DALI 2 LED Drivers (With System Feedback)

Constant Current Version - DALI/1-10V/Switch-Dim



HED6010 / HED6020 / HED6045 HED6045L / HED6060 / HED6060L

Applications

Use with 'plug n' play' or DALI broadcast master.
Fully addressable DALI systems, including fault feedback.
Switch-Dim

1-10V Dimming Systems

Models for all fixture types-insulated terminal cover with cord restraint:

- Office / Commercial Lighting
- Health Care
- Classrooms

Use for retrofit upgrades & new luminaire designs.

Features





Switch-Dim with Synchronization

Stand-by Power < 0.5W

Active PFC Design

Analogue Flicker-free Dimming

Logarithmic Dimming

Linear Dimming

Configurable Constant Current (CC) Output via Dip-Switch

[] Thermal Cut-out Protection

Short Circuit Protection

All with Auto-restart

Over-load Protection

[2] Permanent Settings Memory, Protected against Loss of Power

5 Year, 50,000hr Warranty

SELV IP20 F F F







Output Configuration

HED6010, 1x10W		HED6020, 1x20W		HED6	045, 1x45W	1	HED6045L, 1x45W
500mA • • • • 350mA • • • 1230mA • • • • 195mA • • • •		900mA • • • 700mA • • 0 1 500mA • 0 0 1 350mA • 0 0 6	 	1200mA 1050mA 900mA 700mA			900mA • • • • • 650mA • • • • 600mA • • • • • 550mA • • • • • 600mA • • • • • 600mA • • • • • 600mA • • • • • • 600mA • • • • • • 600mA • • • • • • • • 600mA • • • • • • • • • • 600mA • • • • • • • • • • • • • • • • • • •
HED6060, 1x60W		HED6060L,	1x60	W			
2 10A • • • • •		900mA					

Marning: Please make sure the correct current is selected before starting the driver!

Output

Description:

Description:

Description:

Note: The properties of the prop

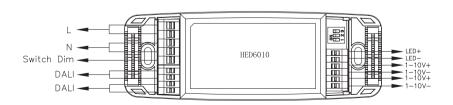
Technical Data

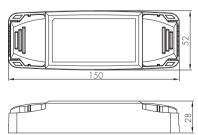
	Model No.	HED6010	HED6020	HED6045	HED6045L	HED6060	HED6060L		
	Mains Voltage	220~240VAC 50/60Hz							
	Mains Current	0.075~0.065A	0.125~0.115A	0.22~0.2A	0.22~0.2A	0.35~0.27A	0.35~0.27A		
Input	Power Factor	0.9	0.93	0.95	0.95	0.95	0.95		
шриг	Max. Efficiency	88%							
	Dielectric Strength			Input→Output : 30	000VAC				
	Leakage Current	<0.25mA	<0.25mA	<0.25mA	<0.25mA	<0.25mA	<0.25mA		
	Ripple Current	<3%	<3%	<3%	<3%	<3%	<3%		
Output	Uout Max.	52V	60V	<i>75</i> V	95V	80V	115V		
Oulpui	Turn-on Time	<0.5s	<0.5s	<0.5s	<0.5s	<0.5s	<0.5s		
	Dimming Interface	DALI, Switch-Dim, 1-10V							
	Operation Temp.	-20~+50℃	-20~+45℃	-20~+45℃	-20~+45℃	-20~+45℃	-20~+45℃		
Environment	Case Temp. (Max.)	<i>75</i> ℃	75℃	85℃	85℃	80℃	80℃		
	IP Rating	IP20	IP20	IP20	IP20	IP20	IP20		
	EMC Standard	EN55015, EN61547, EN61000-3-2, EN61000-3-3							
Safety	Safety Standard	EN61347-1,EN62493,EN61347-2-13							
and EMC	DALI Standard	IEC62386-101 ; IEC62386-102 ; IEC62386-207							
	Certifications	Semko, CB, RCM, CE , EMC							

Model No.	Max. output power/curre	ent/voltage range		
HED6010	8W/195mA/6~41V	9.5W/230mA/6~41V	12.5W/350mA/6~36V	12.5W/500mA/6~25V
HED6020	15.5W/350mA/10~45V	21.5W/500mA/10~43V	21W/700mA/10~30V	20.5W/900mA/10~23V
HFD6045	28W/500mA/10~56V	40W/700mA/10~56V	45W/900mA/10~50V	45W/1050mA/10~42V
TILD0043	40W/1200mA/10~34V	40W/1400mA/10~28V		
LIEDAOAEI	26W/350mA/15~75V	37W/500mA/15~75V	41W/550mA/15~75V	45W/600mA/15~75V
HED6045L	45W/650mA/15~75V	45W/700mA/15~65V	45W/900mA/15~50V	
LIEDAGAG	55W/1.05A/15~53V	60W/1.2A/15~50V	60W/1.4A/15~43V	60W/1.6A/15~38V
HED6060	60W/1.75A/15~35V	60W/2.0A/15~30V	60W/2.1A/15~28V	
HEDAGAGI	31W/350mA/15~90V	45W/500mA/15~90V	50W/550mA/15~90V	54W/600mA/15~90V
HED6060L	58W/650mA/15~90V	60W/700mA/15~86V	60W/900mA/15~67V	

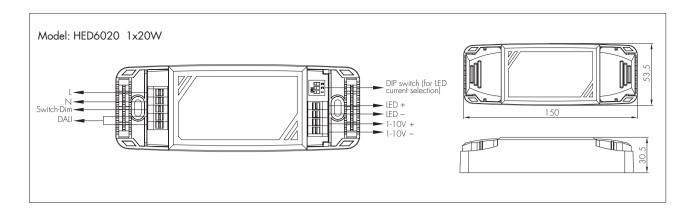
Dimensions and Terminals

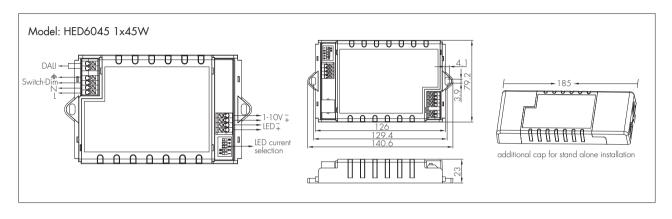
Model: HED6010 1x10W

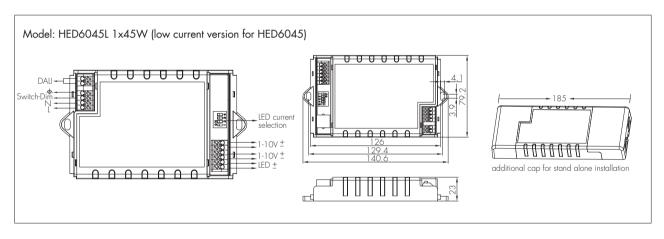


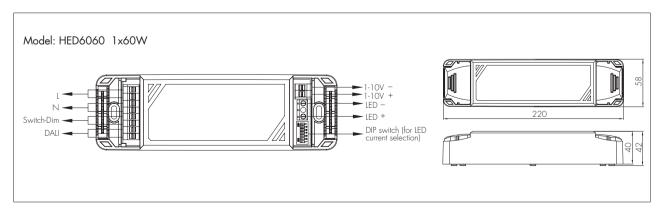


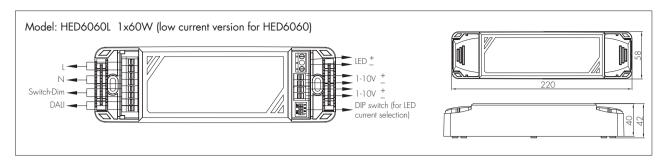
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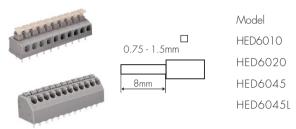




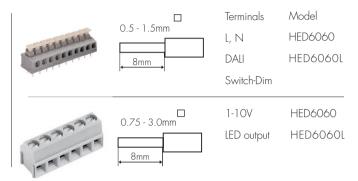




Wire Preparation



To make or release the wire from the terminal, use a screwdriver to push down the button.



Loading and In-rush Current

Model	HED6010	HED6020	HED6045	HED6045L	HED6060	HED6060L
In-rush Current (Imax.)	8A	8A	62A	54A	73A	69A
Pulse Time	66µs	66 µs	42 µs	72 µs	8.8 µs	9 µs

Number of Drivers Based upon 16A Circuit Breaker

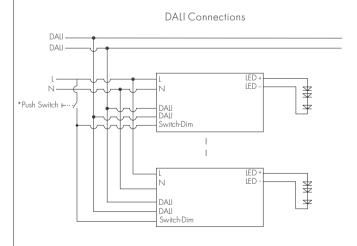
Cct Breaker Type	HED6010	HED6020	HED6045	HED6045L	HED6060	HED6060L
Туре В	98	98	27	28	32	32

Conversion table for max. quantities of drivers on other types of Miniature Circuit Breaker

MCB Type	Rating	Relative number of drivers
В	16A	100% (see table above)
В	10A	63%
В	13A	81%
В	20A	125%
В	25A	156%
С	10A	104%
С	13A	135%
С	16A	170%
С	20A	208%
С	25A	260%

^{*} Environmental factors (such as temperature) will also influence the maximum number of the drivers. Please refer to the MCB manufactures datasheet for loading and derating factors.

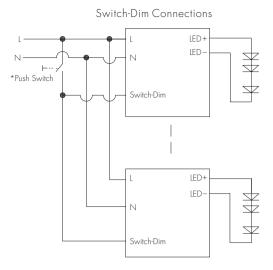
Wiring Diagrams



- * Optional Switch-Dim for manual over-ride of DALI 1-10V is disabled upon DALI connection
- * Unused terminals have been omitted for clarity.

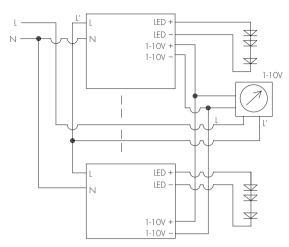
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* Unused terminals have been omitted for clarity.

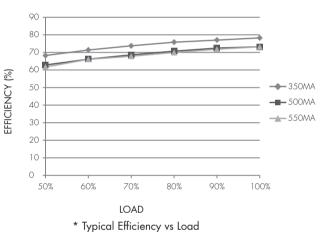
1-10V Connections

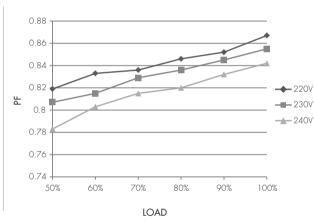


* Unused terminals have been omitted for clarity.

Performance Characteristics

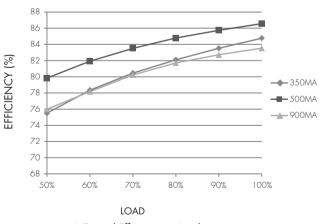




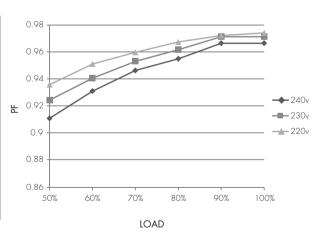


* Typical Power Factor vs Load

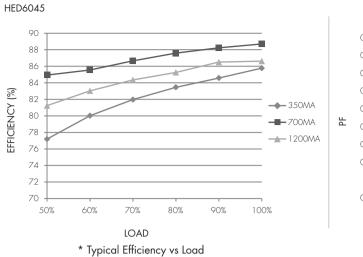
HED6020

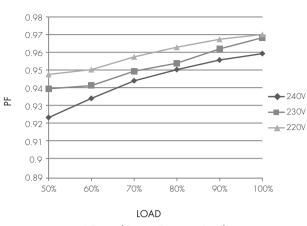


* Typical Efficiency vs Load



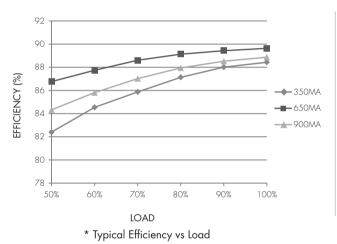
* Typical Power Factor vs Load

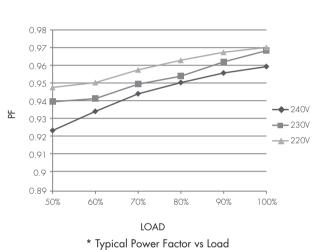




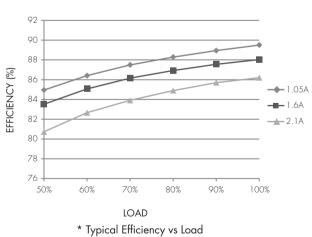
* Typical Power Factor vs Load

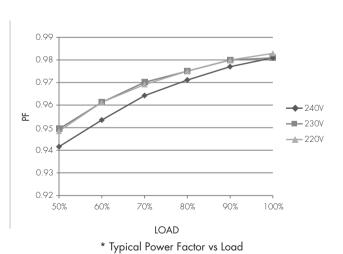
HED6045L





HED6060

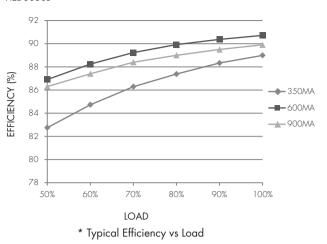


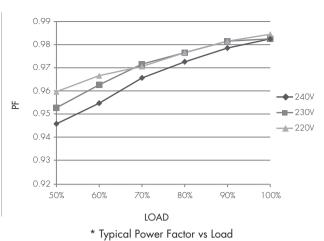


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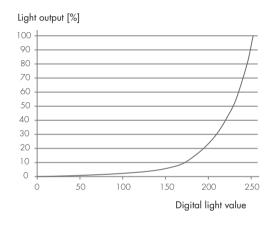
HED6060L





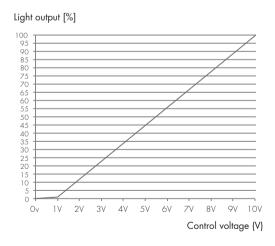
Dimming Characteristics

DALI Dimming Curve

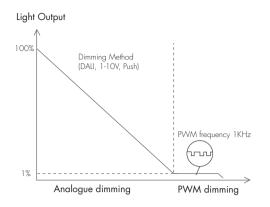


Switch-Dim Dimming Curve

1-10V Dimming Curve

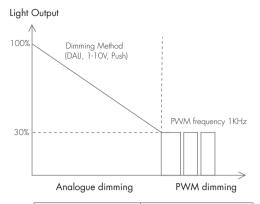


Dimming Profile



Dimming range	Dimming technique		
1%-100%	Analogue		
1%	PVVM		

For HED6010 only.



Dimming range	Dimming technique
30%-100%	Analogue
1-30%	PWM

Note: 1. An upgrade with exended flickerfree dimming is in development to provide 3-100% analogue dimming.
2. For HED6020 / HED6045 / HED6045L / HED6060 / HED6060L.

Dimming Interface Operation Notes

DALI

This series of products are supplied as DALI default group 0 and are 'plug n'play DALI' or 'independent DALI' system ready.

These models are also fully DALI addressable and may be assigned to groups within the limits specified by the DALI protocol or supporting DALI controllers by using a DALI programming tool.

Switch-Dim

The provided Switch-Dim interface allows for a simple dimming method using commercially available non-latching (momentary) wall switches. Up to 64 LED drivers maybe connected to one switch. The Switch-Dim interface may also be used at the same time as DALI to serve as a manual over-ride.

Switch Action Response

Short press (<0.4 second)

Toggle light on / off

Note: short press has to be longer than 0.1s, or it will be invalid.

Long press (>0.4 second) Toggle dim light / increase brightness

Synchronization

Switch Action Response

Long press (>15 seconds) All lights will dim down to minimum then return to 50% brightness

* We recommend the number of drivers connected to a switch does not exceed 25 pieces. The maximum length of the wires from push to driver should be no more than 20 meters.

1-10V

The 1-10V input is operable via commercially available simple rotary wall switches designed for 1-10V dimming equipment or from dedicated system central dimming controllers.

Note: In the unlikely event that the LED driver be used with the Switch-Dim or DALI interface prior to using the 1-10V interface, the 1-10V interface may need to be re-set. This is achieved by placing a short circuit across the 1-10V terminals until the light returns to full brightness (approx. 3-5 seconds).

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