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# ACD-1954

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## 15.0" XGA LED BACKLIT TFT DISPLAY WITH NVIS CAPABILITY

*Sunlight Readability/NVIS full color/Cool operation*

### GENERAL DESCRIPTION

The ACD-1954 consists of the NEC NL10276CBC30-18C XGA TFT display modified with a high performance LED backlight capable of Day and NVIS full color operation. The resulting performance provides a brightness of over 2350 cd/m<sup>2</sup> in direct sunlight.

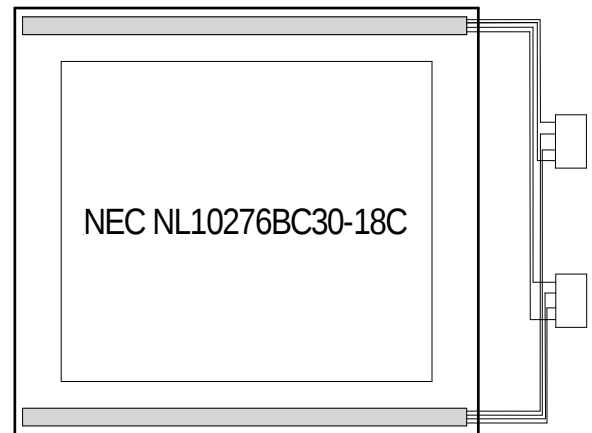
#### Performance at given brightness levels

1650 cd/m<sup>2</sup> with 22.5 watts LED power (Day)  
18 cd/m<sup>2</sup> with 3.0 watts LED power (NVIS)

#### Outdoor performance in direct sunlight

2750 cd/m<sup>2</sup> with 22.5 watts LED power (Day)

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### LCD PANEL HIGHLIGHTS

15.0" TFT Active Matrix Color  
304.108 (H) mm x 228.096 (V) mm viewable area  
XGA 1024 x 768 pixels, 16,777,216 colors  
600:1 typical contrast ratio  
40% color gamut (NTSC color space)

*For complete LCD specification (standard panel), refer to  
NEC datasheet NL10276BC30-18C*

### LED BACKLIGHT FEATURES

White and NVIS LED edge-light rail

Two wire connection (Typically 11 inches long),  
allows simple interconnect with LED driver<sup>1</sup>

Projected lifetime > 75,000 hours

50,000:1 or better dimming ratio (Day)<sup>1</sup>

Minimum NVIS intensity equal to 0.003 cd/m<sup>2</sup> or less<sup>1</sup>

<sup>1</sup> For best power transfer and control, use one  
ACI-E120250-1879 (Day mode) and one ACI-  
C120033-1761 (NVIS Mode) LED drivers.

## MAXIMUM RATINGS

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| Symbol | Parameter                                                    | Value      | Unit  |
|--------|--------------------------------------------------------------|------------|-------|
| Top    | Operating temperature of display (center of panel surface)   | -10 to +70 | Deg-C |
| Tled   | Operating temperature of LED edge light (light rail contact) | -20 to +80 | Deg-C |
| Tstg   | Display storage temperature                                  | -20 to +80 | Deg-C |
| Ifwd   | LED forward current (Day)                                    | 75         | mA    |
| Ifwd   | LED forward current (NVIS)                                   | 20         | mA    |

\*Maximum Ratings are those values beyond which damage may occur

## PANEL/BACKLIGHT OPTICAL CHARACTERISTICS

Ifwd(Day) = 62.5mA per bank, 2 banks per rail, 2 rails per display, Ifwd(NVIS) = 16.5mA per bank, 1 banks per rail, (LED rails: one ACR-1921 and one ACR-1941), Ta = +25Deg-C, LCD unpowered

| Symbol | Parameter                     | Test Conditions            | Min  | Typ   | Max  | Unit              |
|--------|-------------------------------|----------------------------|------|-------|------|-------------------|
| Bpd    | Panel Brightness (Day)        |                            | 1485 | 1650  | 1815 | cd/m <sup>2</sup> |
| Bpn    | Panel Brightness (NVIS)       |                            | 16   | 18    | 20   | cd/m <sup>2</sup> |
| Bpsun  | Panel Brightness (direct sun) | Direct sunlight + Day mode |      | 2750  |      | cd/m <sup>2</sup> |
| Xd     | White X coordinate (Day mode) |                            |      | 0.306 |      | -                 |
| Yd     | White Y coordinate (Day mode) |                            |      | 0.376 |      | -                 |
| XN     | White X coordinate (NVIS)     |                            |      | 0.248 |      | -                 |
| YN     | White Y coordinate (NVIS)     |                            |      | 0.362 |      | -                 |

## LED EDGE-LIGHT ELECTRICAL CHARACTERISTICS

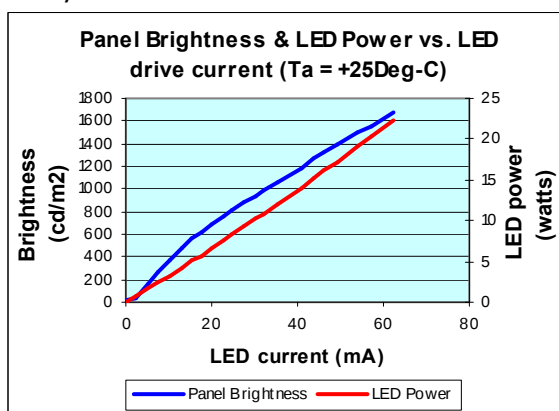
Ifwd(Day) = 62.5mA, Ifwd(NVIS) = 16.5mA, Top = +25Deg-C

| Symbol | Parameter                                | Test Conditions | Min | Typ | Max | Unit |
|--------|------------------------------------------|-----------------|-----|-----|-----|------|
| Vfwd   | LED rail forward voltage drop (Day mode) |                 | 81  | 91  | 101 | Vdc  |
| Vfwd   | LED rail forward voltage drop (NVIS)     |                 | 81  | 92  | 101 | Vdc  |

### TYPICAL LCD/LED BACKLIGHT PERFORMANCE GRAPHS

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Day mode



NVIS

