



729 Series

LED Emergency Light (110V DC)

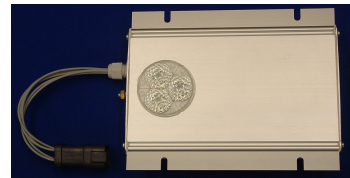
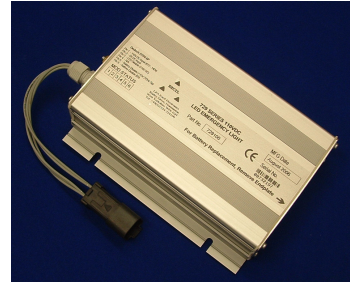


*Long Life Reliability
does not cost the earth*

LPA-EXCIL ELECTRONICS

Feature Summary

- High reliability battery-maintained LED emergency lighting unit (ELU) with intelligent power management.
- Provides over three hours of emergency lighting in the event of vehicle power loss, in compliance with EN13272
- In-built self diagnostic facility, with automatic fault reporting.
- Separate bezel design permits bespoke aesthetic styling



Product Codes

- The main 729 series product is #729128. This unit is capable of providing 3 hours of illumination at 120 lux, 2m from the unit. This is in excess of the statutory EN13272 requirement.
- LPA-Excil's Emergency Lighting System Sender Units, #729132 & #729133 are compatible with the #729128 ELU. These units provide an additional high-integrity deactivation facility to the stock #729128 product.
- Replacement NiMH battery packs for #729128 are available from Excil, part number #729115.

729128 ELU Product Features		
Input Voltage Range	67-140	V DC
No. High Intensity 1W LEDs	3	
High Capacity Internal NiMH Battery Pack	Yes	
Condition Reporting Via Coloured LED	Yes	
Enclosure Type	Sealed Aluminium Extrusion (Figure 1)	
Input Connector	Deutsch Connector® DT04-6P	

* Other styles available by request. Call LPA-Excil for details



General Unit Behaviour

The ELU has two main modes of operation.

1. Dual Purpose Luminaire / Emergency Light

- The LEDs within the device are ON by default at all times to provide general illumination. This is the default behaviour when external control inputs are absent.
- Electrical power is drawn from the vehicle supply.
- If vehicle power is disconnected, the ELU enters Emergency Mode. Illumination continues, with power being drawn from the internal battery pack within the unit.
- The battery is continuously discharged until it reaches its discharge threshold. At this point the power management detects this condition and shuts down the unit to avoid over discharging and damaging the internal batteries.

2. Emergency Light

- The LEDs within the device are OFF by default, under normal circumstances. This mode is triggered by supplying +110V DC to pin 3 on the external connector.
- Electrical power is drawn from the external vehicle supply.
- If external vehicle power is disconnected, emergency illumination is triggered and battery discharge commences as described above.

In modes 1 & 2 the ELU continuously monitors the internal battery state.

- **If the battery has been significantly discharged and external vehicle power is available Boost charging commences**
- The battery pack is fast-charged via a tightly regulated low-loss switched charging circuit.
- Charging is automatically halted when the internal circuitry detects a zero voltage slope at the battery.
- **If the battery is fully charged the ELU stands-by, and continues to monitor the condition of the internal battery.**
- Any drop in voltage at the battery terminals is detected by the unit and a top-up charge is automatically supplied.

Emergency illumination can be selectively deactivated via an LPA-Excil sender unit, part nos. #729132/#729133.

- **When triggered, the sender unit supplies a 15V 218Hz square wave signal to the ELU.**
- This signal will shutdown any emergency illumination that has been triggered by disconnecting the ELU from the vehicle supply (eg for maintenance).
- The ELU will only respond to this frequency. Thus false deactivation in a crash scenario where vehicle cabling may be disturbed is avoided.

Input Specification

Input Voltages and Currents

Acceptable Input Supply Voltage Range	67-140	V DC
Nominal Input Voltage	110	
Input Voltage Limit Without Damage	160	

		LEDs Off	LEDs On	
DC Input Current - Boost Charge	@ 110V DC	110	140	mA DC
DC Input Current - Top Up Charge		12	50	

* Input current values across the entire operational voltage range are available on request



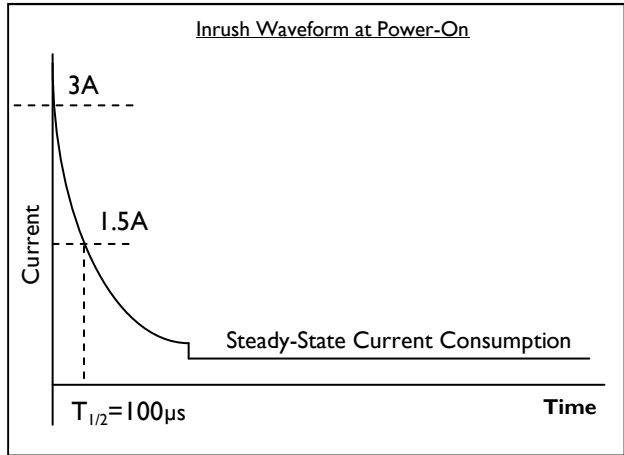
Battery Management and Protection Features

<p>Over-Charging Protection As soon as the ELU battery is fully charged, the zero-voltage slope that occurs at the battery terminals is detected. Boost charging halts and the unit enters top-up charge mode.</p>
<p>Over-Discharge Protection During discharge the battery terminal voltage is monitored. When this voltage drops below a critical value discharging is halted.</p>
<p>Thermal Cut-Out Protection Charging only occurs when the battery pack is within the correct temperature range.</p>
<p>Under/Over Voltage Protection The ELU battery will only be charged when the terminal voltage lies within a valid specified range. If this condition is not satisfied a battery recovery procedure is instigated. If this fails to bring the battery within specification, the unit will then latch in a non-charging state.</p>
<p>Charging Time Protection If charging is not complete after a specified time period charging halts and the system latches. Charging will not begin again until the unit power supply is reconnected.</p>

Battery Lifetime	~500 charge/discharge cycles
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Power-On Inrush Data

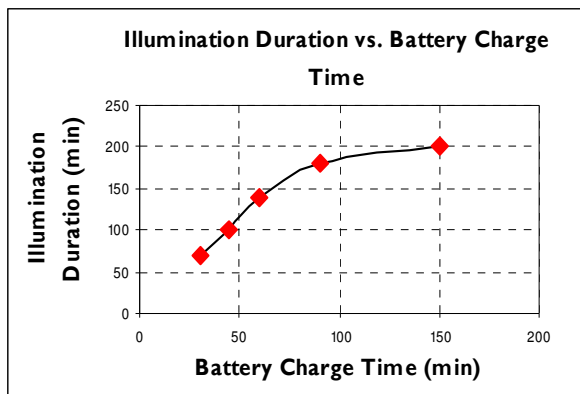
Peak Inrush Current	3 (@ 140V DC)	A
Time to Half Value	100 (@ T=25°C)	µs



Output Specification

Light output @2m	120	Lux	
Illumination Beamangle*	±15	Degrees	
Emergency Illumination Duration	Fully charged battery	>180	Mins
	90 min charge	~180	

* Assumes standard 'medium' lens. Other lenses available by request.



Environmental Specification

Unit Weight		900	g
Dry Heat (steady state)	RIA13 1990 1995	70	°C
		6	Hrs
Sealing Rating		IP65	
Shock and Vibration		EN50155 & EN61373	
Crash Pulse		AV/ST9001	
Operating Temperature Range		-25 to 55	°C
MTBF Ground Mobile 40°C		160,000	Hrs
		28	Yrs

Compliance

The 729 Series LED emergency light complies with the following standards:

- EN50121-3-2
- RIA12
- EN61373
- EN50155
- EN60529 to IP65
- AV/ST9001
- EN13272

Safety Specification

#729128 is equipped with the following protection circuitry as standard:

- All inputs protected against DC voltage reversal.
- Under voltage cut-off.

CAUTION: When replacing ELU battery packs we recommend that only LPA-Excil NiMH battery packs, #729115, should be used. Use of other battery packs may result in damage to both ELU and battery pack, and may cause personal injury for which LPA-Excil cannot be held responsible.

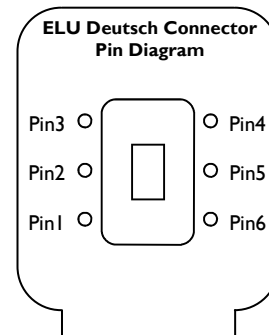
System Condition Reporting

- The 729 series product has an internal condition reporting facility.
- Information about the current internal state of the ELU is communicated to the user via a dual-colour red/green glow from within the main lighting bezel.
- This is visible only when the illumination LEDs within the lens are deactivated.
- Flashing patterns of red and green with different duty cycles correspond to different internal system states.

System State	Light Pattern*	Green	Red	
Battery OK: Boost Charging	GGGGRGGGGRGGGG	1.9	0.1	secs
Battery OK: Fully Charged	GGGGGGGGGGGGGGGG	∞	NA	
Battery Out-of-Spec: Boost Charging	RRRRGRRRRGRRRR	0.1	1.9	
Battery Out-of-Spec: Capacity Issue	RRRRRRRRRRRRRR	NA	∞	
Thermal Cut-Out: System Unlatched	GGRRRGGGRRRGGG	0.4	0.4	
System Latched: Charging Problem	RRRRRRRRRRRRRR	NA	∞	

Installation Guide

ELU Unit Connector Pin Out - Deutsch DT04-06†	
Pin 1	Input Supply +110V DC
Pin 2	Input Supply 0V DC
Pin 3	LED Disable Input +110V DC LEDs OFF 0V/Open LEDs ON
Pin 4	Not Used
Pin 5	Battery Disable Input +15V 218Hz square wave BATTERY OFF
Pin 6	Battery Disable Input 0V



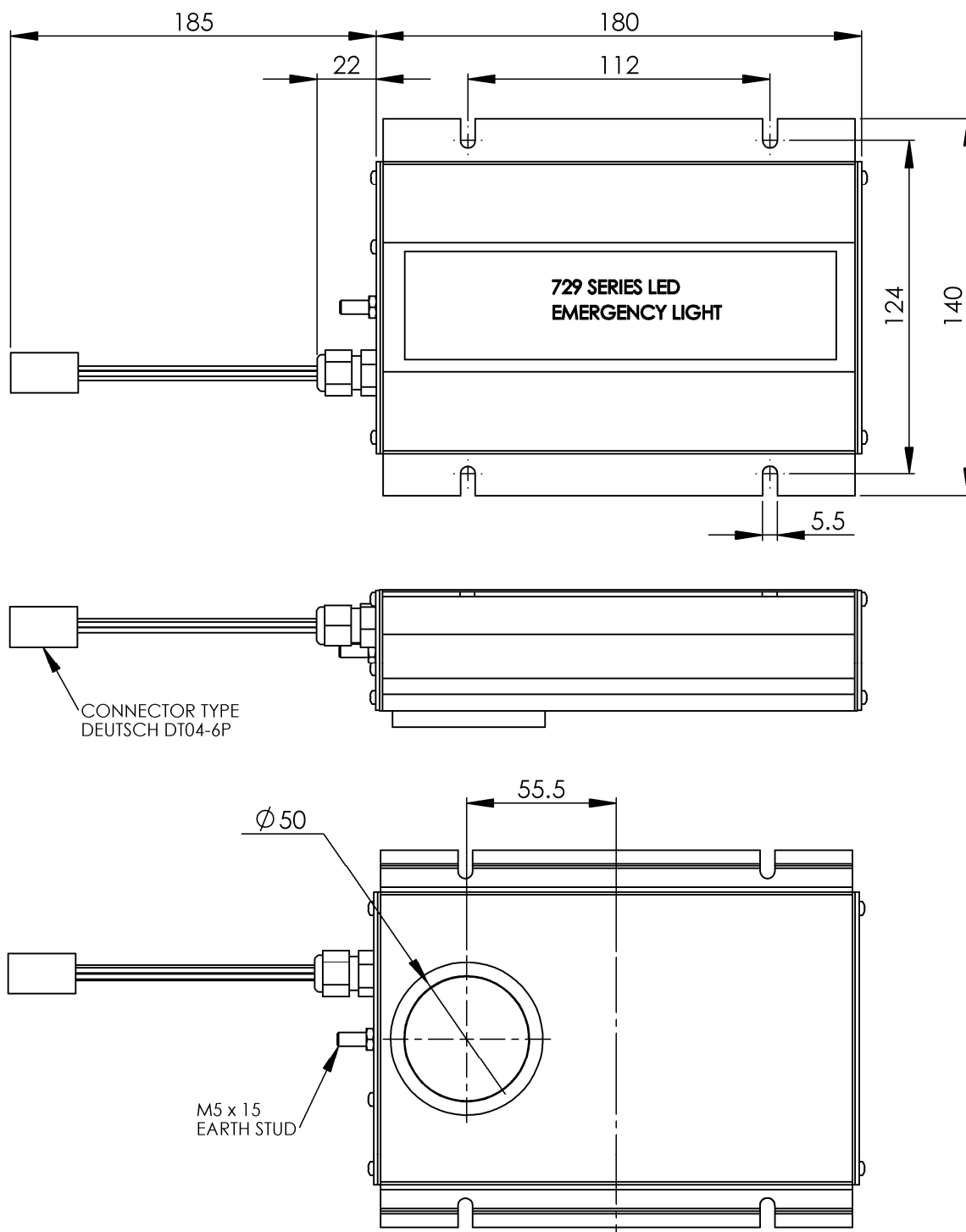
* Where G denotes green illumination and R denotes red.

† Other connector types are available on request. Contact us for details.

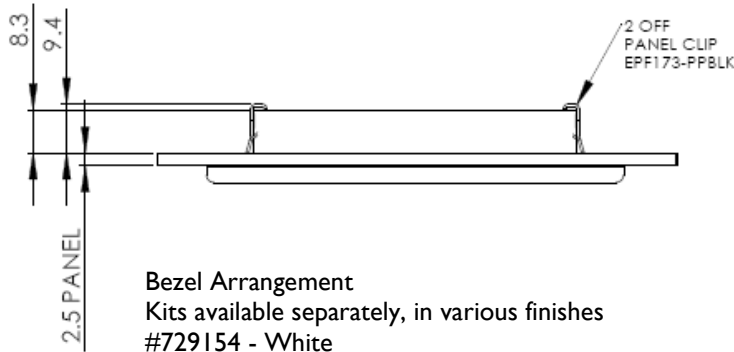
Mechanical Specification

All Dimensions in mm unless stated otherwise

Figure 1 - #729128 ELU Aluminium Enclosure
DT04-06 Deutsch Connector

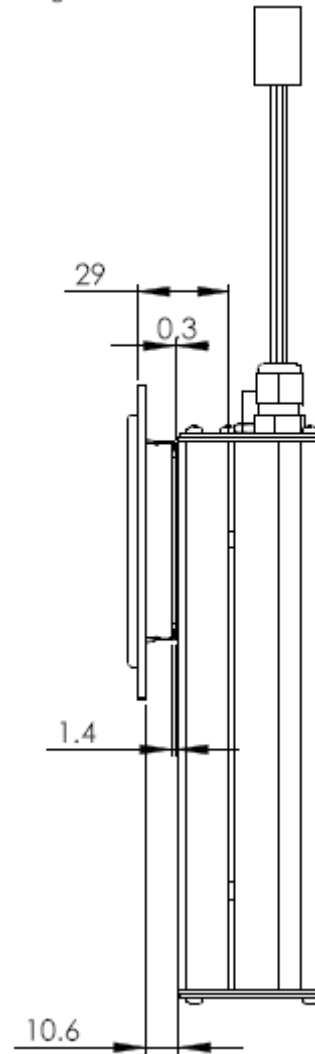
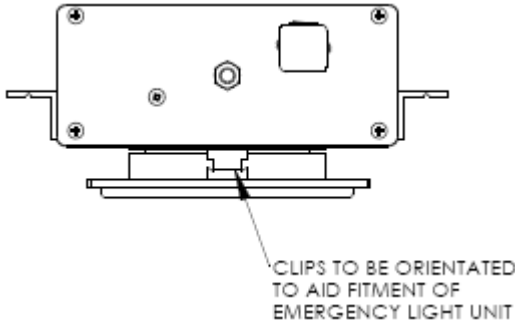


Mechanical Installation



Bezel Arrangement
Kits available separately, in various finishes
#729154 - White
#729155 - Nickel
#729156 - Chrome

2.5 PANEL



LPA-Excil makes every effort to ensure the accuracy of the information contained within this datasheet. However we reserve the right to withdraw and re-issue this datasheet at a later date.



LPA-Excil Electronics
Ripley Drive, Normanton,
WF6 1QT, UK
Tel: +44 (0)1924 224100
Fax: +44 (0)1924 224111

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