

**SPECIFICATION:**

**BLGDEP011TT2**

## Revision History

Rev.	Issued Date	Revised Contents
0.1	Oct.02, 2015	Preliminary

# ***TECHNICAL SPECIFICATION***

## **CONTENTS**

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## 1. General Description

reflective electrophoretic E Ink technology display module based on active matrix TFT and plastic substrate. It has 1.1" active area with 240 x 240 pixels, the display is capable to display images at 4 gray levels (2 bits) depending on the display controller and the associated waveform file it used.

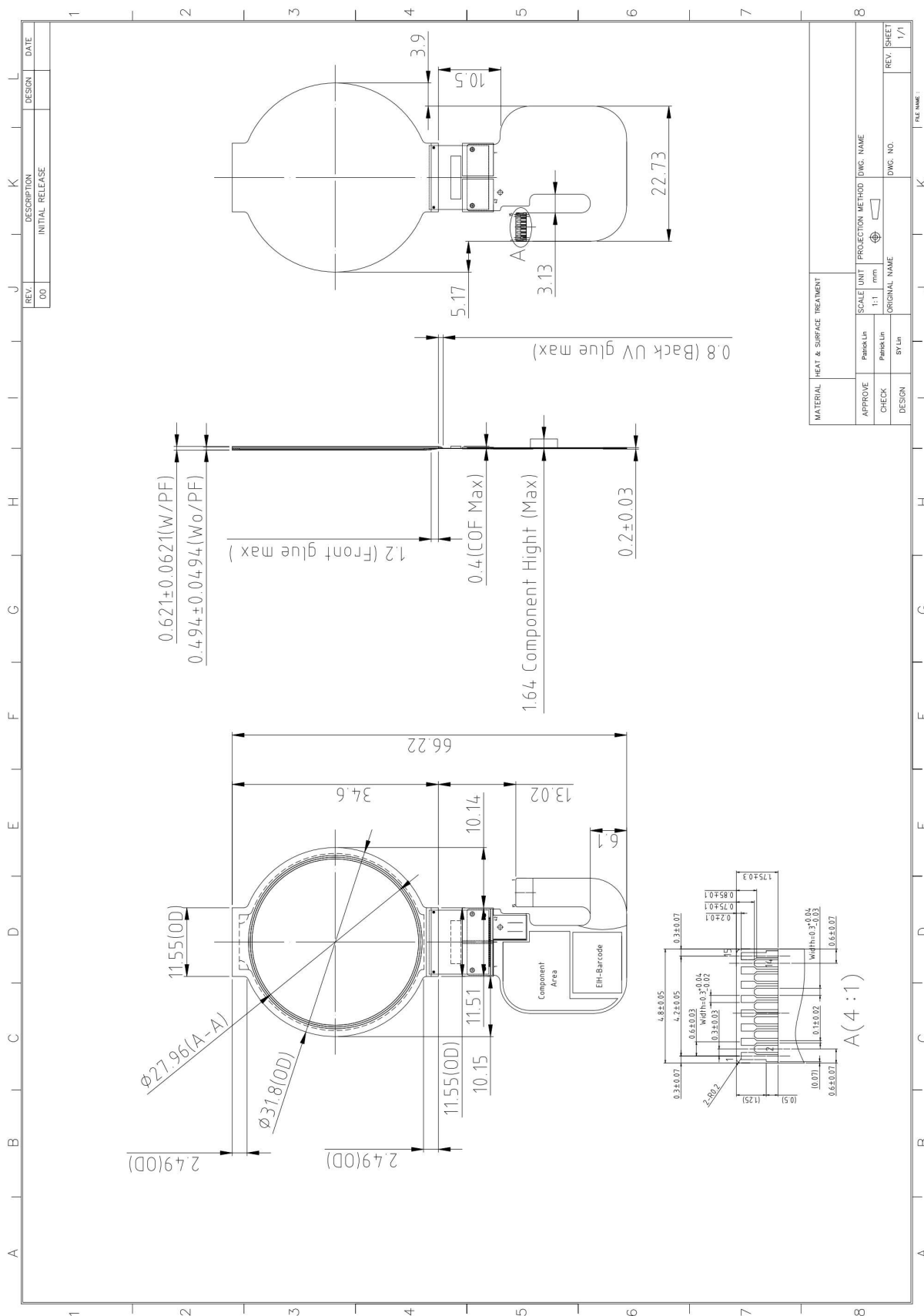
## 2. Features

- High contrast reflective/electrophoretic technology
- 240x240 display
- High reflectance
- Ultra wide viewing angle
- Pure reflective mode
- Bi-stable
- Commercial temperature range
- Plastic substrate

## 3. Mechanical Specifications

Parameter	Specifications	Unit	Remark
Screen Size	1.1	Inch	
Display Resolution	240 (H) × 240(V)	Pixel	
Active Area	Φ27.96	mm	
Pixel Pitch	116.5(H) × 116.5(V)	μm	
Pixel Configuration	Rectangle		
Outline Dimension	31.80(H) × 34.6(V) × 0.494(D)	mm	
Module Weight	TBD	g	
Display operating mode	Reflective mode		

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## 5. Input /Output Interface

### 5-1) Connector type: FH35C-15S-0.3SHW(50)

#### Pin Assignment

Pin	Symbol	Description
1	NC	NC
2	VSS	Ground
3	VDD	Power Supply
4	SDA	Serial data pin (SPI)
5	SCL	Serial clock pin (SPI)
6	CSB	Chip Select input pin
7	DC	Data /Command control pin
8	RST_N	Reset
9	BUSY_N	Busy state output pin
10	BS	Bus selection pin; L: 4-wire IF. H: 3-wire IF. (Default)
11	TSDA	I2C Interface to digital temperature sensor Data pin
12	TSCL	I2C Interface to digital temperature sensor Clock pin
13	NC	NC
14	NC	NC
15	NC	NC

### 5-2) Panel Scan direction

TBD

## 6. Electrical Characteristics

### 6-1) Absolute maximum rating

Parameter	Symbol	Rating	Unit
Logic Supply Voltage	VDD	-0.3 to +6	V
Operating Temp. Range	TOTR	TBD	°C
Storage Temperature	TSTG	TBD	°C

### 6-2) Panel DC characteristics

Parameter	symbol	conditions	Min	Typ	Max	Unit
Signal ground	Vss		-	0	-	V
Logic voltage supply	Vdd		2.3	3.3	3.6	V
	Ivdd	Vdd=3.3V	-	TBD	TBD	mA
Common voltage	Vcom		TBD	Adjusted	TBD	V
Maximum Power panel	Pmax		-	-	TBD	mW
Typical power panel	Ptyp		-	TBD	-	mW
Standby power panel	Pstby		-	-	TBD	mW

### 6-3) Refresh Rate

**TBD**

### 6-4) Panel AC characteristics

**TBD**

## **7. Power Sequence**

TBD



## 8. Optical characteristics

### 8-1) Specifications

Measurements are made with that the illumination is under an angle of 45 degrees, the detector is perpendicular unless otherwise specified.

T = 25°C

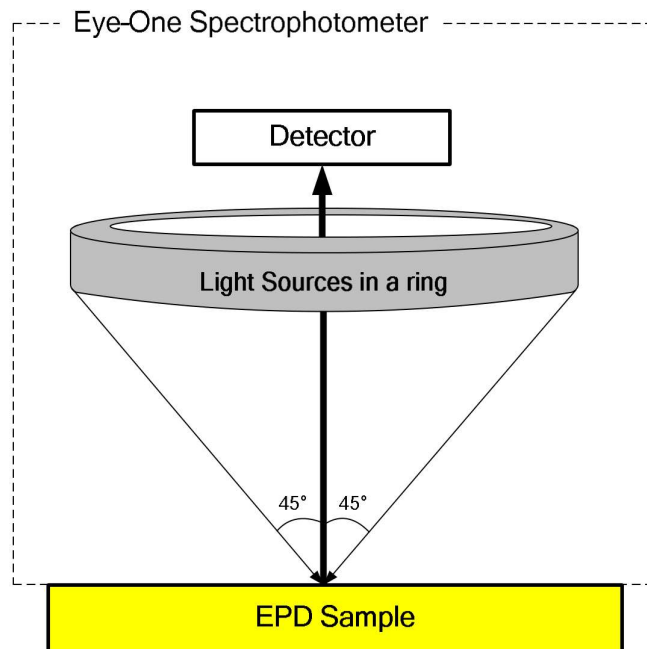
Symbol	Parameter	Conditions	Min	Typ.	Max	Unit	Note
R	Reflectance	White	TBD	TBD	-	%	Note 8-1
CR	Contrast Ratio	-	TBD	TBD	-		-

WS: White state , DS: Dark state

Note 8-1: Luminance meter : Eye – One Pro Spectrophotometer.

### 8-2) Definition of contrast ratio

The contrast ratio (CR) is the ratio between the reflectance in a full white area (RI) and the reflectance in a dark area (Rd):  $CR = RI / Rd$



### 8-3) Reflection Ratio

The reflection ratio is expressed as:

$$R = \text{Reflectance Factor}_{\text{white board}} \times (L_{\text{center}} / L_{\text{white board}})$$

$L_{\text{center}}$  is the luminance measured at center in a white area ( $R=G=B=1$ ).  $L_{\text{white board}}$  is the luminance of a standard white board. Both are measured with equivalent illumination source. The viewing angle shall be no more than 2 degrees.

## 9. HANDLING, SAFETY, ENVIRONMENTAL REQUIREMENTS AND REMARK

### WARNING

The display module should be kept flat or fixed to a rigid, curved support with limited bending along the long axis. It should not be used for continual flexing and bending. Handle with care. Should the display break do not touch any material that leaks out. In case of contact with the leaked material then wash with water and soap. Contact E Ink for advice on mounting the display in a curved shape.

### CAUTION

The display module should not be exposed to harmful gases, such as acid and alkali gases, which corrode electronics components.

Disassembling the display module can cause permanent damage and invalidates the warranty agreements.

### Mounting Precautions

- (1) It's recommended that you consider the mounting structure so that uneven force (ex. Twisted stress) is not applied to the module.
- (2) It's recommended that you attach a transparent protective plate to the surface in order to protect the EPD. Transparent protective plate should have sufficient strength in order to resist external force.
- (3) You should adopt radiation structure to satisfy the temperature specification.
- (4) Acetic acid type and chlorine type materials for the cover case are not desirable because the former generates corrosive gas of attacking the PS at high temperature and the latter causes circuit break by electro-chemical reaction.
- (5) Do not touch, push or rub the exposed PS with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment. Do not touch the surface of PS for bare hand or greasy cloth. (Some cosmetics deteriorate the PS)
- (6) When the surface becomes dusty, please wipe gently with absorbent cotton or other soft materials like chamois soaks with petroleum benzene. Normal-hexane is recommended for cleaning the adhesives used to attach the PS. Do not use acetone, toluene and alcohol because they cause chemical damage to the PS.
- (7) Wipe off saliva or water drops as soon as possible. Their long time contact with PS causes deformations and color fading.

<b>Data sheet status</b>	
Product specification	This data sheet contains preliminary version product specifications.
<b>Limiting values</b>	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
<b>Application information</b>	
Where application information is given, it is advisory and does not form part of the specification.	
<b>Remark</b>	
All the specifications listed in this document are guaranteed for module only. Post-assembled operation or component(s) may impact module performance or cause unexpected effect or damage and therefore listed specifications is not warranted after any post-assembly operation.	