

# Telecentric Lens SE-65/110 Series Operating Manual

Thank you for purchasing an SE-65/110-series Telecentric Lens.

To properly use the product and take full advantage of its functionality, read this operating manual before using the product. After reading this operating manual, store it in a safe and readily accessible location.

## 1 Application Precautions

- Do not disassemble or modify the product.
- Do not subject it to impact.
- The lens barrel has a lens at the object-side end. Do not hold it too tight. For details of the relevant part, refer to the Dimensional Diagrams on the back of this manual.
- Handle the lens with care during daily use. Make sure no dust, dirt, or fingerprints adhere to the lens.
- Remove dust and dirt by blowing it off with air. Do not touch the lens with your hand.
- Use a lens cloth to wipe away any marks, such as fingerprints.

## 2 SE-65 Series (WD 65mm)

Model	Coaxial	SE-65VT08	SE-65VT10	SE-65VT15	SE-65VT20	SE-65VT40
	Straight	SE-65ST08	SE-65ST10	SE-65ST15	SE-65ST20	SE-65ST40
Lens type	Object-space telecentric lens (fixed magnification)					
Optical magnification		0.8 x ± 5%	1 x ± 5%	1.5 x ± 5%	2 x ± 5%	4 x ± 5%
WD		67.7 ± 2 mm	65.2 ± 2 mm	65 ± 2 mm	65.1 ± 2 mm	65.1 ± 2 mm
Depth of field*1*2		1.85 mm	1.33 mm	0.59 mm	0.33 mm	0.13 mm
Optical resolution*2*3		12.4 μm	11.2 μm	7.5 μm	5.6 μm	4.3 μm
NA*2		0.027	0.030	0.045	0.060	0.078
Actual F number (Fe)*2		14.9	16.8	16.7	16.7	25.4
TV distortion*2		-0.027 %	-0.010 %	-0.017 %	-0.013 %	+0.006 %
Weight	Coaxial	50g	54g	37g	38g	40g
	Straight	45g	49g	32g	33g	35g
Camera mount	C mount					
Maximum image size	1/1.8 "					
Outer diameter	Ø 20 mm			Ø 16 mm		
Lens barrel length	79.4 mm	89.4 mm	50.8 mm	53.2 mm	64.4 mm	
Applicable wavelength	400 to 700nm					
Object-image distance (O/I)*2	164.6 mm	172.1 mm	133.3 mm	135.8 mm	147 mm	
Focal length*2	90.7 mm	100.9 mm	19.2 mm	13.7 mm	9.5 mm	
Operating environment	Temperature: 0 to 40°C, Humidity: 85%RH max. (with no condensation)					
Storage environment	Temperature: -20 to 60°C (with no condensation)					
Environmental regulations	RoHS compliant, REACH compliant					

\*1 Calculations are based on a permissible circle of confusion diameter of 40 μm.

\*2 These are calculated values.

\*3 Theoretical resolution calculations are based on a wavelength of 550 nm.

### 3 SE-110 Series (WD 110mm)

Model	Coaxial	SE-110VT08	SE-110VT10	SE-110VT15	SE-110VT20	SE-110VT40
	Straight	SE-110ST08	SE-110ST10	SE-110ST15	SE-110ST20	SE-110ST40
Lens type	Object-space telecentric lens (fixed magnification)					
Optical magnification	0.8 x ± 5%	1 x ± 5%	1.5 x ± 5%	2 x ± 5%	4 x ± 5%	
WD	110.4 ± 3.3 mm	110 ± 3.3 mm	114.1 ± 3.4 mm	110 ± 3.3 mm	110 ± 3.3 mm	
Depth of field <sup>*1*2</sup>	2 mm	1.6 mm	0.86 mm	0.65 mm	0.2 mm	
Optical resolution <sup>*2*3</sup>	13.4 μm	13.4 μm	10.8 μm	10.8 μm	6.6 μm	
NA <sup>*2</sup>	0.025	0.025	0.031	0.031	0.051	
Actual F number (Fe) <sup>*2</sup>	16.0	19.9	24.0	32.0	39.5	
TV distortion <sup>*2</sup>	-0.05 %	-0.05 %	+0.01 %	-0.01 %	+0.01 %	
Weight	Coaxial	54g	56g	48g	50g	50g
	Straight	49g	51g	43g	45g	45g
Camera mount	C mount					
Maximum image size	1/1.8 "					
Outer diameter	Ø 23 mm			Ø 18 mm		
Lens barrel length	83.1 mm	86.3 mm	76.4 mm	88.6 mm	84.9 mm	
Applicable wavelength	400 to 700nm					
Object-image distance (O/I) <sup>*2</sup>	211 mm	213.9 mm	208 mm	216.1 mm	212.5 mm	
Focal length <sup>*2</sup>	57.7 mm	44.4 mm	24.5 mm	24.5 mm	12.2 mm	
Operating environment	Temperature: 0 to 40°C, Humidity: 85%RH max. (with no condensation)					
Storage environment	Temperature: -20 to 60°C (with no condensation)					
Environmental regulations	RoHS compliant, REACH compliant					

\*1 Calculations are based on a permissible circle of confusion diameter of 40 μm.

\*2 These are calculated values.

\*3 Theoretical resolution calculations are based on a wavelength of 550 nm.

## ● Warranty Information

EXCEPT FOR THE EXPRESS WARRANTIES STATED IN THIS DOCUMENT, CCS MAKES NO ADDITIONAL WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, AS TO ANY MATTER WHATSOEVER. IN PARTICULAR, ANY AND ALL WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED. EXCEPT AS EXPRESSLY SET FORTH HEREIN, CCS MAKES NO WARRANTIES WITH RESPECT TO THE PRODUCTS.

**WARRANTY PERIOD: ONE YEAR, STARTING FROM CCS Inc. SHIPPING DATE.**

CCS Inc. WILL REPAIR OR REPLACE THE PRODUCT FREE OF CHARGE IF IT SHOULD FAIL TO FUNCTION WITHIN THE SPECIFIED WARRANTY PERIOD. IF EITHER OF THESE CONDITIONS OCCURS, PLEASE TAKE THE PRODUCT TO YOUR CCS SALES REPRESENTATIVE.

### WARRANTY TERMS

1 CCS Inc. WILL REPAIR OR REPLACE THE PRODUCT FREE OF CHARGE IF IT SHOULD FAIL TO FUNCTION UNDER USE ON OUR SPECIFIED CONDITION IN ACCORDANCE WITH THE INSTRUCTION GUIDE AND OTHER WRITTEN CAUTIONS DURING THE INDICATED WARRANTY PERIOD OF ONE YEAR.

2 CCS Inc. WILL CHARGE A REPAIR FEE UNDER THE FOLLOWING CONDITIONS:

- 1) IF THE PRODUCT HAS BEEN SUBJECTED TO MISUSE, UNAUTHORIZED REPAIRS, OR MODIFICATION FROM ITS ORIGINAL DESIGN.
  - 2) IF THE PRODUCT HAS BEEN DAMAGED FROM IMPACTS DUE TO INAPPROPRIATE HANDLING.
  - 3) IF DAMAGE TO THE PRODUCT RESULTS FROM EXTERNAL CAUSES INCLUDING ACCIDENTS, FIRE, POLLUTION, RIOTS, COMMUNICATION FAILURES, EARTHQUAKES, THUNDERSTORMS, WIND AND FLOOD DAMAGE, OR ANY OTHER ACT OF PROVIDENCE, OR FROM ANY EXTRAORDINARY CONDITIONS SUCH AS ELECTRICAL SURGES, WATER LEAKAGE, CONDENSATION, OR THE USE OF CHEMICALS.
  - 4) IF THE DAMAGE RESULTS FROM CONNECTION TO ANY POWER SUPPLY OR TO ANY EQUIPMENT WHICH CCS Inc. DOES NOT MANUFACTURE OR DOES NOT SPECIFY FOR USE.
- 3 CCS ASSUMES NO LIABILITY FOR ANY PURCHASER'S SECONDARY DAMAGE (DAMAGE OF EQUIPMENT, LOSS OF OPPORTUNITIES, LOSS OF PROFITS, ETC.) OR ANY OTHER DAMAGE RESULTING FROM A FAILURE OF OUR PRODUCT.

THIS WARRANTY INFORMATION PROVIDES THE SCOPE OF CCS'S PRODUCT WARRANTY WITHIN THE SPECIFIED PERIOD, AND DOES NOT INDICATE OR IMPLY ANY FURTHER GUARANTEE BEYOND THE WARRANTY TERMS.

CONTACT CCS FOR INQUIRIES OR INFORMATION ON REPAIRS TO THE PRODUCT AFTER THE EXPIRATION OF THE WARRANTY.

**Ask any product queries to the following address or to your nearest CCS representative.**

**CCS CCS Inc.**

Headquarters

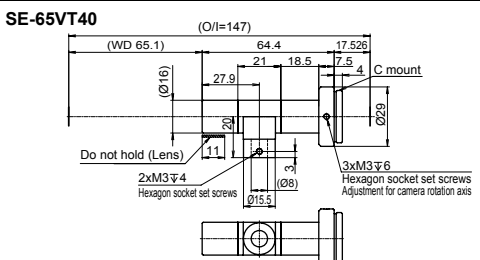
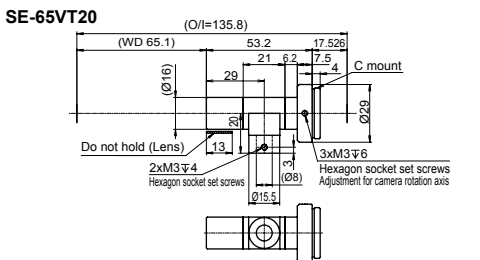
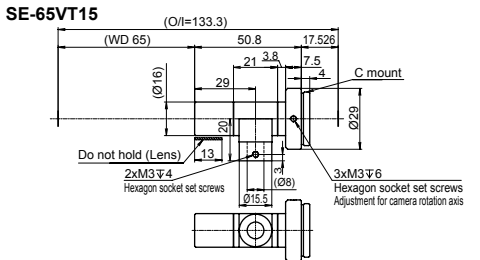
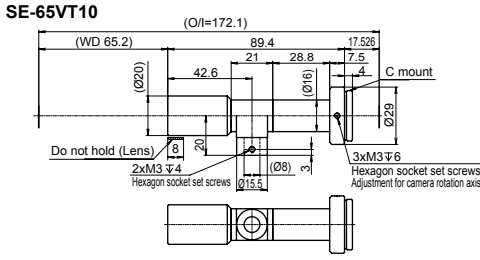
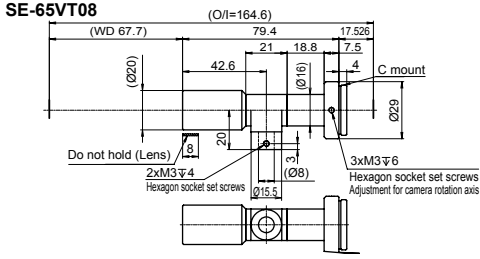
Shimodachiuri-agaru, Karasuma-dori, Kamigyo-ku, Kyoto 602-8011 Japan

Phone : +81-75-415-8284 Fax : +81-75-415-8278 E-mail : intlsales@ccs-inc.co.jp

Use our website to find your nearest CCS representative.

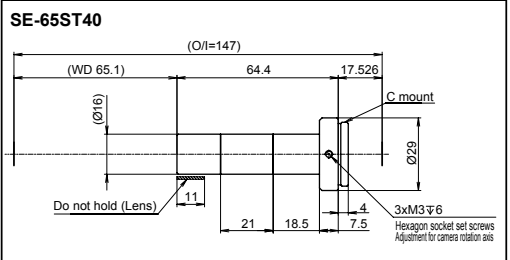
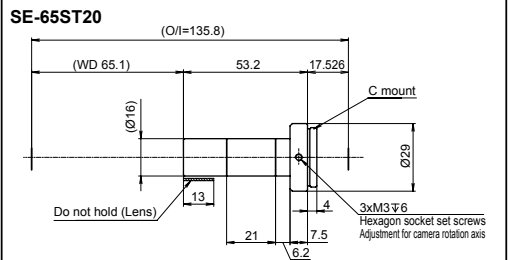
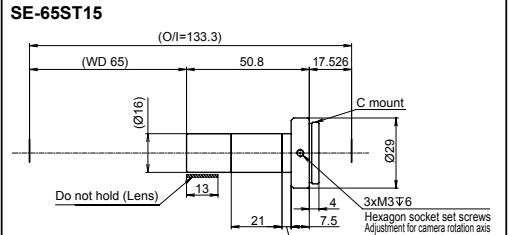
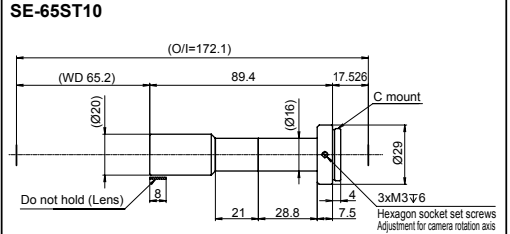
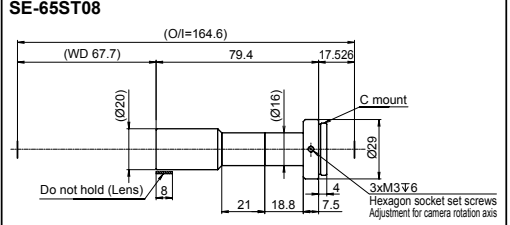
➡➡➡ <http://www.ccs-grp.com/mvad/>

Coaxial Lenses



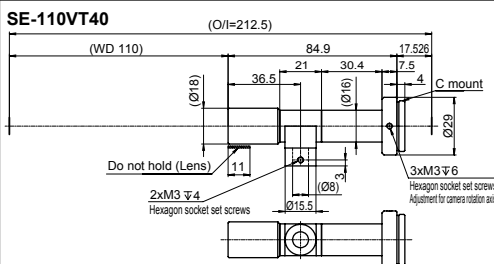
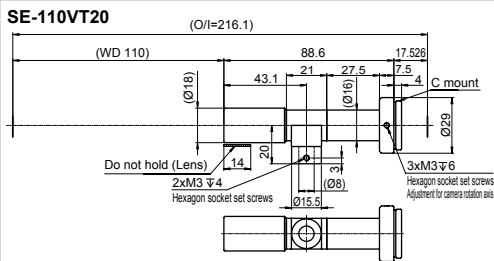
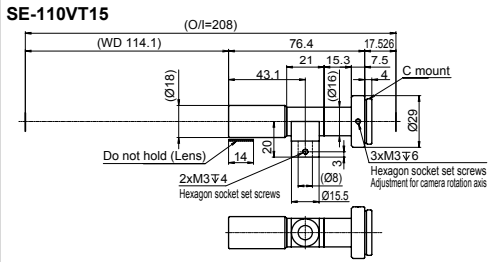
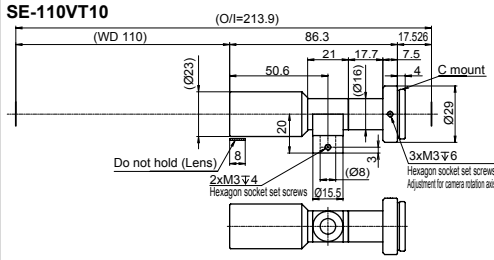
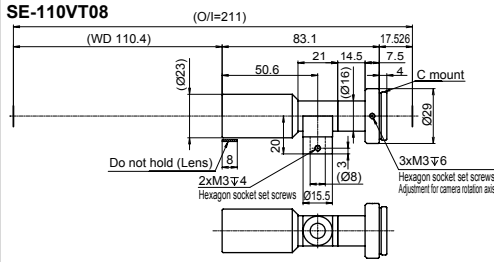
(Unit: mm)

Straight Lenses



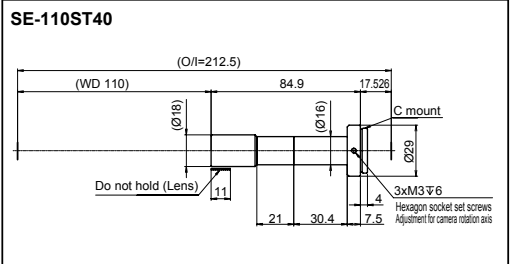
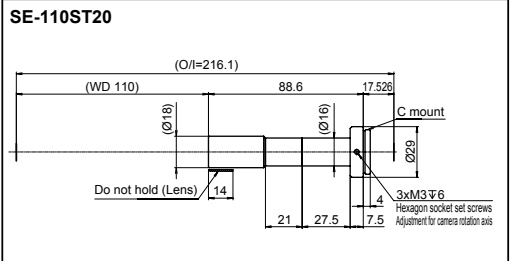
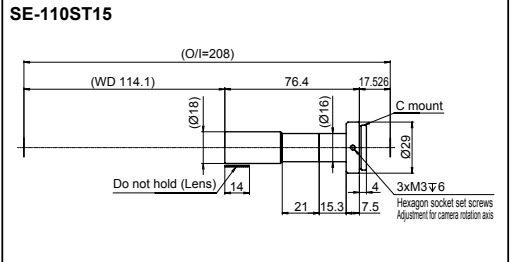
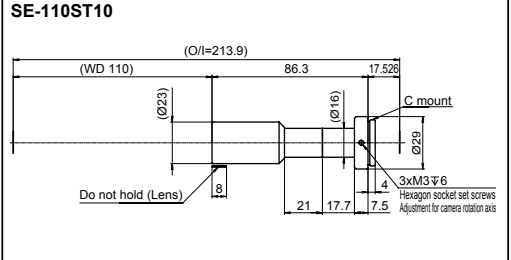
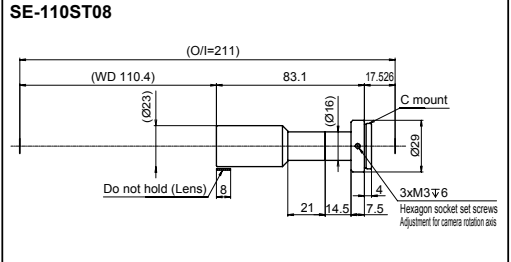
(Unit: mm)

Coaxial Lenses



(Unit: mm)

Straight Lenses



(Unit: mm)