

The DRAGON series High Power LED Light Sources

Features

- Plug-and-play frame for LEDs
- Interchangeable LED clusters provided
- 395, 405, 455nm, 475nm, 505nm, 530nm, 590nm, 617nm, 630nm, white 5500 K, white 3300 K
- Selection of collimating optics/ attachments
- Selection of base units
- Fast analog control (some models)
- Low-noise CW control (some models)
- Fast pulsed (digital) control (some models)
- Narrow bandwidth or broadband
- Wide field or focused output
- Continuous, waveforms, or pulses to <500ns
- Up to 2.5W CW, x5 intensity short pulse
- Accepts LEDH heads (0.8" spacing)
- Mounting to standard posts (UNC1/4-20 thread in the base unit)
- Base unit diameter 3.0" (76mm)

Applications

- Fluorescence excitation
- High-speed imaging
- Synchronous detection
- Machine vision
- Biomedical optics

Description

The HPLS-76 series of high power LED light sources are designed as flexible system of interchangeable components for applications where it is hard to standardize the requirements for mass-production.

Building a system comes down to (1) selection of appropriate base with specific functionality and type of control; (2) selection of LED heads and (3) focusing optics specific for the application.

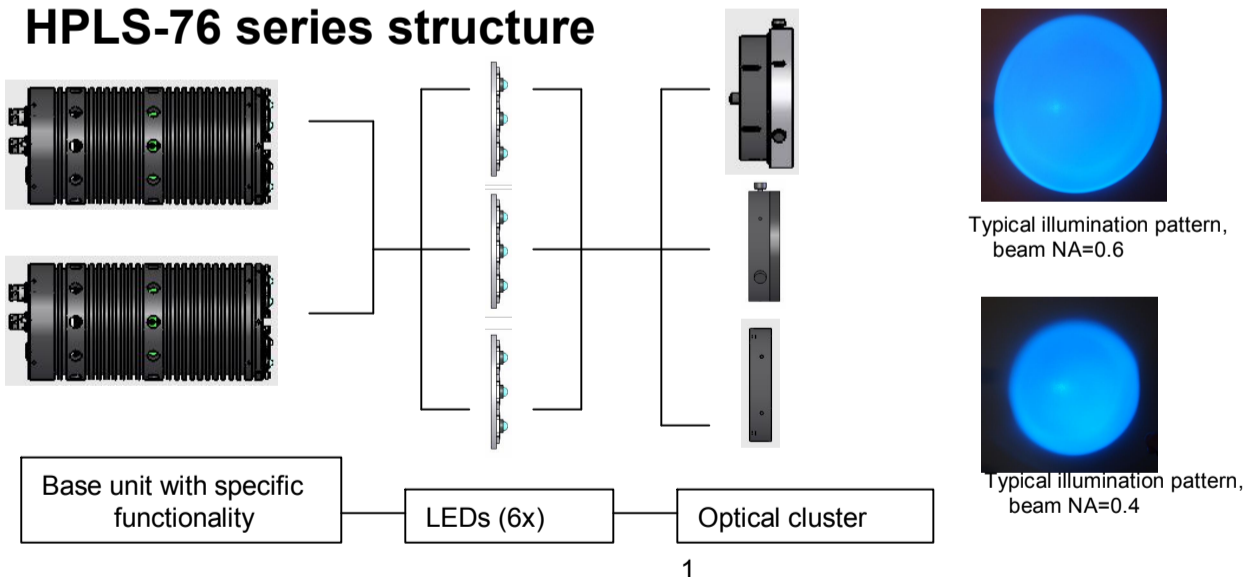
Functionality of base units include fast analog control (to generate any optical function, sine, saw, square, CW...); low-noise CW control (for applications where ATC-like or PWM algorithms may cause problem); and fast pulsed (digital) control (faster and more powerful than analog).

Selection of the way the optical power is set include external digital/analog signal supplied thru connector (BNC/Twin BNC), or, for CW application, Built-In Potentiometer/ Remote Potentiometer/ 2-level Switch).

LED cluster features 6 individual sockets for quick-change LED heads LEDH with 0.8" spacing (completely compatible with HPLS-36 series), it takes only few minutes to populate the cluster with individual LEDs, including different colors option.

The function of focusing optics is to direct the light to the certain spot size on certain distance as required and often custom designed for specific application. Most of new optics is backward-compatible (fits the units previously shipped)

HPLS-76 series structure



HPLS-76AD3500



Description

HPLS LED light source with built-in 2-channel (Analog/Digital) driver. Full remote control in both Analog and Digital modes thru two independent inputs. Analog channel has linear control and continuously variable output, with 1% input offset to ensure light shutdown when signal is not applied. Digital channel has 2-level ON-OFF control (active HI), high peak current, and provisions to protect the LEDs from permanent damage when inappropriate signal applied.

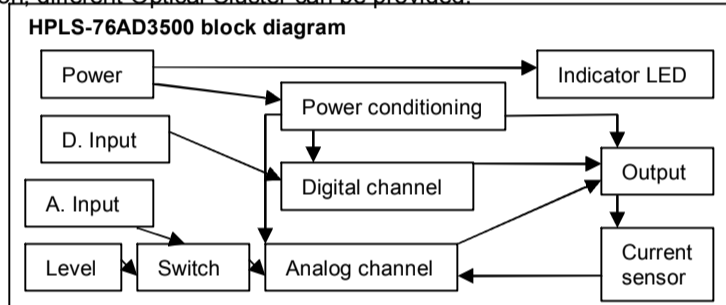
Output current in the sum of outputs of both channels when analog signal < 0.5 of full scale. When analog signal is > 0.5 full scale, operation of digital channel is prohibited. Switch on the control panel helps aligning the unit for experiment by forcing Analog channel to stay ON disregard the input signal.

Analog channel operates in current regulation mode using a feedback from the current sensor in the output stage (optimized to convert the input voltage into current as precisely as possible and as fast as reasonable but not hurting precision). Digital channel provides fast switching without active feedback (optimized for switching the current to MAX level and back to 0 as fast as possible). As a side effect, the current in Digital mode varies slightly for different LED cluster; while the Analog channel current is regulated to be the same.

HPLS-36 features LED cluster with interchangeable LED heads and optical clusters, allowing the spot size adjustment around the illumination angle it is optimized for. For the larger adjustment range, light collection efficiency may be reduced. For maximum efficiency in specific application, different Optical Cluster can be provided.

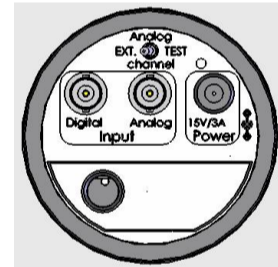
Common Specifications/Features

- Two operating modes: Analog/Digital
- Full remote control: Analog/Digital
- Optical beam: cone 0.3-0.6NA
- Interchangeable optical cluster for other beam requirements
- Interchangeable LEDH heads (6x)
- Dimensions: Ø3.0x6" (76x152mm)
- Weight: 915g (with LEDs and optics)
- Power Requirement: 12V, 3A
- Control Signal Connectors: BNC
- Cooling: built-in forced cooling
- Operating temperature: 10-30C
- Humidity: non-condensing environment

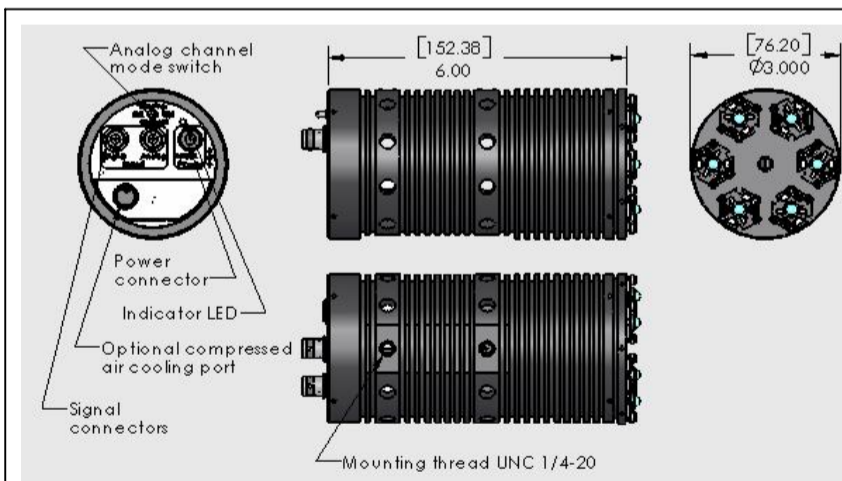


HPLS-76AD3500 control panel:

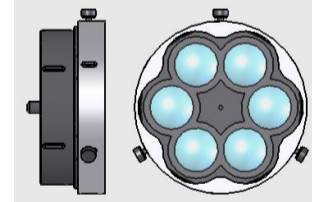
- Switch: Analog channel Test mode
- Left: external control
 - Center: OFF
 - Right: Analog channel forced to ON
- BNC connectors:
- Central pin: input signal
 - Barrel: common ground



LED: input power/fault indicator
Power: Central positive



HPLS-36AD3500 exterior view, dimensions and mounting interface.



Optical cluster OH76-24x0.5 for conical beam adjustable 0.3-0.6NA, with optional optical filter ring

Waveforms and specifications

Digital mode specifications:

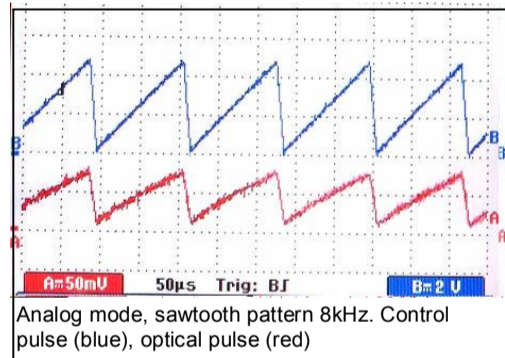
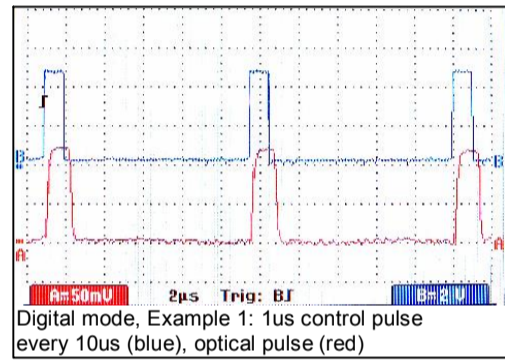
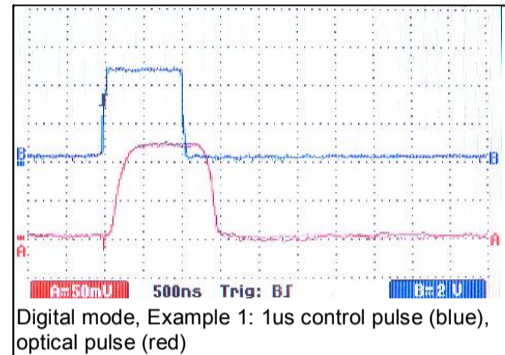
- Output current: 3.5Ax6A +/- 0.7A (LED cluster dependent)
- P-P stability: <1%
- Drift: <1%/5min
- Rise Time: 150ns (to 1/2 level); 300ns (to 90%)
- Rise front propagation delay: 120ns typ
- Fall Time: 280ns (to 1/2 level); 400ns (to 90%)
- Fall front propagation delay: 200ns
- Pulse front/fall jitter: < 15ns, <8ns typ
- Nominal Signal Level: 3.3-5V; TTL/CMOS
- Logical "0" (light OFF): <0.8V
- Logical "1" (light ON): >2.4V
- Smart Time Limiting Circuitry for LED Protection Limits the Cumulative Energy Delivered to LED
- Single Control Pulse length range: 50ns-200us
- Maximum Duty Cycle of Continuous Waveform: 12%
- Average Ratio, Active Time/Relaxation Time: 1:10
- Any Repetition Rate
- Automatic shutdown: analog channel current > 0.5 full scale

Digital mode, protocol examples:

- Example 1: 1us pulse permitted every 13us
- Example 2: 200us max duration pulse every 2.6ms
- Example 3: 50% duty cycle waveform 400us total duration, permitted every 2.6ms
- Example 4: 20% duty cycle waveform 1ms total duration, permitted every 2.6ms
- Example 5: 30us pulse permitted every 390us

Analog mode specifications:

- Input/Output relationship: Linear, 1% offset
- Output current, continuously variable: 0-2.25A
- Output current drift: < 800ppm/hour
- Output current accuracy: +/-3% of set value
- Output current RMS noise: <0.5%
- Input Signal Format: User Programmable (4-Dip switch on the driver board)
- Input Signal Format (Default): 0-5V
- Input Signal Formats: 0-10V; 0-20mA, 4-20mA
- Rise Time/Delay for 0-500mA transit: 600ns(50%), 1.8us(90%) / 2.4us Delay
- Fall Time/Delay for 500-0mA transition: 1050ns(50%), 750ns(90%) / 200ns Delay
- Rise Time/Delay for 100-500mA transition: 500ns(50%), 1300ns(90%); 200ns Delay



Terms and Conditions



Prices and Quotations

All quotations are valid for 30 days unless stated otherwise. Published prices are subject to change without notice. Custom and specialty products are individually priced per requirements specified and subject to change if changes are made from original request.

Purchase Orders and Payment Methods

Orders are accepted by email, mail, and fax. Verbal orders are not advised but accepted on individual basis. Payments by Net 30 account upon approval of credit or by credit card. Late fee 2% per month invoiced if past due. International customers: 100% pre-payment, credit card, or wire transfer Net 30 with approved credit.

Delivery and shipping.

Shipments are made domestically by USPS priority or FedEx prepaid and added to invoices unless shipping method and shipping account number provided with order. International shipments do not include importation or duty fees and international shipping charges are specified with product quotes.

Safety warnings and operating conditions.

Lightspeed Technologies is not liable for equipment damage or personal injury resulting from the use of these products. Do not look into the beam directly, or stare at the specular reflection from reflective surfaces such as mirrors. Do not operate unless LED head is secured by 2 screws. Do not disassemble drivers unless to access user-level controls inside per user manual. Do not operate outdoors, in high humidity or condensing environment. HPLS series of light sources and drivers are designed for operation in indoor environment, non-condensing conditions, with ambient temperature from 4.5°C to 29.5°C (40°F to 85°F).

Warranty Terms and Conditions

Lightspeed Technology's products, HPLS base units, drivers, optics, accessories (except LED heads) are warranted to be free from manufacturing defects in materials, parts and labor for a period of 1 year from the date of delivery to a customer, customer's shipping department, and/or designated agent. Components that are subject for failure per conditions specific to customer's testing environment, including but not limited to, incompatible line outlet voltage, out-of-the-specifications line outlet voltage, incompatible signal voltages and/or timing requirements; specifically including, but not limited to, LED heads, are warranted for a period of 90 days.

Returns and cancellation conditions.

No returns on special order items, or if a demo unit was requested, furnished and subsequently tested by a customer prior to placing an order. All products should be returned with original packaging material. All returns are subject to inspection and restocking fees upon arrival if without original packaging, damaged, or otherwise tampered with. Contact Lightspeed Technologies for a return materials authorization (RMA) number and shipping address if product is to be returned. No returns after 30 days from the day of product delivery to a customer, shipping department, or designated agent. Lightspeed Technologies will make the determination of cause of damage and if warranty replacement is applied.

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