



FIFO OPTICS

QUALITY.VALUE.SELECTION.VARIETY.CUSTOMIZATION.

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Company Profile

FIFO was founded in 2000, who is one of leading professional manufacturers in machine vision lens, M12 lens, glass optical components and optical assemblies. FIFO is currently located in Fuzhou, Fujian, China and has US office in San Ramon, CA. FIFO has over 200 staffs comprised of a very skilled team of fabricators including 20 dedicated engineers and over 9000 square meter of manufacturer area. FIFO carries out ISO9001:2015 quality management system.

FIFO is equipped with the most advanced metrology instruments, including ZYGO GPI-XP Interferometers, Lambda 950 Spectrophotometer, Trioptics OptoSpheric Lens measurement system, Trioptics Prism Master .5" Angle measurer, LensCheck -MTF testing and analysis, Collimator, 3D digital CMM etc. FIFO also has advanced production equipments, including Cutting machines, Spherical Milling Machines, Plano Milling Machines, Precision Polishing Machines, High Speed Polishing Machine, Profiling Machines, Vacuum Coating Machines, and Ultrasonic Cleaning Lines.

FIFO is always working hard to chase more excellent quality for every product. FIFO has the very professional R&D engineers, who can assist you with optical design in any time. OEM orders are also warmly welcome.

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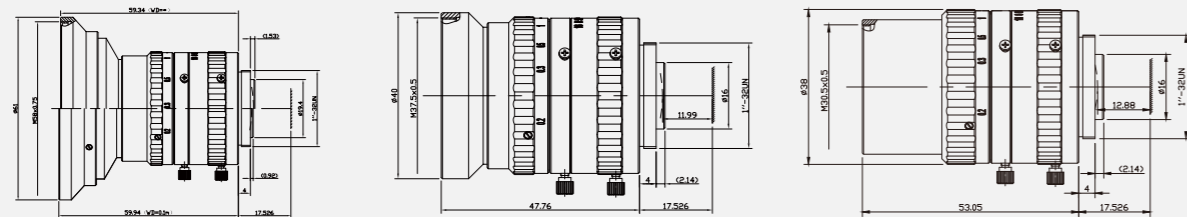
6MP Lenses Series

1/1.2" Format Manual Iris Fixed Lenses



| Item No | FIFO-NV0820M6M | FIFO-NV1220M6M | FIFO-NV1620M6M | |
|--------------------------|----------------|---------------------|-----------------------|-----------------------|
| Resolution | 170lp/mm (6MP) | 170lp/mm (6MP) | 170lp/mm (6MP) | |
| Format | 1/1.2" | 1/1.2" | 1/1.2" | |
| Mount | C | C | C | |
| Focal Length | 8mm | 12mm | 16mm | |
| F/No. | F2.0~16 | F2.0~16 | F2.0~16 | |
| Back Focus | 12.476mm | 11.99mm | 12.88mm | |
| Iris Type | M-Iris | M-Iris | M-Iris | |
| Angle of View (DxVxH) | 1/1.2" | 80°x 53.8°x67.8° | 56.59°x 34.03°x45.31° | 44.1°x 27.1°x35.7° |
| | 2/3" | 69°x 44.83°x57.62° | 48.22°x 29.92°x39.4° | 36.7°x 22.3°x29.6° |
| | 1/2" | 53.13°x 33.4°x43.6° | 36.86°x 22.62°x29.86° | 28.07°x 17.06°x22.62° |
| Distortion | <0.45% | <1% | <0.6% | |
| Working Distance | 0.1m~∞ | 0.1m~∞ | 0.1m~∞ | |
| Design Wavelength | 400~700nm | 400~700nm | 400~700nm | |
| Filter Thread | M58 x 0.75 | M37.5 x 0.5 | M30.5x 0.5 | |
| Dimension | Φ61 x 59.34mm | Φ40x 47.76mm | Φ38 x 53.05mm | |
| Weight | 110.8g | 83.4g | 106.1g | |

Layout



FIFO-NV0820M6M

FIFO-NV1220M6M

FIFO-NV1620M6M

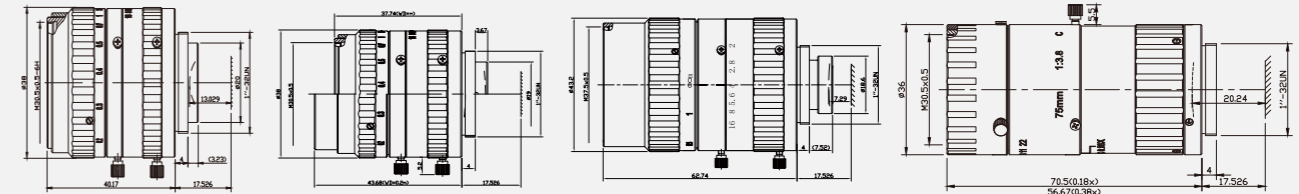
6MP Lenses Series

1/1.2" Format Manual Iris Fixed Lenses



| Item No | FIFO-NV2520M6M | FIFO-NV3520M6M | FIFO-NV5020M6M | FIFO-NV7538M6M | |
|--------------------------|----------------|-----------------------|----------------------|----------------------|-------------------|
| Resolution | 170lp/mm (6MP) | 170lp/mm (6MP) | 170lp/mm (6MP) | 6MP | |
| Format | 1/1.2" | 1/1.2" | 1/1.2" | 2/3" | |
| Mount | C | C | C | C | |
| Focal Length | 25mm | 35mm | 50mm | 75mm | |
| F/No. | F2.0~16 | F2.0~16 | F2.0~16 | 3.8 | |
| Back Focus | 13.03mm | 10.52mm | 7.26mm | 25.683mm | |
| Iris Type | M-Iris | M-Iris | M-Iris | Manual | |
| Angle of View (DxVxH) | 1/1.2" | 27.3°x 16.64°x22° | 20.6°x 12.4°x16.6° | 12.40°x 7.64°x10.21° | 5.39°x 4.05°(HxV) |
| | 2/3" | 22.6°x13.6°x18° | 17°x 10°x13.3° | 10.14°x 6.14°x8.16° | 3.93°x 2.95°(HxV) |
| | 1/2" | 18.18°x 10.97°x14.59° | 13.04°x 7.85°x10.45° | 8.32°x 5.0°x6.86° | 2.95°x 2.21°(HxV) |
| Distortion | <-0.25% | <-0.35% | <0.05% | <0.3% | |
| Working Distance | 0.2m~∞ | 0.2m~∞ | 0.2m~∞ | | |
| Design Wavelength | 400~700nm | 400~700nm | 400~700nm | 400~700nm | |
| Filter Thread | M30.5x 0.5 | M30.5x 0.5 | M37.5 x 0.5 | M30.5x 0.5 | |
| Dimension | Φ38 x 40.17mm | Φ38 x 38.74mm | Φ43.2 x 62.74mm | Φ36 x 70.5mm | |
| Weight | 97.3g | 94.4g | | | |

Layout



FIFO-NV2520M6M

FIFO-NV3520M6M

FIFO-NV5020M6M

FIFO-NV7538M6M

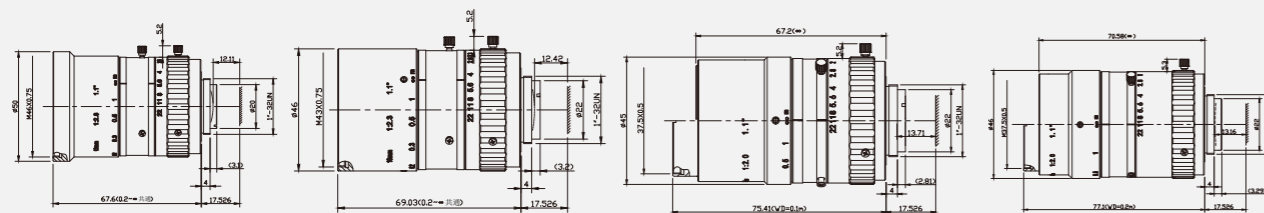
12MP Lenses Series

1.1" Format Manual Iris Fixed Lenses



| Item No | FIFO-1228ML12M | FIFO-1623ML12M | FIFO-2520ML12M | FIFO-3520ML12M | |
|-----------------------|----------------|-----------------------|-----------------------|----------------------|---------------------|
| Resolution | 150lp/mm | 150lp/mm | 150lp/mm | 150lp/mm | |
| Format | 1.1" | 1.1" | 1.1" | 1.1" | |
| Mount | C | C | C | C | |
| Focal Length | 12mm | 16mm | 25mm | 35mm | |
| F/No. | 2.8 | 2.3 | 2.0 | 2.0 | |
| Back Focus | 12.11mm | 12.42mm | 13.71mm | 13.16mm | |
| Iris Type | Manual | Manual | Manual | Manual | |
| Angle of View (DxVxH) | 1.1" Format | 69.35°x 45.54°x57.95° | 54.39°x 34.45°x44.56° | 35.3°x21.75°x28.68° | 25.27°x 15°x20.4° |
| | 2/3" Format | 47.07°x 29.24°x38.04° | 35.67°x 21.83°x28.85° | 22.55°x13.68°x18.19° | 15.89°x9.64°x12.89° |
| | 1/2" Format | 35.12°x 21.47°x28.39° | 26.31°x 15.96°x21.18° | 16.50°x 9.96°x13.27° | 11.59°x 7.0°x9.35° |
| Distortion | <0.51% | <0.4% | <0.25% | <0.15% | |
| Working Distance | 0.1~∞m | 0.1~∞m | 0.1~∞m | 0.2~∞m | |
| Design Wavelength | 400~700nm | 400~700nm | 400~700nm | 400~700nm | |
| Filter Thread | M46x0.75 | M43x0.75 | M37.5x0.5 | M37.5x0.5 | |
| Dimension | Φ50X67.6mm | Φ46X69.03mm | Φ45X75.41mm | Φ46X7.1mm | |
| Weight | 226.3g | 226.3g | 194g | 209.7g | |

Layout



FIFO-1228ML12M

FIFO-1623ML12M

FIFO-2520ML12M

FIFO-3520ML12M

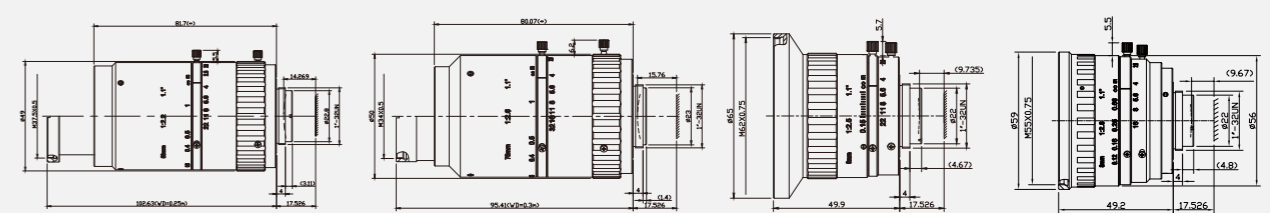
12MP Lenses Series

1.1" Format Manual Iris Fixed Lenses



| Item No | FIFO-5022ML12M | FIFO-7526ML12M | FIFO-0625ML12M | FIFO-0828ML12M | |
|-----------------------|----------------|----------------------|--------------------|-----------------------|----------------------|
| Resolution | 150lp/mm | 150lp/mm | 150lp/mm | 150lp/mm | |
| Format | 1.1" | 1.1" | 1.1" | 1.1" | |
| Mount | C | C | C | C | |
| Focal Length | 50mm | 75mm | 6mm | 8mm | |
| F/No. | 2.2 | 2.6 | 2.5 | 2.8 | |
| Back Focus | 14.27mm | 15.76mm | 9.735mm | 9.67mm | |
| Iris Type | Manual | Manual | Manual | Manual | |
| Angle of View (DxVxH) | 1.1" Format | 16.18°x 9.77°x13.00° | 7.53°x 4.65°x6.05° | 107.35°x64.58°x86.02° | 93.85°x65.21°x80.98° |
| | 2/3" Format | 10.03°x 6.11°x8.15° | 4.80°x 3.12°x3.96° | 102.3°x61.47°x81.89° | 88.33°x60.36°x75.60° |
| | 1/2" Format | 7.30°x 4.43°x5.93° | 3.65°x 2.43°x3.04° | 81.01°x48.68°x64.85° | 80.65°x53.96°x68.31° |
| Distortion | <0.1% | <-0.35% | <0.23% | <-0.47% | |
| Working Distance | 0.25m~∞m | 0.3m~∞m | 0.15m~∞m | 0.12m~∞m | |
| Design Wavelength | 400~700nm | 400~700nm | 400~700nm | 400~700nm | |
| Filter Thread | M37.5x0.5 | M34x0.5 | M62x0.75 | M55x0.75 | |
| Dimension | Φ49X102.63mm | Φ50X95.41mm | Φ65X49.9mm | Φ59X49.2mm | |
| Weight | 252.1g | 270g | / | / | |

Layout



FIFO-5022ML12M

FIFO-7526ML12M

FIFO-0625ML12M

FIFO-0828ML12M

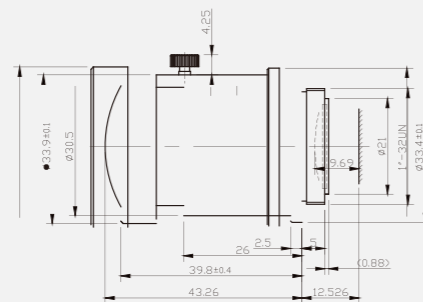
12MP Lenses Series

1" Format Manual Iris Fixed Lenses



| | | |
|--------------------------|----------------|------------------|
| Item No | FIFO-0725ML12M | |
| Resolution | 150lp/mm | |
| Format | 1" | |
| Mount | C | |
| Focal Length | 6.99mm | |
| F/No. | 2.55 | |
| Back Focus | 9.69mm | |
| Iris Type | Manual | |
| Angle of View (DxVxH) | 1"Format | 143°x 80°x109.2° |
| | 2/3"Format | 93°x 55°x74° |
| | 1/2"Format | 67°x 39.6°x53° |
| Distortion | <-61% | |
| Working Distance | 0.5m~∞m | |
| Design Wavelength | 400~700nm | |
| Filter Thread | - | |
| Dimension | Φ33.9X43.26mm | |
| Weight | - | |

Layout



FIFO-0725ML12M

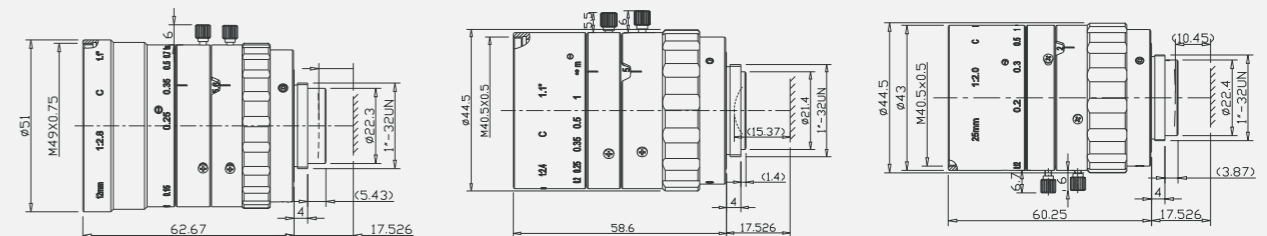
24MP Lenses Series

1.1" Format Manual Iris Fixed Lenses



| Item No | FIFO-1228SF | FIFO-1624SF | FIFO-2520SF | |
|--------------------------|-------------|-----------------------|-----------------------|-----------------------|
| Resolution | 200lp/mm | 200lp/mm | 200lp/mm | |
| Format | 1.1" | 1.1" | 1.1" | |
| Mount | C | C | C | |
| Focal Length | 12mm | 16mm | 25mm | |
| F/No. | 2.8 | 2.4 | 2.0 | |
| Back Focus | 10.19mm | 15.37mm | 10.45mm | |
| Iris Type | Manual | Manual | Manual | |
| Angle of View (DxVxH) | 1.1" | 67.92°x 44.26°x56.86° | 53.67°x 34.13°x44.44° | 34.68°x 21.24°x28.11° |
| | 1" | 63.12°x 40.59°x52.44° | 49.64°x 31.18°x40.79° | 31.79°x 19.34°x25.63° |
| | 1/1.1" | 56.59°x 35.87°x46.66° | 44.21°x 27.44°x36.06° | 27.96°x 16.94°x22.50° |
| Distortion | <-0.26% | <-0.6% | <-0.33% | |
| Working Distance | 0.12 ~ 1m | 0.12~∞m | 0.12~∞m | |
| Design Wavelength | 400~700nm | 400~700nm | 400~700nm | |
| Filter Thread | M49x0.75 | M40.5 x 0.5 | M40.5x0.5 | |
| Dimension | Φ51x62.67mm | Φ44.5x58.6mm | Φ44.5x60.25mm | |
| Weight | | | | |

Layout



FIFO-1228SF

FIFO-1624SF

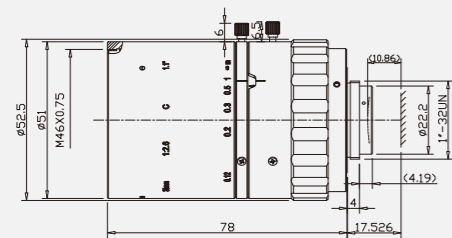
FIFO-2520SF

24MP Lenses Series

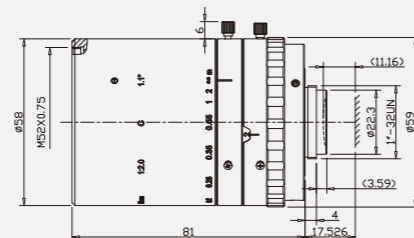
1.1" Format Manual Iris Fixed Lenses

| Item No | FIFO-3526SF | FIFO-5020SF | |
|--------------------------|-------------|-----------------------|----------------------|
| Resolution | 200lp/mm | 200lp/mm | |
| Format | 1.1" | 1.1" | |
| Mount | C | C | |
| Focal Length | 35mm | 50mm | |
| F/No. | 2.6 | 2.0 | |
| Back Focus | 10.869mm | 11.16mm | |
| Iris Type | Manual | Manual | |
| Angle of View (DxVxH) | 1.1" | 22.06°x 13.49°x17.87° | 13.68°x 8.47°x11.30° |
| | 1" | 20.23°x 12.28°x16.28° | 12.85°x 7.70°x10.28° |
| | 1/1.1" | 17.77°x 10.77°x14.29° | 11.25°x 6.72°x8.99° |
| Distortion | <0.1% | <0.08% | |
| Working Distance | 0.12~∞m | 0.2~∞m | |
| Design Wavelength | 400~700nm | 400~700nm | |
| Filter Thread | M46 x 0.75 | M52x0.75 | |
| Dimension | Φ52.5x78mm | Φ59x81mm | |
| Weight | | | |

Layout



FIFO-3526SF



FIFO-5020SF

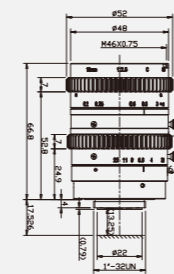
25MP Lenses Series

4/3" F format Manual Iris Fixed Lenses

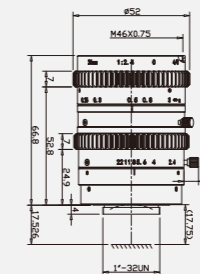


| Item No | FIFO-1825XF | FIFO-2524XF | FIFO-3524XF | FIFO-5025XF | |
|--------------------------|-------------|-----------------------|----------------------|----------------------|----------------------|
| Resolution | 180lp/mm | 180lp/mm | 180lp/mm | 180lp/mm | |
| Format | 4/3" | 4/3" | 4/3" | 4/3" | |
| Mount | C | C | C | C | |
| Focal Length | 18mm | 25mm | 35mm | 50mm | |
| F/No. | 2.5 | 2.4 | 2.4 | 2.5 | |
| Back Focus | 13.25mm | 17.75mm | 16.99mm | 17.62mm | |
| Iris Type | Manual | Manual | Manual | Manual | |
| Angle of View (DxVxH) | 1.1"Format | 62.63°x40.65°x52.44° | 43.70°x27.09°x35.64° | 33.37°x20.35°x26.98° | 22.38°x13.55°x18.00° |
| | 2/3"Format | 54.19°x34.24°x44.66° | 39.41°x24.25°x31.99° | 28.02°x16.97°x22.54° | 18.59°x11.26°x14.96° |
| | 1/2"Format | 50.12°x 31.37°x41.08° | 36.19°x22.16°x29.29° | 25.62°x15.49°x20.58° | 17.00°x10.28°x13.67° |
| Distortion | <0.84% | <-0.36% | <-0.25% | <0.076% | |
| Working Distance | 0.12~∞m | 0.15~∞m | 0.23~∞m | 0.25~∞m | |
| Design Wavelength | 400~700nm | 400~700nm | 400~700nm | 435~650nm | |
| Filter Thread | M46x0.75 | M46x0.75 | M46x0.75 | M46x0.75 | |
| Dimension | Φ52X66.8mm | Φ52X66.8mm | Φ53.6X68.5mm | Φ57.6X85.53mm | |
| Weight | / | / | / | / | |

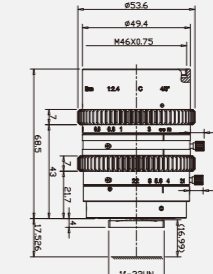
Layout



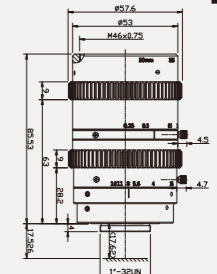
FIFO-1825XF



FIFO-2524XF



FIFO-3524XF



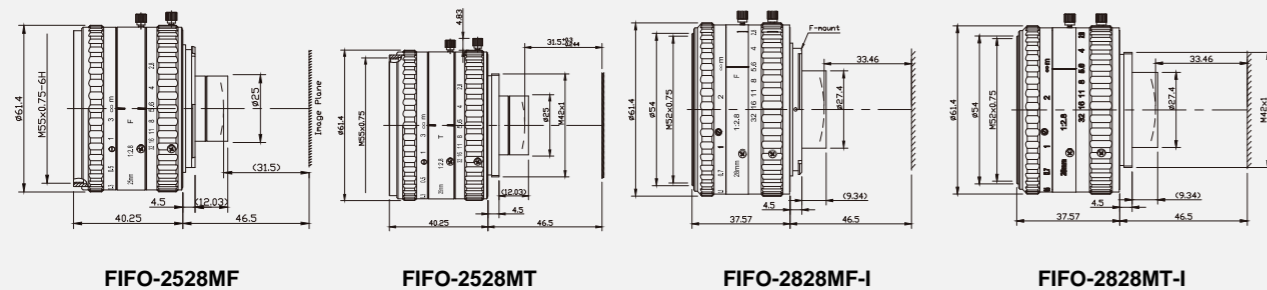
FIFO-5025XF

F/T-mount lenses for 4K (7 micron) line scan camera



| Item No | FIFO-2528MF | FIFO-2528MT | FIFO-2828MF-I | FIFO-2828MT-I |
|----------------------|-----------------|-----------------|-------------------|-------------------|
| Resolution: | 50lp/mm | 50lp/mm | 50lp/mm | 50lp/mm |
| Format: | 43mm | 43mm | 43mm | 43mm |
| Mount : | F | M42 x 1(T) | F | M42 x 1(T) |
| Focal Length : | 25mm | 25mm | 28mm | 28mm |
| F/No. | F2.8~F32 | F2.8~F32 | F2.8~F32 | F2.8~F32 |
| Back Focus : | 31.5mm | 31.5mm | 33.46mm | 33.46mm |
| Iris Type : | Manual Iris | Manual Iris | Manual Iris | Manual Iris |
| Angle of View(DXVXH) | 82.3°x51.1°x72° | 82.3°x51.1°x72° | 73.6°x44.4°x63.4° | 73.6°x44.4°x63.4° |
| Distortion : | <-3.7% | <-4% | <-3% | <-3% |
| Focusing Range: | 0.15m~∞ | 0.15m~∞ | 0.3m~∞ | 0.3m~∞ |
| Design wavelength | 400~700nm | 400~700nm | 400~700nm | 400~700nm |
| Filter Thread: | M55x 0.75 | M55x 0.75 | M52x 0.75 | M52x 0.75 |
| Dimension: | ∅ 61.4x 40.25mm | ∅ 61.4x 40.25mm | ∅ 61.4x 37.57mm | ∅ 61.4x 37.57mm |
| Weight: | 320g | 300g | 290g | 270g |

Layout

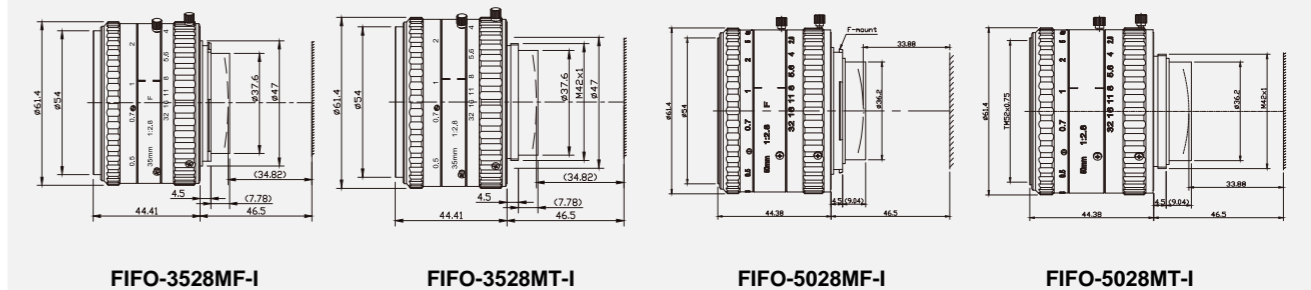


F/T-mount lenses for 4K (7 micron) line scan camera



| Item No | FIFO-3528MF-I | FIFO-3528MT-I | FIFO-5028MF-I | FIFO-5028MT-I |
|----------------------|----------------------|----------------------|----------------------|----------------------|
| Resolution: | 50lp/mm | 50lp/mm | 50lp/mm | 50lp/mm |
| Format: | 43mm | 43mm | 43mm | 43mm |
| Mount : | F | M42 x 1(T) | F | M42 x 1(T) |
| Focal Length : | 35mm | 35mm | 50mm | 50mm |
| F/No. | F2.8~F32 | F2.8~F32 | F2.8~F32 | F2.8~F32 |
| Back Focus : | 34.82mm | 34.82mm | 38.88mm | 38.88mm |
| Iris Type : | Manual Iris | Manual Iris | Manual Iris | Manual Iris |
| Angle of View(DXVXH) | 61.60°x36.20°x52.60° | 61.60°x36.20°x52.60° | 46.54°x26.99°x39.60° | 46.54°x26.99°x39.60° |
| Distortion : | <-2.8% | <-2.8% | <2.4% | <2.4% |
| Focusing Range: | 0.3m~∞ | 0.3m~∞ | 0.4m~∞ | 0.4m~∞ |
| Design wavelength | 400~700nm | 400~700nm | 400~700nm | 400~700nm |
| Filter Thread: | M52x 0.75 | M52x 0.75 | M52x 0.75 | M52x 0.75 |
| Dimension: | ∅ 61.4x 44.41mm | ∅ 61.4x 44.41mm | ∅ 61.4x 44.38mm | ∅ 61.4x 44.38mm |
| Weight: | 360g | 340g | 340g | 320g |

Layout

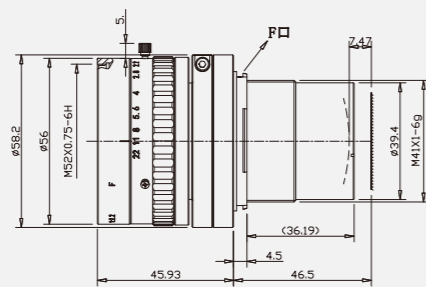


F/T-mount lenses for 4K (7 micron) line scan camera



| | |
|----------------------|----------------------|
| Item No | FIFO-5022MF |
| Resolution: | 170lp/mm |
| Format: | 32.6mm |
| Mount : | F |
| Focal Length : | 50mm |
| F/No. | F2.2-F22 |
| Back Focus : | 7.47mm |
| Iris Type : | Manual Iris |
| Angle of View(DXVXH) | 29.22°x20.89°x20.89° |
| Distortion : | <-0.15% |
| Focusing Range: | 0.32~0.38m |
| Design wavelength | 400~700nm |
| Filter Thread: | M52x 0.75 |
| Dimension: | ∅ 58.2x 45.93mm |
| Weight: | 370g |

Layout



FIFO-5022MF

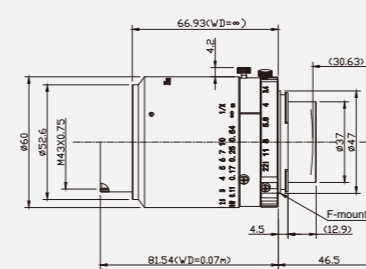
HF Lenses Series

43mm Format Manual Iris Fixed Lenses

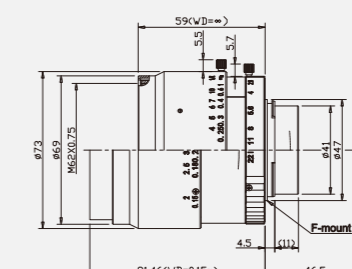


| Item No | FIFO-3534HF | FIFO-5528HF | FIFO-11030HF | |
|--------------------------|-------------|-----------------------|-----------------------|----------------------|
| Resolution | 5um | 5um | 3.5um | |
| Format | 43mm | 43mm | 43mm | |
| Mount | F | F | F | |
| Focal Length | 35mm | 55mm | 110mm | |
| F/No. | 3.4 | 2.8 | 3.0 | |
| Back Focus | 30.63mm | 34.74~64.35mm | 22.14mm | |
| Iris Type | Manual | Manual | Manual | |
| Angle of View (DxVxH) | 43mmFormat | 43.89°x 26.15°x35.03° | 43.20°x 26.73°x35.14° | 21.9°x 13.34°x17.67° |
| | 4/3"Format | 23.67°x 14.25°x18.97° | 23.43°x 14.19°x18.84° | 11.58°x 6.98°x9.29° |
| | 1"Format | 16.76°x 10.13°x13.46° | 16.78°x 10.11°x13.46° | 8.29°x 4.98°x6.64° |
| Distortion | <0.4% | <0.2% | <1.33% | |
| Working Distance | 71mm~∞ | 150mm~∞mm | 184mm~∞ | |
| Design Wavelength | 400~700mm | 400~700nm | 400~700mm | |
| Filter Thread | M43x0.75 | M62x0.75 | M72x0.75 | |
| Dimension | ∅60X81.54mm | ∅73X81.46mm | ∅81X130.51mm | |
| Weight | - | - | - | |

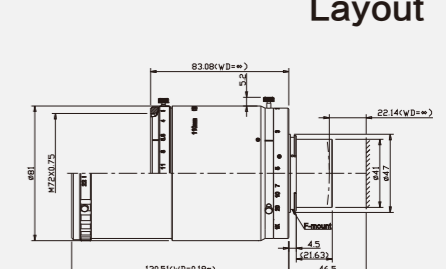
Layout



FIFO-3534HF



FIFO-5528HF



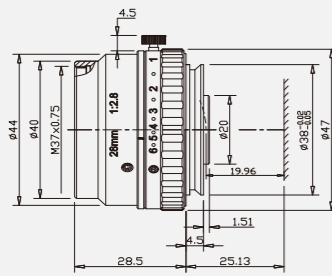
FIFO-11030HF

V38-mount Lenses Series

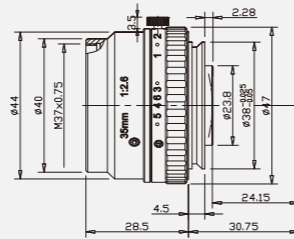


| Item No | FIFO-ELS-28/2.8V | | | FIFO-ELS-35/2.6V | | |
|-----------------------|------------------|----------|---------|------------------|---------|---------|
| Resolution | 40lp/mm | | | 40lp/mm | | |
| Focal Length | 28mm | | | 35mm | | |
| Magnification | 0.04X | 0.1X | 0.33X | 0.04X | 0.1X | 0.33X |
| Working Distance | 734.08 | 294.58 | 90.37 | 879.70 | 357.40 | 114.71 |
| O/I Distance | 788.88 | 351.14 | 153.67 | 940.34 | 420.13 | 185.45 |
| Working # (Full Open) | 3.11 | 3.1 | 3.1 | 2.68 | 2.67 | 2.67 |
| F/No. | 2.8 | | | 2.6 | | |
| DOF | +/-48.59 | +/-7.775 | +/-0.71 | +/-41.88 | +/-6.68 | +/-0.61 |
| Distortion | 0.02% | -0.5% | -1.5% | -0.5% | 0.16% | 0.5% |
| Back Focus(mm) | 21.13 | 22.89 | 29.52 | 25.51 | 27.59 | 35.51 |
| Format | 30mm | | | 30mm | | |
| Filter Thread | M37x0.75 | | | M37x0.75 | | |
| Flange Distance | 26.30 | 28.06 | 34.80 | 32.14 | 34.23 | 42.24 |
| Weight | 89g | | | 97g | | |

Layout



FIFO-ELS-28/2.8V



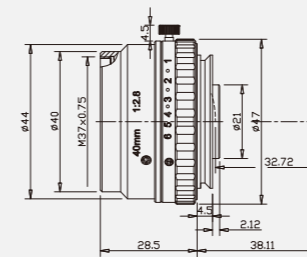
FIFO-ELS-35/2.6V

V38-mount Lenses Series

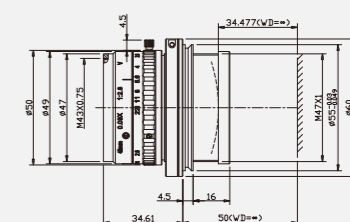


| Item No | FIFO-ELS-40/2.8V | | | FIFO-ELS-45/2.6V | | |
|-----------------------|------------------|---------|---------|------------------|---------|---------|
| Resolution | 40lp/mm | | | 7um(6K) | | |
| Focal Length | 40mm | | | 45mm | | |
| Magnification | 0.04X | 0.1X | 0.33X | 0.04X | 0.09X | 0.33X |
| Working Distance | 1053.95 | 431.15 | 141.76 | 1200 | 525 | 150 |
| O/I Distance | 1122.22 | 501.91 | 222.07 | 1285 | 610 | 245.89 |
| Working # (Full Open) | 2.98 | 3.14 | 3.78 | 2.85 | 2.92 | 3.24 |
| F/No. | 2.8 | | | 2.8 | | |
| DOF | +/-46.56 | +/-7.85 | +/-0.87 | +/-14.25 | +/-2.88 | +/-0.24 |
| Distortion | -0.5% | -0.2% | 0.2% | - | -2.88% | - |
| Back Focus(mm) | 34.35 | 36.8 | 46.25 | 36.329 | 38.722 | 49.59 |
| Format | 43mm | | | 43mm(6K) | | |
| Filter Thread | M37x0.75 | | | M43x0.75 | | |
| Flange Distance | 39.77 | 42.26 | 51.81 | - | 50 | 42.24 |
| Weight | 90g | | | - | | |

Layout



FIFO-ELS-45/4.0V



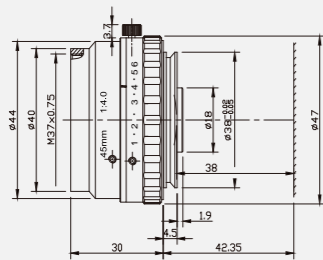
FIFO-ELS-50/2.8V

V38-mount Lenses Series

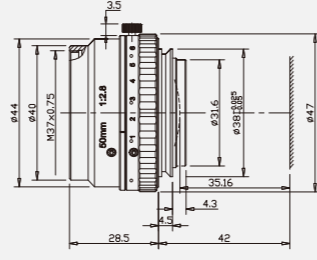


| Item No | FIFO-ELS-45/4.0V | | | FIFO-ELS-50/2.8V | | |
|-----------------------|------------------|---------|---------|------------------|---------|---------|
| Resolution | 40lp/mm | | | 40lp/mm | | |
| Focal Length | 45mm | | | 50mm | | |
| Magnification | 0.04X | 0.17X | 0.33X | 0.08X | 0.17X | 0.34X |
| Working Distance | 1183.48 | 299.35 | 160.45 | 631.37 | 327.15 | 176.40 |
| O/I Distance | 1257.69 | 379.49 | 248.30 | 703.04 | 406.03 | 263.72 |
| Working # (Full Open) | 4.23 | 4.72 | 5.37 | 3.09 | 3.33 | 3.81 |
| F/No. | 4 | | | 2.985 | | |
| DOF | +/-66.09 | +/-4.23 | +/-1.21 | +/-11.21 | +/-2.99 | +/-0.85 |
| Distortion | 0.2% | -0.1% | 0.15% | 0.4% | 0.15% | -0.2% |
| Back Focus(mm) | 39.88 | 45.7 | 53.34 | 39.31 | 43.44 | 51.78 |
| Format | 43mm | | | 43mm | | |
| Filter Thread | M37x0.75 | | | M37x0.75 | | |
| Flange Distance | 44.21 | 50.12 | 57.84 | 46.17 | 50.38 | 58.82 |
| Weight | 89g | | | 94g | | |

Layout



FIFO-ELS-45/4.0V



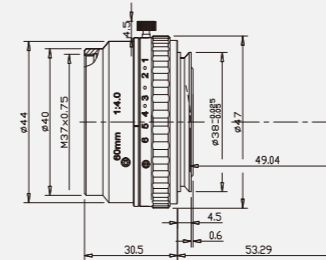
FIFO-ELS-50/2.8V

V38-mount Lenses Series

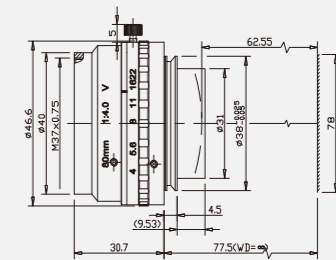


| Item No | FIFO-ELS-60/4.0V | | | FIFO-ELS-80/4.0V | | |
|-----------------------|------------------|---------|---------|------------------|----------|--------|
| Resolution | 40lp/mm | | | 6K | | |
| Focal Length | 60mm | | | 80mm | | |
| Magnification | 0.04X | 0.17X | 0.33X | 0.08X | 0.17X | 0.33X |
| Working Distance | 1532.61 | 393.81 | 215.24 | 1026 | 543.3 | 303 |
| O/I Distance | 1618.82 | 487.71 | 319.19 | 1129.73 | 653.74 | 427.03 |
| Working # (Full Open) | 4.19 | 4.67 | 5.3 | 4.37 | 4.7 | 5.34 |
| F/No. | 4.137 | | | 4 | | |
| DOF | +/-64.82 | +/-4.14 | +/-1.18 | +/-15.71 | +/-4.213 | +/-1.2 |
| Distortion | 0.4% | 0.1% | -0.15% | - | <0.2% | - |
| Back Focus(mm) | 51.7 | 59.29 | 69.26 | - | 62.55 | - |
| Format | 60mm | | | 78mm | | |
| Filter Thread | M37x0.75 | | | M37x0.75 | | |
| Flange Distance | 55.7 | 63.4 | 73.45 | 84.21 | 90.93 | 104.28 |
| Weight | 94g | | | 135g | | |

Layout



FIFO-ELS-60/4.0V



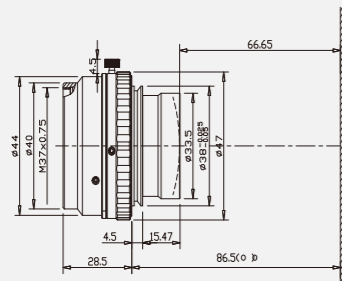
FIFO-ELS-80/4.0V

V38-mount Lenses Series

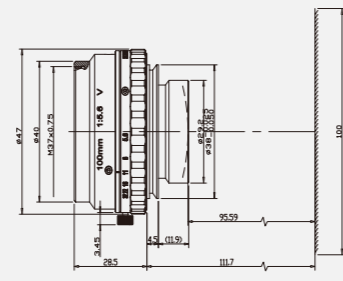


| Item No | FIFO-ELS-90/4.5V | | | FIFO-ELS-100/5.6V | | |
|----------------------|------------------|---------|---------|-------------------|---------|---------|
| Resolution | 40lp/mm | | | 40lp/mm | | |
| Focal Length | 90mm | | | 100mm | | |
| Magnification | 0.08X | 0.17X | 0.33X | 0.08X | 0.17X | 0.33X |
| Working Distance | 1160.82 | 607.41 | 333.99 | 1305.66 | 691.29 | 384.42 |
| O/I Distance | 1283.40 | 737.66 | 479.49 | 1438.54 | 832.69 | 542.85 |
| Working #(Full Open) | 4.98 | 5.35 | 6.09 | 6.08 | 6.57 | 7.52 |
| F/No. | 4.796 | | | 5.6 | | |
| DOF | +/-18.07 | +/-4.80 | +/-1.36 | +/-21.93 | +/-5.92 | +/-1.69 |
| Distortion | 0.3% | -0.02% | -0.25% | 0.15% | 0.08% | -0.06%- |
| Back Focus(mm) | 74.24 | 81.91 | 96.98 | 88.07 | 96.59 | 113.61 |
| Format | 90mm | | | 100mm | | |
| Filter Thread | M37x0.75 | | | M37x0.75 | | |
| Flange Distance | 94.08 | 101.75 | 117.00 | 104.38 | 112.90 | 129.93 |
| Weight | 122g | | | 107g | | |

Layout



FIFO-ELS-90/4.5V



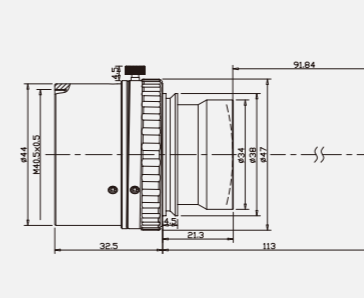
FIFO-ELS-100/5.6V

V38-mount Lenses Series

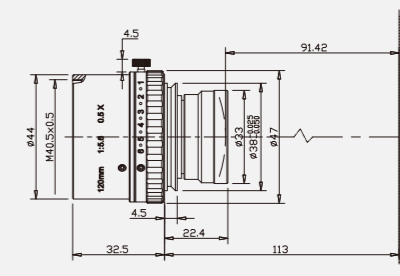


| Item No | FIFO-ELS-120/5.6V-0.3X | | | FIFO-ELS-120/5.6V-0.5X | | |
|----------------------|------------------------|---------|---------|------------------------|----------|---------|
| Resolution | 40lp/mm | | | 40lp/mm | | |
| Focal Length | 120mm | | | 120mm | | |
| Magnification | 0.26X | 0.32X | 0.38X | 0.38X | 0.50X | 0.63X |
| Working Distance | 546.65 | 460.91 | 402.24 | 410.33 | 330.46 | 282.54 |
| O/I Distance | 723.3 | 664.76 | 593.29 | 601.13 | 536.39 | 503.61 |
| Working #(Full Open) | 7.15 | 7.49 | 7.83 | 7.8 | 8.51 | 9.22 |
| F/No. | 5.6 | | | 5.6 | | |
| DOF | +/-2.62 | +/-1.81 | +/-1.34 | +/-1.37 | +/-0.842 | +/-0.58 |
| Distortion | 0.03% | -0.02% | -0.05% | 0.06% | 0.01% | -0.03% |
| Back Focus(mm) | 123.51 | 130.71 | 137.91 | 137.27 | 152.40 | 167.54 |
| Format | 90mm | | | 90mm | | |
| Filter Thread | M40.5x0.5 | | | M40.5x0.5 | | |
| Flange Distance | 144.15 | 151.35 | 158.55 | 158.31 | 173.43 | 188.57 |
| Weight | 151g | | | 145g | | |

Layout



FIFO-ELS-120/5.6V-0.3X



FIFO-ELS-120/5.6V-0.5X

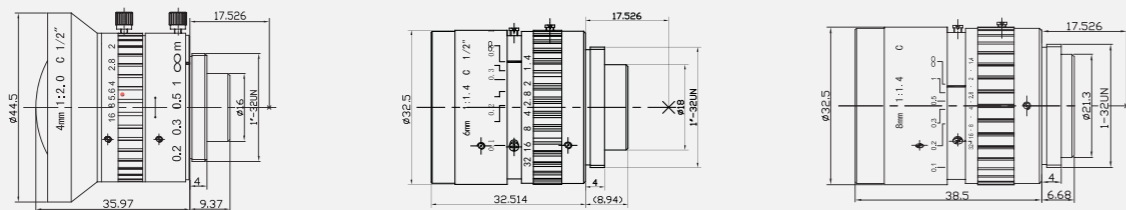
2.0 Mega-pixel Lenses Series

1/2" Format Manual Iris Fixed Lenses



| Item No | FIFO-0420MM | FIFO-0614MM | FIFO-0814MM |
|--------------------------|------------------|-----------------------|-----------------------|
| Resolution | 100lp/mm (2MP) | 100lp/mm (2MP) | 100lp/mm (2MP) |
| Format | 1/2" | 1/2" | 1/2" |
| Mount | C | C | C |
| Focal Length | 4mm | 6mm | 8mm |
| F/No. | F2.0~F16 | F1.4~F32 | F1.4~F32 |
| Back Focus | 8.77mm | 9.262mm | 11.453mm |
| Iris Type | Manual Iris | Manual Iris | Manual Iris |
| Angle of View (DxVxH) | 1/2 " | 90°x 61.93°x77.32° | 67.38°x 43.60°x56.14° |
| | 1/3 " | 73.74°x 48.46°x61.93° | 53.13°x 33.39°x43.60° |
| | 1/4 " | 53.13°x 33.40°x43.60° | 36.87°x 22.60°x29.86° |
| Distortion | <-2.8% | <-1% | <-1% |
| Focusing Range | 0.1m ~ ∞ | 0.1m ~ ∞ | 0.1m ~ ∞ |
| Design Wavelength | 400nm~950nm | 400nm~950nm | 400nm~950nm |
| Filter Thread | M43x 0.75 | M30.5x 0.5 | M30.5x 0.5 |
| Dimension | ∅ 44.5 x 35.97mm | ∅ 32 x32.514mm | ∅ 32.5 x 38.5mm |
| Weight | 130g | 100g | 107g |

Layout



FIFO-0420MM

FIFO-0614MM

FIFO-0814MM

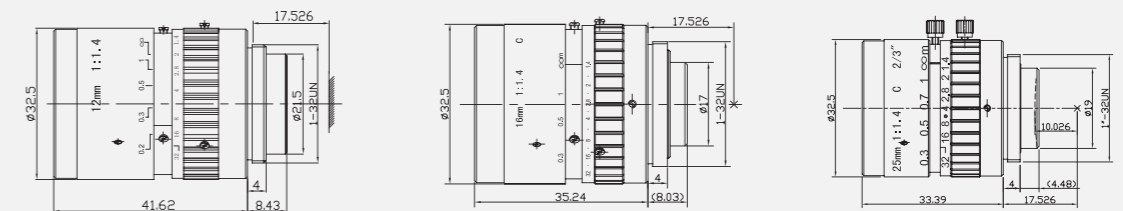
2.0 Mega-pixel Lenses Series

2/3" Format Manual Iris Fixed Lenses



| Item No | FIFO-1214MM | FIFO-1614MM | FIFO-2514MM | |
|--------------------------|------------------|-----------------------|-----------------------|------------------------|
| Resolution | 100lp/mm (2MP) | 100lp/mm (2MP) | 100lp/mm (2MP) | |
| Format | 2/3" | 2/3" | 2/3" | |
| Mount | C | C | C | |
| Focal Length | 12mm | 16mm | 25mm | |
| F/No. | F1.4~F32 | F1.4~F32 | F1.4~F32 | |
| Back Focus | 9.62mm | 9.87mm | 9.04mm | |
| Iris Type | Manual Iris | Manual Iris | Manual Iris | |
| Angle of View (DxVxH) | 2/3 " | 49.24°x 30.75°x40.27° | 37.94°x 23.31°x30.75° | 24.81°x 15.04°x 19.96° |
| | 1/2 " | 36.86°x 22.62°x29.86° | 28.07°x 17.06°x22.62° | 18.18°x 10.97°x14.59° |
| | 1/3 " | 28.07°x 17.06°x22.62° | 21.23°x 12.84°x17.06° | 13.69°x 8.24°x10.97° |
| | 1/4 " | 18.92°x 11.42°x15.19° | 14.25°x 8.58°x11.42° | 9.15°x 5.50°x7.32° |
| Distortion | <-1% | <-1% | -1% | |
| Focusing Range | 0.1m ~ ∞ | 0.2m ~ ∞ | 0.3m ~ ∞ | |
| Design Wavelength | 400nm~950nm | 400nm~950nm | 400nm~950nm | |
| Filter Thread | M30.5x 0.5 | M30.5x 0.5 | M30.5x 0.5 | |
| Dimension | ∅ 32.5 x 41.62mm | ∅ 32.5 x 35.24mm | ∅ 32.5 x 33.9mm | |
| Weight | 85g | 80g | 60g | |

Layout



FIFO-1214MM

FIFO-1614MM

FIFO-2514MM

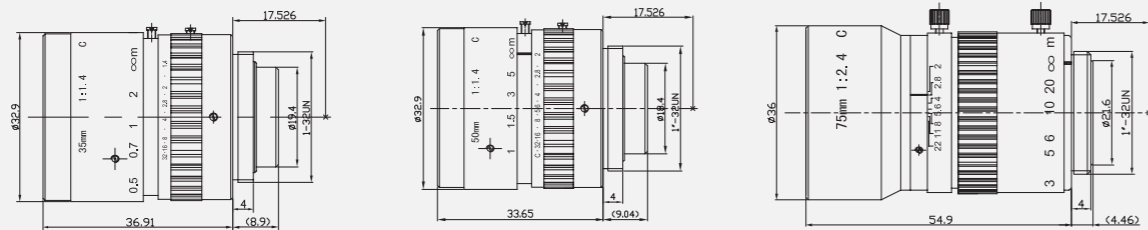
2.0 Mega-pixel Lenses Series

2/3" Format Manual Iris Fixed Lenses



| Item No | FIFO-3514MM | FIFO-5020MM | FIFO-7524MM | |
|--------------------------|------------------|-----------------------|----------------------|--------------------|
| Resolution | 100lp/mm (2MP) | 100lp/mm (2MP) | 100lp/mm (2MP) | |
| Format | 2/3" | 2/3" | 2/3" | |
| Mount | C | C | C | |
| Focal Length | 35mm | 50mm | 75mm | |
| F/No. | F1.4~F32 | F2.0~F32 | F2.4~F22 | |
| Back Focus | 9.44mm | 9.4mm | 17.14mm | |
| Iris Type | Manual Iris | Manual Iris | Manual Iris | |
| Angle of View (D×V×H) | 2/3 " | 17.86°× 10.77°×14.33° | 12.55°× 7.55°×10.06° | 8.38°× 5.04°×6.72° |
| | 1/2 " | 13.03°× 7.85°×10.45° | 9.15°× 5.50°×7.32° | 6.10°× 3.67°×4.89° |
| | 1/3 " | 9.80°× 5.89°×7.85° | 6.87°× 4.12°×5.50° | 4.58°× 2.75°×3.67° |
| | 1/4 " | 6.54°× 3.93°×5.23° | 4.58°× 2.75°×3.67° | 3.05°× 1.83°×2.44° |
| Distortion | <-1% | <0.4% | <0.6% | |
| Focusing Range | 0.5m ~ ∞ | 1m ~ ∞ | 1m ~ ∞ | |
| Design Wavelength | 400nm~950nm | 400nm~950nm | 400nm~950nm | |
| Filter Thread | M30.5x 0.5 | M30.5x 0.5 | M34x 0.5 | |
| Dimension | ∅ 32.9 x 36.91mm | ∅ 32.9 x 33.65mm | ∅ 36 x 54.9mm | |
| Weight | 90g | 80g | 140g | |

Layout



FIFO-3514MM

FIFO-5020MM

FIFO-7524MM

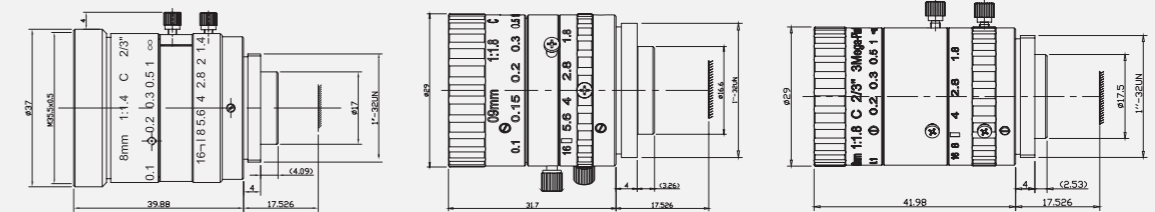
3.0 Mega-pixel Lenses Series

2/3" Format Manual Iris Fixed Lenses



| Item No | FIFO-0814M3M | FIFO-0918M3M | FIFO-1218M3M | |
|--------------------------|----------------|-----------------------|-----------------------|--------------------|
| Resolution | 120lp/mm (3MP) | 120lp/mm(3MP) | 120lp/mm(3MP) | |
| Format | 2/3" | 2/3" | 2/3" | |
| Mount | C | C | C | |
| Focal Length | 8mm | 9mm | 12mm | |
| F/No. | F1.4~F16 | F1.8~F16 | F1.8~F16 | |
| Back Focus | 9.87mm | 10.87mm | 11.72mm | |
| Iris Type | Manual Iris | Manual Iris | Manual Iris | |
| Angle of View (D×V×H) | 2/3 " | 69.02°× 44.83°×57.62° | 62°× 51.22°×19.77° | 48°× 29.4°×38.5° |
| | 1/2 " | 53.13°× 33.4°×43.6° | 47.09°× 38.44°×29.3° | 36°× 21.6°×30.3° |
| | 1/3 " | 41.11°× 25.36°×33.4° | 36.19°× 29.3°×22.19° | 27°×16.4°×21.6° |
| | 1/4 " | 28.07°× 17.06°×22.62° | 27.54°× 22.19°×16.73° | 22.6°× 12.4°×16.4° |
| Distortion | <0.5% | <-0.5% | <-0.3% | |
| Focusing Range | 0.1m ~ ∞ | 0.1m ~ ∞ | 0.1m ~ ∞ | |
| Design Wavelength | 400nm~950nm | 400nm~950nm | 400nm~950nm | |
| Filter Thread | M37x 0.5 | M27x 0.5 | M27x 0.5 | |
| Dimension | ∅ 39 x 39.88mm | ∅ 29 x 31.7mm | ∅ 29 x 41.98mm | |
| Weight | 200g | 63g | 73g | |

Layout



FIFO-0814M3M

FIFO-0918M3M

FIFO-1218M3M

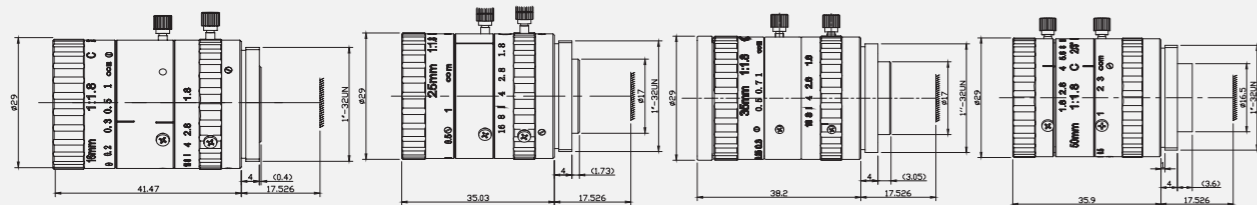
3.0 Mega-pixel Lenses Series

2/3" Format Manual Iris Fixed Lenses



| Item No | FIFO-1618M3M | FIFO-2518M3M | FIFO-3518M3M | FIFO-5018M3M | |
|--------------------------|---------------|--------------------|----------------------|--------------------|-------------------|
| Resolution | 120lp/mm(3MP) | 120lp/mm(3MP) | 120lp/mm(3MP) | 120lp/mm(3MP) | |
| Format | 2/3" | 2/3" | 2/3" | 2/3" | |
| Mount | C | C | C | C | |
| Focal Length | 16mm | 25mm | 35mm | 50mm | |
| F/No. | F1.8~F16 | F1.8~F16 | F1.8~F16 | F1.8~F16 | |
| Back Focus | 13.5mm | 12.7mm | 11.72mm | 11.35mm | |
| Iris Type | Manual Iris | Manual Iris | Manual Iris | Manual Iris | |
| Angle of View (DxVxH) | 2/3 " | 36.8°x 22.2°x29.1° | 24.2°x 14.04°x18.68° | 17.5°x 9.6°x12.8° | 12.6°x6.86°x9.14° |
| | 1/2 " | 26.6°x 16.3°x21.5° | 17°x 10.26°x13.64° | 11.68°x 7°x9.3° | 8.3°x4.98°x6.64° |
| | 1/3 " | 20°x 12.4°x16.3° | 13°x 7.7°x10.26° | 8.8°x 5.24°x7° | 6.2°x3.73°x4.98° |
| | 1/4 " | 15.2°x 9.6°x12.4° | 9.6°x 5.76°x7.7° | 6.56°x 3.94°x5.24° | 4.66°x2.8°x3.73° |
| Distortion | <-0.3% | <-0.1% | <-0.1% | <-0.1% | |
| Focusing Range | 0.1m ~ ∞ | 0.15m ~ ∞ | 0.2m ~ ∞ | 0.2m ~ ∞ | |
| Design Wavelength | 400nm~950nm | 400nm~950nm | 400nm~950nm | 400nm~950nm | |
| Filter Thread | M27x0.5 | M27x0.5 | M27x0.5 | M27x0.5 | |
| Dimension | ∅ 29x41.47 | ∅ 29x35.03 | ∅ 29x38.2 | ∅ 29x35.9 | |
| Weight | 71g | 60.5g | 71g | 60g | |

Layout



FIFO-1618M3M

FIFO-2518M3M

FIFO-3518M3M

FIFO-5018M3M

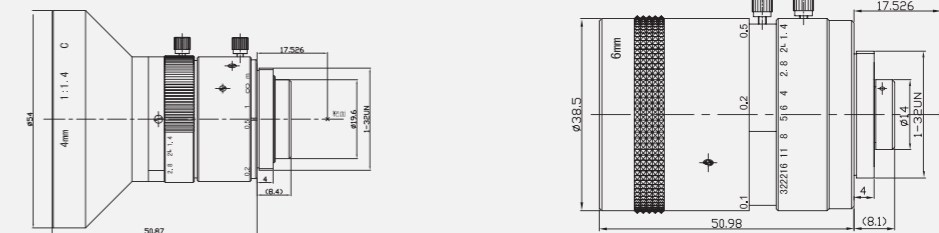
5.0 Mega-pixel Lenses Series

1/2" Format Manual Iris Fixed Lenses



| Item No | FIFO-0414M5M | FIFO-0614M5M | |
|--------------------------|----------------|-----------------------|-----------------------|
| Resolution | 150lp/mm (5MP) | 150lp/mm (5MP) | |
| Format | 1/2" | 1/2" | |
| Mount | C | C | |
| Focal Length | 4mm | 6mm | |
| F/No. | F1.4~F32 | F1.4~F16 | |
| Back Focus | 10.342mm | 9.8mm | |
| Iris Type | Manual Iris | Manual Iris | |
| Angle of View (DxVxH) | 1/2 " | 90°x 61.93°x77.32° | 67.38°x 43.60°x56.14° |
| | 1/3 " | 73.74°x 48.46°x61.93° | 53.13°x 33.39°x43.60° |
| | 1/4 " | 53.13°x 33.40°x43.60° | 36.87°x 22.60°x29.86° |
| | Distortion | <-1.6% | <-1% |
| Focusing Range | 0.1m ~ ∞ | 0.1m ~ ∞ | |
| Design Wavelength | 400nm~950nm | 400nm~950nm | |
| Filter Thread | M52 x 0.75mm | M35.5x 0.5 | |
| Dimension | ∅ 54 x 50.87mm | ∅ 38.5 x 50.4mm | |
| Weight | 142g | 140g | |

Layout



FIFO-0414M5M

FIFO-0614M5M

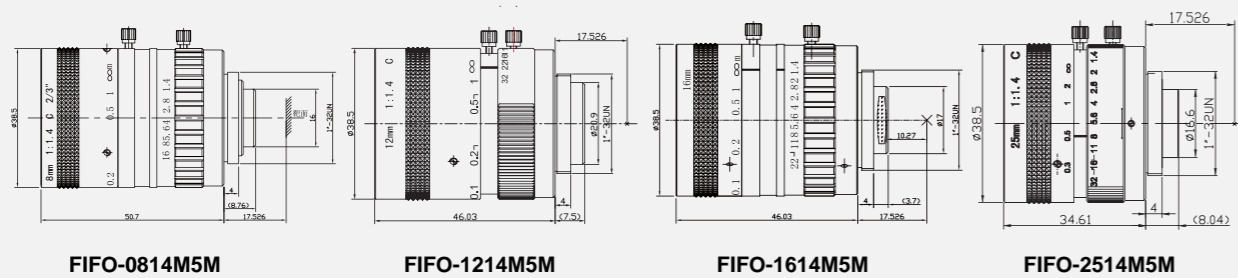
5.0 Mega-pixel Lenses Series

2/3" Format Manual Iris Fixed Lenses



| Item No | FIFO-0814M5M | FIFO-1214M5M | FIFO-1614M5M | FIFO-2514M5M |
|--------------------------|-----------------|-----------------------|-----------------------|-----------------------|
| Resolution | 150lp/mm (5MP) | 150lp/mm (5MP) | 150lp/mm (5MP) | 150lp/mm (5MP) |
| Format | 2/3" | 2/3" | 2/3" | 2/3" |
| Mount | C | C | C | C |
| Focal Length | 8mm | 12mm | 16mm | 25mm |
| F/No. | F1.4~F32 | F1.4~F32 | F1.4~F32 | F1.4~F32 |
| Back Focus | 9.91mm | 10.365mm | 10.27mm | 9.97mm |
| Iris Type | Manual Iris | Manual Iris | Manual Iris | Manual Iris |
| Angle of View (DxVxH) | 2/3 " | 69.02°x 44.83°x57.62° | 49.24°x 30.75°x40.27° | 37.94°x 23.31°x30.75° |
| | 1/2 " | 53.13°x 33.40°x43.60° | 36.86°x 22.62°x29.86° | 28.07°x 17.06°x22.62° |
| | 1/3 " | 41.11°x 25.36°x33.40° | 28.07°x 17.06°x22.62° | 21.23°x 12.84°x17.06° |
| | 1/4 " | 28.07°x 17.06°x22.62° | 18.92°x 11.42°x15.19° | 14.25°x 8.58°x11.42° |
| Distortion | <-1% | <0.2% | <-0.2% | <-1% |
| Focusing Range | 0.1m ~ ∞ | 0.1m ~ ∞ | 0.1m ~ ∞ | 0.15m ~ ∞ |
| Design Wavelength | 400nm~950nm | 400nm~950nm | 400nm~950nm | 400nm~950nm |
| Filter Thread | M35.5x 0.5 | M35.5x 0.5 | M35.5x 0.5 | M35.5x 0.5 |
| Dimension | ∅ 38.5 x 50.7mm | ∅ 38.5 x 46.03mm | ∅ 38.5 x 46.03mm | ∅ 38.5 x 34.61mm |
| Weight | 156g | 150g | 139g | 110g |

Layout



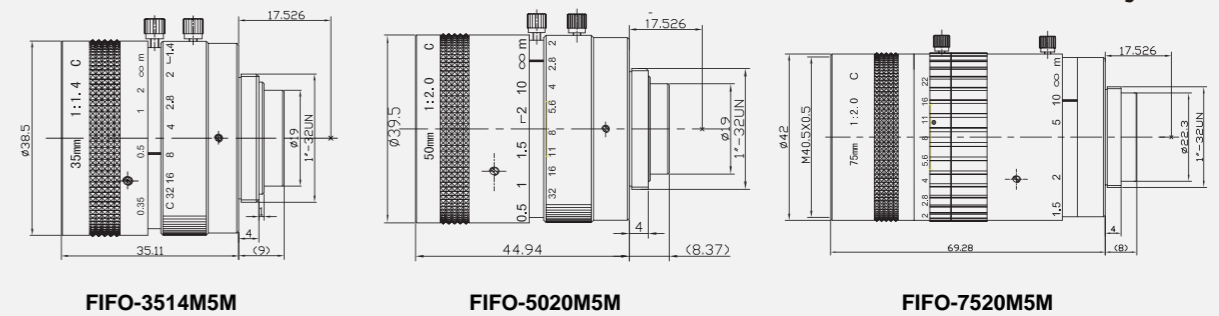
5.0 Mega-pixel Lenses Series

2/3" Format Manual Iris Fixed Lenses



| Item No | FIFO-3514M5M | FIFO-5020M5M | FIFO-7520M5M | |
|--------------------------|------------------|-----------------------|----------------------|--------------------|
| Resolution | 150lp/mm (5MP) | 150lp/mm (5MP) | 150lp/mm (5MP) | |
| Format | 2/3" | 2/3" | 2/3" | |
| Mount | C | C | C | |
| Focal Length | 35mm | 50mm | 75mm | |
| F/No. | F1.4~F32 | F2.0~F32 | F2.0~F22 | |
| Back Focus | 9.19mm | 9.78mm | 10.65mm | |
| Iris Type | Manual Iris | Manual Iris | Manual Iris | |
| Angle of View (DxVxH) | 2/3 " | 17.86°x 10.77°x14.33° | 12.55°x 7.55°x10.06° | 8.38°x 5.04°x6.72° |
| | 1/2 " | 13.03°x 7.85°x10.45° | 9.15°x 5.50°x7.32° | 6.10°x 3.67°x4.89° |
| | 1/3 " | 9.80°x 5.89°x7.85° | 6.87°x 4.12°x5.50° | 4.58°x 2.75°x3.67° |
| | 1/4 " | 6.54°x 3.93°x5.23° | 4.58°x 2.75°x3.67° | 3.05°x 1.83°x2.44° |
| Distortion | <-0.1% | <-0.1% | <-0.1% | |
| Focusing Range | 0.35m ~ ∞ | 0.4m ~ ∞ | 1m ~ ∞ | |
| Design Wavelength | 400nm~950nm | 400nm~950nm | 400nm~950nm | |
| Filter Thread | M35.5x 0.5 | M35.5x 0.5 | M40.5x 0.5 | |
| Dimension | ∅ 38.5 x 35.11mm | ∅ 39.5 x 44.94mm | ∅ 42 x 69.28mm | |
| Weight | 120g | 152g | 290g | |

Layout



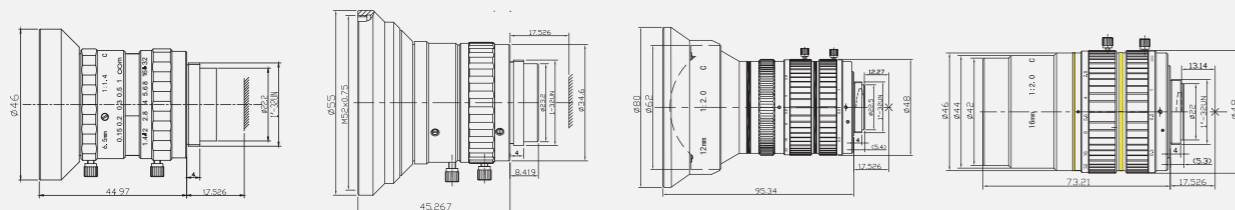
Large Format Lenses Series

5MP 1" Format Lenses Series



| Item No | FIFO-0614MLM | FIFO-06520ML5M | FIFO-1218ML5M | FIFO-1620ML5M |
|-----------------------|----------------|-----------------------|------------------------|-----------------------|
| Resolution | 100lp/mm (2MP) | 150lp/mm (5MP) | 150lp/mm (5MP) | 150lp/mm (5MP) |
| Format | 1" | 1" | 1" | 1" |
| Mount | C | C | C | C |
| Focal Length | 6.5mm | 6.5mm | 12mm | 16mm |
| F/No. | F1.4~F16 | F2.0~F22 | F1.8~F32 | F2.0~F32 |
| Back Focus | 9.33mm | 8.42mm | 12.27mm | 13.14mm |
| Iris Type | Manual Iris | Manual Iris | Manual Iris | Manual Iris |
| Angle of View (DxVxH) | 1" | 112°x 72.89°x88.66° | 101.81°x 72.89°x88.66° | 67.38°x 43.6°x55.77° |
| | 2/3" | 85.02°x 57.62°x72.51° | 80.47°x 53.83°x68.19° | 49.24°x 30.75°x40.27° |
| | 1/2" | 67.38°x 43.60°x56.14° | 67.38°x 43.6°x56.14° | 36.86°x 22.62°x29.86° |
| | 1/3" | 53.13°x 33.39°x43.6° | 63.22°x 40.53°x52.42° | 28.07°x 17.06°x22.62° |
| | 1/4" | 36.87°x 22.6°x29.86° | 34.21°x 20.92°x27.66° | 18.92°x 11.42°x15.19° |
| Distortion | <-19% | <10% | <-1% | <0.5% |
| Focusing Range | 0.15m ~ ∞ | 0.1m ~ ∞ | 0.2m ~ ∞ | 0.2m ~ ∞ |
| Design Wavelength | 400nm~950nm | 400nm~950nm | 400nm~950nm | 400nm~950nm |
| Filter Thread | M43x0.75 | M52 x 0.75 | M77x 0.75 | M37.5x 0.75 |
| Dimension | ∅ 46 x 43.97mm | ∅ 55 x 45.27mm | ∅ 80 x 95.34mm | ∅ 46 x 73.21mm |
| Weight | 130g | 135g | 516g | 360g |

Layout



FIFO-0614MLM

FIFO-06520ML5M

FIFO-1218ML5M

FIFO-1620ML5M

Large Format Lenses Series

5MP 1" Format Lenses Series



FIFO-2020ML5M

FIFO-2520ML5M

| Item No | FIFO-2020ML5M | FIFO-2520ML5M |
|-----------------------|----------------|------------------------|
| Resolution | 150lp/mm (5MP) | 150lp/mm (5MP) |
| Format | 1" | 1" |
| Mount | C | C |
| Focal Length | 20mm | 25mm |
| F/No. | F2.0~F22 | F2.0~F22 |
| Back Focus | 15.69mm | 11.94mm |
| Iris Type | Manual Iris | Manual Iris |
| Angle of View (DxVxH) | 1" | 43.60°x 26.99°x 35.23° |
| | 2/3" | 30.75°x 18.74°x 24.81° |
| | 1/2" | 22.61°x 13.69°x 18.18° |
| | 1/3" | 17.06°x 10.29°x 13.69° |
| | 1/4" | 11.42°x 6.87°x 9.15° |
| Distortion | <0.7% | <0.12% |
| Focusing Range | 0.3m ~ ∞ | 0.3m ~ ∞ |
| Design Wavelength | 400nm~950nm | 400nm~950nm |
| Filter Thread | M37.5x 0.5 | M43 x 0.75 |
| Dimension | ∅ 40 x 46.61mm | ∅ 46 x 65.82mm |
| Weight | 143g | 300g |



| Item No | FIFO-1632ZL5M |
|----------------------|-----------------|
| Resolution: | 150lp/mm |
| Format : | 1" |
| Mount : | C |
| Focal Length : | 16 ~ 32mm |
| F/No: | F1.8~F16 |
| Iris Type : | Manual Iris |
| Horizontal of view : | 53.2° ~ 27.5° |
| Distortion : | ±1% |
| Focusing range : | 0.3m ~ ∞ |
| Coating Range: | 400nm~950nm |
| Filter Thread: | M62 x 0.75mm |
| Dimension: | ∅ 66 x 113.35mm |
| Weight: | 619g |

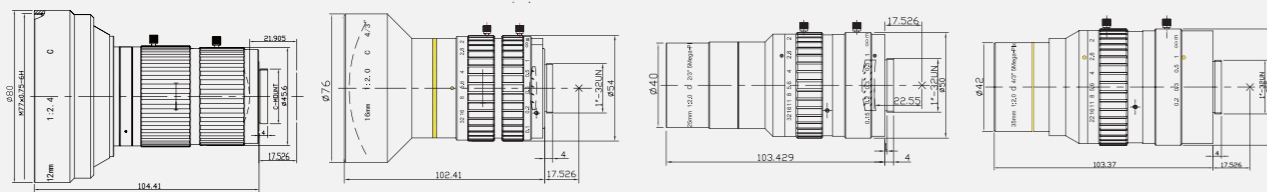
Large Format Lenses Series

4/3" Format Manual Iris Fixed Lenses



| Item No | FIFO-1224MX5M | FIFO-1620MX5M | FIFO-2520MX5M | FIFO-3520MX5M | |
|-----------------------|----------------------|-----------------------|-----------------------|------------------------|-----------------------|
| Resolution | 150lp/mm (5MP) | 150lp/mm (5MP) | 150lp/mm (5MP) | 150lp/mm (5MP) | |
| Format | 4/3" | 4/3" | 4/3" | 4/3" | |
| Mount | C | C | C | C | |
| Focal Length | 12mm | 16mm | 25mm | 35mm | |
| F/No. | F2.4~F32 | F2.0~F32 | F2.0~F32 | F2.0~F22 | |
| Back Focus | 21.88mm | 21.6mm | 22.55mm | 35.29mm | |
| Iris Type | Manual Iris | Manual Iris | Manual Iris | Manual Iris | |
| Angle of View (DxVxH) | 4/3 " | 86.6°x58.72°x73.74° | 70.22°x45.75°x58.72° | 48.46°x 30.22°x 39.6° | 35.64°x 21.83°x28.84° |
| | 1 " | 67.38°x 43.60°x55.77° | 53.13°x 33.4°x43.29° | 35.49°x 21.74°x 28.5° | 25.75°x 15.62°x20.57° |
| | 2/3 " | 49.24°x 30.75°x40.27° | 37.94°x 23.31°x30.75° | 24.81°x 15.04°x 19.96° | 17.86°x 10.77°x14.33° |
| | 1/2 " | 36.86°x 22.62°x29.86° | 28.07°x 17.06°x22.62° | 18.18°x 10.97°x14.59° | 13.03°x 7.85°x10.45° |
| | 1/3 " | 28.07°x 17.06°x22.62° | 21.23°x 12.84°x17.06° | 13.69°x 8.24°x10.97° | 9.80°x 5.89°x7.85° |
| 1/4 " | 18.92°x11.42°x15.19° | 14.25°x8.58°x15.19° | 9.15°x5.5°x7.32° | 6.54°x3.93°x5.23° | |
| Distortion | <3.7% | <-0.6% | <0.2% | <1% | |
| Focusing Range | 0.3m ~ ∞ | 0.1m ~ ∞ | 0.15m ~ ∞ | 0.2m ~ ∞ | |
| Design Wavelength | 400nm~950nm | 400nm~950nm | 400nm~950nm | 400nm~950nm | |
| Filter Thread | M77x 0.75 | M72x 0.75 | M35.5 x 0.5 | M37.5x 0.5mm | |
| Dimension | ∅ 80 x 104.41mm | ∅ 76 x 102.41mm | ∅ 38.5 x 103.43mm | ∅ 42x 103.37mm | |
| Weight | 670g | 690g | 383g | 510g | |

Layout



FIFO-1224MX5M

FIFO-1620MX5M

FIFO-2520MX5M

FIFO-3520MX5M

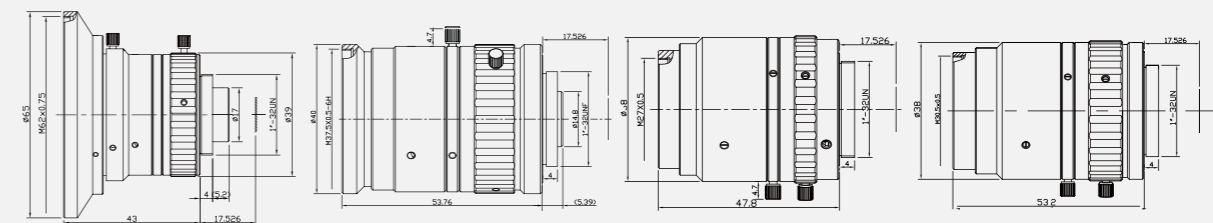
10Mega-pixel Lenses Series

2/3" Format Manual Iris Fixed Lenses



| Item No | FIFO-0518M10M | FIFO-0818M10M | FIFO-1218M10M | FIFO-1618M10M | |
|-----------------------|-----------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Resolution | 200lp/mm (10MP) | 200lp/mm (10MP) | 200lp/mm (10MP) | 200lp/mm (10MP) | |
| Format | 2/3" | 2/3" | 2/3" | 2/3" | |
| Mount | C | C | C | C | |
| Focal Length | 5mm | 8mm | 12mm | 16mm | |
| F/No. | F1.8~F11 | F1.8~F22 | F1.8~F32 | F1.8~F22 | |
| Back Focus | 8.54mm | 12.47mm | 16.22mm | 14.93mm | |
| Iris Type | Manual Iris | Manual Iris | Manual Iris | Manual Iris | |
| Angle of View (DxVxH) | 2/3 " | 95.45°x 66.85°x82.7° | 69.02°x 44.83°x57.62° | 49.24°x 30.75°x40.27° | 37.94°x 23.31°x30.75° |
| | 1/2 " | 77.31°x 51.28°x65.24° | 53.13°x 33.40°x43.60° | 36.86°x 22.62°x29.86° | 28.07°x 17.06°x22.62° |
| | 1/3 " | 61.93°x 39.6°x51.28° | 41.11°x 25.36°x33.40° | 28.07°x 17.06°x22.62° | 21.23°x 12.84°x17.06° |
| | 1/4 " | 43.6°x 27°x35.49° | 28.07°x 17.06°x22.62° | 18.92°x 11.42°x15.19° | 14.25°x 8.58°x11.42° |
| Distortion : | <-5% | <-1% | <-0.4% | <-0.2% | |
| Working Distance: | 0.1m ~ ∞ | 0.1m ~ ∞ | 0.1m ~ ∞ | 0.2m ~ ∞ | |
| Design Wavelength: | 400nm~950nm | 400nm~950nm | 400nm~950nm | 400nm~950nm | |
| Filter Thread : | M62 x 0.75 | M37.5 x 0.5 | M27x 0.5 | M30.5x 0.5 | |
| Dimension: | ∅ 65 x 43mm | ∅ 40 x 53.76mm | ∅ 38 x 47.8mm | ∅ 38 x 53.2mm | |
| Weight: | 150g | 180g | 140g | 140g | |

Layout



FIFO-0518M10M

FIFO-0818M10M

FIFO-1218M10M

FIFO-1618M10M

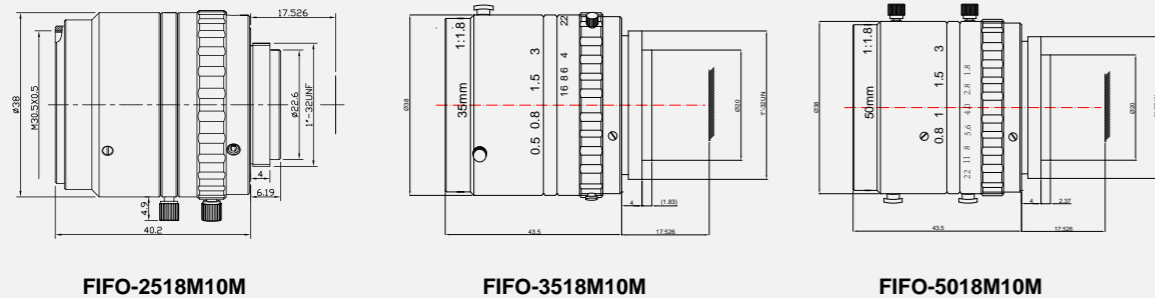
10Mega-pixel Lenses Series

2/3" Format Manual Iris Fixed Lenses



| Item No | FIFO-2518M10M | FIFO-3518M10M | FIFO-5018M10M | |
|------------------------|-----------------|------------------------|---------------------|--------------------|
| Resolution | 200lp/mm (10MP) | 200lp/mm (10MP) | 200lp/mm (10MP) | |
| Format | 2/3" | 2/3" | 2/3" | |
| Mount | C | C | C | |
| Focal Length | 25mm | 35mm | 50mm | |
| F/No. | F1.8~F32 | F1.8~F16 | F1.8~F22 | |
| Back Focus | 12.59mm | 12.42mm | 13.86mm | |
| Iris Type | Manual Iris | Manual Iris | Manual Iris | |
| Angle of View (DxVxH): | 2/3 " | 24.81°x 15.04°x 19.96° | 17.9°x10.76°x14.4° | 11.46°x6.86°x9.16° |
| | 1/2 " | 18.18°x 10.97°x14.59° | 13.04°x7.85°x10.44° | 8.32°x5°x6.86° |
| | 1/3 " | 13.69°x 8.24°x10.97° | 8.17°x5.89°x7.85° | 6.24°x3.74°x5° |
| Distortion : | <-0.09% | <-0.1% | <-0.2% | |
| Working Distance: | 0.2m ~ ∞ | 0.3m ~ ∞ | 0.5m ~ ∞ | |
| Design Wavelength | 400nm~950nm | 400nm~950nm | 400nm~950nm | |
| Filter Thread : | M30.5x 0.5 | M34x 0.5 | M34x 0.5 | |
| Dimension : | ∅ 38 x 40.2mm | ∅ 38 x 43.5mm | ∅ 38 x 43.5mm | |
| Weight : | 140g | 125g | 124g | |

Layout



FIFO-2518M10M

FIFO-3518M10M

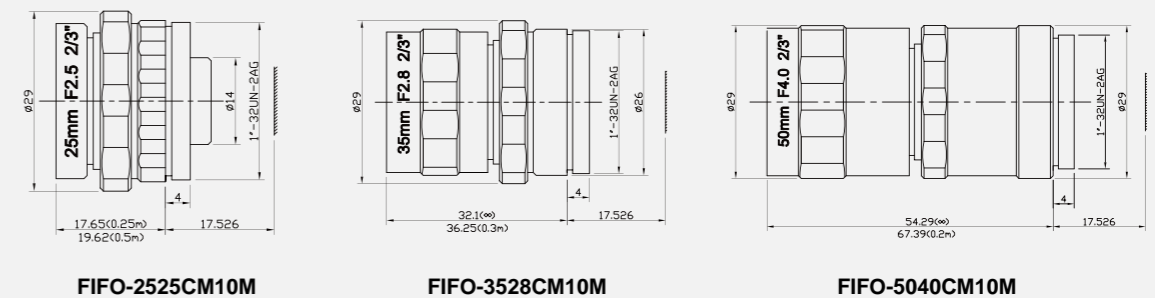
FIFO-5018M10M

10Mega-pixel Macro Lenses Series



| Item No | FIFO-2525CM10M | FIFO-3528CM10M | FIFO-5040CM10M | |
|-------------------|----------------------|------------------------|------------------------|-----------------------|
| Resolution | 200lp/mm | 200lp/mm | 200lp/mm | |
| Format | 2/3" | 2/3" | 2/3" | |
| Mount | C | C | C | |
| Focal Length | 25 | 35 | 35 | |
| F/No. | 2.5 4.0 5.6 8.0 11.0 | 2.5 4.0 5.6 8.0 11.0 | 2.5 4.0 5.6 8.0 11.0 | |
| Back Focus | 9.61mm | 20.3mm | 29.7mm | |
| Iris Type | Manual Iris | Manual Iris | Manual Iris | |
| Angle of View : | 2/3 " | 24.81°x 15.04°x 19.96° | 17.86°x 10.77°x 14.33° | 12.55°x 7.55°x 10.06° |
| | 1/2 " | 18.18°x 10.97°x14.59° | 13.03°x 7.85°x10.45° | 9.15°x 5.5°x7.32° |
| | 1/3 " | 13.69°x 8.24°x10.97° | 9.8°x5.89°x7.85° | 6.87°x 4.12°x5.5° |
| | 1/4 " | 9.15°x 5.50°x7.32° | 6.54°x 3.93°x5.23° | 4.58°x 2.75°x3.67° |
| Distortion | <0.5% | <-0.4% | <-0.25% | |
| Focusing Range | 0.1 ~ 0.5m | 0.3m ~ ∞ | 0.5m ~ ∞ | |
| Design Wavelength | 400~950nm | 400~950nm | 400~950nm | |
| Dimension | ∅ 29 x 17.65mm | ∅ 29 x 36.25mm | ∅ 29 x 54.29mm | |
| Weight | 26.5g | 40g | 76.5g | |

Layout



FIFO-2525CM10M

FIFO-3528CM10M

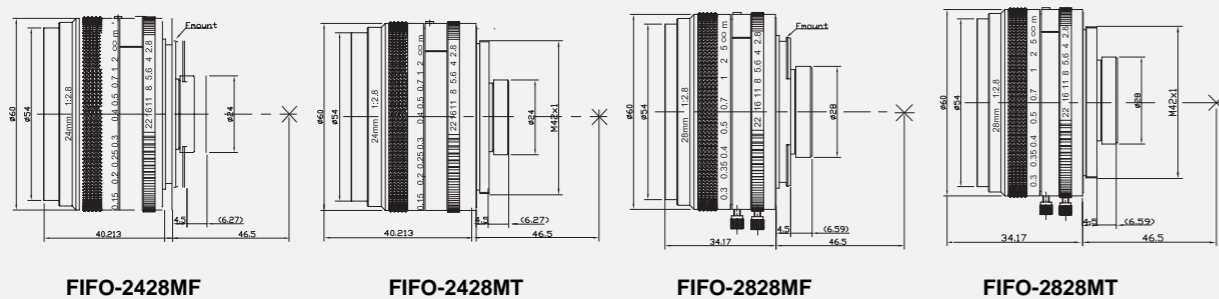
FIFO-5040CM10M

F/T-Mount Lenses Series



| Item No | FIFO-2428MF | FIFO-2428MT | FIFO-2828MF | FIFO-2828MT |
|-------------------|---------------|---------------|---------------|---------------|
| Resolution: | 30lp/mm | 30lp/mm | 30lp/mm | 30lp/mm |
| Format: | 43mm | 43mm | 43mm | 43mm |
| Mount : | F | M42 x 1(T) | F | M42 x 1(T) |
| Focal Length : | 24mm | 24mm | 28mm | 28mm |
| F/No. | F2.8~F22 | F2.8~F22 | F2.8~F22 | F2.8~F22 |
| Back Focus : | 36mm | 36mm | 35.7mm | 35.7mm |
| Iris Type : | Manual Iris | Manual Iris | Manual Iris | Manual Iris |
| Angle of View(D) | 84° | 84° | 74° | 74° |
| Distortion : | <-4% | <-4% | <-3% | <-3% |
| Focusing Range: | 0.15m ~ ∞ | 0.15m ~ ∞ | 0.3m ~ ∞ | 0.3m ~ ∞ |
| Design wavelength | 400~950nm | 400~950nm | 400~950nm | 400~950nm |
| Filter Thread: | M52x 0.75 | M52x 0.75 | M52x 0.75 | M52x 0.75 |
| Dimension: | ∅ 60x 40.21mm | ∅ 60x 40.21mm | ∅ 60x 34.17mm | ∅ 60x 34.17mm |
| Weight: | 227.5g | 200g | 199.5g | 199.5g |

Layout

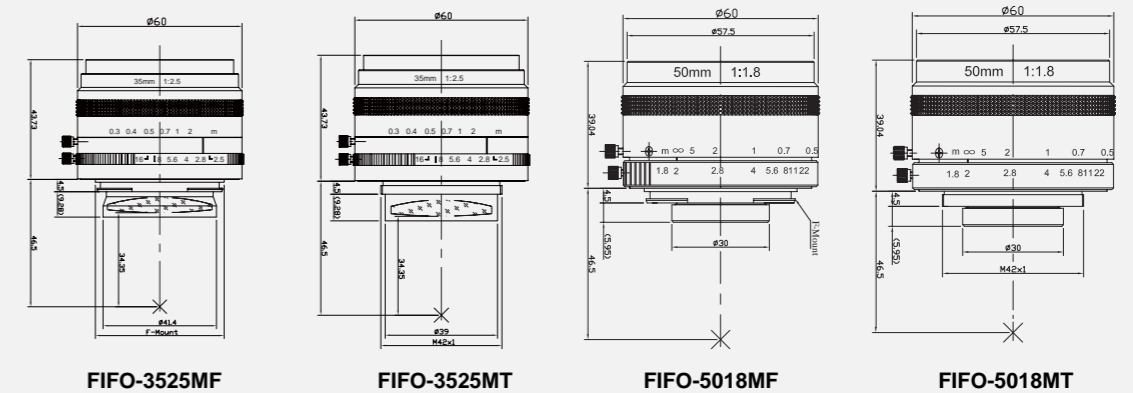


F/T-Mount Lenses Series



| Item No | FIFO-3525MF | FIFO-3525MT | FIFO-5018MF | FIFO-5018MT |
|-------------------|----------------|----------------|---------------|---------------|
| Resolution: | 30lp/mm | 30lp/mm | 30lp/mm | 30lp/mm |
| Format: | 43mm | 43mm | 43mm | 43mm |
| Mount : | F | M42 x 1(T) | F | M42 x 1(T) |
| Focal Length : | 35mm | 35mm | 50mm | 50mm |
| F/No. | F2.5~F22 | F2.5~F22 | F1.8~F22 | F1.8~F22 |
| Back Focus : | 34.35 | 34.35 | 36.33mm | 36.33mm |
| Iris Type : | Manual Iris | Manual Iris | Manual Iris | Manual Iris |
| Angle of View(D) | 52.3° | 52.3° | 45° | 45° |
| Distortion : | -3% | -3% | <-1% | <-1% |
| Focusing Range: | 0.3m ~ ∞ | 0.3m ~ ∞ | 0.4m ~ ∞ | 0.4m ~ ∞ |
| Design wavelength | 400~950nm | 400~950nm | 400~950nm | 400~950nm |
| Filter Thread: | M52x 0.75 | M52x 0.75 | M52x 0.75 | M52x 0.75 |
| Dimension: | ∅ 60 x 43.73mm | ∅ 60 x 43.73mm | ∅ 60x 39.04mm | ∅ 60x 39.04mm |
| Weight: | 273g | 253g | 230g | 210g |

Layout



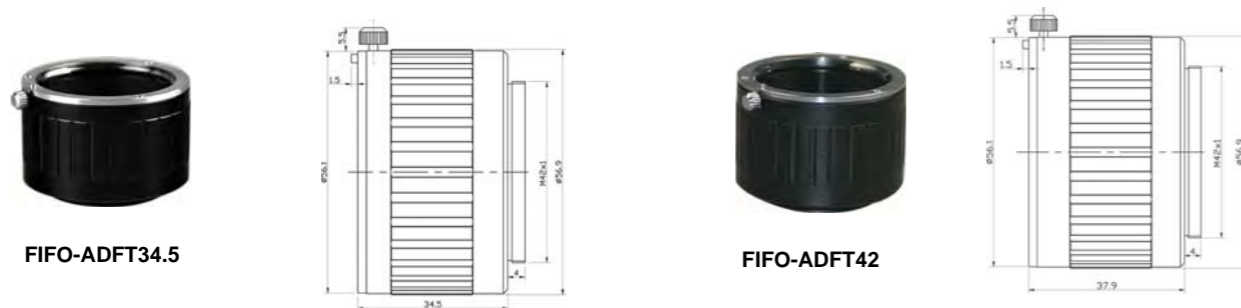
F-Mount Lenses Series

10 Mega-pixel Manual Iris Fixed Lenses



| Item No | FIFO-3520MF | FIFO-5020MF |
|------------------|---------------|--------------|
| Resolution: | 50lp/mm | 50lp/mm |
| Format: | 43mm | 43mm |
| Mount : | F | F |
| Focal Length : | 35mm | 50mm |
| F/No. | F2.0~F22 | F2.0~F22 |
| Back Focus : | 36.36mm | 34.49mm |
| Iris Type : | Manual Iris | Manual Iris |
| Angle of View(D) | 71° | 44.7° |
| Distortion : | <-0.25% | <-0.15% |
| Focusing Range: | 0.3m ~ ∞ | 0.25m ~ ∞ |
| Filter Thread: | M52x 0.75 | M52x 0.75 |
| Dimension: | ∅ 35x 96.47mm | ∅ 71x 90.4mm |
| Weight: | 611g | 732g |

F-mount lens to T-mount adapter



FIFO-ADFT34.5

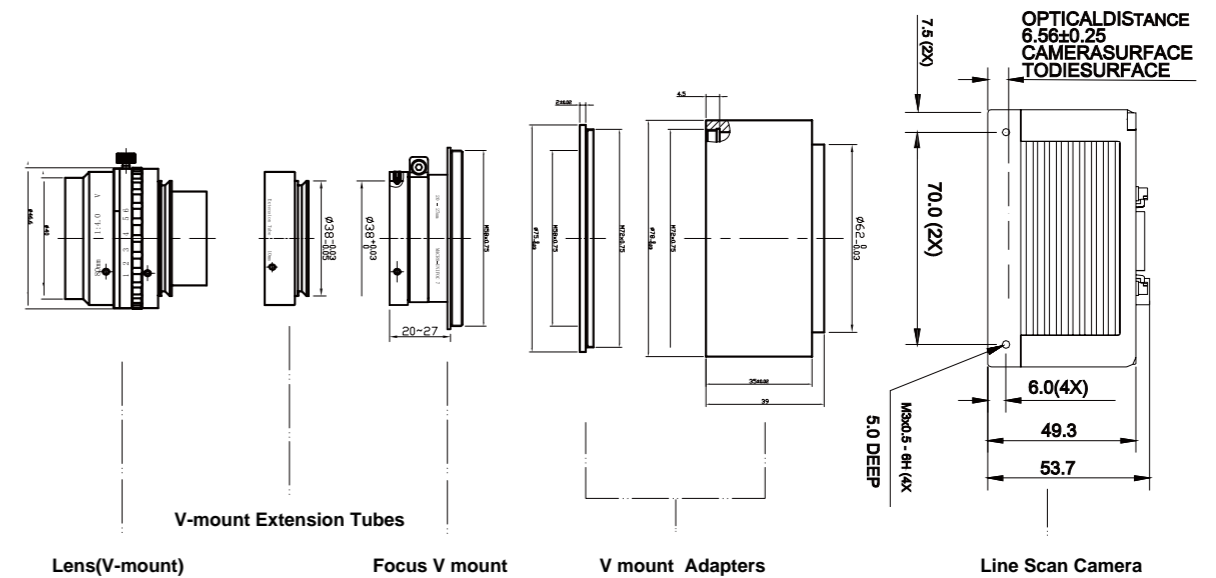
FIFO-ADFT42

V-mount Lenses Series

High Resolution(16K) V-Mount Lenses

| Item No | FIFO-50/2.8V16K | FIFO-85/4.5V16K | FIFO-95/3.9V16K | FIFO-95/4.5V16K | FIFO-96/3.7V16K |
|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Resolution | 16K | 16K | 16K | 16K | 16K |
| Format | 62mm | 62mm | 62mm | 62mm | 62mm |
| Mount | V | V | V | V | V |
| Focal Length | 50mm | 85mm | 95mm | 95mm | 96mm |
| F/No. | 2.8 | 4.5 | 3.9 | 4.5 | 3.7 |
| Magnification | 3.5X | 0.5X~2.0X | 0.21X~0.26X | 0.03X~0.17X | 0.27~0.315X |
| Distortion | <0.025% | <-0.0025% | <0.05% | <0.075% | <0.05% |
| Design Wavelength | 400~1000nm | 400~1000nm | 400~1000nm | 400~1000nm | 400~1000nm |

V-mount lenses connection diagram



Lens(V-mount)

Focus V mount

V mount Adapters

Line Scan Camera

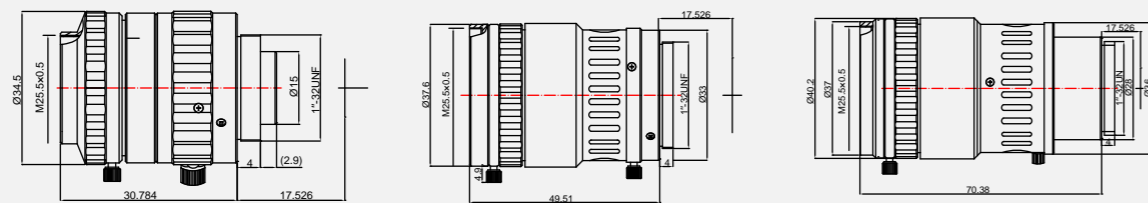
UV Lenses Series

2/3" Format Manual Iris Fixed Lenses



| Item No | FIFO-2528UV | FIFO-5030UV | FIFO-7538UV |
|-----------------------|------------------|------------------------|----------------------|
| Resolution | 100lp/mm (2MP) | 100lp/mm (2MP) | 100lp/mm (2MP) |
| Format | 2/3" | 2/3" | 2/3" |
| Mount | C | C | C |
| Focal Length | 25mm | 50mm | 75mm |
| F/No. | 2.8 | 3.0 | 3.8 |
| Back Focus | 12.45mm | 26.55mm | 47.32mm |
| Iris Type | Manual Iris | Manual Iris | Manual Iris |
| Angle of View (DxVxH) | 2/3 " | 24.81°x 15.04°x 19.96° | 12.55°x 7.55°x10.06° |
| | 1/2 " | 18.18°x 10.97°x14.59° | 9.15°x 5.50°x7.32° |
| | 1/3 " | 13.69°x 8.24°x10.97° | 6.87°x 4.12°x5.50° |
| | 1/4 " | 9.15°x 5.5°x7.32° | 4.58°x 2.75°x3.67° |
| Distortion | <0.4% | <0.08% | <0.1% |
| Focusing Range | 0.2m ~ ∞ | 0.3m ~ ∞ | 0.5m ~ ∞ |
| Design Wavelength | 200nm~1000nm | 200nm~1000nm | 200nm~1000nm |
| Filter Thread | M25.5x 0.5 | M34x 0.5 | M34 x 0.5 |
| Dimension | ∅ 34.5 x 30.78mm | ∅ 37.6 x 49.51mm | ∅ 40.2 x 70.38mm |

Layout



FIFO-2528UV

FIFO-5030UV

FIFO-7538UV

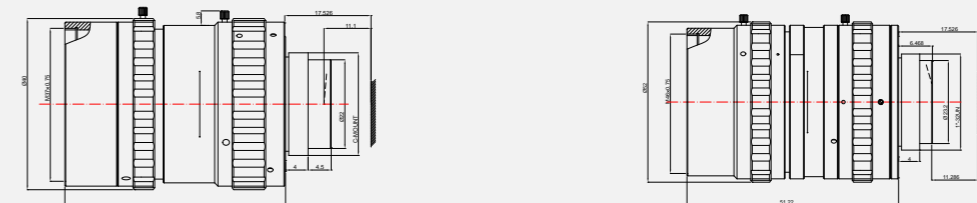
SWIR Format Lenses Series

1" Format Manual Iris Fixed Lenses



| Item No | FIFO-3514SWIR | FIFO-5014SWIR |
|-----------------------|----------------|-----------------------|
| Format | 1" | 1" |
| Mount | C | C |
| Focal Length | 35mm | 50mm |
| F/No. | F1.4~16 | F1.4~16 |
| Back Focus | 11.1mm | 11.29mm |
| Iris Type | Manual Iris | Manual Iris |
| Angle of View (DxVxH) | 1 " | 25.75°x 15.62°x20.57° |
| | 2/3 " | 17.86°x 10.77°x14.33° |
| | 1/2 " | 13.03°x 7.85°x10.45° |
| | 1/3 " | 9.80°x 5.89°x7.85° |
| Angle of View (DxVxH) | 1/4 " | 6.54°x 3.93°x5.23° |
| | 1/4 " | 4.58°x 2.75°x3.67° |
| Distortion | <0.1% | <-0.05% |
| Focusing Range | 0.3m ~ ∞ | 0.5m ~ ∞ |
| Design Wavelength | 900nm~1700nm | 900nm~1700nm |
| Filter Thread | M37x 0.75 | M46x 0.75 |
| Dimension | ∅ 40 x 39.18mm | ∅ 52 x 51.22mm |

Layout



FIFO-3514SWIR

FIFO-5014SWIR

Telecentric Lenses Series

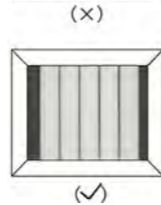
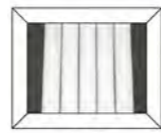
WD 40mm Telecentric Lens

| | |
|------------------|--------------|
| Item No | FIFO-4020THM |
| Working Distance | 40mm |
| Magnification | 2.0x |
| EFL | 21.08mm |
| Mount | C |
| Format | 1/2" |
| NA | 0.1 |
| Resolution | ≤10μm |
| Depth of Field | ≥1mm |
| TV Distortion | ≤0.1% |
| Dimension | ∅ 30 x 55mm |



WD 60mm Telecentric Lens

| | |
|------------------|--------------|
| Item No | FIFO-6003TSM |
| Working Distance | 60mm |
| Magnification | 0.33X |
| Resolution | 15.2μm |
| Format | 1/2" |
| Mount | C |
| Back Focus | 15.6 |
| Distortion | <-0.014% |
| NA | 0.027 |



WD 65mm Telecentric Lens



| Item No | FIFO-6505THM | FIFO-6508TSM | FIFO-6510TSM |
|------------------|--------------|--------------|--------------|
| Working Distance | 65mm | 65mm | 65mm |
| Magnification | 0.5x | 0.8x | 1.0x |
| Resolution | 10μm | 12.5μm | 10μm |
| Format | 2/3" | 1/2" | 2/3" |
| Mount | C | C | C |
| NA | 0.026 | 0.027 | 0.027 |
| Effective F/No. | 9.6 | 14.8 | 18.5 |
| Filed Range | 17.6x13.2mm | 8x6mm | 8.8x6.6mm |
| Depth of Field | 3.0mm | 1.8mm | 1.5mm |
| TV Distortion | 0.00125% | 0.0002% | 0.0001% |
| Weight | 100g | 60g | 49.5g |

Telecentric Lenses Series

WD 65mm Telecentric Lens



| Item No | FIFO-6515TSM | FIFO-6520TSM | FIFO-6530TSM | FIFO-6540TSM |
|------------------|--------------|--------------|--------------|--------------|
| Working Distance | 65mm | 65mm | 65mm | 65mm |
| Magnification | 1.5x | 2.0x | 3.0x | 4.0x |
| Resolution | 6.66μm | 4.54μm | 3.03μm | 2.77μm |
| Format | 1/2" | 1/2" | 1/2" | 1/2" |
| Mount | C | C | C | C |
| NA | 0.048 | 0.027 | 0.069 | 0.073 |
| Effective F/No. | 15.5 | 17.3 | 21.7 | 27.4 |
| Filed Range | 4.3x3.2mm | 3.2 x2.4mm | 2.1x1.6mm | 1.6x1.2mm |
| Depth of Field | 0.6mm | 0.3mm | 0.2mm | 0.14mm |
| TV Distortion | 0.0025% | 0.00125% | 0.0035% | 0.002% |
| Weight | 47.5g | 53g | 53g | 63g |

Coaxial Type



| Item No | FIFO-6510TSMD | FIFO-6515TSMD | FIFO-6520TSMD | FIFO-6530TSMD | FIFO-6540TSMD |
|------------------|---------------|---------------|---------------|---------------|---------------|
| Working Distance | 65mm | 65mm | 65mm | 65mm | 65mm |
| Magnification | 1.0x | 1.5x | 2.0x | 3.0x | 4.0x |
| Resolution | 10μm | 6.66μm | 4.54μm | 3.03μm | 2.77μm |
| Format | 2/3" | 1/2" | 1/2" | 1/2" | 1/2" |
| Mount | C | C | C | C | C |
| NA | 0.027 | 0.048 | 0.027 | 0.069 | 0.073 |
| Effective F/No. | 18.5 | 15.5 | 17.3 | 21.7 | 27.4 |
| Filed Range | 8.8x6.6mm | 4.3x3.2mm | 3.2 x2.4mm | 2.1x1.6mm | 1.6x1.2mm |
| Depth of Field | 1.5mm | 0.6mm | 0.3mm | 0.2mm | 0.14mm |
| TV Distortion | <0.0001% | <0.0025% | <0.00125% | <0.0035% | <0.002% |
| Weight | ----- | 54g | 61g | 59g | 69g |

Telecentric Lenses Series

Coaxial Type



| Item No | FIFO-6503TH5MD | FIFO-6505TH5MD | FIFO-11004TH5MD | FIFO-11008TH5MD | FIFO-11010TH5MD |
|------------------|----------------|----------------|-----------------|-----------------|-----------------|
| Working Distance | 65mm | 65mm | 110mm | 110mm | 110mm |
| Magnification | 0.3x | 0.5x | 0.4x | 0.8x | 1.0x |
| Resolution | 16.67 μ m | 10 μ m | 3.3 μ m | 6.25 μ m | 5 μ m |
| Format | 2/3" | 2/3" | 2/3" | 2/3" | 2/3" |
| Mount | C | C | C | C | C |
| NA | 0.021 | 0.036 | 0.03 | 0.036 | 0.045 |
| Effective F/No. | 7.14 | 6.94 | 6.67 | 11.1 | 11.1 |
| Filed Range | 29x22mm | 17.6x13.2 | 22x16.5 | 11x8.3 | 8.8x6.6 |
| Depth of Field | 3.3mm | 1.2mm | 3.34mm | 1.4mm | 1.4mm |
| TV Distortion | <0.005% | <0.005% | <0.005% | <0.01% | <0.01% |
| Weight | 130g | 65g | ----- | 119.5g | 102g |

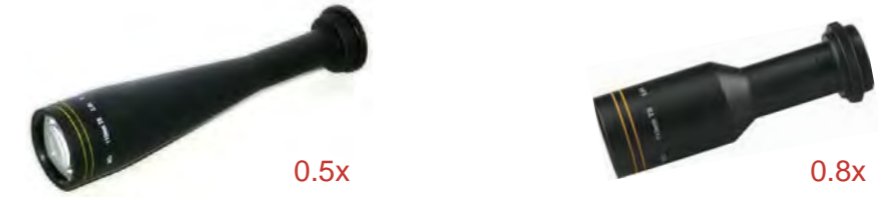
5 Mega-pixel Telecentric Lenses



| Item No | FIFO-6503TH5M | FIFO-6504TH5M | FIFO-6505TH5M | FIFO-6507TH5M | FIFO-11004TH5M |
|------------------|---------------|---------------|----------------|---------------|----------------|
| Working Distance | 65mm | 65mm | 65mm | 65mm | 110mm |
| Magnification | 0.3X | 0.4X | 0.5X | 0.7X | 0.4X |
| Resolution | 16.67 μ m | 3.3 μ m | 10 μ m | 3.3 μ m | 3.3 μ m |
| Format | 2/3" | 2/3" | 2/3" | 2/3" | 2/3" |
| Mount | C | C | C | C | C |
| NA | 0.021 | 0.035 | 0.036 | 0.041 | 0.03 |
| Effective F/No. | 7.14 | 5.71 | 6.94 | 8.54 | 6.67 |
| Filed Range | 29.3x 22mm | 22 x 16.5mm | 17.6x 13.2mm | 12.57x 9.43mm | 22 x 16.5mm |
| Depth of Field | 3.3mm | 2.86mm | 1.2mm | 1.39mm | 3.34mm |
| Distortion | <0.005% | <0.005% | <0.005% | <0.001% | <0.001% |
| Dimension | ∅ 39x 143.5mm | ∅ 37x 134.7mm | ∅ 32 x 141.6mm | ∅ 42x 134.6mm | ∅ 36x 143.9mm |

Telecentric Lenses Series

WD 110mm Telecentric Lens



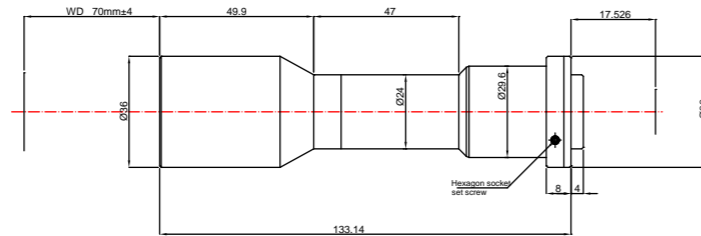
| Item No | FIFO-11005TH5M | FIFO-11008TSM | FIFO-11010TH5M |
|------------------|----------------|---------------|----------------|
| Working Distance | 110mm | 110mm | 110mm |
| Magnification | 0.5X | 0.8X | 1X |
| Resolution | 10 μ m | 6.25 μ m | 5.0 μ m |
| Format | 2/3" | 2/3" | 2/3" |
| Mount | C | C | C |
| NA | 0.021 | 0.036 | 0.045 |
| Effective F/No. | 7.14 | 11.1 | 11.1 |
| Filed Range | 17.6x 13.2mm | 11x 8.3mm | 8.8x 6.6mm |
| Depth of Field | 3.3mm | 1.4mm | 1.4mm |
| Distortion | <0.01% | <0.01% | <0.01% |
| Weight | 143g | 114.5g | 104g |

10Mega-pixel Lenses Series

| Item No | FIFO-6505TH10M | FIFO-6520TH10M | FIFO-11010TH10M |
|------------------|----------------|----------------|-----------------|
| Working Distance | 65mm | 65mm | 110mm |
| Magnification | 0.5X | 1X | 1X |
| Resolution | 10 μ m | 5 μ m | 3.5 μ m |
| Format | 1" | 1" | 1" |
| Mount | C | C | C |
| NA | 0.037 | 0.077 | 0.063 |
| Effective F/No. | 6.76 | 6.49 | 0.79 |
| Filed Range | 25.6x 19.2mm | 12.8x 9.6mm | 12.8 x 9.6mm |
| Depth of Field | 2.16mm | 2.16mm | 0.64mm |
| Distortion | <0.0015% | <0.0015% | <0.0015% |
| Dimension | ∅ 42x 134.6mm | ---- | ∅ 35x 128.7mm |

Telecentric Lenses Series

Double Telecentric Lenses



| | |
|------------------|---------------|
| Item No | FIFO-DT70M10M |
| Working Distance | 70mm |
| Magnification | 0.64X |
| Resolution | 100lp/mm |
| Format | 1" |
| Mount | C |
| NA | 0.033 |
| Effective F/No. | 6.94mm |
| Filed Range | 17.6 × 13.2mm |
| Depth of Field | 1.2mm |
| Distortion | <0.0025% |
| Weight | 38g |

Telecentric Zoom Lens



| | | | | |
|-------------------------|---------------|-------------|------------|-----------|
| Item No | FIFO-0513XTHM | | | |
| Format | 2/3" | | | |
| Mount | C | | | |
| Focal Length | 63mm | | | |
| Resolution | 10μm | 6.67μm | 5μm | 3.85μm |
| Magnification | 0.5X | 0.75X | 1X | 1.3X |
| Angle of View | 2/3" | 17.6 × 13.2 | 11.7 × 8.8 | 8.8 × 6.6 |
| View | 1/2" | 12.8 × 9.6 | 8.5 × 6.4 | 6.4 × 4.8 |
| Working Distance | 176mm | 134mm | 112.5mm | 98.4mm |
| Distance from object to | 272.76mm | 246.45mm | 241.13mm | 245.4mm |
| NA | 0.047 | 0.047 | 0.047 | 0.047 |
| Depth of Field | 1.7mm | 1.13mm | 0.85mm | 1.65mm |
| Distortion | <0.04% | <0.05% | <0.03% | <0.02% |
| Weight | 349.5g | | | |

Board Lenses Series

Fish-eye Lenses Series



| | | | | | |
|-------------------|---------------|---------------|--------------|--------------|----------------|
| Item No | FIFO-01020B5M | FIFO-01524BMC | FIFO-01824BM | FIFO-01825BM | FIFO-01825BM-1 |
| Resolution | 5MP | 1MP | 1MP | 1MP | 1MP |
| Format | 1/3", 1/4" | 1/4" | 1/4" | 1/4" | 1/4" |
| Mount | M12 × 0.5 | M12 × 0.5 | M12 × 0.5 | M12 × 0.5 | M12 × 0.5 |
| Focal Length | 1.0 | 1.5 | 1.8 | 1.8 | 1.8 |
| F/No. | 2.0 | 2.4 | 2.4 | 2.5 | 2.5 |
| Back Focus | 3.76 | 2.25 | 4.6 | 4.6 | 5.0 |
| Angle of View (D) | 185° | 140° | 54° | 122° | 122° |
| Distortion | <-93% | <-85% | <-56% | <-89% | <-89% |
| Focusing Range | 0.1m~∞ | 0.6m~∞ | 0.2m~∞ | 0.2m~∞ | 0.2m~∞ |
| Dimension | ∅ 30×35.9mm | ∅ 14×14.7mm | ∅ 14×16.5mm | ∅ 14×18.45mm | ∅ 14×16.5mm |
| Weight | 5.5g | 5.5g | 5.5g | 6g | 6g |

| | | | | | |
|-----------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Item No | FIFO-IR01020B10M | FIFO-IR01020B5M | FIFO-IR01320B9M | FIFO-IR01420B9M B9M | FIFO-IR01514B9M |
| Resolution | 10MP | 5MP | 9MP | 9MP | 9MP |
| Format | 1/2.3", 1/2.7", 1/3", 1/4" | 1/2.3", 1/2.7", 1/3", 1/4" | 1/2.3", 1/2.7", 1/3", 1/4" | 1/2.3", 1/2.7", 1/3", 1/4" | 1/2.3", 1/2.7", 1/3", 1/4" |
| Mount | M12 × 0.5 | M12 × 0.5 | M12 × 0.5 | M12 × 0.5 | M12 × 0.5 |
| Focal Length | 1.05 | 1.08 | 1.3 | 1.41 | 1.5 |
| F/No. | 2.0 | 2.0 | 2.0 | 2.0 | 1.4 |
| Back Focus | 3.5 | 4.4 | 3.2 | 3.69 | 3.9 |
| Angle of View (D×V×H) | 1/2.3" | 245°×245°×245° | 185°×185°×185° | 195°×195°×195° | 183°×183°×183° |
| | 1/2.7" | 245°×245°×176° | 185°×185°×176° | 195°×195°×141° | 183°×183°×133.4° |
| | 1/3" | 245°×245°×192.2° | 141°×116.7°×77.4° | 195°×195°×157.5° | 183°×183°×146.4° |
| | 1/4" | 215°×171°×129.2° | 92°×73.3°×55.2° | 176°×140°×105° | 163°×130.2°×97.8° |
| Distortion | <-1.6% | <-93% | <-0.7% | <-97% | <-92.2% |
| Focusing Range | 52.5mm | 54mm | 65mm | 70.5mm | 75mm |
| Dimension | ∅ 35.6×35.0mm | ∅ 30×31.2mm | ∅ 32×30.1mm | ∅ 34×29.4mm | ∅ 47.5×63.9mm |
| Weight | 26g | 21.8g | 24.5g | 24.5g | 200g |

Board Lenses Series

Wide-Angle Lenses Series

| Item No | Resolution | Format | Mount | Focal Length | F/No | Back Focus | Angle of View | Distortion | Focusing Range | Dimension |
|--------------|------------|------------|-----------|--------------|------|------------|---------------|------------|----------------|--------------|
| FIFO-01922BM | 1MP | 1/4" | M12 x 0.5 | 1.9 | 2.2 | 4.7 | 120° | <-62% | 0.05mm~∞ | ∅ 14x11.76mm |
| FIFO-02024BM | 1MP | 1/4" | M12 x 0.5 | 2.0 | 2.4 | 3.3 | 156° | <20% | 0.05mm~∞ | ∅ 17x11.40mm |
| FIFO-02120BM | 1MP | 1/3" | M12 x 0.5 | 2.1 | 2.0 | 4.92 | 151° | <-60% | 0.2mm~∞ | ∅ 17x20.38mm |
| | 1MP | 1/3" | M12 x 0.5 | 2.1 | 2.0 | 4.79 | 122.2° | <-63% | 0.2mm~∞ | ∅ 17x18.15mm |
| | 1MP | 1/3" | M12 x 0.5 | 2.1 | 2.0 | 4.79 | 122.2° | <-63% | 0.2mm~∞ | ∅ 14x18.15mm |
| FIFO-02220BM | 1MP | 1/3" | M12 x 0.5 | 2.2 | 2.0 | 5.3 | 96° | <-40% | 0.1mm~∞ | ∅ 14x19.90mm |
| FIFO-02520BM | 1MP | 1/3" | M12 x 0.5 | 2.5 | 2.0 | 5.18 | 111.8° | <-53% | 0.2mm~∞ | ∅ 14x18.03mm |
| FIFO-02920BM | 1MP | 1/3", 1/4" | M12 x 0.5 | 2.9 | 2.0 | 5.0 | 55° | <-5% | 0.2mm~∞ | ∅ 14x20.1mm |
| FIFO-03021BM | 1MP | 1/3" | M12 x 0.5 | 3.0 | 2.1 | 5.35 | 124° | <-24% | 0.2mm~∞ | ∅ 14x17.0mm |

Wide-Angle Lenses Series

| Item No | Resolution | Format | Mount | Focal Length | F/No | Back Focus | Angle of View | Focusing Range | Dimension |
|----------------|------------|------------|-----------|--------------|------|------------|-------------------|----------------|--------------|
| FIFO-IR02420BM | 1MP | 1/2.7" | M12 x 0.5 | 2.4 | 2.0 | 4.15 | 130°(D) | 0.15mm~∞ | ∅ 15x13mm |
| FIFO-IR03620BM | 1MP | 1/3", 1/4" | M12 x 0.5 | 3.6 | 2.0 | 6.0 | 80°x58°x102° | ---- | ∅ 14x22.23mm |
| | | | | | | | 58°x72°x43° | | |
| FIFO-IR04316BM | 1MP | 1/3", 1/4" | M12 x 0.5 | 4.3 | 1.6 | 7.2 | 67°x48.4°x88° | 0.2mm~∞ | ∅ 14x15.6mm |
| | | | | | | | 42.6°x31.4°x54.4° | | |
| FIFO-IR04620BM | 1MP | 1/3", 1/4" | M12 x 0.5 | 4.6 | 2.0 | 5.63 | 80°x42°x46° | 0.2mm~∞ | ∅ 14x23.03mm |
| | | | | | | | 58°x46°x35° | | |
| FIFO-IR0620BM | 1MP | 1/3", 1/4" | M12 x 0.5 | 6.0 | 2.0 | 8.27 | 58.4°x46.2°x34.5° | 0.2mm~∞ | ∅ 14x23.09mm |
| | | | | | | | 38.2°x30.6°x22.9° | | |
| FIFO-IR0820BM | 1MP | 1/3", 1/4" | M12 x 0.5 | 8.0 | 2.0 | 8.44 | 42°x33.6°x24.9° | 0.2mm~∞ | ∅ 14x13.8mm |
| | | | | | | | 31°x24.9°x18.2° | | |
| FIFO-1214BM | 1MP | 1/2" | M12 x 0.5 | 12 | 1.4 | 13.7±3% | 22° | 0.3mm~∞ | ∅ 27x38.7mm |

2.0 Mega-pixel Lenses Series

| Item No | FIFO-02120B2M | FIFO-02620B2M | FIFO-0324B2M | FIFO-03321B2M | FIFO-03616B2M | FIFO-1216B2M | FIFO-1618B2M |
|-----------------------|---------------|-----------------|--------------------|--------------------|--------------------|-------------------|-------------------|
| Resolution | 2MP | 2MP | 2MP | 2MP | 2MP | 2MP | 2MP |
| Format | 1/4" | 1/4" | 1/2.7", 1/3", 1/4" | 1/2.7", 1/3", 1/4" | 1/2.7", 1/3", 1/4" | 1/3", 1/4" | 1/3", 1/4" |
| Mount | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 |
| Focal Length | 2.1 | 2.6 | 3.0 | 3.3 | 1.8 | 12 | 16 |
| F/No. | 2.0 | 2.0 | 2.4 | 2.1 | 2.5 | 1.6 | 1.8 |
| Back Focus | 2.8 | 5.0 | 5.12 | 6.22 | 4.6 | 6.45 | 6.57 |
| Angle of View (DxVxH) | 1/2.7" | / | / | 172°x130°x64° | 139.5°x114.6°x58° | 122°x101.3°x52.1° | / |
| | 1/3" | / | / | 135.6°x99.4°x71.3° | 120°x90°x65° | 104°x79.4°x57.6° | 29°x23.5°x17.2° |
| | 1/4" | 133°x110.4°x65° | 130°x95.4°x66.9° | 80°x62.6°x46.2° | 72.6°x56.4°x41.7° | 64.6°x50.8°x37.7° | 19.2°x15.3°x11.4° |
| Distortion | <-80% | <-45% | <-63.2% | <-42% | <16% | <-2.5% | <-2.5% |
| Focusing Range | ∞~0.1mm | ∞~0.13mm | ∞~0.15mm | ∞~0.165mm | ∞~0.18mm | ∞~0.6mm | ∞~0.8mm |
| Dimension | ∅ 17x20.5mm | ∅ 14x17.75mm | ∅ 14x15.56mm | ∅ 14x14.3mm | ∅ 14x14.3mm | ∅ 14x15.36mm | ∅ 14x13.5mm |
| Weight | 6.0g | 11.0g | 5.1g | 3.8g | 6.5g | 5.5g | 5.5g |

Board Lenses Series

3.0 Mega-pixel Lenses Series

| Item No | FIFO-02521B3M | FIFO-02928B3M | FIFO-0320B3M | FIFO-IR03617B3M | FIFO-03626B3M | FIFO-03820B3M | FIFO-2520B3M |
|-----------------------|---------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Resolution | 3MP | 3MP | 3MP | 3MP | 3MP | 3MP | 3MP |
| Format | 1/3", 1/4" | 1/2.7", 1/3", 1/4" | 1/2.7", 1/3", 1/4" | 1/2.7", 1/3", 1/4" | 1/2.7", 1/3", 1/4" | 1/2.7", 1/3", 1/4" | 1/2.7", 1/3", 1/4" |
| Mount | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 |
| Focal Length | 2.5 | 2.9 | 3.0 | 3.6 | 3.6 | 3.8 | 25 |
| F/No. | 2.1 | 2.8 | 2.0 | 1.7 | 2.6 | 2.0 | 2.0 |
| Back Focus | 3.47 | 5.13 | 6.01 | 5.0 | 5.0 | 5.12 | 7.2 |
| Angle of View (DxVxH) | 1/2.7" | / | 162°x126°x63° | 136°x114.8°x61° | 122°x101.3°x52.1° | 122°x101.3°x52.1° | 98°x79.5°x51.5° |
| | 1/3" | 153°x116.2°x80.6° | 130°x97.4°x70.1° | 120.8°x97.5°x63° | 104°x79.4°x57.6° | 104°x79.4°x57.6° | 110.5°x93.5°x49.9° |
| | 1/4" | 112.4°x92.4°x56° | 78.8°x61.6°x43.7° | 76°x59.8°x44.5° | 64.6°x50.8°x37.7° | 64.6°x50.8°x37.7° | 61.6°x48.7°x36.2° |
| Distortion | <-73% | <-62.5% | <-43% | <-16% | <-16.5% | <-29% | <-2% |
| Focusing Range | 0.125mm~∞ | 0.146mm~∞ | 0.15mm~∞ | 0.18mm~∞ | 0.18mm~∞ | 0.19mm~∞ | 1.25mm~∞ |
| Dimension | ∅ 17.4x17.2mm | ∅ 14x15.65mm | ∅ 14x17.73mm | ∅ 14x18.3mm | ∅ 14x18.1mm | ∅ 14x17.59mm | ∅ 14x20.14mm |
| Weight | 6.6g | 4.8g | 5.5g | 6.5g | 5.5g | 5.5g | 8.0g |

5.0 Mega-pixel Lenses Series



| Item No | FIFO-01728B5M | FIFO-IR02424B5M | FIFO-IR02524B5M | FIFO-IR02918B5M | FIFO-IR03618B5M | FIFO-IR0418B5M |
|-----------------------|---------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Resolution | 5MP | 5MP | 5MP | 5MP | 5MP | 5MP |
| Format | 1/4" | 1/2.5", 1/2.7", 1/3", 1/4" | 1/2.5", 1/2.7", 1/3", 1/4" | 1/2.5", 1/2.7", 1/3", 1/4" | 1/2.5", 1/2.7", 1/3", 1/4" | 1/2.5", 1/2.7", 1/3", 1/4" |
| Mount | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 |
| Focal Length | 1.7 | 2.35 | 2.5 | 2.9 | 3.6 | 4.0 |
| F/No. | 2.8 | 2.4 | 2.4 | 1.8 | 1.8 | 1.8 |
| Back Focus | 4.5 | 4.95 | 4.98 | 4.47 | 7.2 | 7.72 |
| Angle of View (DxVxH) | 1/2.5" | / | 172°x138.4°x104° | 166°x132°x98.8° | 152°x117.5°x86.5° | 128°x96.4°x69.8° |
| | 1/2.7" | / | 162.5°x142.4°x80° | 155.5°x135°x75° | 141.5°x121°x65.3° | 118°x99.2°x52.4° |
| | 1/3" | / | 148°x123.1°x82.6° | 141°x116.7°x77.4° | 126.6°x103.6°x67.5° | 104°x84°x54.4° |
| | 1/4" | 190°x130°x190° | 97.1°x78°x58.6° | 92°x73.3°x55.2° | 80.4°x63.9°x47.6° | 64.6°x51°x37.6° |
| Distortion | / | <-50% | <-83% | <-42% | <-43% | <-10% |
| Focusing Range | 0.25mm~∞ | 0.117mm~∞ | 0.125mm~∞ | 0.145mm~∞ | 0.18mm~∞ | 0.2mm~∞ |
| Dimension | ∅ 14x14.15mm | ∅ 17x19.96mm | ∅ 14x17.73mm | ∅ 17x21.32mm | ∅ 14x18.08mm | ∅ 14x17.44mm |
| Weight | 19g | 6.8g | 11.8g | 13.3g | 5.0g | 5.0g |

Board Lenses Series

Wide-Angle Lenses Series

| Item No | FIFO-IR0618B5M | FIFO-IR0818B5M | FIFO-IR1218B5M |
|-----------------------|----------------------------|----------------------------|----------------------------|
| Resolution | 5MP | 5MP | 5MP |
| Format | 1/2.5", 1/2.7", 1/3", 1/4" | 1/2.5", 1/2.7", 1/3", 1/4" | 1/2.5", 1/2.7", 1/3", 1/4" |
| Mount | M12 x 0.5 | M12 x 0.5 | M12 x 0.5 |
| Focal Length | 6mm | 8mm | 12mm |
| F/No. | 1.8 | 1.8 | 1.8 |
| Back Focus | 9.6mm | 7.81mm | 8.3mm |
| Angle of View (DxVxH) | 1/2.5" | 68.8°x54.8°x41.1° | 52.1°x41.4°x30.8° |
| | 1/2.7" | 64.8°x56.4°x31.4° | 48.9°x42.5°x23.6° |
| | 1/3" | 58.6°x48.8°x32.3° | 44.3°x36.7°x24.4° |
| | 1/4" | 38.4°x30.6°x23° | 28.8°x23°x17.2° |
| Distortion | <-11.6% | <-7.0% | <-4.3% |
| Focusing Range | 0.3mm~∞ | 0.4mm~∞ | 0.6mm~∞ |
| Dimension | ∅ 14x19.1mm | ∅ 14x19.09mm | ∅ 14x17.44mm |
| Weight | 6.5g | 6.5g | 6.0g |

8.0Mega-pixel Lenses Series

| Item No | FIFO-IR02920B8M | FIFO-IC01530B8M |
|-----------------------|------------------|-----------------|
| Resolution | 8MP | 8MP |
| Format | 1/2.7", 1/3" | 1/2" |
| Mount | M12 x 0.5 | M12 x 0.5 |
| Focal Length | 2.9mm | 1.5mm |
| F/No. | 2.0 | 3.0 |
| Back Focus | 5.08 | 2.95 |
| Angle of View (DxVxH) | 125°x92.8°x72.5° | 192°x192°x180° |
| Distortion | <-46% | ---- |
| Focusing Range | 0.1m~∞ | 0.1m~∞ |
| Dimension | ∅ 14x25.21mm | ∅ 14x25.21mm |



Sports DV camera Lenses Series



| Item No | FIFO-IR01724DV | FIFO-IR02226DV | FIFO-IR02928DV | FIFO-IR03026DV | FIFO-IR03728DV |
|-------------------|----------------|-----------------|---------------------|---------------------|-------------------|
| Resolution | 16MP | 8MP | 16MP | 4MP | 16MP |
| Format | 1/2.3" | 1/3.2" | 1/2.3" | 1/3" | 1/2.3" |
| Mount | M12 x 0.5 | M6.5 x 0.35 | M12 x 0.5 | M8.0 x 0.35 | M12 x 0.5 |
| Focal Length | 1.7 | 2.2 | 2.9 | 3.0 | 3.7 |
| F/No. | 2.4 | 2.6 | 2.8 | 2.6 | 2.8 |
| Back Focus | 2.6 | 1.8 | 4.33 | 4.26 | 5.58 |
| Angle of View | 185°(V) | 120°x100°x78.5° | 150.9°x119.9°x90.4° | 138.2°x110.6°x58.4° | 130°x100.5°x74.5° |
| Max Image Circle | 4.64 | 6.1 | 8.2 | 6.43 | 8.2 |
| Distortion | <-20.4% | <-26% | <-65.9% | <-60.9% | <-56% |
| IR | 78% | 47.2% | 75.3% | 54.5% | 86.6% |
| Design Wavelength | 420~680nm | 420~680nm | 420~680nm | 420~680nm | 420~680nm |
| Focusing Range | 0.4m~∞ | 0.5m~∞ | 0.73m~∞ | 0.64m~∞ | 0.1m~∞ |
| Front Diameter | 16.5 | 8.0 | 18 | 6.0 | 18 |
| Construction | 7G+IR | 2G3P+IR | 9G+IR | 4G+IR | 8g+IR |
| TTL(mm) | 20 | 9.29 | 24 | 11.32 | 23 |

The Near Field / Far Field Lenses Series

Working Distance 100~350mm Lenses



| Item No | FIFO-1217MAC | FIFO-1620MAC | FIFO-2025MAC5M | FIFO-IR2520MACT |
|-----------------------|---------------------|--------------------|---------------------|----------------------|
| Resolution | 80lp/mm | 80lp/mm | 160lp/mm | 100lp/mm |
| Format | 2/3" | 2/3" | 2/3" | 1/2" |
| Mount | M12x0.5 | M12x0.5 | M12x0.5 | M16x0.5 |
| Focal Length | 12mm | 16mm | 25mm | 25mm |
| F/No. | 1.7 | 2.0 | 2.0 | 2.0 |
| Back Focus | 7.29mm | 18.73mm | 9.8mm | 13.37mm |
| Iris Type | Fixed | Fixed | Fixed | Fixed |
| Angle of View (DxVxH) | 45.6°x28.31°x37.17° | 34.1°x20.85°x27.6° | 18.6°x11.22°x14.93° | 14.59°x10.97°x18.18° |
| Distortion | <-0.85% | <2.7% | <0.17% | <1% |
| Working Distance | 114mm | 100mm | 110mm | 250~350mm |
| Design Wavelength | 660nm | 660nm | 660nm | 660~950nm |
| Dimension | ∅ 14 x 19.97mm | ∅ 18 x 24.62mm | ∅ 16 x 30.75mm | ∅ 18 x 24.85mm |
| Weight | 0.5g | 0.5g | 2.5g | 3.5g |

Working Distance 100~500mm Lenses



| Item No | FIFO-05516MAC | FIFO-0620MAC | FIFO-0825MAC |
|-----------------------|----------------|-----------------|-------------------|
| Resolution | 120lp/mm(| 100lp/mm | 130lp/mm |
| Format | 1/1.8" | 1/1.8" | 1/1.8" |
| Mount | M12x0.5 | M12x0.5 | M12x0.5 |
| Focal Length | 5.5mm | 6mm | 8mm |
| F/No. | 1.6 | 2.0 | 2.5 |
| Back Focus | 5.295mm | ---- | ---- |
| Angle of View (DxVxH) | 78°x51.4°x66° | 77°x50.6°x65.5° | 58.8°x37.1°x48.7° |
| Distortion | <-1.2% | <6.5% | <-0.25% |
| Working Distance | 0.1m~∞ | 0.1~0.5m | 0.1~0.5m |
| Design Wavelength | 400~950nm | 400~950nm | 400~950nm |
| Dimension | ∅ 15 x 19.56mm | ∅ 19 x 23.17mm | ∅ 14 x 14.65mm |

The Near Field / Far Field Lenses Series

1/2.3" Format

| | |
|-------------------|---------------|
| Item No | FIFO-04516MAC |
| Resolution | 100lp/mm(2MP) |
| Format | 1/2.3" |
| Mount | M12x0.5 |
| Focal Length | 4.5mm |
| F/No. | 1.6 |
| Iris Type | Fixed |
| Distortion | <-3.5% |
| Design Wavelength | 400~950nm |

1/2.5" Format

| | |
|-------------------|--------------|
| Item No | FIFO-0320MAC |
| Resolution | 100lp/mm |
| Format | 1/2.5" |
| Mount | M12x0.5 |
| Focal Length | 3.0mm |
| F/No. | 2.0 |
| Iris Type | Fixed |
| Distortion | <-22% |
| Design Wavelength | 400~950nm |

Far Field lenses 10 Mega-Pixel 2/3" Format Series



| Item No | FIFO-1228MAC | FIFO-1622MAC | FIFO- 2525MAC |
|----------------------|--------------------|-----------------|-------------------|
| Resolution | 200lp/mm(10MP) | 200lp/mm(10MP) | 200lp/mm(10MP) |
| Format | 2/3" | 2/3" | 2/3" |
| Mount | M12x0.5 | M12x0.5 | M12x0.5 |
| Focal Length | 12mm | 16mm | 25mm |
| F/No. | 2.8 | 2.2 | 2.5 |
| Iris Type | Fixed | Fixed | Fixed |
| Angle of view(DxVxH) | 48.68°x30.3°x39.7° | 34.5°x21°x27.9° | 22.2°x13.4°x17.8° |
| Distortion | <-0.2% | <2.5% | <0.5% |
| Working Distance | 0.1~0.5m | 0.1~0.5m | 0.1~0.5m |
| Design Wavelength | --- | ∅ 14 x 14.65mm | ∅ 17 x 21.87mm |

2/3"Format Far Field Lenses Series



| Item No | FIFO-F1225FM | FIFO-F1620FM | FIFO- F2520FM | FIFO- F3528MAC | FIFO- F5040MAC |
|----------------------|-------------------|-------------------|-------------------|-----------------|----------------|
| Resolution | 200lp/mm(10MP) | 200lp/mm(10MP) | 200lp/mm(10MP) | 200lp/mm(10MP) | 200lp/mm(10MP) |
| Format | 2/3" | 2/3" | 2/3" | 2/3" | 2/3" |
| Mount | M12x0.5 | M12x0.5 | M12x0.5 | M12x0.5 | M12x0.5 |
| Focal Length | 12mm | 16mm | 25mm | 35mm | 50mm |
| F/No. | 2.5 | 2.0 | 2.0 | 2.8 | 4.0 |
| Back Focus | 8.03-6.53 | 4.97-4.22 | 9.25-7.48 | 20.3 | 29.7 |
| Iris Type | Fixed | Fixed | Fixed | Fixed | Fixed |
| Angle of view(DxVxH) | 45.6°x28.3°x37.1° | 36.2°x22.1°x29.3° | 18.6°x11.2°x14.9° | 18°x10.8°x14.4° | 12.6°x7.5°x10° |
| Distortion | <-1.2% | <-3% | <-0.12% | <-0.4% | <-0.2% |
| Working Distance | 0.1m~∞ | 0.2m~∞ | 0.2m~∞ | 0.3m~∞ | 0.5m~∞ |
| Design Wavelength | 400~950mm | 400~950mm | 400~950mm | 400~950mm | 400~950mm |

Lenses Accessories

Lens Extender

Attached between lens and camera, extending the focal length



| Item No | Specifications |
|-------------|----------------------------|
| FIFO-PE1.5C | 1.5X Extender for C-Mount |
| FIFO-PE2.0C | 2.0X Extender for C-Mount |
| FIFO-PE2.5C | 2.5X Extender for C-Mount |
| FIFO-PE2CS | 2.0X Extender for CS-Mount |
| FIFO-PE4.0C | 4.0X Extender for C-Mount |

Extension Tube Kit

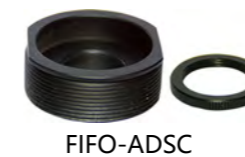
Attached between lens and camera, reducing the minimum focusing distance



| Item No | Specifications |
|-------------|----------------|
| FIFO-PET0.5 | 0.5mm |
| FIFO-PET1.0 | 1.0mm |
| FIFO-PET2.0 | 2.0mm |
| FIFO-PET5.0 | 5.0mm |
| FIFO-PET10 | 10mm |
| FIFO-PET20 | 20mm |
| FIFO-PET30 | 30mm |
| FIFO-PET40 | 40mm |
| FIFO-PET50 | 50mm |

Adapter Series

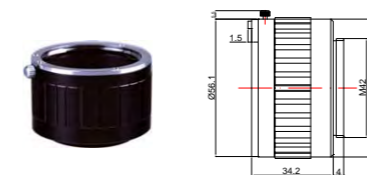
S-mount lens to C-mount adapter



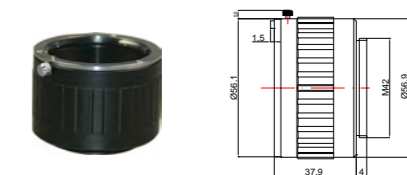
V-mount lens to C-mount adapter



F-mount lens to T-mount adapter



FIFO-ADFT34.5



FIFO-ADFT42

Lenses Accessories

V-mount adapter

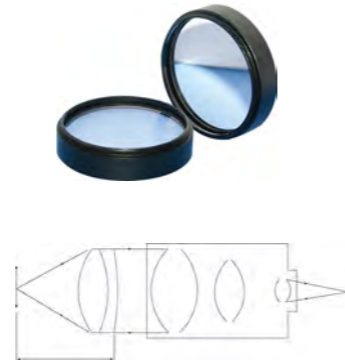


| Item No | Specifications | Item No | Specifications |
|--------------------|----------------------------|---------------------|--|
| FIFO-ADV6 | V-mount tube 6mm | FIFO- ADM58M72 | M58-mount to M72-mount adapter |
| FIFO- ADV6.5 | V-mount tube 6.5mm | FIFO- ETM58(25) | 25mm Tube M58*0.75 |
| FIFO- ADV8 | V-mount tube 8mm | FIFO- ADVM58(20-27) | V-mount to M58-mount adapter |
| FIFO- ADV10 | V-mount tube 10mm | FIFO- ADM72D | V-mount to Dalsa adapter (reference Piranha 2 P2-2X-XXX40) |
| FIFO- ADV17.4-29.4 | V-mount tube 17.4-29.4mm | FIFO- ADM58E10 | M58 10mm tube |
| FIFO- ADV20-27 | V-mount tube 20-27mm | FIFO- ADM58E25 | M58 25mm tube |
| FIFO- ADV25 | V-mount tube 25mm | FIFO- ADM72E5 | M72 5mm tube |
| FIFO- ADV50 | V-mount tube 50mm | FIFO- ADM72E10 | M72 10mm tube |
| FIFO- ADV75 | V-mount tube 75mm | FIFO- ADM72E25 | M72 20mm tube |
| FIFO- ADVF9 | V-mount to F-mount adapter | FIFO- ADM72E50 | M72 50mm tube |
| FIFO- ADVC | V-mount to C-mount adapter | | |

Close-up Lenses

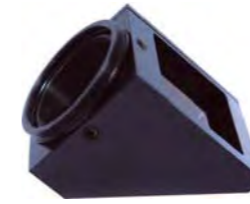
Screwed into the mount in the front of lens that is fitted to camera, bringing the focusing range of lens closer to camera.

| Item No | Diopter | Focal Length(inf.) |
|---------------|---------|--------------------|
| FIFO- PCL1.0 | +1.0 | 1000mm |
| FIFO- PCL2.0 | +2.0 | 500mm |
| FIFO- PCL3.0 | +3.0 | 333mm |
| FIFO- PCL3.3 | +3.3 | 300mm |
| FIFO- PCL3.75 | +3.75 | 266mm |
| FIFO- PCL4.0 | +4.0 | 250mm |
| FIFO- PCL5.0 | +5.0 | 200mm |
| FIFO- PCL7.0 | +7.0 | 142mm |



Lenses Accessories

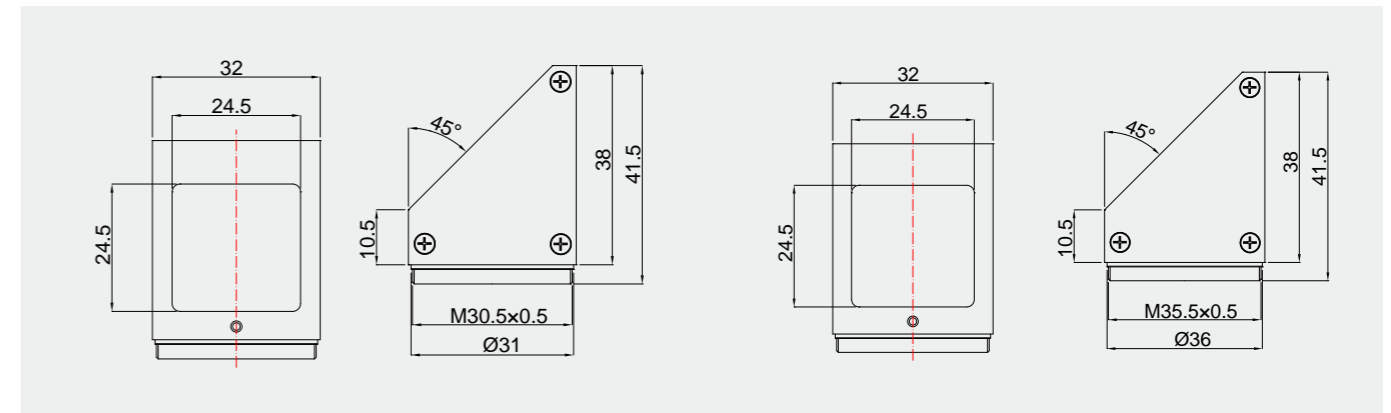
Turning angle prism



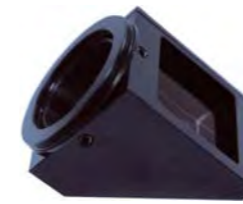
FIFO-PC305-1



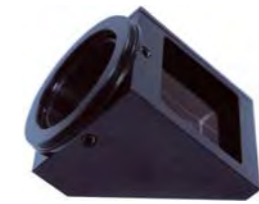
FIFO-PC355-1



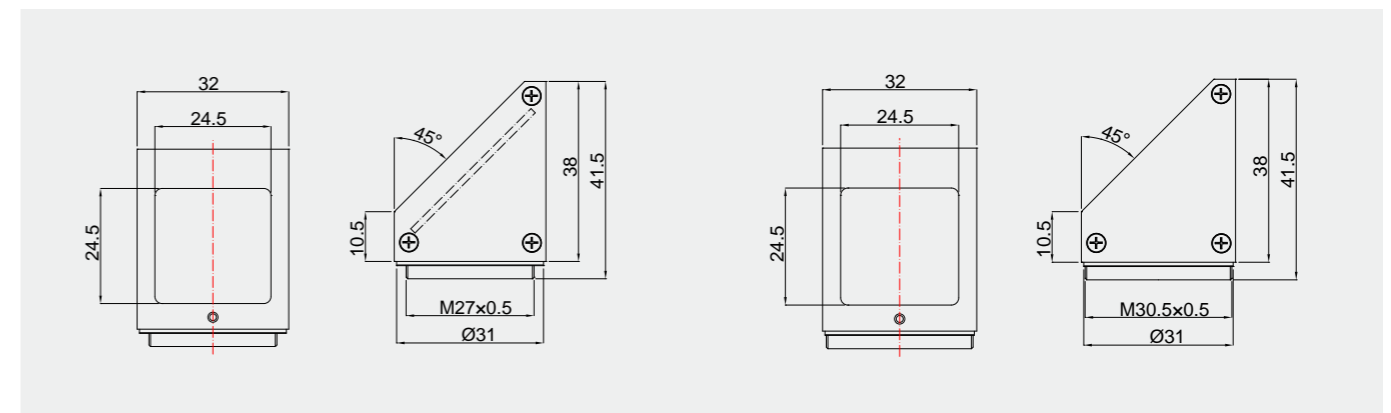
Reflective turning mirror



FIFO-MC27-1



FIFO-MC305-1



Endoscope TV adapters, C-mount, soakable

Adapters for all kinds of rigid endoscopes



| Item No | FIFO-1412ED | FIFO-1812ED | FIFO-2012ED | FIFO-2212ED |
|--------------|-------------|-------------|-------------|-------------|
| Resolution | 1280x 1024 | 1280x 1024 | 1280x 1024 | 1280x 1024 |
| Format | 1/2" | 1/2" | 1/2" | 1/2" |
| Mount | C/CS | C/CS | C/CS | C/CS |
| Focal Length | 14mm | 18mm | 20mm | 22mm |
| F/No | 1.2 | 1.2 | 1.2 | 1.2 |
| Dimension | Φ54×L44 | Φ54×L44 | Φ48×L44 | Φ54×L44 |
| Weight | 76g | 92g | 92g | 92g |



| Item No | FIFO-2512ED | FIFO-2812ED | FIFO-3512ED |
|--------------|-------------|-------------|-------------|
| Resolution | 1280x 1024 | 1280x 1024 | 1280x 1024 |
| Format | 1/2" | 1/2" | 1/2" |
| Mount | C/CS | C/CS | C/CS |
| Focal Length | 25mm | 28mm | 35mm |
| F/No | 1.2 | 1.2 | 1.2 |
| Dimension | Φ48×L44 | Φ54×L44 | Φ48×L44 |
| Weight | 92g | 92g | 92g |

Adapters for all kinds of semi-right/soft endoscopes



| Item No | FIFO-1412EF | FIFO-1812EF | FIFO-2212EF | FIFO-2812EF |
|--------------|-------------|-------------|-------------|-------------|
| Resolution | 1280x 1024 | 1280x 1024 | 1280x 1024 | 1280x 1024 |
| Format | 1/2" | 1/2" | 1/2" | 1/2" |
| Mount | C/CS | C/CS | C/CS | C/CS |
| Focal Length | 14mm | 18mm | 22mm | 28mm |
| F / No | 1.2 | 1.2 | 1.2 | 1.2 |
| Dimension | Φ42×L54 | Φ41.5×L54 | Φ42×L57 | Φ54×L44 |
| Weight | 76g | 92g | 92g | 92g |

Filter Series



- Durable
- Non-hydroscopic
- Long lifespan

As an important accessory for machine vision, filters can largely enhance the work efficiency of vision systems. FIFO offers the full spectral range of filters in different types, such as long pass filters, band pass filters etc.

All filters are mounted in standard sizes, matching FIFO mega-pixel lenses and other brands of lenses. We also can do custom coating designs upon request.

| ThreadDia. xPitch(mm) | C-Mount | M22.5×0.5 | M25.5×0.5 | N27.0×0.5 | M30.5×0.5 | M34.0×0.5 | M35.5×0.5 | M37.0×0.75 | M37.5×0.5 |
|------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| External Ø | 25.4 | 24.0 | 27.5 | 29 | 32.5 | 36 | 37 | 39 | 39.5 |
| Aperture Ø | 19.5 | 18.5 | 21 | 23 | 26.5 | 30 | 31.5 | 33 | 33.5 |
| ThreadDia. xPitch (mm) | M40.5×0.5 | M43.0×0.75 | M46.0×0.75 | M49.0×0.75 | M52.0×0.75 | M55.0×0.75 | M58.0×0.75 | M62.0×0.75 | M67.0×0.75 |
| External Ø | 42 | 45 | 48 | 51 | 54 | 57 | 60 | 65 | 70 |
| Aperture Ø | 36 | 39.5 | 41.5 | 44.5 | 47.5 | 50.5 | 53.5 | 57.5 | 63.2 |
| ThreadDia. xPitch (mm) | M68.0×0.75 | M72.0×0.75 | M77.0×0.75 | M82.0×0.75 | M86.0×0.75 | M95.0×1.0 | M105×1.0 | | |
| External Ø | 70 | 75 | 80 | 85 | 90 | 99 | 109 | | |
| Aperture Ø | 63.2 | 67.7 | 73 | 78.8 | 80 | 90 | 100 | | |

Filter Series

Filter Types

Bandpass Filters Series

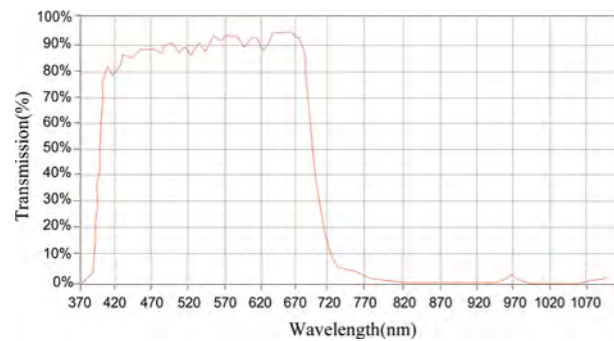
| Color Bandpass Filter | |
|--|------------------------------|
| Item No | Specifications |
| FIFO-BP465 | Blue Bandpass UV Block 465nm |
| FIFO-BP470 | Blue Bandpass UV Block 470nm |
| FIFO-BP500 | Green Blue Bandpass 500nm |
| FIFO-BP525 | Light Green Bandpass 525nm |
| FIFO-BP530 | Green Bandpass 530nm |
| FIFO-BP535 | Green Bandpass 535nm |
| FIFO-BP590 | Orange Bandpass 590nm |
| FIFO-BP635 | Light Red Bandpass 635nm |
| FIFO-BP660 | Dark Red Bandpass 660nm |
| Infrared Pass / Visible Block Bandpass Filters | |
| Item No | Specifications |
| FIFO-BP695 | IR Bandpass 695nm |
| FIFO-BP735 | IR Bandpass 735nm |
| FIFO-BP800 | IR Bandpass 800nm |
| FIFO-BP850 | IR Bandpass 850nm |
| FIFO-BP880 | IR Bandpass 880nm |

Longpass Filters Series

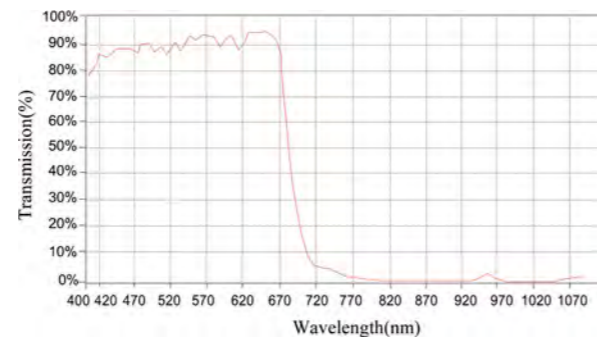
| Color Bandpass Filter | |
|--|------------------------------|
| Item No | Specifications |
| FIFO-LP470 | Light Yellow Longpass 470nm |
| FIFO-LP500 | Yellow Longpass 500nm |
| FIFO-LP515 | Yellow Orange Longpass 515nm |
| FIFO-LP530 | Orange Longpass 530nm |
| FIFO-LP550 | Orange Longpass 550nm |
| FIFO-LP580 | Red Orange Longpass 580nm |
| FIFO-LP590 | Red Longpass 590nm |
| FIFO-LP610 | Red Longpass 610nm |
| FIFO-LP630 | Red Longpass 630nm |
| FIFO-LP640 | Dark Red Longpass 640nm |
| Infrared Pass / Visible Block Longpass Filters | |
| Item No | Specifications |
| FIFO-LP695 | IR Longpass 695nm |
| FIFO-LP715 | IR Longpass 715nm |
| FIFO-LP780 | IR Longpass 780nm |
| FIFO-LP830 | IR Longpass 830nm |
| FIFO-LP850 | IR Longpass 850nm |
| FIFO-LP920 | IR Longpass 920nm |
| FIFO-LP1000 | IR Longpass 1000nm |

IR Cut Filter

>> UV&IR Cut Filter Curves



>> Short IR Cut Filter Curves



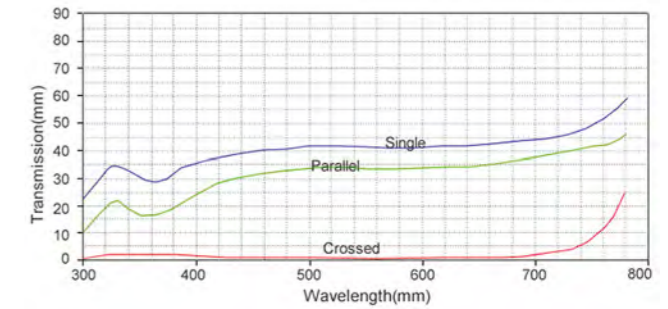
Filter Series

Polarizing Filters Series

FIFO-PLL-Linear Polarizer
FIFO-PLC - Circular Polarizer



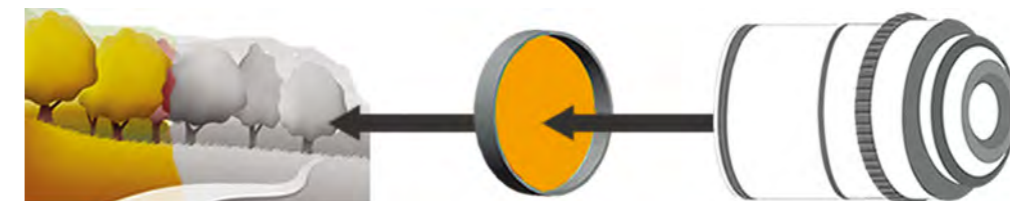
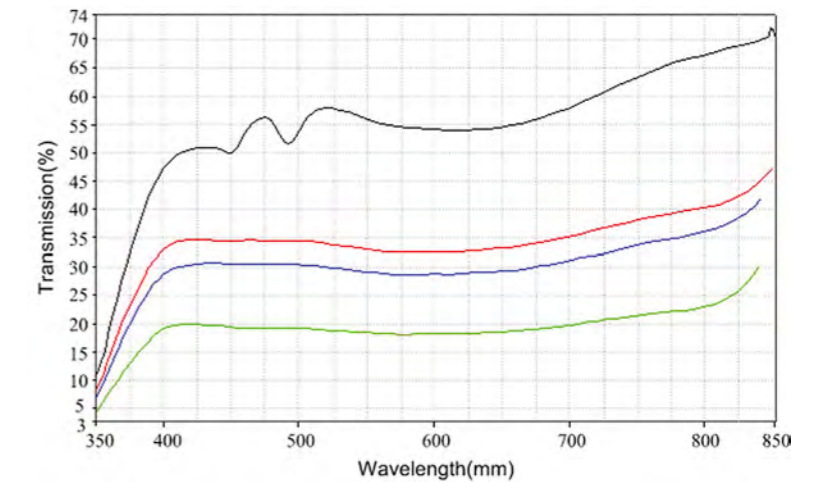
FIFO Polarizing filters are constructed with dichroic sheets of laminated polymers that are cemented between protective glasses. They filter out light polarized perpendicularly to the axis of the filter. FIFO offers linear polarizing filters and circular polarizing filters in most sizes.



| Single | Transmission | Polarization | X | Y | Z | L | a* | b* | □E |
|----------|--------------|--------------|------|------|------|------|------|------|-----|
| | 40.4% | 99.321% | 38.5 | 40.8 | 42.7 | 70.0 | -0.9 | 1.9 | 2.2 |
| Parallel | Transmission | Dichroic | X | Y | Z | L | a* | b* | □E |
| | 3.27% | 27.29386 | 31.2 | 33.3 | 31.2 | 64.4 | -0.7 | 3.8 | 3.9 |
| Crossed | Transmission | Comparison | X | Y | Z | L | a* | b* | □E |
| | 0.223% | 146.75 | 0.1 | 0.1 | 0.3 | 1.1 | 1.1 | -2.3 | 2.6 |

Neutral Density Filters Series

- FIFO-FND01 - Optical Density=0.1
- FIFO-FND02 - Optical Density=0.2
- FIFO-FND03 - Optical Density=0.3
- FIFO-FND04 - Optical Density=0.4
- FIFO-FND05 - Optical Density=0.5
- FIFO-FND06 - Optical Density=0.6
- FIFO-FND07 - Optical Density=0.7
- FIFO-FND08 - Optical Density=0.8
- FIFO-FND09 - Optical Density=0.9
- FIFO-FND10 - Optical Density=1.0





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