

# Omni Spectrographs

## Omni- $\lambda$ Monochromators and Spectrographs



Omni- $\lambda$  Series of imaging spectrographs and monochromators from Zolix Instruments are profession standard for researchers who demand the highest quality data. Zolix spectrographs and monochromators feature a very flexible design that can be configured for a wide range of applications & spectral range from UV to NIR.

- 200mm, 320 mm,500 mm,750 mm focal length
- Our rugged Czerny-Turner spectrographs come pre-aligned and pre-calibrated for ease of operation.
- Interchangeable triple grating turret– Different wavelength ranges and resolutions, Provide a simple, accurate and convenient way for the user to change gratings within the spectrograph unit
- These instruments can be integrated with single point detectors, InGaAs cameras and CCDs to offer a versatile, most sensitive modular solution for different applications ;
- Accessories including filter wheels, fiber adapters, shutters, motorized slits, sample chambers etc.
- Software can complete data acquisition for detectors including single point detectors and CCD.
- Labview driver for programming to operate Omni- $\lambda$  Series spectrographs and monochromators.

### Omni- $\lambda$ Specifications(@1200g/mm\* )

	Omni- $\lambda$ 200i	Omni- $\lambda$ 300i	Omni- $\lambda$ 500i	Omni- $\lambda$ 750i
Focal Length (mm)	200	320	500	750
Aperture Ratios	f/3.5	f/4.2	f/6.5	f/9.7
Resolution(nm)-PMT*	0.15	0.08	0.046	0.028
Resolution(nm)-CCD(26 $\mu$ m) *	0.28	0.174	0.15	0.09
Dispersion (nm/mm) *	3.6	2.3	1.7	1.1
Wavelength Accuracy(nm)	$\pm 0.2$	$\pm 0.2$	$\pm 0.15$	$\pm 0.1$
Wavelength Repeatability (nm)	$\pm 0.1$	$\pm 0.1$	$\pm 0.08$	$\pm 0.01$
Step (nm)	0.01	0.005	0.005	0.0025
Stray Light	$1 \times 10^{-5}$	$1 \times 10^{-5}$	$1 \times 10^{-5}$	$1 \times 10^{-5}$
Focal Plane Size (mm)	30(w) $\times$ 14(h)	30(w) $\times$ 14(h)	30(w) $\times$ 14(h)	30(w) $\times$ 14(h)
Optical Axis Height(mm)	146	146	146	146
Slit	Width: 0.01-3mm(Motorised or manual slit), Height: 2, 4, 14 mm, height selectable			
Grating Size(mm)	50 $\times$ 50	68 $\times$ 68	68 $\times$ 68	68 $\times$ 68
Grating Mount	Dual grating turret	Interchangeable triple grating turret	Interchangeable triple grating turret	Interchangeable triple grating turret
Computer Interface	USB2.0	USB2.0 and RS232	USB2.0 and RS232	USB2.0 and RS232
Size (mm)	300 $\times$ 216 $\times$ 213	420 $\times$ 295 $\times$ 232	550 $\times$ 288 $\times$ 220	800 $\times$ 338 $\times$ 218
Weight (Kg)	14	16	22	32.5

- Dispersion measured with 1200g/mm grating @ 435.8nm
- PMT resolution measured with 1200g/mm @ 435.8nm, 10 $\mu$ m slit width and 4mm slit height
- CCD resolution measured with 1200g/mm @ 435.8nm, 10 $\mu$ m slit width and 26 $\mu$ m pixel

## Omni-λ Spectrographs Named Views

Omni-λXX Y Z(i)

20: 200 mm focal length  
 30: 320 mm focal length  
 50: 500 mm focal length  
 75: 750 mm focal length

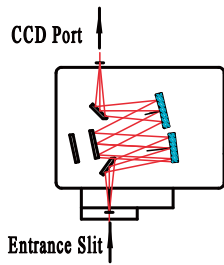
0: Standard (Side entrance, protected Al coated grating and mirror)  
 1: IR (Protected gold coated)  
 2: Dual slit entrances  
 3: IR & Dual slit entrances  
 4: UV  
 5: UV & Dual slit entrances  
 6: Protected silver coated  
 7: Protected silver coated & Dual slit entrances

2: CCD side exit  
 3: Slit front exit, CCD side exit  
 4: Dual CCD exits  
 5: Slit front exit  
 6: CCD front exit  
 7: Dual slit exits  
 8: CCD front exit, slit side exit  
 9: Slit side exit

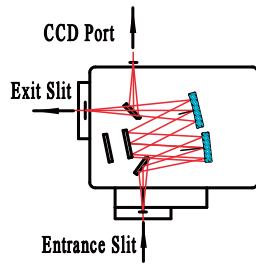
e.g Omni-λ 3047, side entrance, slit front exit, slit side exit, support 3 gratings simultaneously, UV monochromator.

### Optical Configuration

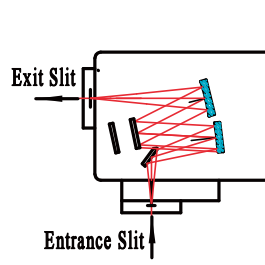
#### Omni-λ 200i Monochromator/Spectrograph



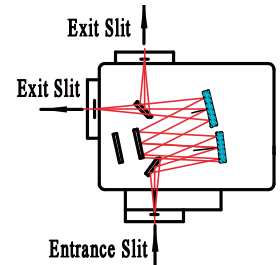
Omni-λ 2002i



Omni-λ 2003i

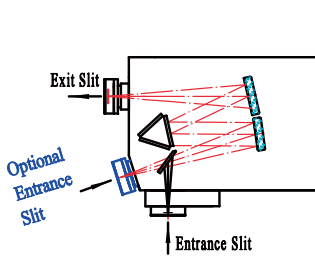


Omni-λ 2005i

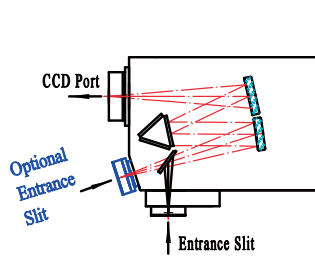


Omni-λ 2007i

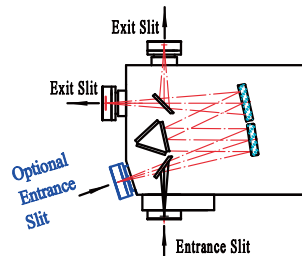
#### Omni-λ 300i Monochromator/Spectrograph



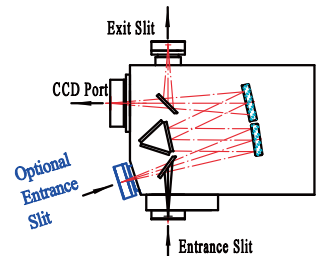
Omni-λ 3005i



Omni-λ 3006i

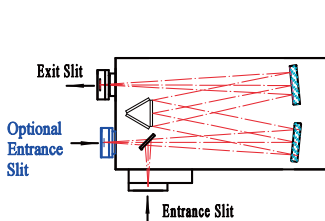


Omni-λ 3007i

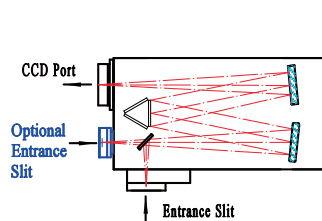


Omni-λ 3008i

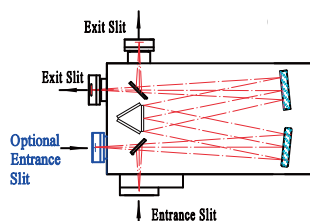
#### Omni-λ 500i Monochromator/Spectrograph



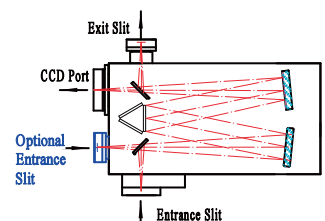
Omni-λ 5005i



Omni-λ 5006i

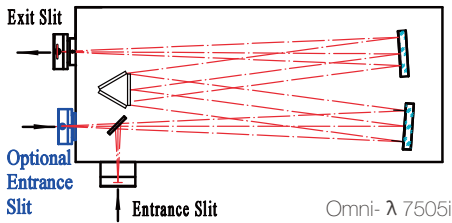


Omni-λ 5007i

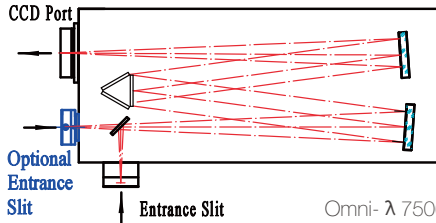


Omni-λ 5008i

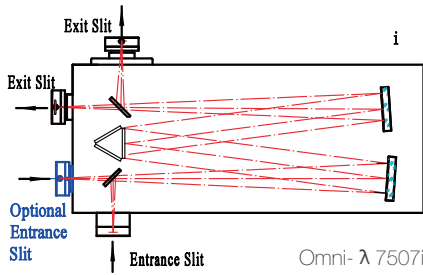
### Omni-λ 750i Monochromator/ Spectrograph



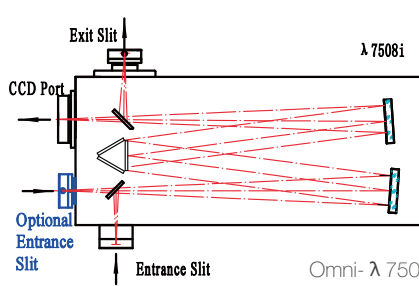
Omni-λ 7505i



Omni-λ 7506i



Omni-λ 7507i



Omni-λ 7508i

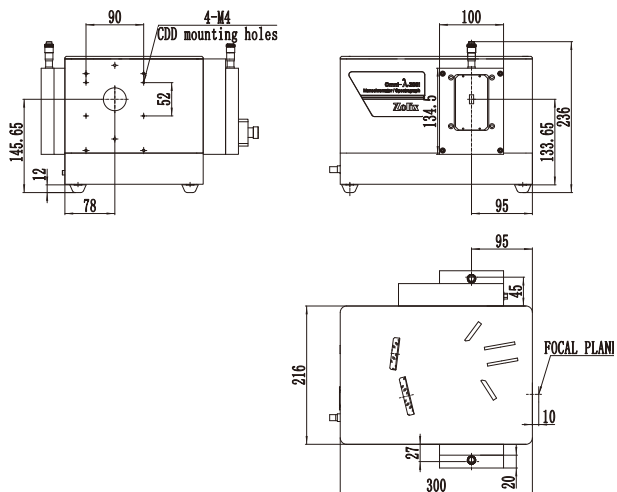
Note: the second entrance is the optional (blue).

### Omni-λ Selections

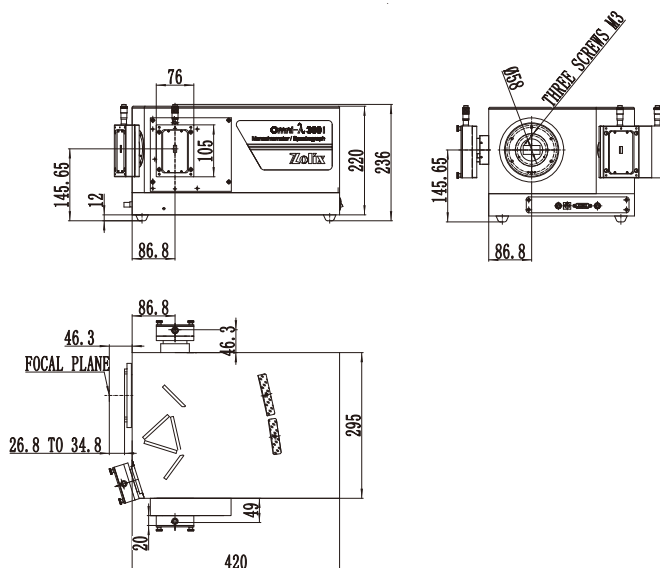
Model	Description
<b>Omni-λ200i series Monochromator(200 mm focal length, support 2 gratings simultaneously)</b>	
Omni-λ2003i	side entrance, slit front exit, CCD side exit, support 2 gratings simultaneously
Omni-λ2002i	side entrance, CCD side exit, support 2 gratings simultaneously
Omni-λ2005i	side entrance, slit front exit, support 2 gratings simultaneously
Omni-λ2007i	side entrance, slit front exit, slit side exit, support 2 gratings simultaneously
<b>Omni-λ300i series Monochromator/ spectrograph(320 mm focal length, support 3 gratings simultaneously)</b>	
Omni-λ3005i	side entrance, slit front exit, support 3 gratings simultaneously
Omni-λ3007i	side entrance, slit front exit, slit side exit, support 3 gratings simultaneously
Omni-λ3008i	side entrance, CCD front exit, slit side exit, support 3 gratings simultaneously
Omni-λ3004i	side entrance, CCD front exit, CCD side exit, support 3 gratings simultaneously
Omni-λ3015i	side entrance, slit front exit, support 3 gratings simultaneously, IR monochromator,
Omni-λ3017i	side entrance, slit front exit, slit side exit, support 3 gratings simultaneously, IR monochromator
Omni-λ3027i	Dual entrances, slit front exit, slit side exit, support 3 gratings simultaneously
Omni-λ3028i	Dual entrances, CCD front exit, slit side exit, support 3 gratings simultaneously
Omni-λ3024i	Dual entrances, CCD front exit, CCD side exit, support 3 gratings simultaneously
Omni-λ3047i	side entrance, slit front exit, slit side exit, support 3 gratings simultaneously, UV monochromator
Omni-λ3048i	side entrance, CCD front exit, slit side exit, support 3 gratings simultaneously, UV monochromator
Omni-λ3044i	side entrance, CCD front exit, CCD side exit, support 3 gratings simultaneously, UV monochromator
<b>Omni-λ500i series Monochromator/ spectrograph (500 mm focal length, support 3 gratings simultaneously)</b>	
Omni-λ5005i	side entrance, slit front exit, support 3 gratings simultaneously
Omni-λ5007i	side entrance, slit front exit, slit side exit, support 3 gratings simultaneously
Omni-λ5008i	side entrance, CCD front exit, slit side exit, support 3 gratings simultaneously
Omni-λ5004i	side entrance, CCD front exit, CCD side exit, support 3 gratings simultaneously
Omni-λ5015i	side entrance, slit front exit, support 3 gratings simultaneously, IR monochromator,
Omni-λ5017i	side entrance, slit front exit, slit side exit, support 3 gratings simultaneously, IR monochromator
Omni-λ5027i	Dual entrances, slit front exit, slit side exit, support 3 gratings simultaneously
Omni-λ5028i	Dual entrances, CCD front exit, slit side exit, support 3 gratings simultaneously
Omni-λ5024i	Dual entrances, CCD front exit, CCD side exit, support 3 gratings simultaneously
Omni-λ5047i	side entrance, slit front exit, slit side exit, support 3 gratings simultaneously, UV monochromator
Omni-λ5048i	side entrance, CCD front exit, slit side exit, support 3 gratings simultaneously, UV monochromator
Omni-λ5044i	side entrance, CCD front exit, CCD side exit, support 3 gratings simultaneously, UV monochromator
<b>Omni-λ750 series Monochromator/ spectrograph (750 mm focal length, support 3 gratings simultaneously)</b>	
Omni-λ7505i	side entrance, slit front exit, support 3 gratings simultaneously
Omni-λ7507i	side entrance, slit front exit, slit side exit, support 3 gratings simultaneously
Omni-λ7508i	side entrance, CCD front exit, slit side exit, support 3 gratings simultaneously
Omni-λ7504i	side entrance, CCD front exit, CCD side exit, support 3 gratings simultaneously
Omni-λ7515i	side entrance, slit front exit, support 3 gratings simultaneously, IR monochromator,
Omni-λ7517i	side entrance, slit front exit, slit side exit, support 3 gratings simultaneously, IR monochromator

## Omni-λ Drawings

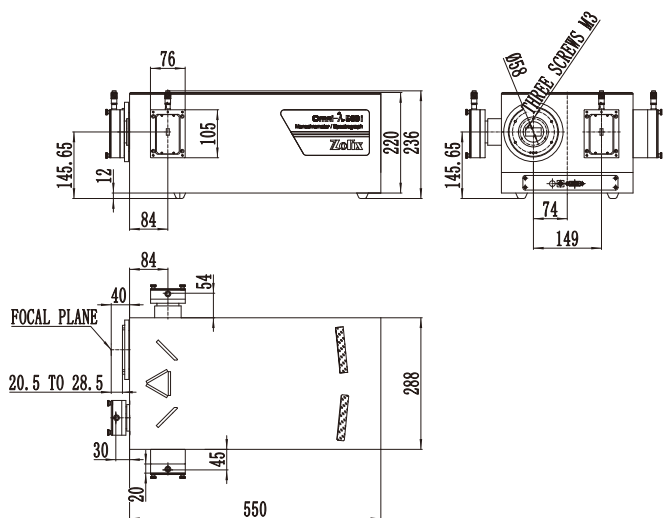
Omni-λ 200i Monochromator/Spectrograph



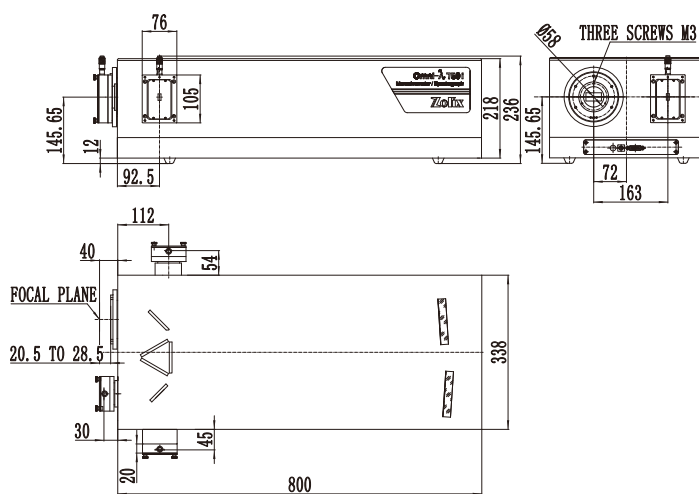
Omni-λ 300i Monochromator/Spectrograph



Omni-λ 500i Monochromator/Spectrograph

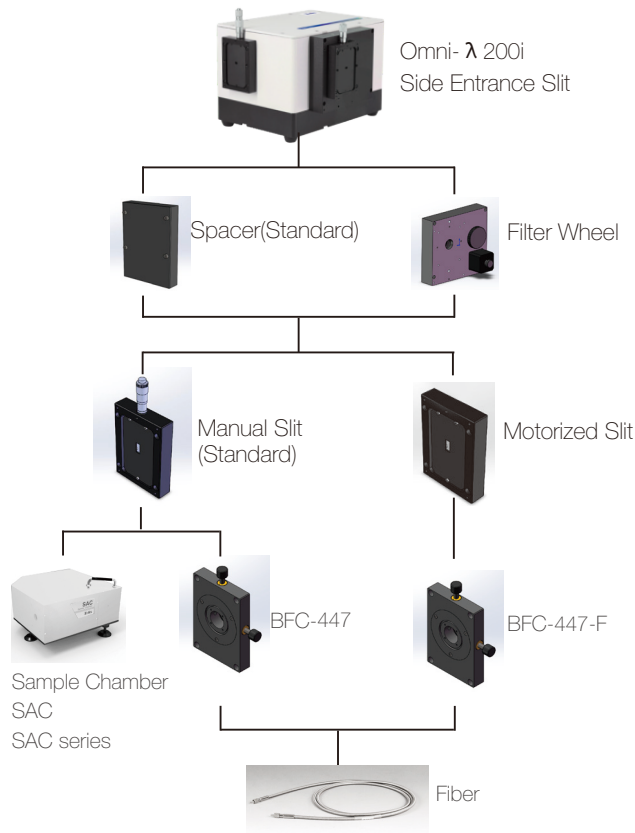


Omni-λ 750i Monochromator/Spectrograph

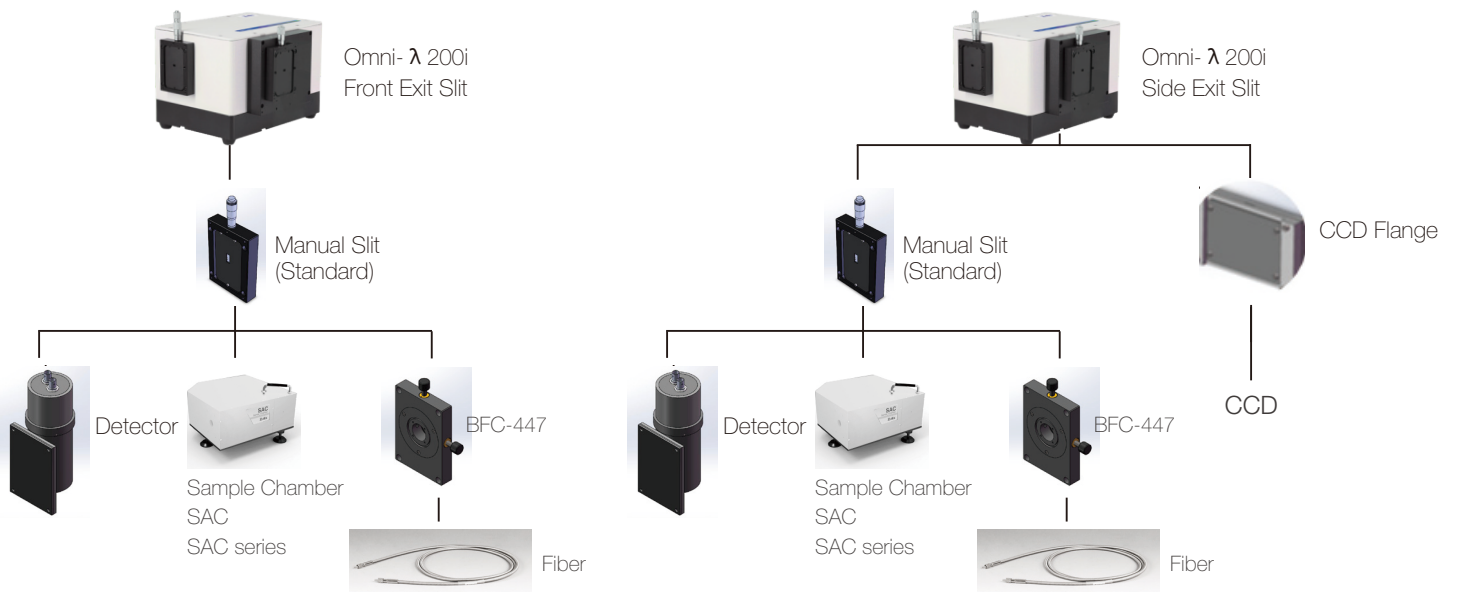


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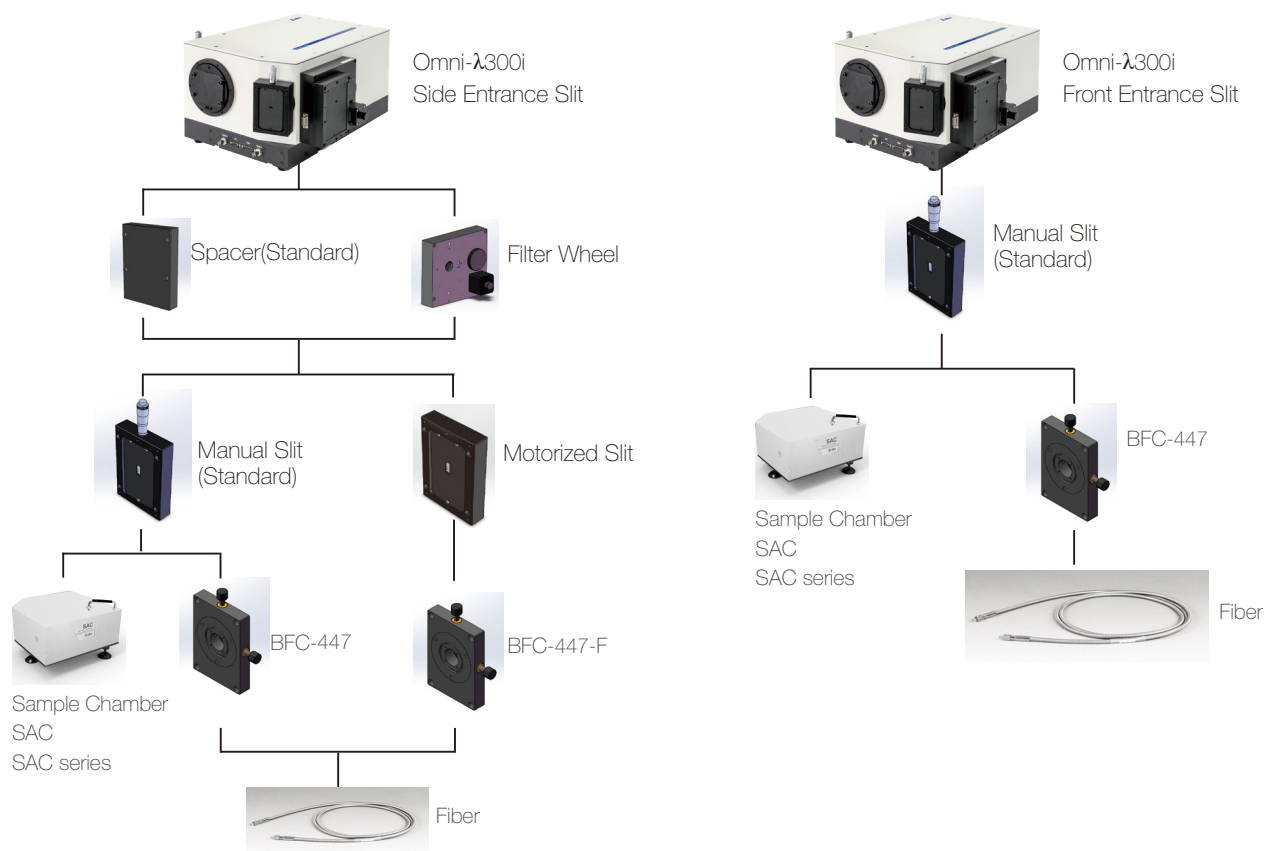
## Omni-λ200i Input Port



## Omni-λ200i Output Port

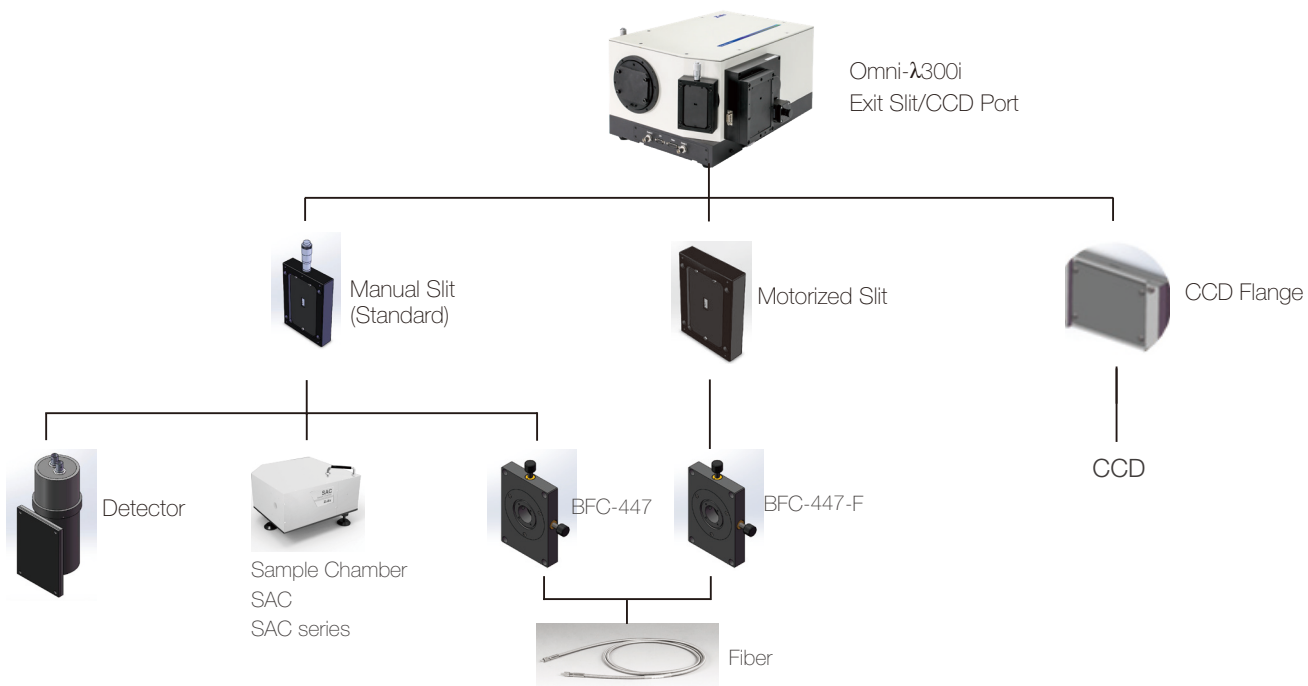


### Omni-λ300i Input Port

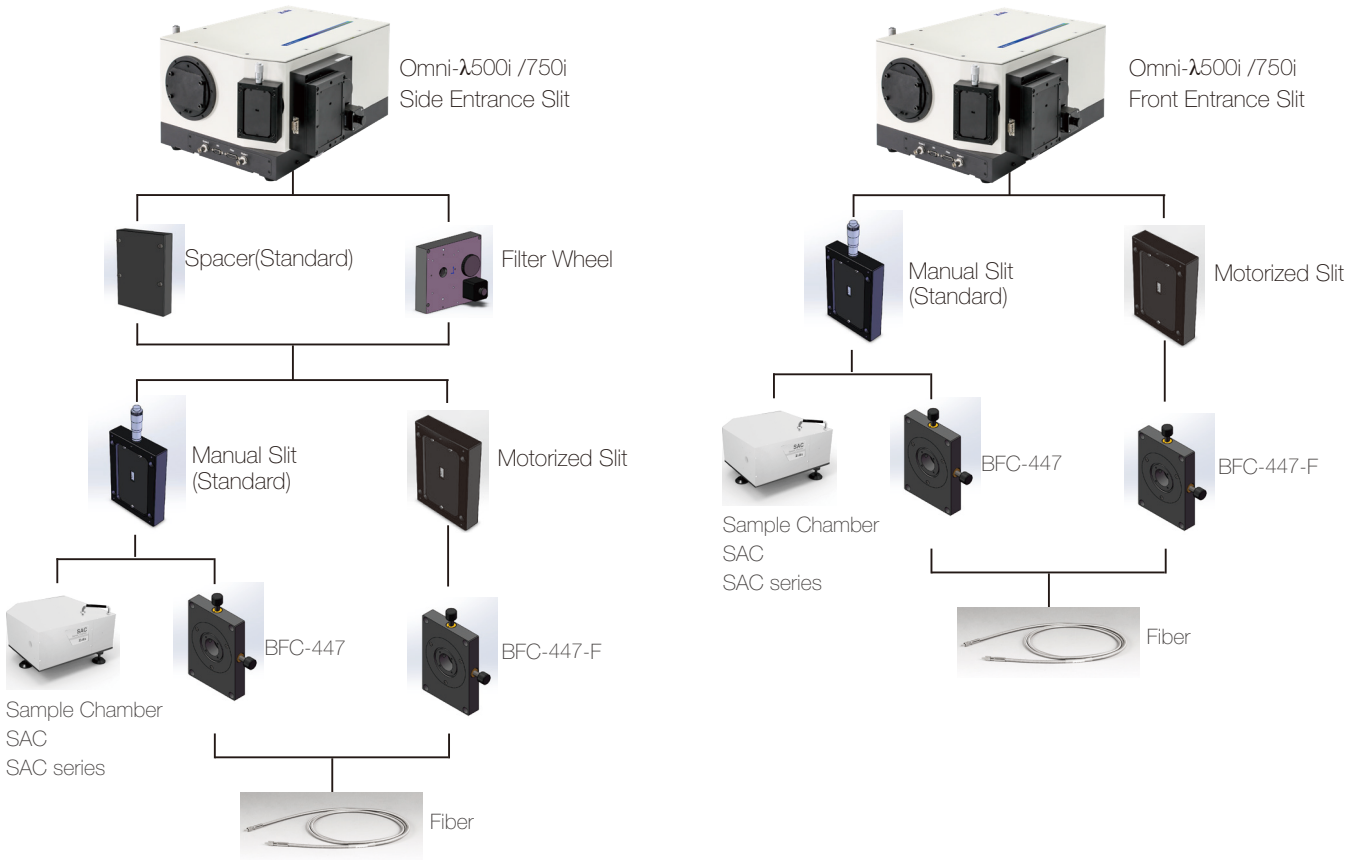


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### Omni-λ300i Output Port

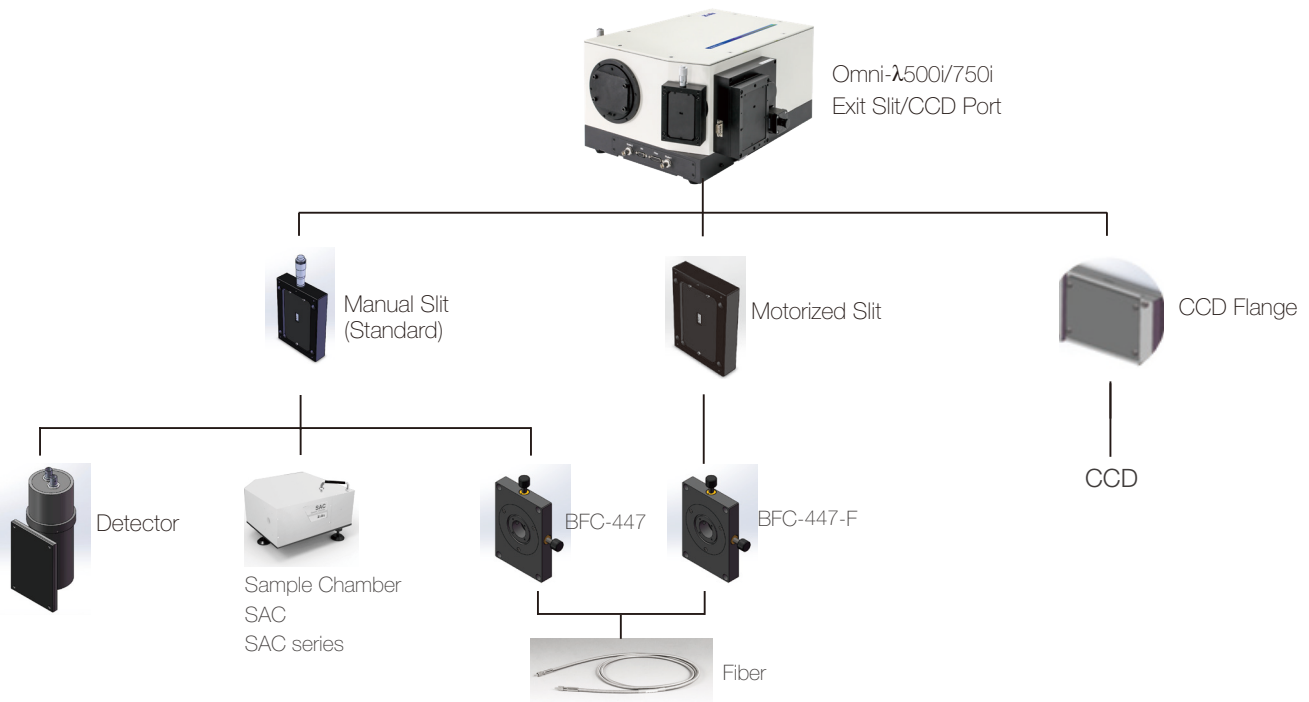


### Omni-λ500i/750i Input Port



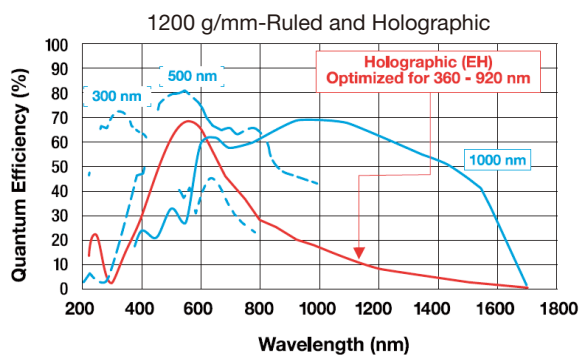
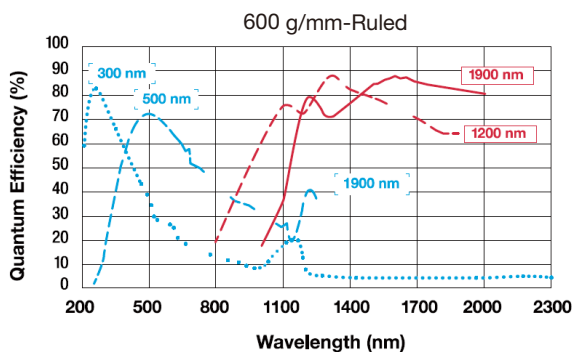
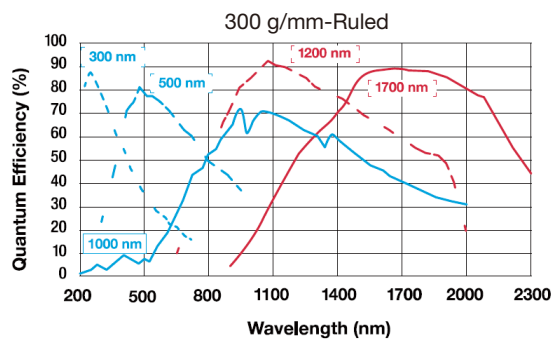
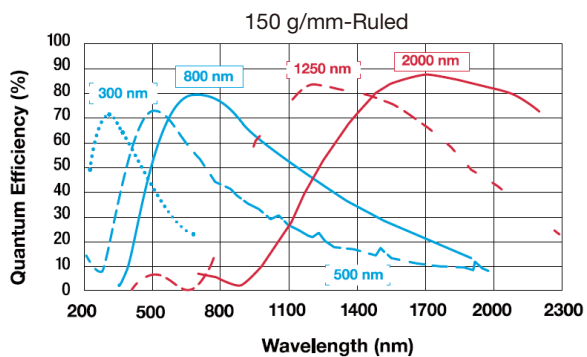
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### Omni-λ500i/750i Output Port



# Gratings

## Grating Curves



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### The Green Models are Used Commonly as We Suggested

Model	Range(nm)	Grooves(g/mm)	Blaze(nm)	Size(mm)
<b>Holographic</b>				
1-360-180-500-NP	180-400	3600	300	68 x 68
<b>1-240-250-600-NP</b>	250-600	2400	300	68 x 68
<b>1-240-190-800-NP</b>	190-600	2400	250	68 x 68
1-200-300-900-NP	300-720	2000	475	68 x 68
1-180-350-900-NP	350-800	1800	500	68 x 68
<b>1-180-190-900-NP</b>	190-800	1800	250	68 x 68
1-120-190-800-NP	190-800	1201.6	250	68 x 68
<b>1-120-400-1200-NP</b>	400-1200	1200	700	68 x 68
<b>Ruled</b>				
1-240-240-NP	190-600	2400	240	68 x 68
<b>1-240-300-NP</b>	250-600	2400	300	68 x 68
1-180-400-NP	300-800	1800	400	68 x 68
1-180-500-NP	350-800	1800	500	68 x 68
1-120-250-NP	200-500	1200	250	68 x 68
<b>1-120-300-NP</b>	200-600	1200	300	68 x 68
1-120-400-NP	200-1000	1200	400	68 x 68
<b>1-120-500-NP</b>	350-1100	1200	500	68 x 68
1-120-750-NP	500-1200	1200	750	68 x 68
1-090-550-NP	350-1600	900	550	68 x 68
1-083-1200-NP	700-1700	830	1200	68 x 68
<b>1-060-300-NP</b>	200-600	600	300	68 x 68
<b>1-060-500-NP</b>	330-1000	600	500	68 x 68
1-060-750-NP	500-1500	600	750	68 x 68
1-060-1000-NP	650-2200	600	1.0 $\mu\text{m}$	68 x 68
<b>1-060-1200-NP</b>	800-2400	600	1.2 $\mu\text{m}$	68 x 68
1-060-1600-NP	1-2.4 $\mu\text{m}$	600	1.6 $\mu\text{m}$	68 x 68
<b>1-030-300-NP</b>	200-600	300	300	68 x 68
<b>1-030-500-NP</b>	300-1000	300	500	68 x 68
1-030-760-NP	450-1500	300	760	68 x 68
1-030-1000-NP	600-2000	300	1000	68 x 68
<b>1-030-1200-NP</b>	800-2200	300	1200	68 x 68
1-030-2000-NP	1.4-4 $\mu\text{m}$	300	2.0 $\mu\text{m}$	68 x 68
1-030-3000-NP	2-4.8 $\mu\text{m}$	300	3.0 $\mu\text{m}$	68 x 68
<b>1-015-300-NP</b>	200-600	150	300	68 x 68
<b>1-015-500-NP</b>	330-1100	150	500	68 x 68
<b>1-015-800-NP</b>	400-1600	150	800	68 x 68
1-015-1000-NP	600-2000	150	1090	68 x 68
1-015-1250-NP	800-2500	150	1250	68 x 68
<b>1-015-2000-NP</b>	1.1-4 $\mu\text{m}$	150	2 $\mu\text{m}$	68 x 68
1-015-3000-NP	2.2-4 $\mu\text{m}$	150	3 $\mu\text{m}$	68 x 68
1-015-4000-NP	2.5-8 $\mu\text{m}$	150	4 $\mu\text{m}$	68 x 68
1-0075-8000-NP	6-16 $\mu\text{m}$	75	8 $\mu\text{m}$	68 x 68
1-0075-10000-NP	6-18 $\mu\text{m}$	75	10 $\mu\text{m}$	68 x 68
1-0075-12000-NP	9-20 $\mu\text{m}$	75	12.0 $\mu\text{m}$	68 x 68
1-0050-12000-NP	8-22 $\mu\text{m}$	50	12 $\mu\text{m}$	68 x 68

## Dispersion and Wavelength Coverage

Model	Grating (g/mm)	Dispersion* (nm/mm)	Spectrometer Mechanical Range (nm)	CCD Resolution with 13.5um pixels (nm)	PMT Resolution (nm)	Spectral Coverage with 30mm CCD (nm)
Omni-λ200i	3600	1	0 to 400	0.1	0.05	30
	2400	1.4	0 to 600	0.14	0.08	42
	1800	2.16	0 to 800	0.2	0.1	64
	1200	3.6	0 to 1200	0.28	0.15	108
	900	4.96	0 to 1600	0.4	0.2	148
	600	7.68	0 to 2400	0.56	0.3	230
	300	15.77	0 to 4800	1.12	0.6	473
	150	31.89	0 to 9600	2.24	1.2	956
Omni-λ300i	3600	0.66	0 to 400	0.058	0.03	20
	2400	0.91	0 to 600	0.087	0.04	27
	1800	1.39	0 to 800	0.116	0.05	42
	1200	2.28	0 to 1200	0.174	0.08	68
	900	3.16	0 to 1600	0.232	0.11	95
	600	4.87	0 to 2400	0.348	0.16	146
	300	9.97	0 to 4800	0.696	0.32	299
	150	20.13	0 to 9600	1.392	0.64	604
Omni-λ500i	3600	0.43	0 to 400	0.033	0.02	13
	2400	0.6	0 to 600	0.050	0.03	18
	1800	0.91	0 to 800	0.067	0.04	27
	1200	1.5	0 to 1200	0.100	0.05	45
	900	2	0 to 1600	0.133	0.07	60
	600	3.15	0 to 2400	0.200	0.10	95
	300	6.43	0 to 4800	0.400	0.20	193
	150	12.97	0 to 9600	0.800	0.40	389
Omni-λ750i	3600	0.3	0 to 400	0.022	0.01	9
	2400	0.43	0 to 600	0.034	0.02	13
	1800	0.64	0 to 800	0.045	0.02	19
	1200	1	0 to 1200	0.067	0.03	30
	900	1.4	0 to 1600	0.089	0.04	42
	600	2.14	0 to 2400	0.134	0.06	64
	300	4.36	0 to 4800	0.268	0.12	131
	150	8.77	0 to 9600	0.536	0.24	263

"★ Center Wavelength of 253.65 nm used with 3600 g/mm grating Center Wavelength of 435.833 nm used with all other gratings Dispersion may vary at different wavelengths"

☆ Spectral range will depend not only on Mechanical Range, but also the grating Blaze Wavelength

◆ Listed Resolution values are not at the same wavelength, the specified wavelength is close to blaze wavelength