

MPI SED133-32K

LCD CONTROLLER

APPLICATION GUIDE

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CHAPTER 1. PRINTED CIRCUIT BOARD

The MPI SED1335-32K LCD controller is a small (3.0x2.2 inch) PCB that will driver the row and column drivers on almost all LCD's up to 640x256 pixels that use the 4-bit column drive scheme. The board has 2 connectors. The 20-pin connector is use to connect to the microprocessor. The 17-pin connector is use to connect the LCD. The MPI SED1335-32K is available with a 20-pin female Berg SIP socket that will allow the board to be mounted on top of the MPI S133 advanced graphic controller board. This allows the MPI S133 AGC to be used with LCD's that do not have built-in controllers. The MPI SED1335-32K is available without connectors and can be used with any LCD that requires the SED1335 as a basic LCD controller. See figure 1 for layout and picture of the board that shows component placement.

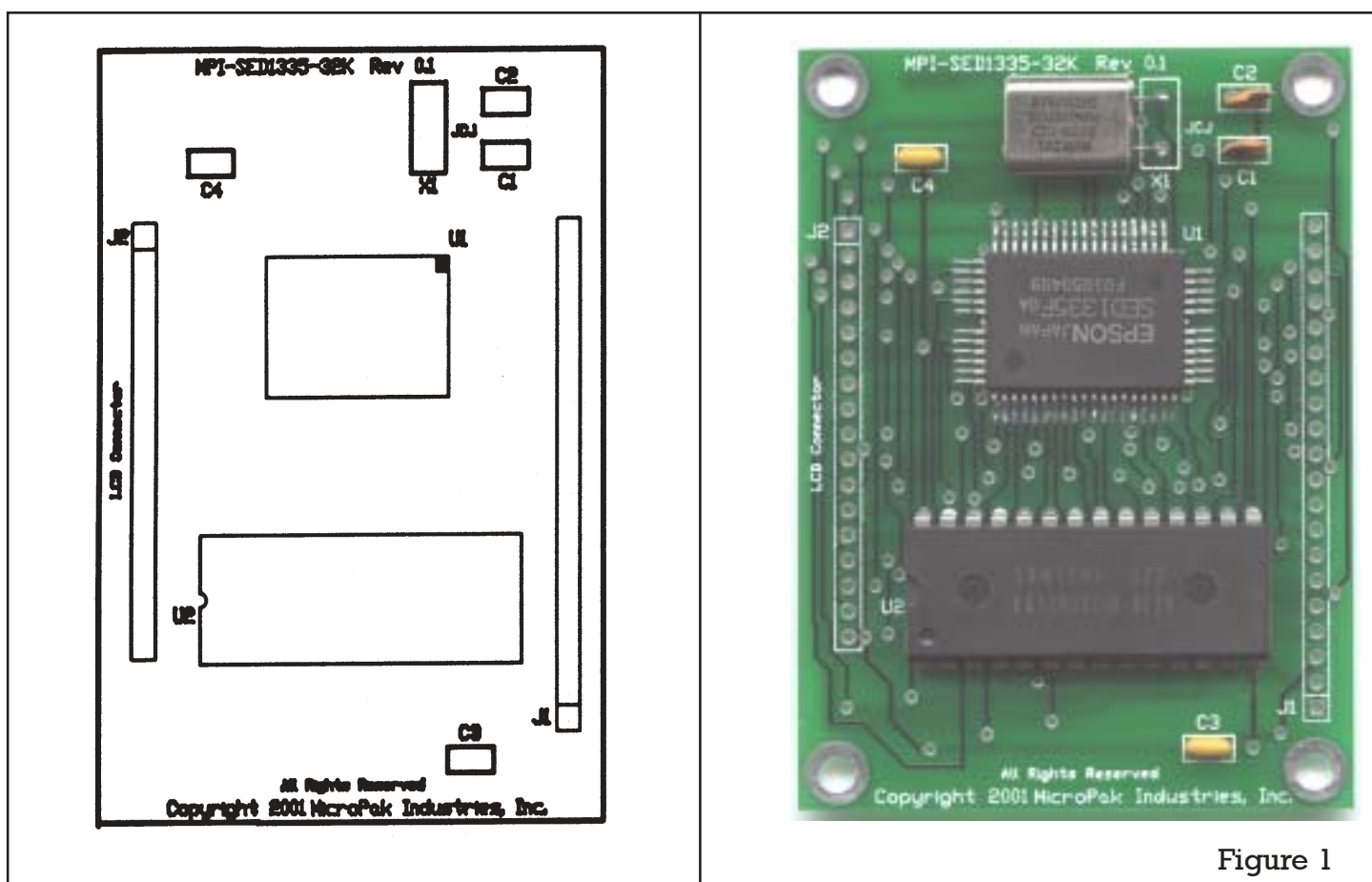


Figure 1

The microprocessor connector uses a 20-pin SIP layout. The pin outs and explanation of the signals are explained in Table 1. The LCD connector is a 17-pin SIP layout. The pin outs and explanation of the signals are explained in Table 2. Note that in Table 2 the names of various LCD signals have more than 1 symbol. Different LCD manufacturers use different nomenclature to differentiate their LCDs from other manufacturers. We have tried to include all the different names that we are aware of in the table. For detailed information on the SMOS's SED1335 or MicroPak's MPI S133 AGC download the application manuals at our web site at:

<http://www.angelfire.com/electronic/micropakindustries>.

J1 20-pin Connector - Table 1

#	Name	Description	Pin Type
1	GND	Ground - Vss	Power
2	GND	Ground - Vss	Power
3	+5	Power -Vdd	Power
4	VO	LCD Operating Voltage - variable	Power
5	/RES	SED 1335 Reset - Ground Active	Input
6	RD	SED 1335 Read Line	Input
7	WR	SED 1335 Write Line	Input
8	CS	SED 1335 Chip Select Line	Input
9	A0	SED 1335 Register Select Line	Input
10	DB0	SED 1335 Data Bit 0	I/O
11	DB1	SED 1335 Data Bit 1	I/O
12	DB2	SED 1335 Data Bit 2	I/O
13	DB3	SED 1335 Data Bit 3	I/O
14	DB4	SED 1335 Data Bit 4	I/O
15	DB5	SED 1335 Data Bit 5	I/O
16	DB6	SED 1335 Data Bit 6	I/O
17	DB7	SED 1335 Data Bit 7	I/O
18	SEL1	SED 1335 8080/6800 family input select Bit 0	Input
19	SEL2	SED 1335 8080/6800 family input select Bit 1	Input
20	VLC	LCD Drive Voltage	Power

J2 17-pin Connector - Table 2

#	Name	Description	Pin Type
1	XD0	Data Bit 0 X-driver (column drive) data output	Output
2	XD1	Data Bit 1 X-driver (column drive) data output	Output
3	XD2	Data Bit 2 X-driver (column drive) data output	Output
4	XD3	Data Bit 3 X-driver (column drive) data output	Output
5	XSCL (CL2)	Data Shift Clock	Output
6	XECL	X-Driver Enable Chain Clock	Output
7	LP (CL1)	Latch Pulse	Output
8	WF (M)	Frame Signal	Output
9	YD (FLM, DIN)	Scan Start Pulse	Output
10	YSCL	Scan Shift Clock	Output
11	YDIS	Power Down Signal when display is blanked	Output
12	+5	Power -Vdd	Power
13	GND	Ground - Vss	Power
14	VO	LCD Operating Voltage	Power
15	VLC	LCD Drive Voltage	Power
16	GND	Ground - Vss	Power
17	+5	Power - Vdd	Power

CHAPTER 2. LCD HARDWARE CONNECTIONS

The following tables show the hardware connections for various LCD's with the MPI SED1335-32K controller board. The pin number and name for the MPI SED1335-32K board are listed first. Then the display type and model number along with the pin numbers and names are listed next. Correct wiring will occur by connecting the corresponding pin numbers on the MPI SED 1335-32K board with the display pin numbers. See previous section for an explanation of the signals from the MPI SED1335-32K board. NC means no connection.

SEIKO Displays

MPI SED1335-32K		G121C Display	
1	XD0	9	D0
2	XD1	10	D1
3	XD2	11	D2
4	XD3	12	D3
5	XSCL (CL2)	3	CL2
6	XECL	-	NC
7	LP (CL1)	6	CL1
8	WF (M)	8	M
9	YD (FLM) (DIN)	5	FLM
10	YSCL	-	NC
11	YDIS	-	NC
12	+5	1	Vdd
13	GND	7,15	Vss
14	VO	14	Vo
15	VLC	13	Vlcd
16	GND	2	FGND
17	+5	4	INH

MPI SED1335-32K		G191C Display	
1	XD0	8	D0
2	XD1	7	D1
3	XD2	2	D2
4	XD3	1	D3
5	XSCL (CL2)	6	CL2
6	XECL	-	NC
7	LP (CL1)	5	CL1
8	WF (M)	4	M
9	YD (FLM) (DIN)	3	FLM
10	YSCL	-	NC
11	YDIS	-	NC
12	+5	9	Vdd
13	GND	10	Vss
14	VO	14	Vlcd
15	VLC	-	NC
16	GND	12	FGND
17	+5	-	NC

MPI SED1335-32K		G191D Display	
1	XD0	9	D0
2	XD1	10	D1
3	XD2	11	D2
4	XD3	12	D3
5	XSCL (CL2)	3	CL2
6	XECL	-	NC
7	LP (CL1)	6	CL1
8	WF (M)	8	M
9	YD (FLM) (DIN)	5	FLM
10	YSCL	-	NC
11	YDIS	-	NC
12	+5	1	Vdd
13	GND	7,15	Vss
14	VO	14	Vo
15	VLC	13	Vlcd
16	GND	2	FGND
17	+5	4	INH

MPI SED1335-32K		G2436 Display	
1	XD0	4	D0
2	XD1	3	D1
3	XD2	2	D2
4	XD3	1	D3
5	XSCL (CL2)	8	CL2
6	XECL	-	NC
7	LP (CL1)	7	CL1
8	WF (M)	6	M
9	YD (FLM) (DIN)	5	FLM
10	YSCL	-	NC
11	YDIS	-	NC
12	+5	9	Vdd
13	GND	10	Vss
14	VO	11	Vo
15	VLC	-	NC
16	GND	-	NC
17	+5	-	NC

MPI SED1335-32K		G2446 Display	
1	XD0	8	D0
2	XD1	9	D1
3	XD2	10	D2
4	XD3	11	D3
5	XSCL (CL2)	14	CL2
6	XECL	-	NC
7	LP (CL1)	15	CL1
8	WF (M)	13	M
9	YD (FLM) (DIN)	12	FLM
10	YSCL	-	NC
11	YDIS	-	NC
12	+5	16	Vdd
13	GND	17	Vss
14	VO	18	Vo
15	VLC	-	NC
16	GND	20	FGND
17	+5	7	INH

MPI SED1335-32K		G242C Display	
1	XD0	8	D0
2	XD1	9	D1
3	XD2	10	D2
4	XD3	11	D3
5	XSCL (CL2)	14	CL2
6	XECL	-	NC
7	LP (CL1)	15	CL1
8	WF (M)	13	M
9	YD (FLM) (DIN)	12	FLM
10	YSCL	-	NC
11	YDIS	-	NC
12	+5	16	Vdd
13	GND	17	Vss
14	VO	18	Vo
15	VLC	-	NC
16	GND	20	FGND
17	+5	-	NC

MPI SED1335-32K		G321D Display	
1	XD0	8	D0
2	XD1	9	D1
3	XD2	10	D2
4	XD3	11	D3
5	XSCL (CL2)	14	CL2
6	XECL	-	NC
7	LP (CL1)	15	CL1
8	WF (M)	13	M
9	YD (FLM) (DIN)	12	FLM
10	YSCL	-	NC
11	YDIS	-	NC
12	+5	16	Vdd
13	GND	17	Vss
14	VO	18	Vo
15	VLC	19	Vlcd
16	GND	20	FGND
17	+5	7	INH

MPI SED1335-32K		G324E Display	
1	XD0	8	D0
2	XD1	9	D1
3	XD2	10	D2
4	XD3	11	D3
5	XSCL (CL2)	14	CL2
6	XECL	-	NC
7	LP (CL1)	15	CL1
8	WF (M)	13	M
9	YD (FLM) (DIN)	12	FLM
10	YSCL	-	NC
11	YDIS	-	NC
12	+5	16	Vdd
13	GND	17	Vss
14	VO	18	Vo
15	VLC	19	Vlcd
16	GND	20	FGND
17	+5	7	INH

MPI SED1335-32K		G321E Display	
1	XD0	6	D0
2	XD1	7	D1
3	XD2	8	D2
4	XD3	9	D3
5	XSCL (CL2)	4	CL2
6	XECL	-	NC
7	LP (CL1)	3	CL1
8	WF (M)	2	M
9	YD (FLM) (DIN)	1	FLM
10	YSCL	-	NC
11	YDIS	-	NC
12	+5	10	Vdd
13	GND	11	Vss
14	VO	13	Vo
15	VLC	12	Vlcd
16	GND	14	FGND
17	+5	5	INH

MPI SED1335-32K		G648D Display	
1	XD0	8	D0
2	XD1	7	D1
3	XD2	2	D2
4	XD3	1	D3
5	XSCL (CL2)	6	CL2
6	XECL	-	NC
7	LP (CL1)	5	CL1
8	WF (M)	4	M
9	YD (FLM) (DIN)	3	FLM
10	YSCL	-	NC
11	YDIS	-	NC
12	+5	9	Vdd
13	GND	10	Vss
14	VO	12	Vo
15	VLC	11	Vlcd
16	GND	14	FGND
17	+5	13	INH

MPI SED1335-32K		G649D Display	
1	XD0	9	D0
2	XD1	10	D1
3	XD2	11	D2
4	XD3	12	D3
5	XSCL (CL2)	3	CL2
6	XECL	-	NC
7	LP (CL1)	6	CL1
8	WF (M)	8	M
9	YD (FLM) (DIN)	5	FLM
10	YSCL	-	NC
11	YDIS	-	NC
12	+5	1	Vdd
13	GND	7,15	Vss
14	VO	14	Vo
15	VLC	13	Vlcd
16	GND	2	FGND
17	+5	4	INH

EPSON Displays

MPI SED1335-32K		EG7501D Display	
1	XD0	11	D0
2	XD1	12	D1
3	XD2	13	D2
4	XD3	14	D3
5	XSCL (CL2)	10	XSCL
6	XECL	-	NC
7	LP (CL1)	6	LP
8	WF (M)	-	NC
9	YD (FLM) (DIN)	9	DIN
10	YSCL	-	NC
11	YDIS	-	NC
12	+5	1	Vdd
13	GND	2	Vss
14	VO	3	Vo
15	VLC	4	Vlcd
16	GND	-	NC
17	+5	-	NC