

Product Specification

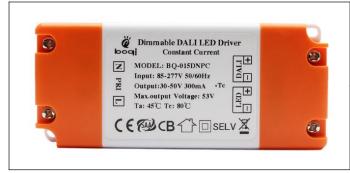
Title	DALI Dimmable LED Driver		
Model	BQ-015DNPC		
Specification	Input: 100~265Vac 50/60Hz Output: 36-50V/300mA 24-42/350mA		
Power Range	10-15W		
Author	R&D		
Document NO.	RDPS-2302		
Date	2021-01-04		
Revision	2.0		



1. Product Description

1.1 This engineering report describes the design for a DALI dimmable ConstantCurrent led driver for LED applications.

1.2 Prototype Photo



1.3 Physical size

L	W	Н
(mm)	(mm)	(mm)
100	43	21
±1	±1	±1

Features

- ●100~265Vac 50/60Hz
- •Built-in active PFC function
- Short circuit, Over current, Over voltage Protection
- Air Cooling
- •Integrated Dali standard interface

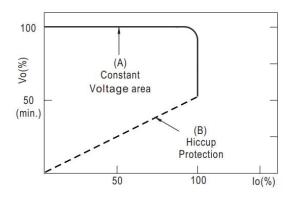
- Applied to LED homing and commercial lighting etc
- •No load and Safety Protection Device
- •Installed economically and quickly
- •Complied with the world safety standard of lighting
- •Protection class II
- •5 years Warranty

Description

BQ-015DNPC DALI dimmable LED Driver is the kind of CC dimmable LED power supply that our company R&D, with high power factor, high efficiency, high precision, adopting the high efficiency, stable, low loss of switch control chip. It was made with the high quality components, so it had the characteristics like low noise, energy saving, environmental protection and long life etc.

1.4 Working principle

BQ-015DNPC DALI Dimmable LED Driver is with the CC feature, the working condition is as the picture under.



Typical output current normalized by rated current (%)



2. Electric Idiosyncrasy

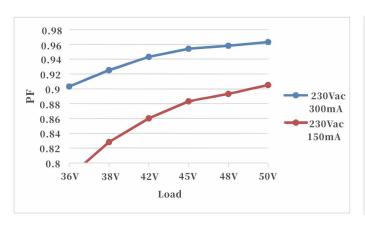
2.1 Specs.

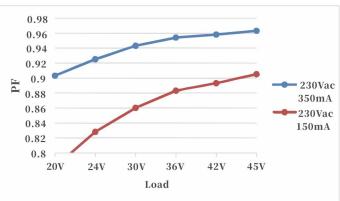


Model BQ-015DNPC 24-45V Output Current 300mA 350mA 350mA Output Power 10-15W Flicker Index Modulation depth ≤1% Complies with the flicker-free standard (IEEE Std 1789-2015) Ripple Current ±10% (rated current) ±5% ±5% ±5%					
Output Power 300mA 350mA Output Power 10-15W Flicker Index Modulation depth ≤1% Complies with the flicker-free standard (IEEE Std 1789-2015) Ripple Current <10%(rated current) Current Tolerance ±5% ±5% Temperature Drift ±5% ±5% Start-up Time <1.5S@230Vac *** Input Voltage 100-265VAC *** Frequency Range 47-63Hz *** Power Factor(Typ.) 0.95@115VAC 0.93@230VAC @ full load THD(Typ.)@ full load <20%@230Vac (DC42V full load) Efficiency(Typ.) 85%@ full load AC Current(Max.) 0.2A Inrush Current (Typ.) ≤14A&74uS@230Vac Leakage current <0.5mA Standby Power ≤0.5W (when DALI OFF signal is effective) Consumption Short Circuit Hiccup mode (auto-recovery) Over temperature 100°±10°° shut down o/p voltage, automatically recover after cooling. Working TEMP. 20°° - +45°° (see below derating curve) Working Humidity 20°° - 90°RH, non-condensing </th <th colspan="2">Model</th> <th colspan="2">BQ-015DNPC</th>	Model		BQ-015DNPC		
Output Power 10-15W Flicker Index Modulation depth ≤1% Complies with the flicker-free standard (IEEE Std 1789-2015) Ripple Current <10%(rated current)		DC Voltage	36-50V	24-45V	
Plicker Index Modulation depth ≤1% Complies with the flicker-free standard (IEEE Std 1789-2015)	Output	Output Current	300mA	350mA	
Standard (IEEE Std 1789-2015) Ripple Current		Output Power	10	-15W	
Ripple Current		Flicker Index	·		
Temperature Drift		Ripple Current	<10%(rated current)		
Start-up Time		Current Tolerance	±5%	±5%	
Input Voltage		Temperature Drift	±5%	'	
Prequency Range		Start-up Time	<1.5S@230Vac		
Power Factor(Typ.) 0.95@115VAC 0.93@230VAC @ full load THD(Typ.)@ full load <20%@230Vac (DC42V full load) Efficiency(Typ.) 85%@ full load 85%@ full load 85%@ full load AC Current(Max.) 0.2A Inrush Current (Typ.) ≤14A&74uS@230Vac Leakage current <0.5mA Standby Power ≤0.5W (when DALI OFF signal is effective) Consumption Short Circuit Hiccup mode (auto-recovery) Over temperature 100°C±10°C shut down o/p voltage, automatically recover after cooling. Working TEMP. -20°C - +45°C (see below derating curve) Working Humidity 20~90%RH, non-condensing Storage TEMP.Humidity -30~+80°C,10~90%RH Atmospheric Pressure 86kPa~106kPa Certifications TUV-CE, CB, SAA, RoHS Safety standards EN61347 Withstand voltage I/P-O/P: 3.75kVac 5mA 60S Insulation Resistance I/P-O/P: 100MΩ/500VDC/25°C/70%RH EMC EMISSION EN55015: EN61000-3-2: EN61000-3-3: EMC IMMUNITY EN61547 DALI Standard IEC 62386-101 102 207: DALI 2.0 Dimension 100*43*21 mm (L*W*H)		Input Voltage	100-265VAC		
THD(Typ.)@ full load		Frequency Range	47-63Hz		
Efficiency(Typ.) 85%@ full load 85%@ full load AC Current(Max.) 0.2A		Power Factor(Typ.)	0.95@115VAC 0.93@230VAC @ full load		
AC Current(Max.) 0.2A		THD(Typ.)@ full load	<20%@230Vac (DC42V full load)		
AC Current(Max.) 0.2A	Immus.	Efficiency(Typ.)	85%@ full load	85%@ full load	
Leakage current Standby Power Consumption Short Circuit Protection Working TEMP. Atmospheric Pressure Certifications Safety & EMC Safety & EMC Certification Resistance EMC EMISSION EMC EMISSION EMC IMMUNITY DALI Standard Standby Power ≤0.5W (when DALI OFF signal is effective) ≤0.5W (when DALI OFF signal is effective) (when DALI OFF signal is effective) ≤0.5W (when DALI OFF signal is effective) (when DALI Standard ≤0.5W (when DALI OFF signal is effective) ≤0.5W (when DALI OFF signal is effective) (when DALI Standard ≤0.5W (when DALI OFF signal is effective) (when DALI Standard Hiccup mode (auto-recovery) 100°C±10°C shut down o/p voltage, automatically recover after cooling. 20~90%RH, non-condensing 30~+80°C,10~90%RH 86kPa~106kPa TUV-CE, CB, SAA, RoHS Safety Standards EN61347 Withstand voltage 1/P-O/P: 3.75KVac 5mA 60S Insulation Resistance 1/P-O/P:100MΩ/500VDC/25°C/70%RH EMC IMMUNITY EN61547 DALI Standard IEC 62386-101 102 207: DALI 2.0 Others	input	AC Current(Max.)	0.2A	·	
Standby Power Consumption Short Circuit Hiccup mode (auto-recovery) Over temperature 100°C±10°C shut down o/p voltage, automatically recover after cooling. Working TEMP20°C - +45°C (see below derating curve) Working Humidity 20~90%RH, non-condensing Storage TEMP.Humidity -30~+80°C,10~90%RH Atmospheric Pressure 86kPa~106kPa Certifications TUV-CE, CB, SAA, RoHS Safety standards EN61347 Withstand voltage I/P-O/P: 3.75KVac 5mA 60S Insulation Resistance I/P-O/P:100MΩ/500VDC/25°C/70%RH EMC EMISSION EN55015; EN61000-3-2; EN61000-3-3; EMC IMMUNITY EN61547 DALI Standard IEC 62386-101 102 207: DALI 2.0 Dimension 100*43*21 mm (L*W*H)		Inrush Current (Typ.)	≤14A&74uS@230Vac		
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Short CircuitHiccup mode (auto-recovery)Over temperature100°C±10°C shut down o/p voltage, automatically recover after cooling.Working TEMP20°C - +45°C (see below derating curve)Working Humidity20~90%RH, non-condensingStorage TEMP.Humidity-30~+80°C,10~90%RHAtmospheric Pressure86kPa~106kPaCertificationsTUV-CE, CB, SAA, RoHSSafety standardsEN61347Withstand voltageI/P-O/P: 3.75KVac 5mA 60SInsulation ResistanceI/P-O/P:100MΩ/500VDC/25°C/70%RHEMC EMISSIONEN55015; EN61000-3-2; EN61000-3-3;EMC IMMUNITYEN61547OthersDALI StandardIEC 62386-101 102 207: DALI 2.0Dimension100*43*21 mm (L*W*H)		Standby Power	≤0.5W (when DALI OFF signal is effective)		
ProtectionOver temperature100°C±10°C shut down o/p voltage, automatically recover after cooling.EnvironmentWorking TEMP20°C - +45°C (see below derating curve)Working Humidity20~90%RH, non-condensingStorage TEMP.Humidity-30~+80°C,10~90%RHAtmospheric Pressure86kPa~106kPaCertificationsTUV-CE, CB, SAA, RoHSSafety standardsEN61347Withstand voltageI/P-O/P: 3.75KVac 5mA 60SInsulation ResistanceI/P-O/P:100MΩ/500VDC/25°C/70%RHEMC EMISSIONEN55015; EN61000-3-2; EN61000-3-3;EMC IMMUNITYEN61547DALI StandardIEC 62386-101 102 207: DALI 2.0Dimension100*43*21 mm (L*W*H)		Consumption			
### after cooling. ### Working TEMP. ### Working Humidity ### Storage TEMP.Humidity ### Storage T		Short Circuit	Hiccup mode (auto-recovery)		
Working TEMP20°C - +45°C (see below derating curve) Working Humidity 20~90%RH, non-condensing Storage TEMP.Humidity -30~+80°C,10~90%RH Atmospheric Pressure 86kPa~106kPa Certifications TUV-CE, CB, SAA, RoHS Safety standards EN61347 Withstand voltage I/P-O/P: 3.75KVac 5mA 60S Insulation Resistance I/P-O/P:100MΩ/500VDC/25°C/70%RH EMC EMISSION EN55015; EN61000-3-2; EN61000-3-3; EMC IMMUNITY EN61547 DALI Standard IEC 62386-101 102 207: DALI 2.0 Dimension 100*43*21 mm (L*W*H)	Protection	Over temperature	100℃±10℃ shut down o/p voltage, automatically recover		
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Storage TEMP.Humidity -30~+80°C,10~90%RH			-20℃ - +45℃ (see below derating curve)		
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Safety standards EN61347		·	86kPa~106kPa		
Safety& EMC Insulation Resistance I/P-O/P: 3.75KVac 5mA 60S Insulation Resistance I/P-O/P:100MΩ/500VDC/25℃/70%RH EMC EMISSION EN55015; EN61000-3-2; EN61000-3-3; EMC IMMUNITY EN61547 DALI Standard IEC 62386-101 102 207: DALI 2.0 Dimension 100*43*21 mm (L*W*H)			TUV-CE, CB, SAA, RoHS		
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EMC EMISSION EN55015; EN61000-3-2; EN61000-3-3; EMC IMMUNITY EN61547 DALI Standard IEC 62386-101 102 207: DALI 2.0 Others Dimension 100*43*21 mm (L*W*H)	Safety& EMC		1 11 1		
EMC IMMUNITY EN61547 DALI Standard IEC 62386-101 102 207: DALI 2.0 Dimension 100*43*21 mm (L*W*H)		Insulation Resistance			
DALI Standard IEC 62386-101 102 207: DALI 2.0 Others Dimension 100*43*21 mm (L*W*H)		EMC EMISSION	EN55015; EN61000-3-2; EN61000-3-3;		
Others Dimension 100*43*21 mm (L*W*H)		EMC IMMUNITY	EN61547		
,	Others	DALI Standard	IEC 62386-101 102 207: DALI 2.0		
Warranty 5 Years (Tc≤77.5℃)		Dimension	100*43*21 mm (L*W*H)		
		Warranty	5 Years (Tc≤77.5℃)		

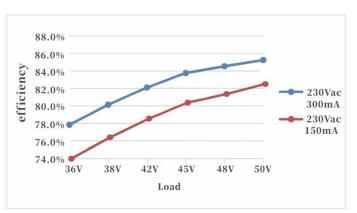
2.2 Characteristic Curve

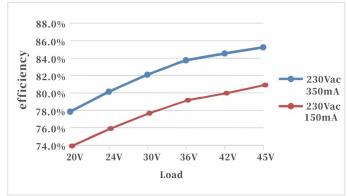
2.2.1 Power Factor Characteristic Curve



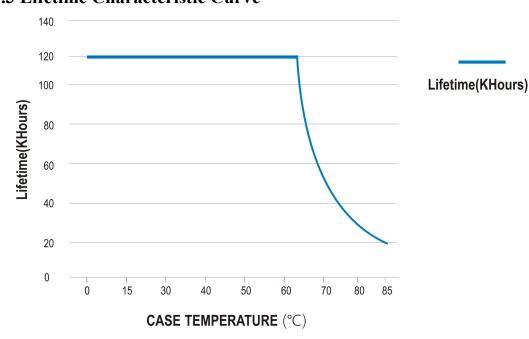


2.2.2 Power Efficiency Characteristic Curve





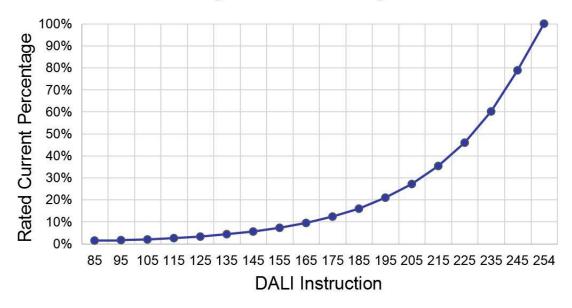
2.2.3 Lifetime Characteristic Curve





2.2.4 Dimming Curve





Operation Instructions of DALI Dimming

Factory default setting is of 100% brightness.

Connect the DALI signal to the DA1 and DA2 terminals.

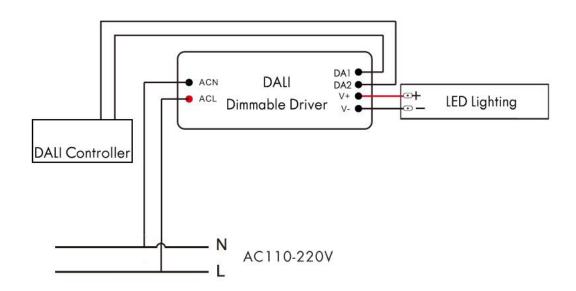
DALI protocol includes 16 groups and 64 IP addresses.

The minimum dimming depth of the DALI dimming is 0.1% (Iout).



2.3 Circuit Drawing

- 1. When using this product, Please differentiate its input and output terminal. PRI is AC input, Connect ACL to firing line, ACN to null line; DC output, LED + and LED connect the positive and negative of LED lamps separately; DA1 and DA2 DALI signal lines, no need to differentiate the positive and negative.
- 2. This product is a high Voltage LED lamps controller, please cut off the power before installation, Wiring according to the chart as shown, Connect LED+ and LED-, then connect the DA1 and DA2 signal wire, at last connect ACL and ACN. After verification to electricity.





3. Real Photo









Common Fault and Handing Method

The product is installed according to the chart as shown, If meet the below faults:

- 1. LED lamp is not bright, Please cut off the power, and check
- a. Whether the output end is bad contact.
- b. Whether the positive negative of the output end are against.
- c. Whether the input end is bad contact.
- d. Whether the LED line and DALI signal line are against. Test again after excluding below fault.
- 2. Light-up the LED lamp, but the brightness is abnormal (LED lamp is flicking, too bright or too dark) or can not be dimmed, Please cut off the power immediately, and check if the LED lamps accord with the products' output demand(LED lamp power is too small or too big), whether the DALI parameters are set correctly.
- 3. During the product using, If you meet other queries, and can not solve by yourself, Please contact us immediately. We will try our best to improve and optimize in time.