

VS-TC Series 2/3" 1/1.8"

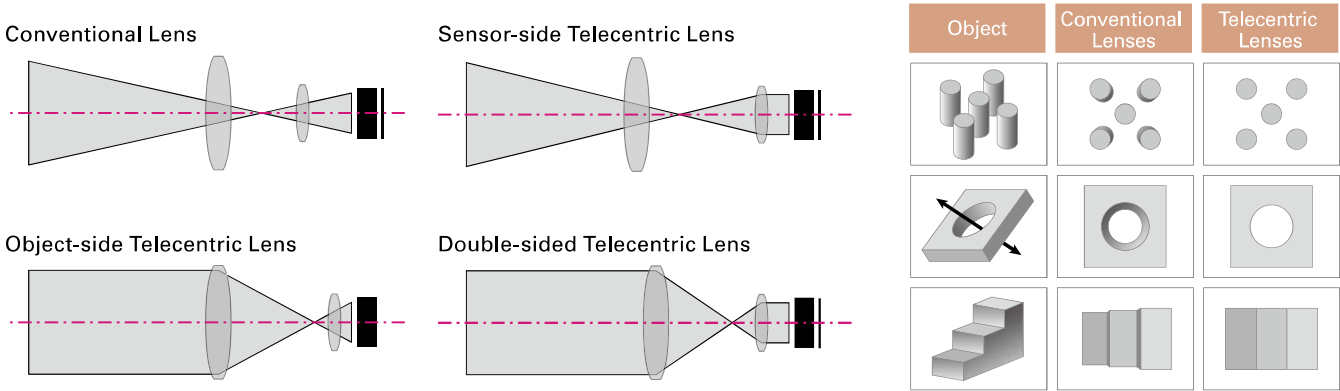
While being compact in size and light in weight the VS-TC series is our largest collection of telecentric lenses with WDs ranging from 40 - 340mm. They produce a clear, distortionless, high contrast image.

- Features
- 1/2 - 2/3" sensor support
  - 70 models available
  - Compact
  - Light weight
  - Telecentric design



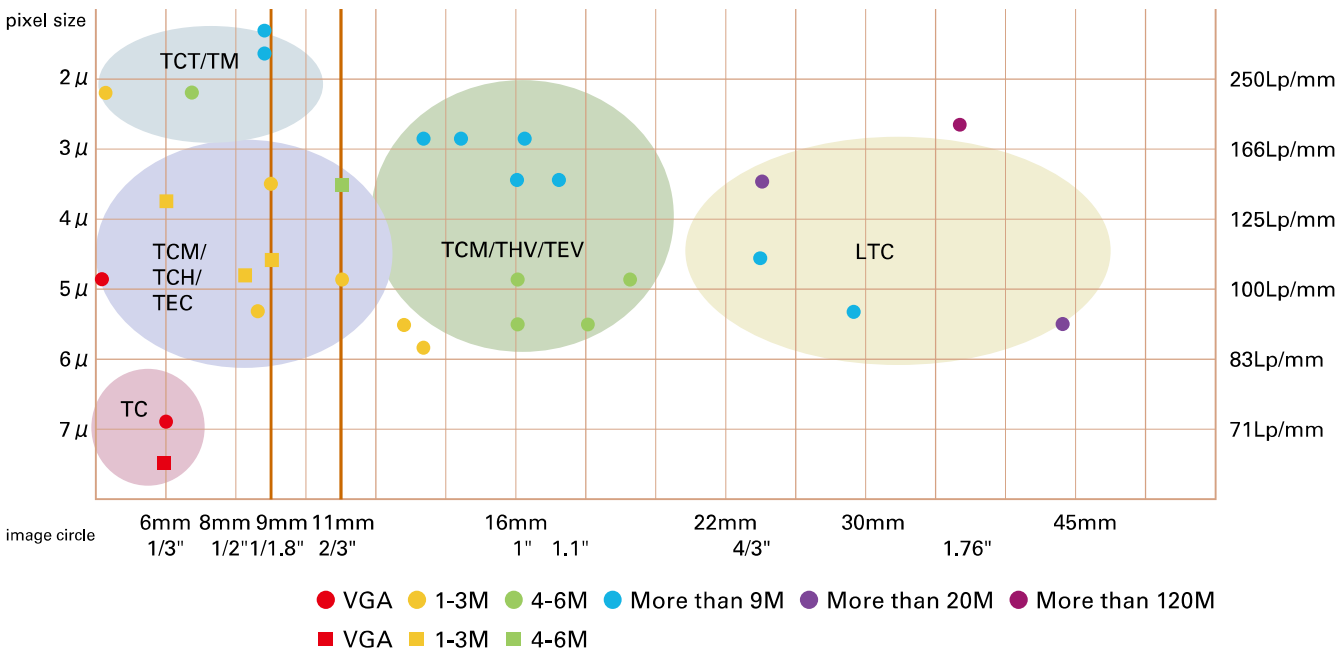
What are telecentric lenses?

A lens is considered telecentric when its chief rays are parallel to the optical axis. Due to the rays being parallel it is ideal for coaxial lighting. Telecentric lenses eliminate perspective errors and when the WD changes, the magnification does not. These aspects allow for accurate measurement of both static, and vertically moving objects.



| Object | Conventional Lenses | Telecentric Lenses |
|--------|---------------------|--------------------|
|        |                     |                    |
|        |                     |                    |
|        |                     |                    |

Telecentric Lens Comparison Map



The recent trends in the image sensor market have been that as sensor sizes are now becoming larger, the resolution of pixels is becoming smaller. This means that sensors having the same dimensions will yield a picture with a greater resolution.

The advantage of pixels getting smaller in size is that more of them can now fit into a sensor of the same size. However since the surface area of the sensor stays the same, the amount of light that each pixel can absorb is lowered. This means that the ability for a lens to absorb a lot of light becomes more critical of a factor as sensor resolution increases.

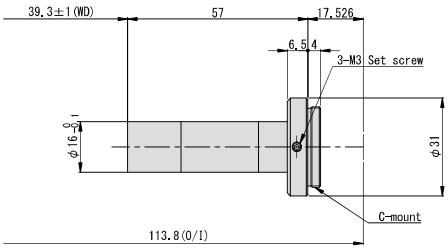
If however, the pixel size is to remain the same while the dimensions of the sensor increase, the size of the lenses image circle must also increase.

It is no easy task to reconcile between pixel size and sensor size with respect to light throughput optimization, but VS Technology has effectively elevated the industry's benchmark by consistently expanding the quality of our lineup of high resolution telecentric lenses.

|     |          |                                                                                          |
|-----|----------|------------------------------------------------------------------------------------------|
| TC  | P54-69   | Standard Telecentric Lenses                                                              |
| TCH | P70-79   | High Resolution Telecentric Lenses                                                       |
| TCM | P80-87   | High Resolution Telecentric LensesLarge Format Telecentric Lenses, Bi-Telecentric Lenses |
| THV | P88-95   | 1.1 & 1" Telecentric Lenses                                                              |
| TCT | P96-97   | 1.67 µ m Telecentric Lenses                                                              |
| TM  | P98-99   | Telecentric Microscope Lenses                                                            |
| TEC | P100-103 | Variable Magnification Telecentric Lenses                                                |
| TEV | P104-105 | 1.1" Variable Magnification Telecentric Lenses                                           |
| LTC | P106-111 | Large Format Line Scan Telecentric Lenses                                                |

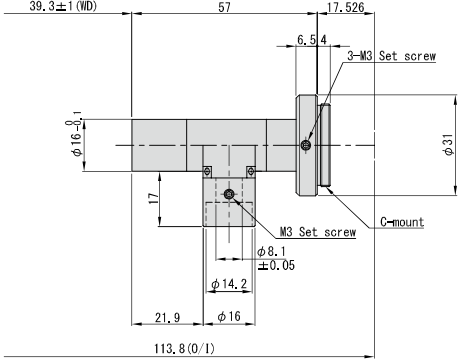
WD:40mm Series

VS-TC1.5-40



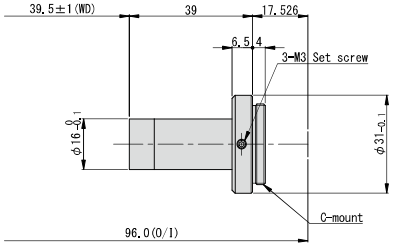
|                                |      |                       |
|--------------------------------|------|-----------------------|
| Optical Mag.                   |      | 1.5x ±5 %             |
| FOV(VxH)                       | 2/3" | —                     |
|                                | 1/2" | 3.2 x 4.3 mm          |
|                                | 1/3" | 2.4 x 3.2 mm          |
| WD                             |      | 39.3 mm ±1            |
| O/I (Object & Imager Distance) |      | 113.8 mm              |
| Working F/#                    |      | 11.2                  |
| NA                             |      | 0.067                 |
| DOF at PCoC φ0.04mm            |      | 0.4 mm                |
| TV Distortion (1/2")           |      | 0.00 %                |
| Relative Illuminance (Y=4)     |      | 69 %                  |
| Wavelength                     |      | Visible               |
| Mount                          |      | C-Mount               |
| Flange Back                    |      | 17.526 mm             |
| Sensor Size (max.)             |      | 1/2"                  |
| Co-Axial Prism                 |      | —                     |
| Weight (approx.)               |      | 37 g                  |
| Dimension                      |      | φ31(max.) x L = 57 mm |

VS-TC1.5-40CO



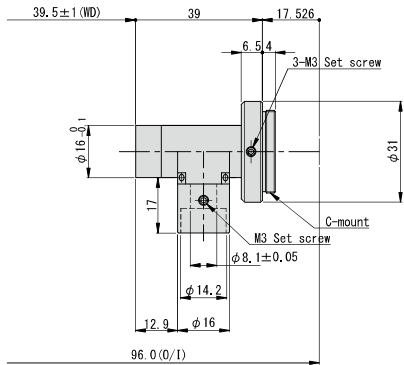
|                                |      |                       |
|--------------------------------|------|-----------------------|
| Optical Mag.                   |      | 1.5x ±5 %             |
| FOV(VxH)                       | 2/3" | —                     |
|                                | 1/2" | 3.2 x 4.3 mm          |
|                                | 1/3" | 2.4 x 3.2 mm          |
| WD                             |      | 39.3 mm ±1            |
| O/I (Object & Imager Distance) |      | 113.8 mm              |
| Working F/#                    |      | 11.2                  |
| NA                             |      | 0.067                 |
| DOF at PCoC φ0.04mm            |      | 0.4 mm                |
| TV Distortion (1/2")           |      | 0.00 %                |
| Relative Illuminance (Y=4)     |      | 69 %                  |
| Wavelength                     |      | Visible               |
| Mount                          |      | C-Mount               |
| Flange Back                    |      | 17.526 mm             |
| Sensor Size (max.)             |      | 1/2"                  |
| Co-Axial Prism                 |      | Built-in              |
| Weight (approx.)               |      | 42 g                  |
| Dimension                      |      | φ31(max.) x L = 57 mm |

VS-TC2-40



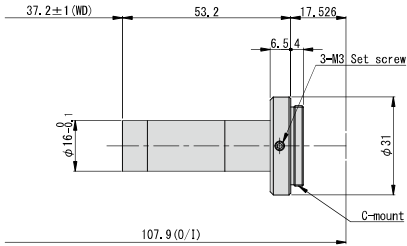
|                                |      |                       |
|--------------------------------|------|-----------------------|
| Optical Mag.                   |      | 2.0x ±5 %             |
| FOV(VxH)                       | 2/3" | —                     |
|                                | 1/2" | 2.4 x 3.2 mm          |
|                                | 1/3" | 1.8 x 2.4 mm          |
| WD                             |      | 39.5 mm ±1            |
| O/I (Object & Imager Distance) |      | 96.0 mm               |
| Working F/#                    |      | 15.0                  |
| NA                             |      | 0.067                 |
| DOF at PCoC φ0.04mm            |      | 0.3 mm                |
| TV Distortion (1/2")           |      | 0.00 %                |
| Relative Illuminance (Y=4)     |      | 84 %                  |
| Wavelength                     |      | Visible               |
| Mount                          |      | C-Mount               |
| Flange Back                    |      | 17.526 mm             |
| Sensor Size (max.)             |      | 1/2"                  |
| Co-Axial Prism                 |      | —                     |
| Weight (approx.)               |      | 30 g                  |
| Dimension                      |      | φ31(max.) x L = 39 mm |

VS-TC2-40CO



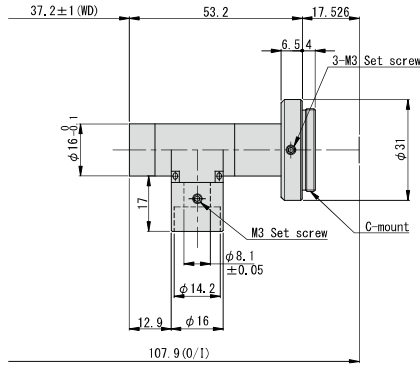
|                                |      |                       |
|--------------------------------|------|-----------------------|
| Optical Mag.                   |      | 2.0x ±5 %             |
| FOV(VxH)                       | 2/3" | —                     |
|                                | 1/2" | 2.4 x 3.2 mm          |
|                                | 1/3" | 1.8 x 2.4 mm          |
| WD                             |      | 39.5 mm ±1            |
| O/I (Object & Imager Distance) |      | 96.0 mm               |
| Working F/#                    |      | 15.0                  |
| NA                             |      | 0.067                 |
| DOF at PCoC φ0.04mm            |      | 0.3 mm                |
| TV Distortion (1/2")           |      | 0.00 %                |
| Relative Illuminance (Y=4)     |      | 84 %                  |
| Wavelength                     |      | Visible               |
| Mount                          |      | C-Mount               |
| Flange Back                    |      | 17.526 mm             |
| Sensor Size (max.)             |      | 1/2"                  |
| Co-Axial Prism                 |      | Built-in              |
| Weight (approx.)               |      | 35 g                  |
| Dimension                      |      | φ31(max.) x L = 39 mm |

VS-TC3-40-LD



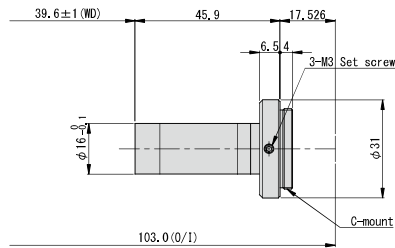
|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 3.0x ±5 %               |
| FOV(VxH)                       | 2/3" | —                       |
|                                | 1/2" | 1.6 x 2.1 mm            |
|                                | 1/3" | 1.2 x 1.6 mm            |
| WD                             |      | 37.2 mm ±1              |
| O/I (Object & Imager Distance) |      | 107.9 mm                |
| Working F/#                    |      | 23.5                    |
| NA                             |      | 0.064                   |
| DOF at PCoC φ0.04mm            |      | 0.2 mm                  |
| TV Distortion (1/2")           |      | 0.00 %                  |
| Relative Illuminance (Y=4)     |      | 100 %                   |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17.526 mm               |
| Sensor Size (max.)             |      | 1/2"                    |
| Co-Axial Prism                 |      | —                       |
| Weight (approx.)               |      | 33 g                    |
| Dimension                      |      | φ31(max.) x L = 53.2 mm |

VS-TC3-40CO-LD



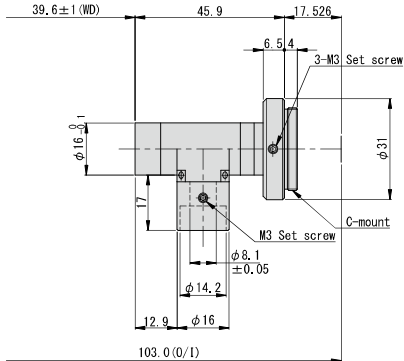
|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 3.0x ±5 %               |
| FOV(VxH)                       | 2/3" | —                       |
|                                | 1/2" | 1.6 x 2.1 mm            |
|                                | 1/3" | 1.2 x 1.6 mm            |
| WD                             |      | 37.2 mm ±1              |
| O/I (Object & Imager Distance) |      | 107.9 mm                |
| Working F/#                    |      | 23.5                    |
| NA                             |      | 0.064                   |
| DOF at PCoC φ0.04mm            |      | 0.2 mm                  |
| TV Distortion (1/2")           |      | 0.00 %                  |
| Relative Illuminance (Y=4)     |      | 100 %                   |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17.526 mm               |
| Sensor Size (max.)             |      | 1/2"                    |
| Co-Axial Prism                 |      | Built-in                |
| Weight (approx.)               |      | 39 g                    |
| Dimension                      |      | φ31(max.) x L = 53.2 mm |

VS-TC4-40



|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 4.0x ±5 %               |
| FOV(VxH)                       | 2/3" | —                       |
|                                | 1/2" | 1.2 x 1.6 mm            |
|                                | 1/3" | 0.9 x 1.2 mm            |
| WD                             |      | 39.6 mm ±1              |
| O/I (Object & Imager Distance) |      | 103.0 mm                |
| Working F/#                    |      | 29.4                    |
| NA                             |      | 0.068                   |
| DOF at PCoC φ0.04mm            |      | 0.1 mm                  |
| TV Distortion (1/2")           |      | 0.00 %                  |
| Relative Illuminance (Y=4)     |      | 100 %                   |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17.526 mm               |
| Sensor Size (max.)             |      | 1/2"                    |
| Co-Axial Prism                 |      | —                       |
| Weight (approx.)               |      | 31 g                    |
| Dimension                      |      | φ31(max.) x L = 45.9 mm |

VS-TC4-40CO



|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 4.0x ±5 %               |
| FOV(VxH)                       | 2/3" | —                       |
|                                | 1/2" | 1.2 x 1.6 mm            |
|                                | 1/3" | 0.9 x 1.2 mm            |
| WD                             |      | 39.6 mm ±1              |
| O/I (Object & Imager Distance) |      | 103.0 mm                |
| Working F/#                    |      | 29.4                    |
| NA                             |      | 0.068                   |
| DOF at PCoC φ0.04mm            |      | 0.1 mm                  |
| TV Distortion (1/2")           |      | 0.00 %                  |
| Relative Illuminance (Y=4)     |      | 100 %                   |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17.526 mm               |
| Sensor Size (max.)             |      | 1/2"                    |
| Co-Axial Prism                 |      | Built-in                |
| Weight (approx.)               |      | 38 g                    |
| Dimension                      |      | φ31(max.) x L = 45.9 mm |

WD:65-70mm Series

|                                |      |                          |            |
|--------------------------------|------|--------------------------|------------|
| VS-TC08-65                     |      | Optical Mag.             | 0.8x ± 5 % |
| FOV(VxH)                       | 2/3" | —                        |            |
|                                | 1/2" | 6.0 x 8.0 mm             |            |
|                                | 1/3" | 4.5 x 6.0 mm             |            |
| WD                             |      | 65.4 mm ± 2              |            |
| O/I (Object & Imager Distance) |      | 182.5 mm                 |            |
| Working F/#                    |      | 10.0                     |            |
| NA                             |      | 0.040                    |            |
| DOF at PCoC Ø0.04mm            |      | 1.3 mm                   |            |
| TV Distortion (1/2")           |      | 0.05 %                   |            |
| Relative Illuminance (Y=4)     |      | 100 %                    |            |
| Wavelength                     |      | Visible                  |            |
| Mount                          |      | C-Mount                  |            |
| Flange Back                    |      | 17.526 mm                |            |
| Sensor Size (max.)             |      | 1/2"                     |            |
| Co-Axial Prism                 |      | —                        |            |
| Weight (approx.)               |      | 72 g                     |            |
| Dimension                      |      | ø31 (max.) x L = 99.6 mm |            |

|                                |      |                          |            |
|--------------------------------|------|--------------------------|------------|
| VS-TC1-65-16                   |      | Optical Mag.             | 1.0x ± 5 % |
| FOV(VxH)                       | 2/3" | —                        |            |
|                                | 1/2" | 4.8 x 6.4 mm             |            |
|                                | 1/3" | 3.6 x 4.8 mm             |            |
| WD                             |      | 65.9 mm ± 2              |            |
| O/I (Object & Imager Distance) |      | 178.8 mm                 |            |
| Working F/#                    |      | 14.2                     |            |
| NA                             |      | 0.035                    |            |
| DOF at PCoC Ø0.04mm            |      | 1.1 mm                   |            |
| TV Distortion (1/2")           |      | 0.10 %                   |            |
| Relative Illuminance (Y=4)     |      | 90 %                     |            |
| Wavelength                     |      | Visible                  |            |
| Mount                          |      | C-Mount                  |            |
| Flange Back                    |      | 17.526 mm                |            |
| Sensor Size (max.)             |      | 1/2"                     |            |
| Co-Axial Prism                 |      | —                        |            |
| Weight (approx.)               |      | 48 g                     |            |
| Dimension                      |      | ø31 (max.) x L = 95.4 mm |            |

|                                |      |                        |            |
|--------------------------------|------|------------------------|------------|
| VS-TC1.5-70                    |      | Optical Mag.           | 1.5x ± 5 % |
| FOV(VxH)                       | 2/3" | 4.7 x 5.6 mm           |            |
|                                | 1/2" | 3.2 x 4.3 mm           |            |
|                                | 1/3" | 2.4 x 3.2 mm           |            |
| WD                             |      | 69.5 mm ± 2            |            |
| O/I (Object & Imager Distance) |      | 150.0 mm               |            |
| Working F/#                    |      | 15.6                   |            |
| NA                             |      | 0.048                  |            |
| DOF at PCoC Ø0.04mm            |      | 0.6 mm                 |            |
| TV Distortion (2/3")           |      | 0.10 %                 |            |
| Relative Illuminance (Y=5.5)   |      | 90 %                   |            |
| Wavelength                     |      | Visible                |            |
| Mount                          |      | C-Mount                |            |
| Flange Back                    |      | 17.526 mm              |            |
| Sensor Size (max.)             |      | 2/3"                   |            |
| Co-Axial Prism                 |      | —                      |            |
| Weight (approx.)               |      | 37 g                   |            |
| Dimension                      |      | ø31 (max.) x L = 63 mm |            |

|                                |      |                          |            |
|--------------------------------|------|--------------------------|------------|
| VS-TC2-65                      |      | Optical Mag.             | 2.0x ± 5 % |
| FOV(VxH)                       | 2/3" | 3.6 x 4.2 mm             |            |
|                                | 1/2" | 2.4 x 3.2 mm             |            |
|                                | 1/3" | 1.8 x 2.4 mm             |            |
| WD                             |      | 66.7 mm ± 2              |            |
| O/I (Object & Imager Distance) |      | 147.7 mm                 |            |
| Working F/#                    |      | 15.6                     |            |
| NA                             |      | 0.064                    |            |
| DOF at PCoC Ø0.04mm            |      | 0.3 mm                   |            |
| TV Distortion (2/3")           |      | 0.04 %                   |            |
| Relative Illuminance (Y=5.5)   |      | 90 %                     |            |
| Wavelength                     |      | Visible                  |            |
| Mount                          |      | C-Mount                  |            |
| Flange Back                    |      | 17.526 mm                |            |
| Sensor Size (max.)             |      | 2/3"                     |            |
| Co-Axial Prism                 |      | —                        |            |
| Weight (approx.)               |      | 40 g                     |            |
| Dimension                      |      | ø31 (max.) x L = 63.5 mm |            |

|                                |      |                          |            |
|--------------------------------|------|--------------------------|------------|
| VS-TC3-65                      |      | Optical Mag.             | 3.0x ± 5 % |
| FOV(VxH)                       | 2/3" | 2.4 x 2.8 mm             |            |
|                                | 1/2" | 1.6 x 2.1 mm             |            |
|                                | 1/3" | 1.2 x 1.6 mm             |            |
| WD                             |      | 65.3 mm ± 2              |            |
| O/I (Object & Imager Distance) |      | 142.1 mm                 |            |
| Working F/#                    |      | 22.0                     |            |
| NA                             |      | 0.068                    |            |
| DOF at PCoC Ø0.04mm            |      | 0.2 mm                   |            |
| TV Distortion (2/3")           |      | 0.04 %                   |            |
| Relative Illuminance (Y=5.5)   |      | 98 %                     |            |
| Wavelength                     |      | Visible                  |            |
| Mount                          |      | C-Mount                  |            |
| Flange Back                    |      | 17.526 mm                |            |
| Sensor Size (max.)             |      | 2/3"                     |            |
| Co-Axial Prism                 |      | —                        |            |
| Weight (approx.)               |      | 38 g                     |            |
| Dimension                      |      | ø31 (max.) x L = 59.3 mm |            |

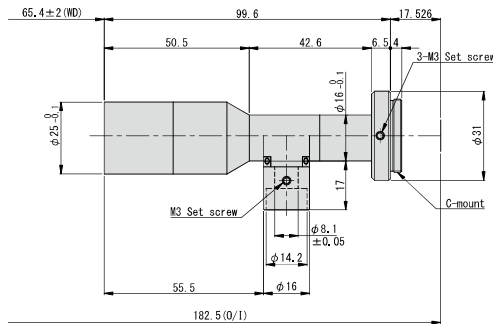
|                                |      |                        |            |
|--------------------------------|------|------------------------|------------|
| VS-TC4-65                      |      | Optical Mag.           | 4.0x ± 5 % |
| FOV(VxH)                       | 2/3" | 1.8 x 2.1 mm           |            |
|                                | 1/2" | 1.2 x 1.6 mm           |            |
|                                | 1/3" | 0.9 x 1.2 mm           |            |
| WD                             |      | 64.5 mm ± 2            |            |
| O/I (Object & Imager Distance) |      | 150.0 mm               |            |
| Working F/#                    |      | 29.1                   |            |
| NA                             |      | 0.069                  |            |
| DOF at PCoC Ø0.04mm            |      | 0.1 mm                 |            |
| TV Distortion (2/3")           |      | -0.01 %                |            |
| Relative Illuminance (Y=5.5)   |      | 100 %                  |            |
| Wavelength                     |      | Visible                |            |
| Mount                          |      | C-Mount                |            |
| Flange Back                    |      | 17.526 mm              |            |
| Sensor Size (max.)             |      | 2/3"                   |            |
| Co-Axial Prism                 |      | —                      |            |
| Weight (approx.)               |      | 38 g                   |            |
| Dimension                      |      | ø31 (max.) x L = 68 mm |            |

|                                |      |                          |            |
|--------------------------------|------|--------------------------|------------|
| VS-TC5-65                      |      | Optical Mag.             | 5.0x ± 5 % |
| FOV(VxH)                       | 2/3" | 1.4 x 1.7 mm             |            |
|                                | 1/2" | 1.0 x 1.3 mm             |            |
|                                | 1/3" | 0.7 x 1.0 mm             |            |
| WD                             |      | 64.5 mm ± 2              |            |
| O/I (Object & Imager Distance) |      | 155.3 mm                 |            |
| Working F/#                    |      | 36.2                     |            |
| NA                             |      | 0.069                    |            |
| DOF at PCoC Ø0.04mm            |      | 0.1 mm                   |            |
| TV Distortion (2/3")           |      | 0.00 %                   |            |
| Relative Illuminance (Y=5.5)   |      | 100 %                    |            |
| Wavelength                     |      | Visible                  |            |
| Mount                          |      | C-Mount                  |            |
| Flange Back                    |      | 17.526 mm                |            |
| Sensor Size (max.)             |      | 2/3"                     |            |
| Co-Axial Prism                 |      | —                        |            |
| Weight (approx.)               |      | 41 g                     |            |
| Dimension                      |      | ø31 (max.) x L = 73.3 mm |            |

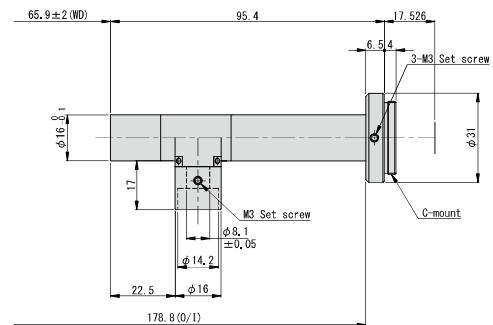
|                                |      |                          |            |
|--------------------------------|------|--------------------------|------------|
| VS-TC6-65                      |      | Optical Mag.             | 6.0x ± 5 % |
| FOV(VxH)                       | 2/3" | 1.2 x 1.4 mm             |            |
|                                | 1/2" | 0.8 x 1.1 mm             |            |
|                                | 1/3" | 0.6 x 0.8 mm             |            |
| WD                             |      | 64.3 mm ± 2              |            |
| O/I (Object & Imager Distance) |      | 162.5 mm                 |            |
| Working F/#                    |      | 43.1                     |            |
| NA                             |      | 0.070                    |            |
| DOF at PCoC Ø0.04mm            |      | 0.1 mm                   |            |
| TV Distortion (2/3")           |      | 0.00 %                   |            |
| Relative Illuminance (Y=5.5)   |      | 100 %                    |            |
| Wavelength                     |      | Visible                  |            |
| Mount                          |      | C-Mount                  |            |
| Flange Back                    |      | 17.526 mm                |            |
| Sensor Size (max.)             |      | 2/3"                     |            |
| Co-Axial Prism                 |      | —                        |            |
| Weight (approx.)               |      | 43 g                     |            |
| Dimension                      |      | ø31 (max.) x L = 80.7 mm |            |

|                                |      |                          |            |
|--------------------------------|------|--------------------------|------------|
| VS-TC8-65                      |      | Optical Mag.             | 8.0x ± 5 % |
| FOV(VxH)                       | 2/3" | 0.9 x 1.1 mm             |            |
|                                | 1/2" | 0.6 x 0.8 mm             |            |
|                                | 1/3" | 0.5 x 0.6 mm             |            |
| WD                             |      | 64.0 mm ± 2              |            |
| O/I (Object & Imager Distance) |      | 177.0 mm                 |            |
| Working F/#                    |      | 57.1                     |            |
| NA                             |      | 0.070                    |            |
| DOF at PCoC Ø0.04mm            |      | 0.07 mm                  |            |
| TV Distortion (2/3")           |      | 0.00 %                   |            |
| Relative Illuminance (Y=5.5)   |      | 100 %                    |            |
| Wavelength                     |      | Visible                  |            |
| Mount                          |      | C-Mount                  |            |
| Flange Back                    |      | 17.526 mm                |            |
| Sensor Size (max.)             |      | 2/3"                     |            |
| Co-Axial Prism                 |      | —                        |            |
| Weight (approx.)               |      | 48 g                     |            |
| Dimension                      |      | ø31 (max.) x L = 95.5 mm |            |

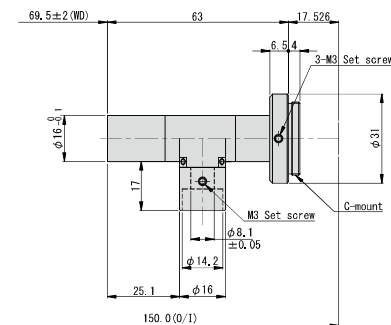
|                                |      |                           |             |
|--------------------------------|------|---------------------------|-------------|
| VS-TC10-65                     |      | Optical Mag.              | 10.0x ± 5 % |
| FOV(VxH)                       | 2/3" | 0.7 x 0.8 mm              |             |
|                                | 1/2" | 0.5 x 0.6 mm              |             |
|                                | 1/3" | 0.4 x 0.5 mm              |             |
| WD                             |      | 64.8 mm ± 2               |             |
| O/I (Object & Imager Distance) |      | 192.7 mm                  |             |
| Working F/#                    |      | 73.2                      |             |
| NA                             |      | 0.068                     |             |
| DOF at PCoC Ø0.04mm            |      | 0.06 mm                   |             |
| TV Distortion (2/3")           |      | 0.00 %                    |             |
| Relative Illuminance (Y=5.5)   |      | 100 %                     |             |
| Wavelength                     |      | Visible                   |             |
| Mount                          |      | C-Mount                   |             |
| Flange Back                    |      | 17.526 mm                 |             |
| Sensor Size (max.)             |      | 2/3"                      |             |
| Co-Axial Prism                 |      | —                         |             |
| Weight (approx.)               |      | 54 g                      |             |
| Dimension                      |      | ø31 (max.) x L = 110.4 mm |             |

**VS-TC08-65CO**

|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 0.8x $\pm$ 5 %                 |
|                                | 2/3" | —                              |
| FOV(VxH)                       | 1/2" | 6.0 x 8.0 mm                   |
|                                | 1/3" | 4.5 x 6.0 mm                   |
| WD                             |      | 65,4 mm $\pm$ 2                |
| O/I (Object & Imager Distance) |      | 182,5 mm                       |
| Working F/#                    |      | 10.0                           |
| NA                             |      | 0.040                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 1.3 mm                         |
| TV Distortion (1/2")           |      | 0,05 %                         |
| Relative Illuminance (Y=4)     |      | 100 %                          |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17,526 mm                      |
| Sensor Size (max.)             |      | 1/2"                           |
| Co-Axial Prism                 |      | Built-in                       |
| Weight (approx.)               |      | 78 g                           |
| Dimension                      |      | $\phi$ 31 (max.) x L = 99,6 mm |

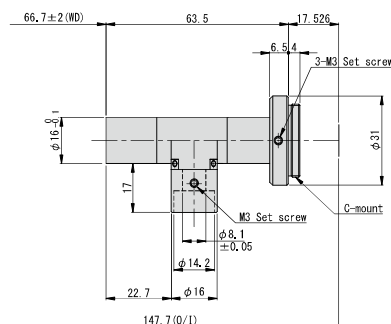
**VS-TC1-65CO-16**

|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   | 2/3" | 1.0x ± 5 %                     |
| FOV(VxH)                       | 1/2" | 4.8 x 6.4 mm                   |
|                                | 1/3" | 3.6 x 4.8 mm                   |
| WD                             |      | 65.9 mm ± 2                    |
| O/I (Object & Imager Distance) |      | 178.8 mm                       |
| Working F/#                    |      | 14.2                           |
| NA                             |      | 0,035                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 1.1 mm                         |
| TV Distortion (1/2")           |      | 0.10 %                         |
| Relative Illuminance (Y=4)     |      | 90 %                           |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17526 mm                       |
| Sensor Size (max.)             |      | 1/2"                           |
| Co-Axial Prism                 |      | Built-in                       |
| Weight (approx.)               |      | 56 g                           |
| Dimension                      |      | $\phi$ 31 (max.) x L = 95.4 mm |

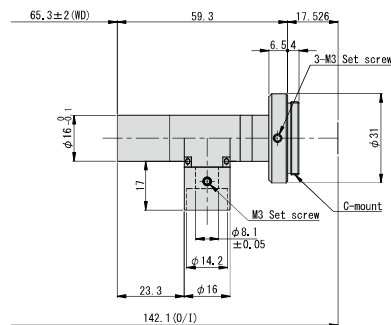
**VS-TC1.5-70CO**

|                                |      |                        |
|--------------------------------|------|------------------------|
| Optical Mag.                   |      | 1.5x ± 5 %             |
|                                | 2/3" | 4.7 x 5.6 mm           |
| FOV(VxH)                       | 1/2" | 3.2 x 4.3 mm           |
|                                | 1/3" | 2.4 x 3.2 mm           |
| WD                             |      | 69.5 mm ± 2            |
| O/I (Object & Imager Distance) |      | 150.0 mm               |
| Working F/#                    |      | 15.6                   |
| NA                             |      | 0.048                  |
| DOF at PCoC Ø0.04mm            |      | 0.6 mm                 |
| TV Distortion (2/3")           |      | 0.10 %                 |
| Relative Illuminance (Y=5,5)   |      | 90 %                   |
| Wavelength                     |      | Visible                |
| Mount                          |      | C-Mount                |
| Flange Back                    |      | 17,526 mm              |
| Sensor Size (max.)             |      | 2/3"                   |
| Co-Axial Prism                 |      | Built-in               |
| Weight (approx.)               |      | 44 g                   |
| Dimension                      |      | Ø31 (max.) x L = 63 mm |

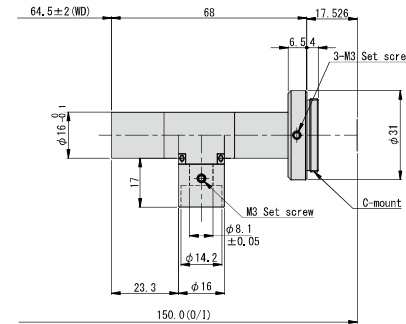
## VS-TC2-65CO



|                                |      |                               |
|--------------------------------|------|-------------------------------|
| Optical Mag.                   |      | 2.0x $\pm$ 5 %                |
|                                | 2/3" | 3.6 x 4.2 mm                  |
| FOV(VxH)                       | 1/2" | 2.4 x 3.2 mm                  |
|                                | 1/3" | 1.8 x 2.4 mm                  |
| WD                             |      | 66.7 mm $\pm$ 2               |
| O/I (Object & Imager Distance) |      | 147.7 mm                      |
| Working F/#                    |      | 15.6                          |
| NA                             |      | 0.064                         |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.3 mm                        |
| TV Distortion (2/3')           |      | 0.04 %                        |
| Relative Illuminance (Y=5.5)   |      | 90 %                          |
| Wavelength                     |      | Visible                       |
| Mount                          |      | C-Mount                       |
| Flange Back                    |      | 17.526 mm                     |
| Sensor Size (max.)             |      | 2/3"                          |
| Co-Axial Prism                 |      | Built-in                      |
| Weight (approx.)               |      | 46 g                          |
| Dimension                      |      | $\phi$ 31(max.) x L = 63.5 mm |

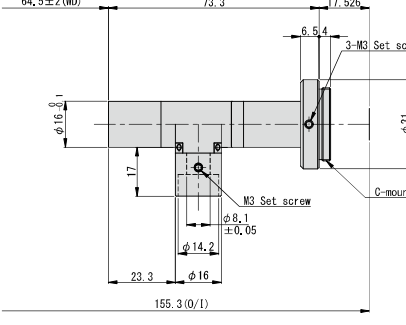
**VS-TC3-65CO**

|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 3.0x ± 5 %              |
|                                | 2/3" | 2.4 x 2.8 mm            |
| FOV(VxH)                       | 1/2" | 1.6 x 2.1 mm            |
|                                | 1/3" | 1.2 x 1.6 mm            |
| WD                             |      | 65.3 mm ± 2             |
| O/I (Object & Imager Distance) |      | 142.1 mm                |
| Working F/#                    |      | 22.0                    |
| NA                             |      | 0.068                   |
| DOF at PCoC Ø0.04mm            |      | 0.2 mm                  |
| TV Distortion (2/3")           |      | 0.04 %                  |
| Relative Illuminance (Y=5.5)   |      | 98 %                    |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17,526 mm               |
| Sensor Size (max.)             |      | 2/3"                    |
| Co-Axial Prism                 |      | Built-in                |
| Weight (approx.)               |      | 42 g                    |
| Dimension                      |      | Ø31(max.) x L = 59.3 mm |

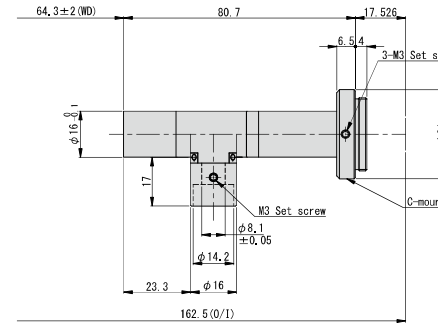
**VS-TC4-65CO**

|                                |      |                                                        |
|--------------------------------|------|--------------------------------------------------------|
| Optical Mag.                   |      | 4.0x $\pm 5\%$                                         |
|                                | 2/3" | 1.8 x 2.1 mm                                           |
| FOV(VxH)                       | 1/2" | 1.2 x 1.6 mm                                           |
|                                | 1/3" | 0.9 x 1.2 mm                                           |
| WD                             |      | 64.5 mm $\pm 2$                                        |
| O/I (Object & Imager Distance) |      | 150,0 mm                                               |
| Working F/#                    |      | 29.1                                                   |
| NA                             |      | 0.069                                                  |
| DOF at PCoC $\phi 0.04$ mm     |      | 0.1 mm                                                 |
| TV Distortion (2/3")           |      | -0,01 %                                                |
| Relative Illuminance (Y=5.5)   |      | 100 %                                                  |
| Wavelength                     |      | Visible                                                |
| Mount                          |      | C-Mount                                                |
| Flange Back                    |      | 17526 mm                                               |
| Sensor Size (max.)             |      | 2/3"                                                   |
| Co-Axial Prism                 |      | Built-in                                               |
| Weight (approx.)               |      | 45 g                                                   |
| Dimension                      |      | $\phi 31(\text{max.}) \times \text{L} = 68 \text{ mm}$ |

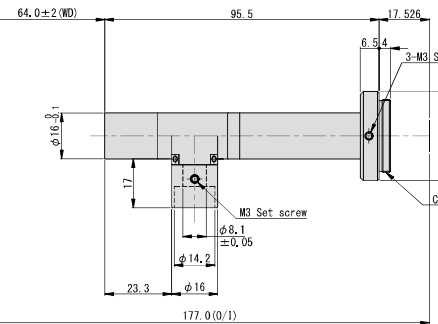
## VS-TC5-65CO



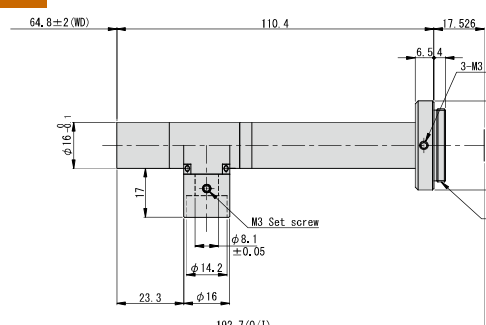
|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 5.0x ± 5 %                     |
|                                | 2/3" | 1.4 x 1.7 mm                   |
| FOV(VxH)                       | 1/2" | 1.0 x 1.3 mm                   |
|                                | 1/3" | 0.7 x 1.0 mm                   |
| WD                             |      | 64.5 mm ± 2                    |
| O/I (Object & Imager Distance) |      | 155.3 mm                       |
| Working F/#                    |      | 36.2                           |
| NA                             |      | 0.069                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.1 mm                         |
| TV Distortion (2/3")           |      | 0.00 %                         |
| Relative Illuminance (Y=5,5)   |      | 100 %                          |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17.526 mm                      |
| Sensor Size (max.)             |      | 2/3"                           |
| Co-Axial Prism                 |      | Built-in                       |
| Weight (approx.)               |      | 47 g                           |
| Dimension                      |      | $\phi 31$ (max.) x L = 73.3 mm |

**VS-TC6-65CO**

|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 6.0x ± 5 %                     |
|                                | 2/3" | 1,2 x 1,4 mm                   |
| FOV(VxH)                       | 1/2" | 0,8 x 1,1 mm                   |
|                                | 1/3" | 0,6 x 0,8 mm                   |
| WD                             |      | 64,3 mm ± 2                    |
| O/I (Object & Imager Distance) |      | 162,5 mm                       |
| Working F/#                    |      | 43,1                           |
| NA                             |      | 0,070                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.1 mm                         |
| TV Distortion (2/3")           |      | 0,00 %                         |
| Relative Illuminance (Y=5,5)   |      | 100 %                          |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17,526 mm                      |
| Sensor Size (max.)             |      | 2/3"                           |
| Co-Axial Prism                 |      | Built-in                       |
| Weight (approx.)               |      | 49 g                           |
| Dimension                      |      | $\phi 31$ (max.) x L = 80,7 mm |

**VS-TC8-65CO**

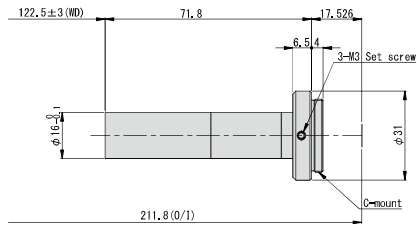
|                                |      |                          |
|--------------------------------|------|--------------------------|
| Optical Mag.                   |      | 8.0x ± 5 %               |
|                                | 2/3" | 0.9 x 1.1 mm             |
| FOV(VxH)                       | 1/2" | 0.6 x 0.8 mm             |
|                                | 1/3" | 0.5 x 0.6 mm             |
| WD                             |      | 64,0 mm ± 2              |
| O/I (Object & Imager Distance) |      | 1770 mm                  |
| Working F/#                    |      | 571                      |
| NA                             |      | 0,070                    |
| DOF at PCoC Ø0,04mm            |      | 0.07 mm                  |
| TV Distortion (2/3")           |      | 0.00 %                   |
| Relative Illuminance (Y=5,5)   |      | 100 %                    |
| Wavelength                     |      | Visible                  |
| Mount                          |      | C-Mount                  |
| Flange Back                    |      | 17526 mm                 |
| Sensor Size (max.)             |      | 2/3"                     |
| Co-Axial Prism                 |      | Built-in                 |
| Weight (approx.)               |      | 54 g                     |
| Dimension                      |      | Ø31 (max.) x L = 95.5 mm |

**VS-TC10-65CO**

|                                |      |                                 |
|--------------------------------|------|---------------------------------|
| Optical Mag.                   |      | 10.0x ± 5 %                     |
|                                | 2/3" | 0.7 x 0.8 mm                    |
| FOV(VxH)                       | 1/2" | 0.5 x 0.6 mm                    |
|                                | 1/3" | 0.4 x 0.5 mm                    |
| WD                             |      | 64.8 mm ± 2                     |
| O/I (Object & Imager Distance) |      | 192.7 mm                        |
| Working F/#                    |      | 73.2                            |
| NA                             |      | 0.068                           |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.06 mm                         |
| TV Distortion (2/3")           |      | 0.00 %                          |
| Relative Illuminance (Y=5,5)   |      | 100 %                           |
| Wavelength                     |      | Visible                         |
| Mount                          |      | C-Mount                         |
| Flange Back                    |      | 17,526 mm                       |
| Sensor Size (max.)             |      | 2/3"                            |
| Co-Axial Prism                 |      | Built-in                        |
| Weight (approx.)               |      | 58 g                            |
| Dimension                      |      | $\phi$ 31 (max.) x L = 110.4 mm |

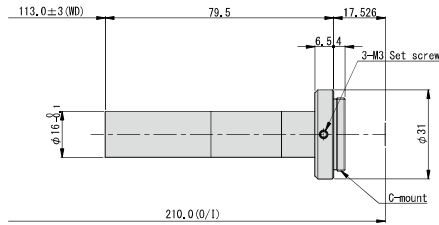


## WD:110-170mm Series

**VS-TC08-120**

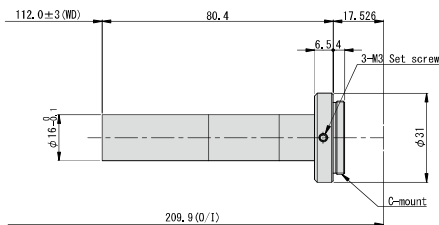
|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   | 2/3" | 0.8x $\pm$ 5%                  |
| FOV(VxH)                       | 1/2" | —                              |
|                                | 1/3" | 6.0 x 8.0 mm                   |
| WD                             |      | 4.5 x 6.0 mm                   |
| O/I (Object & Imager Distance) |      | 122.5 mm $\pm$ 3               |
| Working F/#                    |      | 211.8 mm                       |
| NA                             |      | 18.0                           |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.022                          |
| TV Distortion (1/2")           |      | 2.3 mm                         |
| Relative Illuminance (Y=4)     |      | 0.10 %                         |
| Wavelength                     |      | 90 %                           |
| Mount                          |      | Visible                        |
| Flange Back                    |      | C-Mount                        |
| Sensor Size (max.)             |      | 17.526 mm                      |
| Co-Axial Prism                 |      | 1/2"                           |
| Weight (approx.)               |      | —                              |
| Dimension                      |      | 40 g                           |
|                                |      | $\phi$ 31 (max.) x L = 71.8 mm |

## VS-TC1-110

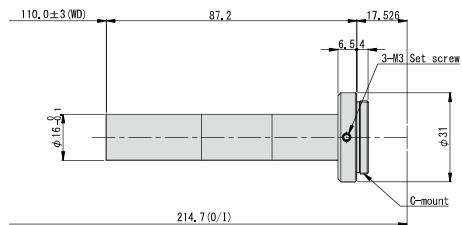


|                                |      |                                                   |
|--------------------------------|------|---------------------------------------------------|
| Optical Mag.                   |      | 1.0x $\pm 5\%$                                    |
|                                | 2/3" | —                                                 |
| FOV(VxH)                       | 1/2" | 4.8 x 6.4 mm                                      |
|                                | 1/3" | 3.6 x 4.8 mm                                      |
| WD                             |      | 113.0 mm $\pm 3$                                  |
| O/I (Object & Imager Distance) |      | 210.0 mm                                          |
| Working F/#                    |      | 20.0                                              |
| NA                             |      | 0.025                                             |
| DOF at PCoC $\phi 0.04$ mm     |      | 1.6 mm                                            |
| TV Distortion (1/2")           |      | 0.00 %                                            |
| Relative Illumination (Y=4)    |      | 97 %                                              |
| Wavelength                     |      | Visible                                           |
| Mount                          |      | C-Mount                                           |
| Flange Back                    |      | 17.526 mm                                         |
| Sensor Size (max.)             |      | 1/2"                                              |
| Co-Axial Prism                 |      | —                                                 |
| Weight (approx.)               |      | 42 g                                              |
| Dimension                      |      | $\phi 31(\text{max.}) \times L = 79.5 \text{ mm}$ |

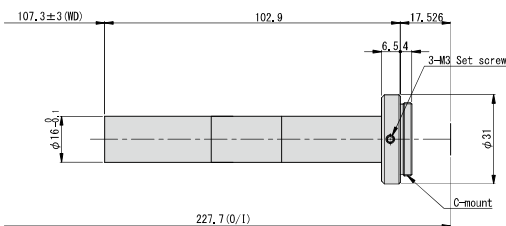
## VS-TC1.5N-110



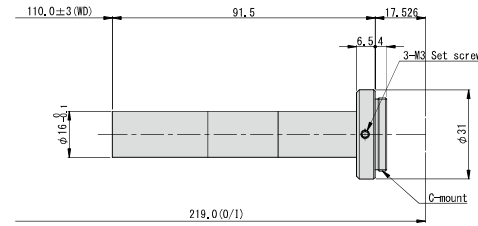
|                                |      |                          |
|--------------------------------|------|--------------------------|
| Optical Mag.                   |      | 1.5x ± 5 %               |
|                                | 2/3" | —                        |
| FOV(VxH)                       | 1/2" | 3.2 x 4.3 mm             |
|                                | 1/3" | 2.4 x 3.2 mm             |
| WD                             |      | 112.0 mm ± 3             |
| O/I (Object & Imager Distance) |      | 209.9 mm                 |
| Working F/#                    |      | 18.8                     |
| NA                             |      | 0.040                    |
| DOF at PCoC 0.04mm             |      | 0.7 mm                   |
| TV Distortion (1/2")           |      | 0.02 %                   |
| Relative Illuminance (Y=4)     |      | 91 %                     |
| Wavelength                     |      | Visible                  |
| Mount                          |      | C-Mount                  |
| Flange Back                    |      | 17526 mm                 |
| Sensor Size (max.)             |      | 1/2"                     |
| Co-Axial Prism                 |      | —                        |
| Weight (approx.)               |      | 42 g                     |
| Dimension                      |      | φ31 (max.) x L = 80.4 mm |

**VS-TC2-110-LD**

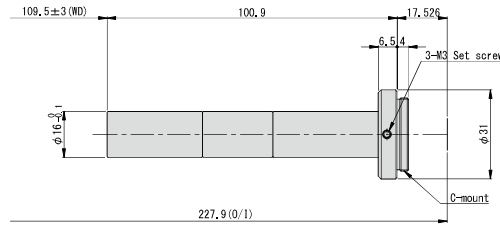
|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   | 2/3" | 2.0x $\pm$ 5 %                 |
|                                |      | —                              |
| FOV(VxH)                       | 1/2" | 2.4 x 3.2 mm                   |
|                                | 1/3" | 1.8 x 2.4 mm                   |
| WD                             |      | 110.0 mm $\pm$ 3               |
| O/I (Object & Imager Distance) |      | 214.7 mm                       |
| Working F/#                    |      | 24.9                           |
| NA                             |      | 0,040                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.5 mm                         |
| TV Distortion (1/2")           |      | 0.00 %                         |
| Relative Illuminance (Y=4)     |      | 100 %                          |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17.526 mm                      |
| Sensor Size (max.)             |      | 1/2"                           |
| Co-Axial Prism                 |      | —                              |
| Weight (approx.)               |      | 46 g                           |
| Dimension                      |      | $\phi$ 31 (max.) x L = 87.2 mm |

**VS-TC3-110**

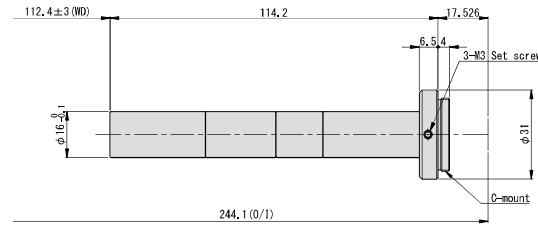
|                                |      |                                 |
|--------------------------------|------|---------------------------------|
| Optical Mag.                   |      | 3.0x $\pm$ 5 %                  |
|                                | 2/3" | 2.4 x 2.8 mm                    |
| FOV(VxH)                       | 1/2" | 1.6 x 2.1 mm                    |
|                                | 1/3" | 1.2 x 1.6 mm                    |
| WD                             |      | 107.3 mm $\pm$ 3                |
| O/I (Object & Imager Distance) |      | 22.77 mm                        |
| Working F/#                    |      | 37.5                            |
| NA                             |      | 0.040                           |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.3 mm                          |
| TV Distortion (2/3")           |      | 0.10 %                          |
| Relative Illuminance (Y=5.5)   |      | 90 %                            |
| Wavelength                     |      | Visible                         |
| Mount                          |      | C-Mount                         |
| Flange Back                    |      | 17,526 mm                       |
| Sensor Size (max.)             |      | 2/3"                            |
| Co-Axial Prism                 |      | —                               |
| Weight (approx.)               |      | 48 g                            |
| Dimension                      |      | $\phi$ 31 (max.) x L = 102.9 mm |

**VS-TC4-110-LD**

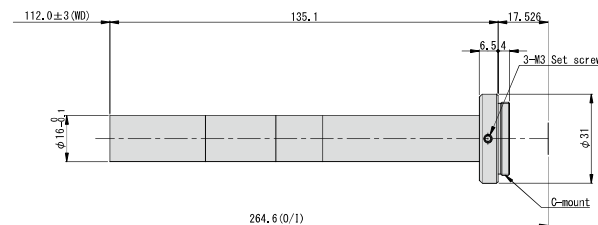
|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 4.0x $\pm 5\%$                 |
|                                | 2/3" | 1.8 x 2.1 mm                   |
| FOV(VxH)                       | 1/2" | 1.2 x 1.6 mm                   |
|                                | 1/3" | 0.9 x 1.2 mm                   |
| WD                             |      | 110,0 mm $\pm 3$               |
| O/I (Object & Imager Distance) |      | 219,0 mm                       |
| Working F/#                    |      | 41.7                           |
| NA                             |      | 0.048                          |
| DOF at PCoC $\phi 0,04$ mm     |      | 0,2 mm                         |
| TV Distortion (2/3")           |      | 0,00 %                         |
| Relative Illuminance (Y=5.5)   |      | 100 %                          |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17526 mm                       |
| Sensor Size (max.)             |      | 2/3"                           |
| Co-Axial Prism                 |      | —                              |
| Weight (approx.)               |      | 49 g                           |
| Dimension                      |      | $\phi 31$ (max.) x L = 91,5 mm |

**VS-TC5-110**

|                                |      |                                 |
|--------------------------------|------|---------------------------------|
| Optical Mag.                   | 2/3" | 5.0x $\pm$ 5 %                  |
| FOV(VxH)                       | 1/2" | —                               |
|                                | 1/3" | 1.0 x 1.3 mm                    |
|                                |      | 0.7 x 1.0 mm                    |
| WD                             |      | 109.5 mm $\pm$ 3                |
| O/I (Object & Imager Distance) |      | 227.9 mm                        |
| Working F/#                    |      | 51.8                            |
| NA                             |      | 0.048                           |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.2 mm                          |
| TV Distortion (1/2")           |      | 0.00 %                          |
| Relative Illuminance (Y=4)     |      | 100 %                           |
| Wavelength                     |      | Visible                         |
| Mount                          |      | C-Mount                         |
| Flange Back                    |      | 17.526 mm                       |
| Sensor Size (max.)             |      | 1/2"                            |
| Co-Axial Prism                 |      | —                               |
| Weight (approx.)               |      | 52 g                            |
| Dimension                      |      | $\phi$ 31 (max.) x L = 100.9 mm |

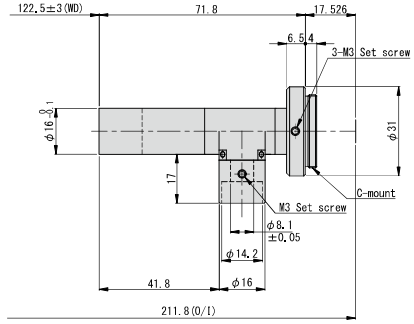
**VS-TC6-110-LD**

|                                |      |                                 |
|--------------------------------|------|---------------------------------|
| Optical Mag.                   |      | 6.0x ± 5 %                      |
|                                | 2/3" | 1,2 x 1,4 mm                    |
| FOV(VxH)                       | 1/2" | 0.8 x 1,1 mm                    |
|                                | 1/3" | 0.6 x 0.8 mm                    |
| WD                             |      | 112,4 mm ± 3                    |
| O/I (Object & Imager Distance) |      | 244,1 mm                        |
| Working F/#                    |      | 673                             |
| NA                             |      | 0,045                           |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.1 mm                          |
| TV Distortion (2/3")           |      | 0,00 %                          |
| Relative Illuminance (Y=5.5)   |      | 100 %                           |
| Wavelength                     |      | Visible                         |
| Mount                          |      | C-Mount                         |
| Flange Back                    |      | 17,526 mm                       |
| Sensor Size (max.)             |      | 2/3"                            |
| Co-Axial Prism                 |      | —                               |
| Weight (approx.)               |      | 54 g                            |
| Dimension                      |      | $\phi 31$ (max.) x L = 114,2 mm |

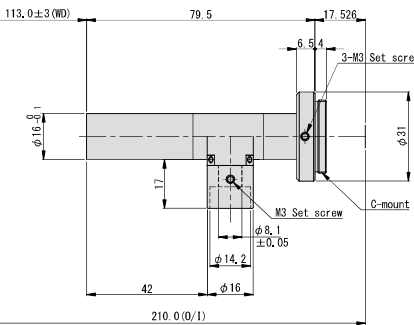
**VS-TC8-110-LD**

|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 8.0x ± 5 %                     |
|                                | 2/3" | 0.9 x 1.1 mm                   |
| FOV(VxH)                       | 1/2" | 0.6 x 0.8 mm                   |
|                                | 1/3" | 0.5 x 0.6 mm                   |
| WD                             |      | 112.0 mm ± 3                   |
| O/I (Object & Imager Distance) |      | 264.6 mm                       |
| Working F/#                    |      | 89.3                           |
| NA                             |      | 0,045                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.1 mm                         |
| TV Distortion (2/3")           |      | 0.00 %                         |
| Relative Illuminance (Y=5.5)   |      | 100 %                          |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17,526 mm                      |
| Sensor Size (max.)             |      | 2/3"                           |
| Co-Axial Prism                 |      | —                              |
| Weight (approx.)               |      | 60 g                           |
| Dimension                      |      | $\phi$ 31(max.) x L = 135.1 mm |

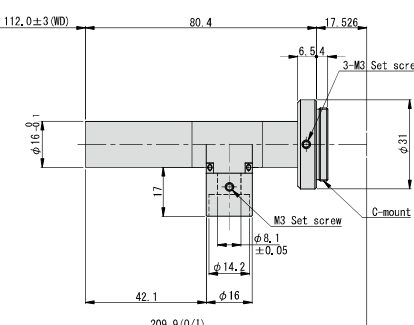
# VS-TC08-120CO



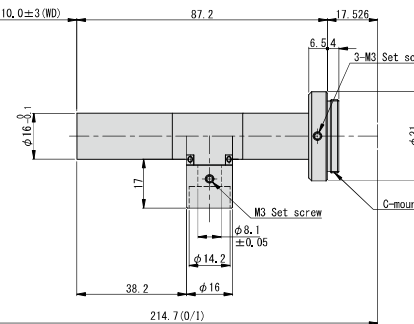
|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 0.8x ± 5 %              |
|                                | 2/3" | —                       |
| FOV(VxH)                       | 1/2" | 6.0 x 8.0 mm            |
|                                | 1/3" | 4.5 x 6.0 mm            |
| WD                             |      | 122,5 mm ± 3            |
| O/I (Object & Imager Distance) |      | 211,8 mm                |
| Working F/#                    |      | 18.0                    |
| NA                             |      | 0.022                   |
| DOF at PCoC Ø0.04mm            |      | 2.3 mm                  |
| TV Distortion (1/2")           |      | 0,10 %                  |
| Relative Illuminance (Y=4)     |      | 90 %                    |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17,526 mm               |
| Sensor Size (max.)             |      | 1/2"                    |
| Co-Axial Prism                 |      | Built-in                |
| Weight (approx.)               |      | 46 g                    |
| Dimension                      |      | Ø31(max.) x L = 71,8 mm |

**VS-TC1-110CO**

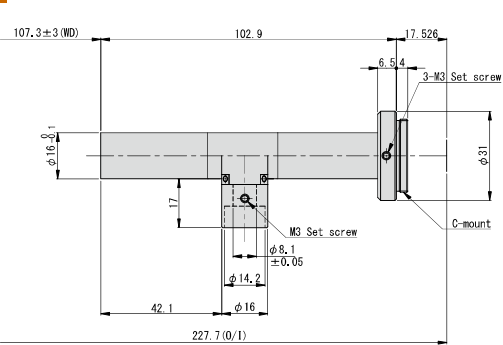
|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 1.0x $\pm$ 5 %                 |
|                                | 2/3" | —                              |
| FOV(VxH)                       | 1/2" | 4.8 x 6.4 mm                   |
|                                | 1/3" | 3.6 x 4.8 mm                   |
| WD                             |      | 113.0 mm $\pm$ 3               |
| O/I (Object & Imager Distance) |      | 210.0 mm                       |
| Working F/#                    |      | 20.0                           |
| NA                             |      | 0.025                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 1.6 mm                         |
| TV Distortion (1/2")           |      | 0.00 %                         |
| Relative Illuminance (Y=4)     |      | 97 %                           |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17.526 mm                      |
| Sensor Size (max.)             |      | 1/2"                           |
| Co-Axial Prism                 |      | Built-in                       |
| Weight (approx.)               |      | 48 g                           |
| Dimension                      |      | $\phi$ 31 (max.) x L = 79.5 mm |

**VS-TC1.5N-110CO**

|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 1.5x $\pm$ 5 %                 |
|                                | 2/3" | —                              |
| FOV(VxH)                       | 1/2" | 3,2 x 4,3 mm                   |
|                                | 1/3" | 2,4 x 3,2 mm                   |
| WD                             |      | 112,0 mm $\pm$ 3               |
| O/I (Object & Imager Distance) |      | 209,9 mm                       |
| Working F/#                    |      | 18,8                           |
| NA                             |      | 0,040                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 0,7 mm                         |
| TV Distortion (1/2")           |      | 0,02 %                         |
| Relative Illuminance (Y=4)     |      | 91 %                           |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17,526 mm                      |
| Sensor Size (max.)             |      | 1/2"                           |
| Co-Axial Prism                 |      | Built-in                       |
| Weight (approx.)               |      | 49 g                           |
| Dimension                      |      | $\phi$ 31 (max.) x L = 80,4 mm |

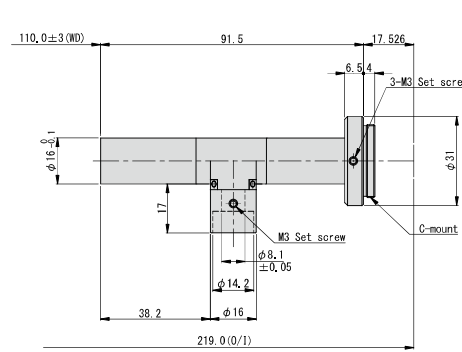
**VS-TC2-110CO-LD**

|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 2.0x $\pm$ 5 %                 |
|                                | 2/3" | —                              |
| FOV(VxH)                       | 1/2" | 2.4 x 3.2 mm                   |
|                                | 1/3" | 1.8 x 2.4 mm                   |
| WD                             |      | 110,0 mm $\pm$ 3               |
| O/I (Object & Imager Distance) |      | 214.7 mm                       |
| Working F/#                    |      | 24.9                           |
| NA                             |      | 0,040                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.5 mm                         |
| TV Distortion (1/2")           |      | 0.00 %                         |
| Relative Illuminance (Y=4)     |      | 100 %                          |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17.526 mm                      |
| Sensor Size (max.)             |      | 1/2"                           |
| Co-Axial Prism                 |      | Built-in                       |
| Weight (approx.)               |      | 52 g                           |
| Dimension                      |      | $\phi$ 31 (max.) x L = 87.2 mm |

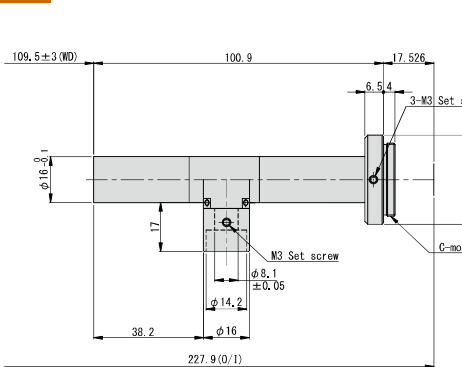
**VS-TC3-110CO**

|                                |      |                                 |
|--------------------------------|------|---------------------------------|
| Optical Mag.                   | 2/3" | 3.0x $\pm 5\%$                  |
|                                |      | 2.4 x 2.8 mm                    |
| FOV(VxH)                       | 1/2" | 1.6 x 2.1 mm                    |
|                                | 1/3" | 1.2 x 1.6 mm                    |
| WD                             |      | 107.3 mm $\pm 3$                |
| O/I (Object & Imager Distance) |      | 227.7 mm                        |
| Working F/#                    |      | 37.5                            |
| NA                             |      | 0.040                           |
| DOF at PCoC $\phi 0.04$ mm     |      | 0.3 mm                          |
| TV Distortion (2/3")           |      | 0.10 %                          |
| Relative Illuminance (Y=5.5)   |      | 90 %                            |
| Wavelength                     |      | Visible                         |
| Mount                          |      | C-Mount                         |
| Flange Back                    |      | 17.526 mm                       |
| Sensor Size (max.)             |      | 2/3"                            |
| Co-Axial Prism                 |      | Built-in                        |
| Weight (approx.)               |      | 56 g                            |
| Dimension                      |      | $\phi 31$ (max.) x L = 102.9 mm |

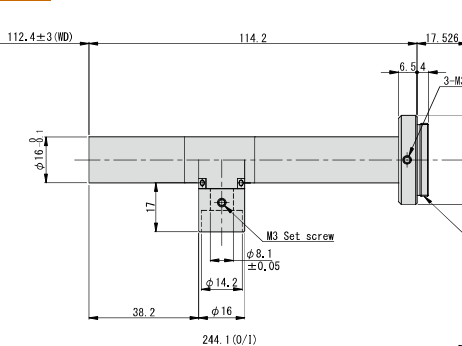
## VS-TC4-110CO-LD



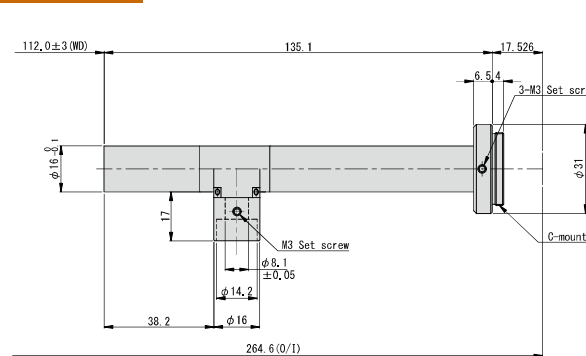
|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 4.0x $\pm$ 5 %                 |
|                                | 2/3" | 1.8 x 2.1 mm                   |
| FOV(VxH)                       | 1/2" | 1.2 x 1.6 mm                   |
|                                | 1/3" | 0.9 x 1.2 mm                   |
| WD                             |      | 110,0 mm $\pm$ 3               |
| O/I (Object & Imager Distance) |      | 219,0 mm                       |
| Working F/#                    |      | 41.7                           |
| NA                             |      | 0.048                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.2 mm                         |
| TV Distortion (2/3")           |      | 0,00 %                         |
| Relative Illuminance (Y=5.5)   |      | 100 %                          |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17526 mm                       |
| Sensor Size (max.)             |      | 2/3"                           |
| Co-Axial Prism                 |      | Built-in                       |
| Weight (approx.)               |      | 54 g                           |
| Dimension                      |      | $\phi$ 31 (max.) x L = 91,5 mm |

**VS-TC5-110CO**

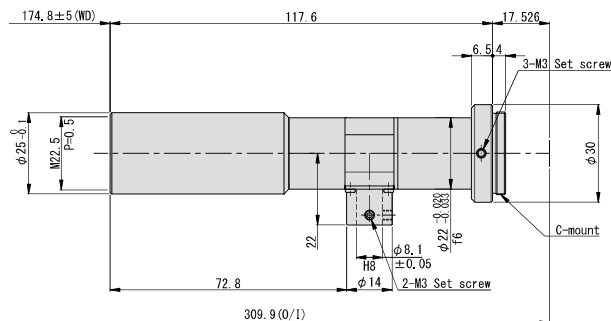
|                                |      |                                 |
|--------------------------------|------|---------------------------------|
| Optical Mag.                   |      | 5.0x $\pm$ 5%                   |
|                                | 2/3" | —                               |
| FOV(VxH)                       | 1/2" | 1.0 x 1.3 mm                    |
|                                | 1/3" | 0.7 x 1.0 mm                    |
| WD                             |      | 109.5 mm $\pm$ 3                |
| O/I (Object & Imager Distance) |      | 227.9 mm                        |
| Working F/#                    |      | 51.8                            |
| NA                             |      | 0,048                           |
| DOF at PCoC $\phi$ 0,04mm      |      | 0,2 mm                          |
| TV Distortion (1/2")           |      | 0.00 %                          |
| Relative Illuminance (Y=4)     |      | 100 %                           |
| Wavelength                     |      | Visible                         |
| Mount                          |      | C-Mount                         |
| Flange Back                    |      | 17526 mm                        |
| Sensor Size (max.)             |      | 1/2"                            |
| Co-Axial Prism                 |      | Built-in                        |
| Weight (approx.)               |      | 58 g                            |
| Dimension                      |      | $\phi$ 31 (max.) x L = 100.9 mm |

**VS-TC6-110CO-LD**

|                                |      |                                 |
|--------------------------------|------|---------------------------------|
| Optical Mag.                   |      | 6.0x $\pm$ 5 %                  |
|                                | 2/3" | 1.2 x 1.4 mm                    |
| FOV(VxH)                       | 1/2" | 0.8 x 1.1 mm                    |
|                                | 1/3" | 0.6 x 0.8 mm                    |
| WD                             |      | 112.4 mm $\pm$ 3                |
| O/I (Object & Imager Distance) |      | 244.1 mm                        |
| Working F/#                    |      | 67.3                            |
| NA                             |      | 0.045                           |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.1 mm                          |
| TV Distortion (2/3")           |      | 0.00 %                          |
| Relative Illuminance (Y=5,5)   |      | 100 %                           |
| Wavelength                     |      | Visible                         |
| Mount                          |      | C-Mount                         |
| Flange Back                    |      | 17,526 mm                       |
| Sensor Size (max.)             |      | 2/3"                            |
| Co-Axial Prism                 |      | Built-in                        |
| Weight (approx.)               |      | 60 g                            |
| Dimension                      |      | $\phi$ 31 (max.) x L = 114.2 mm |

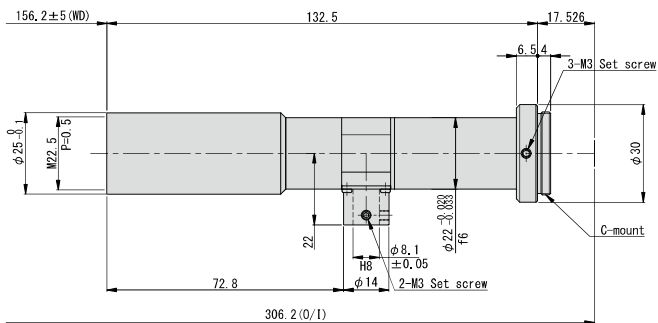
**VS-TC8-110CO-LD**

|                                |      |                                 |
|--------------------------------|------|---------------------------------|
| Optical Mag.                   |      | 8.0x $\pm$ 5 %                  |
|                                | 2/3" | 0.9 x 1.1 mm                    |
| FOV(VxH)                       | 1/2" | 0.6 x 0.8 mm                    |
|                                | 1/3" | 0.5 x 0.6 mm                    |
| WD                             |      | 112.0 mm $\pm$ 3                |
| O/I (Object & Imager Distance) |      | 264.6 mm                        |
| Working F/#                    |      | 89.3                            |
| NA                             |      | 0,045                           |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.1 mm                          |
| TV Distortion (2/3")           |      | 0.00 %                          |
| Relative Illuminance (Y=5,5)   |      | 100 %                           |
| Wavelength                     |      | Visible                         |
| Mount                          |      | C-Mount                         |
| Flange Back                    |      | 17526 mm                        |
| Sensor Size (max.)             |      | 2/3"                            |
| Co-Axial Prism                 |      | Built-in                        |
| Weight (approx.)               |      | 66 g                            |
| Dimension                      |      | $\phi$ 31 (max.) x L = 135.1 mm |

**VS-TC08-170CO**

|                                |      |                              |
|--------------------------------|------|------------------------------|
| Optical Mag.                   |      | 0.5x $\pm$ 5 %               |
|                                | 2/3" | —                            |
| FOV(VxH)                       | 1/2" | 9.6 x 12.8 mm                |
|                                | 1/3" | 7.2 x 9.6 mm                 |
| WD                             |      | 152.2 mm $\pm$ 5             |
| O/I (Object & Imager Distance) |      | 251.7 mm                     |
| Working F/#                    |      | 12.5                         |
| NA                             |      | 0.020                        |
| DOF at PCoC $\phi$ 0.04mm      |      | 4.0 mm                       |
| TV Distortion (1/2")           |      | 0.10 %                       |
| Relative Illuminance (Y=4)     |      | 90 %                         |
| Wavelength                     |      | Visible                      |
| Mount                          |      | C-Mount                      |
| Flange Back                    |      | 17526 mm                     |
| Sensor Size (max.)             |      | 1/2"                         |
| Co-Axial Prism                 |      | —                            |
| Weight (approx.)               |      | 76 g                         |
| Dimension                      |      | $\phi$ 31 (max.) x L = 82 mm |

|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 0.8x ± 5 %                     |
|                                | 2/3" | —                              |
| FOV(VxH)                       | 1/2" | 6.0 x 8.0 mm                   |
|                                | 1/3" | 4.5 x 6.0 mm                   |
| WD                             |      | 174,8 mm ± 5                   |
| O/I (Object & Imager Distance) |      | 309,9 mm                       |
| Working F/#                    |      | 13.9                           |
| NA                             |      | 0.029                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 1.7 mm                         |
| TV Distortion (1/2")           |      | 0.02 %                         |
| Relative Illuminance (Y=4)     |      | 99 %                           |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17526 mm                       |
| Sensor Size (max.)             |      | 1/2"                           |
| Co-Axial Prism                 |      | Built-in                       |
| Filter Thread                  |      | M 22.5 P = 0.5                 |
| Weight (approx.)               |      | 78 g                           |
| Dimension                      |      | $\phi$ 30(max.) x L = 117.6 mm |

**VS-TC1-150CO**

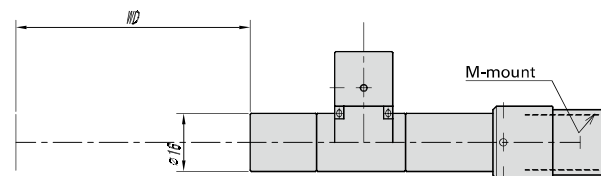
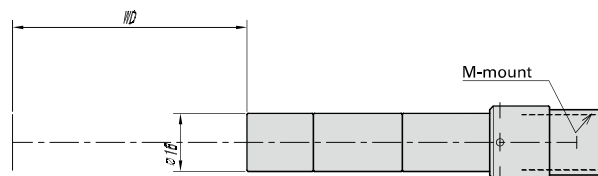
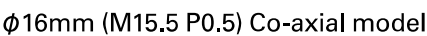
|                                |      |                           |
|--------------------------------|------|---------------------------|
| Optical Mag.                   |      | 0.8x ± 5 %                |
|                                | 2/3" | —                         |
| FOV(VxH)                       | 1/2" | 6.0 x 8.0 mm              |
|                                | 1/3" | 4.5 x 6.0 mm              |
| WD                             |      | 174.8 mm ± 5              |
| O/I (Object & Imager Distance) |      | 309.9 mm                  |
| Working F/#                    |      | 13.9                      |
| NA                             |      | 0.029                     |
| DOF at PCoC Ø0.04mm            |      | 1.7 mm                    |
| TV Distortion (1/2")           |      | 0.02 %                    |
| Relative Illuminance (Y=4)     |      | 99 %                      |
| Wavelength                     |      | Visible                   |
| Mount                          |      | C-Mount                   |
| Flange Back                    |      | 17.526 mm                 |
| Sensor Size (max.)             |      | 1/2"                      |
| Co-Axial Prism                 |      | —                         |
| Filter Thread                  |      | M 22.5 P = 0.5            |
| Weight (approx.)               |      | 72 g                      |
| Dimension                      |      | Ø30 (max.) x L = 117.6 mm |

|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 1.0x ± 5 %                     |
|                                | 2/3" | —                              |
| FOV(VxH)                       | 1/2" | 4.8 x 6.4 mm                   |
|                                | 1/3" | 3.6 x 4.8 mm                   |
| WD                             |      | 156.2 mm ± 5                   |
| O/I (Object & Imager Distance) |      | 306.2 mm                       |
| Working F/#                    |      | 13.0                           |
| NA                             |      | 0.038                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 1.0 mm                         |
| TV Distortion (1/2")           |      | 0.01 %                         |
| Relative Illuminance (Y=4)     |      | 99 %                           |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17526 mm                       |
| Sensor Size (max.)             |      | 1/2"                           |
| Co-Axial Prism                 |      | Build-in                       |
| Filter Thread                  |      | M 22.5 P = 0.5                 |
| Weight (approx.)               |      | 82 g                           |
| Dimension                      |      | $\phi$ 30(max.) x L = 132.5 mm |

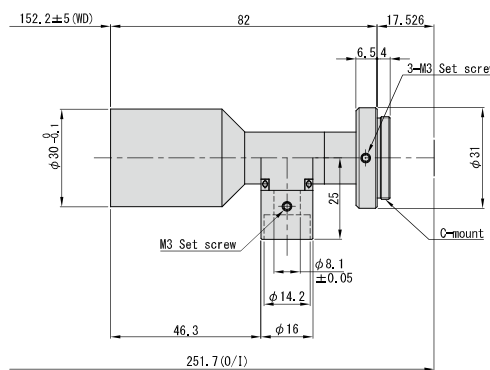
## Custom-example

■ 1/2" CCD (M15.5 P.0.5)

φ16mm (M15.5 P0.5) Straight model

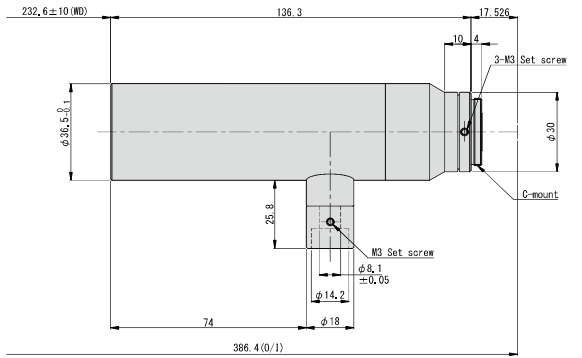
[illegible]

|                                |      |                                                 |
|--------------------------------|------|-------------------------------------------------|
| Optical Mag.                   | 2/3" | 0.5x $\pm 5\%$                                  |
| FOV(VxH)                       | 2/3" | —                                               |
|                                | 1/2" | 9.6 x 12.8 mm                                   |
|                                | 1/3" | 7.2 x 9.6 mm                                    |
| WD                             |      | 152.2 mm $\pm 5$                                |
| O/I (Object & Imager Distance) |      | 251.7 mm                                        |
| Working F/#                    |      | 12.5                                            |
| NA                             |      | 0.020                                           |
| DOF at PCoC $\phi 0.04$ mm     |      | 4.0 mm                                          |
| TV Distortion (1/2")           |      | 0.10 %                                          |
| Relative Illuminance (Y=4)     |      | 90 %                                            |
| Wavelength                     |      | Visible                                         |
| Mount                          |      | C-Mount                                         |
| Flange Back                    |      | 17526 mm                                        |
| Sensor Size (max.)             |      | 1/2"                                            |
| Co-Axial Prism                 |      | Built-in                                        |
| Weight (approx.)               |      | 82 g                                            |
| Dimension                      |      | $\phi 31(\text{max.}) \times L = 82 \text{ mm}$ |



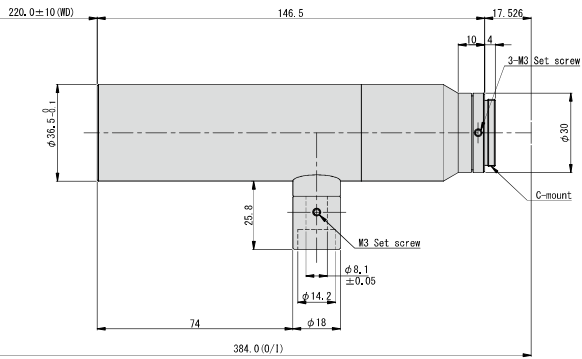
WD:220mm Series

VS-TC08-220CO



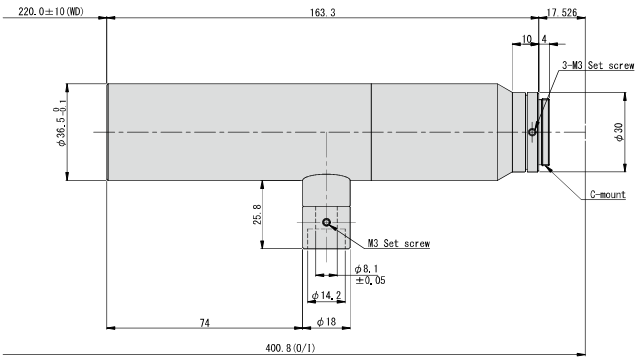
|                                |      |                            |
|--------------------------------|------|----------------------------|
| Optical Mag.                   |      | 0.8x ±5 %                  |
| FOV(VxH)                       | 2/3" | —                          |
|                                | 1/2" | 6.0 x 8.0 mm               |
|                                | 1/3" | 4.5 x 6.0 mm               |
| WD                             |      | 232.6 mm ±10               |
| O/I (Object & Imager Distance) |      | 386.4 mm                   |
| Working F/#                    |      | 8.0                        |
| NA                             |      | 0.050                      |
| DOF at PCoC 0.04mm             |      | 1.0 mm                     |
| TV Distortion (1/2")           |      | -0.15 %                    |
| Relative Illuminance (Y=4)     |      | 85 %                       |
| Wavelength                     |      | Visible                    |
| Mount                          |      | C-Mount                    |
| Flange Back                    |      | 17526 mm                   |
| Sensor Size (max.)             |      | 1/2"                       |
| Co-Axial Prism                 |      | Built-in                   |
| Weight (approx.)               |      | 225 g                      |
| Dimension                      |      | φ36.5(max.) x L = 136.3 mm |

VS-TC1-220CO



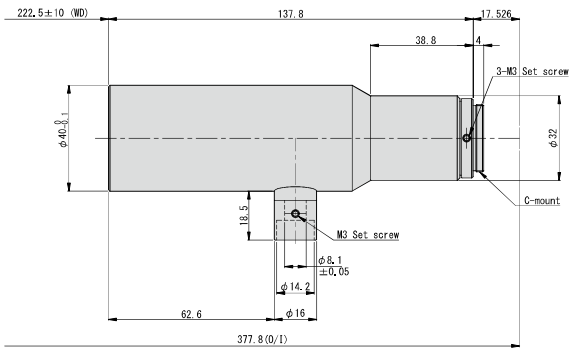
|                                |      |                            |
|--------------------------------|------|----------------------------|
| Optical Mag.                   |      | 1.0x ±5 %                  |
| FOV(VxH)                       | 2/3" | —                          |
|                                | 1/2" | 4.8 x 6.4 mm               |
|                                | 1/3" | 3.6 x 4.8 mm               |
| WD                             |      | 220.0 mm ±10               |
| O/I (Object & Imager Distance) |      | 384.0 mm                   |
| Working F/#                    |      | 10.0                       |
| NA                             |      | 0.050                      |
| DOF at PCoC 0.04mm             |      | 0.8 mm                     |
| TV Distortion (1/2")           |      | 0.10 %                     |
| Relative Illuminance (Y=4)     |      | 90 %                       |
| Wavelength                     |      | Visible                    |
| Mount                          |      | C-Mount                    |
| Flange Back                    |      | 17526 mm                   |
| Sensor Size (max.)             |      | 1/2"                       |
| Co-Axial Prism                 |      | Built-in                   |
| Weight (approx.)               |      | 245 g                      |
| Dimension                      |      | φ36.5(max.) x L = 146.5 mm |

VS-TC2-220CO



|                                |      |                            |
|--------------------------------|------|----------------------------|
| Optical Mag.                   |      | 2.0x ±5 %                  |
| FOV(VxH)                       | 2/3" | —                          |
|                                | 1/2" | 2.4 x 3.2 mm               |
|                                | 1/3" | 1.8 x 2.4 mm               |
| WD                             |      | 220.0 mm ±10               |
| O/I (Object & Imager Distance) |      | 400.8 mm                   |
| Working F/#                    |      | 20.0                       |
| NA                             |      | 0.050                      |
| DOF at PCoC 0.04mm             |      | 0.4 mm                     |
| TV Distortion (1/2")           |      | 0.10 %                     |
| Relative Illuminance (Y=4)     |      | 90 %                       |
| Wavelength                     |      | Visible                    |
| Mount                          |      | C-Mount                    |
| Flange Back                    |      | 17526 mm                   |
| Sensor Size (max.)             |      | 1/2"                       |
| Co-Axial Prism                 |      | Built-in                   |
| Weight (approx.)               |      | 270 g                      |
| Dimension                      |      | φ36.5(max.) x L = 163.3 mm |

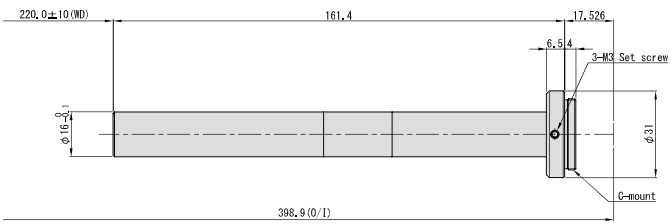
VS-TC4-220CO



|                                |      |                          |
|--------------------------------|------|--------------------------|
| Optical Mag.                   |      | 4.0x ±5 %                |
| FOV(VxH)                       | 2/3" | —                        |
|                                | 1/2" | 1.2 x 1.6 mm             |
|                                | 1/3" | 0.9 x 1.2 mm             |
| WD                             |      | 222.5 mm ±10             |
| O/I (Object & Imager Distance) |      | 377.8 mm                 |
| Working F/#                    |      | 29.4                     |
| NA                             |      | 0.068                    |
| DOF at PCoC 0.04mm             |      | 0.1 mm                   |
| TV Distortion (1/2")           |      | 0.10 %                   |
| Relative Illuminance (Y=4)     |      | 90 %                     |
| Wavelength                     |      | Visible                  |
| Mount                          |      | C-Mount                  |
| Flange Back                    |      | 17526 mm                 |
| Sensor Size (max.)             |      | 1/2"                     |
| Co-Axial Prism                 |      | Built-in                 |
| Weight (approx.)               |      | 330 g                    |
| Dimension                      |      | φ40(max.) x L = 137.8 mm |

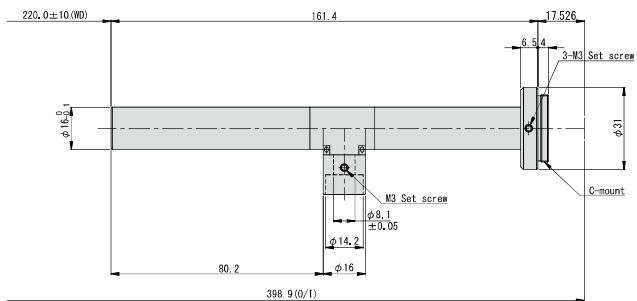
WD:220mmφ16 Series

VS-TC2-220-16



|                                |      |                          |
|--------------------------------|------|--------------------------|
| Optical Mag.                   |      | 2.0x ±5 %                |
| FOV(VxH)                       | 2/3" | —                        |
|                                | 1/2" | 2.4 x 3.2 mm             |
|                                | 1/3" | 1.8 x 2.4 mm             |
| WD                             |      | 222.0 mm ±10             |
| O/I (Object & Imager Distance) |      | 389.9 mm                 |
| Working F/#                    |      | 43.5                     |
| NA                             |      | 0.023                    |
| DOF at PCoC 0.04mm             |      | 0.9 mm                   |
| TV Distortion (1/2")           |      | 0.10 %                   |
| Relative Illuminance (Y=4)     |      | 90 %                     |
| Wavelength                     |      | Visible                  |
| Mount                          |      | C-Mount                  |
| Flange Back                    |      | 17526 mm                 |
| Sensor Size (max.)             |      | 1/2"                     |
| Co-Axial Prism                 |      | —                        |
| Weight (approx.)               |      | 66 g                     |
| Dimension                      |      | φ31(max.) x L = 161.4 mm |

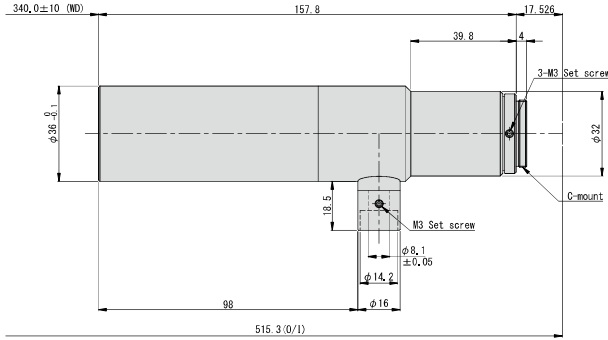
VS-TC2-220CO-16



|                                |      |                          |
|--------------------------------|------|--------------------------|
| Optical Mag.                   |      | 2.0x ±5 %                |
| FOV(VxH)                       | 2/3" | —                        |
|                                | 1/2" | 2.4 x 3.2 mm             |
|                                | 1/3" | 1.8 x 2.4 mm             |
| WD                             |      | 220.0 mm ±10             |
| O/I (Object & Imager Distance) |      | 398.9 mm                 |
| Working F/#                    |      | 43.5                     |
| NA                             |      | 0.023                    |
| DOF at PCoC 0.04mm             |      | 0.9 mm                   |
| TV Distortion (1/2")           |      | 0.10 %                   |
| Relative Illuminance (Y=4)     |      | 90 %                     |
| Wavelength                     |      | Visible                  |
| Mount                          |      | C-Mount                  |
| Flange Back                    |      | 17526 mm                 |
| Sensor Size (max.)             |      | 1/2"                     |
| Co-Axial Prism                 |      | Built-in                 |
| Weight (approx.)               |      | 70 g                     |
| Dimension                      |      | φ31(max.) x L = 161.4 mm |

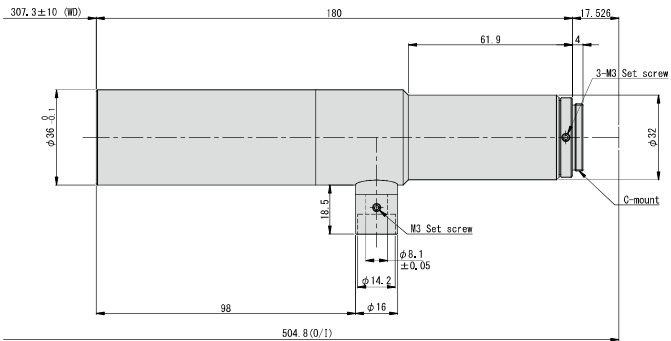
WD:300-340mm Series

VS-TC07-340CO



|                                |      |                          |
|--------------------------------|------|--------------------------|
| Optical Mag.                   |      | 0.7x ±5 %                |
| FOV(VxH)                       | 2/3" | —                        |
|                                | 1/2" | 6.9 x 9.1 mm             |
|                                | 1/3" | 5.1 x 6.9 mm             |
| WD                             |      | 340.0 mm ±10             |
| O/I (Object & Imager Distance) |      | 515.3 mm                 |
| Working F/#                    |      | 10.9                     |
| NA                             |      | 0.032                    |
| DOF at PCoC 0.04mm             |      | 1.8 mm                   |
| TV Distortion (1/2")           |      | 0.10 %                   |
| Relative Illuminance (Y=4)     |      | 100 %                    |
| Wavelength                     |      | Visible                  |
| Mount                          |      | C-Mount                  |
| Flange Back                    |      | 17526 mm                 |
| Sensor Size (max.)             |      | 1/2"                     |
| Co-Axial Prism                 |      | Built-in                 |
| Weight (approx.)               |      | 235 g                    |
| Dimension                      |      | φ36(max.) x L = 157.8 mm |

VS-TC1-300CO



|                                |      |                        |
|--------------------------------|------|------------------------|
| Optical Mag.                   |      | 1.0x ±5 %              |
| FOV(VxH)                       | 2/3" | —                      |
|                                | 1/2" | 4.8 x 6.4 mm           |
|                                | 1/3" | 3.6 x 4.8 mm           |
| WD                             |      | 307.3 mm ±10           |
| O/I (Object & Imager Distance) |      | 504.8 mm               |
| Working F/#                    |      | 15.6                   |
| NA                             |      | 0.032                  |
| DOF at PCoC 0.04mm             |      | 1.2 mm                 |
| TV Distortion (1/2")           |      | 0.10 %                 |
| Relative Illuminance (Y=4)     |      | 100 %                  |
| Wavelength                     |      | Visible                |
| Mount                          |      | C-Mount                |
| Flange Back                    |      | 17526 mm               |
| Sensor Size (max.)             |      | 1/2"                   |
| Co-Axial Prism                 |      | Built-in               |
| Weight (approx.)               |      | 265 g                  |
| Dimension                      |      | φ36(max.) x L = 180 mm |



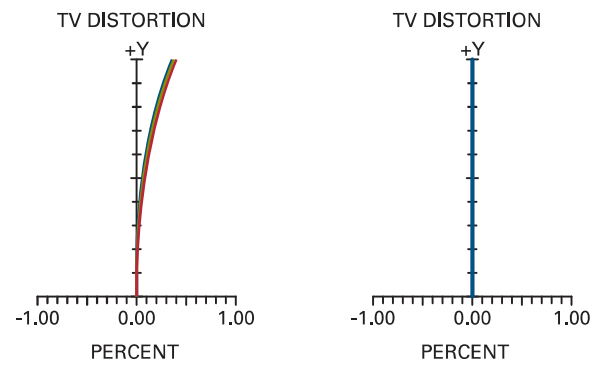
VS-TCH Series 2/3" 1/1.8"

The VS-TCH series was designed for use at a 65mm or 110mm WD (depending on the particular lens) with up to a 2/3" sensor camera. It is a great choice for any machine vision application needing a high resolution, distortionless image.

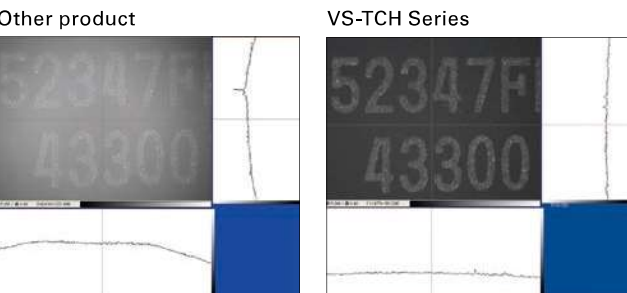
- Features
- 2/3" sensor support
  - 65/110mm WD
  - High Resolution
  - High Telecentricity



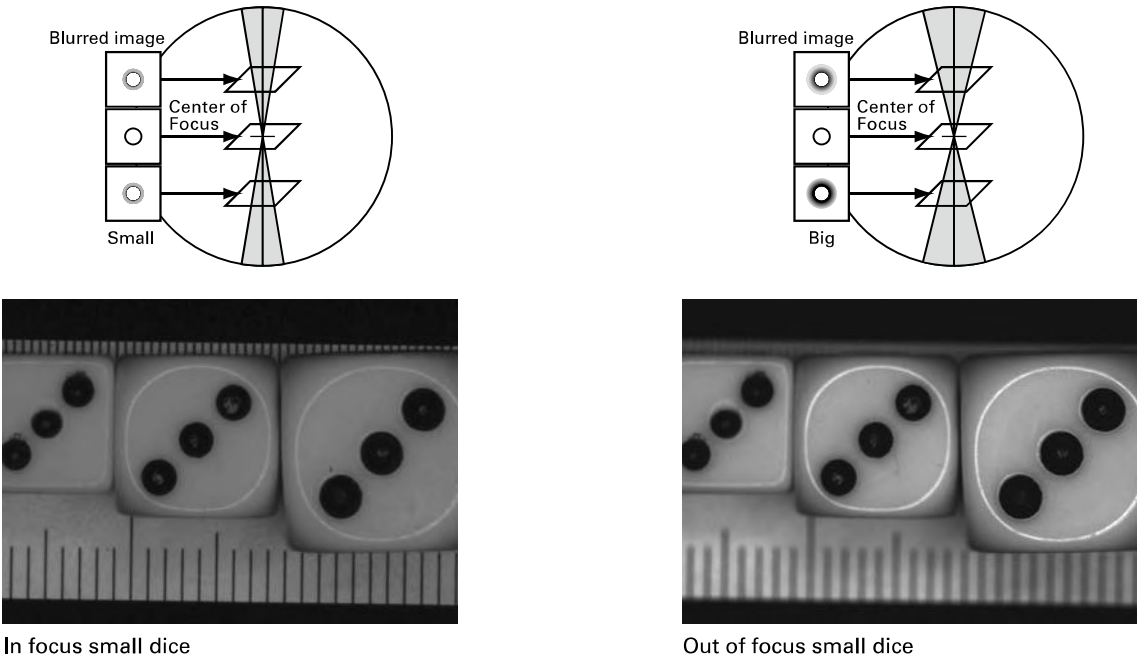
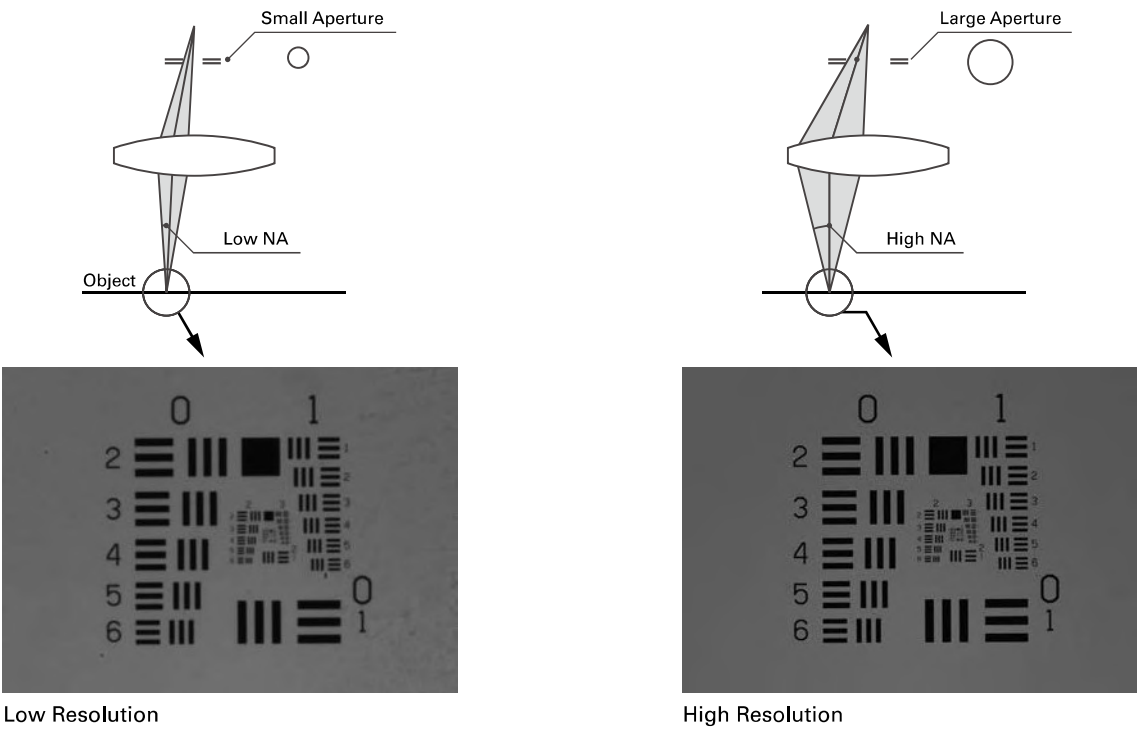
Low distortion



High contrast in entire Field of View



Lens Resolution, NA and Depth of Field (DOF)

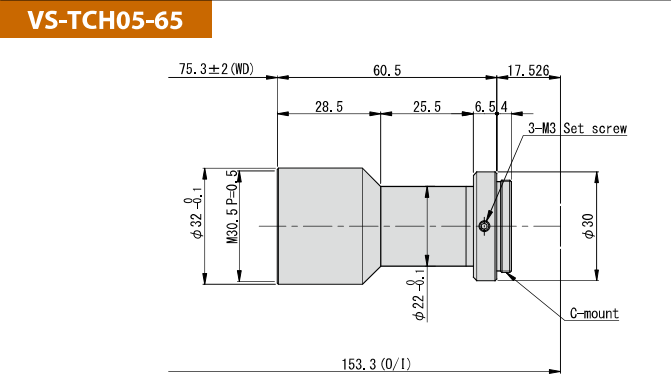


Camera : STC-A152A  
Lens: NA High VS-TC M022-150/S (Open) NA Low VS-TCM022-150/S (Close)  
Lighting: Chart: UEB-70W50 Dice: UNSL-73W100

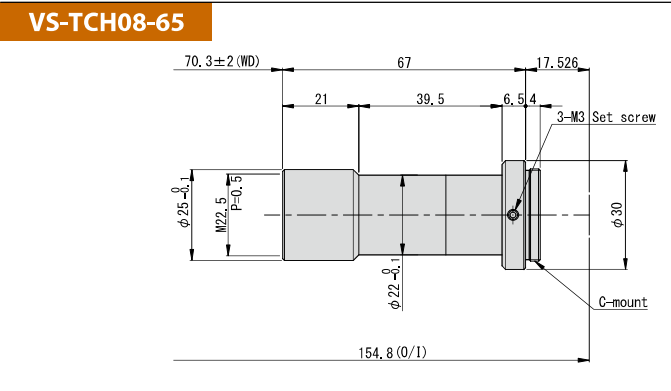
Note: Brightness is adjusted by camera shutter speed and lighting

VS Technology has a lineup of variable iris models to modify the depth of field easily.  
In addition, we can customize a fixed iris to suit your needs.

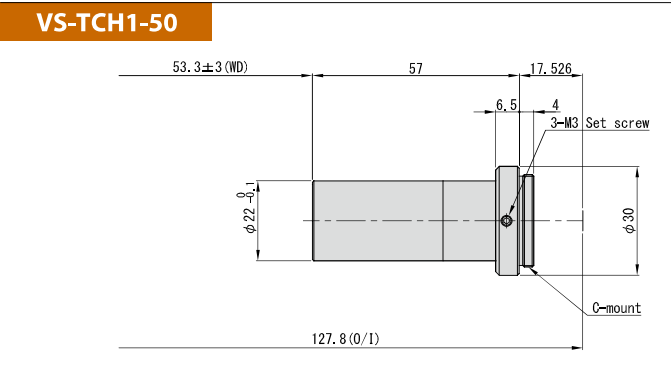
WD:65-75mm Series



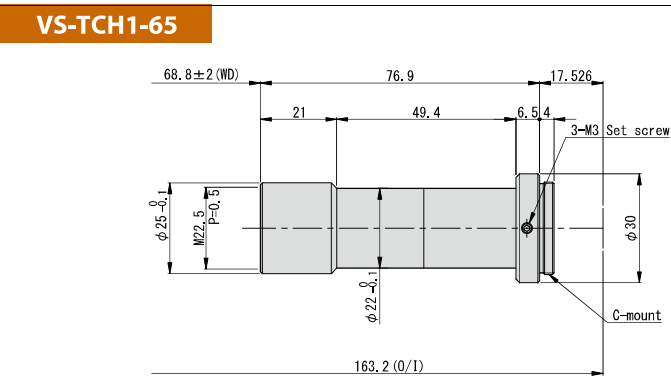
|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 0.5x ±5 %               |
| FOV(VxH)                       | 2/3" | 14.2 x 16.8 mm          |
|                                | 1/2" | 9.6 x 12.8 mm           |
|                                | 1/3" | 7.2 x 9.6 mm            |
| WD                             |      | 75.3 mm ±2              |
| O/I (Object & Imager Distance) |      | 153.3 mm                |
| Working F/#                    |      | 9.4                     |
| NA                             |      | 0.027                   |
| DOF at PCoC φ0.04mm            |      | 3.0 mm                  |
| TV Distortion (2/3")           |      | 0.02 %                  |
| Relative Illuminance (Y=5.5)   |      | 94 %                    |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17526 mm                |
| Sensor Size (max.)             |      | 2/3"                    |
| Co-Axial Prism                 |      | —                       |
| Filter Thread                  |      | M 30.5 P = 0.5          |
| Weight (approx.)               |      | 62 g                    |
| Dimension                      |      | φ32(max.) x L = 60.5 mm |



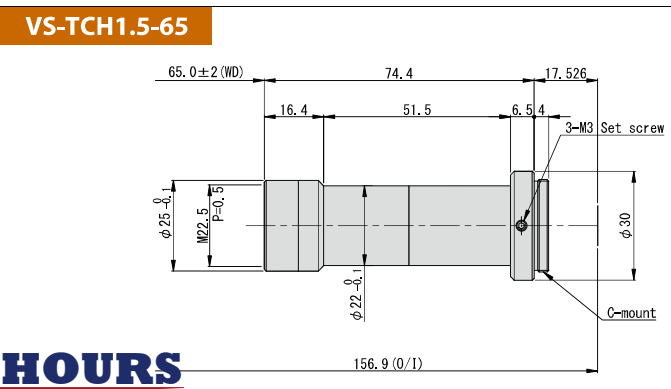
|                                |      |                       |
|--------------------------------|------|-----------------------|
| Optical Mag.                   |      | 0.8x ±5 %             |
| FOV(VxH)                       | 2/3" | 8.9 x 10.5 mm         |
|                                | 1/2" | 6.0 x 8.0 mm          |
|                                | 1/3" | 4.5 x 6.0 mm          |
| WD                             |      | 70.3 mm ±2            |
| O/I (Object & Imager Distance) |      | 154.8 mm              |
| Working F/#                    |      | 9.6                   |
| NA                             |      | 0.042                 |
| DOF at PCoC φ0.04mm            |      | 1.2 mm                |
| TV Distortion (2/3")           |      | 0.01 %                |
| Relative Illuminance (Y=5.5)   |      | 98 %                  |
| Wavelength                     |      | Visible               |
| Mount                          |      | C-Mount               |
| Flange Back                    |      | 17526 mm              |
| Sensor Size (max.)             |      | 2/3"                  |
| Co-Axial Prism                 |      | —                     |
| Filter Thread                  |      | M 22.5 P = 0.5        |
| Weight (approx.)               |      | 58 g                  |
| Dimension                      |      | φ30(max.) x L = 67 mm |



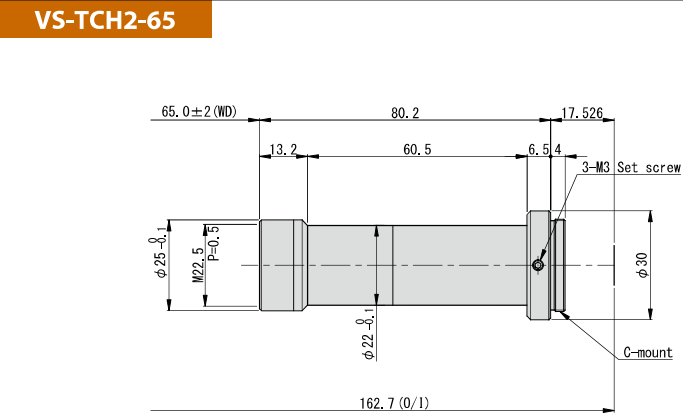
|                                |      |                       |
|--------------------------------|------|-----------------------|
| Optical Mag.                   |      | 1.0x ±5 %             |
| FOV(VxH)                       | 2/3" | 7.1 x 8.4 mm          |
|                                | 1/2" | 4.8 x 6.4 mm          |
|                                | 1/3" | 3.6 x 4.8 mm          |
| WD                             |      | 53.3 mm ±3            |
| O/I (Object & Imager Distance) |      | 127.8 mm              |
| Working F/#                    |      | 9.9                   |
| NA                             |      | 0.050                 |
| DOF at PCoC φ0.04mm            |      | 0.8 mm                |
| TV Distortion (2/3")           |      | 0.02 %                |
| Relative Illuminance (Y=5.5)   |      | 99 %                  |
| Wavelength                     |      | Visible               |
| Mount                          |      | C-Mount               |
| Flange Back                    |      | 17526 mm              |
| Sensor Size (max.)             |      | 2/3"                  |
| Co-Axial Prism                 |      | —                     |
| Weight (approx.)               |      | 47 g                  |
| Dimension                      |      | φ30(max.) x L = 57 mm |



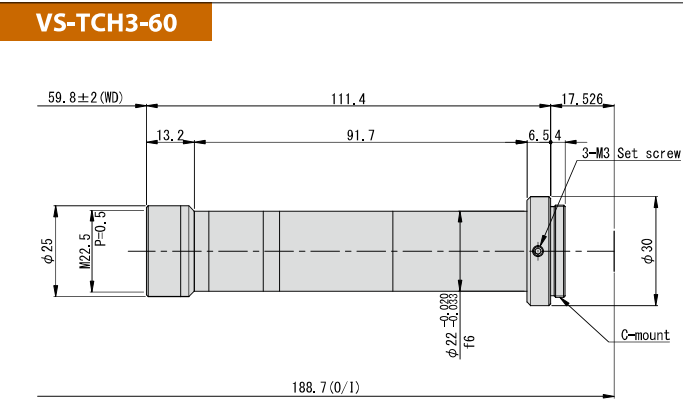
|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 1.0x ±5 %               |
| FOV(VxH)                       | 2/3" | 7.1 x 8.4 mm            |
|                                | 1/2" | 4.8 x 6.4 mm            |
|                                | 1/3" | 3.6 x 4.8 mm            |
| WD                             |      | 68.8 mm ±2              |
| O/I (Object & Imager Distance) |      | 163.2 mm                |
| Working F/#                    |      | 9.9                     |
| NA                             |      | 0.050                   |
| DOF at PCoC φ0.04mm            |      | 0.8 mm                  |
| TV Distortion (2/3")           |      | 0.01 %                  |
| Relative Illuminance (Y=5.5)   |      | 99 %                    |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17526 mm                |
| Sensor Size (max.)             |      | 2/3"                    |
| Co-Axial Prism                 |      | —                       |
| Filter Thread                  |      | M 22.5 P = 0.5          |
| Weight (approx.)               |      | 60 g                    |
| Dimension                      |      | φ30(max.) x L = 76.9 mm |



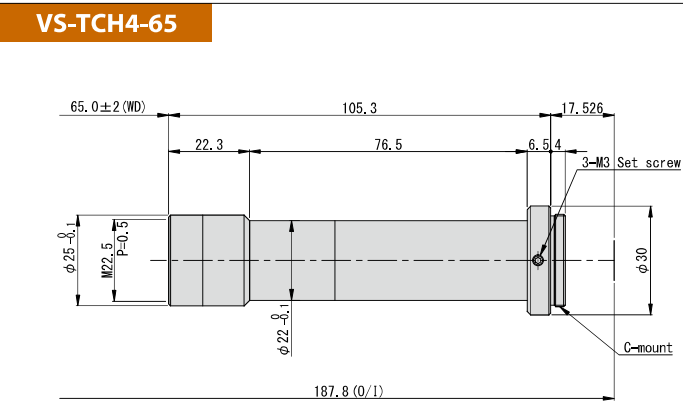
|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 1.5x ±5 %               |
| FOV(VxH)                       | 2/3" | 4.7 x 5.6 mm            |
|                                | 1/2" | 3.2 x 4.3 mm            |
|                                | 1/3" | 2.4 x 3.2 mm            |
| WD                             |      | 65.0 mm ±2              |
| O/I (Object & Imager Distance) |      | 156.9 mm                |
| Working F/#                    |      | 11.8                    |
| NA                             |      | 0.064                   |
| DOF at PCoC φ0.04mm            |      | 0.4 mm                  |
| TV Distortion (2/3")           |      | 0.01 %                  |
| Relative Illuminance (Y=5.5)   |      | 100 %                   |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17526 mm                |
| Sensor Size (max.)             |      | 2/3"                    |
| Co-Axial Prism                 |      | —                       |
| Filter Thread                  |      | M 22.5 P = 0.5          |
| Weight (approx.)               |      | 60 g                    |
| Dimension                      |      | φ30(max.) x L = 74.4 mm |



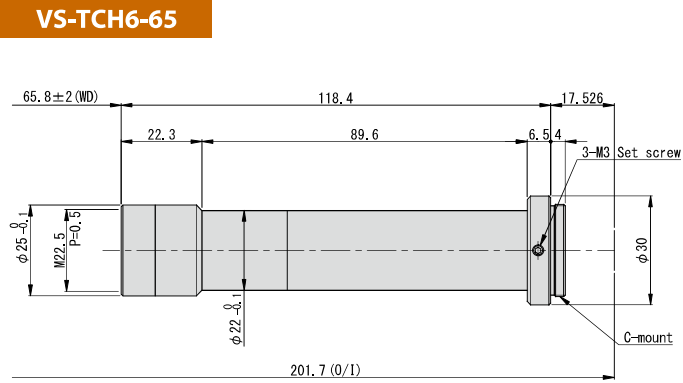
|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 2.0x ±5 %               |
| FOV(VxH)                       | 2/3" | 3.6 x 4.2 mm            |
|                                | 1/2" | 2.4 x 3.2 mm            |
|                                | 1/3" | 1.8 x 2.4 mm            |
| WD                             |      | 65.0 mm ±2              |
| O/I (Object & Imager Distance) |      | 162.7 mm                |
| Working F/#                    |      | 13.6                    |
| NA                             |      | 0.074                   |
| DOF at PCoC φ0.04mm            |      | 0.3 mm                  |
| TV Distortion (2/3")           |      | 0.03 %                  |
| Relative Illuminance (Y=5.5)   |      | 98 %                    |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17526 mm                |
| Sensor Size (max.)             |      | 2/3"                    |
| Co-Axial Prism                 |      | —                       |
| Filter Thread                  |      | M 22.5 P = 0.5          |
| Weight (approx.)               |      | 58 g                    |
| Dimension                      |      | φ30(max.) x L = 80.2 mm |



|                                |      |                          |
|--------------------------------|------|--------------------------|
| Optical Mag.                   |      | 3.0x ±5 %                |
| FOV(VxH)                       | 2/3" | 2.4 x 2.8 mm             |
|                                | 1/2" | 1.6 x 2.1 mm             |
|                                | 1/3" | 1.2 x 1.6 mm             |
| WD                             |      | 59.8 mm ±2               |
| O/I (Object & Imager Distance) |      | 188.7 mm                 |
| Working F/#                    |      | 20.5                     |
| NA                             |      | 0.073                    |
| DOF at PCoC φ0.04mm            |      | 0.2 mm                   |
| TV Distortion (2/3")           |      | 0.01 %                   |
| Relative Illuminance (Y=5.5)   |      | 99 %                     |
| Wavelength                     |      | Visible                  |
| Mount                          |      | C-Mount                  |
| Flange Back                    |      | 17526 mm                 |
| Sensor Size (max.)             |      | 2/3"                     |
| Co-Axial Prism                 |      | —                        |
| Filter Thread                  |      | M 22.5 P = 0.5           |
| Weight (approx.)               |      | 72 g                     |
| Dimension                      |      | φ30(max.) x L = 111.4 mm |



|                                |      |                          |
|--------------------------------|------|--------------------------|
| Optical Mag.                   |      | 4.0x ±5 %                |
| FOV(VxH)                       | 2/3" | 1.8 x 2.1 mm             |
|                                | 1/2" | 1.2 x 1.6 mm             |
|                                | 1/3" | 0.9 x 1.2 mm             |
| WD                             |      | 65.0 mm ±2               |
| O/I (Object & Imager Distance) |      | 187.8 mm                 |
| Working F/#                    |      | 17.9                     |
| NA                             |      | 0.112                    |
| DOF at PCoC φ0.04mm            |      | 0.09 mm                  |
| TV Distortion (2/3")           |      | 0.02 %                   |
| Relative Illuminance (Y=5.5)   |      | 85 %                     |
| Wavelength                     |      | Visible                  |
| Mount                          |      | C-Mount                  |
| Flange Back                    |      | 17526 mm                 |
| Sensor Size (max.)             |      | 2/3"                     |
| Co-Axial Prism                 |      | —                        |
| Filter Thread                  |      | M 22.5 P = 0.5           |
| Weight (approx.)               |      | 80 g                     |
| Dimension                      |      | φ30(max.) x L = 105.3 mm |



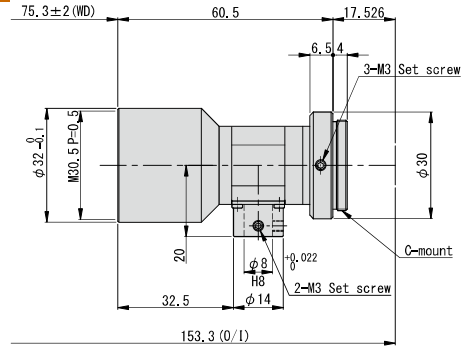
|                                |      |                          |
|--------------------------------|------|--------------------------|
| Optical Mag.                   |      | 6.0x ±5 %                |
| FOV(VxH)                       | 2/3" | 1.2 x 1.4 mm             |
|                                | 1/2" | 0.8 x 1.1 mm             |
|                                | 1/3" | 0.6 x 0.8 mm             |
| WD                             |      | 65.8 mm ±2               |
| O/I (Object & Imager Distance) |      | 201.7 mm                 |
| Working F/#                    |      | 27.0                     |
| NA                             |      | 0.111                    |
| DOF at PCoC φ0.04mm            |      | 0.06 mm                  |
| TV Distortion (2/3")           |      | 0.02 %                   |
| Relative Illuminance (Y=5.5)   |      | 84 %                     |
| Wavelength                     |      | Visible                  |
| Mount                          |      | C-Mount                  |
| Flange Back                    |      | 17526 mm                 |
| Sensor Size (max.)             |      | 2/3"                     |
| Co-Axial Prism                 |      | —                        |
| Filter Thread                  |      | M 22.5 P = 0.5           |
| Weight (approx.)               |      | 88 g                     |
| Dimension                      |      | φ30(max.) x L = 118.4 mm |

VS-TCH2-65

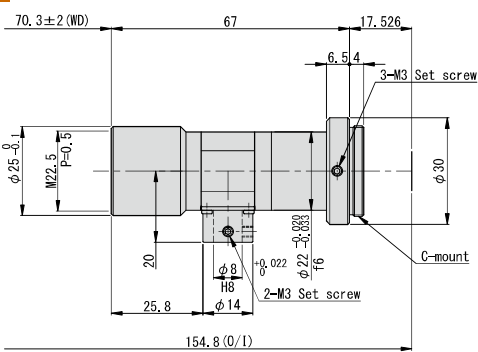
VS-TCH3-60

VS-TCH4-65

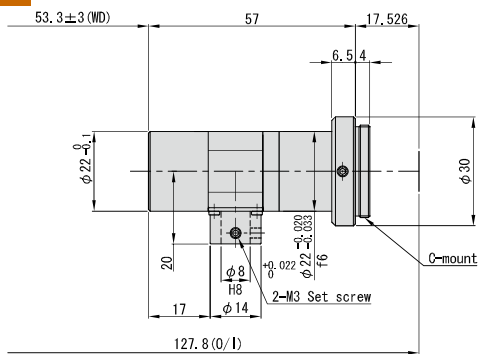
VS-TCH6-65

**VS-TCH05-65CO**

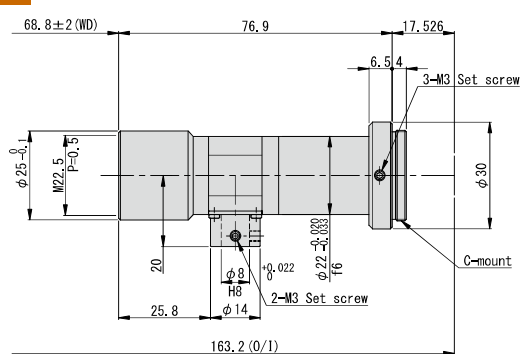
|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   | 2/3" | 0.5x ± 5 %              |
| FOV(VxH)                       | 2/3" | 14.2 x 16.8 mm          |
|                                | 1/2" | 9.6 x 12.8 mm           |
|                                | 1/3" | 7.2 x 9.6 mm            |
| WD                             |      | 75.3 mm ± 2             |
| O/I (Object & Imager Distance) |      | 153.3 mm                |
| Working F/#                    |      | 9.4                     |
| NA                             |      | 0.027                   |
| DOF at PCoC Ø0.04mm            |      | 3.0 mm                  |
| TV Distortion (2/3")           |      | 0.02 %                  |
| Relative Illuminance (Y=5.5)   |      | 94 %                    |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17.526 mm               |
| Sensor Size (max.)             |      | 2/3"                    |
| Co-Axial Prism                 |      | Built-in                |
| Filter Thread                  |      | M 30.5 P = 0.5          |
| Weight (approx.)               |      | 66 g                    |
| Dimension                      |      | φ32(max.) x L = 60.5 mm |

**VS-TCH08-65CO**

|                                |      |                              |
|--------------------------------|------|------------------------------|
| Optical Mag.                   | 2/3" | 0.8x ± 5 %                   |
| FOV(VxH)                       | 2/3" | 8.9 x 10.5 mm                |
|                                | 1/2" | 6.0 x 8.0 mm                 |
|                                | 1/3" | 4.5 x 6.0 mm                 |
| WD                             |      | 70.3 mm ± 2                  |
| O/I (Object & Imager Distance) |      | 154.8 mm                     |
| Working F/#                    |      | 9.6                          |
| NA                             |      | 0,042                        |
| DOF at PCoC $\phi$ 0.04mm      |      | 1.2 mm                       |
| TV Distortion (2/3")           |      | 0.01 %                       |
| Relative Illuminance (Y=5.5)   |      | 98 %                         |
| Wavelength                     |      | Visible                      |
| Mount                          |      | C-Mount                      |
| Flange Back                    |      | 17.526 mm                    |
| Sensor Size (max.)             |      | 2/3"                         |
| Co-Axial Prism                 |      | Built-in                     |
| Filter Thread                  |      | M 22.5 P = 0.5               |
| Weight (approx.)               |      | 62 g                         |
| Dimension                      |      | $\phi$ 30 (max.) x L = 67 mm |

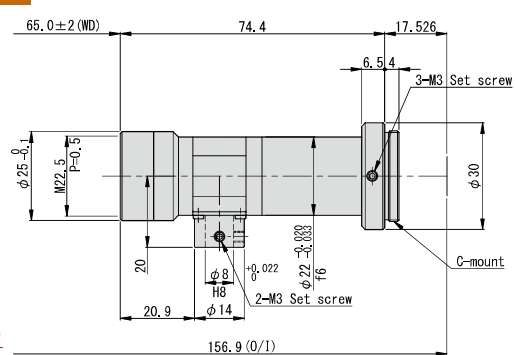
**VS-TCH1-50CO**

|                                |      |                              |
|--------------------------------|------|------------------------------|
| Optical Mag.                   |      | 1.0x ± 5 %                   |
|                                | 2/3" | 7.1 x 8.4 mm                 |
| FOV(VxH)                       | 1/2" | 4.8 x 6.4 mm                 |
|                                | 1/3" | 3.6 x 4.8 mm                 |
| WD                             |      | 53.3 mm ± 3                  |
| O/I (Object & Imager Distance) |      | 127.8 mm                     |
| Working F/#                    |      | 9.9                          |
| NA                             |      | 0.050                        |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.8 mm                       |
| TV Distortion (2/3")           |      | 0.02 %                       |
| Relative Illuminance (Y=5,5)   |      | 99 %                         |
| Wavelength                     |      | Visible                      |
| Mount                          |      | C-Mount                      |
| Flange Back                    |      | 17.526 mm                    |
| Sensor Size (max.)             |      | 2/3"                         |
| Co-Axial Prism                 |      | Built-in                     |
| Weight (approx.)               |      | 52 g                         |
| Dimension                      |      | $\phi$ 30 (max.) x L = 57 mm |

**VS-TCH1-65CO**

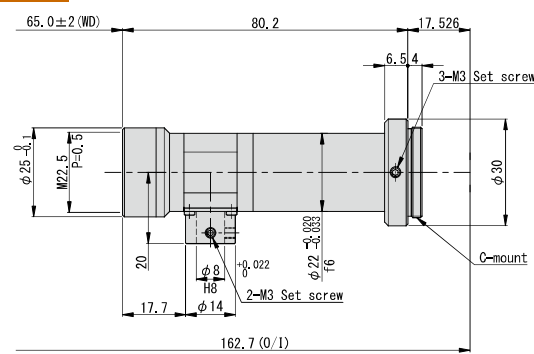
|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 1.0x ± 5 %                     |
| FOV(VxH)                       | 2/3" | 7.1 x 8.4 mm                   |
|                                | 1/2" | 4.8 x 6.4 mm                   |
|                                | 1/3" | 3.6 x 4.8 mm                   |
| WD                             |      | 68.8 mm ± 2                    |
| O/I (Object & Imager Distance) |      | 163.2 mm                       |
| Working F/#                    |      | 9.9                            |
| NA                             |      | 0.050                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.8 mm                         |
| TV Distortion (2/3")           |      | 0.01 %                         |
| Relative Illuminance (Y=5.5)   |      | 99 %                           |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17526 mm                       |
| Sensor Size (max.)             |      | 2/3"                           |
| Co-Axial Prism                 |      | Built-in                       |
| Filter Thread                  |      | M 22.5 P = 0.5                 |
| Weight (approx.)               |      | 64 g                           |
| Dimension                      |      | $\phi$ 30 (max.) x L = 76.9 mm |

## VS-TCH1.5-65CO



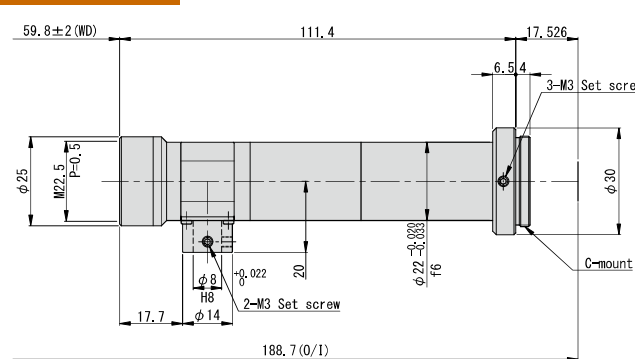
|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 1.5x ± 5 %                     |
| FOV(VxH)                       | 2/3" | 4.7 x 5.6 mm                   |
|                                | 1/2" | 3.2 x 4.3 mm                   |
|                                | 1/3" | 2.4 x 3.2 mm                   |
| WD                             |      | 65.0 mm ± 2                    |
| O/I (Object & Imager Distance) |      | 156.9 mm                       |
| Working F/#                    |      | 11.8                           |
| NA                             |      | 0.064                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.4 mm                         |
| TV Distortion (2/3")           |      | 0.01 %                         |
| Relative Illuminance (Y=5.5)   |      | 100 %                          |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17,526 mm                      |
| Sensor Size (max.)             |      | 2/3"                           |
| Co-Axial Prism                 |      | Built-in                       |
| Filter Thread                  |      | M 22.5 P = 0.5                 |
| Weight (approx.)               |      | 64 g                           |
| Dimension                      |      | $\phi$ 30 (max.) x L = 74.4 mm |

## VS-TCH2-65CO



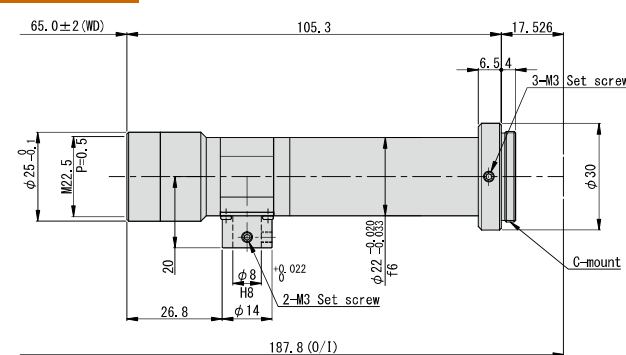
|                                |      |                                                   |
|--------------------------------|------|---------------------------------------------------|
| Optical Mag.                   |      | 2.0x $\pm 5\%$                                    |
|                                | 2/3" | 3.6 x 4.2 mm                                      |
| FOV(VxH)                       | 1/2" | 2.4 x 3.2 mm                                      |
|                                | 1/3" | 1.8 x 2.4 mm                                      |
| WD                             |      | 65.0 mm $\pm 2$                                   |
| O/I (Object & Imager Distance) |      | 162.7 mm                                          |
| Working F/#                    |      | 13.6                                              |
| NA                             |      | 0.074                                             |
| DOF at PCoC $\phi 0.04$ mm     |      | 0.3 mm                                            |
| TV Distortion (2/3")           |      | 0.03 %                                            |
| Relative Illuminance (Y=5.5)   |      | 98 %                                              |
| Wavelength                     |      | Visible                                           |
| Mount                          |      | C-Mount                                           |
| Flange Back                    |      | 17526 mm                                          |
| Sensor Size (max.)             |      | 2/3"                                              |
| Co-Axial Prism                 |      | Built-in                                          |
| Filter Thread                  |      | M 22.5 P = 0.5                                    |
| Weight (approx.)               |      | 62 g                                              |
| Dimension                      |      | $\phi 30(\text{max.}) \times L = 80.2 \text{ mm}$ |

## VS-TCH3-60CO

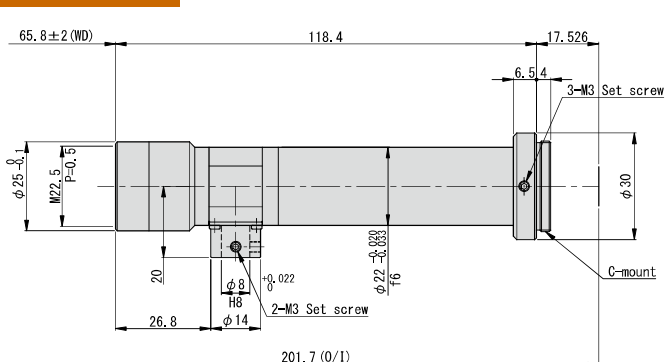


|                                |      |                                 |
|--------------------------------|------|---------------------------------|
| Optical Mag.                   |      | 3.0x $\pm$ 5 %                  |
|                                | 2/3" | 2.4 x 2.8 mm                    |
| FOV(VxH)                       | 1/2" | 1.6 x 2.1 mm                    |
|                                | 1/3" | 1.2 x 1.6 mm                    |
| WD                             |      | 59.8 mm $\pm$ 2                 |
| O/I (Object & Imager Distance) |      | 188.7 mm                        |
| Working F/#                    |      | 20.5                            |
| NA                             |      | 0,073                           |
| DOF at PCoC $\phi$ 0,04mm      |      | 0.2 mm                          |
| TV Distortion (2/3")           |      | 0.01 %                          |
| Relative Illuminance (Y=5.5)   |      | 99 %                            |
| Wavelength                     |      | Visible                         |
| Mount                          |      | C-Mount                         |
| Flange Back                    |      | 17.526 mm                       |
| Sensor Size (max.)             |      | 2/3"                            |
| Co-Axial Prism                 |      | Built-in                        |
| Filter Thread                  |      | M 22.5 P = 0.5                  |
| Weight (approx.)               |      | 76 g                            |
| Dimension                      |      | $\phi$ 30 (max.) x L = 111.4 mm |

## VS-TCH4-65CO



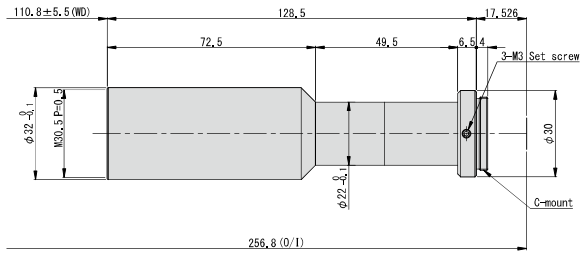
|                                |      |                                 |
|--------------------------------|------|---------------------------------|
| Optical Mag.                   |      | 4.0x $\pm$ 5 %                  |
|                                | 2/3" | 1,8 x 2,1 mm                    |
| FOV(VxH)                       | 1/2" | 1,2 x 1,6 mm                    |
|                                | 1/3" | 0,9 x 1,2 mm                    |
| WD                             |      | 65,0 mm $\pm$ 2                 |
| O/I (Object & Imager Distance) |      | 1878 mm                         |
| Working F/#                    |      | 179                             |
| NA                             |      | 0.112                           |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.09 mm                         |
| TV Distortion (2/3")           |      | 0.02 %                          |
| Relative Illuminance (Y=5.5)   |      | 85 %                            |
| Wavelength                     |      | Visible                         |
| Mount                          |      | C-Mount                         |
| Flange Back                    |      | 17526 mm                        |
| Sensor Size (max.)             |      | 2/3"                            |
| Co-Axial Prism                 |      | Built-in                        |
| Filter Thread                  |      | M 22.5 P = 0.5                  |
| Weight (approx.)               |      | 84 g                            |
| Dimension                      |      | $\phi$ 30 (max.) x L = 105,3 mm |

**VS-TCH6-65CO**

|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 6.0x $\pm$ 5 %                 |
|                                | 2/3" | 1.2 x 1.4 mm                   |
| FOV(VxH)                       | 1/2" | 0.8 x 1.1 mm                   |
|                                | 1/3" | 0.6 x 0.8 mm                   |
| WD                             |      | 65.8 mm $\pm$ 2                |
| O/I (Object & Imager Distance) |      | 201.7 mm                       |
| Working F/#                    |      | 270                            |
| NA                             |      | 0.111                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.06 mm                        |
| TV Distortion (2/3")           |      | 0.02 %                         |
| Relative Illuminance (Y=5.5)   |      | 84 %                           |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17526 mm                       |
| Sensor Size (max.)             |      | 2/3"                           |
| Co-Axial Prism                 |      | Built-in                       |
| Filter Thread                  |      | M 22.5 P = 0.5                 |
| Weight (approx.)               |      | 92 g                           |
| Dimension                      |      | $\phi$ 30(max.) x L = 118.4 mm |

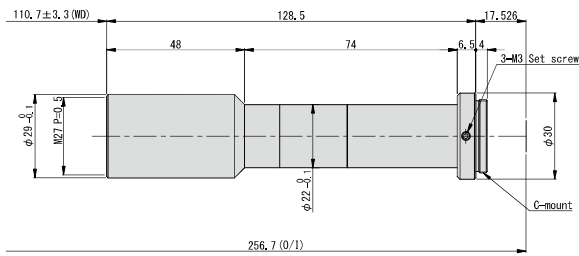
## WD:110mm Series

## VS-TCH05-110



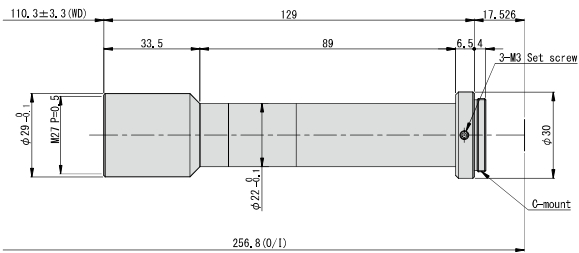
|                                |      |                          |
|--------------------------------|------|--------------------------|
| Optical Mag.                   |      | 0.5x ± 5 %               |
|                                | 2/3" | 14.2 x 16.8 mm           |
| FOV(VxH)                       | 1/2" | 9.6 x 12.8 mm            |
|                                | 1/3" | 7.2 x 9.6 mm             |
| WD                             |      | 110.8 mm ± 5.5           |
| O/I (Object & Imager Distance) |      | 256.8 mm                 |
| Working F/#                    |      | 9.5                      |
| NA                             |      | 0.026                    |
| DOF at PCoC Ø0.04mm            |      | 3.0 mm                   |
| TV Distortion (2/3")           |      | 0.02 %                   |
| Relative Illuminance (Y=5.5)   |      | 98 %                     |
| Wavelength                     |      | Visible                  |
| Mount                          |      | C-Mount                  |
| Flange Back                    |      | 17.526 mm                |
| Sensor Size (max.)             |      | 2/3"                     |
| Co-Axial Prism                 |      | —                        |
| Filter Thread                  |      | M 30.5 P = 0.5           |
| Weight (approx.)               |      | 92 g                     |
| Dimension                      |      | Φ32(max.) x L = 128.5 mm |

## VS-TCH08-110

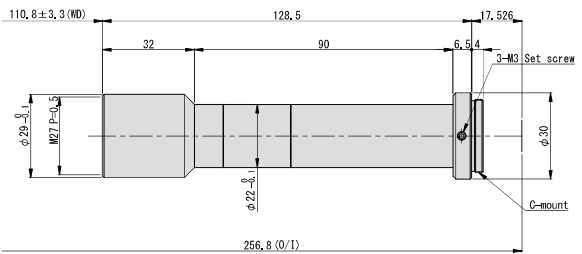


|                                |      |                           |
|--------------------------------|------|---------------------------|
| Optical Mag.                   |      | 0.8x ± 5 %                |
|                                | 2/3" | 8.9 x 10.5 mm             |
| FOV(VxH)                       | 1/2" | 6.0 x 8.0 mm              |
|                                | 1/3" | 4.5 x 6.0 mm              |
| WD                             |      | 110.7 mm ± 3.3            |
| O/I (Object & Imager Distance) |      | 256.7 mm                  |
| Working F/#                    |      | 11.0                      |
| NA                             |      | 0.036                     |
| DOF at PCoC Ø0.04mm            |      | 1.4 mm                    |
| TV Distortion (2/3")           |      | 0.02 %                    |
| Relative Illuminance (Y=5.5)   |      | 99 %                      |
| Wavelength                     |      | Visible                   |
| Mount                          |      | C-Mount                   |
| Flange Back                    |      | 17.526 mm                 |
| Sensor Size (max.)             |      | 2/3"                      |
| Co-Axial Prism                 |      | —                         |
| Filter Thread                  |      | M 27 P = 0.5              |
| Weight (approx.)               |      | 92 g                      |
| Dimension                      |      | Ø30 (max.) x L = 128.5 mm |

## VS-TCH1-110

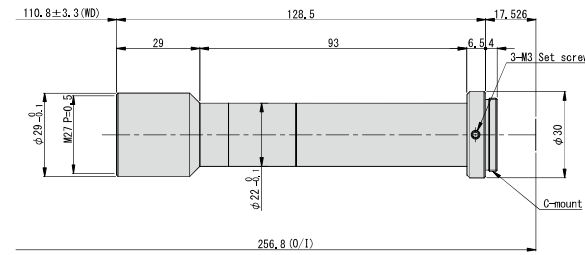


|                                |      |                        |
|--------------------------------|------|------------------------|
| Optical Mag.                   |      | 1.0x ± 5 %             |
|                                | 2/3" | 7.1 × 8.4 mm           |
| FOV(VxH)                       | 1/2" | 4.8 × 6.4 mm           |
|                                | 1/3" | 3.6 × 4.8 mm           |
| WD                             |      | 110.3 mm ± 3.3         |
| O/I (Object & Imager Distance) |      | 256.8 mm               |
| Working F/#                    |      | 10.5                   |
| NA                             |      | 0.048                  |
| DOF at PCoC Ø0.04mm            |      | 0.8 mm                 |
| TV Distortion (2/3")           |      | 0.02 %                 |
| Relative Illuminance (Y=5.5)   |      | 99 %                   |
| Wavelength                     |      | Visible                |
| Mount                          |      | C-Mount                |
| Flange Back                    |      | 17,526 mm              |
| Sensor Size (max.)             |      | 2/3"                   |
| Co-Axial Prism                 |      | —                      |
| Filter Thread                  |      | M 27 P = 0.5           |
| Weight (approx.)               |      | 92 g                   |
| Dimension                      |      | Ø30(max.) × L = 129 mm |

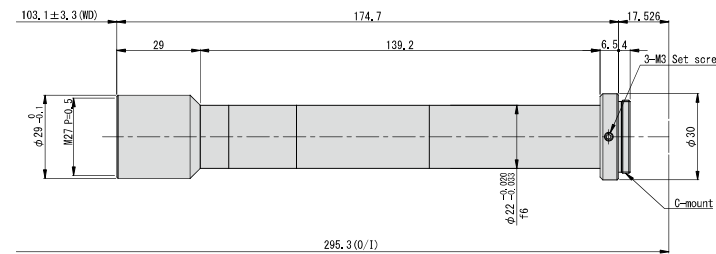
**VS-TCH1.5-110**

|                                |      |                           |
|--------------------------------|------|---------------------------|
| Optical Mag.                   |      | 1.5x ± 5 %                |
|                                | 2/3" | 4.7 x 5.6 mm              |
| FOV(VxH)                       | 1/2" | 3.2 x 4.3 mm              |
|                                | 1/3" | 2.4 x 3.2 mm              |
| WD                             |      | 110.8 mm ± 3.3            |
| O/I (Object & Imager Distance) |      | 256.8 mm                  |
| Working F/#                    |      | 12.0                      |
| NA                             |      | 0.063                     |
| DOF at PCoC Ø0.04mm            |      | 0.4 mm                    |
| TV Distortion (2/3")           |      | 0.02 %                    |
| Relative Illuminance (Y=5.5)   |      | 99 %                      |
| Wavelength                     |      | Visible                   |
| Mount                          |      | C-Mount                   |
| Flange Back                    |      | 17.526 mm                 |
| Sensor Size (max.)             |      | 2/3"                      |
| Co-Axial Prism                 |      | —                         |
| Filter Thread                  |      | M 27 P = 0.5              |
| Weight (approx.)               |      | 84 g                      |
| Dimension                      |      | Ø30 (max.) x L = 128.5 mm |

## VS-TCH2-110

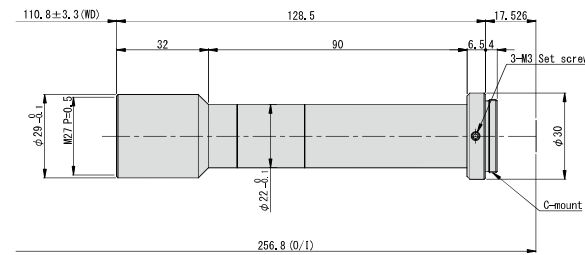


|                                |      |                                 |
|--------------------------------|------|---------------------------------|
| Optical Mag.                   |      | 2.0x ± 5 %                      |
|                                | 2/3" | 3.6 x 4.2 mm                    |
| FOV(VxH)                       | 1/2" | 2.4 x 3.2 mm                    |
|                                | 1/3" | 1.8 x 2.4 mm                    |
| WD                             |      | 110.8 mm ± 3.3                  |
| O/I (Object & Imager Distance) |      | 256.8 mm                        |
| Working F/#                    |      | 13.5                            |
| NA                             |      | 0.074                           |
| DOF at PCOC $\phi$ 0.04mm      |      | 0.3 mm                          |
| TV Distortion (2/3")           |      | 0.03 %                          |
| Relative Illuminance (Y=5.5)   |      | 95 %                            |
| Wavelength                     |      | Visible                         |
| Mount                          |      | C-Mount                         |
| Flange Back                    |      | 17526 mm                        |
| Sensor Size (max.)             |      | 2/3"                            |
| Co-Axial Prism                 |      | —                               |
| Filter Thread                  |      | M 27 P = 0.5                    |
| Weight (approx.)               |      | 88 g                            |
| Dimension                      |      | $\phi$ 30 (max.) x L = 128.5 mm |

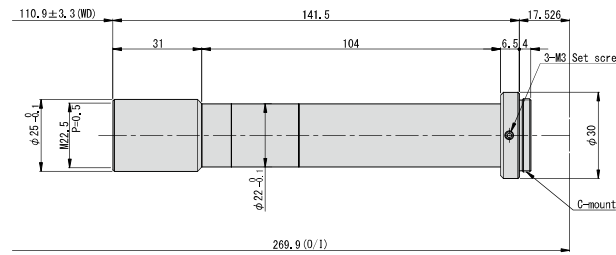
**VS-TCH3-100**

|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 3.0x $\pm$ 5 %                 |
|                                | 2/3" | 2.4 x 2.8 mm                   |
| FOV(VxH)                       | 1/2" | 1.6 x 2.1 mm                   |
|                                | 1/3" | 1.2 x 1.6 mm                   |
| WD                             |      | 103.1 mm $\pm$ 3.3             |
| O/I (Object & Imager Distance) |      | 295.3 mm                       |
| Working F/#                    |      | 20.9                           |
| NA                             |      | 0.072                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.2 mm                         |
| TV Distortion (2/3")           |      | 0.01 %                         |
| Relative Illuminance (Y=5.5)   |      | 99 %                           |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17526 mm                       |
| Sensor Size (max.)             |      | 2/3"                           |
| Co-Axial Prism                 |      | —                              |
| Filter Thread                  |      | M 27 P = 0.5                   |
| Weight (approx.)               |      | 110 g                          |
| Dimension                      |      | $\phi$ 30(max.) x L = 174.7 mm |

## VS-TCH4-110



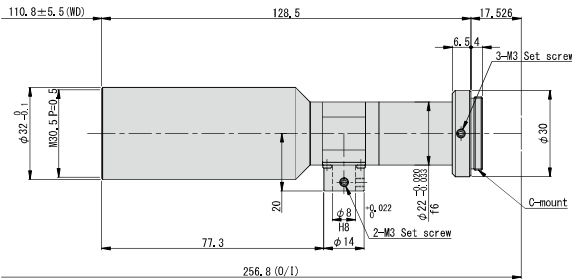
|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 4.0x $\pm$ 5 %                 |
|                                | 2/3" | 1.8 x 2.1 mm                   |
| FOV(VxH)                       | 1/2" | 1.2 x 1.6 mm                   |
|                                | 1/3" | 0.9 x 1.2 mm                   |
| WD                             |      | 110.8 mm $\pm$ 3.3             |
| O/I (Object & Imager Distance) |      | 256.8 mm                       |
| Working F/#                    |      | 22.2                           |
| NA                             |      | 0.090                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.1 mm                         |
| TV Distortion (2/3")           |      | 0.03 %                         |
| Relative Illuminance (Y=5.5)   |      | 87 %                           |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17,526 mm                      |
| Sensor Size (max.)             |      | 2/3"                           |
| Co-Axial Prism                 |      | —                              |
| Filter Thread                  |      | M 27 P = 0.5                   |
| Weight (approx.)               |      | 90 g                           |
| Dimension                      |      | $\phi$ 30(max.) x L = 128.5 mm |

**VS-TCH6-110**

|                                |      |                                 |
|--------------------------------|------|---------------------------------|
| Optical Mag.                   |      | 6.0x $\pm$ 5 %                  |
|                                | 2/3" | 1.2 x 1.4 mm                    |
| FOV(VxH)                       | 1/2" | 0.8 x 1.1 mm                    |
|                                | 1/3" | 0.6 x 0.8 mm                    |
| WD                             |      | 110.9 mm $\pm$ 3.3              |
| O/I (Object & Imager Distance) |      | 269.9 mm                        |
| Working F/#                    |      | 39.3                            |
| NA                             |      | 0.076                           |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.09 mm                         |
| TV Distortion (2/3")           |      | 0.03 %                          |
| Relative Illuminance (Y=5.5)   |      | 87 %                            |
| Wavelength                     |      | Visible                         |
| Mount                          |      | C-Mount                         |
| Flange Back                    |      | 17526 mm                        |
| Sensor Size (max.)             |      | 2/3"                            |
| Co-Axial Prism                 |      | —                               |
| Filter Thread                  |      | M 22.5 P = 0.5                  |
| Weight (approx.)               |      | 90 g                            |
| Dimension                      |      | $\phi$ 30 (max.) x L = 141.5 mm |

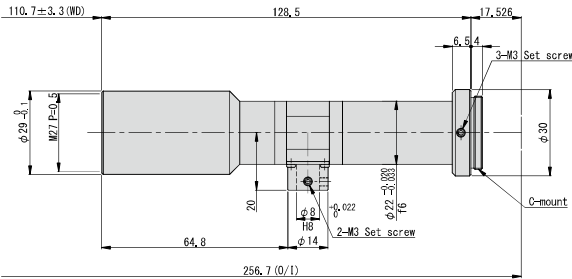


VS-TCH05-110CO



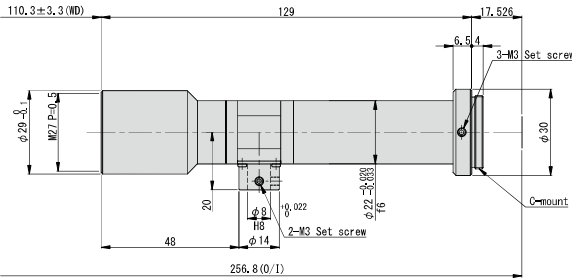
|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 0.5x ± 5 %              |
| FOV(VxH)                       | 2/3" | 14.2 x 16.8 mm          |
|                                | 1/2" | 9.6 x 12.8 mm           |
|                                | 1/3" | 7.2 x 9.6 mm            |
| WD                             |      | 110.8 mm ± 5.5          |
| O/I (Object & Imager Distance) |      | 256.8 mm                |
| Working F/#                    |      | 9.5                     |
| NA                             |      | 0.026                   |
| DOF at PCoC 0.04mm             |      | 3.0 mm                  |
| TV Distortion (2/3")           |      | 0.02 %                  |
| Relative Illuminance (Y=5.5)   |      | 98 %                    |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17.526 mm               |
| Sensor Size (max.)             |      | 2/3"                    |
| Co-Axial Prism                 |      | Built-in                |
| Filter Thread                  |      | M 30.5 P = 0.5          |
| Weight (approx.)               |      | 98 g                    |
| Dimension                      |      | 32(max.) x L = 128.5 mm |

VS-TCH08-110CO



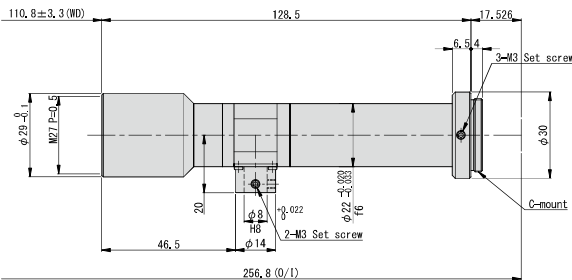
|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 0.8x ± 5 %              |
| FOV(VxH)                       | 2/3" | 8.9 x 10.5 mm           |
|                                | 1/2" | 6.0 x 8.0 mm            |
|                                | 1/3" | 4.5 x 6.0 mm            |
| WD                             |      | 110.7 mm ± 3.3          |
| O/I (Object & Imager Distance) |      | 256.7 mm                |
| Working F/#                    |      | 11.0                    |
| NA                             |      | 0.036                   |
| DOF at PCoC 0.04mm             |      | 1.4 mm                  |
| TV Distortion (2/3")           |      | 0.02 %                  |
| Relative Illuminance (Y=5.5)   |      | 99 %                    |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17.526 mm               |
| Sensor Size (max.)             |      | 2/3"                    |
| Co-Axial Prism                 |      | Built-in                |
| Filter Thread                  |      | M 27 P = 0.5            |
| Weight (approx.)               |      | 98 g                    |
| Dimension                      |      | 30(max.) x L = 128.5 mm |

VS-TCH1-110CO



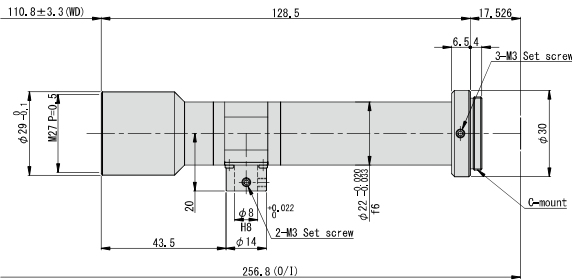
|                                |      |                       |
|--------------------------------|------|-----------------------|
| Optical Mag.                   |      | 1.0x ± 5 %            |
| FOV(VxH)                       | 2/3" | 7.1 x 8.4 mm          |
|                                | 1/2" | 4.8 x 6.4 mm          |
|                                | 1/3" | 3.6 x 4.8 mm          |
| WD                             |      | 110.3 mm ± 3.3        |
| O/I (Object & Imager Distance) |      | 256.8 mm              |
| Working F/#                    |      | 10.5                  |
| NA                             |      | 0.048                 |
| DOF at PCoC 0.04mm             |      | 0.8 mm                |
| TV Distortion (2/3")           |      | 0.02 %                |
| Relative Illuminance (Y=5.5)   |      | 99 %                  |
| Wavelength                     |      | Visible               |
| Mount                          |      | C-Mount               |
| Flange Back                    |      | 17.526 mm             |
| Sensor Size (max.)             |      | 2/3"                  |
| Co-Axial Prism                 |      | Built-in              |
| Filter Thread                  |      | M 27 P = 0.5          |
| Weight (approx.)               |      | 96 g                  |
| Dimension                      |      | 30(max.) x L = 129 mm |

VS-TCH1.5-110CO



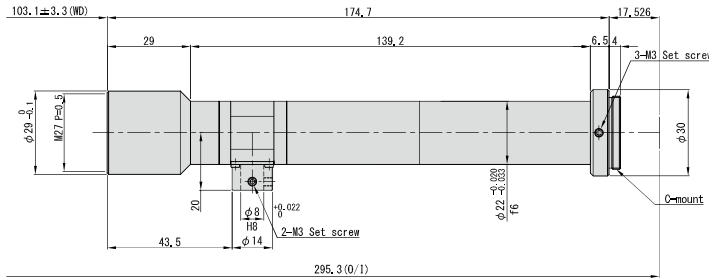
|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 1.5x ± 5 %              |
| FOV(VxH)                       | 2/3" | 4.7 x 5.6 mm            |
|                                | 1/2" | 3.2 x 4.3 mm            |
|                                | 1/3" | 2.4 x 3.2 mm            |
| WD                             |      | 110.8 mm ± 3.3          |
| O/I (Object & Imager Distance) |      | 256.8 mm                |
| Working F/#                    |      | 12.0                    |
| NA                             |      | 0.063                   |
| DOF at PCoC 0.04mm             |      | 0.4 mm                  |
| TV Distortion (2/3")           |      | 0.02 %                  |
| Relative Illuminance (Y=5.5)   |      | 99 %                    |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17.526 mm               |
| Sensor Size (max.)             |      | 2/3"                    |
| Co-Axial Prism                 |      | Built-in                |
| Filter Thread                  |      | M 27 P = 0.5            |
| Weight (approx.)               |      | 88 g                    |
| Dimension                      |      | 30(max.) x L = 128.5 mm |

VS-TCH2-110CO



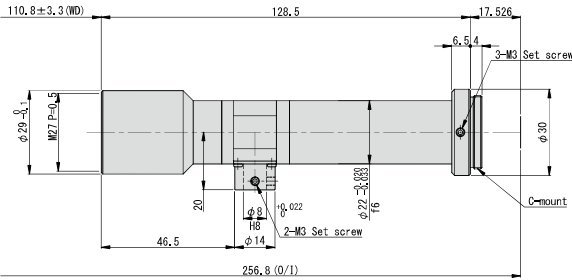
|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 2.0x ± 5 %              |
| FOV(VxH)                       | 2/3" | 3.6 x 4.2 mm            |
|                                | 1/2" | 2.4 x 3.2 mm            |
|                                | 1/3" | 1.8 x 2.4 mm            |
| WD                             |      | 110.8 mm ± 3.3          |
| O/I (Object & Imager Distance) |      | 256.8 mm                |
| Working F/#                    |      | 13.5                    |
| NA                             |      | 0.074                   |
| DOF at PCoC 0.04mm             |      | 0.3 mm                  |
| TV Distortion (2/3")           |      | 0.03 %                  |
| Relative Illuminance (Y=5.5)   |      | 95 %                    |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17.526 mm               |
| Sensor Size (max.)             |      | 2/3"                    |
| Co-Axial Prism                 |      | Built-in                |
| Filter Thread                  |      | M 27 P = 0.5            |
| Weight (approx.)               |      | 94 g                    |
| Dimension                      |      | 30(max.) x L = 128.5 mm |

VS-TCH3-100CO



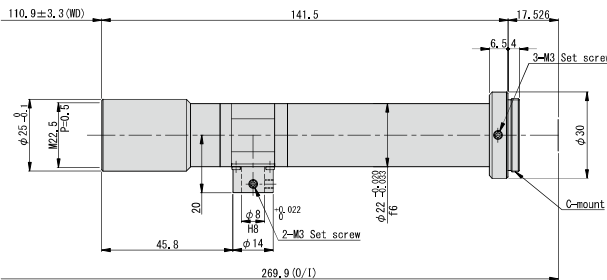
|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 3.0x ± 5 %              |
| FOV(VxH)                       | 2/3" | 2.4 x 2.8 mm            |
|                                | 1/2" | 1.6 x 2.1 mm            |
|                                | 1/3" | 1.2 x 1.6 mm            |
| WD                             |      | 103.1 mm ± 3.3          |
| O/I (Object & Imager Distance) |      | 295.3 mm                |
| Working F/#                    |      | 20.9                    |
| NA                             |      | 0.072                   |
| DOF at PCoC 0.04mm             |      | 0.2 mm                  |
| TV Distortion (2/3")           |      | 0.01 %                  |
| Relative Illuminance (Y=5.5)   |      | 99 %                    |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17.526 mm               |
| Sensor Size (max.)             |      | 2/3"                    |
| Co-Axial Prism                 |      | Built-in                |
| Filter Thread                  |      | M 27 P = 0.5            |
| Weight (approx.)               |      | 114 g                   |
| Dimension                      |      | 30(max.) x L = 174.7 mm |

VS-TCH4-110CO



|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 4.0x ± 5 %              |
| FOV(VxH)                       | 2/3" | 1.8 x 2.1 mm            |
|                                | 1/2" | 1.2 x 1.6 mm            |
|                                | 1/3" | 0.9 x 1.2 mm            |
| WD                             |      | 110.8 mm ± 3.3          |
| O/I (Object & Imager Distance) |      | 256.8 mm                |
| Working F/#                    |      | 22.2                    |
| NA                             |      | 0.090                   |
| DOF at PCoC 0.04mm             |      | 0.1 mm                  |
| TV Distortion (2/3")           |      | 0.03 %                  |
| Relative Illuminance (Y=5.5)   |      | 87 %                    |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17.526 mm               |
| Sensor Size (max.)             |      | 2/3"                    |
| Co-Axial Prism                 |      | Built-in                |
| Filter Thread                  |      | M 27 P = 0.5            |
| Weight (approx.)               |      | 96 g                    |
| Dimension                      |      | 30(max.) x L = 128.5 mm |

VS-TCH6-110CO



|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 6.0x ± 5 %              |
| FOV(VxH)                       | 2/3" | 1.2 x 1.4 mm            |
|                                | 1/2" | 0.8 x 1.1 mm            |
|                                | 1/3" | 0.6 x 0.8 mm            |
| WD                             |      | 110.9 mm ± 3.3          |
| O/I (Object & Imager Distance) |      | 269.9 mm                |
| Working F/#                    |      | 39.3                    |
| NA                             |      | 0.076                   |
| DOF at PCoC 0.04mm             |      | 0.09 mm                 |
| TV Distortion (2/3")           |      | 0.03 %                  |
| Relative Illuminance (Y=5.5)   |      | 87 %                    |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17.526 mm               |
| Sensor Size (max.)             |      | 2/3"                    |
| Co-Axial Prism                 |      | Built-in                |
| Filter Thread                  |      | M 22.5 P = 0.5          |
| Weight (approx.)               |      | 94 g                    |
| Dimension                      |      | 30(max.) x L = 141.5 mm |



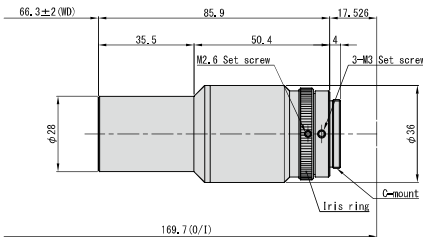
VS-TCM Series 1.1" 1" 1/1.2"

The VS-TCM series is made to suit larger sensor format, high resolution cameras. With its high NA these lenses are well suited for AOI, high accuracy inspection, and measurement applications. The adjustable aperture allows the DOF and contrast to be set to your application's needs.

- Features
- 1/2" - 1,1" sensor support
  - 33 models available
  - 0,1x - 7,0x Magnification
  - Telecentric design

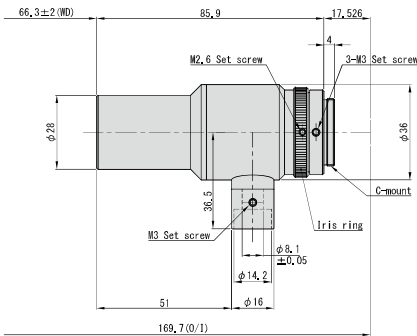


VS-TCM075-65/S



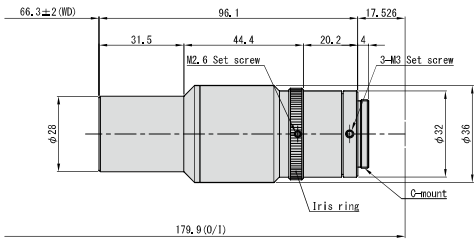
|                                 |      |                         |
|---------------------------------|------|-------------------------|
| Optical Mag.                    | 2/3" | 0.75x ±5 %              |
| FOV(VxH)                        | 2/3" | —                       |
|                                 | 1/2" | 6,4 x 8,5 mm            |
|                                 | 1/3" | 4,8 x 6,4 mm            |
| WD                              |      | 66,3 mm ±2              |
| O/I (Object & Imager Distance)  |      | 169,7 mm                |
| Working F/# *Value at Iris Open |      | 6,2                     |
| NA                              |      | 0,081                   |
| DOF at PCoC 0,04mm              |      | 0,5 mm                  |
| TV Distortion (1/2")            |      | 0,05 %                  |
| Relative Illuminance (Y=4)      |      | 95 %                    |
| Wavelength                      |      | Visible                 |
| Mount                           |      | C-Mount                 |
| Flange Back                     |      | 17,526 mm               |
| Sensor Size (max.)              |      | 1/2"                    |
| Co-Axial Prism                  |      | —                       |
| Weight (approx.)                |      | 155 g                   |
| Dimension                       |      | φ36(max.) x L = 85,9 mm |

VS-TCM075-65CO/S



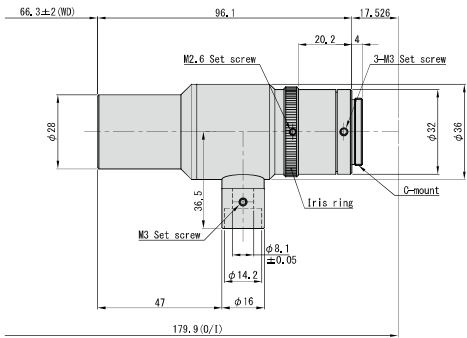
|                                 |      |                         |
|---------------------------------|------|-------------------------|
| Optical Mag.                    | 2/3" | 0.75x ±5 %              |
| FOV(VxH)                        | 2/3" | —                       |
|                                 | 1/2" | 6,4 x 8,5 mm            |
|                                 | 1/3" | 4,8 x 6,4 mm            |
| WD                              |      | 66,3 mm ±2              |
| O/I (Object & Imager Distance)  |      | 169,7 mm                |
| Working F/# *Value at Iris Open |      | 6,2                     |
| NA                              |      | 0,081                   |
| DOF at PCoC 0,04mm              |      | 0,5 mm                  |
| TV Distortion (1/2")            |      | 0,05 %                  |
| Relative Illuminance (Y=4)      |      | 95 %                    |
| Wavelength                      |      | Visible                 |
| Mount                           |      | C-Mount                 |
| Flange Back                     |      | 17,526 mm               |
| Sensor Size (max.)              |      | 1/2"                    |
| Co-Axial Prism                  |      | Built-in                |
| Weight (approx.)                |      | 160 g                   |
| Dimension                       |      | φ36(max.) x L = 85,9 mm |

VS-TCM1-65/S



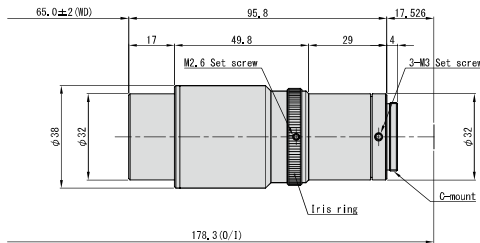
|                                 |      |                         |
|---------------------------------|------|-------------------------|
| Optical Mag.                    | 2/3" | 1.0x ±5 %               |
| FOV(VxH)                        | 2/3" | —                       |
|                                 | 1/2" | 4.8 x 6.4 mm            |
|                                 | 1/3" | 3.6 x 4.8 mm            |
| WD                              |      | 66,3 mm ±2              |
| O/I (Object & Imager Distance)  |      | 179,9 mm                |
| Working F/# *Value at Iris Open |      | 6,2                     |
| NA                              |      | 0,081                   |
| DOF at PCoC 0,04mm              |      | 0,5 mm                  |
| TV Distortion (1/2")            |      | 0,05 %                  |
| Relative Illuminance (Y=4)      |      | 95 %                    |
| Wavelength                      |      | Visible                 |
| Mount                           |      | C-Mount                 |
| Flange Back                     |      | 17,526 mm               |
| Sensor Size (max.)              |      | 1/2"                    |
| Co-Axial Prism                  |      | —                       |
| Weight (approx.)                |      | 155 g                   |
| Dimension                       |      | φ36(max.) x L = 96,1 mm |

VS-TCM1-65CO/S



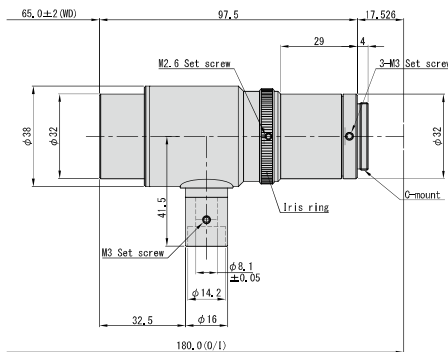
|                                 |      |                         |
|---------------------------------|------|-------------------------|
| Optical Mag.                    | 2/3" | 1.0x ±5 %               |
| FOV(VxH)                        | 2/3" | —                       |
|                                 | 1/2" | 4.8 x 6.4 mm            |
|                                 | 1/3" | 3.6 x 4.8 mm            |
| WD                              |      | 66,3 mm ±2              |
| O/I (Object & Imager Distance)  |      | 179,9 mm                |
| Working F/# *Value at Iris Open |      | 6,2                     |
| NA                              |      | 0,081                   |
| DOF at PCoC 0,04mm              |      | 0,5 mm                  |
| TV Distortion (1/2")            |      | 0,05 %                  |
| Relative Illuminance (Y=4)      |      | 95 %                    |
| Wavelength                      |      | Visible                 |
| Mount                           |      | C-Mount                 |
| Flange Back                     |      | 17,526 mm               |
| Sensor Size (max.)              |      | 1/2"                    |
| Co-Axial Prism                  |      | Built-in                |
| Weight (approx.)                |      | 160 g                   |
| Dimension                       |      | φ36(max.) x L = 96,1 mm |

VS-TCM2-65/S



|                                 |      |                         |
|---------------------------------|------|-------------------------|
| Optical Mag.                    | 2/3" | 2.0x ±5 %               |
| FOV(VxH)                        | 2/3" | —                       |
|                                 | 1/2" | 2,4 x 3,2 mm            |
|                                 | 1/3" | 1,8 x 2,4 mm            |
| WD                              |      | 65,0 mm ±2              |
| O/I (Object & Imager Distance)  |      | 178,3 mm                |
| Working F/# *Value at Iris Open |      | 6,6                     |
| NA                              |      | 0,152                   |
| DOF at PCoC 0,04mm              |      | 0,1 mm                  |
| TV Distortion (1/2")            |      | 0,10 %                  |
| Relative Illuminance (Y=4)      |      | 95 %                    |
| Wavelength                      |      | Visible                 |
| Mount                           |      | C-Mount                 |
| Flange Back                     |      | 17,526 mm               |
| Sensor Size (max.)              |      | 1/2"                    |
| Co-Axial Prism                  |      | —                       |
| Weight (approx.)                |      | 200 g                   |
| Dimension                       |      | φ38(max.) x L = 95,8 mm |

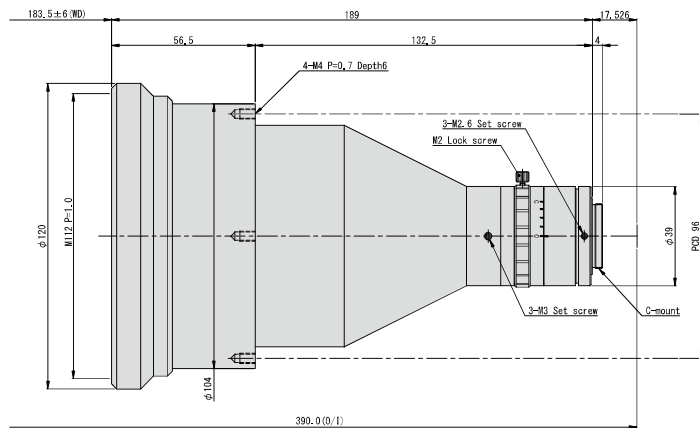
VS-TCM2-65CO/S



|                                 |      |                         |
|---------------------------------|------|-------------------------|
| Optical Mag.                    | 2/3" | 2.0x ±5 %               |
| FOV(VxH)                        | 2/3" | —                       |
|                                 | 1/2" | 2.4 x 3.2 mm            |
|                                 | 1/3" | 1.8 x 2.4 mm            |
| WD                              |      | 65,0 mm ±2              |
| O/I (Object & Imager Distance)  |      | 180,0 mm                |
| Working F/# *Value at Iris Open |      | 6,6                     |
| NA                              |      | 0,152                   |
| DOF at PCoC 0,04mm              |      | 0,1 mm                  |
| TV Distortion (1/2")            |      | 0,10 %                  |
| Relative Illuminance (Y=4)      |      | 95 %                    |
| Wavelength                      |      | Visible                 |
| Mount                           |      | C-Mount                 |
| Flange Back                     |      | 17,526 mm               |
| Sensor Size (max.)              |      | 1/2"                    |
| Co-Axial Prism                  |      | Built-in                |
| Weight (approx.)                |      | 210 g                   |
| Dimension                       |      | φ38(max.) x L = 97,5 mm |

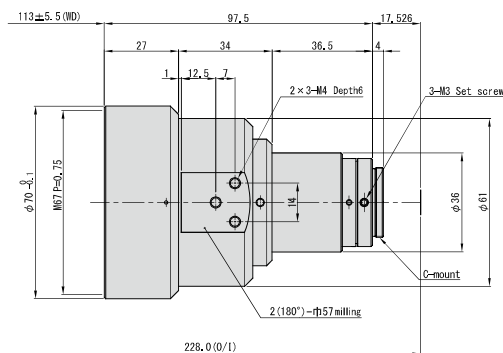
## WD:110-335mm Series

## VS-TCM01-180/S



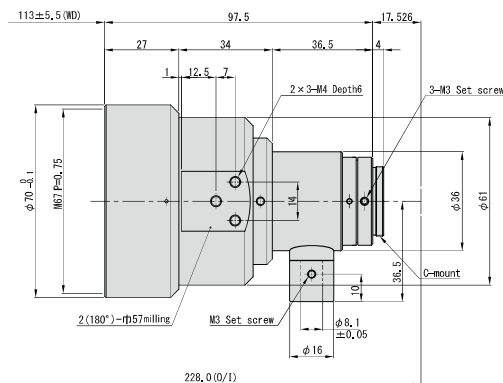
|                                 |        |                                |
|---------------------------------|--------|--------------------------------|
| Optical Mag.                    |        | 0,1x ± 5 %                     |
|                                 | 1/1.8" | 54.0 x 71.0 mm                 |
| FOV(VxH)                        | 1/2"   | 48.0 x 64.0 mm                 |
|                                 | 1/3"   | 36.0 x 48.0 mm                 |
| WD                              |        | 183,5 mm ± 6                   |
| O/I (Object & Imager Distance)  |        | 390,0 mm                       |
| Working F/# *Value at Iris Open |        | 5.6                            |
| NA                              |        | 0.009                          |
| DOF at PCoC $\phi$ 0.04mm       |        | 44.8 mm                        |
| TV Distortion (1/1,8")          |        | 0,01 %                         |
| Relative Illuminance (Y=4.4)    |        | 98 %                           |
| Wavelength                      |        | Visible                        |
| Mount                           |        | C-Mount                        |
| Flange Back                     |        | 17,526 mm                      |
| Sensor Size (max.)              |        | 1/1.8"                         |
| Co-Axial Prism                  |        | —                              |
| Filter Thread                   |        | M 112 P = 1.0                  |
| Weight (approx.)                |        | 940 g                          |
| Dimension                       |        | $\phi$ 120 (max.) x L = 189 mm |

## VS-TCM017-110

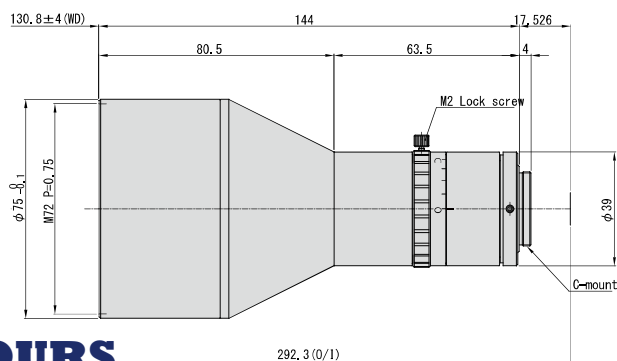


|                                |                                                  |                |
|--------------------------------|--------------------------------------------------|----------------|
| Optical Mag.                   |                                                  | 0.17x ± 5 %    |
|                                | 1/1.8"                                           | 31.8 x 41.8 mm |
| FOV(VxH)                       | 1/2"                                             | 28.2 x 37.6 mm |
|                                | 1/3"                                             | 21.2 x 28.2 mm |
| WD                             |                                                  | 113.0 mm ± 5.5 |
| O/I (Object & Imager Distance) |                                                  | 228.0 mm       |
| Working F/#                    |                                                  | 4.0            |
| NA                             |                                                  | 0.021          |
| DOF at PCoC $\phi$ 0.04mm      |                                                  | 11.1 mm        |
| TV Distortion (1/1.8")         |                                                  | 0.02 %         |
| Relative Illuminance (Y=4.4)   |                                                  | 100 %          |
| Wavelength                     |                                                  | Visible        |
| Mount                          |                                                  | C-Mount        |
| Flange Back                    |                                                  | 17526 mm       |
| Sensor Size (max.)             |                                                  | 1/1.8"         |
| Co-Axial Prism                 |                                                  | —              |
| Filter Thread                  | M 67                                             | P = 0.75       |
| Weight (approx.)               |                                                  | 380 g          |
| Dimension                      | $\phi 70(\text{max.}) \times L = 975 \text{ mm}$ |                |

## VS-TCM017-110CO

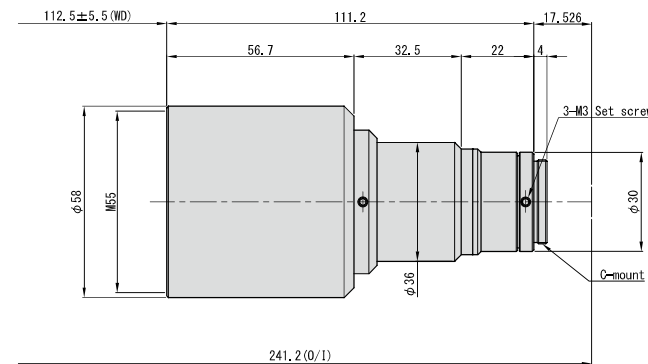


|                                |        |                              |
|--------------------------------|--------|------------------------------|
| Optical Mag.                   |        | 0.17x $\pm$ 5%               |
|                                | 1/1.8" | 31.8 x 41.8 mm               |
| FOV(VxH)                       | 1/2"   | 28.2 x 37.6 mm               |
|                                | 1/3"   | 21.2 x 28.2 mm               |
| WD                             |        | 113.0 mm $\pm$ 5.5           |
| O/I (Object & Imager Distance) |        | 228.0 mm                     |
| Working F/#                    |        | 4.0                          |
| NA                             |        | 0.021                        |
| DOF at PCoC $\phi$ 0.04mm      |        | 11.1 mm                      |
| TV Distortion (1/1.8")         |        | 0.02 %                       |
| Relative Illuminance (Y=4.4)   |        | 100 %                        |
| Wavelength                     |        | Visible                      |
| Mount                          |        | C-Mount                      |
| Flange Back                    |        | 17526 mm                     |
| Sensor Size (max.)             |        | 1/1.8"                       |
| Co-Axial Prism                 |        | Built-in                     |
| Filter Thread                  |        | M 67 P = 0.75                |
| Weight (approx.)               |        | 390 g                        |
| Dimension                      |        | $\phi$ 70(max.) x L = 975 mm |

**VS-TCM019-130/S**

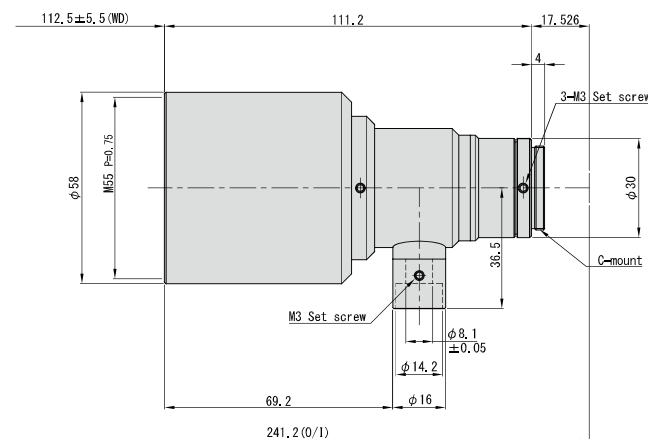
|                                |      |                                                  |
|--------------------------------|------|--------------------------------------------------|
| Optical Mag.                   |      | 0.19x ± 5 %                                      |
|                                | 2/3" | 37.4 x 44.2 mm                                   |
| FOV(VxH)                       | 1/2" | 25.3 x 33.7 mm                                   |
|                                | 1/3" | 18.9 x 25.3 mm                                   |
| WD                             |      | 130.8 mm ± 4                                     |
| O/I (Object & Imager Distance) |      | 292.3 mm                                         |
| Working F/# Value at Iris Open |      | 4.3                                              |
| NA                             |      | 0.022                                            |
| DOF at PCoC $\phi$ 0.04mm      |      | 9.5 mm                                           |
| TV Distortion (2/3")           |      | -0.01 %                                          |
| Relative Illuminance (Y=5,5)   |      | 96 %                                             |
| Wavelength                     |      | Visible                                          |
| Mount                          |      | C-Mount                                          |
| Flange Back                    |      | 17,526 mm                                        |
| Sensor Size (max.)             |      | 2/3"                                             |
| Co-Axial Prism                 |      | —                                                |
| Filter Thread                  |      | M 72 P = 0.75                                    |
| Weight (approx.)               |      | 410 g                                            |
| Dimension                      |      | $\phi 75(\text{max.}) \times L = 144 \text{ mm}$ |

**VS-TCM022-110-1/1.8"**



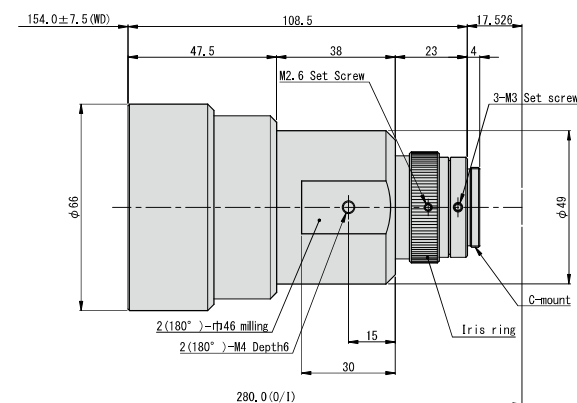
|                                |        |                                                    |
|--------------------------------|--------|----------------------------------------------------|
| Optical Mag.                   |        | 0,22x ± 5 %                                        |
|                                | 1/1.8" | 24.5 x 32.3 mm                                     |
| FOV(VxH)                       | 1/2"   | 21.8 x 29.1 mm                                     |
|                                | 1/3"   | 16.4 x 21.8 mm                                     |
| WD                             |        | 112,5 mm ± 5,5                                     |
| O/I (Object & Imager Distance) |        | 241,2 mm                                           |
| Working F/#                    |        | 5,6                                                |
| NA                             |        | 0,020                                              |
| DOF at PCoC $\phi$ 0,04mm      |        | 9,3 mm                                             |
| TV Distortion (1/1,8")         |        | 0,05 %                                             |
| Relative Illuminance (Y=4.4)   |        | 90 %                                               |
| Wavelength                     |        | Visible                                            |
| Mount                          |        | C-Mount                                            |
| Flange Back                    |        | 17,526 mm                                          |
| Sensor Size (max.)             |        | 1/1.8"                                             |
| Co-Axial Prism                 |        | —                                                  |
| Filter Thread                  |        | M 55 P = 0.75                                      |
| Weight (approx.)               |        | 380 g                                              |
| Dimension                      |        | $\phi 58(\text{max.}) \times L = 111,2 \text{ mm}$ |

**VS-TCM022-110CO-1/1.8"**



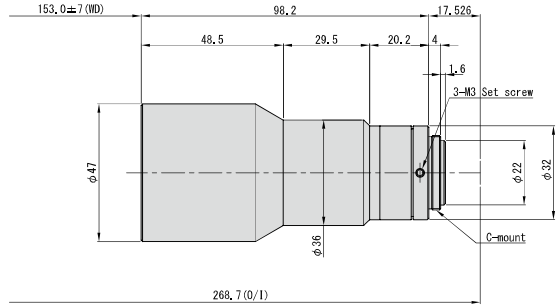
|                                |        |                                                    |
|--------------------------------|--------|----------------------------------------------------|
| Optical Mag.                   |        | 0.22x ± 5 %                                        |
|                                | 1/1.8" | 24.5 x 32.3 mm                                     |
| FOV(VxH)                       | 1/2"   | 21.8 x 29.1 mm                                     |
|                                | 1/3"   | 16.4 x 21.8 mm                                     |
| WD                             |        | 112.5 mm ± 5.5                                     |
| O/I (Object & Imager Distance) |        | 241.2 mm                                           |
| Working F/#                    |        | 5.6                                                |
| NA                             |        | 0.020                                              |
| DOF at PCoC $\phi$ 0.04mm      |        | 9.3 mm                                             |
| TV Distortion (1/1.8")         |        | 0.05 %                                             |
| Relative Illuminance (Y=4,4)   |        | 90 %                                               |
| Wavelength                     |        | Visible                                            |
| Mount                          |        | C-Mount                                            |
| Flange Back                    |        | 17526 mm                                           |
| Sensor Size (max.)             |        | 1/1.8"                                             |
| Co-Axial Prism                 |        | Built-in                                           |
| Filter Thread                  |        | M 55 P = 0.75                                      |
| Weight (approx.)               |        | 380 g                                              |
| Dimension                      |        | $\phi 58(\text{max.}) \times L = 111.2 \text{ mm}$ |

## VS-TCM022-150/S

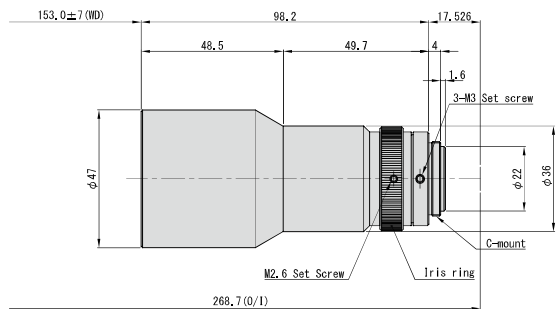


|                                |      |                                                    |
|--------------------------------|------|----------------------------------------------------|
| Optical Mag.                   |      | 0.22x ± 5 %                                        |
|                                | 2/3" | 32,3 x 38,2 mm                                     |
| FOV(VxH)                       | 1/2" | 21,8 x 29,1 mm                                     |
|                                | 1/3" | 16,4 x 21,8 mm                                     |
| WD                             |      | 154,0 mm ± 7,5                                     |
| O/I (Object & Imager Distance) |      | 280 mm                                             |
| Working F/# Value at Iris Open |      | 5,5                                                |
| NA                             |      | 0.020                                              |
| DOF at PCoC $\phi$ 0.04mm      |      | 9,1 mm                                             |
| TV Distortion (2/3")           |      | 0,02 %                                             |
| Relative Illuminance (Y=5,5)   |      | 100 %                                              |
| Wavelength                     |      | Visible                                            |
| Mount                          |      | C-Mount                                            |
| Flange Back                    |      | 17,526 mm                                          |
| Sensor Size (max.)             |      | 2/3"                                               |
| Co-Axial Prism                 |      | —                                                  |
| Weight (approx.)               |      | 360 g                                              |
| Dimension                      |      | $\phi 66(\text{max.}) \times L = 108,5 \text{ mm}$ |

# VS-TCM025-150

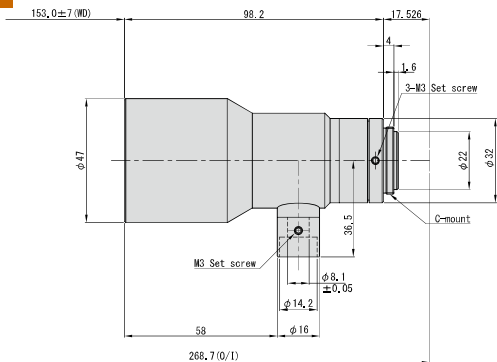


|                                |      |                         |
|--------------------------------|------|-------------------------|
| Optical Mag.                   |      | 0,25x ± 5 %             |
|                                | 2/3" | —                       |
| FOV(VxH)                       | 1/2" | 19,2 x 25,6 mm          |
|                                | 1/3" | 14,4 x 19,2 mm          |
| WD                             |      | 153,0 mm ± 7            |
| O/I (Object & Imager Distance) |      | 268,7 mm                |
| Working F/#                    |      | 3.9                     |
| NA                             |      | 0.032                   |
| DOF at PCoC Ø0,04mm            |      | 5,0 mm                  |
| TV Distortion (1/2")           |      | 0,05 %                  |
| Relative Illuminance (Y=4)     |      | 100 %                   |
| Wavelength                     |      | Visible                 |
| Mount                          |      | C-Mount                 |
| Flange Back                    |      | 17,526 mm               |
| Sensor Size (max.)             |      | 1/2"                    |
| Co-Axial Prism                 |      | —                       |
| Weight (approx.)               |      | 250 g                   |
| Dimension                      |      | Ø47(max.) x L = 98,2 mm |

**VS-TCM025-150/S**

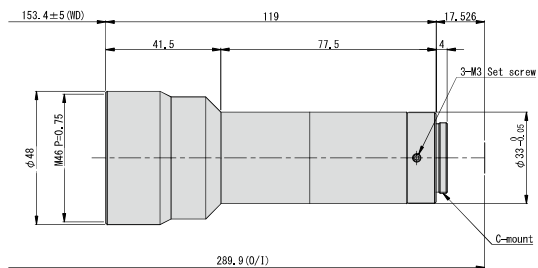
|                                 |      |                                |
|---------------------------------|------|--------------------------------|
| Optical Mag.                    |      | 0.25x $\pm 5\%$                |
|                                 | 2/3" | —                              |
| FOV(VxH)                        | 1/2" | 19.2 x 25.6 mm                 |
|                                 | 1/3" | 14.4 x 19.2 mm                 |
| WD                              |      | 153.0 mm $\pm 7$               |
| O/I (Object & Imager Distance)  |      | 268.7 mm                       |
| Working F/# *Value at Iris Open |      | 3.9                            |
| NA                              |      | 0.032                          |
| DOF at PCoC $\phi 0.04$ mm      |      | 5.0 mm                         |
| TV Distortion (1/2")            |      | 0.05 %                         |
| Relative Illuminance (Y=4)      |      | 100 %                          |
| Wavelength                      |      | Visible                        |
| Mount                           |      | C-Mount                        |
| Flange Back                     |      | 17.526 mm                      |
| Sensor Size (max.)              |      | 1/2"                           |
| Co-Axial Prism                  |      | —                              |
| Weight (approx.)                |      | 250 g                          |
| Dimension                       |      | $\phi 47$ (max.) x L = 98.2 mm |

## VS-TCM025-150CO



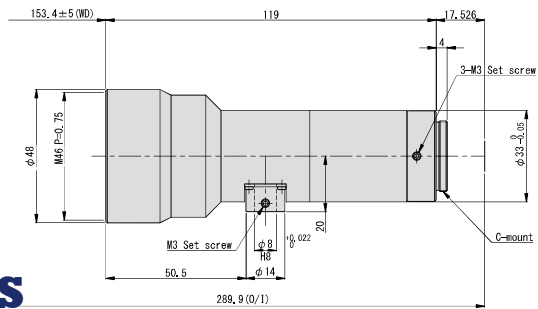
|                                |      |                                                   |
|--------------------------------|------|---------------------------------------------------|
| Optical Mag.                   |      | 0.25x ± 5 %                                       |
|                                | 2/3" | —                                                 |
| FOV(VxH)                       | 1/2" | 19.2 x 25.6 mm                                    |
|                                | 1/3" | 14.4 x 19.2 mm                                    |
| WD                             |      | 153.0 mm ± 7                                      |
| O/I (Object & Imager Distance) |      | 268.7 mm                                          |
| Working F/#                    |      | 3.9                                               |
| NA                             |      | 0.032                                             |
| DOF at PCoC $\phi$ 0.04mm      |      | 5.0 mm                                            |
| TV Distortion (1/2")           |      | 0.05 %                                            |
| Relative Illuminance (Y=4)     |      | 90 %                                              |
| Wavelength                     |      | Visible                                           |
| Mount                          |      | C-Mount                                           |
| Flange Back                    |      | 17526 mm                                          |
| Sensor Size (max.)             |      | 1/2"                                              |
| Co-Axial Prism                 |      | Built-in                                          |
| Weight (approx.)               |      | 260 g                                             |
| Dimension                      |      | $\phi 47(\text{max.}) \times L = 98.2 \text{ mm}$ |

## VS-TCM03-150



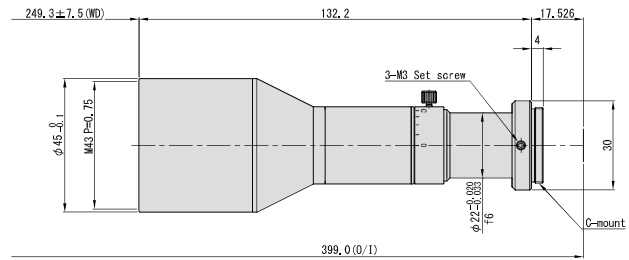
|                                |      |                               |
|--------------------------------|------|-------------------------------|
| Optical Mag.                   |      | 0.3x $\pm 5\%$                |
|                                | 2/3" | 23.7 x 28.0 mm                |
| FOV(VxH)                       | 1/2" | 16.0 x 21.3 mm                |
|                                | 1/3" | 12.0 x 16.0 mm                |
| WD                             |      | 153.4 mm $\pm 5$              |
| O/I (Object & Imager Distance) |      | 289.9 mm                      |
| Working F/#                    |      | 7.5                           |
| NA                             |      | 0.020                         |
| DOF at PCoC $\phi 0.04$ mm     |      | 6.7 mm                        |
| TV Distortion (2/3")           |      | 0.03 %                        |
| Relative Illuminance (Y=5,5)   |      | 82 %                          |
| Wavelength                     |      | Visible                       |
| Mount                          |      | C-Mount                       |
| Flange Back                    |      | 17526 mm                      |
| Sensor Size (max.)             |      | 2/3"                          |
| Co-Axial Prism                 |      | —                             |
| Filter Thread                  |      | M 46 P = 0.75                 |
| Weight (approx.)               |      | 225 g                         |
| Dimension                      |      | $\phi 48$ (max.) x L = 119 mm |

## VS-TCM03-150CC

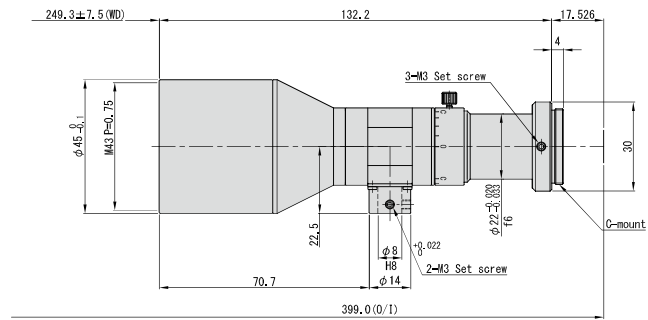


|                                |      |                              |
|--------------------------------|------|------------------------------|
| Optical Mag.                   |      | 0.3x ± 5 %                   |
| FOV(VxH)                       | 2/3" | 23.7 × 28.0 mm               |
|                                | 1/2" | 16.0 × 21.3 mm               |
|                                | 1/3" | 12.0 × 16.0 mm               |
| WD                             |      | 153.4 mm ± 5                 |
| O/I (Object & Imager Distance) |      | 289.9 mm                     |
| Working F/#                    |      | 7.5                          |
| NA                             |      | 0.020                        |
| DOF at PCoC $\phi$ 0.04mm      |      | 6.7 mm                       |
| TV Distortion (2/3")           |      | 0.03 %                       |
| Relative Illuminance (Y=5.5)   |      | 82 %                         |
| Wavelength                     |      | Visible                      |
| Mount                          |      | C-Mount                      |
| Flange Back                    |      | 17526 mm                     |
| Sensor Size (max.)             |      | 2/3"                         |
| Co-Axial Prism                 |      | Built-in                     |
| Filter Thread                  |      | M 46 P = 0.75                |
| Weight (approx.)               |      | 225 g                        |
| Dimension                      |      | $\phi$ 48(max.) x L = 119 mm |

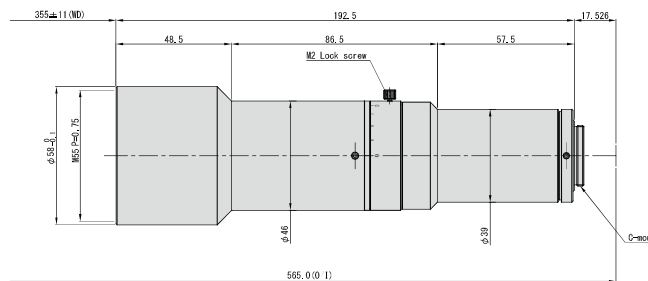
## VS-TCM1-250/S



|                                 |      |                           |
|---------------------------------|------|---------------------------|
| Optical Mag.                    | 2/3" | 1.0x ± 5 %                |
| FOV(VxH)                        | 2/3" | 71 x 8.4 mm               |
|                                 | 1/2" | 4.8 x 6.4 mm              |
|                                 | 1/3" | 3.6 x 4.8 mm              |
| WD                              |      | 249,3 mm ± 75             |
| O/I (Object & Imager Distance)  |      | 399,0 mm                  |
| Working F/# *Value at Iris Open |      | 10.0                      |
| NA                              |      | 0.050                     |
| DOF at PCoC Ø0,04mm             |      | 0.8 mm                    |
| TV Distortion (2/3")            |      | 0.00 %                    |
| Relative Illuminance (Y=5.5)    |      | 100 %                     |
| Wavelength                      |      | Visible                   |
| Mount                           |      | C-Mount                   |
| Flange Back                     |      | 17526 mm                  |
| Sensor Size (max.)              |      | 2/3"                      |
| Co-Axial Prism                  |      | —                         |
| Filter Thread                   |      | M 43 P = 0.75             |
| Weight (approx.)                |      | 220 g                     |
| Dimension                       |      | Ø45 (max.) x L = 132.2 mm |

**VS-TCM1-250CO/9**

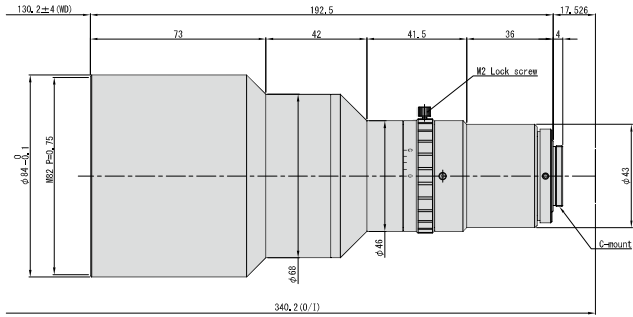
|                                |      |                                |
|--------------------------------|------|--------------------------------|
| Optical Mag.                   |      | 1.0x $\pm$ 5 %                 |
|                                | 2/3" | 7.1 x 8.4 mm                   |
| FOV(VxH)                       | 1/2" | 4.8 x 6.4 mm                   |
|                                | 1/3" | 3.6 x 4.8 mm                   |
| WD                             |      | 249.3 mm $\pm$ 7.5             |
| O/I (Object & Imager Distance) |      | 399.0 mm                       |
| Working F/# Value at Iris Open |      | 10.0                           |
| NA                             |      | 0.050                          |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.8 mm                         |
| TV Distortion (2/3")           |      | 0.00 %                         |
| Relative Illuminance (Y=5,5)   |      | 100 %                          |
| Wavelength                     |      | Visible                        |
| Mount                          |      | C-Mount                        |
| Flange Back                    |      | 17.526 mm                      |
| Sensor Size (max.)             |      | 2/3"                           |
| Co-Axial Prism                 |      | Built-in                       |
| Filter Thread                  |      | M 43 P = 0.75                  |
| Weight (approx.)               |      | 230 g                          |
| Dimension                      |      | $\phi$ 45(max.) x L = 132.2 mm |

**VS-TCM1-355/S**

|                                |        |                                                    |
|--------------------------------|--------|----------------------------------------------------|
| Optical Mag.                   |        | 1.0x                                               |
|                                | 1/1.8" | 5.4 x 7.1 mm                                       |
| FOV(VxH)                       | 1/2"   | 4.8 x 6.4 mm                                       |
|                                | 1/3"   | 3.6 x 4.8 mm                                       |
| WD                             |        | 355.0 mm ± 11                                      |
| O/I (Object & Imager Distance) |        | 565.0 mm                                           |
| Working F/# Value at Iris Open |        | 7.5                                                |
| NA                             |        | 0.067                                              |
| DOF at PCoC $\phi$ 0.04mm      |        | 0.6 mm                                             |
| TV Distortion (1/1.8")         |        | 0.05 %                                             |
| Relative Illuminance (Y=4.4)   |        | 91 %                                               |
| Wavelength                     |        | Visible                                            |
| Mount                          |        | C-Mount                                            |
| Flange Back                    |        | 17526 mm                                           |
| Sensor Size (max.)             |        | 1.18"                                              |
| Co-Axial Prism                 |        | —                                                  |
| Filter Thread                  |        | M 55 P = 0.75                                      |
| Weight (approx.)               |        | 440 g                                              |
| Dimension                      |        | $\phi 58(\text{max.}) \times L = 192.5 \text{ mm}$ |

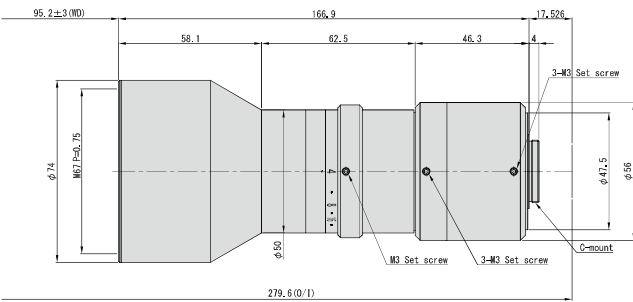
## ■ 1.1" Support Series

**VS-TCM03-130/S** Bi-Telecentric Lens



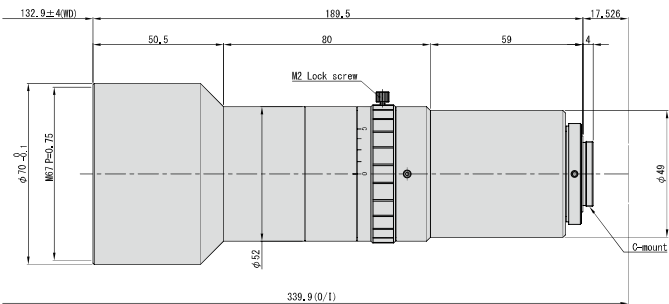
|                                 |      |                                            |
|---------------------------------|------|--------------------------------------------|
| Optical Mag.                    |      | 0.3x $\pm 5\%$                             |
|                                 | 1"   | 37.5 x 37.5 mm                             |
| FOV(VxH)                        | 2/3" | 23.7 x 28.0 mm                             |
|                                 | 1/2" | 16.0 x 21.3 mm                             |
| WD                              |      | 130.2 mm $\pm 4$                           |
| O/I (Object & Imager Distance)  |      | 340.2 mm                                   |
| Working F/# *Value at Iris Open |      | 5.8                                        |
| NA                              |      | 0.026                                      |
| DOF at PCoC $\phi 0.04$ mm      |      | 5.1 mm                                     |
| TV Distortion (1")              |      | 0.01 %                                     |
| Relative Illuminance (Y=10)     |      | 94 %                                       |
| Wavelength                      |      | Visible                                    |
| Mount                           |      | C-Mount                                    |
| Flange Back                     |      | 17.526 mm                                  |
| Image Circle                    |      | $\phi 20$ mm                               |
| Co-Axial Prism                  |      | —                                          |
| Filter Thread                   |      | M 82 P = 0.75                              |
| Weight (approx.)                |      | 940 g                                      |
| Dimension                       |      | $\phi 84(\text{max.}) \times L = 192.5$ mm |

**VS-TCM04-100/S** Bi-Telecentric Lens



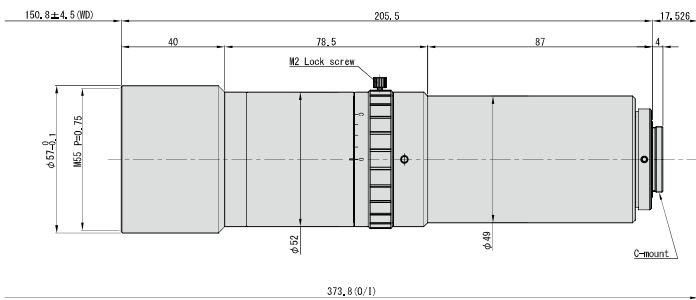
|                                 |      |                                                           |
|---------------------------------|------|-----------------------------------------------------------|
| Optical Mag.                    |      | 0.4x $\pm 5\%$                                            |
|                                 | 1"   | 28.2 x 28.2 mm                                            |
| FOV(VxH)                        | 2/3" | 17.8 x 21.0 mm                                            |
|                                 | 1/2" | 12.0 x 16.0 mm                                            |
| WD                              |      | 95.2 mm $\pm 3$                                           |
| O/I (Object & Imager Distance)  |      | 279.6 mm                                                  |
| Working F/# *Value at Iris Open |      | 4.0                                                       |
| NA                              |      | 0.050                                                     |
| DOF at PCoC $\phi 0.04$ mm      |      | 2.0 mm                                                    |
| TV Distortion (1")              |      | 0.02 %                                                    |
| Relative Illuminance (Y=8)      |      | 90 %                                                      |
| Wavelength                      |      | Visible                                                   |
| Mount                           |      | C-Mount                                                   |
| Flange Back                     |      | 17.526 mm                                                 |
| Image Circle                    |      | $\phi 16$ mm                                              |
| Co-Axial Prism                  |      | —                                                         |
| Weight (approx.)                |      | M 67 P = 0.75                                             |
| Dimension                       |      | 680 g                                                     |
|                                 |      | $\phi 74(\text{max.}) \times \text{L} = 166.9 \text{ mm}$ |

**VS-TCM05-130/S** Bi-Telecentric Lens



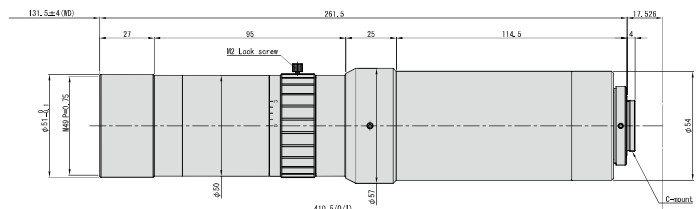
|                                |                     |                          |
|--------------------------------|---------------------|--------------------------|
| Optical Mag.                   |                     | 0.5x ± 5 %               |
|                                | 1"                  | 22.5 x 22.5 mm           |
| FOV(VxH)                       | 2/3"                | 14.2 x 16.8 mm           |
|                                | 1/2"                | 9.6 x 12.8 mm            |
| WD                             |                     | 132.9 mm ± 4             |
| O/I (Object & Imager Distance) |                     | 339.9 mm                 |
| Working F/#                    | *Value at Iris Open | 4.6                      |
| NA                             |                     | 0.055                    |
| DOF at PCoC                    | φ0.04mm             | 1.5 mm                   |
| TV Distortion (1°)             |                     | -0.02%                   |
| Relative Illuminance (Y=9)     |                     | 97 %                     |
| Wavelength                     |                     | Visible                  |
| Mount                          |                     | C-Mount                  |
| Flange Back                    |                     | 17.526 mm                |
| Image Circle                   |                     | φ18 mm                   |
| Co-Axial Prism                 |                     | —                        |
| Filter Thread                  |                     | M 67 P = 0.75            |
| Weight (approx.)               |                     | 720 g                    |
| Dimension                      |                     | φ70(max.) x L = 189.5 mm |

**VS-TCM07-150/S** Bi-Telecentric Lens



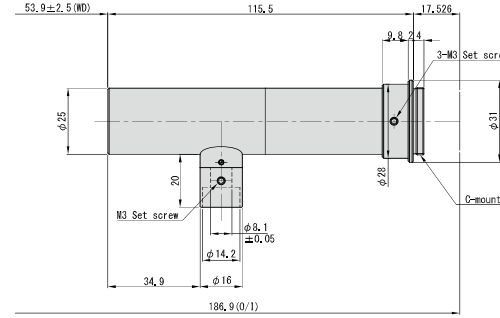
|                                 |      |                                 |
|---------------------------------|------|---------------------------------|
| Optical Mag.                    |      | 0.7x $\pm$ 5 %                  |
|                                 | 1"   | 16.1 x 16.1 mm                  |
| FOV(VxH)                        | 2/3" | 10.1 x 12.0 mm                  |
|                                 | 1/2" | 6.9 x 9.1 mm                    |
| WD                              |      | 150.8 mm $\pm$ 4.5              |
| O/I (Object & Imager Distance)  |      | 373.8 mm                        |
| Working F/# *Value at Iris Open |      | 5.3                             |
| NA                              |      | 0.066                           |
| DOF at PCoC $\phi$ 0.04mm       |      | 0.9 mm                          |
| TV Distortion (1")              |      | 0.01%                           |
| Relative Illuminance (Y=9)      |      | 99 %                            |
| Wavelength                      |      | Visible                         |
| Mount                           |      | C-Mount                         |
| Flange Back                     |      | 17526 mm                        |
| Image Circle                    |      | $\phi$ 18 mm                    |
| Co-Axial Prism                  |      | —                               |
| Filter Thread                   |      | M 55 P = 0.75                   |
| Weight (approx.)                |      | 580 g                           |
| Dimension                       |      | $\phi$ 57 (max.) x L = 205.5 mm |

|                      |                     |
|----------------------|---------------------|
| <b>VS-TCM1-130/S</b> | Bi-Telecentric Lens |
|----------------------|---------------------|



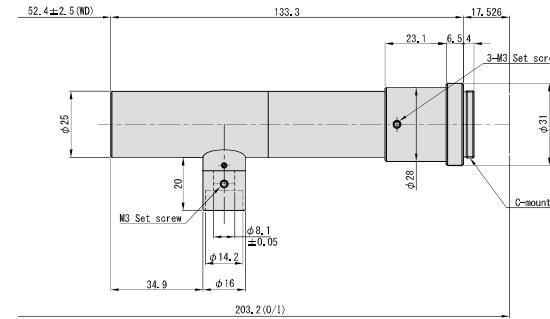
|                                 |      |                                 |
|---------------------------------|------|---------------------------------|
| Optical Mag.                    |      | 1.0x ± 5 %                      |
|                                 | 1"   | 11.3 x 11.3 mm                  |
| FOV(VxH)                        | 2/3" | 7.1 x 8.4 mm                    |
|                                 | 1/2" | 4.8 x 6.4 mm                    |
| WD                              |      | 131.5 mm ± 4                    |
| O/I (Object & Imager Distance)  |      | 410.5                           |
| Working F/# *Value at Iris Open |      | 6.3                             |
| NA                              |      | 0.080                           |
| DOF at PCoC $\phi$ 0.04mm       |      | 0.5 mm                          |
| TV Distortion (1")              |      | 0.00%                           |
| Relative Illuminance (Y=9)      |      | 99 %                            |
| Wavelength                      |      | Visible                         |
| Mount                           |      | C-Mount                         |
| Flange Back                     |      | 17.526 mm                       |
| Image Circle                    |      | $\phi$ 18 mm                    |
| Co-Axial Prism                  |      | —                               |
| Filter Thread                   |      | M 49 P = 0.75                   |
| Weight (approx.)                |      | 610 g                           |
| Dimension                       |      | $\phi$ 57 (max.) x L = 261.5 mm |

## VS-TCM3-50CO

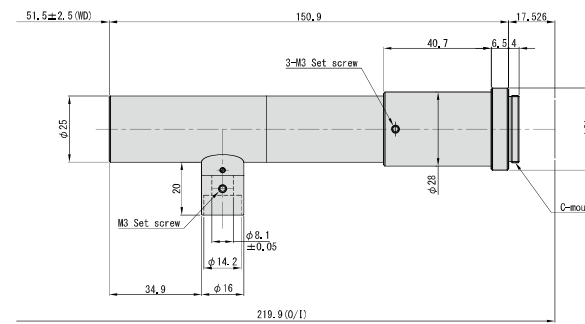


|                                 |      |                                 |
|---------------------------------|------|---------------------------------|
| Optical Mag.                    |      | 3.0x $\pm$ 5 %                  |
|                                 | 1"   | 3.8 x 3.8 mm                    |
| FOV(VxH)                        | 2/3" | 2.4 x 2.8 mm                    |
|                                 | 1/2" | 1.6 x 2.1 mm                    |
| WD                              |      | 53.9 mm $\pm$ 2.5               |
| O/I (Object & Imager Distance)  |      | 186.9 mm                        |
| Working F/# *Value at Iris Open |      | 15.0                            |
| NA                              |      | 0.100                           |
| DOF at PCoC $\phi$ 0.04mm       |      | 0.1 mm                          |
| TV Distortion (1")              |      | 0.32 %                          |
| Relative Illuminance (Y=9.25)   |      | 93 %                            |
| Wavelength                      |      | Visible                         |
| Mount                           |      | C-Mount                         |
| Flange Back                     |      | 17526 mm                        |
| Image Circle                    |      | $\phi$ 18.5 mm                  |
| Co-Axial Prism                  |      | Built-in                        |
| Weight (approx.)                |      | 120 g                           |
| Dimension                       |      | $\phi$ 31 (max.) x L = 115.5 mm |

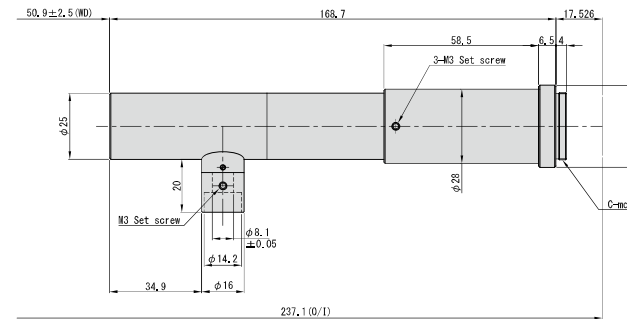
## VS-TCM4-50CO



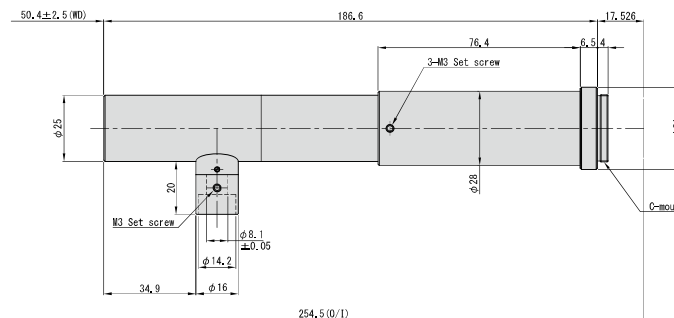
|                                 |      |                                 |
|---------------------------------|------|---------------------------------|
| Optical Mag.                    |      | 4.0x $\pm$ 5 %                  |
|                                 | 1"   | 2.8 x 2.8 mm                    |
| FOV(VxH)                        | 2/3" | 1.8 x 2.1 mm                    |
|                                 | 1/2" | 1.2 x 1.6 mm                    |
| WD                              |      | 52.4 mm $\pm$ 2.5               |
| O/I (Object & Imager Distance)  |      | 203.2 mm                        |
| Working F/# *Value at Iris Open |      | 20.0                            |
| NA                              |      | 0.100                           |
| DOF at PCoC $\phi$ 0.04mm       |      | 0.1 mm                          |
| TV Distortion (1")              |      | 0.09 %                          |
| Relative Illuminance (Y=11)     |      | 90 %                            |
| Wavelength                      |      | Visible                         |
| Mount                           |      | C-Mount                         |
| Flange Back                     |      | 17526 mm                        |
| Image Circle                    |      | $\phi$ 22 mm                    |
| Co-Axial Prism                  |      | Built-in                        |
| Weight (approx.)                |      | 132 g                           |
| Dimension                       |      | $\phi$ 31 (max.) x L = 133.3 mm |

**VS-TCM5-50CO**

|                                 |      |                                 |
|---------------------------------|------|---------------------------------|
| Optical Mag.                    |      | 5.0x $\pm$ 5 %                  |
|                                 | 1"   | 2.3 x 2.3 mm                    |
| FOV(VxH)                        | 2/3" | 1.4 x 1.7 mm                    |
|                                 | 1/2" | 1.0 x 1.3 mm                    |
| WD                              |      | 51.5 mm $\pm$ 2.5               |
| O/I (Object & Imager Distance)  |      | 219.9 mm                        |
| Working F/# *Value at Iris Open |      | 25.0                            |
| NA                              |      | 0.100                           |
| DOF at PCoC $\phi$ 0.04mm       |      | 0.08 mm                         |
| TV Distortion (1")              |      | 0.03 %                          |
| Relative Illuminance (Y=11)     |      | 90 %                            |
| Wavelength                      |      | Visible                         |
| Mount                           |      | C-Mount                         |
| Flange Back                     |      | 17526 mm                        |
| Image Circle                    |      | $\phi$ 22 mm                    |
| Co-Axial Prism                  |      | Built-in                        |
| Weight (approx.)                |      | 148 g                           |
| Dimension                       |      | $\phi$ 31 (max.) x L = 150.9 mm |

**VS-TCM6-50CO**

|                                 |      |                                 |
|---------------------------------|------|---------------------------------|
| Optical Mag.                    |      | 6.0x $\pm$ 5 %                  |
|                                 | 1"   | 1.9 x 1.9 mm                    |
| FOV(VxH)                        | 2/3" | 1.2 x 1.4 mm                    |
|                                 | 1/2" | 0.8 x 1.1 mm                    |
| WD                              |      | 50.9 mm $\pm$ 2.5               |
| O/I (Object & Imager Distance)  |      | 237.1 mm                        |
| Working F/# *Value at Iris Open |      | 30.0                            |
| NA                              |      | 0.100                           |
| DOF at PCoC $\phi$ 0.04mm       |      | 0.07 mm                         |
| TV Distortion (1°)              |      | 0.00 %                          |
| Relative Illuminance (Y=11)     |      | 90 %                            |
| Wavelength                      |      | Visible                         |
| Mount                           |      | C-Mount                         |
| Flange Back                     |      | 17526 mm                        |
| Image Circle                    |      | $\phi$ 22 mm                    |
| Co-Axial Prism                  |      | Built-in                        |
| Weight (approx.)                |      | 155 g                           |
| Dimension                       |      | $\phi$ 31 (max.) x L = 168.7 mm |

**VS-TCM7-50CO**

|                                 |      |                                 |
|---------------------------------|------|---------------------------------|
| Optical Mag.                    |      | 70x $\pm 5\%$                   |
|                                 | 1"   | 1.6 x 1.6 mm                    |
| FOV(VxH)                        | 2/3" | 1.0 x 1.2 mm                    |
|                                 | 1/2" | 0.7 x 0.9 mm                    |
| WD                              |      | 50.4 mm $\pm 2.5$               |
| O/I (Object & Imager Distance)  |      | 254.5 mm                        |
| Working F/# *Value at Iris Open |      | 35.0                            |
| NA                              |      | 0.100                           |
| DOF at PCoC $\phi 0.04$ mm      |      | 0.06 mm                         |
| TV Distortion (1")              |      | 0.00 %                          |
| Relative Illumination (Y=11)    |      | 90 %                            |
| Wavelength                      |      | Visible                         |
| Mount                           |      | C-Mount                         |
| Flange Back                     |      | 17526 mm                        |
| Image Circle                    |      | $\phi 22$ mm                    |
| Co-Axial Prism                  |      | Built-in                        |
| Weight (approx.)                |      | 160 g                           |
| Dimension                       |      | $\phi 31$ (max.) x L = 186.6 mm |



VS-THV Series 1.1" 1" 2/3"

The VS-THV series is designed to support cameras with large sensors up to 1.1". The adjustable aperture allows the DOF and contrast to be set to the need of your application.

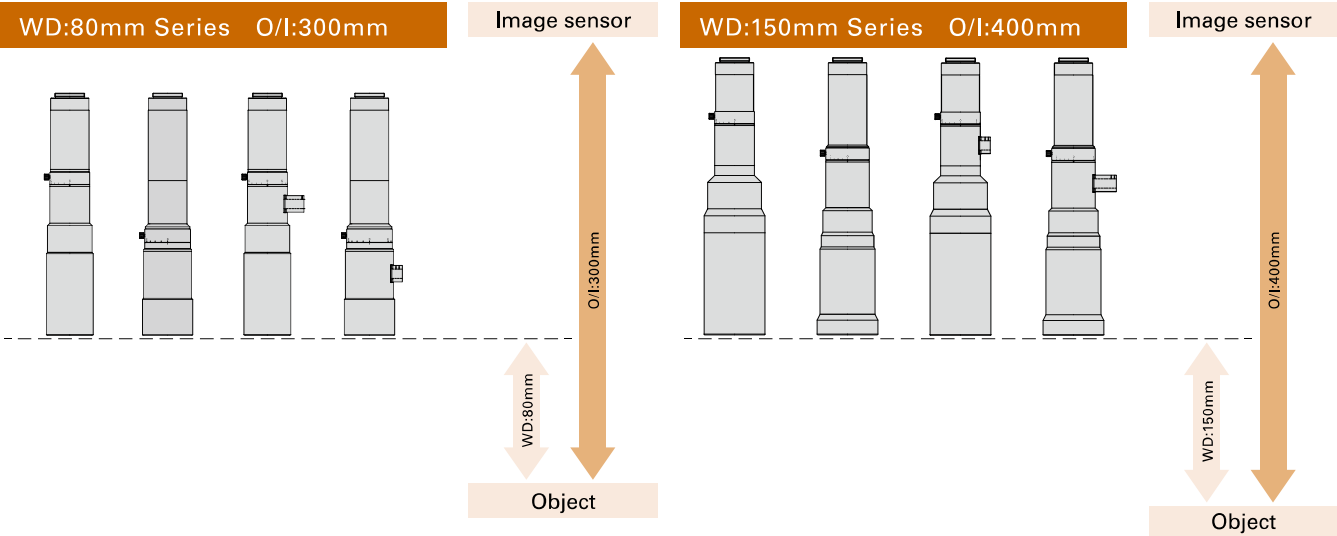
Features

- 1.1" & 1" sensor support
- 23 models available
- 0.11x - 2.0x Magnification
- Built-In Coaxial Illumination Available
- Manual Iris to Adjust Depth of Fields (DOF)

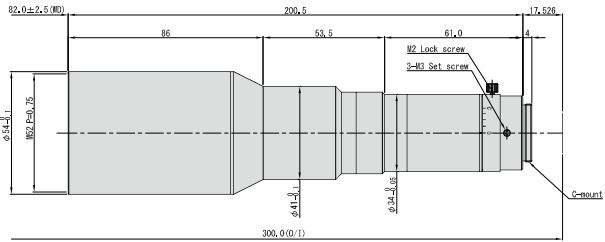


VS-THV (1.1") Series

Equal Object to Image Distance (O/I) Optical Design

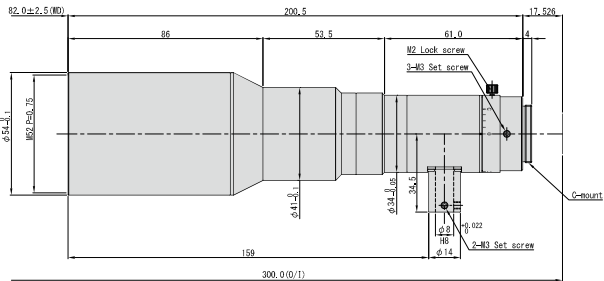


VS-THV05-80/S



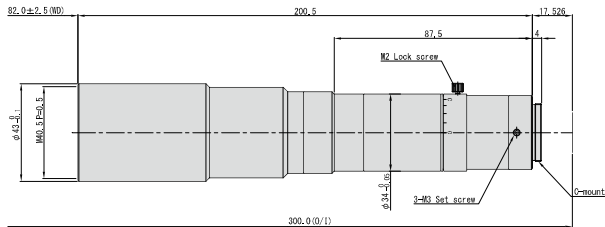
|                                 |      |                          |
|---------------------------------|------|--------------------------|
| Optical Mag.                    |      | 0.5x ± 5 %               |
| FOV(VxH)                        | 1.1" | 20.6 x 28.2 mm           |
|                                 | 1"   | 22.5 x 22.5 mm           |
|                                 | 2/3" | 14.2 x 16.8 mm           |
| WD                              |      | 82.0 mm ± 2,5            |
| O/I (Object & Imager Distance)  |      | 300,0 mm                 |
| Working F/# *Value at Iris Open |      | 7,5                      |
| NA                              |      | 0.033                    |
| DOF at PCoC Ø0,04mm             |      | 2.4 mm                   |
| TV Distortion (1,1")            |      | 0,01 %                   |
| Relative Illuminance (Y=8.8)    |      | 98 %                     |
| Wavelength                      |      | Visible                  |
| Mount                           |      | C-Mount                  |
| Flange Back                     |      | 17526 mm                 |
| Sensor Size (max.)              |      | 1.1"                     |
| Co-Axial Prism                  |      | —                        |
| Filter Thread                   |      | M 52 P = 0.75            |
| Weight (approx.)                |      | 370 g                    |
| Dimension                       |      | Ø54(max.) x L = 200.5 mm |

VS-THV05-80CO/S



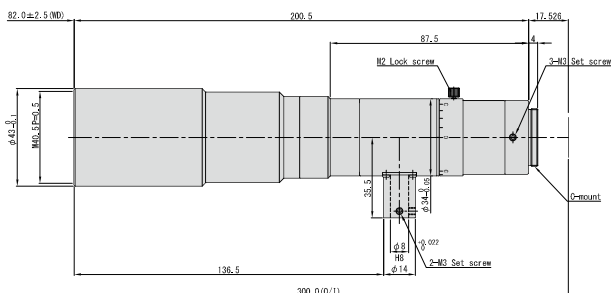
|                                 |      |                          |
|---------------------------------|------|--------------------------|
| Optical Mag.                    |      | 0.5x ±5 %                |
| FOV(VxH)                        | 1.1" | 20,6 x 28,2 mm           |
|                                 | 1"   | 22.5 x 22.5 mm           |
|                                 | 2/3" | 14.2 x 16.8 mm           |
| WD                              |      | 82,0 mm ± 2,5            |
| O/I (Object & Imager Distance)  |      | 300,0 mm                 |
| Working F/# *Value at Iris Open |      | 7,5                      |
| NA                              |      | 0.033                    |
| DOF at PCoC Ø0,04mm             |      | 2.4 mm                   |
| TV Distortion (1,1")            |      | 0,01 %                   |
| Relative Illuminance (Y=8.8)    |      | 98 %                     |
| Wavelength                      |      | Visible                  |
| Mount                           |      | C-Mount                  |
| Flange Back                     |      | 17526 mm                 |
| Sensor Size (max.)              |      | 1.1"                     |
| Co-Axial Prism                  |      | Built-in                 |
| Filter Thread                   |      | M 52 P = 0,75            |
| Weight (approx.)                |      | 370 g                    |
| Dimension                       |      | Ø54(max.) x L = 200.5 mm |

VS-THV08-80/S



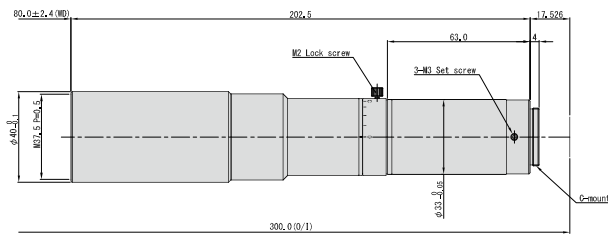
|                                 |      |                          |
|---------------------------------|------|--------------------------|
| Optical Mag.                    |      | 0.8x ± 5 %               |
| FOV(VxH)                        | 1.1" | 12.9 x 17.6 mm           |
|                                 | 1"   | 14.1 x 14.1 mm           |
|                                 | 2/3" | 8.9 x 10.5 mm            |
| WD                              |      | 82.0 mm ± 2.5            |
| O/I (Object & Imager Distance)  |      | 300.0 mm                 |
| Working F/# *Value at Iris Open |      | 7.5                      |
| NA                              |      | 0.053                    |
| DOF at PCoC Ø0.04mm             |      | 0.9 mm                   |
| TV Distortion (1.1")            |      | 0.00 %                   |
| Relative Illuminance (Y=8.8)    |      | 99 %                     |
| Wavelength                      |      | Visible                  |
| Mount                           |      | C-Mount                  |
| Flange Back                     |      | 17526 mm                 |
| Sensor Size (max.)              |      | 1.1"                     |
| Co-Axial Prism                  |      | —                        |
| Filter Thread                   |      | M 40.5 P = 0.5           |
| Weight (approx.)                |      | 360 g                    |
| Dimension                       |      | Ø43(max.) x L = 200.5 mm |

VS-THV08-80CO/S

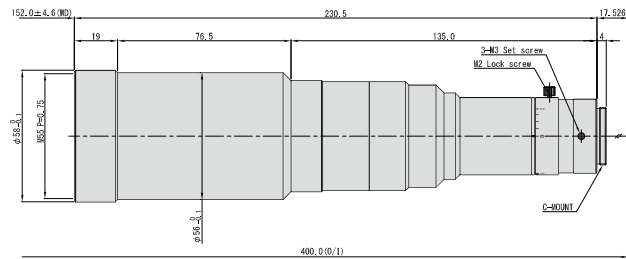


|                                 |      |                          |
|---------------------------------|------|--------------------------|
| Optical Mag.                    |      | 0.8x ±5 %                |
| FOV(VxH)                        | 1.1" | 12.9 x 17.6 mm           |
|                                 | 1"   | 14.1 x 14.1 mm           |
|                                 | 2/3" | 8.9 x 10.5 mm            |
| WD                              |      | 82.0 mm ± 2.5            |
| O/I (Object & Imager Distance)  |      | 300.0 mm                 |
| Working F/# *Value at Iris Open |      | 7.5                      |
| NA                              |      | 0.053                    |
| DOF at PCoC Ø0.04mm             |      | 0.9 mm                   |
| TV Distortion (1.1")            |      | 0.00 %                   |
| Relative Illuminance (Y=8.8)    |      | 99 %                     |
| Wavelength                      |      | Visible                  |
| Mount                           |      | C-Mount                  |
| Flange Back                     |      | 17526 mm                 |
| Sensor Size (max.)              |      | 1.1"                     |
| Co-Axial Prism                  |      | Built-in                 |
| Filter Thread                   |      | M 40.5 P = 0.5           |
| Weight (approx.)                |      | 360 g                    |
| Dimension                       |      | Ø43(max.) x L = 200.5 mm |

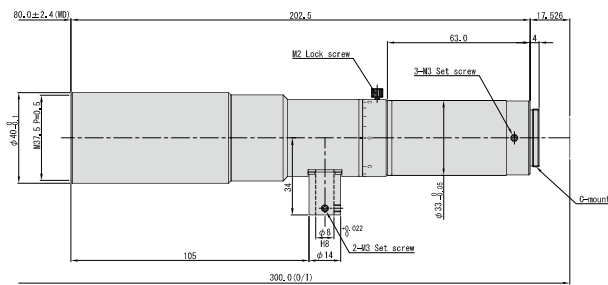
## VS-THV1-80/S



|                                 |      |                                |
|---------------------------------|------|--------------------------------|
| Optical Mag.                    |      | 1.0x $\pm$ 5 %                 |
|                                 | 1.1" | 10.3 x 14.1 mm                 |
| FOV(VxH)                        | 1"   | 11.3 x 11.3 mm                 |
|                                 | 2/3" | 7.1 x 8.4 mm                   |
| WD                              |      | 80.0 mm $\pm$ 2.4              |
| O/I (Object & Imager Distance)  |      | 300.0 mm                       |
| Working F/# *Value at Iris Open |      | 7.5                            |
| NA                              |      | 0.067                          |
| DOF at PCoC $\phi$ 0.04mm       |      | 0.6 mm                         |
| TV Distortion (1.1")            |      | 0.00 %                         |
| Relative Illuminance (Y=8.8)    |      | 99 %                           |
| Wavelength                      |      | Visible                        |
| Mount                           |      | C-Mount                        |
| Flange Back                     |      | 17526 mm                       |
| Sensor Size (max.)              |      | 1.1"                           |
| Co-Axial Prism                  |      | —                              |
| Filter Thread                   |      | M 37.5 P = 0.5                 |
| Weight (approx.)                |      | 310 g                          |
| Dimension                       |      | $\phi$ 40(max.) x L = 202.5 mm |

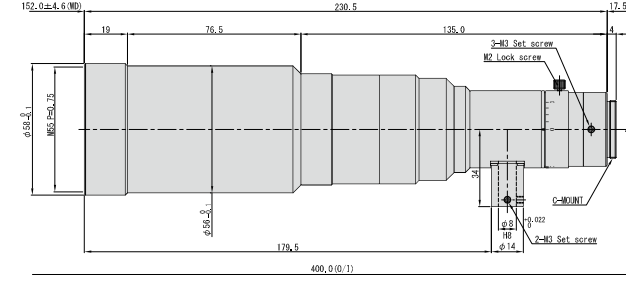
**VS-THV05-150/S**

|                                 |      |                                |
|---------------------------------|------|--------------------------------|
| Optical Mag.                    |      | 0.5x $\pm$ 5 %                 |
|                                 | 1.1" | 20.6 x 28.2 mm                 |
| FOV(VxH)                        | 1"   | 22.5 x 22.5 mm                 |
|                                 | 2/3" | 14.2 x 16.8 mm                 |
| WD                              |      | 152.0 mm $\pm$ 4.6             |
| O/I (Object & Imager Distance)  |      | 400.0 mm                       |
| Working F/# *Value at Iris Open |      | 7.5                            |
| NA                              |      | 0.033                          |
| DOF at PCoC $\phi$ 0.04mm       |      | 2.4 mm                         |
| TV Distortion (1,1")            |      | 0.00 %                         |
| Relative Illuminance (Y=8.8)    |      | 98 %                           |
| Wavelength                      |      | Visible                        |
| Mount                           |      | C-Mount                        |
| Flange Back                     |      | 17526 mm                       |
| Sensor Size (max.)              |      | 1.1"                           |
| Co-Axial Prism                  |      | —                              |
| Filter Thread                   |      | M 55 P = 0.75                  |
| Weight (approx.)                |      | 500 g                          |
| Dimension                       |      | $\phi$ 58(max.) x L = 230.5 mm |

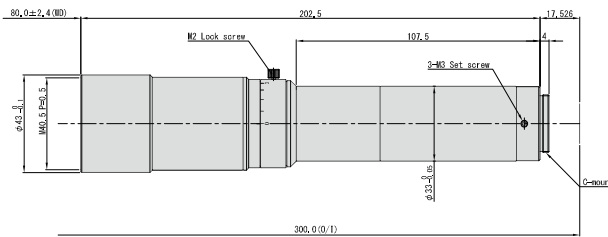
**VS-THV1-80CO/S**

|                                |      |                                 |
|--------------------------------|------|---------------------------------|
| Optical Mag.                   |      | 1.0x $\pm$ 5 %                  |
|                                | 1.1" | 10.3 x 14.1 mm                  |
| FOV(VxH)                       | 1"   | 11.3 x 11.3 mm                  |
|                                | 2/3" | 7.1 x 8.4 mm                    |
| WD                             |      | 80.0 mm $\pm$ 2.4               |
| O/I (Object & Imager Distance) |      | 300.0 mm                        |
| Working F/# Value at Iris Open |      | 7.5                             |
| NA                             |      | 0.067                           |
| DOF at PCoC $\phi$ 0.04mm      |      | 0.6 mm                          |
| TV Distortion (1.1")           |      | 0.00 %                          |
| Relative Illuminance (Y=8.8)   |      | 99 %                            |
| Wavelength                     |      | Visible                         |
| Mount                          |      | C-Mount                         |
| Flange Back                    |      | 17526 mm                        |
| Sensor Size (max.)             |      | 1.1"                            |
| Co-Axial Prism                 |      | Built-in                        |
| Filter Thread                  |      | M 37.5 P = 0.5                  |
| Weight (approx.)               |      | 310 g                           |
| Dimension                      |      | $\phi$ 40 (max.) x L = 202.5 mm |

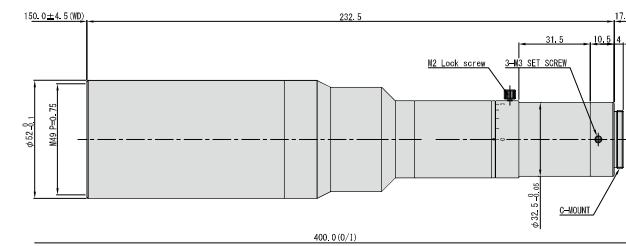
## VS-THV05-150CO/S



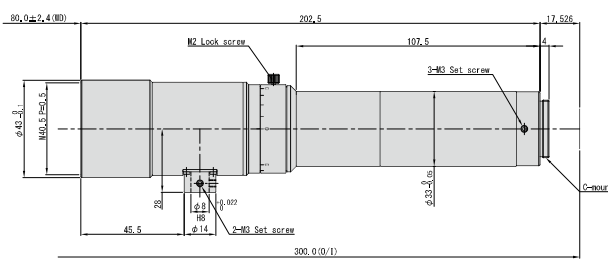
|                                 |      |                          |
|---------------------------------|------|--------------------------|
| Optical Mag.                    |      | 0.5x ± 5 %               |
|                                 | 1.1" | 20.6 x 28.2 mm           |
| FOV(VxH)                        | 1"   | 22.5 x 22.5 mm           |
|                                 | 2/3" | 14.2 x 16.8 mm           |
| WD                              |      | 152.0 mm ±4.6            |
| O/I (Object & Imager Distance)  |      | 400.0 mm                 |
| Working F/# *Value at Iris Open |      | 7.5                      |
| NA                              |      | 0,033                    |
| DOF at PCoC Ø0.04mm             |      | 2.4 mm                   |
| TV Distortion (1.1")            |      | 0.00 %                   |
| Relative Illuminance (Y=8.8)    |      | 98 %                     |
| Wavelength                      |      | Visible                  |
| Mount                           |      | C-Mount                  |
| Flange Back                     |      | 17526 mm                 |
| Sensor Size (max.)              |      | 1.1"                     |
| Co-Axial Prism                  |      | Built-in                 |
| Filter Thread                   |      | M 55 P = 0.75            |
| Weight (approx.)                |      | 500 g                    |
| Dimension                       |      | Ø58(max.) x L = 230.5 mm |

**VS-THV2-80/S**

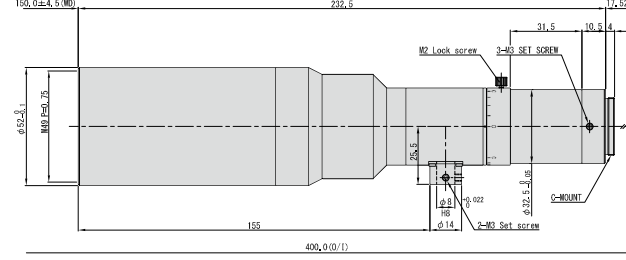
|                                 |      |                                 |
|---------------------------------|------|---------------------------------|
| Optical Mag.                    |      | 2.0x $\pm$ 5 %                  |
|                                 | 1.1" | 5.2 x 7.1 mm                    |
| FOV(VxH)                        | 1"   | 5.6 x 5.6 mm                    |
|                                 | 2/3" | 3.6 x 4.2 mm                    |
| WD                              |      | 80.0 mm $\pm$ 2.4               |
| O/I (Object & Imager Distance)  |      | 300.0 mm                        |
| Working F/# *Value at Iris Open |      | 7.5                             |
| NA                              |      | 0.133                           |
| DOF at PCoC $\phi$ 0.04mm       |      | 0.2 mm                          |
| TV Distortion (1.1")            |      | 0.04 %                          |
| Relative Illuminance (Y=8.8)    |      | 100 %                           |
| Wavelength                      |      | Visible                         |
| Mount                           |      | C-Mount                         |
| Flange Back                     |      | 17526 mm                        |
| Sensor Size (max.)              |      | 1.1"                            |
| Co-Axial Prism                  |      | —                               |
| Filter Thread                   |      | M 40.5 P = 0.5                  |
| Weight (approx.)                |      | 380 g                           |
| Dimension                       |      | $\phi$ 43 (max.) x L = 202.5 mm |

**VS-THV08-150/S**

|                                  |      |                                                          |
|----------------------------------|------|----------------------------------------------------------|
| Optical Mag.                     |      | $0.8\times \pm 5\%$                                      |
|                                  | 1.1" | $12.9 \times 17.6\text{ mm}$                             |
| FOV(VxH)                         | 1"   | $14.1 \times 14.1\text{ mm}$                             |
|                                  | 2/3" | $8.9 \times 10.5\text{ mm}$                              |
| WD                               |      | $150.0\text{ mm} \pm 4.5$                                |
| O/I (Object & Imager Distance)   |      | 400.0 mm                                                 |
| Working F/# *Value at Iris Open  |      | 75                                                       |
| NA                               |      | 0.053                                                    |
| DOF at PCoC $\phi 0.04\text{mm}$ |      | 0.9 mm                                                   |
| TV Distortion (1,1")             |      | 0.00 %                                                   |
| Relative Illuminance (Y=8.8)     |      | 99 %                                                     |
| Wavelength                       |      | Visible                                                  |
| Mount                            |      | C-Mount                                                  |
| Flange Back                      |      | 17526 mm                                                 |
| Sensor Size (max.)               |      | 1.1"                                                     |
| Co-Axial Prism                   |      | —                                                        |
| Filter Thread                    |      | M 49 P = 0.75                                            |
| Weight (approx.)                 |      | 480 g                                                    |
| Dimension                        |      | $\phi 52(\text{max.}) \times \text{L} = 232.5\text{ mm}$ |

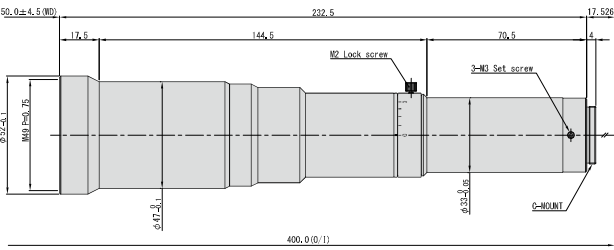
**VS-THV2-80CO/S**

|                                 |      |                                 |
|---------------------------------|------|---------------------------------|
| Optical Mag.                    |      | 2.0x ± 5 %                      |
|                                 | 1.1" | 5.2 x 7.1 mm                    |
| FOV(VxH)                        | 1"   | 5.6 x 5.6 mm                    |
|                                 | 2/3" | 3.6 x 4.2 mm                    |
| WD                              |      | 80.0 mm ± 2.4                   |
| O/I (Object & Imager Distance)  |      | 300.0 mm                        |
| Working F/# *Value at Iris Open |      | 7.5                             |
| NA                              |      | 0.133                           |
| DOF at PCoC $\phi$ 0.04mm       |      | 0.2 mm                          |
| TV Distortion (1.1")            |      | 0.04 %                          |
| Relative Illuminance (Y=8.8)    |      | 100 %                           |
| Wavelength                      |      | Visible                         |
| Mount                           |      | C-Mount                         |
| Flange Back                     |      | 17526 mm                        |
| Sensor Size (max.)              |      | 1.1"                            |
| Co-Axial Prism                  |      | Built-in                        |
| Filter Thread                   |      | M 40.5 P = 0.5                  |
| Weight (approx.)                |      | 380 g                           |
| Dimension                       |      | $\phi$ 43 (max.) x L = 202.5 mm |

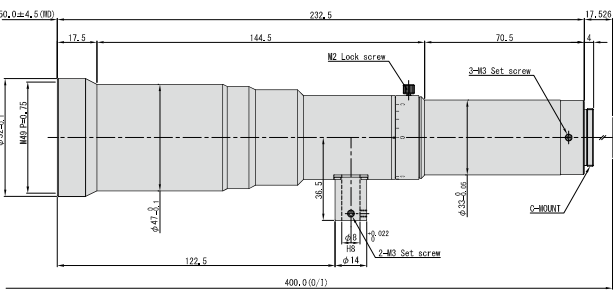
**VS-THV08-150CO/S**

|                                 |      |                                |
|---------------------------------|------|--------------------------------|
| Optical Mag.                    |      | 0.8x $\pm$ 5 %                 |
|                                 | 1.1" | 12.9 x 176 mm                  |
| FOV(VxH)                        | 1"   | 14.1 x 14.1 mm                 |
|                                 | 2/3" | 8.9 x 10.5 mm                  |
| WD                              |      | 150.0 mm $\pm$ 4.5             |
| O/I (Object & Imager Distance)  |      | 400.0 mm                       |
| Working F/# *Value at Iris Open |      | 75                             |
| NA                              |      | 0,053                          |
| DOF at PCoC $\phi$ 0.04mm       |      | 0.9 mm                         |
| TV Distortion (1.1")            |      | 0.00 %                         |
| Relative Illuminance (Y=8.8)    |      | 99 %                           |
| Wavelength                      |      | Visible                        |
| Mount                           |      | C-Mount                        |
| Flange Back                     |      | 17526 mm                       |
| Sensor Size (max.)              |      | 1.1"                           |
| Co-Axial Prism                  |      | Built-in                       |
| Filter Thread                   |      | M 49 P = 0.75                  |
| Weight (approx.)                |      | 480 g                          |
| Dimension                       |      | $\phi$ 52(max.) x L = 232.5 mm |

## VS-THV1-150/S

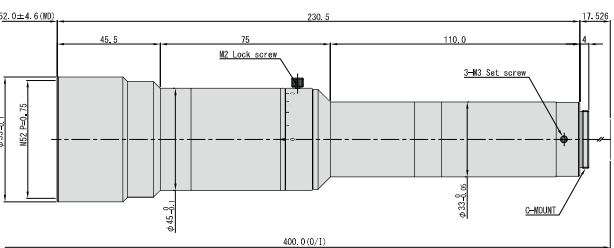


|                                 |      |                                 |
|---------------------------------|------|---------------------------------|
| Optical Mag.                    | 1.1" | 10x ± 5 %                       |
| FOV(VxH)                        | 1"   | 10.3 x 14.1 mm                  |
|                                 | 1"   | 11.3 x 11.3 mm                  |
|                                 | 2/3" | 7.1 x 8.4 mm                    |
| WD                              |      | 150.0 mm ± 4.5                  |
| O/I (Object & Imager Distance)  |      | 400.0 mm                        |
| Working F/# *Value at Iris Open |      | 7.5                             |
| NA                              |      | 0.067                           |
| DOF at PCoC $\phi$ 0.04mm       |      | 0.6 mm                          |
| TV Distortion (1,1")            |      | 0.00 %                          |
| Relative Illuminance (Y=8.8)    |      | 99 %                            |
| Wavelength                      |      | Visible                         |
| Mount                           |      | C-Mount                         |
| Flange Back                     |      | 17,526 mm                       |
| Sensor Size (max.)              |      | 1.1"                            |
| Co-Axial Prism                  |      | —                               |
| Filter Thread                   |      | M 49 P = 0.75                   |
| Weight (approx.)                |      | 400 g                           |
| Dimension                       |      | $\phi$ 52 (max.) x L = 232.5 mm |

**VS-THV1-150CO/S**

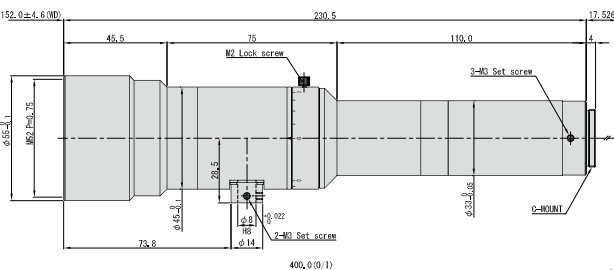
|                                 |      |                                 |
|---------------------------------|------|---------------------------------|
| Optical Mag.                    |      | 1.0x $\pm$ 5 %                  |
|                                 | 1.1" | 10.3 x 14.1 mm                  |
| FOV(VxH)                        | 1"   | 11.3 x 11.3 mm                  |
|                                 | 2/3" | 7.1 x 8.4 mm                    |
| WD                              |      | 150.0 mm $\pm$ 4.5              |
| O/I (Object & Imager Distance)  |      | 400.0 mm                        |
| Working F/# *Value at Iris Open |      | 7.5                             |
| NA                              |      | 0.067                           |
| DOF at PCoC $\phi$ 0.04mm       |      | 0.6 mm                          |
| TV Distortion (1.1")            |      | 0.00 %                          |
| Relative Illuminance (Y=8.8)    |      | 99 %                            |
| Wavelength                      |      | Visible                         |
| Mount                           |      | C-Mount                         |
| Flange Back                     |      | 17526 mm                        |
| Sensor Size (max.)              |      | 1.1"                            |
| Co-Axial Prism                  |      | Built-in                        |
| Filter Thread                   |      | M 49 P = 0.75                   |
| Weight (approx.)                |      | 400 g                           |
| Dimension                       |      | $\phi$ 52 (max.) x L = 232.5 mm |

## VS-THV2-150/S

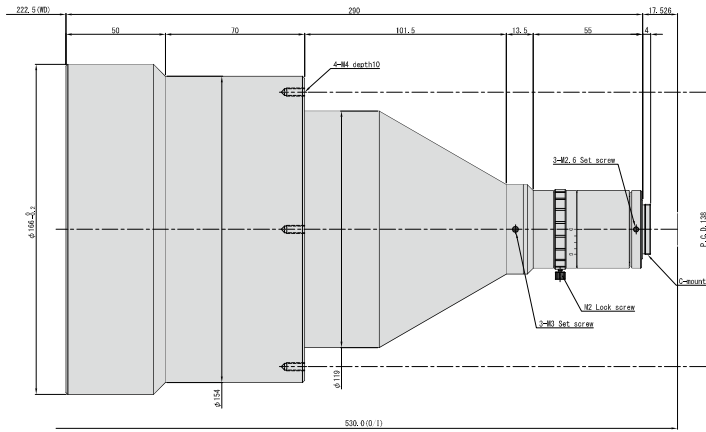


|                                 |      |                                 |
|---------------------------------|------|---------------------------------|
| Optical Mag.                    |      | 2.0x ± 5 %                      |
|                                 | 1.1" | 5.2 x 7.1 mm                    |
| FOV(VxH)                        | 1"   | 5.6 x 5.6 mm                    |
|                                 | 2/3" | 3.6 x 4.2 mm                    |
| WD                              |      | 152.0 mm ± 4.6                  |
| O/I (Object & Imager Distance)  |      | 400.0 mm                        |
| Working F/# *Value at Iris Open |      | 9.2                             |
| NA                              |      | 0.109                           |
| DOF at PCoC $\phi$ 0.04mm       |      | 0.2 mm                          |
| TV Distortion (1.1")            |      | -0.01 %                         |
| Relative Illuminance (Y=8.8)    |      | 100 %                           |
| Wavelength                      |      | Visible                         |
| Mount                           |      | C-Mount                         |
| Flange Back                     |      | 17,526 mm                       |
| Sensor Size (max.)              |      | 1.1"                            |
| Co-Axial Prism                  |      | —                               |
| Filter Thread                   |      | M 52 P = 0.75                   |
| Weight (approx.)                |      | 600 g                           |
| Dimension                       |      | $\phi$ 55 (max.) x L = 230.5 mm |

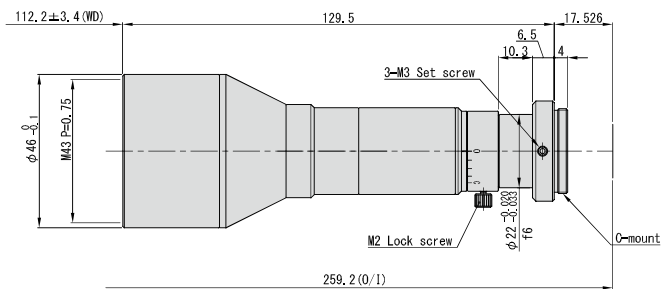
## VS-THV2-150CO/S



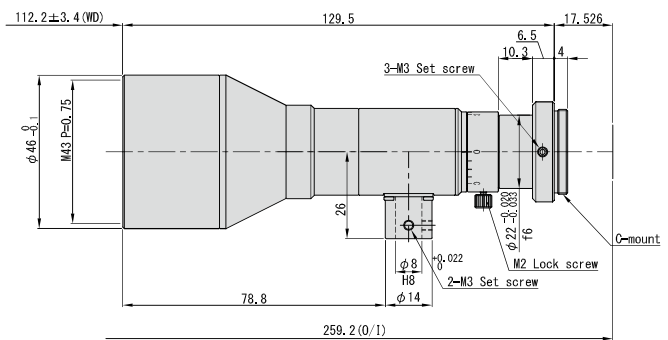
|                                 |      |                                 |
|---------------------------------|------|---------------------------------|
| Optical Mag.                    |      | 2.0x $\pm 5\%$                  |
|                                 | 1.1" | 5.2 x 7.1 mm                    |
| FOV(VxH)                        | 1"   | 5.6 x 5.6 mm                    |
|                                 | 2/3" | 3.6 x 4.2 mm                    |
| WD                              |      | 152.0 mm $\pm 4.6$              |
| O/I (Object & Imager Distance)  |      | 400.0 mm                        |
| Working F/# *Value at Iris Open |      | 9.2                             |
| NA                              |      | 0.109                           |
| DOF at PCoC $\phi 0.04$ mm      |      | 0.2 mm                          |
| TV Distortion (1.1")            |      | -0.01 %                         |
| Relative Illuminance (Y=8.8)    |      | 100 %                           |
| Wavelength                      |      | Visible                         |
| Mount                           |      | C-Mount                         |
| Flange Back                     |      | 17526 mm                        |
| Sensor Size (max.)              |      | 1.1"                            |
| Co-Axial Prism                  |      | Built-in                        |
| Filter Thread                   |      | M 52 P = 0.75                   |
| Weight (approx.)                |      | 590 g                           |
| Dimension                       |      | $\phi 55$ (max.) x L = 230.5 mm |

**VS-THV011-220/S**

|                                 |      |                                |
|---------------------------------|------|--------------------------------|
| Optical Mag.                    |      | 0.11x $\pm 5\%$                |
|                                 | 1"   | 102.4 x 102.4 mm               |
| FOV(VxH)                        | 2/3" | 64.5 x 76.4 mm                 |
|                                 | 1/2" | 43.6 x 58.2 mm                 |
| WD                              |      | 222.5 mm                       |
| O/I (Object & Imager Distance)  |      | 530.0 mm                       |
| Working F/# *Value at Iris Open |      | 5.6                            |
| NA                              |      | 0.010                          |
| DOF at PCoC $\phi 0.04$ mm      |      | 37.0 mm                        |
| TV Distortion (1")              |      | 0.01 %                         |
| Relative Illuminance (Y=8)      |      | 98 %                           |
| Wavelength                      |      | Visible                        |
| Mount                           |      | C-Mount                        |
| Flange Back                     |      | 17526 mm                       |
| Sensor Size (max.)              |      | 1"                             |
| Co-Axial Prism                  |      | —                              |
| Weight (approx.)                |      | 2460 g                         |
| Dimension                       |      | $\phi 166$ (max.) x L = 290 mm |

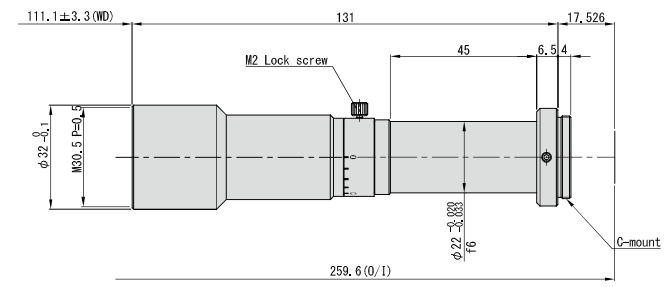
**VS-THV05-110/S**

|                                 |      |                                 |
|---------------------------------|------|---------------------------------|
| Optical Mag.                    |      | 0.5x $\pm$ 5 %                  |
|                                 | 1"   | 22.5 x 22.5 mm                  |
| FOV(VxH)                        | 2/3" | 14.2 x 16.8 mm                  |
|                                 | 1/2" | 9.6 x 12.8 mm                   |
| WD                              |      | 112.2 mm $\pm$ 3.4              |
| O/I (Object & Imager Distance)  |      | 259.2 mm                        |
| Working F/# *Value at Iris Open |      | 10.0                            |
| NA                              |      | 0.025                           |
| DOF at PCoC $\phi$ 0.04mm       |      | 3.2 mm                          |
| TV Distortion (1")              |      | -0.02 %                         |
| Relative Illuminance (Y=8)      |      | 96 %                            |
| Wavelength                      |      | Visible                         |
| Mount                           |      | C-Mount                         |
| Flange Back                     |      | 17526 mm                        |
| Sensor Size (max.)              |      | 1"                              |
| Co-Axial Prism                  |      | —                               |
| Filter Thread                   |      | M 43 P = 0.75                   |
| Weight (approx.)                |      | 146 g                           |
| Dimension                       |      | $\phi$ 46 (max.) x L = 129.5 mm |

**VS-THV05-110CO/S**

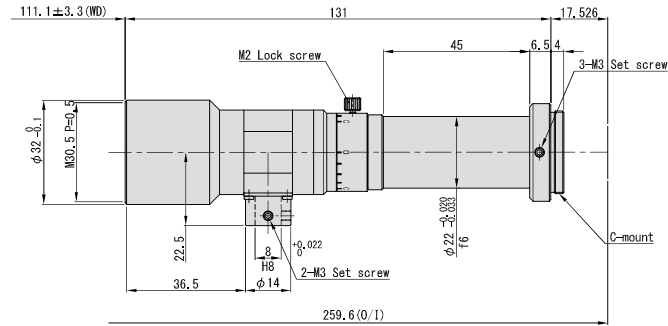
|                                 |      |                           |
|---------------------------------|------|---------------------------|
| Optical Mag.                    |      | 0.5x ± 5 %                |
|                                 | 1"   | 22.5 x 22.5 mm            |
| FOV(VxH)                        | 2/3" | 14.2 x 16.8 mm            |
|                                 | 1/2" | 9.6 x 12.8 mm             |
| WD                              |      | 112.2 mm ± 3.4            |
| O/I (Object & Imager Distance)  |      | 259.2 mm                  |
| Working F/# *Value at Iris Open |      | 10.0                      |
| NA                              |      | 0.025                     |
| DOF at PCoC Ø0.04mm             |      | 3.2 mm                    |
| TV Distortion (1")              |      | -0.02 %                   |
| Relative Illuminance (Y=8)      |      | 96 %                      |
| Wavelength                      |      | Visible                   |
| Mount                           |      | C-Mount                   |
| Flange Back                     |      | 17526 mm                  |
| Sensor Size (max.)              |      | 1"                        |
| Co-Axial Prism                  |      | Built-in                  |
| Filter Thread                   |      | M 43 P = 0.75             |
| Weight (approx.)                |      | 155 g                     |
| Dimension                       |      | Ø46 (max.) x L = 129,5 mm |

VS-THV1-110/S



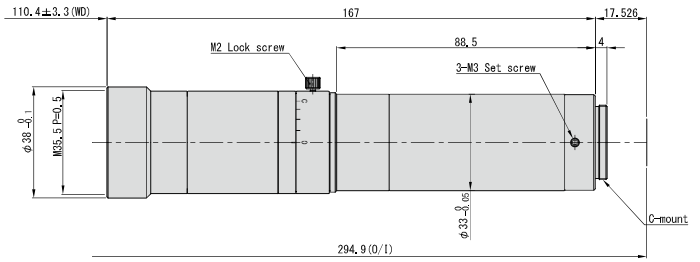
|                                 |      |                        |
|---------------------------------|------|------------------------|
| Optical Mag.                    | 1"   | 1.0x ± 5 %             |
| FOV(VxH)                        | 1"   | 11.3 x 11.3 mm         |
|                                 | 2/3" | 7.1 x 8.4 mm           |
|                                 | 1/2" | 4.8 x 6.4 mm           |
| WD                              |      | 111.1 mm ± 3.3         |
| O/I (Object & Imager Distance)  |      | 259.6 mm               |
| Working F/# *Value at Iris Open |      | 10.5                   |
| NA                              |      | 0.048                  |
| DOF at PCoC 0.04mm              |      | 0.8 mm                 |
| TV Distortion (1")              |      | 0.02 %                 |
| Relative Illuminance (Y=8)      |      | 98 %                   |
| Wavelength                      |      | Visible                |
| Mount                           |      | C-Mount                |
| Flange Back                     |      | 17.526 mm              |
| Sensor Size (max.)              |      | 1"                     |
| Co-Axial Prism                  |      | —                      |
| Filter Thread                   |      | M 30.5 P = 0.5         |
| Weight (approx.)                |      | 124 g                  |
| Dimension                       |      | φ32(max.) x L = 131 mm |

VS-THV1-110CO/S



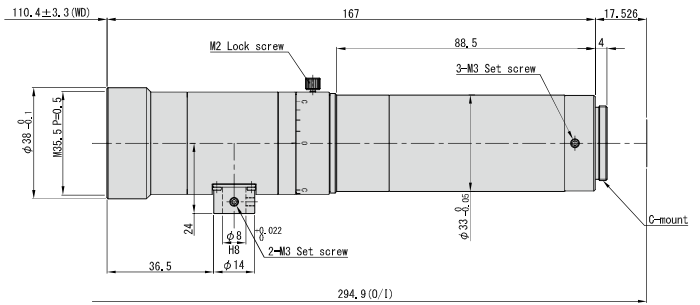
|                                 |      |                        |
|---------------------------------|------|------------------------|
| Optical Mag.                    | 1"   | 1.0x ± 5 %             |
| FOV(VxH)                        | 1"   | 11.3 x 11.3 mm         |
|                                 | 2/3" | 7.1 x 8.4 mm           |
|                                 | 1/2" | 4.8 x 6.4 mm           |
| WD                              |      | 111.1 mm ± 3.3         |
| O/I (Object & Imager Distance)  |      | 259.6 mm               |
| Working F/# *Value at Iris Open |      | 10.5                   |
| NA                              |      | 0.048                  |
| DOF at PCoC 0.04mm              |      | 0.8 mm                 |
| TV Distortion (1")              |      | 0.02 %                 |
| Relative Illuminance (Y=8)      |      | 98 %                   |
| Wavelength                      |      | Visible                |
| Mount                           |      | C-Mount                |
| Flange Back                     |      | 17.526 mm              |
| Sensor Size (max.)              |      | 1"                     |
| Co-Axial Prism                  |      | Built-in               |
| Filter Thread                   |      | M30.5 P = 0.5          |
| Weight (approx.)                |      | 128 g                  |
| Dimension                       |      | φ32(max.) x L = 131 mm |

VS-THV2-110/S



|                                 |      |                        |
|---------------------------------|------|------------------------|
| Optical Mag.                    |      | 2.0x ± 5 %             |
| FOV(VxH)                        | 1"   | 5,6 x 5,6 mm           |
|                                 | 2/3" | 3,6 x 4,2 mm           |
|                                 | 1/2" | 2,4 x 3,2 mm           |
| WD                              |      | 110.4 mm ± 3.3         |
| O/I (Object & Imager Distance)  |      | 294.9 mm               |
| Working F/# *Value at Iris Open |      | 10.0                   |
| NA                              |      | 0.100                  |
| DOF at PCoC Ø0.04mm             |      | 0.2 mm                 |
| TV Distortion (1")              |      | 0.02 %                 |
| Relative Illuminance (Y=8)      |      | 100 %                  |
| Wavelength                      |      | Visible                |
| Mount                           |      | C-Mount                |
| Flange Back                     |      | 17,526 mm              |
| Sensor Size (max.)              |      | 1"                     |
| Co-Axial Prism                  |      | —                      |
| Filter Thread                   |      | M 35.5 P = 0.5         |
| Weight (approx.)                |      | 235 g                  |
| Dimension                       |      | Ø38(max.) x L = 167 mm |

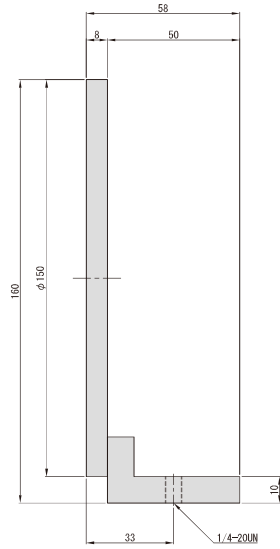
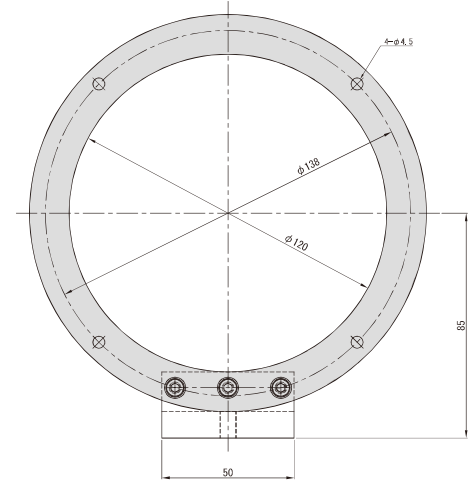
VS-THV2-110CO/S



|                                 |      |                        |
|---------------------------------|------|------------------------|
| Optical Mag.                    |      | 2.0x ± 5 %             |
| FOV(VxH)                        | 1"   | 5.6 x 5.6 mm           |
|                                 | 2/3" | 3.6 x 4.2 mm           |
|                                 | 1/2" | 2.4 x 3.2 mm           |
| WD                              |      | 110.4 mm ± 3.3         |
| O/I (Object & Imager Distance)  |      | 294.9 mm               |
| Working F/# *Value at Iris Open |      | 10.0                   |
| NA                              |      | 0.100                  |
| DOF at PCoC φ0.04mm             |      | 0.2 mm                 |
| TV Distortion (1")              |      | 0.02 %                 |
| Relative Illuminance (Y=8)      |      | 100 %                  |
| Wavelength                      |      | Visible                |
| Mount                           |      | C-Mount                |
| Flange Back                     |      | 17.526 mm              |
| Sensor Size (max.)              |      | 1"                     |
| Co-Axial Prism                  |      | Built-in               |
| Filter Thread                   |      | M35.5 P = 0.5          |
| Weight (approx.)                |      | 240 g                  |
| Dimension                       |      | φ38(max.) x L = 167 mm |

VS-THV011-220/S Adapter

VS-AD-THV011





1.67μm Telecentric Lenses

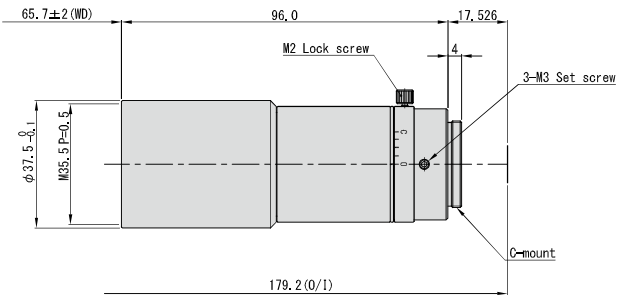
VS-TCT Series 2/3" 1/1.8"

The VS-TCT series lineup consists of our highest resolution Telecentric lenses. With 1.67 μm resolution you can expect an excellent image from any sensor 2/3" or lower. Both normal and coaxial lighting ready models are available.

- Features
- 2/3" sensor support
  - 1.67μm resolution
  - 0.5x - 1.0x Magnification
  - 61.5 - 66mm WD
  - Fno 4.5
  - Telecentric design

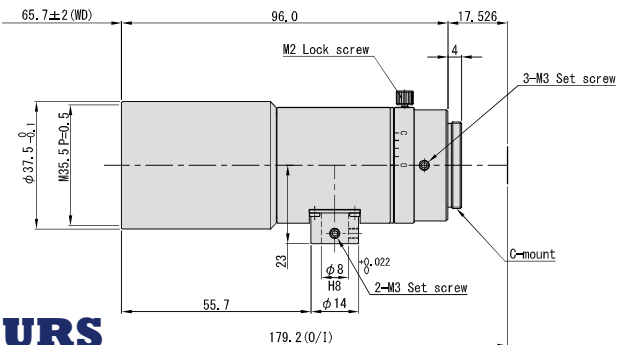


VS-TCT05-65/S



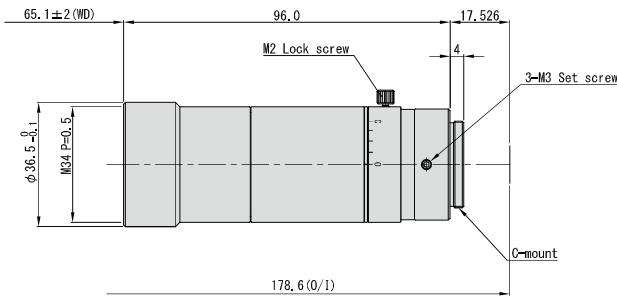
|                                 |      |                         |
|---------------------------------|------|-------------------------|
| Optical Mag.                    |      | 0.5x ±5 %               |
| FOV(VxH)                        | 2/3" | 14.2 x 16.8 mm          |
|                                 | 1/2" | 9.6 x 12.8 mm           |
|                                 | 1/3" | 7.2 x 9.6 mm            |
| WD                              |      | 65.7 mm ±2              |
| O/I (Object & Imager Distance)  |      | 179.2 mm                |
| Working F/# *Value at Iris open |      | 4.5                     |
| NA                              |      | 0.056                   |
| DOF at PCoC φ0.04mm             |      | 1.4 mm                  |
| TV Distortion (2/3")            |      | 0.00%                   |
| Relative Illuminance (Y=5.5)    |      | 97 %                    |
| Wavelength                      |      | Visible                 |
| Mount                           |      | C-Mount                 |
| Flange Back                     |      | 17.526 mm               |
| Sensor Size (Max)               |      | 2/3"                    |
| Co-Axial Prism                  |      | —                       |
| Filter Thread                   |      | M 35.5 P = 0.5          |
| Weight (approx.)                |      | 205 g                   |
| Dimension                       |      | φ37.5(max.) x L = 96 mm |

VS-TCT05-65CO/S



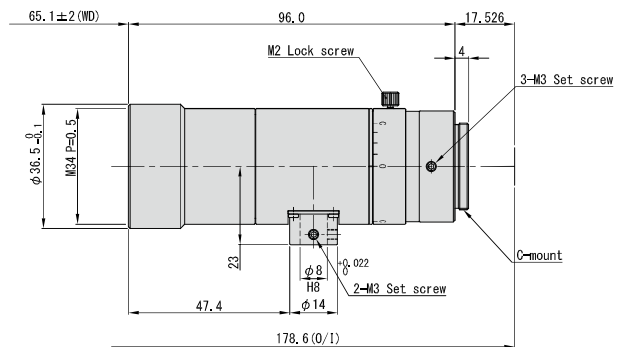
|                                 |      |                         |
|---------------------------------|------|-------------------------|
| Optical Mag.                    |      | 0.5x ±5 %               |
| FOV(VxH)                        | 2/3" | 14.2 x 16.8 mm          |
|                                 | 1/2" | 9.6 x 12.8 mm           |
|                                 | 1/3" | 7.2 x 9.6 mm            |
| WD                              |      | 65.7 mm ±2              |
| O/I (Object & Imager Distance)  |      | 179.2 mm                |
| Working F/# *Value at Iris open |      | 4.5                     |
| NA                              |      | 0.056                   |
| DOF at PCoC φ0.04mm             |      | 1.4 mm                  |
| TV Distortion (2/3")            |      | 0.00%                   |
| Relative Illuminance (Y=5.5)    |      | 97 %                    |
| Wavelength                      |      | Visible                 |
| Mount                           |      | C-Mount                 |
| Flange Back                     |      | 17.526 mm               |
| Sensor Size (Max)               |      | 2/3"                    |
| Co-Axial Prism                  |      | Built-in                |
| Filter Thread                   |      | M 35.5 P = 0.5          |
| Weight (approx.)                |      | 205 g                   |
| Dimension                       |      | φ37.5(max.) x L = 96 mm |

VS-TCT08-65/S



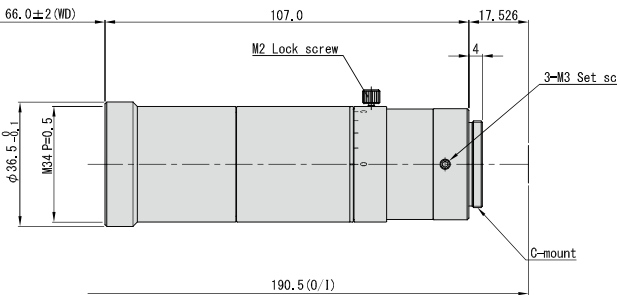
|                                 |      |                         |
|---------------------------------|------|-------------------------|
| Optical Mag.                    |      | 0.8x ±5 %               |
| FOV(VxH)                        | 2/3" | 8.9 x 10.5 mm           |
|                                 | 1/2" | 6.0 x 8.0 mm            |
|                                 | 1/3" | 4.5 x 6.0 mm            |
| WD                              |      | 65.1 mm ±2              |
| O/I (Object & Imager Distance)  |      | 178.6 mm                |
| Working F/# *Value at Iris open |      | 4.5                     |
| NA                              |      | 0.089                   |
| DOF at PCoC φ0.04mm             |      | 0.6 mm                  |
| TV Distortion (2/3")            |      | 0.00 %                  |
| Relative Illuminance (Y=5.5)    |      | 98 %                    |
| Wavelength                      |      | Visible                 |
| Mount                           |      | C-Mount                 |
| Flange Back                     |      | 17.526 mm               |
| Sensor Size (Max)               |      | 2/3"                    |
| Co-Axial Prism                  |      | —                       |
| Filter Thread                   |      | M 34 P = 0.5            |
| Weight (approx.)                |      | 200 g                   |
| Dimension                       |      | φ36.5(max.) x L = 96 mm |

VS-TCT08-65CO/S



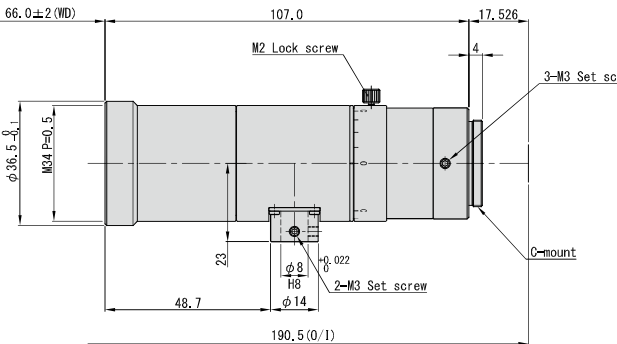
|                                 |      |                         |
|---------------------------------|------|-------------------------|
| Optical Mag.                    |      | 0.8x ±5 %               |
| FOV(VxH)                        | 2/3" | 8.9 x 10.5 mm           |
|                                 | 1/2" | 6.0 x 8.0 mm            |
|                                 | 1/3" | 4.5 x 6.0 mm            |
| WD                              |      | 65.1 mm ±2              |
| O/I (Object & Imager Distance)  |      | 178.6 mm                |
| Working F/# *Value at Iris open |      | 4.5                     |
| NA                              |      | 0.089                   |
| DOF at PCoC φ0.04mm             |      | 0.6 mm                  |
| TV Distortion (2/3")            |      | 0.00 %                  |
| Relative Illuminance (Y=5.5)    |      | 98 %                    |
| Wavelength                      |      | Visible                 |
| Mount                           |      | C-Mount                 |
| Flange Back                     |      | 17.526 mm               |
| Sensor Size (Max)               |      | 2/3"                    |
| Co-Axial Prism                  |      | Built-in                |
| Filter Thread                   |      | M 34 P = 0.5            |
| Weight (approx.)                |      | 200 g                   |
| Dimension                       |      | φ36.5(max.) x L = 96 mm |

VS-TCT1-65/S



|                                 |      |                          |
|---------------------------------|------|--------------------------|
| Optical Mag.                    |      | 1.0x ±5 %                |
| FOV(VxH)                        | 2/3" | 7.1 x 8.4 mm             |
|                                 | 1/2" | 4.8 x 6.4 mm             |
|                                 | 1/3" | 3.6 x 4.8 mm             |
| WD                              |      | 66.0 mm ±2               |
| O/I (Object & Imager Distance)  |      | 190.5 mm                 |
| Working F/# *Value at Iris open |      | 4.5                      |
| NA                              |      | 0.111                    |
| DOF at PCoC φ0.04mm             |      | 0.4 mm                   |
| TV Distortion (2/3")            |      | 0.00 %                   |
| Relative Illuminance (Y=5.5)    |      | 99 %                     |
| Wavelength                      |      | Visible                  |
| Mount                           |      | C-Mount                  |
| Flange Back                     |      | 17.526 mm                |
| Sensor Size (Max)               |      | 2/3"                     |
| Co-Axial Prism                  |      | —                        |
| Filter Thread                   |      | M 34 P = 0.5             |
| Weight (approx.)                |      | 215 g                    |
| Dimension                       |      | φ36.5(max.) x L = 107 mm |

VS-TCT1-65CO/S



|                                 |      |                          |
|---------------------------------|------|--------------------------|
| Optical Mag.                    |      | 1.0x ±5 %                |
| FOV(VxH)                        | 2/3" | 7.1 x 8.4 mm             |
|                                 | 1/2" | 4.8 x 6.4 mm             |
|                                 | 1/3" | 3.6 x 4.8 mm             |
| WD                              |      | 66.0 mm ±2               |
| O/I (Object & Imager Distance)  |      | 190.5 mm                 |
| Working F/# *Value at Iris open |      | 4.5                      |
| NA                              |      | 0.111                    |
| DOF at PCoC φ0.04mm             |      | 0.4 mm                   |
| TV Distortion (2/3")            |      | 0.00 %                   |
| Relative Illuminance (Y=5.5)    |      | 99 %                     |
| Wavelength                      |      | Visible                  |
| Mount                           |      | C-Mount                  |
| Flange Back                     |      | 17.526 mm                |
| Sensor Size (Max)               |      | 2/3"                     |
| Co-Axial Prism                  |      | Built-in                 |
| Filter Thread                   |      | M 34 P = 0.5             |
| Weight (approx.)                |      | 215 g                    |
| Dimension                       |      | φ36.5(max.) x L = 107 mm |

Telecentric Microscope Lenses

**VS-TM Series** 2/3" 1/1.8"

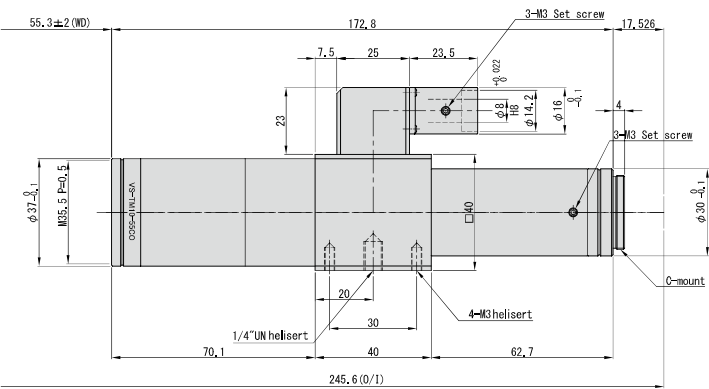
With its 10x magnification and high 0.23 numerical aperture the VS-TM series is an excellent lens to use for up close inspection. Higher magnifications of 15x and 20x are possible with the use of a rear converter lens.

Features

- 2/3" sensor support
- 10x Magnification
- 0.23 NA
- 55mm WD
- Telecentric design



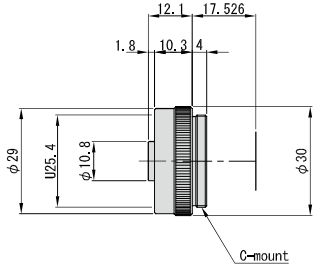
**VS-TM10-55CO**



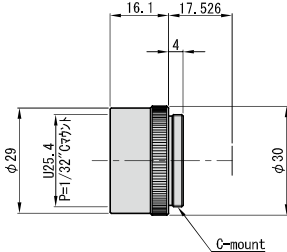
|                                |                           |
|--------------------------------|---------------------------|
| Optical Mag.                   | 10x ±5 %                  |
| FOV(VxH)                       | 2/3" 0.7 x 0.8 mm         |
|                                | 1/2" 0.5 x 0.6 mm         |
|                                | 1/3" 0.4 x 0.5 mm         |
| WD                             | 55.3 mm ± 2               |
| O/I (Object & Imager Distance) | 245.6 mm                  |
| Working F/#                    | 22.0                      |
| NA                             | 0.23                      |
| DOF at PCoC Ø0.04mm            | 0.02 mm                   |
| TV Distortion (2/3")           | 0.08 %                    |
| Relative Illuminance (Y=5.5)   | 90 %                      |
| Wavelength                     | Visible                   |
| Mount                          | C-Mount                   |
| Flange Back                    | 17.526 mm                 |
| Sensor Size (Max)              | 2/3"                      |
| Co-Axial Prism                 | Built-in                  |
| Filter Thread                  | M 35.5 P = 0.5            |
| Weight (approx.)               | 370 g                     |
| Dimension                      | Ø37 (max.) x L = 172.8 mm |

**Rear Converter Lens**

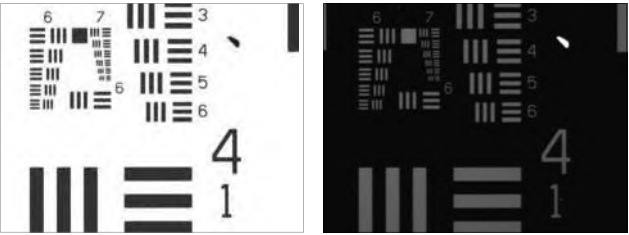
**VS-TM1.5X**



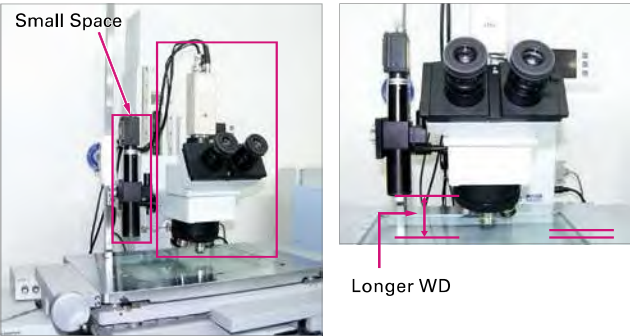
**VS-TM2.0X**



High Resolution



Compact Size



Variable Magnification Telecentric Lenses

VS-TEC Series 2/3" 1/1.8"

The variable magnification and iris make the VS-TEC series a great choice for a wide range of applications such as the inspection of electronic parts, semiconductors, and manufacturing equipment. The series is suitable for cameras with up to 2/3" sensors.

Features

- 2/3" sensor support
- 9 models available
- Variable magnification
- Telecentric design



Combination with optional unit

Mirror unit (picture①/②)

VS-PZ-C305NF : Allows you to set up in a limited space.

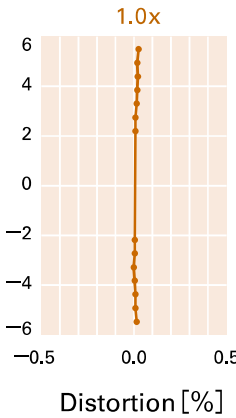
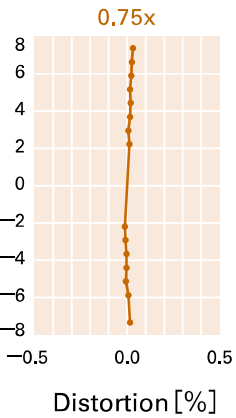
Co-axial unit (picture③)

VS-HM305 : Easy to set up co-axial lighting in front of the lens.

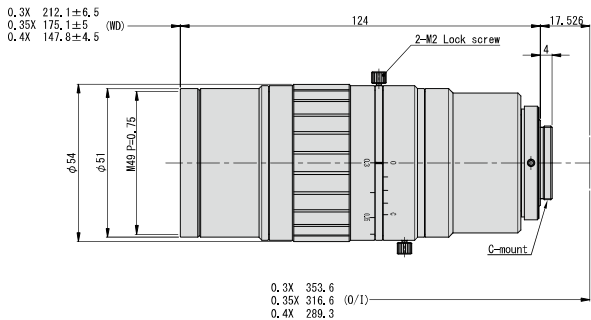
\* for Mag. above0.5x model.



Distortion (measured value)

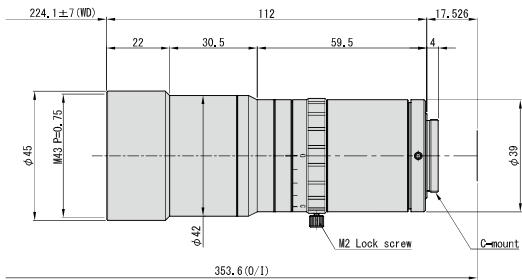


VS-TEC0304



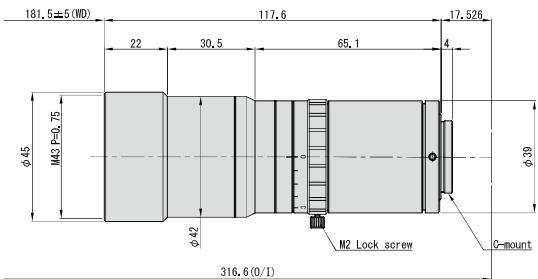
|                                 |                              |                |                |
|---------------------------------|------------------------------|----------------|----------------|
| Optical Mag. Range              | 0.3x ~ 0.4x                  |                |                |
| Optical Mag.                    | 0.3x                         | 0.35x          | 0.4x           |
| FOV(VxH)                        | 2/3"                         | 23.7 x 28.0 mm | 20.3 x 24.0 mm |
|                                 | 1/2"                         | 16.0 x 21.3 mm | 13.7 x 18.3 mm |
|                                 | 1/3"                         | 12.0 x 16.0 mm | 10.3 x 13.7 mm |
| WD                              | 212.1 mm                     | 175.1 mm       | 147.8 mm       |
| O/I (Object & Imager Distance)  | 353.6 mm                     | 316.6 mm       | 289.3 mm       |
| Working F/# *Value at Iris Open | 4.3                          | 4.7            | 5.0            |
| NA                              | 0.035                        | 0.038          | 0.040          |
| DOF at PCoC $\phi$ 0.04mm       | 3.8 mm                       | 3.0 mm         | 2.5 mm         |
| TV Distortion (2/3")            | 0.02 %                       | -0.01 %        | -0.03 %        |
| Relative Illuminance (Y=5.5)    | 98 %                         |                |                |
| Wavelength                      | Visible                      |                |                |
| Mount                           | C-Mount                      |                |                |
| Flange Back                     | 17526 mm                     |                |                |
| Sensor Size (max.)              | 2/3"                         |                |                |
| Filter Thread                   | M 49 P = 0.75                |                |                |
| Weight (approx.)                | 360 g                        |                |                |
| Dimension                       | $\phi$ 54(max.) x L = 124 mm |                |                |

VS-TEC03/S



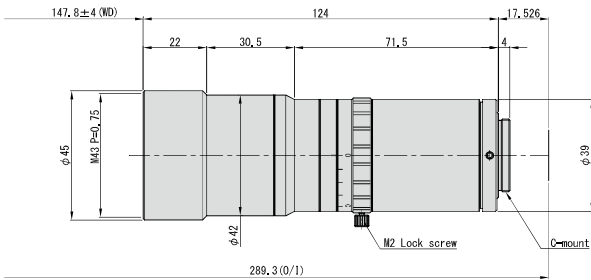
|                                 |                              |                |
|---------------------------------|------------------------------|----------------|
| Optical Mag.                    | 0.3x $\pm$ 5 %               |                |
| FOV(VxH)                        | 2/3"                         | 23.7 x 28.0 mm |
|                                 | 1/2"                         | 16.0 x 21.3 mm |
|                                 | 1/3"                         | 12.0 x 16.0 mm |
| WD                              | 224.1 mm $\pm$ 7             |                |
| O/I (Object & Imager Distance)  | 353.6 mm                     |                |
| Working F/# *Value at Iris Open | 4.3                          |                |
| NA                              | 0.035                        |                |
| DOF at PCoC $\phi$ 0.04mm       | 3.8 mm                       |                |
| TV Distortion (2/3")            | 0.02 %                       |                |
| Relative Illuminance (Y=5.5)    | 98 %                         |                |
| Wavelength                      | Visible                      |                |
| Mount                           | C-Mount                      |                |
| Flange Back                     | 17526 mm                     |                |
| Sensor Size (max.)              | 2/3"                         |                |
| Filter Thread                   | M 43 P = 0.75                |                |
| Weight (approx.)                | 245 g                        |                |
| Dimension                       | $\phi$ 45(max.) x L = 112 mm |                |

VS-TEC035/S



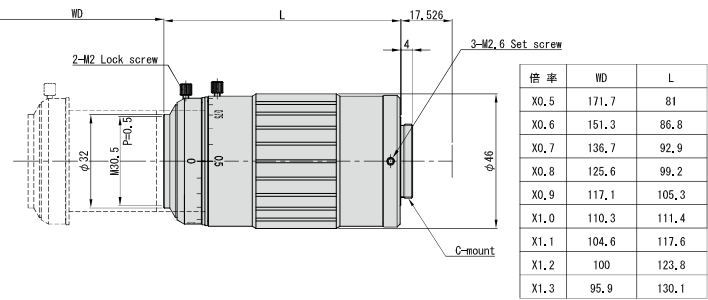
|                                 |                                |                |
|---------------------------------|--------------------------------|----------------|
| Optical Mag.                    | 0.35x $\pm$ 5 %                |                |
| FOV(VxH)                        | 2/3"                           | 20.3 x 24.0 mm |
|                                 | 1/2"                           | 13.7 x 18.3 mm |
|                                 | 1/3"                           | 10.3 x 13.7 mm |
| WD                              | 181.5 mm $\pm$ 5               |                |
| O/I (Object & Imager Distance)  | 316.6 mm                       |                |
| Working F/# *Value at Iris Open | 4.7                            |                |
| NA                              | 0.038                          |                |
| DOF at PCoC $\phi$ 0.04mm       | 3.0 mm                         |                |
| TV Distortion (2/3")            | -0.01 %                        |                |
| Relative Illuminance (Y=5.5)    | 98 %                           |                |
| Wavelength                      | Visible                        |                |
| Mount                           | C-Mount                        |                |
| Flange Back                     | 17526 mm                       |                |
| Sensor Size (max.)              | 2/3"                           |                |
| Filter Thread                   | M 43 P = 0.75                  |                |
| Weight (approx.)                | 250 g                          |                |
| Dimension                       | $\phi$ 45(max.) x L = 112.6 mm |                |

VS-TEC04/S



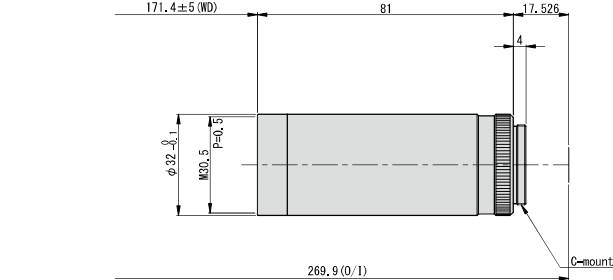
|                                 |                              |                |
|---------------------------------|------------------------------|----------------|
| Optical Mag.                    | 0.4x $\pm$ 5 %               |                |
| FOV(VxH)                        | 2/3"                         | 17.8 x 21.0 mm |
|                                 | 1/2"                         | 12.0 x 16.0 mm |
|                                 | 1/3"                         | 9.0 x 12.0 mm  |
| WD                              | 147.8 mm $\pm$ 4             |                |
| O/I (Object & Imager Distance)  | 289.3 mm                     |                |
| Working F/# *Value at Iris Open | 5.0                          |                |
| NA                              | 0.040                        |                |
| DOF at PCoC $\phi$ 0.04mm       | 2.5 mm                       |                |
| TV Distortion (2/3")            | -0.03 %                      |                |
| Relative Illuminance (Y=5.5)    | 98 %                         |                |
| Wavelength                      | Visible                      |                |
| Mount                           | C-Mount                      |                |
| Flange Back                     | 17526 mm                     |                |
| Sensor Size (max.)              | 2/3"                         |                |
| Filter Thread                   | M 43 P = 0.75                |                |
| Weight (approx.)                | 255 g                        |                |
| Dimension                       | $\phi$ 45(max.) x L = 124 mm |                |

VS-TEC0513



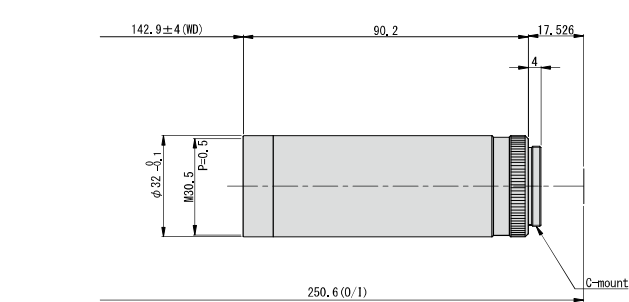
|                                |                                     |                |              |
|--------------------------------|-------------------------------------|----------------|--------------|
| Optical Mag. Range             | 0.5x ~ 1.3x                         |                |              |
| Optical Mag.                   | 0.5x                                | 1.0x           | 1.3x         |
| FOV(VxH)                       | 2/3"                                | 14.2 x 16.8 mm | 7.1 x 8.4 mm |
|                                | 1/2"                                | 9.6 x 12.8 mm  | 4.8 x 6.4 mm |
|                                | 1/3"                                | 7.2 x 9.6 mm   | 3.6 x 4.8 mm |
| WD                             | 171.7 mm                            | 110.3 mm       | 95.9 mm      |
| O/I (Object & Imager Distance) | 270.2 mm                            | 239.2 mm       | 248.5 mm     |
| Working F/#                    | 5.3                                 | 8.3            | 10.2         |
| NA                             | 0.047                               | 0.060          | 0.064        |
| DOF at PCoC $\phi$ 0.04mm      | 1.7 mm                              | 0.7 mm         | 0.5 mm       |
| TV Distortion (2/3")           | 0.03 %                              | 0.01 %         | 0.01 %       |
| Relative Illuminance (Y=5.5)   | 98 %                                | 99 %           | 99 %         |
| Wavelength                     | Visible                             |                |              |
| Mount                          | C-Mount                             |                |              |
| Flange Back                    | 17526 mm                            |                |              |
| Sensor Size (max.)             | 2/3"                                |                |              |
| Filter Thread                  | M 30.5 P = 0.5                      |                |              |
| Weight (approx.)               | 255 g                               |                |              |
| Dimension                      | $\phi$ 46(max.) x L = 81 ~ 130.1 mm |                |              |

VS-TEC05



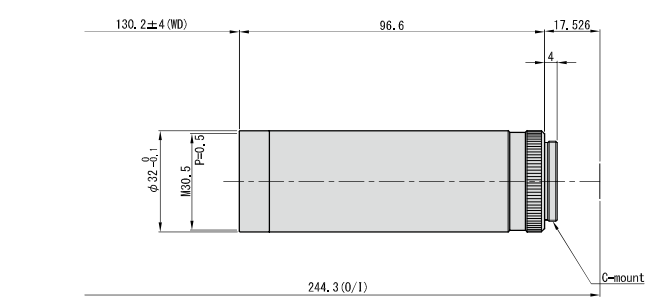
|                                |                             |                |
|--------------------------------|-----------------------------|----------------|
| Optical Mag.                   | 2/3"                        | 0.5x $\pm$ 5 % |
| FOV(VxH)                       | 2/3"                        | 14.2 x 16.8 mm |
|                                | 1/2"                        | 9.6 x 12.8 mm  |
|                                | 1/3"                        | 7.2 x 9.6 mm   |
| WD                             | 171.4 $\pm$ 5               | 81 mm          |
| O/I (Object & Imager Distance) | 269.9 mm                    |                |
| Working F/#                    | 5.3                         |                |
| NA                             | 0.047                       |                |
| DOF at PCoC $\phi$ 0.04mm      | 1.7 mm                      |                |
| TV Distortion (2/3")           | 0.03 %                      |                |
| Relative Illuminance (Y=5.5)   | 98 %                        |                |
| Wavelength                     | Visible                     |                |
| Mount                          | C-Mount                     |                |
| Flange Back                    | 17526 mm                    |                |
| Sensor Size (max.)             | 2/3"                        |                |
| Filter Thread                  | M 30.5 P = 0.5              |                |
| Weight (approx.)               | 80 g                        |                |
| Dimension                      | $\phi$ 32(max.) x L = 81 mm |                |

VS-TEC065



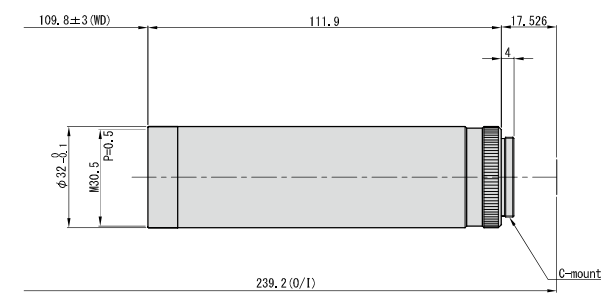
|                                |                               |                 |
|--------------------------------|-------------------------------|-----------------|
| Optical Mag.                   | 2/3"                          | 0.65x $\pm$ 5 % |
| FOV(VxH)                       | 2/3"                          | 10.9 x 12.9 mm  |
|                                | 1/2"                          | 7.4 x 9.8 mm    |
|                                | 1/3"                          | 5.5 x 7.4 mm    |
| WD                             | 142.9 $\pm$ 4                 | 90.2 mm         |
| O/I (Object & Imager Distance) | 250.6 mm                      |                 |
| Working F/#                    | 6.2                           |                 |
| NA                             | 0.053                         |                 |
| DOF at PCoC $\phi$ 0.04mm      | 1.2 mm                        |                 |
| TV Distortion (2/3")           | 0.02 %                        |                 |
| Relative Illuminance (Y=5.5)   | 97 %                          |                 |
| Wavelength                     | Visible                       |                 |
| Mount                          | C-Mount                       |                 |
| Flange Back                    | 17526 mm                      |                 |
| Sensor Size (max.)             | 2/3"                          |                 |
| Filter Thread                  | M 30.5 P = 0.5                |                 |
| Weight (approx.)               | 86 g                          |                 |
| Dimension                      | $\phi$ 32(max.) x L = 90.2 mm |                 |

VS-TEC075



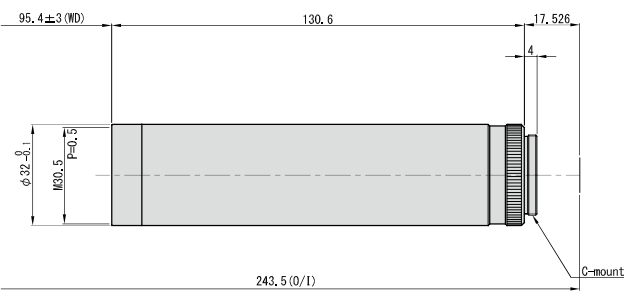
|                                |                               |                 |
|--------------------------------|-------------------------------|-----------------|
| Optical Mag.                   | 2/3"                          | 0.75x $\pm$ 5 % |
| FOV(VxH)                       | 2/3"                          | 9.5 x 11.2 mm   |
|                                | 1/2"                          | 6.4 x 8.5 mm    |
|                                | 1/3"                          | 4.8 x 6.4 mm    |
| WD                             | 130.2 $\pm$ 4                 | 96.6 mm         |
| O/I (Object & Imager Distance) | 244.3 mm                      |                 |
| Working F/#                    | 6.8                           |                 |
| NA                             | 0.055                         |                 |
| DOF at PCoC $\phi$ 0.04mm      | 1.0 mm                        |                 |
| TV Distortion (2/3")           | 0.02 %                        |                 |
| Relative Illuminance (Y=5.5)   | 98 %                          |                 |
| Wavelength                     | Visible                       |                 |
| Mount                          | C-Mount                       |                 |
| Flange Back                    | 17526 mm                      |                 |
| Sensor Size (max.)             | 2/3"                          |                 |
| Filter Thread                  | M 30.5 P = 0.5                |                 |
| Weight (approx.)               | 90 g                          |                 |
| Dimension                      | $\phi$ 32(max.) x L = 96.6 mm |                 |

VS-TEC10



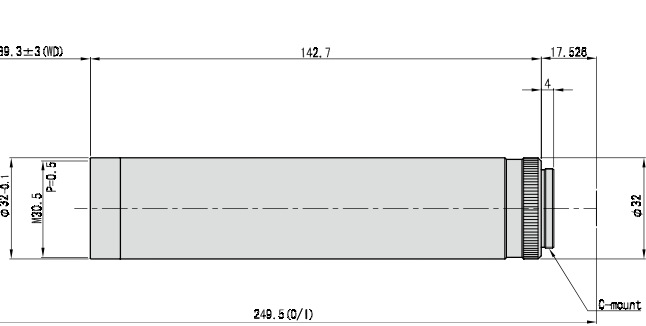
|                                |                                |                |
|--------------------------------|--------------------------------|----------------|
| Optical Mag.                   | 2/3"                           | 1.0x $\pm$ 5 % |
| FOV(VxH)                       | 2/3"                           | 7.1 x 8.4 mm   |
|                                | 1/2"                           | 4.8 x 6.4 mm   |
|                                | 1/3"                           | 3.6 x 4.8 mm   |
| WD                             | 109.8 $\pm$ 3                  | 111.9 mm       |
| O/I (Object & Imager Distance) | 239.2 mm                       |                |
| Working F/#                    | 8.3                            |                |
| NA                             | 0.060                          |                |
| DOF at PCoC $\phi$ 0.04mm      | 0.7 mm                         |                |
| TV Distortion (2/3")           | 0.01 %                         |                |
| Relative Illuminance (Y=5.5)   | 99 %                           |                |
| Wavelength                     | Visible                        |                |
| Mount                          | C-Mount                        |                |
| Flange Back                    | 17526 mm                       |                |
| Sensor Size (max.)             | 2/3"                           |                |
| Filter Thread                  | M 30.5 P = 0.5                 |                |
| Weight (approx.)               | 96 g                           |                |
| Dimension                      | $\phi$ 32(max.) x L = 111.9 mm |                |

VS-TEC13



|                                |                                |                |
|--------------------------------|--------------------------------|----------------|
| Optical Mag.                   | 2/3"                           | 1.3x $\pm$ 5 % |
| FOV(VxH)                       | 2/3"                           | 5.5 x 6.5 mm   |
|                                | 1/2"                           | 3.7 x 4.9 mm   |
|                                | 1/3"                           | 2.8 x 3.7 mm   |
| WD                             | 95.4 $\pm$ 3                   | 130.6 mm       |
| O/I (Object & Imager Distance) | 243.5 mm                       |                |
| Working F/#                    | 10.2                           |                |
| NA                             | 0.064                          |                |
| DOF at PCoC $\phi$ 0.04mm      | 0.5 mm                         |                |
| TV Distortion (2/3")           | 0.01 %                         |                |
| Relative Illuminance (Y=5.5)   | 99 %                           |                |
| Wavelength                     | Visible                        |                |
| Mount                          | C-Mount                        |                |
| Flange Back                    | 17526 mm                       |                |
| Sensor Size (max.)             | 2/3"                           |                |
| Filter Thread                  | M 30.5 P = 0.5                 |                |
| Weight (approx.)               | 104 g                          |                |
| Dimension                      | $\phi$ 32(max.) x L = 130.6 mm |                |

VS-TEC15



|                                |                                |                |
|--------------------------------|--------------------------------|----------------|
| Optical Mag.                   | 2/3"                           | 1.5x $\pm$ 5 % |
| FOV(VxH)                       | 2/3"                           | 4.7 x 5.6 mm   |
|                                | 1/2"                           | 3.2 x 4.3 mm   |
|                                | 1/3"                           | 2.4 x 3.2 mm   |
| WD                             | 89.3 $\pm$ 3                   | 142.7 mm       |
| O/I (Object & Imager Distance) | 249.5 mm                       |                |
| Working F/#                    | 11.4                           |                |
| NA                             | 0.066                          |                |
| DOF at PCoC $\phi$ 0.04mm      | 0.4 mm                         |                |
| TV Distortion (max.)           | 0.02 %                         |                |
| Relative Illuminance (Y=5.5)   | 99 %                           |                |
| Wavelength                     | Visible                        |                |
| Mount                          | C-Mount                        |                |
| Flange Back                    | 17526 mm                       |                |
| Sensor Size (max.)             | 2/3"                           |                |
| Filter Thread                  | M 30.5 P = 0.5                 |                |
| Weight (approx.)               | 116 g                          |                |
| Dimension                      | $\phi$ 32(max.) x L = 142.7 mm |                |



1.1" Variable Magnification Telecentric Lenses

VS-TEV Series 1.1" 1" 1/1.2"

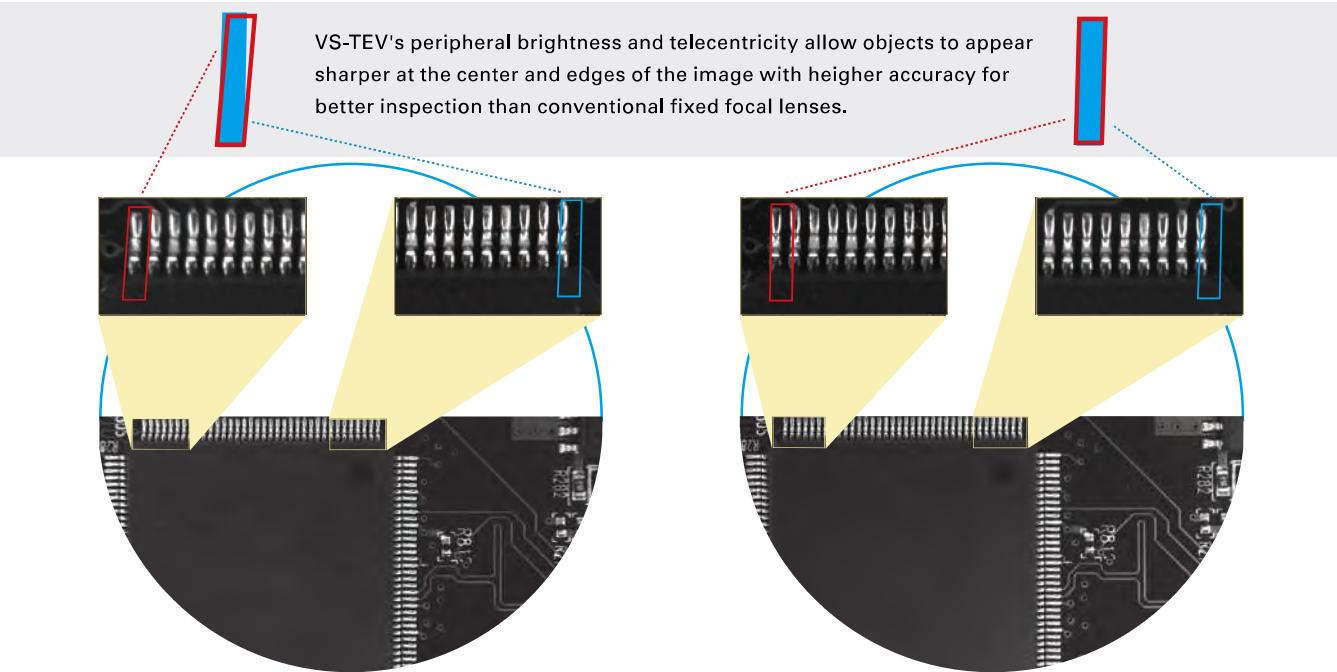
With 1.1" large format sensor support and a 3.45μm pixel resolution the VS-TEV series excels at delivering a clear high quality image. Its three variable magnification ranges of 0.3x - 0.5x, 0.5x - 0.75x, 0.75x - 1x have you covered at every spectrum.

Features

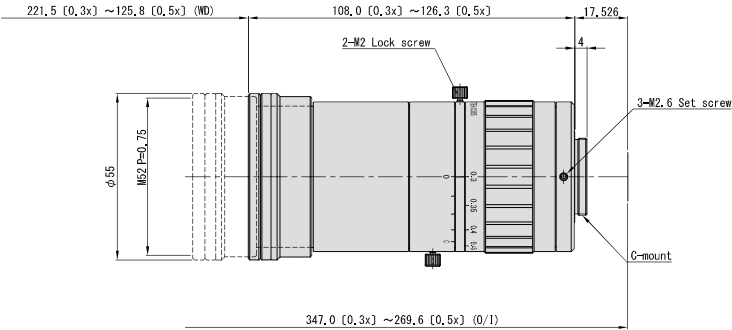
- 1.1" sensor support
- 3 models available
- 3.45μm resolution
- Variable Magnification
- Adjustable DOF
- High Telecentricity



Image Comparison

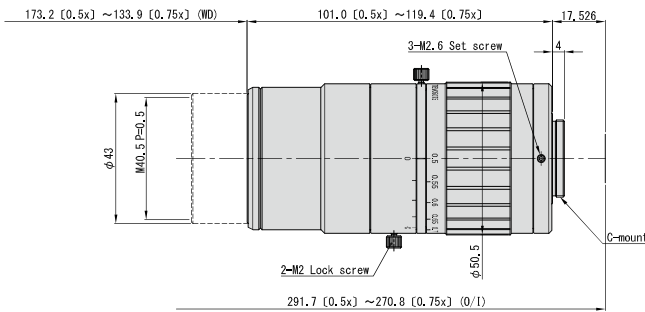


VS-TEV0305



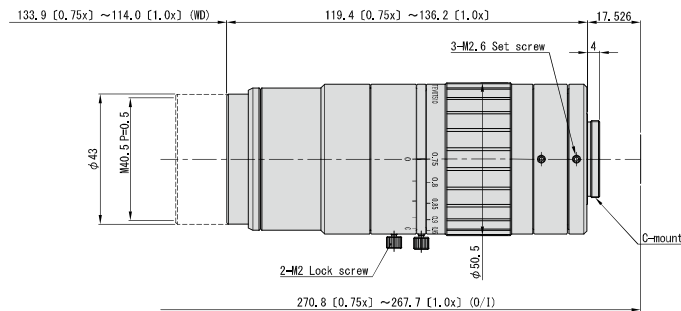
|                                 |                                         |                |                |
|---------------------------------|-----------------------------------------|----------------|----------------|
| Optical Mag. Range              | 0.3x ~ 0.5x                             |                |                |
| Optical Mag.                    | 0.3x                                    | 0.4x           | 0.5x           |
| FOV(VxH)                        | 1.1"                                    | 34.7 x 47.0 mm | 26.0 x 35.3 mm |
|                                 | 1"                                      | 37.5 x 37.5 mm | 28.2 x 28.2 mm |
|                                 | 2/3"                                    | 23.7 x 28.0 mm | 17.8 x 21.0 mm |
| WD                              | 221.5 mm                                | 162.0 mm       | 125.8 mm       |
| O/I (Object & Imager Distance)  | 347.0 mm                                | 296.7 mm       | 269.6 mm       |
| Working F/# *Value at Iris Open | 4.3                                     | 5.2            | 6.2            |
| NA                              | 0.035                                   | 0.038          | 0.040          |
| DOF at PCoC $\phi$ 0.04mm       | 3.8 mm                                  | 2.6 mm         | 2.0 mm         |
| TV Distortion (1.1")            | 0.03 %                                  | -0.04 %        | -0.04 %        |
| Relative Illuminance (Y=8.8)    | 72 %                                    | 97 %           | 97 %           |
| Wavelength                      | Visible                                 |                |                |
| Mount                           | C-Mount                                 |                |                |
| Flange Back                     | 17526 mm                                |                |                |
| Sensor Size (max.)              | 1.1"                                    |                |                |
| Filter Thread                   | M 52 P = 0.75                           |                |                |
| Weight (approx.)                | 390 g                                   |                |                |
| Dimension                       | $\phi$ 55 (max.) x L = 108.0 ~ 126.3 mm |                |                |

VS-TEV05075



|                                 |                                           |                |
|---------------------------------|-------------------------------------------|----------------|
| Optical Mag. Range              | 0.5x ~ 0.75x                              |                |
| Optical Mag.                    | 0.5x                                      | 0.75x          |
| FOV(VxH)                        | 1.1"                                      | 20.8 x 28.2 mm |
|                                 | 1"                                        | 22.5 x 22.5 mm |
|                                 | 2/3"                                      | 14.2 x 16.8 mm |
| WD                              | 173.2 mm                                  | 133.9 mm       |
| O/I (Object & Imager Distance)  | 291.7 mm                                  | 270.8 mm       |
| Working F/# *Value at Iris Open | 5.0                                       | 6.8            |
| NA                              | 0.050                                     | 0.055          |
| DOF at PCoC $\phi$ 0.04mm       | 1.6 mm                                    | 1.0 mm         |
| TV Distortion (1.1")            | 0.06 %                                    | 0.04 %         |
| Relative Illuminance (Y=8.8)    | 90 %                                      | 98 %           |
| Wavelength                      | Visible                                   |                |
| Mount                           | C-Mount                                   |                |
| Flange Back                     | 17526 mm                                  |                |
| Sensor Size (max.)              | 1.1"                                      |                |
| Filter Thread                   | M 40.5 P = 0.5                            |                |
| Weight (approx.)                | 350 g                                     |                |
| Dimension                       | $\phi$ 50.5 (max.) x L = 101.0 ~ 119.4 mm |                |

VS-TEV07510



|                                 |                                           |                |
|---------------------------------|-------------------------------------------|----------------|
| Optical Mag. Range              | 0.75x ~ 1.0x                              |                |
| Optical Mag.                    | 0.75x                                     | 1.0x           |
| FOV(VxH)                        | 1.1"                                      | 13.9 x 18.8 mm |
|                                 | 1"                                        | 15.0 x 15.0 mm |
|                                 | 2/3"                                      | 9.5 x 11.2 mm  |
| WD                              | 133.9 mm                                  | 114.0 mm       |
| O/I (Object & Imager Distance)  | 270.8 mm                                  | 267.7 mm       |
| Working F/# *Value at Iris Open | 6.8                                       | 8.5            |
| NA                              | 0.055                                     | 0.059          |
| DOF at PCoC $\phi$ 0.04mm       | 1.0 mm                                    | 0.7 mm         |
| TV Distortion (1.1")            | 0.04 %                                    | 0.02 %         |
| Relative Illuminance (Y=8.8)    | 98 %                                      | 99 %           |
| Wavelength                      | Visible                                   |                |
| Mount                           | C-Mount                                   |                |
| Flange Back                     | 17526 mm                                  |                |
| Sensor Size (max.)              | 1.1"                                      |                |
| Filter Thread                   | M 40.5 P = 0.5                            |                |
| Weight (approx.)                | 370 g                                     |                |
| Dimension                       | $\phi$ 50.5 (max.) x L = 119.4 ~ 136.2 mm |                |



VS-LTC Series

Sensors with diameters ranging from 21 - 45 mm can utilize the VS-LTC series to produce a high resolution telecentric image. Specifically designed for large format line scan sensors, you can find within this series an excellent match for your line scan camera.

Features

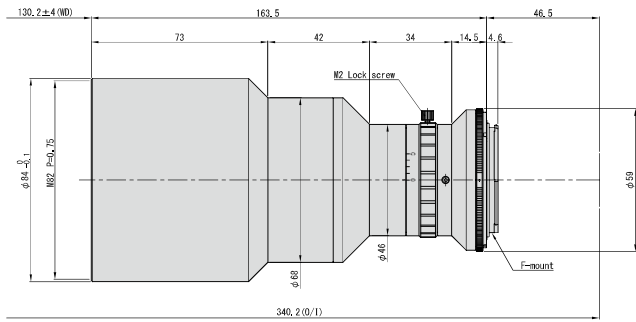
- 21-45 mm sensor support
- 21 models available
- Reduced shading
- Adjustable DOF
- Telecentric design



Image circle chart

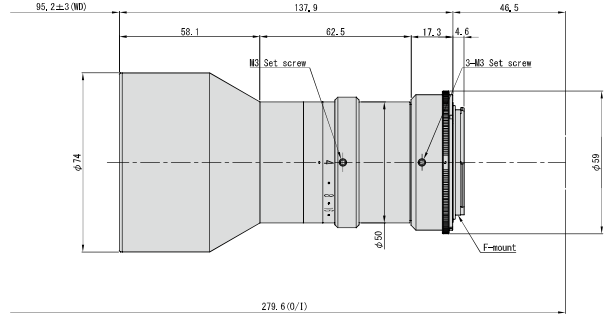
| bit                  |       |      | 2048 | 2048 | 4096 | 7450 | 4096 | 6144 |
|----------------------|-------|------|------|------|------|------|------|------|
| Pixel Size (μm)      |       |      | 10   | 14   | 7    | 4.7  | 10   | 7    |
| Image Circle φ(mm)   |       |      | 20.5 | 28.7 | 28.7 | 35   | 41   | 43   |
| VS-LTC03-130/FS      | 22    | P107 | ●    |      |      |      |      |      |
| VS-LTC04-100-21/FS   | 20.24 | P107 | ●    |      |      |      |      |      |
| VS-LTC05-130/FS      | 22    | P107 | ●    |      |      |      |      |      |
| VS-LTC07-150/FS      | 21    | P107 | ●    |      |      |      |      |      |
| VS-LTC1-130/FS       | 22    | P107 | ●    |      |      |      |      |      |
| VS-LTC075-70-35/FS   | 35    | P108 | ●    | ●    | ●    | ●    |      |      |
| VS-LTC075-70CO-35/FS | 35    | P108 | ●    | ●    | ●    | ●    |      |      |
| VS-LTC1-70-35/FS     | 35    | P108 | ●    | ●    | ●    | ●    |      |      |
| VS-LTC1-70CO-35/FS   | 35    | P108 | ●    | ●    | ●    | ●    |      |      |
| VS-LTC2-70/FSN       | 35    | P109 | ●    | ●    | ●    | ●    |      |      |
| VS-LTC2-70CO/FSN     | 35    | P109 | ●    | ●    | ●    | ●    |      |      |
| VS-LTC2-60/FS        | 35    | P109 | ●    | ●    | ●    | ●    |      |      |
| VS-LTC3.3-45/FS      | 35    | P109 | ●    | ●    | ●    | ●    |      |      |
| VS-LTC1-130-45/FS    | 45    | P110 | ●    | ●    | ●    | ●    | ●    | ●    |
| VS-LTC1-130CO-45/FS  | 45    | P110 | ●    | ●    | ●    | ●    | ●    | ●    |
| VS-LTC2-130-45/FS    | 45    | P110 | ●    | ●    | ●    | ●    | ●    | ●    |
| VS-LTC2-130CO-45/FS  | 45    | P110 | ●    | ●    | ●    | ●    | ●    | ●    |
| VS-LTC4-50CO-28/F    | 25    | P111 | ●    |      |      |      |      |      |
| VS-LTC5-50CO-28/F    | 28.6  | P111 | ●    | ●    | ●    |      |      |      |
| VS-LTC6-50CO-28/F    | 28.6  | P111 | ●    | ●    | ●    |      |      |      |
| VS-LTC7-50CO-28/F    | 28.6  | P111 | ●    | ●    | ●    |      |      |      |

VS-LTC03-130/FS



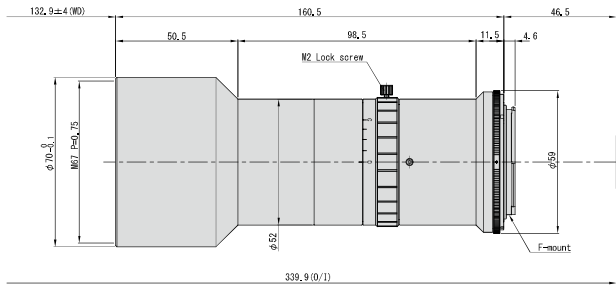
|                                 |                          |
|---------------------------------|--------------------------|
| Optical Mag.                    | 0.3x ± 5 %               |
| FOV                             | 73.3 mm                  |
| WD                              | 130.2 mm ± 4             |
| O/I (Object & Imager Distance)  | 340.2 mm                 |
| Working F/# *Value at Iris Open | 5.8                      |
| NA                              | 0.026                    |
| DOF at PCoC φ0.04mm             | 5.2 mm                   |
| TV Distortion                   | 0.01 %                   |
| Relative Illuminance (Y=11)     | 94 %                     |
| Wavelength                      | Visible                  |
| Mount                           | F-Mount                  |
| Flange Back                     | 46.5 mm                  |
| Image Circle                    | φ22 mm                   |
| Filter Thread                   | M 82 P = 0.75            |
| Weight (approx.)                | 960 g                    |
| Dimension                       | φ84(max.) x L = 163.5 mm |

VS-LTC04-100-21/FS



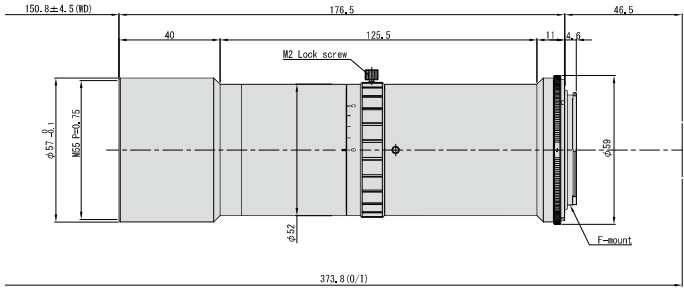
|                                 |                          |
|---------------------------------|--------------------------|
| Optical Mag.                    | 0.4x ± 5 %               |
| FOV                             | 51.2 mm                  |
| WD                              | 95.2 mm ± 3              |
| O/I (Object & Imager Distance)  | 279.6 mm                 |
| Working F/# *Value at Iris Open | 4.0                      |
| NA                              | 0.050                    |
| DOF at PCoC φ0.04mm             | 2.0 mm                   |
| TV Distortion                   | 0.02 %                   |
| Relative Illuminance (Y=10.24)  | 90 %                     |
| Wavelength                      | Visible                  |
| Mount                           | F-Mount                  |
| Flange Back                     | 46.5 mm                  |
| Image Circle                    | φ20.48 mm                |
| Weight (approx.)                | 660 g                    |
| Dimension                       | φ74(max.) x L = 137.9 mm |

VS-LTC05-130/FS



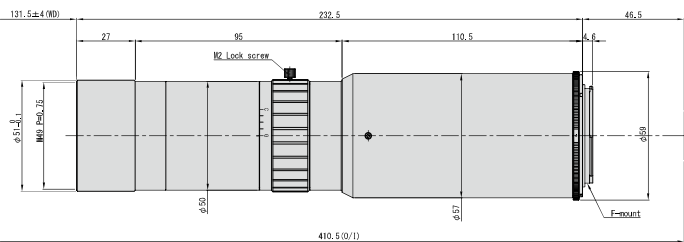
|                                 |                          |
|---------------------------------|--------------------------|
| Optical Mag.                    | 0.5x ± 5 %               |
| FOV                             | 44.0 mm                  |
| WD                              | 132.9 mm ± 4             |
| O/I (Object & Imager Distance)  | 339.9 mm                 |
| Working F/# *Value at Iris Open | 4.6                      |
| NA                              | 0.055                    |
| DOF at PCoC φ0.04mm             | 1.5 mm                   |
| TV Distortion                   | -0.04 %                  |
| Relative Illuminance (Y=11)     | 97 %                     |
| Wavelength                      | Visible                  |
| Mount                           | F-Mount                  |
| Flange Back                     | 46.5 mm                  |
| Image Circle                    | φ22 mm                   |
| Filter Thread                   | M 67 P = 0.75            |
| Weight (approx.)                | 730 g                    |
| Dimension                       | φ70(max.) x L = 160.5 mm |

VS-LTC07-150/FS



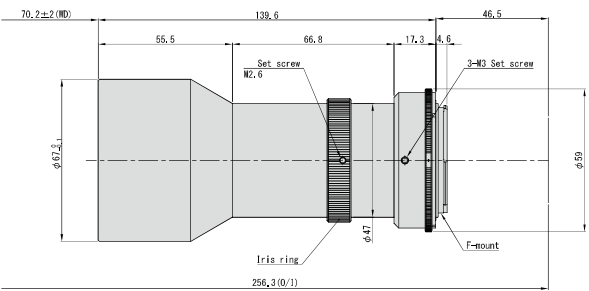
|                                 |                          |
|---------------------------------|--------------------------|
| Optical Mag.                    | 0.7x ± 5 %               |
| FOV                             | 30.0 mm                  |
| WD                              | 150.8 mm ± 4.5           |
| O/I (Object & Imager Distance)  | 373.8 mm                 |
| Working F/# *Value at Iris Open | 5.3                      |
| NA                              | 0.066                    |
| DOF at PCoC φ0.04mm             | 0.9 mm                   |
| TV Distortion                   | 0.01 %                   |
| Relative Illuminance (Y=10.5)   | 99 %                     |
| Wavelength                      | Visible                  |
| Mount                           | F-Mount                  |
| Flange Back                     | 46.5 mm                  |
| Image Circle                    | φ21 mm                   |
| Filter Thread                   | M 55 P = 0.75            |
| Weight (approx.)                | 580 g                    |
| Dimension                       | φ59(max.) x L = 176.5 mm |

VS-LTC1-130/FS



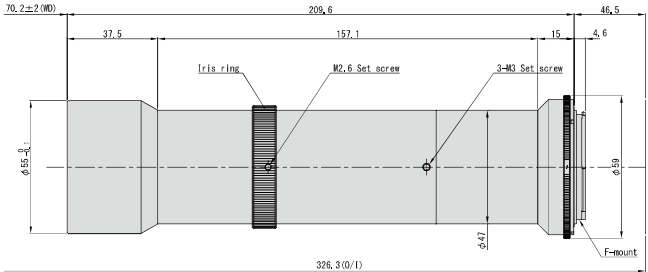
|                                 |                          |
|---------------------------------|--------------------------|
| Optical Mag.                    | 1.0x ± 5 %               |
| FOV                             | 22.0 mm                  |
| WD                              | 131.5 mm ± 4             |
| O/I (Object & Imager Distance)  | 410.5 mm                 |
| Working F/# *Value at Iris Open | 6.3                      |
| NA                              | 0.080                    |
| DOF at PCoC φ0.04mm             | 0.5 mm                   |
| TV Distortion                   | 0.00 %                   |
| Relative Illuminance (Y=11)     | 99 %                     |
| Wavelength                      | Visible                  |
| Mount                           | F-Mount                  |
| Flange Back                     | 46.5 mm                  |
| Image Circle                    | φ22 mm                   |
| Filter Thread                   | M 49 P = 0.75            |
| Weight (approx.)                | 610 g                    |
| Dimension                       | φ59(max.) x L = 232.5 mm |

VS-LTC075-70-35/FS



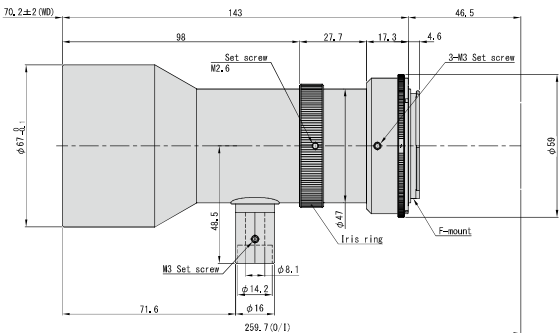
|                                 |                                 |
|---------------------------------|---------------------------------|
| Optical Mag.                    | 0.75x ±5 %                      |
| FOV                             | 46.7 mm                         |
| WD                              | 70.2 mm ±2                      |
| O/I (Object & Imager Distance)  | 256.3 mm                        |
| Working F/# *Value at Iris Open | 5.4                             |
| NA                              | 0.070                           |
| DOF at PCoC $\phi$ 0.04mm       | 0.8 mm                          |
| TV Distortion                   | 0.10 %                          |
| Relative Illuminance (Y=17.5)   | 90 %                            |
| Wavelength                      | Visible                         |
| Mount                           | F-Mount                         |
| Flange Back                     | 46.5 mm                         |
| Sensor Size (max.)              | $\phi$ 35 mm                    |
| Co-Axial Prism                  | —                               |
| Weight (approx.)                | 740 g                           |
| Dimension                       | $\phi$ 67 (max.) x L = 139.6 mm |

VS-LTC2-70/FSN



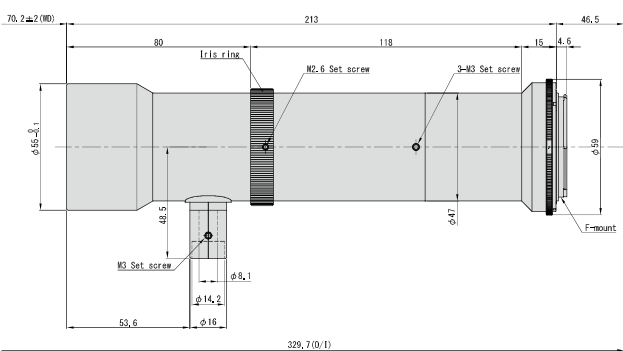
|                                 |                                 |
|---------------------------------|---------------------------------|
| Optical Mag.                    | 2.0x ±5 %                       |
| FOV                             | 17.5 mm                         |
| WD                              | 70.2 mm ±2                      |
| O/I (Object & Imager Distance)  | 326.3 mm                        |
| Working F/# *Value at Iris Open | 12.5                            |
| NA                              | 0.080                           |
| DOF at PCoC $\phi$ 0.04mm       | 0.3 mm                          |
| TV Distortion                   | 0.05 %                          |
| Relative Illuminance (Y=17.5)   | 90 %                            |
| Wavelength                      | Visible                         |
| Mount                           | F-Mount                         |
| Flange Back                     | 46.5 mm                         |
| Sensor Size (max.)              | $\phi$ 35 mm                    |
| Co-Axial Prism                  | —                               |
| Weight (approx.)                | 670 g                           |
| Dimension                       | $\phi$ 59 (max.) x L = 209.6 mm |

VS-LTC075-70CO-35/FS



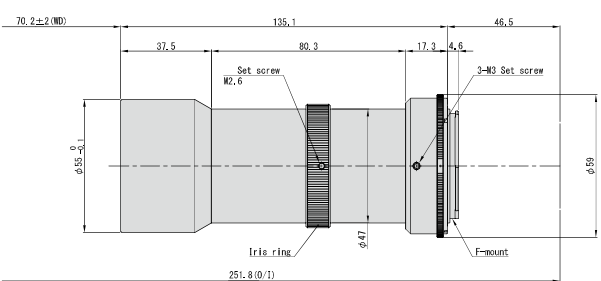
|                                 |                               |
|---------------------------------|-------------------------------|
| Optical Mag.                    | 0.75x ±5 %                    |
| FOV                             | 46.7 mm                       |
| WD                              | 70.2 mm ±2                    |
| O/I (Object & Imager Distance)  | 259.7 mm                      |
| Working F/# *Value at Iris Open | 5.4                           |
| NA                              | 0.070                         |
| DOF at PCoC $\phi$ 0.04mm       | 0.8 mm                        |
| TV Distortion                   | 0.10 %                        |
| Relative Illuminance (Y=17.5)   | 90 %                          |
| Wavelength                      | Visible                       |
| Mount                           | F-Mount                       |
| Flange Back                     | 46.5 mm                       |
| Sensor Size (max.)              | $\phi$ 35 mm                  |
| Co-Axial Prism                  | Built-in                      |
| Weight (approx.)                | 770 g                         |
| Dimension                       | $\phi$ 67 (max.) x L = 143 mm |

VS-LTC2-70CO/FSN



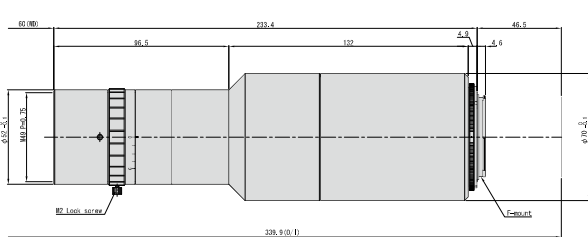
|                                 |                               |
|---------------------------------|-------------------------------|
| Optical Mag.                    | 2.0x ±5 %                     |
| FOV                             | 17.5 mm                       |
| WD                              | 70.2 mm ±2                    |
| O/I (Object & Imager Distance)  | 329.7 mm                      |
| Working F/# *Value at Iris Open | 12.5                          |
| NA                              | 0.080                         |
| DOF at PCoC $\phi$ 0.04mm       | 0.3 mm                        |
| TV Distortion                   | 0.05 %                        |
| Relative Illuminance (Y=17.5)   | 90 %                          |
| Wavelength                      | Visible                       |
| Mount                           | F-Mount                       |
| Flange Back                     | 46.5 mm                       |
| Sensor Size (max.)              | $\phi$ 35 mm                  |
| Co-Axial Prism                  | Built-in                      |
| Weight (approx.)                | 690 g                         |
| Dimension                       | $\phi$ 59 (max.) x L = 213 mm |

VS-LTC1-70-35/FS



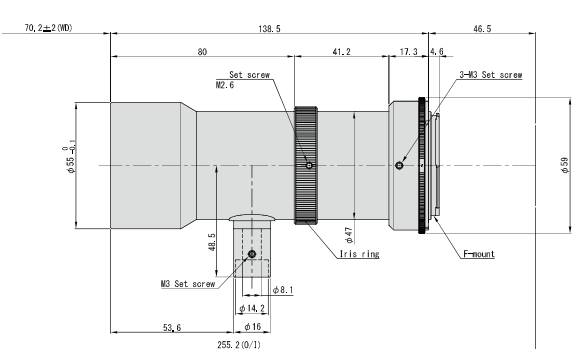
|                                 |                                 |
|---------------------------------|---------------------------------|
| Optical Mag.                    | 1.0x ±5 %                       |
| FOV                             | 35 mm                           |
| WD                              | 70.2 mm ±2                      |
| O/I (Object & Imager Distance)  | 251.8 mm                        |
| Working F/# *Value at Iris Open | 6.3                             |
| NA                              | 0.080                           |
| DOF at PCoC $\phi$ 0.04mm       | 0.5 mm                          |
| TV Distortion                   | 0.03 %                          |
| Relative Illuminance (Y=17.5)   | 90 %                            |
| Wavelength                      | Visible                         |
| Mount                           | F-Mount                         |
| Flange Back                     | 46.5 mm                         |
| Sensor Size (max.)              | $\phi$ 35 mm                    |
| Co-Axial Prism                  | —                               |
| Weight (approx.)                | 550 g                           |
| Dimension                       | $\phi$ 59 (max.) x L = 135.1 mm |

VS-LTC2-60/FS



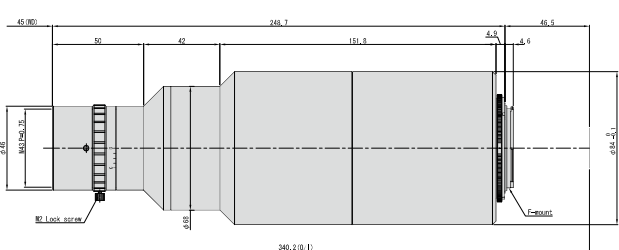
|                                 |                                 |
|---------------------------------|---------------------------------|
| Optical Mag.                    | 2.0x ±5 %                       |
| FOV                             | 17.5 mm                         |
| WD                              | 60.0 mm                         |
| O/I (Object & Imager Distance)  | 339.9 mm                        |
| Working F/# *Value at Iris Open | 9.1                             |
| NA                              | 0.110                           |
| DOF at PCoC $\phi$ 0.04mm       | 0.2 mm                          |
| TV Distortion                   | 0.02 %                          |
| Relative Illuminance (Y=17.5)   | 98 %                            |
| Wavelength                      | Visible                         |
| Mount                           | F-Mount                         |
| Flange Back                     | 46.5 mm                         |
| Image Circle                    | $\phi$ 35 mm                    |
| Filter Thread                   | M 49 P = 0.75                   |
| Weight (approx.)                | 880 g                           |
| Dimension                       | $\phi$ 70 (max.) x L = 233.4 mm |

VS-LTC1-70CO-35/FS



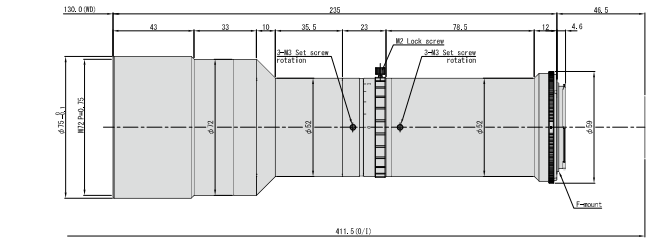
|                                 |                                 |
|---------------------------------|---------------------------------|
| Optical Mag.                    | 1.0x ±5 %                       |
| FOV                             | 35 mm                           |
| WD                              | 70.2 mm ±2                      |
| O/I (Object & Imager Distance)  | 255.2 mm                        |
| Working F/# *Value at Iris Open | 6.3                             |
| NA                              | 0.080                           |
| DOF at PCoC $\phi$ 0.04mm       | 0.5 mm                          |
| TV Distortion                   | 0.03 %                          |
| Relative Illuminance (Y=17.5)   | 90 %                            |
| Wavelength                      | Visible                         |
| Mount                           | F-Mount                         |
| Flange Back                     | 46.5 mm                         |
| Sensor Size (max.)              | $\phi$ 35 mm                    |
| Co-Axial Prism                  | Built-in                        |
| Weight (approx.)                | 570 g                           |
| Dimension                       | $\phi$ 59 (max.) x L = 138.5 mm |

VS-LTC3.3-45/FS



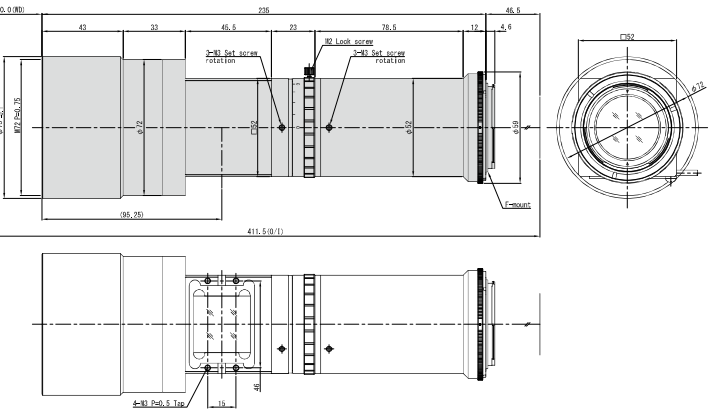
|                                 |                                 |
|---------------------------------|---------------------------------|
| Optical Mag.                    | 3.3x ±5 %                       |
| FOV                             | 10.6 mm                         |
| WD                              | 45.0 mm                         |
| O/I (Object & Imager Distance)  | 340.2 mm                        |
| Working F/# *Value at Iris Open | 19.2                            |
| NA                              | 0.086                           |
| DOF at PCoC $\phi$ 0.04mm       | 0.1 mm                          |
| TV Distortion                   | -0.05 %                         |
| Relative Illuminance (Y=17.5)   | 95 %                            |
| Wavelength                      | Visible                         |
| Mount                           | F-Mount                         |
| Flange Back                     | 46.5 mm                         |
| Image Circle                    | $\phi$ 35 mm                    |
| Filter Thread                   | M 43 P = 0.75                   |
| Weight (approx.)                | 1100 g                          |
| Dimension                       | $\phi$ 84 (max.) x L = 248.7 mm |

VS-LTC1-130-45/FS



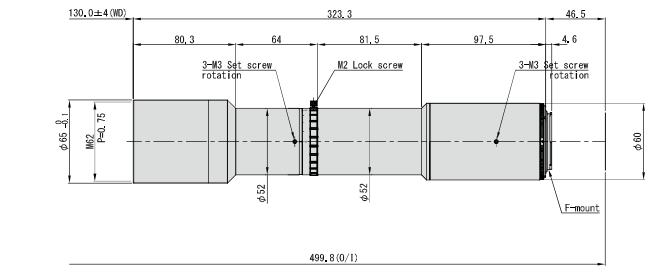
|                                 |                        |
|---------------------------------|------------------------|
| Optical Mag.                    | 1.0x ±5 %              |
| FOV(VxH)                        | φ45.0 mm               |
| WD                              | 130.0 mm               |
| O/I (Object & Imager Distance)  | 411.5 mm               |
| Working F/# *Value at Iris Open | 6.4                    |
| NA                              | 0.078                  |
| DOF at PCoC φ0.04mm             | 0.5 mm                 |
| Optical Distortion(Y=22.5)      | 0.04 %                 |
| Relative Illuminance (Y=22.5)   | 97 %                   |
| Wavelength                      | Visible                |
| Mount                           | F-Mount                |
| Flange Back                     | 46.5 mm                |
| Image Circle                    | φ45 mm                 |
| Co-Axial Prism                  | —                      |
| Weight (approx.)                | 1180 g                 |
| Dimension                       | φ75(max.) x L = 235 mm |

VS-LTC1-130CO-45/FS



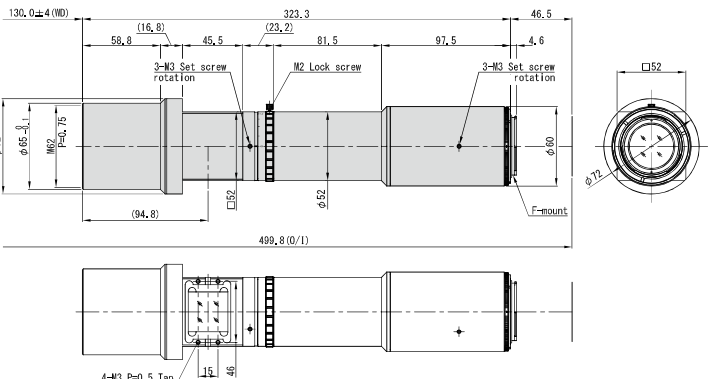
|                                 |                        |
|---------------------------------|------------------------|
| Optical Mag.                    | 1.0x ±5 %              |
| FOV(VxH)                        | φ45.0 mm               |
| WD                              | 130.0 mm               |
| O/I (Object & Imager Distance)  | 411.5 mm               |
| Working F/# *Value at Iris Open | 6.4                    |
| NA                              | 0.078                  |
| DOF at PCoC φ0.04mm             | 0.5 mm                 |
| Optical Distortion(Y=22.5)      | 0.04 %                 |
| Relative Illuminance (Y=22.5)   | 97 %                   |
| Wavelength                      | Visible                |
| Mount                           | F-Mount                |
| Flange Back                     | 46.5 mm                |
| Image Circle                    | φ45 mm                 |
| Co-Axial Prism                  | Built-in               |
| Weight (approx.)                | 1240 g                 |
| Dimension                       | φ75(max.) x L = 235 mm |

VS-LTC2-130-45/FS



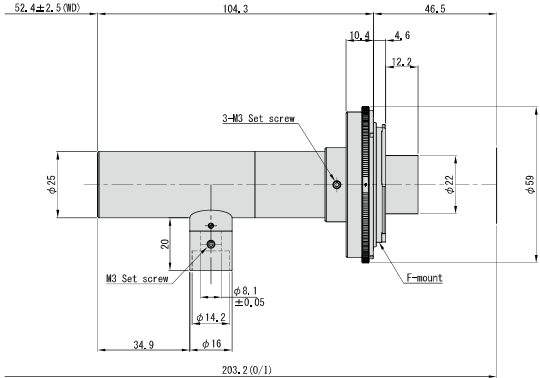
|                                 |                          |
|---------------------------------|--------------------------|
| Optical Mag.                    | 2.0x ±5 %                |
| FOV(VxH)                        | φ22.5 mm                 |
| WD                              | 130.0 mm ±4              |
| O/I (Object & Imager Distance)  | 499.8 mm                 |
| Working F/# *Value at Iris Open | 8.3                      |
| NA                              | 0.120                    |
| DOF at PCoC φ0.04mm             | 0.2 mm                   |
| Optical Distortion (Y=22.5)     | 0.02 %                   |
| Relative Illuminance (Y=22.5)   | 99 %                     |
| Wavelength                      | Visible                  |
| Mount                           | F-Mount                  |
| Flange Back                     | 46.5 mm                  |
| Sensor Size (max.)              | φ45 mm                   |
| Co-Axial Prism                  | —                        |
| Filter Thread                   | M 62 P = 0.75            |
| Weight (approx.)                | 1500 g                   |
| Dimension                       | φ65(max.) x L = 323.3 mm |

VS-LTC2-130CO-45/FS



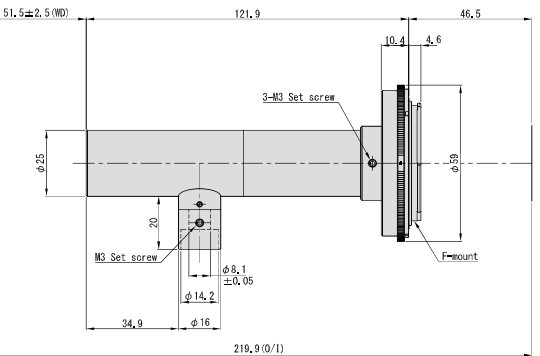
|                                 |                          |
|---------------------------------|--------------------------|
| Optical Mag.                    | 2.0x ±5 %                |
| FOV(VxH)                        | φ22.5 mm                 |
| WD                              | 130.0 mm ±4              |
| O/I (Object & Imager Distance)  | 499.8 mm                 |
| Working F/# *Value at Iris Open | 8.3                      |
| NA                              | 0.120                    |
| DOF at PCoC φ0.04mm             | 0.2 mm                   |
| Optical Distortion (Y=22.5)     | 0.02 %                   |
| Relative Illuminance (Y=22.5)   | 99 %                     |
| Wavelength                      | Visible                  |
| Mount                           | F-Mount                  |
| Flange Back                     | 46.5 mm                  |
| Sensor Size (max.)              | φ45 mm                   |
| Co-Axial Prism                  | Built-in                 |
| Filter Thread                   | M 62 P = 0.75            |
| Weight (approx.)                | 1580 g                   |
| Dimension                       | φ72(max.) x L = 323.3 mm |

VS-LTC4-50CO-28/F



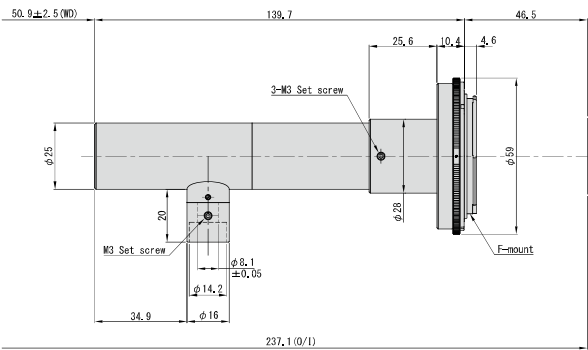
|                                |                          |
|--------------------------------|--------------------------|
| Optical Mag.                   | 4.0x ±5 %                |
| FOV                            | 6.3 mm                   |
| WD                             | 52.4 mm ±2.5             |
| O/I (Object & Imager Distance) | 203.2 mm                 |
| Working F/#                    | 20.0                     |
| NA                             | 0.100                    |
| DOF at PCoC φ0.04mm            | 0.1 mm                   |
| TV Distortion                  | 0.27 %                   |
| Wavelength                     | Visible                  |
| Mount                          | F-Mount                  |
| Flange Back                    | 46.5 mm                  |
| Image Circle                   | φ25 mm                   |
| Co-Axial Prism                 | Built-in                 |
| Weight (approx.)               | 180 g                    |
| Dimension                      | φ59(max.) x L = 104.3 mm |

VS-LTC5-50CO-28/F



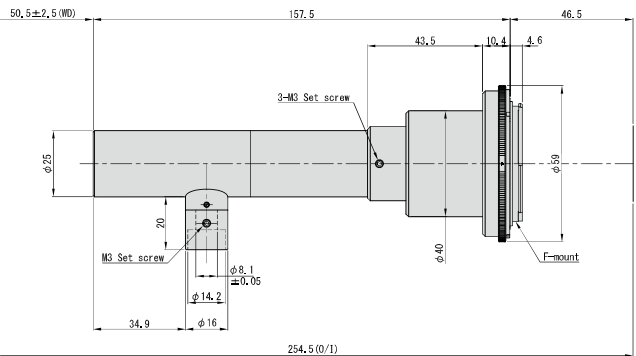
|                                |                          |
|--------------------------------|--------------------------|
| Optical Mag.                   | 5.0x ±5 %                |
| FOV                            | 5.7 mm                   |
| WD                             | 51.5 mm ±2.5             |
| O/I (Object & Imager Distance) | 219.9 mm                 |
| Working F/#                    | 25.0                     |
| NA                             | 0.100                    |
| DOF at PCoC φ0.04mm            | 0.08 mm                  |
| TV Distortion                  | 0.08 %                   |
| Wavelength                     | Visible                  |
| Mount                          | F-Mount                  |
| Flange Back                    | 46.5 mm                  |
| Image Circle                   | φ28.6 mm                 |
| Co-Axial Prism                 | Built-in                 |
| Weight (approx.)               | 185 g                    |
| Dimension                      | φ59(max.) x L = 121.9 mm |

VS-LTC6-50CO-28/F



|                                |                          |
|--------------------------------|--------------------------|
| Optical Mag.                   | 6.0x ±5 %                |
| FOV                            | 4.8 mm                   |
| WD                             | 50.9 mm ±2.5             |
| O/I (Object & Imager Distance) | 237.1 mm                 |
| Working F/#                    | 30.0                     |
| NA                             | 0.100                    |
| DOF at PCoC φ0.04mm            | 0.07 mm                  |
| TV Distortion                  | 0.01 %                   |
| Wavelength                     | Visible                  |
| Mount                          | F-Mount                  |
| Flange Back                    | 46.5 mm                  |
| Image Circle                   | φ28.6 mm                 |
| Co-Axial Prism                 | Built-in                 |
| Weight (approx.)               | 195 g                    |
| Dimension                      | φ59(max.) x L = 139.7 mm |

VS-LTC7-50CO-28/F



|                                |                          |
|--------------------------------|--------------------------|
| Optical Mag.                   | 7.0x ±5 %                |
| FOV                            | 4.1 mm                   |
| WD                             | 50.5 mm ±2.5             |
| O/I (Object & Imager Distance) | 254.5 mm                 |
| Working F/#                    | 35.0                     |
| NA                             | 0.100                    |
| DOF at PCoC φ0.04mm            | 0.06 mm                  |
| TV Distortion                  | 0.02 %                   |
| Wavelength                     | Visible                  |
| Mount                          | F-Mount                  |
| Flange Back                    | 46.5 mm                  |
| Image Circle                   | φ28.6 mm                 |
| Co-Axial Prism                 | Built-in                 |
| Weight (approx.)               | 210 g                    |
| Dimension                      | φ59(max.) x L = 157.5 mm |