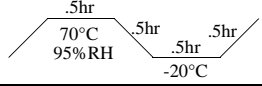
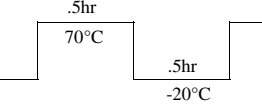


RELIABILITY DATA

SUMMARY: LIFETIME AND ENVIRONMENTAL TESTS

TEST ITEMS	TEST CONDITIONS	TEST TIME	NUMBR OF UNITS TESTED	FAILURE RATE (%)
TEMPERATURE LIFETIME	60°C, 5V, 32Hz 30°C, 5V, 32Hz	7,000hr 7,000hr	50 50	0 0
HIGH TEMPERATURE	70°C 95°C 60°C	1,000hr 100hr 5,000hr	300 300 300	0 0 0
LOW TEMPERATURE	-40°C -30°C	100hr 1,000hr	300 300	0 0
HIGH TEMPERATURE AND HUMIDITY	70°C, 95%RH 40°C, 95%RH	100hr 500hr	300 300	0 0
TEMPERATURE AND HUMIDITY CYCLE		25 CYCLES	50	0
POLARIZER AND REFLECTOR RELIABILITY	70°C, DRY 90°C, DRY	1,000hr 100hr	300 300	0 0
ULTRAVIOLET LIGHT	OUTDOOR EXPOSURE	5,000hr	50	0
HEAT SHOCK		25 CYCLES	50	0
VIBRATION	10 - 50Hz, 1g, X,YX,Z DIRECTIONS 51 - 300Hz, 0.5g, X,Y,Z DIRECTIONS	1hr	50	0
MECHANICAL	50g 15ms ± X,Y,Z	3 TIMES EACH	50	0

SUMMARY: LIFE EXPECTANCY

COMPONENT	TYPICAL LIFETIME
LCD DISPLAY (GLASS ASSEMBLY)	50,000hr (5.7yr)
LCD ELECTRONICS	100,000hr (12yr) min
EL BACK LIGHT	5,000hr (7mo) ^{1, 2}
CCFL BACK LIGHT	15,000hr (20mo) ²
LED BACKLIGHT	100,000hr (12yr) min

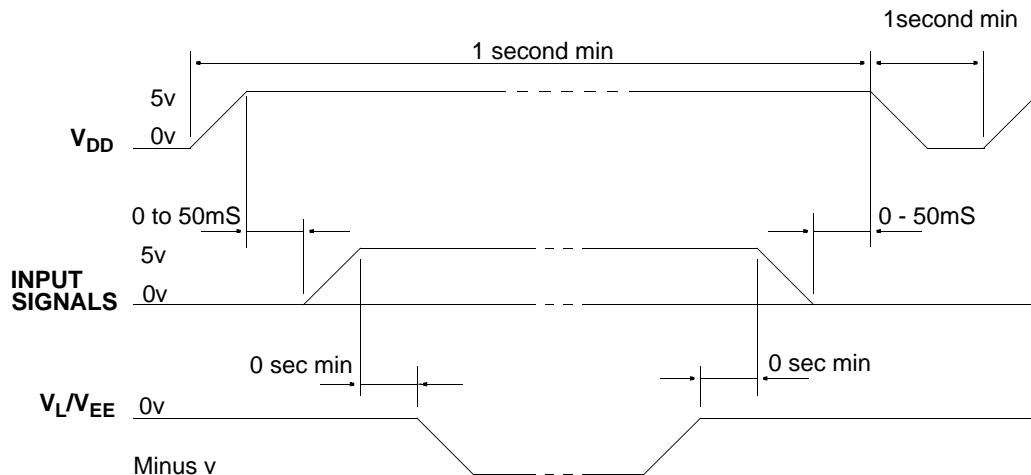
NOTES:

1. It is recommended that the product be designed so that the EL back light is not left on continuously. This will greatly extend the life of the back light element.

2. Usable lifetime of the back light is reached when the light output reaches 50% of the original brightness.

POWER SUPPLY SEQUENCING (Graphics Modules Only)

The power supply voltages should be sequenced according to the following timing diagram. This will insure that the internal electronics have time to begin operation before the negative voltage is applied. The sequence of events should be as follows: Apply V_{DD} first. When V_{DD} is stable at 5v, apply the input signals and then apply V_L/V_{EE} . The shut down sequence is exactly the opposite. **Failure to follow this procedure may result in permanent damage to the LCD fluid or to the CMOS electronics on the module.**



NOTICE:

Specifications in this catalog are subject to change without notice. Some mechanical specifications may vary slightly from those listed in this catalog due to changes and improvements made to the product. The most current specifications are maintained on our Web site at: www.hantronix.com.