

## Cardinal™ Cooler Door Fixtures

## PRODUCT DESCRIPTION

SPECIFICATIONS AND FEATURES	
<b>Length</b>	2, 3, 4, 5 and 6 foot versions
<b>Wattage</b>	9, 14, 18, and 22 watts fixed
<b>Total Lumens*</b>	9 watt >> 1260 lumens 14 watt >> 1960 lumens 18 watt >> 2520 lumens 22 watt >> 3080 lumens
<b>Efficacy*</b>	140 Lms/Watt
<b>CRI</b>	CRI 82
<b>R9</b>	8 @ 4100K
<b>Duv</b>	Duv = -0.0007
<b>Voltage</b>	120 ~ 277VAC 50-60 Hz
<b>Power Supply</b>	Internal or External Driver Options 9, 14, 18, and 22 watts fixed All units are 110-277 VAC compatible
<b>Power Factor / THD</b>	PF=0.998, THD < 6% (@ 110 VAC)
<b>Power Input</b>	4' flying pig-tail from one end of tube
<b>Endcaps</b>	G13 Bi-Pin, rotatable option available
<b>LED Elements</b>	288 Diodes
<b>Color Temperature</b>	3500K, 4100K, 5000K +/- 200'K (3 McAdam ellipses)
<b>cULus listed</b> 	E347929, E363806, E 357319, E362805, E341042, Dry or Damp Locations
<b>Beam Angle</b>	120°
<b>Size</b>	2, 3, 4, 5 and 6 foot versions
<b>Operating Temperature</b>	-40 °F to 110 °F
<b>Certifications</b>	UL, cUL, RU, 1993, 1598, 1598(B), 1598(C) 8750, FCC, CE, RoHS
<b>DesignLights Consortium</b>	93 RedBird models on the DLC List Highest efficacy LED tube on the DLC list
<b>Warranty</b>	10 Years for External Driver Models 5 years for Internal Driver Models Full replacement Warranty, no Prorating warranty@redbirdled.com
<b>Lifetime</b>	<b>100,000 Hours</b> (LM-80 available)

**Cardinal™ Cooler Door Fixtures** are high quality replacements of standard fluorescent tubes (T8 and T12) commonly used in the reach-in cooler and freezer doors and can provide electrical savings of 35% to 70%.

Installation is easy, these fixtures snap into place using two small brackets that screw directly into the inside wall of the cooler replacing the original fluorescent lamp fixtures completely. The systems are available with either Internal or External Drivers, both being universal voltage compatible (110-277 VAC 50/60 Hz) The External LED driver mounts where the old fluorescent ballast had been located. The pre-attached 4' pigtail mounted to the Light engine component allows easy connect to the low voltage output of the driver. Top quality LEDs are employed to provide a 100,000 hr lifetime with an efficacy >115 lms/watt and a CRI>82. Exceptional thermal management is achieved with an aluminum core LED PCB thermally bonded to the ribbed aluminum heat sink with a 'D' channel extrusion made from 6063-T5 alloy for optimal heat conduction. The outer shell is a robust design with a shatter-proof polycarbonate lens.

The mounting brackets allow easy adjustment of the light output to optimize the light distribution for each application



- PATENTS PENDING -

## ORDERING INFORMATION

**Size - Form - Color Temp - Model - E, DIM, F**

**C4-4 foot - 18W - 50K-5000 K - 132 - DIM**

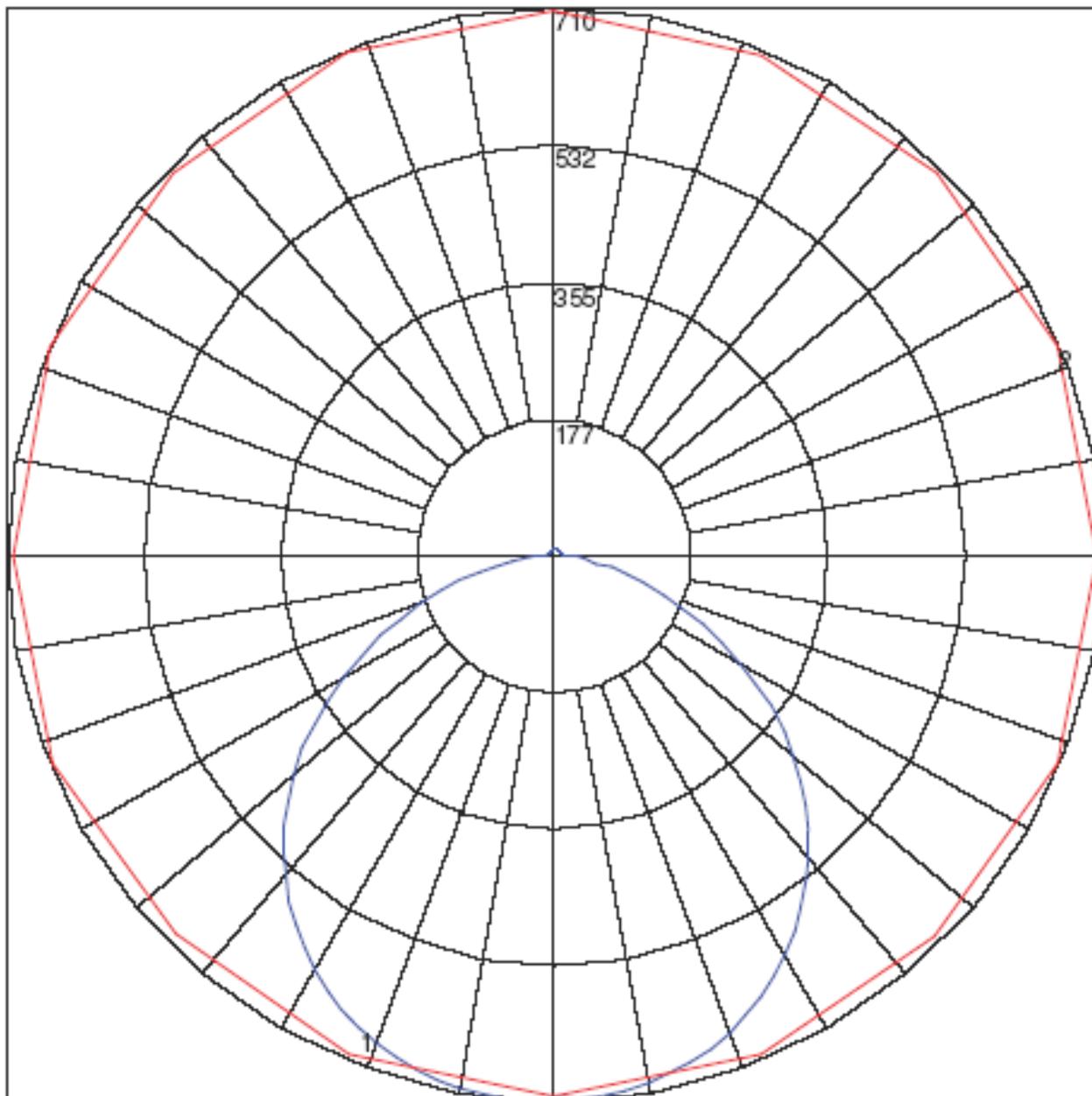
Ordering Example: **C4-18W-50K-132** is an 18 watt @ 5000K CCT 4 foot LED Cooler Door Linear Replacement fixture with Internal Driver.

Unit configuration is comes complete with Adjustable Mounting Brackets and external power supply.



## Cardinal™ Linear Lights

### Typical Radiometric Distribution Pattern C4-18W-41K-132 Measured on 35 ' , Scanning Gonio-Photometer



Maximum Candela = 709.54 Located At Horizontal Angle = 157.5, Vertical Angle = 2.5  
# 1 - Vertical Plane Through Horizontal Angles (157.5 - 337.5) (Through Max. Cd.)  
# 2 - Horizontal Cone Through Vertical Angle (2.5) (Through Max. Cd.)

## Installation Instructions Cardinal™ Linear Light Fixtures Snap-mount, adjustable beam angle, Internal or External Driver.

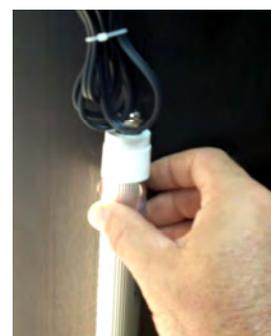
1. If these are being placed in a refrigerated case, cut power to the lighting circuit in the cooler door where the fixture is to be installed.
2. Ensure that there is enough clearance in the location to accommodate the total overall length of the particular linear light fixture being installed.
3. Remove previously installed fixture including any fluorescent terminals and the fluorescent lamp ballast. Recycle/dispose of these components properly. Fluorescent tubes contain Mercury and many older fluorescent ballasts contain hazardous and carcinogenic materials. These items need to be handled with care and properly disposed of.
4. Locate the fixture in the desired position and mark this position. Determine if you prefer the pig-tail power cord to be located at the top of the tube or the bottom.
5. **Make certain that there is nothing behind the surface the screw is being installed in that could be damaged by the screw point such as a refrigeration line or power cables.**
6. Fasten the upper mounting bracket with the self-drilling/tapping screw provided. The upper bracket should be mounted such that the screw is located on the desired centerline of the linear light engine and the bracket is positioned far enough below any obstructions directly above this location to allow room for the end-cap with the compression fitting and pigtail to have clearance. See Figure (1) Snap the lower mounting bracket onto the Linear Light Engine so that it is directly adjacent to the lower end-cap. Temporarily install the tube into the top bracket and mark the location on the cooler wall where the lower bracket should be installed. Remove the tube and set aside. Check that the horizontal position of the bottom bracket will place both mounting screws along a vertical line to ensure that the fixture is mounted in a plumb fashion.
7. Mount the bottom bracket with the self-drilling/tapping screw provided.
8. Snap the Linear Light Engine component into the two mounting brackets. See Figure (2)
9. Route the power cord as needed. For the Internal Driver model connect to the primary power Hot and Neutral Lines. Typically these would be accessible in the area where the fluorescent ballast had been installed. If the External Driver model is being installed, the External Driver can be mounted in the area where the fluorescent ballast was removed from. The input power to the External Driver should then be connected to the primary power Hot and Neutral Lines and the low voltage (32-38 VDC) constant current LED drive output should be connected to



**Detail of Mounting Bracket**



**Installing Light Tube into Mounting Bracket**



**Adjusting Beam Angle In Situ**

# Spectrum Test Report

Product : FY-T8-1200EC  
Sample No. : FY-13-0580-6  
Manufacturer : FY lighting

Date : 2013-12-12  
Instrument : HAAS-2000(EVERFINE)  
Operator : sugar LI

## Test Condition

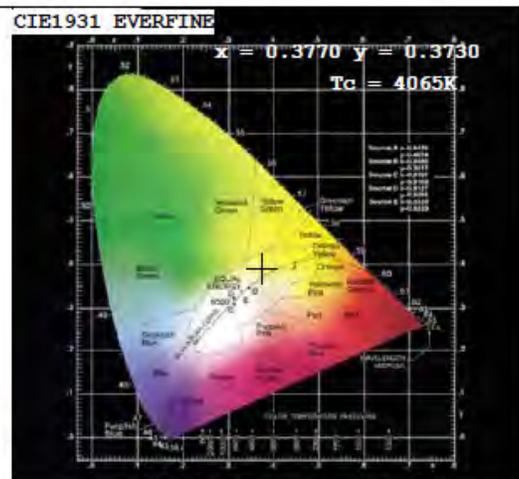
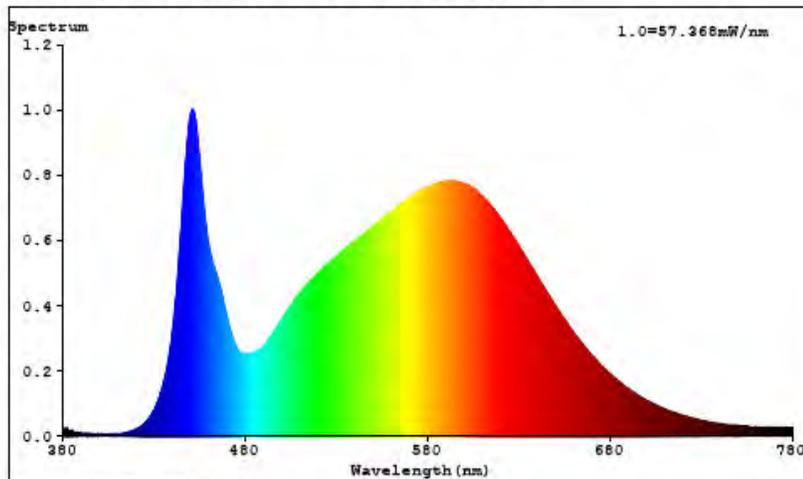
Temperature : 23.5Deg  
Scan Range : 380nm-780nm

RH : 65.0%  
IP : 57594 (88%)

Test Type : Fast Test

T : 739 ms  
Delicacy : Low

## Spectroradiometric Parameters



Spectral Distribution

CIE1931 Chromaticity Diagram

## CIE Color Parameters:

Chromaticity Coordinate:  $x=0.3770$   $y=0.3730$   $u'=0.2244$   $v'=0.4994$  ( $duv=-7.52e-04$ )

CCT:  $T_c = 4065K$  Prcp Wavel:  $\lambda_p = 579.3nm$  Purity=25.1%

Peak Wavel:  $\lambda_p = 451nm$  Half Width:  $\Delta\lambda_p = 20.9nm$  Ratio: R=19.6% G=77.0% B=3.5%

Render Index:  $R_a = 82.4$

R1 =81 R2 =89 R3 =95 R4 =80 R5 =80 R6 =84 R7 =86

R8 =64 R9 =8 R10=74 R11=78 R12=59 R13=83 R14=97 R15=75

LEVEL: WHITE:ANSI\_4000K

## Photo Parameters:

Flux = 2637 lm Eff. : 141.39 lm/W Fe = 8.105 W

## Electrical parameters:

V = 275.6 V I = 0.06998 A P = 18.65 W PF = 0.9673