

PRODUCT SPECIFICATION

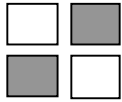
MONOCHROME LCD MODULE

PART NUMBER : FDG192016A

DESCRIPTION : 192x16 Graphic

REVISION : Rev A

	Approval for Specification only		Approval for Sample Only
	Approval for Pre-production	x	Approval for Mass Production



FDG192016A (192 x 16 graphics)

FEATURES

- ◆ BUILT-IN CONTROLLER (HD66730 OR EQUIVALENT)
- ◆ +5 V POWER SUPPLY
- ◆ 1/16 DUTY CYCLE
- ◆ 8-BIT PARALLEL INTERFACE
- ◆ 4.2 V LED FORWARD VOLTAGE

MECHANICAL DATA

ITEM	DIMENSIONS	UNIT
Module Size (W x H x T)	80.0 x 36.0 x 8.8 (12.7 LED)	mm
Viewing Area (W x H)	65.0 x 16.0	mm
Active Area (W x H)	62.79 x 7.64	mm
Dot Size (W x H)	0.40 x 0.60	mm
Dot Pitch (W x H)	0.43 x 0.64	mm

INTERFACE PIN CONNECTIONS

NO.	SYMBOL	LEVEL	FUNCTION
1	V _{SS}	0V	Power Supply Ground
2	V _{DD}	5V	Power Supply Voltage
3	V _o	-	Contrast Adj.
4	RS	H/L	Register Select
5	R/W	H	Read/Write
6	E	H	Enable Signal
7-14	DB0-DB7	H/L	Data Bus Line
15	A	4.2V	LED Power (+)
16	K	0V	LED Power (-)

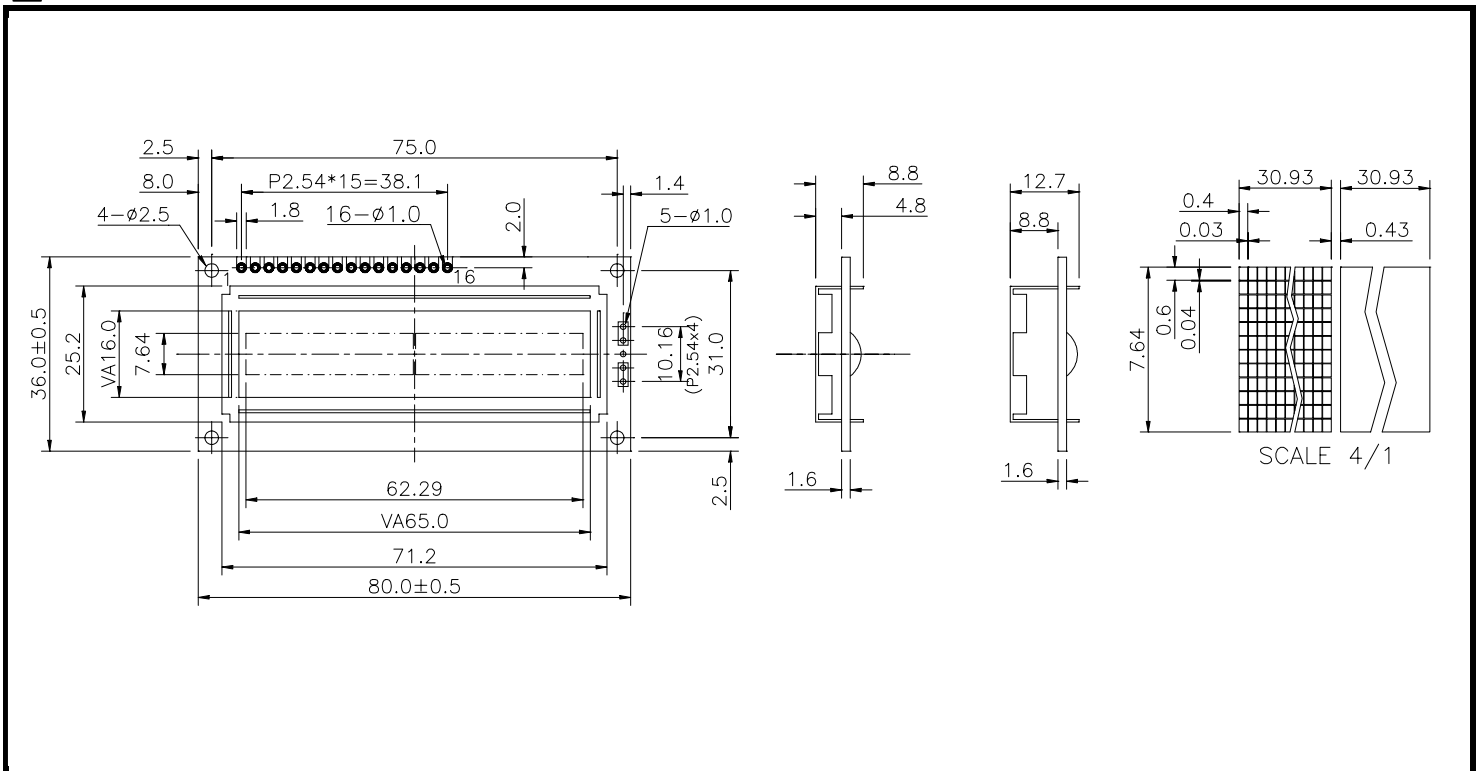
ABSOLUTE MAXIMUM RATINGS

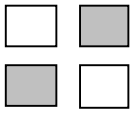
ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage For Logic	V _{DD} -V _{SS}	0	-	7	V
Supply Voltage For LCD Drive	V _{DD} -V _o	0	-	12	V
Input Voltage	V _I	V _{SS}	-	V _{DD}	V

ELECTRICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	
Supply Voltage For Logic	V _{DD} -V _{SS}	-	4.5	5	5.5	V	
Supply Voltage For LCD	V _{DD} -V _o	V _{DD} =5V Ta=25°C	4.4	4.8	5.2	V	
Supply Current	I _{DD}	V _{DD} =5V	-	2.5	4.5	mA	
Input Voltage	"HIGH" Level	V _{IH}	-	2.2	-	V _{DD}	V
	"LOW" Level	V _{IL}	-	-	-	0.6	V
Output Voltage	"HIGH" Level	V _{OH}	-	2.4	-	V	V
	"LOW" Level	V _{OL}	-	-	-	0.4	V

EXTERNAL DIMENSIONS





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■ TIMING CHARACTERISTICS

ITEM		SYMBOL	MIN.	TYP.	MAX.	UNIT.
E Cycle Time		t_{CYCE}	1000	-	-	ns
Enable Pulse Width	"High Level"	P_{WEH}	450	-	-	ns
Enable Rise/Fall Time		t_{ER}, t_{EF}	-	-	25	ns
Address Set-up Time	RS,R/W to E	t_{AS}	60	-	-	ns
Address Hold Time		t_{AH}	20	-	-	ns
Data Sep-up Time		t_{DSW}	140	-	-	ns
Data delay Time		t_{DDR}	-	-	360	ns
Data Hold Time	Write	t_H	30	-	-	ns
Data Hold Time	Read	t_{DHR}	5	-	-	ns

FIG.1 WRITE OPERATION

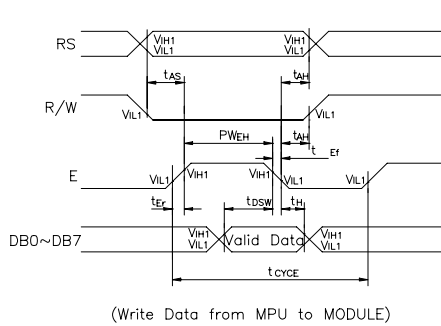
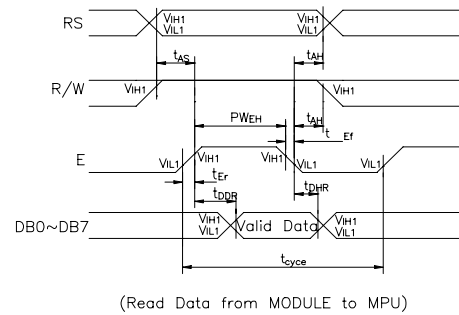
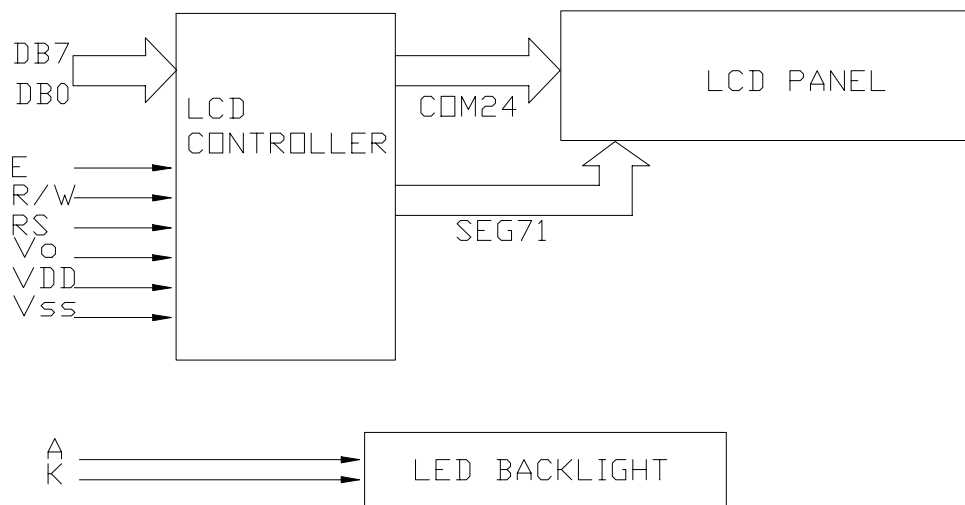


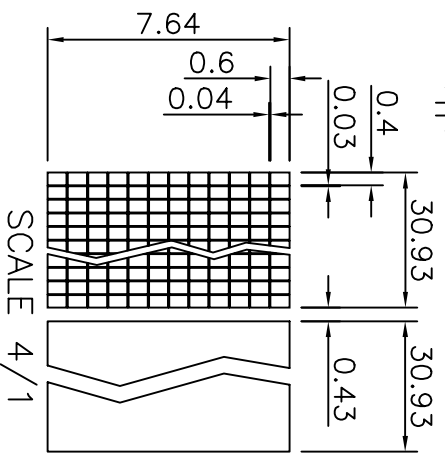
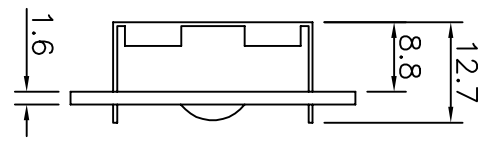
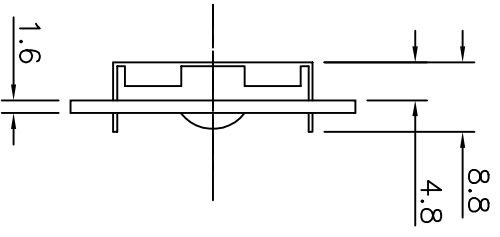
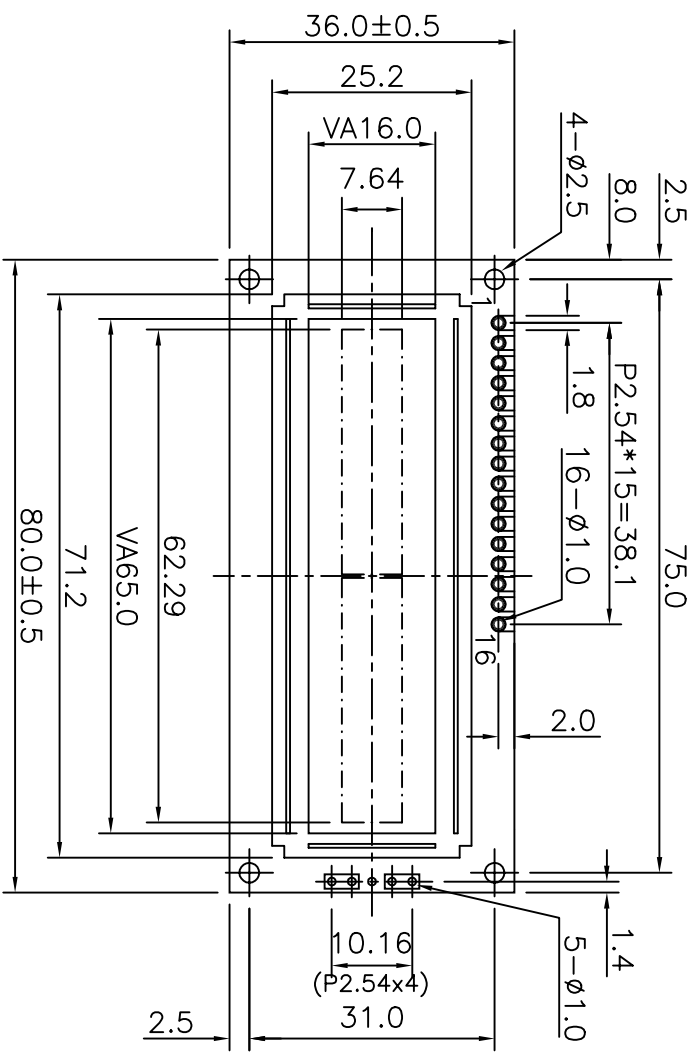
FIG.2 READ OPERATION



■ BLOCK DIAGRAM



PIN NO	SIGNAL
1	VSS
2	VDD
3	VO
4	RS
5	R/W
6	E
7	DB0
8	DB1
9	DB2
10	DB3
11	DB4
12	DB5
13	DB6
14	DB7
15	A
16	K



NOTE	ITEM	CONTENT	DATA	REV	TOLERANCE	SCALE	UNIT	DWYN	CUSTOMER	APVL	TITLE	MODEL	DWG NO	PAGE
		CHANGE NUMBER	2004.03.01	0	X. ±0.30 X ±0.20 .XX±0.05	1/1	mm	Gilli	2004.03.01		MODULE	SG1201A	A-A2-0001	1/1
SUNLIKE DISPLAY														