

## TS28.6mm-6.0-65-EL

### Lens module specifications

| Focus tunable lens<br>(Optotune) | Model       | EL-16-40-TC-VIS-5D |         |         |         |
|----------------------------------|-------------|--------------------|---------|---------|---------|
|                                  | Focal power | -2                 | 0       | +3      | dpt     |
| Magnification                    |             | 5.897              | 6.004   | 6.163   | X       |
| F/#                              |             | 30.2               |         |         | (Fixed) |
| Maximum sensor format            |             | 1.76               |         |         | inch    |
| Image circle (Φ)                 |             | 28.6               |         |         | mm      |
| FoV (at max sensor format) H x V |             | 3.8x2.9            | 3.7x2.8 | 3.7x2.7 | mm      |
| Working distance                 |             | 70                 | 66      | 60      | mm      |
| Field depth                      |             | 0.03               |         |         | mm      |
| Optical leverage                 |             | 2                  |         |         | 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                   |             | 2                  |         |         | %       |
| Wavelength range                 |             | 400-700            |         |         | nm      |
| Lifecycles (10-90% sinusoidal)   |             | >1'000'000'000     |         |         | cycles  |
| Mount                            |             | F                  |         |         |         |
| Dimension (Φ x L)                |             | Φ60x143.8          |         |         | mm      |
| Weight                           |             | 284                |         |         | g       |

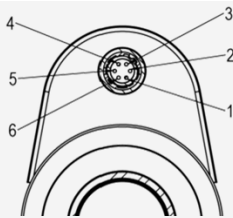
### Focus tunable lens specifications

#### 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)<br>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)<br>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 TS28.6mm-6.0-65:

- 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

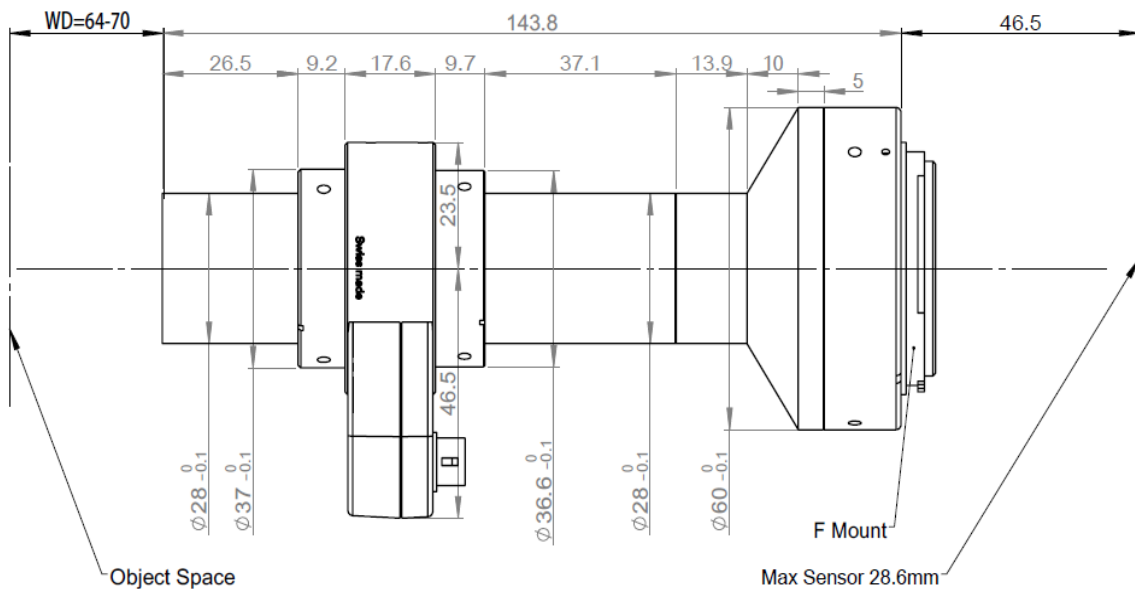


Figure 1: Mechanical drawing of the TS28.6mm-6.0-65-EL

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