STALWART

Ultra High Resolution Grating Spectrometer
STP-730 Series

STP-730 Series

Introduction

STP-730 spectrometer is an ultra-high resolution spectrometer developed by Stalwart with 20 years of spectrometer development experience. After five years of research and development, STP-730 spectrometer adopts reflective grating, which is convenient for quick replacement. The grating tower wheel is controlled by software, which can accurately locate the grating and test wavelength.

The STP-730 system uses a simulated and optimized optical system to ensure high resolution. This design provides the possibility of multi fiber imaging at the same time by correcting the aberration. STP-730 series has multiple input and output options, providing endless possibilities, scalability and diversity for researchers. Both single point detectors and array cameras can be used.

STP-730 spectrometer has four models with different focal lengths: 210, 350, 510 and 760mm. Different from prism spectrum or transmission grating, each STP-730 can cover applications from ultraviolet to near-infrared and short wave infrared bands. Just select the appropriate grating, you can have more freedom in the selection of wavelength and resolution.

STP-730 spectrometer can receive SMA905 fiber input light or free space light, and output the measured spectral data through USB2.0 or UART port.

STP-730 spectrometer only needs a + 12V DC power supply, which is very easy to use. All the controls can be electrically controlled by software.

Features

- Ultra high resolution, up to 0.01nm ;
- Four different lengths customized: 210, 350, 510, 760mm
- Wavelength range: 150nm-25 um (Customized)
- Tower rotation grating, built-in 3 gratings, multiple gratings optional: 90, 150, 300, 400, 500, 600, 900, 1200, 800, 2400, 3600 line ;
- Power supply: DC 12V@<4A ;
- ADC depth: 18 bit (output 16bit);
- Multiple optical input interfaces: SM905 fiber interface or free space input;
- Dual-output with two CCD configured (Si CCD & InGaAs CCD);
- Crossed C-T light path and toroidal aberration calibration design;
- The control of the instrument (such as grating conversion, wavelength scanning, etc.) is all controlled by computer
- Data output interface: USB2.0 & UART ;
- 15-pin expansion interface;
- SMA external trigger signal;
- Multiple attachment can be select.

Specification

Detector	
Model	TE Cooled CCD, TE Cooled InGaAs CCD, PbS, Pyroelectric
Wavelength Range	150nm-25 um
Effective Pixels	CCD: 2048, SWIR InGaAs CCD: 512, PbS & Pyroelectric: 256
Optical Parameter	
Wavelength Range	150nm-25 um, Customized
Optical Resolution	10 pm ~ 5 nm (Depend on different focal length, slit size, spectral range)
Max. Dynamic Range	SCMOS & CCD: >1400; SWIR InGaAs: >10000
Light Path Parameter	
Optical Design	Asymmetric Cooled C-T Optical Path
Focal Length	210, 350, 510 & 760mm
Grating	Tower rotation grating, built-in 3 gratings, multiple gratings optional: 90, 150, 300, 400, 500, 600, 900, 1200, 1800, 2400, 3600 line;
Grating Rotation Mode	Electronic Control
Grating Rotation Angle	0.36 μrad
Input Slit Width	5, 10, 25, 50, 100, 150, 200 μm Customized
Incident Light Interface	Support dual entry: SMA905 fiber interface, free space
Output Optical Interface	Support dual entry.
Electrical Parameters	
Integration Time	10μs - 256s
Data Output Interface	USB 2.0
ADC depth	18bit (output 16bit)
Power Support	12V DC±5%
Working Current	<4A
Working Temp.	-20°C ~ +45°C
Storage Temp.	-30°C ~ +70°C
Max. Working Humidity	< 90%RH (No Condensation)

Specification

Physical Parameters	
Dimension & Weight	STP-730FL2: 600*400*155mm,15kg STP-730FL3: 23 Kg STP-730FL4: 35Kg STP-730FL5: 45Kg

Application

- Raman Spectroscopy;
- Fluorescence Spectroscopy;
- Photoluminescence Spectroscopy;
- Absorption, Reflection & Transmission Spectroscopy;
- LIBS;
- Microscope.

Selection Table

Detector	Focal Length	Aperture Ratio	PMT Resolution*	CCD Resolution**	Linear Dispersion
STP-730FL2	210mm	F/3.5	0.4 nm	0.4 nm	4.17 nm/mm
STP-730FL3	350mm	F/4.2	0.1 nm	0.14 nm	2.38 nm/mm
STP-730FL4	510mm	F/6.5	0.07	0.09	1.65nm/mm
STP-730FL5	760mm	F/9.7	0.04	0.05	1.03nm/mm

Note:

1. with 1200 g/mm grating @ 435.8 nm and 10μm slit width and 4 mm slit height
2. with 1200g/mm grating @ 435.8nm 14μm pixel, 20μm slit width

Accessories

- Various fibers.
- Filter runner;
- Light source;
- 17 kinds of gratings optional;
- Wavelength calibration and intensity calibration system;

Detachable Three-stage Grating Tower Wheel

- Each tower wheel can be installed with three gratings, which can be freely selected when order in.
- The tower wheel has optical installation interface, which can be calibrated automatically after installation.
- Wavelength coverage, luminous flux and resolution can be optimized according to requirement.

Specification

Spectral range	Model	Types	Material	Response range	Pixels	Cooled
<1100nm	STP-S1	Cooled back-illuminated area array CCD	Si	50~1100nm	2048X64	-20˚C
	STP-S2	Deep-cooling back -illuminated area array			2048X264	-70˚C
	STP-S3	Deep-cooling area array EMCCD			1600 x 200 1600 x 400	-100˚C
	STP-S4	Unit Si detector			1X1	-10˚C
	STP-S5	ultra-low temperature cooled CCD			2048X264	-130˚C
	STP-S6	Liquid nitrogen cooled CCD			2048X264	-190˚C
900~2500nm	STP-S7	Cooled linear array InGaAs CCD	InGaAs J11	900~1700nm	512X1	-20˚C
	STP-S8	Refrigerated linear array InGaAs CCD	InGaAs J13	900~2500nm	512X1	-20˚C
	STP-S9	Unit InGaAs detector	InGaAs J11	900~1700nm	1	-20˚C
	STP-S10	Unit InGaAs detector	InGaAs J13	900~2500nm	1	-20˚C
>2.5μm	STP-S11	Unit PbS detector	PbS	1~3μm	1	-20˚C
	STP-S12	Cooled line array PbS detector	PbS	1~3μm	256X1	-20˚C
	STP-S13	Cooled unit pyroelectric detector	Pyroelectric	1~25μm	1	-20˚C
	STP-S14	Cooled linear array pyroelectric detector	Pyroelectric	1~25μm	256X1	-20˚C