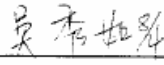
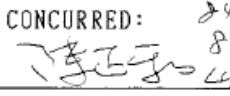
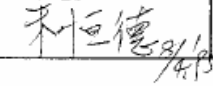
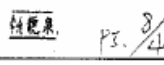


承認書 APPROVAL SHEET

產品型號 TYPE NO.	電 路 功 能 C I R C U I T F U N C T I O N
PC064PYL01	8 CHARACTER X 2 LINE LCD MODULE Type : STN LCD Dot color/Background color : DARK BLUE / YELLOW
REMARKS : SAMPLE: 6 pcs. <div style="text-align: right;">View Angle = 12 O'clock</div>	
ORG BY: 	CONCURRED:  APPROVED:  QC: 
FINAL APPROVE BY CUSTOMER :	
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>碧悠電子工業股份有限公司 PICVUE ELECTRONICS LTD.</p> <p>TEL : 886-35-596145</p> <p>FAX : 886-35-596149</p> </div> <div style="width: 45%;"> <p>新竹縣新豐鄉建興路二段468巷12號 NO. 12, LANE 468, SEC. 2, CHIEN-HSING RD. HSIN-FUNG, HSIN-CHU TAIWAN, R.O.C.</p> </div> </div>	



Revision Record

REV.	Revision Items	Date
NEW	NEW	AUG/ 3 / '95
A		
B		
C		
D		
E		
F		
G		
H		
I		
J		
K		
L		
M		
N		
O		
P		
Q		
R		
S		
T		
U		
V		
W		

PICVUE

LCM NO: PC-064PYL

REF.NO: 9506401

REV.: NEW

/

12.4 Keep the humidity of operation room above 45%

Please keep the room humidity above 45% .

Because the dryer the air , the easier static electricity will occur.
Further, please also hold attention to operation desks, chairs, shelves
push care be well with earth. Special attention have to be extended to
the movement as taking LCM out or transferring from packing box.

12.5 Be attention to the use of cleaning machine

Do not get the mouth of cleaning machine near to the LCM when is cleaning
the operation room by cleaning machine . It had been found sometime the
LCM were demolished by static electricity.

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LCM NO:	PC-064PYL	REF.NO:	9506401	REV.:	NEW	/
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6. Watch for low temperature bubbles !!

Prolonged storing under the temperature even lower than specified temperature range or strong impact applied on the unit , will often give give rise to black or white bubbles appeared in the display .

12.1 Must be with human body earth when touching

Please , must be well with human body earth at time of LCM handling . Because it would become reasons why C-MOS , LSI being demolished if touch LCM without earth . It is advisable to wear conductive shoes, and operate under conductive sheet for safety.

12.2 Be using no AC current leakage welding hand.

Be sure there will have no AC current leakage for welding hand when is making use . It would probably destroyed by involuntarily voltage applying to LCM.

12.3 Must be with earth for electric driver

Please , must be well with earth when using electric driver for LCM installation . It had been reconized that LCM might be broken due to static electricity occurred by electric driver.

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LCM NO :	PC-064PYL	REF.NO :	9506401
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2. Do not clean whole LCD parte after PCB soldering !!

This will cause washing solution (fleen , or trichloroethane) to penetrate into resin of pin , decomposes resin under sunlight producing chlorine and combines with water to produce hydrochloric acid . This acid will then desolve the electrodes , causing wire breaks.

11.3 Handling of LCM

1. Keep away from processing or modifying of metal frame fingers !!

This will often affect the consistency of C-MOS LSI signal output resulting in unusual display .

2. Take good care on CFL handling !!

When installing CFL to the unit, care must be taken not to be grasped by hand or hitted by hard material to avoid demages.

3. Do not hardly press metal frame or PCB !!

When pressure is applied to metal frame or PCB , will often give rise to distortion of conducting rubber , breakage of LCD or backlighting lamp , resulting in display failure .Therefore on installation of LCM , please use holes for fixing to keep LCM or lamp free from stress.

4. Through-hole-pad should not be peeled off !!

When repairing or soldering the connector , care must be taken not to peel off through-hole-pad. Watch closely the soldering iron temperature and soldering time duration.

5. Watch for an after image !!

When there is an object existing under the direct sunlight or fluorescent lamp above LCM unit , will often transfer the image to the LCM acting as an after image . Not put an abject above LCM to abstract the display .

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11.1 HANDLING OF LCD

1. The surface is easy to get scratched !!

The surface of LCD glass is covered with polarizer (organic film). This surface is quite soft and so should avoid rubbing with hard material for keeping it not get scratched.

2. Away from water !!

LCD must not be used with drop of water adhered on it in order to keep electrodes from corrosion. Wipe the droplets off and use it dry.

3. Keep off dirty !!

Saliva, fingerprint, starch or oily materials are easy to adhere on LCD surface. On case this happened, wipe it off using soft cloth slightly wetted with normal hexane. Better keep LCD away from other organic solvents.

4. High temperature and high humidity will cause LCD'S easy deterioration !!

LCD dislike high temperature and high humidity. Store and use then under the condition where the temperature and humidity are kept in specified range.

11.2 User notes for pin-type LCD

1. Keep off high temperature and high stress !!

High stress or high temperature will cause poor pin connection.

Install LCD 2mm or more apart from PCB. Making the pin at both ends both sides dummy will help stress release.

The connector pin installation area must be designed to the temperature not to exceed 80°C when using.

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Display position	1	2	3	4	5	6	7	8
DD RAM address	00	01	02	03	04	05	06	07
	40	41	42	43	44	45	46	47

For shift left	01	02	03	04	05	06	07	08
	41	42	43	44	45	46	47	48

For shift right	27	00	01	02	03	04	05	06
	67	40	41	42	43	44	45	46

9.4 2-Line by 8-Character Display Example

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LCM NO:	PC-064PYL	REF.NO:	9506401	REV.:	NEW /

9.3 Standard Character Pattern

Upper 4bit Lower 4bit	LLLL	LLHL	LLHH	LHLL	LHLH	LHHL	LHHH	HLLL	HLHL	HLHL	HLHH	HLLL	HHHL	HHHL	HHHH
LLLL	CG RAM (1)														
LLHL	(2)														
LLHL	(3)														
LLHH	(4)														
LHLL	(5)														
LHLH	(6)														
LHHL	(7)														
LHHH	(8)														
HLLL	(1)														
HLLH	(2)														
HLHL	(3)														
HLHH	(4)														
HHLL	(5)														
HHHL	(6)														
HHHL	(7)														
HHHH	(8)														

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LCM NO: PC-064PYL

REF.NO: 9506401

REV.: NEW

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9.2

CONTROL and DISPLAY COMMAND (continued)

Command	RS	R/W	DB ₇	DB ₆	DB ₅	DB ₄	DB ₃	DB ₂	DB ₁	DB ₀	Excution time (fosc = 250kHz)	Remark					
SET CG RAM ADDRESS	L	L	L	H	CG RAM address (corresponds to cursor address)						40μS	CG RAM Data is sent and received after this setting					
SET DD RAM ADDRESS	L	L	H	DD RAM address						40μS	DD RAM Data is sent and received after this setting						
READ BUSY FLAG & ADDRESS	L	H	BF	Address Counter used for Both DD & CG RAM address						0μS	<table border="1"><tr><td>BF</td><td>H</td><td>Busy</td></tr><tr><td></td><td>L</td><td>Ready</td></tr></table> <p>— Reads BF indication internal operating is being performed. — reads address counter contents</p>	BF	H	Busy		L	Ready
BF	H	Busy															
	L	Ready															
WRITE DATA	H	L	Write Data						46μ S	Write data into DD or CG RAM							
READ DATA	H	H	Read Data						46μ S	Read data from DD or CGRAM							

X: Don't care

(table 1)

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LCM NO: PC-064PVL

REF.NO: 9506401

REV.: NEW

/

CONTROL and DISPLAY COMMAND 9.1

Command	RS	R/W	DB ₇	DB ₆	DB ₅	DB ₄	DB ₃	DB ₂	DB ₁	DB ₀	excution time (fosc = 250kHz)	Remark															
DISPLAY CLEAR	L	L	L	L	L	L	L	L	L	H	1.64ms																
RETURN HOME	L	L	L	L	L	L	L	L	H	X	1.64ms	cursor move to first digit															
ENTRY MODE SET	L	L	L	L	L	L	L	H	I/D	SH	40μs	<ul style="list-style-type: none">• I/D: set cursor move direction <table border="1"><tr><td rowspan="2">I/D</td><td>H</td><td>Increase</td></tr><tr><td>L</td><td>Decrease</td></tr></table> <ul style="list-style-type: none">• SH: Specifies shift of display <table border="1"><tr><td rowspan="2">SH</td><td>H</td><td>display is shifted</td></tr><tr><td>L</td><td>display is not shifted</td></tr></table>	I/D	H	Increase	L	Decrease	SH	H	display is shifted	L	display is not shifted					
I/D	H	Increase																									
	L	Decrease																									
SH	H	display is shifted																									
	L	display is not shifted																									
DISPLAY ON/OFF	L	L	L	L	L	L	H	D	C	B	40μs	<ul style="list-style-type: none">• Display <table border="1"><tr><td rowspan="2">D</td><td>H</td><td>Display on</td></tr><tr><td>L</td><td>Display off</td></tr></table> <ul style="list-style-type: none">• Cursor <table border="1"><tr><td rowspan="2">C</td><td>H</td><td>Cursor on</td></tr><tr><td>L</td><td>Cursor off</td></tr></table> <ul style="list-style-type: none">• Blinking <table border="1"><tr><td rowspan="2">B</td><td>H</td><td>Blinking on</td></tr><tr><td>L</td><td>Blinking off</td></tr></table>	D	H	Display on	L	Display off	C	H	Cursor on	L	Cursor off	B	H	Blinking on	L	Blinking off
D	H	Display on																									
	L	Display off																									
C	H	Cursor on																									
	L	Cursor off																									
B	H	Blinking on																									
	L	Blinking off																									
SHIFT	L	L	L	L	L	H	S/C	R/L	X	X	40μs	<table border="1"><tr><td rowspan="2">SC</td><td>H</td><td>Display shift</td></tr><tr><td>L</td><td>Cursor move</td></tr></table> <table border="1"><tr><td rowspan="2">R/L</td><td>H</td><td>Right shift</td></tr><tr><td>L</td><td>Left shift</td></tr></table>	SC	H	Display shift	L	Cursor move	R/L	H	Right shift	L	Left shift					
SC	H	Display shift																									
	L	Cursor move																									
R/L	H	Right shift																									
	L	Left shift																									
SET FUNCTION	L	L	L	L	H	DL	N	F	X	X	40μs	<table border="1"><tr><td rowspan="2">DL</td><td>H</td><td>8 bits interface</td></tr><tr><td>L</td><td>4 bits interface</td></tr></table> <table border="1"><tr><td rowspan="2">N</td><td>H</td><td>2 line display</td></tr><tr><td>L</td><td>1 line display</td></tr></table> <table border="1"><tr><td rowspan="2">F</td><td>H</td><td>5×10 dots</td></tr><tr><td>L</td><td>5×7 dots</td></tr></table>	DL	H	8 bits interface	L	4 bits interface	N	H	2 line display	L	1 line display	F	H	5×10 dots	L	5×7 dots
DL	H	8 bits interface																									
	L	4 bits interface																									
N	H	2 line display																									
	L	1 line display																									
F	H	5×10 dots																									
	L	5×7 dots																									

Table 1.

PICVUE PICVUE ELECTRONICS CO.,LTD.

LCM NO: PC-064PYL

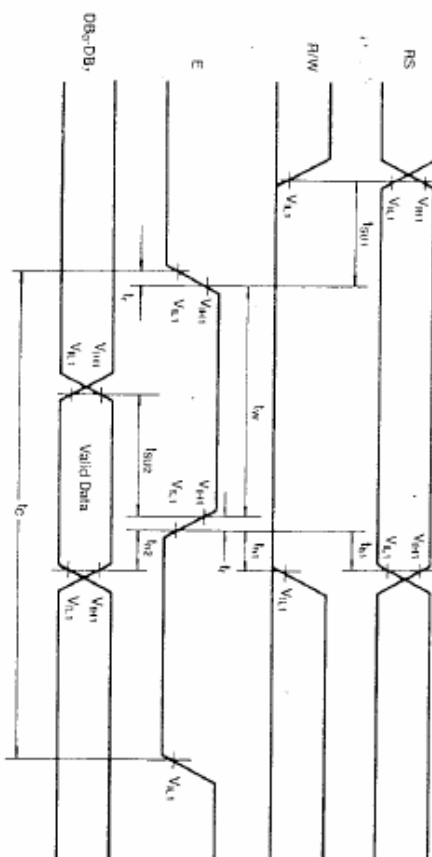
REF.NO: 9506401

REV.: NEW /

9.0 AC characteristics (V_{DD}=5V±10%, V_{SS}=0V T_a=25°C)

Write mode

Characteristic	Symbol	Min	Typ	Max	Unit	Test pin
E cycle time	t _c	500	—	—	ns	E
E rise time	t _r	—	—	25	ns	E
E fall time	t _f	—	—	25	ns	E
E pulse width (High, Low)	t _w	220	—	—	ns	E
R/W and RS set-up time	t _{su1}	40	—	—	ns	R/W, RS
R/W and RS hold time	t _{h1}	10	—	—	ns	R/W, RS
Data set-up time	t _{su2}	60	—	—	ns	DB ₀ ~DB ₇
Data hold time	t _{h2}	10	—	—	ns	DB ₀ ~DB ₇



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REF.NO: 9506401

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/

8.0 INTERFACE PIN FUNCTION DESCRIPTION

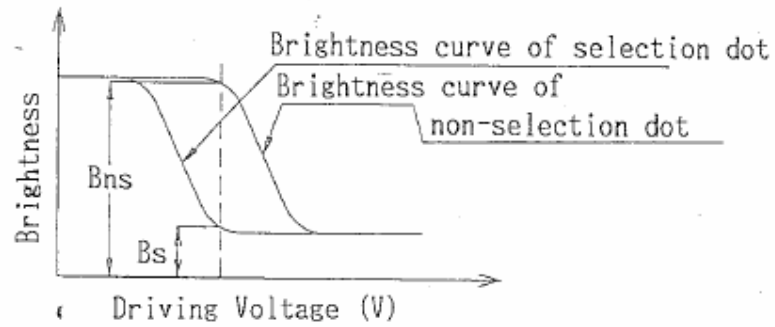
PIN NO	SYMBOL	FUNCTIONS
1	CLK	CLOCK
2	DATA	DATA INPUT
3	NO HOLE	NO CONNECTION
4	GND	GROUND
5	E	ENABLE
6	VCC	POWER SUPPLY FOR LOGIC

PICVUE | PICVUE ELECTRONICS CO.,LTD.

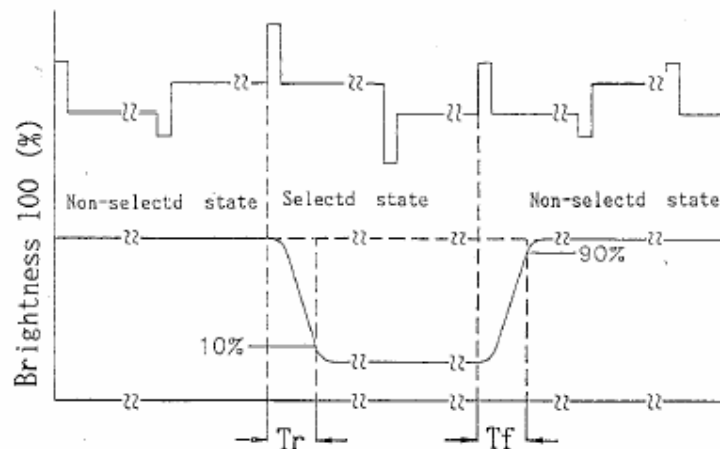
LCM NO: PC-064PYL | REF.NO: 9506401 | REV. : NEW | /

7-3 DEFINITION OF CONTRAST RATIO CR :

$$CR = \frac{\text{Brightness of non-selected segment}(B2)}{\text{Brightness of selected segment}(B1)}$$



7-4 DEFINITION OF OPTICAL RESPONSE TIME :



PICVUE | PICVUE ELECTRONICS CO.,LTD.

LCM NO : PC-064PYL

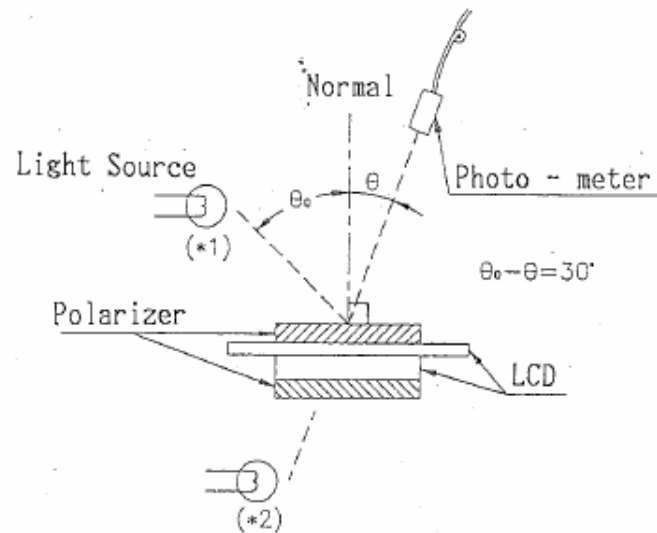
REF.NO : 9506401

REV. : NEW

/

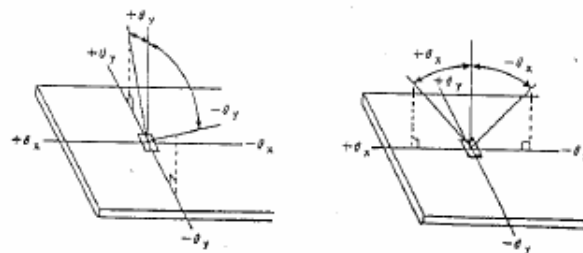
7-1 OPTICAL MEASUREMENT SYSTEM :

MEASURING INSTRUMENTS FOR ELECTRO-OPTICAL CHARACTERISTICS



- * 1 : LIGHT SOURCE POSITION FOR MEASURING OF REFLECTIVE TYPE LCD
- * 2 : LIGHT SOURCE POSITION FOR MEASURING OF TRANSPARENT/TRANFLECTIVE TYPE LCD

7-2 DEFINITION OF θ_x AND θ_y :



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6.0 ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
INPUT VOLTAGE	V I	—	—	5.0	—	V
INPUT HIGH VOLTAGE	V IH	—	0.7VDD	—	VDD	V
INPUT LOW VOLTAGE	V IL	—	VSS	—	0.3VDD	V
SUPPLY CURRENT	I DD	VDD=5.0V	—	—	—	mA

7.0 OPTICAL SPECIFICATION

	SYMBOL	MIN.	TYP.	MAX.	UNIT
VIEW ANGLE CR \geq 2 (VERTICALLY)	θ X	30	35	—	DEGREE
VIEW ANGLE CR \geq 2 (HORIZONTALLY)	ϕ	—	—	—	DEGREE
CONTRAST RATIO	CR	2.0	2.5	—	
RESPONSE TIME 25°C (RISE)	T ON	—	110	220	ms
RESPONSE TIME 25°C (FALL)	T OFF	—	210	310	ms

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4.0 MECHANICAL SPECIFICATIONS

ITEM	STANDARD VALUE	UNIT
DISPLAY TYPE	8 CHARACTER X 2 LINE	—
MODULE DIMENSION	33.7 (W) × 44.35(H) × 10.0 (D)	mm
EFFECTIVE DISPLAY AREA	26.50 (W) × 12.20 (H)	mm
DOT SIZE	0.38 (W) × 0.38 (H)	mm
DOT PITCH	0.43 (W) × 0.43 (H)	mm
VIEWING DIRECTION	12 O'CLOCK	
BACK LIGHT	LED BACKLIGHT	

5.0 MAX. STANDARD VALUE

ITEM	SYMBOL	MIN.	MAX.	UNIT
OPERATING TEMPERATURE	Top	0	+50	℃
STORAGE TEMPERATURE	Tst	-20	+60	℃
SUPPLY VOLTAGE FOR LOGIC	VDD-GND	0	+5	V
SUPPLY VOLTAGE FOR LCD	VDD-VEE	0	+5	V
INPUT VOLTAGE	Vi	0	VDD	V
STATIC ELECTRICITY	BE SURE THAT USER ARE GROUNDED WHEN HANDING LCM			

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3.0 DIMENSIONAL DIAGRAM

44.35±0.5

39.2±0.2

2.62

9.725

24.9±0.3

3.6

2.53

6.125

6.35

V.A. 12.2

1.86

8.48

2.625

3.6

4.95

11.85

28.45±0.2

V.A. 26.5

23.8

2.0

P2.0x2=4.0

4

J2

1

2

3

4

5

6

4-Ø2.4

PAD Ø1.5

S-Ø1.0

NO HOLE

NO #3

100CMAX

6.6

1.6

1.7

3.39

0.43

0.38

0.43

0.38

2.1

1.0

DISP.LY PATTERN

SCALE 5/1

J2 ASSIGNMENTS
1 CLK
2 DATA
3 NO HOLE
4 GND
5 ENABLE
6 +5V

PICVUE	PICVUE ELECTRONICS CO.,LTD.		
LCM NO:	PC-064PYL	REF.NO:	9506401
		REV.:	NEW

1.0 INTRODUCTION

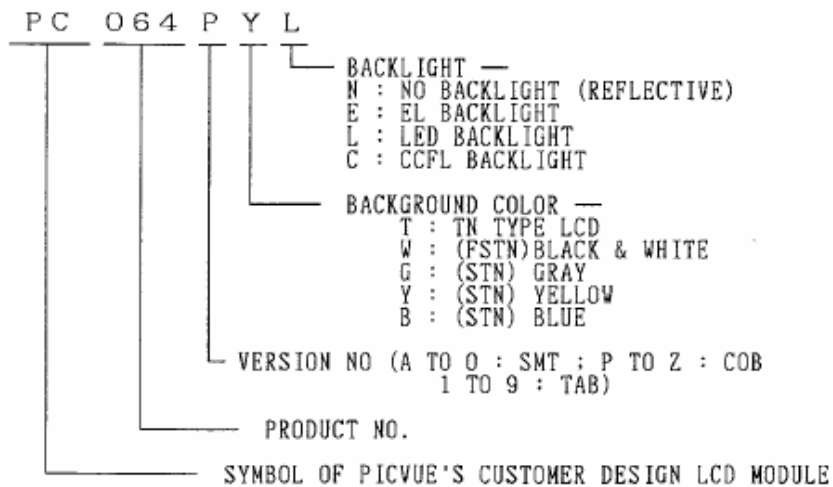
This product specification is introduced the outline dimensions, optical characteristics, electrical characteristics, interface specifications, instructions, etc. of the product.

PICVUE'S dot matrix LCD modules, consist of a newly developed STD/FSTN type liquid crystal display with high contrast and wide viewing angle, CMOS LCD driver (and controller). The combination of LCD and semiconductor technology feature high reliability and low power consumption.

1.1 FEATURE

- (1) Compact, integrated display module.
- (2) High contrast, clear display with TN type LCD.
- (3) Low voltage, low power consumption.
- (4) Wide operating temperature range.

2.0 CLASSIFICATION OF MODULE



PICVUE	PICVUE ELECTRONICS CO.,LTD.
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LCM NO: PC-064PYL	REF.NO: 9506401	REV.: NEW	/
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Character TYPE LCD MODULE
PRODUCT SPECIFICATIONS

PC-064PYL

PICVUE ELECTRONICS, LTD.

NO.12 LANE 468 , SEC. 2, CHIEN-HSING RD.

HSIN-FONG, HSIN-CHU, TAIWAN R.O.C.

TEL : 886-3-3225609, 886-2-7003628

FAX : 886-3-3225206, 886-2-7003497