

# CINCON

2013



**LED POWER SUPPLY**  
**DC LED DRIVER**  
**LIGHT CONTROLLER**

# Cincon Power Supply LED Lighting DALI (Digital Addressable Lighting Interface)

Cincon offers a wide range of LED drivers / power supplies and DALI controllers to give you the ability to tailor your lighting system to exacting requirements.

Whether your requirements are targeted towards simplified design, energy management, scene change flexibility, ease of maintenance

or all of the above Cincon provides the high quality lighting products you require.

## What's DALI?



The Digital Addressable Lighting Interface (DALI) is a communication protocol that enables LED drivers / power supplies and their controllers to talk to each other.

DALI offers numerous advantages over analog lighting control. Wiring is simplified, control zones can be easily reconfigured without rewiring, control accuracy is superior and two-way communication can provide status of lighting components.

Digital lighting control makes for an adaptable lighting system. In an analog system, the smallest zone is a branch circuit. In a digital system, zoning is implemented using software, independent of circuits, using individual LED Drivers addresses stored in memory.

Because each ballast is individually addressable, control zones can be established that are as small as a single LED Drivers or light fixture. Small control zones increase the effectiveness of energy management programs and allow for ultimate flexibility where frequent scene changes are required.

## CINCON LED POWER SUPPLY

Features :

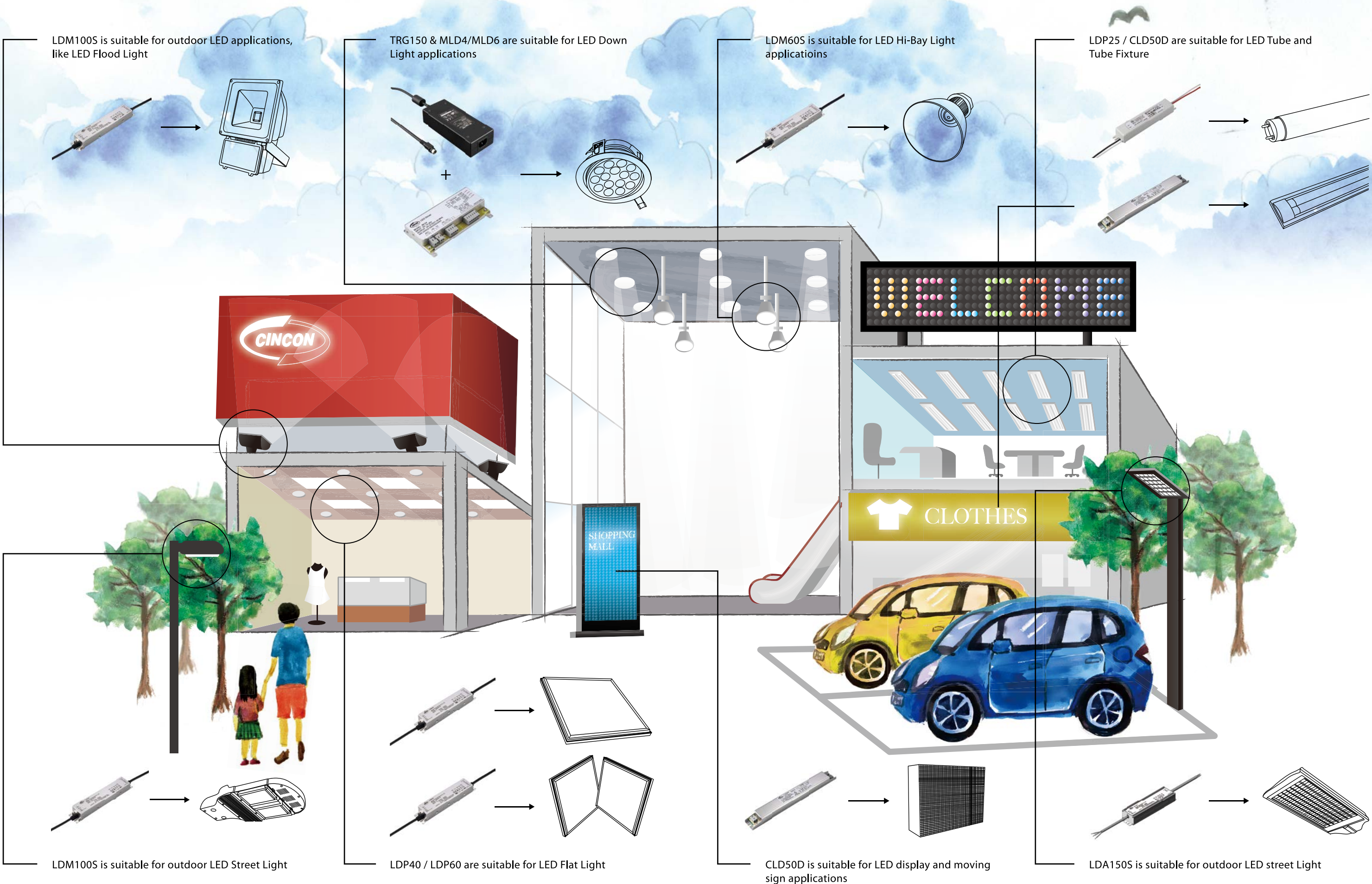
- I Comprehensive applications from output power range 25W to 150W
- I Compact Size
- I 3 Years Warranty
- I Design for Indoor and Outdoor Installation
- I Dimming Function (PWM, 1-10VDC and DALI)
- I Safety Requirement : Short Circuit / Over Load / Over Temperature Protection

## CINCON Light Controller

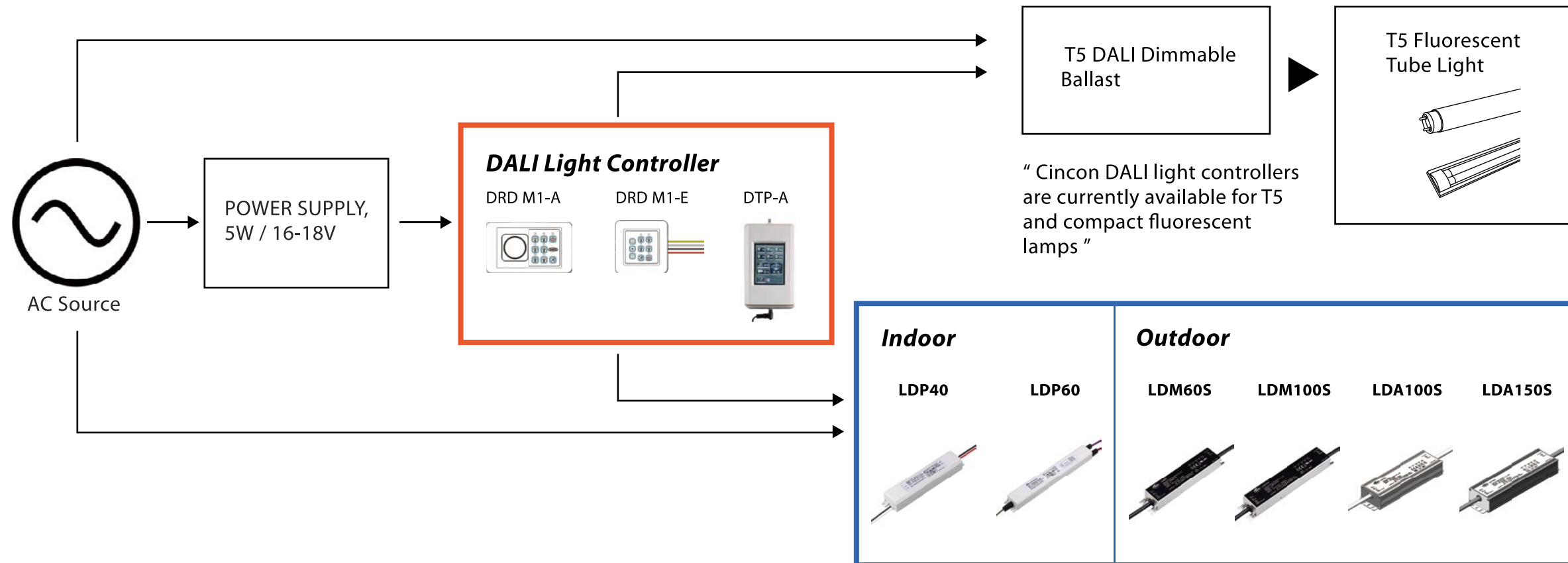
Features :

- I Designed for DALI Group And Scene Controller
- I Recall and store lighting scenes
- I Can be connected in parallel to set up multiple control points
- I Automatic synchronization between the control points
- I Maximum length of signal line 300m

Cincon LED power supplies are designed for indoor / outdoor application and used in variety of applications including LED straight lights, down lights, Hi-Bay, panel lights and street lights.







T5 DALI Dimmable Ballast

T5 Fluorescent Tube Light

" Cincon DALI light controllers are currently available for T5 and compact fluorescent lamps "

**PRODUCT INDEX**  
**3 YEARS WARRANTY**

# CINCON LED PRODUCT FAMILY

**LED Power Supply** + **DC LED Driver** + **Light Controller**

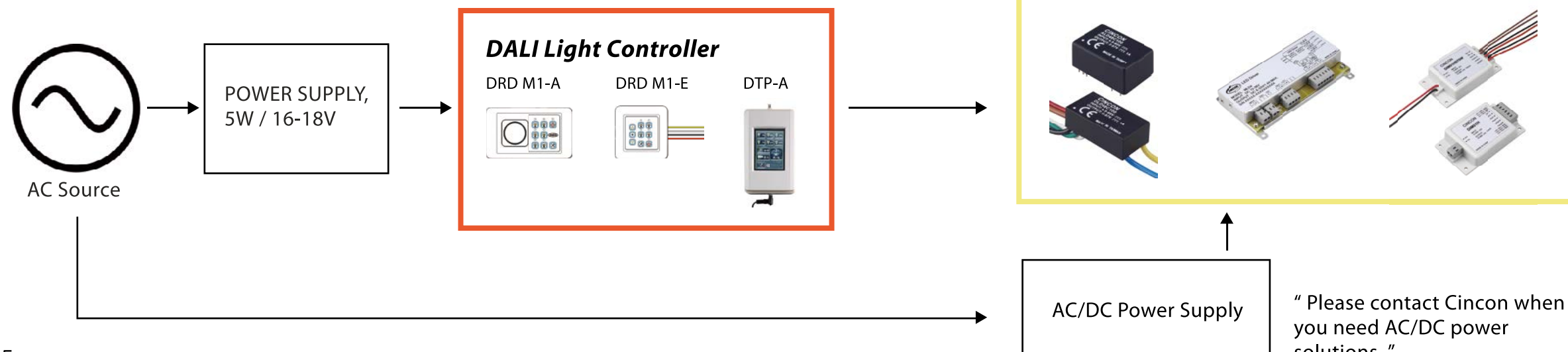
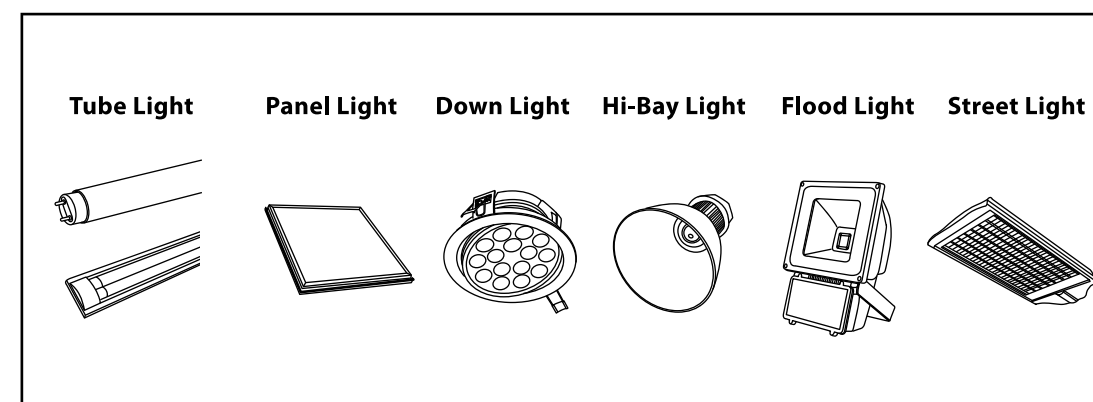
Maximum Flexibility , Minimal Size

## LED POWER SUPPLY

|                 |           |      |
|-----------------|-----------|------|
| LDP25           | 25W       | P.07 |
| LDP40           | 40W       | P.09 |
| LDP60           | 60W       | P.11 |
| CLD50D          | 50W       | P.13 |
| LDM60S          | 60W       | P.15 |
| LDM100S         | 100W      | P.17 |
| LDA100S/LDA150S | 100W/150W | P.19 |

## DC LED DRIVER

|       |      |
|-------|------|
| DIM01 | P.21 |
| DLD   | P.23 |
| ALD   | P.25 |
| MLD   | P.27 |



ALD+DLD

MLD

DIM01

AC/DC Power Supply

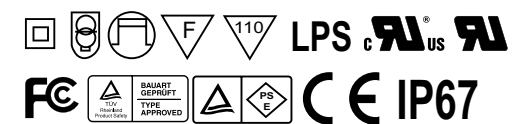
" Please contact Cincon when you need AC/DC power solutions."

## LIGHT CONTROLLER

|          |      |
|----------|------|
| DRD S1-A | P.29 |
| DRD S1-E | P.31 |
| DRD M1-A | P.33 |
| DRD M1-E | P.35 |
| DTP-A    | P.37 |

# LDP25

## 25 WATT OUTPUT LED POWER SUPPLY



- AC Input Range 90 – 305VAC
- Constant Current Output
- Active PFC > 0.9
- Low Inrush Current < 5A
- Low Profile, Height of 20mm and Width of 30mm
- Low Ripple and Noise
- Short Circuit / Over Voltage Protection
- Fully Isolated Plastic Case
- Safety UL8750, IEC/EN61347-1, IEC/EN61347-2-13
- IP 67 (Optional)
- Dimming Function: 1-10V / PWM (Optional)

### Order Information:

| LDP Series | Output Power | ID Code                                         | Out Voltage                              | ID Code                                                                                                                                  | Output Current (set when ordering)         | Input Voltage                                           | ID Code                                                 |
|------------|--------------|-------------------------------------------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| LDP        | 25           | X<br>S : Single O/P<br>A : Single O/P with IP67 | X<br>240 : 24V<br>360 : 36V<br>480 : 48V | X<br>Cable For America<br>C: No dimming<br>P: With PWM/1-10V/ dimming<br>Cable For Europe<br>E: No dimming<br>G: With PWM/1-10V/ dimming | 110 : 1100mA<br>070 : 700mA<br>053 : 530mA | X<br>A: 100-240 Vac labelled<br>B: 100-277 Vac labelled | X<br>R: 1% output ripple or<br>Blank: 10% output ripple |

| MODEL            | Input Voltage Range        | Output Rated Voltage    | Output Rated Current | No Load Output Voltage | Output Rated Power | Ripple and Noise                     | %Eff. Typ. |
|------------------|----------------------------|-------------------------|----------------------|------------------------|--------------------|--------------------------------------|------------|
| LDP25S240-xxxxxx | 90-264/305Vac <sup>1</sup> | 9/16-24Vdc <sup>3</sup> | 1100mA               | 29Vdc                  | 26.40W             | 0.24/2.0V <sub>pp</sub> <sup>3</sup> | 86%        |
| LDP25S360-xxxxxx | 90-264/305Vac <sup>1</sup> | 9/24-36Vdc <sup>3</sup> | 700mA                | 43Vdc                  | 25.20W             | 0.36/2.7V <sub>pp</sub> <sup>3</sup> | 86%        |
| LDP25S480-xxxxxx | 90-264/305Vac <sup>1</sup> | 9/32-48Vdc <sup>3</sup> | 530mA                | 56Vdc                  | 25.44W             | 0.48/4.8V <sub>pp</sub> <sup>3</sup> | 86%        |

NOTE :1. Nominal Input Voltage: 115Vac, 230/277 Vac  
LDP25XXXX-XXXXAX for the models with 90-264Vac Input (100-240Vac labelled)  
LDP25XXXX-XXXXBX for the models with 90-305Vac Input (100-277Vac labelled)

2. Ripple and Noise are measured at 20MHz bandwidth with a 0.1uF ceramic capacitor and 10uF aluminum capacitor.
3. LDP25XXXX-XXXXXR for the models with Low Ripple: Vout min 9V Typ.  
Ripple Noise =Max Output Rated Voltage \* 1%(V<sub>pp</sub>) Eff.=84% Typ.

### Specifications

#### INPUT SPECIFICATIONS:

AC Input Voltage ..... 90~264Vac/305Vac  
Frequency ..... 47 to 63Hz  
Power Factor.....115Vac/230Vac.....PF≥0.9 at 75%~100%Load  
Inrush Current .....<5A after 100μs@240Vac, Cold Start @25°C  
Leakage Current ..... 0.5mA max.

#### OUTPUT SPECIFICATIONS:

Maximum Output Voltage..... See Table  
Constant Current Accuracy...(note 1)..... ±5%max.  
Current Line Regulation .....(note 2).....±5%max.  
Current Load Regulation .....(note 3)..... ±5%max.  
Start up time..... 1 second max.  
Over Voltage Protection..... yes  
Short Circuit Protection..... Hiccup Mode, Auto Recovery

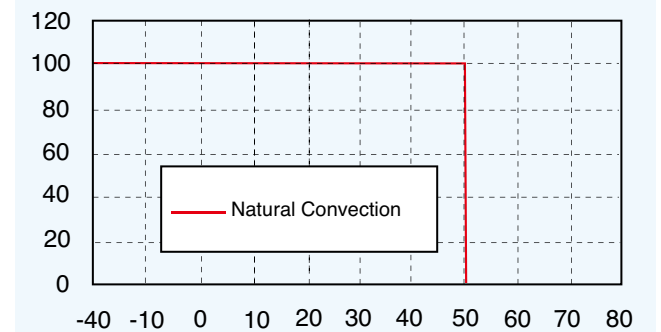
#### GENERAL SPECIFICATIONS:

Efficiency..... See Table  
Temperature Coefficient.....±0.05%/°C(0~50°C)  
Isolation voltage, Input to output..... 3.75KVac  
Isolation resistance, Input to output..... 10<sup>9</sup>Ω min.  
Operating Ambient Temperature ..... -40~50°C  
Cooling..... natural convection  
Storage Temperature..... -40~85°C  
Operating Humidity..... 20%~95%RH non-condensing.  
Operating Altitude..... Sea Level to 3000m  
MTBF,MIL-HDBK-217F(25°C Ta)..... 200K hrs.  
Dimensions..... 5.51x1.18x0.787 Inches (140.0x30.0x20.0mm)  
Weight..... 100g

#### SAFETY AND EMC :

Safety meef..... UL8750, IEC/EN61347-1  
IEC/EN61347-2-13,  
EMI..... FCC Part 18/EN55015 Class B  
EMS..... EN61547,EN61000-4-2,3,4,5,6,8,11  
EN61000-3-2 Harmonic Class C,EN61000-3-3

### LDP25 Series Derating Curve

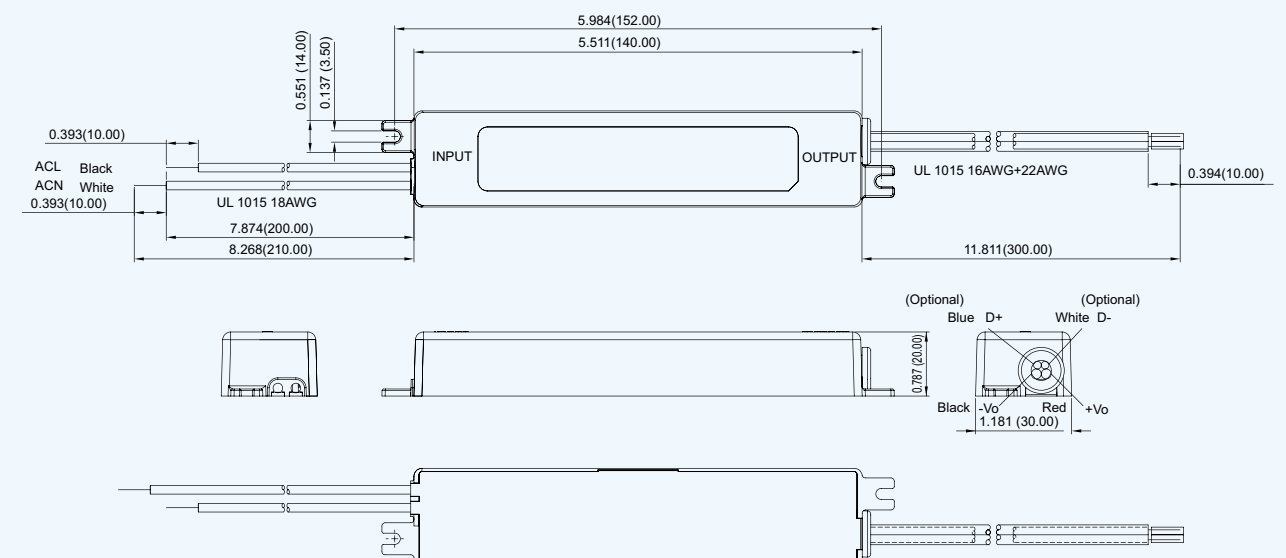


#### NOTE:

1. Current accuracy is set at nominal input voltage and full load.
2. Line regulation is measured from High Line to Low Line with full load.
3. Load regulation is measured from 75% to 100% output rated voltage max . with full load.

### Mechanical Specification

All Dimensions are in inches(mm)  
Tolerance Inches: x.xxx= ±0.02  
Millimeters: x.xx= ±0.5

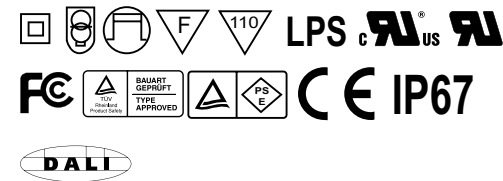


Typical at 25°C, nominal line and 75% load, unless otherwise Specified

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# LDP40

## 40 WATT OUTPUT LED POWER SUPPLY



- AC Input Range 90 – 305VAC
- Constant Current Output
- Active PFC > 0.9
- Low Inrush Current < 5A
- Low Profile, Height of 25.2mm and Width of 40mm
- Low Ripple and Noise
- Short Circuit / Over Voltage / Over Temperature Protection
- Fully Isolated Plastic Case
- Safety UL8750, IEC/EN61347-1, IEC/EN61347-2-13
- IP 67 (Optional)
- Dimming Function: 1-10V / PWM / DALI (Optional)

### Order Information:

| LDP Series | Output Power | ID Code                                        | Out Voltage                              | Dim ID Code                                                                                                                                                                                                                | Output Current (set when ordering) | Input Voltage                                           | ID Code                                                   |
|------------|--------------|------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|---------------------------------------------------------|-----------------------------------------------------------|
| LDP        | 40           | X<br>S: Single O/P<br>A : Single O/P with IP67 | X<br>240 : 24V<br>360 : 36V<br>480 : 48V | X<br>Cable For America<br>C: No dimming<br>D: With DALI dimming<br>P: With PWM/1-10V/<br>Potentiometer dimming<br>Cable For Europe<br>E: No dimming<br>F: With DALI dimming<br>G: With PWM/1-10V/<br>Potentiometer dimming | 170 : 1700mA<br>084 : 840mA        | X<br>A: 100-240 Vac labelled<br>B: 100-277 Vac labelled | X<br>R: 1% output ripple<br>or<br>Blank:10% output ripple |

| MODEL            | Input Voltage Range         | Output Rated Voltage    | Output Rated Current | No Load Output Voltage | Output Rated Power | Ripple and Noise                     | %Eff. Typ. |
|------------------|-----------------------------|-------------------------|----------------------|------------------------|--------------------|--------------------------------------|------------|
| LDP40S240-xxxxxx | 100-240/277Vac <sup>1</sup> | 9/16-24Vdc <sup>3</sup> | 1700mA               | 29Vdc                  | 40.80W             | 0.24/2.0V <sub>pp</sub> <sup>3</sup> | 86%        |
| LDP40S480-xxxxxx | 100-240/277Vac <sup>1</sup> | 9/32-48Vdc <sup>3</sup> | 840mA                | 56Vdc                  | 40.32W             | 0.48/4.8V <sub>pp</sub> <sup>3</sup> | 86%        |

NOTE : 1. Nominal Input Voltage: 115Vac, 230/277 Vac

LDP40XXX-XXXXAX for the models with 90-264Vac Input(100-240Vac labelled)

LDP40XXX-XXXXBX for the models with 90-305Vac Input(100-277Vac labelled)

2. Ripple and Noise are measured at 20MHz bandwidth with a 0.1uF ceramic capacitor and 10uF aluminum capacitor.

3. LDP40XXX-XXXXXR for the models with Low Ripple:

Vout min 9V Typ.

Ripple Noise =Max Output Rated Voltage \* 1%(Vpp)  
Eff.=84% Typ.

### Specifications

#### INPUT SPECIFICATIONS:

AC Input Voltage ..... 90~264Vac/305Vac  
Frequency ..... 47 to 63Hz  
Power Factor.....115Vac/230Vac.....PF≥0.9 at 75%~100%Load  
Inrush Current .....<5A After 100uS@240Vac, Cold Start @25°C  
Leakage Current ..... 0.75 max.

#### OUTPUT SPECIFICATIONS:

Maximum Output Voltage..... See Table  
Constant Current Accuracy...(note 1).....±5%max.  
Current Line Regulation .....(note 2).....±5%max.  
Current Load Regulation .....(note 3).....±5%max.  
Start up time..... 1 second max.  
Over Voltage Protection..... yes  
Short Circuit Protection..... Hiccup Mode, Auto Recovery  
Over Temperature Protection..... yes

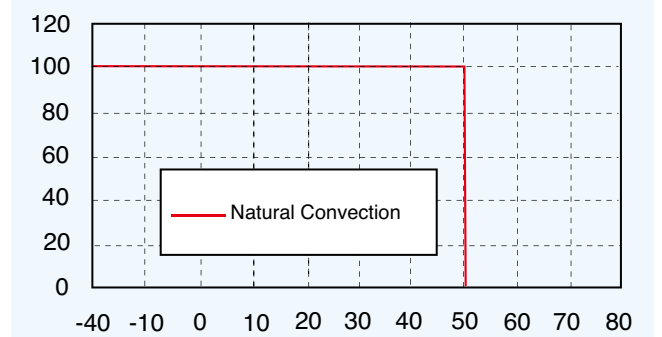
#### GENERAL SPECIFICATIONS:

Efficiency..... See Table  
Temperature Coefficient.....±0.05%/°C(0~50°C)  
Isolation voltage, Input to output.....3.75KVac  
Isolation resistance, Input to output.....10<sup>9</sup>Ω min.  
Operating Ambient Temperature .....-40~50°C  
Cooling.....natural convection  
Storage Temperature.....-40~85°C  
Operating Humidity..... 20%~95%RH non-condensing.  
Operating Altitude..... Sea Level to 3000m  
MTBF,MIL-HDBK-217F(25°C Ta) ..... 200K hrs.  
Dimensions.....6.614x1.574x0.992 inch (168.0x40.0x25.2mm)  
Weight..... 230g

#### SAFETY AND EMISSIONS:

Safety meet.....UL8750, IEC/ EN61347-1  
IEC/EN61347-2-13,  
EMI..... FCC Part 18/EN55015 Class B  
EMS..... EN61547,EN61000-4-2,3,4,5,6,8,11  
EN61000-3-2 Harmonic Class C,EN61000-3-3

### LDP40 Series Derating Curve

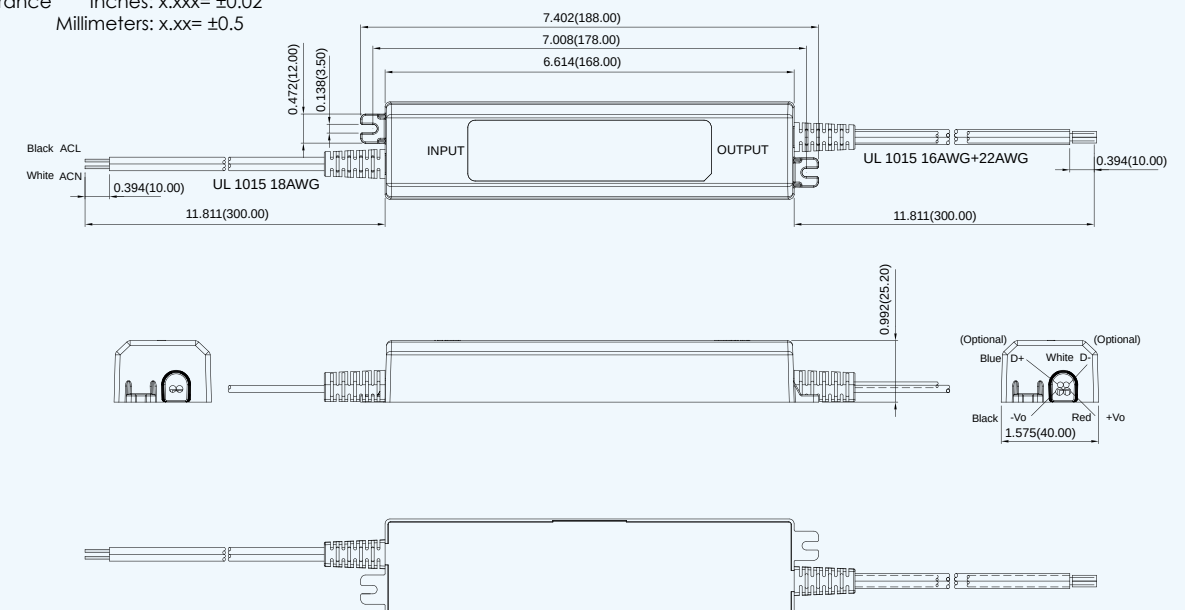


#### NOTE:

1. Current accuracy is set at nominal input voltage and full load.
2. Line regulation is measured from High Line to Low Line with full load.
3. Load regulation is measured from 75% to 100% output rated voltage max . with full load.

### Mechanical Specification

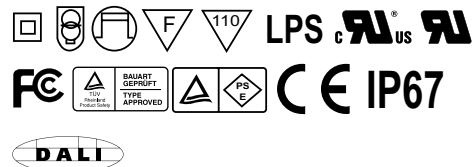
All Dimensions are in inches(mm)  
Tolerance Inches: x.xxx= ±0.02  
Millimeters: x.xx= ±0.5





# LDP60

## 60WATT OUTPUT LED POWER SUPPLY



- AC Input Range 90 – 305VAC
- 30W Dual Outputs / 60W Single Output By Paralleling
- Constant Current Output
- Active PFC > 0.9
- Low Inrush Current < 5A
- Low Profile, Height of 25.2mm and Width of 40mm
- Low Ripple and Noise
- Short Circuit / Over Voltage / Over Temperature Protection
- Fully Isolated Plastic Case
- Safety UL8750, IEC/EN61347-1, IEC/EN61347-2-13
- IP 67 (Optional)
- Dimming Function: 1-10V / PWM / DALI (Optional)

### Order Information:

| LDP Series | Output Power | ID Code                                                                               | Out Voltage                              | ID Code                                                                                                                                                                                                              | Output Current (set when ordering)                                         | Input Voltage                                           | ID Code                                                |
|------------|--------------|---------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------|
| LDP        | 60           | X<br>S: Single O/P<br>A: Single O/P with IP67<br>D: Dual O/P<br>B: Dual O/P with IP67 | X<br>240 : 24V<br>360 : 36V<br>480 : 48V | X<br>Cable For America<br>C: No dimming<br>D: With DALI dimming<br>P: With PWM/1-10V/ Potentiometer dimming<br>Cable For Europe<br>E: No dimming<br>F: With DALI dimming<br>G: With PWM/1-10V/ Potentiometer dimming | 062 : 625mA<br>083 : 833mA<br>125 : 1250mA<br>166 : 1666mA<br>250 : 2500mA | X<br>A: 100-240 Vac labelled<br>B: 100-277 Vac labelled | X<br>R: 1% output ripple or<br>Blank:10% output ripple |

| MODEL            | Input Voltage Range        | Operating Voltage Range | Output Rated Current   | Output Voltage Max. | Output Rated Power | Ripple and Noise                     | %Eff. Typ. |
|------------------|----------------------------|-------------------------|------------------------|---------------------|--------------------|--------------------------------------|------------|
| LDP60D240-XXXXXX | 90-264/305Vac <sup>1</sup> | 9/16-24Vdc <sup>3</sup> | V1 1250mA<br>V2 1250mA | 29Vdc<br>29Vdc      | 30W<br>30W         | 0.24/2.0V <sub>pp</sub> <sup>3</sup> | 86%        |
| LDP60D360-XXXXXX | 90-264/305Vac <sup>1</sup> | 9/24-36Vdc <sup>3</sup> | V1 833mA<br>V2 833mA   | 43Vdc<br>43Vdc      | 30W<br>30W         | 0.36/2.7V <sub>pp</sub> <sup>3</sup> | 86%        |
| LDP60D480-XXXXXX | 90-264/305Vac <sup>1</sup> | 9/32-48Vdc <sup>3</sup> | V1 625mA<br>V1 625mA   | 56Vdc<br>56Vdc      | 30W<br>30W         | 0.48/4.8V <sub>pp</sub> <sup>3</sup> | 86%        |
| LDP60S240-XXXXXX | 90-264/305Vac <sup>1</sup> | 9/16-24Vdc <sup>3</sup> | 2500mA                 | 29Vdc               | 60W                | 0.24/2.2V <sub>pp</sub> <sup>3</sup> | 84%        |
| LDP60S360-XXXXXX | 90-264/305Vac <sup>1</sup> | 9/24-36Vdc <sup>3</sup> | 1666mA                 | 43Vdc               | 60W                | 0.36/2.7V <sub>pp</sub> <sup>3</sup> | 84%        |
| LDP60S480-XXXXXX | 90-264/305Vac <sup>1</sup> | 9/32-48Vdc <sup>3</sup> | 1250mA                 | 56Vdc               | 60W                | 0.48/4.8V <sub>pp</sub> <sup>3</sup> | 84%        |

NOTE : 1. Nominal Input Voltage: 115Vac, 230/277Vac

LDP60XXXX-XXXXAX for the models with 90-264Vac Input (100-240Vac Labeled)

LDP60XXXX-XXXXBX for the models with 90-305Vac Input (100-277Vac Labeled)

2. Ripple and Noise are measured at 20MHz bandwidth with a 0.1uF ceramic capacitor and 10uF aluminum capacitor.

3. LDP60XXXX-XXXXXR for Low Ripple Type :

Vout min 9V Typ

Ripple Noise =Max Output Rated Voltage \* 1%(V<sub>pp</sub>)

Eff.=84% Typ.

### Specifications

#### INPUT SPECIFICATIONS:

AC Input Voltage ..... 90~264Vac/305Vac  
Frequency ..... 47 to 63Hz  
Power Factor .....115Vac/230Vac.....PF≥0.9 at 75%~100%Load  
Inrush Current .....<5A, after 100μS@240Vac, Cold Start @25°C  
Leakage Current ..... 0.75mA max.

#### OUTPUT SPECIFICATIONS:

Maximum Output Voltage..... See Table  
Constant Current Accuracy...(note 1).....±5%max.  
Current Line Regulation .....(note 2)..... ±5%max.  
Current Load Regulation .....(note 3)..... ±5%max.  
Start up time..... 1 second max.  
Over Voltage Protection..... yes  
Short Circuit Protection..... Hiccup Mode, Auto Recovery  
Over Temperature Protection..... yes

#### GENERAL SPECIFICATIONS:

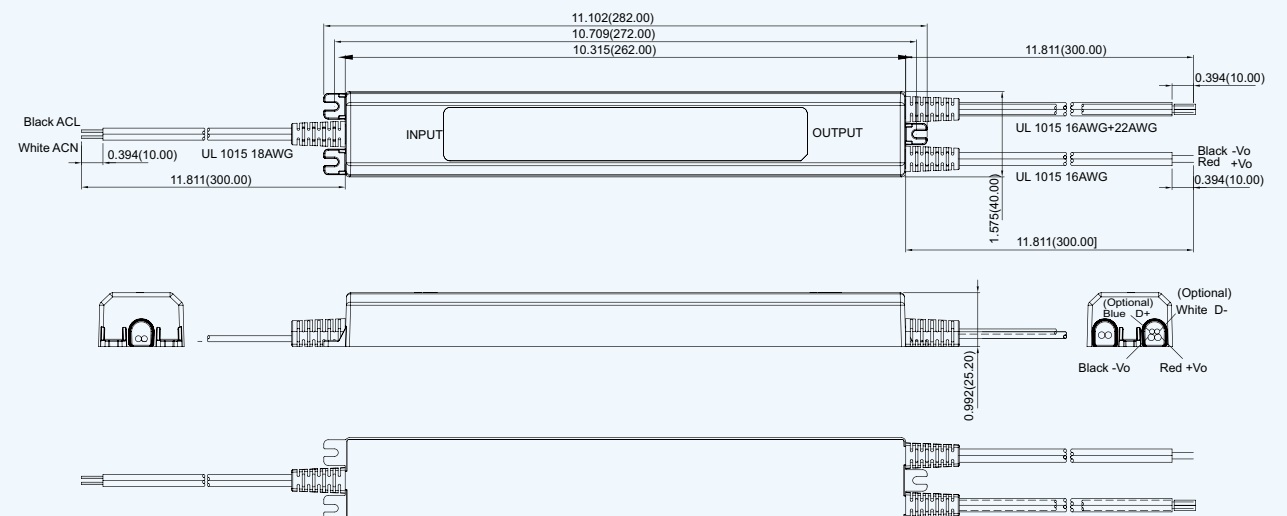
Efficiency..... See Table  
Temperature Coefficient.....±0.05%/°C(0~50°C)  
Isolation voltage, Input to output..... 3.75KVac  
Isolation resistance, Input to output..... 10<sup>9</sup>Ω min.  
Operating Ambient Temperature .....-40~50°C  
Cooling.....natural convection  
Storage Temperature..... -40~85°C  
Operating Humidity..... 20%~95%RH non-condensing.  
Operating Altitude..... Sea Level to 3000m  
MTBF,MIL-HDBK-217F(25°C Ta) ..... 200K hrs.  
Dimensions..... 10.314x1.574x0.992 inch (262.0x40.0x25.2mm)  
Weight..... 530g

#### SAFETY AND EMISSIONS:

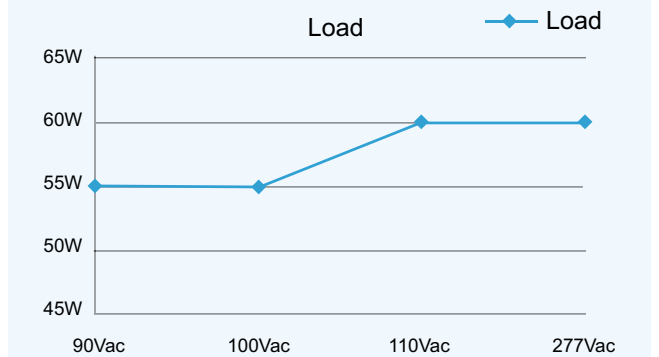
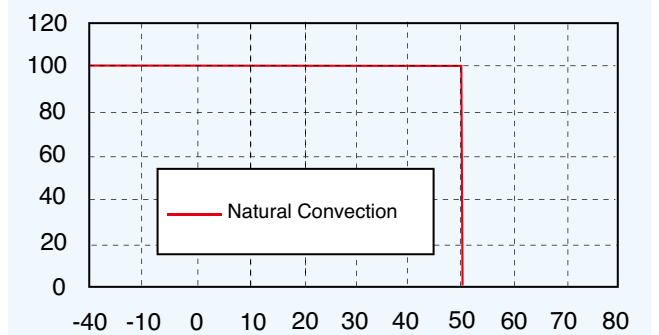
Safety meet.....UL8750, IEC/ EN61347-1  
IEC/EN61347-2-13,  
EMI..... FCC Part 18/EN55015 Class B  
EMS..... EN61547,EN61000-4-2,3,4,5,6,8,11  
EN61000-3-2 Harmonic Class C,EN61000-3-3

### Mechanical Specification

All Dimensions are in inches(mm)  
Tolerance Inches: x.xxx= ±0.02  
Millimeters: x.xx= ±0.5



### LDP60D Series Derating Curve



#### NOTE:

1. Current accuracy is set at nominal input voltage and full load.
2. Line regulation is measured from High Line to Low Line with full load.
3. Load regulation is measured from 75% to 100% output rated voltage max . with full load.

# CLD50D

## 50 WATT DUAL OUTPUT LED POWER SUPPLY



- AC Input Range 90 – 264VAC
- Constant Current Output
- Active PFC > 0.9
- Low Inrush Current < 5A
- Low Profile, Height of 24.5mm and Width of 36.1mm
- Low Ripple and Noise
- Short Circuit / Over Voltage Protection
- Fully Isolated Plastic Case
- Safety UL8750, IEC/EN61347-1, IEC/EN61347-2-13 and PSE Mark

| MODEL          | Input Voltage Range | Output Operating Voltage | Output Rated Current | Output Rated Power | Output Voltage Maximum | Ripple and Noise (max.) Note2 | Efficiency (TYPICAL) Note3 |
|----------------|---------------------|--------------------------|----------------------|--------------------|------------------------|-------------------------------|----------------------------|
| CLD50D240-C100 | 90-264Vac           | V1                       | 8-24VDC              | 1000mA             | 24W                    | 30VDC                         | 85%                        |
|                |                     | V2                       | 8-24VDC              | 1000mA             | 24W                    | 30VDC                         |                            |
| CLD50D420-C060 | 90-264Vac           | V1                       | 18-42VDC             | 600mA              | 25.2W                  | 48VDC                         | 85%                        |
|                |                     | V2                       | 18-42VDC             | 600mA              | 25.2W                  | 48VDC                         |                            |

NOTE :1.Nominal Input Voltage: 100Vac, 230Vac

2.Ripple and Noise are measured at rated current, 100Vac, Vo=36Vdc(CLD50D420), 21V(CLD50D240) and 20MHz bandwidth with a 0.1uF ceramic capacitor.

3.Measured at rated current, 100Vac, Vo=36Vdc(CLD50D420), 21Vdc(CLD50D240)

### Specifications

#### INPUT SPECIFICATIONS:

AC Input Voltage ..... 90~264Vac  
Frequency ..... 50 to 60Hz  
Power Factor..... PF $\geq$ 0.9 at 85%~100%Load  
Inrush Current ..... 230Vac.....Cold start ..... 20A max.  
After 400us <5A  
Leakage Current ..... 3.5mA max.

#### OUTPUT SPECIFICATIONS:

Maximum Output Voltage....(note1)..... See Table.  
Constant Current Accuracy.....  $\pm$ 5%max.  
Current Line Regulation....(note 2).....  $\pm$ 5%max.  
Current Load Regulation....(note 3).....  $\pm$ 5%max.  
Over Voltage Protection..... Voltage Clamp by TVS  
Short Circuit Protection..... Constant Current with Auto Recovery  
Start up time ..... 100Vac..... 1.6 second max.

#### GENERAL SPECIFICATIONS:

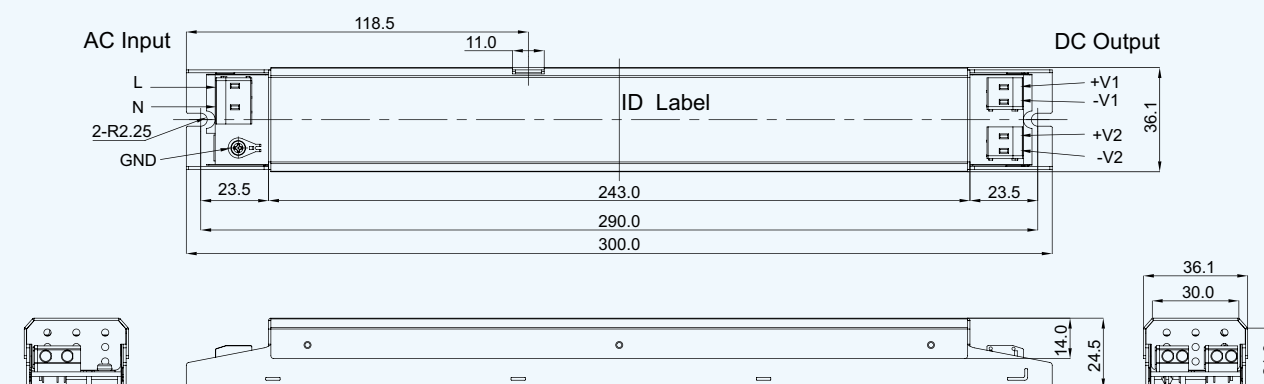
Efficiency..... See Table  
Temperature Coefficient.....  $\pm$ 0.03%/°C(0~50°C)  
Isolation voltage, Input to output..... 3.75KVac  
Input to Ground..... 1.5KVac  
Isolation resistance, Input to output.....  $10^8\Omega$  min.  
Operating Ambient Temperature ..... -20~50°C  
Cooling..... natural convection  
Storage Temperature..... -40~85°C  
Operating Humidity..... 10%~80%RH non-condensing.  
Operating Altitude..... Sea Level to 10000feet  
Vibration..... 0~500Hz, 2G 60min./1 cycle, period for 3hours, 3 axes  
Shock..... 30g peak, half sine, 6 axes  
MTBF,MIL-HDBK-217F (25°C)..... 200Khrs. typ.

#### SAFETY AND EMISSIONS:

Safety meet..... UL8750, IEC/EN61347-1  
IEC/EN61347-2-13  
EMI..... EN55022/EN55015 Class B  
EMS..... EN61547,EN61000-4-2,3,4,5,6,8,11  
EN61000-3-2 Harmonic Class C,EN61000-3-3  
Dimensions..... 300x36.1x24.5 mm  
Weight..... 230g.  
Case Material..... Aluminum

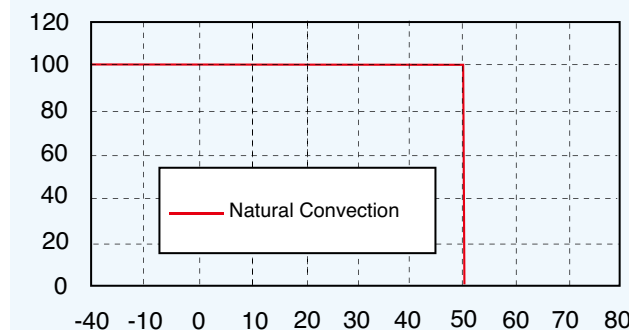
### CASE Miniature

All Dimensions in mm  
Tolerance Millimeters:x.x=  $\pm$ 0.5,x.xx=  $\pm$ 0.25



Input Connector: WAGO 235-502 2Pin or Equivalent  
Output Connector: WAGO 235-402 2Pin or Equivalent

### CLD50 Derating Curve



### Ordering information

| CLD50DXX - | X                   | XXX            |
|------------|---------------------|----------------|
| Model No.  | Output Type         | Output Current |
|            | C: Constant Current | 100 : 1000mA   |
|            | D: DALI Dimming     | 060 : 600mA    |

#### NOTE:

1. Output voltage is measured at no load.
2. Current Line regulation is measured from High Line to Low Line.
3. Current Load regulation is measured from high to low operating voltage.



LDM60S

60 WATT SINGLE OUTPUT  
AC-DC LED DRIVER



Ordering information

| LDM60SXXX - XX |                                                                                                                          |
|----------------|--------------------------------------------------------------------------------------------------------------------------|
| 01:            | Constant Current Mode<br>No dimming<br>No adjustment for output voltage and output current                               |
| 02:            | Constant Current Mode<br>No dimming<br>With adjustment for output voltage and output current                             |
| 03:            | Constant Current Mode<br>Dimming: 1~10Vdc or PWM and Resistance<br>No adjustment for output voltage and output current   |
| 03A:           | Constant Current Mode<br>Dimming: 1~10Vdc or PWM and Resistance<br>With adjustment for output voltage and output current |
| 04:            | Constant Current Mode<br>Dimming: DALI<br>No adjustment for output voltage and output current                            |
| 04A:           | Constant Current Mode<br>Dimming: DALI<br>With adjustment for output voltage and output current                          |

| MODEL     | Output Voltage | Output Current<br>Note.6 | Ripple<br>(mV p-p)<br>Note.1 | Voltage Accuracy<br>Note.2 | Line Regulation<br>Note.3 | Load Regulation<br>Note.4 | Constant Current Region. | Current Adj. Rang<br>(Optional)<br>Note.5 | Voltage Adj. Rang<br>(Optional)<br>Note.5 | %EFF.<br>(Typ.)<br>Note |
|-----------|----------------|--------------------------|------------------------------|----------------------------|---------------------------|---------------------------|--------------------------|-------------------------------------------|-------------------------------------------|-------------------------|
| LDM60S120 | 12V            | 5.00A                    | 120mV                        | ±1%                        | ±1%                       | ±2%                       | 6.5V~12V                 | 3A~5A                                     | 10.8V~13.2V                               | 87%                     |
| LDM60S240 | 24V            | 2.50A                    | 240mV                        | ±1%                        | ±1%                       | ±2%                       | 13V~24V                  | 1.5A~2.5A                                 | 21.6V~26.4V                               | 88%                     |
| LDM60S360 | 36V            | 1.67A                    | 360mV                        | ±1%                        | ±1%                       | ±2%                       | 19V~36V                  | 1.0A~1.67A                                | 32.4V~39.6V                               | 89%                     |
| LDM60S480 | 48V            | 1.25A                    | 480mV                        | ±1%                        | ±1%                       | ±2%                       | 26V~48V                  | 0.75A~1.25A                               | 43.2V~52.8V                               | 90%                     |

- AC Input Range 90 – 305VAC
- Max Output Power 60W
- Active PFC Function
- Short Circuit / Over Voltage / Over Current / Over Temperature Protection
- Safety UL8750, IEC/EN61347-1, IEC/EN61347-2-13 and VDE
- Dimming Input Range 1 - 100%
- IP 67
- Dimming Function:  
1-10V / Resistance / PWM / DALI (Optional)



Specifications

**INPUT SPECIFICATIONS:**  
Voltage ..... 90~305Vac  
Frequency ..... 47 to 63Hz  
Inrush Current ..... 70A max. @240Vac, Cold Start @25°C  
Conducted EMI ..... CISPR/FCC Class B  
Power Factor ..... PF> = 0.9  
Leakage Current..... 1mA max.

**OUTPUT SPECIFICATIONS:**  
Holdup Time ..... 10ms typ. @115Vac  
Short Circuit Protection .....Hiccup Mode (Auto Recover)  
Temperature Coefficient ..... ±0.05% /°C  
Over Voltage Protection ..... TVS Component to Clamp  
Over current Limit.....constant current mode  
Altitude..... 2000 m  
Startup time..... 2.5s typ.  
Rise time..... 50ms typ.  
MTBF..... MIL-HDBK-217F, GB, at 25°C /115VAC 150K hrs typ.  
Vibration..... 15~2000Hz 4G period for 60min,each along X Y Z axes

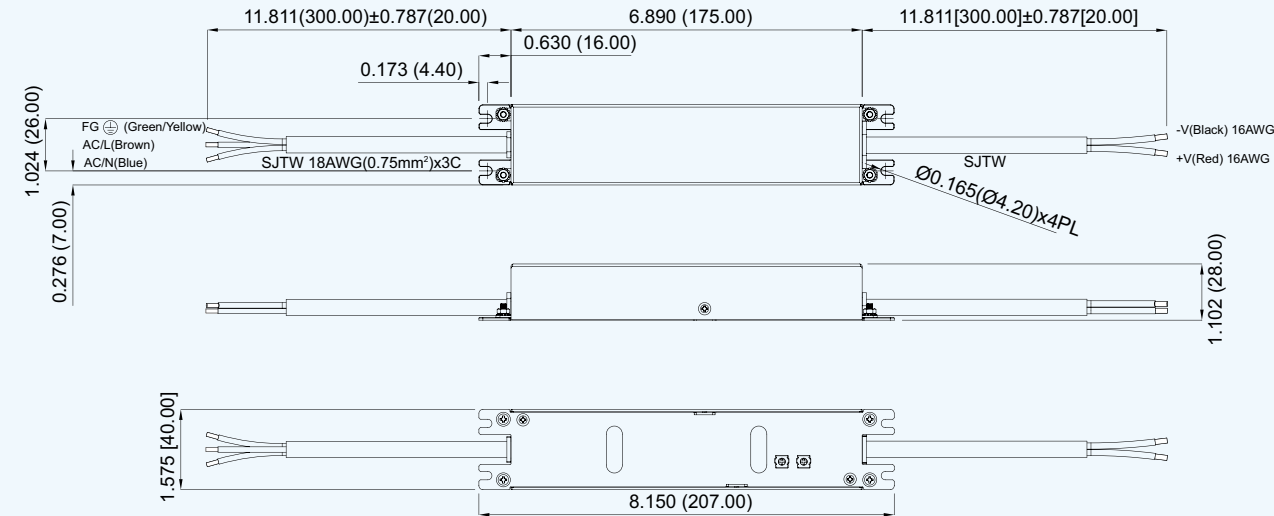
**SAFETY AND EMC :**  
Emission and Immunity:.....EN55015 ,CISPR22  
EN61547 ,EN61000-3-2, EN61000-3-3  
Isolation Voltage..... I/P-O/P 3750VAC  
Surge..... ±4KV  
Safety: ..... UL8750, CN61347-1, EN61347-2-13  
Harmonic Current..... EN61000-3-2 Class C (>60% load )  
Isolation Resistance..... 100MΩ min

**GENERAL SPECIFICATIONS:**  
Operating Temperature ..... -40~70°C(see derating curve)  
Storage Temperature ..... -40~85°C  
Cooling ..... Natural Convection

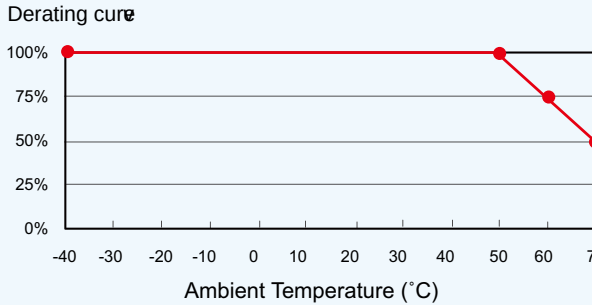
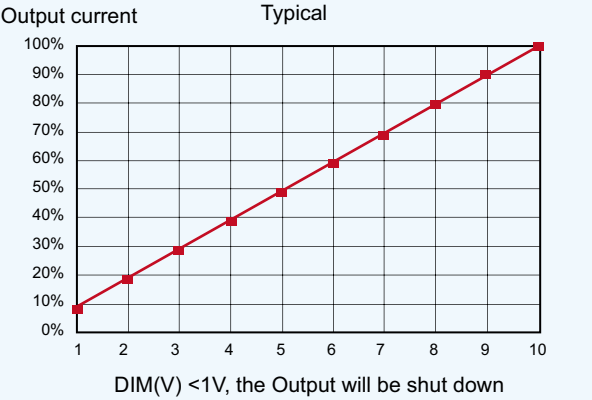
**MECHANICAL CHARACTERISTICS:**  
Dimensions ..... 1.5748x8.149x1.1023 Inches (40x207x28mm)  
Weight ..... 454g Typical

Mechanical Specification

All Dimensions in inches(mm)  
Tolerance Inches: x.xxx= ±0.02  
Millimeters: x.xx= ±0.5



1~10V Dimming function for output current curve:



- NOTE:**
1. Add a 0.1uF ceramic capacitor and a 10uF E.L. capacitor to output for Ripple & Noise measuring @20MHz BW.
  2. Voltage accuracy is set of 90% rated current.
  3. Line regulation is measured from High Line to Low Line with 90%. Rated current.
  4. Load regulation is measured from 90% to 10% Rated current.
  5. Can be adjusted by internal potentiometer.
  6. Output Constant Current Accuracy ±5%.
  7. IP67 for model:LDM60SXXX-01, LDM60SXXX-03, LDM60SXXX-04  
IP65 for model: LDM60SXXX-02 , LDM60SXXX-03A, LDM60SXXX-04A.
  8. Efficiency is measured 95% rated power at Vin=230VAC.

LDM100S

100 WATT SINGLE OUTPUT  
AC-DC LED DRIVER



Ordering information

| LDM100SXXX - XX |                                                                                                                         |
|-----------------|-------------------------------------------------------------------------------------------------------------------------|
| 01:             | Constant Current Mode<br>No dimming<br>No adjustment for output voltage and output current                              |
| 02:             | Constant Current Mode<br>No dimming<br>With adjustment for output voltage and output current                            |
| 03:             | Constant Current Mode<br>Dimming:1~10Vdc or PWM and Resistance<br>No adjustment for output voltage and output current   |
| 03A:            | Constant Current Mode<br>Dimming:1~10Vdc or PWM and Resistance<br>With adjustment for output voltage and output current |
| 04:             | Constant Current Mode<br>Dimming: DALI<br>No adjustment for output voltage and output current                           |
| 04A:            | Constant Current Mode<br>Dimming: DALI<br>With adjustment for output voltage and output current                         |

| MODEL      | Output Voltage | Output Current(A) | Ripple (mV p-p) | Voltage Accuracy | Line Regulation | Load Regulation | Constant Current Region | Current Adj. Rang (Optional) | Voltage Adj. Rang (Optional) | %EFF (typ.) |
|------------|----------------|-------------------|-----------------|------------------|-----------------|-----------------|-------------------------|------------------------------|------------------------------|-------------|
|            |                | Note.6            | Note.1          | Note.2           | Note.3          | Note.4          |                         | Note.5                       | Note.5                       | Note.8      |
| LDM100S120 | 12V            | 8.34A             | 120mV           | ±1%              | ±1%             | ±2%             | 6.5V~12V                | 5.3A~8.34A                   | 10.8V~13.2V                  | 88%         |
| LDM100S240 | 24V            | 4.17A             | 240mV           | ±1%              | ±1%             | ±2%             | 13V~24V                 | 2.6A~4.17A                   | 21.6V~26.4V                  | 89%         |
| LDM100S360 | 36V            | 2.78A             | 360mV           | ±1%              | ±1%             | ±2%             | 19V~36V                 | 1.74A~2.78A                  | 32.4V~39.6V                  | 90%         |
| LDM100S480 | 48V            | 2.08A             | 480mV           | ±1%              | ±1%             | ±2%             | 26V~48V                 | 1.3A~2.08A                   | 43.2V~52.8V                  | 90%         |

- AC Input Range 90 – 305VAC
- Max Output Power 100W
- Active PFC Function
- Short Circuit / Over Voltage / Over Current / Over Temperature Protection
- Safety UL8750, IEC/EN61347-1, IEC/EN61347-2-13 and VDE
- Dimming Input Range 1 - 100%
- IP 67
- Dimming Function:  
1-10V / Resistance / PWM / DALI (Optional)



Specifications

**INPUT SPECIFICATIONS:**  
Voltage ..... 90~305Vac  
Frequency ..... 47 to 63Hz  
Inrush Current .....75A max. @240Vac, Cold Start @25°C  
Conducted EMI ..... CISPR/FCC Class B  
Power Factor ..... PF> = 0.9  
Leakage Current..... 1mA max.

**OUTPUT SPECIFICATIONS:**  
Holdup Time ..... 12ms typ. @115Vac  
Short Circuit Protection .....Hiccup Mode (Auto Recover)  
Temperature Coefficient ..... ±0.05% /°C  
Over Voltage Protection ..... TVS Component to Clamp  
Over current Limit..... Constant Current mode  
Altitude..... 2000 m  
Startup time.....2.1s typ.  
Rise time.....30ms typ.  
Humidity ..... 95% RH max. Non condensing  
MTBF..... MIL-HDBK-217F, GB, at 25°C /115VAC...160K hrs typ.  
Vibration..... 15~2000Hz 4G period for 60min,each along X Y Z axes

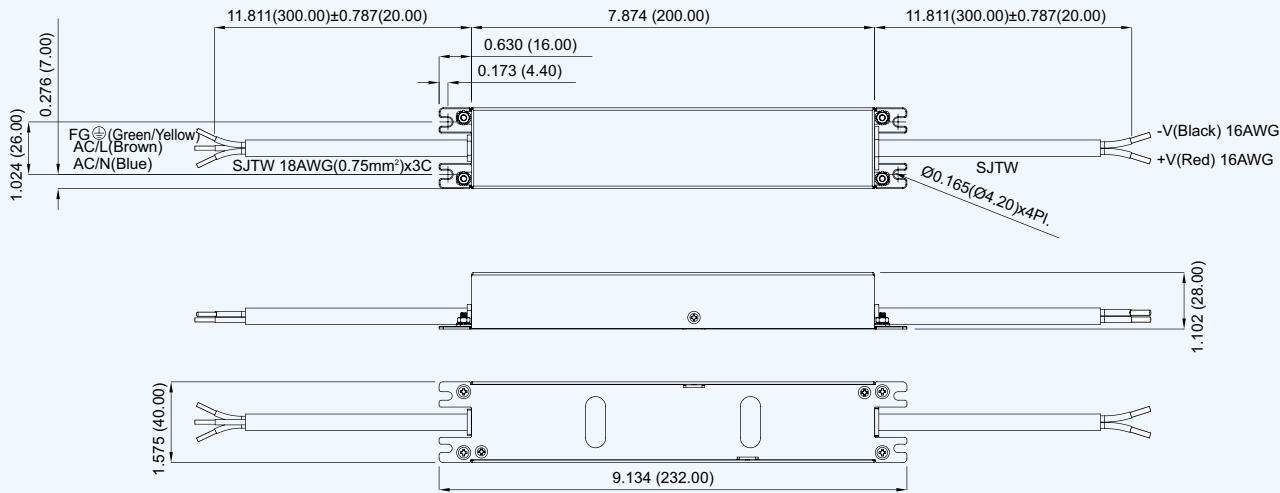
**SAFETY AND EMC :**  
Emission and Immunity:.....EN55015 ,CISPR22  
EN61547,EN61000-3-2, EN61000-3-3  
Isolation Voltage.....I /P-O/P 3750VAC  
Surge.....±4KV  
Safety: ..... UL8750, EN61347-1,EN61347-2-13  
Harmonic Current..... EN61000-3-2 Class C (>60% load )  
Isolation Resistance..... 100MΩ min

**GENERAL SPECIFICATIONS:**  
Operating Temperature ..... -40~70°C(see derating curve)  
Storage Temperature ..... -40~85°C  
Cooling ..... Natural Convection

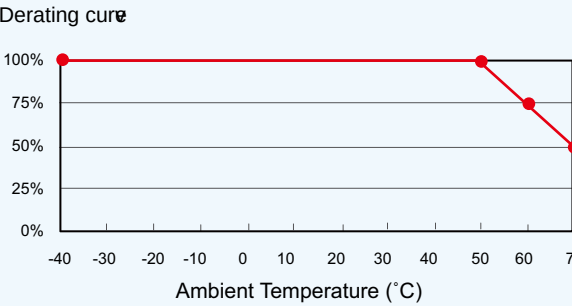
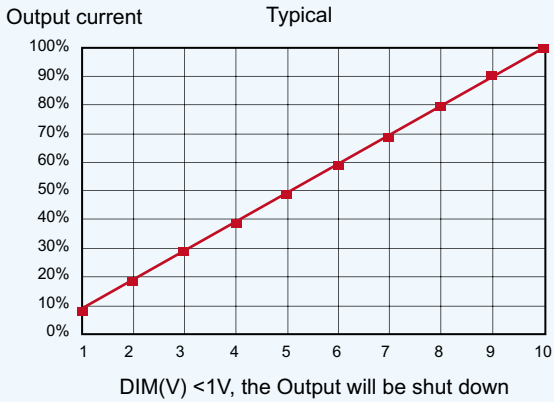
**MECHANICAL CHARACTERISTICS:**  
Dimensions ..... 1.5748x9.1338x1.1023nches (40x232x28mm)  
Weight ..... 504g Typical

LDM100S Series

All Dimensions are in inches(mm)  
Tolerance Inches: x.xxx= ±0.02  
Millimeters: x.xx= ±0.5



1~10V Dimming function for output current curve:



- NOTE:**
1. Add a 0.1uF ceramic capacitor and a 10uF E.L. capacitor to output for Ripple & Noise measuring @20MHz BW.
  2. Voltage accuracy is set of 90% rated current.
  3. Line regulation is measured from High Line to Low Line with 90% Rated current.
  4. Load regulation is measured from 90% to 10% Rated current.
  5. Can be adjusted by internal potentiometer.
  6. Output Constant Current Accuracy ±5%.
  7. IP67 for model:LDM100SXXX-01, LDM100SXXX-03, LDM100SXXX-04  
IP65 formodel:LDM100SXXX-02,LDM100SXXX-03A,LDM100SXXX-04A.
  8. Efficiency is measured 95% rated power at Vin=230VAC.

Coming  
Soon

**LDA100S** 100W Single Output / 5 Years Warranty



- AC Input Range 90 – 305VAC
- Active PFC Function
- Short Circuit / Over Voltage / Over Current / Over Temperature Protection
- Safety UL8750, IEC/EN61347-1, IEC/ EN61347-2-13
- IP 67
- Dimming Function: 1-10V / Resistance / PWM / DALI (Optional)
- Dimming Input Range 1 - 100%

| MODEL      | OUTPUT VOLTAGE | RATED CURREN | RIPPLE & NOISE<br>Note.1 | VOLTAGE ACCURACY<br>Note.2 | LINE REGULATION<br>Note.3 | LOAD REGULATION<br>Note.4 | Contstant Current Region | EFF.<br>Note.5 |
|------------|----------------|--------------|--------------------------|----------------------------|---------------------------|---------------------------|--------------------------|----------------|
| LDA100S24  | 24V            | 4.16A        | 1%                       | ±1%                        | ±1%                       | ±2%                       | 18~24V                   | 90%            |
| LDA100S36  | 36V            | 2.77A        | 1%                       | ±1%                        | ±1%                       | ±2%                       | 27~36V                   | 91%            |
| LDA100S48  | 48V            | 2.08A        | 1%                       | ±1%                        | ±1%                       | ±2%                       | 36~48V                   | 91%            |
| LDA100S60  | 60V            | 1.66A        | 1%                       | ±1%                        | ±1%                       | ±2%                       | 48~60V                   | 92%            |
| LDA100S107 | 107V           | 0.93A        | 1%                       | ±1%                        | ±1%                       | ±2%                       | 75~107V                  | 92%            |
| LDA100S142 | 142V           | 0.70A        | 1%                       | ±1%                        | ±1%                       | ±2%                       | 107~142V                 | 92%            |
| LDA100S214 | 214V           | 0.47A        | 1%                       | ±1%                        | ±1%                       | ±2%                       | 150~214V                 | 92%            |

**LDA150S** 150W Single Output / 5 Years Warranty



- AC Input Range 90 – 305VAC
- Active PFC Function
- Short Circuit / Over Voltage / Over Current / Over Temperature Protection
- Safety UL8750, IEC/EN61347-1, IEC/ EN61347-2-13
- IP 67
- Dimming Function: 1-10V / Resistance / PWM / DALI (Optional)
- Dimming Input Range 1 - 100%

| MODEL      | OUTPUT VOLTAGE | RATED CURREN | RIPPLE & NOISE<br>Note.1 | VOLTAGE ACCURACY<br>Note.2 | LINE REGULATION<br>Note.3 | LOAD REGULATION<br>Note.4 | Contstant Current Region | EFF.<br>Note.5 |
|------------|----------------|--------------|--------------------------|----------------------------|---------------------------|---------------------------|--------------------------|----------------|
| LDA150S240 | 24V            | 6.25A        | 1%                       | ±1%                        | ±1%                       | ±2%                       | 18~24V                   | 90%            |
| LDA150S480 | 48V            | 3.125A       | 1%                       | ±1%                        | ±1%                       | ±2%                       | 36~48V                   | 91%            |
| LDA150S107 | 107V           | 1.4A         | 1%                       | ±1%                        | ±1%                       | ±2%                       | 75~107V                  | 91%            |
| LDA150S142 | 142V           | 1.05A        | 1%                       | ±1%                        | ±1%                       | ±2%                       | 107~142V                 | 92%            |
| LDA150S214 | 214V           | 0.7A         | 1%                       | ±1%                        | ±1%                       | ±2%                       | 150~214V                 | 92%            |



# DIM01

## DC/DC LED DRIVER WITH DALI INTERFACE MODULE



- For DALI systems
- Provides Two Sets of LED Lighting Synchronization Controls
- Adjustable Output Current
- Waterproof Design



| DALI installation cable    |                                | MODEL  | CN3,CN4                                               | Vout1,Vout2 Output Rated Current |  |  |
|----------------------------|--------------------------------|--------|-------------------------------------------------------|----------------------------------|--|--|
| Cable length               | min. cable cross-section (AWG) |        |                                                       |                                  |  |  |
| up to 100 m (325 ft)       | 0.5 mm <sup>2</sup> (#20)      | DIM01L | PIN1,PIN6 Short<br>PIN2,PIN5 Short<br>PIN3,PIN4 Short | 1000mA<br>700mA<br>550mA         |  |  |
| 100...150 m (325...492 ft) | 0.75 mm <sup>2</sup> (#18)     | DIM01H | PIN1,PIN6 Short<br>PIN2,PIN5 Short                    | 700mA<br>550mA                   |  |  |
| 150...300 m (492...984 ft) | 1.5 mm <sup>2</sup> (#16)      |        | PIN3,PIN4 Short                                       | 350mA                            |  |  |

| MODEL      | Input Voltage Range Note.1 | Output Operating Voltage Note.1  | Output Rated Current           | Output Rated Power (max.) | Ripple and Noise(max.) Note.5 | Efficiency (Typical) Note.6 |
|------------|----------------------------|----------------------------------|--------------------------------|---------------------------|-------------------------------|-----------------------------|
| DIM01L     | 12-30Vdc                   | Vout1=10-28Vdc<br>Vout2=10-28Vdc | 1000 or 700 or 550mA<br>Note.7 | 28W                       | 500mVpp                       | 93%                         |
| DIM01H     | 12-60Vdc                   | Vout1=10-58Vdc<br>Vout2=10-58Vdc | 700 or 550 or 350mA<br>Note.7  | 40.6W                     | 500mVpp                       | 95%                         |
| DIM01H100W | 12-60Vdc                   | Vout1=10-58Vdc<br>Vout2=10-58Vdc | 1000mA                         | 58W                       | 500mVpp                       | 95%                         |
| DIM01H070W | 12-60Vdc                   | Vout1=10-58Vdc<br>Vout2=10-58Vdc | 700mA                          | 40.6W                     | 500mVpp                       | 95%                         |
| DIM01H055W | 12-60Vdc                   | Vout1=10-58Vdc<br>Vout2=10-58Vdc | 550mA                          | 31.9W                     | 500mVpp                       | 95%                         |
| DIM01H035W | 12-60Vdc                   | Vout1=10-58Vdc<br>Vout2=10-58Vdc | 350mA                          | 20.3w                     | 500mVpp                       | 95%                         |

Specifications are subject to change without notice.

### Specifications

#### INPUT SPECIFICATIONS:

Input Voltage .....DIM01H.....12~60Vdc  
DIM01L.....12~30Vdc  
Input Surge Voltage(1second) ..... 65Vdc max.

#### OUTPUT SPECIFICATIONS:

Constant Current Accuracy(Note.2).....±5% max.  
Current Line Regulation(Note.3).....±5% max.  
Current Load Regulation(note.4).....±5% max.  
Short Circuit Protection .....Auto Recovery  
Start up time..... 10ms max.

#### GENERAL SPECIFICATIONS:

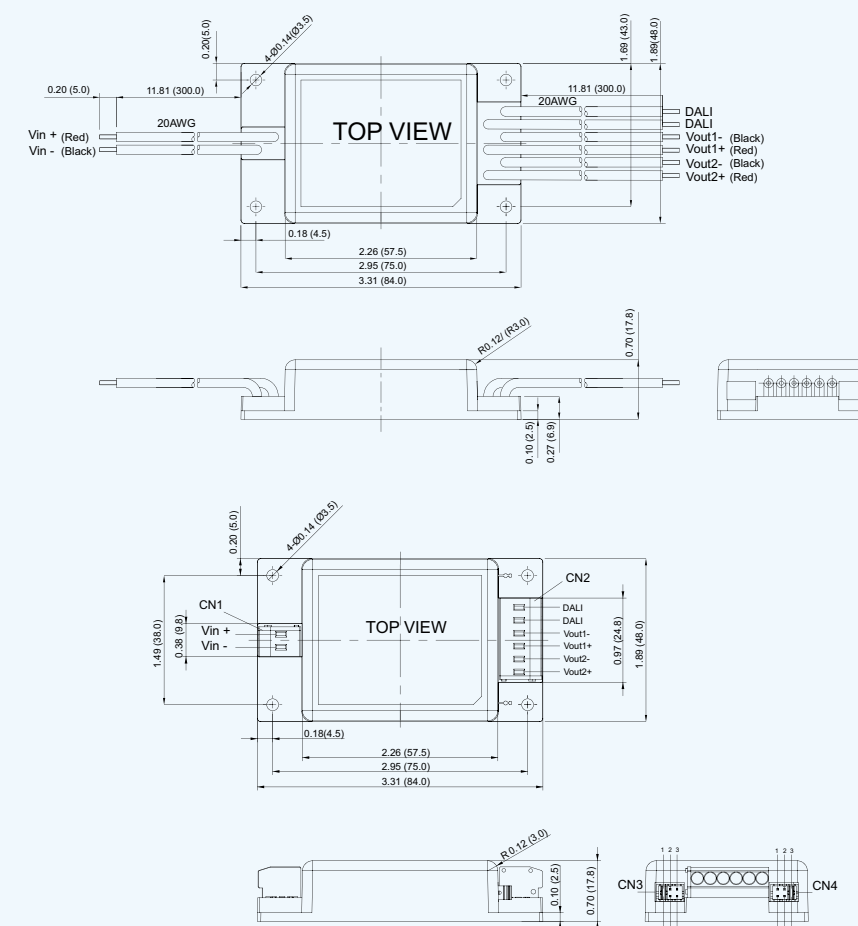
Efficiency..... See Table  
Isolation Voltage .....Non-isolation  
Switching Frequency..... 270KHz typ.  
Operating Ambient Temperature ..... -40°C~85°C(See Derating Curve)  
Cooling..... Natural Convection  
Storage Temperature ..... -55°C to +105°C  
Humidity..... 95% RH max. Non condensing  
MTBF ..... MIL-STD-217F, GB, 25°C, Full Load ..... 400K hrs typ.  
Dimensions .....3.31×1.89×0.70 inches (84.0×48.0×17.8 mm)  
Weight .....DIM01HXXXW..... 100g  
DIM01H&DIM01L.....60g  
Case Material ..... Plastic Case

#### DALI Control:

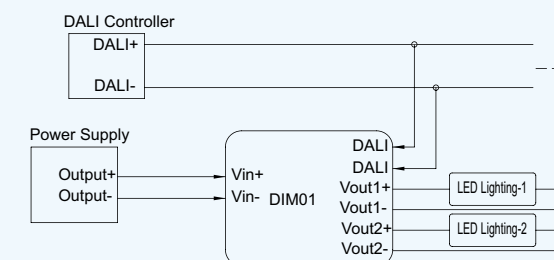
Output Current..... 10%~100%

### Mechanical Specification

All Dimensions are in inches(mm)  
Tolerance Inches: x.xx= ±0.02, x.xxx= ±0.010  
Millimeters: x.xx= ±0.5, x.xxx= ±0.25



### Installation Drawing



#### NOTE:

1. Nominal Input Voltage: 48Vdc(DIM01H),24Vdc(DIM01L)  
Nominal output Voltage: 36Vdc(DIM01H),12Vdc(DIM01L)
2. Vin-Vout<30Vdc,to keep current accuracy.
3. Current Line regulation is measured from high line and Low Line.
4. Current Load regulation is measured from high to low operating voltage.
5. Ripple and Noise are measured at rated current , Nominal Input and Nominal output And 20MHz bandwidth with a 0.1uF ceramic capacitor.
6. Measured at rated current , Nominal Input and Nominal output.
7. Ex. using a jumper to connect PIN1 and PIN6 of CN3, CN4 to set output ent. rated current to 1000mA for DIM01L. And using a jumper to connect PIN1 and PIN2 of CN5, CN4 to set output rated current to 500mA for DIM01H. Where the output rated current needn't to be the same for Vout1,Vout2.

# DLD

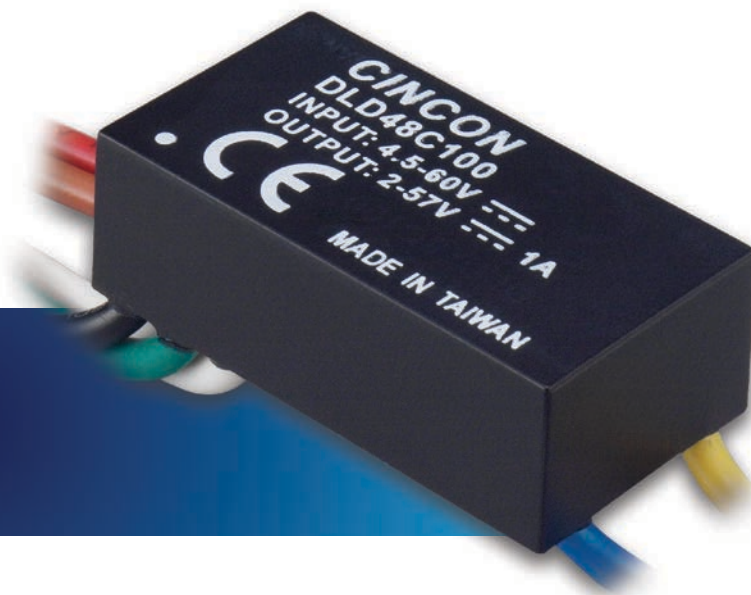
## 57 WATT BUCK LED DRIVER



- Output Rated Current from 350 – 1400mA
- Constant Current Output
- DIP16 Package / Wire End
- IP 67
- Short Circuit Protection
- Dimming Function: PWM / Analogue

| MODEL NUMBER | Input Voltage Range | Output Operating Voltage | Output Rated Current | Output Rated Power | Ripple and Noise (max.) Note2 | Efficiency (TYPICAL) Note3 |
|--------------|---------------------|--------------------------|----------------------|--------------------|-------------------------------|----------------------------|
| DLD-C035     | 4.5-60Vdc           | 2-57VDC                  | 350mA                | 20W                | 300mVpp                       | 96%                        |
| DLD-C070     | 4.5-60Vdc           | 2-57VDC                  | 700mA                | 40W                | 500mVpp                       | 96%                        |
| DLD-C100     | 4.5-60Vdc           | 2-57VDC                  | 1000mA               | 57W                | 500mVpp                       | 96%                        |
| DLD-C140     | 10-36Vdc            | 8-33VDC                  | 1400mA               | 46.2W              | 500mVpp                       | 96%                        |

NOTE : 1.  $3V < V_{in} - V_{out} < 30V_{dc}$ , to keep current accuracy. Nominal Input Voltage: 48Vdc, 28Vdc (C140 models)  
 2. Ripple and Noise are measured at rated current, Nominal Input and 36Vdc or 24Vdc (C140 models) output and 20MHz bandwidth with a 0.1uF ceramic capacitor.  
 3. Measured at rated current, Nominal Input and 36Vdc or 24Vdc(C140 models) output



### Specifications

#### INPUT SPECIFICATIONS:

Input Voltage .....1400mA/others.....10-36Vdc/4.5-60Vdc  
 Input Surge Voltage (1second).....1400mA/others..50Vdc/65Vdc max.  
 Input Filter.....Capacitor  
 Under Voltage Lockout.....Power up.....8.0Vdc/4.0Vdc typ.  
 Power down.....6.9Vac/3.7Vdc typ.

#### OUTPUT SPECIFICATIONS:

Constant Current Accuracy...(note1).....  $\pm 5\%$  max.  
 Current Line Regulation...(note 2).....  $\pm 5\%$  max.  
 Current Load Regulation...(note 3).....  $\pm 5\%$  max.  
 Short Circuit Protection.....Constant Current with Auto Recovery  
 Start up time ..... 60ms max.

#### GENERAL SPECIFICATIONS:

Efficiency..... See Table  
 Temperature Coefficient.....  $\pm 0.05\%/^{\circ}\text{C}$   
 Isolation voltage.....Non-isolation  
 Switching Frequency.....1400mA/others..... 50-500KHz/300KHz typ.  
 Operating Ambient Temperature ..... -40~85°C see Derating Curve  
 Case Temperature.....100°C max.  
 Cooling..... natural convection  
 Storage Temperature..... -55~125°C  
 Operating Humidity..... 10%~95%RH non-condensing.  
 Operating Altitude..... Sea Level to 3000m  
 Vibration..... 0~500Hz, 2G 60min./1cycle, period for 3hours, 3 axes  
 Shock.....30g peak, half sine, 6 axes  
 MTBF,MIL-HDBK-217F (25°C).....>1.6Mhrs  
 Dimensions.....1.28x0.66x0.40 Inches(32.5x1.68x10.2mm)  
 Weight.....18g  
 Case Material.....Plastic Case

#### PWM DIMMING: (leave open if not used)

Input Voltage Range ..... TTL Logic Compatibility 5Vdc typ.  
 Threshold Voltage..... Module on >1.75Vdc, Module off <0.5Vdc  
 Switching Frequency..... 1KHz max.  
 Output Current Range..... 10% to 100%  
 Minimum On Time..... 100ns

#### ANALOGUE DIMMING: (leave open if not used)

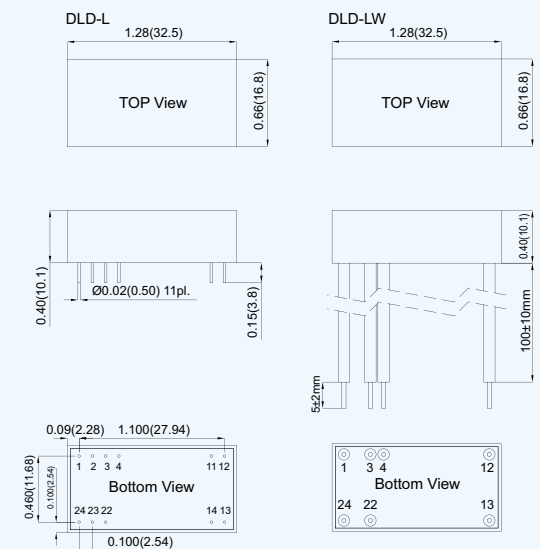
Control Voltage Range.....1400mA/others.....1-5Vdc/1.25-5Vdc  
 Analogue Pin Drive Current.....0.4mA max.

#### SAFETY AND EMISSIONS:

EMI..... EN55022/EN55015 Class B  
 EMS..... EN61547,EN61000-4-2,3,4,5,6

### CASE Miniature

NOTE:Pin Size is 0.020" Inch (0.5mm) DIA $\pm 0.05$   
 All Dimensions In Inches(mm)  
 Tolerance Inches:x.xx=  $\pm 0.02$ , x.xxx=  $\pm 0.010$   
 Millimeters:x.x=  $\pm 0.5$ , x.xx= $\pm 0.25$



#### DLD Connections

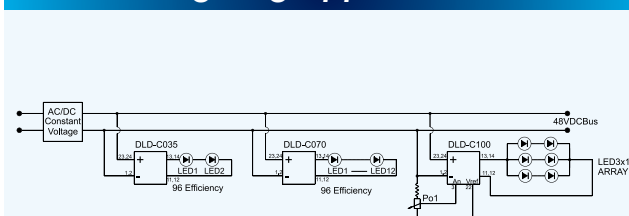
| DLD-L | DLD-LW     | Function         |
|-------|------------|------------------|
| 1&2   | 1(Black)   | -V Input         |
| 3     | 3(White)   | Analogue DIMming |
| 4     | 4(Green)   | PWM/ON/OFF       |
| 11&12 | 12(Blue)   | -V Output        |
| 13&14 | 13(Yellow) | +V Output        |
| 22    | 22(Brown)  | Vref / NP        |
| 23&24 | 24(Red)    | +V Input         |

NP: No Pin for DLD-C140

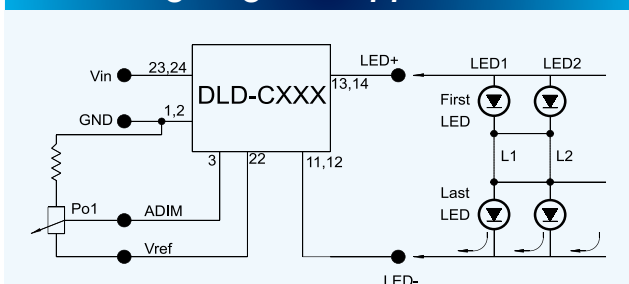
#### NOTE:

- 1:  $3V < V_{in} - V_{out} < 30V_{dc}$ , to keep current accuracy.
- 2: Current Line regulation is measured from High Line to Low Line.
- 3: Current Load regulation is measured from high to low operating voltage.

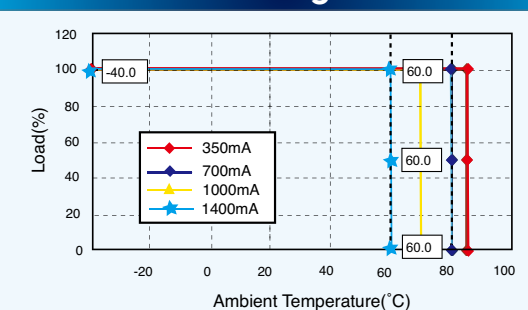
### Lighting Application



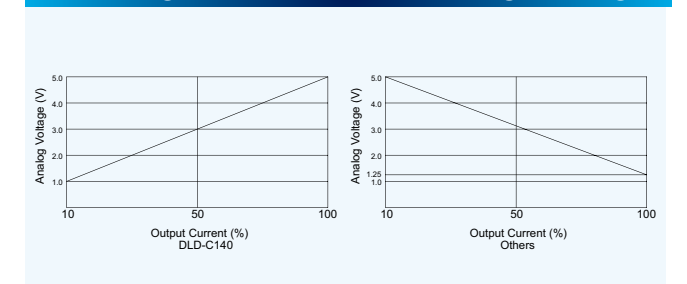
### Lighting Wall Application



### DLD Derating Curve



### Dimming Controlled by Analog Voltage

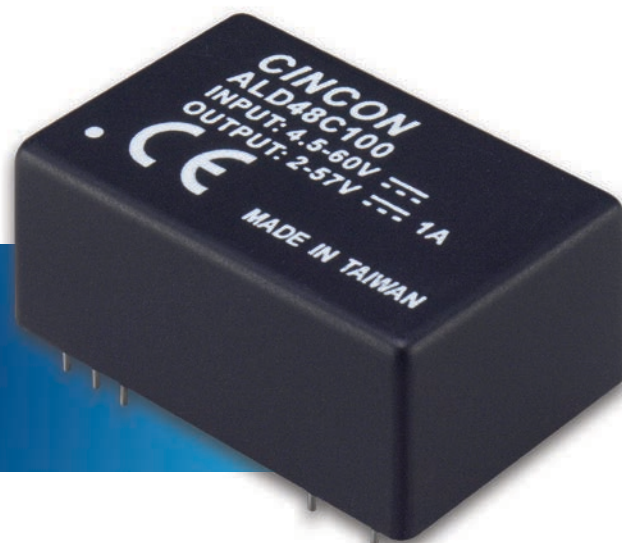


# ALD

## 57 WATT BUCK LED DRIVER with DALI



- For DALI Systems
- Constant Current Output
- Output Rated Current from 350mA – 1400mA
- DIP24 Package
- IP 67
- Short Circuit Protection



| MODEL    | Input Voltage Range | Output Operating Voltage | Output Rated Current | Output Rated Power | Ripple and Noise (max.) Note2 | Efficiency (TYPICAL) Note3 |
|----------|---------------------|--------------------------|----------------------|--------------------|-------------------------------|----------------------------|
| ALD-C035 | 4.5-60Vdc           | 2-57VDC                  | 350mA                | 20W                | 300mVpp                       | 96%                        |
| ALD-C070 | 4.5-60Vdc           | 2-57VDC                  | 700mA                | 40W                | 500mVpp                       | 96%                        |
| ALD-C100 | 4.5-60Vdc           | 2-57VDC                  | 1000mA               | 57W                | 500mVpp                       | 96%                        |
| ALD-C140 | 10-36Vdc            | 8-33VDC                  | 1400mA               | 46.2W              | 500mVpp                       | 96%                        |

NOTE : 1.  $3V < V_{in} - V_{out} < 30V_{dc}$ , to keep current accuracy. Nominal Input Voltage: 48Vdc, 28Vdc (C140 models)  
 2. Ripple and Noise are measured at rated current, Nominal Input and 36Vdc or 24Vdc (C140 models) output and 20MHz bandwidth with a 0.1uF ceramic capacitor.  
 3. Measured at rated current, Nominal Input and 36Vdc or 24Vdc(C140 models) output

### Specifications

#### INPUT SPECIFICATIONS:

Input Voltage .....1400mA/others.....10-36VDC/4.5-60Vdc  
 Input Surge Voltage (1second)... 1400mA/others....50Vdc/65Vdc max.  
 Input Filter.....Capacitor  
 Under Voltage Lockout.....Power up.....8.0Vdc/4.0Vdc typ.  
 Power down.....6.9Vdc/3.7Vdc typ.

#### OUTPUT SPECIFICATIONS:

Constant Current Accuracy...(note1).....±5%max.  
 Current Line Regulation...(note 2).....±5%max.  
 Current Load Regulation...(note 3).....±5%max.  
 Short Circuit Protection.....Constant Current with Auto Recovery  
 Start up time .....60ms max.

#### GENERAL SPECIFICATIONS:

Efficiency.....See Table  
 Temperature Coefficient.....±0.05%/°C (0~50°C)  
 Isolation voltage.....Non-isolation  
 Switching Frequency.....1400mA/others.....50-500KHz/300KHz typ.  
 Operating Ambient Temperature .....-40~85°C see Derating Curve  
 Case Temperature.....100°Cmax.  
 Cooling.....natural convection  
 Storage Temperature.....-55~125°C  
 Operating Humidity.....10%~95%RH non-condensing.  
 Operating Altitude.....Sea Level to 3000m  
 Vibration.....0~500Hz, 2G 60min./1cycle, period for 3hours, 3 axes  
 Shock.....30g peak, half sine, 6 axes  
 MTBF,MIL-HDBK-217F (25°C).....>1.6Mhrs  
 Dimensions.....1.25x0.80x0.50 Inches(31.8x20.3x12.7 mm)  
 Weight.....18g  
 Case Material.....Plastic Case

#### DALI Control:

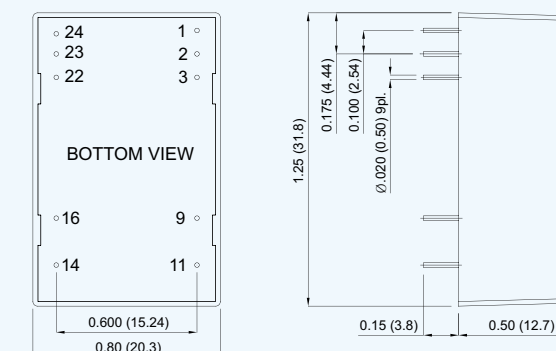
Output Current Range.....10%-100%

#### SAFETY AND EMISSIONS:

EMI.....EN55022/EN55015 Class B  
 EMS.....EN61547,EN61000-4-2,3,4,5,6

### Mechanical Specification

All Dimensions in inches(mm)  
 Tolerance Inches: x.xx=±0.02 ,x.xxx=±0.010  
 Millimeters: x.x=±0.5 , x.xx=±0.25



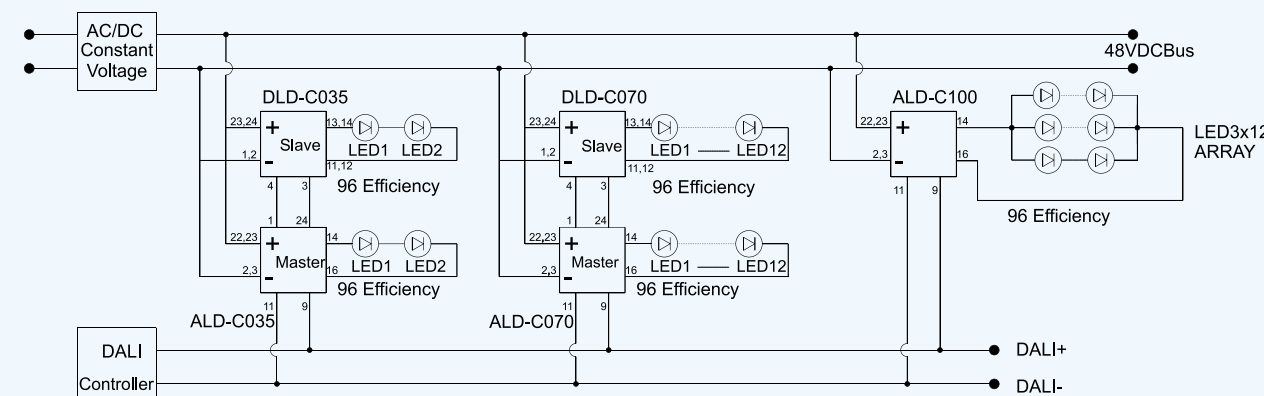
#### PIN CONNECTION

| Pin   | Function         |
|-------|------------------|
| 1     | PWM DIM          |
| 2,3   | -V Input         |
| 9     | DALI -           |
| 11    | DALI +           |
| 14    | +V Output        |
| 16    | -V Output        |
| 22,23 | +V Input         |
| 24    | Analogue DIMming |

#### NOTE:

1.  $3V < V_{in} - V_{out} < 30V_{dc}$ , to keep current accuracy.
2. Current Line regulation is measured from High Line to Low Line.
3. Current Load regulation is measured from high to low operating voltage.

### DALI Lighting Application



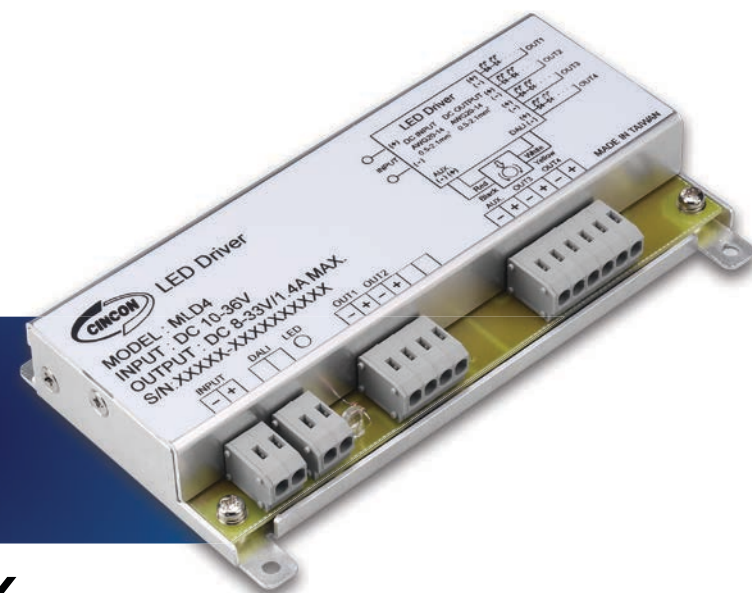


# MLD

## MULTI-CHANNEL BUCK DC LED DRIVER with DALI



- For DALI Systems
- Input Range 10 – 36VDC & 4.5 – 60VDC
- Output Rated Current from 700mA – 1400mA
- Provides Multi-Channels of LED Lighting Synchronization Controls
- Dimming Function: PWM
- Optional Auxiliary Power



| MODEL     | Input Voltage Range | Output Operating Voltage | Output Rated Current | Output Rated Power/ Channel | Ripple and Noise (max.) Note2 | Efficiency (TYPICAL) Note3 |
|-----------|---------------------|--------------------------|----------------------|-----------------------------|-------------------------------|----------------------------|
| MLD4-C070 | 4.5-60Vdc           | 2-57VDC x4               | 700mA x4             | 40W                         | 500mVpp                       | 96%                        |
| MLD4-C100 | 4.5-60Vdc           | 2-57VDC x4               | 1000mA x4            | 57W                         | 500mVpp                       | 96%                        |
| MLD4-C140 | 10-36Vdc            | 8-33VDC x4               | 1400mA x4            | 46.2W                       | 500mVpp                       | 96%                        |
| MLD6-C070 | 4.5-60Vdc           | 2-57VDC x6               | 700mA x6             | 40W                         | 500mVpp                       | 96%                        |
| MLD6-C100 | 4.5-60Vdc           | 2-57VDC x6               | 1000mA x6            | 57W                         | 500mVpp                       | 96%                        |
| MLD6-C140 | 10-36Vdc            | 8-33VDC x6               | 1400mA x6            | 46.2W                       | 500mVpp                       | 96%                        |

NOTE : 1. Nominal Input Voltage: 48Vdc, 28Vdc (C140 models)  
 2. Ripple and Noise are measured at rated current, Nominal Input and 36Vdc or 24Vdc (C140 models) output and 20MHz bandwidth with a 0.1uF ceramic capacitor.  
 3. Measured at rated current, Nominal Input and 36Vdc or 24Vdc(C140 models) output

### Specifications

#### INPUT SPECIFICATIONS:

Input Voltage ..... see table  
 Input Surge Voltage (1second).....1.4A/Others.....50V/65Vdc max.  
 Input Filter..... Capacitor  
 Under Voltage Lockout...Power up.....1.4A/Others...8.0Vdc/4.0Vdc typ.  
 Power down .....1.4A/Others.....6.9Vdc/3.7Vdc typ.

#### OUTPUT SPECIFICATIONS:

Constant Current Accuracy...(note1)..... ±5%max.  
 Current Line Regulation...(note 2)..... ±5%max.  
 Current Load Regulation...(note 3)..... ±5%max.  
 Auxiliary power(Vin>21Vdc).....18Vdc/300mA  
 Short Circuit Protection..... Constant Current with Auto Recovery  
 Start up time ..... 60ms max.

#### GENERAL SPECIFICATIONS:

Efficiency..... See Table  
 Temperature Coefficient..... ±0.05%/°C  
 Isolation voltage..... Non-isolation  
 Switching Frequency.....1.4A/Others..... 50-500KHz/300KHz typ.  
 Operating Ambient Temperature .....-40~71°C see De-rating Curve  
 Cooling..... natural convection  
 Storage Temperature..... -55~105°C  
 Operating Humidity..... 10%~95%RH non-condensing.  
 Operating Altitude..... Sea Level to 3000m  
 Vibration..... 0~500Hz, 2G 60min./1cycle, period for 3hours, 3 axes  
 Shock..... 30g peak, half sine, 6 axes  
 MTBF,MIL-HDBK-217F (25°C)..... TBD  
 Dimensions..... 5.05x2.30x0.80 Inches(128.3x58.4x20.3 mm)  
 Weight.....MLD4/MLD6..... 145/160g  
 Case Material..... Aluminum Case

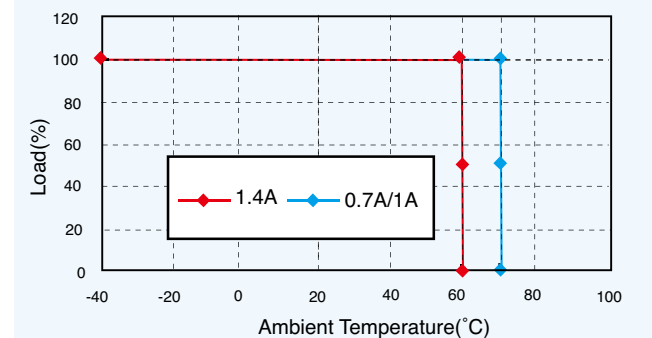
#### DALI Control:

Output Current Range..... 10%-100%

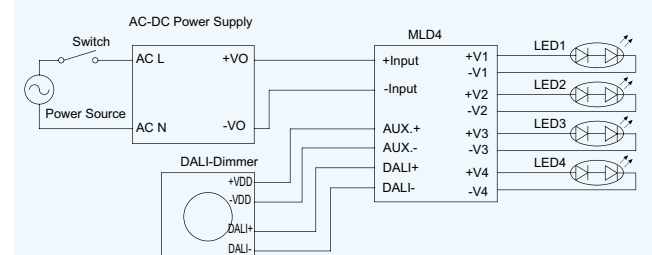
#### SAFETY AND EMISSIONS:

EMI meet..... EN55015 Class B  
 EMS meet..... EN61547,EN61000-4-2,3,4,6,8

### MLD4/6 Derating Curve



### Example Circuit Connection of MLD4 module for driving 4 LED Luminaries

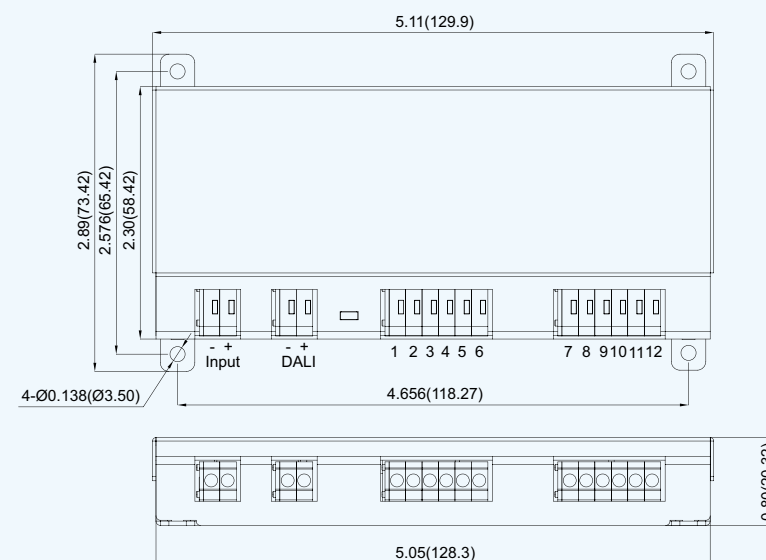


#### NOTE:

1. 3V < Vin-Vout < 30Vdc. to keep current accuracy.
2. Current Line regulation is measured from High Line to Low Line.
3. Current Load regulation is measured from high to low operating voltage.
4. Suffix "A" to the model number with Aux. power for MLD4 only.

### Mechanical Specification

All Dimensions are in inches(mm)  
 Tolerance Inches: x.xx= ±0.02, x.xxx=±0.010  
 Millimeters: x.x= ±0.5, x.xx=±0.25



| PIN CONNECTION |                 |                  |                 |
|----------------|-----------------|------------------|-----------------|
| Pin            | MLD4-CXXX       | MLD4-CXXXA       | MLD6-CXXX       |
| 1              | V <sub>1-</sub> | V <sub>1-</sub>  | V <sub>1-</sub> |
| 2              | V <sub>1+</sub> | V <sub>1+</sub>  | V <sub>1+</sub> |
| 3              | V <sub>2-</sub> | V <sub>2-</sub>  | V <sub>2-</sub> |
| 4              | V <sub>2+</sub> | V <sub>2+</sub>  | V <sub>2+</sub> |
| 5              | NC              | NC               | V <sub>3-</sub> |
| 6              | NC              | NC               | V <sub>3+</sub> |
| 7              | NC              | AUX <sub>-</sub> | V <sub>4-</sub> |
| 8              | NC              | AUX <sub>+</sub> | V <sub>4+</sub> |
| 9              | V <sub>3-</sub> | V <sub>3-</sub>  | V <sub>5-</sub> |
| 10             | V <sub>3+</sub> | V <sub>3+</sub>  | V <sub>5+</sub> |
| 11             | V <sub>4-</sub> | V <sub>4-</sub>  | V <sub>6-</sub> |
| 12             | V <sub>4+</sub> | V <sub>4+</sub>  | V <sub>6+</sub> |

# DRD-S1-A

## Digital Rotary Dimmer



- For DALI systems
- On/ Off switchable function
- Green LED locator light
- Designed as master controller or slave controller
- DRD-S1 serves as master controller and power supply for 2 slave controllers
- Automatic synchronization makes it possible to change the control location without disturbing effects (Brightness /ONOFF)
- Capable of individually addressing (1 - 64 addresses) or Broadcast mode



### DRD-S1-A Operation



- On/Off – Press
- Brightness decrease – Left Rotate
- Brightness increase – Right Rotate

### Specifications

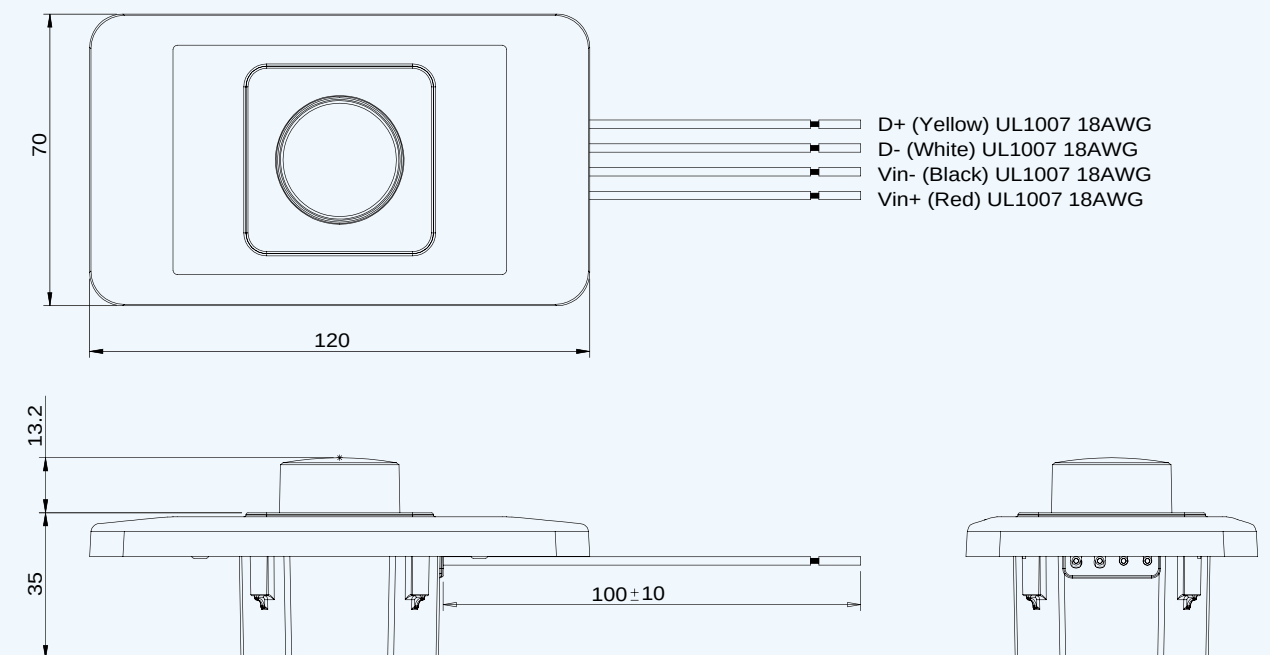
- Input Voltage: 18-20Vdc
- Power Consumption: 3W
- Output Current: 150mA max.
- Maximum length of signal line: 300m
- Master(1) DRD-S1\*1 Max connection: 45 Ballast or LED Device
- Master DRD-S1\*2 Max connection: 90 Ballast or LED Device
- Master DRD-S1\*1 Max connection: 2 Slave(2) DRD-S1
- Master DRD-S1\*2 Max connection: 4 Slave DRD-S1
- Over Current Protection and Short Circuit Protection
- Operating Temperature: 0~50°C

Note:

- (1) The Master operation can deliver the required control current itself when connected to the DC Power Supply.
- (2) The Slave operation can be supplied directly from the DALI control line.

### MECHANICAL DRAWING

All Dimensions are in inches(mm)  
Tolerance Millimeters: x.xx=±0.5



# DRD-S1-E

## Digital Rotary Dimmer



- For DALI systems
- On/ Off switchable function
- Green LED locator light
- Designed as master controller or slave controller
- DRD-S1 serves as master controller and power supply for 2 slave controllers
- Automatic synchronization makes it possible to change the control location without disturbing effects (Brightness /ONOFF)
- Capable of individually addressing (1 - 64 addresses) or Broadcast mode



### DRD-S1-E Operation



- On/Off – Press
- Brightness decrease – Left Rotate
- Brightness increase – Right Rotate

### Specifications

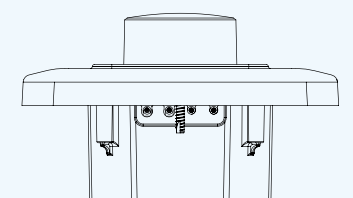
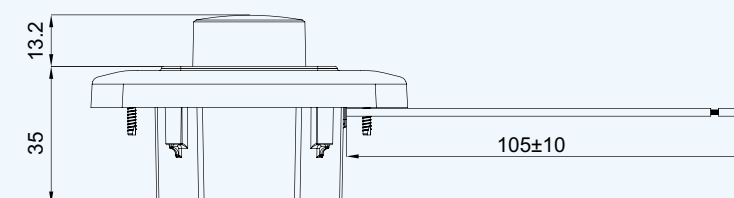
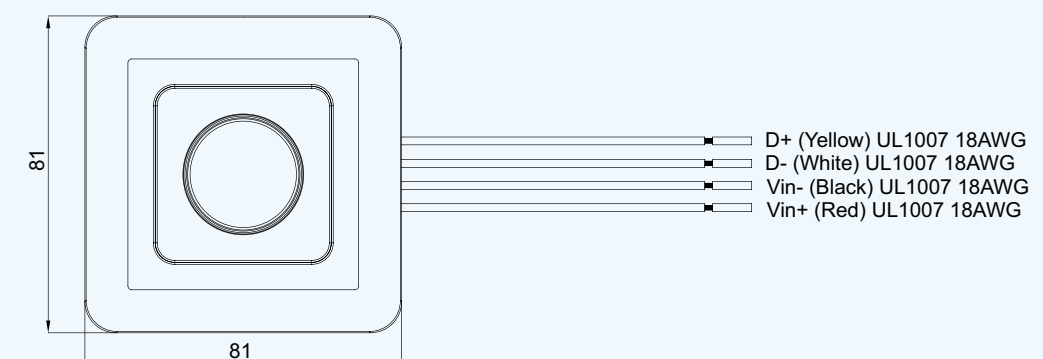
- Input Voltage: 18-20Vdc
- Power Consumption: 3W
- Output Current: 150mA max.
- Maximum length of signal line: 300m
- Master(1) DRD-S1\*1 Max connection: 45 Ballast or LED Device
- Master DRD-S1\*2 Max connection: 90 Ballast or LED Device
- Master DRD-S1\*1 Max connection: 2 Slave(2) DRD-S1
- Master DRD-S1\*2 Max connection: 4 Slave DRD-S1
- Over Current Protection and Short Circuit Protection
- Operating Temperature: 0~50°C

Note:

- (1) The Master operation can deliver the required control current itself when connected to the DC Power Supply.
- (2) The Slave operation can be supplied directly from the DALI control line.

### MECHANICAL DRAWING

All Dimensions are in inches(mm)  
Tolerance      Millimeters: x.xx=±0.5





# DRD-M1-A

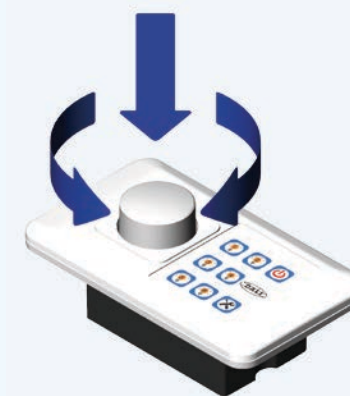
## Multiple Dimmer



- For DALI systems
- On/Off switchable function
- Green LED locator light
- DRD-M1 serves as master controller and power supply for 2 DRD-S1 slave controllers
- Automatic synchronization makes it possible to change the control location without disturbing effects (Brightness /ONOFF)
- 1 - 6 Individual DALI addresses can be addressed and controlled independently
- Recall and store up to 6 lighting scenes
- Readdressing of individual DALI addresses possible



### DRD-M1-A Operation



- Unitary On/Off – Press
- Brightness decrease – Left Rotate
- Brightness increase – Right Rotate
- Group1~Group6
- Power On/Off
- Function Set

### Specifications

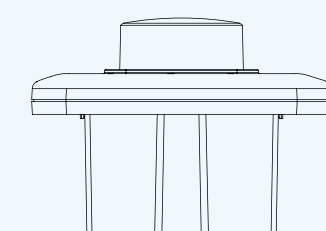
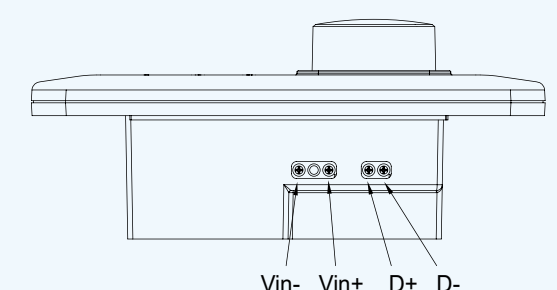
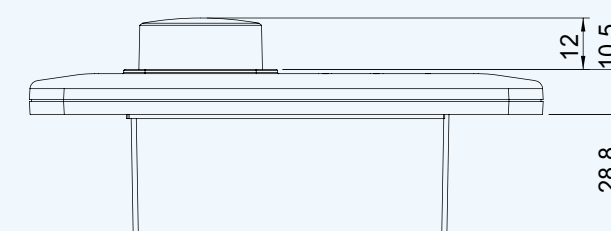
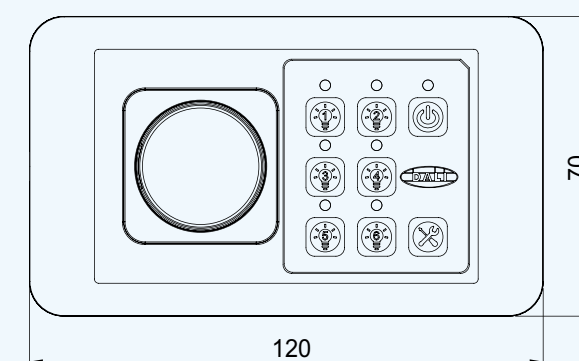
- Input Voltage: 18-20Vdc
- Power Consumption: 5W
- Output Current: 150mA max.
- Maximum length of signal line: 300m
- Master(1) DRD-M1-A\*1 Max connection: 45 Ballast or LED Device
- Master DRD-M1-A\*2 Max connection: 90 Ballast or LED Device
- Master DRD-M1-A\*1 Max connection 2 Slave(2) DRD-S1
- Master DRD-M1-A\*2 Max connection: 4 Slave DRD-S1
- Over Current Protection and Short Circuit Protection
- Operating Temperature: 0~50°C

#### Note:

- (1) The Master operation can deliver the required control current itself when connected to the DC Power Supply.
- (2) The Slave operation can be supplied directly from the DALI control line.

### MECHANICAL DRAWING

All Dimensions are in mm  
Tolerance Millimeters: x.xx=±0.5



# DRD-M1-E

## Multiple Dimmer



- For DALI systems
- On/Off switchable function
- DRD-M1 serves as master controller and power supply for 2 DRD-S1 slave controllers
- Automatic synchronization makes it possible to change the control location without disturbing effects (Brightness / ONOFF)
- 1 - 4 Individual DALI addresses can be addressed and controlled independently
- Recall and store up to 4 lighting scenes
- Readdressing of individual DALI addresses possible



### DRD-M1-E Operation



- Up / Brightness increase
- Unitary On/Off
- Down / Brightness decrease
- Group1~Group4
- Power On/Off
- Function Set

### Specifications

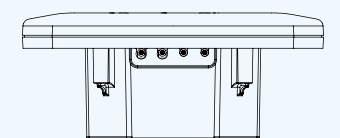
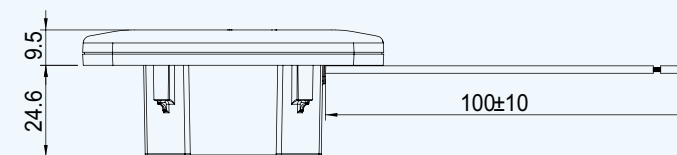
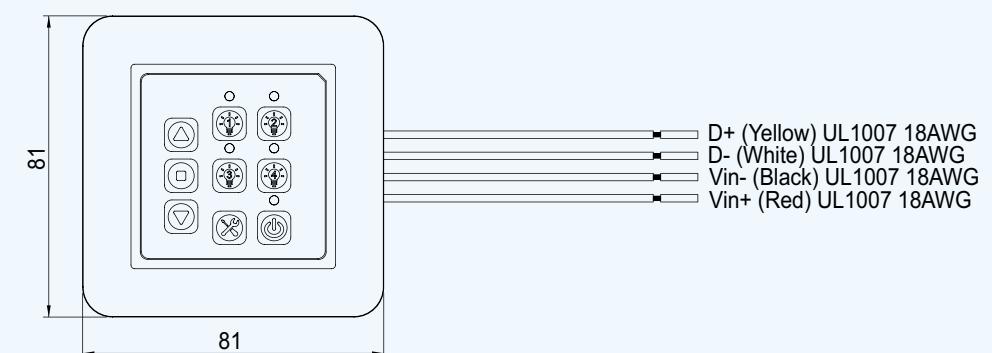
- Input Voltage: 18-20Vdc
- Power Consumption: 5W
- Output Current: 150mA max.
- Maximum length of signal line:  
300m Master<sup>(1)</sup> DRD-M1-E\*1 Max connection:  
45 Ballast or LED Device
- Master DRD-M1-E\*2 Max connection:  
90 Ballast or LED Device
- Master DRD-M1-E\*1 Max connection:  
2 Slave<sup>(2)</sup> DRD-S1
- Master DRD-M1-E\*2 Max connection:  
4 Slave DRD-S1
- Over Current Protection and Short Circuit Protection
- Operating Temperature: 0~50°C

Note:

- (1) The Master operation can deliver the required control current itself when connected to the DC Power Supply.
- (2) The Slave operation can be supplied directly from the DALI control line.

### MECHANICAL DRAWING

All Dimensions in mm  
Tolerance Millimeters: x.xx= ±0.5



# DTP-A



## Touch panel DALI controller



- For DALI systems
- On/Off switchable function
- DTP-A serves as master controller and power supply for 2 DRD-S1 slave controllers
- Automatic synchronization makes it possible to change the control location without disturbing effects (Brightness /ONOFF)
- 1-6 Individual DALI addresses can be addressed and controlled independently
- Recall and store up to 4 lighting scenes
- Readdressing of individual DALI addresses possible
- 2.8" LCD display

### Specifications

- Input Voltage: 18~20Vdc
- Power Consumption: 5W
- Output Current: 150mA max.
- Maximum length of signal line: 300m
- Master<sub>(1)</sub> DTP-A Max connection: 45 Ballast or LED Device
- Master DTP-A Max connection: 2 Slave<sub>(2)</sub> DRD-S1
- Over Current Protection and Short Circuit Protection

- Operating Temperature: 0~50°C
- Note:
- (1) The Master operation can deliver the required control current itself when connected to the DC Power Supply.
  - (2) The Slave operation can be supplied directly from the DALI control line.





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