

MicroTRAK Carrier Board

Technical Manual

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WARRANTY:

BiPOM Electronics warrants MicroTRAK for a period of 1 year. If the board becomes defective during this period, BiPOM will at its option, replace or repair the board. This warranty is voided if the product is subjected to physical abuse or operated outside stated electrical limits. BiPOM Electronics will not be responsible for damage to any external devices connected to MicroTRAK. BiPOM Electronics disclaims all warranties express or implied warranties of merchantability and fitness for a particular purpose. In no event shall BiPOM Electronics be liable for any indirect, special, incidental or consequential damages in connection with or arising from the use of this product. BiPOM Electronics' liability is limited to the purchase price of this product.

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1. Overview

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.

MicroTRAK supports all BiPOM Electronics peripheral boards and includes practical examples for C, Basic and Assembly Language Programming, Keypad and LCD interfacing, I2C bus, Serial port programming, Motor control, Analog to Digital Conversion and many other fun and instructive projects.

MicroTrak serves not only as a training kit but also as a rapid project development tool. Pick a microcontroller board for the microcontroller family that you are familiar with, download software development tools from our website, plug the peripheral boards and/or display/keypad for your project to the MicroTRAK carrier board and you are much closer to a tangible proof-of-concept for your project.

MicroTRAK/51-C2 Complete includes MicroTRAK Carrier Board, MINI-MAX/51-C2 Microcontroller Board, TB-1 Training Board, PROTO-1 Prototyping Board, 8051 I/O Module, LCD242 LCD, KP1-4X4 Keypad, Cables, Adapter, Training Manuals, Labbook, Demo versions of BASCOM51 BASIC Compiler, Micro C Compiler, Assembler, Micro-IDE, over 70 example projects, full version of SDCC C Compiler (open-source), Serial downloader.

MicroTRAK carrier board should be powered from a 6 to 12 Volt (DC) external power source

List of micro-controller boards and peripheral boards, software examples for MicroTRAK training kit are available from <http://www.bipom.com/>

2. Specifications

MicroTRAK carrier board has the following configuration:

- Sockets for a microcontroller board
- Sockets for dual peripheral boards
- Keypad interface
- Industry-standard display interface for alphanumeric LCD and VFD displays.
- Connectors and cables for connection to a standard breadboard
- Expansion port for a microcontroller-specific pluggable module (for example, 8051 I/O Module) with port connectors, port indicator LED's and port control DIP Switches. Configuration of the high speed input via 3 jumpers.
- Single operating unregulated voltage 6 ... 12VDC
- On-board 5 Volt regulator
- Dimensions are 8.8 X 6.7 inches (22.4 X 17.0 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 MicroTRAK carrier board

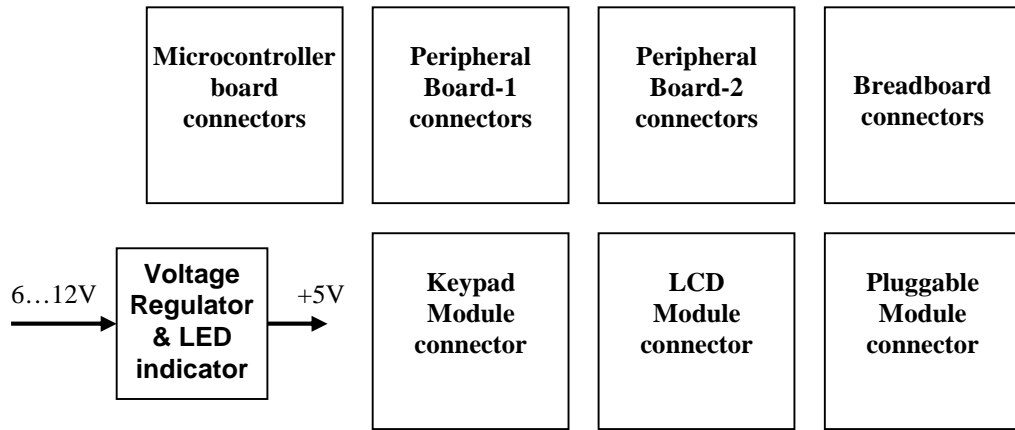


Figure 1

Breadboard connectors

The 32 input/output (I/O) lines and 5 Volt power supply pins are available on the 20-pin connectors (X1, X2) for interfacing to breadboards.

Table 1 shows the pin assignments for the connectors.

Connector X1				Connector X2			
Signal	Pin	Pin	Signal	Signal	Pin	Pin	Signal
P1.0	20	19	P1.1	P3.0	20	19	P3.1
P1.2	18	17	P1.3	P3.2	18	17	P3.3
P1.4	16	15	P1.5	P3.4	16	15	P3.5
P1.6	14	13	P1.7	P3.6	14	13	P3.7
P0.0	12	11	P0.1	P2.0	12	11	P2.1
P0.2	10	9	P0.3	P2.2	10	9	P2.3
P0.4	8	7	P0.5	P2.4	8	7	P2.5
P0.6	6	5	P0.7	P2.6	6	5	P2.7
VDD (+5V)	4	3	GND	VDD (+5V)	4	3	GND
VDD (+5V)	2	1	GND	VDD (+5V)	2	1	GND

Table 1

Pluggable Module connector

The 32 input/output (I/O) lines and 5 Volt power supply pins are available on the 36-pin connector (X3) for interfacing to a microcontroller-specific pluggable module.

Table 2 shows the pin assignments for the connector.

Connector X3

Signal	Pin		Signal	Pin		Signal	Pin		Signal	Pin
P3.1	9		P2.0	18		P0.7	27		GND	36
P3.2	8		P2.1	17		P1.0	26		VDD	35
P3.3	7		P2.2	16		P1.1	25		P0.0	34
P3.4	6		P2.3	15		P1.2	24		P0.1	33
P3.5	5		P2.4	14		P1.3	23		P0.2	32
P3.6	4		P2.5	13		P1.4	22		P0.3	31
P3.7	3		P2.6	12		P1.5	21		P0.4	30
VDD	2		P2.7	11		P1.6	20		P0.5	29
GND	1		P3.0	10		P1.7	19		P0.6	28

Table 2

Microcontroller board connectors

The 16 input/output (I/O) lines and 5 Volt power supply pins are available on the 20-pin expansion connector (X4) for interfacing to a microcontroller-board.

Table 3 shows the pin assignments for the connector.

Connector X4

Signal	Pin	Pin	Signal
P3.0	20	19	P3.1
P3.2	18	17	P3.3
P3.4	16	15	P3.5
P3.6	14	13	P3.7
P1.0	12	11	P1.1
P1.2	10	9	P1.3
P1.4	8	7	P1.5
P1.6	6	5	P1.7
VDD (+5V)	4	3	GND
VDD (+5V)	2	1	GND

Table 3

Connector X5 is used for microcontroller-board interfacing to a keypad module.

Table 4 shows the pin assignments for the connectors.

Connector X5

Signal	Pin	Signal	Pin
P2.4	5	-	10
P2.3	4	GND	9
P2.2	3	P2.7	8
P2.1	2	P2.6	7
P2.0	1	P2.5	6

Table 4

Connector X6 is used for microcontroller-board interfacing to LCD module.

Table 5 shows the pin assignments for the connectors.

Connector X6

Signal	Pin	Pin	Signal
P0.7 (DB7)	14	13	P0.6 (DB6)
P0.5 (DB5)	12	11	P0.4 (DB4)
-	10	9	-
-	8	7	P0.3 (DB0)
P0.2 (E)	6	5	P0.1 (R/W)
P0.0 (RS)	4	3	Vee (Contrast)
Vcc (+5V)	2	1	GND

Table 5

Power Supply

External power supply should be able to provide 6 ... 12 Volts DC.

Current consumption is dependent on the hardware configuration.

WARNING: Correct polarity should be observed when applying external DC supply to power supply jack.

4. Application Notes

Various host micro-controller boards with micro-controllers such as 8051, 6811, 6808, PIC, Basic Stamp, Basic Tiger and others can be used on the MicroTRAK carrier board. More details on supported BiPOM micro-controller boards are available from the link below:

<http://www.bipom.com/boards.shtml>

Peripheral boards can either be stacked on top of MicroTRAK using stand-offs or connected in chain configuration using flat ribbon cable. More details concerning BiPOM Peripheral boards are available from the link below:

http://www.bipom.com/periph_boards.shtml

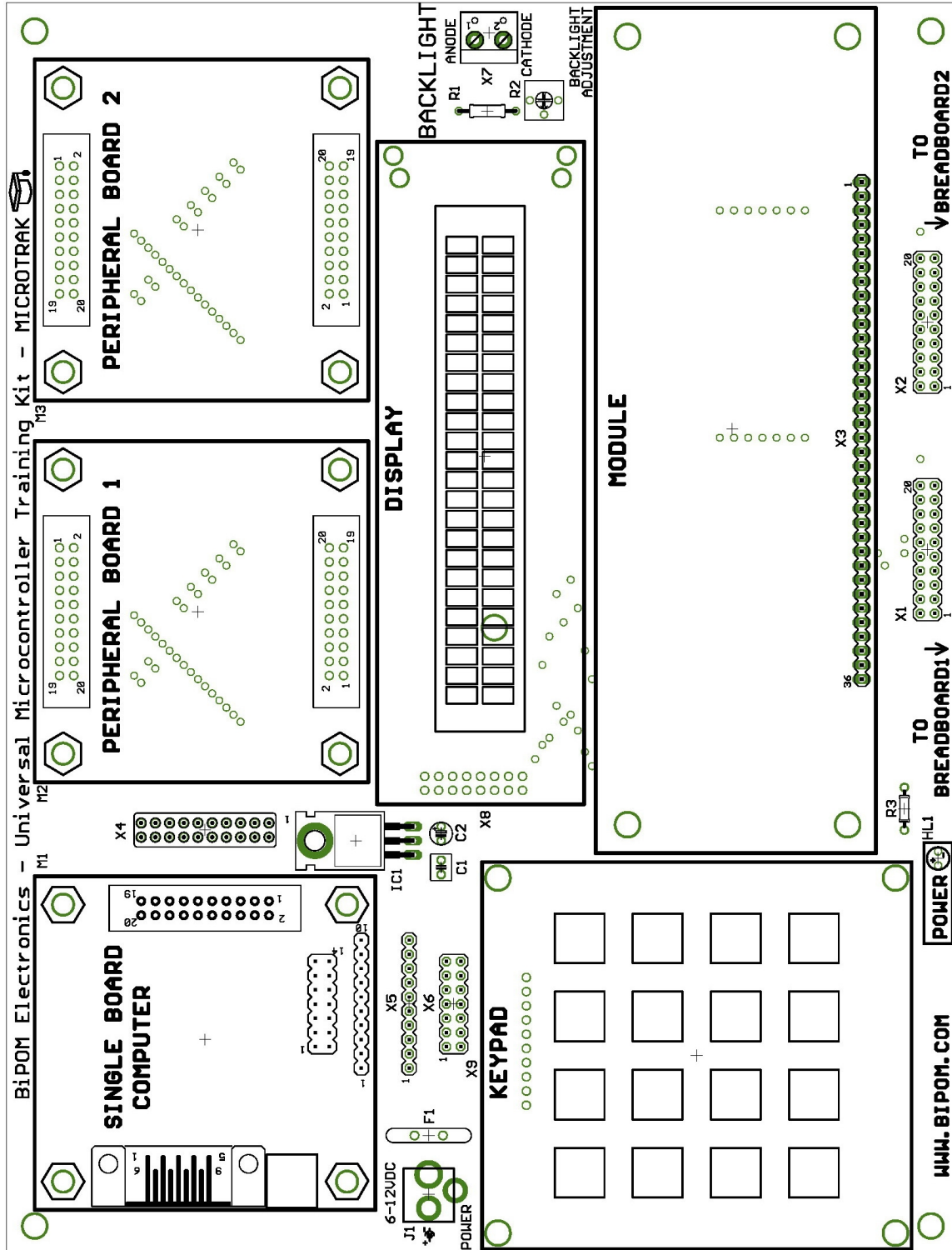
8051/52, BASCOM51 and SDCC (Small Device C Compiler) development systems provide examples for MicroTRAK training kit.

Please download any of these development systems from:

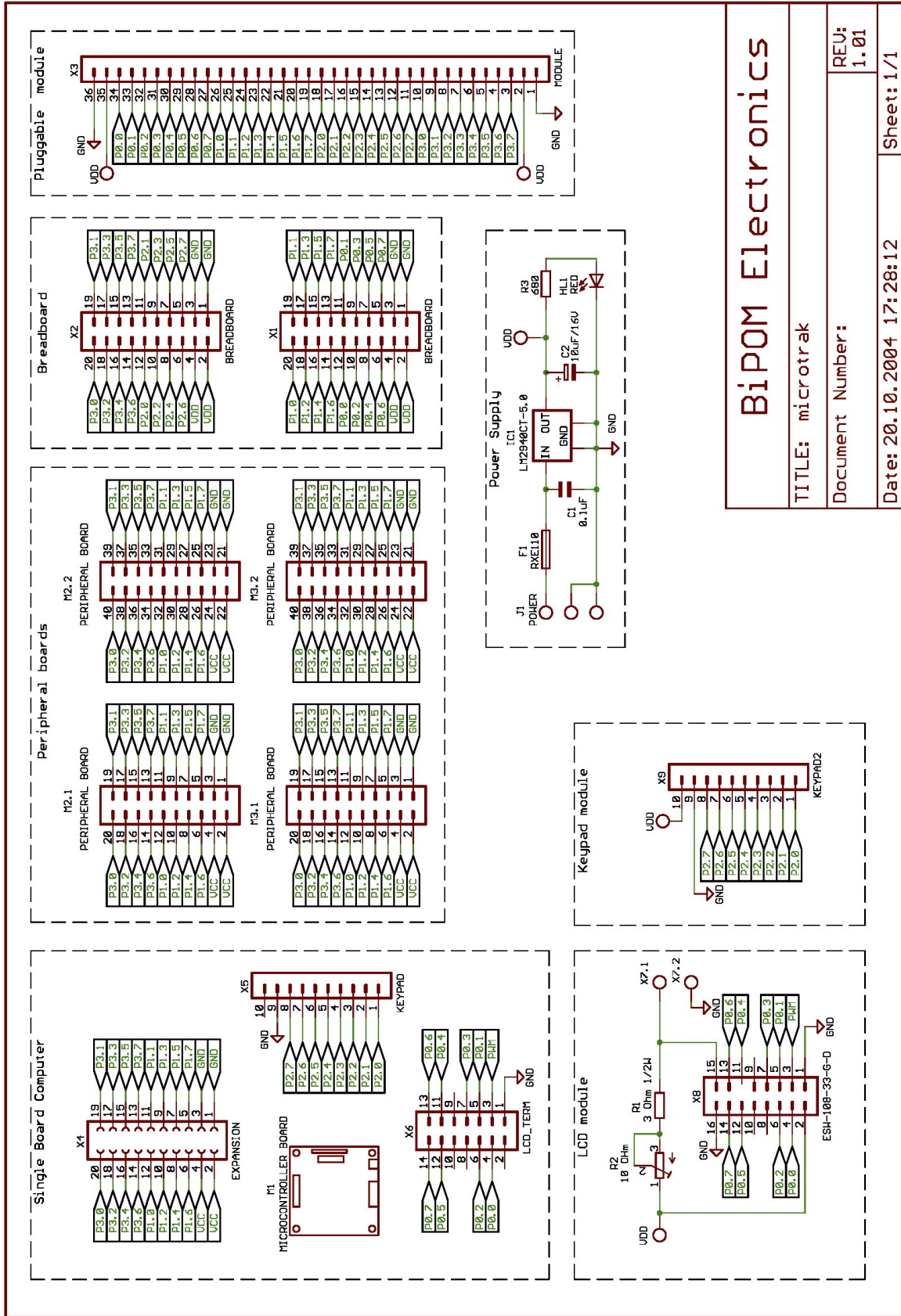
<http://www.bipom.com/software.shtml>

5. Board Layout

Layout of MicroTRAK board is shown below:



6. Schematics



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