KEIL® C Programming for BARTH® lococube®

PROGRAMMING MANUAL

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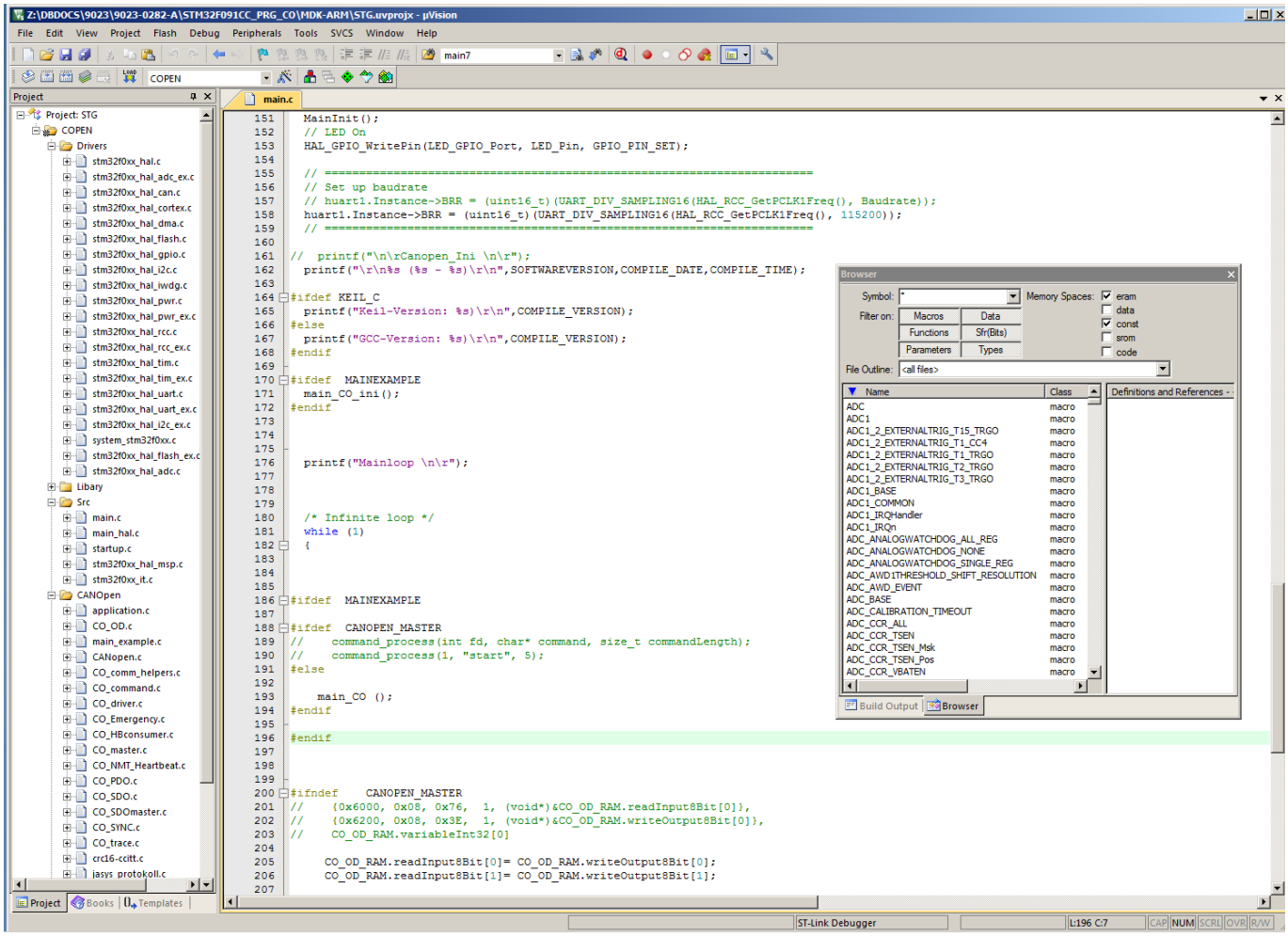


1 Introduction

The BARTH® lococube® STG-8xx features an Open Source Hardware Design allowing full access to the CPU´s memory and peripherals.
The powerful KEIL® µVision® Software Suite is the tool of choice for everyone who is familar with C-Programming. KEIL® opens up a variety of hardware-oriented features in a realtime environment with powerful debugging features to guarant shortest time-to-market with your lococube® project.

1.1 Supported models

lococube® Model	Programmer Connection Cable
STG-800 STG-810 STG-820 STG-850 STG-860	ST-Link/V2 (Art. No. 0017-0066) VK-35 (Art. No. 0091-0035) or: PG-30 (Art. No. 0017-0030)

2 Software download

Please note that an once Open Source programmed lococube® can not be graphical programmed afterwards! The miCon-L runtime will be overwritten and has to be factory-reinstalled!

In the first step please download the KEIL® µVision® Software Suite from:

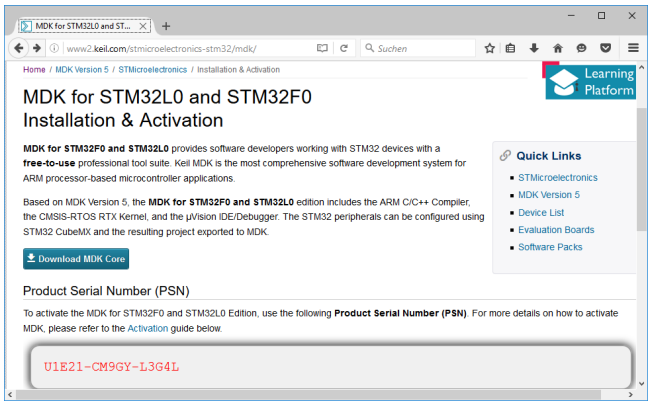
http://www2.keil.com/stmicroelectronics-stm32/mdk

All product-related software packages are available from: https://www.barth-elektronik.com/en/download.html

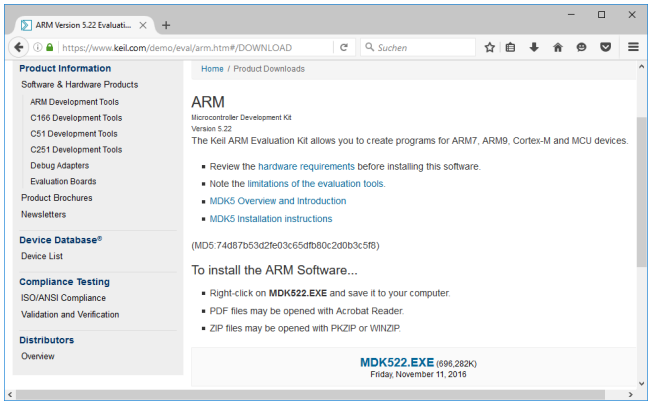
The packages includes free and ready-to-use sample programming templates. Each template refers to the specific hardware design and contains all required port connections. To create your own project simply modify or extend one of the following programming templates. Please login or register for free Downloadcenter access.

3 Installation

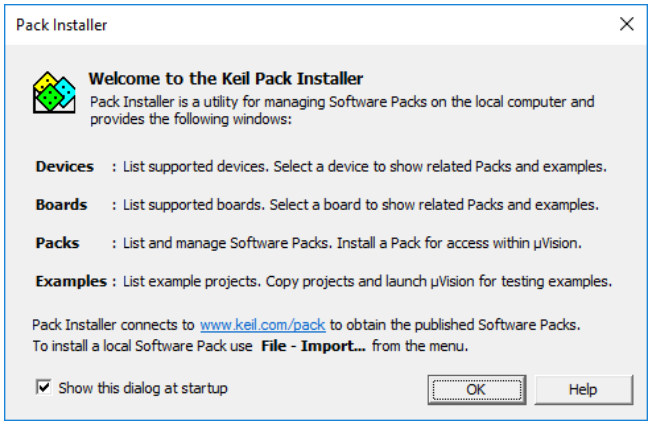
Now first install the KEIL® µVision® Software Suite:



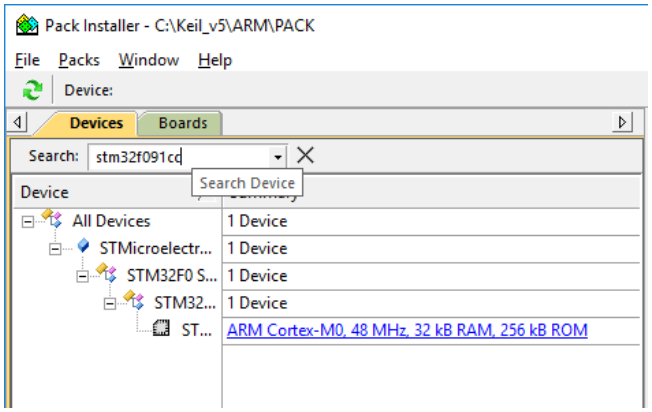
Please follow the software setup instructions.



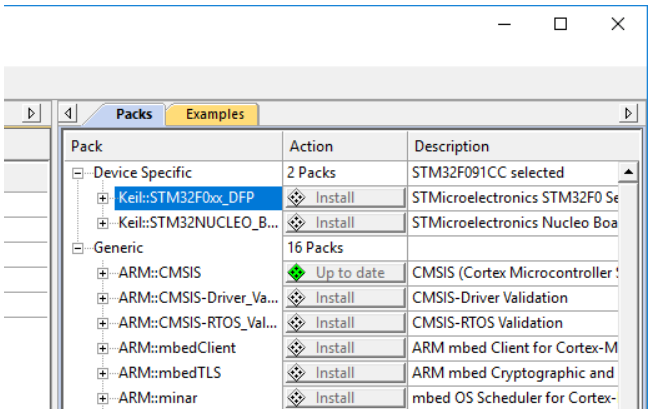
After successful software installation the Pack Installer will be lauched:

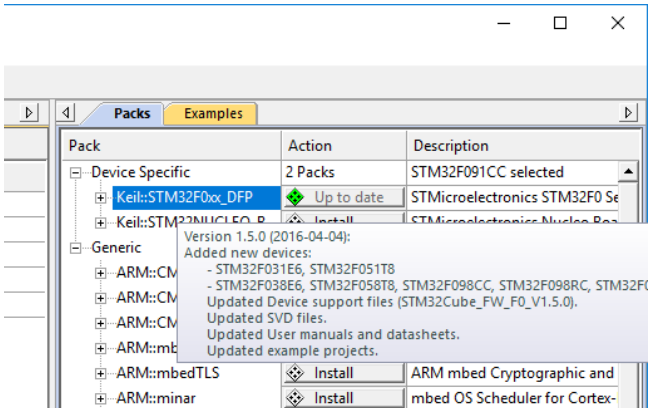


Please search for the ‚STM32F091CC' device.

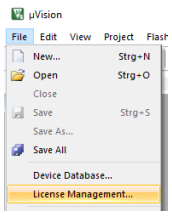


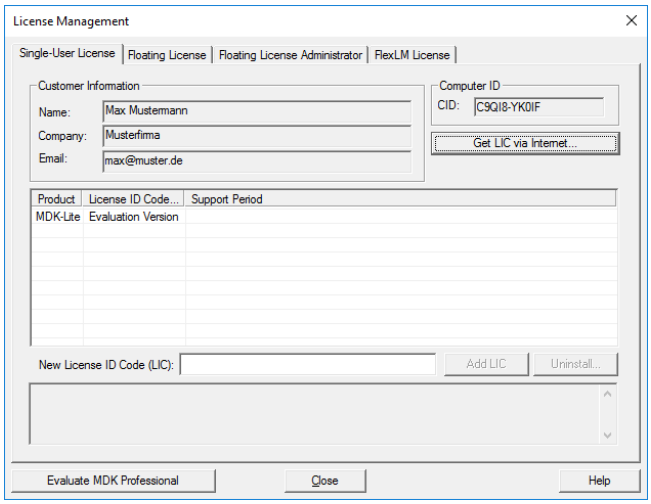
Select the device-specific packages to be installed.



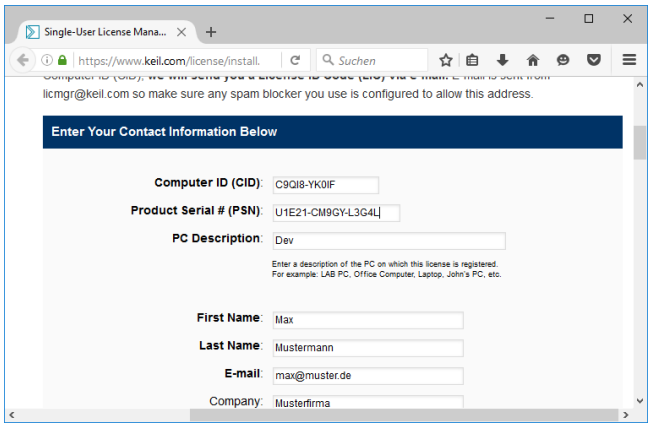


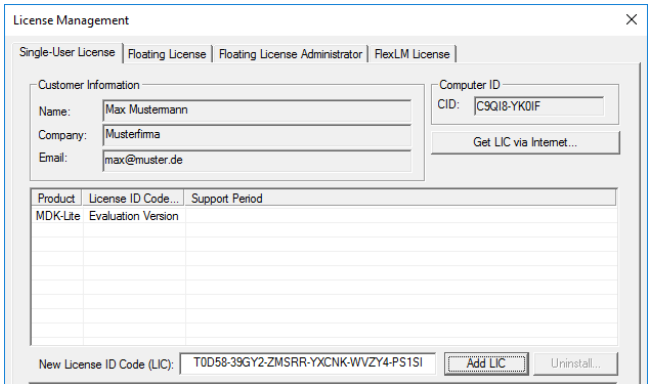
Now please open the ‚License Management' to enable your free KEIL® µVision® Software Suite.

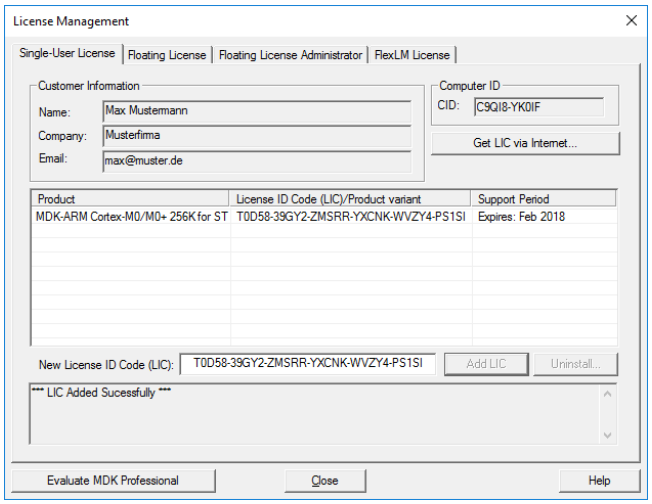




Add your personal Product Serial Number.



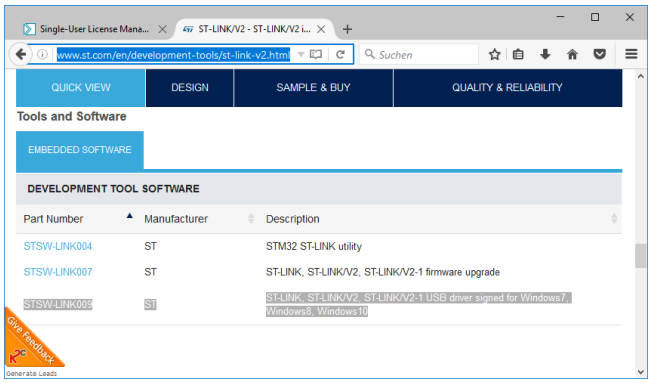


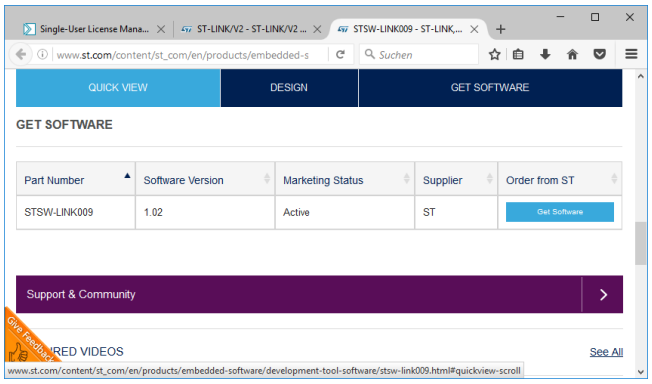


To program and debug the lococube® the ST-Link/V2 Programmer (BARTH® Art. No. 0017-0066) and Connection Cable VK-35 (BARTH® Art. No. 0091-0035) are required.

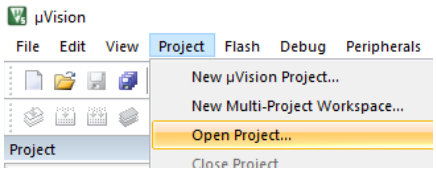
Please download the ‚ST-LINK/V2‘ driver from

http://www.st.com

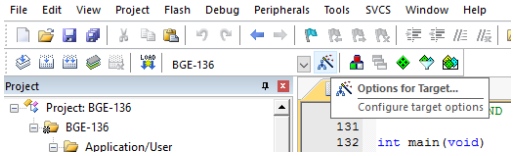


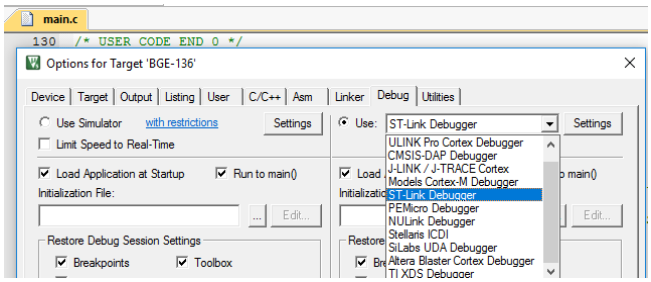


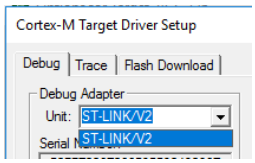
Now open a sample project in the KEIL® µVision® Software Suite.

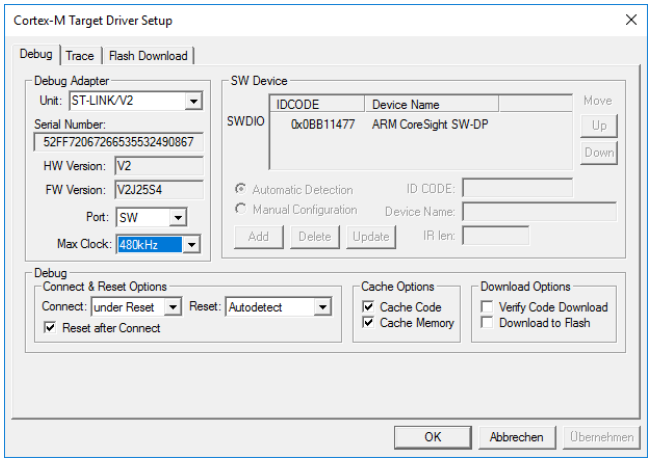


Open the ‚options‘ menu and select ‚ST-Link Debugger‘ as your favourite programmer/debugger tool.

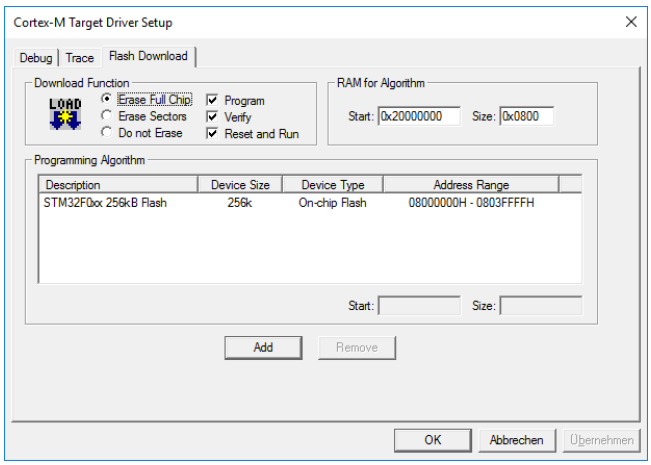




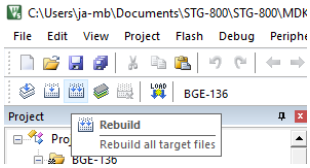


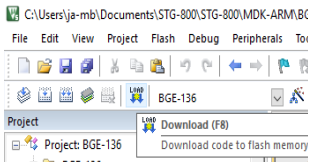


Please ensure the following programmer settings.

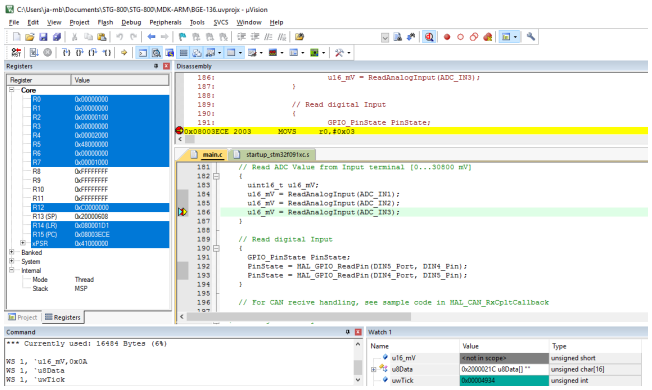


Now build and download a sample project.

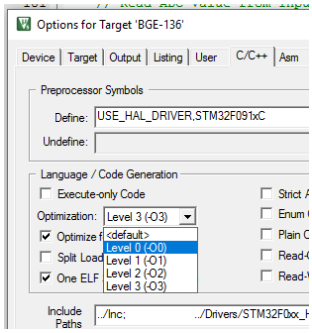




After successful download you will be able to debug the project.



To read online values you have to set the optimization level down to ‚0' in the ‚C/C++ options menu'.



4 First steps

The product-related BARTH® software packages include numerous free and ready-to-use sample programming templates. Each template refers to the lococube´s® hardware design and contains all required port connections. To create your own project simply modify or extend one of the following programming templates. Choose and open your favourite sample programming template project in the KEIL® µVision® Software.

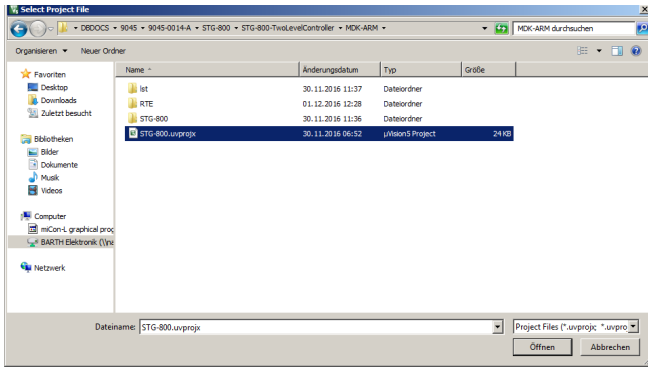
4.1 Hardware setup

For electrical connection of your lococube® please refer to the product-related manual.

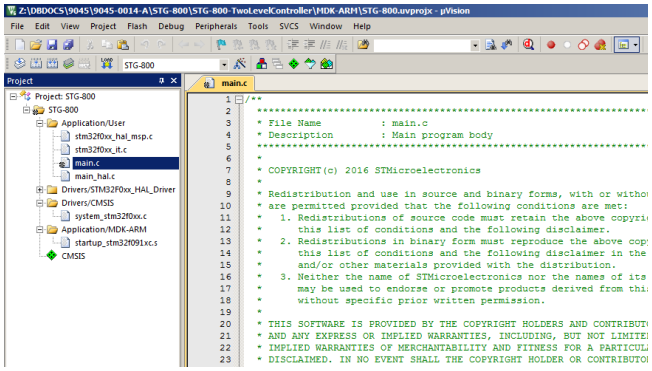
The picture below shows the typical hardware setup.

- lococube® mini-PLC
- Power Supply Connection (7 to 32VDC)
- Programmer ST-Link/V2
- USB Cable
- Connection Cable VK-35

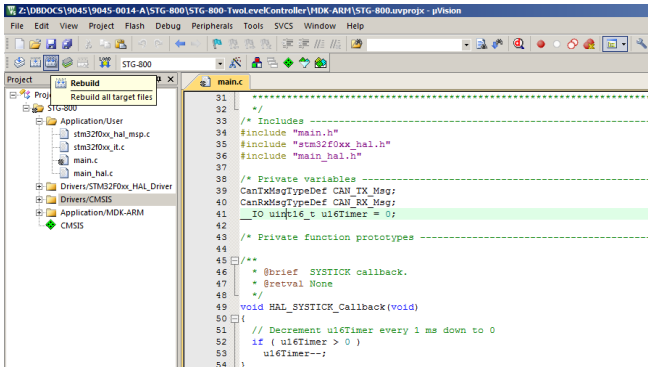
4.2 Software setup



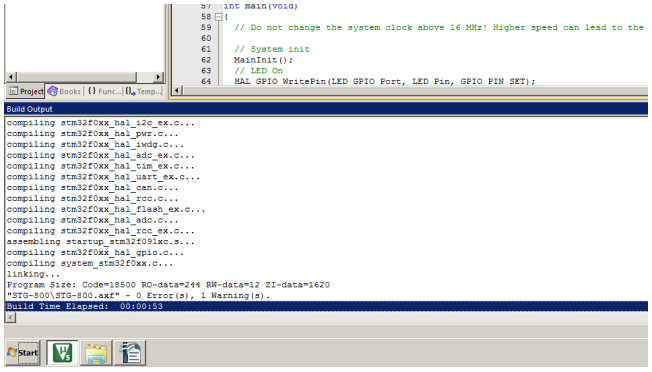
Open the ‚main.c' from the sample project.



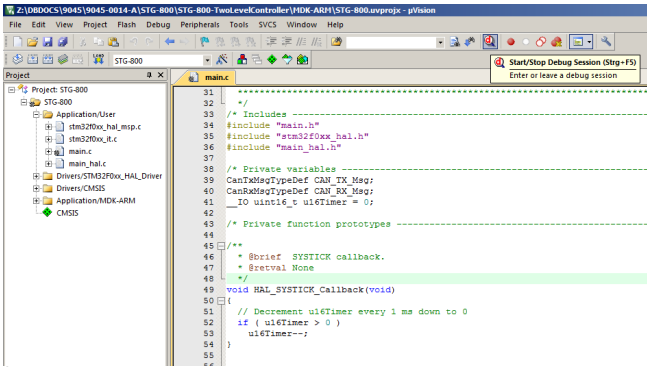
Rebulid the project.

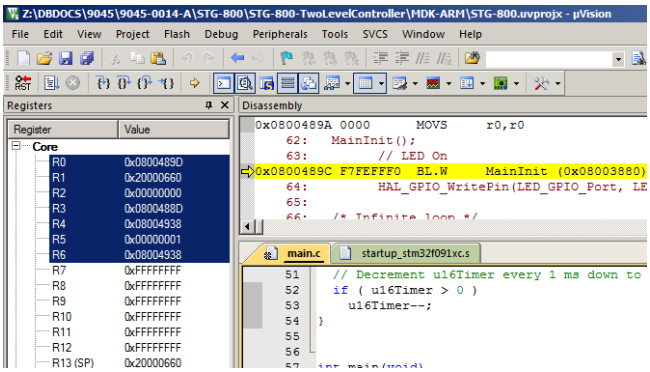


Wait... and have a look at the Output Window during the Rebuild.

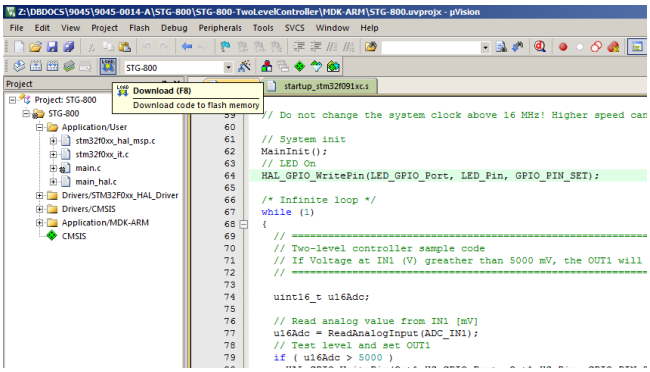


Now start your Debug Session...





...or download (F8) your application instead of debugging.



Now you are at the point to create your own programs.
Have fun with your lococube®!