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# Building the UI V1.8 Board

## OVI40 UI V1.7 Documents

**UI V1.7 documents are provided for information only**. Please primarily use the V1.8 documents for building the UI V1.8 board.

- OVI40 UI V1.7 schematics
- UI V1.7 component placement - bottom layer
- UI V1.7 component placement - top layer

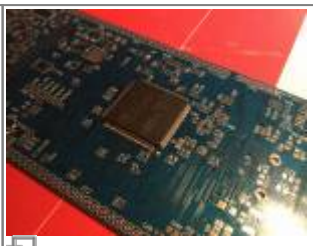
Please note that the component placement docs are searchable pdf documents. During soldering they can be used to quickly find a component's location by entering the component reference (e.g. „R20“) in pdf search. No need to be concerned to use the V1.7 component placement doc for assembling a V1.8 UI board - V1.7 and V1.7 are quite similar in this respect.

## OVI40 UI V1.8 Documents

- OVI40 UI V1.8 schematics
- OVI40 UI V1.8 BOM
- BOM von Francois F4HTX with IC Device Marks added

## OVI40 UI V1.8 Kit Contents

The kit contains UI V1.8 PCB, components in bags and packing list. The display is delivered as assembled and tested unit.

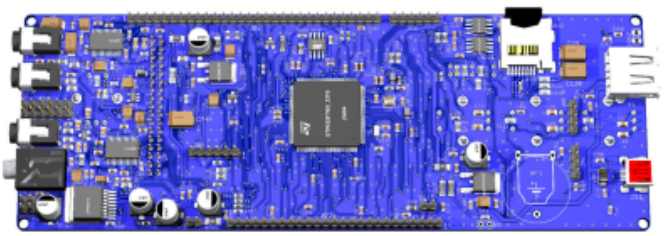
| | | |
|---|---|---|
|  |  |  |
| Components in bags (Foto: DL8EBD) | UI V1.8 PCB (Foto: DL8EBD) | Display board (Foto: DL8EBD) |

## Assembly and Soldering

The graphics below - UI V1.7 with 3.2„ Display - give an impression on how the finished V1.8 UI board will look like:




UI Board V1.7 mit 3.2“ Display)



UI Board V1.7

**Please read Errata carefully**

Make sure to read the Errata carefully **before starting assembly.**

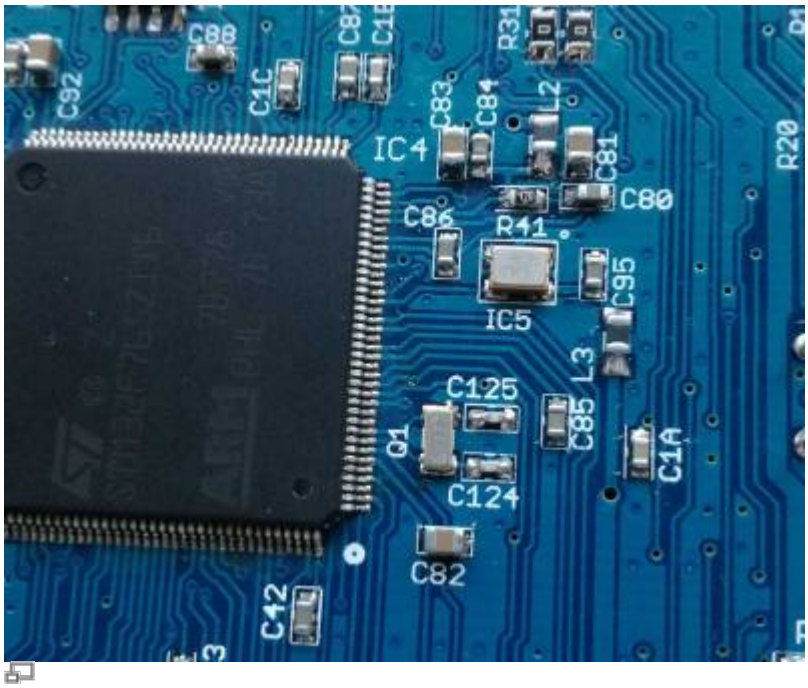
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=== IC Device Markings ===
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The smaller ICs can be identified by device mark. The following device marks are used:

| Typ | Device Mark | Schematic | Purpose |
|---|---|---|---|
| LP5907_Q1 | LLVB | IC3 | LDO 3.3 V |
| BAV70 | A4 | D5, D6 | Diode |
| BC857B | 3F | T3 | Transistor |
| BAS85 | Ring = Cathode | D7 - D9 | Diode |

**MCU STM32 "Pin 1" marking**

Please understand the correct orientation of STM32 MCU Pin 1. There are two markings on the IC. Please not the text printed on MCU to find the correct Pin 1: When reading the text Pin 1 is on bottom left corner.




Orientation of TXCO & MCU (photo DF9EH)

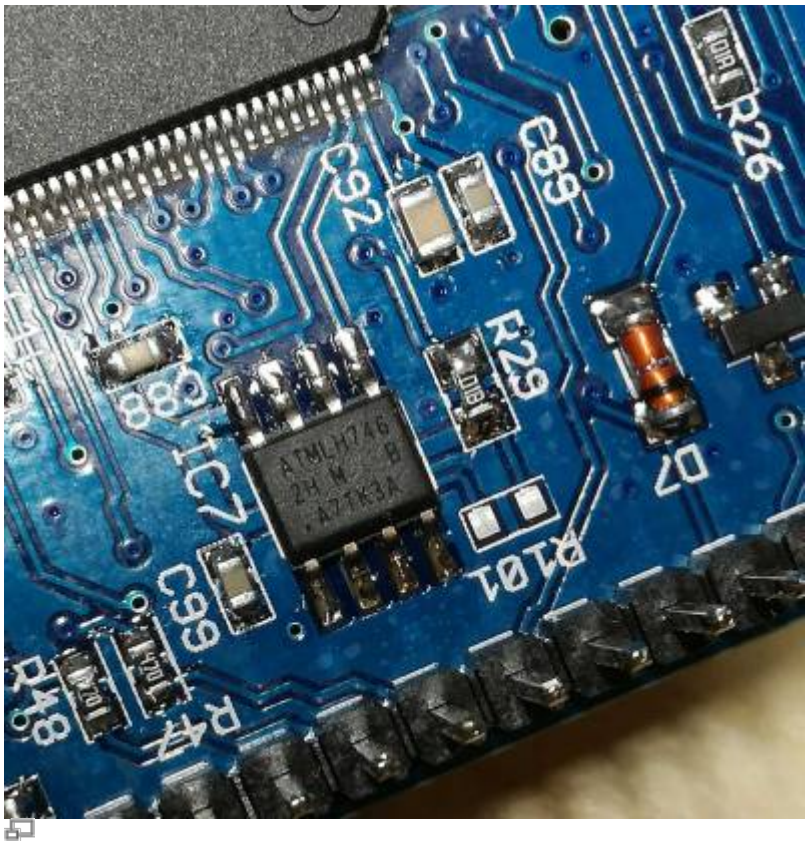
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=== STM32F76X_ZIT vs. STM32H743ZIT6 ===
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The kit is shipped with STM32F76X_ZIT („F7“). The just released STM32H743ZIT6 („H7“) may be used instead. It is suggested to use the F7 for now. Rwason: it is planned to support the H7 in the UHSDR, but no boot loader oder firmware is released for the H7 at the moment.

Comparison of MCUs:

| | mcHF: | OVI40: | OVI40 - future: |
|---|---|---|---|
| | STM32F407VET6 | STM32F767ZIT6 | STM32H743ZIT6 |
| Flash[kB] | 500 | 2048 | 2048 |
| RAM [kB] | 192 | 512 | 1024 |
| Clock[MHz] | 168 | 216 | 400 |
| FPU | single | double | double |
| Pins | 100 | 144 | 144 |
| DMIPS | 210 | 462 | 856 |

**EEPROM IC7 orientation**




EEPROM IC7 position (photo DF9EH)

This is where the dot is printed. Also the edge of the case is slanted near the 1-4 pins. See here

**Do not solder in R101** for the EEPROM delivered with the kit (AT24CM02).

**Prevent short cut with back up battery holder**

One of the connection pins of the battery holder might touch ground connection of a rotary encoder. Make sure to cut this pin flush with PCB surface **before soldering** - see photo:



Potential Shortcut (photo DF9EH)

**Polarised capacitors**

Please observe mounting orientation of tantal and electrolytic capacitors. Markings on the capacitors are explained http://elektroniktutor.de/bauteilkunde/c_smdcod.html|here

**Mounting locations of switches S7 and S8**

Two different mounting locations are provided on the UI PCB for S7 and S8:

- „mcHF style“: S7 and S8 not line with switches under LCD - they are mounted slightly higher
- „OVI40 style“: S7 and S8 are mounted in line with the function keys under the LCD

„In line“ is the preferred mounting location for S7 and S8.

**IC9 und IC11: leave empty for now**

IC9 (SPI FRAM) and IC11 (SPI FLASH) are for future use. Please leave empty for now. They are neither required nor supported by UHSDR at this time.

## Modifications

### Temporary Modification: Resistor in parallel to C94

Symptom: In stand-by the current drawn from back-up battery is excessively high. Work-around: Put resistor in parallel to C94. Start with a value of 56k - this seems to work in most cases. If board does not start increase value slightly. The same approach is used BTW in the commercially available Disco F746 prototype board.

### Change brightness of LEDs

Helle LEDS: Mit den Bausatz-Vorwiderständen leuchten die LEDs sehr hell. DF9EH hat die Werte reduziert:

- R36 auf 22,6k (D1 grün)
- R37 auf 6,8k (D2 rot)
- R116 auf 6,8k (D3 blau)

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