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상 세 내 역

1. 구성

1. 40X Olympus Plan Achromat Objective, 0.65 NA, 0.6 mm WD
2. Ø1" Longpass Dichroic Mirror, 550 nm Cut-On
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4. Ø1" Zero-Order Half-Wave Plate, SM1-Threaded Mount, 1030 nm
5. Ø1" UV-Enhanced Aluminum Mirror, 10 Pack
6. 470 - 850 nm Mounted Broadband LED, 70 mW (Min), 500 mA
7. Adjustable Collimation Adapter with Ø1" Lens, AR Coating: 350 - 700 nm
8. Filter Kinematic Mount, 2-Screw
9. 25.4mm Wire Grid Polarizing Cube
10. Ø1/2" CaF2 Plano-Convex Lens, f = 40 mm, Uncoated
11. Ø1" CaF2 Plano-Convex Lens, f = 40 mm, Uncoated
12. Fast-Change, SM1 Lens Tube Filter Holder for Filters ≤3.5mm Thick
13. Fast-Change, SM1 Lens Tube Filter Holder for Filters 3.5 - 6.3 mm Thick
14. 25 x 36 mm 50:50 UVFS Plate Beamsplitter, Coating: 400 - 700 nm, t = 1 mm
15. 25 mm Travel Linear Translation Stage, End-Mounted Micrometer, M6 x 1.0 Taps
16. Single Mode Patch Cable, 405 - 532 nm, FC/PC, Ø3 mm Jacket, 2 m Long
17. Flip Mount Adapter, Metric
18. Polaris® Ø1" Mirror Mount, 3 Hex Adjusters with Side Holes, Monolithic Optic Retention
19. Ø1" Polymer Zero-Order Quarter-Wave Plate, 633 nm
20. Ø1" MgF2 Broadband Precision Window, Uncoated
21. CaF2 Equilateral Dispersive Prism, Uncoated, 25 mm
22. Ø2" Harmonic Beamsplitter, Reflects 266 nm and 355 nm, Transmits 532 nm and 1064 nm
23. K-Cube Brushed DC Servo Motor Controller (Power Supply Not Included)

2. 규격

1. 40X Olympus Plan Achromat Objective, 0.65 NA, 0.6 mm WD



- Wavelength Range : Visible
- Magnification(M) : 40X
- Working Distance(WD) : 0.6 mm
- Effective Focal Length(EFL) : 4.5 mm
- Numerical Aperture(NA) : 0.65
- Entrance Pupil Diameter(EP) : 5.9 mm
- Resolution : 0.5 μ m
- Optical Field Number(OFN) : 22
- Parfocal Length(PFL) : 45.06 mm
- Cover Glass Thickness : 0.17 mm

2. Ø1" Longpass Dichroic Mirror, 550 nm Cut-On



- Type : Longpass
- Cut-On Wavelength : 550 nm
- Transmission Band (T_{abs} > 85%, T_{avg} > 90%) : 565 - 800 nm
- Reflection Band (R_{abs} > 90%, R_{avg} > 95%) : 380 - 533 nm
- Size : Ø1"
- Clear Aperture : >Ø22.86 mm
- Thickness : 3.2 mm

3. Ø1" Longpass Dichroic Mirror, 550 nm Cut-On



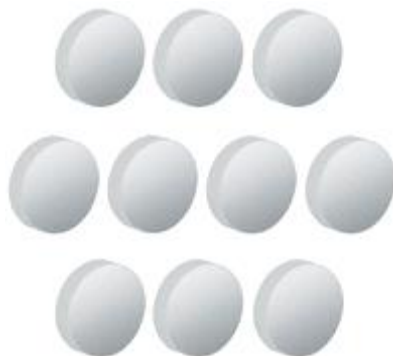
- Type : Longpass
- Cut-On Wavelength : 950 nm
- Transmission Band : 990 - 1600 nm
- Reflection Band : 420 - 900 nm
- Size : Ø1"
- Clear Aperture : >Ø22.86 mm
- Thickness : 3.2 mm

4. Ø1" Zero-Order Half-Wave Plate, SM1-Threaded Mount, 1030 nm



- Clear Aperture : Ø22.6 mm (Ø0.89")
- Mounted Diameter : 30.48 mm (1.20")
- Unmounted Diameter : 25.4 ± 0.1 mm
- Unmounted Thickness : 1.47 mm
- Design Wavelength : 1030 nm
- Reflectance : <0.25% Per Surface at 1030 nm
- Beam Deviation : <10 arcsec
- Retardance : $\lambda / 2$
- Retardance Accuracy : $< \lambda / 300$
- Material : Crystalline Quartz

5. Ø1" UV-Enhanced Aluminum Mirror, 10 Pack



- Diameter : 1" (25.4 mm)

- Thickness : 6.0 mm (0.24")
- Reflectance : $R_{avg} > 90\%$ from 250 to 450 nm
- Substrate : Fused Silica
- Flatness (Peak to Valley) : $\lambda / 10 @ 633 \text{ nm}$

6. 470 - 850 nm Mounted Broadband LED, 70 mW (Min), 500 mA



- Wavelength : 470 - 850 nm (10 dB Bandwidth)
- LED Output Power (Min / Typ.) : 70 mW
- Bandwidth (FWHM) : 280 nm
- Irradiance (Typ.) : $0.9 \mu\text{W}/\text{mm}^2$
- Max Current (CW) : 500 mA
- Forward Voltage (Typ.) : 3.6 V
- Viewing Angle (Full Angle at Half Max) : 120°

7. Adjustable Collimation Adapter with $\varnothing 1"$ Lens, AR Coating: 350 - 700 nm



- Compatible Optic : $\varnothing 1"$ ($\varnothing 25 \text{ mm}$)
- Lens Travel Range : 11 mm (0.43")
- Input Threading : External SM1 (1.035"-40)
- Output Threading : Internal SM2 (2.035"-40)
- Included Lens : ACL2520U-A
- AR Coating Range : 350 - 700 nm

- Lens Focal Length : 20.1 mm
- Operating Temperature : 15 - 60 ° C(Non-Condensing)

8. Filter Kinematic Mount, 2-Screw



- Type : Adjustable - Tip-Tilt
- Type of Optics : Square or Rectangular
- Size of Compatible Optics (mm) : 12.7 - 101.6
- Number of Adjustment Screws : 2
- Aperture Size : 1" (25mm)
- Thickness of Compatible Optics (mm) : 0.5 - 3.7
- Angle Tolerance (°) : 0.4 per 0.25mm turn
- Fine Tilt/Tip Angle (°) : $\pm 5/\pm 5$

9. 25.4mm Wire Grid Polarizing Cube



- Beam Deviation (arcmin) : < 5
- Clear Aperture (%) : $> 90\%$
- Coating Specification : $R_{avg} < 0.5\%$ @ 400 - 700nm
- Dimensions (mm) : 25.4 x 25.4 x 25.4 ± 0.3
- Efficiency ($T_p \cdot R_s$) : $> 62\%$ @ 450nm, $> 65\%$ @ 550nm & 650nm
- Extinction Ratio : 1100:1 @ 450nm, 2000:1 @ 550nm, 3000:1 @ 650nm
- Substrate : N-BK7
- Transmission (%) : $T_p > 72\%$ @ 450nm, $T_p > 75\%$ @ 550nm, $T_p > 78\%$ @ 650nm
- Transmitted Wavefront Distortion (RMS) : $< 0.33 \lambda$ @ 633nm

- Type : Linear Polarizer
- Wavelength Range (nm) : 400 - 700

10. Ø1/2" CaF₂ Plano-Convex Lens, f = 40 mm, Uncoated



- Diameter : 1/2" (12.7 mm)
- Focal Length : 40.0 mm
- Diopter : +25.0
- Radius of Curvature : 17.4 mm
- Center Thickness : 3.2 mm
- Edge Thickness : 2.0 mm
- Back Focal Length : 37.8 mm

11. Ø1" CaF₂ Plano-Convex Lens, f = 40 mm, Uncoated



- Diameter : 1" (25.4 mm)
- Focal Length : 40.0 mm
- Diopter : +25.0
- Radius of Curvature : 17.4 mm
- Center Thickness : 7.5 mm
- Edge Thickness : 2.0 mm
- Back Focal Length : 34.7 mm

12. Fast-Change, SM1 Lens Tube Filter Holder for Filters ≤ 3.5 mm Thick



- Accept $\text{Ø}1"$ or $\text{Ø}25$ mm Filters, SM1QU Holds Unmounted Filters (0 - 3.5 mm Thick)
- Filter Secured via Spring-Loaded Clamp
- Stackable SM1 Lens Tube Construction
- Included Lock Nut Allows the User to Select a Specific Rotational Orientation

13. Fast-Change, SM1 Lens Tube Filter Holder for Filters 3.5 - 6.3 mm Thick



- Accept $\text{Ø}1"$ or $\text{Ø}25$ mm Filters, SM1QP Holds Mounted Filters (3.5 - 6.3 mm Thick)
- Filter Secured via Spring-Loaded Clamp
- Stackable SM1 Lens Tube Construction
- Included Lock Nut Allows the User to Select a Specific Rotational Orientation

14. 25 x 36 mm 50:50 UVFS Plate Beamsplitter, Coating: 400 - 700 nm, $t = 1$ mm



- Size : 25 mm x 36 mm
- Thickness : 1.0 mm

- Wedge Angle : No Wedge
- Split Ratio (R:T) : 50:50
- Overall Performance : Tabs = $50 \pm 8\%$, Rabs = $50 \pm 8\%$, Tabs + Rabs > 99%,
|Ts - Tp| < 35% and |Rs - Rp| < 35%, 45° AOI

15. 25 mm Travel Linear Translation Stage, End-Mounted Micrometer, M6 x 1.0 Taps



- Side- or End-Mounted Metric Micrometer
- Mounting Surface has Twenty-Two 1/4"-20 (M6 x 1.0) Tapped Blind Holes, 0.30" (7.6 mm) Deep
- Create Multi-Axis Configurations Using Dovetail Locking Screw (Clamp Screw has a Maximum Torque of 15 in•lbs)
- Directly Compatible with 3" Mating Dovetail Stages

16. Single Mode Patch Cable, 405 - 532 nm, FC/PC, Ø3 mm Jacket, 2 m Long



- Fiber Type : SM400
- Operating Wavelength : 405 - 532 nm
- Cutoff Wavelength : 305 - 400 nm
- Mode Field Diameter : 2.5 - 3.4 μm @ 480 nm
- Cladding Diameter : $125 \pm 1.0 \mu\text{m}$
- Coating Diameter : $245 \pm 15 \mu\text{m}$
- Max Attenuation : $\leq 50 \text{ dB/km}$ @ 430 nm, $\leq 30 \text{ dB/km}$ @ 532 nm
- NA : 0.12 - 0.14
- Connectors : FC/PC, 2.0 mm Narrow Key
- Jacket : Ø3 mm Yellow PVC Furcation Tubing

17. Flip Mount Adapter, Metric



- Rotates 90° to Clear Beam Path
- Kinematic Design Ensures Repeatability
- Mounting Options on Top Surface: Three 8-32 (M4) Mounting Holes, One #8 (M4) Counterbore
- Post Mountable via 1/4" (M6) Counterbore

18. Polaris® Ø1" Mirror Mount, 3 Hex Adjusters with Side Holes, Monolithic Optic Retention



- 3 Hex Adjusters with Side Holes (See Image to the Right)
- Designed for use with Ø1" Optics
- 100 TPI Matched Actuator/Body Pairs
- $\pm 4^\circ$ Mechanical Angular Range (Nominal)
- ~ 7.7 mrad/rev Resolution
- Less than 1 μ rad Deviation after Temperature Cycling
- Patented Monolithic Flexure Arm Design for Minimal Optic Distortion and Improved Optic Holding Stability

19. Ø1" Polymer Zero-Order Quarter-Wave Plate, 633 nm



- Clear Aperture : >90%
- Optic Diameter : 1" (25.4 mm)
- Optic Thickness : 3.2 mm
- Design Wavelength : 633 nm
- Transmission at Design Wavelength : $\geq 98\%$
- Broadband AR Coating Range : 350 nm - 700 nm
- Average Reflectance (Per Coated Surface) : <0.5%
- Retardance Accuracy : $< \lambda / 100$
- Retardance Uniformity (RMS) : <5 nm
- Material : Liquid Crystal Polymer Between N-BK7 Glass Plates
- Transmitted Wavefront Error : $< \lambda / 4 @ 633 \text{ nm}$
- Surface Quality : 60-40 Scratch-Dig
- Temperature Stability : <0.08 nm/degree over Operating Temperature Range
- Operating Temperature Range : -20 to 60 ° C
- Beam Deviation : <5 arcmin

20. Ø1" MgF2 Broadband Precision Window, Uncoated



- Diameter : 1" (25.4 mm)
- Thickness : 5.0 mm
- Clear Aperture : >90% Diameter
- Axis Orientation : $\pm 0.5^\circ$

- Parallelism : ≤ 5 arcmin
- Surface Flatness : $\lambda/8$ over Clear Aperture
- Surface Quality : 20-10 Scratch-Dig
- Wavelength Range : 200 nm - 6.0 μ m (Uncoated)
- Substrate : Magnesium Fluoride

21. CaF₂ Equilateral Dispersive Prism, Uncoated, 25 mm



- Material : CaF₂
- Minimum Angle of Deviation : 31.6° @ 633 nm
- Vd : 95.00
- Surface Flatness @ 633 nm : $\lambda/2$
- Clear Aperture : 70%
- Surface Quality : 40-20 Scratch-Dig
- Angular Tolerance : ± 10 arcmin
- Number of Polished Faces : 2

22. Ø2" Harmonic Beamsplitter, Reflects 266 nm and 355 nm, Transmits 532 nm and 1064 nm



- Diameter : 2"
- Thickness : 8.0 mm (0.31")
- Beamsplitter Coating : Reflectance $>90\%$ at 266 nm, $>99\%$ at 355 nm /

Transmission >95% at 532 nm and 1064 nm

- AR V-Coating : Dual V-Coat, Reflectance <0.5% at 532 nm and 1064 nm
- AOI : 45°

23. K-Cube Brushed DC Servo Motor Controller (Power Supply Not Included)



- Front Panel Velocity Wheel and Digital Display for Controlling Motorized Stages or Actuators
- Two Bidirectional Trigger Ports to Read or Control External Equipment
- Interfaces with Computer Using Included USB Cable
- Compact Footprint: 60.0 mm x 60.0 mm x 49.2 mm
- Power Supply Not Included

3. 기타사항

가. 설치위치 : 경북 구미시 구미대로 350-27 XR 디바이스 개발 지원센터 106호

나. 설치개요 : 규격서의 조건에 맞는 광학 소자 납품

다. 납품기한 : 계약일로 부터 30일 이내

라. 계약의 이행

- 1) 본 규격서에 대한 주계약자(이하 “계약자” 라 한다)와 발주기관 간의 해석상 이견은 발주기관의 해석에 따라야 하며, 본 규격서에 특별히 명시되지 않은 사항은 정부계약법 등의 규정과 일반 관례에 따른다.
- 2) 발주기관은 계약내용 전부에 대한 권리를 행사할 수 있으며 계약자는 이에 대하여 전적으로 동의해야 한다.
- 3) 본 규격서에 명시된 모든 조항은 본 사업의 원활한 추진에 필요한 최소한의 사항만을 규정하였으므로 상세히 기술하지 않았거나 누락된 사항에 대해서도 정상운영 및 서비스에 문제가 발생되지 않도록 계약자는 사전 조치를 취하여야 한다.
- 4) 본 규격서에서 요구하는 성능 및 특성에 대해 계약자의 오인 또는 누락된 상태로 계약 체결되어, 계약 후 이를 보완하기 위한 설계 변경, 물품 등을 추가해야 할 경우 계약자 부담으로 시행한다.

5) 계약자는 공급하는 제품의 성능, 품질 등에 대한 최종적인 책임을 진다.

4. 기타조건

가. 납품기한 : 계약 후 30일 이내

다. 규격관련 문의사항 : 우성수 선임 : 010-8807-9124