GARDASOFT
Industrial LED technology

TR-CL180 Industrial Lens Controller

Compatible with Optotune focus tunable lenses

optotune
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Industrial, precision controller for Optotune lenses

Easy connection with cameras and lighting via triniti™ Intelligent Machine Vision platform

GigE Vision compliance, Lenses therefore easily integrated with standard Image Processing software

- One channel output
- Include constant current Lens drive and Lens EEPROM data communications
- -400mA to +400mA in 0.1mA steps
- Compatible with Optotune EL-10-30-Ci and EL-16-40-TC lenses
- Full current calibration with lens temperature compensation

Gardasoft Industrial Lens Controller

The Gardasoft TR-CL Series are single channel industrial Lens Controllers which provide very accurate and repeatable control of tunable lenses, they have been developed in close collaboration with Optotune. The TR-CL controllers include constant current Lens drive and Lens EEPROM data communications and are compatible with Optotune EL-10-30-Ci and EL-16-40-TC tunable lenses.

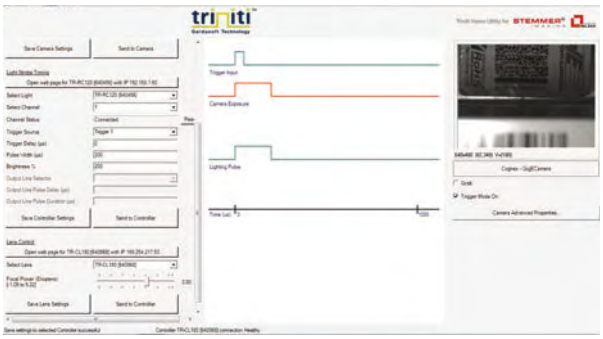
With a fast focus change (1ms), the TR-CL Series enable dynamic lens control in Machine Vision applications which require varying height objects - Postal identification for example.

Microscopy and Life Sciences are other key market sectors for tunable lens control, addressing applications such as Z slices, Light sheet imaging, In vivo (live tissue) imaging, and many types of automated imaging. There is a National Instruments LabVIEW Utility available for the TR-CL Series, and this is particularly relevant for applications in these sectors.

GigE Vision integration for Lens Controllers

TR-CL Lens controllers are GigE Vision compliant and mark an important addition in the integration of Machine Vision systems. The Lens controllers are part of the Gardasoft Triniti machine vision platform, so users now have seamless access and control of system cameras, lighting and lenses within the same environment (either via conventional image processing software or via a Triniti SDK).

In addition to LabVIEW support, utilities are also available for other leading machine vision imaging software packages such as Cognex VisionPro, Teledyne Dalsa Sherlock and Stemmer Imaging CVB.



TR-CL180 Industrial Lens Controller
Compatible with Optotune focus tunable lenses

Data sheet
TR-CL180 v001b

Optotune lenses

Optotune's focus tunable lenses provide a versatile and compact solution to adjust the focus within milliseconds. As no translational mechanics are involved such systems are robust and achieve billions of cycles.

The technology of Optotune's shape-changing lenses is based on a combination of optical fluids and a polymer membrane. To tune the lens, fluid is pressed into the center of the lens by a current controlled voice coil thus changing the curvature of the membrane and with that the focal length of the lens.

EL-10-30

Launched in 2010, the EL-10-30 lens family covers a broad application range with its variety of coatings and housing options. With its clear aperture of 10mm settling times as low as 5ms can be achieved. The EL-10-30-C models feature an integrated temperature sensor, C-mount threads on either side as well as the possibility to replace the cover glass with a fixed focus offset lens, allowing for free adjustment of the focal length range according to the requirements of your application.

EL-16-40

In 2015, Optotune launched the world's largest electrically focus tunable lens with a clear aperture of 16mm. The lens accepts positive and negative currents to generate positive and negative optical powers of up to +/-10 diopters. Housing options include a number of standard mounting threads and the built-in temperature sensor allows for best-in class repeatability and focus stability. The large aperture and tuning range make this lens particularly interesting for ophthalmology, microscopy and machine vision, where image circles of up to 30mm can be achieved.

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EL-16-40-TC

EL-10-30-Ci

SPECIFICATIONS	
Parameter	**TR-CL180 specifications**
Output channel	One channel, including constant current lens drive and lens EEPROM data communications. Automatically reads data from EEPROM inside lens which calibrates the controller response. The performance of the controller is therefore automatically tailored to each individual lens.
Lens compatibility	Compatible with following Optotune lens ranges EL-10-30-Ci; EL-16-40-TC Full current calibration with lens temperature compensation
Operating modes	**Three operating modes:** 1. Single configurable optical power 2. Two optical powers, selected by digital input 3. Optical power set by analog input
Digital input	Smart input 3V-24V, TTL, NPN, PNP compatible
Analog input	0V to 10V, 7K input impedance Nominal 12-bit resolution
Refocus latency	6ms (not including lens response)
Output current	-400mA to +400mA in 0.1mA steps Accuracy +/- 0.5mA
Output voltage	-16V to +16V
User interface	Ethernet (easy to use browser by means of in-built Web server) RS232 Front Panel
User SDK	Triniti SDK, applications written in C#, C++, VB
Lens connector	6-way Hirose HR 10 G lens connector
Power supply	24V +/-10%. An SELV power supply is required Input power 10W maximum
Operating temperature	5 to 50oC
Humidity	Up to 95% non-condensing
Dimensions	120mm x 101mm x 35mm
Mounting	DIN rail mount
Weight	175g
Standards	CE, RoHS