

# Technical Specification :

## 2) 3D Operating Laparoscope system with 2D ICG Facility

SL. No	Specification
1	<p><b>3D &amp; 2D Video Camera Processor</b></p> <ul style="list-style-type: none"> <li>• Should be modular in design. The Camera processor should be capable of processing 3D &amp; 2D Image.</li> <li>• System should have facility to offer various visualization modes for surgery and diagnosis by shifting the color spectrum like <b>BLUE &amp; GREEN</b> light for recognition of the finest tissue structures and their differentiation in both 2D &amp; 3D procedures.</li> <li>• Should have DVI-D output for transmitting the 3D signal in 1080p format at 50/60 Hz to a 3D monitor.</li> <li>• Should have HD-SDI for simultaneous signal transmission to standard 2D monitors.</li> <li>• Easy switching of 3D to 2D by press of a button.</li> <li>• Integrated USB interface for saving captured FULL HD Video or still images in 2D.</li> <li>• Should have inputKeyboard for character generator for keying patient details &amp; control from non-sterile zone.</li> <li>• System should have facility of controlling additional equipment's through camera head buttons from sterile zone like light source, insufflators and recording device etc.</li> <li>• Parallel live display of visualization modes besides white light mode (picture-in-picture).</li> <li>• Should meets IEC 601-1, 601-2-18, CSA 22.2 no.601, UL 2601-1 and CE according to MDD, protection class I/CF defibrillation-safe</li> </ul>
2.	<p><b>3D Video Endoscopes Telescopes</b></p> <ul style="list-style-type: none"> <li>• Integrated Video Endoscope, 10 mm, 30° direction of view</li> <li>• Two distal Full HD 2 x (1920 x 1080p) image sensors with depth of focus 20mm to 200 mm, optimized for stereoscopic endoscopy</li> <li>• Slender and light design – weight should not be more than 450 gm for optimal ergonomics, integrated in a fine titanium case.</li> <li>• Sterilization options: Autoclavable, Gas &amp; Plasma Sterilization.</li> </ul>
3	<p><b>Three Chip 2D FULL High definition Camera Head for ICG Fluorescence guided imaging by Near Infra Red (NIR) light.</b></p> <p>The system should be truly Digital HDTV endoscopic video camera. The system should have the maximum Resolution of 1920 X 1080 pixels, progressive scan and the consistent use of 16: 9 formats for Input &amp; Output to guarantee genuine HDTV.</p> <ul style="list-style-type: none"> <li>• Camera head should be compatible for ICG HD fluorescence guided Imaging by Near Infra-Red for Intraoperative perfusion assessment of tissues and organs.</li> <li>• ICG HD system should be easy to handle and can be used for both White light &amp; Near Infra Red (NIR) light.</li> <li>• The system should have facility of Optical &amp; Digital Zoom lens to enhance the quality of Image size &amp; cross specialty usage of the camera system, regardless of the telescope used.</li> <li>• The Individual components (Light source, camera system, telescopes and fibre optic cable) are perfectly aligned to ICG HD system.</li> </ul> <p><b>Technical Specifications:</b></p>

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	<p><b>Image sensor</b> : 3X1/3" CCD-Chip.  <b>Pixels</b> : 1920 x 1080  <b>Lens</b> : <b>Integrated Zoom Lens</b> f = 15-31 mm (2x optical zoom)  <b>Video output</b> : 2 x DVI-D output, 1 x 3G-SDI output, 3 x camera input for communication with compatible camera modules, LAN connection, 4 x USB connection (2 x front, 2 x back).  <b>Certified to</b> : IEC 601-1, 601-2-18, CSA 22.2 No. 601, UL 2601 and CE according to MDD, protection class I/CF</p>	8
4	<p><b>High Definition Medical Grade Monitor capable of displaying 3D &amp; 2D Image.</b></p> <ul style="list-style-type: none"> <li>• LCD Panel 32 inch ( 16:9 aspect ratio)</li> <li>• High Definition 1920*1080 pixel resolution</li> <li>• Should supply clip on type glasses also for selectable wearing surgeons.</li> <li>• Should supply clip on type glasses also for selectable wearing surgeons.</li> <li>• Various signal inputs: DVI-D for 3D signal DVI-D for 2d signal in HD, HD-SDI for 2D signal in HD, S-Video for 2D signal in standard resolution</li> <li>• Should be supplied with 20 pieces of Light, passive circularly polarized 3D glasses.</li> <li>• Viewing angle- Horizontal: 178 degrees, Vertical: 178 degrees (3D: TBD)</li> <li>• Contrast Contrast 1000:1</li> </ul>	
5	<p><b>Xenon Light Source with ICG HD fluorescence mode.</b></p> <ul style="list-style-type: none"> <li>• Lamp type:- Xenon 15V, 300 Watt</li> <li>• Color Temperatures 6000K</li> <li>• Light Outlets – 1</li> <li>• Light Intensity Adjustment: - Continuously adjustable, either via a membrane keyboard.</li> <li>• Facility of switching between white light and Near Infra Red light (NIR) for ICG HD use by footswitch.</li> <li>• Certified To :- IEC 601-1 &amp; UL 544 CE According to MDD , protection class I/CF</li> </ul>	
6	<p><b>Fiber optic/ fluid cable – 2 Nos</b></p> <ul style="list-style-type: none"> <li>• High light transmission for optimal ICG HD fluorescence Imaging.</li> <li>• Extremely heat resistance.</li> <li>• Should be supplied with Diameter 4.8mm, Length 300 cm.</li> </ul>	
7	<p><b>LED Light Source</b></p> <p>Suitable LED light source for 3D camera.</p>	
8	<p><b>ICG Rigid Laparoscope Telescope 30 degree</b></p> <p>Straight forward telescope 30 degree, enlarged view, 10mm, length 31cm, autoclavable, compatible with ICG Fluorescence guided imaging by Near Infra Red (NIR) light and white light, fiber optic light transmission incorporated.</p>	<p><i>Surf.</i></p> <p><i>[Signature]</i></p>
9	<p><b>CO2 Electronic Insufflator 50.0L/M</b></p>	<p><i>[Signature]</i></p>

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- Heatable insufflation tube for heating the CO2 gas up to patient body temperature. 3
- High flow mode with flow performance up to 50 l/min.
- Easy and intuitive use with user friendly colour touch screen for easy and precise setting of set values for pressure and flow and of insufflation mode, as well as for clear display of corresponding set values and actual values.
- Optical and acoustic alarm signals in the event of patient overpressure.
- Safety system: Constant monitoring of intraabdominal pressure; any overpressure is reduced immediately.
- Applicable for use in Laparoscopy, in Thoracoscopy, in Proctology (for Transanal Endoscopic Operations) and for endoscopy of the upper and lower gastrointestinal tract, as well as in Cardiac Surgery (open or endoscopically assisted cardiac surgery to assure an optimal air extrusion and minimizing risk of air microemboli and for decreasing rate of contamination and minimizing risk of postoperative wound infection – for minimally invasive cardiac surgery, e. g. mitral valve surgery) and in Vascular Surgery (endoscopic vessel harvesting).

**Technical Specifications:**

- Gas flow: 0-50 l/min.
  - Pressure: 0-30 mmHg (4000Pa).
  - High flow mode (0 to 50 l/min.)
  - Sensitive mode pressure 15 mmhg & flow 15 l/min for sensitive application
  - Electronic control and colour touch screen.
- Following data are displayed on touch screen: - Insufflation mode.
- Set value pressure (0-30 mmHg).
  - Current patient pressure.
  - Set value gas flow (0-50 l/min).
  - Current gas flow.
  - Gas consumption (0-999 l).
  - Status of gas heating.
    - Power supply: 100-240 VAC, 50/60 Hz.
    - Certified to: IEC 60601-1, CE label acc. to MDD, medical product Class IIb.
    - Type of protection against electrical shocks: Protection Class 1.
    - Degree of protection against electric shocks: Applied part type CF.
    - It should be supplied with smoke evacuator.

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**IMAGE/VIDEO RECORDING 3D & 2D AND DATA ARCHIVING SYSTEM**

State of the art user friendly Medical grade system (certified to be used in OT) should be offered with following features,

- User should have full control of the system from the sterile field via camera head buttons, optional touch screen, optional foot switch.
- Parallel (synchronic or independent) recording of two image sources.
- Still images and videos (optional with audio) in 2D FULL HD or 3D (with optional 3D-camera system). Water mark feature.
- Intelligent, adaptive storage management.
- Storage location is freely definable and configurable.
- Storage on internal memory (2 TB, FIFO), USB storage media via 2.0 and 3.0, optical media (DVD writer, Blu-ray reader), network drive, FTP or via DICOM.

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- Automatic storage in the background to reduce the time between the interventions. Easy management and overview of open/automatic save processes.
- Import of patient data via keyboard or DICOM work list.
- Intra- and postoperative printing via optional printer (local or network).
- Various adaptable templates for printing to choose from.
- Integrated surgical checklist following the WHO standard or customizable. Basic functions for the editing of still images and videos.
- Playback of 2D and 3D content on separate monitor (optional 3D-system required).
- Integrated file-viewer for still images, videos and checklists from diverse data sources.
- Integrated security software as a protection against malware, independent from security patches of the operating system and it is only possible to run certified software.
- Structured and clear user guidance, optimized for touch screen control.
- Scalable range of functions.
- Low noise generation and fast system start due to SSD-technology.
- Should have seamless USB silicone keyboard with touch pad to enter details
- Controllable via 12" inbuilt touch screen
- Input Voltage: 100-240 VAC.
- Input Frequency: 50 - 60 Hz.
- Power output: 350 Watt.
- CPU: Intel® Core™ i7-2600 @ 3.4GHz.
- Internal memory: SSD (70GB) | HDD (2 TB).
- Memory RAM: 8GB.
- Connectors: 3 x 1 GB Ethernet (RJ 45), 6x USB 2.0, 2x USB 3.0.
- Image format: BMP, JPG, JPG2000.
- Video format: MPEG-4, MPEG-2, MOV.
- Video signal inputs: 2 x DVI-D.
- Color system: PAL, NTSC.
- Resolution still images: up to 1920x1080, Aspect ratio 16:9.
- Resolution videos: up to 1920x1080 Progressive Scan for 25/30 frames.
- Preinstalled printer: SONY UP-DR80MD.
- Type approval: IEC 60601-1-1, EN60601-1, EN60601-2.

The DICOM 3 interface shall be installed to the system in order to allow the surgeon to view all the DICOM 3 images stored in the PACS system on a digital light box within the operating rooms. Furthermore, all intra operative images recorded can be sent via the DICOM 3 interface to the PACS system for further processing.

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**Imported Endoscopic Trolley**

Equipment Cart , rides on 4antistatic dual wheels equipped withlocking brakes, central beam withintegrated electrical sub-distributorswith 6 sockets, grounding plugs, modular in nature (should be able to add shelves and components later if required)

Should have central monitor holder to mount monitor with height adjustable, swiveling and tilting, swivel range approx. 360°, loading capacity max. 18 kg, with monitor mount VESA 75/100

Cart should have following minimum dimensions in mm (w x h x d):

Equipment cart: 830 x 1474 x 730,

Caster diameter should be 125 mm

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	<p>It should consisting of: Base Module, equipment cart 1 x Top Cover, Beam Package, equipment cart 1 x Shelf, size - 630 x 25 x 510, 1 x Drawer Unit with Lock, 1 X Base Plate 1 x Cameraholder</p> <p><b>Cart should be competible to accomodate followings when required,</b></p> <ul style="list-style-type: none"><li>- Atleast 4 more shelves</li><li>- Isolation transformer</li><li>- Counter balance plate</li><li>- CO2 cylinder holder</li><li>- Monitor holding arms (lateral)</li></ul>
12	<b>UPS online 2.5KVA with 30 minutes back up.</b>

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