

**EQUIPMENT: 4K ULTRA HIGH DEFINITION LAPROSCOPY IMAGING SYSTEM
TECHNICAL SPECIFICATION**

All items should be Medical Grade. It should provide 4 times more information than Conventional Full HD imaging system. The complete optical chain should be 4K for optimized imaging.

Product Description	Required Quantity
4K video image processor.	1
Powerful LED light source.	1
4K camera head.	1
4K – UHD medical grade monitor.	1
Ultra Telescopes.	Please refer the spec.
High Flow 45 liters insufflator	1
Image management system.	1
Suction and Irrigation System.	1
Equipment cart and Monitor Holder	1

1, 4K High-Definition Video Image processor

- The 4K high-definition processor should have a native resolution of 3840 x 2160 pixels system.
- Video processor & Monitor having BT 2020 video format to display true 4K color format.
- It should have touch panel operation for easy control.
- System should provide color gamut of ITU-BT2020
- Shall have AE (Automatic Exposure) – Iris function.
- The System settings should be held in memory even after the video system processor is switched OFF.
- Should have compatibility for selecting 3G-SDI or HD-SDI signal output (transmission method).
- Power Supply 220-240V,50/60 Hz
- Type of protection against electric shock -Class I
- Degree of protection against electric shock of applied part - TYPE BF applied part.

2, Powerful LED light source with Light Guide Cable.

- Should be compatible with the 4K system.
- Should have an LED light source equivalent to 300w xenon light.
- Shall have standby mode.
- Should supply with Fiber optic light cable with straight connector size 4.8mm or above, length 300cm or above.
- Should supply universal adaptor for scope and light source side.
- The light cable must be Heat and Chemical Resistant.
- Should have a light intensity indicator.
- Should have adjustable brightness control.
- LED life span should be 25,000 hours or more.



- Power Supply 220-240V,50/60 Hz

3, 4K camera head

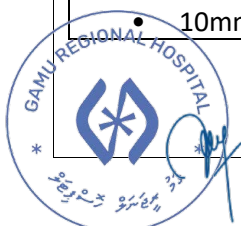
- Camera head should incorporate optical Fiber transmission providing 4K resolution through thin cable.
- The system should have CMOS 3-chip camera technology to reduce artifacts and optimize resolution.
- Should have focal length $f=18\text{mm}$ or more.
- Should be immersible in disinfectant solution and autoclavable.
- Design: Ergonomic, lightweight camera head.
- Should supply C-mount coupler if necessary.

4, 4K – UHD medical grade monitor.

- 4K medical grade 31 inch or more UHD LCD/LED backlit monitor with ultra-high-definition resolution 3840x2160.
- Aspect Ratio 16:9
- Should have various input/output terminals, including 3G/HD/SD/ SDI, DVI-D, HDMI
- Monitor should have Opti-contrast panel providing higher contrast image and less color blurring.
- Power Supply 220-240V,50/60 Hz

5, Ultra Telescopes.

- 4K ultra telescopes shall have ED glass lenses for distortion free and razor-sharp images, with wide field of view and must be fully autoclavable.
 - Straight forward telescope 0°
(Enlarged view/ Diameter 10mm/ length 290mm and above /Fiber optic light transmission incorporated)
 - Forward-oblique Telescope 30°
(Enlarged view/ Diameter 10mm/ length 290mm and above /Fiber optic light transmission incorporated)
 - Should have homogenous light distribution.
- Quantity Required
- 10mm Ultra telescope 0 degree-1 Nos
 - 10mm Ultra telescope 30 degree-1 Nos



6, High Flow CO2 Gas Insufflator with Automatic smoke evacuation system with existing energy system

- Should be digital, microprocessor controlled & automatic type.
- Large digital display on front panel for status checking.
- Powerful Insufflation flow rate of 45 L/min required.
- Automatic feedback control for any malfunction.
- Should have automatic smoke evacuation facility with existing energy source in the OT.
- It should have a CO2 gas cylinder switching valve to allow freely switch between two gas cylinders without the hassle of replacing (optional).
- It should be supplied with the following, Insufflator tubing system, Suitable gas connector (High Pressure hose) Filter.
- Should work with input 220-240V AC,50/60Hz supply.

7, Image and Video recording and data archiving management system

- Digital storage of still images, video sequences and audio files.
- Should be a 4K UHD medical grade video and still images recorder.
- Should have full featured graphical user interface.
- Recording media: Internal HDD (1 TB), External USB and DVD-R
- Should have customized windows-based operating system.
- Should have simultaneous recording and playback feature.
- Should have facility of patient’s data.
- USB support for storage on USB devices.
- Input / recording resolution: 4K UHD: 3840x2160p,50/60 Hz
HD: 1080p ,1080i, 720p
- Still file format: JPEG, PNG
- Compatibility with HIS/DICOM/PACS.
- Users should have full control of the system from the sterile field via camera head buttons, optical touch screen, optical foot switch.
- Connectors.
Input/output: DVI, S Video, 3G HD –SDI, composite & audio
Other interfaces: USB 2.0, USB 3.0 RJ-12, network RJ-45 and Remote control
- All necessary cables should be supplied.
- should have the following additional features.
foot pedal control
RS-232 communications
- The following accessories should be supplied.
Cordless mouse and cordless silicone keypad -01 in no.
Foot pedal control -01 in no.
Remote control-01 in no.



8, Suction and Irrigation System

- Compact suction and irrigation unit having irrigation pressure not less than 400mmHg & Suction pressure not less than (-0.75mmHg).
- The unit should be supplied with a 1.5L bottle with bottle cap and stand.
- The unit should be supplied with reusable irrigation and suction silicon tubing (2x each)
- All other required accessories must be quoted for the functioning of the system.

9, Equipment Cart and Monitor Holder

- The design must be ergonomic and should supply 4 antistatic dual wheels with a breaking mechanism.
- The cart must have a monitor mount that should support monitors of 31 inches or above.
- The mount shall be height adjustable, swiveling and tilting.
- The cart shall have the followings,
 - a) Main switch.
 - b) Drawer unit
 - c) Foot switch holder.
 - d) CO2 cylinder holder
 - e) Energy beam with an integrated electrical sub distributor's with at least 10 power sockets.

SAFETY, STANDARD AND TRAINING

- All applicable systems should be under class-1 and type BF.
- Manufacturers should have ISO certification for quality standard.
- Comprehensive training for operators and service training for In-house biomedical engineers is mandatory.
- On-site comprehensive warranty for 2 years.
- The availability of spare parts and all other accessories must be for 10 years.

DOCUMENTATION

- User/Technical/maintenance manual to be supplied in English.
- Certificate of calibration and inspection should be submitted.



ADDITIONAL CONDITIONS

- Any other essential hardware/software/items required to make all the above things functional should be quoted, otherwise it will be treated that same will be supplied free of cost.
- All products shall be same manufacturer & should be US FDA or European CE approved (with four digit notified body number)
- An original catalogue with detailed literature should be provided.
- A manufacturer or authorized supplier should install and successfully demonstrate the unit.
- An authorization letter should be submitted.



Instrument and accessories For Laparoscopy system	
Technical Specification	
Item Description	Qty
Trocar & Cannula: Cannula size: 11 mm diameter; should have multifunctional valve and automatic valve to prevent damage of sharp instruments. It should have stopcock for CO2 insufflation. Trocar should have pyramidal tip with pin holes near the tip for safety outlet of CO2 gas. The working length of the canula should be 100-110 mm.	5
Trocar & Cannula: Cannula size: 5mm diameter; should have multifunctional valve and automatic valve to prevent damage of sharp instruments and 18quipme tip lens while passing through the cannula valve. It should have stopcock for CO2 insufflation. Trocar should have pyramidal tip with pin holes near the tip for safety outlet of CO2 gas. The working length of the canula should be 100-110 mm.	10
Veress Needle: Veress needle of working length 13 cm with Luer lock.	1
Reduction Sleeve: 11/5mm	1
Grasping forceps- Rotating, dismantling, double action jaws, with disengageable ratchet, with connector pin for unipolar coagulation, size 5mm, length 36cm	1
Dissecting and Grasping forceps: Rotating, dismantling, double action jaws, without ratchet, with connector pin for unipolar coagulation, size 5mm, length 36cm	1
Dissecting and Grasping forceps: Rotating, dismantling, double action jaws, with haemostat style ratchet, with connector pin for unipolar coagulation, size 5mm, length 36cm	2
Grasping forceps- Rotating, dismantling, single action jaw, atraumatic, fenestrated, without ratchet, with connector pin for unipolar coagulation, size 5mm, length 36cm	2
Hook scissors: rotating, dismantling, single action jaws, without ratchet, with connector pin for unipolar coagulation, size 5mm, length 36cm	1
Scissors Insert: for hook scissor size 5mm, length 36cm	1
METZENBAUM Scissor: rotating, dismantling, double action jaws, curved, without ratchet with connector pin for unipolar coagulation, size 5mm, length 36cm	1
Coagulation and dissecting electrode: Insulated sheath, L-shaped, distal tapered, with cm-marking, with connector pin for unipolar coagulation size 5mm, Length 43cm	1
Unipolar High frequency Cord: size 5mm, length 300cm	2

Kelly Dissecting and Grasping forceps: CLEARMONT-FERRAND model, rotating, dismantling with connector pin for bipolar coagulation, double action jaws, suitable for dissection, size 5mm, length 36cm.	2
Grasping forceps: CLEARMONT-FERRAND model, rotating, dismantling with connector pin for bipolar coagulation, with fine atraumatic serration, fenestrated jaws, double action jaws, size 5mm, Length 36cm	2
METZENBAUM Scissor: CLEARMONT-FERRAND model, rotating, dismantling with connector pin for bipolar coagulation, double action jaws, slender scissor blades, for cutting and bipolar coagulation, size 5mm, Length 36cm	2
METZENBAUM Scissor insert: CLEARMONT-FERRAND model, double action jaws, curved jaws, slender scissor blades, size 5mm, Length 36cm	1
Bipolar High frequency Cord: Length 300cm	1
Macro Needle Holder: with tungsten carbide insert, pistol handle with disengageable ratchet, Jaw curved to left, Size 5mm, length 33cm	2
Macro Needle Holder: with tungsten carbide insert, pistol handle with disengageable ratchet, Jaw curved to right, Size 5mm, length 33cm	1
Dismantling Fan Retractor: size 5mm length 36cm	1
Suction and irrigation Tube, with lateral holes, anti-reflex surface, with two-way stopcock for single-hand control, size 5mm, length 36 cm	2
Injection Needle with LUER lock, diameter 1.5 mm, size 5 mm, length 36cm	1
Fascial Closure Instrument, for subcutaneous ligation of trocar incisions, size 3mm, length 17 cm	1
Laparoscopic Clip Applicator, dismantling, rotating, size 10 mm, length 36 cm, with ratchet to lock the jaw holding the clip	2
Laparoscopic clips (Medium-large)	1
Wire Tray for Cleaning, Sterilization and Storage: Should accommodate two rigid endoscopes /one light cable, including holder for light post adaptors, silicone telescope holders and lid, for rigid endoscopes up to diameter 10 mm and working length 32cm Approximate external dimensions (w x d x h): 487 x 125 x 54 mm	1
Instrument Rack for Cleaning, Sterilization and storage: Should accommodate at-least 14 instruments with diameter 2.5 to 10mm, include variable bars with holder, rack with tray. Approximate external dimensions (w x d x h): 480 x 250 x 125 mm	1

