TH-1-SHT board

Technical Manual

Date: 14 September, 2009

Document Revision: 1.01

BiPOM Electronics

WARRANTY:

1. Overview

TH-1-SHT board is a general purpose, low-cost peripheral board for the MINI-MAX and PRO-MAX series of micro-controller systems.
The board allows to use a SHT75 humidity sensor with the micro-controller systems.

TH-1-SHT board is powered from 5 Volts DC of external power source.

Software examples for TH-1-SHT board are available from http://www.bipom.com/

2. Specifications

TH-1-SHT board has the following configuration:

- SHT75 humidity sensor provides ±1.8% RH accuracy from 0 to 100% RH

- 20-pin Expansion connector for data communication with a micro-controller board and power supply.

- Four jumper blocks to select the communication lines with a micro-controller board.

- Single operating voltage: 5 VDC, 3 mA maximum supply consumption.

- Dimensions are 2.4 x 1.2 inches (5.88 X 2.94 centimeters).

- Mounting holes of 0.138 inches (3.5 millimeters) are on four corners.

- 0° - 70° C operating, -40° - +85° C storage temperature range.

3. Functional Blocks
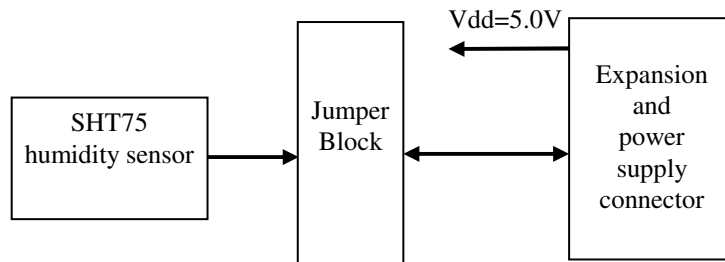
Figure 1 shows the block diagram of the TH-1-SHT board

Figure 1

<u>**Expansion connector**</u>

5 data communication pins and 5 Volt power supply pins are available on 20-pin connector X3 for interfacing to a host micro-controller board. TH-1-SHT board can be connected to a host board either as a piggyback daughter-board using standoffs or can be placed away from the micro-controller board using a 20-wire ribbon cable (Part #: EXPCABLE-6).
Table 1 shows the pin assignments for the X3 connector.

Connector X3

Signal	Pin	Pin	Signal
NC	20	19	NC
PSCL3 /I2C SCL/	**18**	17	NC
NC	**16**	15	NC
DSDA4 /I2C SDA/	**14**	**13**	**PSCL4 /I2C SCL/**
PSCL0 /I2C SCL/	**12**	**11**	**DSDA0 /I2C SDA/**
PSCL1 /I2C SCL/	**10**	**9**	**DSDA1 /I2C SDA/**
PSCL2 /I2C SCL/	**8**	**7**	**DSDA2 /I2C SDA/**
NC	6	**5**	**DSDA3 /I2C SDA/**
NC	4	**3**	**GND**
VCC (+5V) input	**2**	1	NC

Table 1

<u>**Jumpers**</u>

Table 2 shows the jumper assignments for connections of the humidity sensor I2C data.
WARNINGS! Do not install more than one jumper to X2!

X2 jumper assignments

Jumper	Signal	If removed	Operations if installed
X2:1-2	DSDA0 /X3:pin-11/	Unconnected	Connected to I2C data (Data) of the humidity sensor
X2:3-4	DSDA1 /X3:pin-9/	Unconnected	Connected to I2C data (Data) of the humidity sensor
X2:5-6	DSDA2 /X3:pin-7/	Unconnected	Connected to I2C data (Data) of the humidity sensor
X2:7-8	DSDA3 /X3:pin-5/	Unconnected	Connected to I2C data (Data) of the humidity sensor
X2:9-10	DSDA4 /X3:pin-14/	Unconnected	Connected to I2C data (Data) of the humidity sensor

Table 2

Table 3 shows the jumper assignments for connections of the humidity sensor I2C clock.
WARNINGS! Do not install more than one jumper to X5!

Jumper	Signal	If removed	Operations if installed
X5:1-2	PSCL0 /X3:pin-12/	Unconnected	Connected to I2C data (SCK) of the humidity sensor
X5:3-4	PSCL1 /X3:pin-10/	Unconnected	Connected to I2C data (SCK) of the humidity sensor
X5:5-6	PSCL2 /X3:pin-8/	Unconnected	Connected to I2C data (SCK) of the humidity sensor
X5:7-8	PSCL3 /X3:pin-18/	Unconnected	Connected to I2C data (SCK) of the humidity sensor
X5:9-10	PSCL4 /X3:pin-13/	Unconnected	Connected to I2C data (SCK) of the humidity sensor

Table 3

Power Supply

TH-1-SHT board can be powered from a 5 Volts DC source through 20-pin X3 connector.
The board power supply consumption is 3 mA maximum.

WARNING: Correct polarity should be observed when applying external DC supply to the connector.

4. Application Notes

TH-1-SHT peripheral board can be stacked on top of Micro-Computer board using stand-offs or connected in a chain configuration using flat ribbon cable. Figure 2 shows how TH-1-SHT board can be connected to a Micro-Computer board in a stacked fashion. Figure 3 shows the chain connection.
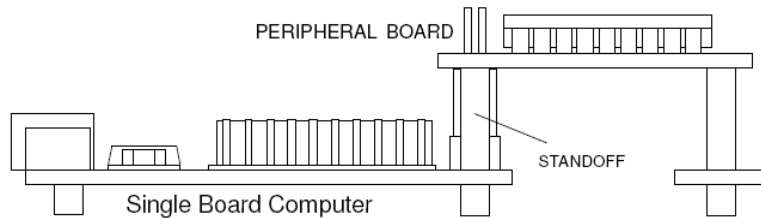

Figure 2

Figure 3

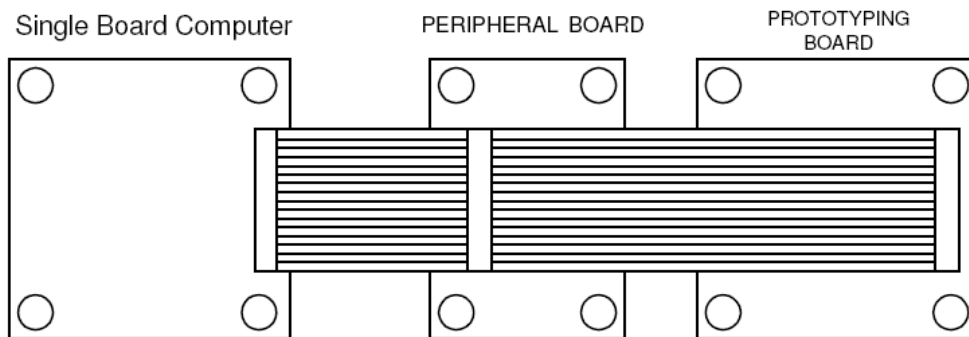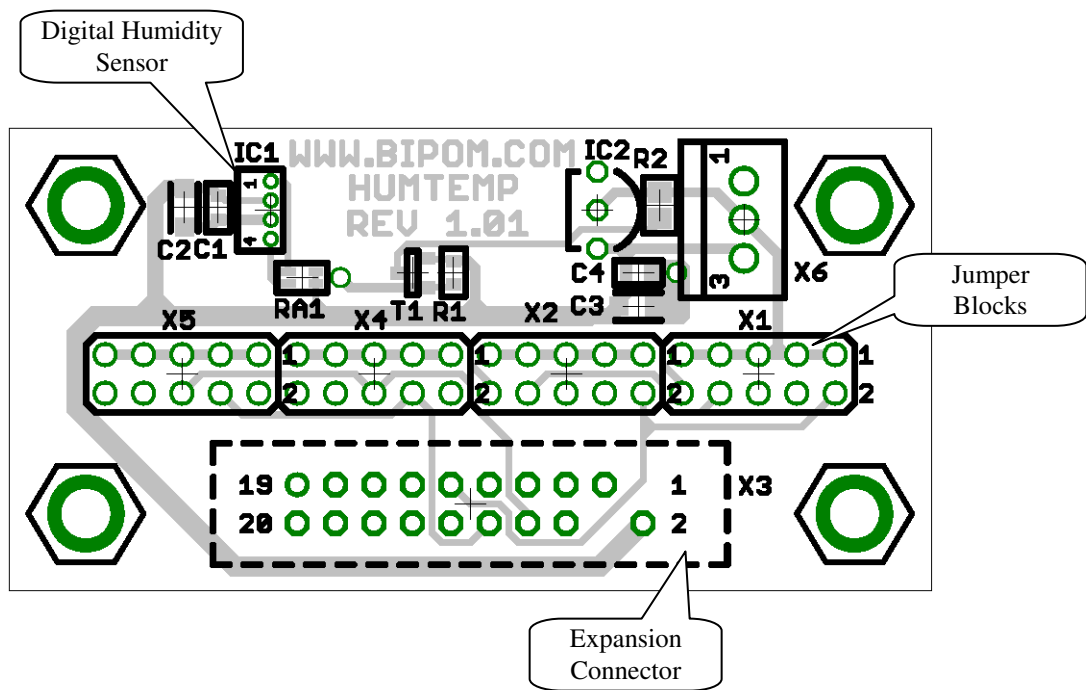More details concernig BiPOM Peripheral boards are available from the link below:
http://www.bipom.com/periph_boards.php

8051/52, BASCOM51 and SDCC (Small Device C Compiler) development systems provide examples for TH-1-SHT peripheral board.
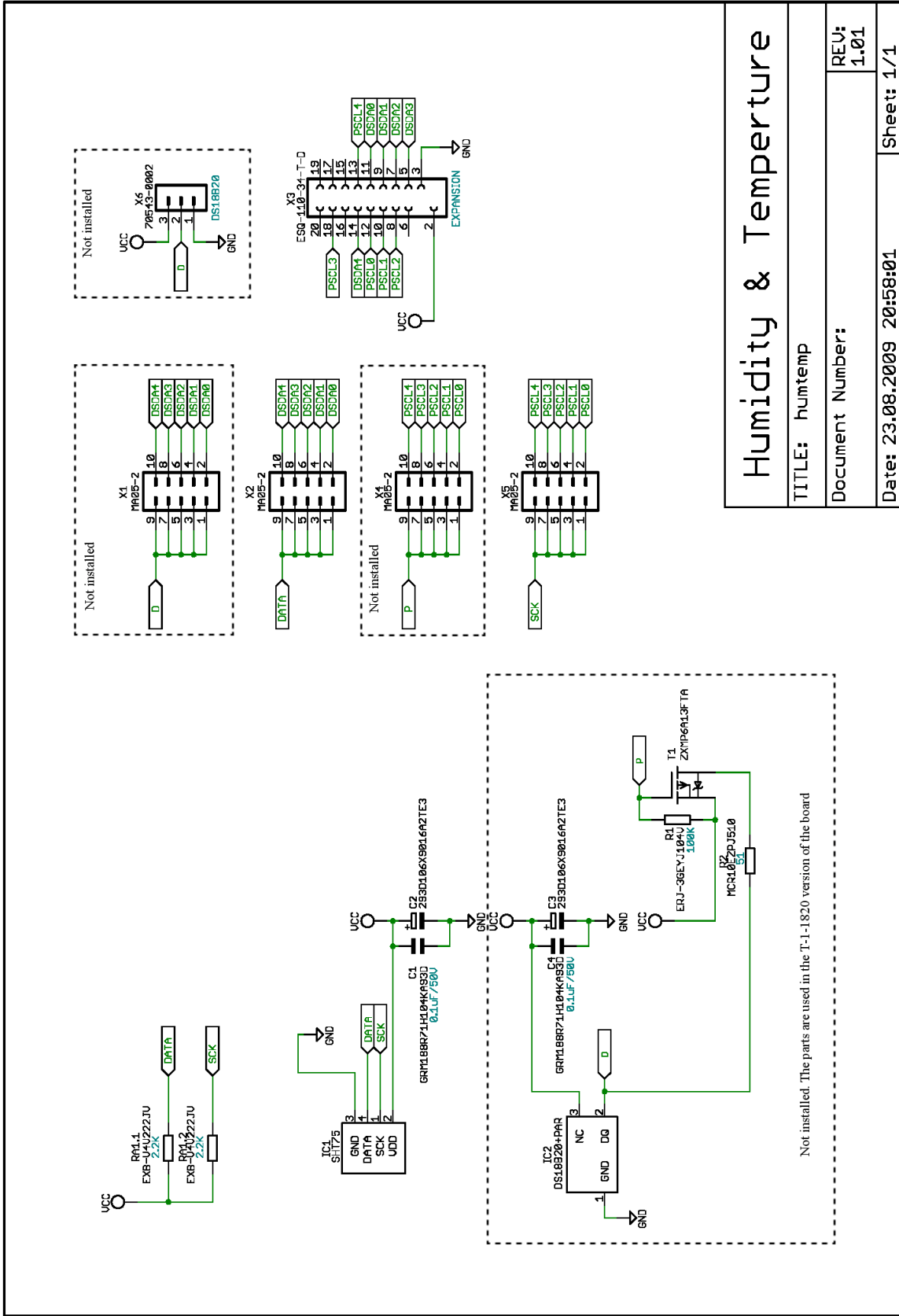
Please download any of these development systems from:
http://www.bipom.com/software.php

5. Board Layout

Layout of the TH-1-SHT board is shown below:

6. Schematics

Humidity & Temperture

TITLE: humtemp

Document Number:

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Date: 23.08.2009 20:58:01

Not installed

X6
70543-0002
DS18B20

VCC
GND

X3
ESQ-110-34-T-D
PSCL4 DSDA0 DSDM1 DSDA2 DSDA3
19 17 15 13 11 9 7 5 3
18 16 14 12 10 8 6 4 2
PSCL3 DSDA1 PSCL0 PSCL1 PSCL2
EXPANSION
VCC
GND

X1
MA05-2
DSDA4 DSDA3 DSDA2 DSDA1 DSDA0
10 8 6 4 2
9 7 5 3 1
Not installed
D

X2
MA05-2
DSDA4 DSDA3 DSDA2 DSDA1 DSDA0
10 8 6 4 2
9 7 5 3 1
DATA

X4
MA05-2
PSCL4 PSCL3 PSCL2 PSCL1 PSCL0
10 8 6 4 2
9 7 5 3 1
Not installed
P

X5
MA05-2
PSCL3 PSCL2 PSCL1 PSCL0
10 8 6 4 2
9 7 5 3 1
SCK

T1
ZXMP6A13F-TA
P

R1
ERJ-3GEYJ104V
100K

R2
MCR10EZPJ510
51

C2
293D106X9016A2TE3
VCC
GND
VCC
GND

C3
293D106X9016A2TE3
VCC
GND

C1
GRM188R71H104KA93D
0.1uF/50V
VCC

C4
GRM188R71H104KA93D
0.1uF/50V

GND
D

RM1.1
EXB-V4V222JV
2.2K
DATA

RM1.2
EXB-V4V222JV
2.2K
SCK

VCC

IC1
SHT75
3 GND
4 DATA
1 SCK
2 VDD
DATA
SCK
GND

IC2
DS18B20+PAR
3 NC DQ 2
1 GND
GND

Not installed. The parts are used in the T-1-1820 version of the board.

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