

# MINI-AT™

Small AVR development board fitted in DIP26 form factor, containing ATmega328 microcontroller.

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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.

A handwritten signature in white ink, appearing to read 'N. Matic', is positioned on the right side of the page. The signature is fluid and cursive, with a large initial 'N' and 'M'.

Nebojsa Matic  
General Manager

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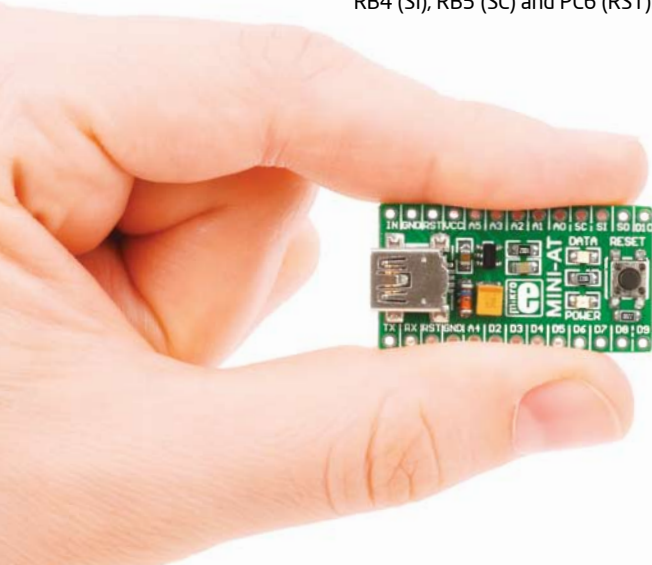
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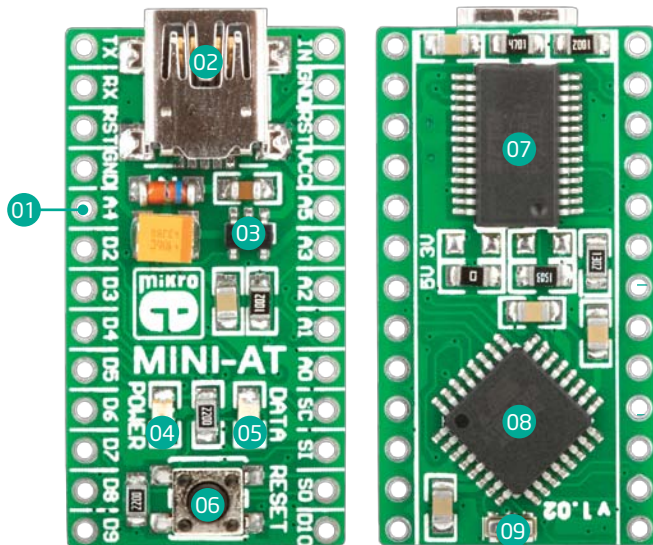
# Introduction to MINI-AT

Miniature and powerful development tool designed to work as a stand alone device or as MCU card in DIP26 socket. MINI-AT is pre programmed with bootloader so it is not necessary to have external programmer. If there is a need for external programmer (AVR ISP) attach it to MINI-AT via pads marked with PB3 (SO), RB4 (SI), RB5 (SC) and PC6 (RST).



## Key features

- 01 Connection Pads
- 02 USB MINI-B connector
- 03 Power supply regulator
- 04 POWER supply LED
- 05 DATA LED
- 06 Reset button
- 07 FTDI IC
- 08 Microcontroller ATmega328
- 09 Crystal oscillator



## System Specification



### power supply

3.3V or 5V via USB (depending on which MINI-AT board you are using)



### power consumption

depends on MCU state (max current is 300mA)



### board dimensions

33.02 x 17.78mm (1.3 x 0.7")



### weight

~4g (0.009 lbs)

# 1. Programming with Bootloader

When you are ready to start writing your first projects for MINI-AT, you need to download and install the desired AVR compiler. Choose between mikroC, mikroBasic and mikroPascal compilers, which can be found on following address:



<http://www.mikroe.com/eng/categories/view/21/avr-compilers/>

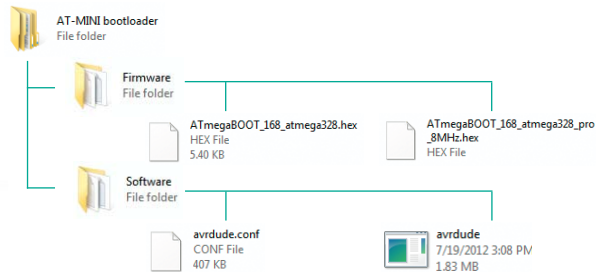


After the installation run the compiler and write the desired code. You can also use provided LedBlinking example as your first project. When you are done writing the code click on **Project->Build (F11)** option to create output .HEX file. Now you need to upload the generated .HEX into the MCU. But before that connect MINI-AT to a PC via MINI-B USB cable (**Figure 1-1**).

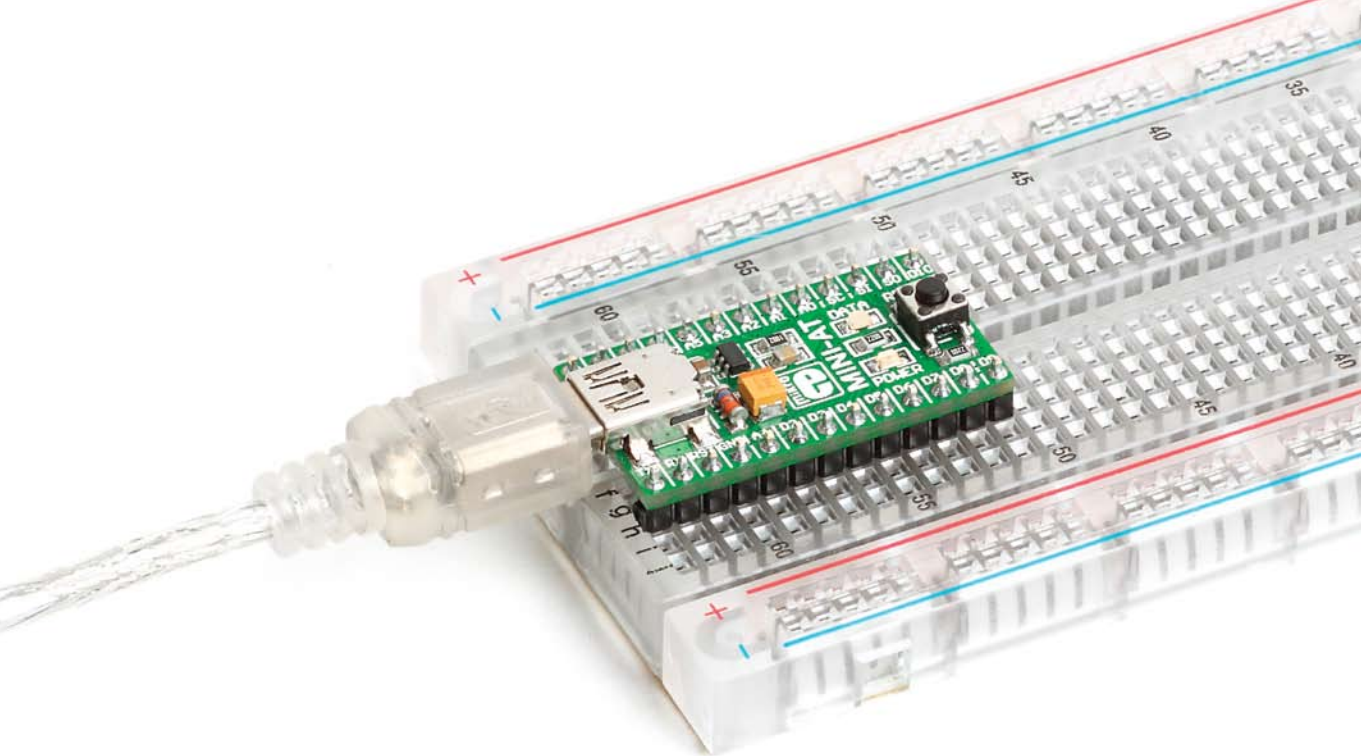
Now you will need to download and install the bootloader application and integrate it with your compiler. Download link is available on the MINI-AT webpage. We also provided a nice video tutorial which will guide you through the bootloading process.



<http://www.mikroe.com/eng/products/view/649/mini-at-board/>



**NOTE:** If you accidentally overwrite the bootloader program it is possible to load it again. In the Firmware folder you can find bootloader .hex files which can be loaded into the microcontroller via the AVR ISP programmer.

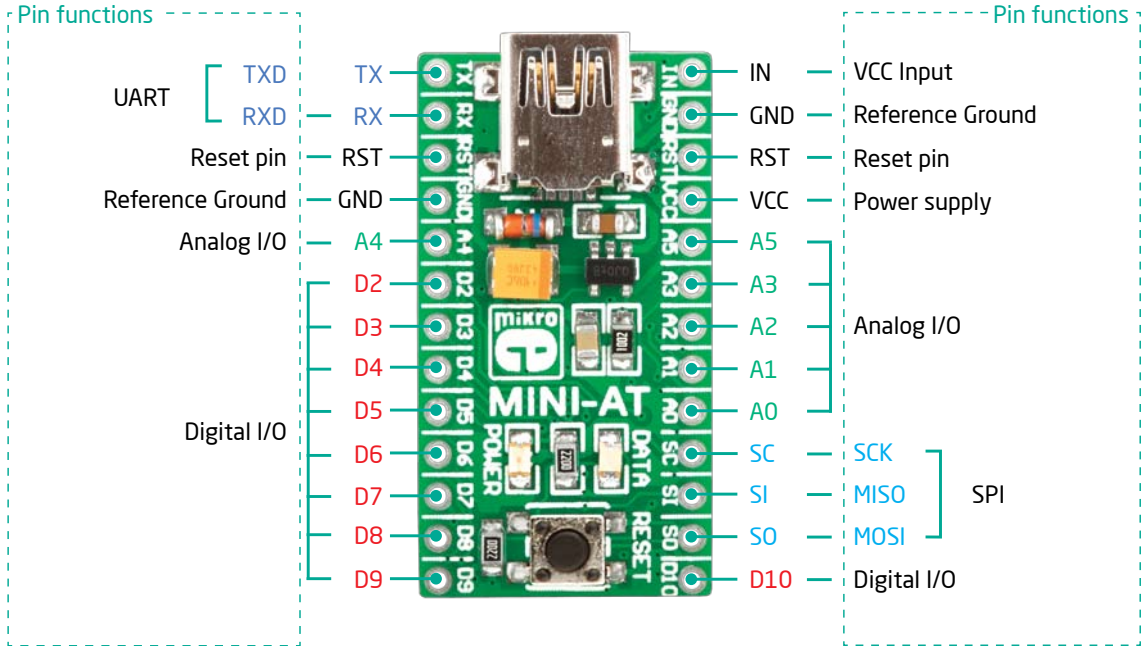


**Figure 1-1: Connected MINI-AT via USB cable**



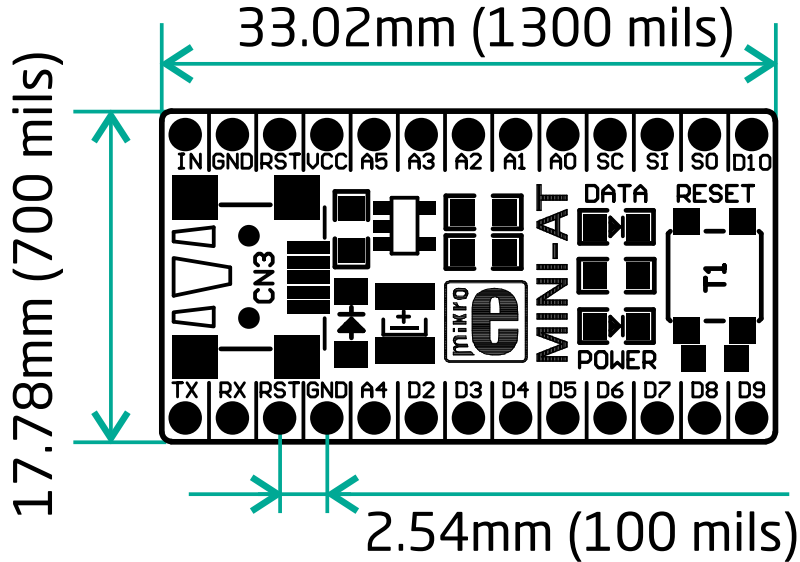


# 3. Pinout

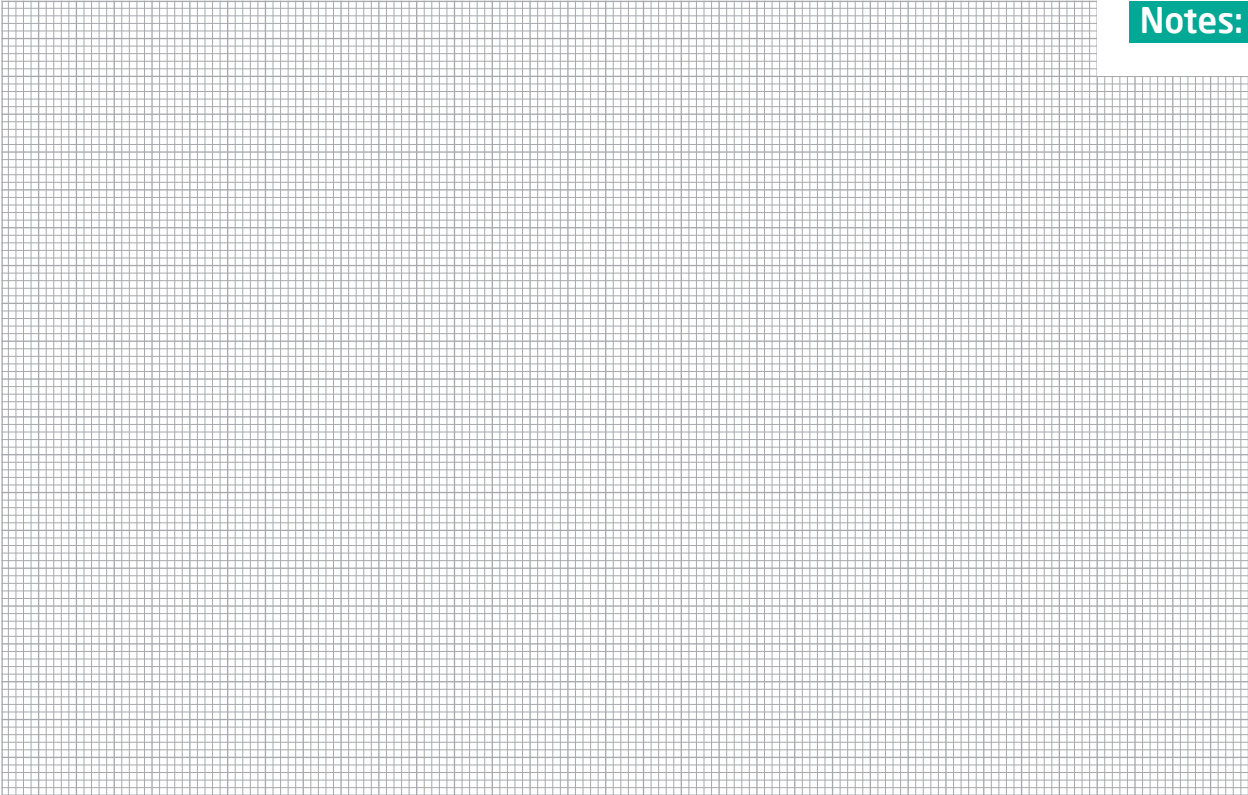


■ Digital lines  
 ■ Analog Lines  
 ■ SPI Lines  
 ■ UART lines

## 4. Dimensions



Notes:



Notes:

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MINI - AT Manual  
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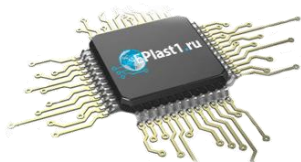
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- Защита от снятия компонента с производства.



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