

CONTENTS

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>page no.</u>
1	TYPE NUMBER	2
2	GENERAL SPECIFICATIONS	2
3	ABSOLUTE MAXIMUM RATINGS	
	3.1 Electrical Maximum Ratings	2
	3.2 Environmental Conditions	2
4	ELECTRICAL SPECIFICATIONS	
	4.1 Interface Definition	3
	4.2 Electrical Characteristics	4
	4.3 Timing Specifications	4
	4.4 Timing Diagrams for KS0070B	5
5	ELECTRICAL BLOCK DIAGRAM	6
6	MECHANICAL SPECIFICATIONS	7

REVISION RECORD

REV LEVEL	REV DATE	PAGE/S	CHANGE DESCRIPTION	APPROVAL
O	25/01/99	ALL	INITIAL ISSUE	

Crystalfontz

1) TYPE NUMBER

Crystalfontz Model : KD162-636SG

2) MECHANICAL SPECIFICATIONS

Module Dimensions : 80.0 (W) X 36.0 (H) X 10.5 max (T)
Display Format : 16 Characters X 2 Lines
Display Font : 5 X 8 Dots
Display Technology : Super Twisted Nematic
Display Color Mode : Yellow-Green
Display Transmission Mode : Positive
Active (Image) Area : 11.5 (H) X 56.2 (W)
Viewing Area : 15.8 (H) X 61.0 (W)
Dot Size : 0.65 (H) X 0.55 (W)
Dot Pitch : 0.70 (H) X 0.60 (W)
Viewing Direction : 6 o'clock
Driving Scheme : 1/16 duty, 1/5 bias
Backlight Type : Nil
Backlight Color : Nil
Ref Outline Drawing : 9M636P01
Weight : approx. 30g

3) ABSOLUTE MAXIMUM RATINGS

3.1 Electrical Maximum Ratings (Ta = 25 deg C)

ITEM	SYMBOL	CONDITION	MIN	MAX	UNIT
Supply Voltage (Logic)	Vcc-Vss	-	0	7.0	V
Supply Voltage (LCD Drive)	Vcc-Vee	-	0	11.5	V
Input Voltage	Vi	-	-0.3	Vcc + 0.3	V

3.2 Environmental Conditions

ITEM	SYMBOL	CONDITION	MIN	MAX	UNIT
Operating Temp	Topr	-	0	50	deg C
Storage Temp	Ttsg	-	-10	60	deg C
Humidity Endurance	RH	no condensation Ta <= 40 deg C		95	%
Vibration	-	3 directions	see note (a) , page3		
Shock	-	3 directions	see note (b) , page 3		

3.2 Environmental Conditions (continued from page 2)

note (a) : frequency : varying from 10 Hz to 55 Hz in a 1-minute cycle
amplitude : 1.5 mm
duration : 120 cycles, each lasting 1 minute,
for each of the 3 directions, x,y,z

note (b) : mutually perpendicular directions
direction normal to surface of LCD glass :
80G, half-sine pulse of duration 11ms
other 2 directions
100G, half-sine pulse of duration 11ms

4) ELECTRICAL SPECIFICATIONS

4.1 Interface Definition

Pin No.	Symbol	Description
1	GND	Ground
2	Vcc	Voltage Supply for logic (+5V)
3	Vee	Voltage Supply for LCD bias
4	RS	Register Select input : "H" for Data Register (for read and write) "L" for Instruction Register (for write) Busy flag, address counter (for read)
5	R/W	Read / Write signal : "H" for Read mode "L" for Write mode
6	E	Enable signal: to read and write data
7	DB0	Data input / output (LSB)
8	DB1	Data input / output
9	DB2	Data input / output
10	DB3	Data input / output
11	DB4	Data input / output
12	DB5	Data input / output
13	DB6	Data input / output
14	DB7	Data input / output (MSB)
15	LED-	-ve Supply for LED backlight (where applicable)
16	LED+	+ve Supply for LED backlight (where applicable)

Crystalfontz

4.2 Electrical Characteristics at Ta = 25 deg C, Vcc = 5V +/- 5%

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
Supply Voltage (logic)	Vcc-Vss		4.5	5	5.5	V
Supply Voltage (LCD)	Vcc-Vee	Vcc = 5V	4.12	4.7	5.12	V
Input signal voltage (for E,DB0-7, R/W,RS)	V-ih	"H" level	2.2	-	Vcc	V
	V-il	"L" level	0	-	0.6	V
Supply Current (logic)	Icc	-	0.9	1	1.2	mA
Supply Current (LCD)	Io	-	0.15	0.22	0.27	mA

4.3 Timing Specifications at Ta = 25 deg C, Vcc = 5V+/-10% , Vss = 0V

4.3.1 (Write mode)

ITEM	SYMBOL	MIN		MAX	UNIT
E cycle time	<i>t-c</i>	500		-	ns
E rise time	<i>t-r</i>	-		25	ns
E fall time	<i>t-f</i>	-		25	ns
E-pulse width (H, L)	<i>t-w</i>	220		-	ns
R/W and RS set-up time	<i>t-su1</i>	40		-	ns
R/W and RS hold time	<i>t-h1</i>	10		-	ns
Data set-up time	<i>t-su2</i>	60		-	ns
Data hold time	<i>t-h2</i>	10		-	ns

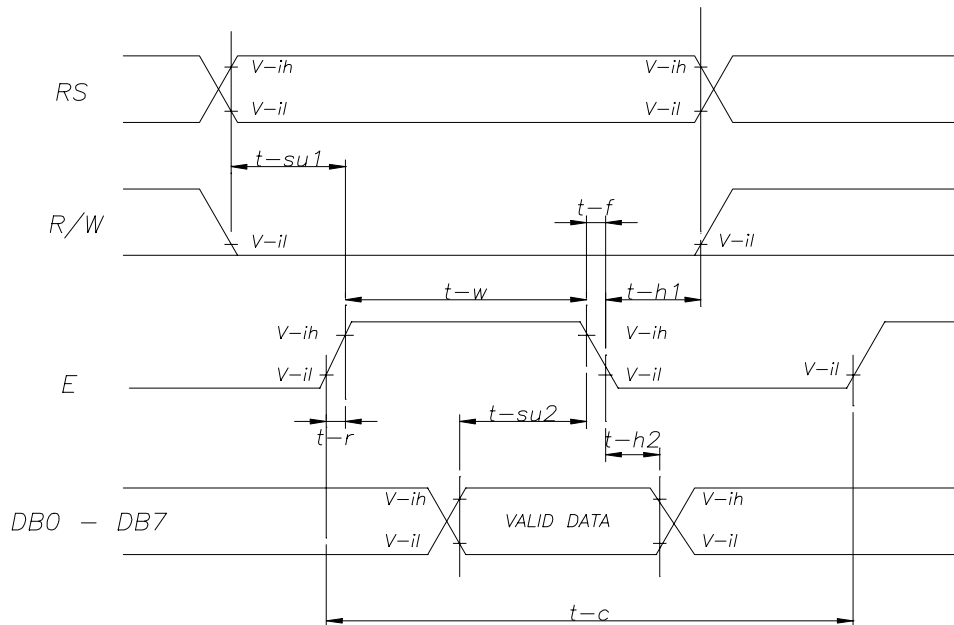
4.3 Timing Specifications at Ta = 25 deg C, Vcc = 5V+/-10% , Vss = 0V

4.3.2 (Read mode)

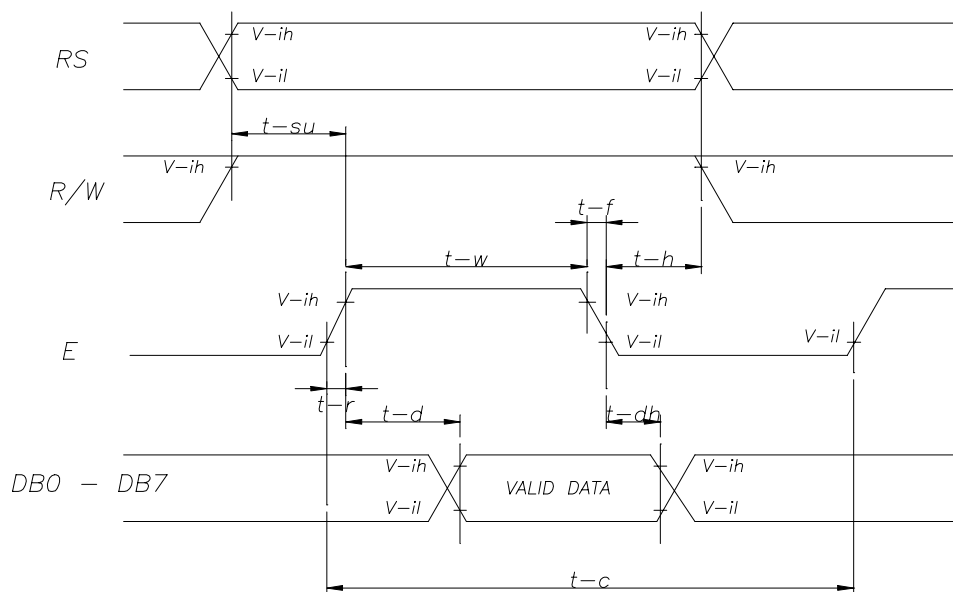
ITEM	SYMBOL	MIN		MAX	UNIT
E cycle time	<i>t-c</i>	500		-	ns
E rise time	<i>t-r</i>	-		25	ns
E fall time	<i>t-f</i>	-		25	ns
E-pulse width (H, L)	<i>t-w</i>	220		-	ns
R/W and RS set-up time	<i>t-su</i>	40		-	ns
R/W and RS hold time	<i>t-h</i>	10		-	ns
Data output delay time	<i>t-d</i>	-		120	ns
Data hold time	<i>t-dh</i>	20		-	ns

4.4 Timing Diagram for KS0070B

WRITE MODE TIMING DIAGRAM FOR KS0070B

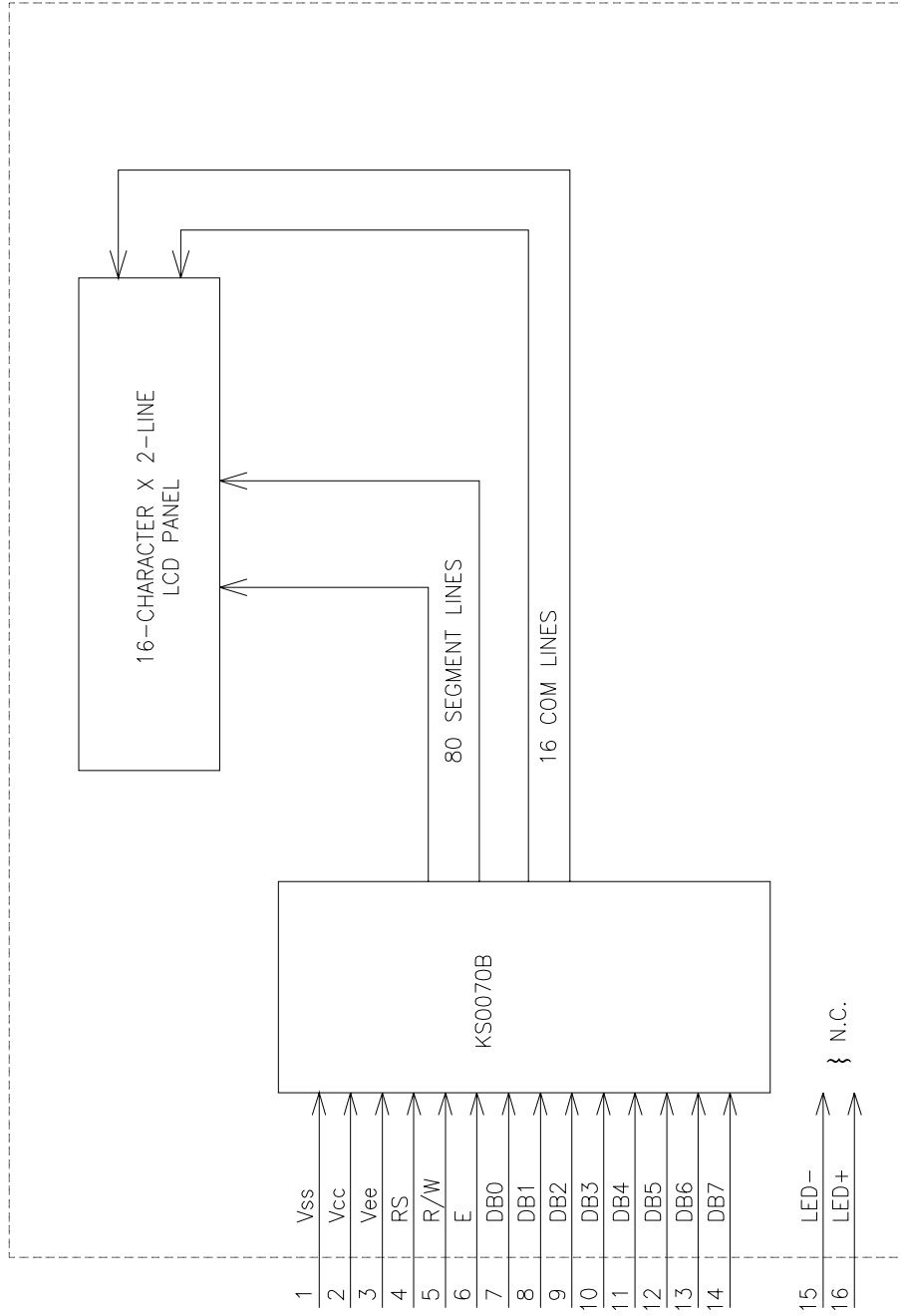


READ MODE TIMING DIAGRAM FOR KS0070B



REVISIONS ARE INDICATED BY CIRCLED LETTERS

ALL DIMENSIONS ARE IN MILLIMETRES



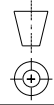
THIS DRAWING IS APPLICABLE TO THE FOLLOWING SUB-VARIANTS :-

KD162-636SG KD162-636SG-3V

TITLE



BLOCK DIAGRAM



SCALE N.A.

PROJECT 636

GEN. TOL.
X.X = ± 0.20
X.XX = ± 0.10
ANG = ± 0.5°

DRAWN BY : N.K.S.

APPROVED :

DWG NBR 9K636B01

DATE 25 JAN 1999

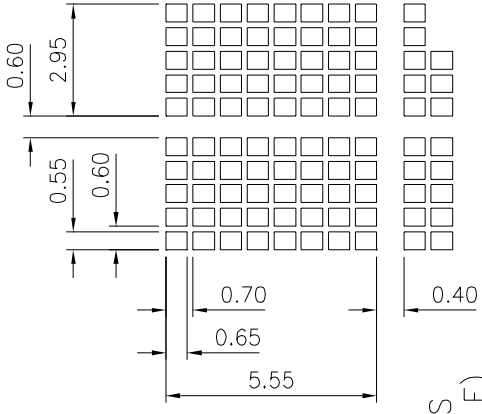
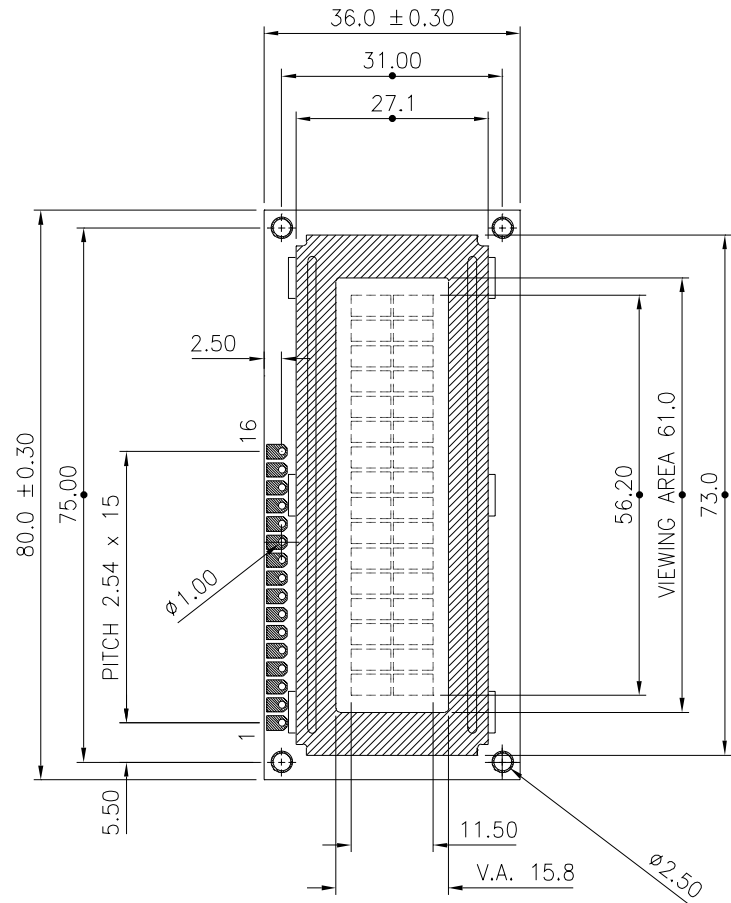
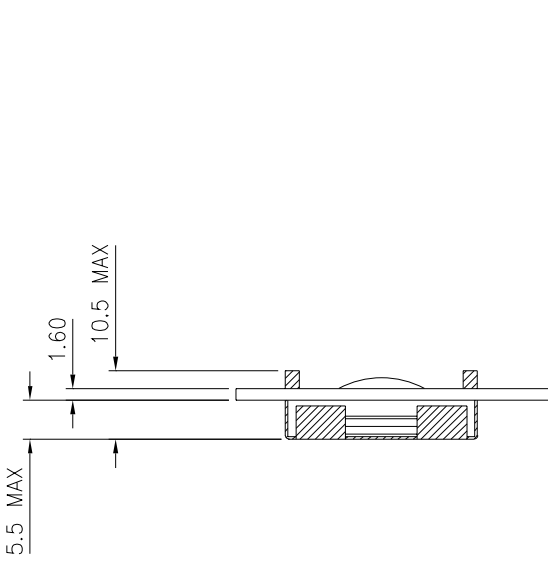
DISKETTE CY8826

REV 0

SHEET 1 OF 1



REVISIONS ARE INDICATED BY CIRCLED LETTERS

ALL DIMENSIONS IN MILLIMETRES



MATRIX DETAILS
(NOT-TO-SCALE)

THIS DRAWING IS APPLICABLE TO
THE FOLLOWING SUB-VARIANTS:-
KD162-6365G

	TITLE MECHANICAL SPECIFICATIONS, LCD MODULE, 16 CH X 2 LINES			SCALE 1 = 1	GEN. TOLERANCE X.X = ± 0.2 X.XX = ± 0.10 ANG = ± 0.5°	DWG MBR 9M636P02 DATE 25 JAN 1999	REV 0 SHEET 1 OF 1
	PROJECT 636						