



AB-GES-L56224Wxx4T2

Features:

- 24W 2ft. linear light engine
- SimpleDrive® - 230V AC drive technology
- Driver on Board Structure
- Dimmable
- Long life - No Electrolytic capacitors
- Easily integrated
- 5VA covers available
- CE Compliance

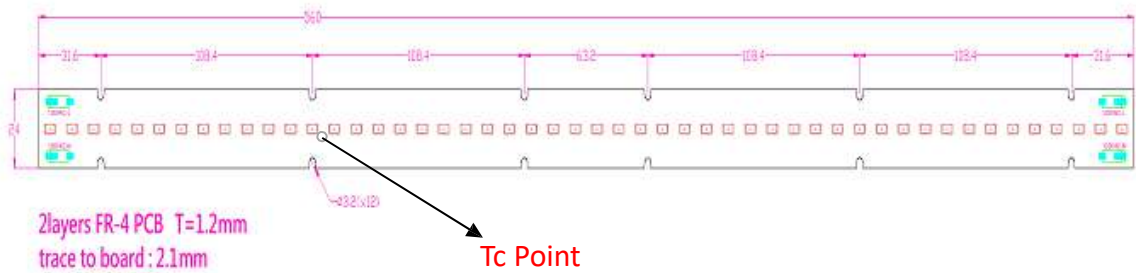
Applications:

- Under Cabinet Lights
- Ceiling Lights
- In Ground Light
- Wall Sconces
- Vandal Proof Lights
- Cove Light
- Troffer Light





Outline Dimensions



50 LEDs
Units: mm

Notes:

1. 24W 2ftLinear light engine
2. Dimmable light engine
3. Phillips Lumileds LED
4. Can be connected serially.
5. AC Direct drive technology
6. Long life : No Electrolytic capacitors
7. Easily assembly light engine



Characteristics

■ Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Input Voltage	V _{in}	230	V _{ac}
LED Junction Temperature ^[2]	T _j	115	°C
Storage Temperature	T _{stg}	-40 ~ 100 °C	°C
Operation Temperature	T _{opr}	-40 ~ 45 °C	°C

- Proper current rating must be observed to maintain junction temperature below maximum at all time. For this product, we suggest to keep the Temperature of TC point under 75°C, and the temperature of Top IC surface under 110°C. After passing the maximum temperature of IC, the rating current will be lower automatically for protecting the whole circuit.

■ Electrical Characteristics, Ta=25°C

Parameter	Symbol	Min.	Max.	Unit
Input Voltage	V _{in}	210	250	V _{ac}
Input Frequency	Freq.	50/60		Hz
Power Factor	PF	0.9	0.95	-
Flicker % ^[1]		100%		
Flicker Index ^[1]		0.3		

- Surge protection is up to 0.5KV

■ Optical Characteristics (V_{in}=120V), Ta=25°C

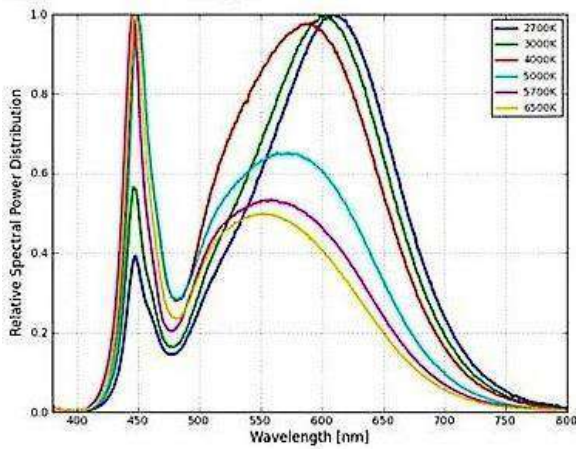
Model name	AC Power(W)			Color Temp (K)	Luminous Flux(lm)		CRI
	Min	Typ.	Max		Min	Typ.	
AB-GES-L56124W301N2	20.8	24.0	27.0	3000	2160	2400	>80
AB-GES-L56124W401N2	20.8	24.0	27.0	4000	2480	2700	>80
AB-GES-L56124W501N2	20.8	24.0	27.0	5000	2480	2700	>80

- Correlated color Temperature is derived from the CIE 1931Chromaticity diagram.
- The luminous flux tolerance is ± 10%.
- This CRI value tolerance is ± 2.
- Calibration accuracy of CIE_x and CIE_y : ±0.007 ;
- Calibration error CCT 3000K ±175K ; 4000K ±300K ; 6500K ±400K

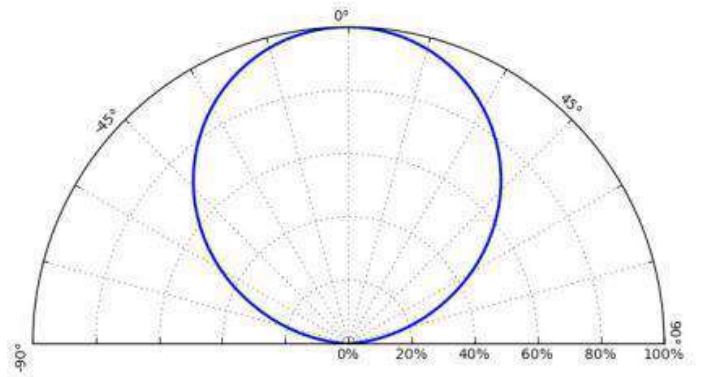
■ Thermal Resistance, Ta=25°C

Part	Min.	Typ.	Max.	Unit
LED		12		°C/W
IC	15		20	°C/W

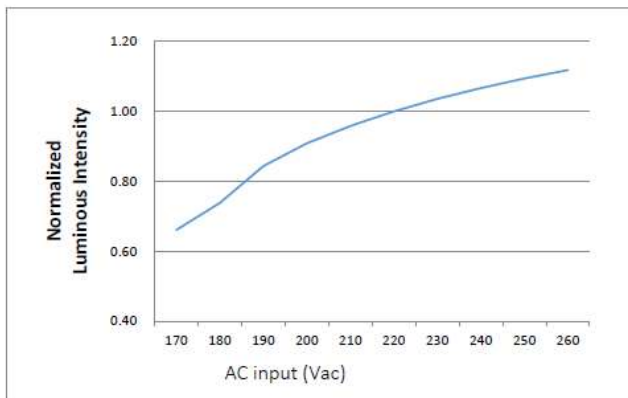
■ **Relative Spectrum of Emission (Ta=25°C, Test current=60mA)**



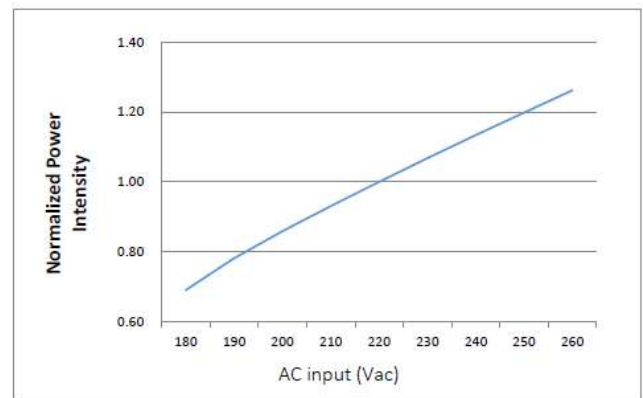
■ **Radiation Pattern (Tj=25 °C)**



■ **Relative power distribution vs. Input voltage (Ta=25°C)**

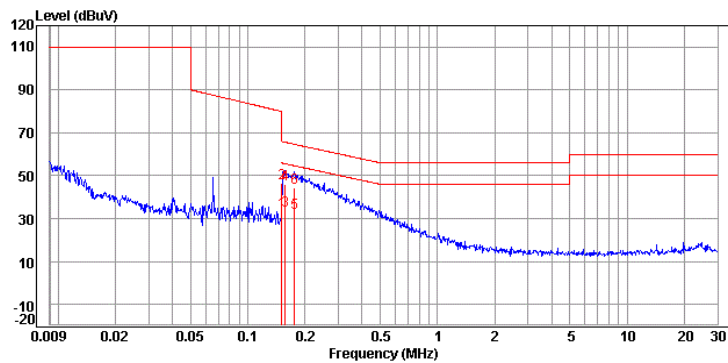


■ **Relative luminous output vs. Input voltage (Ta=25°C)**



■ **Conduction Testing^[4] (220Vac/60Hz)**

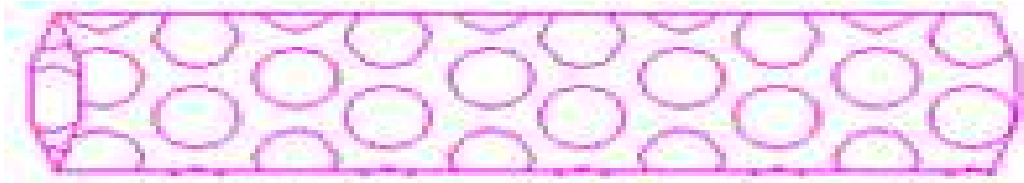
Standard: EN 55015 (QP), Temp. (C)/Hum.(%): 25°C/57%





Packaging

1. ESD bubble bag.



2 items per bag

1 Box = 100 PCS (about 2 Kgs)



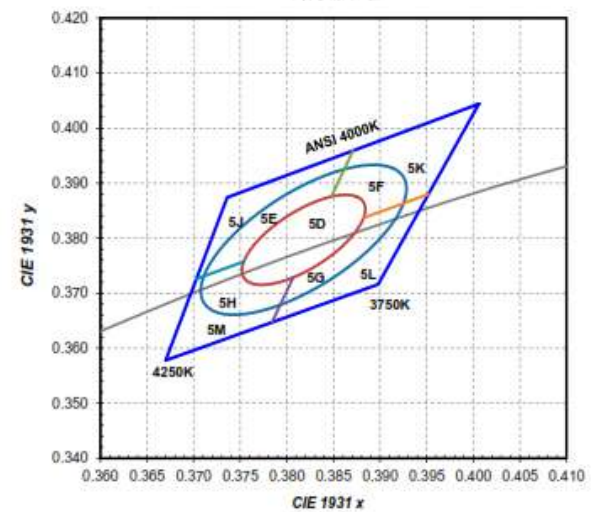
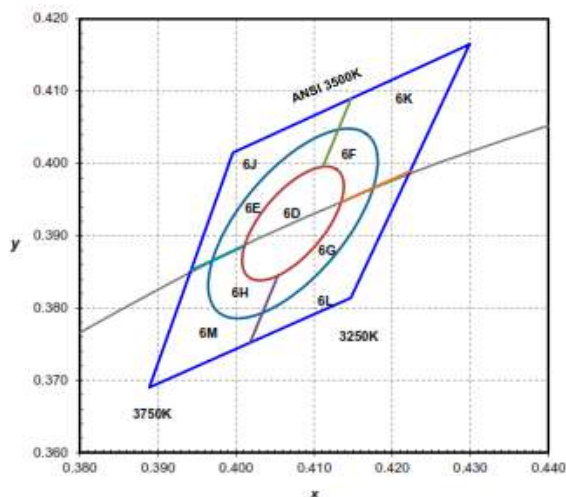
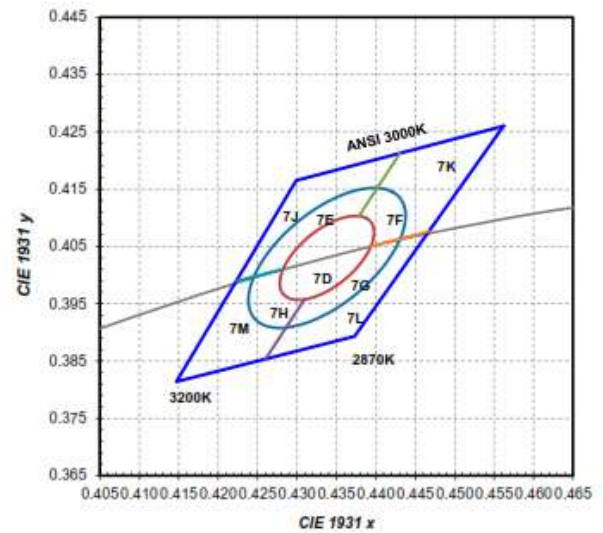
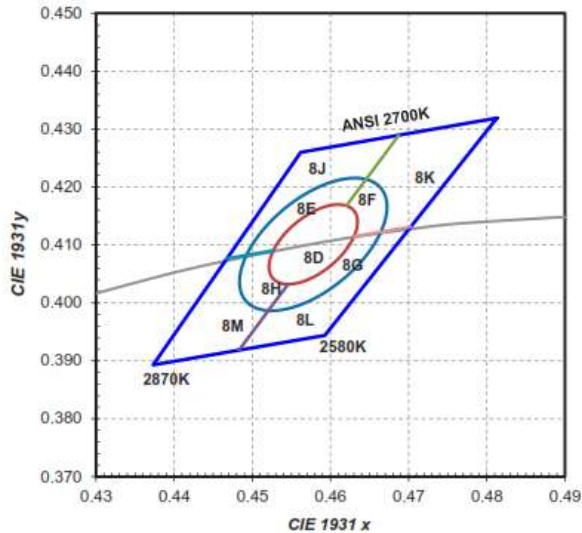
Color Bin Code

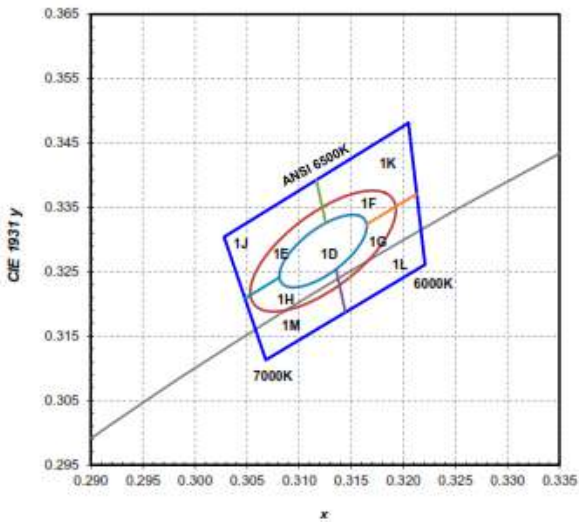
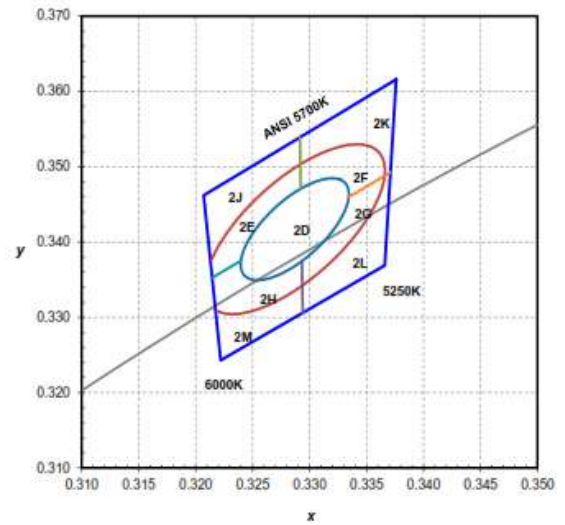
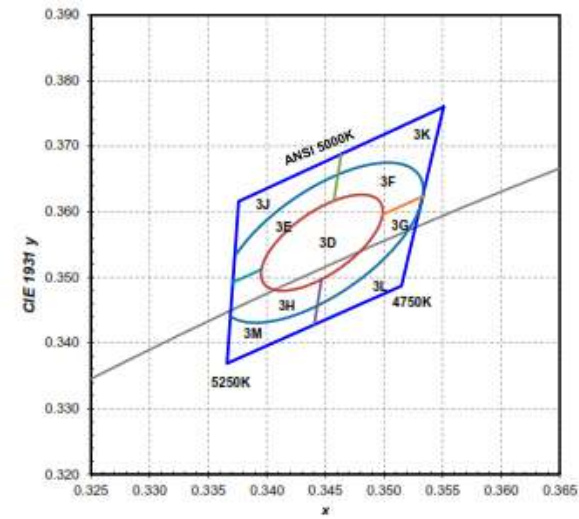
Color region stays within Macadam "3-Step" ellipse from the chromaticity center.

The chromaticity center refers to ANSI C78.377:2008.

Please refer to ANSI C78.377 for the chromaticity center.

CC	Steps	Cx	Cy	a	b	theta
2700K	3	0.4578	0.4101	0.00810	0.00420	53.7
3000K	3	0.4338	0.4030	0.00834	0.00408	53.2
3500K	3	0.4073	0.3917	0.00927	0.00414	54.0
4000K	3	0.3818	0.3797	0.00939	0.00402	53.7
5000K	3	0.3447	0.3553	0.00822	0.00354	59.6
5700K	3	0.3287	0.3417	0.00746	0.00320	59.0
6500K	3	0.3123	0.3282	0.00669	0.00285	58.5





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AC Module Flicker

Flicker for AC driven LED modules can be measured in two different manners, Percent and Index.

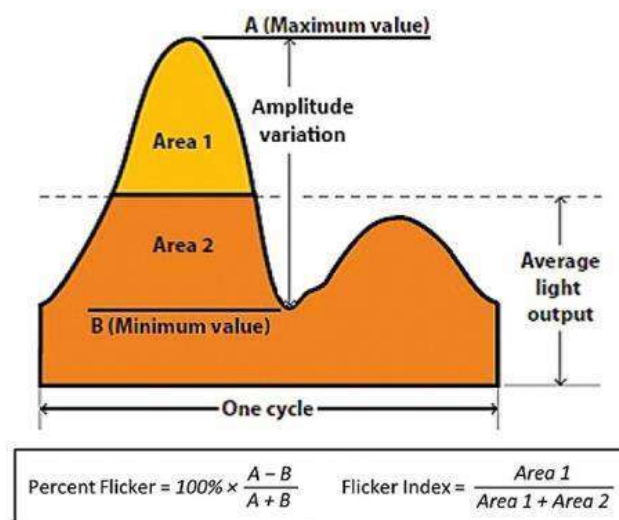
Percent - Older more common metric that measures peak to peak amplitude. No other attributes of the AC wave are taken into account. Measurements of percent range from 0%-100%

AC Module Flicker	100%
Any LED system with Electrolytic Capacitor	2%-90%

Index - A metric defined by the IES (Illuminating Engineering Society) that measures the shape, duty cycle, and peak to peak amplitude. This is a true measure of eye response to flicker. Measurement of index range from 1-1.0.

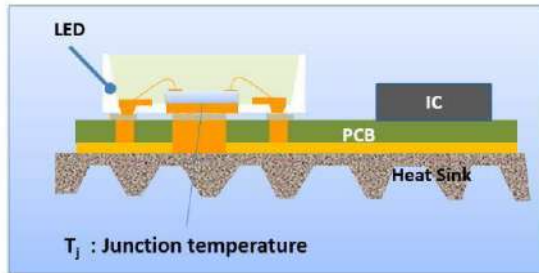
AC Module Index	<0.3
Any LED system with Electrolytic Capacitor	.02~0.2

Graph showing measurement differences



Junction Temperature (T_j) & Solder Point Temperature (T_s)

Junction Temperature is the most important factor of LED. Different life performance will be impacted by different junction temperature.



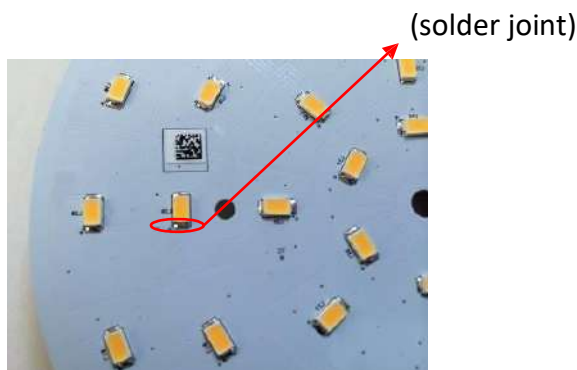
If the thermal dissipation is good enough, the junction temperature will be lower and the lifetime performance will be better.

If the junction temperature is higher than 120°C, the LED will deteriorate quickly.

How to monitor the junction temperature?

You need to measure the T_s point.

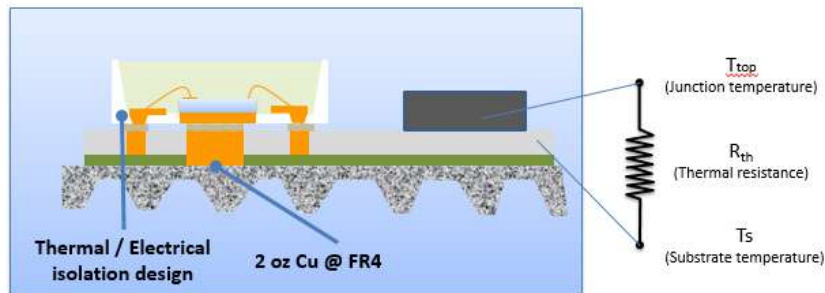
A solder point temperature is a temperature at the measurable point nearest to the junction. Typically this point is at the solder joint.



You can use the high-temperature thermal conductivity glue (Such as SatlonD-3/606...etc.) to fix the thermal couple to the solder joint then measure the temperature. Once you got the T_s temperature measurement data, you can calculate the junction temperature based on the measurement data of the T_s . The details of the calculation method are shown in the following page:



Calculate the Junction temperature of LED



$$T_{j,LED} = T_s + R_{th} * P_D$$

The junction temperature should be calculated by the Substrate temperature (T_s) and the thermal resistance of Substrate (R_{th}).

Examples:

What is the T_j of LED ($R_{th} = 12 \text{ } ^\circ\text{C/W}$) at 40°C ?

$T_s = 40^\circ\text{C}$, LED $P_D = 0.5\text{W}$, LED $R_{th} = 12 \text{ } ^\circ\text{C/W}$ (typical)

★ $T_{j,LED} = 40 + 0.5 * 12 = 46^\circ\text{C}$ (Normal $T_{j,LED}$ limitation is 110°C)

Calculate the Junction temperature of IC

$$T_{j,IC} = T_s + R_{th,IC} * P_D$$

The junction temperature should be calculated by the Substrate temperature (T_s) and the Thermal resistance of Substrate (R_{th})

IC	IC power consumption	$R_{th,ic}$
	AC input	
	100V-220V	15

Thermal resistance of IC under different AC input

Examples:

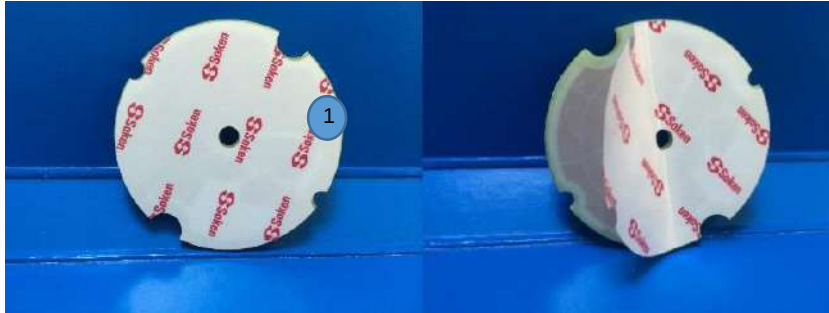
What is the T_j of IC ($R_{th} = 15 \text{ } ^\circ\text{C/W}$) at 40°C ?

$T_s = 40^\circ\text{C}$, IC $P_D = 1.68\text{W}$, IC $R_{th} = 15 \text{ } ^\circ\text{C/W}$ (minimum)

★ $T_{j,IC} = 40 + 1.68 * 15 = 65.2^\circ\text{C}$ (Normal $T_{j,IC}$ limitation is 110°C)



Backside of AC LED module



Picture of the backside of module

Items:

Warning:

Remember to remove the protective paper on the thermal insulating tape from the backside of the module

Warning:

AC LED modules must be attached by an additional connection, not only the tape

Specification of the Thermal tape

Thickness	mm	0.25
Adhesive force	T ₀ (0 hrs)	4.0
	T ₂₄ (24 hrs)	4.6
Thermal conductivity	W / m •K	0.7
Thermal resistance	cm ² °C/W	3.6
Fire ret ardency	UL94	V0
Isolation strength	DC (kV)	>10
	AC (kV)	4.4



Installation Instructions

Installation:

1. Remove the protective paper on the back side of AC LED module
2. Adjust the AC LED module to the desired position
3. Using a screw driver, attach the AC LED module
4. Select the proper wire

If a connector is going to be used with the AC Module, please follow the instructions below

	WAGO	BJB
Photo		
Conductor size	Solid: 0.2-0.75mm ² Fine stranded: 0.2-0.75mm ²	Solid: 0.34-0.75mm ²
Conductor size (AWG)	18-24	18-24

Connector spec summary