

# AZ DISPLAYS, INC.

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*COMPLETE LCD SOLUTIONS*

## SPECIFICATIONS FOR LIQUID CRYSTAL DISPLAY

PART NUMBER:

AGM1264H Series

REVISED:

MAY 14, 2003



## 1.0 MECHANICAL SPECIFICATIONS

ITEM	STANDARD VALUE	UNIT
DOTS	128X64 DOTS	-
DOT SIZE	0.48X0.48	mm
MODULE DIMENSION	77.5(W) × 51.3(H) × 2.8(T)	mm
VIEWING AREA	70.7(W) × 38.8(H)	mm
APPROX. WEIGHT	30	G
LCD TYPE	FSTN (Positive / Transflective )	
DUTY, BIAS	1/64, 1/9	
VIEWING DIRECTION	12 O'clock	

## 2.0 ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
OPERATING TEMPERATURE	Top	-20	25	70	C
STORAGE TEMPERATURE	Tst	-20	-	80	C
INPUT VOLTAGE	VI	VSS	-	VDD	V
SUPPLY VOLTAGE FOR LOGIC	VDD-VSS	VSS-0.3	-	5.5	V
SUPPLY VOLTAGE FOR LCD	VDD-V0	VSS-0.3	9.2	18.0	V
STATIC ELECTRICITY	Be certain you are grounded when handing LCM				

### 3.0 ELECTRICAL CHARACTERISTICS

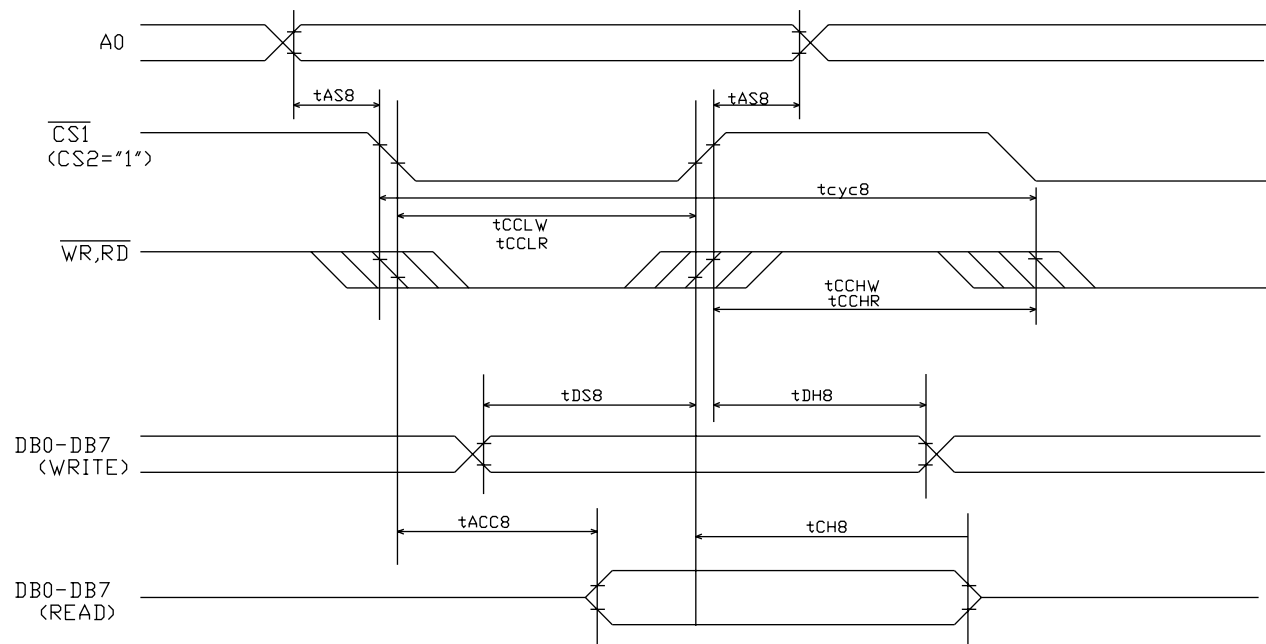
#### 3.1 DC Characteristics

Ta=0~45C ,VDD=2.7~5.5V, VSS=0V

Items	Symbol	Condition	Standard Value			Unit
			Min.	Typ.	Max.	
Power Supply Voltage	VDD -VSS		1.8	3.0 or 5.0	5.5	V
	VDD-V0		8.7	9.2	9.7	V
Input Voltage	VIH		0.8*VDD	-	VDD	V
	VIL		VSS	-	0.2*VDD	
Output Voltage	VOH	IOH= -0.5mA	0.8*VDD	-	VDD	V
	VOL	IOL= 0.5mA	VSS	-	0.2*VDD	
Supply Current	IDD	VDD = 3.3V	-	1.6	2.4	mA

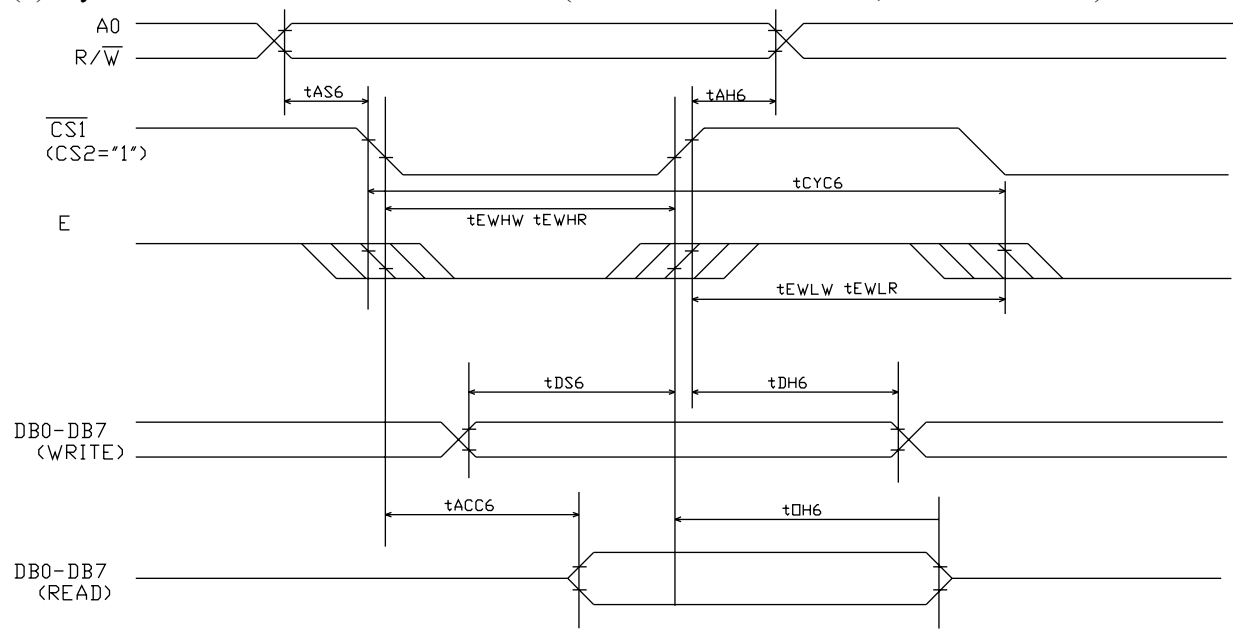
#### 3.2 AC Characteristics

(1) System bus Read/Write characteristics (For the 8080 Series MPU,VDD= 2.7~ 4.5V)



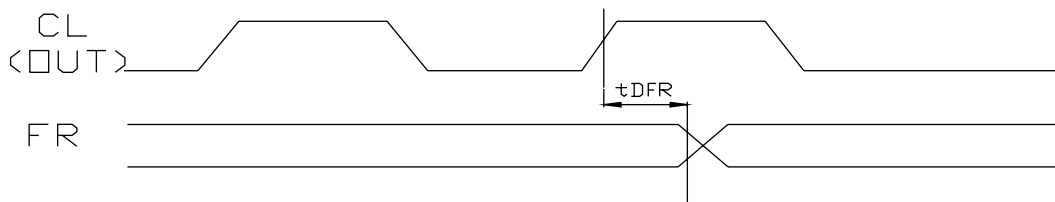
Symbol	Parameter	Min.	Typ.	Max.	Unit	Condition
T <sub>AH8</sub>	Address hold time	0			ns	A0
T <sub>AS8</sub>	Address setup time	0			ns	A0
T <sub>CYC8</sub>	System cycle time	300			ns	
T <sub>CCLW</sub>	Control L pulse width(WR)	60			ns	/WR
T <sub>CCLR</sub>	Control L pulse width(RD)	120			ns	/RD
T <sub>CCHW</sub>	Control H pulse width(WR)	60			ns	/WR
T <sub>CCHR</sub>	Control H pulse width(RD)	60			ns	/RD
T <sub>DS8</sub>	Data setup time	40			ns	D0 T0 D7
T <sub>DH8</sub>	Data hold time	15			ns	D0 T0 D7
T <sub>ACC8</sub>	RD access time			140	ns	C <sub>L</sub> =100pF
T <sub>CH8</sub>	Output disable time	10		100	ns	C <sub>L</sub> =100pF

(2) System bus Read/Write characteristics (For the 6800 Series MPU, VDD= 2.7~4.5V)



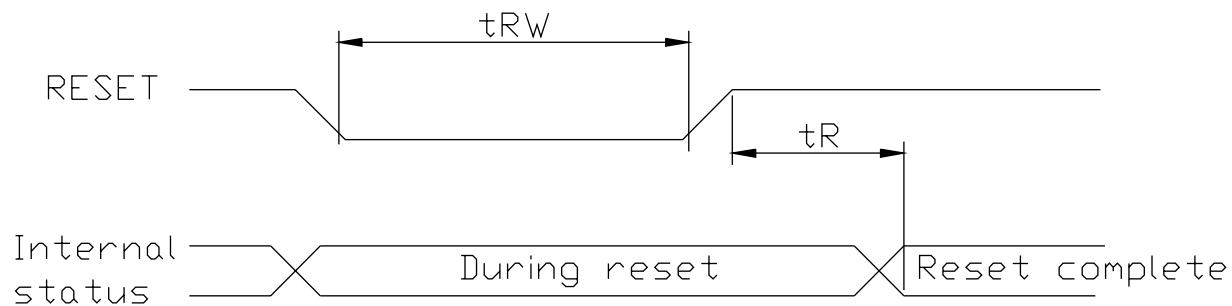
Symbol	Parameter	Min.	Typ.	Max.	Unit	Condition
T <sub>CYC6</sub>	System cycle time	300			ns	
T <sub>AS6</sub>	Address setup time	0			ns	A0
T <sub>AH6</sub>	Address hold time	0			ns	A0
T <sub>DS6</sub>	Data setup time	40			ns	D0 T0 D7
T <sub>DH6</sub>	Data hold time	15			ns	D0 T0 D7
T <sub>OH6</sub>	Output disable time	10		100	ns	C <sub>L</sub> =100pF
T <sub>ACC6</sub>	Access time			140	ns	C <sub>L</sub> =100pF
T <sub>EWHR</sub>	Enable H pulse width(Read)	120			ns	
T <sub>EWHW</sub>	Enable H pulse width(Write)	60			ns	
T <sub>EWLR</sub>	Enable L pulse width(Read)	60			ns	
T <sub>EWLW</sub>	Enable L pulse width(Write)	60			ns	

### (3) Display control timing



Symbol	Parameter	Min.	Typ.	Max.	Unit	Condition
TDFR	FR delay time		20	80	ns	CL=50pF

### (4) Reset timing



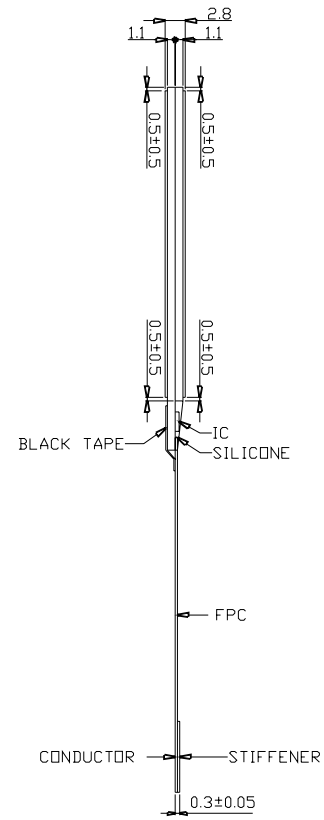
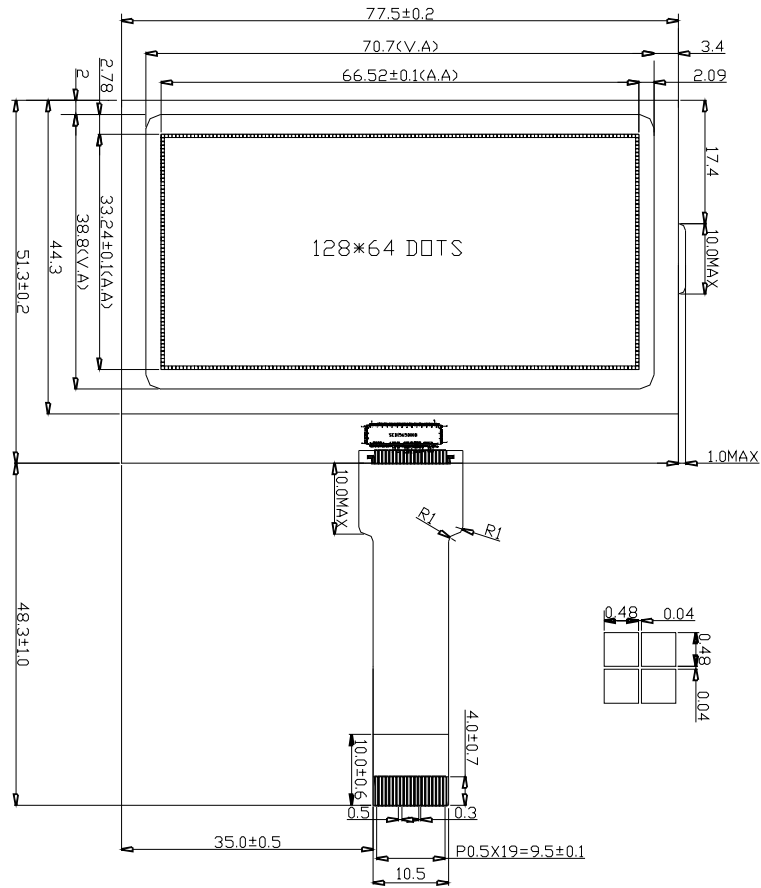
Symbol	Parameter	Min.	Typ.	Max.	Unit	Condition
TR	Reset time			1.0	us	
TW	Reset low pulse width	1.0			us	

## 4.0 OPTICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Viewing Angle	$\theta$ (B-F)	Cr>6.0 Ta=25 C	-50	-	30	DEG
	$\phi$ (R-L)		-40	-	40	DEG
Contrast ratio (Max)	Cr(Max)	$\theta = 0$ $\phi = 0$	-	9.0	-	
Response Time(Rise)	Ton	$\theta = 0$ $\phi = 0$ Vlcd=9.2V Ta=25C	-	-	250	ms
Response Time(Fall)	Toff		-	-	268	ms

## 5.0 INTERFACE

PIN NO.	SYMBOL	PIN NO.	SYMBOL
1	V5	11	VOUT
2	V4	12	VSS
3	V3	13	VDD
4	V2	14	D7(SI)
5	V1	15	D6(SCL)
6	NC	16	/RD
7	CAP2+	17	/WR
8	CAP2-	18	A0
9	CAP1-	19	/RES
10	CAP1+	20	/CS1



DISPLAY TYPE: FSTN POSITIVE  
 DISPLAY MODE: TRANSFLECTIVE  
 VIEWING DIRECTION: 12:00  
 DRIVING METHOD: 1/64 DUTY; 1/9 BIAS  
 OPERATING VOLTAGE: 9.2V; VDD: 5.0V  
 OPERATING TEMPERATURE: -20°C~+70°C  
 STORAGE TEMPERATURE: -20°C~+80°C  
 CONNECTOR: FPC  
 DRIVER IC: SED1565 (Seiko-Epson)  
 Unless otherwise specified, tolerance is +/-0.2mm

PIN NO.	1	2	3	4	5	6	7	8	9	10
SYMBOL	V5	V4	V3	V2	V1	NC	CAP2+	CAP2-	CAP1-	CAP1+
PIN NO.	11	12	13	14	15	16	17	18	19	20
SYMBOL	VOUT	VSS	VDD	D7<SI>	D6<SCL>	/RD	/WR	A0	/RES	/CS1

<b>AZ DISPLAYS, INC.</b>		
<b>AGM1264H</b>	1 OF 1	
DWG NO:ED-3713-LCM/A	UNIT: MM	