



978 Series

110V DC LED Modules



Long Life Reliability
does not cost the earth

LPA-EXCIL ELECTRONICS

Feature Summary

- High reliability lighting grade chip LED technology.
- LED life expectancy greater than 80,000hrs to 70% of initial light output*.
- Zero maintenance costs.
- Reduced weight compared to fluorescent luminaires.
- Illumination levels exceed industry requirements.
- Offers energy savings compared to conventional light sources.
- Integrated power supply for direct connection to vehicle 110V DC systems.
- Three independent LED circuits.
- Emergency mode circuit.
- Option with RED/GREEN indicators.



Product Codes

Individual products in the 978 series range are referred to by product code.

	Product Code #
978123 Door Luminaire	978110 (No Cables) 978111 (Input Cables) 978112 (Output Cables)
978124 Short Luminaire before the Cab	978100 (Input/Output cables)
978125 Arch Luminaire	978102 (no Cables) 978103 (Input/Output Cables)
978126 Rotunda Luminaire	978104 (No Cables) 978105 (Input/Output Cables)
978127 Straight Lateral Luminaire	978106 (No Cables) 978107 (Input/output Cables)
978128 Short Straight Lateral Luminaire	978108 (No Cables) 978109 (Input/Output Cables)
978129 Cab Luminaire	978106 (No Cables) 978135 (Input/Output Cables)

* When mounted to an appropriate heat sink @25°C



Input Specification

Acceptable Input Supply Voltage Range (Supply and Control lines)			67-140VDC
Input Voltage Limit Without Damage			154VDC
Input Current (@ 110VDC)	978110	SL1	22mA
	978111	SL2	30mA
	978112	SLE	8.7mA
		SLR	5.1mA
		SLE	8mA
	978100	SL1	34mA
	978108	SL2	34mA
	978109	SLE	5.5mA
	978102	SL1	34mA
	978103	SL2	34mA
		SLE	5.5mA
	978104	SL1	30mA
	978105	SL2	30mA
		SLE	5.5mA
	978106	SL1	30mA
978107	SL2	30mA	
978135	SLE	5.5mA	
Input Power (@ 110VDC)	978110	SL1	2.4W
	978111	SL2	3.2W
	978112	SLE	1W
		SLR	0.6W
		SLE	0.9W
	978100	SL1	3.75W
	978108	SL2	3.75W
	978109	SLE	0.65W
	978102	SL1	3.75W
	978103	SL2	3.75W
		SLE	0.65W
	978104	SL1	3.30W
	978105	SL2	3.30W
		SLE	0.65W
	978106	SL1	3.30W
978107	SL2	3.30W	
978135	SLE	0.65W	
Combined LED Module Power Converter Efficiency			87%
Line Regulation (Percentage Illuminance change due to Supply variation from nominal) @			<10%
Peak Inrush Current (@ Peak Sine)			24A
Time to Half Value (@ T=25°C)			9us



Output Specification

Dim Level	LED Colour Classification	Colour Temperature Range	LED Manufacturer	Intensity Bin	Source Luminous Flux lm/W	Total Luminous Flux lm
978100	Natural White	4000k-4200k	Seoul Semiconductor	U0	105	729
972102						
978103						
978108						
978109						
978104	Natural White	4000k-4200k	Seoul Semiconductor	U0	105	683
978105						
978106						
978107						
978135						
978110	Natural White	4000k-4200k	Seoul Semiconductor	U0	105	638
978111						
978112						



Environmental Specification

All Variants			
Shock and Vibration		EN50155 & EN61373	
Operating Temperature Range		-40 to 55	°C
Weight		<90 (LED Module)	g
Lumen Maintenance (LED Life to 70% of the initial light output)		>80,000	Hrs
MTBF Ground Mobile 40°C	Complete Unit	> 339,000 (white only) >210,000 (door)	Hrs
	Single driver/LED Circuit	>1,000,000	

Compliance

The 978 Series LED Module complies with the following standards:

- EN61373:1999 Rolling stock equipment. Shock and vibration.
- EN50121-3-2:2006 Rolling stock equipment. Electromagnetic compatibility.
- EN50155:2007 Electronic equipment used on rolling stock.

Safety Specification

All 978 Series LED Modules come equipped with the following protection circuitry as standard:

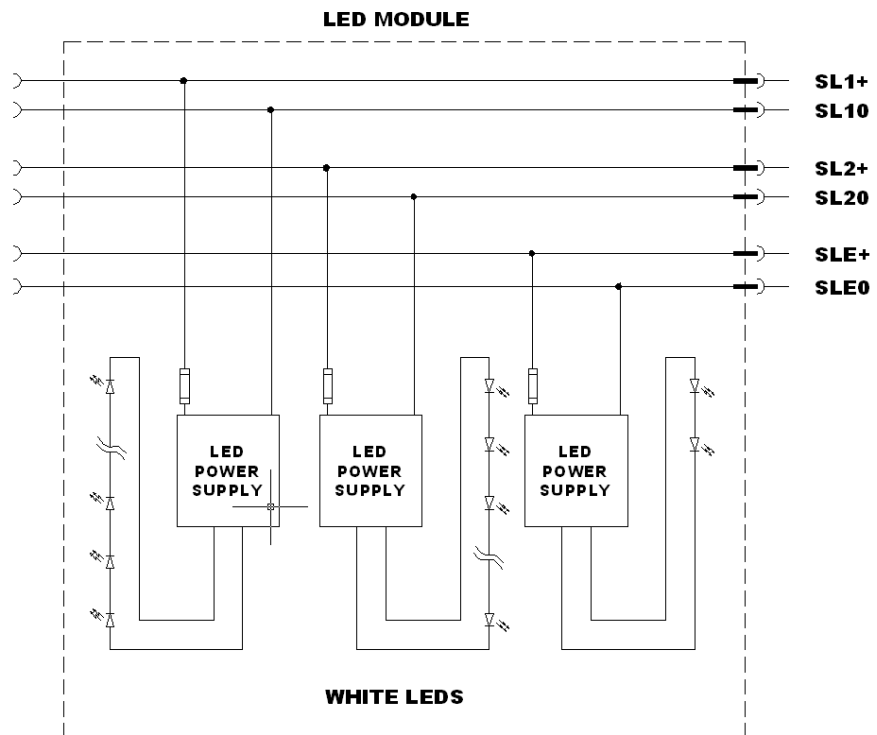
- DC input voltage reversal (Non destructive) for supply and control lines.
- Input transient protection for supply and control lines.
- Under voltage protection.
- Input fuse per LED driver to protect against consequential failures or damage.
- The failure of one LED circuit will not effect the operation of the remaining LED circuit.

Installation Guide

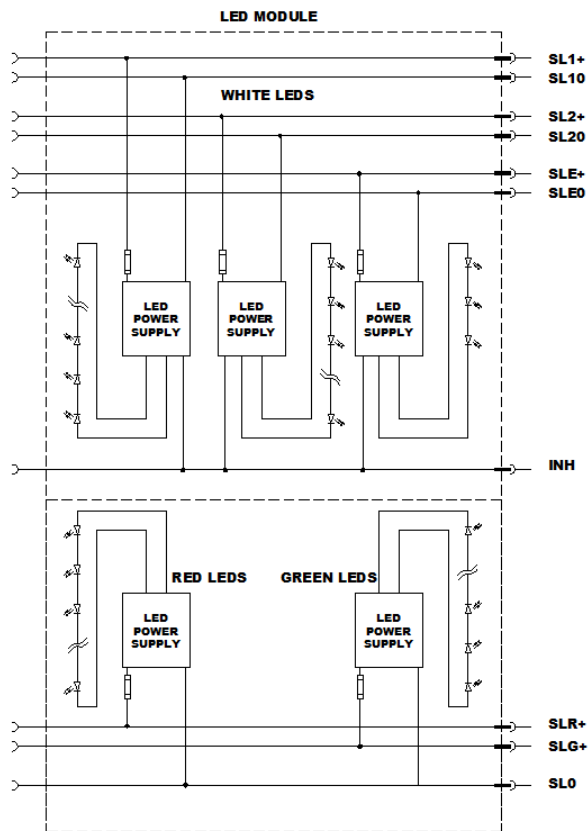
General Installation Notes: 978 Series Products

Maximum PCB Impedance (Per Input)						
	978110 978111 978112	978100 978108 978109	978102 978103	978104 978105	978106 978107 978135	
SL1+	0.035	0.030	0.030	0.040	0.035	Ohms
SL10	0.030	0.030	0.030	0.040	0.030	Ohms
SL2+	0.045	0.020	0.030	0.045	0.030	Ohms
SL20	0.035	0.020	0.040	0.045	0.030	Ohms
SLE+	0.040	0.085	0.045	0.090	0.080	Ohms
SLE0	0.050	0.065	0.045	0.080	0.070	Ohms
SLR+	0.085	N/A	N/A	N/A	N/A	Ohms
SLG+	0.055	N/A	N/A	N/A	N/A	Ohms
SL0	0.055	N/A	N/A	N/A	N/A	Ohms

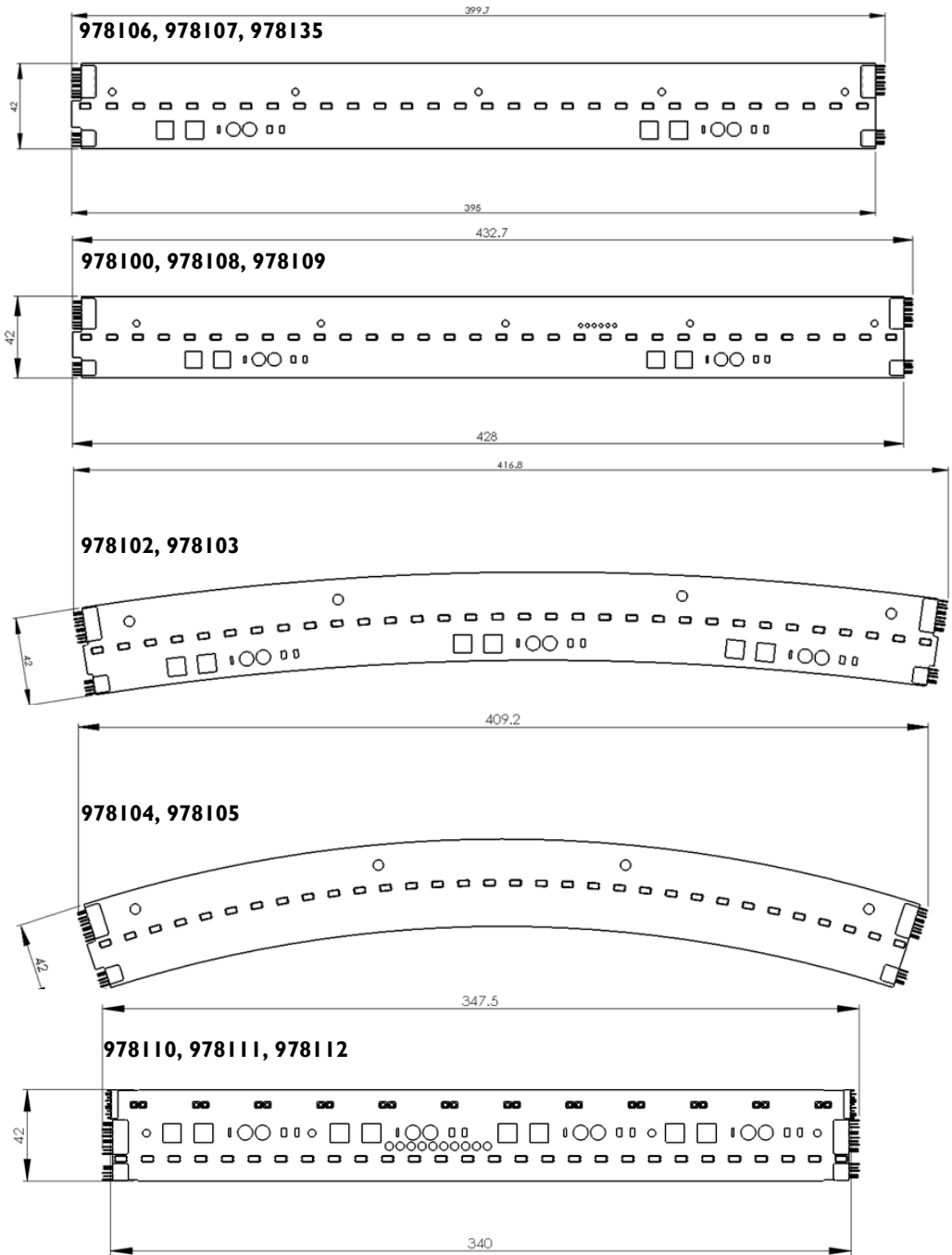
Maximum Continuous Loop in/out Current	6	A
Maximum Number of LED Modules connected in series from one supply source	25	



#D0404801



Mechanical Specification



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.



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