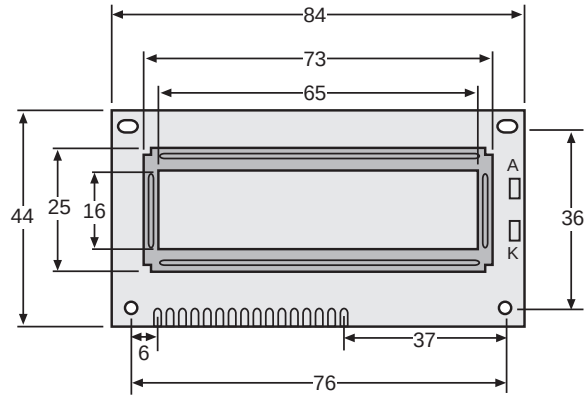
ALTRONIC DISTRIBUTORS pty. ltd.
ACN 008 801 161

Z 7000A
Z 7011

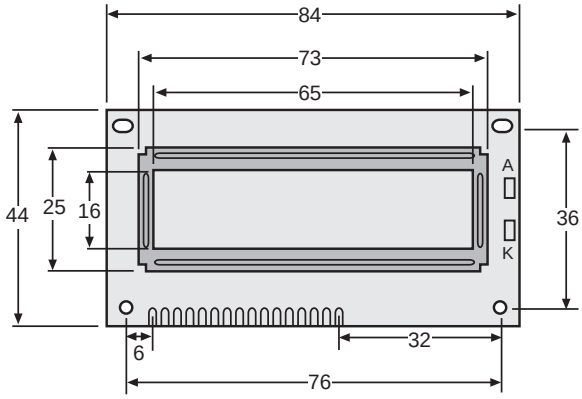
Specification Sheet
Alphanumeric LCD Modules

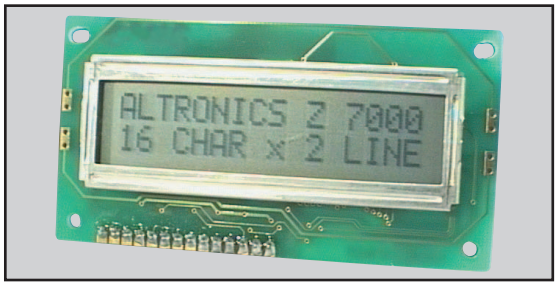
16 character x 2 line dot matrix LCD module.
• Powered by 5V DC • 96 inbuilt ASCII characters, 92 special characters and 8 custom characters
• Supertwist (Z 7000A) and backlit (Z 7011) versions available

Z 7000A Dimension



Z 7011 Dimension





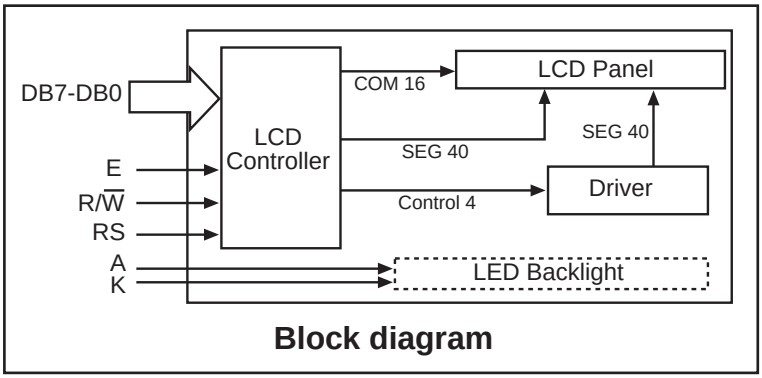
Pin Assignments

Pin No.	Label	Description
1	VSS	Ground
2	VDD	Supply Voltage
3	VO	Contrast adjustment voltage
4	RS	Register select signal
5	R/W	Read / write select signal
6	E	Operation (read/write) enable
7	DB0	Low byte data bit
8	DB1	Low byte data bit
9	DB2	Low byte data bit
10	DB3	Low byte data bit
11	DB4	High byte data bit
12	DB5	High byte data bit
13	DB6	High byte data bit
14	DB7	High byte data bit
15	A	Positive LED backlight (Anode)*
16	K	Negative LED backlight (Cathode)*

* Backlighting connections for Z 7011 Only

Characteristics

Overall Dimensions: Z 7000A 84 x 44 x 8.8mm
Z 7011 84 x 44 x 12.7mm
Viewing Area: .....66 x 16mm
Character Size: .....2.96 x 5.56mm
Character Pitch: .....3.55 x 5.94mm
Character Font:.....5x7 dots
Dot Size:.....0.56 x 0.66mm
Duty:.....1/16
Weight: .....Z 7000A 28g
Z 7011 36g



Block diagram

Parameter	Symbol	Condition	Pin	Min.	Typ.	Max	Unit
Supply voltage	VDD		VDD	4.75	5.00	5.25	V
Supply current	IDD	VDD = 5V	VDD	-	1.0	3.0	mA
High level input voltage	VIH1		DB0-DB7	2.0	-	VDD	V
Low level input voltage	VIL1		RS, R/W, E	VSS	-	0.8	V
High level output voltage	VOH1	IOH = 0.2mA	DB0-DB7	2.4	-	-	V
Low level output voltage	VOL1	IOL = 1.2mA	DB0-DB7	-	-	0.4	V
LCD driving voltage	VLCD	VDD = 5V		3.0	-	VDD	V
Backlight current (Z 7011)	ILED			20	-	80	mA
Internal clock speed	FOSC			245	250	255	kHz
Response time (rise)	Tr	T = 25°C		-	110	220	ms
Response time (fall)	Tf	T = 25°C		-	110	220	ms
Viewing angle (Lateral)		T = 25°C		60	-	120	degrees
Viewing angle (Longitudinal)		T = 25°C		50	-	80	degrees
Operating temperature	TOP			0	25	50	°C
Storage temperature	TST			-20	25	+60	°C

Specification Sheet

Alphanumeric LCD Module

Control and Display Commands

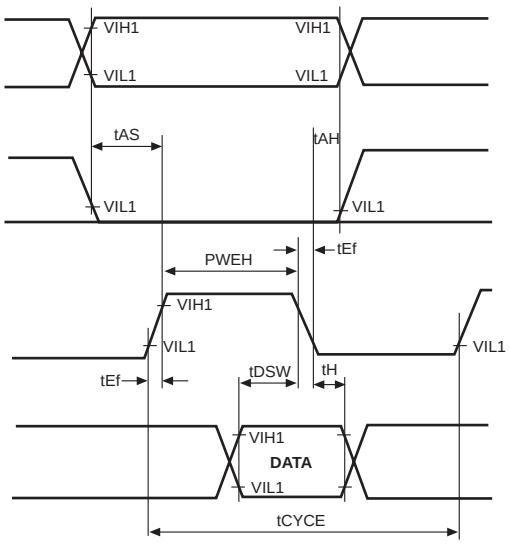
Command	RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0	Remarks
Display Clear	0	0	0	0	0	0	0	0	0	1	Clears Display
Return Home	0	0	0	0	0	0	0	0	1	X	Cursor Moves to 1st Digit
Entry Mode Set	0	0	0	0	0	0	0	1	I/D	SH	I/D=0 Cursor moves left I/D=1 Cursor moves right SH=0 Display is not shifted SH=1 Display is shifted
Display ON/OFF	0	0	0	0	0	0	1	D	C	B	D=0 Display off, D=1 Display on C=0 Cursor on, C=1 Cursor off B=0 Blinking off, B=1 Blinking on
Display Shifting & Cursor Motion	0	0	0	0	0	1	S/C	R/L	X	X	SC=0 Cursor moves, SC=1 Display shifts R/L=0 Left shift, R/L=1 Right shift
Set Display Function	0	0	0	0	1	DL	N	F	X	X	DL=0 4 bit interface, DL=1 8 bit interface N=0 1 line display, N=1 2 line display F=0 5x7 dots, F=1 5x10 dots
Set CGRAM Address	0	0	0	1	CG5	CG4	CG3	CG2	CG1	CG0	DB5-DB0 : CGRAM Address CGRAM Add. corresponds to Cursor Add.
Set DDRAM Address	0	0	1	DD6	DD5	DD4	DD3	DD2	DD1	DD0	DB6-DB0 : DDRAM Address
Read Busy Flag & Address Ctr	0	1	BF	AC6	AC5	AC4	AC3	AC2	AC1	AC0	DB6-DB0 : Address Counter (AC) BF=0 Ready, BF=1 Busy
Write Data to CGRAM / DDRAM	1	0	DATA7	DATA6	DATA5	DATA4	DATA3	DATA2	DATA1	DATA0	DB7-DB0 : Data Bits for Write
Read Data CGRAM / DDRAM	1	1	DATA7	DATA6	DATA5	DATA4	DATA3	DATA2	DATA1	DATA0	DB7-DB0 : Data Bits Read

Timing

Item	Symbol	Value
Enable cycle time	tCYCE	500ns
Enable pulse width	PWEH	220ns
Enable rise/fall time	tEr, tef	25ns
Set up time	tAS	60ns
Address hold time	tAH	10ns

Item	Symbol	Value
Data set-up time	tDSW	100ns
Data delay time	tDDR	170ns
Data hold time (write)	tH	10ns
Data hold time (read)	tDHR	20ns
Clock frequency	tOSC	270kHz

Writing Timing



Reading Timing