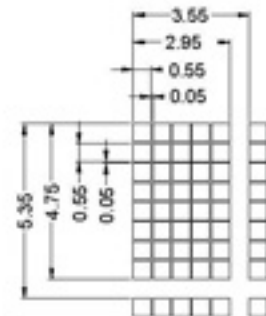
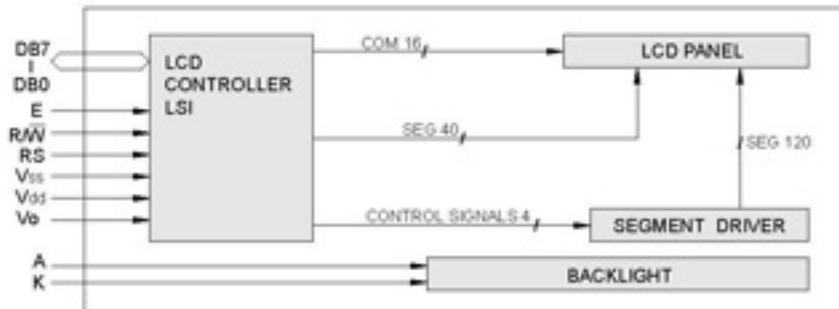
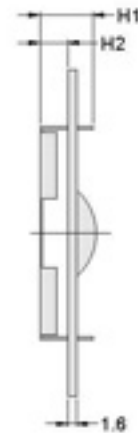
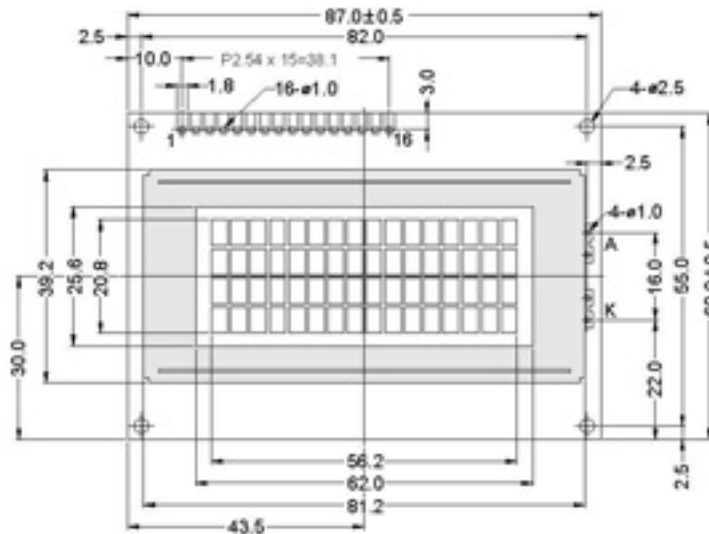




OUTLINE DIMENSION & BLOCK DIAGRAM



The tolerance unless classified $\pm 0.3\text{mm}$

MECHANICAL SPECIFICATION

Overall Size	87.0 x 60.0	Module	H2 / H1
View Area	62.0 x 25.6	W/O B/L	5.1 / 9.7
Dot Size	0.55 x 0.55	EL B/L	5.1 / 9.7
Dot Pitch	0.60 x 0.60	LED B/L	8.9 / 13.5

PIN ASSIGNMENT

Pin no.	Symbol	Function
1	Vss	Power supply(GND)
2	Vdd	Power supply(+)
3	Vo	Contrast Adjust
4	RS	Register select signal
5	R/W	Data read / write
6	E	Enable signal
7	DB0	Data bus line
8	DB1	Data bus line
9	DB2	Data bus line
10	DB3	Data bus line
11	DB4	Data bus line
12	DB5	Data bus line
13	DB6	Data bus line
14	DB7	Data bus line

ABSOLUTE MAXIMUM RATING

Item	Symbol	Condition	Min.	Max.	Units
Supply for logic voltage	Vdd-Vss	25°C	-0.3	7	V
LCD driving supply voltage	Vdd-Vee	25°C	-0.3	13	V
Input voltage	Vin	25°C	-0.3	Vdd+0.3	V

ELECTRICAL CHARACTERISTICS

Item	Symbol	Condition	Min.	Typical	Max.	Units			
Power supply voltage	Vdd-Vss	25°C	2.7	-	5.5	V			
LCD operation voltage	Vop	Top	N	W	N	W	N	W	V
		-20°C	-	7.1	-	7.5	-	7.9	V
		0°C	4.3	-	4.6	-	4.9	-	V
		25°C	3.9	6.1	4.2	6.4	4.5	6.7	V
		50°C	3.6	-	3.9	-	4.2	-	V
		70°C	-	5.7	-	6	-	6.3	V
LCM current consumption (No B/L)	Idd	Vdd=5V	-	2	3	mA			
Backlight current consumption	LED/edge	VB/L=4.2V	-	-	-	mA			
	LED/array	VB/L=4.2V	-	220	-	mA			

REMARK

LCD option: STN, TN, FSTN

Backlight Option: LED, EL Backlight feature, other Specs not available on catalog is under request.



● CODING SYSTEM FOR LCD MODULE

P C 1 6 0 2 * * * - * * - * - *
 1 2 3 4 5 6 7 8 9 10 11

NO	Code value	Description	Type
1	P	Powertip products	Brand
2	C	Character	Module type
	G	Graphic	
	S	Engineer sample	
	T	Total solution	
3	08.16.20.24 ...	Characters per line (for character modules)	Characters per line or row dots
	120.122.128 ...	Row dots (for graphic modules)	
4	01.02.03.04 ...	Lines (for character modules)	Lines or column dots
	32.64.128 ...	Column dots (for graphic modules)	
5	A	Without backlight	Backlight mode (Type + Color)
	B	EL backlight, Blue-green	
	D	EL backlight, Yellow-green	
	E	EL backlight, White	
	F	CCFL backlight, White	
	L	LED backlight, Yellow-green	
	M	LED backlight, Amber	
	N	LED backlight, Red	
	O	LED backlight, Orange	
	P	LED backlight, Pure-green	
	S	LED backlight, Green	
	U	LED backlight, Blue	
W	LED backlight, White		
6	R	Standard (through hole, cable, connector and etc.)	Connecting type
	Y	Straight pin-header	
	Z	Right angle pin-header	
7	None (*1)	TN positive, Gray	LCD mode (Type + Color)
	N	TN negative, Blue	
	S	STN positive, Gray	



7	U	STN positive, Yellow-green	LCD mode (Type+Color)
	M	STN negative, Blue	
	F	FSTN positive, White	
	T	FSTN negative, Black	
8	0~Z	Series number	Model name
9	00~ZZ	IC manufacturer / character pattern /total solution series number	* 2
	NN	Without controller	
10	A	Reflective /Normal temp. /6:00 direction	Polarizer type/ LCD Temperature range/ Viewing direction
	D	Reflective /Normal temp. /12:00 direction	
	G	Reflective /Extended temp. /6:00 direction	
	J	Reflective /Extended temp. /12:00 direction	
	B	Transflective /Normal temp. /6:00 direction	
	E	Transflective /Normal temp. /12:00 direction	
	H	Transflective /Extended temp. /6:00 direction	
	K	Transflective /Extended temp. /12:00 direction	
	C	Transmissive /Normal temp. /6:00 direction	
	F	Transmissive /Normal temp. /12:00 direction	
	I	Transmissive /Extended temp. /6:00 direction	
	L	Transmissive /Extended temp. /12:00 direction	
11	No code value	Standard product	Version
	01~ZZ	Special code	

(*1) Without code value

(*2)

Character Pattern	Character							Graphic	
English / Japanese	EA	HO/HA/HC	SO	NO	WA	AO	JA	YA	E4
English / Europe	EB	H2/HB/HC/HU	S5/S6	N5/N6/NI	WB/W5		JB	TA	
English / France	EC		S3	N3					
English / Russia	EH		SH	NH					
English / Chinese		HH							
English / Hebrew			S4/S8	N4/N8					

Note: A: APANPEC LSI M: MOTOROLA LSI R: SHARP LSI W: SITRONIX LSI
 E: ESPON LSI N: NOVATECH LSI S: SAMSUNG LSI Y: SANYO LSI
 H: HITACHI LSI O: OKI LSI T: TOSHIBA LSI
 J: JRC LSI P: PHILIPS LSI U: UMC GROUP LSI

(*3) Check with our sales for available combinations.



● CODING SYSTEM FOR OTHER PRODUCTS

PD - * * * * *
 1 2

NO	CODE VALUE	DESCRIPTION	TYPE
1	PD	Powertip design product	Products
2	IN05300,IN05500...	Product characteristic	Types

NOTE: The code value and length of product characteristic are unlimited



POWERTIP TECH. C
DISPLAY DEVICES
BETTER ELECTRON
DESIGN

PC 1604-A