The STC MCU FAQ

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Why should I use STC's MCU?

Provided you compare apples to apples, i.e. STC's MCU to other MCS-51 MCU:

- They are cheap.
- They have easy to use peripherals.
- They are well documented.
- They can be used with open source tools.
- They don't require a proprietary programmer.

While these characteristics are certainly not unique, their combination constitutes a kind of least resistance path in the MCS-51 world.

Which programmer should I buy?

An USB-to-TTL adapter is enough to flash an STC MCU. However, as the flashing procedure involves power cycling the MCU, you may want to buy an "STC Auto Programmer" from AliExpress for a couple of dollars/euros to make it even easier. Please read the **`Using_an_STC_Auto_Programmer_with_STCGAL.pdf`** document in this repository for more information and purchase links.

Which toolchain should I use?

SDCC includes a C compiler, an assembler and a linker. Other than this, you'll just need STCGAL (https://github.com/grigorig/stcgal) to flash your MCU.

Which STC MCU should I use?

As always, it depends. The following table summarises a few common selection criteria:

If you need…	Use an…
a USB peripheral	STC8H8K64U
DMA support	STC8A8K64D4, STC8H8K64U, STC8H4, STC8H1K17T
4 UART	STC8A8K64D4, STC8H8K64U, STC8H4, STC8H3K64S4
a lot of RAM	STC8A8K64D4, STC8H8K64U
a fast MCU	STC8A8K64D4, STC8H8K64U, STC8H4, STC8H3
an 8-pin package	STC8G1K17A-36I-SOP8
a DIP package	STC8G1K17A-36I-DIP8, STC8G1K17-38I-DIP16, STC8G1K17-38I-DIP20, STC8H8K64U-45I-PDIP40
a feature-rich PWM	STC8H
an easy-to-use PWM	STC8A8K64D4, STC8G1K17, STC8G1K17A
a cheap MCU	All STC8 MCU are cheaper than older series.

In case that matters to you, note the STC8H series are where STC puts most of their efforts.

Differences between the STC8H8K64U and STC8A8K64D4?

Features	STC8H8K64U	STC8A8K64D4
PCA	No	Yes
PWM	Advanced 16-bit	Enhanced 15-bit
USB	Yes	No
RTC	Yes	No

Where can I find documentation?

SDCC: https://sdcc.sourceforge.net/doc/sdccman.pdf

English versions of MCU technical reference manuals:

http://www.stcmcudata.com/STC8F-datasheet/STC8H-en.pdf
http://www.stcmcudata.com/STC8F-datasheet/STC8G-en.pdf
http://www.stcmcudata.com/STC8F-datasheet/STC8A-STC8F-en.pdf
http://www.stcmcudata.com/datasheet/stc/stc-ad-pdf/STC15-english.pdf
http://www.stcmcudata.com/datasheet/stc/stc-ad-pdf/STC12C5A60S2-english.pdf

Chinese versions of MCU technical reference manuals:

http://www.stcmcudata.com/STC8F-datasheet/STC8H.pdf
http://www.stcmcudata.com/STC8F-datasheet/STC8G.pdf
http://www.stcmcudata.com/STC8F-datasheet/STC8A-STC8F.pdf
http://www.stcmcudata.com/datasheet/stc/stc-ad-pdf/STC15.pdf
http://www.stcmcudata.com/datasheet/stc/stc-ad-pdf/STC12C5A60S2.pdf

Chinese-only technical reference manual:

> http://www.stcmcudata.com/STC8F-datasheet/STC8A8K64D4.pdf

You can check the following page for documentation updates:

> http://www.stcmcudata.com/website-update.txt

The **`STC_documentation_tracking`** folder in this repository contains useful information extracted from STC's documentation such as silicon errata and gap between Chinese and English documentation. It also includes **`stc-updates.sh`**, a shell script that automates the extraction of documentation updates and formats them in a consistent way.

Where can I find code examples?

STC's documentation includes a few code examples, both in C and assembly.

You will also find a HAL providing a consistent access to STC's MCU features across the most recent series in this repository: https://github.com/area-8051/uni-STC. The **`demos`** folder contains code examples for most of the functionalities.

Where can I buy STC MCU?

LCSC offers most STC MCU: https://www.lcsc.com/products/Microcontroller-Units-MCUs-MPUs-SOCs_11329.html?keyword=STC8H

AliExpress can also be used to source DIP package versions:

> https://yourcee.aliexpress.com/store/1089303/search?SearchText=STC%20DIP
> https://ec-buying.aliexpress.com/store/1762106/search?SearchText=STC%20DIP

For orders of CNY 3000 and above (around USD/EUR 450), or if you need parts not available from LCSC/AliExpress, you can also order directly from STC.

Their up-to-date price list is available at: http://www.stcmcudata.com/stc-mcu-select.txt. Being a text file, it will not display correctly in a browser, so it is better downloaded with a command such as:

```
wget -q --remote-encoding=GB18030 http://www.stcmcudata.com/stc-mcu-select.txt
```

Why don't you cover STC32 MCU?

The STC32F and STC32G are MCS-251 MCU, with a different programming model, which is not supported by SDCC, you have to pay to use Keil's C251 compiler.

Furthermore, there is no point in using an STC32 when 32-bit RISC-V MCU are available at the same price point or even less. While there definitely are use cases for 8-bit MCS-51 MCU, I can't see any valid reason to use and STC32 and suffer from their archaic weirdness.

If you're interested in RISC-V MCU, see the following document for more about them: https://github.com/area-8051/Awesome_RISC-V/blob/master/RISC-V_MCU_development_boards.pdf