

TS1-4.0-110-EL

Lens module specifications

| Focus tunable lens (Optotune) | Model | EL-16-40-TC-VIS-5D | | | |
|----------------------------------|-------------|--------------------|---------|---------|---------|
| | Focal power | -2 | 0 | +3 | dpt |
| Magnification | | 3.935 | 4.015 | 4.132 | X |
| F/# | | 22.9 | | | (Fixed) |
| Maximum sensor format | | 1 | | | inch |
| Image circle (Φ) | | 17 | | | mm |
| FoV (at max sensor format) H x V | | 3.3×2.2 | 3.3×2.2 | 3.2×2.1 | mm |
| Working distance | | 118 | 111 | 99 | mm |
| Field depth | | 0.06 | | | mm |
| Optical leverage | | 3.8 | | | mm/dpt |
| Optical Distortion | | ≤0.1 | ≤0.1 | ≤0.1 | % |
| Telecentricity | | ≤0.1 | ≤0.1 | ≤0.1 | ° |
| Pixel size recommended | | 2.4 | | | μm |
| MTF @ 50 lp/mm | | 10 | | | % |
| Wavelength range | | 400-700 | | | nm |
| Lifecycles (10-90% sinusoidal) | | >1'000'000'000 | | | cycles |
| Mount | | C | | | |
| Dimension (Φ x L) | | Φ37×143.3 | | | mm |
| Weight | | 347 | | | g |

Focus tunable lens specifications

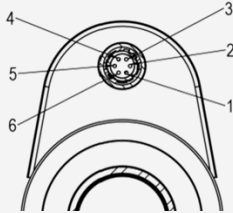
EL-16-40-TC-VIS-5D

| | | |
|--|------------|----------------------|
| 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 |

| 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 ² C SCL | 6 |
| Pin 6 | I ² 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 TS1-4.0-110-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

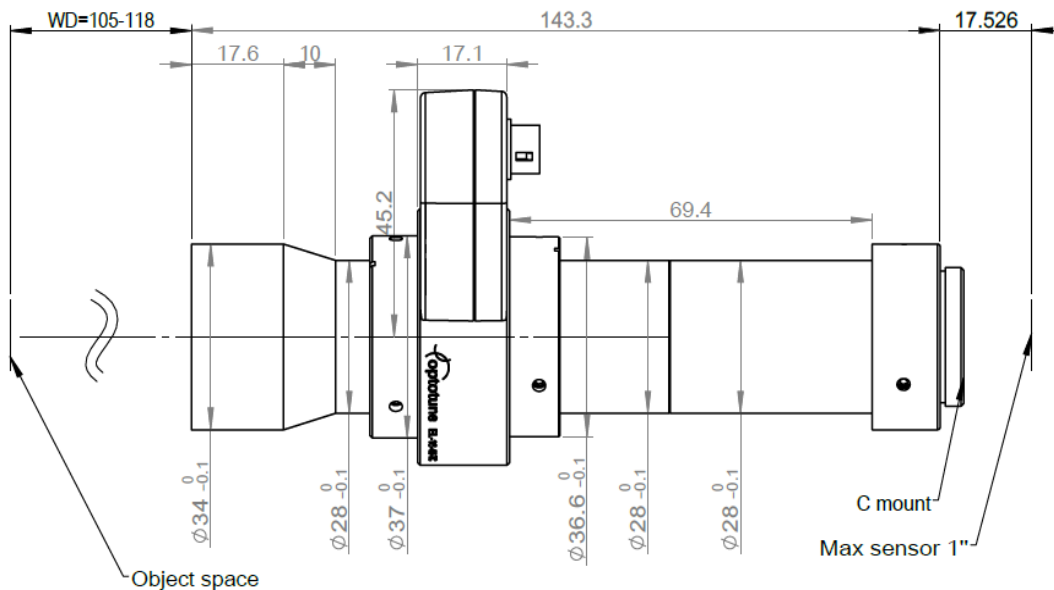


Figure 1: Mechanical drawing of the TS1-4.0-110-EL

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