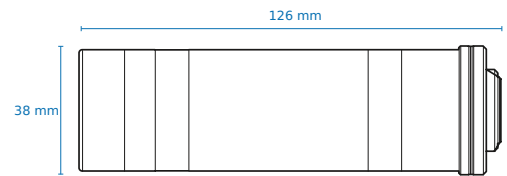


# TCLWD100

Long working distance telecentric lens for 2/3" detectors, WD 132.3 mm, magnification 1.00x, C-mount

## SPECIFICATIONS

|  |           |             |
|--|-----------|-------------|
| Magnification                              | (x)       | 1.000       |
| Image circle Ø                             | (mm)      | 11.0        |
| Object field of view(8)                    |           |             |
| with 1/3" detector (4.8 x 3.6 mm)          | (mm x mm) | 4.80 x 3.60 |
| with 1/2.5" detector (5.70 x 4.28 mm)      | (mm x mm) | 5.70 x 4.28 |
| with 1/2" detector (6.4 x 4.8 mm)          | (mm x mm) | 6.40 x 4.80 |
| with 1/1.8" detector (7.13 x 5.37 mm) (7)  | (mm x mm) | 7.13 x 5.37 |
| with 2/3" - 5 MP detector (8.45 x 7.07 mm) | (mm x mm) | 8.45 x 7.07 |
| Optical specifications                     |           |             |
| Working distance (1)                       | (mm)      | 132.3       |
| wF/# (2)                                   |           | 12          |
| Telecentricity typical (max) (3)           | (deg)     | 0.04 (0.06) |
| Distortion typical (max) (4)               | (%)       | 0.05 (0.10) |
| Field depth (5)                            | (mm)      | 1.0         |
| CTF @ 35 lp/mm                             | (%)       | > 60        |
| Dimensions                                 |           |             |
| Mount                                      |           | C           |
| Phase adjustment (7)                       |           | Yes         |
| Length (6)                                 | (mm)      | 126.0       |
| Diameter                                   | (mm)      | 37.7        |
| Mass                                       | (g)       | 339         |



## NOTES

1. Working distance: distance between the front end of the mechanics and the object. Set this distance within +/- 3% of the nominal value for maximum resolution and minimum distortion.
2. Working F-number (wF/#): the real F-number of a lens when used as a macro. Lenses with smaller apertures can be supplied on request.
3. Maximum slope of chief rays inside the lens: when converted to milliradians, it gives the maximum measurement error for any millimeter of object displacement.
4. Typical (average production) values and maximum (guaranteed) values are listed. Percent deviation of the real image compared to an ideal, undistorted image: typical (average production) values and maximum (guaranteed) values are listed.
5. At the borders of the field depth the image can be still used for measurement but, to get a perfectly sharp image, only half of the nominal field depth should be considered. Pixel size used for calculation is 5.5 µm.
6. Measured from the front end of the mechanics to the camera flange.
7. Indicates the availability of an integrated camera phase adjustment feature.

## COMPATIBLE PRODUCTS

Despite the efforts made to generate an error-free compatibility list, we always recommend to consult the Opto Engineering® technical support department before purchasing a compatible product. Opto Engineering® shall not be liable for any damage or malfunctioning caused by the incorrect selection of a compatible product.



LTCLHP series

High-performance telecentric illuminators

|             |  |
|-------------|--|
| LTCLHP016-R | Telecentric HP illuminator, beam diameter 20 mm, red   |
| LTCLHP016-G | Telecentric HP illuminator, beam diameter 20 mm, green |
| LTCLHP016-B | Telecentric HP illuminator, beam diameter 20 mm, blue  |
| LTCLHP016-W | Telecentric HP illuminator, beam diameter 20 mm, white |



### LTDM series

High-power strobed LED domes

|          |  |
|----------|--|
| LTDMA1-R | Diffusive strobed dome illuminator - small size medium power red   |
| LTDMA1-G | Diffusive strobed dome illuminator - small size medium power green |
| LTDMA1-W | Diffusive strobed dome illuminator - small size medium power white |
| LTDMB2-R | Diffusive strobed dome illuminator - medium size high power red    |
| LTDMB2-G | Diffusive strobed dome illuminator - medium size high power green  |
| LTDMB2-W | Diffusive strobed dome illuminator - medium size high power white  |
| LTDMC1-W | Diffusive strobed dome illuminator - large size medium power white |
| LTDMC2-R | Diffusive strobed dome illuminator - large size high power red     |
| LTDMC2-G | Diffusive strobed dome illuminator - large size high power green   |
| LTDMC2-W | Diffusive strobed dome illuminator - large size high power white   |



### LTDMC series

Continuous LED domes

|                      |   |
|----------------------|---|
| LT4WRG150-00-1-W-24V | LED dome light, 185 mm outer diameter, white, 24V |
| LT4WRG150-00-1-R-24V | LED dome light, 185 mm outer diameter, red, 24V   |
| LT4WRG150-00-1-G-24V | LED dome light, 185 mm outer diameter, green, 24V |
| LT4WRG150-00-1-B-24V | LED dome light, 185 mm outer diameter, blue, 24V  |



### LTLA series

High-power strobed LED low angle diffused ringlights

|          |  |
|----------|--|
| LTLAB2-R | Diffusive strobed low angle ring light illuminator - medium size high power red    |
| LTLAB2-G | Diffusive strobed low angle ring light illuminator - medium size high power green  |
| LTLAB2-W | Diffusive strobed low angle ring light illuminator - medium size high power white  |
| LTLAC1-W | Diffusive strobed low angle ring light illuminator - large size medium power white |
| LTLAC2-R | Diffusive strobed low angle ring light illuminator - large size high power red     |
| LTLAC2-G | Diffusive strobed low angle ring light illuminator - large size high power green   |
| LTLAC2-W | Diffusive strobed low angle ring light illuminator - large size high power white   |



### LTLAIC series (discontinued models)

Continuous LED low angle diffused ringlights

|                      |  |
|----------------------|--|
| LT2RZF070-60-2-W-24V | LED ringlight, 2 LED rows, 76.2 mm outer diameter, 60°, white, 24V |
| LT2RZF070-60-2-R-24V | LED ringlight, 2 LED rows, 76.2 mm outer diameter, 60°, red, 24V   |
| LT2RZF070-60-2-G-24V | LED ringlight, 2 LED rows, 76.2 mm outer diameter, 60°, green, 24V |
| LT2RZF070-60-2-B-24V | LED ringlight, 2 LED rows, 76.2 mm outer diameter, 60°, blue, 24V  |



### LTLAIC series

Continuous LED low angle diffused ringlights

|                      |   |
|----------------------|---|
| LT3RZF080-60-1-W-24V | LED ringlight, 1 LED row, 81 mm outer diameter, 60°, white, 24V |
| LT3RZF080-60-1-R-24V | LED ringlight, 1 LED row, 81 mm outer diameter, 60°, red, 24V   |
| LT3RZF080-60-1-G-24V | LED ringlight, 1 LED row, 81 mm outer diameter, 60°, green, 24V |
| LT3RZF080-60-1-B-24V | LED ringlight, 1 LED row, 81 mm outer diameter, 60°, blue, 24V  |



### LTLADC series

Continuous LED low angle direct ringlights

|                     |   |
|---------------------|---|
| LTZZO130-75-3-W-24V | LED low angle ringlight, 3 LED rows, outer diameter 131 mm, 75°, white, 24V |
| LTZZO130-75-3-R-24V | LED low angle ringlight, 3 LED rows, outer diameter 131 mm, 75°, red, 24V   |
| LTZZO130-75-3-G-24V | LED low angle ringlight, 3 LED rows, outer diameter 131 mm, 75°, green, 24V |
| LTZZO130-75-3-B-24V | LED low angle ringlight, 3 LED rows, outer diameter 131 mm, 75°, blue, 24V  |



### LTRNST series

LED ring illuminators - straight type

|           |   |
|-----------|---|
| LTRN016RD | Ring LED illuminator, inner diameter 37 mm, straight type, red 630 nm   |
| LTRN016GR | Ring LED illuminator, inner diameter 37 mm, straight type, green 525 nm |
| LTRN016BL | Ring LED illuminator, inner diameter 37 mm, straight type, blue 470 nm  |
| LTRN016NW | Ring LED illuminator, inner diameter 37 mm, straight type, white        |



#### LTRNDC series

Continuous LED direct ringlights

|                     |  |
|---------------------|--|
| LTZGK050-15-2-W-24V | LED ringlight, 2 LED rows, outer diameter 50 mm, 15°, white, 24V |
| LTZGK050-15-2-R-24V | LED ringlight, 2 LED rows, outer diameter 50 mm, 15°, red, 24V   |
| LTZGK050-15-2-G-24V | LED ringlight, 2 LED rows, outer diameter 50 mm, 15°, green, 24V |
| LTZGK050-15-2-B-24V | LED ringlight, 2 LED rows, outer diameter 50 mm, 15°, blue, 24V  |
| LTZGK070-45-3-W-24V | LED ringlight, 3 LED rows, outer diameter 70 mm, 45°, white, 24V |
| LTZGK070-45-3-R-24V | LED ringlight, 3 LED rows, outer diameter 70 mm, 45°, red, 24V   |
| LTZGK070-45-3-G-24V | LED ringlight, 3 LED rows, outer diameter 70 mm, 45°, green, 24V |
| LTZGK070-45-3-B-24V | LED ringlight, 3 LED rows, outer diameter 70 mm, 45°, blue, 24V  |



#### LTDMLA series

High power strobe dome + low angle illumination systems

|             |   |
|-------------|---|
| LTDMLAB2-WW | Diffusive strobed dome + low angle illumination system - medium size high power white |
|-------------|---|



#### View-through system

Space saving illumination system for double-side object inspection

|          |   |
|----------|---|
| LTVTENCH | View-through system bench - small size medium power white                 |
| LTVTA1-W | Complete View-through illuminators system - small size medium power white |



#### LTBC series

Continuous LED backlight

|              |  |
|--------------|--|
| LTBC054054-W | Continuous LED backlight, 54x54 illumination area, white |
| LTBC054054-G | Continuous LED backlight, 54x54 illumination area, green |



#### LTBFC series

Continuous flat side-emitting LED backlights

|                        |  |
|------------------------|--|
| LTPVRG25X36-00-1-W-24V | Flat side-emitting LED backlight, thin borders, 25X36 mm illumination area, white, 24V |
| LTPVRG25X36-00-1-R-24V | Flat side-emitting LED backlight, thin borders, 25X36 mm illumination area, red, 24V   |
| LTPVRG25X36-00-1-G-24V | Flat side-emitting LED backlight, thin borders, 25X36 mm illumination area, green, 24V |
| LTPVRG25X36-00-1-B-24V | Flat side-emitting LED backlight, thin borders, 25X36 mm illumination area, blue, 24V  |



#### LTBRDC series

Continuous LED bar lights

|                      |  |
|----------------------|--|
| LTZPFL040-00-6-W-24V | LED bar light, 6 LED rows, 40X26.3 illumination area, white, 24V |
| LTZPFL040-00-6-R-24V | LED bar light, 6 LED rows, 40X26.3 illumination area, red, 24V   |
| LTZPFL040-00-6-G-24V | LED bar light, 6 LED rows, 40X26.3 illumination area, green, 24V |
| LTZPFL040-00-6-B-24V | LED bar light, 6 LED rows, 40X26.3 illumination area, blue, 24V  |



#### LTCXC series

Continuous LED coaxial lights

|                      |   |
|----------------------|---|
| LT2QOG025-00-X-W-24V | LED coaxial light, 25x25.6 mm light emitting area, white, 24V |
| LT2QOG025-00-X-R-24V | LED coaxial light, 25x25.6 mm light emitting area, red, 24V   |
| LT2QOG025-00-X-G-24V | LED coaxial light, 25x25.6 mm light emitting area, green, 24V |
| LT2QOG025-00-X-B-24V | LED coaxial light, 25x25.6 mm light emitting area, blue, 24V  |



CMBS series

45° beam splitters

CMBS016 45° beam splitter with mount for 37.7 mm clamping diameter optics



CMHO series

Clamping mechanics

CMHO016 Clamping mechanics for TCxx016 lenses and LTCLHP016-X illuminators



LTPR series

LED patterns projectors

LTPRHP3W-W LED pattern projector 3W, HP, white

LTPRHP3W-R LED pattern projector 3W, HP, red

LTPRHP3W-G LED pattern projector 3W, HP, green

LTPRHP3W-B LED pattern projector 3W, HP, blue

LTPRUP-W 90W strobed LED pattern projector white

LTPRUP-R 90W strobed LED pattern projector red

LTPRUP-G 90W strobed LED pattern projector green

LTPRUP-B 90W strobed LED pattern projector blue



COE-G series

GeniCam® PoE cameras

COE-032-M-POE-040-IR-C Area Scan camera IMX265, CMOS, Global shutter, 2048 x 1536, 3.1 MP, 3.45 pix, 1/1.8", Gray, 37.5 fps, GigE, POE, C - mount, Glass filter

COE-032-C-POE-040-IR-C Area Scan camera IMX265, CMOS, Global shutter, 2048 x 1536, 3.1 MP, 3.45 pix, 1/1.8", Color, 37.5 fps, GigE, POE, C - mount, Infrared cut filter

COE-063-M-POE-040-IR-C-B Area Scan camera IMX178, CMOS, Rolling shutter, 3072 x 2048, 6.3 MP, 2.4 pix, 1/1.8", Gray, 17 fps, GigE, POE, C - mount, Glass filter

COE-063-C-POE-040-IR-C Area Scan camera IMX178, CMOS, Rolling shutter, 3072 x 2048, 6.3 MP, 2.4 pix, 1/1.8", Color, 17 fps, GigE, POE, C - mount, Infrared cut filter

COE-122-M-POE-041-IR-C Area Scan camera IMX226, CMOS, Rolling shutter, 4024 x 3036, 12.2 MP, 1.85 pix, 1/1.7", Gray, 9.6 fps, GigE, POE, C - mount, Glass filter

COE-122-C-POE-041-IR-C Area Scan camera IMX226, CMOS, Rolling shutter, 4024 x 3036, 12.2 MP, 1.85 pix, 1/1.7", Color, 9.6 fps, GigE, POE, C - mount, Infrared cut filter

COE-023-M-POE-050-IR-C Area Scan camera PYTHON 2000, CMOS, Global shutter, 1920 x 1200, 2.3 MP, 4.8 pix, 2/3", Gray, 51 fps, GigE, POE, C - mount, Glass filter

COE-023-C-POE-050-IR-C Area Scan camera PYTHON 2000, CMOS, Global shutter, 1920 x 1200, 2.3 MP, 4.8 pix, 2/3", Color, 51 fps, GigE, POE, C - mount, Infrared cut filter

COE-050-M-POE-050-IR-C Area Scan camera IMX264, CMOS, Global shutter, 2448 x 2048, 5 MP, 3.45 pix, 2/3", Gray, 23.5 fps, GigE, POE, C - mount, Glass filter

COE-050-C-POE-050-IR-C Area Scan camera IMX264, CMOS, Global shutter, 2448 x 2048, 5 MP, 3.45 pix, 2/3", Color, 23.5 fps, GigE, POE, C - mount, Infrared cut filter



COE-U series

USB 3.0 GeniCam® cameras

COE-063-M-USB-040-IR-C Area Scan camera IMX178, CMOS, Rolling shutter, 3072 x 2048, 6.3 MP, 2.4 pix, 1/1.8", Gray, 42 fps, USB 3.0, C - mount, Glass filter

COE-063-C-USB-040-IR-C Area Scan camera IMX178, CMOS, Rolling shutter, 3072 x 2048, 6.3 MP, 2.4 pix, 1/1.8", Color, 42 fps, USB 3.0, C - mount, Infrared cut filter

COE-050-M-USB-050-IR-C Area Scan camera IMX264, CMOS, Global shutter, 2448 x 2048, 5 MP, 3.45 pix, 2/3", Gray, 35 fps, USB 3.0, C - mount, Glass filter



mvBlueFOX3-2 series

USB3 vision camera with Sony Pregius CMOS sensors

RT-mvBF3-2032a USB3 Vision camera with Sony Pregius CMOS sensor IMX265

RT-mvBF3-2032 USB3 Vision camera with Sony Pregius CMOS sensor IMX252

RT-mvBF3-2064 USB3 vision camera with sony pregius cmos sensor imx178

RT-mvBF3-2051a USB3 Vision camera with Sony Pregius CMOS sensor IMX264



mvBlueCOUGAR series

GigE &amp; Dual GigE Vision cameras

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**RT-mvBC-X104i** Camera with interface GigE (1GB/s), sensor size 1/1.8", mpixel 3.19, resolution 2064 x 1544, sensor name IMX265, sensor type CMOS

**RT-mvBC-XD104h** Camera with interface Dual GigE (2GB/s), sensor size 1/1.8", mpixel 3.19, resolution 2064 x 1544, sensor name IMX252, sensor type CMOS

**RT-mvBC-X105b** Camera with interface GigE (1GB/s), sensor size 2/3", mpixel 5.07, resolution 2464 x 2056, sensor name IMX264, sensor type CMOS

**RT-mvBC-XD105a** Camera with interface Dual GigE (2GB/s), sensor size 2/3", mpixel 5.01, resolution 2448 x 2048, sensor name IMX250, sensor type CMOS



Accessories

Accessories and add-ons to make the most of Opto Engineering lenses.

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**RT-mvBC-X104iC** CMOS camera GIGE, 2064 x 1544 color, 1/1.8", 37 Hz, IR cut, C-mount, I/O

**RT-mvBC-X105bC** CMOS camera GIGE, 2464 x 2056 Colour sensor, 2/3", 23.5 Hz, IR cut, C-mount, I/O