENTER button. The default setting is [NTSC].



### [I/O Timing]

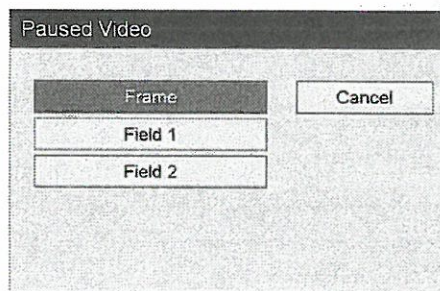
Select the input and output timing in the setting screen that appears, and press the ENTER button. Select [Normal] as signal processing is usually performed under normal circumstances. There will be a slight delay in signal outputs when [Normal] is selected. Select [Pass-Through] for simultaneous input and output timing without signal processing. The default setting is [Normal].



### [Paused Video]

Select the type of image to display when a video is paused in the setting screen that appears, and press the ENTER button.

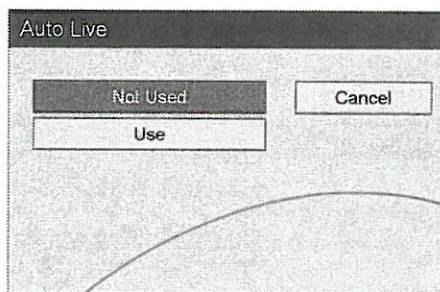
The default setting is [Frame].



### [Auto Live]

Select whether to use the auto live function in the setting screen that appears, and press the ENTER button.

When the auto live function is enabled and you capture a still image, the captured image is displayed for the duration specified with the [Auto Live Time] setting. The default setting is [Not Used].

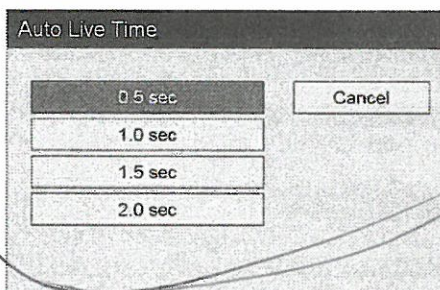


### [Auto Live Time]

This setting can be configured when [Auto Live] is set to [Use].

Select the duration for which still images are displayed after capture in the setting screen that appears, and press the ENTER button.

The default setting is [0.5 sec].





# Specifications

## General

### Power requirements

100 V to 240 V AC, 50/60 Hz

Input current 1.9 to 0.8 A

### Operating temperature

5 °C to 40 °C (41 °F to 104 °F)

### Operating humidity

20% to 80% (Maximum wet-bulb temperature: 30 °C (86 °F))  
(no condensation)

### Operating pressure

700 hPa to 1,040 hPa

### Temperature range for storage

–20 °C to 60 °C (–4 °F to 140 °F)

### Humidity range for storage

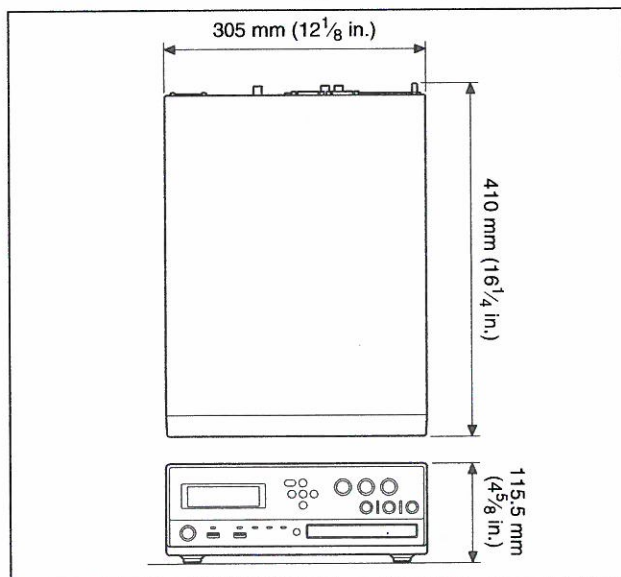
20% to 90% (Maximum wet-bulb temperature: 30 °C (86 °F))  
(no condensation)

### Storage and transport pressure

700 hPa to 1,040 hPa

Mass Approx. 8.4 kg (18.5 lb.)

Dimensions 305 × 410 × 115.5 mm  
(12 1/8 × 16 1/4 × 4 5/8 in.) (w × d × h,  
including protrusions)



## Recording devices

### Internal hard disk drive

320 GB

### Blu-ray Disc/DVD drive (1)

Compatible media: BD-RE2.0, BD-R1.0,  
DVD-R

## Input connectors

### S-VIDEO IN (Mini DIN 4-pin type) (1)

Y: 1.0 Vp-p (75 Ω) Sync negative  
C (BURST): 0.286 Vp-p (75 Ω) (NTSC)  
C (BURST): 0.3 Vp-p (75 Ω) (PAL)

### VIDEO IN (BNC type) (1)

Composite  
1.0 Vp-p (75 Ω)  
Sync negative

### DVI-D IN (receptacle) (1)

TMDS 1 channel (single link)

### RGB IN (D-sub 15-pin) (1)

0.7 Vp-p/with sync on green G: 1.0 Vp-p  
75 Ω

### HD-SDI IN (BNC type) (1)

SD: SMPTE259M compliant  
HD: SMPTE292M compliant 75 Ω

### AUDIO IN (Stereo mini jack) (1)

1.4 Vrms (full bit), input impedance  
10 kΩ or higher, unbalanced

## Output connectors

### S-VIDEO OUT (Mini DIN 4-pin type) (1)

Y: 1.0 Vp-p (75 Ω) Sync negative  
C (BURST): 0.286 Vp-p (75 Ω) (NTSC)  
C (BURST): 0.3 Vp-p (75 Ω) (PAL)

### VIDEO OUT (BNC type) (1)

Composite  
1.0 Vp-p (75 Ω)  
Sync negative

### DVI-D OUT (receptacle) (1)

TMDS 1 channel (single link)

### HD-SDI OUT (BNC type) (1)

SD/HD 0.8 Vp-p 75 Ω

### AUDIO OUT (Stereo mini jack) (1)

1.4 Vrms (full bit), load impedance  
10 kΩ, unbalanced

## Other interfaces

USB (4) USB 2.0

Network (RJ-45 type) (1)

1000 Base-T/100 Base-TX

REMOTE RS-232C (D-sub 9-pin) (2)

REMOTE contact switch (Stereo mini jack) (4)

REMOTE MONITOR (RJ-45 type) (1)

Equipotential connector

## Accessories supplied

Before Using this Unit (this document) (1)

CD-ROM (User's Guide, PROTOCOL MANUAL) (1)

Warranty booklet (1)

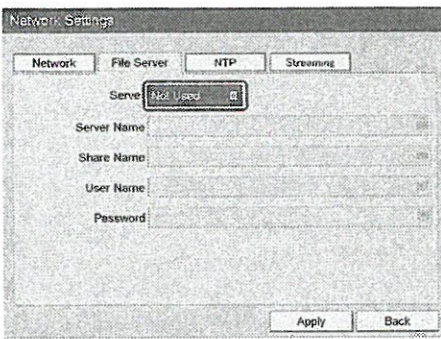
Infrared remote control unit (1)

## Optional accessories

Foot Switch Device conforming to IPX1 standard

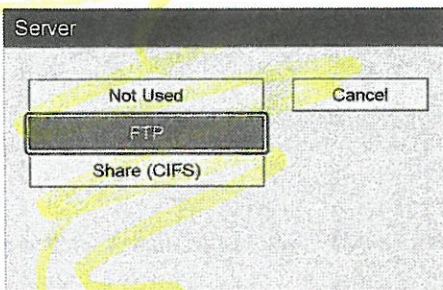
Design and specifications are subject to change without notice.

- 2 Use the **↑** and **↓** buttons to select the [Server] box, and press the ENTER button.



The [Server] screen appears.

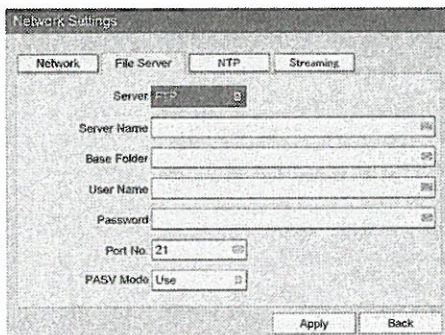
- 3 Use the **↑** and **↓** buttons to select [FTP], and press the ENTER button.



Settings items for the FTP server appear.

- 4 Configure each setting.

Select an item using the **↑** and **↓** buttons, and press the ENTER button to display the setting screen for that item.



#### [Server Name]

Enter the server name using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

#### [Base Folder]

Enter the name of the base folder using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

#### [User Name]

Enter a user name using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

#### [Password]

Enter the password using the on-screen keyboard.

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

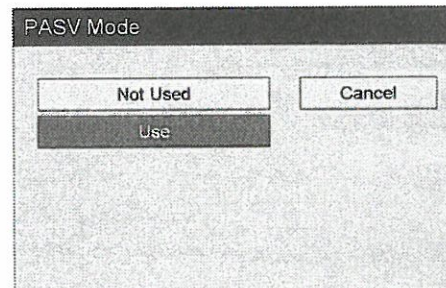
#### [Port No.]

Enter the port number using the on-screen keyboard. The default setting is [21].

For details on using the on-screen keyboard, see "Using the On-Screen Keyboard" (page 26).

#### [PASV Mode]

Select whether to use PASV mode in the setting screen that appears, and press the ENTER button.



- 5 To configure settings in other tabs, use the **↑**, **↓**, **←**, and **→** buttons to select a tab.

If you are finished configuring [Network Settings], use the **↑**, **↓**, **←**, and **→** buttons to select [Apply], and press the ENTER button to save the configurations.





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Vernon Hills, IL 60061  
Phone: (800) 323 - 9653  
Fax: (847) 913 - 1488

John Wehn  
111 Bremen Lane  
McMurray, PA 15317  
Phone: 412-980-8958  
Fax: 724-941-9346  
Email: jjw@wehnever.com

Price  
Quote

## WelchHDVideoQuote3-4-

Account ID: 49390700-000  
WELCH EMERGENCY HOSPITAL  
454 MCDOWELL STREET

P.O. #: \_\_\_\_\_

Contact: DEBBIE ALTIZER  
Phone: 304-436-8830  
Fax: 304-436-6380  
Email: deborah.l.altizer@wv.gov

WELCH, WV 24801

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1	2236.6011	INSUFFLATOR, CO2, 40 L/MIN, 120V, WITH POWER CORD, ALSO INCLUDES: CO2 HOSE 2026.62;	\$14,323.00	\$8,000.00	44.15 %	\$8,000.00
1	5365.855	USB DIGITAL THERMAL PRINTER, 8" X 12"	\$2,266.00	\$1,800.00	20.56 %	\$1,800.00
1	5365.7361	SONY DIGITAL HD RECORDER KIT, HVO-1000, INCL: 5365.736 DIGITAL HD RECORDER, 5365.7363 MEDICAL GRADE	\$11,325.00	\$9,000.00	20.53 %	\$9,000.00
1	31113.701	GLIDER-OR VIDEO CART WITH ARTICULATING ARM, ISOLATION TRANSFORMER, DUAL CO2 TANK HOLDER AND	\$5,047.00	\$3,000.00	40.56 %	\$3,000.00
1	31113.602	MONITOR ROLL STAND, ADJUSTABLE HEIGHT, VESA 100MM MOUNT, HANDLE INCLUDED FOR MOVING AND	\$1,700.00	\$800.00	52.94 %	\$800.00
2	5371.6266	MONITOR, 26" WITH FREEZE FRAME PICTURE IN PICTURE, AND IMAGE COUNTER, INCLUDE: MONITOR DUST	\$6,900.00	\$3,500.00	49.28 %	\$7,000.00
1	5371.60011	ZERO WIRE KIT, WIRELESS SIGNAL TRANSMISSION, INCLUDES: 1X ZERO WIRE TRANSMITTE R/RECEIVER SET (5371.6004),	\$6,400.00	\$4,160.00	35.00 %	\$4,160.00
<b>Total</b>						<b>\$54,910.00</b>

Does not include applicable taxes and freight charges.



**LINE ITEM H8**

**Omni Corporation**

**Assembly Manual**

**Part #MV-9117**

**Richard Wolf Part # 31113.701**

**Description:**

For definition in this manual the part numbers MV-9117 and 31113.701 will be referred to as the Glider cart.

This instruction manual provides specifications, assembly instructions, and a parts list for the Glider cart.

The Glider cart is shipped fully assembled.

**Specifications:**

Overall Size: 28.25" wide x 29.5" deep x 55" tall

Weight: 175 lbs.

Material: 5052 Aluminum in .063, .080, .125, .75 Thickness  
6063/T6 Alum Extrusions 48.063"

Plastic Materials: Arm Caps – 7 pieces Red  
Corners – 6 pieces Red

Locking Drawer, 12.75" wide x 12.75" deep x 2.25" tall

Back Doors (2) , 15.5" clear opening, x 38" tall, removable for service; doors have dual pulls and magnetic strikes.

Adjustable shelves - 2 pieces, 15.5" wide x 15.5" deep, 4 knobs per shelf for mounting

Custom Articulating arm version C style – 36" extension, interior cable routing

- Locking brake with chrome knob
- Dual integrated monitor storage locks with chrome plated levers

Casters - 5" diameter, 2 with total lock brake, 2 standard swivel, Medical Grade

Dual gas bins, 5" aluminum with .25 wall x 12" tall, welded, painted, and base mount

Patch panel with BNC, VGA, and 2 - DVI-I connectors

Monitor transformer storage box

Powder coat: Frame is Gray, part # PPC1635A, Handles are Red, part #PT8400006, and parts are Gray-white, parts #PRHS1194C

Electrical: Integrated into Custom panel

Four Hospital Grade duplex receptacles

Isolation Transformer – Torrid type, Class B, Evaluated to 60601.1

Master on/off

Dual Fuse protection, double-pole, manual reset

Green Power indicator light  
UL/CSA approved to 60601-1, CSA C22.2 no. 601-1, Master File # E314882.

This manual is sectioned according to the assembly sequence. Each sequence includes parts and components that have been processed from earlier operations. The intent of this manual is to reference and control the assembly sequence that provides for consistent and correct manufacture of the Glider cart.

## Contents:

### Welding Assembly:

1. Sub frame top welding
2. Main frame welding
3. Articulating arm welding
4. Monitor bracket welding

### Paint Processing of frame and parts

### Cart Assembly

1. Frame sequence
  - a. Power panel sub assembly
  - b. Drawer sub assembly
  - c. Back door sub assembly
  - d. Articulating arm sub assembly

## Batch Master File

## Bill of Material

Cart Model Number 31113.701 Glider  
cart

<u>Part Name</u>	<u>CNC File Name</u>	<u>Material Used</u>
	9950	
	weldment	
Weld top - lower	production	.125 Al
Base	.75 Alum. Machined	.750 Al
Weld Top-upper	9950 top production	.125 Al
Back Door	9950 French back doors rev.60	.063 Al
Top cap spacers	9950 spacers rev.20	.063 Al



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McMurray, PA 15317  
Phone: 412-980-8958  
Fax: 724-941-9346  
Email: jjw@wehnever.com

Price  
Quote

**WelchHDVideoQuote3-4-**

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P.O. #: \_\_\_\_\_

Contact: DEBBIE ALTIZER  
Phone: 304-436-8830  
Fax: 304-436-6380  
Email: deborah.l.altizer@wv.gov

WELCH, WV 24801

Terms: Net 30 - FOB Vernon Hills, IL  
Date Quoted: 3/4/2013  
Date Expires: 4/30/2013

Qty	Item	Description	Price	Net	% off List	Extended Net
1	5550.654	CAMERA CCU, HD KIT TO INCLUDE: CAMERA CCU 5550.751, CAMERA HEAD 85550.975,	\$43,260.00	\$10,000.00	76.88 %	\$10,000.00
1	85550.975	CAMERA HEAD, 3CCD HD, AUTOCLAVABLE, INTEGRATED COUPLER,5 FUNCTION ROCK ERSWITCH	\$29,870.00	\$7,000.00	76.57 %	\$7,000.00
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spirit of excellence

Paul Lundstrom  
Technical support Specialist  
Phone: 847-913-1113 ext. 252  
Fax: 847-913-1488

Email: PLundstrom@richardwolfusa.com

March 12, 2013

Ms. Roberta Wagner,

31113.601 specs are as follows:

#### 2.4 Technical Data

Supply voltage	Nominal Voltage	115/230 V /AC $\pm 15\%$
Power consumption	Approx.	3 Watt
Response factors (Preset from the manufacturer):	Response value	53 k $\Omega$ $\pm 2,5$ k $\Omega$
	Caution ! The preset value changes with the input voltage and is dependent from the wave characteristic.	
	The preset value can deviate up to $\pm 5\%$ .	
	Response time	> 0,5 s
Measuring circuit:	Test resistance	33 k $\Omega$
	Internal resistance	
	AC	ca. 220 k $\Omega$
	DC	ca. 320 k $\Omega$
	Test voltage	12V $\pm 0,3$ V
	Max. testing current	<0,5 mA
	Max. external DC	250 V
Instrument reading:	LED green	Operating
	LED yellow	Insulation error
	LED yellow	Thermal fault
	Piezo-buzzer	(2,4 kHz)
Performed Tests	Standard norms	EN 55011: 1997+A1+A2
	Electrostatic Discharge	EN 61000-4-2: 2001
	Electromagnetic RF-Fields	EN 61000-4-3: 2001
	Fast Transients	EN 61000-4-4: 2001
	Surge	EN 61000-4-5: 2001
	RF conducted disturbance	EN 61000-4-6: 2001
	Voltage dips and interrupts	EN 61000-4-11: 2001





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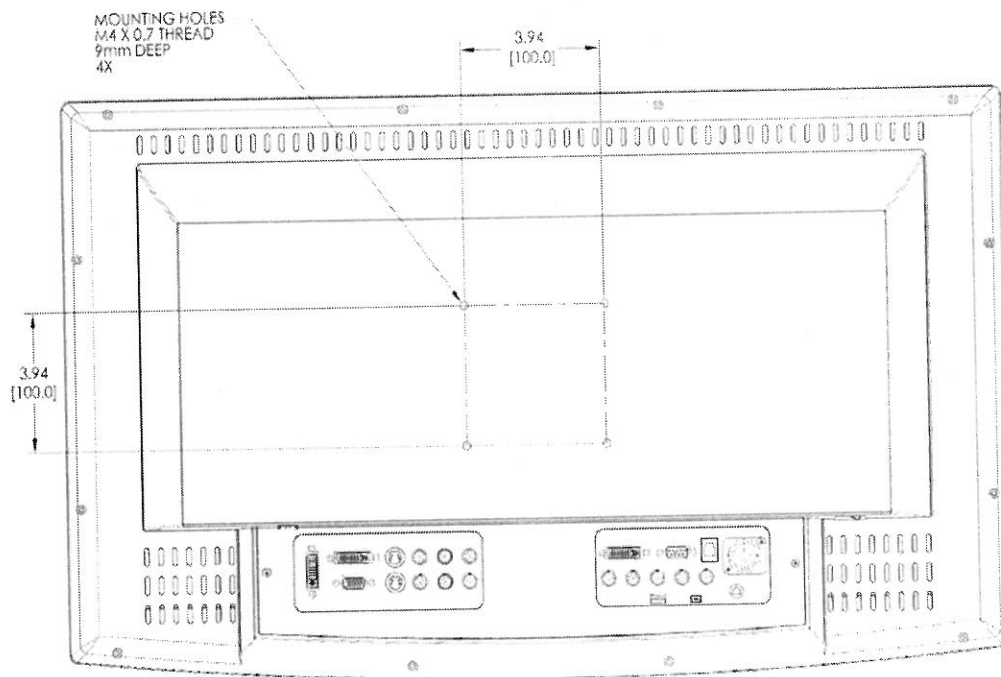
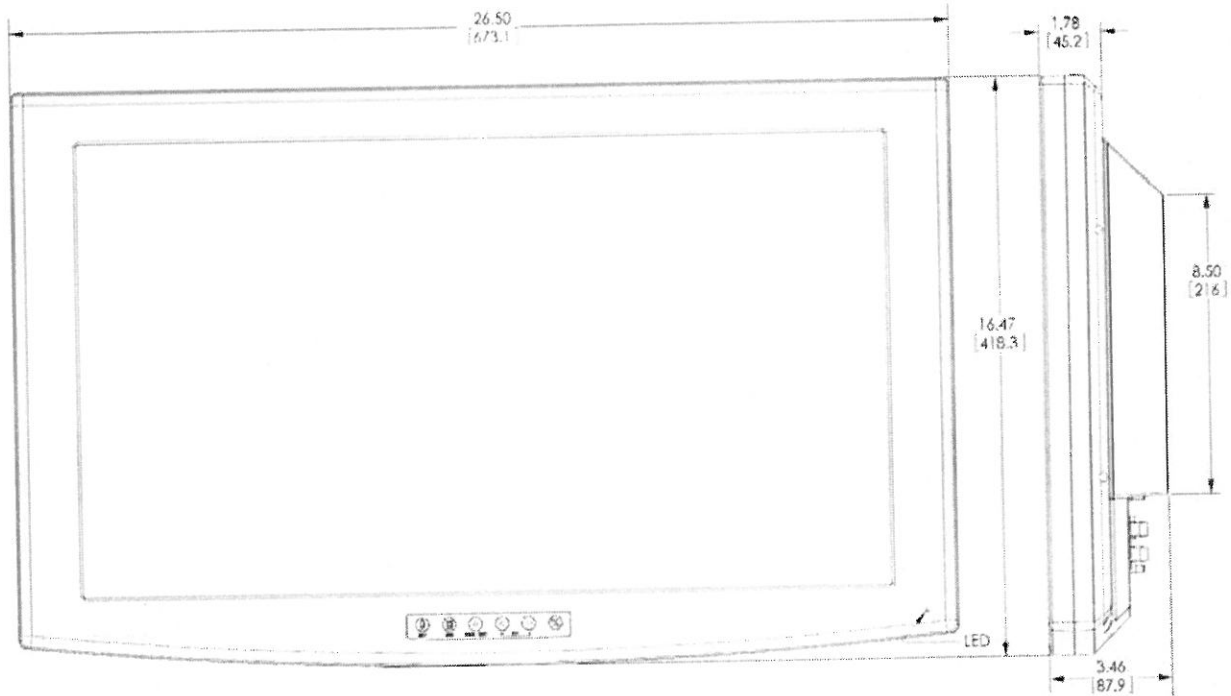
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Drawi- g a- d Dime- sio- s

PRODUCT # 5371.6266  
LINE # 10



8

## GPIO Co- - ector a- d Pi- Out

Ge- eral Purpose I- put a- d Output (GPIO)

Swap:


Closi- g the Swap Pi- to GND swaps the positio- a- d size of the Primary a- d Seco- dary images. See page 6 for details.

PIP Size:

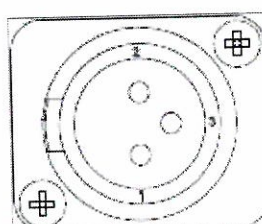
The size of Seco- dary image i- creases each time the PIP Size is co- - ected to GND. See page 6 for details.

Record I- dicator:

The Record I- dicator is displayed while a co- tact closure to the GND is prese- t, the i- dicator is removed whe- the co- tact is ope- ed. The Record I- dicator is displayed i- the mo- itor's top left cor- er.

			<b>GPIO</b> <b>Mati- g co- - ector:</b> <b>RJH 4 pi-</b> <b>Telepho- e Ha- dset</b> <b>Co- - ector</b>		
Pi-	Name	Descriptio-			
1	Swap	Swap P & S i- puts			
2	P.S.	PIP Size.			
3	R.I.	Record I- dicator.			
4	GND	Commo- Grou- d			

## Power Co- - ectors a- d Pi- Outs

					HB 24 volt connector			
Pi-	1	2	3					
	GND	GND	+ 24 VDC					



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## Specifications

Wireless Signal Type	Ultra Wideband (UWB)
Frequency Band	3.1 to 4.8 GHz
RF Power Out (maximum)	-41.25 dBm / MHz
Tx to Rx Range (Line of sight - not required)	Up to 30 ft (9.14m) <sup>1</sup>
Data Rate	53.3 to 480 Mbps
System Latency	< 1 frame
Compression Technology	H.264 Super Low Latency Technology™ 2
Hardware Encryption	128 bit AES
Video Inputs (Transmitter)	DVI, 3G SDI, HD-SDI and SDI
Video Outputs (Receiver)	DVI
Power Consumption	14 Watts (Max)
DC Power Supply	100-240VAC 50/60Hz input 24V @ .75A DC (18 watts) output
Physical Dimensions	7.04" x 7.40" x 1.43" (178.9mm x 187.9mm x 36.4mm)
ZeroWire Weight (Tx or Rx) excluding base	1.4 lbs (0.64 Kg)
Mounting Base Weight	0.8 lbs (0.36 Kg)
Operating Temperature	32° to 104° F (0° to 40° C)
Operating Humidity	10% to 80% RH, non-condensing
Storage Temperature	32° to 122° F (0° to 50° C)
Storage Humidity	< 70% RH (non-condensing)

1. The effective range may vary depending upon the environment in which the product is operating. Follow the product's Setup section to achieve optimum performance and range.
2. Super Low Latency Technology is a trademark of Cavium Networks, Inc.

## Supported Video Modes

Name	Horiz Active	Horiz Total	Vert Active	Vert Total
1080p/60	1920	2200	1080	1125
1080p/50	1920	2640	1080	1125
1080p/30	1920	2200	1080	1125
1080p/25	1920	2640	1080	1125
1080i/60	1920	2200	1080	562
1080i/50	1920	2640	1080	562
1280x1024/60	1280	1688	1024	1066
1280x960/60	1280	1576	960	1000
1024x768/60	1024	1344	768	806
720p/60	1280	1650	720	750
720p/50	1280	1980	720	750
480p/60	720	870	480	525
576p/50	720	864	576	625
VGA(SMT0660)	640	800	480	525
SVGA(DMT0860)	800	1056	600	628
XGA(DMT1060)	1024	1344	768	806
SXGA(DMT1260G)	1280	1688	1024	1066
NTSC	720	858	480	262
PAL	720	864	576	312
Custom Mode	1440	1904	900	932
Custom Mode	1024	1124	1024	1068
Custom Mode	1024	1152	1024	1250

## Cleaning Instructions



We recommend turning the device off prior to cleaning.

Follow your organization's protocol for the handling of blood and body fluids. Clean the device with a diluted mixture of mild detergent and water. Use a soft towel or swab. Use of certain cleaning agents may cause degradation to the plastic enclosure and labels of the product. The plastic is ABS. Consult the device manufacturer to see if agent used for cleaning is compatible with ABS. Do not allow liquid to enter the device.

## Optional Accessories

Part Number	Description	See Page
20C0660	VESA Mount Bracket for 24" a- d 26" Radiance Displays	3
20C0683	VESA Mount Bracket for 19" a- d 23" Radiance Displays a- d 24" E- doVue Display	3
20C0684	Top Mount Bracket for Radiance 32" a- d 37" Radiance Displays	4
20C0668	Top Mount Bracket for Radiance 42", 52" a- d 55" Radiance Displays	4
26B0099	Spare Table Stands	5
30B0038	Spare Power Supply	6
35X0096	'Y' Adapter Cable for 19", 24" a- d 26" Radiance Displays a- d 24" E- doVue Display	6
35X0097	'Y' Adapter Cable for 32" Radiance Display	6
35D0073	6ft DVI Cable	
35D0081	6ft 3G-SDI Cable	
35D0091	Spare 3ft DVI Cable	
35D0092	Spare 2ft DVI Cable	
35D0093	Spare 3ft SDI Cable	
60A0374	Printed ZeroWire Users Manual	
Contact NDS Sales for price a- d availability. Contact information is on the back cover.		

## Optional Accessory Kits

Part Number	Description a- d Contents	
<b>90Z0118</b>	Packaged ZeroWire Accessory Kit for 24" a- d 26" NDS displays	Qty
	20C0660 VESA Mounting Brackets	2
	35X0096 'Y' Adapter Cable	2
	3ft (0.91m) DVI Cable	2
	3ft (0.91m) SDI Cable	1
<b>90Z0119</b>	Packaged ZeroWire Accessory Kit for 32" a- d 37" NDS displays	Qty
	20C0684 Top Mount Bracket for Radiance 32" a- d 37" Radiance Displays	2
	35X0097 'Y' Adapter Cable	2
	3ft (0.91m) DVI Cable	2
	3ft (0.91m) SDI Cable	1
<b>90Z0120</b>	Packaged ZeroWire Accessory Kit for 42", 52" a- d 55" NDS displays	Qty
	20C0668 Top Mount Bracket for Radiance 42", 52" a- d 55" Radiance Displays	2
	3ft (0.91m) DVI Cable	2
	3ft (0.91m) SDI Cable	1
<b>90Z0121</b>	Packaged ZeroWire Accessory Kit for 19" a- d 23" Radiance a- d 24" E- doVue displays	Qty
	20C0683 VESA Mounting Brackets	2
	35X0096 'Y' Adapter Cable	2
	3ft (0.91m) DVI Cable	2
	3ft (0.91m) SDI Cable	1

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