



FENIX *group*

Quality & Service

Low-cost
Standard
Character
LCD Modules



Fenix custom-Made LCD panels

INTRODUCTION

Since custom-made LCD panel introduction 25 years ago, their usage has increased drastically. From calculators, watches and pocket games to cover the industrial market (medical instrumentation, automobile industry, weighing scales and so many other applications).

One of the main advantages why using custom-made LCD panels is their easiness in displaying customised contents required on any application. As consequence, using custom-made LCD panels enhance the performance and quality of any final product.

Custom-made LCD panels can display endless combinations of numeric or/and alphanumeric characters, symbols, indicators, messages, icons, enunciators, bar graphs, and so on. Their content is only limited by the imagination of the designer engineer.

HOW TO ORDER

Make a photocopy of the custom-made LCD panel design form that you will find in this catalogue, fill it up properly, and send it to us together any relevant drawing and/or specification sheet, including external and internal dimensions and sizes, so that we can work out a reliable quotation.

OPTIONAL ACCESSORIES

Apart from supplying the required custom-made LCD panel, FENIX can provide customers with the following accessories to make easier the assembly process:

Backlight panels

Standard backlight panels or customised backlight panels, for Transflective or Transmissive custom-made LCD panels, can be provided to customers in accordingly. The following types are available :

- LED backlight panels
- ELECTROLUMINESCENT backlight panels, including the complete EL inverter, or just the voltage transformer.

Zebra/Elastomeric connectors

Rubber connectors can also be supplied in accordance with the custom-made LCD panels, for those that do not use pin connectors.

Custom-Made LCD panel design form

| | | | | | |
|-------------------|---|-------------------|--|---|--|
| LCD TYPE | <input type="checkbox"/> TN <input type="checkbox"/> STN | DRIVE METHOD | <input type="checkbox"/> DYNAMIC <input type="checkbox"/> STATIC | VOP <input type="text"/> DUTY <input type="text"/> BIAS <input type="text"/> | DRIVER <input type="text"/> FREQ <input type="text"/> |
| VIEW DIRECTION | <input type="checkbox"/> 6:00 (DOWN) <input type="checkbox"/> 12:00 (UP) <input type="checkbox"/> 3:00 (RIGHT) <input type="checkbox"/> 9:00 (LEFT) | DISPLAY MODE | <input type="checkbox"/> POSITIVE <input type="checkbox"/> NEGATIVE | POLARIZER TYPE <input type="checkbox"/> REFLECTIVE <input type="checkbox"/> TRANSFLECTIVE <input type="checkbox"/> TRANSMISSIVE | |
| CONNECTOR | <input type="checkbox"/> RUBBER <input type="checkbox"/> PIN <input type="checkbox"/> FLEXIBLE | TEMPERATURE RANGE | OPERATING TEMPERATURE <input type="text"/> °C STORAGE TEMPERATURE <input type="text"/> °C | | <input type="text"/> °C <input type="text"/> °C |
| DIMENSIONS | LCD WIDTH <input type="text"/> LCD HEIGHT <input type="text"/> GLASS THICKNESS <input type="text"/> PIN LENGTH <input type="text"/> N° OF PIN ROWS <input type="text"/> | | | VIEWING AREA WIDTH <input type="text"/> VIEWING AREA HEIGHT <input type="text"/> LCD THICKNESS <input type="text"/> PIN PITCH <input type="text"/> N° OF PIN PER ROW <input type="text"/> | |
| DELIVERY SCHEDULE | COUNTER DRAWING FOR APPROVAL IN 2 WEEKS, ONCE QUOTATION IN ACCEPTED SAMPLES FOR APPROVAL IN 4 WEEKS, ONCE COUNTER DRAWING IS APPROVED MASS PRODUCTION IN 6 WEEKS, ONCE SAMPLES ARE APPROVED | | | QUANTITY PER ORDER <input type="text"/> QUANTITY PER YEAR <input type="text"/> | |

How to order

1 LCD TYPE

- A** TN
- B** STN Yellow-green
- C** STN Gray
- D** STN Negative
- E** FSTN

2 POLARIZER AND VIEWING ANGLE TYPE

- A** Reflective / 6H
- B** Reflective / 12H
- C** Transflective / 6H
- D** Transflective / 12H
- E** Transmissive / 6H
- F** Transmissive / 12H
- G** Negative / 6H
- H** Negative / 12H

3 BACKLIGHT TYPE

Nil Without backlight

- A** Bottom LED
- Q** Edge LED
- E** EL
- F** CCFL

4 BACKLIGHT COLOUR

Nil Without backlight

- B** Yellow-green
- C** Blue
- D** White

XX SPECIAL OPTION

- W** Extended operating temperature range
- XX** Special numbering according customer options



LCD module guiding chart

CHARACTER LCD MODULE SERIES

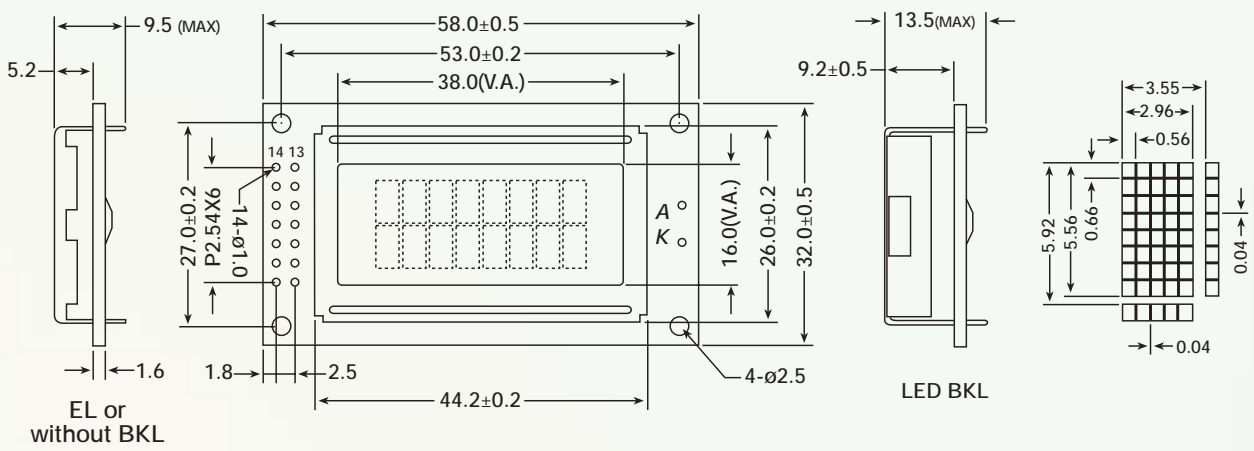
| Display Characters x line | Module Partnumber | Module Size (W x H x L) | Dot Size (W x H) | Character Size (W x H) | View area (W x H) | Duty Cycle |
|------------------------------|----------------------|----------------------------|---------------------|---------------------------|----------------------|---------------|
| 8 x 2 | FNX082A | 58.0 x 32.0 x 9.5/13.5 | 0.56 x 0.66 | 2.96 x 5.56 | 38.0 x 16.0 | 1/16 |
| 16 x 1 | FNX161A | 80.0 x 36.0 x 9.5/13.5 | 0.55 x 0.75 | 3.07 x 6.56 | 64.5 x 14.0 | 1/16 |
| | FNX161B | 122.0 x 33.0 x 9.5/13.5 | 0.92 x 1.10 | 4.84 x 9.22 | 99.0 x 13.0 | 1/16 |
| 16 x 2 | FNX162A | 85.0 x 29.5 x 9.5/13.5 | 0.56 x 0.61 | 3.00 x 5.23 | 64.5 x 16.4 | 1/16 |
| | FNX162B | 80.0 x 36.0 x 9.5/13.5 | 0.56 x 0.61 | 3.00 x 5.23 | 64.5 x 16.4 | 1/16 |
| | FNX162C | 85.0 x 36.0 x 9.5/13.5 | 0.56 x 0.61 | 3.00 x 5.23 | 63.0 x 16.4 | 1/16 |
| | FNX162D | 84.0 x 44.0 x 9.5/13.5 | 0.56 x 0.61 | 3.00 x 5.23 | 64.5 x 16.4 | 1/16 |
| | FNX162E | 122.0 x 44.0 x 9.5/13.5 | 1.00 x 1.15 | 5.20 x 9.55 | 99.0 x 24.0 | 1/16 |
| 16 x 4 | FNX164A | 87.0 x 60.0 x 9.5/14.0 | 0.55 x 0.55 | 2.95 x 4.75 | 61.8 x 25.2 | 1/16 |
| 20 x 2 | FNX202A | 116.0 x 37.0 x 9.5/13.5 | 0.60 x 0.65 | 3.20 x 5.55 | 83.0 x 18.6 | 1/16 |
| | FNX202B | 180.0 x 40.0 x 9.5/15.0 | 1.12 x 1.12 | 6.00 x 9.66 | 149.0 x 23.0 | 1/16 |
| 20 x 4 | FNX204A | 98.0 x 60.0 x 9.5/13.5 | 0.55 x 0.55 | 2.95 x 4.75 | 78.0 x 25.2 | 1/16 |
| | FNX204B | 146.0 x 62.5 x 10.5/14.5 | 0.92 x 1.10 | 4.84 x 9.22 | 123.0 x 42.5 | 1/16 |
| 24 x 2 | FNX242A | 118.0 x 36.0 x 9.5/14.7 | 0.60 x 0.65 | 3.20 x 5.55 | 94.5 x 18.0 | 1/16 |
| 40 x 2 | FNX402A | 182.0 x 33.5 x 10.5/14.0 | 0.60 x 0.65 | 3.20 x 5.55 | 154.0 x 16.5 | 1/16 |
| 40 x 4 | FNX404A | 190.0 x 54.0 x 10.5/14.0 | 0.50 x 0.55 | 2.78 x 4.89 | 190.0 x 54.0 | 1/16 |

GRAPHIC LCD MODULE SERIES

| Display Dots (W x H) | Module Partnumber | Module Size (W x H x L) | Dot Size (W x H) | View area (W x H) | Duty Cycle | Built-in Controller |
|-------------------------|----------------------|---------------------------------|---------------------|----------------------|---------------|------------------------|
| 128 x 64 | FNX12864A | 93.0 x 70.0 x 9.0/13.0 | 0.48 x 0.48 | 72.0 x 40.0 | 1/64 | KS0108B |
| | FNX12864C | 78.0 x 70.0 x 10.0/13.0 | 0.40 x 0.56 | 62.0 x 44.0 | 1/64 | KS0108B |
| | FNX12864D | 78.0 x 70.0 x 10.5/13.0 | 0.40 x 0.56 | 62.0 x 44.0 | 1/64 | T6963C |
| | FNX12864E | 75.0 x 52.7 x 9.5/12.5 | 0.39 x 0.39 | 60.0 x 32.5 | 1/64 | KS0108B |
| 240 x 64 | FNX24064B | 180.0 x 65.0 x 9.5/13.0 | 0.49 x 0.49 | 134.0 x 40.4 | 1/64 | T6963C |
| 240 x 128 | FNX240128B | 170.0 x 103.2 x 14.0 | 0.47 x 0.47 | 132.0 x 76.0 | 1/128 | T6963C |
| | FNX240128G | 144.0 x 104.0 x 12.0/15.0 | 0.40 x 0.40 | 114.0 x 64.0 | 1/128 | T6963C* |
| 320 x 240 | FNX320240F | 160.0/167.1 x 109.0 x 11.0/12.5 | 0.345 x 0.345 | 122.0 x 92.0 | 1/240 | SED1335* |
| | FNX320240Q1 | 85.0 x 92.2 x 7.6/9.0 | 0.225 x 0.225 | 62.0 x 81.8 | 1/240 | SED1335* |

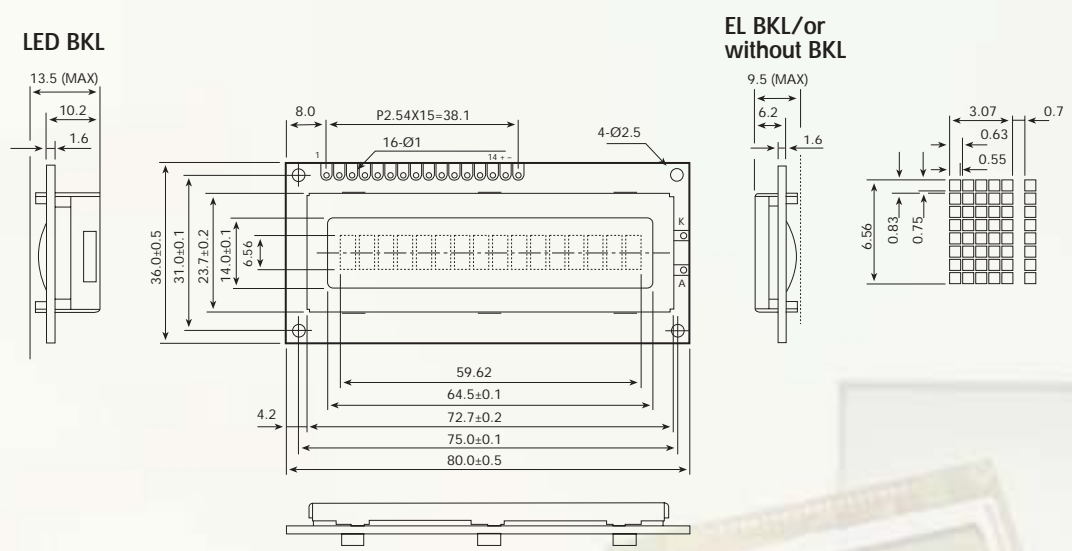
* Optional with pure driver only

FNX082A



- FEATURES**
1. 5X8 dots with cursor
 2. Built-in controller (KS0066U or Equivalent)
 3. +5V power supply (Also available for +3.0V)
 4. 1/16 duty cycle
 5. BKL to be driven by pin1, pin2, or pin15, pin16 or A,K
 6. N.V. optional

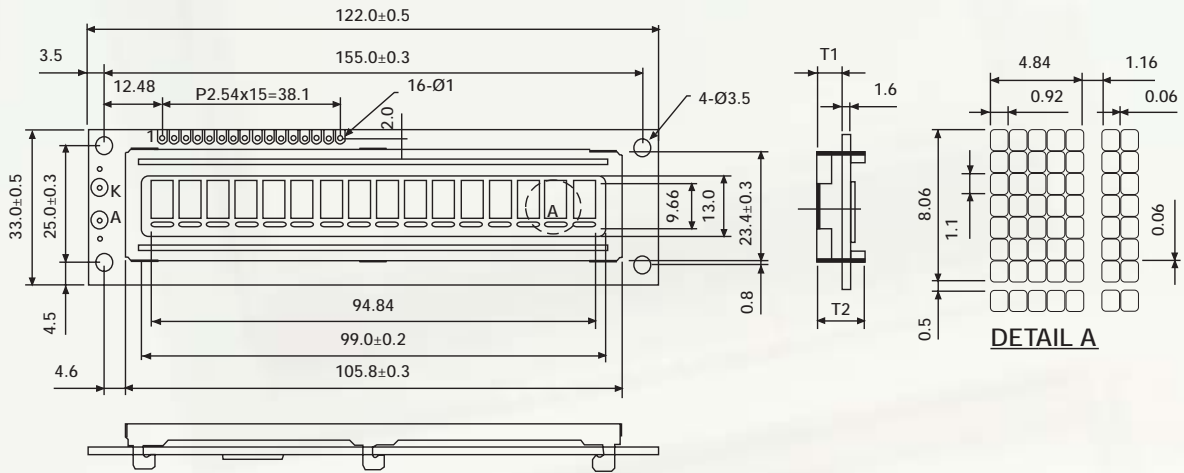
FNX161C



PERFORMANCE FEATURES

| | |
|----------------------|--|
| Performance features | STN, TN |
| Polarizer | Reflective, transfective, transmissive |
| Color | Gray, yellow, blue |
| Backlight | Led (yellow-green) |
| Temperature range | Standard, wide |
| Controller | KS0066 (or equivalent) |

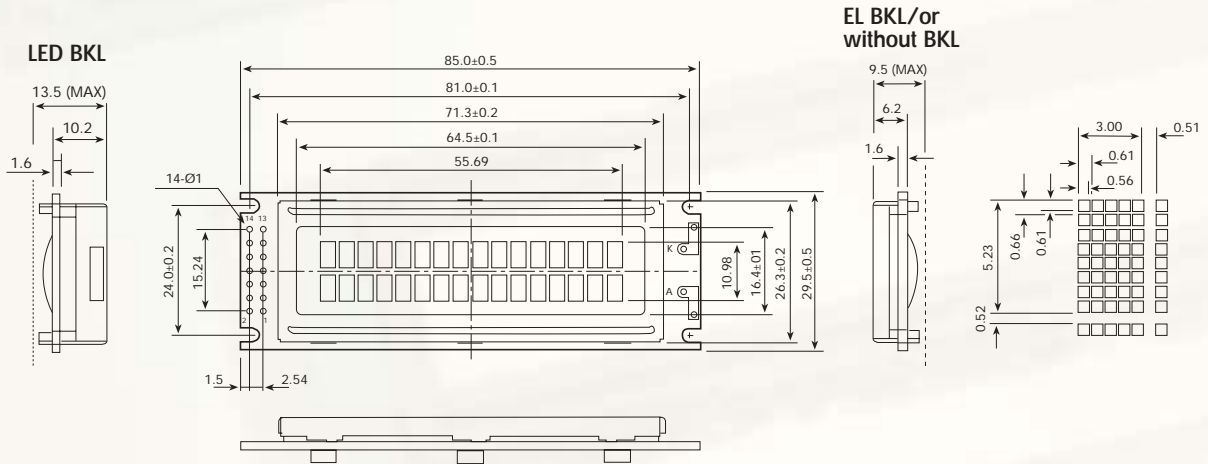
FNX161B



FEATURE

1. Construction: STN LCD panel, Bezel, Zebra and PCB
2. Optional LED back-light
3. Controller: KS0066U or Equivalent
4. 5V or 3.3V single power input. Built-in DC/DC converter while using 3.3V power input
5. Normal / Extended temperature type

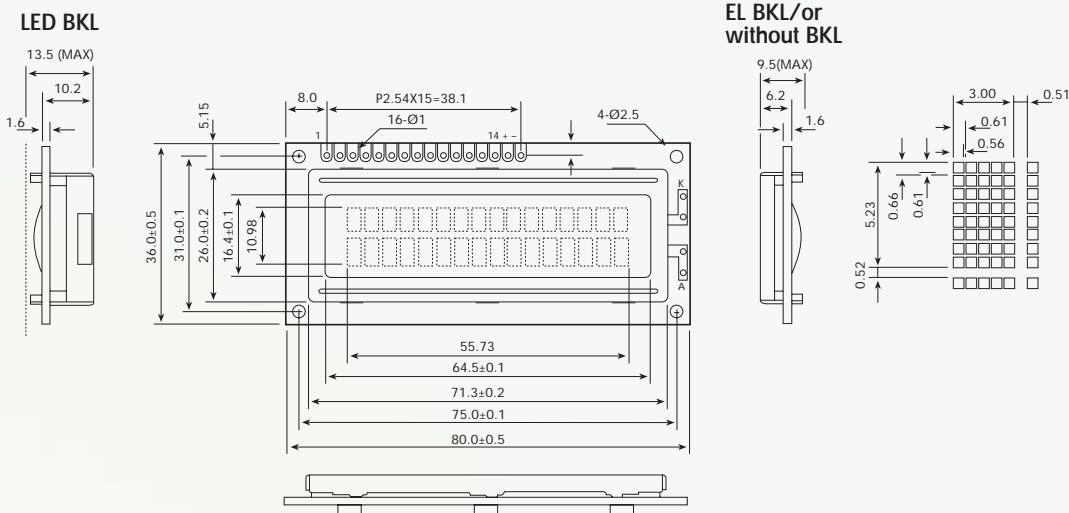
FNX162A



PERFORMANCE FEATURES

| | |
|----------------------|--|
| Performance features | STN, TN |
| Polarizer | Reflective, transfective, transmissive |
| Color | Gray, yellow, blue |
| Backlight | Led (yellow-green) |
| Temperature range | Standard, wide |
| Controller | KS0066 (or equivalent) |

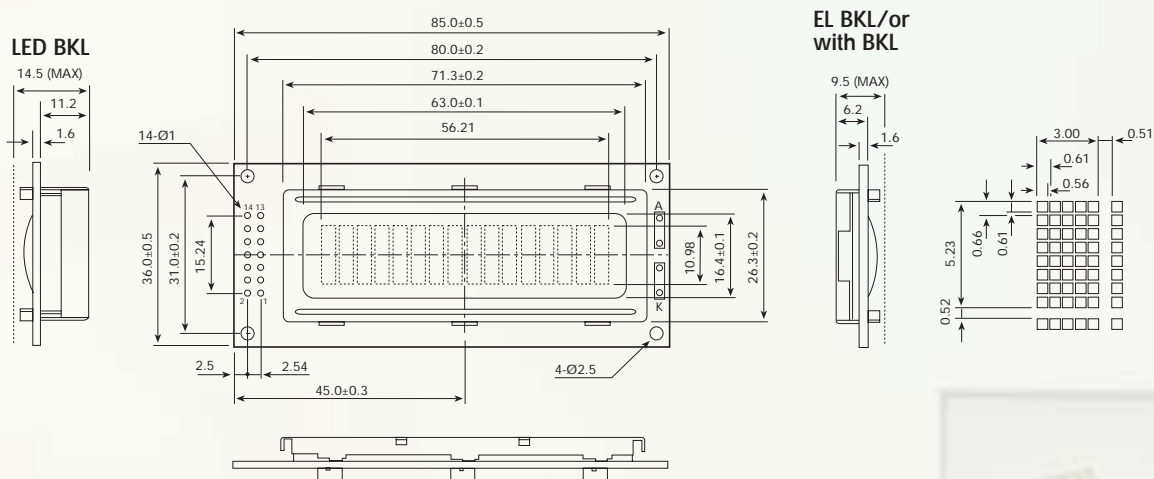
FNX162B



PERFORMANCE FEATURES

| | |
|----------------------|---|
| Performance features | STN,TN |
| Polarizer | Reflective, transflective, transmissive |
| Color | Gray, yellow, blue |
| Backlight | Led (yellow-green) |
| Temperature range | Standard, wide |
| Controller | KS0066 (or equivalent) |

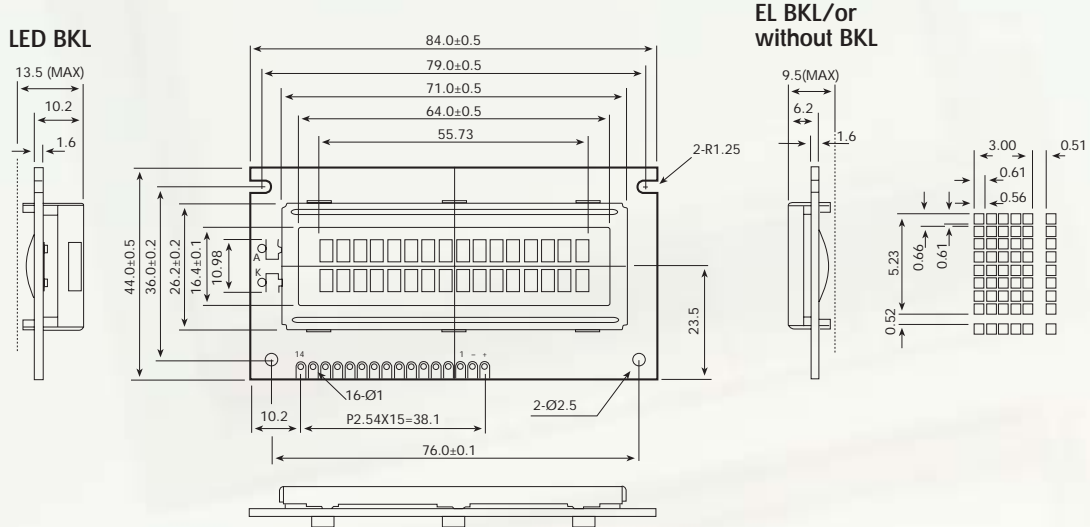
FNX162C



PERFORMANCE FEATURES

| | |
|----------------------|---|
| Performance features | STN,TN |
| Polarizer | Reflective, transflective, transmissive |
| Color | Gray, yellow, blue |
| Backlight | Led (yellow-green) |
| Temperature range | Standard, wide |
| Controller | KS0066 (or equivalent) |

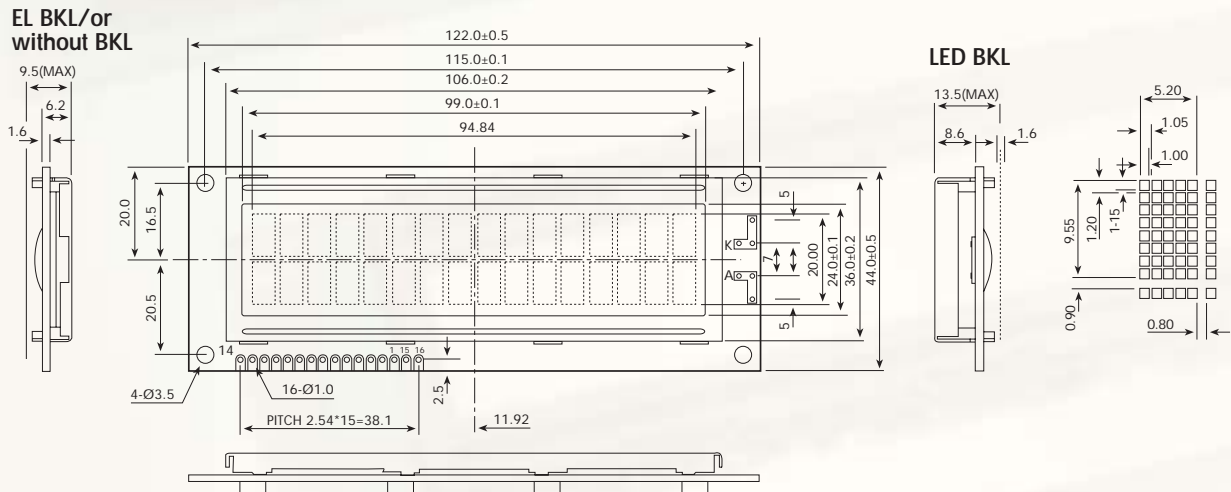
FNX162D



PERFORMANCE FEATURES

| | |
|----------------------|--|
| Performance features | STN, TN |
| Polarizer | Reflective, transfective, transmissive |
| Color | Gray, yellow, blue |
| Backlight | Led (yellow-green) |
| Temperature range | Standard, wide |
| Controller | KS0066 (or equivalent) |

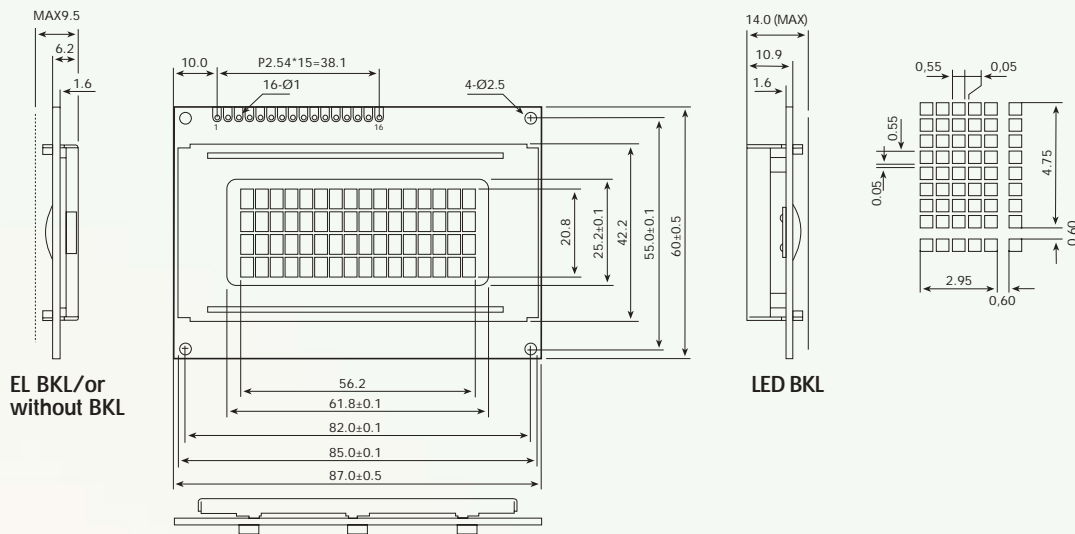
FNX162E



PERFORMANCE FEATURES

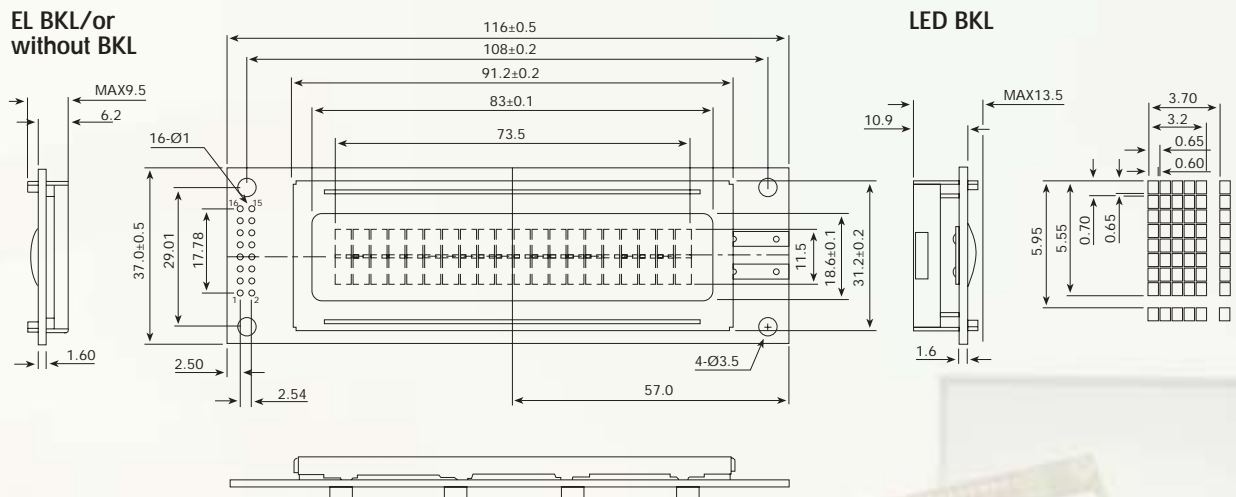
| | |
|----------------------|--|
| Performance features | STN, TN |
| Polarizer | Reflective, transfective, transmissive |
| Color | Gray, yellow, blue |
| Backlight | Led (yellow-green) |
| Temperature range | Standard, wide |
| Controller | KS0066 (or equivalent) |

FNX164A



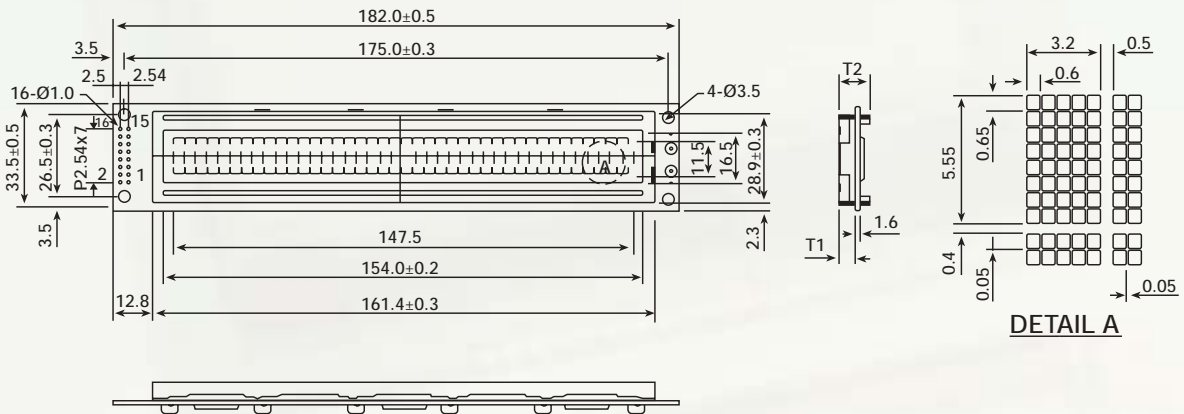
| PERFORMANCE FEATURES | |
|----------------------|--|
| Performance features | STN, TN |
| Polarizer | Reflective, transfective, transmissive |
| Color | Gray, yellow, blue |
| Backlight | LED (yellow-green) |
| Temperature range | Standard, wide |
| Controller | KS0066 (or equivalent) |

FNX202A



| PERFORMANCE FEATURES | |
|----------------------|--|
| Performance features | STN, TN |
| Polarizer | Reflective, transfective, transmissive |
| Color | Gray, yellow, blue |
| Backlight | LED (yellow-green) |
| Temperature range | Standard, wide |
| Controller | KS0066 (or equivalent) |

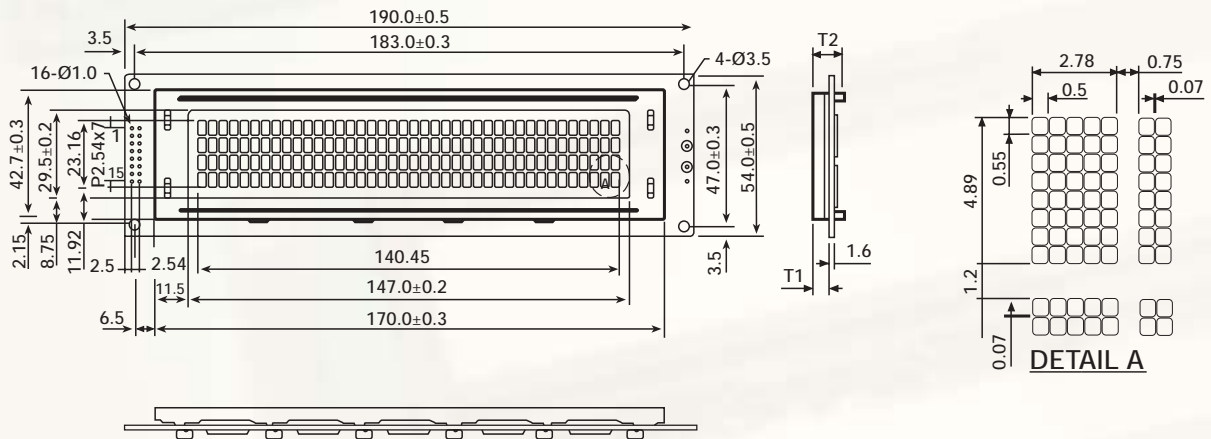
FNX402A



FEATURE

1. Construction: STN LCD panel, Bezel, Zebra and PCB
2. Optional LED or EL back-light
3. Controller: KS0066U or Equivalent
4. 5V or 3.3V single power input. Built-in DC/DC converter while using 3.3V power input
5. Normal / Extended temperature type

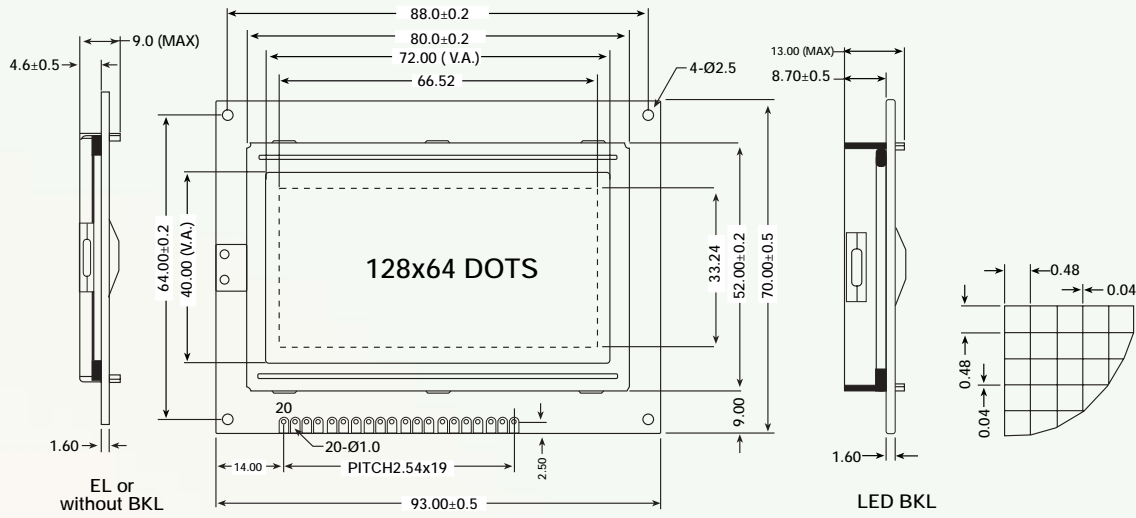
FNX404A



FEATURE

1. Construction: STN LCD panel, Bezel, Zebra and PCB
2. Optional LED or EL back-light
3. Controller: KS0066U or Equivalent
4. 5V or 3.3V single power input. Built-in DC/DC converter while using 3.3V power input
5. Normal / Extended temperature type

FNX12864A



FEATURE

1. 128X64 dots graphic LCD module
2. Built-in controller (KS0108B)
3. 5.0V power supply
4. STN; 1/64 duty; LED BKL or EL BKL

MECHANICAL DATA

| Item | Standard | Unit |
|------------------|-----------|------|
| Module dimension | 93.0x70.0 | mm |
| Viewing area | 72.0x40.0 | mm |
| Dot size | 0.48x0.48 | mm |
| Dot pitch | 0.52x0.52 | mm |

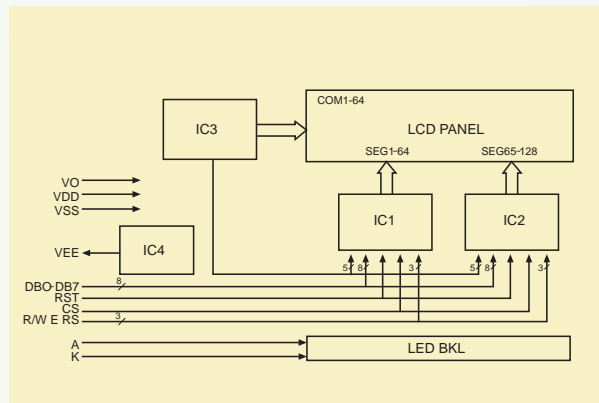
ABSOLUTE MAXIMUM RATING

| Item | Symbol | Standard | | | Unit |
|---------------|---------|----------|-----|-----|------|
| | | Min | Typ | Max | |
| Power supply | VDD-VSS | -0.3 | — | 5.5 | V |
| Input voltage | VI | -0.3 | — | VDD | |

ELECTRONICAL CHARACTERISTICS

| Item | Symbol | Condition | Standard | | | Unit |
|--|-----------------|-----------------------------------|----------|-----|-----|------|
| | | | Min | Typ | Max | |
| Input voltage | VDD | +5V | 4.7 | 5.0 | 5.5 | V |
| Supply current | IDD | VDD=5V | — | 8 | — | mA |
| Recommended LCD driving voltage for normal temp version module | VDD-VO | -20°C | — | — | — | |
| | | 0°C | — | 9.8 | — | |
| | | 25°C | — | 9.5 | — | |
| | | 50°C | — | 9.3 | — | |
| | | 70°C | — | — | — | |
| LED forward voltage | VF | 25°C | — | 4.2 | 4.5 | V |
| LED forward current | IF | 25°C | — | 360 | — | mA |
| EL power supply current | I _{EL} | V _{EL} =110V AC 400Hz | — | — | — | |

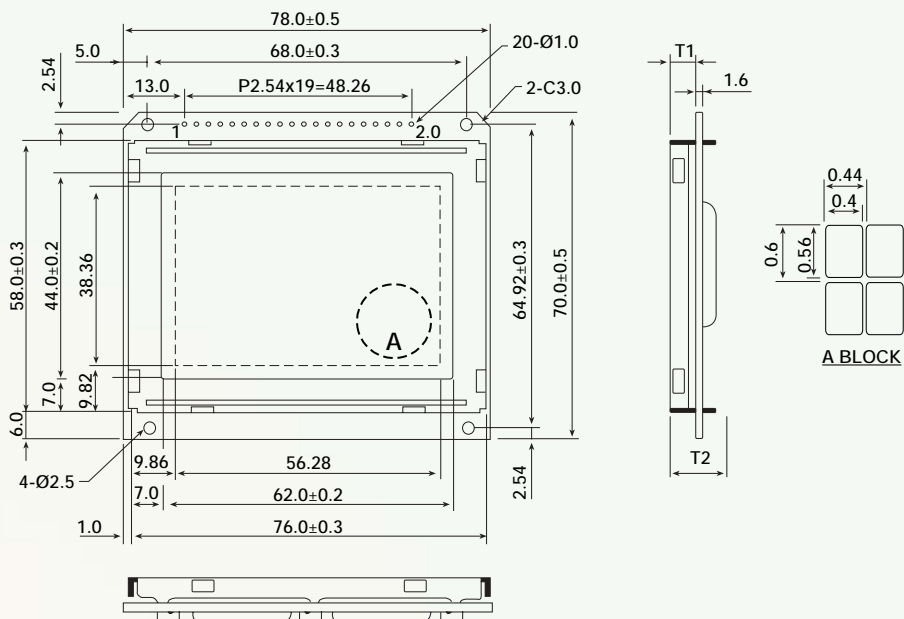
BLOCK DIAGRAM



INTERFACE PIN CONNECTIONS

| Pin No | Symbol | Function |
|---------|------------|-----------------------------|
| 1 | VSS | GND |
| 2 | VDD | +5V |
| 3 | VO | Contrast adjustment |
| 4 | RS | H/L Register select signal |
| 5 | R/W | H/L Read/Write signal |
| 6 | E | H/L Enable signal |
| 7 to 14 | DB0 to DB7 | H/L Data bus line |
| 15 | CS1 | Chip select for IC1 |
| 16 | CS2 | Chip select for IC2 |
| 17 | RST | Reset signal |
| 18 | VEE | Negative voltage output |
| 19 | A | Power supply for BKL (4.2V) |
| 20 | K | Power supply for BKL (GND) |

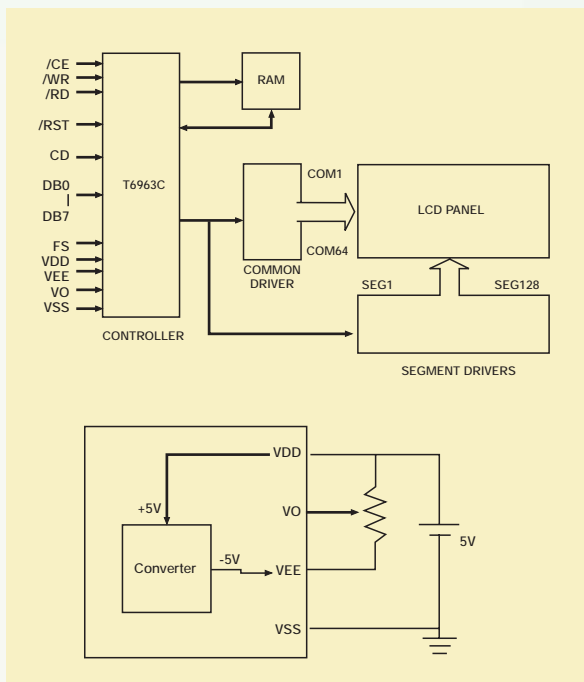
FNX12864D



FEATURE

1. Construction: STN LCD panel, Bezel, Zebra and PCB
2. Optional edge type LED or EL back-light, white edge-light LED available
3. Controller: T6963C
4. 5V or single power input. Built-in DC/DC converter for LCD driving.
5. Normal / Extended temperature type

BLOCK DIAGRAM



THICKNESS

| Version | T1 | T2 |
|-------------------|---------|----------|
| EL & No Backlight | 7.5±0.3 | 14.0 Max |
| CCFL Backlight | 7.5±0.3 | 14.0 Max |

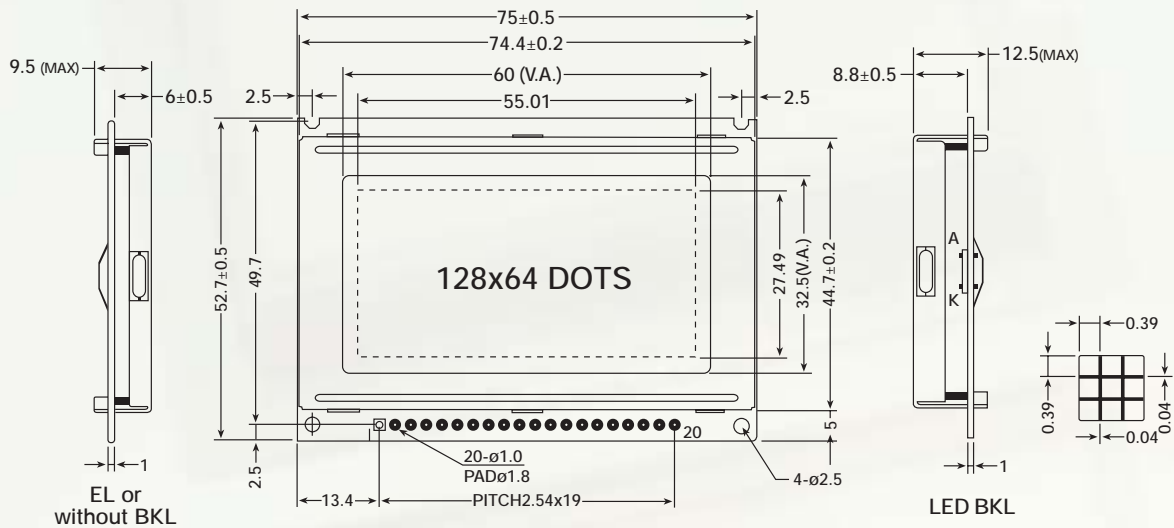
ELECTRICAL CHARACTERISTICS

| Item | Symbol | Condition | Typ. Value | Unit |
|---------------------|-----------------|-----------|------------|------|
| LCD driving voltage | VDD/VDO | 25°C | 9.2 | V |
| Supply current | I _{DD} | VDD=5.0V | 3.0 | mA |

INTERFACE

| Pin No | Symbol | Pin No | Symbol |
|--------|--------|--------|--------|
| 1 | VEE | 11 | DB1 |
| 2 | VSS | 12 | DB2 |
| 3 | VDD | 13 | DB3 |
| 4 | VO | 14 | DB4 |
| 5 | /WR | 15 | DB5 |
| 6 | /RD | 16 | DB6 |
| 7 | /CE | 17 | DB7 |
| 8 | C/D | 18 | FS |
| 9 | /RST | 19 | A/EL1 |
| 10 | DB0 | 20 | K/EL2 |

FNX12864E



FEATURE

1. 128X64 dots graphic LCD module
2. Built-in controller (KS0108B)
3. 5.0V power supply
4. STN; 1/64 duty; LED BKL or EL BKL

MECHANICAL DATA

| Item | Standard | Unit |
|------------------|-----------|------|
| Module dimension | 75.0x52.7 | mm |
| Viewing area | 60.0x32.5 | mm |
| Dot size | 0.39x0.39 | mm |
| Dot pitch | 0.43x0.43 | mm |

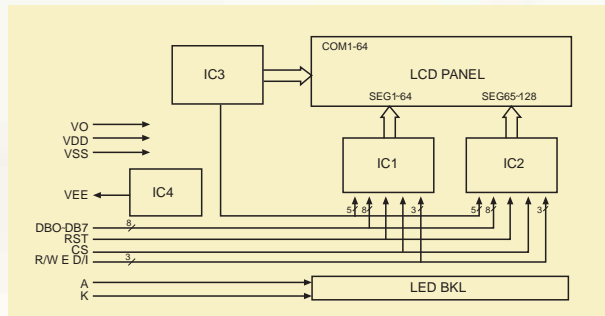
ABSOLUTE MAXIMUM RATING

| Item | Symbol | Standard | | | Unit |
|---------------|---------|----------|-----|-----|------|
| | | Min | Typ | Max | |
| Power supply | VDD-VSS | -0.3 | — | 5.5 | V |
| Input voltage | VI | -0.3 | — | VDD | |

ELECTRONICAL CHARACTERISTICS

| Item | Symbol | Condition | Standard | | | Unit |
|--|--------------------|-----------------------------------|----------|-----|-----|------|
| | | | Min | Typ | Max | |
| Input voltage | VDD | +5V | 4.7 | 5.0 | 5.5 | V |
| Supply current | I _{DD} | VDD=5V | — | 8 | — | mA |
| Recommended LCD driving voltage for normal temp version module | VDD-V _O | -20°C | — | — | — | V |
| | | 0°C | — | 9.8 | — | |
| | | 25°C | — | 9.5 | — | |
| | | 50°C | — | 9.3 | — | |
| LED forward voltage | V _F | 25°C | — | 4.2 | 4.5 | V |
| LED forward current | I _F | 25°C | — | 360 | — | mA |
| EL power supply current | I _{EL} | V _{EL} =110V AC 400Hz | — | — | — | mA |

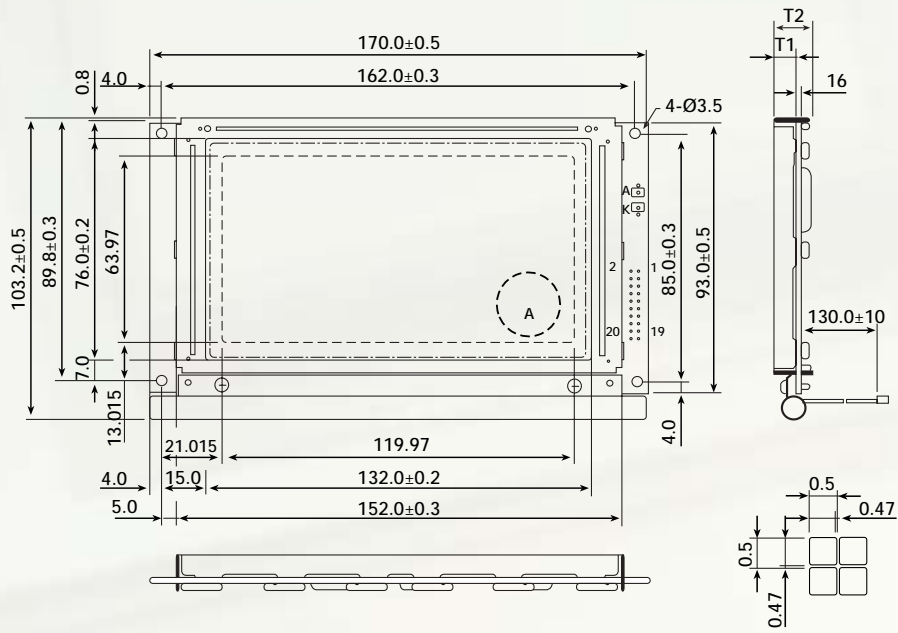
BLOCK DIAGRAM



INTERFACE PIN CONNECTIONS

| Pin No | Symbol | Function |
|---------|----------------|----------------------------------|
| 1 | VDD | +5V |
| 2 | VSS | GND |
| 3 | V _O | Contrast adjust |
| 4 to 11 | DB0 to DB7 | H/L Data bus line |
| 12 | CS1 | Chip select for IC1 |
| 13 | CS2 | Chip select for IC2 |
| 14 | RST | Reset signal |
| 15 | R/W | H/L Read/Write signal |
| 16 | D/I | H/L H: Data, L: Instruction code |
| 17 | E | H/L Enable signal |
| 18 | VEE | Negative voltage output |
| 19 | A | Power supply for BKL (4.2V) |
| 20 | K | Power supply for BKL (GND) |

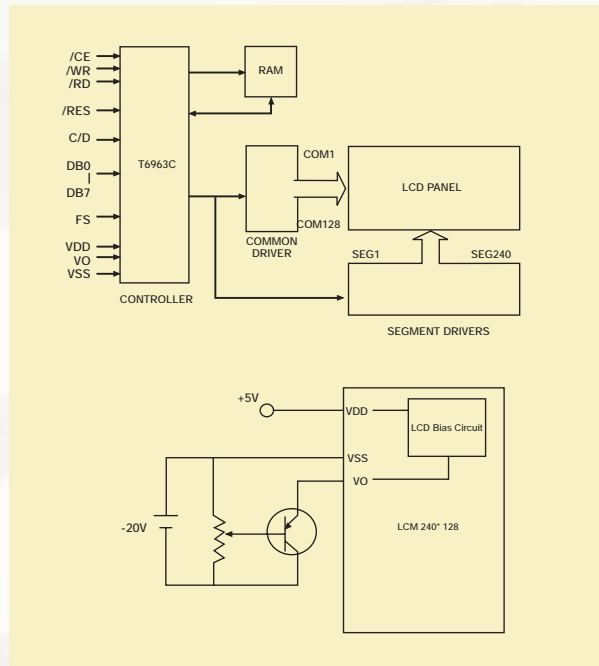
FNX240128B



FEATURE

1. Construction: STN LCD panel, Bezel, Zebra and PCB
2. Optional: LED, EL or CCFL back-light
3. Controller: T6963C
4. Besides +5V for logic circuit, -20V is needed for LCD driving (optional DC/DC converter available).
5. Normal / Extended temperature type

BLOCK DIAGRAM



THICKNESS

| Version | T1 | T2 |
|-------------------|---------|----------|
| EL & No Backlight | 7.5±0.3 | 14.0 Max |
| CCFL Backlight | 7.5±0.3 | 14.0 Max |

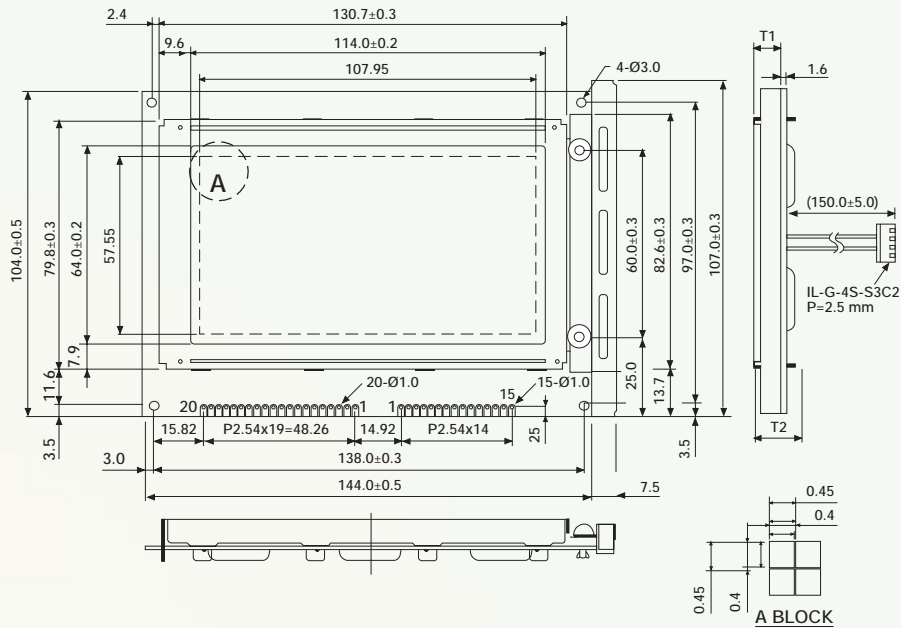
ELECTRICAL CHARACTERISTICS

| Item | Symbol | Condition | Typ. Value | Unit |
|---------------------|-----------------|-----------|------------|------|
| LCD driving voltage | VDD/VO | 25°C | 18.5 | V |
| Supply current | I _{DD} | VDD=5.0V | 15 | mA |

INTERFACE

| Pin No | Symbol | Pin No | Symbol |
|--------|--------|--------|--------|
| 1 | FG | 11 | DB0 |
| 2 | VSS | 12 | DB1 |
| 3 | VDD | 13 | DB2 |
| 4 | VO | 14 | DB3 |
| 5 | /WR | 15 | DB4 |
| 6 | /RD | 16 | DB5 |
| 7 | /CE | 17 | DB6 |
| 8 | C/D | 18 | DB7 |
| 9 | NC | 19 | FS |
| 10 | /RES | 20 | NC |

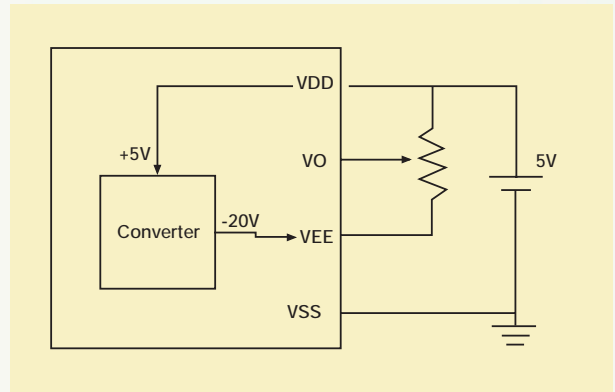
FNX240128G



FEATURE

1. Construction: STN LCD panel, Bezel, Zebra and PCB
2. Optional: LED/EL/CCFL back-light, white edge-light LED available
3. Built-in Controller/Pure Driver
4. 5V single power input. Built-in DC/DC converter for LCD driving
5. Normal / Extended temperature type

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS

| Item | Symbol | Condition | Typ. Value | Unit |
|-----------------------------|-----------------|-----------|------------|------|
| LCD driving voltage | VDD/VO | 25°C | 18.9 | V |
| Supply current (Controller) | I _{DD} | VDD=5.0V | 25 | mA |
| Supply Current (Driver) | I _{DD} | VDD=5.0V | 15 | mA |

BUILT-IN CONTROLLER

| Pin No | Symbol | Pin No | Symbol |
|--------|--------|--------|--------|
| 1 | VSS | 11 | DB4 |
| 2 | VDD | 12 | DB5 |
| 3 | VO | 13 | DB6 |
| 4 | C/D | 14 | DB7 |
| 5 | /RD | 15 | /CE |
| 6 | /WR | 16 | /RES |
| 7 | DB0 | 17 | VEE |
| 8 | DB1 | 18 | MD2 |
| 9 | DB2 | 19 | FS |
| 10 | DB3 | 20 | NC |

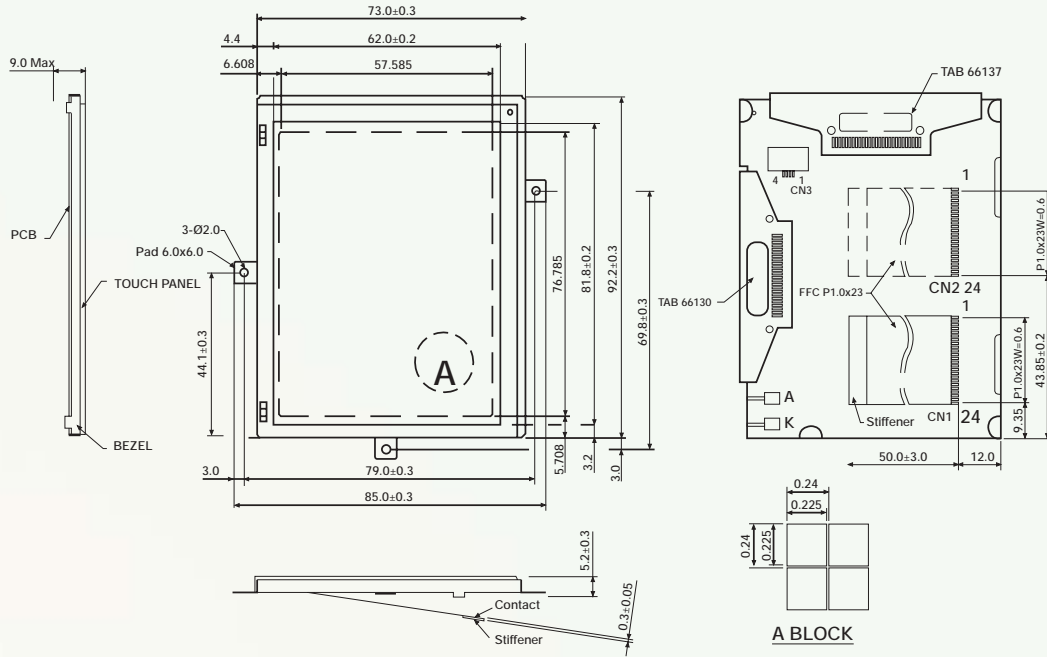
PURE DRIVER

| Pin No | Symbol | Pin No | Symbol |
|--------|--------|--------|----------|
| 1 | FLM | 9 | D1 |
| 2 | CP | 10 | D2 |
| 3 | LP | 11 | D3 |
| 4 | M | 12 | VO |
| 5 | VDD | 13 | /DISPOFF |
| 6 | VSS | 14 | A/EL1 |
| 7 | VEE | 15 | K/EL2 |
| 8 | DO | | |

THICKNESS

| Version | T1 | T2 |
|---------------------|---------|----------|
| EL & No Backlight | 5.5±0.3 | 12.0 Max |
| LED, CCFL Backlight | 9.0±0.3 | 15.0 Max |

FNX320240Q



FEATURE

1. All in one solution
2. Construction: FSTN LCD, TAB IC and PCB
3. Option: EL backlight, EL driver, Touch Panel, Touch Panel Controller
4. Built-in Controller/Pure Driver.
5. 5V or 3.3V single power input. Built-in DC/DC converter for LCD driving. Ultra Low Power Consumption
6. Normal / Extended temperature type

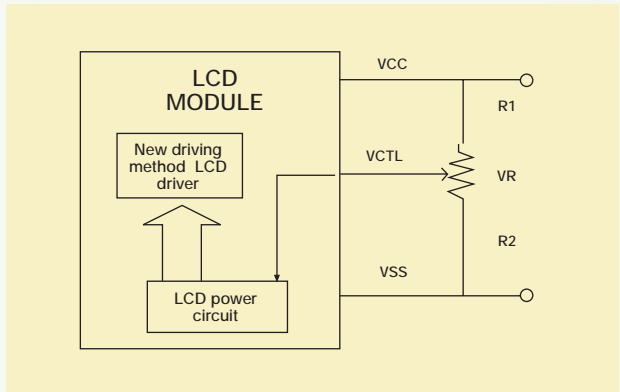
ELECTRICAL CHARACTERISTICS

| Item | Symbol | Condition | Typ. Value | Unit |
|-----------------------------|-----------------|-----------|------------|------|
| LCD driving voltage | VDD/VO | 25°C | 22.9 | V |
| Supply current (Controller) | I _{DD} | VDD=5.0V | 25 | mA |
| Supply Current (Driver) | I _{DD} | VDD=5.0V | 1.5 | mA |

BUILT-IN CONTROLLER

| Pin No | Symbol | Pin No | Symbol |
|--------|--------|--------|--------|
| 1 | /RESET | 13 | DB7 |
| 2 | /RD | 14 | VDD |
| 3 | /WR | 15 | VSS |
| 4 | /CS | 16 | VCTL |
| 5 | AO | 17 | EL_ON |
| 6 | DB0 | 18 | SK |
| 7 | DB1 | 19 | DO |
| 8 | DB2 | 20 | DI |
| 9 | DB3 | 21 | CS |
| 10 | DB4 | 22 | INT |
| 11 | DB5 | 23 | EL1 |
| 12 | DB6 | 24 | EL2 |

BLOCK DIAGRAM



PURE DRIVER

| Pin No | Symbol | Pin No | Symbol |
|--------|----------|--------|--------|
| 1 | DO | 13 | VCTL |
| 2 | D1 | 14 | /RESET |
| 3 | D2 | 15 | SK |
| 4 | D3 | 16 | DO |
| 5 | /DISPOFF | 17 | DI |
| 6 | FLM | 18 | CS |
| 7 | M | 19 | INT |
| 8 | LP | 20 | EL1 |
| 9 | CP | 21 | EL2 |
| 10 | VCC | 22 | NC |
| 11 | VSS | 23 | NC |
| 12 | EL_ON | 24 | NC |

THICKNESS

| Version | T1 | T2 |
|--------------|---------|---------|
| EL Backlight | 3.8±0.3 | 7.6 Max |
| Touch Panel | 5.2±0.3 | 9.0 Max |



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Authorized distributor



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