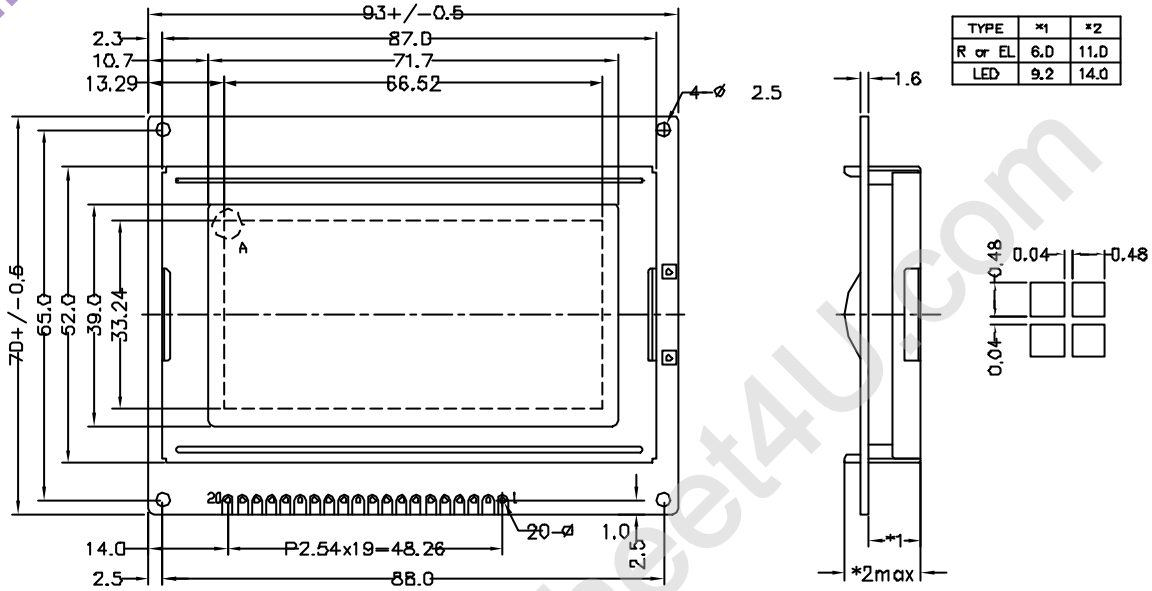


- \* 128 x 64 Dots
- \* EL or LED Backlight or No Backlight (Reflective)
- \* Type: FSTN; STN(Yellow-Green, Grey, Blue mode)

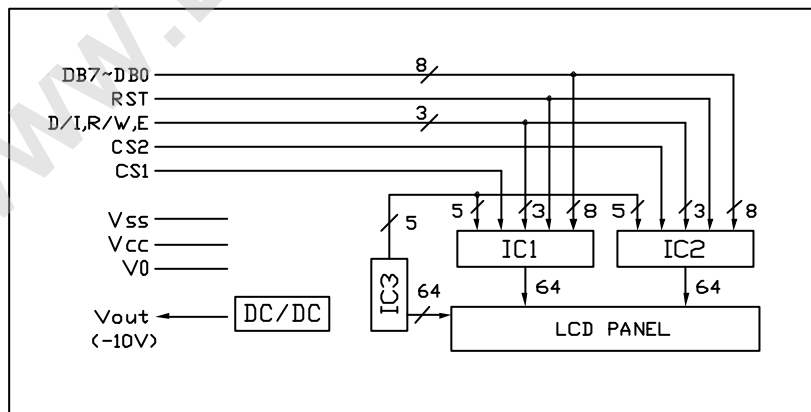
External Dimensionss/Display Pattern



External Dimensionss/Display Pattern

1	2	3	4	5	6	7~14	15	16	17	18	19	20
Vss	Vcc	V0	D/I	R/W	E	DB0~DB7	CS1	CS2	RST	Vout	LED+	LED-

Block Diagram



Absolute Maximum Ratings

Item	Nominal Dimensions	Unit
Module Size (W x h x T)	93.0 x 70.0 x 11.0/14.0	mm
Viewing Area (W x H)	71.7 x 39.0	mm
Dots x Dots (W x H)	128 x 64	dots
Dot Pitch (W x H)	0.52 x 0.52	mm
Dot Size (W x H)	0.48 x 0.48	mm

### Absolute Maximum Ratings

Item	Symbol	Test Condition	Standard Value		Unit
			Min.	Max.	
Supply Voltage for Logic	Vcc-Vss	Ta=25° C	-0.3	7.0	V
Supply Voltage for LCD	Vcc-Vo		0	15.0	V
Input Voltage	V <sub>i</sub>		0	Vcc	V
Operating Temperature	T <sub>opr</sub>	-	0	+50	°C
Storage Temperature	T <sub>stg</sub>	-	-20	+60	°C

### Electrical Characteristics (Vcc=5.0V ± 5% Ta=25 °C,Vo=-10.0V)

Item	Symbol	Test Condition	Standard Value			Unit	
			Min.	Typ.	Max.		
Supply Voltage for	Logic	Vcc-Vss	-	4.5	5.0	5.5	V
	LCD	Vcc-Vo	-	-	13.1	-	V
Supply Current for	Logic	I <sub>cc</sub>	-	-	7.0	10.0	mA
	LCD	I <sub>o</sub>	-	-	3.0	-	mA
Operating Voltage for LCD (Recommended)	Vcc-Vo	-	-	-	-	-	V
		25° C	-	-	13.1	-	V
		-	-	-	-	-	V
Input Voltage	'H' Level	V <sub>ih</sub>	High Level	0.7Vcc	-	Vcc	V
	'L' Level	V <sub>il</sub>	Low Level	0	-	0.3Vcc	V

### Electrical Characteristics

Pin No	Symbol	Input/Output	Description
1	Vss	Power	Ground
2	Vcc	Power	Supply Voltage for Logic and LCD
3	Vo	Input	Operating Voltage for LCD
4	D/I	Input	H: data; L: Instruction code
5	R/W	Input	Read/write selection. H: Read; L: Write
6	E	Input	Enable signal for chip
7~14	DB0~DB7	Input/Output	Data Line
15	CS1	Input	Chip select signal for IC1
16	CS2	Input	Chip select signal for IC2
17	RST	Input	Reset at risting dege
18	VOUT	Power	Supply voltage for LCD
19	LED+	BackLight Power	Supply Voltage for BackLight (+)
20	LED-	BackLight Power	Supply Voltage for BackLight (-)

The Above Spec. May Be Changed by Rev. No.