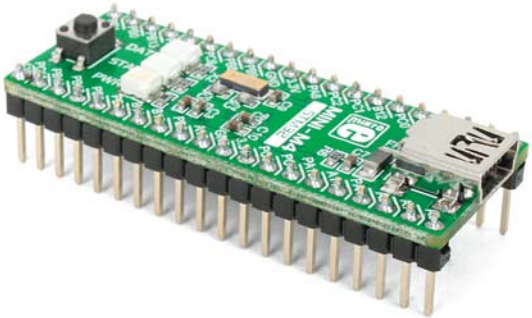

MINI-M4™

development board for STM32

The whole STM32 development board fitted in DIP40 form factor, containing powerful STM32F415RG microcontroller.

MINI ARM

MikroElektronika
DEVELOPMENT TOOLS | COMPILERS | BOOKS

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Nebojsa Matic
General Manager

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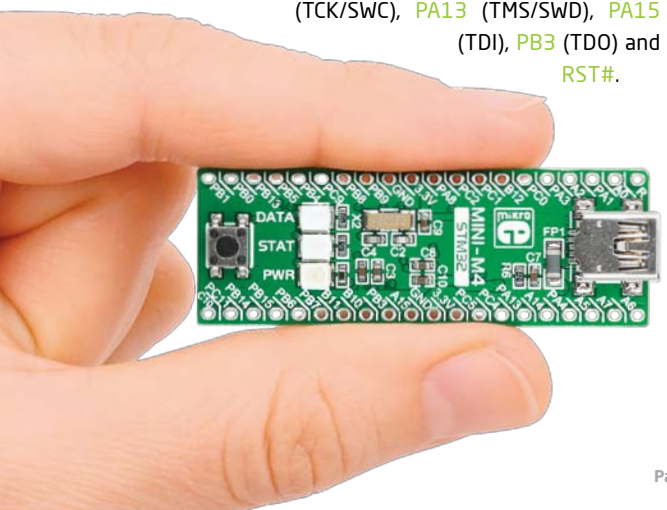
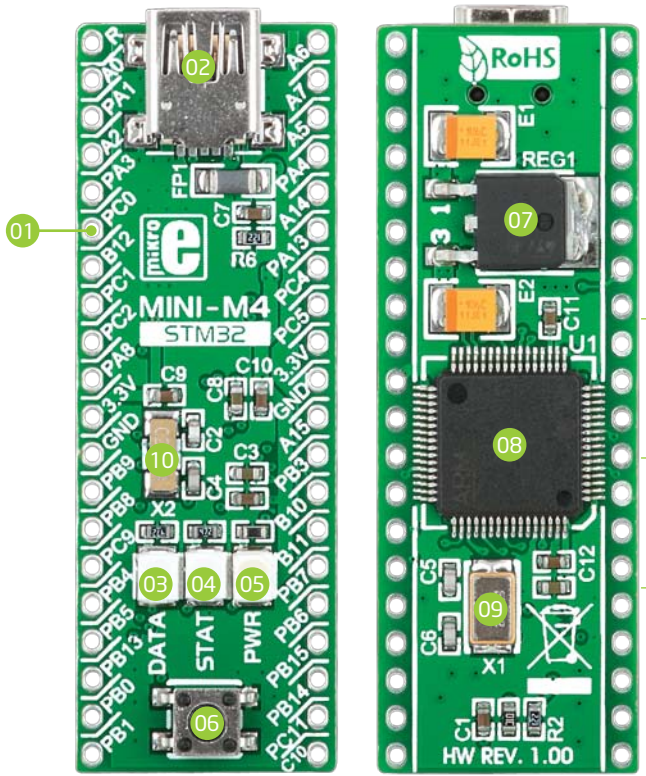
Introduction to MINI-M4 for STM32

Miniature and powerful development tool designed to work as stand alone device or as MCU card in DIP40 socket. MINI-M4 for STM32 is pre programmed with USB HID bootloader so it is not necessary to have external programmer. If there is need for external programmers (mikroProg™ or ST-LINK V2) attach it to MINI-M4 for STM32 via pads marked with PA14 (TCK/SWC), PA13 (TMS/SWD), PA15 (TDI), PB3 (TDO) and RST#.



Key features

01 Connection Pads
02 USB MINI-B connector
03 DATA LED
04 STAT LED
05 POWER supply LED
06 Reset button
07 Power supply regulator
08 Microcontroller STM32F415RG
09 16 MHz Crystal oscillator
10 32.768kHz Crystal oscillator



System Specification

power supply

3.3V via pads or 5V via USB

power consumption

depends on MCU state (max current into 3.3V pad is 800mA)

board dimensions

50.8 x 17.78mm (2 x 0.7")

weight

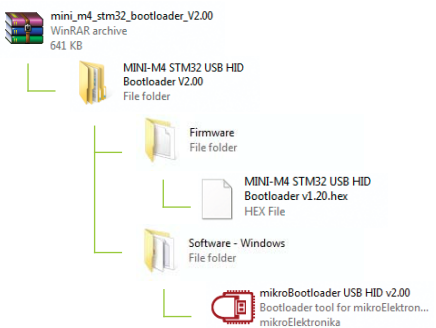
~6g (0.013 lbs)

1. Programming with mikroBootloader

You can program the microcontroller with bootloader which is pre programmed into the device by default. To transfer .hex file from a PC to MCU you need bootloader software (**mikroBootloader USB HID**) which can be downloaded from:

http://www.mikroe.com/downloads/get/1938/mini_m4_stm32_bootloader_v200.zip

After software is downloaded unzip it to desired location and start mikroBootloader USB HID software.



step 1 - Connecting MINI-M4

Figure 1-1: USB HID mikroBootloader window

01 To start, connect the USB cable, or if already connected press the **Reset** button on your MINI-M4 board. Click the **"Connect"** button within 5s to enter the bootloader mode, otherwise existing microcontroller program will execute.

step 2 - Browsing for .HEX file

Figure 1-2: Browse for HEX

01 Click the **"Browse for HEX"** button and from a pop-up window (**Figure 1-3**) choose the .HEX file which will be uploaded to MCU memory.

step 3 - Selecting .HEX file

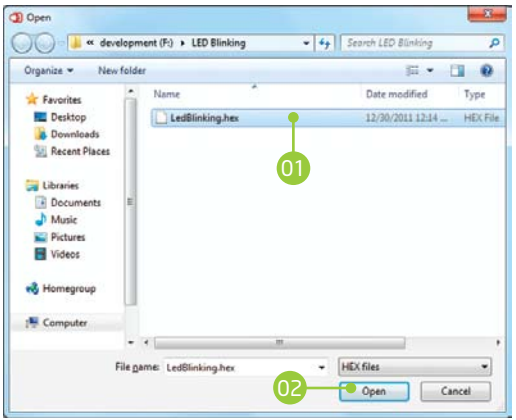


Figure 1-3: Selecting HEX

01 Select .HEX file using open dialog window.

02 Click the **"Open"** button.

step 4 - Uploading .HEX file

Figure 1-4: Begin uploading

01 To start .HEX file bootloading click the **"Begin uploading"** button.

Figure 1-5: Progress bar

01 You can monitor .HEX file uploading via progress bar

step 5 - Finish upload

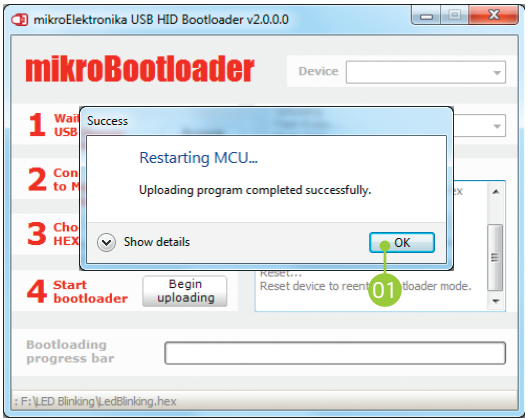
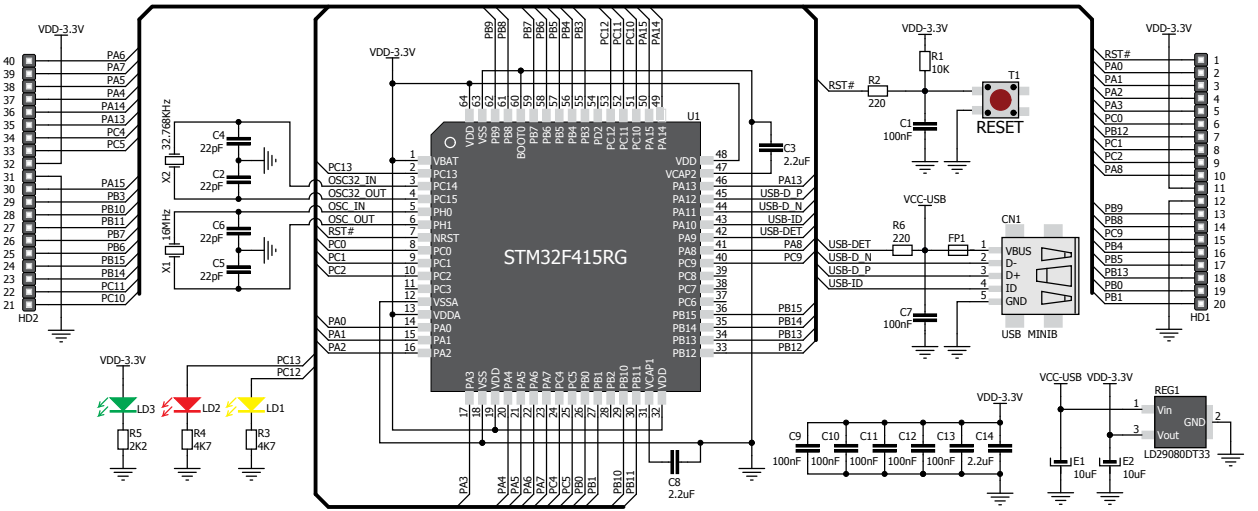


Figure 1-6: Restarting MCU

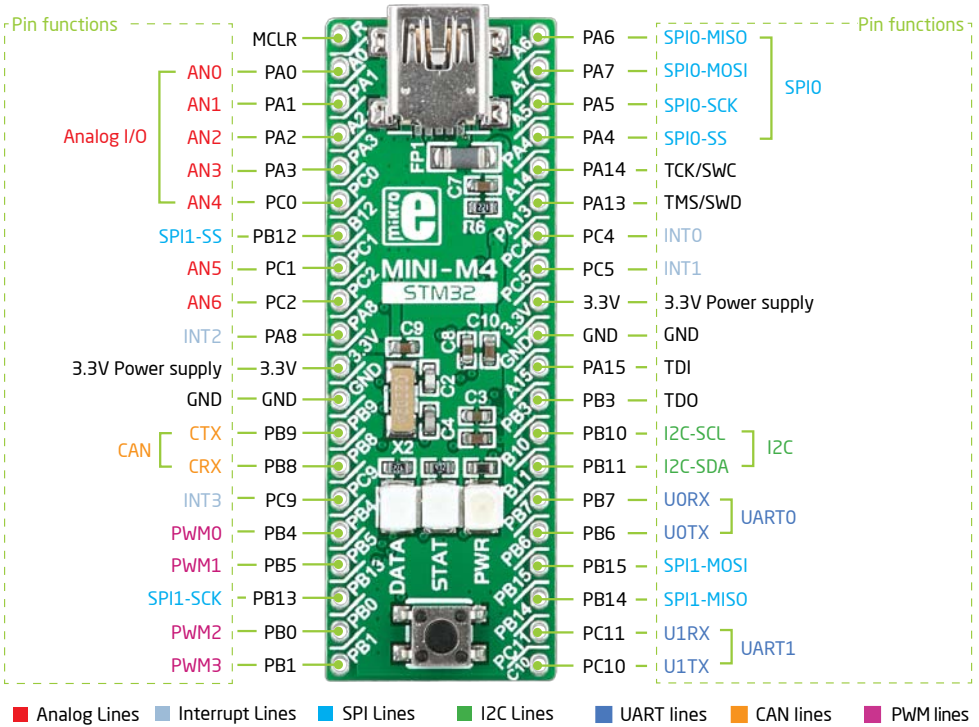
Figure 1-7: mikroBootloader ready for next job

01 Click the **"OK"** button after uploading is finished and wait for 5 seconds. Board will automatically reset and your new program will execute.

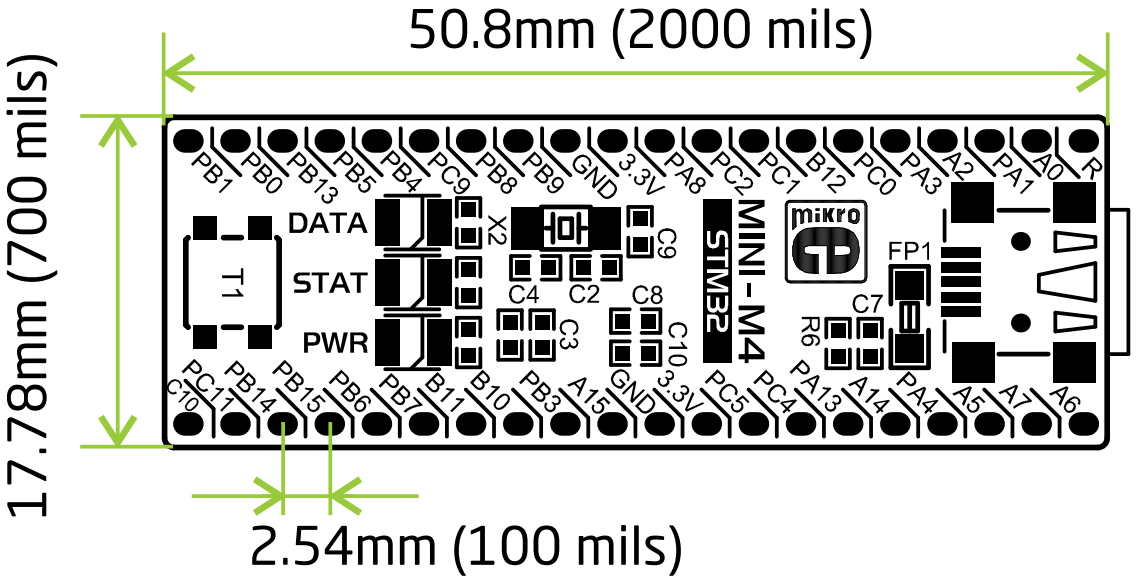
2. Schematic


VDD-3.3V
HD2
PA6
PA7
PA5
PA4
PA14
PA13
PC4
PC5
PA15
PB3
PB10
PB11
PB7
PB6
PB15
PB14
PC11
PC10
X2
32.768KHz
C4
22pF
C2
22pF
X1
16MHz
C6
22pF
C5
22pF
U1
STM32F415RG
VBAT
PC13
PC14
PC15
PH0
PH1
NRST
PC0
PC1
PC2
PC3
VSSA
VDDA
PA0
PA1
PA2
VDD
VSS
PB9
PB8
BOOT0
PB7
PB6
PB5
PB4
PB3
PD2
PC12
PC11
PC10
PA15
PA14
VCAP2
PA13
PA12
PA11
PA10
PA9
PA8
PC9
PC8
PC7
PC6
PB15
PB14
PB13
PB12
PA3
PA4
PA5
PA6
PA7
PC4
PC5
PB0
PB1
PB2
PB10
PB11
VCAP1
OSC32_IN
OSC32_OUT
OSC_IN
OSC_OUT
RST#
USB-D_P
USB-D_N
USB-ID
USB-DET
C3
2.2uF
C8
2.2uF
LD3
LD2
LD1
R5
2K2
R4
4K7
R3
4K7
R1
10K
R2
220
C1
100nF
T1
RESET
R6
220
FP1
C7
100nF
CN1
VBUS
D-
D+
ID
GND
USB MINIB
C9
C10
C11
C12
C13
C14
100nF
2.2uF
REG1
Vin
Vout
GND
LD29080DT33
E1
10uF
E2
10uF
HD1

3. Pinout


Pin functions
MCLR
AN0
AN1
AN2
AN3
AN4
SPI1-SS
AN5
AN6
INT2
3.3V Power supply
GND
CTX
CRX
INT3
PWM0
PWM1
SPI1-SCK
PWM2
PWM3
Analog I/O
CAN
PA0
PA1
PA2
PA3
PC0
PB12
PC1
PC2
PA8
3.3V
GND
PB9
PB8
PC9
PB4
PB5
PB13
PB0
PB1
MINI-M4
STM32
DATA
STAT
PWR
PA6
PA7
PA5
PA4
PA14
PA13
PC4
PC5
3.3V
GND
PA15
PB3
PB10
PB11
PB7
PB6
PB15
PB14
PC11
PC10
SPI0-MISO
SPI0-MOSI
SPI0-SCK
SPI0-SS
TCK/SWC
TMS/SWD
INT0
INT1
3.3V Power supply
GND
TDI
TDO
I2C-SCL
I2C-SDA
U0RX
U0TX
SPI1-MOSI
SPI1-MISO
U1RX
U1TX
SPI0
I2C
UART0
UART1
Pin functions
Analog Lines
Interrupt Lines
SPI Lines
I2C Lines
UART lines
CAN lines
PWM lines

4. Dimensions



Notes:

Notes:

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