

# Designing Custom LCDs

The following steps are a guide for designing custom LCD glass panels only. Amtex can also assist in designing a custom LCD module, complete with PCB and driver chips, and even part of your circuitry.

## Step 1: Consider the economics of your project.

An NRE (Non Recurring Engineering) charge costs from \$2000 upwards. A minimum order quantity is required and is dependent on the size of the LCD panel, eg. a business card size panel will require a MOQ of 1000 to 2000 pieces. The smaller the LCD panel, the larger the MOQ.

## Step 2: Physical issues.

To be economical, considerations here include space for zebra, heat seal (flexible) connectors, metal pins, operating temperature range and glass thickness. Any or all of these factors will have a bearing on price.

## Step 3: Display Mode. Determine each of the following areas:

- TN or STN
- Reflective, Transmissive or Transflective
- Viewing direction
- If backlighting is required; EL, LED or Cold Cathode

## Step 4: Performance Specifications.

To get the optimum performance from an LCD, the following factors have to be considered as a whole, not separately: Driving method, driving voltage and frequency, type of LSI driver, type of liquid and operating temperature range.

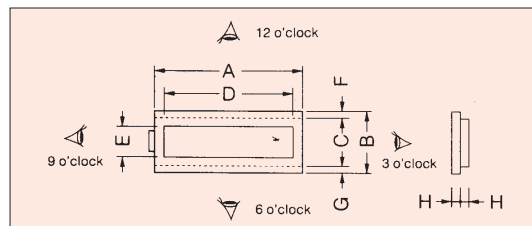
## Step 5: Time considerations.

Customer submits drawing and completed check list (see next page).

- NRE charge quotation ... 2 to 4 working days  
NRE charge accepted by customer
- "Counter drawing" submitted to customer ... 7 to 10 working days  
"Counter drawing" accepted by customer
- Working prototypes ... 4 to 6 weeks  
Customer accepts working prototypes
- Mass production ... 4 to 6 weeks

# CHECK LIST for Custom Designed LCD Panel

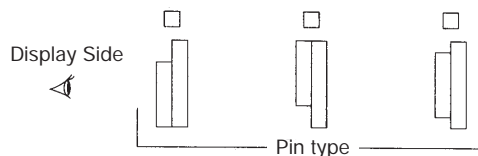
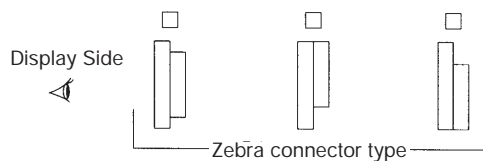
## 1. Outline Dimensions



A	Length of glass	
B	Width of glass	
C	Width of bottom glass	
D	Length of viewing area	
E	Width of viewing area	
F	Size of terminal part	
G	Size of terminal part	
H	Thickness of glass	

## 2. Panel Form

(tick box)



## 3. Mode of Display

### 3.1 Operation Mode

- TN positive
- TN negative
- STN yellow green
- STN blue

### 3.2 Display Mode

- Reflective type
- Transflective type
- Transmissive type
- Others

### 3.3 Viewing Direction

- 6 O'clock
- 12 O'clock
- 3 O'clock
- 9 O'clock
- Others

## 4. Performance Specifications

### 4.1 Driving Method

- Static Driving voltage Vop.....V
- Multiplex Driving frequency.....Hz  
.....duty.....bias Driver LSI .....

### 4.2 Operating Temperature Range

- 0°C ~ 50°C or .....°C ~ .....°C

### Storage Temperature Range

- 10°C ~ 60°C or .....°C ~ .....°C

## 5. Connector

### Type of Connector

- Rubber connector (Zebra)
- Pin (Pin length.....mm;  
Pin pitch.....mm)
- Others

### 6. Pinout

- Customer provided
- Free Design

## 7. Polariser

### 7.1 Visual Specifications

- Normal
- Anti-glare
- Anti-UV

### 7.2 Front Polariser

- Attached type
- Separate type

### 7.3 Rear Polariser

- Attached type
- Separate type

## 8. Schedule

Application:

Samples: Date required: .....

Quantity: .....pcs

Mass Production: Date required: .....

Quantity: .....pcs  
per month/year