RadarBaseboardMCU7

The provided scripts and programs allow to update the firmware on a RadarBaseboardMCU7 board and to initialize radar shields from a Windows PC without the need of a programmer or other special equipment.

Updating the firmware on RadarBaseboardMCU7 boards

To update the firmware on your RadarBasebiardMCU7 board, connect the board via USB to your computer and double click on the file UpdateFirmware.bat. Choose a firmware file (for example the latest version firmware_v115.bin in the directory firmware) and click “open”. The script will then upload the selected firmware to the RadarBaseboardMCU7 board. The progress and the result are shown in a command window. Upon success the output will look similar to this:

```
BOOTLOADER: 0 Activating the bootloader
BOOTLOADER: 100 Activating the bootloader
SEARCH: 0 Searching for com port
SEARCH: 100 Searching for com port
CONNECT: 0 Connecting to COM5
CONNECT: 100 Connecting to COM5
ERASE: 0 Erasing memory
ERASE: 100 Erasing memory
WRITE: 0 Writing firmware
WRITE: 1 Writing firmware
WRITE: 2 Writing firmware
[...]
WRITE: 99 Writing firmware
WRITE: 100 Writing firmware
VERIFY: 0 Verifying firmware
VERIFY: 1 Verifying firmware
[...]
VERIFY: 99 Verifying firmware
VERIFY: 100 Verifying firmware
RESET: 0 Resetting device
RESET: 100 Resetting device
EXIT: 0 successful
```

After that the firmware has been successfully updated.

The script performs the following steps:

1) Finding the COM port of the RadarBaseboardMCU7 board and if necessary activating the bootloader
2) Finding the COM port of the bootloader
3) Erasing the flash
4) Writing the firmware
5) Verifying the firmware
6) Resetting the device

The script will update the firmware on the first RadarBaseboardMCU7 board found. Please make sure that only one RadarBaseboardMCU7 board is connected to your computer.

Initializing the non volatile memory of the radar shield

The radar shield allows to store radar shield specific information on an internal non volatile memory (NVM). In order to initialize the shield correctly, the NVM must be updated after production by the help of an NVM programming tool. For each type of radar shield (BGT60TR13, BGT60ATR24, BGT60LTR11) a specific batch file InizializeBGT60XXX.bat is provided. You can execute the batch file by double-clicking on it. Upon success the batch file will output a message similar to:

```
Board type: BGT60LTR11
New UUID has been written: 4a725f28-166c-49d0-1a32-0876f56f0e9c
Press any key to continue . . .
```

LED Status

The LED on the RadarBaseboardMCU7 board indicates the board's status:

LED	Status	Description
green	ok	
yellow flashing	ok (BGT60LTR11)	
red-green flashing	board missing	No RF shield is connected to RadarBaseboardMCU7.
red flashing	board mirrored	RF shield is connected mirrored to the RadarBaseBoardMCU7.
yellow-red flashing	initialization failed	• BGT60LTR11: NVM is not correctly initialized. See section "Initializing the non volatile memory of the radar shield" for more information. • Radar shield is broken or not properly connected (check connection).

Troubleshooting

In case that a RadarbaseBoardMCU7 board cannot be flashed, disconnect the board from the computer, re-connect it, and follow the steps in section "Updating the firmware on RadarBaseboardMCU7 boards". If this also does not work, try another USB port.

In case that updating the firmware still fails, connect the test point TP1/Erase with 3.3V while you plug the board into the USB port, see Figure 1. TP1/Erase is a test point above the Atmel microcontroller, see the red circle in Figure 1. The pin

marked by the red circle in the top left of Figure 1 is 3.3V, see also the label on the backside of the board. Connect the two pins marked by the red circles in Figure 1 while you connect the board via USB to your computer. Once the board is connected via USB, the pins TP1/Erase and 3.3V do not need to be connected anymore. You should now be able to update the firmware on the board as described in the section "Updating the firmware on RadarBaseboardMCU7 boards".

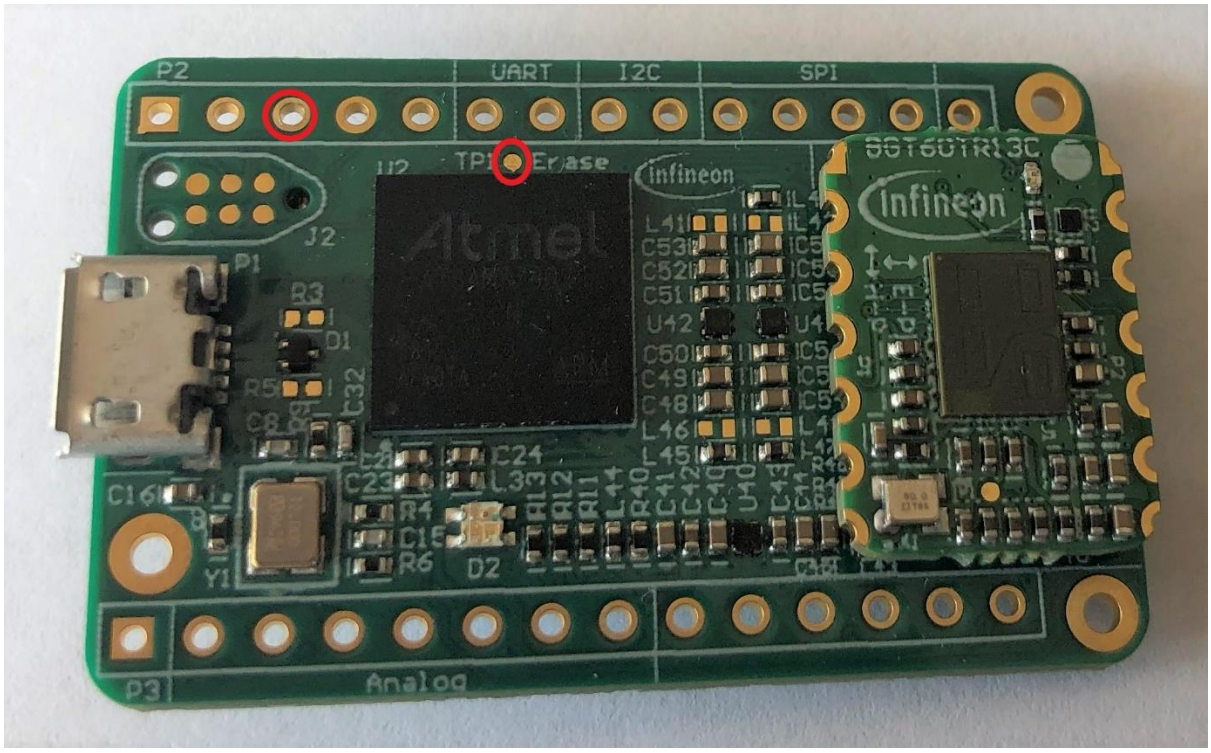

Figure 1 Connect TP1/Erase with 3.3V.

Third party code

The flashing tool UpdateFirmware.exe contains following third party code:

Project	Description	License
BOSSA	flash programming utility (version 1.9.1)	BSD3

You can find the BSD3 license for BOSSA in the directory licenses.