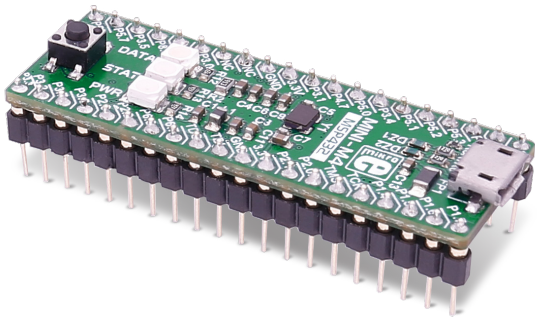


# MINI-M4™

## development board for MSP432

The whole MSP432 development board fitted in DIP40 form factor, containing powerful MSP432P401R microcontroller.

MINI ARM

MikroElektronika
DEVELOPMENT TOOLS | COMPILERS | BOOKS

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I want to express my thanks to you for being interested in our products and for having confidence in MikroElektronika.

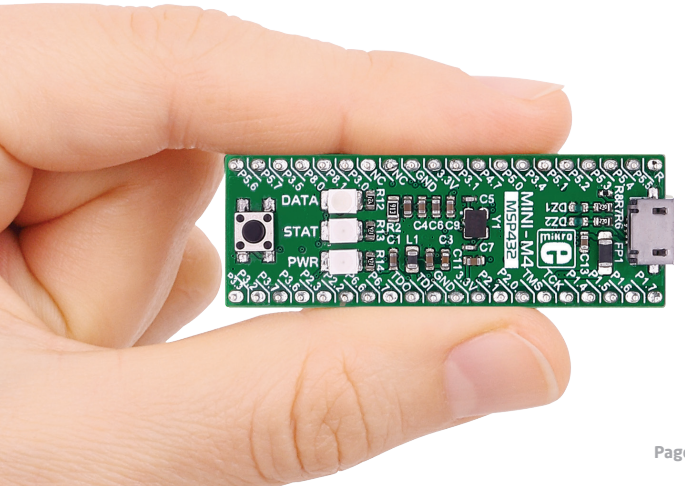
The primary aim of our company is to design and produce high quality electronic products and to constantly improve the performance thereof in order to better suit your needs.

Nebojsa Matic
General Manager

# Table of Contents

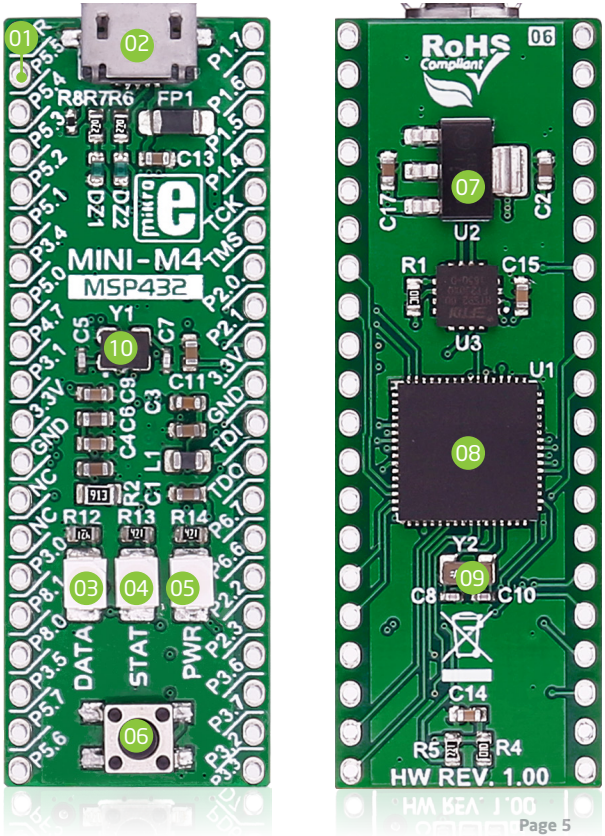
# Introduction to MINI-M4 for MSP432

Miniature and powerful development tool designed to work as stand alone device or as MCU card in DIP40 socket. MINI-M4 for MSP432 is pre programmed with USB UART 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 TCK/SWC, TMS/SWD, INT0, INT1.




## Key features

01 Connection pads
02 micro USB connector
03 DATA LED
04 STAT LED
05 POWER supply LED
06 Reset button
07 Power supply regulator
08 MSP432P401RIRGC microcontroller
09 32.768kHz Crystal oscillator
10 48 MHz Crystal oscillator




## System specifications

**power supply**

3.3V via pads or 5V via USB

**power consumption**

depends on MCU state (max current into 3.3V pad is 300mA)

**board dimensions**

50.8 x 17.78mm (2 x 0.7")

**weight**

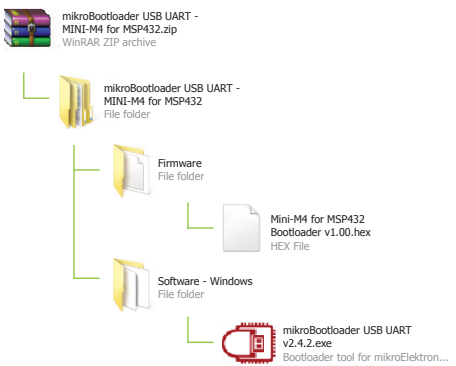
~6g (0.013 lbs)

# 1. Programming with mikroBootloader

You can program the microcontroller with the 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 UART**) which can be downloaded from:

*https://download.mikroe.com/examples/starter-boards/mini/msp432/mini-m4-msp432-bootloader-v242.zip*

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




## step 1 - Connecting MINI-M4


**Figure 1-1: USB UART mikroBootloader**

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

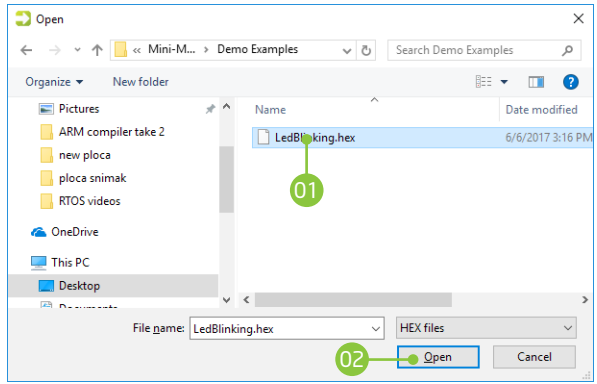



**Figure 1-3: Selecting HEX**

01 Select .HEX file using open dialog window.

02 Click **Open**.

# step 4 - Uploading .HEX file

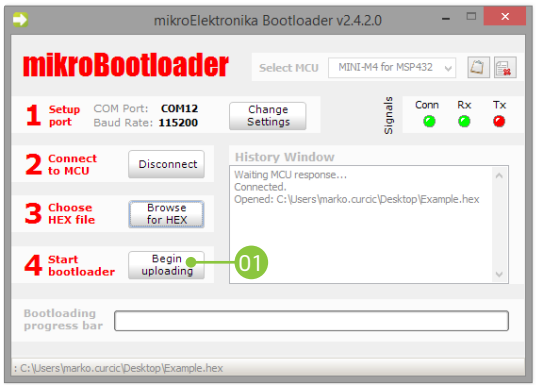



**Figure 1-4: Begin uploading**

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

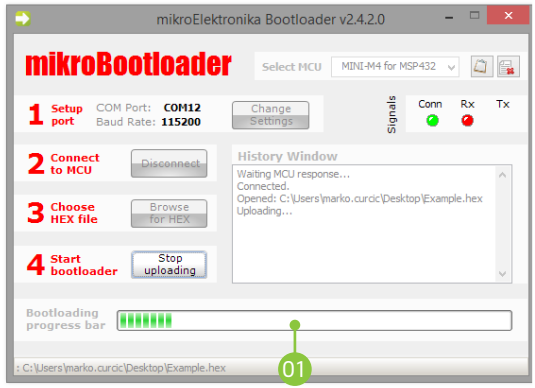



**Figure 1-5: Progress bar**

01 You can monitor .HEX file uploading via progress bar

# step 5 - Finish upload

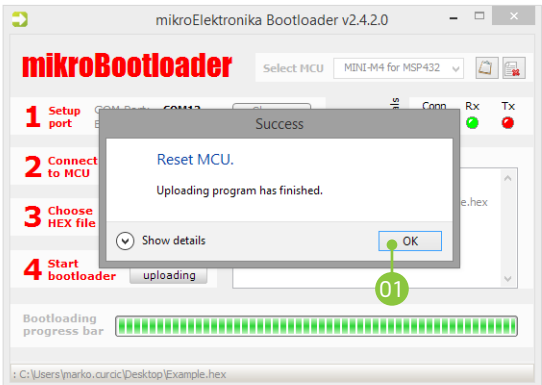
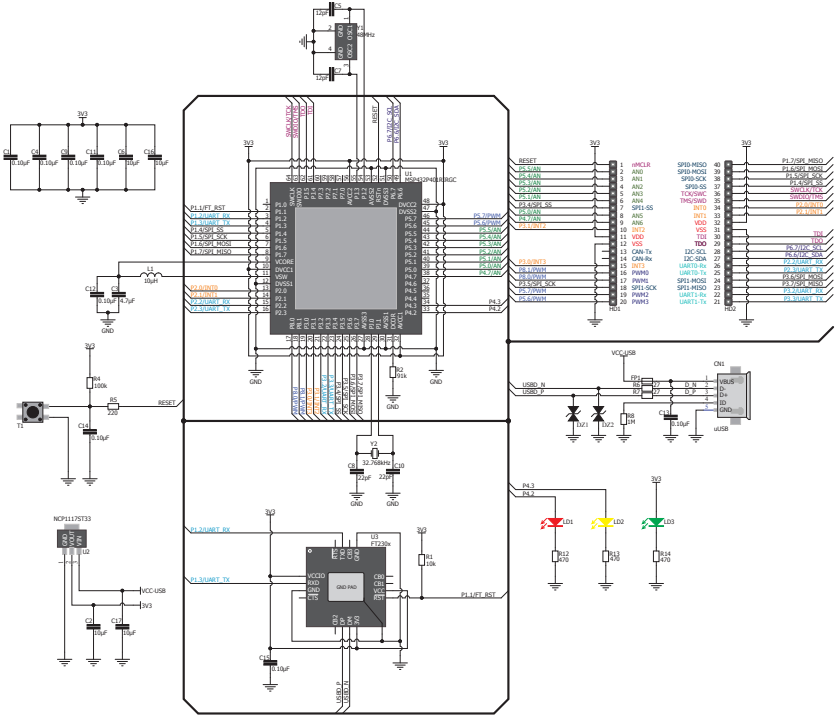



**Figure 1-6: Restarting MCU**

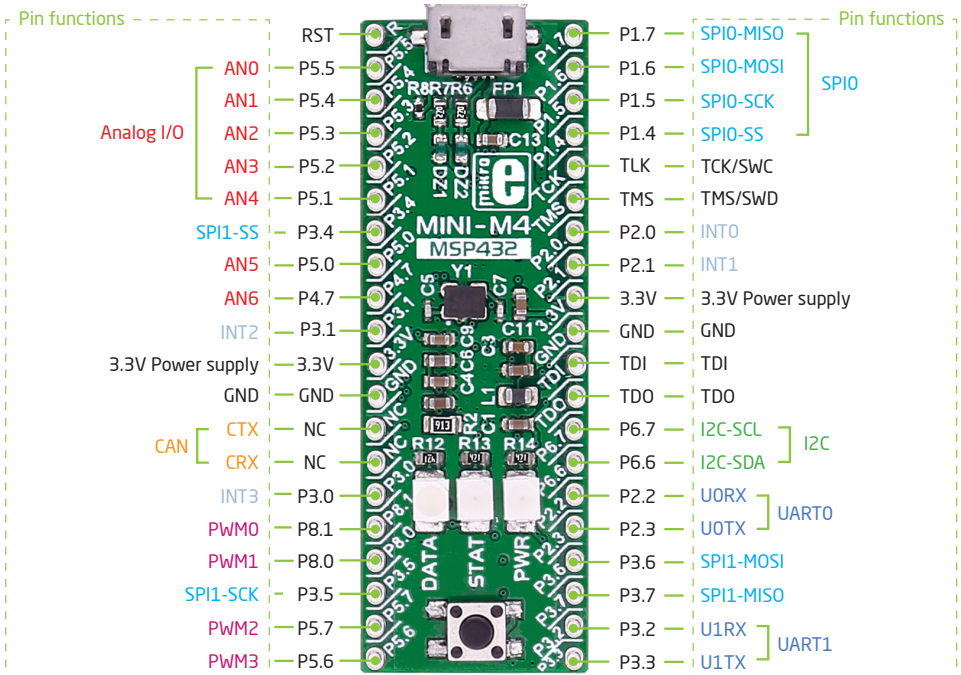

**Figure 1-7: mikroBootloader ready for next job**

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

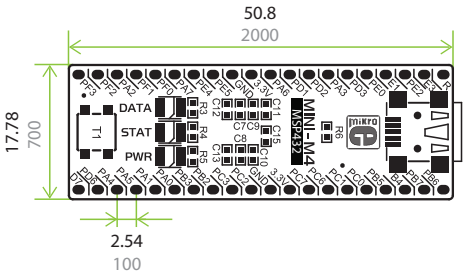
# 2. Schematic



# 3. Pinout


Pin functions
RST
AN0
AN1
AN2
AN3
AN4
Analog I/O
SPI1-SS
AN5
AN6
INT2
3.3V Power supply
GND
CTX
CAN
CRX
INT3
PWM0
PWM1
SPI1-SCK
PWM2
PWM3
P5.5
P5.4
P5.3
P5.2
P5.1
P3.4
P5.0
P4.7
P3.1
3.3V
GND
NC
NC
P3.0
P8.1
P8.0
P3.5
P5.7
P5.6
MINI-M4
MSP432
P1.7
P1.6
P1.5
P1.4
TLK
TMS
P2.0
P2.1
3.3V
GND
TDI
TDO
P6.7
P6.6
P2.2
P2.3
P3.6
P3.7
P3.2
P3.3
Pin functions
SPI0-MISO
SPI0-MOSI
SPI0-SCK
SPI0-SS
SPI0
TCK/SWC
TMS/SWD
INT0
INT1
3.3V Power supply
GND
TDI
TDO
I2C-SCL
I2C-SDA
I2C
U0RX
U0TX
UART0
SPI1-MOSI
SPI1-MISO
U1RX
U1TX
UART1
Analog Lines
Interrupt Lines
SPI Lines
I2C Lines
UART lines
CAN lines
PWM lines

# 4. Dimensions



## Notes:

## Notes:

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