

SYSTEMS OF INFORMATION DISPLAY

Liquid Crystal Display

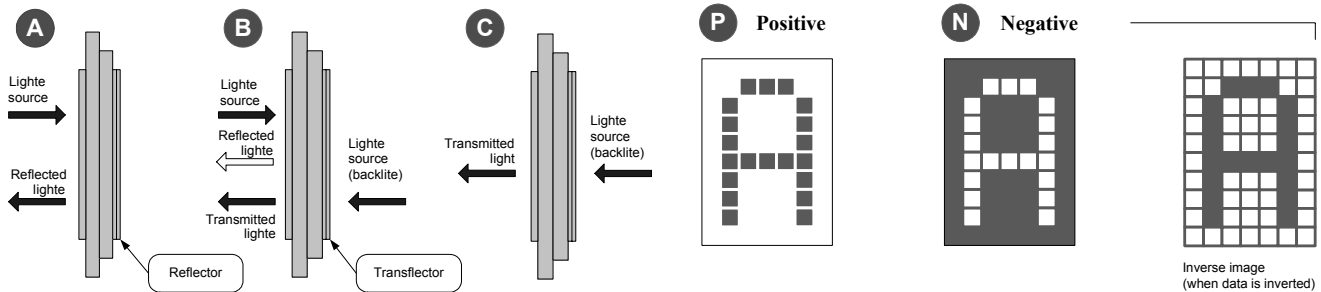
• BASIC SPECIFICATION

| № | Item | Climatic performance group ^(*) | | | Note |
|---|---|---|---|---|------|
| | | I | II | III | |
| 1 | Operation temperature range, °C | -40...+85 | -20...+70 | -0...+50 | (*) |
| 2 | Contrast | 6 : 1 | 6 : 1 | 6 : 1 | |
| 3 | Viewing angle, degrees (at contrast: ≥ 2): - on a vertical; - on a horizontal | -30...+50 -50...+30 ± 45 | -30...+50 -50...+30 ± 45 | -30...+50 -50...+30 ± 45 | (*) |
| 4 | AC applied voltage, V | 3 ± 10% 5 ± 10% | 3 ± 10% 5 ± 10% | 3 ± 10% | |
| 5 | Display type | Positive mode | Reflective Transflective Transmissive | Reflective Transflective Transmissive | (*) |
| | | Negative mode | Transmissive | Transmissive | |
| 6 | Viewing angle | 6 o'clock, 7:30 o'clock, 12 o'clock and other | | | (*) |
| 7 | Storage temperature range, °C | -60...+85 | -50...+80 | -50...+60 | (*) |

(*) Climatic performance group, optical mode and maximal contrast angle depend on customer's requirements.
 (*) Vertical field-of-vision angle depends on maximal contrast angle.

• LCD TYPE: REFLECTIVE/ TRANSFLECTIVE/ TRANSMISSIVE

• LCD MODE: POSITIVE/ NEGATIVE



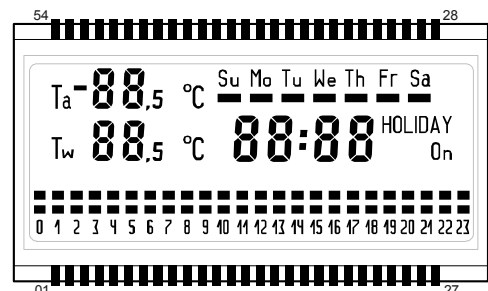
| A. Reflective LCD | B. Transflective LCD | C. Transmissive LCD |
|---|--|---|
| Reflector bonded to the rear polarizer reflects the incoming ambient light. <i>Low power consumption because no backlight is required.</i> | Transflector bonded to the rear polarizer reflects light from front as well as enabling lights to pass through the back . <i>Used with backlight off in bright light and with it on in low light to reduce power consumption.</i> | Whithout reflector or transflector bonded to the rear polarizer. Backlight required . <i>Most common is transmissive negative image.</i> |

• LCD: System of Designations

Samples of marking:

| | |
|---|------------------------------|
| <input type="checkbox"/> in catalog | ID-10DP41-MI |
| <input type="checkbox"/> during shipments (*) | ID-10DP41-MI-AP1-2.54 |
| ID - 10 DP 1 - M - A P 1 - 2.54 | |
| 1 2 3 4 5 7 8 9 10 | |

(*) Optical mode, LCD type, maximal contrast angle and climatic performance group shall be agreed upon during LCD shipments.



LCD marking system at INTEGRAL JSC

Decoding according to the positions numbers

| No | Description | Application | Samples |
|----|---|--|--|
| 1 | <i>Marking for LCD of INTEGRAL JSC</i> | For all type LCD | ID |
| 2 | LCD characteristic | For all type LCD | |
| | Number of digits | LCD of D and DP type | 8 |
| | Number of chars in a line, number of lines | LCD of C and CP type | 1602 - 2 lines till 16 chars |
| | Number of segment (column), number of common (row) lines | LCD of G and GP type | 12064 - 120 SEG, 64 COM |
| | Total number of LCD segments | LCD of P type | 8 |
| 3 | Category of the LCD: D – Digital C – Characters G – Graphic (dot matrix) P – contains pictogram (icon) | LCD of D type LCD of C type LCD of G type LCD of P type | D, DP C, CP G, GP P |
| 4 | Design number for a certain type of LCD | For all type LCD | 45 |
| 5 | Method of LCD mounting on PCB M – using metal pins R – using conductive rubber (zebra) or conductive anisotropic glue | For all type LCD | M R |
| 6 | LCD type: A – reflective LCD B – transfective LCD C – transmissive LCD | For all type LCD during shipments (*) | A B C |
| 7 | Optical mode: N – Negative LCD P – Positive LCD | For all type LCD during shipments (*) | N P |
| 8 | Operation temperature range: 1 - temperature - 40...+ 85 °C 2 - temperature - 20...+ 70 °C 3 - temperature 0...+ 50 °C 4 - other | For all type LCD during shipments (*) | 1 2 3 4 |
| 9 | Pitch on metal pins, mm | For all type LCD during shipments (*) | 1.27 1.80 2.00 2.54 |

(*) Optical mode, LCD type, maximal contrast angle and climatic performance group shall be agreed upon during LCD shipments.