

OAS-DSP NU-2000 농도측정모듈

2021. 04. 12



1. Major parts

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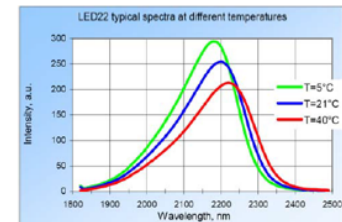
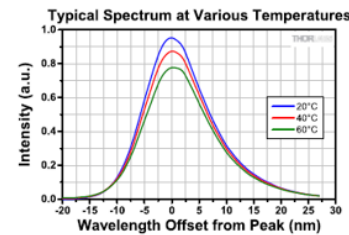
구분		사양	
		UV	MIR
Light source	Peak Wavelength	275±5nm	2250(+40/-30)nm
	Bandwidth	12nm	200nm
	Optical power	1~2mW @100mA Iop	0.9~1.3mW @200mA qCW 25~30mW @1A Pulse
	Emitting area	(~0.8mmX0.8mm)	300umX300um
	Viewing angle	>15° @20% Ipeak	3~4°@FWHM
	Life time	8000hrs typ. @20mA 3000hrs typ. @100mA	80000hrs
	Part name	Optan-275J-BL(Optan)	LED22-R (Roithner)
Detector	Active area	2.4mmX2.4mm	Φ1.0mm
	Responsivity	0.38A/W @275nm	1.3A/W @2300nm
	Part name	S12698-01(Hamamatsu)	G12183-010K(Hamamatsu)

2. Design factor

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- 약액의 leak 방지
 - Sealing 구조의 상호검증, 데이터 공유
 - PTFE 소재의 casing 적용
 - A/V 구조 상 일부 오픈
- Life-time 제고 방안
 - 방열 구조 적용
 - UV : non-active cooling
 - MIR : active cooling
- 수리용이성 확보
 - 기능별 module화 설계
 - LED, PD의 교체 방안
 - 테스트 가능한 구조 적용
- Noise 제거 방안
 - Baffle 구조의 적용
 - Various aperture size 적용
- 내화학적성 확보
 - PTFE
 - PEEK 수지 볼트

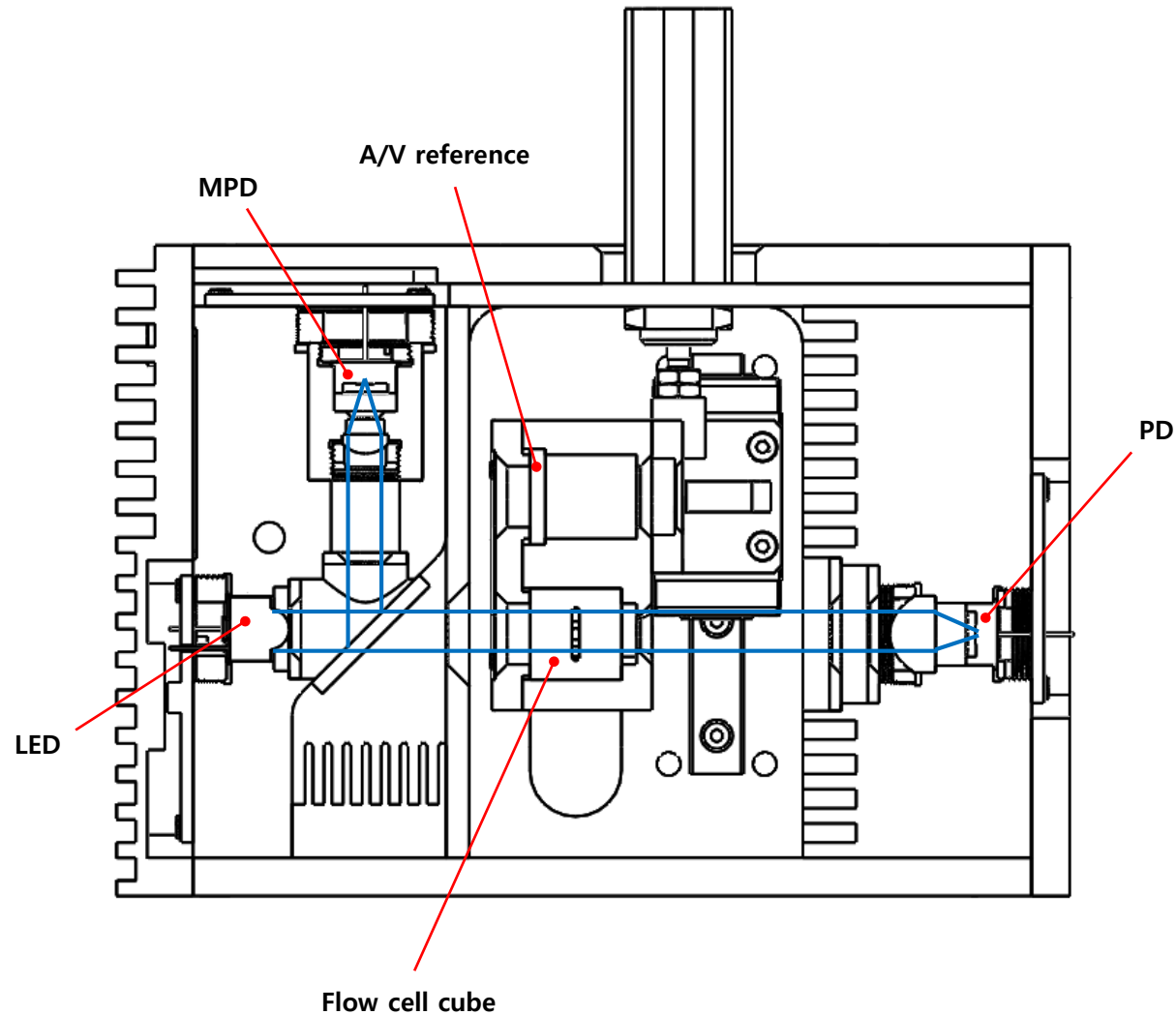
- 광원의 출력변화에 따른 오류 보정
 - Monitoring detector signal을 활용
- 온도에 따른 출력 및 spectrum 변화
 - MIR의 경우 spectrum 변화가 심함 : 온도 유지 장치 필요(Peltier 소자등)



3. Optical layout

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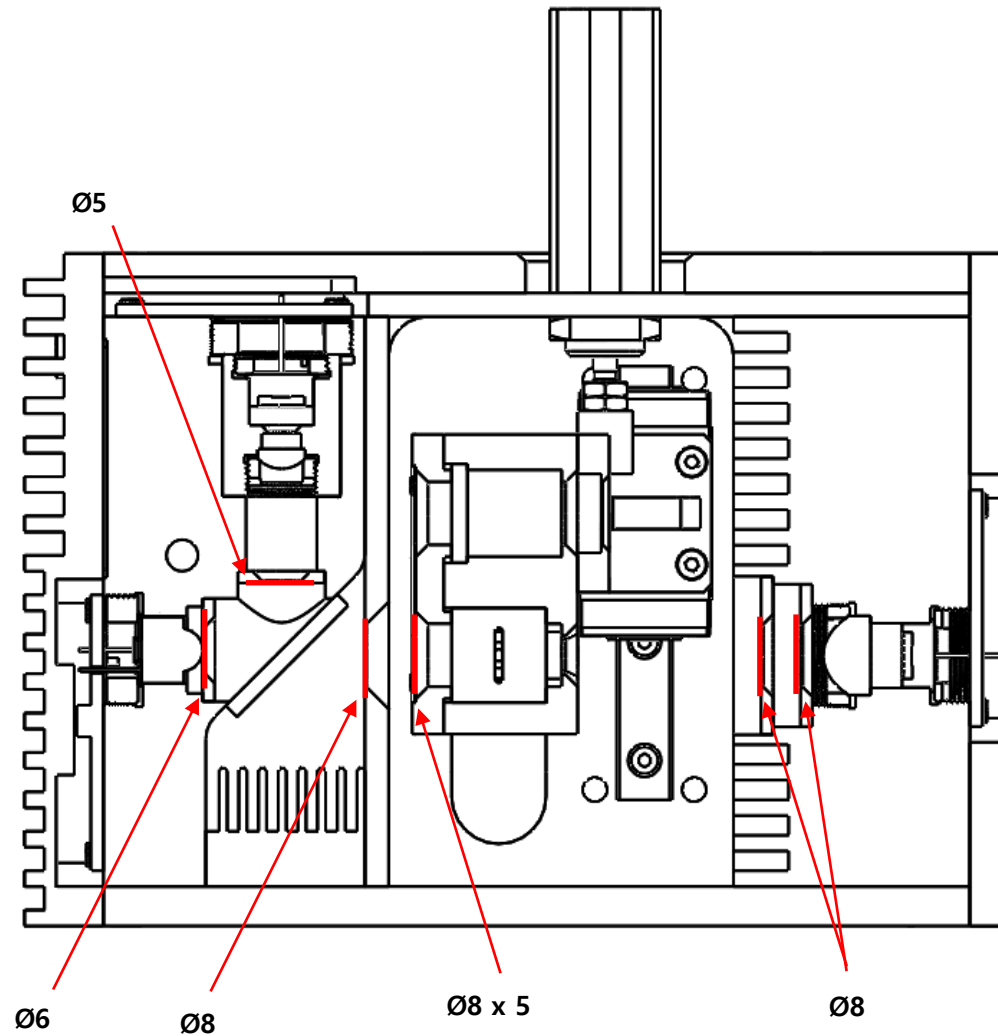
- UV/MIR module



4. Optical aperture

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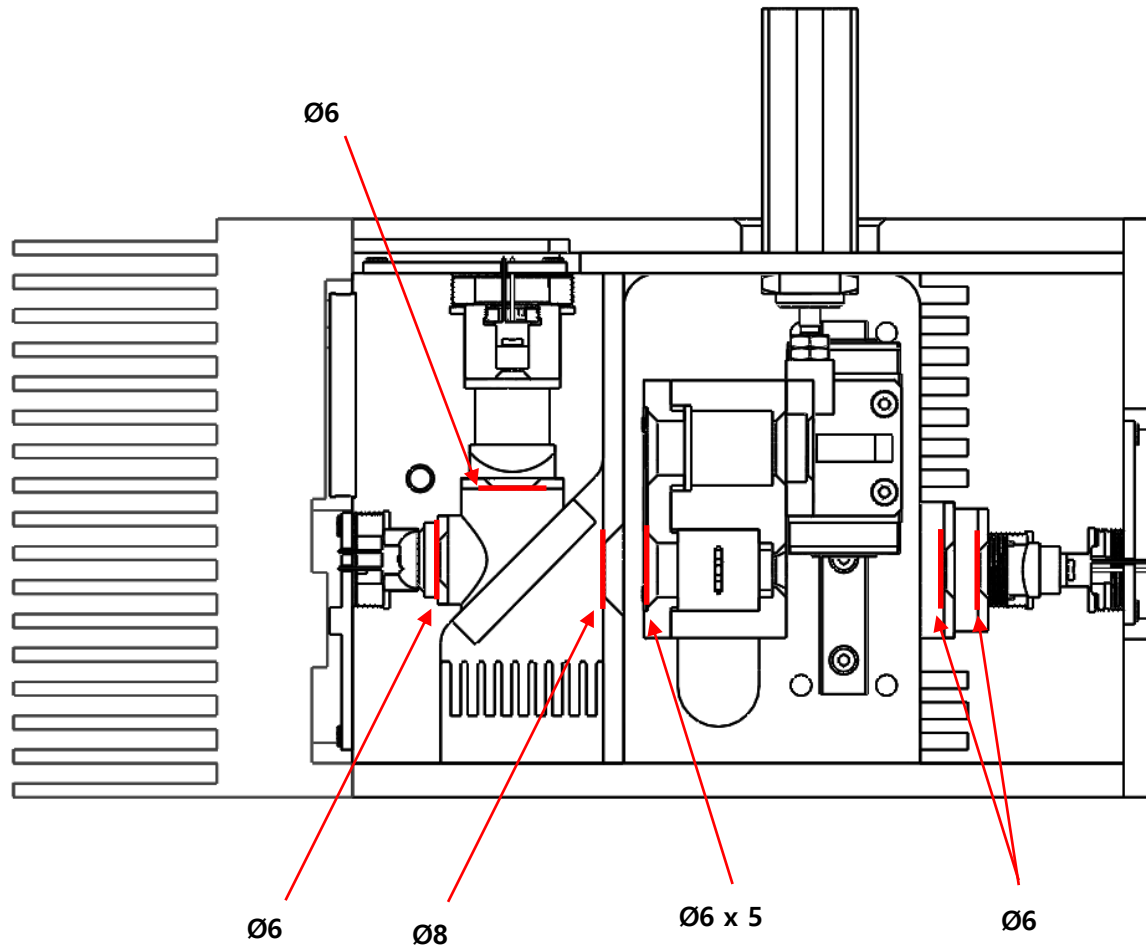
- UV module



4. Optical aperture

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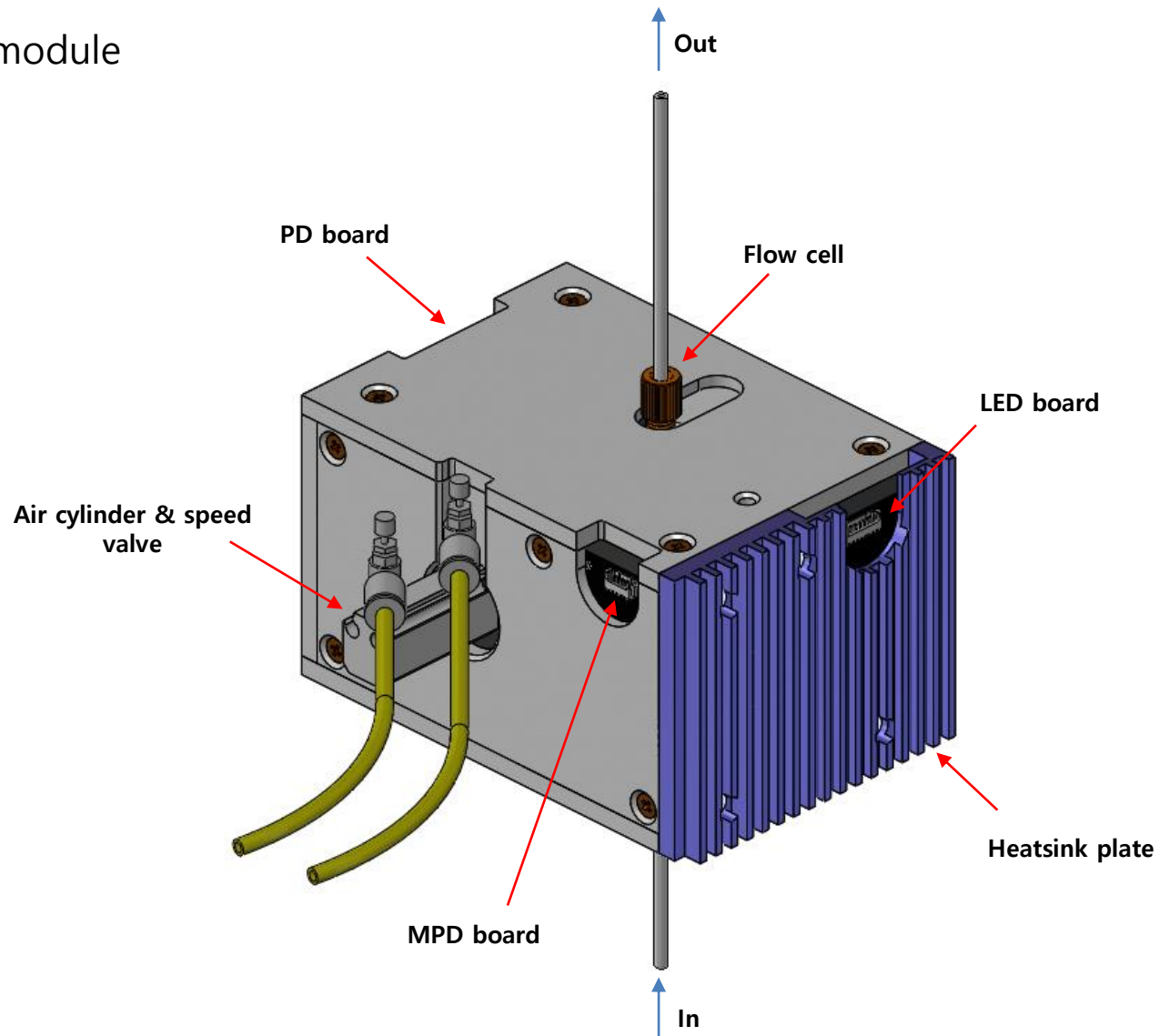
- MIR module



5. configuration

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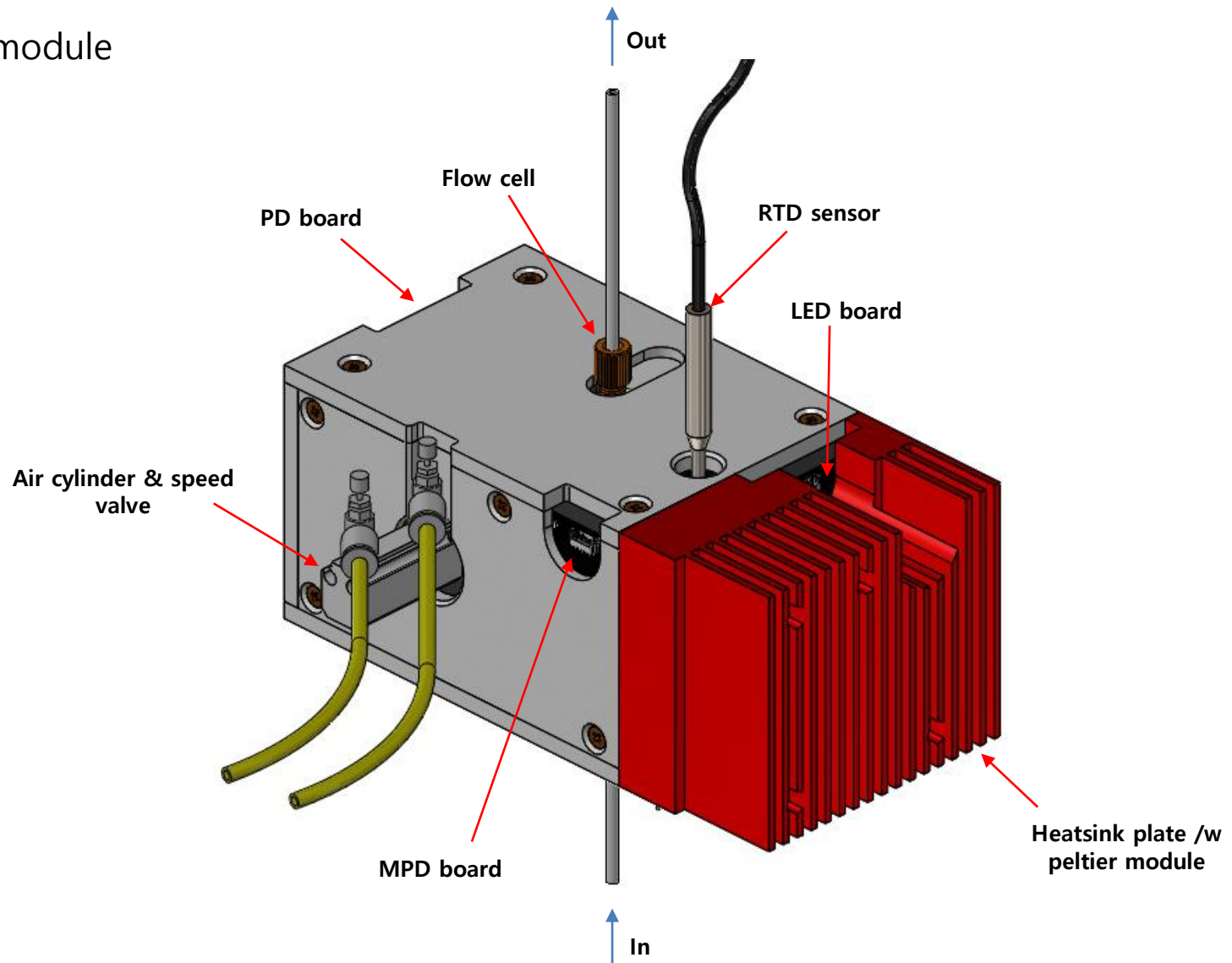
- UV module



5. configuration

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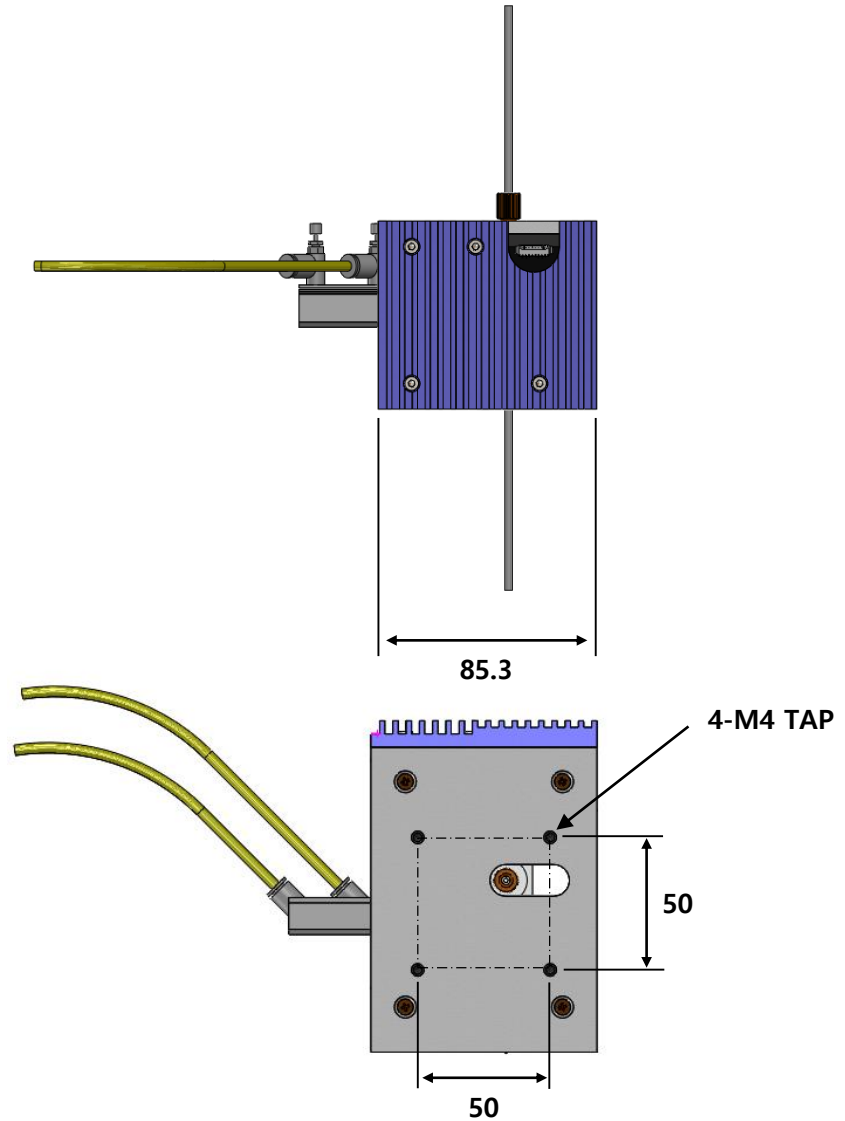
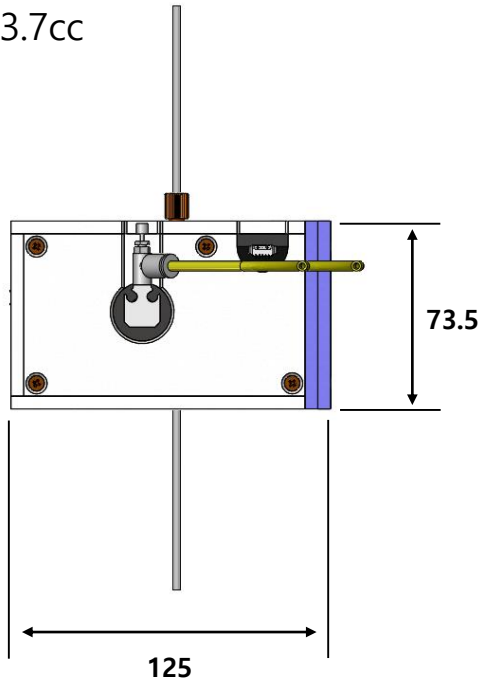
- UV module



6. Dimensions

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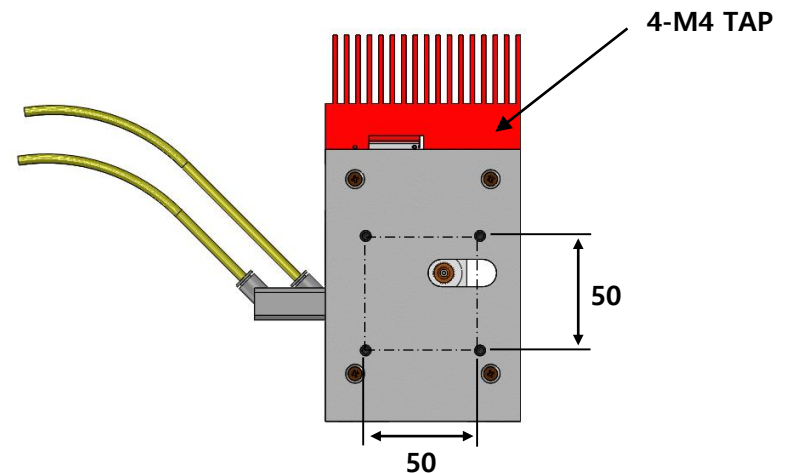
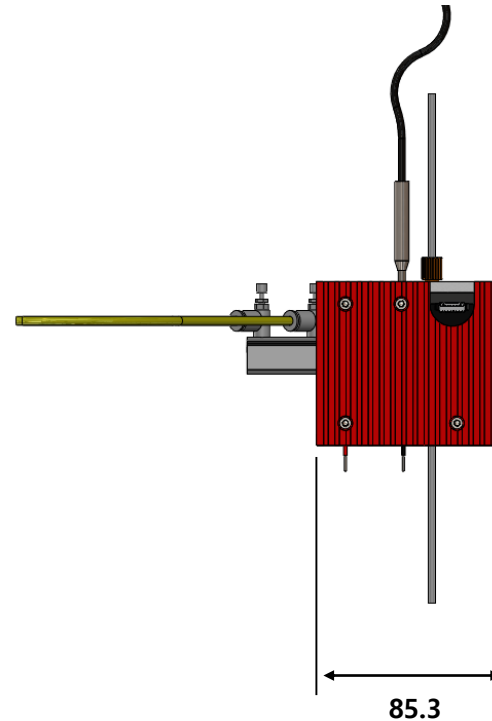
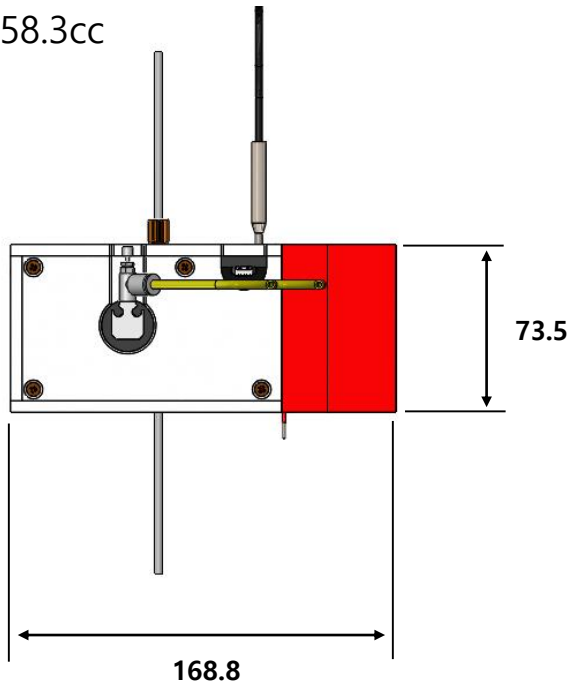
- UV module
 - 783.7cc



6. Dimensions

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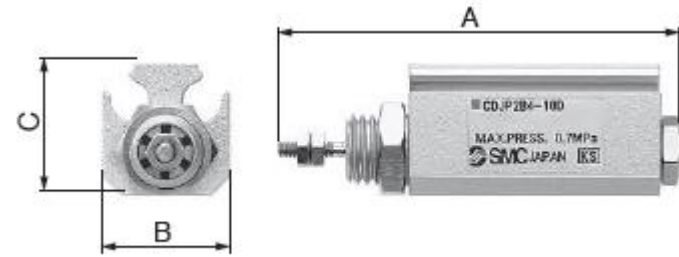
- MIR module
 - 1058.3cc



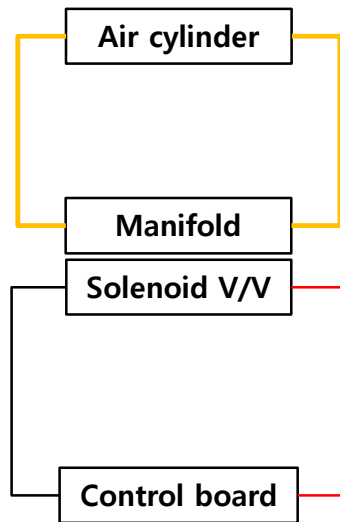
Appendix. air-cylinder specification

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- SMC社 CJP2B6-20D
 - 복동형 air cylinder
 - Stroke : 20mm
 - A : $33+20=53\text{mm}$



- Configuration



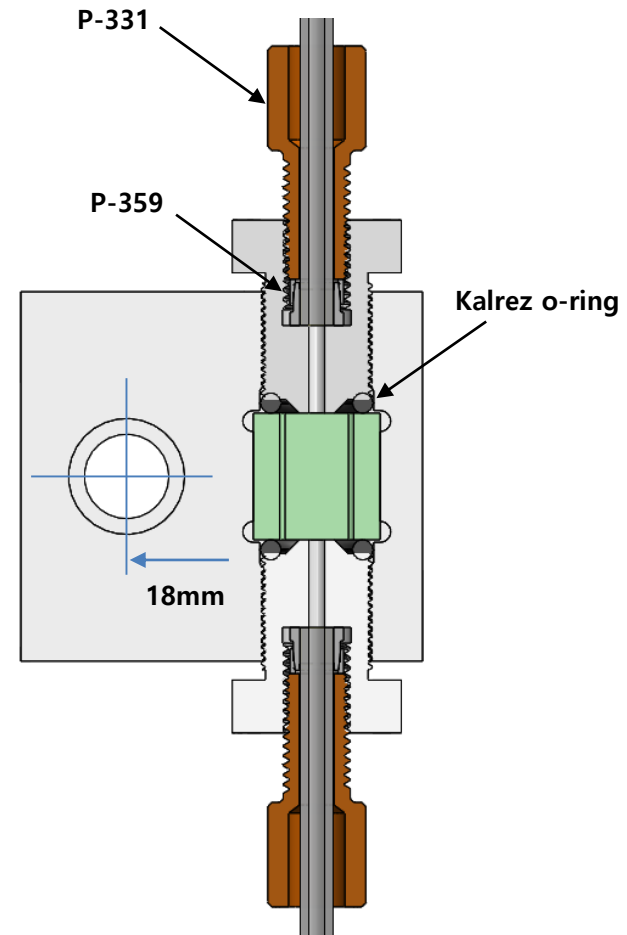
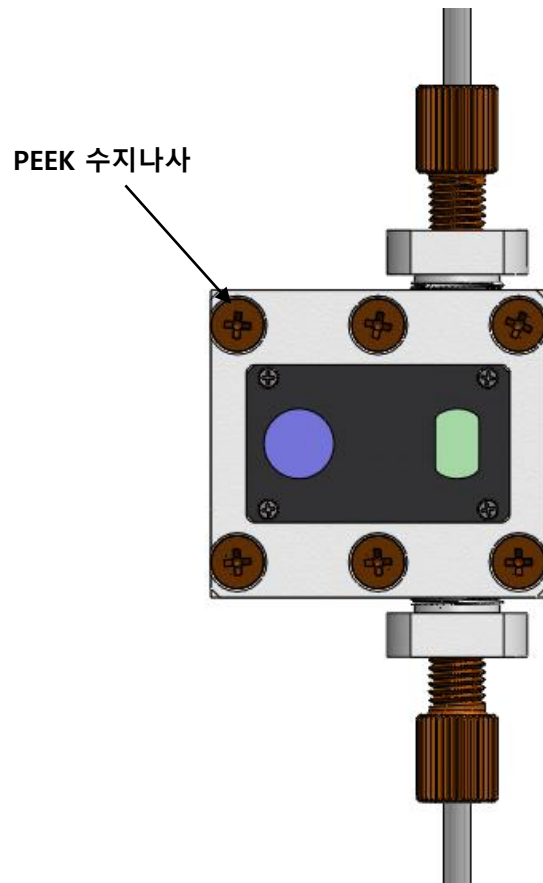
치수표 단위 : mm

튜브내경	A	B	C
4	29+스트로크 (34+스트로크)	14	14.5
<u>6</u>	33+스트로크 (38+스트로크)	14	16.5
10	39.5+스트로크 (44.5+스트로크)	15	19
16	43.5+스트로크 (48.5+스트로크)	20	24.5

※ ()안은 자석내장형의 치수

Appendix. Flow cell unit

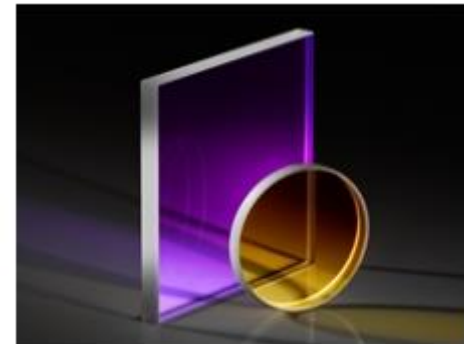
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Appendix. A/V material

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- Reference plate
 - UV module : EdmundOptics #45-809
 - 12.5mm Dia. UV AR coated
 - Material : Fused silica
 - Wavelength range : 250 – 450nm
 - Coating spec. : $R < 0.75\%$ @250-450nm(avg)
 - Index of refraction : 1.458
 - MIR module : EdmundOptics #15-991
 - 12.5mm Dia. BBAR AR coated
 - Material : Sapphire
 - Wavelength range : 1650-3000nm
 - Coating spec. : $R < 1\%$ @1650-3000nm(avg)
 - Index of refraction : 1.77



TECHSPEC® 1λ UV Fused Silica
Windows



TECHSPEC® AR Coated Sapphire
Windows