MilesTag CORE-compatible circuit board

Chris Malton

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1 About this document

This document gives the parts list and recommended assembly guide for the MilesTag Core-compatible circuit boards. This version of the manual is for the boards labelled "CORE H v1.0" next to the LCD connector.

1.1 Revision history

1.1.1 14th September 2011

- Initial release

1.1.2 22nd September 2012

- Fix consistency error with J10 between docs and circuit board. Documentation is now corrected.
- Add warning about omitting 3.3 ohm resistor.

2 Parts list

The following table lists the parts, along with their reference designators on the board. These reference designators (refdes for short), are printed on the board next to every component.

Refdes	Part name
U1	PIC18F2525 (in socket)
X1	8MHz Resonator
U2	5V LDO voltage regulator
J1	14-way 2-row header
J5, J7, J8	4-way 1-row header
J9	6-way 1-row header
R3, R4, R5	10k 1/4 watt resistor
Q1, Q2, Q3, Q4, Q5	IRFD110 MOSFET
R1, R2, R6	51 ohm resistor
D1	1N4001
R7, R8	1.65k, 1% resistor
R9	4.7k resistor
U101	ISD1790 (in socket)
C101, C102, C103, C104, C105	0.1µF capacitor
C106	2.2uF electrolytic capacitor
R101	60.4k 1% resistor
R102	1M 1% resistor
R103	39k resistor
J2, J3, J4, J10, J11, J12	2-way 1-row header
U102	TDA7052A audio amplifier
R10	22k variable resistor
R11	150 ohm resistor
C107, C108	220uF capacitor

Note: It should be noted that there is no 3.3 ohm resistor in the current path for the IR LED as on the original schematic. It is optional whether you choose to add a 3.3 ohm resistor in series with the IR LED. Note that doing so may prolong the life of your infrared LEDs.

3 Recommended assembly order

It is recommended to install the components in order of height from the board. This means that resistors and suchlike come first, whereas the electrolytic capacitors come last.

1. Install all resistors with the exception of R10, which stands proud from the board, and should be installed last.
2. Install the IC holders for U101, U1, and (optionally) U102.
3. Install the 5 FETs Q1-5
4. Install D1
5. Install U2
6. Install X1

7. Install C101-105
8. Install C106-108
9. Install headers
10. Install R10

4 Connections

In the case of all connectors on the board, the pin with a square footprint is pin 1.

The connections are as follows:

- J10 is the power connector - Pin 1 is 0V, Pin 2 is +7.2V
- J1 is the LCD connector - Identical pinout to that of the original MilesTag board
- J3 is the LCD backlight connector - Pin 1 is +5V, Pin 2 is 0V (via FET)
- J5 is the IR LED and Muzzle Flash LED connector.
  - Pin 1: +7.2V
  - Pin 2: 0V via IR LED FET
  - Pin 3: +7.2V
  - Pin 4: 0V via Muzzle LED FET
- J7 is the serial header
  - Pin 1: +5V
  - Pin 2: 0V
  - Pin 3: RX data (to board)
  - Pin 4: TX data (from board)
- J9 is the main switch header
  - Pins 1 & 2: Trigger
  - Pins 3 & 4: Reload
  - Pins 5 & 6: Mode
- J8 is the sensor header
  - Pin 1: Hit LED
  - Pin 2: 0V
  - Pin 3: +5V

  - Pin 4: Data

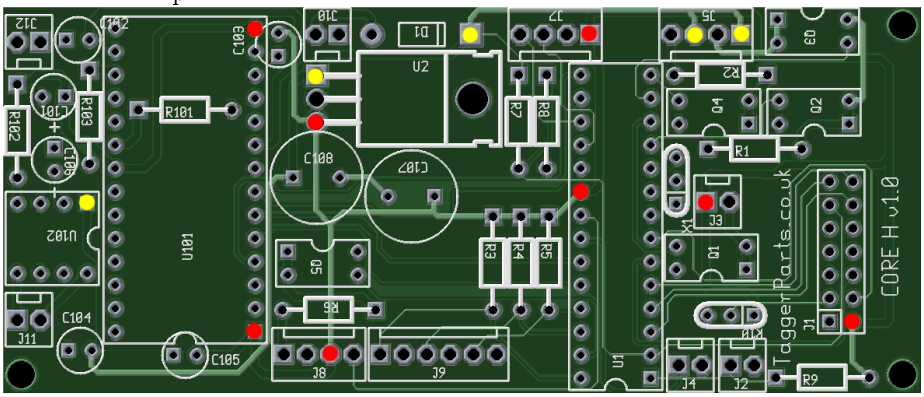
- J4 is the AUX header
- J2 is the Semi/Full auto switch
- J11 is the Audio Output/Speaker connector
- J12 is the Audio input connector

5 Test points

You should visually inspect the board for any shorting tracks/pins before powering up the board.

Before installing U1, and U101, tests should be performed to ensure that the board is operating correctly.

Hook up a 7.2V battery to the battery connector. The following diagram indicates the test points.



Red test points indicated that you should see 5V DC present.
Yellow test points should show 7.2V DC (or thereabouts).