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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.

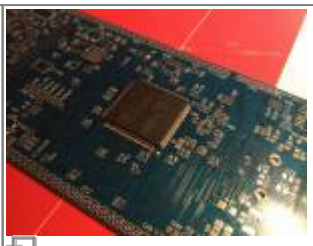
OVI40 UI V1.8 Documents

- 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)

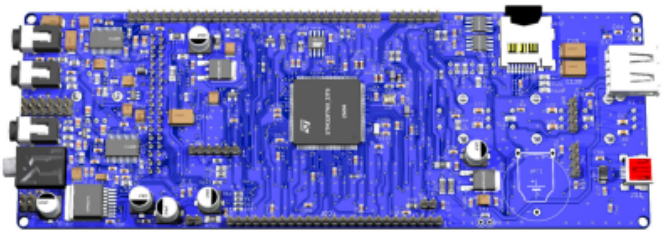

UI V1.8 PCB (Foto: DL8EBD)


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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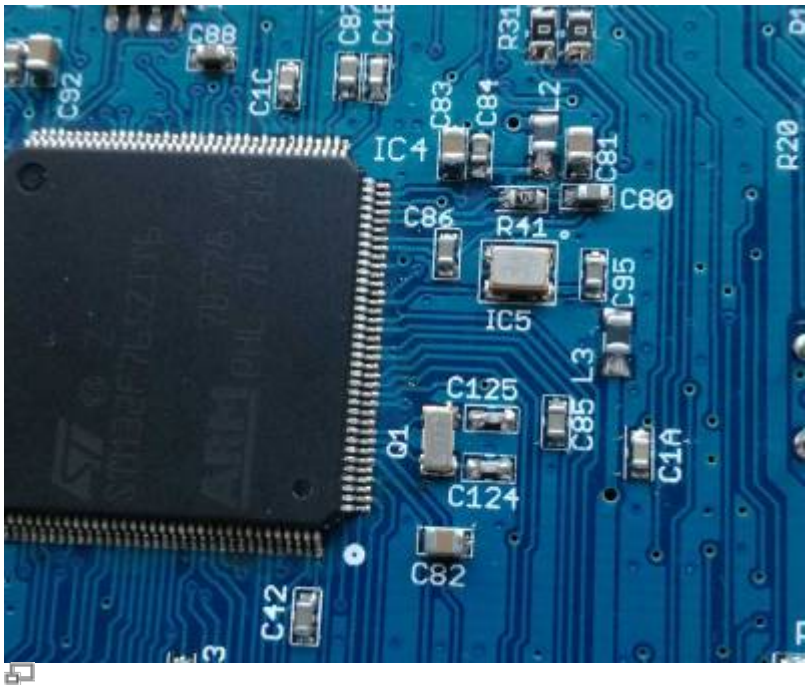
The smaller ICs can be identified by device mark. The following device marks are used:

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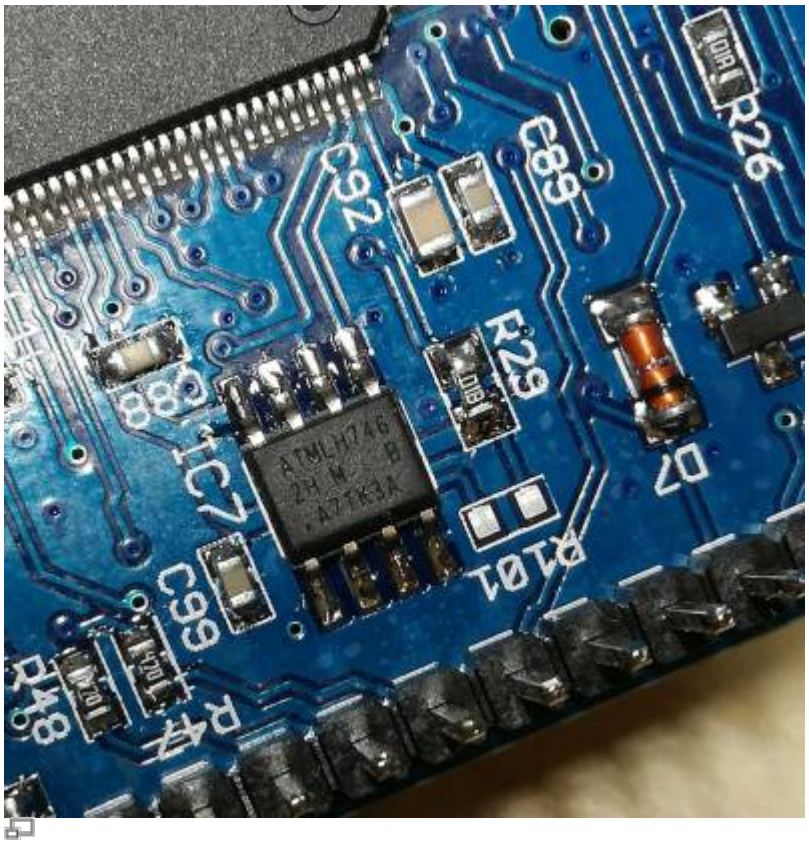
The kit is shipped with STM32F76X_ZIT („F7“). The just released STM32H743ZIT6 („H7“) may be used instead. It is suggested to use the F7 for now. Rwason: it is planned to support the H7 in the UHSDR, but no boot loader oder firmware is released for the H7 at the moment.

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

IC7 close-up

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.

Device Electronic Signature

STM32F76xxx

- 0x111: STM32F767 and STM32F777 LQFP208 and TFBGA216 package
- 0x110: STM32F769 and STM32F779 LQFP208 and TFBGA216 package
- 0x101: STM32F767 and STM32F777 LQFP176 package
- 0x100: STM32F769 and STM32F779 LQFP176 package
- 0x011: WLCSP180 package
- 0x010: LQFP144 package
- 0x001: LQFP100 package
- 0x000: Reserved

STM32H7x3 MCUs:

- 0000: LQFP100 (STM32H7x3)
- 0010: TQFP144 (STM32H7x3)
- 0101: TQFP176/UFBGA176 (STM32H7x3)
- 1000: LQFP208/TFBGA240 (STM32H7x3)

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)