DALI-2 DT6 LED Drivers

HED1009/D2 HED6010 HED1025/D2 HED1040/D2 HED6045/D2
Constant Current

HYTRONIK ®

Product Description

This series of LED drivers are DALI-2 DT6 dimmable with maximum power output ranging from 9W to 45W. They all come with Switch-Dim interface by using Push switch (retractive switch). Various form factor and different structure/ size provide flexibility which is ideal for direct projects or new luminaire design for lighting manufactures.

HED1009/D2

HED6010

HED1025/D2

HED1040/D2

HED6045/D2

Features

- DALI-2 with DALI feedback
- Switch-Dim (Push switch)
- PWM 1KHz (1-100%) (For HED1025/D2 & HED1040/D2)
- Insulated terminal cover with cord restraint (Except for HED1025/D2 & HED1040/D2)
- Active PFC design
- Logarithmic Dimming
- Linear Dimming
- Configurable constant current (CC) output via DIP switches
- Permanent setting memory, protected against loss of power
- Loop-in & loop-out terminal for efficient installation
- Short-circuit Protection
- Overload Protection
- Open-circuit Protection
- 5-year warranty, designed for long lifetime up to 50,000 hours

Output Configuration

HED1009/D2, 9W

	1 2 3 4
600mA	●●●●
500mA	●○●●
400mA	○●○●
350mA	●●○○
300mA	○●○○
250mA	●○○○
200mA	○○○○

HED6010, 10W

	1 2 3 4
500mA	●●●○
400mA	●○●○
350mA	●●○○
300mA	○●○○
250mA	●○○○
230mA	○○○●
195mA	○○○○

HED1025/D2,25W

	1 2 3 4
700mA	●●●●
650mA	○●●●
600mA	●○●●
550mA	●●●○
500mA	○●●○
450mA	●●○○
400mA	○●○○
350mA	●○○○
300mA	○○○○

HED1040/D2,40W

	1 2 3 4
1200mA	●●●●
1150mA	○●●●
1100mA	●○●●
1050mA	●●○●
1000mA	●●●○
950mA	○●●○
900mA	●○●○
850mA	●●○○
800mA	○●○○
750mA	●○○○
700mA	○○○○

HED6045/D2,45W

	1 2 3 4 5
1050mA	●●●●●
1000mA	●●●●○
950mA	●○●●●
900mA	●○●●○
800mA	●●●○○
700mA	●○●○○
600mA	●●○○○
500mA	●○○○○
350mA	○○○○○

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

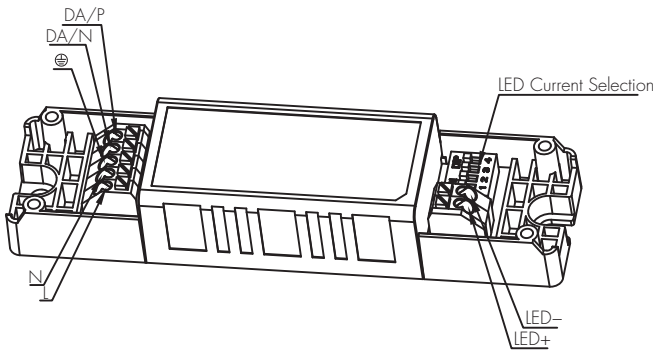
Technical Specifications

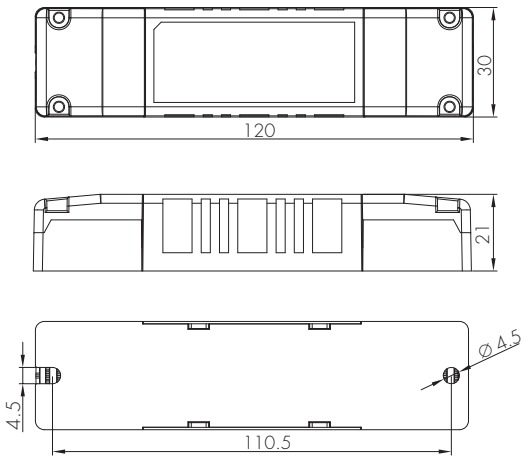
	Model No.	HED1009/D2	HED6010	HED1025/D2	HED1040/D2	HED6045/D2
Input	Mains Voltage	220~240VAC 50/60Hz				
	Mains Current	0.065~0.060A	0.071~0.065A	0.140~0.125A	0.205~0.185A	0.240~0.220A
	Power Factor	0.9	0.9	0.93	0.95	0.95
	Max. Efficiency	88%				
	Leakage Current	<0.25mA	<0.25mA	<0.25mA	<0.25mA	<0.25mA
Output	Ripple Current	<3%	<3%	<3%	<3%	<3%
	Uout Max.	45V	52V	60V	60V	75V
	Turn-on Time	<0.5s	<0.5s	<0.5s	<0.5s	<0.5s
	Dimming Interface	Switch-Dim				
Environment	Operation Temp.	-20~+50℃				
	Case Temp. (Max.)	85℃	75℃	85℃	80℃	80℃
	IP Rating	IP20	IP20	IP20	IP20	IP20
Safety and EMC	EMC Standard	EN55015, EN61547, EN61000-3-2/-3-3				
	Safety Standard	EN61347-1, EN61347-2-13				
	Dielectric strength	Input→output: 3000VAC / 5mA / 1min				
	Abnormal protection	Output short-circuit protection, Overload Protection, Open-circuit Protection				

Model No.	Max. output power/current/voltage range			
HED1009/D2	2-6W/ 200mA /6-28V	2-9W/ 400mA /6-22V	2-9W/ 600mA /6-15V	
HED6010	1.5-8W/ 195mA /6-41V 2.5-12.8W/ 350mA /6-36V	1.5-9W/ 230mA /6-41V 2.5-12.8W/ 400mA /6-32V	1.5-10W/ 250mA /6-41V 3-12.5W/ 500mA /6-25V	2-12W/ 300mA /6-41V
HED1025/D2	2-15W/300mA /6-50V 3-24W/500mA /6-48V 4-25W/700mA /6-36V	2-17W/350mA /6-50V 3-24W/550mA /6-44V	2-20W/400mA /6-50V 4-25W/600mA /6-42V	3-22W/450mA /6-48V 4-25W/650mA /6-38V
HED1040/D2	33W/700mA /6-48V 40W/ 900mA /6-44V 40W/ 1100mA /6-36V	36W/ 750mA /6-48V 40W/ 950mA /6-42V 40W/ 1150mA /6-35V	37W/ 800mA /6-46V 40W/ 1000mA /6-40V 40W/ 1200mA /6-34V	39W/ 850mA /6-46V 40W/ 1050mA /6-38V
HED6045/D2	3.5-19W/350mA /10-54V 8-42W/800mA /10-52V 10.5-44W/ 1050mA /10-42V	5-27W/ 500mA /10-54V 9-45W/ 900mA /10-50V	6-32W/ 600mA /10-54V 9.5-45W/ 950mA /10-47V	7-38W/ 700mA /10-54V 10-45W/ 1000mA /10-45V

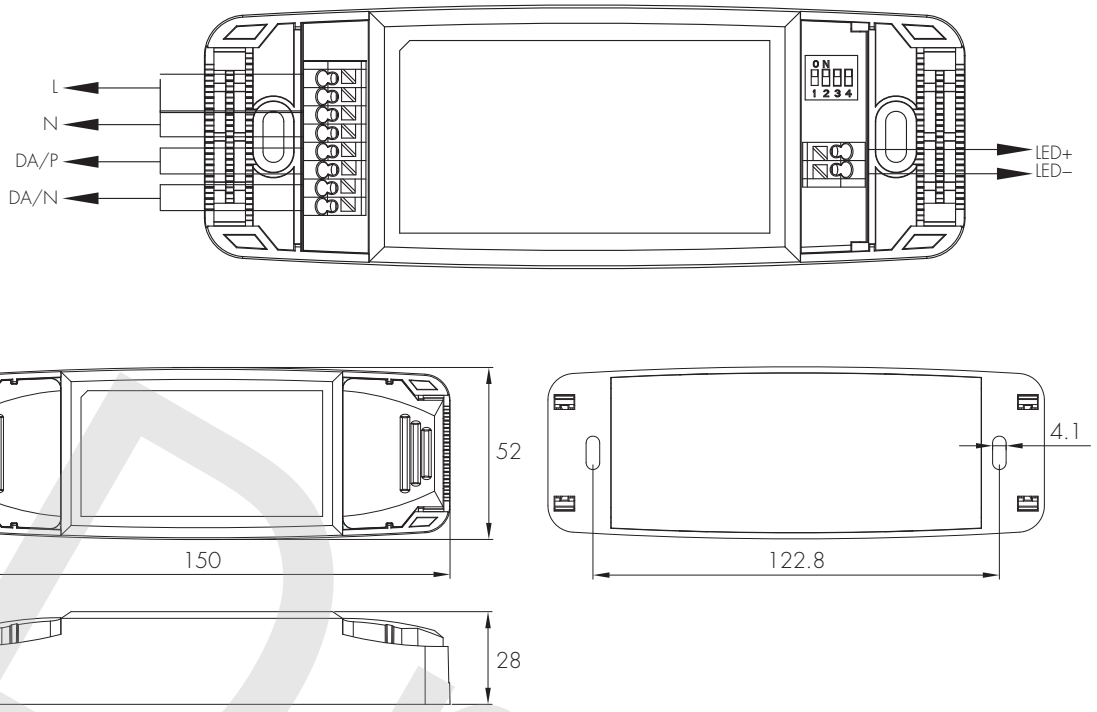
Mechanical Structure & Dimensions

Model: HED1009/D2 9W

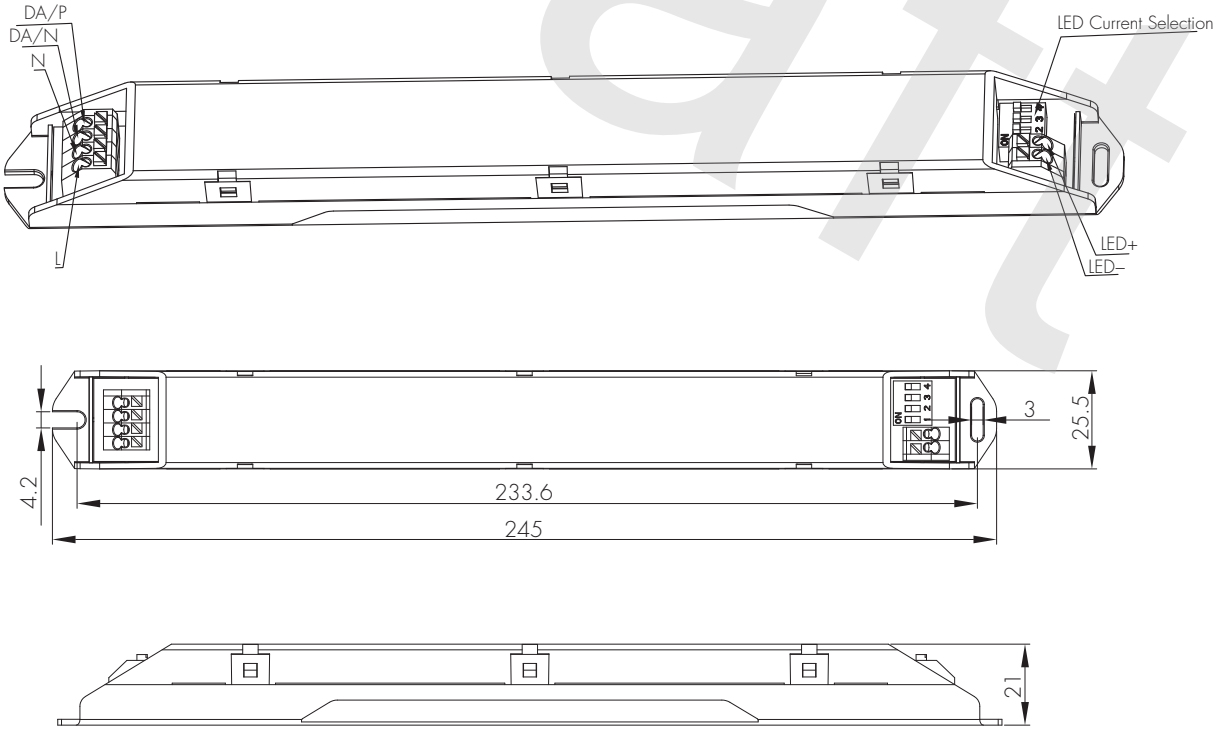




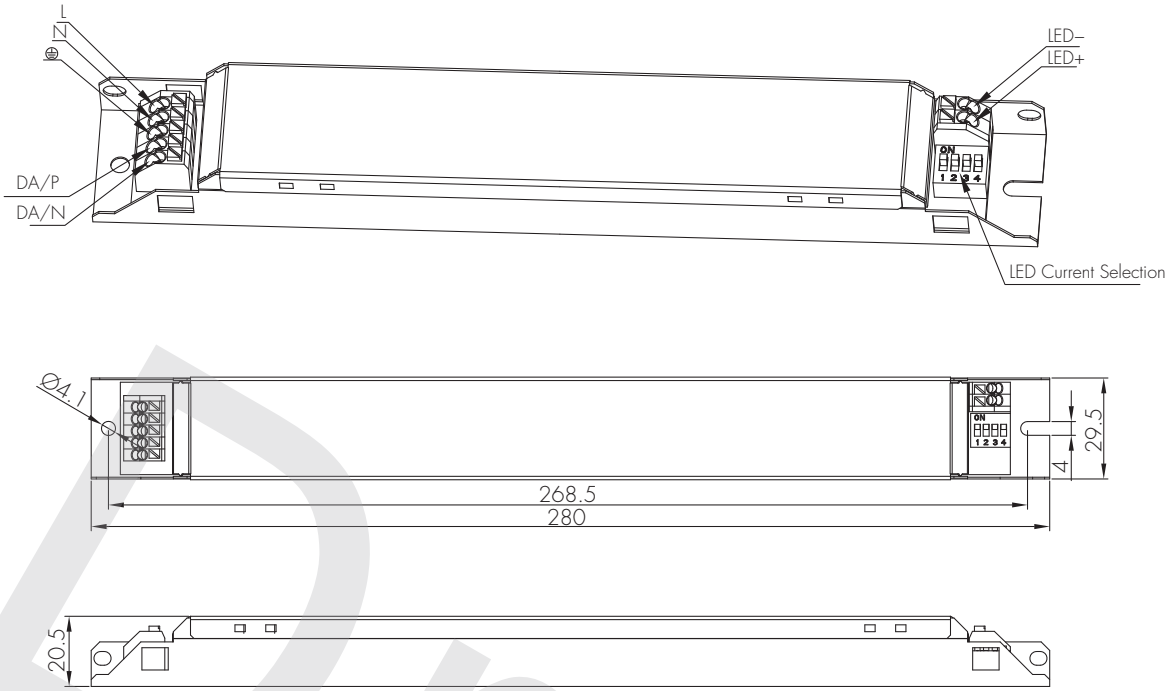
Model: HED6010 10W



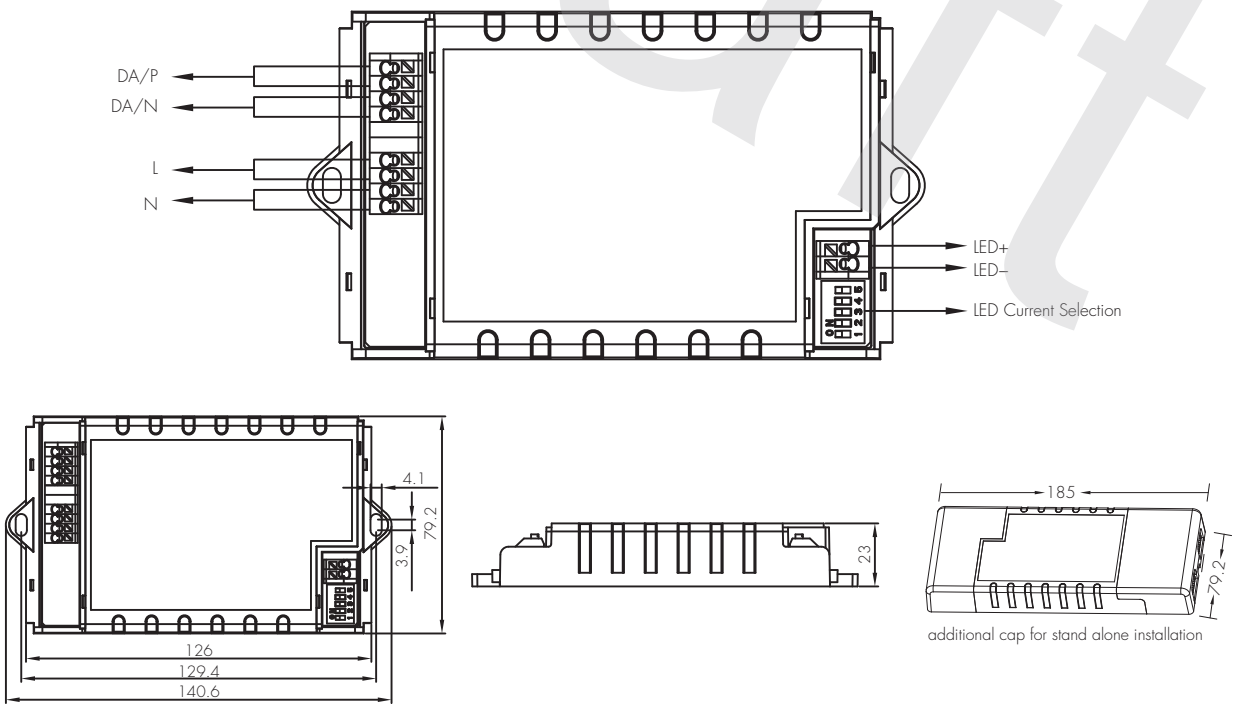
Model: HED1025/D2 25W



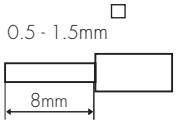
Model: HED1040/D2 40W



Model: HED6045/D2 45W



Wire Preparation



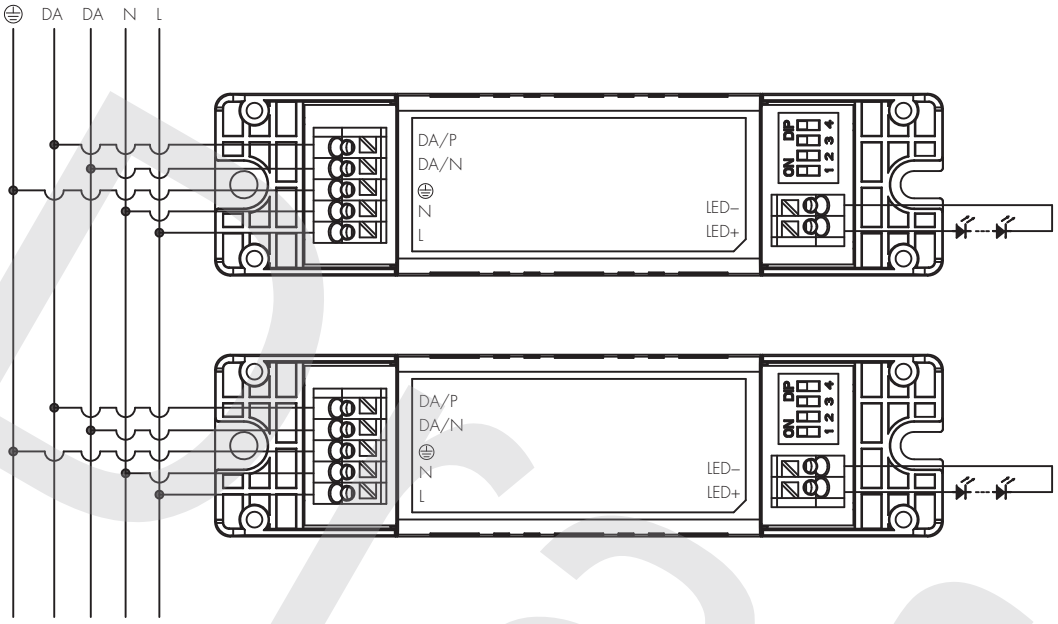
To make or release the wire from the terminal, use a screwdriver to push down the button.

1. 200 metres (total) max. for 1mm² CSA (Ta = 50℃)
2. 300 metres (total) max. for 1.5mm² CSA (Ta = 50℃)

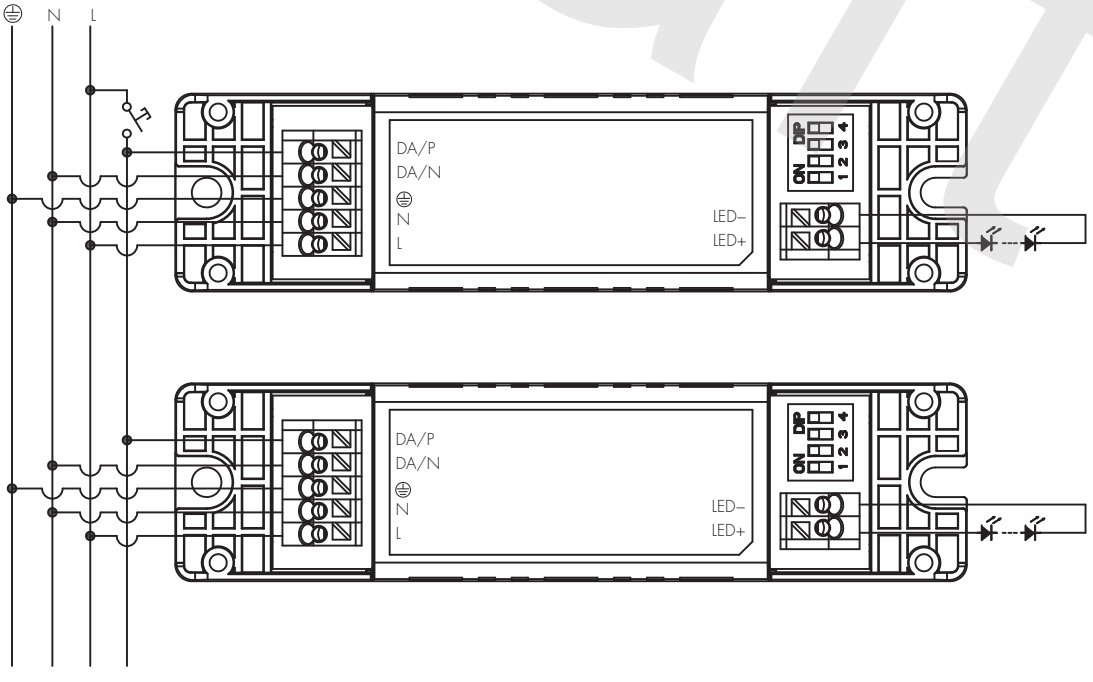
Wiring Diagram

Model: HED1009/D2

Wiring Diagram For DALI

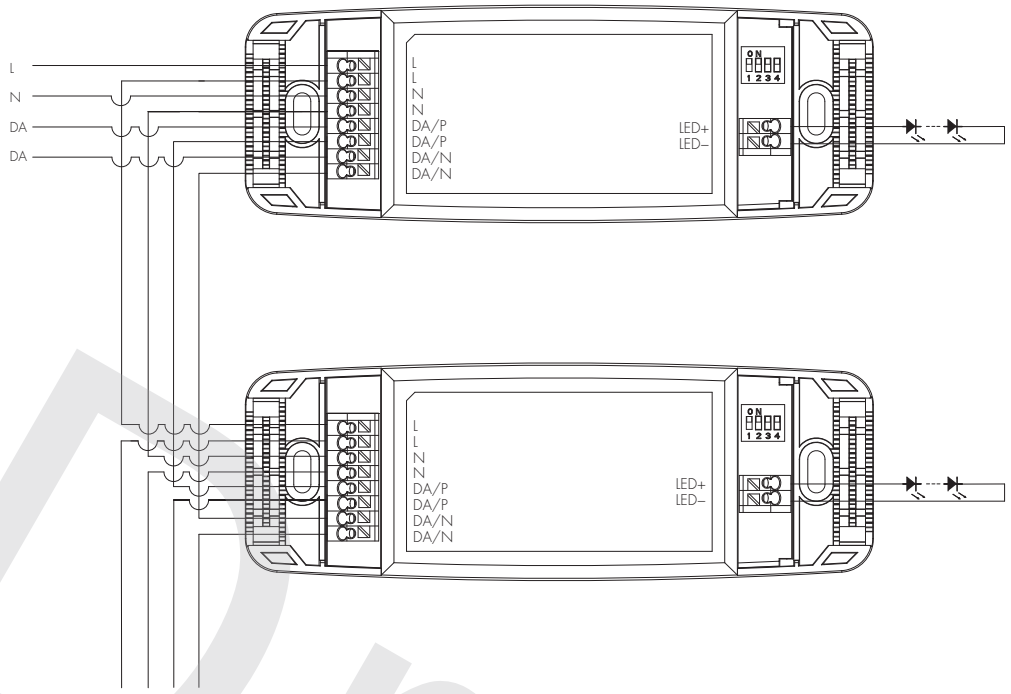


Wiring Diagram For Switch-Dim

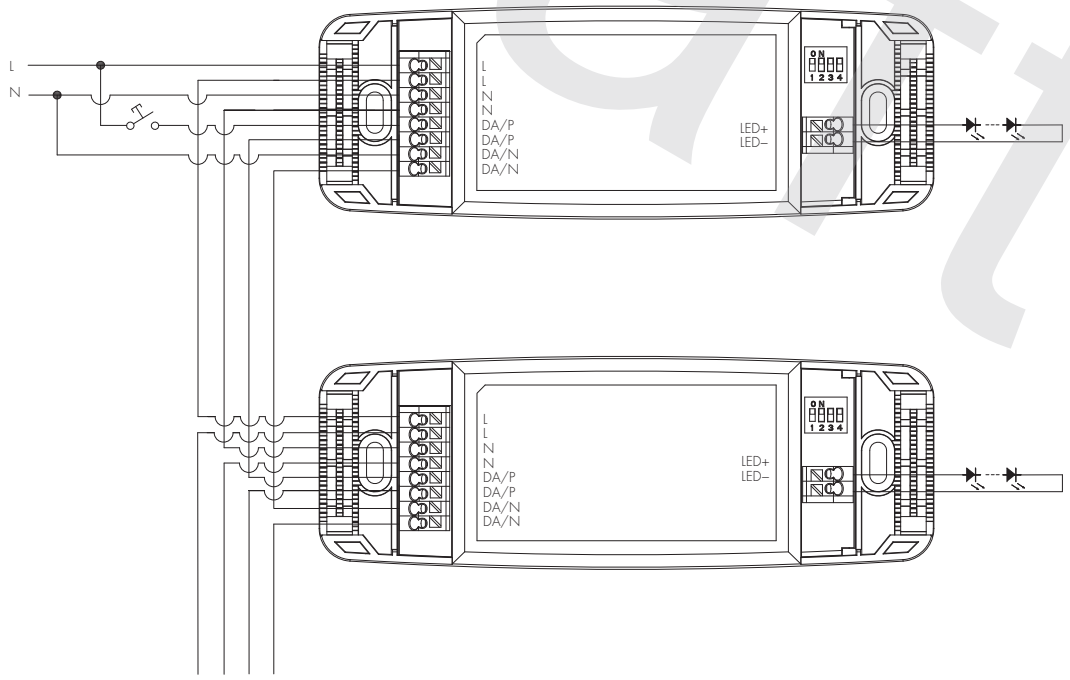


Model: HED6010

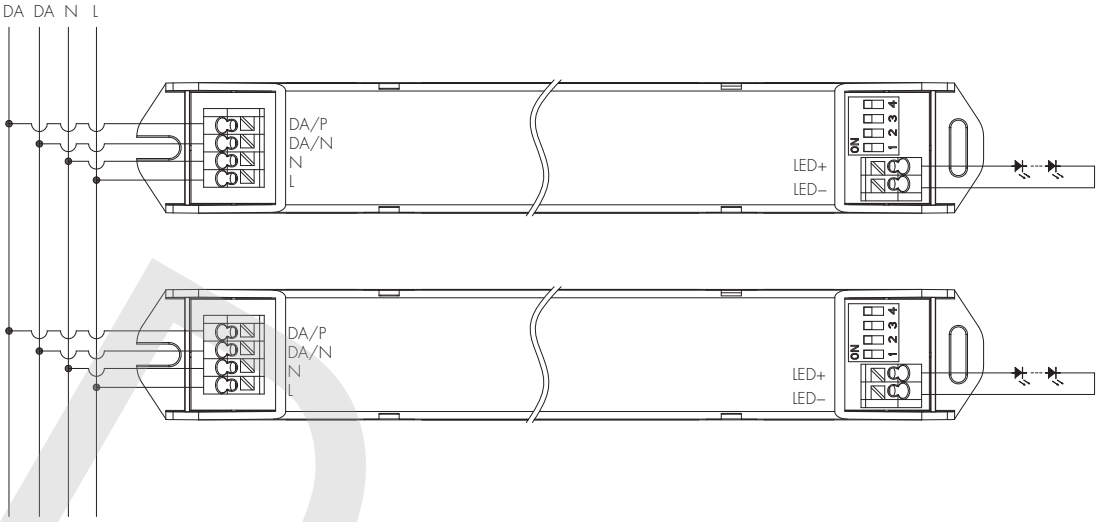
Wiring Diagram For DALI



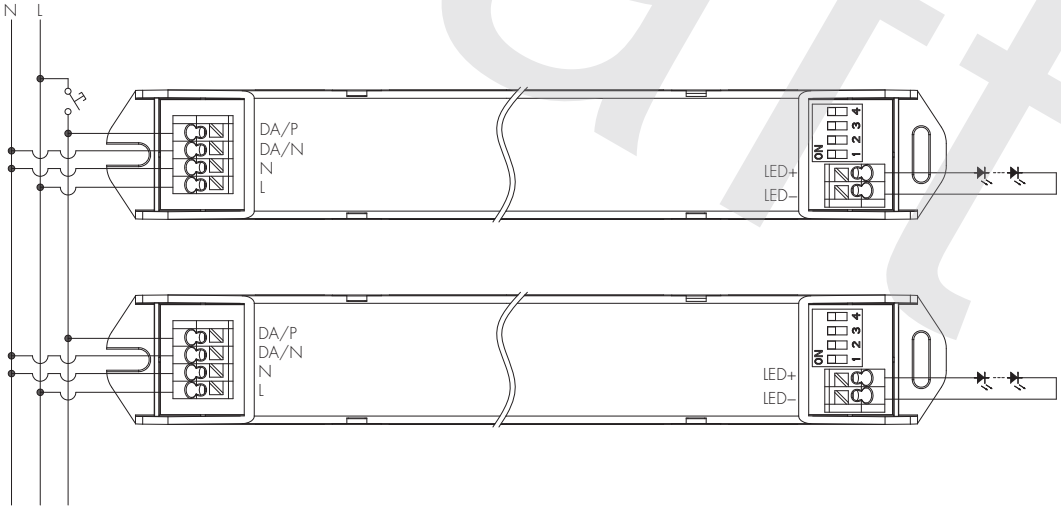
Wiring Diagram For Switch-Dim



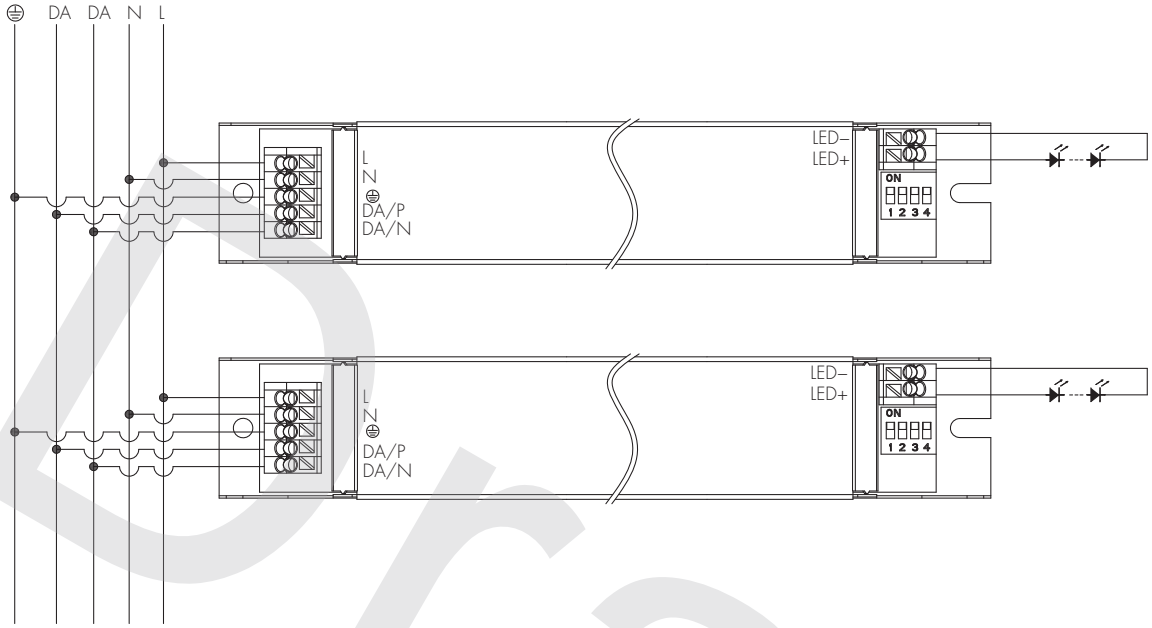
Wiring Diagram For DALI



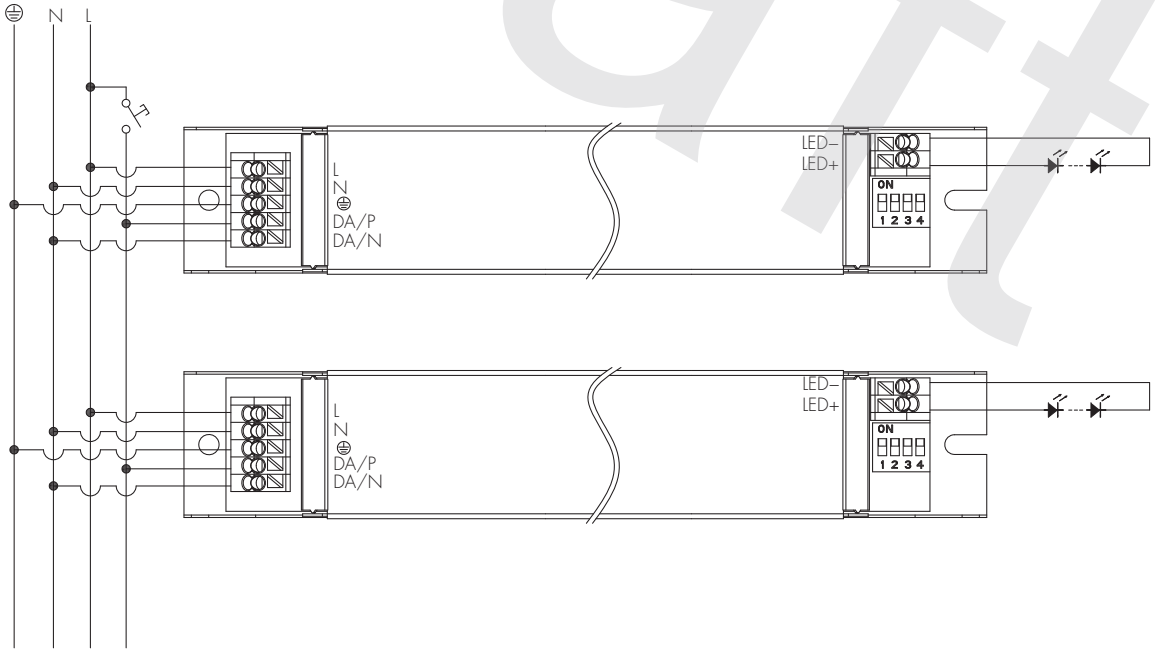
Wiring Diagram For Switch-Dim



Wiring Diagram For DALI

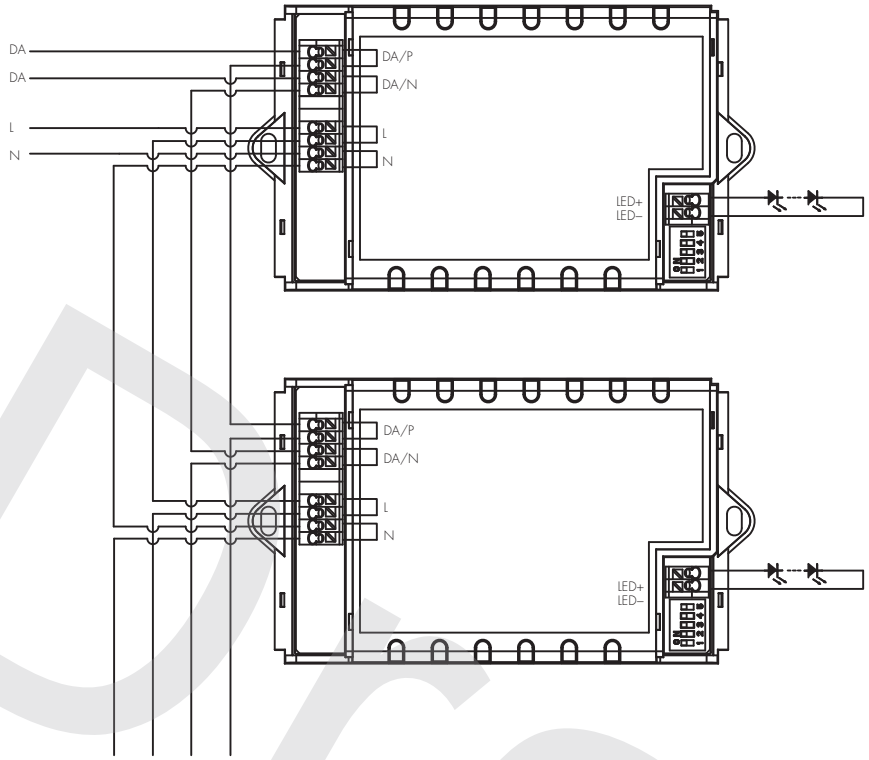


Wiring Diagram For Switch-Dim

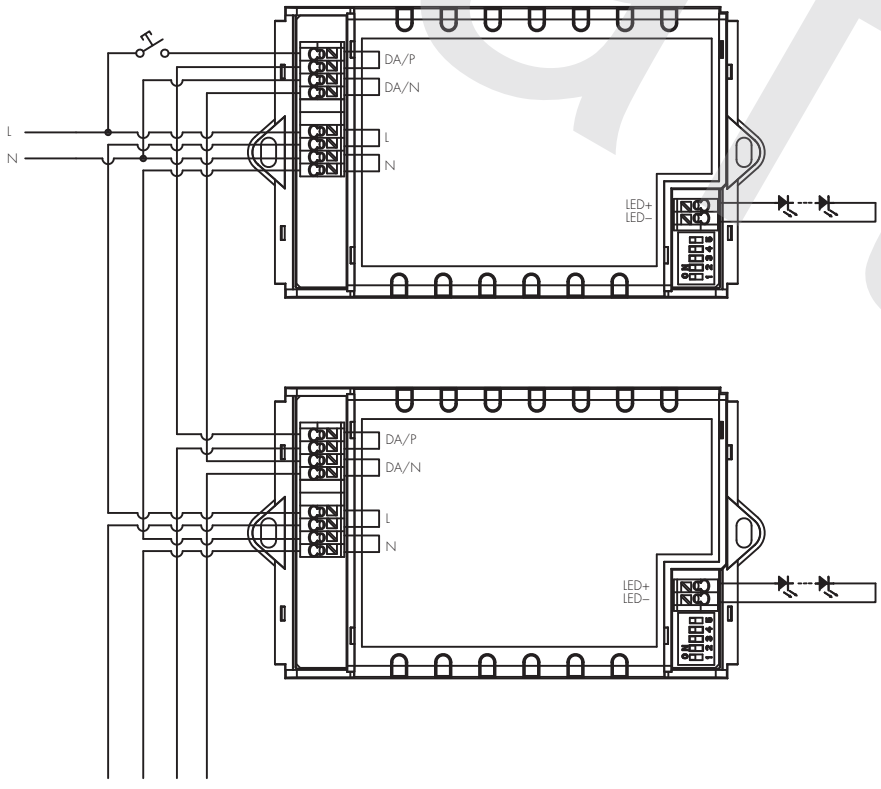


Model: HED6045/D2

Wiring Diagram For DALI



Wiring Diagram For Switch-Dim



Loading and In-rush Current

Model	HED6010	HED1025/D2	HED1040/D2	HED6045/D2
In-rush Current (Imax.)	23A	22A	25A	42A
Pulse Time	30 μs	18 μs	15 μs	30 μs

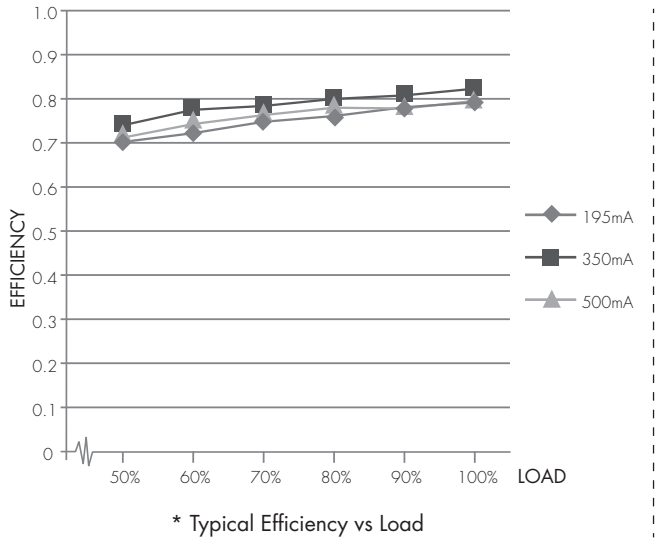
Circuit Breaker Information

Automatic circuit breaker type	B16A	B10A	B13A	B20A	B25A
HED1009/D2	176	110	143	220	276
HED6010	142	89	115	178	222
HED1025/D2	73	46	59	92	115
HED1040/D2	48	30	39	60	75
HED6045/D2	43	27	35	54	67

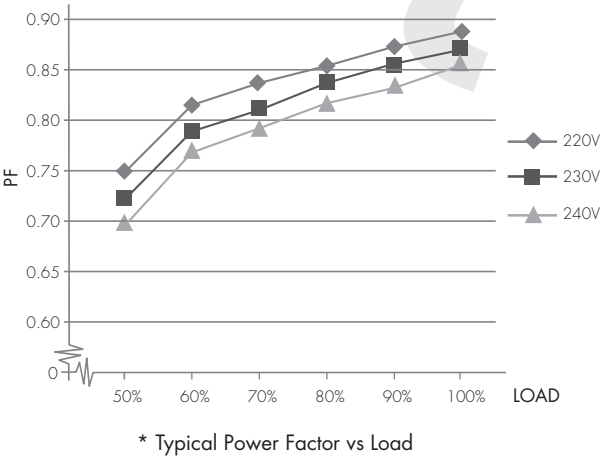
The data above is calculated according to the formula: Maximum Amount = 16/(Pn/230). In order to provide a more reliable reference in real application, the data have been revised to take 60% of the number calculated, i.e. 16/(Pn/230) x 60%. Please kindly take note that the calculation is based on ABB circuit breaker series S200. Actual values may differ due to different types of circuit breaker used and installation environment.

Performance Characteristics

HED1009/D2

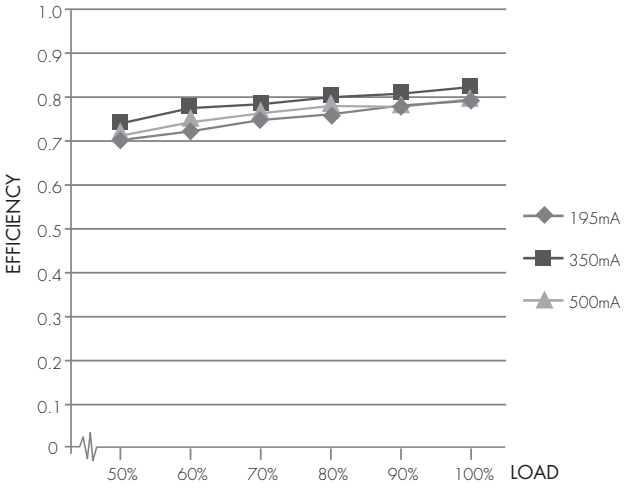


* Typical Efficiency vs Load

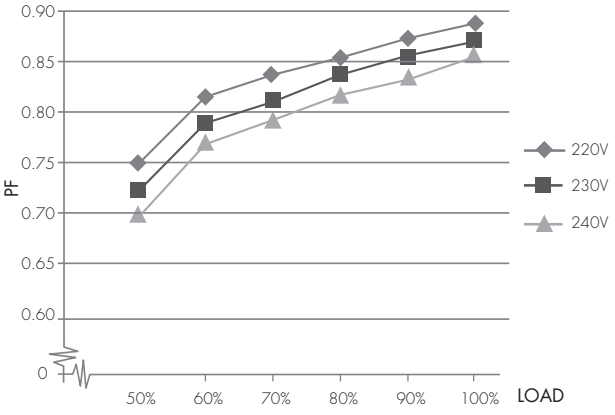


* Typical Power Factor vs Load

HED6010

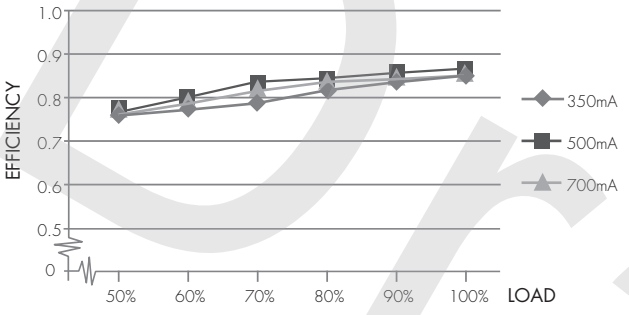


* Typical Efficiency vs Load

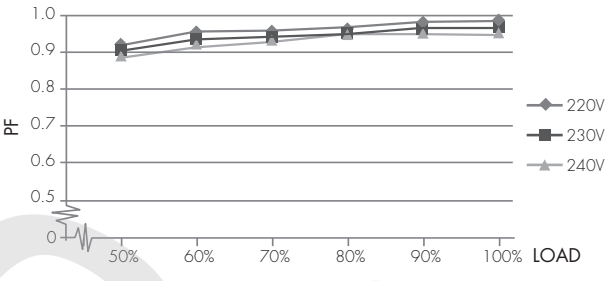


* Typical Power Factor vs Load

HED1025/D2

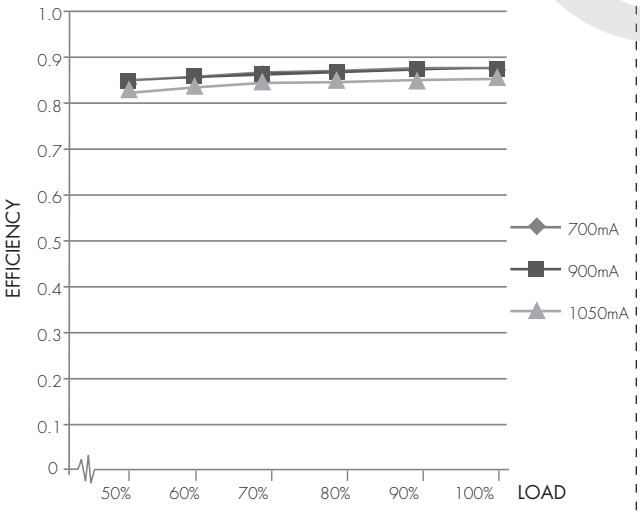


* Typical Efficiency vs Load

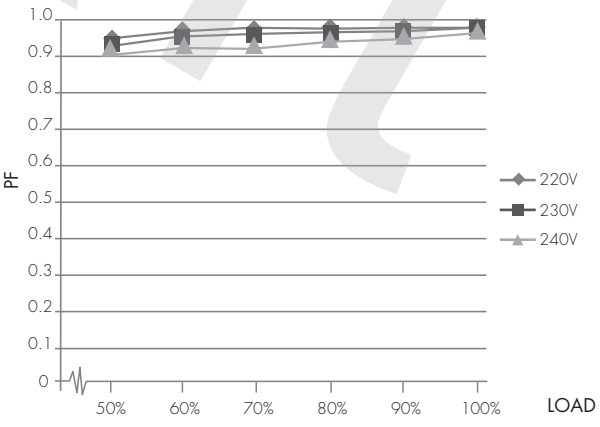


* Typical Power Factor vs Load

HED1040/D2

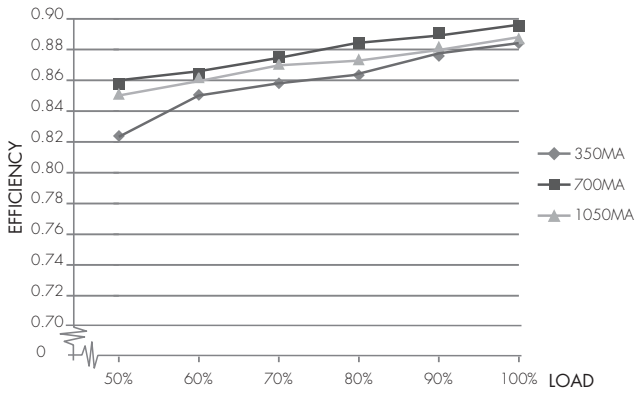


* Typical Efficiency vs Load

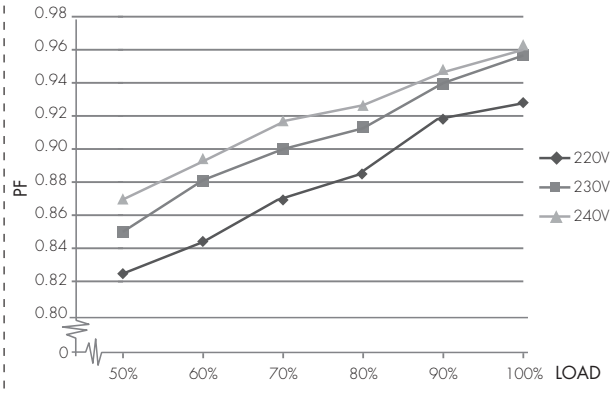


* Typical Power Factor vs Load

HED6045/D2

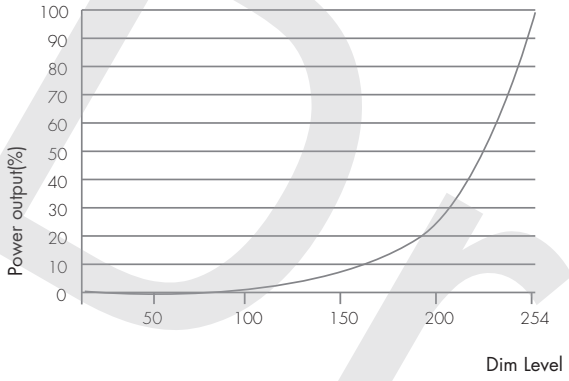


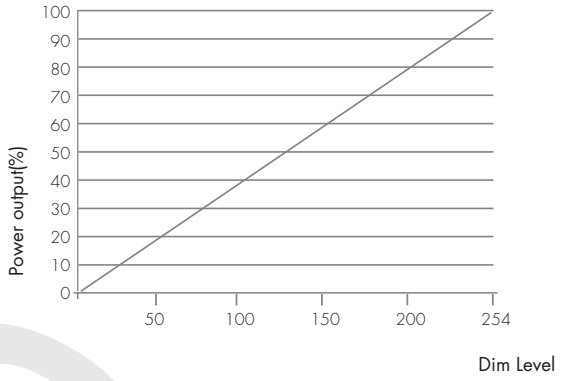
* Typical Efficiency vs Load



* Typical Power Factor vs Load

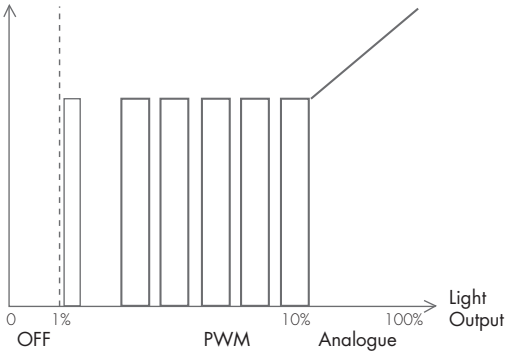
Dimming Characteristics





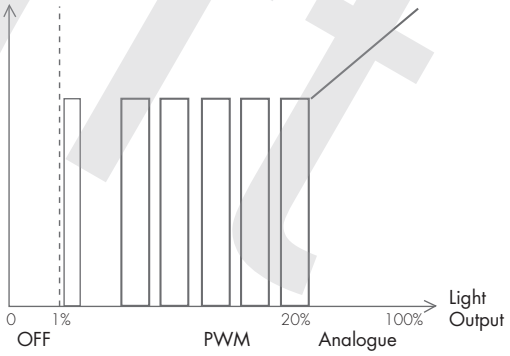
Dimming Profile

PWM
Duty Cycle (for HED1009/D2 & HED6010)



Dimming range	Dimming technique
0	OFF
1-10%	PWM
10-100%	Analogue

PWM
Duty Cycle (for HED6045/D2 only)



Dimming range	Dimming technique
0	OFF
1-20%	PWM
20-100%	Analogue

Dimming Interface Operation Notes

DALI

This series of products are supplied as '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.

Switch Action	Response
Short press (<0.4 second) Note: short press has to be longer than 0.1s, or it will be invalid.	Toggle light on / off
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

* The maximum length of the wires from push to driver should be no more than 20 meters.

Additional Information / Documents

1. Regarding precautions for LED driver installation and operation, please kindly refer to
   www.hytronik.com/download ->knowledge ->LED Drivers - Precautions for Product Installation and Operation

2. Data sheet is subject to change without notice. Please always refer to the most recent release on
   www.hytronik.com/products/bluetooth technology ->Bluetooth Drivers

3. Regarding Hytronik standard guarantee policy, please refer to
   www.hytronik.com/download ->knowledge ->Hytronik Standard Guarantee Policy