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TS23-2.0-110-EL

Lens module specifications

Focus tunable lens (Optotune)	Model	EL-16-40-TC-VIS-5D			
	Focal power	-2	0	+3	dpt
Magnification		1.959	1.993	2.044	X
F/#			16.6		(Fixed)
Maximum sensor format			2/3		inch
Image circle (Φ)			11		mm
FoV (at max sensor format) H x V		4.3×3.6	4.2×3.5	4.1×3.4	mm
Working distance		122	113	102	mm
Field depth			0.17		mm
Optical leverage			4		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			30		%
Wavelength range			400-700		nm
Lifecycles (10-90% sinusoidal)			>1‘000‘000’000		cycles
Mount			C		
Dimension (Φ x L)			Φ37×133.3		mm
Weight			347		g

Focus tunable lens specifications

	EL-16-40-TC-VIS-5D	
Focal power range (@30°C)[3]	-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

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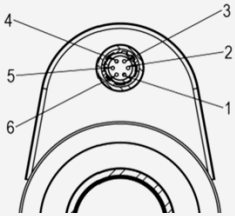
Hirose connector (HR10G-7R-6P)	Function	Sensor pins	
Pin 1	Control current +	-	
Pin 2	Control current -	-	
Pin 3	Ground	1-4	
Pin 4	Power (3.3V)	8	
Pin 5	I^2C SCL	6	
Pin 6	I^2C SDA	5	

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 TS23-2.0-110-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

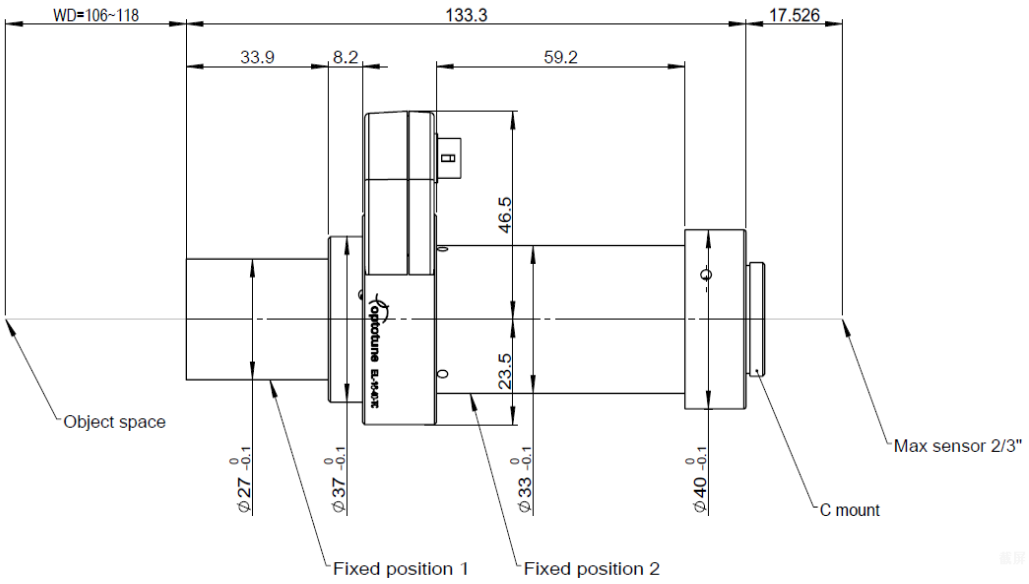


Figure 1: Mechanical drawing of the TS23-2.0-110-EL

For more information on optical, mechanical and electrical parameters, please contact sales@optotune.com

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