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## MSPM00511- ILX511

MSPM00511(P/N: TS300511)  
Micro-spectrometer with 330-1100 wavelength range  
Sony ILX511 sensor  
USB2.0 interface and plug and play capabilities  
Detector collection lens installed  
A proprietary multi-bandpass order sorting filter  
WIN XP/Vista/7/8 (32 or 64 bit)



### Specification

#### MSPM00511(P/N: TS300511)

| Mechanical parameters          |                                                                                                                               |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Dimensions (mm)                | 95×68.5×36                                                                                                                    |
| Weight (g)                     | 210                                                                                                                           |
| Detector Specification         |                                                                                                                               |
| Detector                       | Sony ILX511 2048 Linear CCD Array                                                                                             |
| Wavelength Response Range (nm) | 330-1000                                                                                                                      |
| Active Pixels                  | 2048                                                                                                                          |
| Pixel size (μm)                | 14×200                                                                                                                        |
| Saturation Exposure (lx·s)     | 0.004                                                                                                                         |
| Saturation Output Voltage      | 0.8V                                                                                                                          |
| A/D Resolution                 | 16 bit                                                                                                                        |
| Dark Signal Voltage (mV)       | 3                                                                                                                             |
| Sensitivity Non-uniformity     | 5%                                                                                                                            |
| Sensitivity (V/lx·s)           | 200                                                                                                                           |
| Optical Bench                  |                                                                                                                               |
| Optical System                 | f/4, asymmetrical crossed Czerny-Turner                                                                                       |
| Focal length (mm)              | 45 (Input); 70 (Output)                                                                                                       |
| Entrance Aperture (μm)         | 5, 10, 15, 20, 50 .etc width slits or fiber (customizable)                                                                    |
| Grating                        | Various kinds of scoring grating or holographic grating with different grating constants and flare wavelengths (customizable) |
| Cylindrical Lens               | optional                                                                                                                      |
| Optical Filter                 | Band pass or long pass filters to eliminate secondary spectrum                                                                |

|                                      |                                 |                                                                                                                                 |
|--------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Fiber and Fiber Connection           |                                 | NA 0.22, SMA905 (customizable)                                                                                                  |
| <b>Spectroscopic</b>                 |                                 |                                                                                                                                 |
| Wavelength Range                     |                                 | Depends on optical grating                                                                                                      |
| Optical Resolution (nm)              |                                 | 0.2-10 FWHM (Depends on grating constant, width of slit and detector model)                                                     |
| SNR                                  |                                 | 300:1 (Full signal)                                                                                                             |
| Wavelength Tolerance (nm)            |                                 | About $\pm 0.2$                                                                                                                 |
| Dark noise (RMS counts)              |                                 | 50                                                                                                                              |
| Integration Time                     |                                 | 2ms-4s                                                                                                                          |
| Dynamic Range                        |                                 | 267                                                                                                                             |
| Stray light                          |                                 | <0.05% at 550nm                                                                                                                 |
| <b>Electronics</b>                   |                                 |                                                                                                                                 |
| Power Consumption                    |                                 | 300 mA $\times$ 5 V DC                                                                                                          |
| Data Transfer Speed                  |                                 | Full spectrum into memory every 2.4 ms at USB 2.0                                                                               |
| <b>Computer</b>                      |                                 |                                                                                                                                 |
| Operating System                     |                                 | Windows /XP/Vista/7 (32 and 64)                                                                                                 |
| Interface                            |                                 | USB 2.0 (480Mbps), compatible with USB 1.1                                                                                      |
| <b>Pre-defined System Components</b> |                                 |                                                                                                                                 |
| Name                                 | Customizable Parts              | Remark                                                                                                                          |
| Slit                                 | Width ( $\mu\text{m}$ )         | 10, 20, 50, 100 .etc                                                                                                            |
| Grating                              | Lines Per Unit (L/mm)           | 300, 600, 1200, 1800                                                                                                            |
|                                      | Wavelength Range(nm)            | 200-1100 (User defied, about 650 range with 600 lines/mm grating)                                                               |
| Fiber                                | Core Diameter ( $\mu\text{m}$ ) | 9, 50, 200, 400, 600 .etc                                                                                                       |
|                                      | Wavelength Range(nm)            | 200-1100                                                                                                                        |
|                                      | Outer Protection Layer          | Normal or enhanced jacketing                                                                                                    |
|                                      | Interface type                  | SMA 905 (standard) or FC, ST .etc                                                                                               |
| Detector                             | Model                           | Sony ILX511                                                                                                                     |
| Cylindrical Lens                     | Optional                        | Enhance system's light gathering ability                                                                                        |
| <b>Optional Components</b>           |                                 |                                                                                                                                 |
| Name                                 |                                 | Remark                                                                                                                          |
| Light Source                         |                                 | Used for wide range spectral measurements or wavelength calibration: for example halogen tungsten, xenon or argon light sources |
| Integration Sphere                   |                                 | Used to acquire uniform light                                                                                                   |
| Reflection Measurement Accessory     |                                 | Components used for reflection spectrum measurements: for example standard reflection board or specialized clamp                |
| Transmission Measurement Accessory   |                                 | Components used for transmission spectrum measurement: for example sample holder and various kinds of cuvettes                  |
| <b>Packing List</b>                  |                                 |                                                                                                                                 |

| Name                         | Amount    |
|------------------------------|-----------|
| ToupTek Microspectrometer    | MSPM00511 |
| Fiber with SMA 905 Interface | 1         |
| Mini USB Data Transfer Wire  | 1         |
| CD of Software and SDK       | 1         |

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