

# ILT960 User Guide



**InternationalLight**  
TECHNOLOGIES

Part of Ocean Insight

ISO 17025:2017 Accredited  
ISO 9001:2015 Certified

International Light Technologies, Inc.  
10 Technology Drive,  
Peabody, MA 01960  
Tel: 978-818-6180

Distributor



info@amstechnologies.com  
www.amstechnologies-webshop.com

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## ILT960-Series User Guide

# ILT960 User Guide

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## 1. Included in the box\*

1. ILT960-Series Spectrometer
2. Optical Fiber -600um core diameter, 0.22 NA, SMA905 connection
3. Input Optics ordered. Some of the popular input optics are:
  - a) RAA4
  - b) W2
  - c) Integrating sphere
4. USB 2.0 cable
5. Mini Tripod
6. Zero Filter (Selective models Only)
7. CD with SpectriLight Software and Calibration information

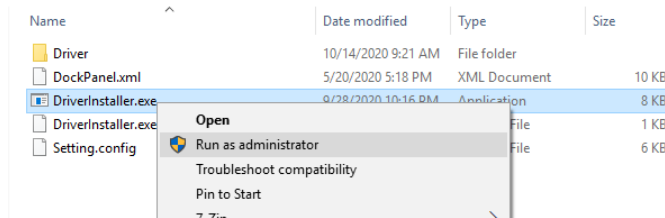
\* Items included may vary for customized spectrometer configurations

## 2. Getting Started

Install the software-SpectriLight from the CD following the instruction in the SpectriLight manual.

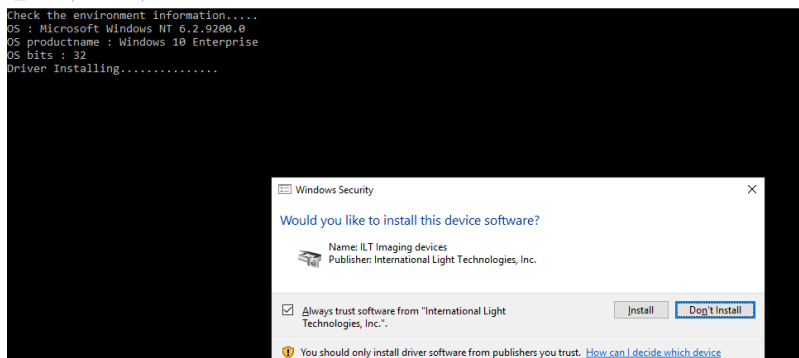
### 2.1. Driver Installation

Open “ILT960 driver” folder, **right click** the “DriverInstaller.exe” and choose “Run as administrator” option.



**Note: Do not double click the “DriverInstaller.exe”. It will end up as failed installation. Right click please.**

Enter the password or authorization needed for the administrator authority. Click “Install” when the following window pop up:

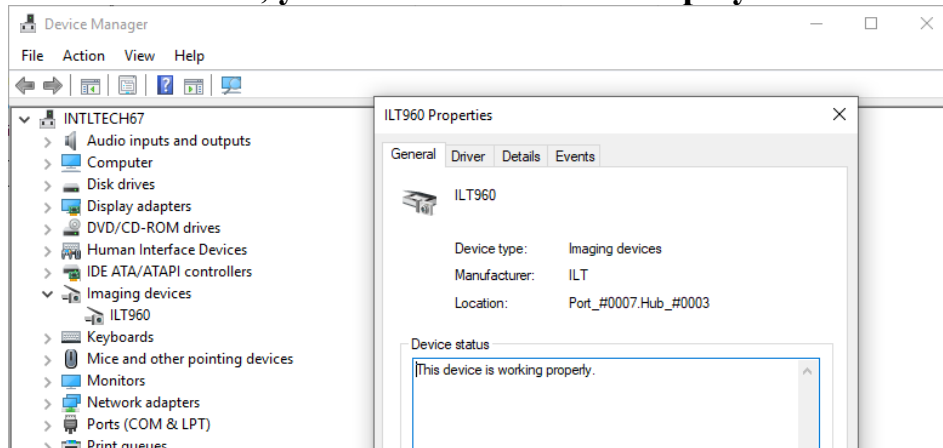


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You will see the following window if driver is installed successfully.

```
Check the environment information....
OS : Microsoft Windows NT 6.2.9200.0
OS productname : Windows 10 Enterprise
OS bits : 32
Driver Installing.....
Driver Installing:C:\Users\pdelauni\Desktop\ILT960_driver\Driver\USB2.0\TAURUS.inf...Success
.....
```

**To confirm: Plug in ILT960 to the computer, open device manager, under “Imaging devices” section, you will see “ILT960” displayed as following:**



## 2.2. Set up

Connect ILT960 to the computer using a USB 2.0 cable. Plug-in the Optical Fiber to the Spectrometer. Plug-in the other end to the input optics.

### Notes:

- End of the Fiber with the Serial number plugs-in to the spectrometer.
- Do not use any tools to tighten the fiber end. Hand tighten only.
- Do not bend the optical fiber with diameter less than 24cm during operation.
- Do not bend the optical fiber with diameter less than 18cm while storing.
- Keep the optical fiber end protection cap on when not connected.

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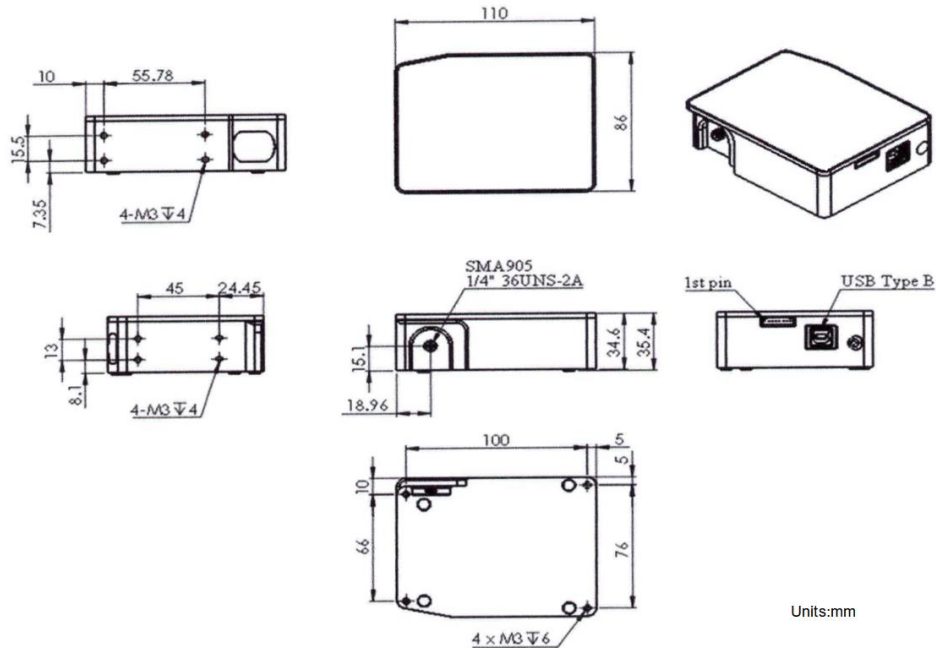
## 3. Product Specification

### 3.1. Features

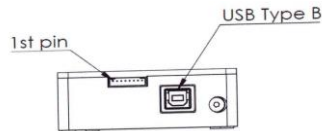
| Parameter                 | ILT960UVLS                         | ILT960UV  | ILT960UVVIS         | ILT960UVIR          | ILT960NIR           |
|---------------------------|------------------------------------|-----------|---------------------|---------------------|---------------------|
| Wavelength                | 200-500nm                          | 200-500nm | 200-850nm           | 230-1050nm          | 900-1700nm          |
| Detector                  | CMOS Linear Sensor                 |           |                     |                     | InGaAs Linear Array |
| Slit                      | 50um                               |           | 25um                |                     | 50um                |
| Resolution                | $\leq 0.9\text{nm}$                |           | $\leq 1.2\text{nm}$ | $\leq 2.3\text{nm}$ | $\leq 7\text{nm}$   |
| SNR                       | 330:1 @ 10ms integration time      |           |                     |                     | 6000:1 @ 100ms      |
| Dynamic Range             | 3450                               |           |                     |                     | 8700                |
| Integration time          | 0.2ms – 1 min                      |           |                     |                     | 0.1ms – 15 sec      |
| Dark Noise                | 36 (Upper Limit)                   |           |                     |                     | 10                  |
| Stray light               | $< 0.1\%$                          | $< 0.2\%$ |                     |                     |                     |
| Wavelength Accuracy       | $\pm 0.21\text{nm}$                |           | $\pm 0.3\text{nm}$  | $\pm 0.6\text{nm}$  | $\pm 1.5\text{nm}$  |
| Wavelength Calibration    | Yes                                |           |                     |                     |                     |
| Non-linearity calibration | Yes                                |           |                     |                     |                     |
| Dynamic Dark Correction   | Yes                                |           |                     |                     |                     |
| ADC                       | 16 Bits, 2.5MHz                    |           |                     |                     | 16 Bits, 15MHz      |
| Operating Temp.           | 0-50 Deg C                         |           |                     |                     |                     |
| Interface                 | USB 2.0 UART                       |           |                     |                     |                     |
| Calibration               | NIST Traceable/ISO17025 Accredited |           |                     |                     |                     |

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## 3.2. Mechanical Diagram



## 3.3. Electrical Specifications



### 3.3.1. Power

Connection: USB Type B  
 Power requirement (VBUS): 300mA at +5 VDC  
 Supply voltage: 4.75-5.25V  
 Power-up time: <4s  
 Maximum USB input power Vcc: +5.25VDC  
 Maximum I/O signal voltage: +5.5VDC

### 3.3.2. Electrical Pinout

| Pin No. | Direction | Pin Name  | Function Description   |
|---------|-----------|-----------|--|
| 1       | Power     | 5V Output | When PC USB port is connected, this pin is also connected to VBUS. This pin can provide around 0.1A power for external device. |
| 2       | Output    | Tx        | UART TX  |
| 3       | Input     | Rx        | UART RX  |

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|                               |        |            |                               |
|-------------------------------|--------|------------|-------------------------------|
| 4                             | Output | GPIO0      | General Purpose Output 0      |
| 5                             | Output | GPIO1      | General Purpose Output 1      |
| 6                             | Output | LS_ON      | Light Source Turn ON          |
| 7                             | Input  | Trigger_IN | External Trigger Input signal |
| 8 (Closest to USB connection) | GND    | GND        | Ground                        |

### 3.4. Calibration Uncertainties:

| Wavelength  | Uncertainty |
|-------------|-------------|
| 200-250nm   | ± 15%       |
| 250-450nm   | ± 10%       |
| 450-950nm   | ± 5%        |
| 950-1050nm  | ± 10%       |
| 1050-1250nm | ± 14%       |
| 1250-1700nm | ± 7%        |

### 3.5. Environmental Conditions

| Parameter | Value                |
|-----------|----------------------|
| Storage   | -30 to +70°C         |
| Operation | 0 to +50°C           |
| Humidity  | 0-90% non-condensing |

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