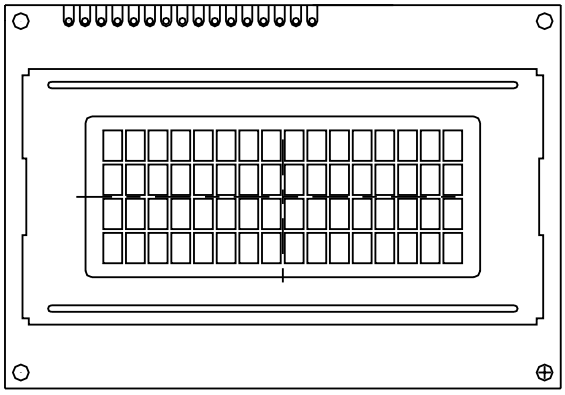
HANTRONIX

PRODUCT SPECIFICATION

HDM16416H-S00S

16 CHARACTERS , 4 LINES
LCD DISPLAY MODULE



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? ?General Specifications

1.Features

A. Drive Method: 1/16 Duty, 1/5 Bias

B. The Module Operating Voltage: 5.0V;

C. The LCD Operating Voltage : 4.7V;

D. Viewing Direction: 6:00

E. Operating Temperature: 0°C ~50°C

F. Storage Temperature: -20°C ~70°C

G. Display type: STN mode, Positive type display

2.Mechanical Data and Conditions:

(1) Module Size----------87.0 w *60.0 h mm

(2) Viewing Area ---------- 61.8 w * 25.2 h mm

(3) Dot Size ----------0.55 w * 0.55 h mm

(4) Character Size ----------2.95 w *4.75 h mm

(5) Number of Characters ----------16 Characters*4 Line

(6) Outline Dimensions----------See Attached Drawing `

3.Pin Connections:

Pin No.	Symbol	Function
1	VSS	Ground(0v)
2	VDD	Logic Supply Voltage(+5.0v)
3	VEE	LCD Driver Voltage Input
4	RS	Data/Instruction Register Select
5	R/W	Read/Write Select
6	E	Enable Signal
7-14	DB0-DB7	Data Bus Line
15	LED+	LED Power
16	LED-	LED Power

4. Absolute Maximum Ratings

Characteristics	Symbol	Ratings	Unit	Note
Operating Voltage	VDD	-0.3 to +7.0	V	
Driver Supply Voltage	V_{LCD}	VDD - 10 to VDD + 0.3	V	
Input Voltage Range	V_{IN}	-0.3 to VDD + 0.3	V	

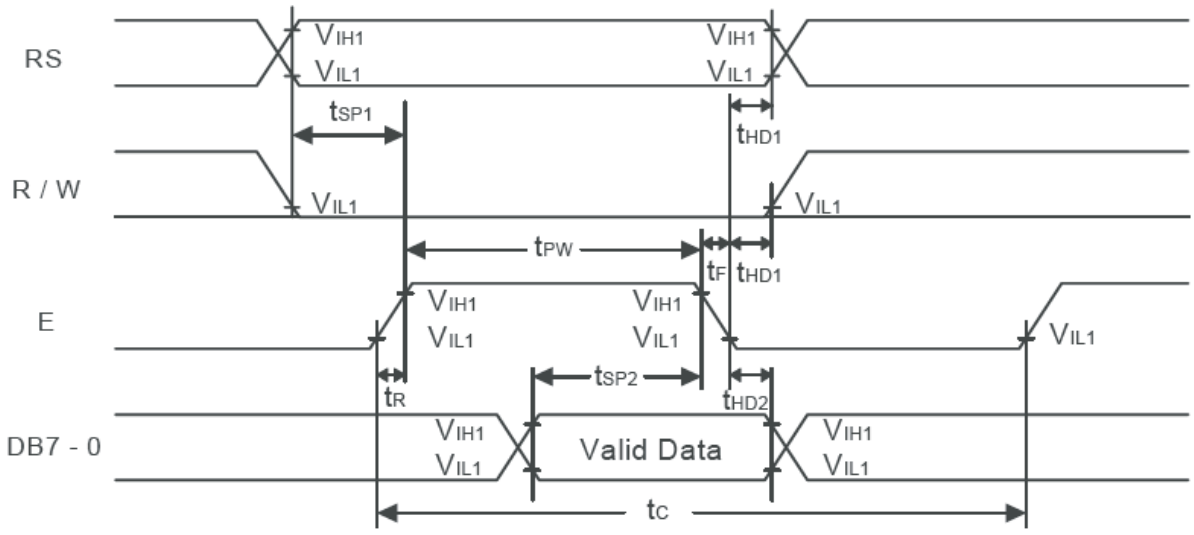
Note: Stresses beyond those given in the Absolute Maximum Rating table may cause operational errors or damage to the device. For normal operational conditions see AC/DC Electrical Characteristics.

5.Timing Characteristics:

Write Operation Writing Data from MPU to SPLC780D1

Characteristics	Symbol	Limit			Unit	Test Condition
		Min.	Typ.	Max.		
E Cycle Time	t_C	400	-	-	ns	Pin E
E Pulse Width	t_{PW}	150	-	-	ns	Pin E
E Rise/Fall Time	t_R, t_F	-	-	25	ns	Pin E
Address Setup Time	t_{SP1}	30	-	-	ns	Pins: RS, R/W, E
Address Hold Time	t_{HD1}	10	-	-	ns	Pins: RS, R/W, E
Data Setup Time	t_{SP2}	40	-	-	ns	Pins: DB0 - DB7
Data Hold Time	t_{HD2}	10	-	-	ns	Pins: DB0 - DB7

Write mode timing diagram Writing Data from MPU to SPLC780D1



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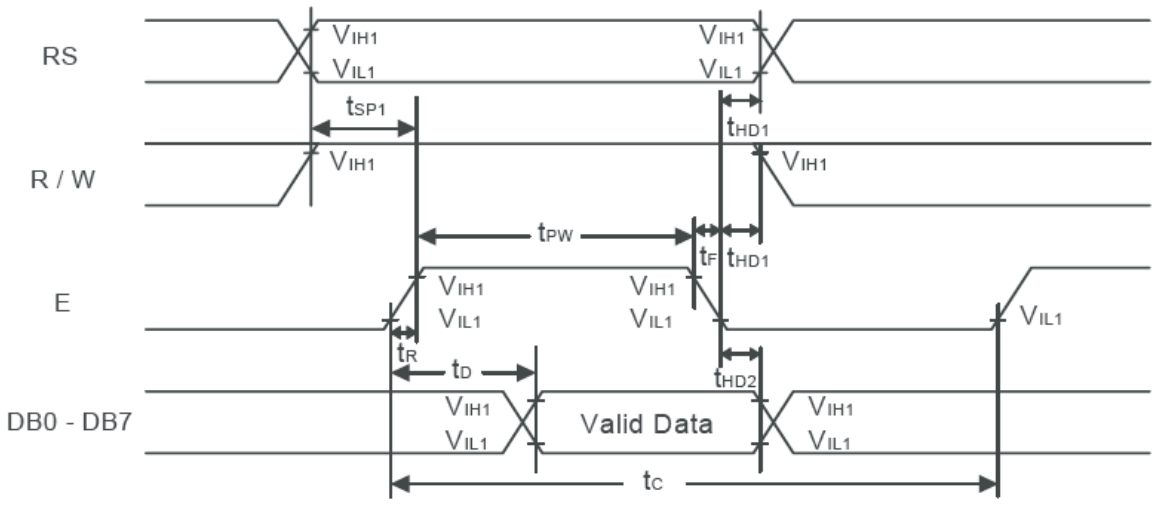
Read Operation Reading Data from SPLC780D1 to MPU

Characteristics	Symbol	Limit			Unit	Test Condition
		Min.	Typ.	Max.		
E Cycle Time	t_C	400	-	-	ns	Pin E
E Pulse Width	t_W	150	-	-	ns	Pin E
E Rise/Fall Time	t_R, t_F	-	-	25	ns	Pin E
Address Setup Time	t_{SP1}	30	-	-	ns	Pins: RS, R/W, E
Address Hold Time	t_{HD1}	10	-	-	ns	Pins: RS, R/W, E
Data Output Delay Time	t_D	-	-	100	ns	Pins: DB0 - DB7
Data hold time	t_{HD2}	5.0	-	-	ns	Pin DB0 - DB7

Read mode timing diagram Reading Data from SPLC780D1 to MPU



.The Characteristics and The Reliability Test

1.Electro-Optic Characteristics:

Condition:TEMP=(23 ± 3) ℃

NO	Item		Symbol	Min.	Typ.	Max.	Unit	Condition
1	Supply Voltage(Logic)		Vdd-Vss		5.0		V	
3	LCD Operating Voltage		Vdd-V_0		4.9		V	0℃
					4.7		V	25℃
					4.5		V	50℃
4	Response Time		Ton		180		ms	
			Toff		212		ms	
5	Contrast		CR	2				
6	Viewing Angel	12H	1		50		Deg.	(CR ≥ 2.0)
		6H	2		65			
		3H	3		58			
		9H	4		58			

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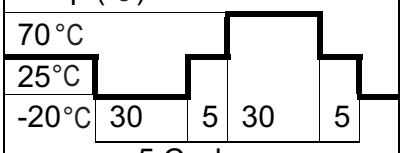
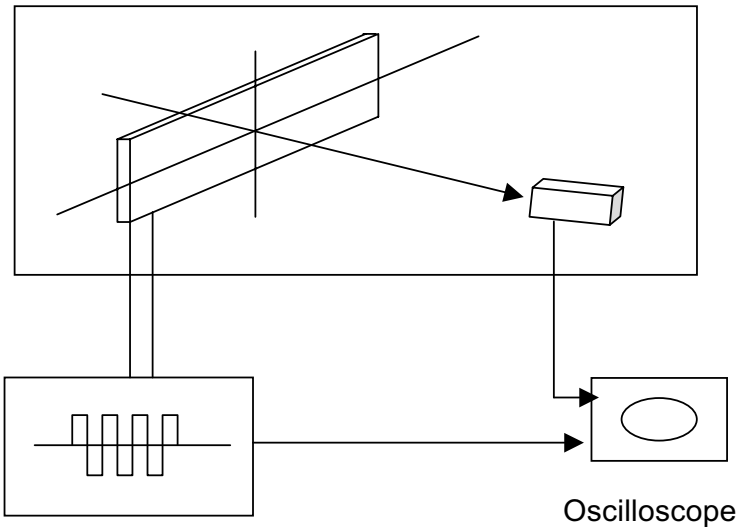
3.Reliability Test

No	Items	Test Condition	Equipment	Test Result
1	High Temp Storage	Temp:70±2°C Time:96h Restore:24h	Tenny	Passed
2	Low Temp Storage	Temp:-20±3°C Time:96h Restore:24h	Tenny	Passed
3	High Temp Static drive	Temp:50±2°C Vop:5V Time:24h Restore:24h	Tenny	Passed
4	Low Temp Static drive	Temp: 0±3°C Vop:5V Time:24h Restore:24h	Tenny	Passed
5	High Temp High Hum Storage	Temp:40±2°C Hum:95%Rh Time:96h Restore:24h	Tenny	Passed
6	Thermal Shock	Temp:(°C)  5 Cycles Restore:24h	Tenny	Passed

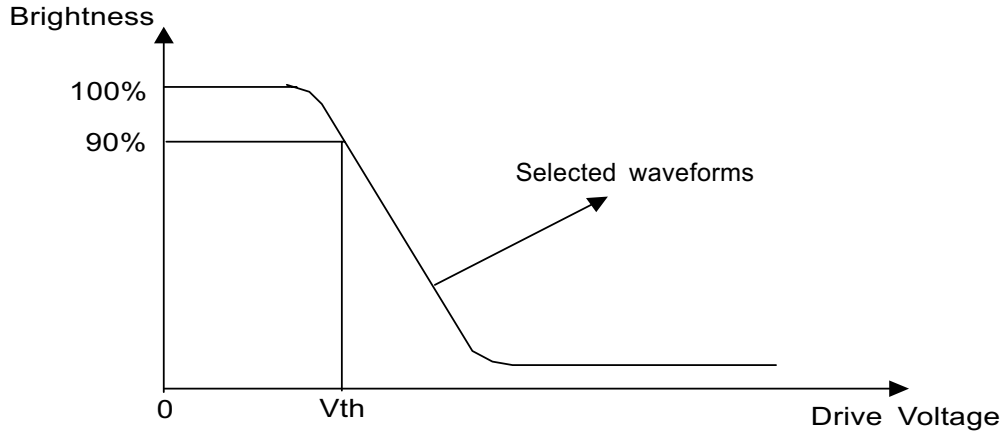
The Equipment and LCD Measuring Method

1. Equipment

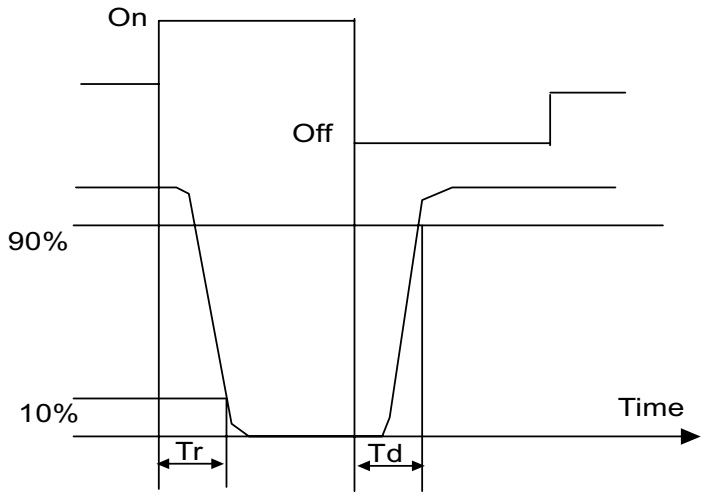


(2) Definition

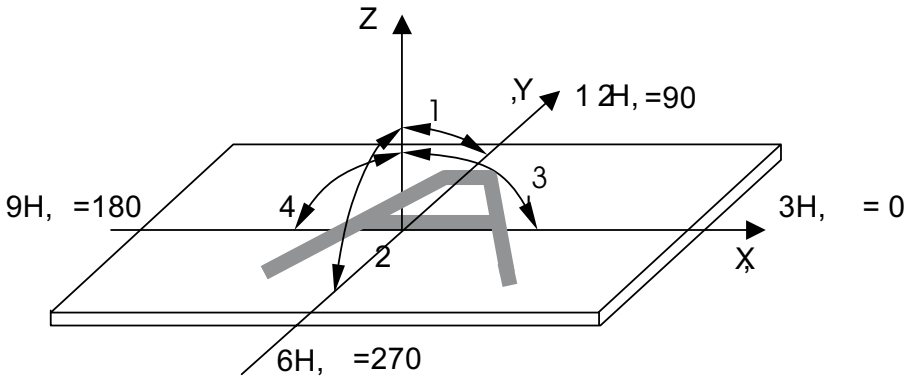
a. Threshold Voltage (Vth)



b. Response Time



a.Viewing Angle:



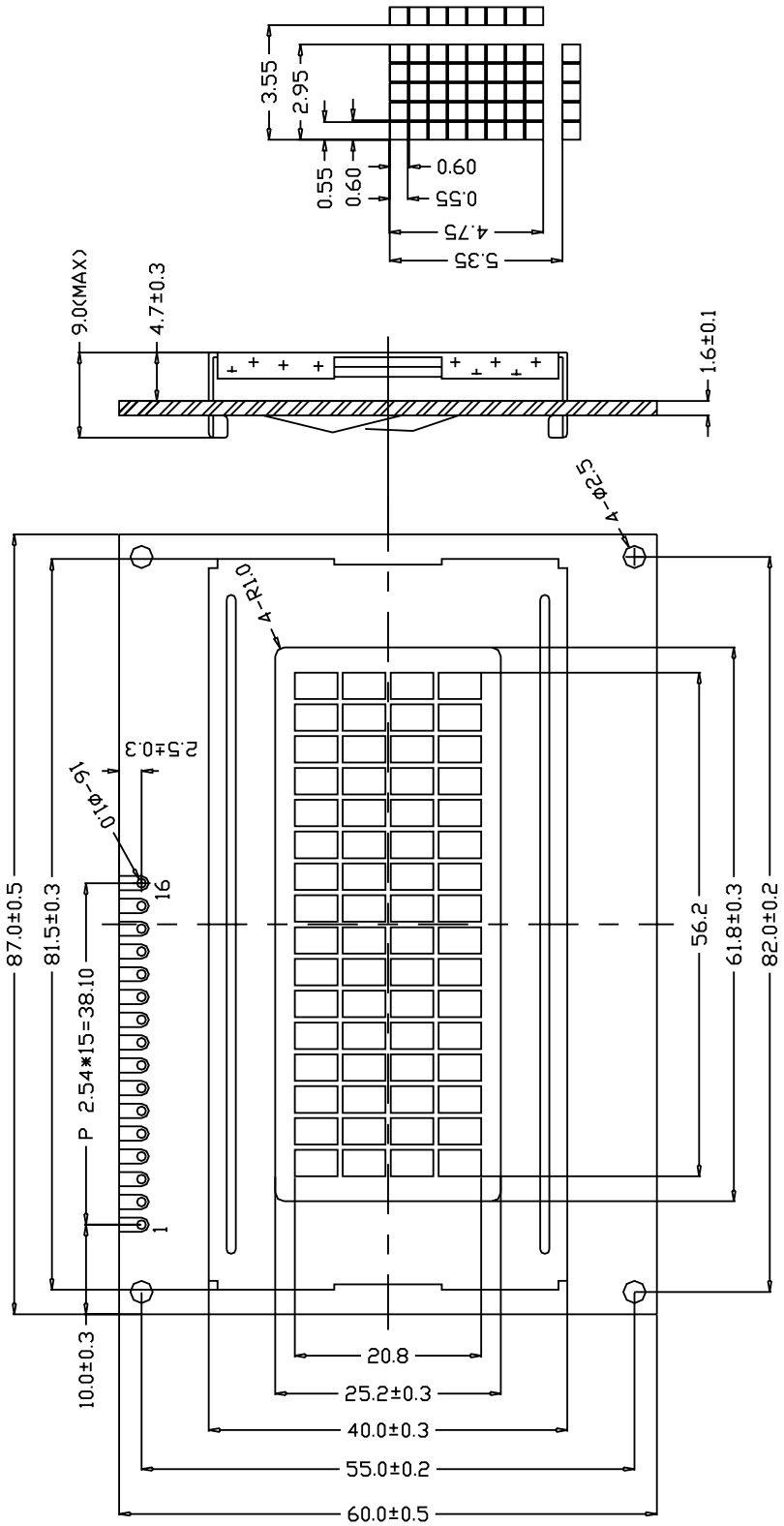
b.Contrast Ratio (positive)

$$CR = \frac{\text{Brightness of non-selected wave-form}}{\text{Brightness of selected wave-form}}$$

4. Reliability Test:

Equipment : Tenny

.Attached Drawing



Note:

1. *Operating Voltage: 5V*
2. *Drive method: 1/16Duty, 1/5 Bias*
3. *Viewing Direction: 6:00*
4. *Operating Temp: 0°C~50°C*
5. *Storage Temp: -20°C~70°C*
6. *Display type: STN,Positive*

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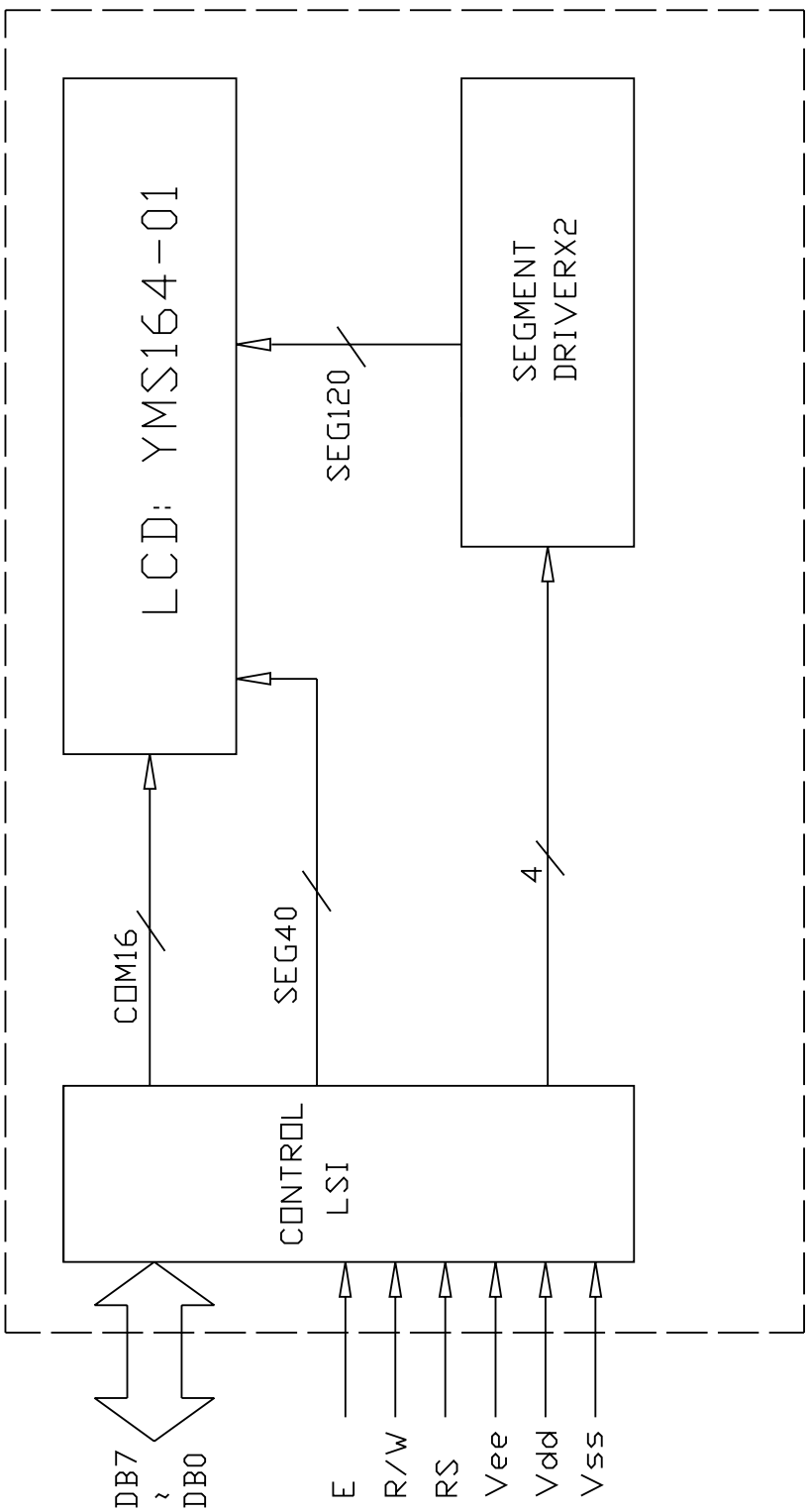

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
SYMBOL	Vss	Vdd	Vee	RS	R/W	E	DB0	DB1	DB2	DB3	DB4	DB5	DB6	DB7	LED+	LED-

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