

# Tunable Lens Focus Module

for FUSION Systems - P/N 35-03-50-000

The addition of a shape changing polymer tunable lens to the FUSION product line provides many advantages for remote focusing.

## Key features:

- An Optotune EL16-40 with a 16mm aperture maintains good resolution with any of the FUSION systems from fixed magnification to either of the 7:1 or 12.5:1 zoom systems.
- Large focus range around the zero position (see table 1)
- The lens has an integrated temperature sensor to maintain good repeatability and focus on in-situ applications.
- The operating temperature ranges from -20 to +65° C.
- Operating life exceeds 1 billion cycles.
- Qioptiq uses specially selected tunable lenses with reduced wavefront error compared to the standard version.
- A USB controller stick with software comes with the unit and is easy to install.
- The tunable lens is inserted in collimated space just above the lower lens or objective and changes the nominal working distance of a lower lens according to table 1.
- This Tunable lens only adds about 27mm to the overall length of any system and eliminates the need for any lower focus module if you so choose.
- Due to the large aperture, using at any angle other than vertical will produce strong coma in the image.
- The spectral range of 450nm to 950nm provides an average of 95% transmission.
- More information can be found on the Optotune website here. <http://www.optotune.com/>



# Optem FUSION Tunable Lens Specification

Table 1: Performance specification when combined with lower lenses

Optotune Tunable Lens Performance Specifications P/N 35-03-50-000																
Lower Lens			Nominal W.D. No Optotune	Mag	MTF, 0° 40 lp/mm	EFL W/ Optotune No current, 0.5 D	Mag	MTF, 0° 40 lp/mm	Min EFL +1 D	Mag	MTF, 0° 40 lp/mm	Max EFL -1 D	Mag	MTF, 0° 40 lp/mm	Focus Range -1 to +1 D	Mag. Change over full range
Mag	Focal Length	Part No.														
0.40X	500	35-00-11-000	491.4	0.40	0.62	390.81	0.50	0.57	321.9	0.59	0.50	968.60	0.21	0.57	646.7	0.38
0.50X	400	35-00-10-000	392.8	0.50	0.62	325.71	0.59	0.57	276.4	0.69	0.50	649.05	0.31	0.57	372.7	0.38
0.67X	300	35-00-09-000	292.4	0.67	0.61	252.85	0.76	0.58	221.5	0.85	0.51	417.13	0.48	0.56	195.6	0.37
1.00X	200	35-00-08-000	192.4	1.00	0.60	174.05	1.09	0.55	158.2	1.18	0.47	241.20	0.82	0.57	83.0	0.35
1.25X	160	35-00-06-000	153.5	1.25	0.59	141.55	1.34	0.54	130.9	1.42	0.47	183.15	1.08	0.56	52.3	0.34
1.43X	140	35-00-05-000	133.1	1.43	0.58	123.82	1.51	0.53	115.4	1.60	0.45	155.28	1.26	0.56	39.8	0.33
1.67X	120	35-00-04-000	112.5	1.67	0.56	105.64	1.75	0.51	99.3	1.83	0.44	128.47	1.51	0.56	29.2	0.32
2.00X	100	35-00-03-000	93.5	2.00	0.55	88.64	2.07	0.50	84.1	2.15	0.42	104.31	1.85	0.55	20.2	0.30
3.00X	67	35-00-01-000	51.1	3.12	0.53	49.10	3.18	0.47	47.1	3.25	0.39	55.43	3.00	0.56	8.3	0.25
4.00X	50	35-00-02-000	32.1	4.16	0.53	30.94	4.20	0.51	29.8	4.24	0.47	34.45	4.09	0.47	4.6	0.15

**Tunable lens comments:**

D= Diopter

Focus range is recommended with minor optical aberrations. More range is possible

Focus range varies with selected lower lens  
 object contrast can effect focus reliability

Magnification varies thru Tunable Lens position



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