BSIO
Peripheral Board

Technical Manual

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BiPOM Electronics

WARRANTY:

1. Overview

BSIO peripheral board is part of MicroTRAK training kit for use with BASIC Stamp Carrier board (BSCB-1 or BSCB-2) and a BS2xx BASIC Stamp Module.

MicroTRAK is the ultimate training kit and project development platform with microcontrollers. Whether developing a new project with or learning about microcontrollers, you will find MicroTRAK a highly versatile carrier board with support for microcontroller systems with 8051, 6811, 6808, PIC, Basic Stamp, Basic Tiger and others.

List of micro-controller boards and peripheral boards, software examples for MicroTRAK training kit are available from

http://www.bipom.com

BSIO board allows access to any signal of any port of a BASIC Stamp micro-controller on the MicroTRAK development platform with any BSCB and also access to signals of PIC16F818 on BSCB-2. BSIO board has 24 switches to force BASIC Stamp ports to a particular value and 24 LED's to indicate the port statuses.

BSIO board is powered from a 5 Volt DC external stabilized power source through the 36-pin input/output connector.

2. Specifications

BSIO peripheral board has the following configuration:

- 36-pin pluggable module connector

- Two 32-pin expansion connectors

- 24 channel DIP switches to force ports to a particular state (low or high)

- 24 LED's with 74ALS05 hex inverters as input buffers

- Audio Amplifier (LM386)

- 10K Potentiometer with RC circuit

- 1-wire interface 3-pin connector

- Single operating stabilized voltage 5VDC at 200mA maximum current

- Dimensions are 5.95 X 1.975 inches (15.1 X 5.0 centimeters).

- Mounting holes of 0.15 inches (3.8 millimeters) are on four corners.

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

3. Functional Blocks

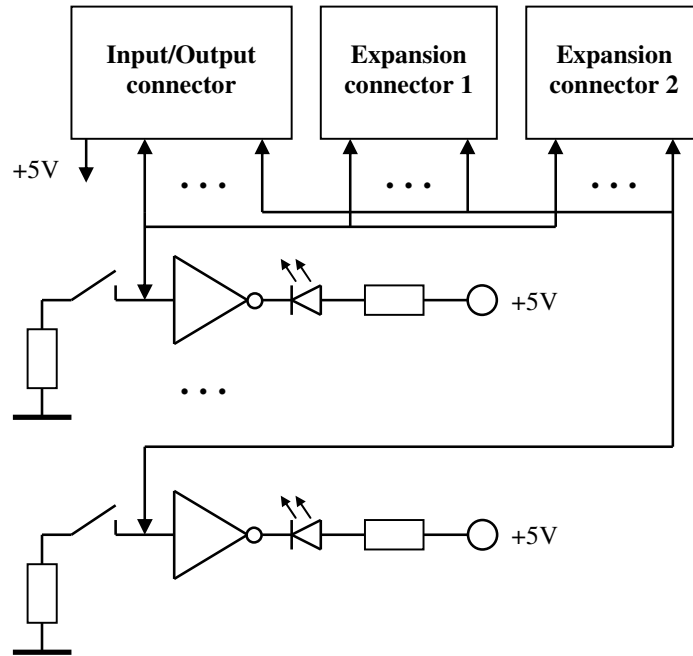Figure 1 shows the block diagram of the BSIO peripheral board

Figure 1

Pluggable Module connector

The 32 input/output (I/O) lines and 5 Volt power supply pins are available on the 36-pin connector X1 for interfacing to BSCB board.

Table 1 shows the pin assignments for the connector.

Connector X1

Signal	Pin		Signal	Pin		Signal	Pin		Signal	Pin
GND	1		P8	10		P0	19		N2	28
VCC	2		RA7	11		P1	20		N3	29
P15	3		RA6	12		P2	21		N4	30
P14	4		RA5	13		P3	22		N5	31
P13	5		RB0	14		P4	23		N6	32
P12	6		RB3	15		P5	24		N7	33
P11	7		RB5	16		P6	25		N8	34
P10	8		RB6	17		P7	26		VCC	35
P9	9		RB7	18		N1	27		GND	36

Table 1

Expansion connectors

The 32 input/output (I/O) lines are available on the 32-pin expansion connector X2 and X3 for interfacing to a microcontroller-board. Table 2 shows the pin assignments for the connector.

Connectors X2, X3

Signal	Pin		Signal	Pin		Signal	Pin		Signal	Pin
P15	1		RA7	9		P0	17		N1	25
P14	2		RA6	10		P1	18		N2	26
P13	3		RA5	11		P2	19		N3	27
P12	4		RB0	12		P3	20		N4	28
P11	5		RB3	13		P4	21		N5	29
P10	6		RB5	14		P5	22		N6	30
P9	7		RB6	15		P6	23		N7	31
P8	8		RB7	16		P7	24		N8	32

Table 2

Power Supply

External power supply should be regulated 5 Volts DC at 200mA. Correct polarity should be observed when applying external DC supply to the connector.

4. Application Notes

BSCB-1 and BSCB-2 are compatible with the following BASIC Stamp Modules:

BS2-IC
BS2e-IC
BS2sx-IC
BS2p-IC
BS2pe-IC

Audio Amplifier (LM386) on the BSIO board can be used with "FREQOUT" command. A small loudspeaker (8 ohms, 0.5 Watts) can be connected to X4 output of BSIO to experiment with sound and frequency generation capabilities of the BASIC Stamp.

RC-circuit with 10K Potentiometer on connector J1 demonstrates the "RCTIME" command of the BASIC Stamp.

BSIO board has the special 2-pin connector for use with 1-wire Dallas Semiconductor devices using "OWIN" and "OWOUT" commands of the BASIC Stamp.
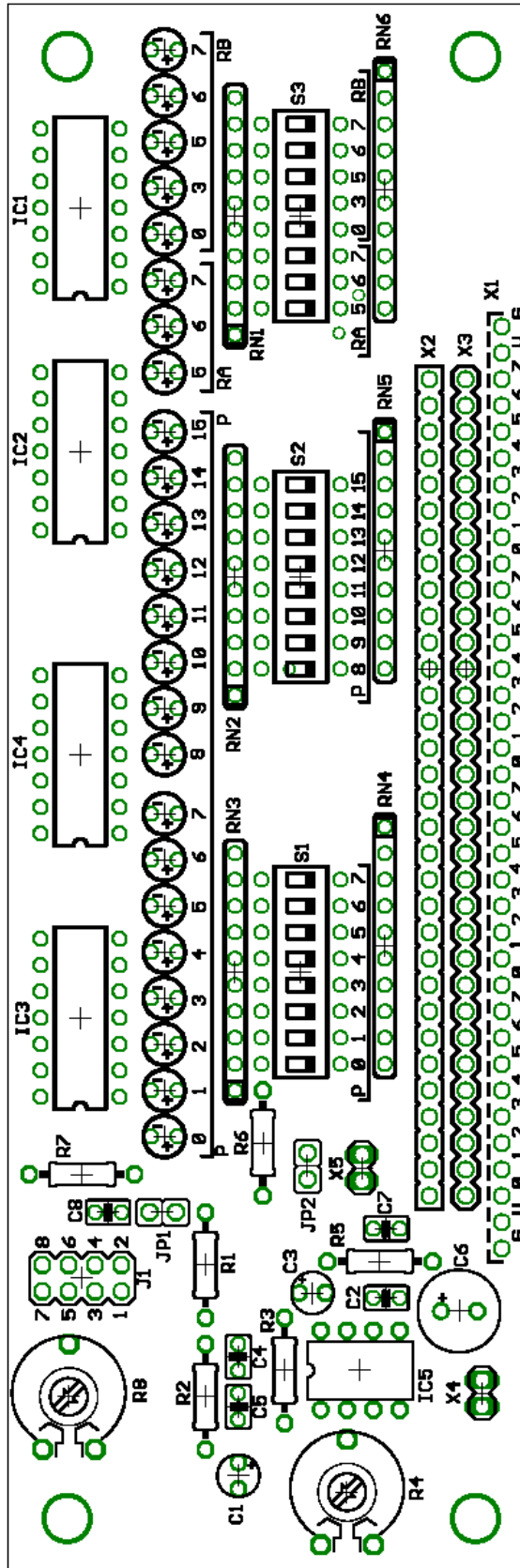
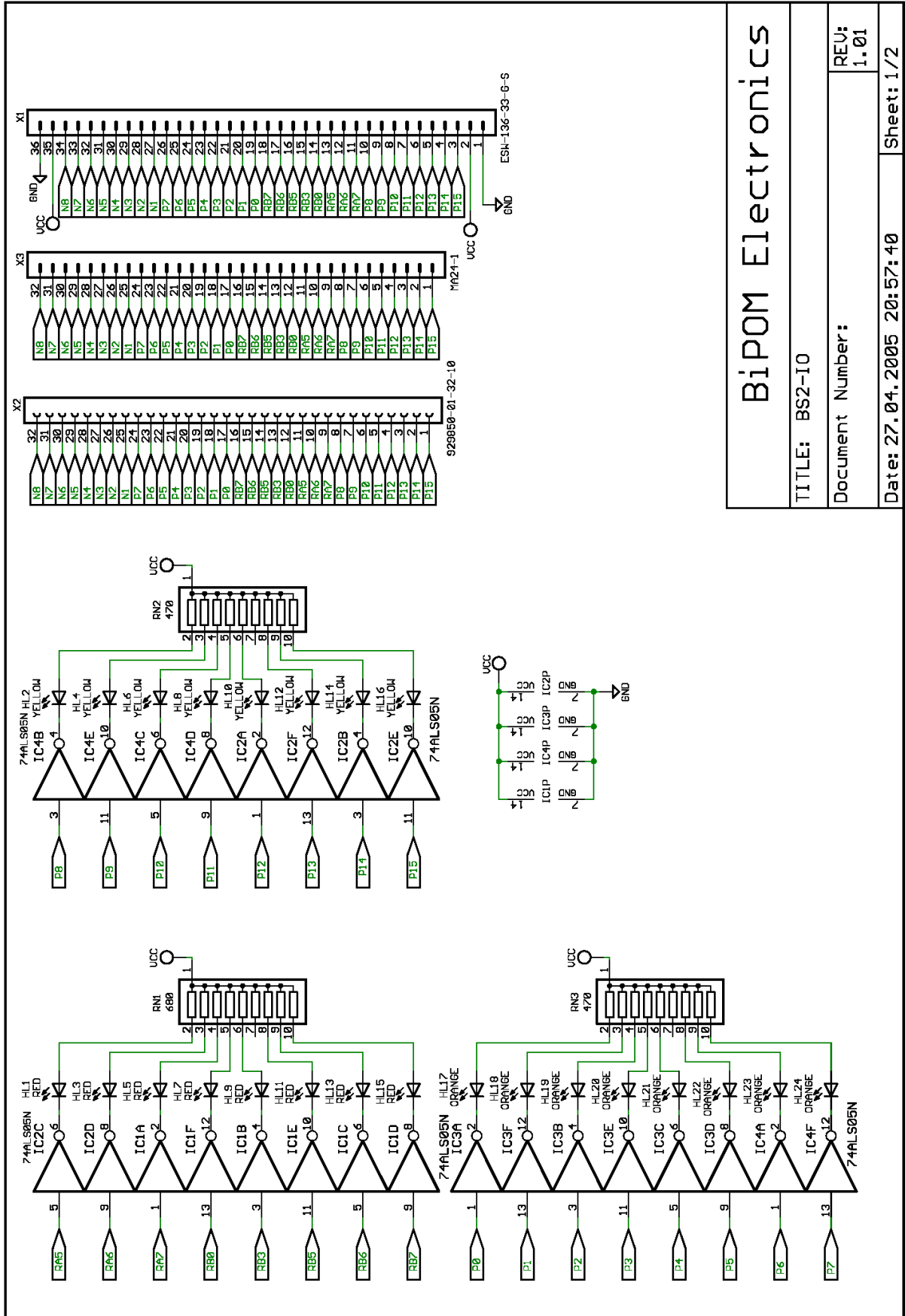For detailed information on BS2 Modules, refer to Parallax

http://www.parallaxinc.com

Various BASIC Stamp Example programs can be downloaded from

http://www.bipom.com/bscbsoft.shtm
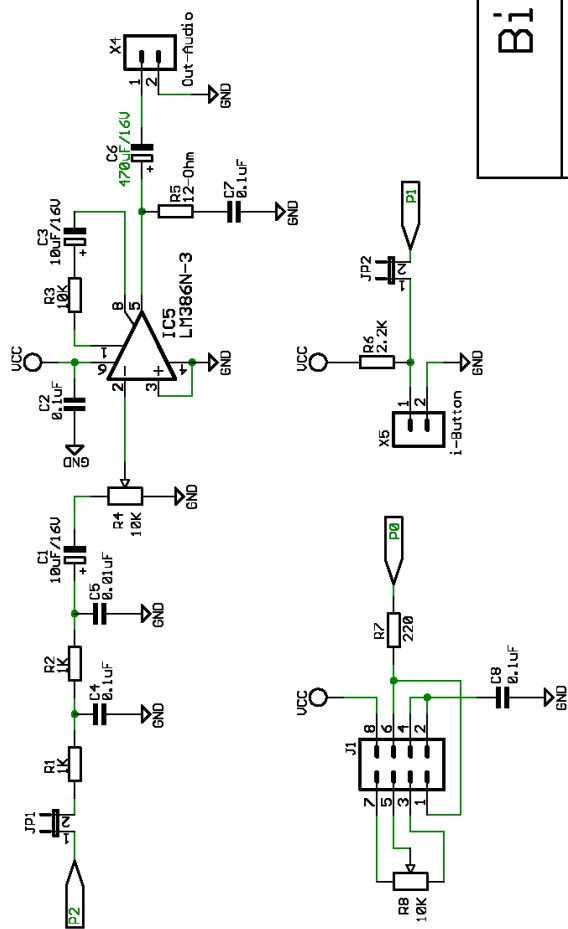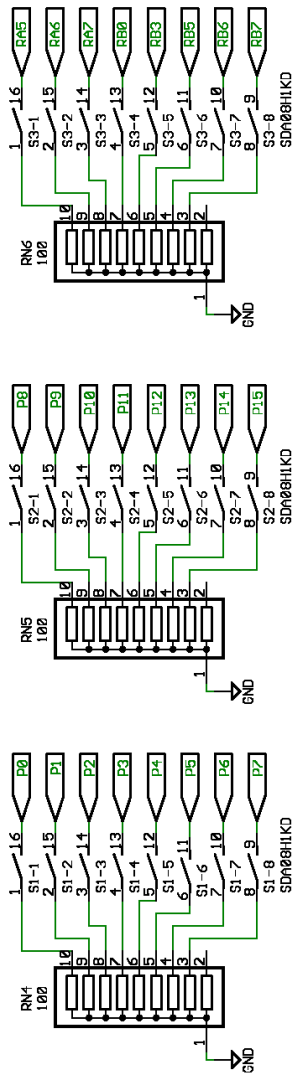
5. Board Layout

6. Schematics

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RN6 100
RN5 100
RN4 100

SDA08H1K0
SDA08H1K0
SDA08H1K0

S3-1 S3-2 S3-3 S3-4 S3-5 S3-6 S3-7 S3-8
S2-1 S2-2 S2-3 S2-4 S2-5 S2-6 S2-7 S2-8
S1-1 S1-2 S1-3 S1-4 S1-5 S1-6 S1-7 S1-8

RA5 RA6 RA7 RB0 RB3 RB5 RB6 RB7
P8 P9 P10 P11 P12 P13 P14 P15
P0 P1 P2 P3 P4 P5 P6 P7

GND

X4
Out-Audio
GND

C6 470uF/16V
C3 10uF/16V
R5 12-Ohm
C7 0.1uF
R3 10K
IC5 LM386N-3
VCC
C2 0.1uF
GND
GND

P1
JP2
R6 2.2K
VCC
X5
i-Button
GND

R4 10K
GND

C1 10uF/16V
C5 0.01uF
GND
R2 1K
C4 0.1uF
GND
R1 1K
JP1
P2

P0
R7 220
VCC
J1
C8 0.1uF
GND
R8 10K