GARDASOFT
Industrial LED technology

TR-HT Series LED Controllers
Highest power output for Machine Vision lighting applications

The Gardasoft TR-HT Series are industry's highest power Controllers for Machine Vision LED lighting; at 150W per channel, they are the perfect partner for driving high power LED Area and LED Bar lights.

- 2 channel, independent, precision current outputs
- 5A continuous mode, 50A pulse mode
- 150W per channel, 300W per unit

- Resolution from 0.6 to 15mA
- GigE Vision compliant
- Operates with both Triniti™ and non-Triniti™ lights

LED drive performance

Highest power output

The Gardasoft TR-HT Series are the industry's highest power, precision controllers for Machine Vision LED lighting. With unique switching technology, these controllers have 2 independent output channels, each rated at 150W and each capable of driving 50A in pulsed mode and 5A in continuous mode. Dual range output current with the design of the TR-HT controllers enables fine tuning at low currents - with resolution from 0.6mA to 15mA.
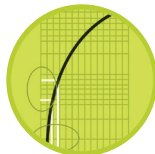
Voltage step-up

SafePower™ removes the restriction of the output voltage needing to be less than the input voltage, and automatically steps up or down the voltage needed to drive or overdrive the lighting, up to a limit of 48V. SafePower works automatically without needing any configuration or user input. For example, the TR-HT range can use a 24VDC supply, regardless of the lighting connected.

In addition, PP Mode allows the advantages of SafePower with the advantages of a direct current drive (as on the PP range of controllers). The output voltage to the lighting can be higher than the supply voltage, but without the limitations on pulse frequency that the RT controllers have.

Control of machine vision lighting

Modes of operation

Four modes of operation are provided separately for each channel of the TR-HT Controllers enabling flexible operation:

Continuous: Output is a continuous level

Pulsed: Output is pulsed once per trigger

Switched: Output is switched by a digital input

Selected: Output intensity selected by a digital input

Extra LED brightness

Patented SafeSense™ technology creates a safe working environment for overdriving LED lights. Driving LEDs with a constant current source allows very precise overdriving. SafeSense ensures that the pulse width and duty cycle are kept within safe working limits. The end result is that much more light is gained from the LED lighting for your machine vision application. This is in addition to the Triniti functionality which comes as standard with all TR-HT controllers and is applicable to Triniti-enabled lighting from manufacturers such as CCS, Smart Vision Lights, TPL and Metaphase.

Controllable digital I/O built-in

All TR-HT controllers have two in-built digital inputs for trigger control, and four digital output points with the ability to trigger external components such as cameras and reject gates.

Software and configuration

Triniti™ as standard (GigE Vision integration)

TR-HT Series controllers are GigE Vision compliant and are part of the Gardasoft Triniti machine vision platform; this enables expert control, operational intelligence and full integration of machine vision lighting - within a 'plug and play' environment.
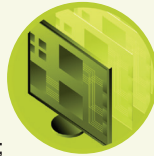
Vision timing utilities

Triniti application utilities are available for many of the leading image processing software packages such as Cognex VisionPro, National Instruments LabVIEW, Teledyne Dalsa Sherlock and Stemmer Imaging CVB.

Triniti SDK

For OEM implementations, applications can be written in any .NET language, including C#, VB and C++, giving full access to all Triniti light and control data.

Configuration options

All TR-HT controllers have options to be configured via 100base-T Ethernet or RS232 (with the additional ability to program via front panel push-buttons). With the Ethernet options, a Web browser can be used to access the TR-HT controllers' internal Web pages allowing status to be viewed and parameters to be changed.
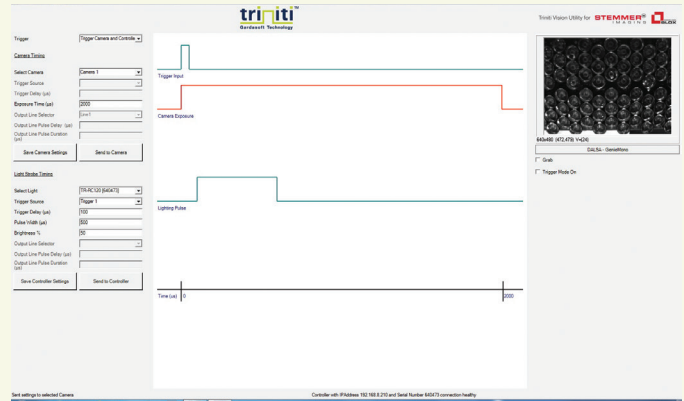
The TR-HT Series can also be configured using simple string commands sent from within their application program using RS232, TCP/IP or UDP, and the Triniti SDK (which is a free download from the Gardasoft website). The configuration is stored in non-volatile memory providing turnkey operation.

All TR-HT Series controllers have a versatile, clear, and easy to use four line graphic display for assisting local set-up via push buttons, diagnostics and operational status indication.

SPECIFICATIONS

Parameter	TR-HT220	TR-HT260
User interface	Ethernet + front panel	RS232 + front panel
Output channels	Two independent precision constant current outputs	
Output current (continuous)	5A max per channel (within 150W envelope)	
Output current (pulsed)	50A max per channel (within 150W envelope) In steps of 0.6mA for currents ≤2A In steps of 15mA for currents >2A	
Output power	150W max average power per channel, 300W max total	
Trigger input	Opto-isolated digital inputs. Logic HI = 3V min, 24V max	
Trigger Delay (td)	3μs to 5seconds	
Pulse Width (PW)[1]	20μs to 5seconds	
Minimum Step Change (PW+td≤500μs)[2]	0.1 μs typ	
Minimum Step Change (500μs<PW+td≤100ms)[2]	5.0 μs typ	
Minimum Step Change (100ms<PW+td≤10s)[2]	100 μs typ	
Trigger rate	30kHz max	
Output voltage	72V max per channel	
Triniti interface	Gardasoft 4-wire Triniti lighting interface	
Triniti communications interface	GigE Vision V2.0, GenICam, UDP/TCP, Third party protocols	
Supply voltage, full output power	21.6 to 52.8 VDC	
Supply voltage, limited output power[3]	10.8 to 21.6 VDC	
Dimensions	256x140x61 mm	
Weight	1.3kg	
Mounting	6 off M4 clearance holes on integral mounting flanges. Fix TR-HT to heatsinking surface. DIN rail mounting option.	
Operating temperature	+5 to +50°C	
Humidity	95% non-condensing	
Standards	CE, RoHS2, REACH	

1. Reduced output power for long pulse widths.
2. This is the minimum incremental adjustment that may be applied to pulse width or trigger delay settings.
3. Maximum power output (lighting power) is de-rated linearly in this supply voltage range with 50% output power at 10.8V to full power at 21.6V.

For more information please contact

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