Product Specification

PRODUCT NUMBER	82-087-00
DESCRIPTION	12.3”1000 NIT TFT, HDMI

Approved: Product Manager  04/25/2019 Signature Date	**Approved:** Doc Control  04/28/2019 Signature Date

REVISION HISTORY

Version	Date	Section	Comments
REV 00	03/30/2019	All	Tentative Specification first issued.
REV 01	04/25/2020	1, 5	Correct Operating Temp, Drawings

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1. GENERAL DESCRIPTION

1.1 OVERVIEW

This is an AUTOMOTOVE GRADE -30C to 85C wide operating temp HD 1920x720 8:3 aspect ratio square pixel IPS-NEO 12.3" HDMI Display.

1.2 FEATURES

- WSVGA (1920 x 720 pixels) resolution
- HDMI Display Interface
- Glass-Glass USB HID Compliant Projected Capacitive Touch Interface.
- Wide operating temperature -30C to 85C.
- Single 5 Volt Operation
- Industrial mounting via ALUMINUM/ABS carrier and 3M VHB gasket.
- "Industrial by Design" Long Product Availability.
- RoHS compliance
- SOLIDWORKS® model available with PixelNext NDA on file.

1.3 APPLICATION

- Medical Displays, Marine, Instrument, Point of Sale, Broadcast, Audio, Factory HMI, etc.

1.4 GENERAL PANEL SPECIFICATI0NS

Item	Specification	Unit	Note
Active Area	292.03 (H) x 109.51 (V) (12.3" diagonal)	mm	(1)
Bezel Opening Area	297.96 (H) x 115.76 (V)	mm	
Technology Type	IPS-NEO	-	-
Pixel Number	1920 x 720	pixel	-
Pixel Pitch	0.1521 (H) x 0.1521 (V) SQUARE	mm	-
Pixel Arrangement	RGB vertical Stripe	-	-
Display Colors	16,194,277 / 262,144	color	-
Display Mode	Normally Black	-	-
Surface Treatment	(7H), Glare	-	-
Module Power Consumption	TBD	W	Typical

2. MECHANICAL SPECIFICATIONS

Item		Typ.	Unit	Note
Module Size	Horizontal(H)	300.0	mm	(1)
	Vertical(V)	124.0	mm	
	Depth(D)	30.2	mm	
Weight		TBD	g	

Note (1) Please refer to the attached drawings for more information of front and back outline dimensions.

3. ABSOLUTE MAXIMUM RATINGS

3.1 ABSOLUTE RATINGS OF ENVIRONMENT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Input Voltage	V_{CC}	4.85	5.15	V_{DC}	at 25 ± 5°C
Operating Ambient Temperature	T_{OP}	-30	+80	℃	
Storage Temperature	T_{ST}	-40	+90	℃	

Notes:
1. The response time will become lower when operated at low temperature.
2. Background color changes slightly depending on ambient temperature. The phenomenon is reversible.
3. Ta<=40°C: 85% RH MAX Ta>=40°C:
4. Absolute humidity must be lower than the humidity of 85% at 40°C.
5. Maximum wet-bulb temperature is 46°C.
6. Condensation of dew must be avoided as electrical current leaks will occur, causing degradation of performance specifications

4. ELECTRICAL CHARCTERSITICS

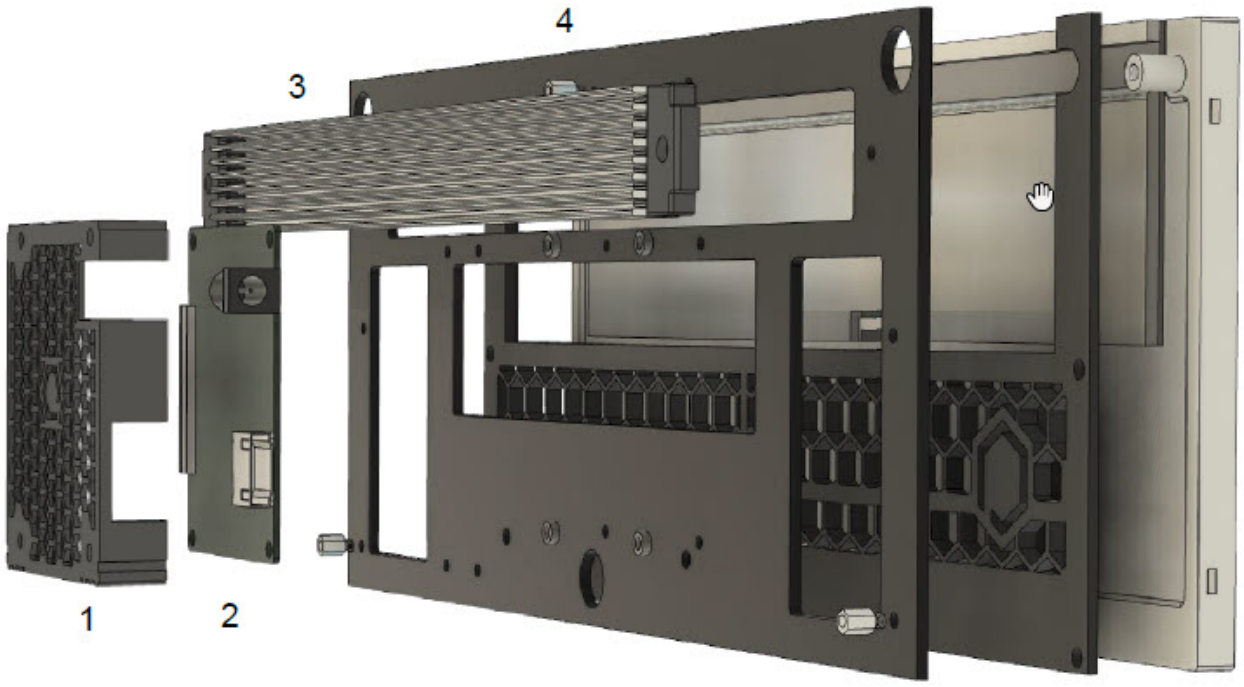
TBD – Contact Factory

5. MECHANICAL CHARACTERISTICS

5.1 SLDPRT Model available upon request.

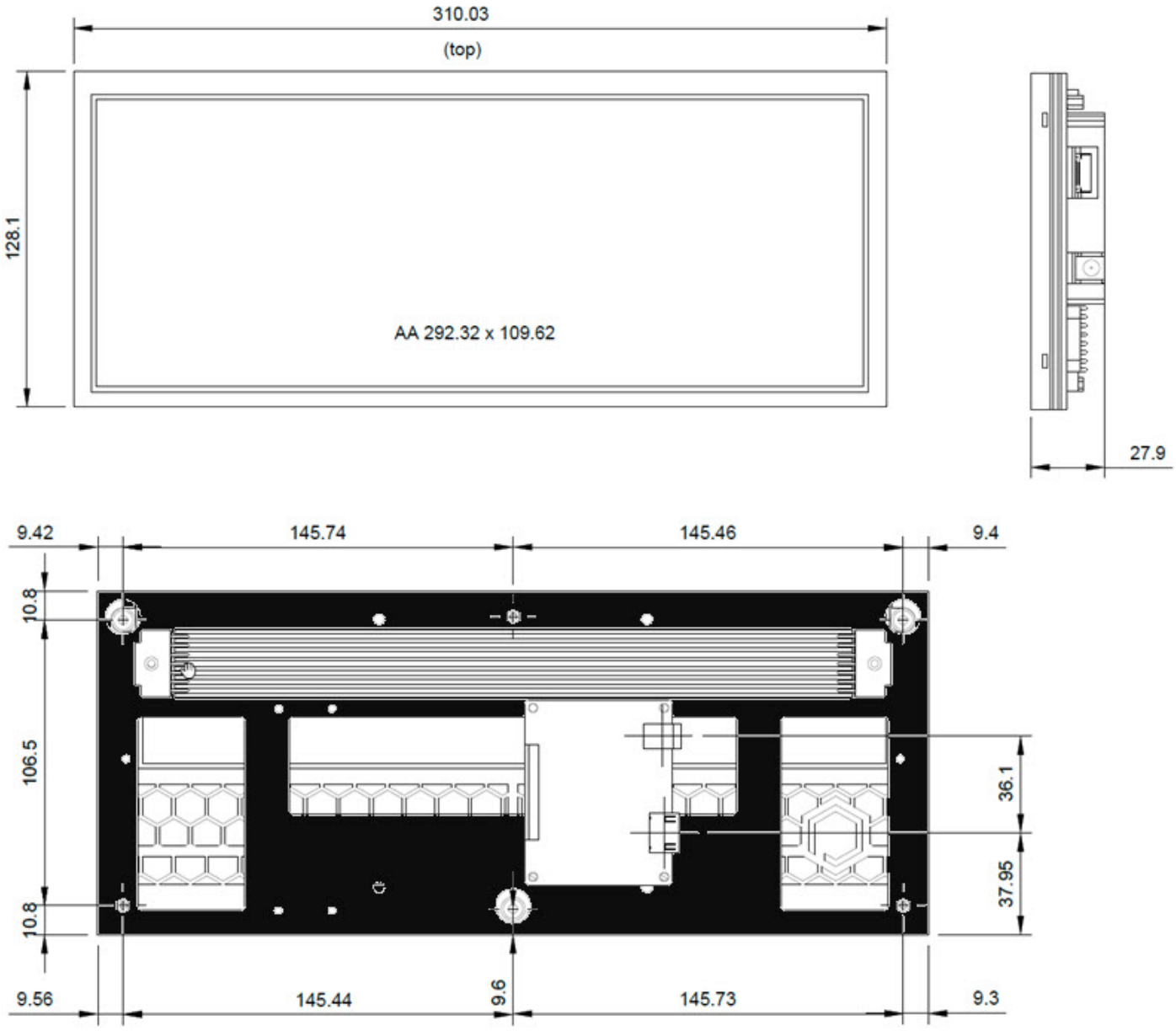
Contact Factory

5.2 3D Drawing



1) PCB cover
2) HDMI
3) Heatsink
4) Carrier
5) Spacer
6) Display

5.3 MECAHANICAL DRAWING



6. CONNECTORS

6.1 J1 – POWER

Pin	Name	Description
1	5V	Power – (Rated at 5V DC 2A)
1	GND	Ground

TE Connectivity 5V Connector - 2-1445098-2

6.2 J3 – HDMI - A

Pin	Name	Description
1	TMDS Data2+	Digital Input Channel 2 True
2	TMDS Data2 Shield	Ground
3	TMDS Data2-	Digital Input Channel 2 Complement
4	TMDS Data1+	Digital Input Channel 1 True
5	TMDS Data1 Shield	Ground
6	TMDS Data1-	Digital Input Channel 1 Complement
7	TMDS Data0+	Digital Input Channel 0 True
8	TMDS Data0 Shield	Ground
9	TMDS Data0-	Digital Input Channel 0 Complement
10	TMDS Clock+	
11	TMDS Clock Shield	Ground
12	TMDS Clock-	
13	CEC	Control
14	Reserved/HEC Data−	No Connection
15	SCL	DDC clock
16	SDA	DDC data
17	DDC/HEC/CEC Ground	Ground
18	+5 V Power	power EDID/DDC
19	Hot Plug Detect/HEC Data+	

7. OPTICAL CHARACTERISTICS

7.1 TEST CONDITIONS

Item	Symbol	Value	Un
Ambient Temperature	Ta	*25±2*	℃
Ambient Humidity	Ha	*50±10*	%
Converter Voltage	V_i	12	V
Converter Duty		100%	

7.2 OPTICAL SPECIFICATIONS

Item	Symbol	Condition	Min	Typ	Max	Unit	Remark
Contrast Ratio	CR	Θ=0°	800	1000	–		Note 8
Response Time	Tr(on)+Tf(off)	25°C	–	35	40	ms	Note1,5
Viewing Angles	ΘT	CR≥10	70	80	–	Degree	Note 2
	ΘB		70	80	–		
	ΘL		70	80	–		
	ΘR		70	80	–		
Luminance	L		850	1000	–	cd/m^2	Note 1,6
Uniformity	U	80			–	%	Note 1,7
Lifetime			-	15000	–	Hours	Note 9

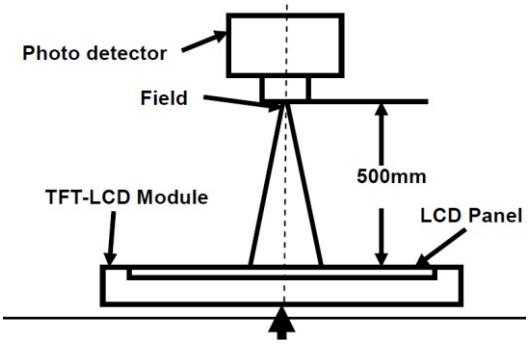
Test Conditions:

1. IF= 20mA (one channel), the ambient temperature is 25℃.

2. The test systems refer to Note 1 and Note 2.

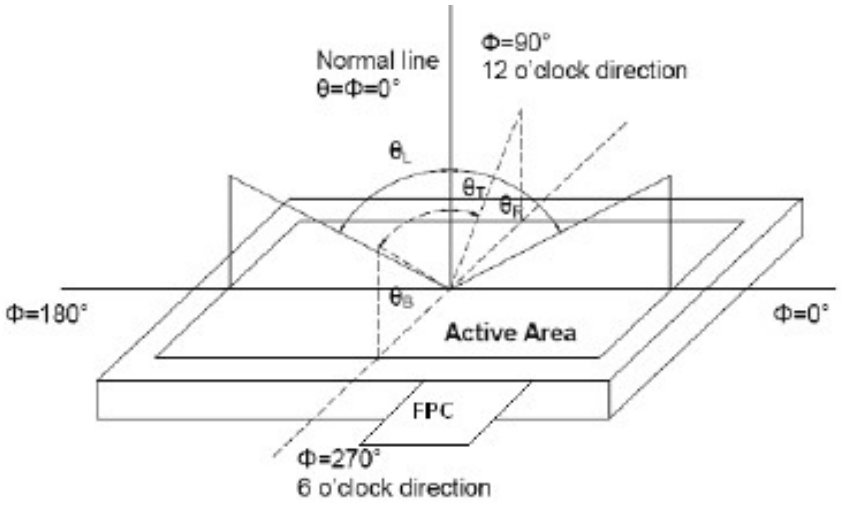
Note 1: Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 10 Minutes operation, the optical properties are measured at the center point of the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel.



Item	Photo Detector	Field
Contrast Ratio	SR-3A	1°
Contrast Ratio		
Contrast Ratio		
Contrast Ratio		
Contrast Ratio	BM-7A	2°

Note 2: Definition of viewing angle range and measurement system.
viewing angle is measured at the center point of the LCD by CONOSCOPE(ergo-80)

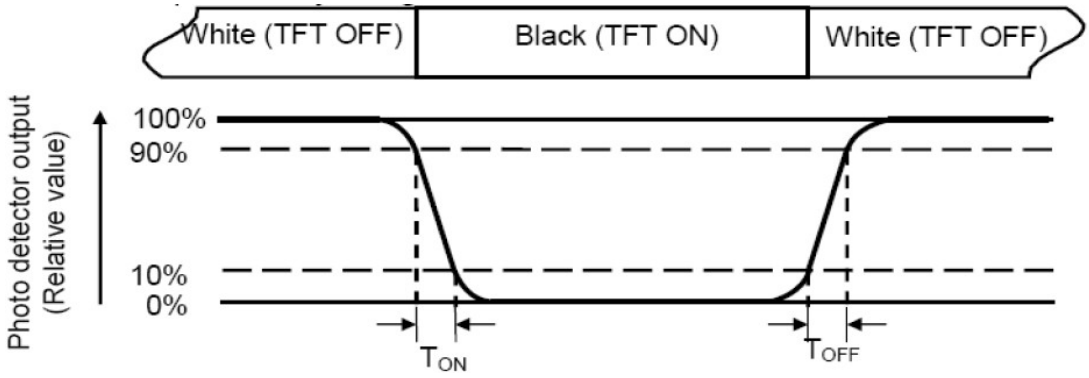


Note 3: Definition of contrast ratio

Contrast Ratio (CR)= Luminance measured when LCD is on “White” state/Luminance measured when LCD is on “Black” state

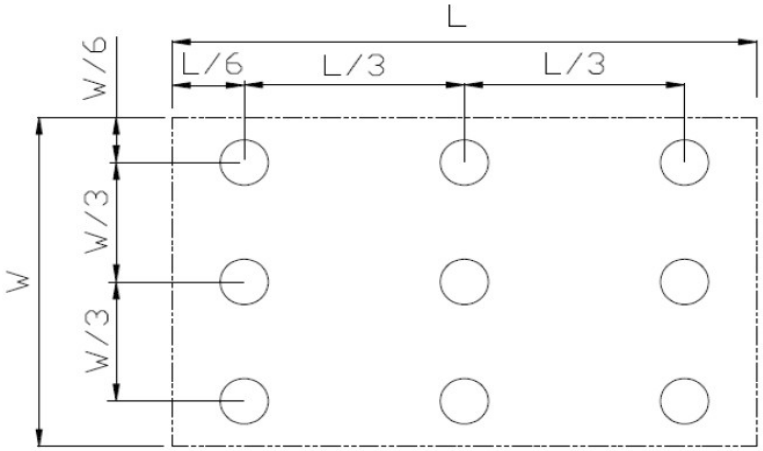
“White state “: The state is that the LCD should be driven by Vwhite (Vwhite: To be determined). “Black state: The state is that the LCD should be driven by Vblack (Vblack: To be determined).

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time (TON) is the time between photo detector output intensity changed from 90% to 10%. And fall time (TOFF) is the time between photo detector output intensity changed from 10% to 90%.



Note 5: Definition of color chromaticity (CIE1931) Color coordinates measured at center point of LCD.

Note 6: Definition of Luminance Uniformity
Active area is divided into 9 measuring areas. Every measuring point is placed at the center of each measuring area. Lmax: The measured Maximum luminance of all measurement position. Lmin: The measured Minimum luminance of all.



Note 7: Definition of Response time
Note 8: Definition of Luminance: Measure the luminance of white state at center point. Left/right 0° Top/bottom 5°
Note 9: If LED is driven by high current, high ambient temperature & humidity condition. The life time of LED will be reduced. Operating life means brightness goes down to 50% initial brightness. Typical operating life time is estimated data.

8. PRECAUTIONS

8.1 ASSEMBLY AND HANDLING PRECAUTIONS

(1) Do not apply rough force such as bending or twisting to the module during assembly.
(2) To assemble or install module into user's system can be only in clean working areas. The dust and oil may cause electrical short or worsen the polarizer.
(3) It's not permitted to have pressure or impulse on the module because the LCD panel and Backlight will be damaged.
(4) Always follow the correct power sequence when LCD module is connecting and operating. This can prevent damage to the CMOS LSI chSFT during latch-up.
(5) Do not pull the I/F connector in or out while the module is operating.
(6) Do not disassemble the module.
(7) Use a soft dry cloth without chemicals for cleaning, because the surface of polarizer is very soft and easily scratched.
(8) It is dangerous that moisture come into or contacted the LCD module, because moisture may damage LCD module when it is operating.
(9) High temperature or humidity may reduce the performance of module. Please store LCD module within the specified storage conditions.
(10) When ambient temperature is lower than 10℃ may reduce the display quality. For example, the response time will become slow.
(11) Do not keep same pattern in a long period of time. It may cause image sticking on LCD.

8.2 SAFETY PRECAUTIONS

(1) Do not disassemble the module or touch the backlight array.
(2) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, skin or clothes, it has to be washed away thoroughly with soap.
(3) After the module's end of life, it is not harmful in case of normal operation and storage.