EXPN-AVI Series

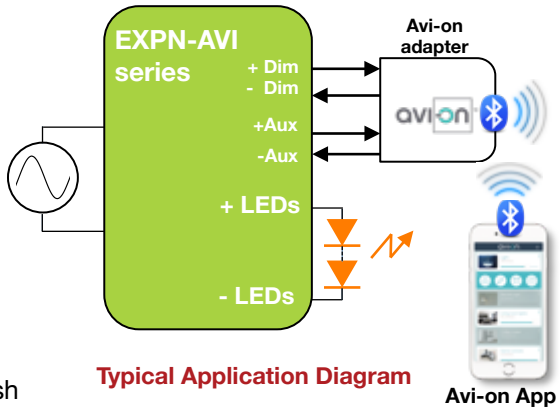
30–50 W

Wireless Bluetooth® Smart Mesh Integrated Constant Current LED Driver

Nominal Input Voltage	Max. Output Power	Output Voltage	Output Current	Efficiency	Max. Case Temperature	THD	Power Factor	Dimming Method	Dimming Range
120 to 277 Vac	44 W	30 to 42 Vdc	700 mA, 1050 mA CC	up to 82% typical	90°C (measured at the hot spot)	< 20%	> 0.9	Bluetooth	1 - 100% (% of Iout)

CC: Constant Current

Plastic Case
(not including Avi-on adapter):
L 87 x W 60 x H 27.2 mm
(L 3.43 x W 2.36 x H 1.07 in)



Typical Application Diagram

FEATURES

- LED driver incorporates a fully compliant Bluetooth Smart Mesh module from Avi-on Labs (www.avi-on) inside an external adapter
- Dims to off
- 90°C maximum case hot spot temperature
- Class 2 power supply
- Worldwide safety approvals

Wiring Diagram

AVI-ON BLUETOOTH MESH SOLUTION

- Wireless lighting controls with simple set-up that anyone can use
- Pre-integrated Bluetooth Smart mesh module enables multi-way controls and switching without additional wiring; no central gateway required
- Utility grade, secure, reliable mobile apps & software
- Dimming, grouping, many users, schedules, timers
- Virtually unlimited range with mesh
- Download for free, additional services available
- Compatible with large ecosystem of products from major brands

APPLICATIONS

- Indoor lighting
- Commercial & Retail lighting
- Architectural lighting

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1 - ORDERING INFORMATION - MODEL DESCRIPTION

ERP Part Number	Nominal Input Voltage (Vac)	Iout (mA)	Max Output Power (W)	Output Voltage Range (Vdc)		Comments
				Min	Max	
EXPN030W: 21 to 30W						
EXPN030W-0700-42-AVIW	120 - 277	700	29.4	30	42	Bluetooth Mesh module from Avi-on Labs and wire whip antenna.
EXPN050W: 41 to 50W						
EXPN050W-1050-42-AVIW	120 - 277	1050	44.1	30	42	Bluetooth Mesh module from Avi-on Labs and wire whip antenna.

For additional options of output current and output voltage, contact your sales representative or send an email to SaveEnergy@erp-power.com.

2 - INPUT SPECIFICATION (@25°C ambient temperature)

	Units	Minimum	Typical	Maximum	Notes
Input Voltage Range (Vin)	Vac	90	120, 230, 277	305	•The rated output current for each model is achieved at Vin≥108 Vac & at Vin≥198 Vac. •At nominal load
Input Frequency Range	Hz	47	60	63	
Power Factor (PF)		0.9	> 0.9		•At nominal input voltage and with nominal LED voltage
Inrush Current	A	Meets NEMA-410 requirements			•At any point on the sine wave and 25°C
Leakage Current	µA			250 µA @ 120 Vac 500 µA @ 230 Vac 600 µA @ 277 Vac	Measured per IEC60950-1
Input Harmonics	Complies with IEC61000-3-2 for Class C equipment				
Total Harmonics Distortion (THD)				20%	•At nominal input voltage and nominal LED voltage •Complies with DLC (DesignLight Consortium) technical
Efficiency	%	-	up to 82%	-	•Measured with nominal input voltage.
Isolation	Meets UL60950-1 for class II reinforced/double insulation power supply ⧈				

Wireless Bluetooth® Smart Mesh Integrated Constant Current LED Driver

3 - OUTPUT SPECIFICATION (@25°C ambient temperature)

	Units	Minimum	Typical	Maximum	Notes
Output Voltage (Vout)	Vdc	30	37.8	42	See ordering information for details
Output Current (Iout)	mA		700, 1050		•See ordering information for details •The rated output current for each model is achieved at Vin≥108 Vac & at Vin≥198 Vac.
Output Current Regulation	%	-5	±2.5	5	•At nominal AC line voltage •Includes load and current set point variations
Output Current Overshoot	%	-	-	10	The driver does not operate outside of the regulation requirements for more than 500 ms during power on with nominal LED load.
Ripple Current	≤ 40% of rated output current for each model				•Measured at nominal LED voltage and nominal input voltage without dimming •Calculated in accordance with the IES Lighting Handbook, 9th edition
Dimming Range (% of Iout)	%	1		100	•Dimming performance is optimal when the driver is operated at its nominal output voltage matching the LED nominal Vf (forward voltage). Dimming performance may vary when the driver is operated near its minimum output voltage.
Start-up Time	ms			400	•Measured from application of AC line voltage to the time where light is visible (about 10% of rated output current)
				500	•Measured from application of AC line voltage to 100% light output •Complies with California Title 24 and ENERGY STAR® luminaire specification

4 - ENVIRONMENTAL CONDITIONS

	Units	Minimum	Typical	Maximum	Notes
Operating Case Temperature (Tc)	°C	-30		+70	Case temperature measured at the hot spot •tc (see label in page 7)
Maximum Case Temperature (Tc)	°C			+90	Case temperature measured at the hot spot •tc (see label in page 7)
Storage Temperature	°C	-40		+85	
Humidity	%	5	-	95	Non-condensing
Cooling	Convection cooled				
Acoustic Noise	dBA			22	Measured at a distance of 1 foot (30 cm), without and with approved dimmers
Mechanical Shock Protection	per EN60068-2-27				
Vibration Protection	per EN60068-2-6 & EN60068-2-64				
MTBF	> 300,000 hours when operated at nominal input and output conditions, and at Tc ≤ 70°C				
Lifetime	hours	50,000			•At Tc = or ≤70°C maximum case hot spot temperature (see hot spot •tc on label in page 7)
Warranty	5 years at Tc ≤ 70°C				

Wireless Bluetooth® Smart Mesh Integrated Constant Current LED Driver

5 - EMC COMPLIANCE AND SAFETY APPROVALS

EMC Compliance			
Conducted and Radiated EMI		•FCC CFR Title 47 Part 15 Class B at 120 Vac and Class A at 277 Vac, •EN55015 (CISPR 15) compliant at 220, 230, and 240 Vac	
Harmonic Current Emissions		IEC61000-3-2	For Class C equipment
Voltage Fluctuations & Flicker		IEC61000-3-3	
Immunity Compliance	**ESD (Electrostatic Discharge)**	IEC61000-4-2	6 kV contact discharge, 8 kV air discharge, level 3
	RF Electromagnetic Field Susceptibility	IEC61000-4-3	3 V/m, 80 - 1000 MHz, 80% modulated at a distance of 3 meters
	Electrical Fast Transient	IEC61000-4-4	± 2 kV on AC power port for 1 minute, ±1 kV on signal/control lines
	Surge	IEC61000-4-5	± 1 kV line to line (differential mode) /± 2 kV line to common mode ground (tested to secondary ground) on AC power port, ±0.5 kV for outdoor cables
	Conducted RF Disturbances	IEC61000-4-6	3V, 0.15-80 MHz, 80% modulated
	Voltage Dips	IEC61000-4-11	>95% dip, 0.5 period; 30% dip, 25 periods; 95% reduction, 250 periods
Transient	**Ring Wave**		ANSI/IEEE c62.41.1-2002 & c62.41.2-2002 category A, 2.5 kV ring wave

Safety Agency Approvals	
UL	UL8750 recognized
cUL	CAN/CSA C22.2 No. 250.13-14 LED equipment for lighting applications CAN/CSA C22.2 No. 223 Power supplies with extra-low voltage Class 2 outputs
CE	IEC61347-2-13 electronic control gear for LED Modules

Safety					
	Units	**Minimum**	**Typical**	**Maximum**	**Notes**
Hi Pot (High Potential) or Dielectric voltage-withstand	Vdc	4242			•Insulation between the input (AC line and Neutral) and the output •Tested at the RMS voltage equivalent of 3000 Vac

6 - PROTECTION FEATURES

Under-Voltage (Brownout)

The EXPN-AVI series provides protection circuitry such that an application of an input voltage below the minimum stated in section 2 (Input Specification) shall not cause damage to the driver.

Short Circuit

The EXPN-AVI series is protected against short-circuit such that a short from any output to return shall not result in a fire hazard or shock hazard. The driver shall hiccup as a result of a short circuit or over current fault. Removal of the fault will return the driver to within normal operation. The driver shall recover, with no damage, from a short across the output for an indefinite period of time.

Internal Over temperature Protection

The EXPN-AVI series incorporates circuitry that prevents internal damage due to an over temperature condition. An over temperature condition may be a result of an excessive ambient temperature or as a result of an internal failure. When the over temperature condition is removed, the driver shall automatically recover.

Output Open Load

When the LED load is removed, the output voltage of the EXPN-AVI series is typically limited to 1.3 times the maximum output voltage of each model.

Wireless Bluetooth® Smart Mesh Integrated Constant Current LED Driver

7 – DIFFERENT TYPES OF ANTENNA

The Bluetooth Mesh module inside the external plastic adapter is available with 2 different types of antennas:

1. **Internal antenna**. Figure 1 shows a picture of the PCB inside the plastic adapter with the small copper antenna. The ordering part numbers are EXPN030W-0700-42-AVIN and EXPN050W-1050-42-AVIN.

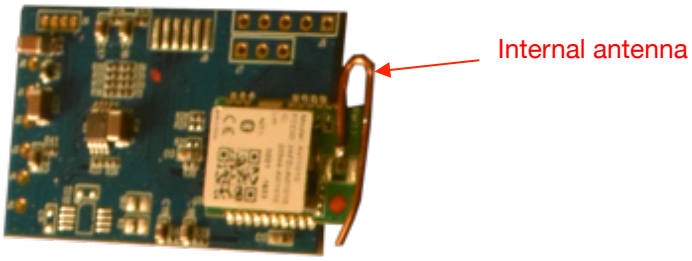

Figure 1

2. **Ready for a removable external antenna**. In this configuration, the plastic adapter comes already pre-wired with a small u.FL to RPSMA cable (figure 2) which allows the connection of an external antenna. The ordering part numbers are: EXPN030W-0700-42-AVIX and EXPN050W-1050-42-AVIX.

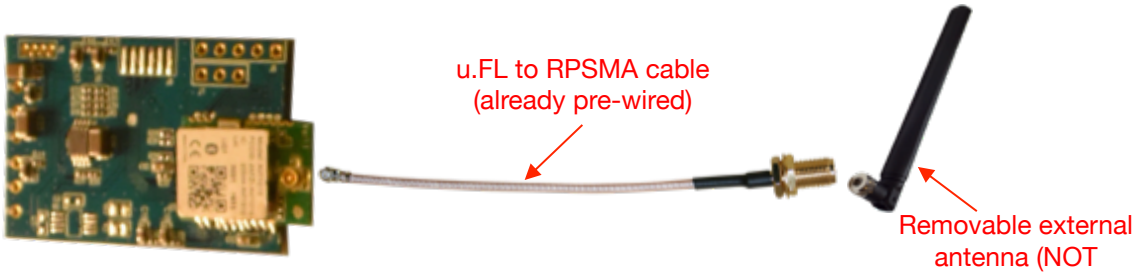

Figure 2

Wireless Bluetooth® Smart Mesh Integrated Constant Current LED Driver

8 - MECHANICAL DETAILS

Packaging Options: Plastic case
I/O Connections: Flying leads, 18 AWG on power leads, 22 AWG on 0-10V dimming wires, 152 mm (6 in) long, 105°C rated, stranded, stripped by approximately 9.5mm, and tinned. All the wires, on both input and output, have a 300 V insulation rating.
Ingress Protection: IP64 rated
Flammability Rating: UL94 V-0 (5VA available upon request. Please contact your sales representative or send an email to: SaveEnergy@erp-power.com for additional information).
Mounting Instructions: The EXPN-AVI driver case must be secured on a flat surface through the two mounting metal clips, shown here below in the case outline drawings.

9 - OUTLINE DRAWINGS

Dimensions: L 87 x W 60 x H 27.2 mm (L 3.43 x W 2.36 x H 1.07 in) (not including Avi-on adapter)
Volume:
Weight:

All dimensions are in mm

Figure 7

Wireless Bluetooth® Smart Mesh Integrated Constant Current LED Driver

9 - LABELING

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