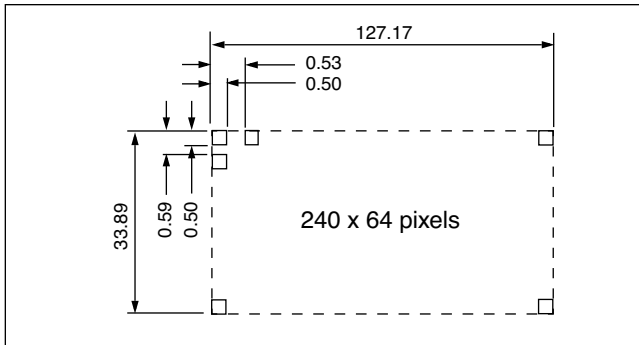




Features

- Black and white ST (MST) transmissive mode
- Blue and white (BST) transmissive mode
- Built-in CCFL backlight
- 40 characters x 8 line capability
- 240 x 64 dot graphic display
- Excellent readability and high-contrast ratio
- Built-in LCD controller (T6963C)
- Wide operating temperature range (0° to 50°C)
- User-selectable fonts: 6 x 8 or 8 x 8

Dot Matrix Dimensions



Mechanical Characteristics

Item	Specification	Unit
Outline Dimensions	180.0 (W) x 70.0 (H) x 14.0 Max (D)	mm
Number of Dots	240 x 64 Dots	
# of Characters	40 x 8 (480), 6 x 8 font	
Viewing Area	127.17 (W) x 33.89 (H)	mm
Bezel Opening	137.0 (W) 44.0 (H)	mm
Dot Size	0.50 (W) 0.50 (H)	mm
Dot Pitch	0.53 (W) 0.53 (H)	mm
Weight (approx.)	170	gram

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.

AND1781MST/BST

240 x 64 Dots

Intelligent Graphics Display

The AND1781MST/BST devices are compact, full dot matrix, with “white page” appearance, LCD modules that have an on-board LCD controller (T6963C) and display memory (RAM). The AND1781 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.

Absolute Maximum Ratings

Item	Absolute Maximum			Unit
	Symbol	Min	Max	
Supply Voltage	V_{DD}	0	7.0	V
	$V_{DD} - V_{EE}$	0	28.0	V
CCFL Input Current	I_{FL}	–	10	mA rms
CCFL Driving Voltage ⁽¹⁾	V_{FL}	–	1500	V_{rms}
CCFL Drive Frequency	f_{FL}	–	35	kHz
Input Voltage	V_{IN}	-0.03	0.3	V
Storage Temperature	T_{stg}	-20	60	°C
Operating Temperature	T_{OP}	0	50	°C
Humidity ⁽²⁾	–	10	90	% RH

1. 1 minute maximum.

2. Wet bulb temperature $\leq 29^\circ\text{C}$, no condensation of water.

Electrical Characteristics (TA = 25°C)

Item	Symbol	Cond.	Specifications			Unit
			Min. (BST/MST)	Typ. (BST/MST)	Max. (BST/MST)	
Supply Voltage	V_{DD}		4.75	5.0	5.25	V
	$V_{DD} - V_{EE}$		11.2/12.0	12.2/13.0	13.2/14.0	
High Level In V	V_{IN}	$V_{DD} = 5.0V$	2.8	–	V_{DD}	V
Low Level In V	V_{IH}		0	–	0.8	
FL Driving V	V_{IN}	V_{FL}	–	300	350	V_{rms}
FL Input Current ⁽¹⁾	I_{FL}		4.0	5.0	7.0	mA rms



AND1781MST/BST Intelligent Graphics Display

Electrical Characteristics (TA = 25°C) (Continued)

Item	Symbol	Cond.	Specifications			Unit
			Min. (BST/MST)	Typ. (BST/MST)	Max. (BST/MST)	
FL Starting V	V_{FLS}	Ta = 0°C	1300	—	—	V_{O-P}
FL Driving Frequency	$I_{FL}^{(2)}$		25	30	35	kHz
Current Consumption	I_{DD}	Typical Pattern ⁽³⁾	—	7.0	14.0	mA
	I_{EE}		—	1.0	2.0	
	I_{DD}	Max. Pattern ⁽³⁾	—	8.0	16.0	
	I_{EE}		—	1.5	3.0	

- Life time of backlight will change according to the FL input current.
- Choose a driving frequency that is not in sync with the frame frequency otherwise, you may experience flickering.
- Typical pattern is all "on", maximum pattern is checkered.

Optical Characteristics (TA = 25°C, $\phi = 0^\circ$, $\theta = 0$)

Item	Symbol	Specifications			Unit
		Min. (BST/MST)	Typ. (BST/MST)	Max. (BST/MST)	
Viewing Angle	Right to Left	—	80		degree
	Up & Down	—	55		
Contrast Ratio	K	2.5/8	3.5/20	—	—
Response Time	T_{ON}	—	200	350	ms
	T_{OFF}	—	200	350	
Luminance $I_{FL} = 5.0$ mA rms	L	50	80	—	cd/m ²

Note: Refer to Applications Section for definitions of viewing angle, contrast ratio, response time ("on" and "off") and luminance.

Connector Pin Assignment

Pin No.	Signal	Function
1	FGND	Frame Ground
2	GND	Ground
3	V_{DD}	Power Supply (5V)
4	V_{EE}	Power Supply for LCD Drive
5	\overline{WR}	Data Write
6	\overline{RD}	Data Read
7	\overline{CE}	Chip Enable
8	C/D	$\overline{WR} = "L", C/\overline{D} = "H":$ Command Write $\overline{WR} = "L", C/\overline{D} = "L":$ Data Write $\overline{RD} = "L", C/\overline{D} = "H":$ Status Read $\overline{RD} = "L", C/\overline{D} = "L":$ Data Read
9	NC	No connection

Connector Pin Assignment (Continued)

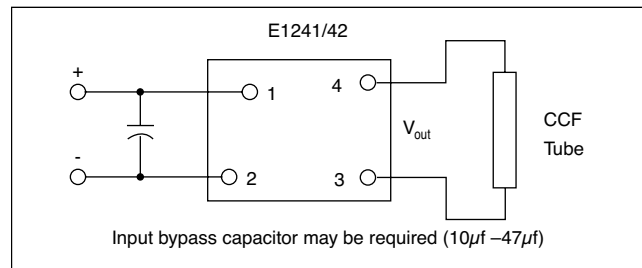
Pin No.	Signal	Function
10	\overline{RESET}	Controller Reset
11	D0	Data Input/Output (LSB)
12	D1	Data Input/Output
13	D2	Data Input/Output
14	D3	Data Input/Output
15	D4	Data Input/Output
16	D5	Data Input/Output
17	D6	Data Input/Output
18	D7	Data Input/Output (MSB)
19	FS	Connect to V_{DD} : 6 x 8 font Connect to GND: 8 x 8 font
20	RV	V_{DD} : Positive image GND: Negative image

FL Connector

Pin No.	Signal	Function
1	V_{FL}	Power supply for FL backlight
5	V_{FL}	Power supply for FL backlight

Note: Connector: IL-G-55-53C2, Japan Aviation Electronics Industry. Mating Housing: IL-M-5P-S3C2-PM. Contact: IL-M-C2.

Recommended FL Inverter



Part number E1241/42 (part number E1241 is +5v, number E1242 is +12V). This part is manufactured by Endicott Research Group, Inc.. Method of connecting is illustrated.

Power Supply

LCD panel is driven by the voltage $V_{DD}-V_{EE}$, so adjustable V_{EE} is required for contrast control and temperature compensation.

Temperature Variations

Temperature	$V_{DD}-V_{EE}$ (MST)	$V_{DD}-V_{EE}$ (BST)
0°C	13.5	14.3
+25°C	12.2	13.0
+50°C	11.0	11.8

