

## TS23-036-115-EL

### Lens module specifications

Focus tunable lens (Optotune)	Model	EL-16-40-TC-VIS-5D			
	Focal power	-2	0	+3	dpt
Magnification		0.35	0.36	0.37	X
F/#		4.5			(Fixed)
Maximum sensor format		2/3			inch
Image circle (Φ)		11			mm
FoV (at max sensor format) H x V		23.4 x 19.6	23.2 x 19.4	23.5 x 19.3	mm
Working distance		135.3	124.0	107.0	mm
Field depth		1.4			mm
Optical leverage		5.7			mm/dpt
Optical Distortion		≤0.1	≤0.1	≤0.1	%
Telecentricity		≤0.1	≤0.1	≤0.1	°
Pixel size recommended		3.45			μm
MTF @ 50 lp/mm		67			%
Wavelength range		400 – 700			nm
Lifecycles (10-90% sinusoidal)		>1'000'000'000			cycles
Mount		C			
Dimension (Φ x L)		Φ53.4 x 128.2			mm
Weight		340			g

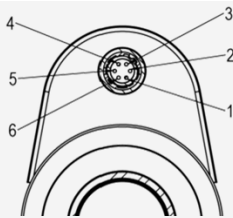
### Focus tunable lens specifications

#### EL-16-40-TC-VIS-5D

Focal power range (@30°C) <sup>3</sup>	-2 to +3	dpt
Wavefront error (at 525 nm & 0 mA) Optical axis vertical / horizontal	<0.25/<0.5	λRMS
Operating temperature	-20 to +65	°C
Storage temperature	-40 to +85	°C
Temperature sensor & memory	STTS2004	(STMicroelectronics)

### Electrical specifications

Control current (typical)	-250 to +250	mA
Absolute max. control current	-500 to 500	mA
Power consumption	0 to 0.7 (nominal) 0 to 2.8 (absolute max.)	W
Motor coil resistance @ 30°C	12	Ω
Absolute maximum voltage (coil)	10	V
Absolute maximum voltage (temp. sensor)	4.3	V

Hirose connector (HR10G-7R-6P)	Function	Sensor pins	
Pin 1	Control current +	-	
Pin 2	Control current -	-	
Pin 3	Ground	1-4	
Pin 4	Power (3.3V)	8	
Pin 5	I <sup>2</sup> C SCL	6	
Pin 6	I <sup>2</sup> C SDA	5	

## Controller

The liquid lens is controlled with electrical current and must be operated by a suitable lens controller. Hirose cables and liquid lens controllers are sold separately. The following controllers are considered fully compatible with TS23-036-115-EL:

- Optotune embedded controller ECC-1C
- Optotune lens driver EL-E-4i
- Optotune industrial controller ICC-4C-500



Additional selection of controllers is available at <https://www.optotune.com/controllers>

## Mechanical drawings

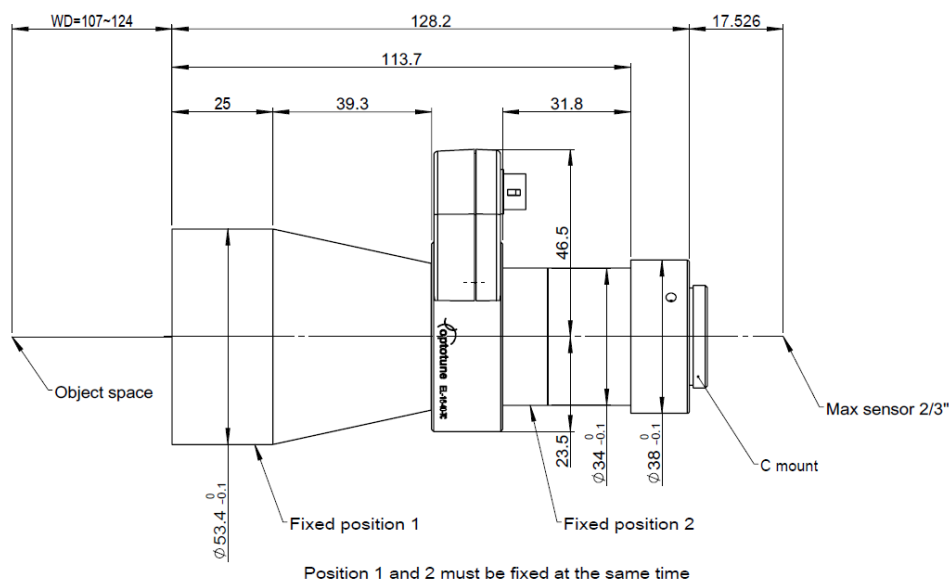


Figure 1: Mechanical drawing of the TS23-036-115-EL

For more information on optical, mechanical and electrical parameters, please contact [sales@optotune.com](mailto:sales@optotune.com)