VIEWLIGHT
POWERED BY INNOVATION

Wireless Indirect Ophthalmoscope

# MANUAL


VIO-20 | VIO-30

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VIEWLIGHT
POWERED BY INNOVATION

**Before use this instrument, be sure to read this manual**

# BINOCULAR INDIRECT OPHTHALMOSCOPE
# PRODUCT DESCRIPTION

## INTRODUCTION

Please read the following information carefully before installing and using the VIO-20 Halogen & VIO-30 LED Binocular Indirect Ophthalmoscope. VIEWLIGHT is responsible for the safety, reliability and performance of the equipment only if it is used in accordance with these instructions.

This device is designed for use by a certified practitioner. Environmental storage and packing conditions of 60-95% relative humidity and 10-40 deg C are recommended. No parts or accessories are supplied in sterile condition.

Apart from those by identified in the instructions within the manual, there are no user-serviceable parts in this device. VIEWLIGHT will retain the direction to advise whether any repairs may be carried out by external qualified technical personnel, or whether part(s) of the device must be returned to the manufacturer's premises for service or repairs to be carried out under warranty or otherwise. Where appropriately qualified technical person are identified. VIEWLIGHT will make available on request information which may assist in maintaining or repairing this device.

## DEVICE DESCRIPTION

VIO-20 Halogen & VIO-30 LED is a head mounted Binocular Indirect ophthalmoscope designed to be Used by trained personnel for illuminating and viewing parts of the eye such as the Cornea and retina when used in conjunction with an ophthalmic aspheric viewing lens.

Binocular Indirect Ophthalmoscope provides an illumination system to direct appropriately, focused light into the eye in order to obtain an intermediate image of the fundus (retina) that is viewed by the observer to diagnose the eye.

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# QUALITY, RELIABILITY AND SAFETY

**VIEWLIGHT** is responsible for the safety, reliability and performance of the equipment only if it is used in accordance with the instructions given in the Manual. The Instrument is designed to perform as per the declared Intended for use with safer and reliable.

- Electrical installation of the room or building in which the equipment is to be used must comply with regulations specified by the country in which the equipment to be used as well the specified in the specification.
- The repair / service will be taken care by a qualified technical person of VIEWLIGHT
- Read and follow the instructions, caution and warnings before installing the Instrument.

# WARNING

Warnings are intended to alert you to importance of following the correct operating procedures where risk of injury to the patient or system user exits.

- This is Class I equipment equipments for CE-Regulation 93/42/EEC, Class II for FDA Classification to avoid risk of electric shock. This equipment must only be connected to supply mains with protective earth.
- No modification of this equipment is allowed.
- Use only the type of power source that indicated on label.
- Connect the Equipment to properly grounded power outlets.
- Unplug the Equipment before servicing / cleaning it.
- Confirm the AC power cord meets the relevant local safety standards.
- Don't use damaged power cord.
- Only trained personal can handle the equipment.
- Remove the plug of Equipment from wall outlet before changing the Fuse.
- Check the electrical connections periodically; any defects noticed, like loose connections, damaged to insulation in the electrical wires etc., should be rectified immediately.

## INTENSITY WARNING (PHOTO TOXICITY INFORMATION)

"Because prolonged intense light exposure can damage retina, the use of the device for ocular examination should not be unnecessarily prolonged, and the brightness setting should not exceed what is needed to provide clear visualization of the target structures. This device should be used with filters that eliminate UV radiation (<400 nm) and, whenever possible filters that eliminate short-wavelength blue light (<420 nm). The retinal exposure dose for a photochemical hazard is a product of the radiance and the exposure time. If the value of the radiance were reduced in half, twice the time would be needed to reach the maximum exposure limit.

While no acute optical radiation hazards have been identified for slit lamps, it is recommended that the intensity of light directed into the patient's eye be limited to the minimum level which is necessary for diagnosis. Infants, aphakes and persons with diseased eyes will be at greater risk. The risk may also be increased if the person being examined has had any exposure with the same instrument or any other ophthalmic instrument using a visible light source during the previous 24 hours. This will apply particularly if the eye has been exposed to retinal photography."

## Calibration process

If the customer needs any calibration please send the equipment for calibration purpose.

## TRAINING REQUIREMENT

The equipment is expected to operate by ophthalmic Doctors only. If at all it is used by Viewlight technician they should by trained well in usage of this equipment.
well trained the personal if required.

# ⚠IMPORTANT SAFETY & MAINTENANCE INSTRUCTIONS

**Maintenance by user**

- ☜ Before using the Equipment, read instructions carefully.
- ☜ Regular maintain and check the instrument and its parts.
- ☜ Handle the Equipment carefully.
- ☜ Touch the Bulb glass with clean cloth.
- ☜ Use proper methods to clean optics and Equipment.
- ☜ Before switch off, turnoff regulator.
- ☜ Cover the Equipment when not in use.
- ☜ Don't touch the Bulb immediately after switch off.
- ☜ Don't touch the Mirror surface or exposed lenses, and keep them clean.
- ☜ Don't spill liquid into the Equipment.
- ☜ Don't use any hazardous solvents to clean the optics and parts.
- ☜ Only use soft, dry cloth to clean the device.
- ☜ When using the instrument after a prolonged period of inactivity, confirm normal and safe operation beforehand
- ☜ If the proposed device has no patient direct / indirect contact hens the biocompatibility validation is not required.
- ☜ Unplug the Equipment and refer servicing to qualified service personnel under the following condition
    - If the product isn't able to use after done all the troubleshooting in this manual.
    - If the liquid has been spilled into the optics / Equipment.
    - If the product has been exposed to rain or water.

# SAFETY PRECAUTIONS

Safety pointers for the manual and the device described therein are depicted according to the following categories. Carefully read these sign codes & follow them when necessary.

| | |
|---|---|
| The following code categories describe the degree of danger or damage likely to be incurred in the event of user error made in ignorance of these codes. | |
| **WARNING** | In the event of user error, death or serious injury is Possible |
| | This icon denote cautions |
| | This icon represents the productive earth |
| | This icon represents Alternating current |
| | This icon represents the power switch is turned OFF |
| | This icon represents the power switch is turned ON |
| | Equipmential Connection |
| | Type B applied part |
| **LABELING INFORMATION** | |
| **SN** | Number following this symbol indicate the serial number of the Equipment |
| **REF** | Character following the symbol indicate the Model number of the Equipment |
| **Classification** | CE-Regulation MDD 93/42/EEC - Class I<br>**FDA classification Class II** |

**Disposal**

Dispose of the instrument according to local disposal and recycling laws.

# ⚠ CAUTION FOR USE

Cautions are intended to alert you to importance of following the correct operating procedures where risk of injury to the patient or system.

Do not handle the plug with wet fingers ( To avoid electric shock)

The operators are here by instructed not to touch the equipment and the patient simultaneously.

## GENERAL SPECIFICATION

### Equipment classification

Mode of operation : 5 minutes (Max)
Degree of mobility : Portable

**Type of protection against**
Electrical shocks - Class 1

**Degree of protection against**
Electrical shocks - Type 'B'

**Power Requirements**

AC Input I/P: 100-230V AC, 50-60Hz,
O/P: 5V DC, 1A

Fuses 1A Slow Blow (110V AC)
500mA Slow Blow (230V AC)
3A Slow Blow

### Safety Rules:

The series family ultrasound machines are designed to comply with the following safety aspects.

- Leakage current to ground less than 0.5mA in normal condition.
- Leakage current to ground less than 1.0mA in single fault condition.
- Isolation voltage between ground and mains wires greater than 1500V.
- Emission and susceptibility requirements for class A. equipment as per IEC 60601-1-2 standards.

# ENVIRONMENTAL CONDITIONS FOR USE

Operating Temperature: 0°C ~ 50°C

Humidity : 35% ~ 95% (without dew condensation)

Air Pressure : 700kPa ~ 1060kPa

## STORAGE, USAGE PERIOD AND OTHERS

1. Environmental conditions for installation (without package)
   Temperature: -5°C ~ 50°C

   Humidity : 35% ~ 95% (without dew condensation)

   Air Pressure : 700hPa ~ 1060hPa

2. When storing the instrument, ensure that the following conditions are met.
   a) The instrument should not be splashed with water.

   b) Store the instrument where air pressure, temperature, humidity, ventilation, sunlight, dust, salty/sulfurous air, etc. do not give any negative side effect.

   c) Do not store or transport the instrument on a slope or uneven surface or in an area where it is subject to vibrations or instability.

   d) Do not store the instrument where chemicals are stored or gas is generated.

## ENVIRONMENTAL CONDITIONS FOR PACKAGING IN TRANSPORTATION

Temperature : -20°C ~ 70°C

Humidity : 10% ~ 95%

## STORAGE, USAGE PERIOD OF BATTERY

Storage condition Backup (Charged) – 30 days

Usage Condition – 90 Minutes (Continues)

Shelf Life Period – Two Years

Time taken for charging – 60 Minutes

# TECHNICAL SPECIFICATION

| Parameter | Model: VIO-20 | Model: VIO-30 |
|---|---|---|
| ❖ Optical System | Stereoscopic | Stereoscopic |
| ❖ Power Supply | I/P: 110V/220V AC~60Hz/ 50Hz, 25VA<br>O/P: 6V DC, 2A | I/P: 100V – 240V AC<br>50Hz – 60Hz, 180mA<br>O/P: 5.7V DC / 700mA, |
| ❖ Battery | - | Rechargeable. 3.7V DC, 700mAh |
| ❖ Lamp | 6V, 10W *<br>NICAD Halogen Bulb | Warm White Light LED<br>3.3V DC, 1W* |
| ❖ Intensity Regulator | Continuously Variable * | Liner Intensity Variable |
| ❖ Pupillary Distance | 54 – 74 mm adjustable | 54 – 74 mm adjustable |
| ❖ Illumination | Good, Clear Circular Field | Good, Clear Circular Field |
| ❖ Net Weight | 1.850 Kg* | 0.500 Kg* |
| ❖ Altitude | Used less than 2000 mts | Used less than 2000 mts |
| ❖ Pollution Degree | 2 degree | 2 degree |
| ❖ Aperture size at the Instrument | 4.0mm, 3.0mm, 1.2mm | 4.0mm, 3.0mm, 1.2mm |
| ❖ Image Size at the focus Point (450mm from the Window Glass) | 80.0mm, 60.0mm, 25.0mm | 80.0mm, 60.0mm, 25.0mm |
| ❖ Filters | Green, Blue | Green, Blue |

## ACCESSORIES

**Standard Accessories (Qty):**

| # | VIO-20 | VIO-30 |
|---|---|---|
| 1. | Carrying Case (1) | Carrying Case (1) |
| 2. | Power Supply (1) | Nokia Charger (1) |
| 3. | Scleral Depressor (1) | Scleral Depressor (1) |
| 4. | Funds Chart (1) | Funds Chart (1) |
| 5. | Marking Pencil (4) | Marking Pencil (4) |
| 6. | Instruction Manual (1) | Instruction Manual (1) |

**Optional Accessories at Extra Cost:**

1. 20 Diopters Aspheric Viewing Lens
2. Double Sided Co-observation Teaching Mirror

*Specifications and design are subject to change without notice for improvement.

# ⚠CLEANING AND DISINFECTION INFORMATION

**The Condensing Lens:**

1) Clean the lens using hard contact lens cleaner and warm tepid water, **NOT HOT WATER**. Then dry by blotting the lens with a soft lint free cloth or paper towel.
2) Never autoclave or boil a condensing lens.
3) Place the lens completely in 3% hydrogen peroxide solution, Zepherin 1:1000, or Pure 70% Isopropyl Alcohol for 5-10 minutes.

**Lather and plastic can be wiped clean and disinfected by**

1. 5 to 10 minute exposure to a fresh solution of 3% Hydrogen peroxide or
2. A fresh solution containing 5000 parts per million (Mg/L) free available chlorine and 1/10 dilution of common household bleach (Sodium Hypochlorite), or
3. 70% Ethanol or
4. 70% Isopropyl alcohol.

## CHECKPOINTS FOR MAINTENANCE

**Maintenance by user**

- ❖ Regularly maintain and check the instrument and its parts.
- ❖ When using the instrument after a prolonged period of inactivity, confirm normal and safe operation beforehand.
- ❖ When the cover glass is stained, wipe it with the accessory clean cloth.
- ❖ When this instrument is not in use for a prolonged period, put the instrument into the carrying case safely.

**Daily Checkups**

- ❖ Do not store the instrument where there is much dust.
- ❖ When not in use, turn off the power.

## CLEANING THE EQUIPMENT

⚠ **Caution:** To avoid electric shock, do not remove the cover. Ask the serviceman to repair the instrument.

**Note:** Do not wipe the parts with volatile solvent. To prevent the plastic parts from discoloring or deteriorating, do not use benzene, thinner, ether or gasoline.

# UNPACKING & INSTALLATION MODEL: VIO-20

Unpack the Instruments and save all packing materials. They are specially designed to protect the Instrument and will make repacking easy if you ever need to ship your Indirect Ophthalmoscope – VIO-20

After unpacking verifies the list of accessories us indicate below.

## INSTALLATION

- The initial installation will be done by VIEWLIGHT Trained Engineers only. After installation a performances check will be carried by VIEWLIGHT Engineers. Nobody is authorized to install the Medical Equipment except VIEWLIGHT Engineers.
- Connect the Output of the power supply to the indirect ophthalmoscope.
- Ensure the intensity control in minimum position.
- Connect the power card to the power supply.
- Connect it to supply mains.
- Do not position the medical equipment to make it difficult to operate the disconnection devices. (appliance coupler)
- Fix the indirect ophthalmoscope on head with proper position.
- Switch ON the power supply unit.
- Sliding Knob Intensity may be adjusted as required and proper inter pupil adjust.
- When it is not in use set the intensity control to minimum position and switch of the equipment.
- Don't close the equipment immediately with any cover wait until it cools and cover with proper dust cover.


1. Binocular Indirect ophthalmoscope – VIO-20
2. Power Supply
3. Scleral Depressor
4. Funds Chart
5. Marking Pencil
6. Teaching Mirror
7. Power Card
8. Instruction Manual

# UNPACKING & INSTALLATION MODEL: VIO-30

Unpack the Instruments and save all packing materials. They are specially designed to protect the Instrument and will make repacking easy if you ever need to ship your Indirect Ophthalmoscope – VIO-30.

After unpacking verifies the list of accessories us indicate below.

## INSTALLATION

- The initial installation will be done by VIEWLIGHT Trained Engineers only. After installation a performances check will be carried by VIEWLIGHT Engineers. Nobody is authorized to install the Medical Equipment except VIEWLIGHT Engineers.
- Set the sliding switch position in OFF position in indirect ophthalmoscope.
- Ensure the sliding switch position in OFF.
- Connect the Charger to the supply mains..
- After charging disconnect the charger from main supply, and also from the indirect ophthalmoscope.
- Fix the indirect ophthalmoscope on head with proper position.
- Sliding Knob may be adjusted as required and proper inter pupil adjust.
- When it is not in use set the sliding switch in OFF position and switch of the equipment.
- Don't close the equipment immediately with any cover wait until it cools and cover with proper dust cover.


1. Binocular Indirect ophthalmoscope – VIO-30
2. Nokia Charger
3. Scleral Depressor
4. Funds Chart
5. Marking Pencil
6. Teaching Mirror
7. Instruction Manual

# A Dual purpose Instrument with Outstanding Features

Binocular indirect ophthalmoscope has gained great acceptance in India among the leading ophthalmologists. In many of the teaching hospitals, our ophthalmoscopes are recommended and used for teaching in residency programs.

The basic reasons for its big success are as follows:

- ✓ It can be used as a Wide Angle; Standard; or Small Pupil Scope with a simple adjustment, maintaining full, bright illumination.
- ✓ It has superior optics compared with any other ophthalmoscope on the market.
- ✓ It has a very east adjustment of P.D within 54 to 74 mm
- ✓ It is light weight and easy to adjust
- ✓ It has a large fin aluminium bulb holder that dissipates the heat better.
- ✓ It is very easy and quick to change the bulb
- ✓ It has a deluxe lightweight chamois cover foam padded headband with multiple adjustments. Foam pads can easily be exchanged after they worn out.
- ✓ With the new variable illumination, there is no need for neutral filters for photophobic patients.
- ✓ The light can be adjusted from 0 to maximum with a rheostat.
- ✓ The filters are the best quality, coated glass, filters-not simple colored plastic sheets.
- ✓ It has the largest, brightest teaching attachment.
- ✓ “Lock in” type of lightweight power cord which will never disengage during use.

# Binocular indirect ophthalmoscope (VIO-20 & VIO-30) With Small Pupil Feature (SPF)

**Special Feature of Binocular Indirect ophthalmoscope:**

- Head worn binocular indirect ophthalmoscope
- Superior optical quality
- Large, easily adjustable oculars
- Comfortable light weight headband
- Double sided teaching mirror accessory
- Filters
- Scleral depressor

**Clinical Advantages of Binocular Indirect Ophthalmoscope:**

- Large field for viewing retinal topography
- Greater illumination for penetrate opacities
- Binocular stereoscopic presentation of height & weight factors
- Capability to overcome distortions as found in amertropia

**Added Clinical Advantages of SPF Binocular Indirect Ophthalmoscope:**

- Ready use for hospital rounds
- Under surgical conditions with a constricted pupil
- In case where dilation is not advisable or possible
- Where a glaucoma patient is being given miotic therapy

Binocular indirect ophthalmoscope affords the viewer a perspective not available in direct ophthalmoscope. Views of the extreme retinal periphery and the ora serrata are readily obtained and operative manipulation without contamination is a definite advantage.

A large variety of pathological conditions are more rapidly; brought into view and “larger lesions can be seen in toto” and their significance will be better appreciated.

The Binocular Indirect Ophthalmoscope is an excellent instrument for all standard applications, as well as with uncooperative pediatric patients and in cases where the pupillary diameter is less than 4 mm. the need for pupillary dilatation is virtually obviated when using the SPF-capability of this dual purpose clinical instruments.

# BINOCULAR INDIRECT OPHTHALMOSCOPE
# Model:VIO-20

Part Nomenclature


## Part List

1. Head band Adjusting Knob
2. Head band
3. Front strip locking knob
4. Headband Front strip
5. Back holder Clamp screw
6. Filter changing lever
7. Front cover
8. Tilting set
9. Main housing
10. Binocular cover
11. Teaching mirror mount
12. Cover glass
13. Pupil adjusting lever
14. Binocular plate
15. Eyepieces
16. Tightening knob
17. Aperture changing lever
18. Wire locker

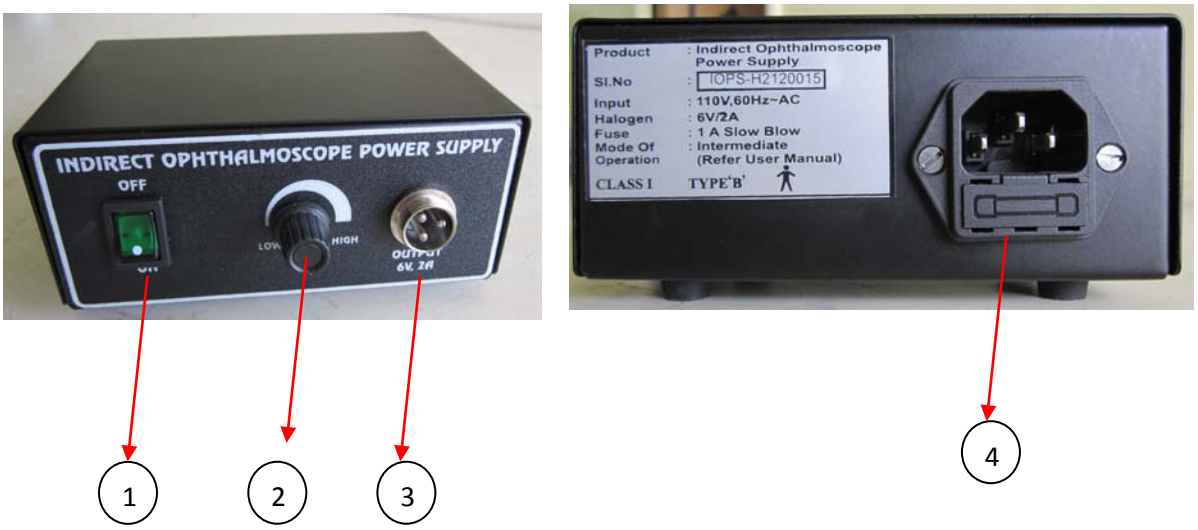
# WIRELESS INDIRECT OPHTHALMOSCOPE (LED)
# Model: VIO-30

Part Nomenclature


**Part List**

19. LED Cover
20. Battery Charger Pin
21. ON/OFF Switch
22. Battery Cover
23. Battery Housing

# INDIRECT OPHTHALMOSCOPE POWER SUPPLY VIO-20




**LIST OF PARTS**

1. ON / OFF Switch
2. Intensity Control
3. Output Socket
4. 3 Pin Socket with Fuse

# INDIRECT OPHTHALMOSCOPE VIO-30

**Battery Details**

| | |
|---|---|
|  | Equipped with double IC protection circuit. These mobile phone batteries consumed less battery, thus last long and provides extra time. These batteries are really safe to use.<br>• A-Grade Li-ion Battery<br>• Aluminium CAN<br>• Largest range of batteries available for almost all kinds of mobiles.<br>• Business class Battery. |

**Avoid:-**

- Exposing battery to fire / Moisture / liquid / High temperature
- Prolonged charging
- Touching battery contacts with metal storage above 60°C or below -20°C.
- Keep out of the reach of children

# OPERATING INSTRUCTIONS

**Small Pupil Binocular Indirect Ophthalmoscope:**

1) Position as usual and adjust to fit with both right and left eye fields in coincide when your target is 18 to 20 inches away.

2) While viewing the target, slide oculars with thumps outward, toward the temporal positions until only approximately 20 to 25 percent of the right and left viewing fields overlap. The smaller overlap you employ-the smaller the pupil you can work with.

3) Position light so that image is in upper 1/3 of the viewing field.

4) Better viewing is obtained if a +30 Diopter Aspheric viewing lens is used.

5) To change back to standard indirect use, merely adjust your oculars to your normal pupillary distance and both fields of view with right and left eyes will align be in coincide.

**Completely eliminated filament image:**

Filament image or uneven brightness within the illuminated area has been considered an unavoidable nuisance in Binocular Indirect Ophthalmoscope. However in Indirect Ophthalmoscope, filament image is eliminated completely by means of a special optical design. Thus Indirect Ophthalmoscope is able to give doctors a fully and evenly illuminated fundus image, free annoying filament image.

**Halogen Lamp:**

Light source is halogen lamp, which shows up figure in their natural colors. Life of the bulb is longer than the incandescent bulb.

**LED Lamp**

- Homogenous White light, adjustable light intensity, Long-lasting LED-illumination free of UV and IR
- Minimal or Less Heat radiation to halogen based light source
- Instant on & Off
- Environment friendly, ROHS complaint, no Mercury

**Low cost of ownership**

- 50000 burning hours of nominal LED-life expectance ensure many years of reliable operation at minimal cost.

# FUSE REPLACEMENT

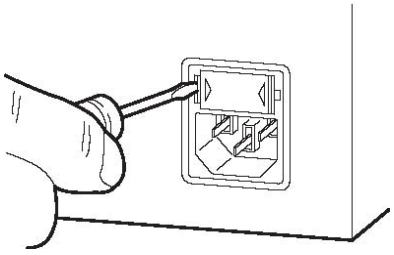
The power supply fuses are located at the rear of the power supply assembly.

**First disconnect the mains power from your Indirect ophthalmoscope.**

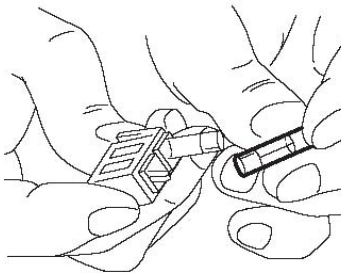
- ☞ Having first disconnected your indirect ophthalmoscope from the mains power supply, remove the fuse holder assembly by pull out the holder or by using external tools.
- ☞ Carefully withdraw the holder from the power supply.
- ☞ A visual inspection will indicate a blow fuse, or a circuit continuity tester may be used.
- ☞ Replace the blown fuse.
- ☞ Replace the fuse holder.
- ☞ Re-connect the mains power to the Indirect Ophthalmoscope, switch ON and check the bulb glow.

1 Make sure that the power of the instrument is OFF and then unplug the power cord.

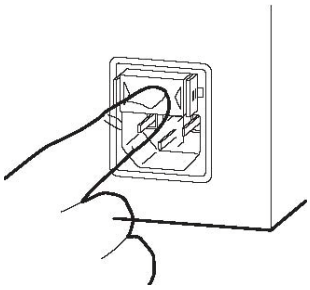
2 Push the claws at the both ends of fuse holder with a slotted screwdriver and remove the fuse holder.



3 Replace the fuse with a new accessory fuse.



4. Push in the fuse holder until "click" is heard



## SCHEMATIC Diagram (VIO-20)

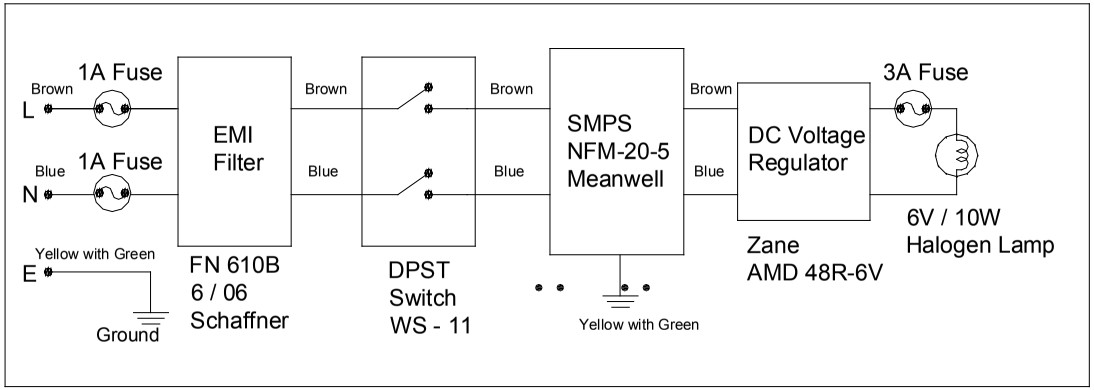
### WARNING

Refer to the rating plate for voltage and check that the Equipment voltage corresponds to the supply voltage.

**Important**: Wire color code defined as follows

***From Main Line to Input of Power Supply:***

Brown Wire - Line, Blue Wire - Neutral, Yellow Wire - Earth
All other wires color are indicated in the below Schematic diagram.



## TROUBLE SHOOTING

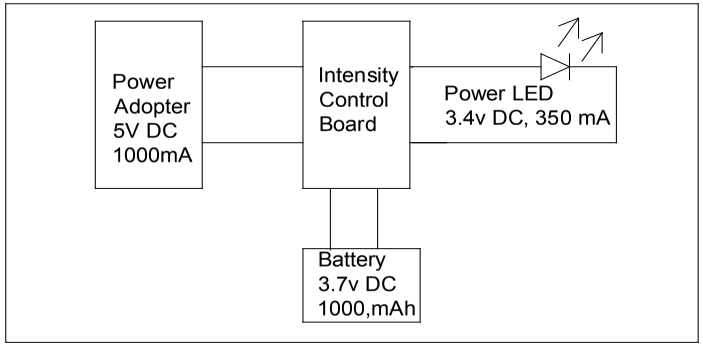
This section lists the most common problems users sometimes encounter. All possible user solutions are also listed for the problems.

- If the problem do not remedy the problem, contact our service Engineers or send the Instrument to our office for service.

- If any part is damaged or the Instrument is dropped, send the Instrument to our office for repair or replacement of damaged parts.

| Problem Reported | Possible Causes | Remedy |
|---|---|---|
| Bulb not glowing | ➢ Bulb fused<br>➢ Carbon deposition in bulb contact pin<br>➢ Transformer output problem | ✓ Change the bulb<br>✓ Remove the carbon deposit and re –assemble<br>✓ Measure the output voltage of Transformer |
| Bulb Flickering | ➢ Loose contact of electrical connections | ✓ Check the entire electrical connections |
| Low illumination | ➢ Weak bulb after long term usage<br>➢ Dust deposit on Cover Glass / Loss of coating<br>➢ Fungus or dust deposit on optics<br>➢ Low input AC voltage | ✓ Replace bulb<br>✓ Clean / replace the Cover Glass<br>✓ Clean dust & fungus<br>✓ Check input voltage |
| No clear image | ➢ Dust or fungus in optics | ✓ Clean the dust or fungus on the optical parts using appropriate cleaning solution |

## 11.2 SCHEMATIC Diagram (AAIO WIRELESS)



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