



PALM TECHNOLOGY CO., LTD.

The LCD(M) Specialist

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PART NO. : PMG1203M-SYL

FOR MESSRS. : _____

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ACCEPTED BY: _____ PROPOSED BY : _____

RECORD OF REVISION

DATE	PAGE	SUMMARY
2001/11/15	7/10	Modify the Interface pin connection: PIN NO. 1 : $\overline{\text{RES}}$ \longrightarrow SCL 2 : SCL \longrightarrow SI 3 : SI \longrightarrow $\overline{\text{RES}}$

3. General specifications

3.1 General specifications

PLEASE REFER TO:

“CUSTOMER ACCEPTANCE STANDARD SPECIFICATIONS (MS-10-1560S)”.

3.2 This individual specification is prior to general specifications

4. Mechanical data

- (1) NUMBER OF DOTS----- 128 W * 32 H DOTS
- (2) MODULE SIZE ----- 59.0 W * 29.3 H * 5.0 T (MAX) mm
- (3) EFFECTIVE AREA----- 52.0 W * 15.0 H mm
- (4) ACTIVE AREA ----- 47.97 W * 11.97 H mm
- (5) DOT SIZE ----- 0.345 W * 0.345 H mm
- (6) DOT PITCH----- 0.375 W * 0.375 H mm
- (7) VIEWING DIRECTION ----- 6 O’CLOCK
- (8) LCD TYPE ----- STN.YELLOW-GREEN.TRANSFLECTIVE.
- (9) LED COLOR----- YELLOW-GREEN

5. Absolute maximum ratings

5.1 Electrical absolute maximum ratings

<i>I T E M</i>	<i>SYMBOL</i>	<i>MIN.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>COMMENT</i>
POWER SUPPLY FOR LOGIC	V _{DD} -V _{SS}	0	6.0	V	-----
INPUT VOLTAGE	V _I	V _{SS}	V _{DD}	V	-----
STATIC ELECTRICITY	-----	-----	100	V	NOTE (1)
POWER SUPPLY FOR LED	V _{DD} -K(-)	-----	6.0	V	-----

NOTE (1): ELECTRO-STATIC DISCHARGE RESISTANCE IS TESTED BY CHARGING A 200PF CAPACITOR AND DISCHARGING IT BY CONTACT WITH A INTERFACE CONNECTOR PIN.

5.2 Environmental absolute maximum ratings

<i>I T E M</i>	<i>OPERATING</i>		<i>STORAGE</i>		<i>COMMENT</i>
	<i>MIN.</i>	<i>MAX.</i>	<i>MIN.</i>	<i>MAX.</i>	
AMBIENT TEMPERATURE	-20°C	70°C	-20°C	70°C	-----
HUMIDITY	NOTE (2)		NOTE (2)		NO CONDENSATION
VIBRATION NOTE (3)	-----	0.5G	-----	2G	10~300Hz XYZ DIRECTIONS 1 Hr EACH
SHOCK NOTE (3)	-----	3G	-----	50G	10 msec XYZ DIRECTIONS 1 TIME EACH
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		-----

NOTE (2): TA ≤ 50°C: 85% RH MAX.

TA > 50°C: ABSOLUTE HUMIDITY MUST BE LOWER THAN THE HUMIDITY OF 85% RH AT 50°C. (50% RH AT 60°C).

NOTE (3): 1G = 9.8 m/s²

6. Electrical characteristics

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>
POWER SUPPLY VOLTAGE FOR CIRCUIT	$V_{DD}-V_{SS}$	-----	2.7	5.0	5.5	V
INPUT VOLTAGE	V_{IH}	-----	$0.85V_{DD}$	-----	V_{DD}	V
	V_{IL}		V_{SS}	-----	$0.15V_{DD}$	V
OUTPUT VOLTAGE	V_{OH}	$I_{OH} = -0.12 \text{ mA}$	$0.8V_{DD}$	-----	V_{DD}	V
	V_{OL}	$I_{OL} = 1.0 \text{ mA}$	V_{SS}	-----	$0.2V_{DD}$	V
POWER SUPPLY CURRENT	I_{DD}	$V_{DD}-V_{SS}=5.0V$	-----	1.0	3.0	mA
LCD DISPLAY DUTY RATIO	DUTY	-----	-----	1/32	-----	-----
POWER SUPPLY CURRENT FOR LED	I_{LED}	$V_{DD}-K(-) = 5.0V$	-----	35	40	mA

7. Optical characteristics

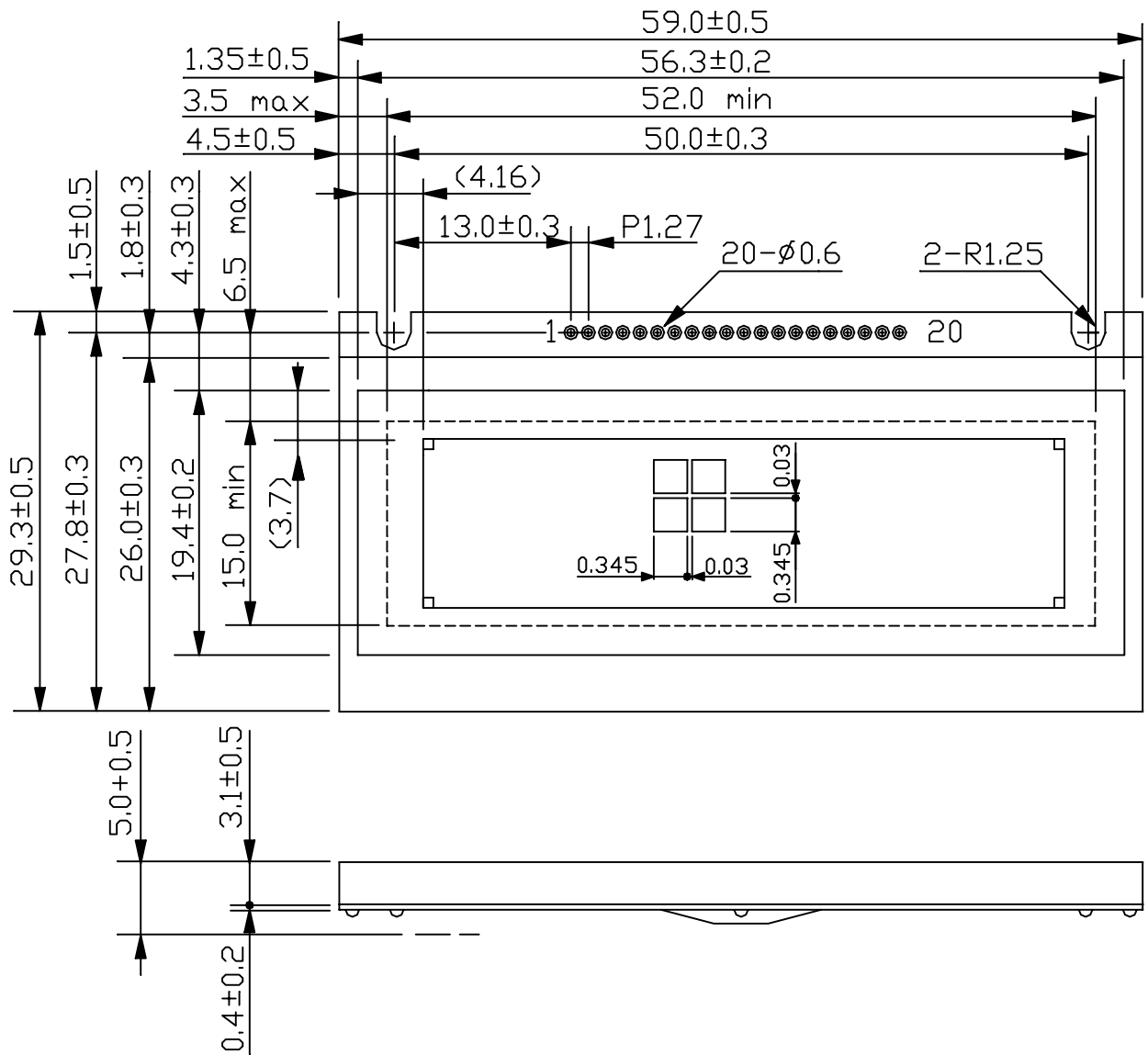
$T_a = 25^\circ\text{C}$ $V_{DD} = 5.0V$

<i>I T E M</i>	<i>SYMBOL</i>	<i>CONDITION</i>	<i>MIN.</i>	<i>TYP.</i>	<i>MAX.</i>	<i>UNIT</i>	<i>NOTE</i>
VIEWING ANGLE	$\Phi 2-\Phi 1$	$K = 2.0$	30	40	-----	deg.	1
CONTRAST RATIO	K	$\Phi = 10^\circ$ $\Theta = 0^\circ$	3.0	4.0	-----	-----	1
RESPONSE TIME	TR (RISE)	$\Phi = 10^\circ$ $\Theta = 0^\circ$	-----	200	350	ms	1
	TF (FALL)	$\Phi = 10^\circ$ $\Theta = 0^\circ$	-----	300	400	ms	1
THE BRIGHTNESS OF BACKLIGHTING SOURCE	B	$\Phi = 0^\circ$ $\Theta = 0^\circ$	4.0	-----	-----	cd/m ²	1,2

NOTE (1): SEE CUSTOMER ACCEPTANCE STANDARD SPECIFICATION FOR DEFINITION OF OPTICAL CHARACTERISTICS

NOTE (2): UNDER NORMAL TEMPERATURE AND HUMIDITY IN A DARK ROOM

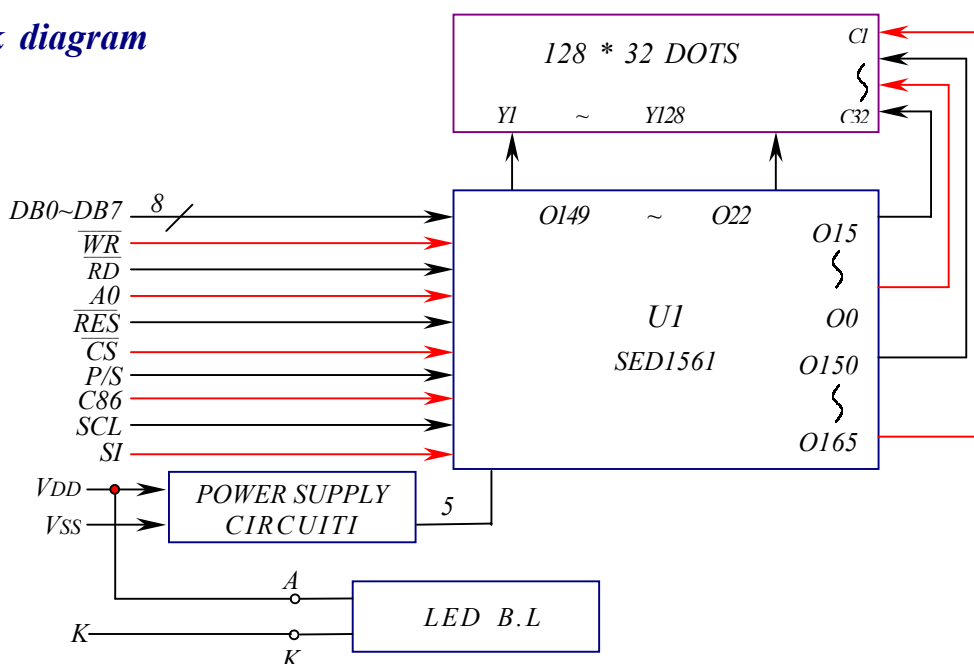
8. Outline dimension



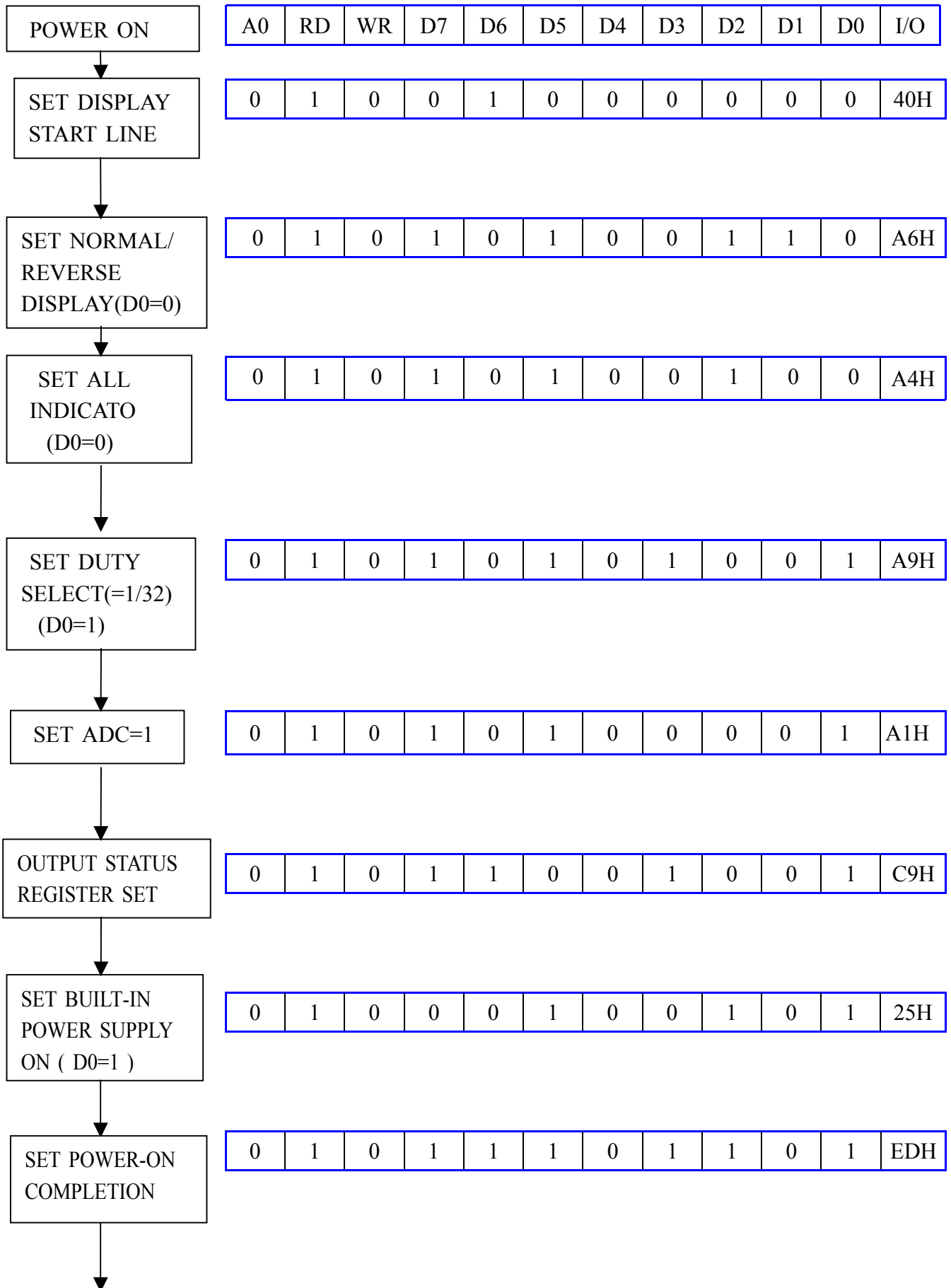
Interface pin connection

PIN NO.	SYMBOL	LEVEL	FUNCTION
1	SCL	L	SERIAL CLOCK INPUT
2	SI	-----	SERIAL DATA INPUT
3	$\overline{\text{RES}}$	-----	L:RESET
4	P/S	H/L	H:PARALLEL INPUT L:SERIAL INPUT
5	$\overline{\text{CS}}$	L	L:CHIP SELECT INPUT
6	A0	H/L	A0="L" INSTRUCTION REGISTER A0="H" DATA REGISTER
7	V _{DD}	-----	POWER SUPPLY
8	V _{SS}	-----	GROUND
9	K	L	L: LED ON
10	C86	H/L	H:68-INTERFACE SERIES L:80- INTERFACE SERIES
11	$\overline{\text{WR}}$ (R/ $\overline{\text{W}}$)	H/L	L:80-SERIES MPU AND 68-SERIES MPU WRITE DATA H:68-SERIES MPU READ DATA
12	$\overline{\text{RD}}$ (E)	H/L	L:80-SERIES MPU READ DATA H: 68-SERIES MPU ENABLE INPUT
13	D0	-----	DATA INPUT/OUTPUT
14	D1	-----	DATA INPUT/OUTPUT
15	D2	-----	DATA INPUT/OUTPUT
16	D3	-----	DATA INPUT/OUTPUT
17	D4	-----	DATA INPUT/OUTPUT
18	D5	-----	DATA INPUT/OUTPUT
19	D6	-----	DATA INPUT/OUTPUT
20	D7	-----	DATA INPUT/OUTPUT

9. Block diagram



10. Initialization by instructions



SET ELECTRONIC
VOLUME
CONTROL

0	1	0	1	0	0	0	1	1	1	1	8FH
---	---	---	---	---	---	---	---	---	---	---	-----

SET DISPLAY
ON (D0=1)

0	1	0	1	0	1	0	1	1	1	1	AFH
---	---	---	---	---	---	---	---	---	---	---	-----

SET PAGE
ADDRESS

0	1	0	1	0	1	1	0	0	0	0	B0H
---	---	---	---	---	---	---	---	---	---	---	-----

SET COLUMN
ADDRESS HIGH-
ORDER 4 BITS

0	1	0	0	0	0	1	0	0	0	1	11H
---	---	---	---	---	---	---	---	---	---	---	-----

SET COLUMN
ADDRESSLOW-
ORDER 4 BITS

0	1	0	0	0	0	0	0	0	0	0	00H
---	---	---	---	---	---	---	---	---	---	---	-----

READ MODIFY
WRITE

0	1	0	1	1	1	0	0	0	0	0	E0H
---	---	---	---	---	---	---	---	---	---	---	-----

DISPLAY
DATA WRITE

1	1	0	WRITE DATA								
---	---	---	------------	--	--	--	--	--	--	--	--

END

0	1	0	1	1	1	0	1	1	1	0	EEH
---	---	---	---	---	---	---	---	---	---	---	-----

11. Power supply for LCM

