

High-sensitivity Low-noise Micro Spectrometer

ATP3000/ATP3040

Features

- Resolution: 0.01-2 nm
- Detector pixels: 2048
- High sensitivity: 1300V (lx*s)
- Response range: from UV to NIR
- Maximum readout speed : 10MHz max
- Optical path : crossed C-T
- Integration time: 1ms-65535ms
- Power supply: USB port
- Light input connector: SMA905 or free space
- Data output connector : USB2.0(High speed) or UART

Application

- Small volume, fast spectrophotometer
- Spectral analysis/ radiation spectrophotometer analysis
- Transmission, absorbance measurement
- Reflectance detection
- Ellipsometer
- Laser wavelength measurement
- UV, VIS and short wave NIR wavelength measurement

Description

Optosky ATP3000/ATP3040 are low-noise, high-resolution optic fiber spectrometer. It employs 2048/4096 pixels CCD sensor spectral response covering UV to NIR wavelength. Readout speed reach up to 10MHz, low noise signal process circuit, and fast and accurate spectral data collection.

ATP3040 further improve SNR and dynamic range based on ATP3000, so measuring results have high stability and reliability, and they do not change with operating temperatures.

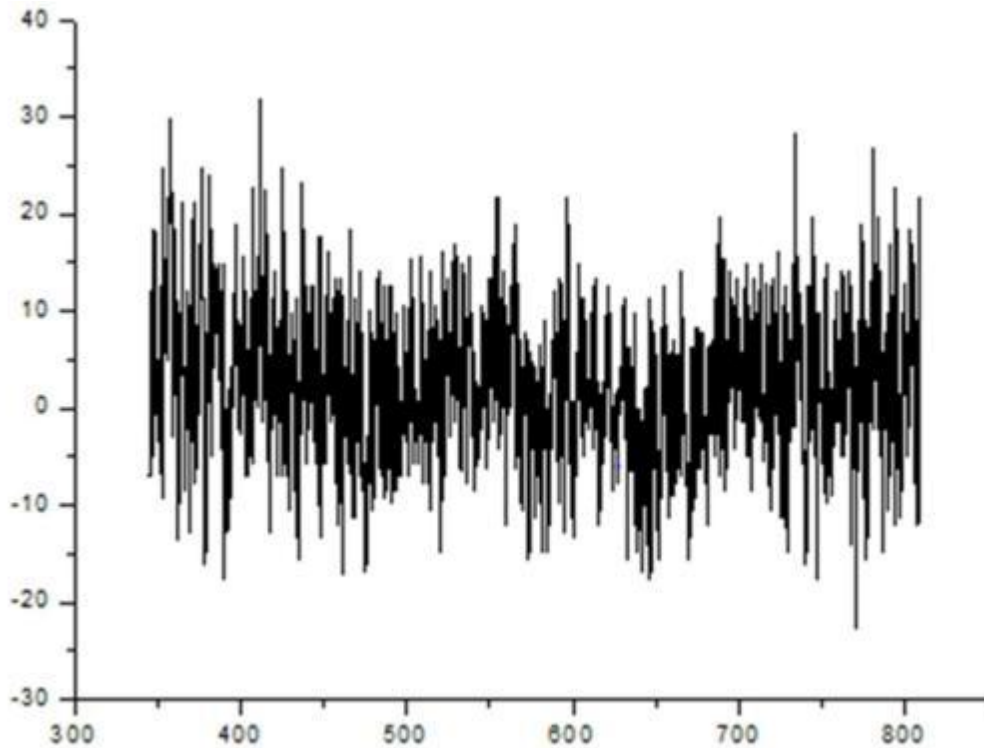
ATP3000/3040 supplies power directly via USB port, and outputs data via USB2.0/UART, and it's convenient to apply integration.

| PN | CCD pixels | Cooling |
|---------|------------|--------------|
| ATP3000 | 2048pixels | Uncooled CCD |
| ATP3040 | 4096pixels | Uncooled CCD |



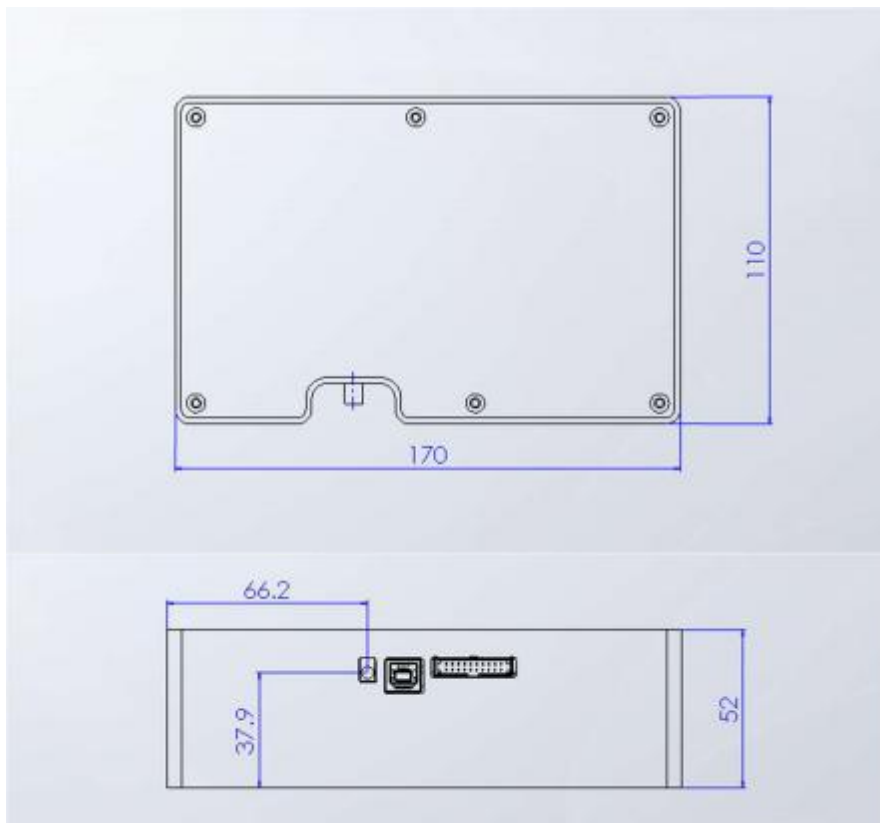
1. Performance

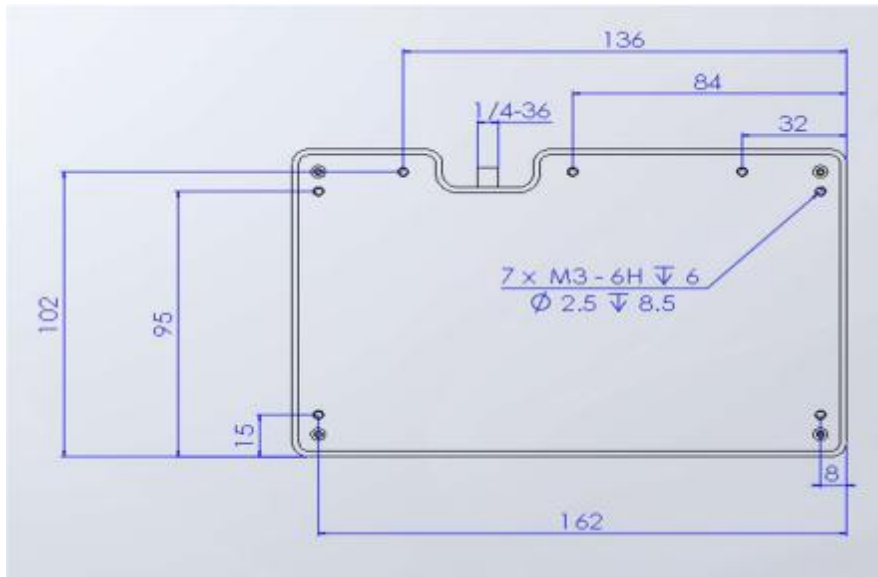
| | |
|-------------------------|--|
| Detector | |
| Type | Hamamatsu S11639/ S13496 Linear CCD sensor |
| Spectral range | 180-1100 nm |
| Resolution | 0.01-2 nm |
| Effective pixels | 2048pixels (ATP3000) or 4096 pixels (ATP3040P) |
| Pixel size | 14 μ m \times 200 μ m (ATP3000)或 7 μ m \times 200 μ m (ATP3040P) |
| Sensitivity | 1300 (lx·s) |
| conversion efficiency | 25uV/e- |
| Dark noise | ATP3000 8.3 RMS @ 25°C |
| Optical parameters | |
| Wavelength ranges | 180- 1100 nm (available in custom wavelength) |
| Optical resolution | 0.01-1 nm (decide on slit and spectral range) |
| SNR | ATP3000 >1000 : 1 |
| Dynamic range | ATP3000 10000 : 1 |
| Optical path parameters | |
| Optical path | f/4 crossed C-T |
| Confocal distance | 77.5 mm for incidence / 112 mm for output |
| Entrance slit width | 5 , 10 , 25, 50, 100, 150, 200 μ m (optional, available in custom width) |
| Incident connector | SMA905 connector or free space |
| Electrical parameters | |
| Integration time | 1 – 65535 ms |
| Output data port | USB 2.0 |
| ADC bits depth | 16 bit |
| Power supply | DC 5V \pm 10% |
| Operating current | <350 mA (uncooled)、 <3.0A (cooled) |
| Storage temperature | -20°C to +70°C |
| Operating temperature | - 10-45 oC |
| Operating humidity | < 90%RH |
| Physical parameters | |
| Size | 170 \times 110 \times 52 mm |
| Weight | 0.8 kg |
| Sealing | Anti-sweat |



ATP3000 dark noise

2. Mechanical dimension:





3. Electrical port:

| Parameter | Min | Typ | Max | Unit |
|---|------|-----|------|------|
| Power Supply | | | | |
| Operating voltage range | 4.5 | 5 | 5.5 | V |
| Operating current | 200 | 500 | 2000 | mA |
| Logic Inputs(3.3V LVTTTL, Five-volt tolerant) | | | | |
| High level input voltage | 1.7 | | 3.6 | V |
| Low level input voltage | -0.3 | | 1.0 | V |
| Logic Output(3.3V LVTTTL) | | | | |
| High level output voltage | 2.4 | | | V |
| Low level output voltage | | | 0.4 | V |



Electrical Pin-Out

| Pin# | Description | I/O | Function Description |
|------|-------------|------------------|--|
| 1 | VCC | / | Power Supply, 5V±0.5, |
| 2 | VCC | / | Power Supply, 5V±0.5, |
| 3 | GND | / | Ground |
| 4 | GND | / | Ground |
| 5 | LD_TX | Output | UART Transmit signal LVTTL Logic for LD |
| 6 | LD_RX | Input | UART Receive signal LVTTL Logic for LD |
| 7 | LD_trigger | Input | LVTTL output trigger signal for LD |
| 8 | LD_EN | Output | LVTTL output enable signal.for LD |
| 9 | NC | / | |
| 10 | NC | / | |
| 11 | GPIO0 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic. |
| 12 | GPIO1 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic. |
| 13 | GPIO2 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic. |
| 14 | GPIO3 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic. |

Product data information is current as of publication data. Products conform to specifications per the terms of Optosky Standard warranty.

| | | | |
|----|--------|---------------|--|
| 15 | GPIO4 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic. |
| 16 | GPIO5 | Input /Output | General Purpose Software Programmable Digital Inputs/Outputs, LVTTL Logic. |
| 17 | VCC | / | 3.3V Power Output |
| 18 | GND | / | Ground |
| 19 | EXT_TX | Output | EXT UART Transmit signal LVTTL Logic |
| 20 | EXT_RX | Input | EXT UART Receive signal LVTTL Logic |