

LM81 System Hardware Monitor Design Kit Manual

1.0 General Description

The LM81 Design Kit allows quick connection and evaluation of the LM81 System Hardware Monitor integrated circuit. The Demo Board connects to and derives all of its power from the parallel printer port of a PC. The software was written using Visual Basic 3.0 and is compatible with Windows version 3.1 or newer.

With the LM81 demo board and software you can:

- Configure the LM81 register contents
- View the LM81 register contents
- Save LM81 temperature and voltage measurements in a file
- Quickly gain knowledge of the LM81 register operation

2.0 Installation

The LM81 Design Kit comprises of the LM81 Demo Board, a 3.5" diskette, and this instruction manual.

- Insert the floppy into the 3.5" floppy drive of the PC. Install the software in Windows by selecting Run and type in the name of the drive followed by "setup". For example type a:\setup.
- In setup select the drive you would like the software installed on. Disk space required for the software is 1Meg.
- Make sure the jumpers are placed on the demo board as shown in FIGURE 1.
- Run the software. Select the parallel printer port address and the I2C address of the demo board default 00.
- Connect the board to the parallel printer port of the PC directly or through a cable not longer than 6 feet.
- Press the ON button on the screen. The software will then report the state of all the registers in the LM81.

Figure 1 LM81 Demo Board photo



3.0 LM81 Demo Board Schematic

The schematic for the LM81 demo board is shown in FIGURE 2. The Chassis Intrusion circuitry has not been included on the demo board. The Chassis Intrusion circuitry includes:

Table 1 Chassis Intrusion Circuitry

Reference	Part
D8, D9	1N914
R9	470 k
R10	10 k
R12	5.1 M
R13	1 M
Q1	BSS84
PD1	L14C2QT
BT1	Panasonic BR2330-1HE

JP1 a four pin header is provided for access to the I2C bus and the power supply (V+ and GND) lines and is described in TABLE 2.

Table 2 JP1 Description

Pin Number	Description
1	V+
2	SDA
3	SCL
4	GND

This header may be used for daisy chaining multiple boards together by connecting the SDA, SCL and GND pins of the different boards together.

The two pin header JP2 allows the disconnection of the LP2950CZ-3.3 from the parallel printer port connection. The board is shipped with a jumper in place, allowing the board to derive all of its power from the parallel printer port. When daisy chaining boards it may be necessary to supply an external power source connected to pin 1 of JP2 to drive the LP2950CZ-3.3. The printer port circuitry that drives the input of the LP2950CZ-3.3 is different from PC to PC and so is its drive capability.

Table 3 JP2 Power Supply Header Description

Pin Number	Description
1	Input of the LP2950CZ-3.3
2	Parallel printer port rectifier circuitry

The 20 pin header JP3 allows access to the analog inputs, fan inputs, DAC output and Chassis Intrusion inputs of the LM81. The board comes shipped with shorting bars installed across the following pins:

- pins 5 and 6
- pins 11 and 12
- pins 13 and 14
- pins 15 and 16

as shown in FIGURE 1.

Table 4 JP3 Description

Pin Number	Description
1	GND
2	Pin 19 of LM81, Vccp1
3	GND
4	Pin 18 of LM81, +2.5Vin
5	Output of LP2950CZ-3.3, Vcc
6	Pin 17 of LM81, +3.3Vin
7	GND
8	Pin 16 of LM81, +5.0Vin
9	GND
10	Pin 15 of LM81, +12Vin
11	R7 and C2
12	Pin 14 of LM81, Vccp2
13	Pin 4 of 74HCV14, used as a dummy fan oscillator
14	Pin 5 of LM81, FAN1 input
15	Pin 2 of 74HCV14, used as a dummy fan oscillator
16	Pin 6 of LM81, FAN2 input
17	No connection
18	Pin 11 of LM81, DACOut/NTESTIN
19	R12, R13 and Pin 3 of BSS84, Chassis Intrusion circuitry output
20	Pin 7 of LM81, CI (Chassis Intrusion) input

The 20 pin header JP4 allows access to VID0-VID4, RESET#, INT# and OS# input and outputs pins of the LM81. The board comes shipped with shorting bars installed across the following pins:

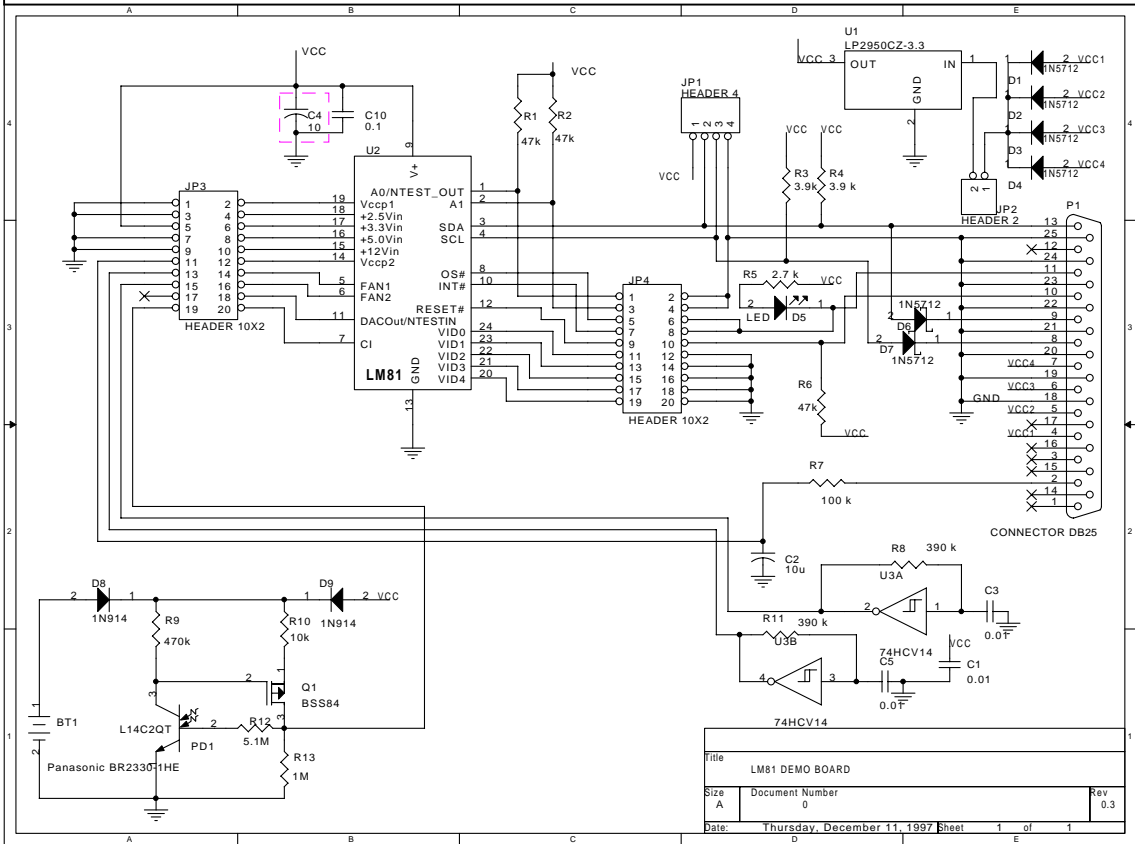
- pins 1 and 2
- pins 3 and 4
- pins 5 and 6
- pins 7 and 8
- pins 9 and 10

as shown in FIGURE 1.

Table 5 JP4 Description

Pin Number	Description
1	Pin 1 of LM81, A0/NTEST_OUT
2	GND
3	Pin 2 of LM81, A1
4	GND
5	Pin 8 of LM81, T_CRIT_A# (was labeled OS#)
6	LED D5 cathode and Pin 11 of Connector DB25 (parallel printer port)
7	Pin 10 of LM81, INT#
8	LED D5 cathode and Pin 11 of Connector DB25 (parallel printer port)
9	Pin 12 of LM81, RESET#
10	R6 and Pin 10 of Connector DB25 (parallel printer port)
11	Pin 24 of LM81, VID0
12	GND
13	Pin 23 of LM81, VID1
14	GND
15	Pin 22 of LM81, VID2
16	GND
17	Pin 21 of LM81, VID3
18	GND
19	Pin 20 of LM81,
20	GND

Figure 2 LM81 Demo Board Schematic



4.0 LM81 Demo Board Bill of Materials

Item	Quantity	Reference	Part
1	1	BT1	Panasonic BR2330-1HE (NOT INCLUDED)
2	1	C10	0.1, 25v, 0805, +80%, -20%
3	1	C2,C4	10u, 16V, 6032, 20%
4	3	C1,C3,C5	0.01, 25V, 0805, 5%
5	6	D1,D2,D3,D4,D6,D7	1N5712
6	1	D5	RED LED, HLMP-K150
7	2	D8,D9	1N914 (NOT INCLUDED)
8	1	JP1	HEADER 4X1
9	1	JP2	HEADER 2X1
10	2	JP4,JP3	HEADER 10X2
11	1	PD1	L14C2QT (NOT INCLUDED)
12	1	P1	CONNECTOR DB25, MALE RIGHT ANGLE
13	1	Q1	BSS84 (NOT INCLUDED)
14	3	R1,R2,R6	47k, 1/8 W, TH, 5%
15	1	R3	3.9k, 1/8 W, TH, 5%
16	1	R4	3.9 k, 1/8 W, TH, 5%
17	1	R5	2.7 k, 1/8 W, TH, 5%
18	1	R7	100 k, 1/8 W, TH, 5%
19	2	R8,R11	390 k, 1/8 W, TH, 5%
20	1	R9	470k (NOT INCLUDED)
21	1	R10	10k (NOT INCLUDED)
22	1	R12	5.1M (NOT INCLUDED)
23	1	R13	1M (NOT INCLUDED)
24	1	U1	LP2950CZ-3.3
25	1	U2	LM81CIMT
26	1	U3	74HC14M
27	10	JUMPERS	