CLICKER 4
for STM32

USER MANUAL

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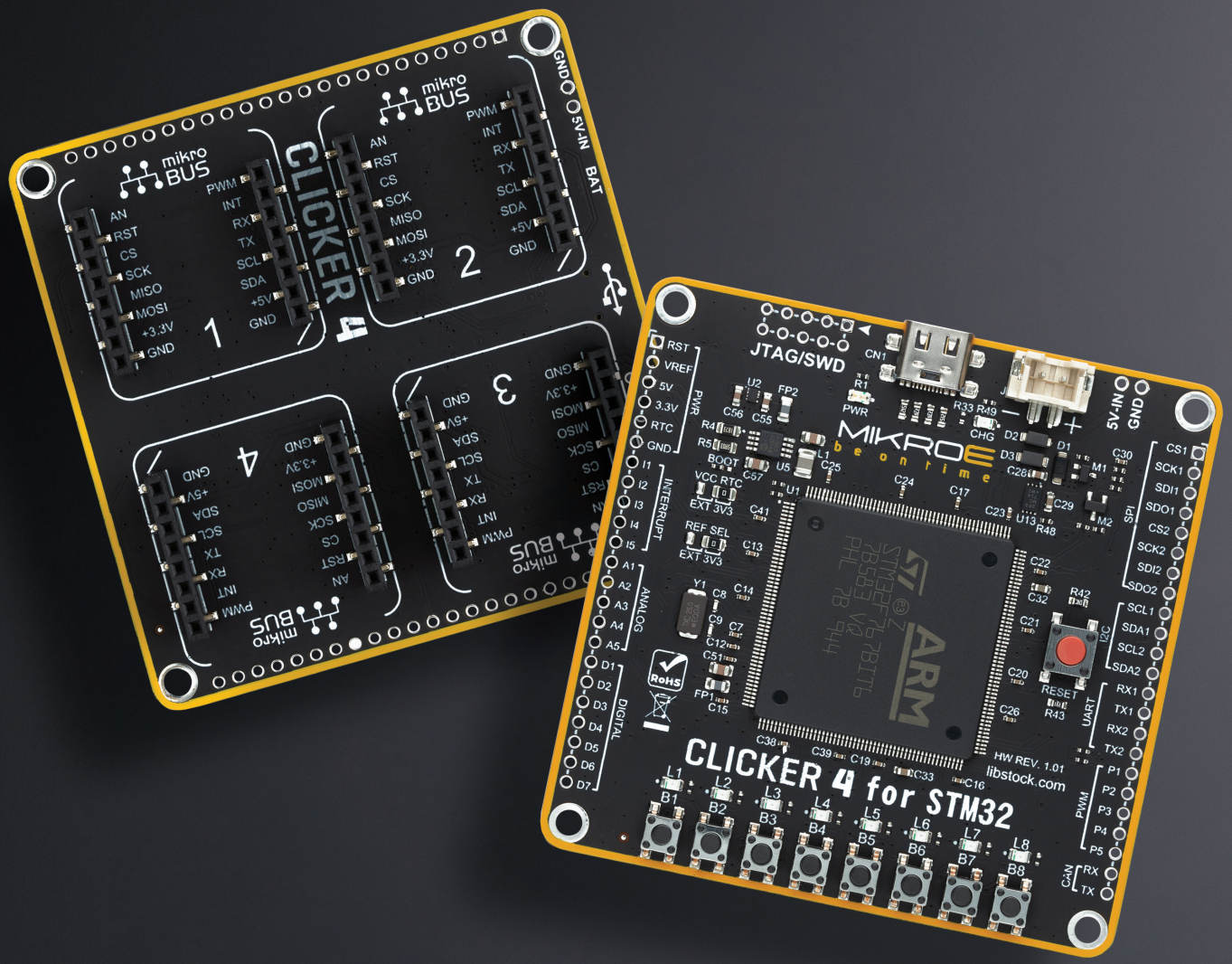
Table of contents


CLICKER
mikro BUS
AN
RST
CS
SCK
MISO
MOSI
+3.3V
GND
PWM
INT
RX
TX
SCL
SDA
+5V
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GND
5V-IN
BAT
JTAG/SWD
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MIKROE
beontime
RST
VREF
5V
3.3V
RTC
PWR
INTERRUPT
ANALOG
DIGITAL
SPI
I2C
UART
PWM
CAN
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Clicker 4 for STM32 is a compact development board designed as a complete solution, you can use it to quickly build your own gadgets with unique functionalities.

Featuring a STM32F767BI MCU, four mikroBUS™ sockets for Click boards™ connectivity, power managment, and more, it represents a perfect solution for the rapid development of many different types of applications.

At its core, there is a STM32F767BI MCU, a powerful microcontroller by STMicroelectronics, based on the high-performance Arm® Cortex®-M7 32-bit RISC core operating at up to 216 MHz frequency.

It provides sufficient processing power for the most demanding tasks, allowing Clicker 4 to adapt to any specific application requirements.

Besides two 1x23 pin headers, four improved mikroBUS™ sockets represent the most distinctive connectivity feature, allowing access to a huge base of Click boards™, growing on a daily basis.

Each section of Clicker 4 is clearly marked, offering an intuitive and clean interface. This makes working with the development board much simpler and thus, faster.

The usability of Clicker 4 doesn't end with its ability to accelerate the prototyping and application development stages: it is designed as a complete solution which can be implemented directly into any project, with no additional hardware modifications required. Four mounting holes [3.2mm/0.126"] at all four corners allow simple installation by using mounting screws. For most applications, a nice stylish casing is all that is needed to turn the Clicker 4 development board into a fully functional, custom design.

1. Key microcontroller features

At its core, Clicker 4 for STM32 uses the **STM32F767BI** MCU.

STM32F767BI is the 32-bit RISC ARM® Cortex®-M7 core. This MCU is produced by STMicroelectronics, featuring a dedicated floating-point unit (FPU), a complete set of DSP functions, and a memory protection unit (MPU) for elevated application security. Among many peripherals available on the host MCU, key features include:

- 2 MB of Flash memory
- 512 KB of SRAM
- Flexible external memory controller
- Chrom-ART Accelerator™ (DMA2D)
- Operating frequency up to 216 MHz
- 462 DMIPS/2.14 DMIPS/MHz (Dhrystone 2.1).

For the complete list of MCU features, please refer to the **STM32F767BI** ***datasheet***

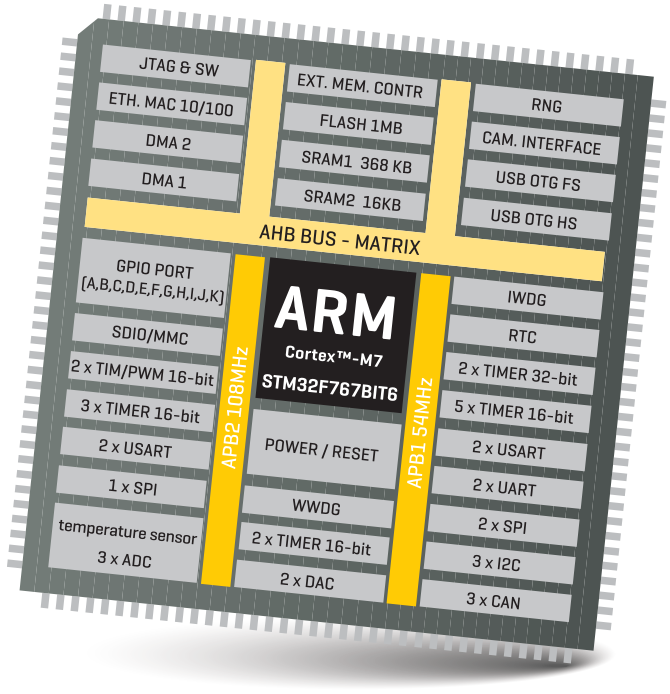


Figure 1: STM32F767BI MCU block schematic

2. MCU programming

The host MCU can be programmed and debugged over the 2x5 pin header **(1)**, labeled as JTAG/SWD. This header allows an external programmer (preferably CODEGRIP or mikroProg) to be used.

Programming the microcontroller can also be done by using the bootloader which is preprogrammed into the device by default. All the informations about the bootloader software can be found on the following page:
www.mikroe.com/mikrobootloader

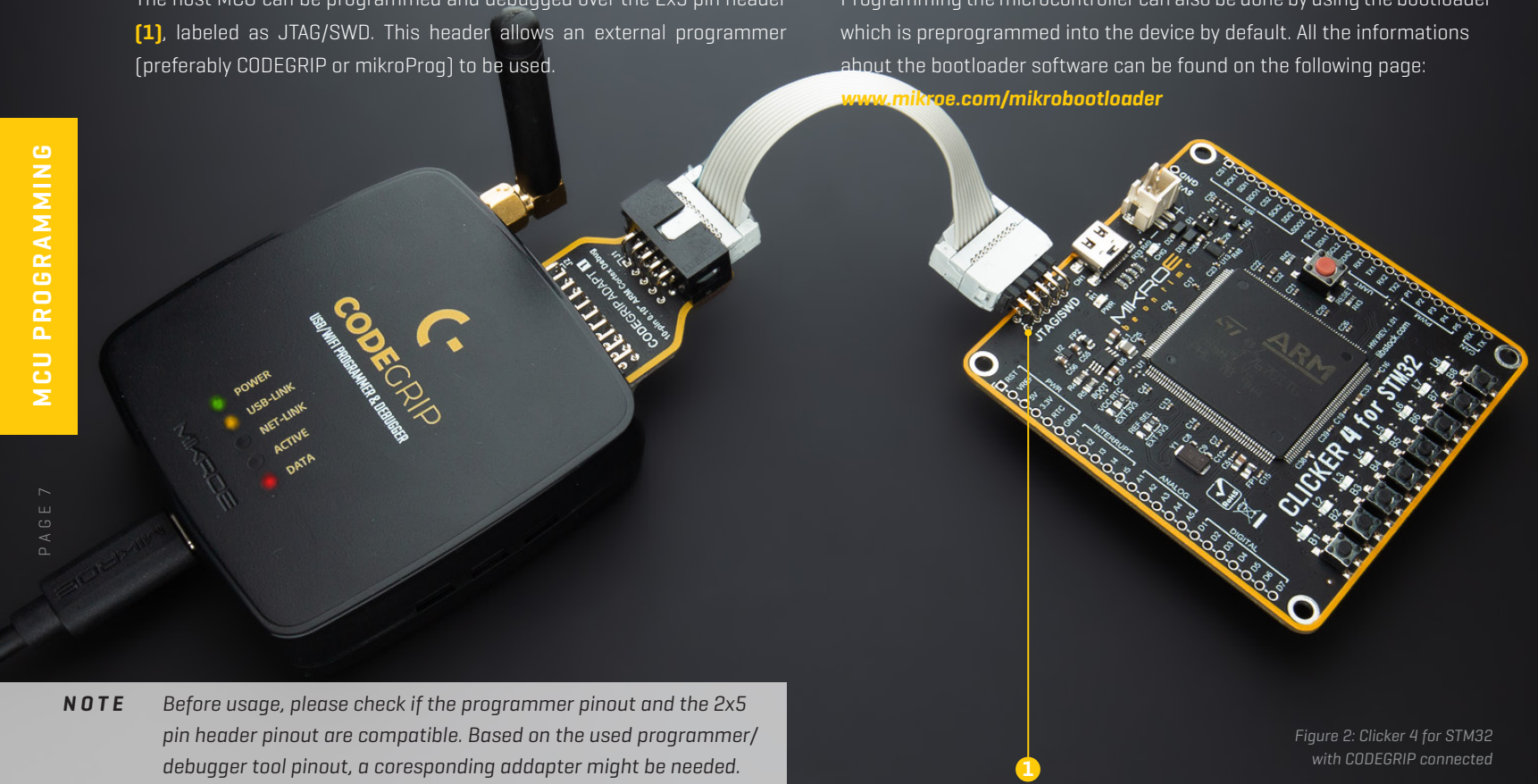


Figure 2: Clicker 4 for STM32 with CODEGRIP connected

NOTE *Before usage, please check if the programmer pinout and the 2x5 pin header pinout are compatible. Based on the used programmer/ debugger tool pinout, a coresponding addapter might be needed.*

3. MCU reset

Clicker 4 for STM32 development board is equipped with the reset button labeled as RESET **[3]**, located on the front of the board. It is used to generate a LOW logic level on the MCU reset pin.

The RST pin of the host MCU is also routed to the pin 1 of the 1x23 pin header **[4]**, allowing an external signal to reset the MCU.

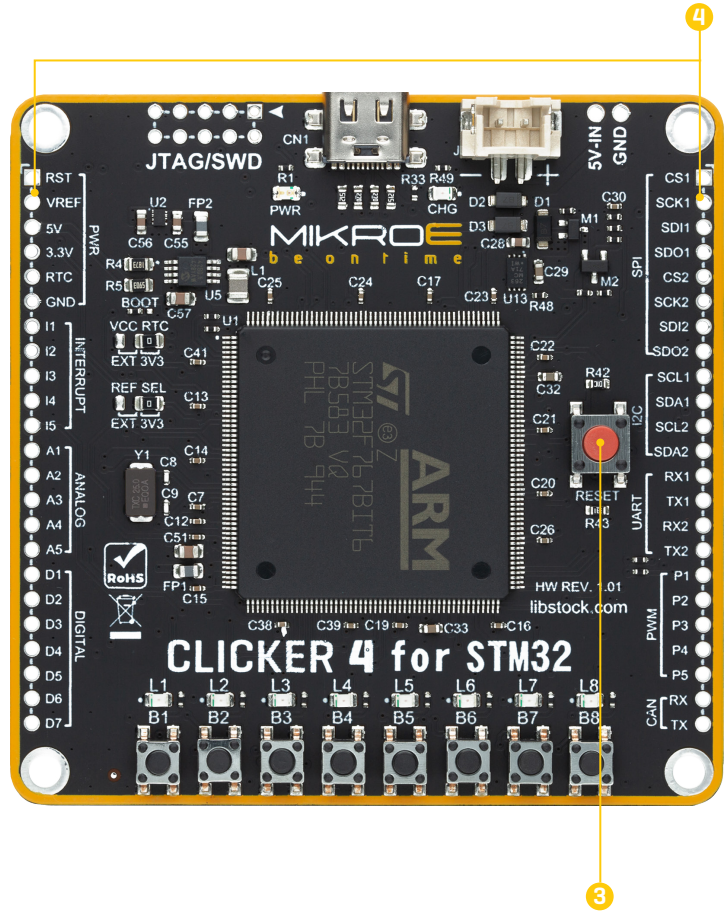


Figure 3: Clicker 4 for STM32 front view

4. Buttons and LEDs

The board also contains eight buttons and LEDs, located on the front side. Buttons **(1)** can be used to apply the desired logic state to pins of the MCU they are routed to. Pressing any of the two buttons can change the logic state of the microcontroller pins from logic high (1) to logic low (0).

LEDs **(2)** can be used to visually indicate a logic state of the specific pin. The maximum current through a single LED is limited with the 4.7k resistor. Each LED is connected to a MCU pin, and an active LED indicates that a logic high (1) is present.

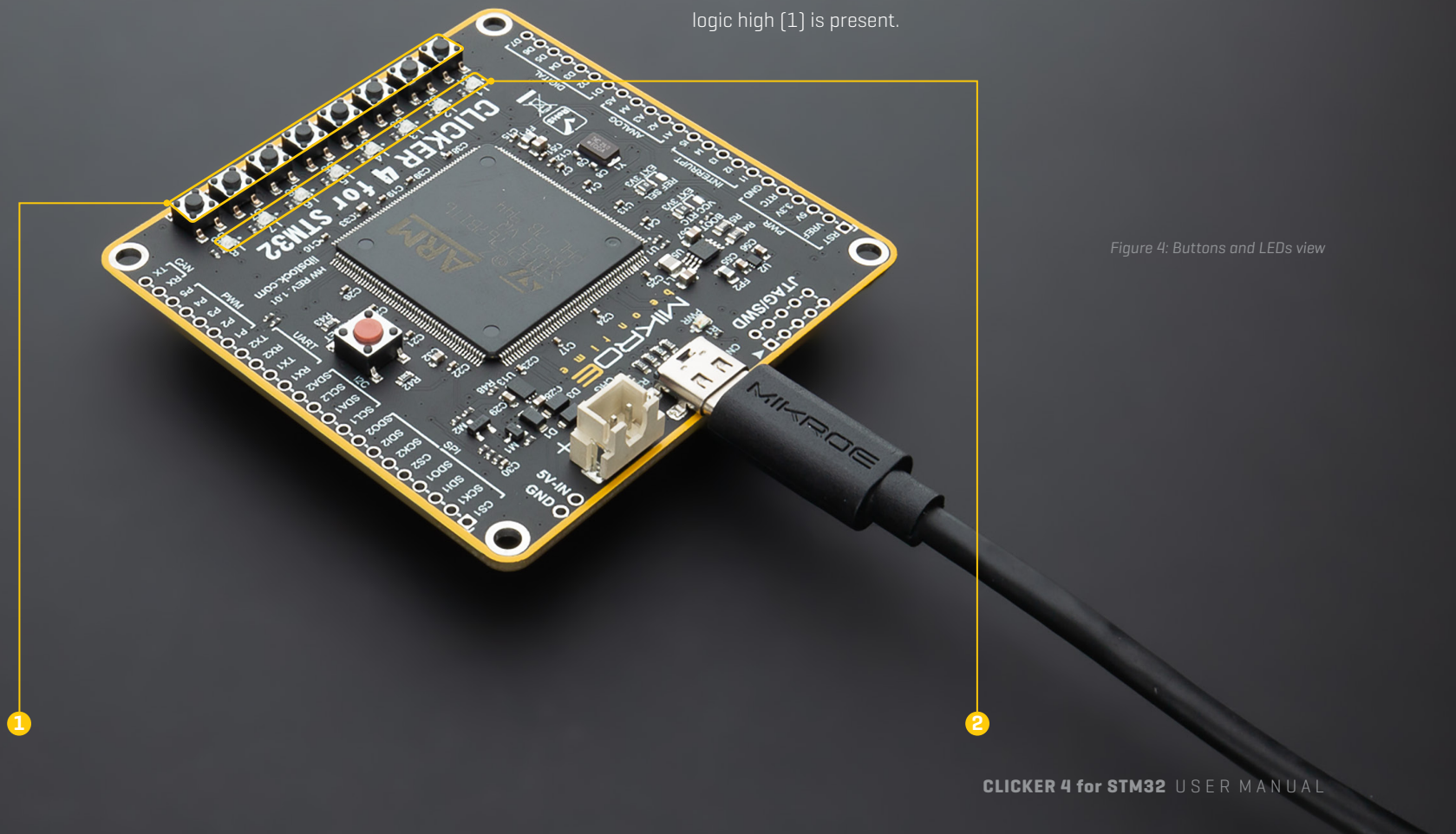


Figure 4: Buttons and LEDs view

5. Power supply

After a valid power supply source is connected **(1 – 2 – 3)**, Clicker 4 for STM32 can be powered ON. A LED indicator labeled as PWR **(4)** indicates that the board is powered ON.

The power supply unit (PSU) provides clean and regulated power, necessary for proper operation of the Clicker 4 for STM32 development board. It is equipped with three different power supply inputs, offering all the flexibility that Clicker 4 for STM32 needs, and a reliable and safe battery charging circuit, which allows a single-cell Li-Po/Li-Ion battery to be charged.

As explained, the advanced design of the PSU allows three types of power sources to be used, offering unprecedented flexibility: when powered by a Li-Po/Li-ION battery, it offers an ultimate degree of autonomy.
Power is not an issue even if it is powered over the USB cable. It can be powered over the USB-C connector, using power supply delivered by the USB HOST (i.e. personal computer), USB wall adapter, or a battery power bank. There are two power supply connectors available, each with its unique purpose:

CN1: USB-C connector **(3)**
J5: Standard 2.5mm pitch XH battery connector **(2)**

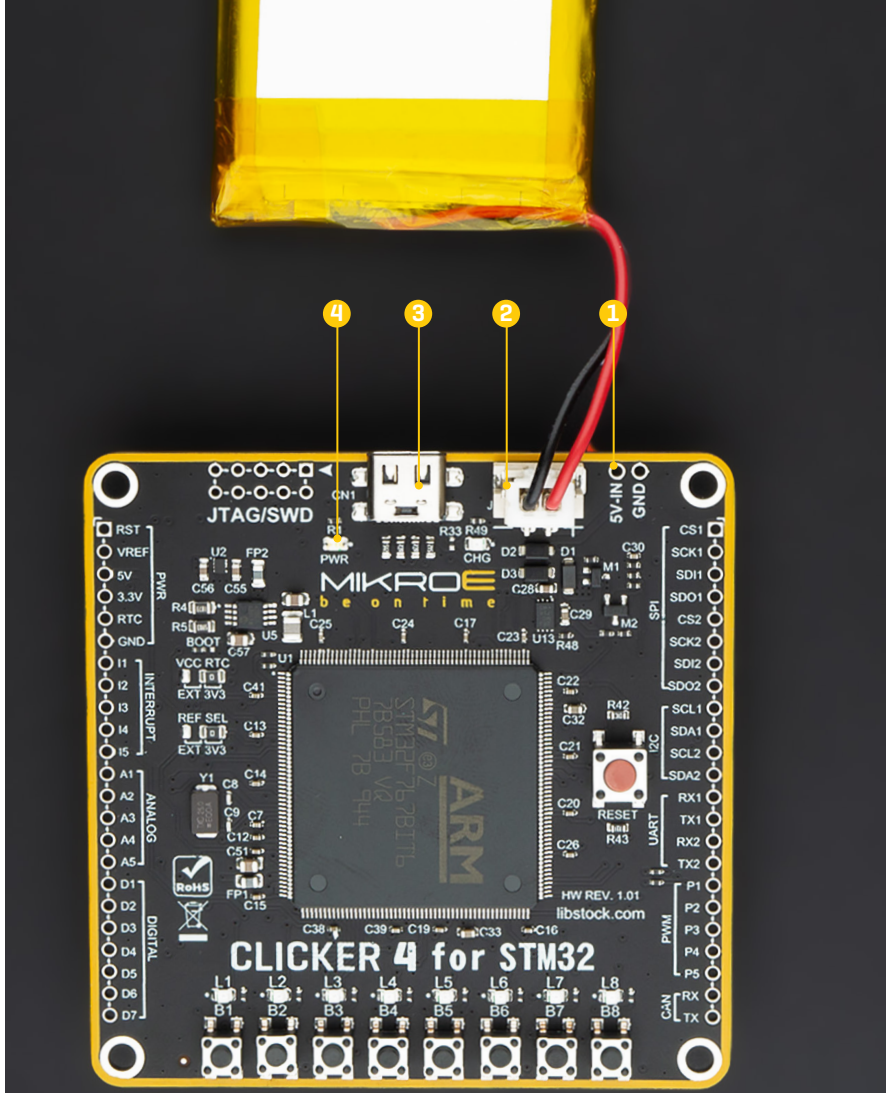


Figure 5: Power supply view

6. Connectivity

Clicker 4 offers a variety of connectivity options including USB [DEVICE] **(1)**, four standardized mikroBUS™ sockets, and two 1x23 pin headers which are used to directly access the host MCU pins.

Clicker 4 supports USB as device, allowing the development of a wide range of various USB-based applications.

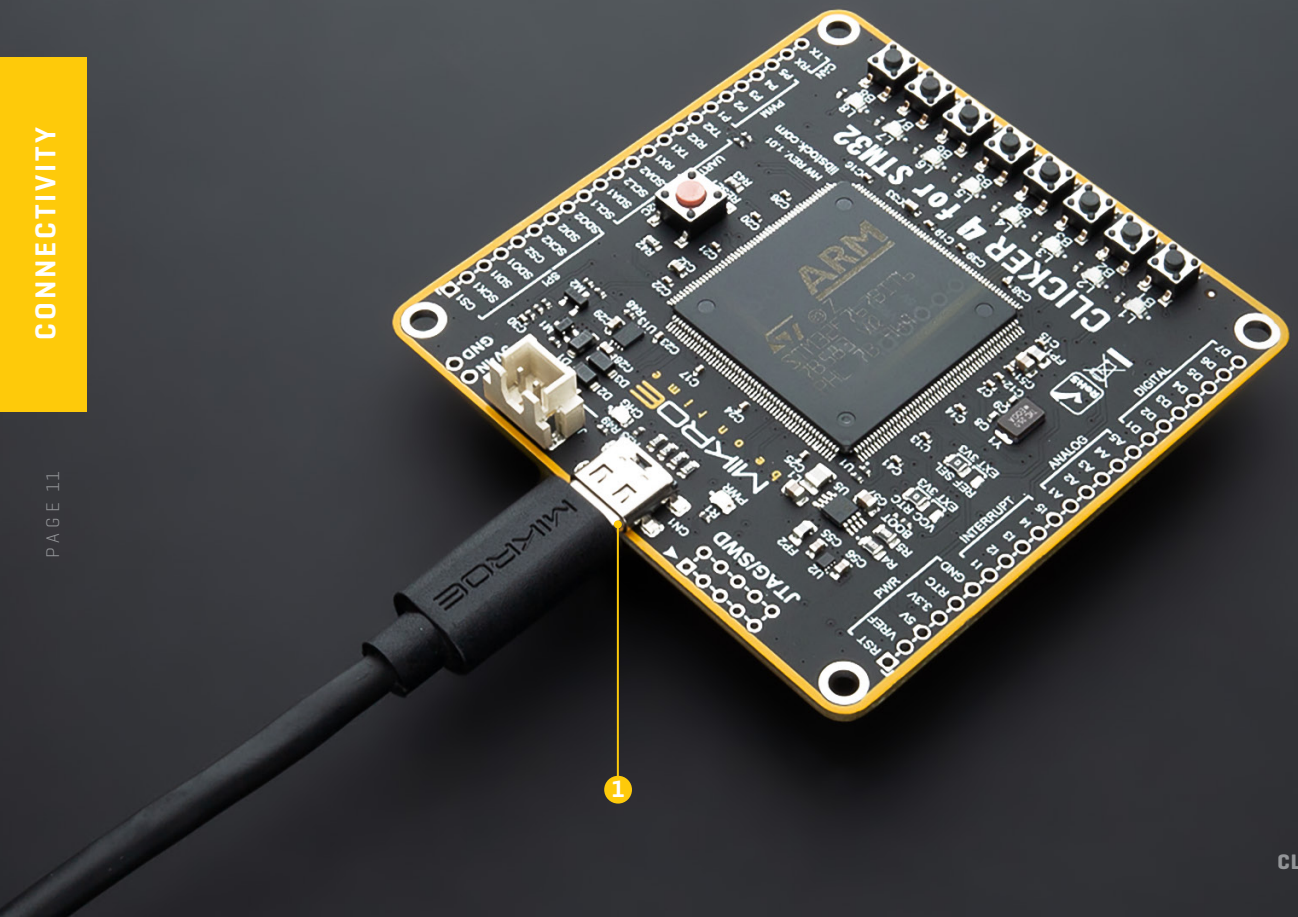


Figure 6: Front view with connected USB - C cable

A lot of the host MCU pins are routed to two 1x23 pin headers, making them available for further connectivity. In addition to MCU pins, some additional peripheral pins are also routed to this header.

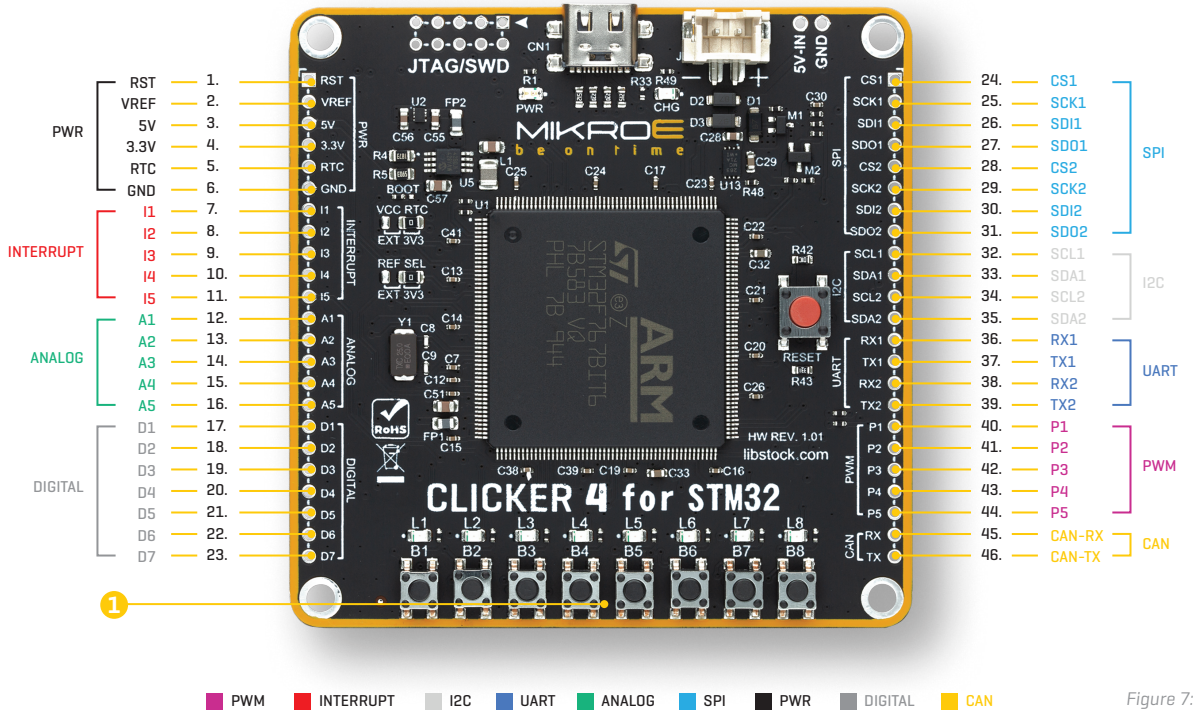


Figure 7: 1x23 pin header view

7. Click boards™

THE LARGEST ADD-ON BOARD COLLECTION IN THE WORLD.

Click boards™ are standardized add-on boards that carry a variety of different electronic devices. They are designed to perfectly fit the mikroBUS™ socket. Engineered to deliver the best performances for the used components, they save developers of testing and troubleshooting often associated with the prototyping phase. They enhance rapid development and accelerate time to market. These ready-to-use boards require no additional hardware configuration.

More information at ***www.mikroe.com/click***

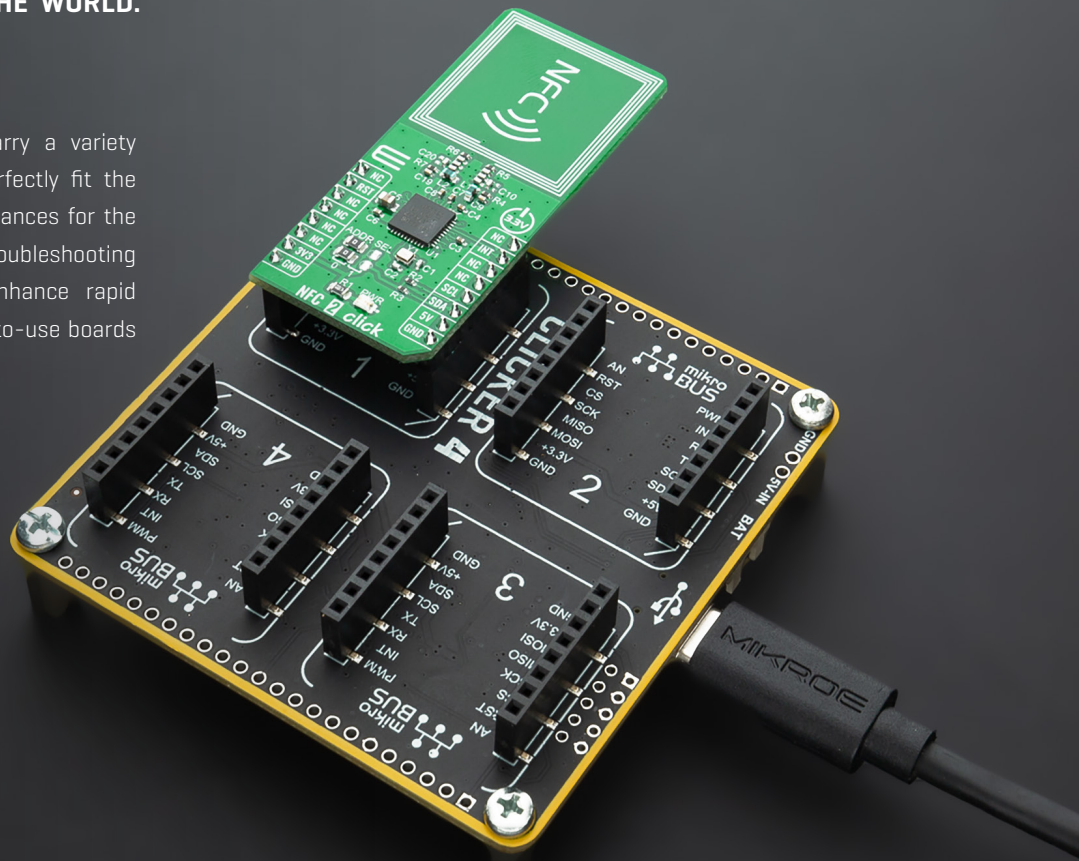
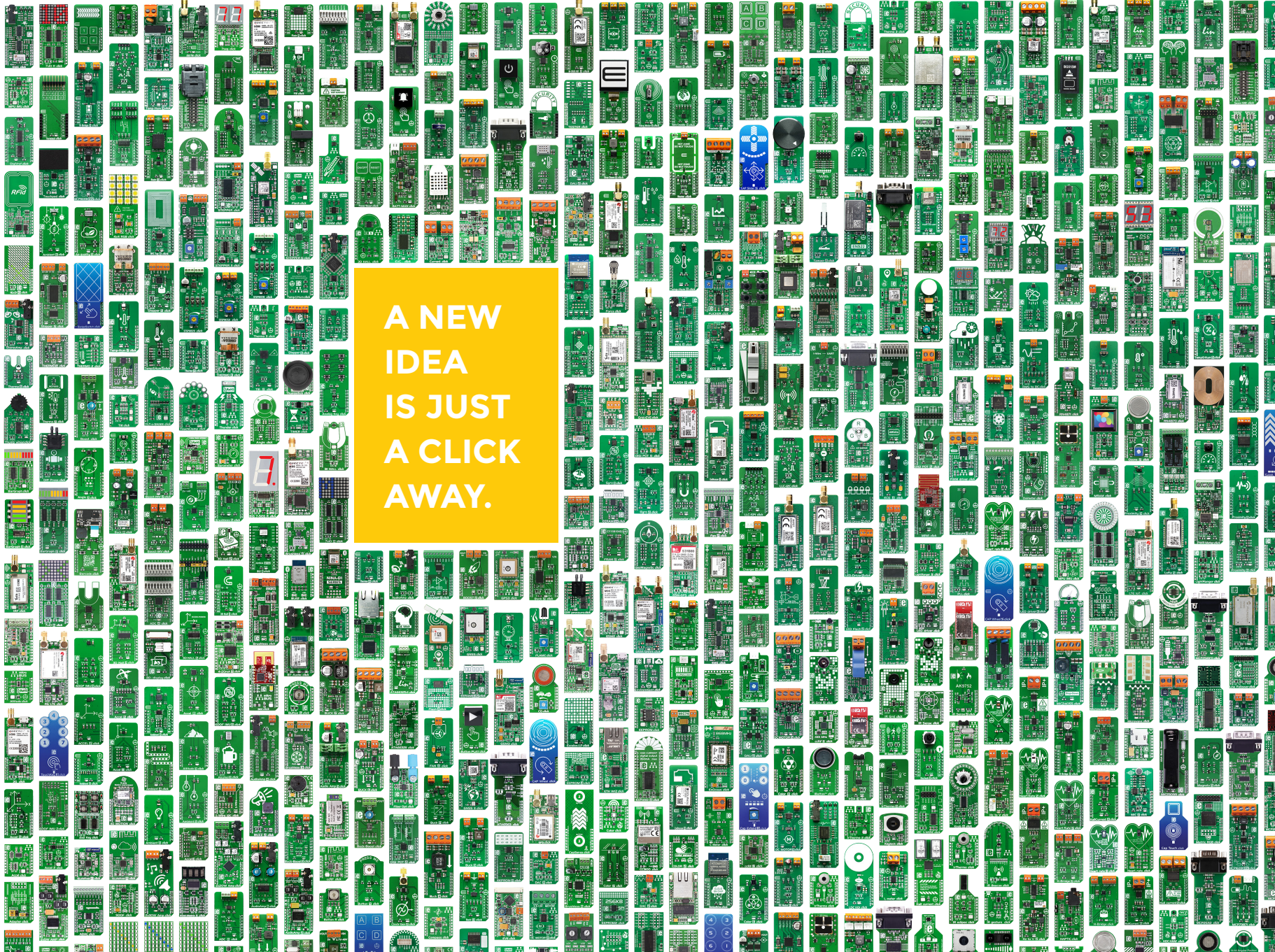


Figure 8: Clicker 4 for STM32 with NFC 2 click connected


A NEW
IDEA
IS JUST
A CLICK
AWAY.

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