LED LIGHTING

PUBLIC TRANSPORT & COMMERCIAL VEHICLES

SCS
INDUSTRIE - COMPONENTEN BV

WORLD LEADERS IN LED TECHNOLOGY

JW Speaker is a world leading LED lighting manufacturer who produces technologically advanced products for leading OEM and after-market customers around the world. As highly respected supplier to a wide range of markets such as agriculture, construction, on-road commercial, material handling, mining, motorcycle, recreation and military, the range of LED products produced by JW Speaker covers just about every application imaginable.

In this brochure we focus on the LED products for the public transportation and commercial vehicles.

REGULATIONS

SURPASSING STANDARDS WORLDWIDE.

J.W. Speaker is committed to making the best products to be used legally on-road around the world. To do that, we design lights that meet and exceed the requirements for a variety of regulations:

The Federal Motor Vehicle Safety Standard regulates all automotive lighting, signaling, and reflective devices in the U.S.A. and is enforced by the Department of Transportation (**DOT**)

Many countries recognize the United Nations Economic Commission for Europe (**ECE**) Transport Division's regulations and mirror the ECE regulations in their own national requirements

SAE International develops standards for the engineering of powered vehicles mainly in the U.S.A. and Canada, including cars, trucks, boats, aircraft, and more

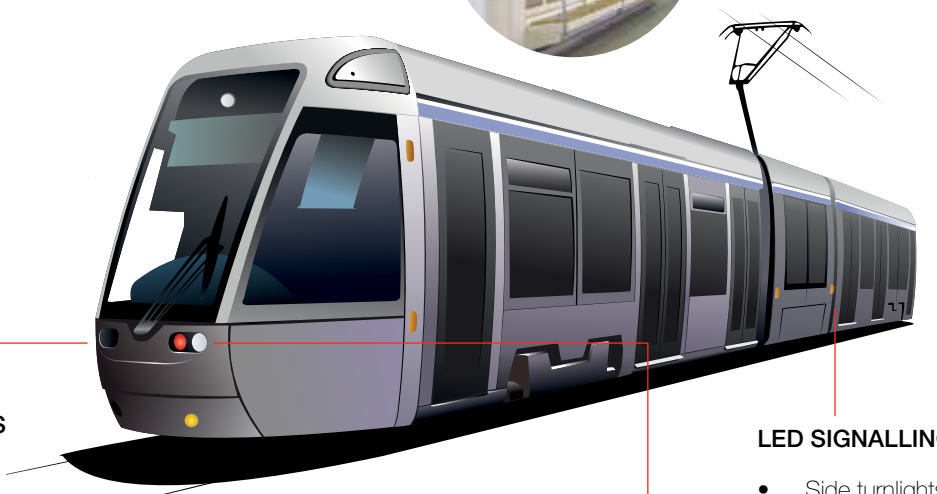
Transport Canada is responsible for developing regulations, policies, and services relating to transportation in Canada

The Australian Design Rules (**ADR**) are national standards for vehicle safety, anti-theft, and emissions

OUR POSSIBILITIES

LED INTERIOR LIGHTING:

- LED tubes
- LED spots
- Custom made LED solutions



LED SIGNAILIGHTS

- Back
- Brake
- Reverse
- Fog
- Turn
- DRL

LED SIGNALLING:

- Side turnlights
- Side Markers

LED HEADLIGHTS:

- High/Low beam
- DRL (Daytime Running Light)
- Multifunction (DRL/Brake/Turn/Tail/Fog

With our wide range of standard products we are able to find a solution for almost any existing system available. Our team of experienced engineers are able to create innovative lighting technology to fit the requirements of your bus and rail projects. The team can guide you through the entire bespoke design process, from producing initial sketches to designing a prototype and offer full post-production services.

MODEL 93

Raw Lumen Output:
630 (High Beam); 1,910 (Low Beam)

Effective Lumen Output:
230 (High Beam); 575 (Low Beam)

Candela Output:
45,000 (High Beam); 18,500 (Low Beam)

Connector/Wiring:
High Beam: Deutsch DT04-3P
Low Beam: Deutsch DT04-2P

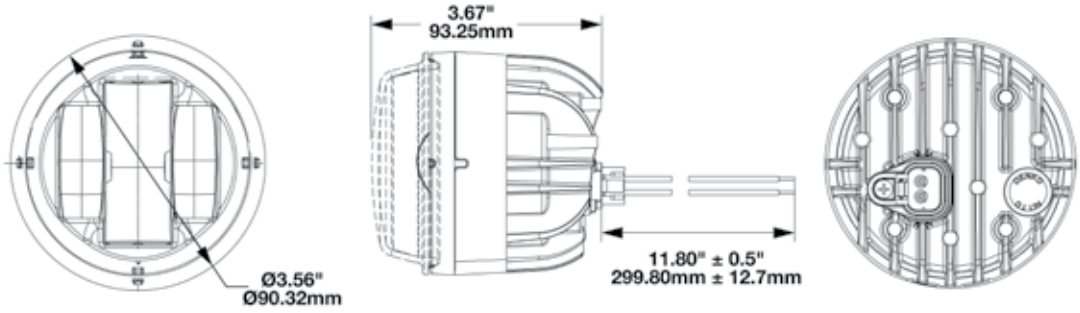
Operating Voltage:

10-31V DC

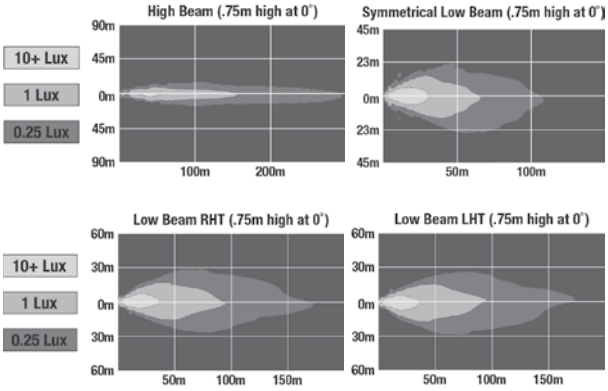
Current Draw:
Low Beam: 1.97A @ 12V; 0.98A @ 24V DC
High Beam: 0.80A @ 12V; 0.40A @ 24V DC
Front Position: 0.40 @ 12V; 0.20 @ 24V DC

Retrofit Information:
Standard 90mm lamps

Standards:



PART #	DESCRIPTION
0553081	SAE/ECE/Reg113/Low
0553091	ECE/LHT/Reg112/Low
0553101	DOT/ECE/RHT/Reg112/Low
0553071	DOT/ECE/High
0554381	SAE/ECE/High with FP
0556701	SAE/ECE/Fog Lamp
0347941	SAE/ECE/DRL/Turn Signal



PART #	ACCESSORIES
8001601	Single Lamp Pedestal Mount Bracket
8001461	1.5mm 3-Point Mount
8001471	3.0mm 3-Point Mount

MODEL 97

Raw Lumen Output:
1,800 (High Beam); 1,600 (Low Beam)

Effective Lumen Output:
497 (High Beam); 321 (Low Beam)

Candela Output:
41,800 (High Beam); 14,600 (Low Beam)

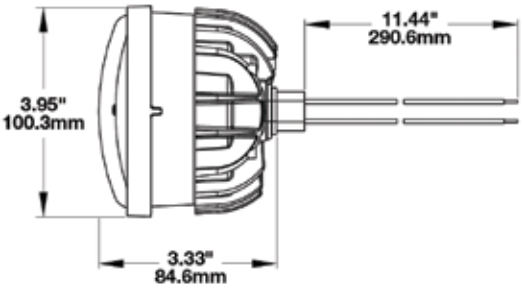
Connector/Wiring:
Deutsch DT04-4P

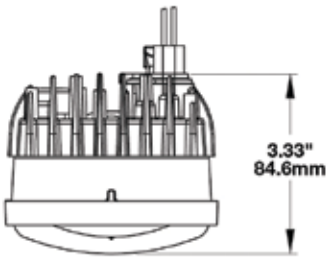
Operating Voltage:
10-32V DC

Current Draw:
High Beam: 1.8A @ 12V; 1.0A @ 24V DC
Low Beam: 1.5A @ 12V; 0.8A @ 24V DC
Front Position: 0.1A @ 12V; 0.06A @ 24V DC

Retrofit Information:
100mm Bi-LED Headlamp

Standards:



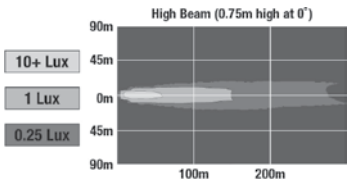


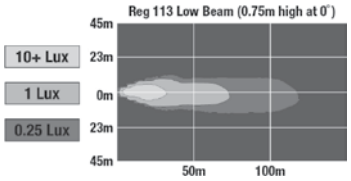
PART #	DESCRIPTION
0554831	DOT/ECE/RHT/High/Low/Reg 112
0554911	ECE/LHT/High/Low/Reg 112
0554921	DOT/ECE/High/Low/Reg 113

PART #	MOUNTING OPTIONS
8001511	3-Point Mount for 3mm Mounting Frame
8001521	Single Lamp Pedestal Mount Bracket


8001511


8001521





MODEL 8630 & 8631 EVOLUTION

PRODUCT SPECIFICATIONS

Raw Lumen Output:
2,925 (High Beam); 2,025 (Low Beam)

Effective Lumen Output:
1,000 (High Beam); 630 (Low Beam)

Candela Output:
61,684 (High Beam); 19,162 (Low Beam)

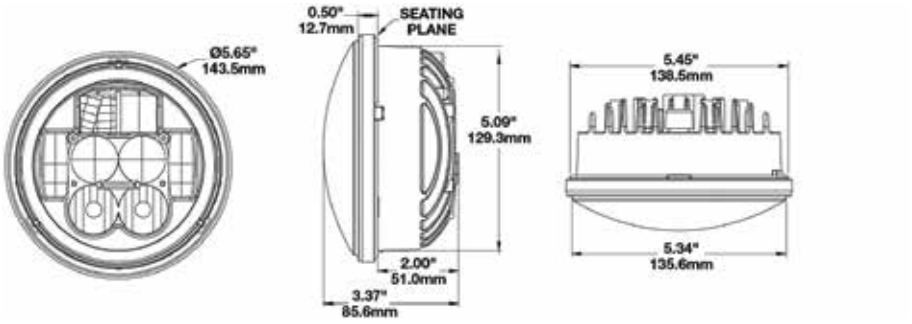
Connector/Wiring:
Integral Connector in Housing simulating
Delphi #12124107

Operating Voltage:
10-32V DC

Current Draw:
Low Beam: 2.20A @12V; 1.70A @14V; 1.10A @24V
High Beam: 3.50A @12V; 2.70A @14V; 1.70A @24V
Turn: 1.40A @12V; .70A @24V
8630 FP: .09A @12V; .07A @14V; .04A @24V
8630 DRL: .90A @12V; .68A @14V; .38A @24V
8631 FP: .05A @12V; .05A @24V
8631 DRL: 1.10A @12V; .70A @24V

Retrofit Information:
5.75" Round (PAR46)

Standards:



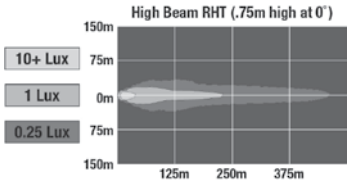
MODEL 8630

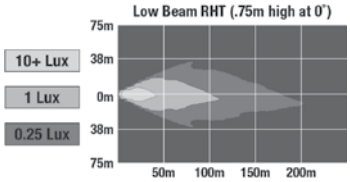
PART #	DESCRIPTION
0549911	DOT/ECE/RHT/High/Low/FP & DRL
0549921	ECE/LHT/High/Low/FP & DRL
0550921	DOT/High/Low

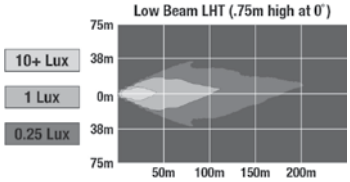
PART #	ACCESSORIES
3157751	Double Lamp Mounting Ring Kit
8200001	Single Lamp Mounting Ring Kit

MODEL 8631

PART #	DESCRIPTION
0551641	ECE/LHT/High/Low/Turn/FP & DRL
0551631	DOT/ECE/RHT/High/Low/Turn/FP & DRL







If your vehicle is operated in the United States you do NOT need to connect the Front Position wire (red) unless your vehicle is equipped with a front position light.

8700 EVO 2 PRO

Raw Lumen Output:
4,170 (High Beam); 2,340 (Low Beam)

Effective Lumen Output:
1,340 (High Beam); 694 (Low Beam)

Candela Output:
84,700 (High Beam); 30,600 (Low Beam)

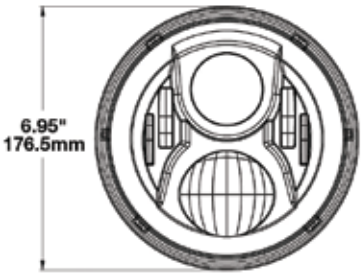
Connector/Wiring:
H4

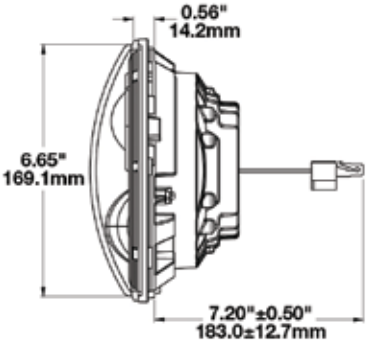
Operating Voltage:
9-32V DC

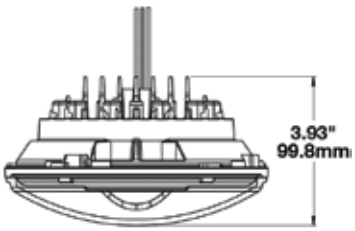
Current Draw:
High Beam: 3.60A @ 12V; 1.80A @ 24V DC
Low Beam: 2.00A @ 12V; 1.10A @ 24V DC
Front Position: 0.16A @ 12V; 0.10A @ 24V DC
DRL: 1.60A @ 12V; 0.80A @ 24V DC

Retrofit Information:
7" Round (PAR56)

Standards:

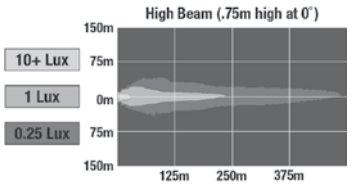


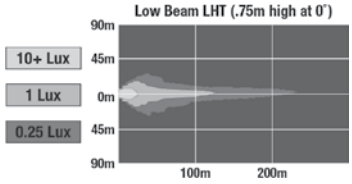


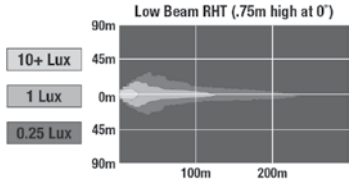


PART #	BEZEL	DESCRIPTION
0556981	Black	ECE/RHT/High/Low/FP & DRL
0556971	Chrome	ECE/RHT/High/Low/FP & DRL
0556961	Black	ECE/LHT/High/Low/FP & DRL
0556951	Chrome	ECE/LHT/High/Low/FP & DRL

PART #	ACCESSORIES
3156561	Panel Mount Bucket Assembly
3156351	Mounting Ring Kit for 7" Round (PAR56) Headlights
3266081	Jumper Harness H4/H13
8000381	Anti-Flicker Harness H4/H4
8000311	Anti-Flicker Harness H4/H13







8900 EVOLUTION 2

Raw Lumen Output:
2,640 (High Beam); 2,250 (Low Beam)

Effective Lumen Output:
1,200 (High Beam); 975 (Low Beam)

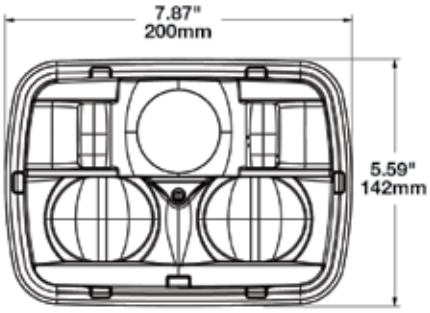
Connector/Wiring:
H4

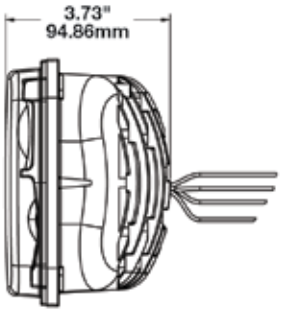
Operating Voltage:
10-32V DC

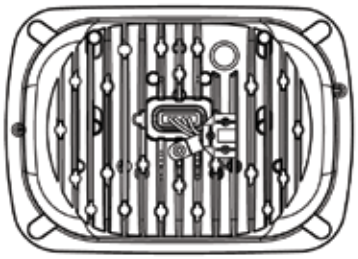
Current Draw:
High Beam: 1.94A @ 12V; 1.03A @ 24V DC
Low Beam: 1.67A @ 12V; 0.87A @ 24V DC
Front Position: 0.22A @ 12V; 0.16A @ 24V DC

Retrofit Information:
5" x 7" Rectangle; 2B1 Sealed Beams

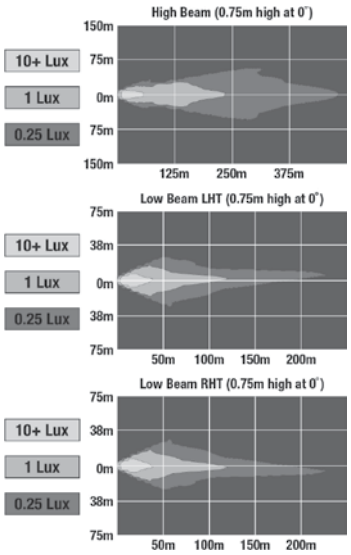
Standards:







PART #	BEZEL	DESCRIPTION
0554471	Chrome	DOT/ECE/RHT/High/Low/FP
0554491	Black	DOT/ECE/RHT/High/Low/FP
0554431	Chrome	ECE/LHT/High/Low/FP
0554451	Black	ECE/LHT/High/Low/FP



If your vehicle is operated in the United States you do NOT need to connect the Front Position wire (red) unless your vehicle is equipped with a front position light.

9900 LOW PROFILE

PRODUCT SPECIFICATIONS

Raw Lumen Output:
2370 (Low Beam); 4300 (High Beam)

Effective Lumen Output:
587 (Low Beam); 1060 (High Beam)

Candela Output:
58,000 (High Beam)

Connector/Wiring:
6-Pin Delphi 12052848

Operating Voltage:
9-30V DC

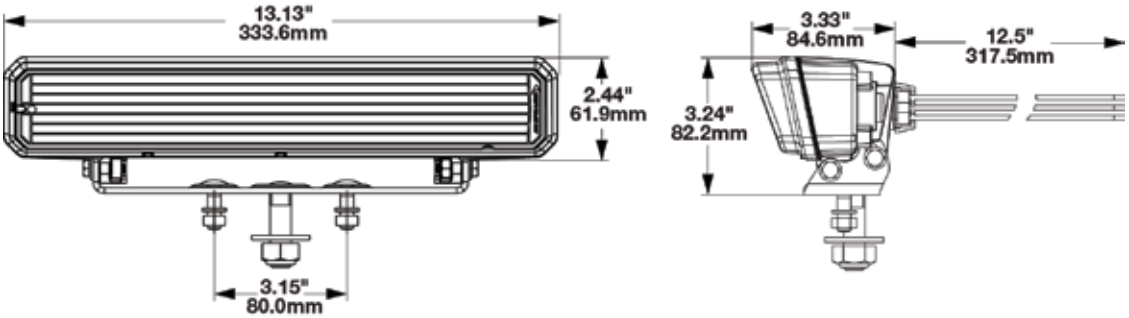
Current Draw:
Low Beam: 3.50A @ 12V; 2.25A @ 24V DC
High Beam: 5.00A @ 12V; 3.00A @ 24V DC
Turn: 1.20A @ 12V DC; .75A @ 24V DC
Front Position: 2.00A @ 12V DC; 1.50A @ 24V DC
DRL: 2.50A @ 12V DC; 1.75A @ 24V DC

Retrofit Information:
3" x 13" Rectangle; Pedestal Mount Headlights

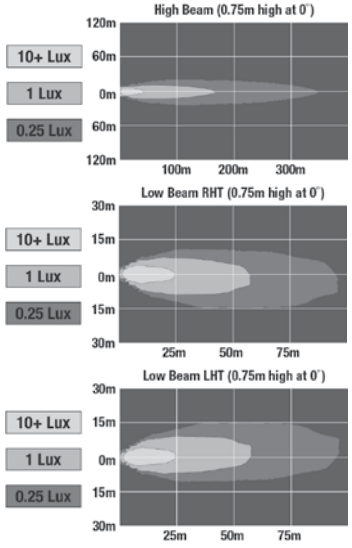
Standards:

RIGHT HAND LAMP

LEFT HAND LAMP



PART #	DESCRIPTION
0556273	DOT/ECE/RHT/High/Low/Turn/FP & DRL/Kit of 2
0556383	ECE/LHT/High/Low/Turn/FP& DRL/Kit of 2



If your vehicle is operated in the United States you do NOT need to connect the Front Position wire (red) unless your vehicle is equipped with a front position light.

MODEL 8770 GEN 3

Raw Lumen Output:
2,200

Effective Lumen Output:
1,800 (Heated); 2,041 (Non-Heated)

Candela Output:
230,000 (Heated); 260,000 (Non-Heated)

Connector/Wiring:
Standard Sealed Beam Style Screw Terminal

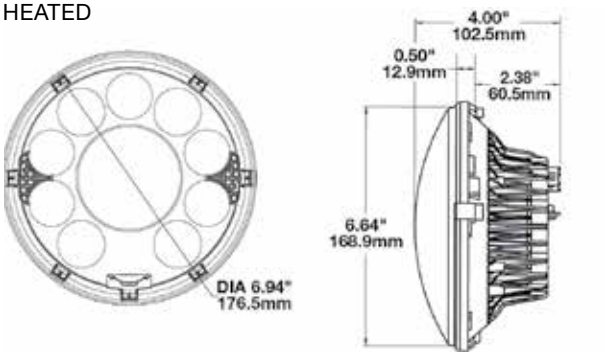
Operating Voltage:
18-130V DC

Current Draw:
Heated/Heater On:
High Output: 3.20A @ 24V; 1.20A @ 75V; 0.85A @ 110V DC
Low Output: 2.60A @ 24V; 0.85A @ 75V; 0.75A @ 110V DC
Non-Heated/Heater Off:
High Output: 2.10A @ 24V; 0.75A @ 75V; 0.55A @ 110V DC
Low Output: 1.00A @ 24V; 0.45A @ 75V; 0.30A @ 110V DC

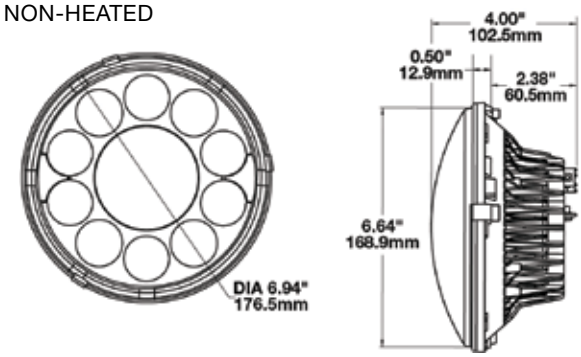
Retrofit Information:
7" Round Locomotive Headlight

Standards:

HEATED



NON-HEATED

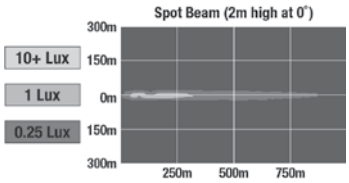


HEATED

PART #	DESCRIPTION
0551901	Locomotive Headlight with Spot

NON-HEATED

PART #	DESCRIPTION
0554601	Locomotive Headlight with Spot



MODEL 217

PART #	BEZEL	DESCRIPTION
0345421	Red	Backuplight w/o bracket
0345451	White	DRL & FP w/o bracket
0345461	White	DRL & FP with 90mm bracket
0345411	Red	Stop & Tail w/o bracket
0345521	Amber	Turnlight with bracket
034441	Amber	Turnlight w/o bracket

Description:
12-24V SAE/ECE LED Signal Light without 90mm Mounting Assembly Adapter

Operating Voltage:
9-30V DC

Current Draw:
0.12A @ 12V DC
0.07A @ 24V DC

Standards:

MODEL 272

PART #	BEZEL	DESCRIPTION
0341811	Red	12V Stop & Tail light
0341801	Amber	12V Turn Signal Light
0345461	Amber	24V Turn Signal Light

Description:
12-24V SAE/ECE LED Signal Light

Operating Voltage:
9-30V DC

Current Draw:
0.16A @ 12V DC
0.07A @ 24V DC

Standards:

MODEL 150

PART #	BEZEL	DESCRIPTION
0205321	Red	Marker light with assembly
0205341	White	Marker light with assembly
0443051	Amber	Marker light with assembly

Description:
LED side Marker inserts

Operating Voltage:
12-24V DC

Current Draw:
0.090 (Max)A @ 12V DC

Standards:

LED SIGNALLING BULBS

HEADLIGHT BULBS

Description:
Model 4000 series is 180% brighter than a standard halogen bulb

Operating Voltage:
12-24V DC

Lumen:
2000 per bulb

Color temp:
6000K

Note:
- Other base on request
- Not Appoved for ECE, DOT or ADR

PART #	BASE	DESCRIPTION
990001	H1	LED Bulb kit reflector optimeised
990003	H3	LED Bulb kit reflector optimeised
990004	H4	LED Bulb kit reflector optimeised
990007	H7	LED Bulb kit reflector optimeised
990007P	H7	LED Bulb kit Projector optimeised

BAYONET BULBS

Description:
Bayonet replacement bulbs

Operating Voltage:
12-24V DC

Note:
Not Appoved for ECE, DOT or ADR

PART #	COLOR	DESCRIPTION
990144	Red	BAY15D 12-24V 120/60lm
990142	Amber	BAU15S 12-24V 250lm
990140	White	BA15S 12-24V 360lm
990145	White	BA15S 12-24V 280lm
990147	White	BA9S 12V 68lm
990148	White	BA9S 24V 68lm

FESTOON

Description:
Festoon replacement bulbs

Operating Voltage:
12-24V DC

Note:
Not Appoved for ECE, DOT or ADR

PART #	BASE	DESCRIPTION
990100	SV8.5	12V 30 X 10.5
990102	SV8.5	12V 36 X 10.5
990103	SV8.5	24V 36 X 10.5
990104	SV8.5	12V 41 X 10.5

WEDGE BASED

Description:
Festoon replacement bulbs

Operating Voltage:
12-24V DC

Note:
Not Appoved for ECE, DOT or ADR

PART #	BASE	DESCRIPTION
990110	T10	12V White 6000K 65lm
990111	T10	24V White 6000K 65lm
990120	T16	12/24V White 6000K 350lm
990122	T16	12/24V Amber 250lm
990124	T20	12/24V White 6000K 360lm
990130	S8	12/24V White 6000K 350/120lm
990132	S8	12/24V White 6000K 253/88lm

MODEL 793

PART #	BEZEL	DESCRIPTION
1603631	Red	Stripe zone light
1603641	Blue	Stripe zone light
1603651	Amber	2Stripe zone light

Description:
6" x 2" LED Warning Light

Operating Voltage:
10-36V DC

Current Draw:
1.60A @ 12V DC
0.60A @ 24V DC
0.57A @ 36V DC

Standards:

MODEL 770

PART #	BEZEL	DESCRIPTION
1706311	Blue	LED blue safety spot
1706441	Red	LED red safety spot

Description:
LED side Marker inserts

Operating Voltage:
12-110V DC

Current Draw:
0.50A @ 12V DC
0.12A @ 60V DC
0.08A @ 110V DC

Standards:

WHY CHOOSE J.W. SPEAKER LIGHTS?

EXPERIENCED, TRUSTED SERVICE

J.W. Speaker has been serving vehicular markets since 1935. We have been a trusted provider for the U.S. Military since the1940's and a manufacturer of engineered lighting solutions since the 1950's. Our portfolio of customers includes household names such as Harley-Davidson, Arctic Cat, John Deere, and McLaren. These organizations, and many more, choose J.W. Speaker because of our experience, our nearly 80 year track record for innovation, and our dedication to quality and service.

A LEADER IN LIGHTING TECHNOLOGY

J.W. Speaker is at the forefront of lighting technology. We know how important it is to stay ahead of the curve, which is why we invest in researching and developing new technologies.

There are thousands of LED lights in the marketplace, but few, if any, achieve the level of performance that comes standard with J.W. Speaker lights. The photo below is a side-by-side comparison of two DOT-approved LED headlights. Our LED headlight is on the left, and a competitor's LED headlight is on the right.

The J.W. Speaker headlight has been specifically engineered to provide more light in the areas where it is needed most. A new addition to our lineup of LED worklights is the XD Series. The XD Series uses a unique thermaly-conuctive polycarbonate housing which enables the lights to function in extreme heat without sacrificing output or durability.

Halogen vs LED

THE BEST WARRANTY IN THE MARKET

J.W. Speaker currently offers the best LED product warranty in the industry. While other companies boast their own Lifetime Limited Warranties, the fine print reveals exclusions like "not for use in mining, construction, or other rugged applications." Our products are designed, manufactured, and tested to work in those very applications, and we feel that it is important to have a warranty that backs that up.

J.W. Speaker guarantees the highest quality products for our end-users. We are certified by various international government agencies that issue quality and safety requirements for our products, as well as the processes used to make them. To confirm that we meet their requirements, the agencies perform regular on-site audits of our
factories. Their certification guarantees we have world-class techniques and methods for making high-quality products.

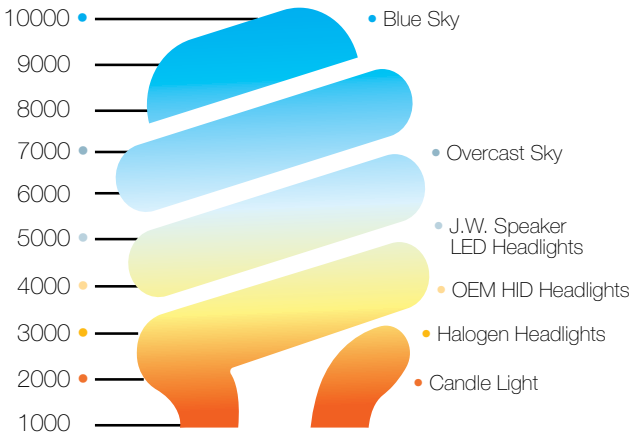
COLOR TEMPERATURE & IP RATINGS

Measured in degrees Kelvin, color temperature describes how cool or warm the light emitted by a source is. Any object will emit light if it is heated to a high enough temperature. The color of the light will change in a predictable way as the temperature increases, shown on the Kelvin Scale.

Warm: 0 to 3,000K
Used in living spaces or retail stores
Similar to the rising and setting sun
Can fatigue eyes and make people feel tired

Neutral White: 3,500 to 4,900K
Used in bathrooms, offices, classrooms & malls
Clean and neutral lighting that is inviting
Promotes efficiency and similar to daylight

Cool: 5,000-7,000K
Used in hospitals, manufacturing, & construction areas
Promotes alertness and attention to detail
Mimics daylight and makes people feel more awake



KELVIN SCALE

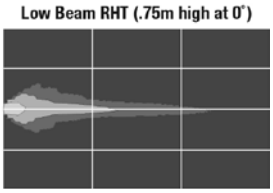
Color temperature does not measure or indicate the physical heat coming from a light source.

BEAM PATTERNS

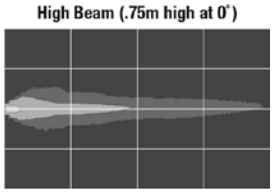
Each light pattern is designed and tested by optical engineers to give you the best possible beam pattern to drive behind.

Below are examples of the common beam patterns.

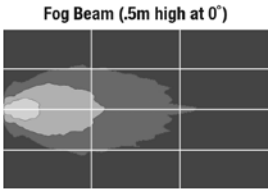
Our engineers design each product to project light in the areas you need it **and** comply with the legal requirements for on-road use in the countries the product is intended to be used in.



Illuminates across the road and ahead of the vehicle, with a cutoff to prevent glare for oncoming traffic



Bright light for distance illumination above and below the horizon, when not following or passing vehicles



Short and wide pattern to illuminate area just above the ground & in front of the vehicle

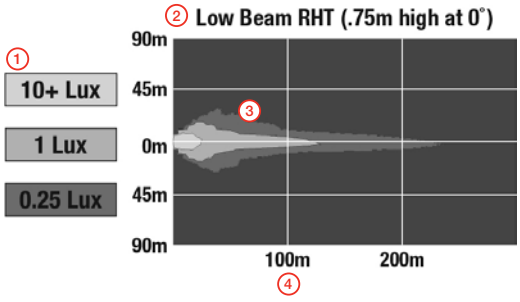
PARTS OF A LIGHT DIAGRAM

Lux Key[1]**:** Intensity of the light measured

Title[2]**:** The type of beam pattern, and the height and angle of the light when it was measured

Light Pattern[3]**:** A "bird's eye view" showing the shape, intensity, and distance

Distance Markers[4]**:** Reference in meters (m) for the size and distance of the light pattern



LED LIGHTING

INTERIOR LIGHTING FOR PUBLIC TRANSPORT

SCS
INDUSTRIE - COMPONENTEN BV

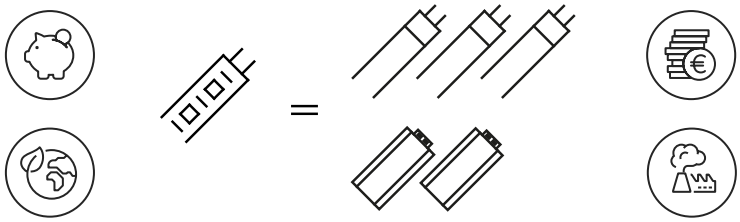
Rail Compliant T8 LED Tubes

SCS offers a wide range of fully rail compliant LED interior lights for retrofit in new and existing fittings. All of our products are developed to meet railway rolling stock standards. They offer all the benefits of LED technology, long life and low power consumption, therefore reducing life cycle costs and your environmental impact.

BENEFITS

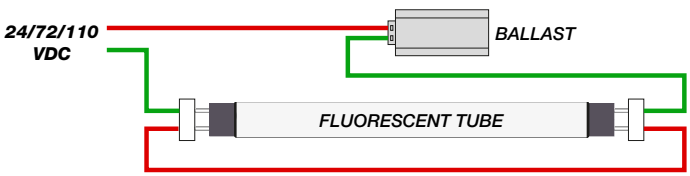
- Lifetime maintenance free
- Direct to power source, NO inverter
- High reliability LED Technology
- 50% Energy saving
- Less Chemical waste

LED vs Fluorescent

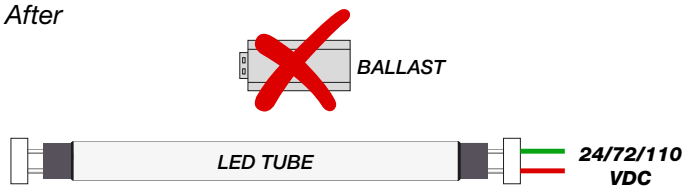


Installation:

Before



After



FEATURES

- Lifetime maintenance free
- LED Life 65.000h @min 70%
- Compliant with low voltage directive
- High reilability LED Technology
- Energy saving - Low Power Consumtion
- Quality Technical Support
- Three years warranty

SAFETY AND STANDARDS

Craig & Derricott LED tubes ar fully designed, tested and **certified** to meet Rolling Stock standards

Standards

- **EN50155** Rolling stock electronic equipment
- **EN50121-3-2** Railway Electro Magnetic Compatibility
- **EN61373** Railway application Shock & Vibration
- **EN45545** Fireprotection (V0 & LSZH compliance
- **EN600081** Double capped tubes dimensional compliant
- **EN605529** IP40 Ingress protection

Description:
24VDC LED tube T8 with frosted lens. Rotatating endcap for ideal beam position

Operating Voltage:
24V DC (16.8 - 30V)

Color temp:
** WW - 3000K; NW - 4000K; CW 6000K

LED TUBE 24V

PART #	COLOR
LED450/24/T8/**/2	450mm
LED600/24/T8/**/2	600mm
LED900/24/T8/**/2	900mm
LED1200/24/T8/**/2	1200mm
LED1500/24/T8/**/2	1500mm

Description:
110VDC LED tube T8 with frosted lens. Rotatating endcap for ideal beam position

Operating Voltage:
110V DC (67.2 - 137.5V)

Color temp:
** WW - 3000K; NW - 4000K; CW 6000K

LED TUBE 110V

PART #	COLOR
LED450/110/T8/**/2	450mm
LED600/110/T8/**/2	600mm
LED900/110/T8/**/2	900mm
LED1200/110/T8/**/2	1200mm
LED1500/110/T8/**/2	1500mm

Description:
230VAC LED tube T8 with frosted lens. Rotatating endcap for ideal beam position

Operating Voltage:
230V AC (161 - 253V)

Color temp:
** WW - 3000K; NW - 4000K; CW 6000K

LED TUBE 230V

PART #	COLOR
LED450/230/T8/**/2	450mm
LED600/230/T8/**/2	600mm
LED900/230/T8/**/2	900mm
LED1200/230/T8/**/2	1200mm
LED1500/230/T8/**/2	1500mm

FEATURES

- Lifetime maintenance free
- Compliant with low voltage directive
- High reilability LED Technology
- Energy saving - Low Power Consumtion
- Rotating end cap
- Three years warranty

SAFETY AND STANDARDS

Our budget line LED tubes are fully designed and tested to meet Rolling Stock standards.

Standards

- **EN50155** Rolling stock electronic equipment
- **EN50121-1-3-2** Railway Electro Magnetic Compatibility
- **EN61373: 2010** Railway application Shock & Vibration
- **EN13272-2012** Electrical lighting for Rolling Stock

LED TUBES

Electrical Specifications	
Voltage (V)	100-240VAC - 24-110VDC
Frequency	50-60Hz
Power Factor	>0.92
Flicker	0%
Total Harmonic Distorsion	<12%
Switching Cycle	>50.000
Max. startng time	0.5sg

Light Specifications	
Luminous efficiency	100 ±10%
Color render index	>80
Color temeprature range	2700K-6000K
Color consistency	<5
Beam angle	120°

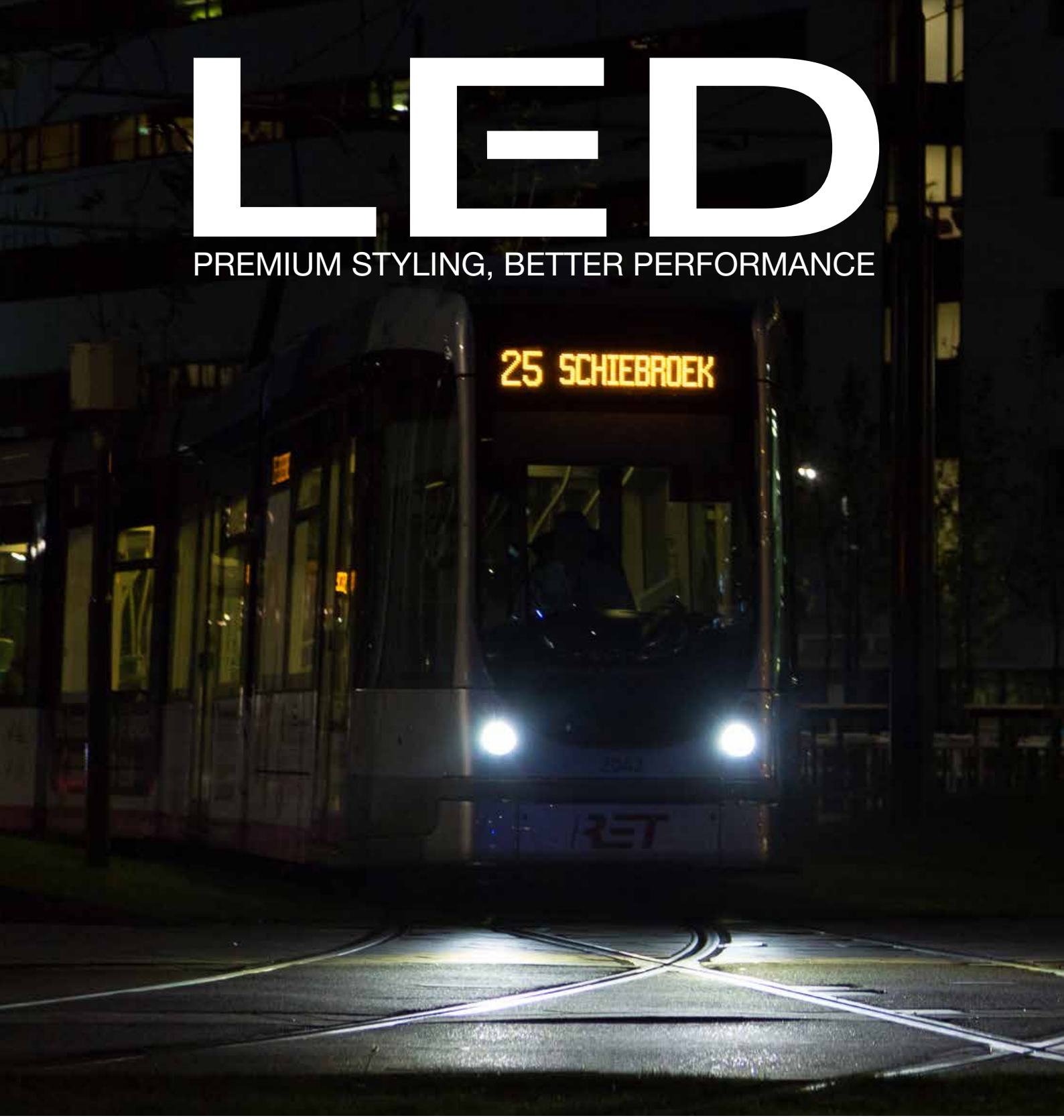
EPISTAR
inside

PART #	POWER	VOLTAGE RANGE	LUMEN OUTPUT (LM) @3000K (WW)	@4000K (NW)	@6000K (CW)	DIMENSIONS
EXT89W220VACRA**	9W	100-240VAC	857	912	982	23x600mm
EXT818W220VACRA**	18W	100-240VAC	1714	1823	1964	23x1200mm
EXT824W220VACRA**	24W	100-240VAC	2285	2431	2618	23x1500mm
EXT89W110VDCRA**	9W	85-125VDC	857	912	982	23x600mm
EXT818W110VDCRA**	18W	85-125VDC	1714	1823	1964	23x1200mm
EXT824W110VDCRA**	24W	85-125VDC	2285	2431	2618	23x1500mm
EXT89W24VDCRA**	9W	15-40VDC	857	912	982	23x600mm
EXT818W24VDCRA**	18W	15-40VDC	1714	1823	1964	23x1200mm
EXT824W24VDCRA**	24W	15-40VDC	2285	2431	2618	23x1500mm

** 3.000K = WW; 4.000K = NW; 6.000K = CW

LED

PREMIUM STYLING, BETTER PERFORMANCE



SCS
INDUSTRIE - COMPONENTEN BV

SCS Industrie-componenten BV
Cobaltstraat 19
2718 RM Zoetermeer
Netherlands

Phone : +31 79 361 1171
Email : sales@scs.nl
Web : www.scs.nl