List of equipments for the department of Ophthalmology (EYE)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of Equipments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pentacam</td>
</tr>
<tr>
<td>2</td>
<td>IOL Master 50C</td>
</tr>
<tr>
<td>3</td>
<td>Flash Autoclave with accessories</td>
</tr>
<tr>
<td>4</td>
<td>Auto refract kerotometer</td>
</tr>
<tr>
<td>5</td>
<td>Slit lamp with Applanation tonometer</td>
</tr>
<tr>
<td>6</td>
<td>A-Scan with immersion option</td>
</tr>
<tr>
<td>7</td>
<td>Pachymeter</td>
</tr>
<tr>
<td>8</td>
<td>Indirect Ophtalmoscope</td>
</tr>
<tr>
<td>9</td>
<td>Cataract surgery set</td>
</tr>
<tr>
<td>10</td>
<td>Glucoma surgery set</td>
</tr>
<tr>
<td>11</td>
<td>D.C.R. surgery set</td>
</tr>
<tr>
<td>12</td>
<td>Ophthalmology trial box complete set</td>
</tr>
<tr>
<td>13</td>
<td>END Laser DCR complete set</td>
</tr>
</tbody>
</table>

A CORNEA AND EYE BANK

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of Equipments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pachymeter</td>
</tr>
<tr>
<td>2</td>
<td>Specular Microscope Living</td>
</tr>
<tr>
<td>3</td>
<td>Orb-Scan (obscan)</td>
</tr>
<tr>
<td>4</td>
<td>Living pentacam</td>
</tr>
<tr>
<td>5</td>
<td>Anterior segment Oct</td>
</tr>
<tr>
<td>6</td>
<td>Optical Biometer</td>
</tr>
<tr>
<td>7</td>
<td>Laminar Flow</td>
</tr>
<tr>
<td>8</td>
<td>Autoclave Flash</td>
</tr>
</tbody>
</table>

B GLACUMA

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of Equipments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gonioscope (3/4 Mirror)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>2</td>
<td>Non Contact Tonometer</td>
</tr>
<tr>
<td>3</td>
<td>Applanaton Tono Meter with slit lamp</td>
</tr>
<tr>
<td>4</td>
<td>Perkins Tonometer</td>
</tr>
<tr>
<td>5</td>
<td>Heidelberg Retinal Tomography</td>
</tr>
<tr>
<td>6</td>
<td>GDx Nerve Fiber Layer Analyzer</td>
</tr>
<tr>
<td>7</td>
<td>Ultrasonic Biomicroscopy (UBM)</td>
</tr>
<tr>
<td>8</td>
<td>Fundus Camera</td>
</tr>
<tr>
<td>C</td>
<td>VITRIO RETINA</td>
</tr>
<tr>
<td>1</td>
<td>ND Yag Laser</td>
</tr>
<tr>
<td>2</td>
<td>Digital Indirect Ophthalmoscope with +20</td>
</tr>
<tr>
<td>3</td>
<td>Heidelberg Retinal Angiogram</td>
</tr>
<tr>
<td>4</td>
<td>(ERG) Electroretinogram &amp; (EOG) Electro Oculogram Visually Evoked Response (Potential)</td>
</tr>
<tr>
<td>5</td>
<td>Ultrasound B-Scan</td>
</tr>
<tr>
<td>6</td>
<td>Micropeimetry</td>
</tr>
<tr>
<td>7</td>
<td>ICG</td>
</tr>
<tr>
<td>8</td>
<td>High End Operating Microscope for retinal surgery</td>
</tr>
<tr>
<td>9</td>
<td>Biom</td>
</tr>
<tr>
<td>10</td>
<td>High End Vitrectomy Machine with endolaser and cryo facilities</td>
</tr>
<tr>
<td>11</td>
<td>SD Oct. (Spectral Domain)</td>
</tr>
<tr>
<td>D</td>
<td>PAEDIATRIC OPHTHALMOLOGY</td>
</tr>
<tr>
<td>1</td>
<td>Indirect Ophthalmoscopy cordless</td>
</tr>
<tr>
<td>2</td>
<td>Synaptophotography</td>
</tr>
<tr>
<td>3</td>
<td>Retcam</td>
</tr>
<tr>
<td>4</td>
<td>Laser Indirect Ophthalmoscopy L10 (Red Laser)</td>
</tr>
<tr>
<td>5</td>
<td>Laser Indirect Ophthalmoscopy L10 (Green Laser)</td>
</tr>
<tr>
<td>E</td>
<td>INDIAN OCULAR LENS OF DIFFERENT POWER</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>Non foldable lenses</td>
</tr>
<tr>
<td>2</td>
<td>Foldable Lenses</td>
</tr>
<tr>
<td>3</td>
<td>Catract surgery set</td>
</tr>
<tr>
<td>4</td>
<td>Glucoma surgery set</td>
</tr>
<tr>
<td>5</td>
<td>DCR surgery set/Viteno Retinal surgery set</td>
</tr>
<tr>
<td>6</td>
<td>Flase Auto clave</td>
</tr>
<tr>
<td>7</td>
<td>Retinal Laser lens</td>
</tr>
<tr>
<td>8</td>
<td>Conventional Auto Clave</td>
</tr>
<tr>
<td>9</td>
<td>Slit lamp with Applanation Tonometer</td>
</tr>
<tr>
<td>10</td>
<td>Trial Box</td>
</tr>
<tr>
<td>11</td>
<td>Auto Refractometer</td>
</tr>
<tr>
<td>12</td>
<td>Auto Refractometer kerotometer</td>
</tr>
<tr>
<td>13</td>
<td>Endo laser DCT complete set</td>
</tr>
</tbody>
</table>
**VITERO RETINAL UNIT**

1. **Nd YAG LASER**

**TECHNICAL SPECIFICATION OF YAG LASER**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser wavelength</td>
<td>1064 nm</td>
</tr>
<tr>
<td>Mode</td>
<td>Super Gaussian</td>
</tr>
<tr>
<td>Optical breakdown</td>
<td>Typically 2.5 mJ in air</td>
</tr>
<tr>
<td>Pulse duration</td>
<td>&lt; 4 ns (typ. 2 – 3 ns)</td>
</tr>
<tr>
<td>Max. laser energy</td>
<td>Single pulse, typically 10 mJ</td>
</tr>
<tr>
<td></td>
<td>Double pulse, typically 23 mJ</td>
</tr>
<tr>
<td></td>
<td>Triple pulse, typically 37 mJ</td>
</tr>
<tr>
<td>Energy levels</td>
<td>22 steps</td>
</tr>
<tr>
<td>Pulse repetition</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>Max. 2.5 Hz</td>
</tr>
<tr>
<td>Focus diameter</td>
<td>10 μm in air (1/e2)</td>
</tr>
<tr>
<td>Angle of exit aperture</td>
<td>16°</td>
</tr>
<tr>
<td>Aiming beam</td>
<td>Laser diode 670 nm, power: 5 μW – 150 μW</td>
</tr>
<tr>
<td></td>
<td>4-spot focusing system</td>
</tr>
<tr>
<td>Focus shift variable</td>
<td>+ 150 μm; 0; - 150 μm</td>
</tr>
<tr>
<td>Electrical connection</td>
<td>100 – 240 V, ± 10%, 50 – 60 Hz</td>
</tr>
<tr>
<td>Illumination</td>
<td>12V; 30W halogen lamp, adjustable</td>
</tr>
<tr>
<td>Magnification</td>
<td>5, 8, 12, 20, 32x through Galilean changer with</td>
</tr>
<tr>
<td></td>
<td>10X eyepieces and tube f = 140 mm</td>
</tr>
<tr>
<td>Tube</td>
<td>Parallel tube f=140 mm with 50 – 78 mm PD adjustment</td>
</tr>
<tr>
<td></td>
<td>Convergent tube should be available as option</td>
</tr>
<tr>
<td>Eyepieces</td>
<td>10X high eyepoint eyepieces with ± 8D</td>
</tr>
<tr>
<td></td>
<td>compensation of ametropia;</td>
</tr>
<tr>
<td></td>
<td>12.5X available as option</td>
</tr>
<tr>
<td>Slit adjustment</td>
<td>Width: 0 – 14 mm, continuous</td>
</tr>
<tr>
<td></td>
<td>Length: in steps 1/3/5/9/14 mm</td>
</tr>
<tr>
<td>Isolation Transformer</td>
<td>Machine should have Isolation Transformer for Safe handling</td>
</tr>
</tbody>
</table>
2. DIGITAL INDIRECT OPHTHALMOSCOPE

BINOCULAR INDIRECT OPHTHALMOSCOPE:

- Indirect Ophthalmoscope with inbuilt cobalt blue, red free, yellow filters.
- Inbuilt heat diffuser filter.
- Facility for LED illumination.
- Teaching Mirror.
- Rechargeable battery & transformer, extension cord and original carrying case.
- Standard accessories: large & small scleral depressor, fundus charts.
- Quality certification: CE marked & relevant ISO certification.

3. HEIDELBERG RETINAL ANGIOGRAM

[Handwritten note]
4. ELECTRORETINOGRAM (ERG), ELECTROOCULOGRAHM (EOG) AND VISUALLY EVOKED POTENTIAL (VEP)

A Typical System Configuration
Anthro 30, 36, or 48-inch wide Utility Cart with shelf
Apple Computer (Mac Pro, iMac, or 15" MacBook Pro)
  - Includes keyboard, mouse, and DVI adapter.
  - Thunderbolt, 802.11 ac Wi-Fi, USB 3, Bluetooth 4.0, SDXC slot
  - Includes National Instruments D/A board, video converter, and EDI Switchbox
Medical grade isolation transformer
Grass 15LT Amplifier System
  - Gain and filter settings controlled entirely through pre-programmed protocols, reducing possibility of user error.
  - One 4-channel AC amplifier module included. Three more optional for a total of 16 possible channels.
Ganzfeld Stimulator (for full-field stimulation)
  - Choose full-sized or hand-held model
FMS color microdisplay with IR eye and fundus imaging
  - 40 microsecond response time.
  - 1280 x 1024 spatial resolution.
  - 24-bit (8-bit red, green, & blue) color channel resolution.
  - Integrated refractor for correction of patient’s refractive error without magnification changes.
  - Infra-red video eye camera to monitor electrode and eye position.
  - Infra-red video fundus camera to monitor fixation while testing.
Spot Calibrator
  - Easy point & click luminance calibration of all stimulators.
Software
Choose from:
  - Basic: Limited pre-programmed monocular protocols for traditional clinical electrophysiology and multifocal ERG testing only.
  - Clinic: Basic protocols plus multifocal ERG, multifocal VEP, Optic Nervehead Component, and more. Provides the ability to modify report layouts and text.
Pre-Programmed Tests
Traditional
  - EOG (2010 ISCEV)
  - Full-Field ERGs (2008 ISCEV)
  - Full-Field Flash VEP
  - Pattern ERG (2007 ISCEV)
  - Pattern VEP (2008 ISCEV)
  - Periodic Sweep VEP
Multifocal
  - Multifocal ERG (2011 ISCEV)
    - 103 hexagons, 7 minute
    - 103 hexagons, 4 and 2 min.
    - 241 hexagons, 7 min.
    - 61 hexagons, 2, 4, & 7 min.
    - 37 hexagons, 2, 4, & 7 min.
  - Multifocal VEP
    - 2 channel, 120 sectors
    - 2 or 3 channel, 60 sectors
  - Optic Nervehead Component
Advanced
  - mERG Ring Ratio Analysis
  - M-Sequence Pattern ERGs
  - M-sequence VEP
  - M-sequence Sweep VEP
  - M-sequence Full-Field Flash
    - Scotopic and photopic with modeled recovery functions.
  - mERG modeled recovery plots
Pre-Programmed Comparisons to:
  - Previous recordings
  - User-specified Baseline Recordings
  - Normal Averages

5. B SCAN

Portable, digital, combination A-scan and B-scan, with easy-to-use touch screen operation, high resolution, extreme accuracy, repeatable measurements.

A-Scan offers built-in immersion capabilities and up to eight IOL formulas, including two post-refractive formulas. Axial length, ACD, and lens thickness are provided for each scan. Group up to five scans with average axial length and standard deviation automatically calculated. Easily review each scan, delete outlying scans, and add new scans, as desired. Customizable tissue velocities of each structure and highly-developed automatic scan recognition algorithms ensure accurate and repeatable measures. Built-in calibration check ensures continued accuracy of system.

B-Scan provides excellent resolution with a full set of features including display of A-scan trace across a selectable vector, zoom and pan capabilities, multiple color and grayscale display modes, measurement functions, annotation, and more. The real-time B-scan display,
adjustable gain and TVG controls, and enhanced "high-resolution" mode which produces a scan with 256 line vectors facilitate optimal diagnostic viewing.

Touch screen operation with large backlit display

Complete measurement and calculation record within seconds

Ability to store up to five different user profiles

Portable and compact weighing less than 6 pounds (3 kg)

Fully adjustable tilt for ergonomic comfort

Video printer

The Scan Should offers extreme portability, weighing about 5 lbs (2.4 kg), and comes with an optional padded carrying case. A video printer comes standard and allows for printing of a hardcopy record of scans and data. A data download and scan viewer software option is also available to create permanent digital archive of scan results.

Two A-Scan probe styles are available - standard or soft-touch - depending upon user preference and scanning application. Built-in immersion scanning capabilities is provided with optional Prager shell for ease of use and the highest assurance of accuracy and repeatability.

6. MICROPERIMETER
# 7. *IDIORYANINIE ANGIOGRAPHY MACHINE (ICG)*

<table>
<thead>
<tr>
<th>Technical Spec. of Mydratic Retinal Camera (HIGHER VERSION)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> Capture Mode</td>
</tr>
<tr>
<td><strong>2.</strong> Auto Fluorescence</td>
</tr>
<tr>
<td><strong>3.</strong> Angle of Coverage</td>
</tr>
<tr>
<td><strong>4.</strong> Photographic Magnifications</td>
</tr>
<tr>
<td><strong>5.</strong> Working Distance</td>
</tr>
<tr>
<td><strong>6.</strong> Dioptr compensation range for patient’s eye</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>7.</strong> Range for patient's eye</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>8.</strong> Dioptr Compensation at finder</td>
</tr>
<tr>
<td><strong>9.</strong> Split Focus</td>
</tr>
<tr>
<td><strong>10.</strong> Internal Fixation</td>
</tr>
<tr>
<td><strong>11.</strong> Counter</td>
</tr>
<tr>
<td><strong>12.</strong> Optical Head tilt</td>
</tr>
<tr>
<td><strong>13.</strong> Light Source</td>
</tr>
<tr>
<td><strong>14.</strong> Power Supply</td>
</tr>
<tr>
<td><strong>15.</strong> Power Consumption</td>
</tr>
<tr>
<td><strong>16.</strong> Dimensions / Weight</td>
</tr>
</tbody>
</table>

**Unique Specifications**
- Gold Standard
- Captured by Nikon D 90 Professional SLR
- Camera
- Max. Variable Flash Intensity Level
- Variable Magnifications:
- Split Focus, Machine guided user friendly
- Capture process
- DI - Capture Facility
8. **HIGH END OPERATING MICROSCOPE FOR VITREO RETINAL SURGERY**

**SPECIFICATION FOR SURGICAL OPERATING MICROSCOPE**

- Compact microscope body with high quality apochromatic Optics with 1:6 zoom ratio, Retina Protection Device and contrast enhancement aperture.
- Stereo Coaxial Illumination for very bright red reflex.
- Inclinate binocular tube with integrated facility for inverting the image with 12.5 X magnification eye pieces
- Objective with 200mm focal length for convenient working distance
- Depth focus management with one touch button.
- Motorized foot controlled X-Y coupling with automatic re-centering and X-Y inversion facility.
- Motorized foot controlled Zoom and focus with recentring of focussing position thru foot control.
- High quality programmable floor stand with magnetic breaks and clutches for easy positioning thru handles and suspension arm.
- Stand should have programming facility for setting the speed of XY, Zoom and focus with storage facility of initial setting at least for nine users.
- Stand should have cold light fibre Optic illumination with Xenon lamps housing and also Xenon illumination as back up lamp
  HaMode filter for Xenon illumination system to generate halogen like light for hospitals where some surgeons prefer xenon and others halogen illumination.
- Independent integrated binocular assistant microscope with 5 Step magnification changer , focusing and binocular tube with integrated facility for inverting the image.
- 3CCD Video camera attachment .
- Compact Video recording and with Touch screen 17” LCD for controls and live video display. The system should have the possibility for upgrade for Z-Align for Toric IOLs and to connect with LAN for data transfer from the diagnostic equipment.
- High performance apochromatic optic with excellent depth of focus and depth perception is required for performing the most difficult Vitreo - Retinal surgery.

- To move in the field of retinal surgery motorized XY movement is extremely important with continuously changeable angle of illumination.
• As Vitreo-retinal surgeries are always done by two surgeons working together hence operating microscope should have the assistant's binocular attachment for the second surgeon.

• For patient follow up the video documentation and still photographic attachments are also must.

• Operating Microscope should have motorized zoom and motorized fine focusing to enable to have excellent video documentation.

• Microscope Should Have Fundus Viewing System

• Fundus Viewing System should be controlled through footswitch

• Microscope Should have inbuilt in inverter for excellent working distance
9. HIGH END VITRECTOMY MACHINE WITH ENDOLASER AND CRYO FACILITIES

VACUUM

1. Should have the facility to generate direct venturi vacuum of up to 650 mmHg through cassette system having 2 independent aspiration ports.

CUTTER

1. Should have the ability to drive vertical guillotine vitrectomy cutter (in 27G, 25+ G and 23G) to go up to 7500 cuts / minute

2. Should have the facility to allow surgeon to select from 3 different duty cycle options at any given cut rate

3. Should have the 3-D technology to linearly control vacuum and cut-rate simultaneously in vitrectomy mode

IOP Control

1. Should have the capacity to monitor infusion pressure constantly
2. Should have the capacity to compensate the infusion pressure constantly with results in a more stable IOP

Illumination

1. The system should have dual port Xenon illumination

2. The System should recognize the gauge of illuminator connected and adjust the illumination accordingly

3. The system should have the facility to monitor the bulb life, to avoid surprises

4. The System should have RFID capacity, which recognizes the probe connected, and automatically loads the settings.

Integrated Advance Green LASER
1. Should have integrated advance Green LASER
2. Should have Dual LASER Port
3. Should have Voice Confirmation
4. Should have Multifunctional Foot switch

**MIVS**

1. Should have the capacity to support MIVS options like 27 G and 25G +

2. Should have a single entry system

**Advance Phaco:**

1. Should have Torsional (Ozil) Phaco incorporated

**Other Features**

1. The System should have the Vented Gas Forced Infusion Capability

2. The System should have the Automated Silicon Oil Injection Capability

3. The System should have Auto Fluid / Air Exchange

4. The System should have Auto Gas Fill ( C3F8 and SF6) option

5. Should have the fully programmable footswitch with the facility to change procedural modes through footswitch.

6. Should have the facility of diathermy.

7. Should have the facility to digitally control the infusion pressure and the facility to toggle between a regular infusion pressure and an higher alternate pressure ( to achieve tamponade effect) with the help of footswitch.

8. Should have the facility for the extrusion of sub-retinal fluid.

9. Should have the facility of voice re-confirmation.

10. Should have programmability to store various parameters.
11. Should have the facility of torsional Phacoemulsification

12. Should have the facility for Anterior Vented Gas forced infusion.

13. Should have the facility to use variety of Phaco tips like, Kelman, ABS and micro tips

14. Should have the facility to use variety of Phaco tips like, Kelman, ABS and micro tips

15. Should have the facility to use High Infusion Sleeve

16. Should have the availability of Linear, Pulse, Burst and 3D in Phaco mode

17. Should have the Irrigation / Aspiration mode

18. Should have the facility of fragmentation with the help of 4 crystal Ultrasound hand piece.
10. SPECTRAL DOMAIN OPTICAL COHERENCE TOMOGRAPHY (SD OCT)

TECHNICAL SPECIFICATION FOR HIGH DEFINITION SPECTRAL DOMAIN OCT FOR POSTERIOR SEGMENT

- Axial resolution: 5μm (in tissue)
- Transverse resolution: 15μm (in tissue)
- Scan speed: 27000 A-scans per second or more
- A-scan depth: 2.0 mm (in tissue), 1024 points
- Field of view: Minimum 36 degrees x 30 degrees
- Optical source: superluminescent diode (SLD), 840 nm

**Fundus Image**

- Live during scanning using LSLO & SLO for precise registration
- Optical source: superluminescent diode (SLD), 750nm
- Focusing Adjustment range: -20D to +20D (diopters) for focusing

- Scan Patterns: Macular Cube 200 x 200
  Macular Cube 512 x 128

  Five Line Raster with 4096 A Scans

  per B Scan

  Enhanced Five Line Raster

- Internal and external fixation
- Internal storage: >80,000 scans
- Pupil size requirement: ≥2.0 mm
- Optimal pupil size requirement: 3.0 mm
- Capture time 2.5 secs or less.
- Validated Normative Data for RNFL for Glaucoma applications and Macular Analysis
- Guided progression analysis.
- Retinal Change analysis.
- Auto Fovea detection.
- Auto Centering for RNFL calculation.
- Auto focus system
- 3D viewing of the section cube with possibility of cutting the layers
- Auto detection of the center of the Optic Disc.
- Upgradability for Anterior Segment imaging.
- Motorised Chin Rest.
- Scan Capture and Alignment controls through Mouse.
Scan Capture module, Monitor & CPU should fully integrated in the unit.

- Ergonomically designed original motorized table.
- Photo quality suitable printer.

<table>
<thead>
<tr>
<th>TECHNICAL SPECIFICATIONS OF Optical Coherence Tomography</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Feature</strong></td>
</tr>
<tr>
<td>Scan Mode</td>
</tr>
<tr>
<td>Observation</td>
</tr>
<tr>
<td>Picture Angle</td>
</tr>
<tr>
<td>Dioptric Scale Range</td>
</tr>
<tr>
<td>Operating Distance</td>
</tr>
<tr>
<td>Photographable Diameter of Pupil</td>
</tr>
</tbody>
</table>
# GENERAL OPHTHALMOLOGY DEPARTMENT

## 1. PENTACAM

<table>
<thead>
<tr>
<th>TECHNICAL SPECIFICATION OF OB - SCAN / PENTACAM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Refractive Power Measuring Range</strong></td>
</tr>
<tr>
<td>Sphere Range: -250 ~ +220 (0.01D / 0.12D / 0.25 D Steps)</td>
</tr>
<tr>
<td>Cylinder Range: 0° ~ ± 10 D (0.01D / 0.12D / 0.25 D Steps)</td>
</tr>
<tr>
<td>Axis Range: 0° ~ 180° (1° / 5° steps)</td>
</tr>
<tr>
<td>Measurable Area: ≥ 8mm (max.)</td>
</tr>
<tr>
<td>Measurable Minimum Pupil Diameter: ≤ 2 mm</td>
</tr>
<tr>
<td><strong>Corneal Curvature Measuring Range</strong></td>
</tr>
<tr>
<td>Corneal Curvature Radius: 5.00 mm ~ 12.00 mm (0.01 mm steps)</td>
</tr>
<tr>
<td>Corneal Refraction: 67.50D ~ 33.75 D (0.01D / 0.12D / 0.25D Steps) Proviso: Corneal refractive index = 1.3775</td>
</tr>
<tr>
<td>Corneal Astigmatism: 0° ~ ±10D (0.01D / 0.12D / 0.25 D Steps)</td>
</tr>
<tr>
<td>Corneal Astigmatism Axial Angle: 0° ~ 180° (1° / 5° steps)</td>
</tr>
<tr>
<td>Measurable Corneal Area: ≥ 0.8 mm ~ 9.2 mm (proviso Radius corneal curvature = 8 mm)</td>
</tr>
<tr>
<td>Measurable PD Range: 20 ~ 85 mm (1 mm step)</td>
</tr>
<tr>
<td>Export Output Terminal: USB (IN / OUT), RS 232 (OUT), LAN (IN / OUT)</td>
</tr>
</tbody>
</table>

**UNIQUE FEATURES**
- 5 FUNCTIONS IN ONE MACHINE: AUTO REFRACTION, KERATOMETRY, ABERROMETRY, TOPOGRAPHY AND MULTIPLE MAPS FOR OVERVIEW ANALYSIS
- DECISION SUPPORT FOR CATARACT AND REFRACTIVE PROCEDURES
- LESS STRESS WITH INVISIBLE LIGHT MEASUREMENT AT TOPOGRAPHY
- EASIER OPERATION WITH R / L FULLY AUTOMATED MEASUREMENT AND TOUCH PANNEL
- VARIOUS MAPS: SUCH AS - MULTI MAPS, IOL SELECTION MAPS, SUMMERY MAPS, PUPILLOMETRY MAPS, OCULAR IOL SELECTION SUPPORT
- PRE & POST REFRACTIVE SURGERY SUPPORT
- SEPARATE CASE REPORT FOR KERATOCONUS / DIFFERENT TYPE OF CATARACT
- TORIC IOL IMPLANTED EYE

## 2. OPTICAL BIOMETER

**Specification for Optical Biometer.**

**Technology For Measurement:** OLCR (Optical Coherence Reflactometry) for all the measurement

**Light Source:** Super luminous Diode (SLD)

**Wavelength of Light Source for Peripheral Fixation:** 570nm

**Power on Patients Eye:** <0.02mW

**The Machine Should Give Complete Eye Measurement at one shot**


One reading Should Contain 16 Individual full eye scans & 4 Individual Keratometric scan taken on 2 Concentric Rings along the patients visual axis.

Keratometry should be taken in two rings of 2.3 mm & 1.65mm with 32 Points

**Formula:** SRK T, HOLLADAY, HAGGIS & HOFFER Q

**POST Lasik FORMULE:** Shammas Corneal Thickness (CT)

**No History for Post Refractive**

- case.Holiday 2 (Optional) &
- Olsen Formula (Optional) 1

## 3. FLASH AUTOCLAVE WITH ACCESSORIES

Rapid instrument sterilizer with following features:

- Outer chamber, steam Jacket & Inner chamber made in corrosion resistant stainless steelall argon welded.
- Lid made of thick stainless Steel.
- Inner chamber dimensions: 300mm dia. X 500mm height.
- Fitted with Automatic pressure Control switch, Low Water cut off, safety valves, Moisture trap, Non return valve, drain valve, dial thermometer.
- Power: 3 phase, 440V 50 Hz AC
- CE & WHO GMP certified
- AMC/CMC required.

4. CONVENTIONAL AUTOCLAVE

Hot air oven

- **HOT AIR STERILIZER (OVEN-Memmert Type)**
- Digital control & display
- Temp. range 50°C to 250°C ± 1°C controlled by digital display temperature controller cum-indicator.
  Provided with air circulation fan. Door gasket made of Synthetic Rubber Compound instead of Asbestos.
- Inner chamber size made of S.S. 304
  - W X H X D
  - 300 X 300 X 300 mm
- ISO 9001&. W.H.O. GMP.certified and C.E. marked

5. SLIT LAMP WITH APPLANATION TONOMETER

3 Step Slit Lamp BioMicroscope Microscope:-

Field of view – Convergent Stereoscopic Microscope
Magnification Selection- 3Step by drum rotation
Base line (Stereoscopic View) should be 24
Range of adjusting Eyepieces +8 to -8 Dioptr
Vertex distance adjustment should possible
Interpupillary distance adjustment 52 mm to 78 mm
Magnification – with standard eye pieces - 6.3, 10x, 16x,
Upgradeable with optional inclined eye piece adapter
Should have counterbalance instrument
Tilting facility should be available
Microscope - Stereo angle 13°
Eye piece 12.5 with crosshair- reticule optional

Illumination:-
- Slit Width (continuous) - 0-8mm
- Slit Length (continuous) - 1-8mm
- Slit Test mark fixation star
- Illumination - Tungsten
- Illumination source 6V 27 W
- Max. intensity - 600,000 (Lux)
- Filters - Gray, Red-free, Blue, Heat absorption
- Power supply should 3 Step, Continuous
spring balanced instrument stand with table designed for concealing cables and electrical attachments
Original Goldman Applanation Tonometers

**Measuring force generated** by leverage weight

- Gold Standard IOP measurement
- Reusable Tonometer prism
- **Measuring range** 0 - 80 mm Hg
- Weight 0.680 kg

The maximum of **Measurement divergence** on the measuring prism over a measuring range of
0 - 58.84 mN is ±1.5% of the nominal value, however minimal ±0.49 mN

**MOTORIZED TABLE TO BE SUPPLIED**

All the above machine should be USFDA Approved, CE & SQS Approved

6. **A SCAN WITH IMMERSION OPTION**

<table>
<thead>
<tr>
<th>Specification of Ultrasound Biometer TRANSDUCER PROBE</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>10 MHz ± 10%</td>
</tr>
<tr>
<td>Fixation</td>
<td>Internal LED</td>
</tr>
<tr>
<td>Sampling Frequency</td>
<td>16.625 MHz</td>
</tr>
<tr>
<td>Bandwidth</td>
<td>&gt;6 MHz at -6 dB</td>
</tr>
<tr>
<td><strong>ACCURACY</strong></td>
<td></td>
</tr>
<tr>
<td>Electronic</td>
<td>± 0.05 mm</td>
</tr>
<tr>
<td>Clinical</td>
<td>± 0.1 mm</td>
</tr>
</tbody>
</table>

**SOUND VELOCITY / PHAKIC STATUS FUNCTIONS**

- Anterior Chamber: 152 m/s
- Cornea: 1641 m/s
- Normal Lens: 1641 m/s
- Vitreous: 1532 m/s
- Aphakic: 1532 m/s
- Cataract: 1629 m/s
- IOL: 2718 m/s
- Silicons: 980 m/s
- Acrylic: 2120 m/s

**MEASUREMENT TECHNIQUES**

- Contact & Immersion
- Automatic
- Manual
- Calibration

**MEASUREMENT MODES**

- 15 mm to 45 mm axial length
- Scan Memory is 10 per eye with Standard Deviation
  of Axial Length & Anterior Chamber Depth

**SOFTWARE MEMORY**

- 6 Profiles
- 10/ Surgeon
- Patient Memory
- 100

**INTERFACE**

- USB Type A connector to Printer
- USB Mini Type B for PC communication
- Jack for footswitch connection
- DC Jack for AC power adaptor
- Probe Connector

**IOL POWER CALCULATION FORMULAE**

<table>
<thead>
<tr>
<th>Formulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRK T Post Lasik: Double K</td>
</tr>
<tr>
<td>SRT II History Derived</td>
</tr>
<tr>
<td>Holladay Refraction Derived</td>
</tr>
</tbody>
</table>
Binkhorst Contact lens Method
Hoffer Rossa Method
Haigis Shammas Method

The machine should take measurement in Normal Viterous and Silicon Filled Viterious

7. PACHYMETER

8. INDIRECT OPHTHALMOSCOPES

High end indirect ophthalmoscope

- Indirect Ophthalmoscope with inbuilt cobalt blue, red free, yellow filters.
- Inbuilt heat diffuser filter.
- Facility for LED illumination.
- Small pupil viewing facility.
- Teaching Mirror.
- Rechargeable battery & transformer, extension cord and original carrying case.
- Standard accessories: large & small scleral depressor, fundus charts.
- Quality certification: CE marked & relevant ISO certification.

9. CATARACT SURGERY SET

HIGH GRADE STAINLESS STEEL SET

HIGH GRADE TITANIUM STEEL SET

10. GLUCOMA SURGERY SET

HIGH GRADE STAINLESS STEEL SET

HIGH GRADE TITANIUM STEEL SET

11. DCR SURGERY SET

HIGH GRADE STAINLESS STEEL SET

HIGH GRADE TITANIUM STEEL SET

12. VITREORETINAL SURGERY SET

HIGH GRADE STAINLESS STEEL SET
13. TRIAL BOX WITH TRIAL FRAME WITH LED VISION CHART

**Product Specification**

Spherical, cylindrical and prizmatic lenses with trial frame in wooden box. The trial lens case are made out of refined hard plastics that offers maximum protection to the lenses against impacts. The compact sizes they come in facilitates easy storing. The smooth interiors hold fast the lens in a manner which minimizes or virtually eliminates any possibility of scratch marks on the surface of the lens.

### LED VISION CHART

A. MULTIDISTANCE OPTION  
B. MULTIMEDIA ACCESS THROUGH USB AND MMC  
C. MULTILANGUAGE  
D. MENU OPTION FOR DISTANCE LANGUAGE SINGLE OPTO AND SETUP FUNCTION  
E. BASIC CHART LIKE SNELEN, DOTS, HOTV AND KAY EXTENDED  
F. ASTIGMATISM, DUOCHROME, AMSLER GRID FULL, CONTRAST SENSITIVITY CHART, COLOR VISION CHART, PHORIA TEST AND ANISOKONIEA TEST  
G. FIXATION TARGET FOR CHILDREN  
H. EDUCATION CHART  
I. MONITOR WITH LED BACKLIGHT  
J. USER FRIENDLY REMOTE CONTROL WITH GLOWING KEYPAD  
K. POWER SAVING MODE  
L. WALL MOUNT AND TABLE TOP FACILITY

14. RIGID LENS OF DIFFRENT POWER

15. FOLDABLE LENS WITH DIFFERENT POWER

16. RETINAL LASER LENS  
**DIAGNOSTIC LENSES:**

- 20D lens, double aspheric x 3nos.  
- 280 lens, double aspheric x 1no.  
- 90D non contact lens x 2nos.
- 78D non contact lens x 2nos.
- Mini quad XL vitrectomy lens x 1no.
- Super macula Vitrectomy lens x 1no.
- Goldman design 3 mirror contact lens x 2nos.
- Superfield non contact fundus lens x 1no.
- CE marked / relevant ISO certification
- Vogt or Ocular make

17. AUTOREFRACTOMETER

### TECHNICAL SPECIFICATION OF AUTO REFRACTOMETER

<table>
<thead>
<tr>
<th>Objective Refractometer Mode</th>
<th>- 25D to + 22 D (0.12D / 0.25D steps)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sphere Range</td>
<td></td>
</tr>
<tr>
<td>Cylinder Range</td>
<td>0 to +10 D (0.12D / 0.25D steps)</td>
</tr>
<tr>
<td>Axis Range</td>
<td>0° to 180° (in 1° to 5° steps)</td>
</tr>
<tr>
<td>Minimum Measurable Pupil Diameter</td>
<td>ø 2.0 mm</td>
</tr>
</tbody>
</table>

**Others**
- PD Measurement: 20 mm to 85 mm (0.5 mm step)
- Input / Output: USB (input) / RS 232 C (output) / LAN (output)
- Other Specifications:
- Dimensions: 317 mm (W) X 521 (D) X 447 - 477 mm (H)
- Weight: 15 Kg
- Power Supply: 100 - 240 V AC, 50 - 60 Hz, 30 - 70 VA

**Features:**
- Rotary Prism Technology
- 8.5 - inch LCD Touchscreen Panel
- Connectable to LAN
- One Touch Lock
- Easy to Load Printer

**MOTORIZED TABLE TO BE SUPPLIED**
18. AUTOREFRACTOKERATOMETER

TECHNICAL SPECIFICATION OF AUTO KERATO REFRACTOMETER

Objective Refractometer Mode
Sphere Range
Cylinder Range
Axis Range
Minimum Measurable Pupil Diameter
Corneal Curvature Mode
Corneal Curvature Radius
Corneal Refraction
Refractive Index
Corneal Astigmatism
Corneal Astigmatism Axial Angle
Others
PD Measurement
Input / Output
Other Specifications
Dimensions
Weight
Power Supply

Unique Features:
Rotary Prism Technology
8.5" inch LCD Touchscreen Panel
Connectable to LAN
One Touch Lock
Easy to Load Printer

MOTORIZED TABLE TO BE SUPPLIED

19. ENOLASER DCR WITH COMPLETE SET
1. **INDIRECT OPHTHALMOSCOPE**

**BINOCULAR INDIRECT OPHTHALMOSCOPE:**

- Indirect Ophthalmoscope with inbuilt cobalt blue, red free, yellow filters.
- Inbuilt heat diffuser filter.
- Facility for LED illumination.
- Teaching Mirror.
- Rechargeable battery & transformer, extension cord and original carrying case.
- Standard accessories: large & small scleral depressor, fundus charts.
- 20D AND 28D TO BE SUPPLIED
- Quality certification: CE marked & relevant ISO certification.

2. **SYNAPTOPHORE**

3. **RET CAM**

**Ret Cam**

1. Note Book Computer: Pre Loaded with Retcam System Software, it should include DVD R/RW,
2. integrated Network adapter & USB
3. Hand Piece: Contains the camera, lightweight and easy to position, has a long cable for easy reach, can be used with interchangeable lenses pieces.
4. Hand piece Inter Connect Harness.
5. Hand Piece Hoister. Holds the Hand piece when the hand piece is not in use
6. Electro Optical Box: Should contain the camera control unit, Illumination Lamp & Control Circuit.
7. Foot Switch
8. Cart with storage compartment for transport
9. Dimension: 19" X 19" X34" (483 X 483 X 864 mm)
10. Weight: 30 Kg approx.
11. Electrical: 100-240 v AC 50/60 Hz
12. Power: 250VA
13. **High end Note book as required by the system**

[Handwritten notes]

- [Signature]
- [Date]
4. LASER INDIRECT OPHTHALMOSCOPE (LIO) RED LASER

RED LASER MODEL (Specification) 14 pounds (6.4 kg)
Weight
Dimension 4" H X 12" W X 12" D
(10 cm X 30 cm X 30 cm)
Electrical
115 VAC, 50/60 Hz, 0.8
230 VAC, 50/60 Hz, 0.4
Cooling No external air or water cooling required
Treatment Laser / Power Infrared diode laser
(810 nm) 0 – 3000 mW
Aiming Laser / Power Red diode laser
(650-670 nm) 0 - < 1.0 mW
Delivery Devices EndoProbe, TruFocus LIO, Portable Slit Lamp
Adapters, Large Spot SLA, and OMA
Pulse Duration
CW-Pulse :
30 ms – 9000 ms
Long Pulse :
10 s – 30 min
Micro Pulse :
100 µs – 1000µs Duration
1.0 ms – 10 ms Interval
Large Spot Delivery Devices TruFocus Laser Indirect Ophthalmoscope
Plus (LIO+)
The TruFocus LIO+ delivers a 1.2 mm retinal
spot size with a 20 D Lens
LENS 28D AND 20D TO BE SUPPLIED WITH THE LIO

5. LASER INDIRECT OPHTHALMOSCOPE (LIO) GREEN LASER

GREEN LASER WITH LIO
(Diode-pumped, frequency-doubled, solid-state
Treatment Laser
laser, (Medical Grade)
Laser Output
2500 mW
Laser Output Type True CW Laser pulses & Micropulse
Wavelength
532 nm Green
Pulse Exposer
10 ms to 3000 ms, 1 Min
Repeat Interval
Cotinious
MicroPulse Duration
10 ms to 3000 ms
MicroPulse Interval
Micro Pulse 0.05 to 10ms
Pilot / Aiming Laser
Micro Pulse 1.00 to 10 ms
Wavelength
Red diode laser
Power
635 nm
Cooling
0 to <1.0mW
Connector Type for Delivery Devices
AIR Cool / TEC Cooled
Delivery Device Output Ranges
RFID / Resistor
Endo Probe (Optional)
LIO+
0-2000 mW, Type: Straight, Tapered, Angled,
Self Illuminating, Aspirating,
0-2000 mW, True Focus type and
light source available from console, Dual LIO which can be used in both
Slit Lamp Adapter (Optional)
Tx Cell (Optional upgrade to Multispot)
Laser Output technology
Diode used for laser source
Eye Safety Filter
Thermal managements

Light Source For LIO
Foot Pedal

532nm(Green) & 810nm(Reed)
0-1800 mW, Spot Size : 50 µm, 100 µm, 200 µm, 300 µm, 500 µm,
0-2000 mW
True wave technology
30 Watts
Ultra view clear Eye safety filter
Zones Specific Efficient Thermal Management System
Inbuilt
Wireless Foot switch with power control function, i.e. power can be increase & decrease from foot switch

LENS 20D AND 28D TO BE SUPPLIED
WITH THE LIO
Should have facility to do Micropulse Laser Tubeculooplasty
Should have voice confirmation technology to aid surgical techniques
Machine should automatically detect the delivery Device,
Should have intuitive Graphical Touch Screen Interface
Should have compact design remote control with adjustment for parameter
Should Have Dual Sense Dual port with Quick and simple selection of Multiple Delivery devices

Weight
Dimensions
Electrical
< 200 watts in standby, < 350 watts max

It Should be Light Approx 9 Kg
12” W X 14” D X 8.5” H (30.5cm X 35.6cm X 21.4cm)
90-240 VAC, 50/60 Hz (no voltage selector required)
1. **GonioLens**

- Goldman 2 Mirror GonioLens
- Goldman 3 Mirror GonioLens
- Goldman 4 Mirror GonioLens

2. **Non Contact Tonometer**

<table>
<thead>
<tr>
<th>Technical Specifications for Non Contact Tonometer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Measurement Range</strong></td>
</tr>
<tr>
<td><strong>2. Working Distance</strong></td>
</tr>
<tr>
<td><strong>3. Measurement Display</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>4. Measurement Recording</strong></td>
</tr>
<tr>
<td><strong>5. Measurement Mode</strong></td>
</tr>
<tr>
<td><strong>6. External Output Terminal</strong></td>
</tr>
<tr>
<td><strong>7. Operating Temperature</strong></td>
</tr>
<tr>
<td><strong>8. Power Supply</strong></td>
</tr>
<tr>
<td><strong>9. Power Consumption</strong></td>
</tr>
<tr>
<td><strong>10. Dimensions</strong></td>
</tr>
<tr>
<td><strong>11. Weight</strong></td>
</tr>
<tr>
<td><strong>12. Other Specifications</strong></td>
</tr>
<tr>
<td><strong>13. Error Indication</strong></td>
</tr>
<tr>
<td><strong>14. Adjustable Safety Stopper</strong></td>
</tr>
<tr>
<td><strong>15. Base Travel</strong></td>
</tr>
<tr>
<td><strong>16. Chinrest Vertical Travel</strong></td>
</tr>
</tbody>
</table>

Soft Puff

Dual Sensor for Accuracy

Easy calibration up to +4 mm Hg according to application reading.

Two step max. pressure range 0 - 30 mm Hg / 60 mm Hg

Auto / Manual measurement option.

MOTORIZED TABLE TO BE SUPPLIED
3. HAND HELD TONOMETER

Specification For Hand Held Tonometer:

1. Type: Tonometer
2. Technology:- Rebound Technology
3. No Anesthesia Required for Taking Measurement
4. Reading / Measurement Can be taken on Pediatric patients
5. The Tonometer should be portable
6. The device conforms to CE regulations.
7. Dimensions: 13 – 32 mm (W) * 45 – 80 mm (H) * 230 mm (L).
8. Weight: 155 g (without batteries), 250 g (4 x AA batteries).
10. Measurement range: 7-50 mmHg
11. Display: Digital Liquid Crystal Display,
12. Display range: 0-99 mmHg (IOP estimation beyond the measuring range).
13. Accuracy: (95% tolerance interval relative to manometry):} 1.2 mmHg (≤ 20 mmHg)
14. Repeatability (coefficient of variation): <8%.
16. Display unit: Millimeter mercury (mmHg).
17. There are no electrical connections from the tonometer to the patient.
18. The device has B-type electric shock protection.
19. Storage/transportation environment: Temperature +5 to +40 °C.
20. Rel. humidity 10 to 80% (without condensation).

4. SLIT LAMP WITH APPLANATION TONOMETER
**TECHNICAL SPECIFICATION OF SLT LAMP**

<table>
<thead>
<tr>
<th>Description</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Microscope</strong></td>
<td>Stereoscopic Microscope</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Magnification Selection</th>
<th>2 steps by Objective Lens rotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>1 X, 1.6 X</td>
</tr>
<tr>
<td>Eye Piece</td>
<td>10X, 15X (15X Eyepiece is optionally available in some models)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Magnification</th>
<th>Objective</th>
<th>Eyepiece</th>
<th>Magnification (Field of View)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 X</td>
<td>10 X</td>
<td>10 X (18 mm dia.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>16 X (11.25 mm dia.)</td>
<td></td>
</tr>
<tr>
<td>1.6 X</td>
<td>10 X</td>
<td>16 X (14.5 mm dia.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>16 X (9 mm dia.)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pupillary Adjustment</th>
<th>10 X Eyepiece</th>
<th>50 mm = 82 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16 X Eyepiece</td>
<td>52 mm = 78 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dioptr Adjustment</th>
<th>10 X Eyepiece</th>
<th>± 80</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16 X Eyepiece</td>
<td>± 120</td>
</tr>
</tbody>
</table>

**Sit Illumination**

- **Sit Width**: Continuous from 0 to 9 mm (Center or 9 mm)
- **Sit Length**: Continuous from 1 to 8 mm
- **Aperture diameter**: 9, 8, 5, 3, 2, 1, 0.2 mm
- **Sit Scope**: 2° = 180°
- **Sit Inclination**: 5°, 10°, 15°, 20°
- **Filters**: Cobalt blue, Red - free, 13% ND, Heat absorbing, UV Cut (Normal Use), UV Cut (Normal Use)
- **Illumination Lamp**: 6 V 20 W Halogen

**Base**

- **Lateral Movement**: 30 mm
- **Length**: 100 mm
- **Fine Base Movement**: 15 mm
- **Vertical Movement**: 35 mm
- **Fixation Target**: 0V 0.2 A Tungsten lamp

**Technical Specifications of Applanation Tonometer**

- **Measuring Force Generated**: By Leverage Weight
- **Installation**: Applanation Tonometer is mounted on 2 supporting pivot top of the binocular microscope & can be mounted on a plate on the microscope arm
- **The intraocular pressure in mm Hg is found by multiplying the drum reading by ten**
- **Scleral - rigidity is not to be taken into account as the small volumetric displacement of 0.55 mm increases the intraocular tension by about 2.5% only**
- **Repeated measuring procedures do not reduce the ocular pressure as no massaging effect occurs**
- **There are no standardisation & calibration difficulties**

**Main Features**

- **Technical Details**
  - Measuring Range: 0 - 80 mm Hg in 2 mm increments = 0.5 mm Hg
  - Dimensions: The pneumatic face, 0.56 mm
  - Repeatability of the force: Standard Divergence
  - Measurement: 47 mm wide X 53 mm deep X 90 mm height
  - Net Weight: 275 g (without accessories)
6. HEILDIELBERG RETINAL TOMOGRAPHY

7. GDx NERVE FIBER LAYER ANALYSER

RFNL ANALYSER FOR EARLY DETECTION OF GLAUCOMA

➢ Scanning laser polarimetry technology with variable corneal compensation.

➢ Illumination Source – Laser diode wavelength 780nm.

➢ Measurement area – 20 x 20 degrees.

➢ Reproductivity – 5 microns

➢ Ametropia correction – 1 – 5 diopters

➢ Acquisition Time - Less than one minute

➢ Normative Database - Extensive stratified normative database

➢ Table top dimension – 14”H  X  10”W  X  24”D

➢ Electrical requirement – 220volt AC

8. ULTRASONIC BIOMICROSCOPY
9. FUNDUS CAMERA

TECHNICAL SPECIFICATION FOR DIGITAL FUNDUS CAMERA

Field angles : 45 deg, 35 deg and 30 deg small pupil

Image mask : 45°, 35°, black, dark, transparent, bright

Display : 19" TFT Monitor (1280 x 1024 pixels)

Capture modes : Colour, green, blue, red, fluorescein angiography/FA in red
                Both IR observation, Anterior Segment images,
                A) Fundus Auto fluorescence ,
                B) ICG angiography( Upgraded)
                C) stereo,
                D) MPD
                Blue and red filters for documentation of the nerve fiber
                layer and choroids.

Compensation of Ametropia : +35... -35D continuous

Pupil diameter : ≥ 4.0mm
                 ≥ 3.3 mm (30 degree small pupil)

Working Distance : Front lens to patient’s eye 40 mm /1.6 inches

Interfaces : USB Port and network connectors, DVI port

Export : Image format DICOM (.dcm), Bitmap (.bmp), JPEG (.jpeg)
         Patient list

[Signatures: R. Lee, Cal MacDonald, [Date: 1973, 2004]}
<table>
<thead>
<tr>
<th>Capture technology</th>
<th>Separate sensors for black and white and colour modes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating system</td>
<td>Windows XP Professional</td>
</tr>
<tr>
<td>Computer system</td>
<td>High speed computer system</td>
</tr>
<tr>
<td>Power consumption</td>
<td>Max. 200 VA</td>
</tr>
<tr>
<td>Line voltage</td>
<td>100 ... 240V ± 10% (self adjusting)</td>
</tr>
<tr>
<td>Frequency</td>
<td>50/60 Hz</td>
</tr>
<tr>
<td>Upgradeability</td>
<td>Upgradeability of software should be possible</td>
</tr>
<tr>
<td>Instrument table</td>
<td>Asymmetrical</td>
</tr>
</tbody>
</table>

**Fixation Targets**
- External and Internal
- Attention mode for internal fixation target (magnified and blinking cross)
- Various programmed sequences or freely positionable

**Quantitative information**
- Extended PDT data including the percentage display of classic CNV and body surface area
- Determining the C/D ratio for glaucoma management
- Correction of the absolute data measured using the patient's refraction data

**Qualitative Information**
- Geocorrected overlay of images for rapid glaucoma diagnosis
- Image processing with shortcuts
- Mapping for Montage, Overlay, Dynamic Comparison, Text into Graphics

**Patient Information**
- Recording of refraction values, weight and size
- Complete address of referring or treating physicians, and photographers
- Search for field angles, right/left eye and stereo image
- Varied personalized print layouts with automatic image arrangement
- Physician's letter layout with automatic entry of existing database information
After sales service should be available directly from Manufacturer. Also spare parts for the equipment are to be readily available at the Regional offices.
CORNEA UNIT AND EYE BANK UNIT

1. PACHYMETER

a portable, digital Pachymeter, with easy-to-use touch screen operation, extreme accuracy, repeatable measurements and reliability. The combination of a high frequency, low noise probe and fast precise algorithms enables automatic scan capture immediately upon steady application of the probe onto the cornea.

Measurement accuracy and repeatability are assured by each scan actually consisting of 256 individual measurements and an automatic measurement algorithm to ensure that only scans with proper probe alignment are accepted. The high probe frequency and processing algorithms enable measures as thin as 125 microns, for measuring corneal flap or bed, and multiple corneal maps are available. Also comes standard with central corneal thickness correction calculator for measured applanation IOP.

Touch screen operation with large backlit display

  Complete measurement and calculation record within seconds

  Ability to store up to five different user profiles

  Portable and compact weighing less than 6 pounds (3 kg)

  Fully adjustable tilt for ergonomic comfort

Optional printer

extreme portability, weighing less than 6 lbs (3 kg), and comes with optional padded carrying case. Optional printer allows for hardcopy record of corneal thickness measurements. Data download and scan viewer software option also available to create permanent digital archive of scan results.

Two probe styles are available, depending upon user preference and scanning application, a 45 degree angled probe for when patient is in supine position and a straight probe for when patient is in sitting position. Built-in probe sensitivity test and calibration check ensures continued accuracy of system.
2. **SPECULAR MICROSCOPE FOR LIVING EYE (CLINICAL)**

**TECHNICAL SPECIFICATION OF SPECULAR MICROSCOPE CORNEAL ENDOThELLIUM PHOTOGRAPHY**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHOTOGRAPHY MAGNIFICATION</td>
<td>254 X (ON THE CONTROL PANEL)</td>
</tr>
<tr>
<td>PHOTOGRAPHY RANGE</td>
<td>0.25 X 0.55 mm</td>
</tr>
<tr>
<td>RESOLVING POWER</td>
<td>MORE THAN 125 LINE/ mm</td>
</tr>
<tr>
<td>FIXATION TARGET</td>
<td>CENTRAL &amp; PERIPHERAL</td>
</tr>
<tr>
<td>CORNEAL THICKNESS MEASUREMENT</td>
<td></td>
</tr>
<tr>
<td>MEASUREMENT RANGE</td>
<td>0.400 - 0.750 mm DISPLAY UNIT: 0.001 mm STEP DISPLAY</td>
</tr>
<tr>
<td>OTHER SPECIFICATIONS:</td>
<td></td>
</tr>
<tr>
<td>DIMENSIONS</td>
<td>286 - 468 mm (W) X 445 - 592 mm (D) X 486 - 685 mm</td>
</tr>
<tr>
<td>WEIGHT</td>
<td>17 KG</td>
</tr>
<tr>
<td>POWER SUPPLY: SOURCE OF VOLTAGE</td>
<td>100 - 240 V AC, 50 - 60 Hz</td>
</tr>
<tr>
<td>POWER SUPPLY: POWER OF INPUT</td>
<td>70 - 120 VA</td>
</tr>
<tr>
<td>OTHER FEATURES:</td>
<td></td>
</tr>
<tr>
<td>COMPACT &amp; STYLISH DESIGN</td>
<td></td>
</tr>
<tr>
<td>COMPREHENSIVE ANALYSIS SOFTWARE</td>
<td></td>
</tr>
<tr>
<td>TWO SEPARATE PHOTOGRAPHY MODES</td>
<td></td>
</tr>
<tr>
<td>QUICK AUTOMATIC MEASUREMENT &amp; ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>PANORAMA - SUBSTANTIAL SIZE INCREASE OF THE ANALYZED AREA</td>
<td></td>
</tr>
</tbody>
</table>
3. ORBSCAN

<table>
<thead>
<tr>
<th>Refractive Power Measuring Range</th>
<th>TECHNICAL SPECIFICATION OF OB - SCAN / PENTACAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sphere Range</td>
<td>- 25 D ~ +22 D (0.01D /0.12D / 0.25 D Steps)</td>
</tr>
<tr>
<td>Cylinder Range</td>
<td>0D ~ ± 10 D (0.01D /0.12D / 0.25 D Steps)</td>
</tr>
<tr>
<td>Axis Range</td>
<td>0° ~ 180° (1° / 5° steps)</td>
</tr>
<tr>
<td>Measurable Area</td>
<td>ø 8mm (max.)</td>
</tr>
<tr>
<td>Measurable Minimum Pupil Diameter</td>
<td>ø 2 mm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Corneal Curvature Measuring Range</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Corneal Curvature Radius</td>
<td>5.00 mm ~ 10.00 mm (0.01 mm steps)</td>
</tr>
<tr>
<td>Corneal Refraction</td>
<td>67.50 D ~ 33.75 D (0.01D / 0.12D / 0.25D steps) Proviso: Cornea</td>
</tr>
<tr>
<td>Corneal Astigmatism</td>
<td>0D ~ ±100 (0.01D / 0.12D / 0.25D Steps)</td>
</tr>
<tr>
<td>Corneal Astigmatism Axial Angle</td>
<td>0° ~ 180° (1° / 5° steps)</td>
</tr>
<tr>
<td>Measurable Corneal Area</td>
<td>ø 0.8 mm ~ 9.2 mm (proviso Radius corneal curvature = 8 mm)</td>
</tr>
<tr>
<td>Measurable PD Range</td>
<td>20 ~ 85 mm (1 mm step)</td>
</tr>
<tr>
<td>Export Output Terminal</td>
<td>USB (IN / OUT), RS 232 (OYT), LAN (IN / OUT)</td>
</tr>
</tbody>
</table>

**UNIQUE FEATURES**

5 FUNCTIONS IN ONE MACHINE: AUTO REFRACTION, KERATOLOGY, ABERROMETRY, TOPOGRAPHY AND PUPILLOGY

MULTIPLE MAPS FOR OVERVIEW ANALYSIS

DECISION SUPPORT FOR CATARACT AND REFRACTIVE PROCEDURES

LESS STRESS WITH INVISIBLE LIGHT MEASUREMENT AT TOPOGRAPHY

EASIER OPERATION WITH R / L FULLY AUTOMATED MEASUREMENT AND TOUCH PANNEL

VARIOUS MAPS: SUCH AS - MULTI MAPS, IOL SELECTION MAPS, SUMMERY MAPS, PUPILLOMETRY MAPS, OCULAR I COMPONENT MAPS, ZERNIKE VECTOR MAPS, CORNEAL R / L MAPS, REFRACTION KERATOLOGY IOL SELECTION SUPPORT

PRE & POST REFRACTIVE SURGERY SUPPORT

SEPARATE CASE REPORT FOR KERATOCONOUS / DIFFERENT TYPE OF CATARACT

TORIC IOL IMPLANTED EYE

4. ANTERIOR SEGMENT OPTICAL COHERENCE TOMOGRAPHY

<table>
<thead>
<tr>
<th>TECHNICAL SPECIFICATION OCT ANTERIOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation &amp; Photography of fundus image</td>
</tr>
<tr>
<td>Scan Mode</td>
</tr>
<tr>
<td>Picture Angle</td>
</tr>
<tr>
<td>operating distance</td>
</tr>
<tr>
<td>Photographable (diameter of pupil)</td>
</tr>
<tr>
<td>Small pupil diameter: ø 3.3 mm or more</td>
</tr>
</tbody>
</table>

<p>| Observation &amp; Photography of Fundus Image / Anterior Segment Tomography |
| Scan (on fundus) | Horizontal Direction 3 - 12 mm |</p>
<table>
<thead>
<tr>
<th>Range</th>
<th>Vertical Direction 3 - 9 mm (on cornea)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scan Speed</td>
<td>50,000 A - Scan per second</td>
</tr>
<tr>
<td>Lateral Resolution</td>
<td>20 µm</td>
</tr>
<tr>
<td>In-depth Resolution</td>
<td>6 µm</td>
</tr>
<tr>
<td>Photographable diameter of Pupil</td>
<td>Ø 2.5 mm or more</td>
</tr>
</tbody>
</table>

**Observation & Photography of fundus image / fundus tomography**

- **Internal Fixation Rating**: Dot matrix type organic EL (The display position can be changed)
- **Electric Rating**
  - **Source Voltage**: AC 100 - 240 V
  - **Power Input**: 70 - 150 VA
  - **Frequency**: 50 Hz - 60 Hz

**Dimensions & Weight**

- **Dimensions**: 307 - 442 mm (w) x 472 - 668 mm (d) x 518 - 722 mm (h)
- **Weight**: 21 Kg

* Display digital Red Free  ** Anterior scanning is option. With anterior segment attachment

**Unique Features of 3D OCT**

- Inbuilt Fundus Camera for Colour & Red Free Photography w/ OCT
- Scan Speed 50,000.00 A Scan/Sec.
- Auto align, Auto Focus & Capture
- 12 mm X 9mm OCT Scan provides measurement & topography of optic nerve & macula in one scan.
- User friendly for operator
- Anterior Segment tomography also available

## 5. OPTICAL BIOMETER

**Specification for Optical Biometer.**

- **Technology For Measurement**: OLCR (Optical Coherence Reflectometry) for all the measurement
- **Light Source**: Super luminous Diode (SLD)
- **Wavelength of Light Source for Peripheral Fixation**: 570nm
- **Power on Patients Eye**: <0.02mW

*The Machine Should Give Complete Eye Measurement at one shot*

One reading Should Contain 16 individual full eye scans & 4 Individual Keratometric scans taken on 2 Concentric Rings along the patient's visual axis.

Keratometry should be taken in two rings of 2.3 mm & 1.65mm with 32 Points

<table>
<thead>
<tr>
<th>Formule</th>
<th>SRK T, HOLLADAY, HAGGIS &amp; HOFER Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>POST Lasik FORMULE</td>
<td>Shammas No History for Post Refractive case, Holaday 2 (Optional) &amp; Olsen Formula (Optional)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1</th>
<th>Corneal Thickness (CT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range</td>
<td>300 - 800 ( \mu )m</td>
</tr>
<tr>
<td>Display Resolution</td>
<td>1 ( \mu )m</td>
</tr>
<tr>
<td>In-vivo Repeatability</td>
<td>((1.0) +/- 2 ( \mu )m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2</th>
<th>Anterior Chamber Depth (ACD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range</td>
<td>1.5 - 5.5 mm</td>
</tr>
<tr>
<td>Display Resolution</td>
<td>0.01 mm</td>
</tr>
<tr>
<td>In-vivo Repeatability</td>
<td>((1.0) +/- 20 ( \mu )m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3</th>
<th>Lens Thickness (LT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range</td>
<td>0.5 - 6.5 mm</td>
</tr>
<tr>
<td>Display Resolution</td>
<td>0.01 mm</td>
</tr>
<tr>
<td>In-vivo Repeatability</td>
<td>((1.0) +/- 50 ( \mu )m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4</th>
<th>Axial Length (AL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range</td>
<td>14 - 32 mm</td>
</tr>
<tr>
<td>Display Resolution</td>
<td>0.01 mm</td>
</tr>
<tr>
<td>In-vivo Repeatability</td>
<td>((1.0) +/- 25 ( \mu )m</td>
</tr>
<tr>
<td>Wave length of Light Source For AL</td>
<td>820 nm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5</th>
<th>Keratometry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range for radius</td>
<td>5 - 10.5 mm</td>
</tr>
<tr>
<td>Display Resolution</td>
<td>0.01 mm</td>
</tr>
<tr>
<td>In-vivo Repeatability</td>
<td>((1.0) +/- 30 ( \mu )m</td>
</tr>
<tr>
<td>Measurement range for axis angle</td>
<td>0 - 180°</td>
</tr>
<tr>
<td>Display Resolution</td>
<td>1°</td>
</tr>
</tbody>
</table>
In-vivo Repeatability \( (1.0) \pm 0.9^\circ \)

Wave Length of Light Source For Keratometer \( 950 \text{ nm} \)

6 White – to – white distance

Measurement range \( 7 - 16 \text{ mm} \)

Display Resolution \( 0.01 \text{ mm} \)

In-vivo Repeatability \( (1.0) \pm 0.3 \text{ mm} \)

7 Pupillometry

Measurement range \( 2 - 13 \text{ mm} \)

Display Resolution \( 0.01 \text{ mm} \)

8 Eccentricity of the visual optical line

Display Resolution \( 0.01 \text{ mm} \)

9 Retinal thickness Manually Assessed Resolution 1 \( \mu \text{m} \)

The Machine should have the option upgradable to Toric Planner which can do Toric intervention of High resolution eye image using incision Optimisation tool.

The Machine should have the option upgradable to T Cone Topographer which can take True Placido Topography of the central 6mm of the anterior Cornea

The Machine should take reading in Normal Eye as well as Silicon Filled Eye.

Electrical : Voltage 12V DC, Power Consumption 12W

General : Dimensions 310 X 260 X 420 mm, Weight 6.2 Kg

6. LAMINAR FLOW

Laminar flow hood

HORIZONTAL LAMINAR FLOW CAMBINET

With Sunmica Table top, HEPA Filters, Pre-Filters fully tested for PARTICLE COUNT with Standard Accessories as

1 – Automatic Device to switch off the air flow / Motor when door is closed.

2 – Stand by Mode (Idling).

[Handwritten notes]
3 - UV / Fluorescent Light Inter Lock : either UV Tube will glow or Fluorescent tube will glow for the users safety.

4 Front arm rest, made of SS 304 suitable for increasing efficiency and convenience for the user while working.

5. Working Area - 2’ x 2’ x 2’
   Size of HEPA filter- 2’ x 2’ x 6”
   No. of Hepa filter- 1
   No. of Pre Filter- 1
   Illumination- 1 x 20 w

6. Transparent front door
7. Built in U.V. Germicidal light
8. Whole cabinet made of commercial board & laminated with sun mica

1. CE & WHO GMP certified
2. AMC required

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7. FLASH AUTOCLAVE

Rapid sterilizer

Rapid instrument sterilizer with following features:

- Outer chamber, steam Jacket & Inner chamber made in corrosion resistant stainless steel- all argon welded..
- Lid made of thick stainless Steel.
- Inner chamber dimensions: 300mm dia. X 500mm height.
- Fitted with Automatic pressure Control switch, Low Water cut off, safety valves, Moisture trap, Non return valve,
- drain valve, dial thermometer.
- Power: 3 phase, 440V 50 Hz AC
- CE & WHO GMP certified
- AMC/CMC required.