



AND3222MST-LEDW 6" FSTN LCD Module

The AND3222MST-LEDW display is a compact, full dot matrix, which is an STN gray positive LCD type, transfective rear polarizer with a yellow green backlight color. The AND3222MST-LEDW can display TEXT information, numerals, letters and symbols, as well as GRAPHIC patterns. These devices are suitable for medical and measurement equipment, point-of-sale terminals, portable equipment, and marine instrumentation.

Features

- STN Gray Positive LCD type
- Built-in LED yellow green backlight
- Excellent readability and high-contrast ratio
- 320 (W) x 240 (H) dot graphic display
- Wide operating temperature range (-20 to +70 °C)
- Transfective rear polarizer
- 6 o'clock viewing angle
- **RoHS Compliant**

Mechanical Characteristics

Item	Specification	Unit
Outline Dimensions	148.0 (W) x 120.2 (H) x 20.5 max (D)	mm
Number of Pixels	320 (W) x 240 (H)	pixels
Active Area	120.14 (W) x 92.14 (H)	mm
Pixel Size	0.33 (W) x 0.33 (H)	mm
Pixel Pitch	0.36 (W) x 0.36 (H)	mm
Duty Ratio	1/240	duty
Controller	SID13305	-
DC/DC Converter	With	-

Absolute Maximum Ratings - Electrical

Item	Symbol	Min.	Max.	Unit
Power Supply for Logic	$V_{DD} - V_{SS}$	-0.3	7.0	V
Power Supply for LCD Driver	$V_{DD} - V_{LCD}$	0	30.0	V
Input Voltage	V_I	-0.3	V_{DD}	V
LED Power Dissipation	P_{AD}	-	1242	mW
LED Forward Current	I_{AF}	-	270	mA
LED Reverse Voltage	V_R		8	V

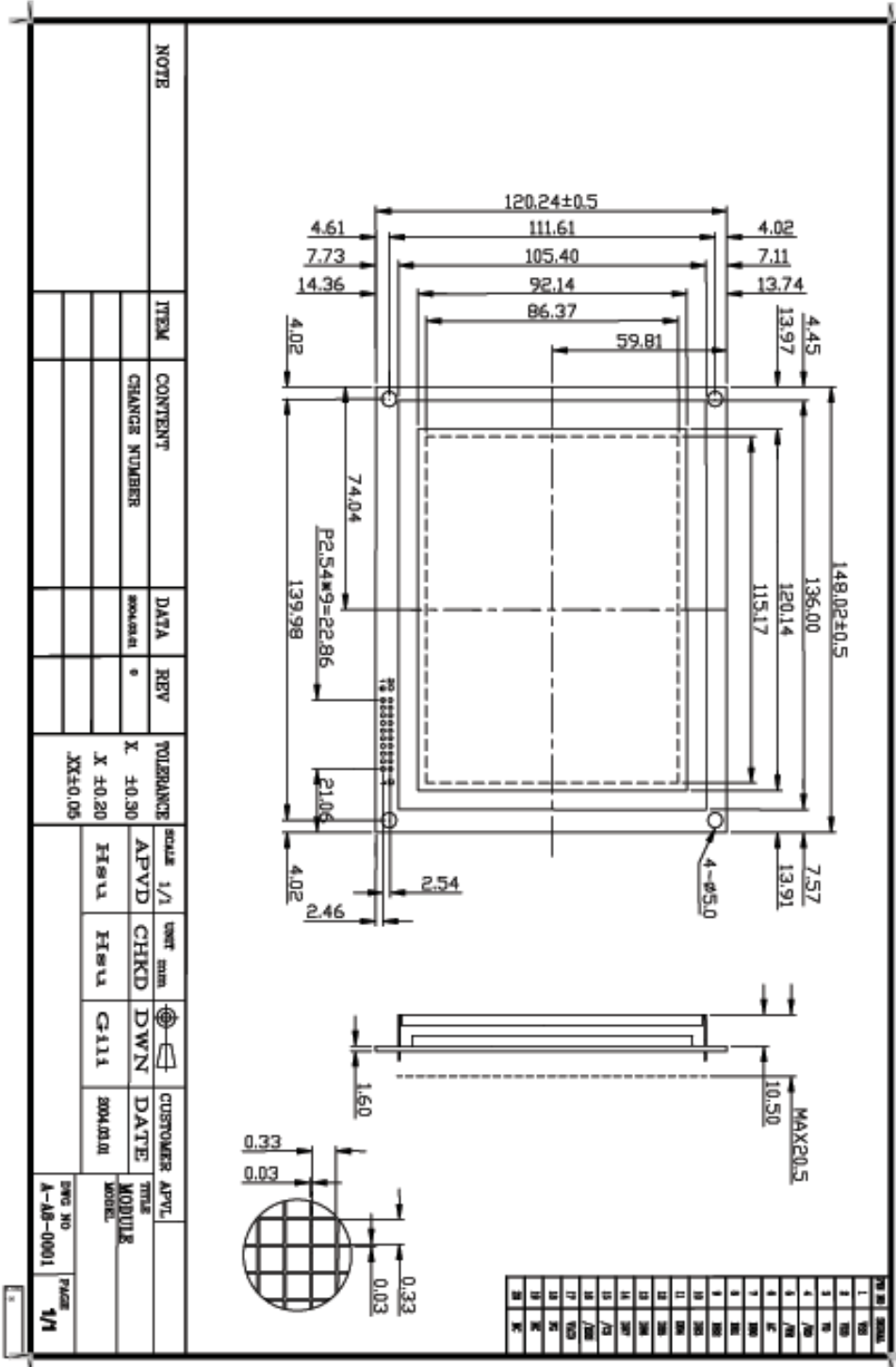
Electrical Characteristics (Ta = 25°C)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply for Logic	$V_{DD} - V_{SS}$	-	4.5	5.0	5.5	V
Power Supply for LCD Drive	$V_{LCD} - V_{SS}$	-	-21.6	-22.1	-22.7	V
Input Voltage	V_{IL}	L Level	0	-	0.6	V
	V_{IH}	H Level	2.2	-	V_{DD}	V
	$V_{DD} - V_O$	Ta = 0°C	-	22.7	-	V
		Ta = 25°C	-	24.3	-	V
Ta = 50°C		-	25.8	-	V	
Logic Supply Current	I_{DD}	$V_{DD} = 5.0V$	34.9	31.3	-	mA
	I_{EE}	$V_{DD} - V_O = 24.3V$	-	3.6	-	
LED Forward Voltage	V_F	If = 180 mA	-	4.2	4.6	V
LED Forward Current	I_F	-	-	180	-	mA
LED Reverse Current	I_R	VR = 8V	-	-	0.3	mA

Product specifications contained herein may be changed without prior notice. It is therefore advisable to contact Purdy Electronics before proceeding with the design of equipment incorporating this product.

Dimensional Outline

Unit: mm
Standard Tolerance: 0.5mm



Optical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Viewing angle range	ϕ f (12 o'clock)	When Cr \geq 1.4	–	20	–	degree
	ϕ b (6 o'clock)		–	40	–	
	ϕ l (9 o'clock)		–	30	–	
	ϕ r (3 o'clock)		–	30	–	
Rise time	Tr	V _{DD} -V _O =24.3V Ta=25°C		175		ms
Fall time	Tf			170		ms
Frame frequency	Frm		–	64	–	Hz
Contrast	Cr		–	4.5	–	
Brightness of Backlight	L	IF = 180 mA	10	20	–	cd/m ²
Peak Emission Wavelength	λ P		567	570	576	nm

Environmental Absolute Maximum Ratings

Item	Normal Temperature				Wide Temperature			
	Operating		Storage		Operating		Storage	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Ambient Temperature	0 °C	+50 °C	-20 °C	+70 °C	-20 °C	+70 °C	-30 °C	+80 °C
Humidity (without condensation)	See Note 2, 4		See note 3, 5		See Note 4, 5		See Note 4.6	

Note 2: Ta \leq 50°C: 80% RH max; Ta > 50°C: Absolute humidity must be lower than the humidity of 85% RH at 50°C

Note 3: Ta at -20°C will be < 48 hrs at 70°C will be <120 hrs when humidity is higher than 75%.

Note 4: Background color changes slightly depending on ambient temperature. This phenomenon is reversible.

Note 5: Ta \leq 70°C: 75% RH max; Ta > 70°C: absolutely humidity must be lower than the humidity of 75% RH at 70°C.

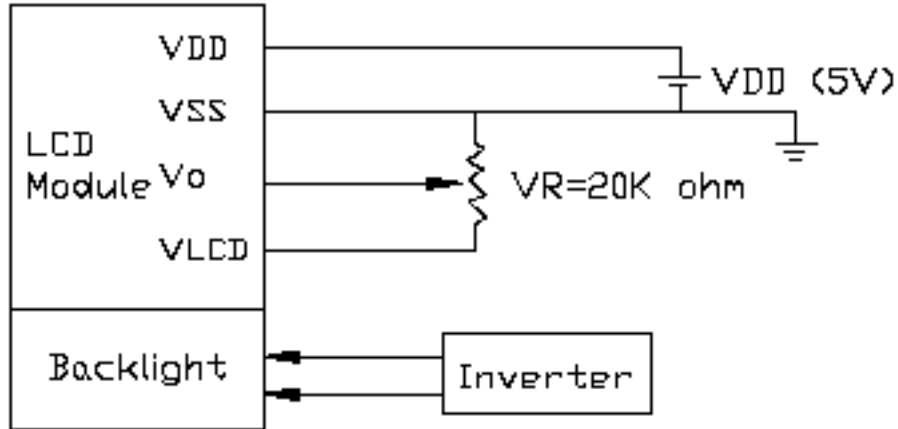
Note 6: Ta at -30°C will be < 48 hrs, at 80°C will be < 120 hrs when humidity is higher than 75%.

Interface Pin Assignment

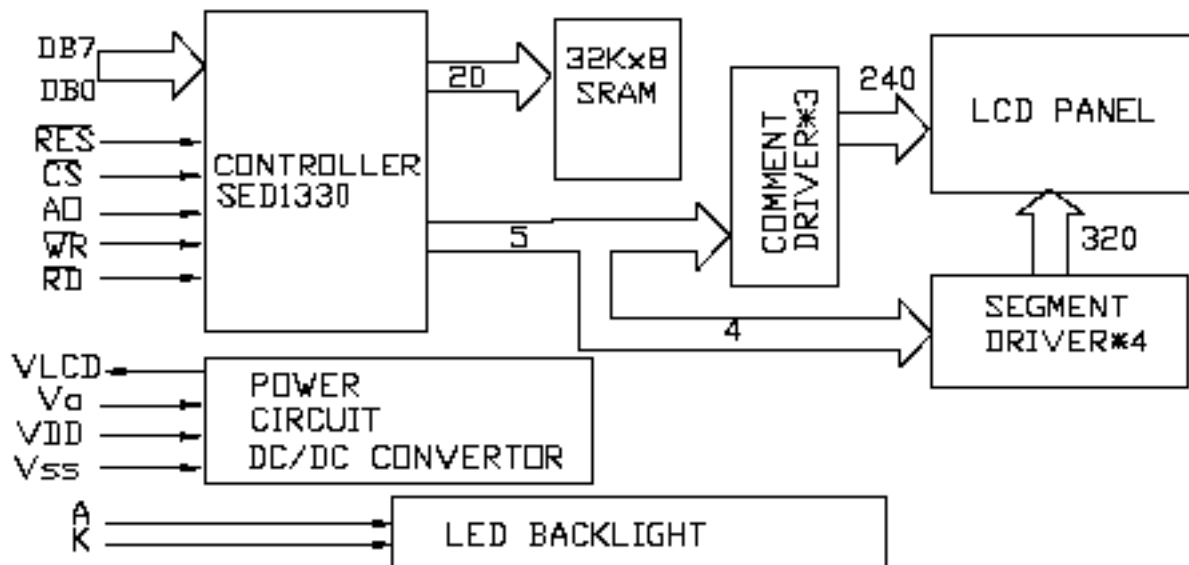
Pin No.	Pin Out	Level	Description
1	VSS	0V	Power Supply Ground
2	VDD	5V	Logic Supply Voltage
3	VO	–	Contrast Adjustment Voltage
4	/RD	L	Read Signal
5	/WR	L	Write Signal
6	AO	H/L	Data Type Select
7	DB0	H/L	Data Bus Line
8	DB1	H/L	Data Bus Line
9	DB2	H/L	Data Bus Line
10	DB3	H/L	Data Bus Line

Pin No.	Pin Out	Level	Description
11	DB4	H/L	Data Bus Line
12	DB5	H/L	Data Bus Line
13	DB6	H/L	Data Bus Line
14	DB7	H/L	Data Bus Line
15	/CS	L	Chip Signal
16	/RST	L	Reset Signal
17	V _{LCD}	–	Power Supply Voltage for LCD
18	FG	–	For GND
19	A	4.2V	LED Power External (Red)
20	K	GND	LED Ground External (White)

Power Supply



Block Diagram



Timing Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit
System Cycle Time	tCYC	425	-	-	ns
Address Set-up Time	tAW	30	-	-	ns
Address Hold Time	tAH	10	-	-	ns
Data Set-up Time	tDS	120	-	-	ns
Data Hold Time	tDH	10	-	-	ns
Output Disable Time	tOH	10	-	50	ns
Access Time	tACC	-	-	120	ns
Enable Pulse Width	Read	220	-	-	ns
	Write	220	-	-	ns

