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# SPECIFICATION SHEET

Customer:

Product: 11100220 / 11100220R

Model: 2.2 x 218 | 0.272/0.269

# Specifications

1. Available Range. The specifications available to CCFL unit listed on page 1.
2. Product Construction.

Item No.	Name	Requirements	Remark
1	Dimension	Lamp Shape: Straight	Naked lamp
		Dia: $\Phi 2.2 \pm 0.05\text{mm}$	
		Glass tube length: $218 \pm 1.0\text{mm}$	
2	Glass tube	Hard material glass tube	
3	Fluorescent powder	Three primary colors phosphor	
4	Electrode	Kovar	
5	Gas	80 Torr	Ne+Ar(95:5)

3. Primary Characteristics.
  - 3.1. Requests of Specifications

Item No.	Name	Code	Unit	Specification	Remark
1	Lamp Voltage (Reference)	VL	Vrms	$530 \pm 10\%$	KD12300 inverter 12V
2	Lamp Current	IL	MArms	$6.0 \pm 0.2\text{mA}$	
3	Starting Voltage (Reference)	Vs	Vrms	$810 \pm 10\%$	KD12300 6mA 25°C
4	Surface Brightness	B	$\text{Cd/m}^2$	$24000 \pm 10\%$	KD12300 6mA 25°C
5	Color Coordinates	x		$0.272 \pm 0.010$	CIE 1931
		y		$0.269 \pm 0.010$	
6	Peak Spectrum (Reference)		Nm	Red	611
				Green	544
				Blue	440
7	Stable Time of Illumination	Ts	min	3min	

### 3.2. Test Conditions

- 3.2.1. Lamp should be placed in horizontal position, under required testing current, and undergo normal lighting for more than 3 minutes, then conduct the electrical and optical properties tests
- 3.2.2. Temperature of Test Environment =  $25^{\circ}\text{C}\pm 2^{\circ}\text{C}$
- 3.2.3. Relative Humidity of Test Environment =  $65\%\pm 20\%$ , under no wind state.

### 3.3. Test Apparatus

Test Items	Test Apparatus
Lamp Voltage	Oscilloscope (Tektronix TDS1012B 100:1)
Lamp Current	Multimeter (Fluke 8086 A)
Surface Brightness	Colorimeter (Topcon BM-7)
Color and Color Temp Coordinates	Colorimeter (Topcon BM-7)

### 3.4. Test Methods

- 3.4.1. CCFL unit under complete voltage control; the test circuit as shown in the Diagram below.
  - 3.4.1.1. LV output end connected to negative of 0V ~ 12V input
  - 3.4.1.2. The connection wire length is 100~300mm
  - 3.4.1.3. Test circuit wires parallel distance should be longer than 100mm in order to avoid possible interference which could affect measurement accuracy
  - 3.4.1.4. When testing current disconnect VL test equipment
  - 3.4.1.5. When testing voltage disconnect IL test equipment
  - 3.4.1.6. During testing, place CCFL unit on shelf with black background in a non-reflective environment



- 3.4.2. Brightness Measurement (naked lamp only), the Colorimeter should be kept a distance of 500 +/- 10mm from the lamp vertical axis and test black perspective at 0.1 degrees.
- 3.4.3. NOTE: testing done with difference test equipment and under different test conditions may result in measurement differences.

