

TR-HT Series LED Controllers

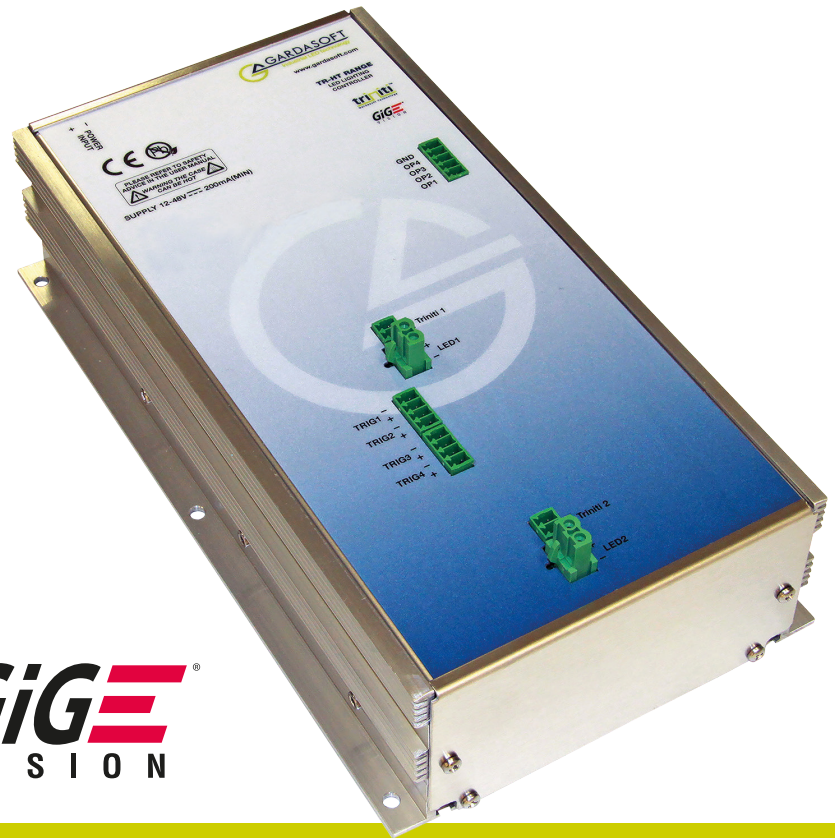
Highest power output for Machine Vision lighting applications

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



GIG E
VISION

TR-HT SERIES LED CONTROLLERS

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.

DATA SHEET
TR-HT Series v003

www.gardasoft.com

GARDASOFT
Machine Vision Control

Software and configuration

Trinit[™] as standard (GigE Vision integration)

TR-HT Series controllers are GigE Vision compliant and are part of the Gardasoft Trinit 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

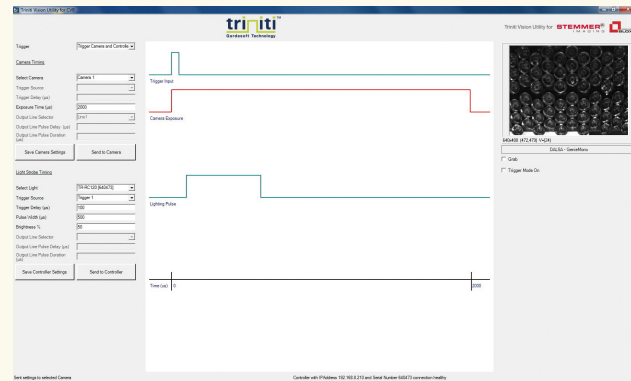
Trinit application utilities are available for many of the leading image processing software packages such as as Cognex VisionPro, National Instruments LabVIEW, Teledyne Dalsa Sherlock and Stemmer Imaging CVB.

Trinit SDK

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

Configuration options

All TR-HT controllers have options to be configured via 100base-T Ethernet or RS232. 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 Trinit SDK (which is a free download from the Gardasoft website). The configuration is stored in non-volatile memory providing turnkey operation.



TR-HT SERIES LED CONTROLLERS SPECIFICATIONS

| PARAMETER | TR-HT220 | TR-HT260 |
|--|---|----------|
| USER INTERFACE | Ethernet | RS232 |
| OUTPUT CHANNEL | 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≤500MS) ² | 0.1 µs typ | |
| MINIMUM STEP CHANGE (500MS<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 Trinit 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.

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