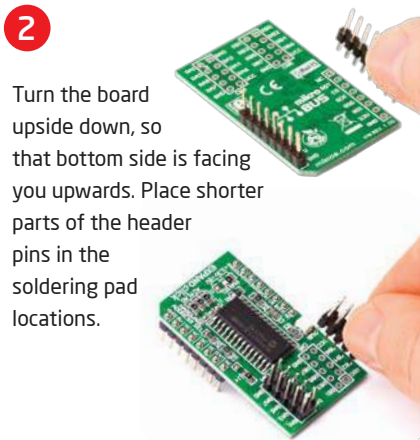
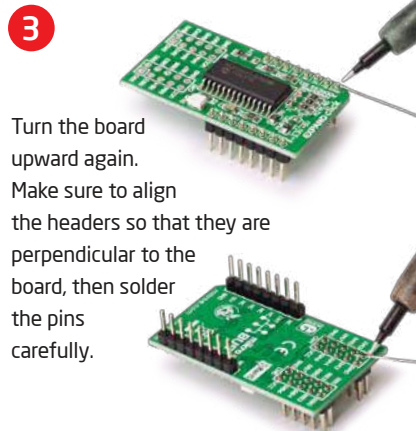


## 2. Soldering the headers

Before using your click board, make sure to solder the provided 1x8 male headers to both sides of the board. Two 1x8 male headers are included with the board in the package.

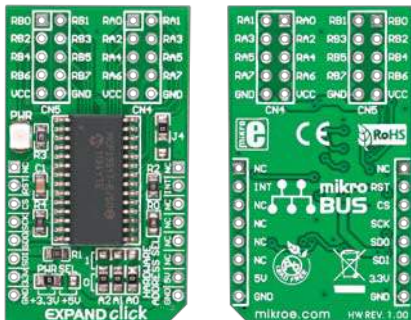


Turn the board upside down, so that bottom side is facing you upwards. Place shorter parts of the header in the soldering pad locations.

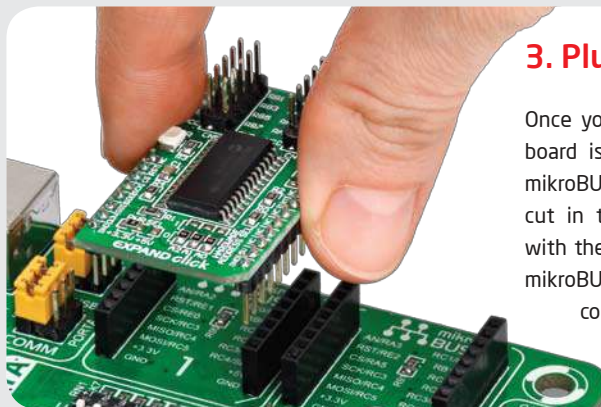


Turn the board upward again. Make sure to align the headers so that they are perpendicular to the board, then solder the pins carefully.

## 1. Introduction



EXPAND Click is an accessory board in **mikroBus™** form factor. It includes a 16-bit I/O expander **MCP23S17** with SPI clock speeds up to 10 MHz for higher throughput applications. Three **HARDWARE ADDRESS SEL** jumpers allow you to configure board address and connect up to eight devices on the bus. Controller also supports interrupt-on-change. Board is set to use 3.3V power supply by default. Solder **PWR SEL** SMD jumper to 5V position if used with 5V systems.



## 3. Plugging the board in

Once you have soldered the headers your board is ready to be placed into desired mikroBUS™ socket. Make sure to align the cut in the lower-right part of the board with the markings on the silkscreen at the mikroBUS™ socket. If all the pins are aligned correctly, push the board all the way into the socket.



## 4. Using The Board

Communication with on-board port expander is done through SPI communication interface. The 16 I/O port bits are divided into two 8-bit ports (PORTA and PORTB). The **MCP23S17** can be configured to operate in the 8-bit or 16-bit mode. All pins act as bidirectional I/Os and can be enabled for interrupt-on-change and/or internal weak pull-up resistor.

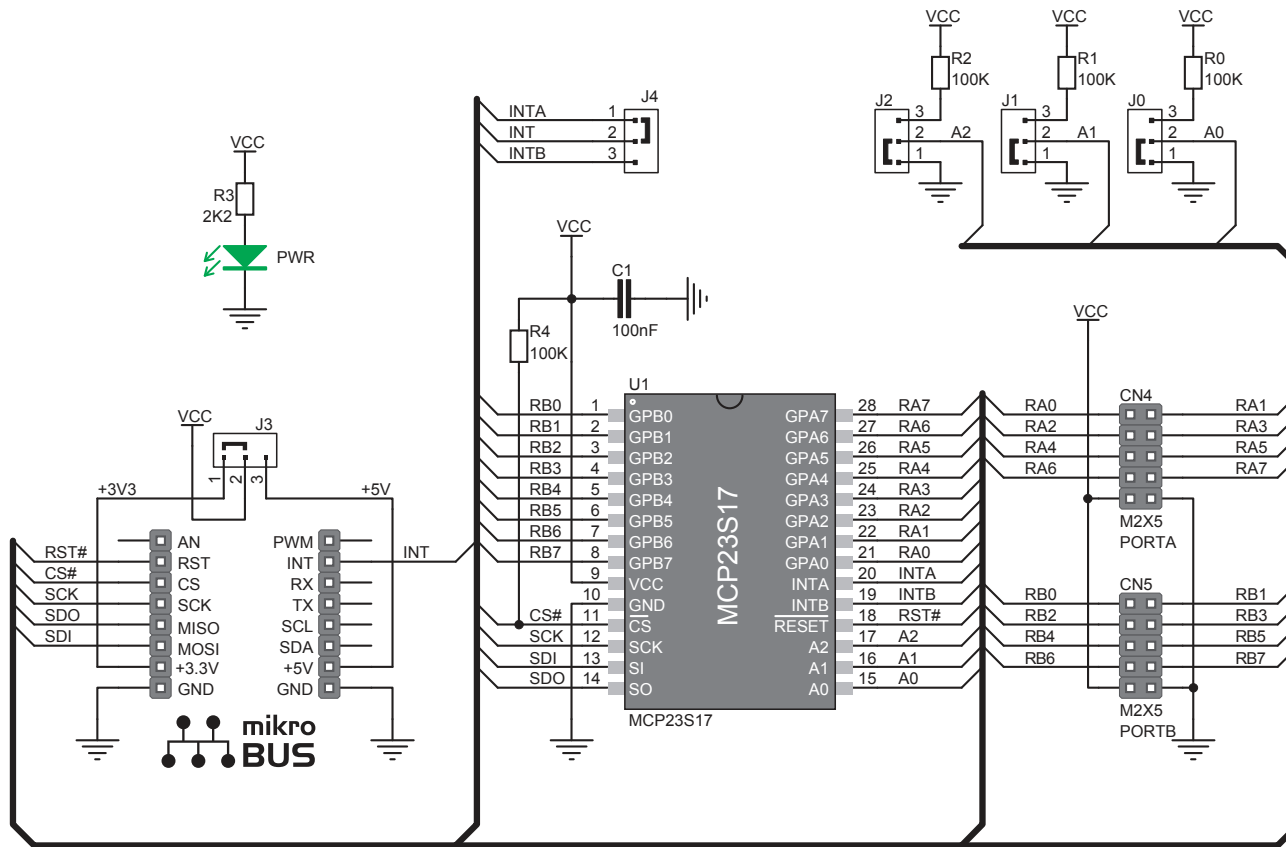
**click™**  
**BOARD**  
[www.mikroe.com](http://www.mikroe.com)



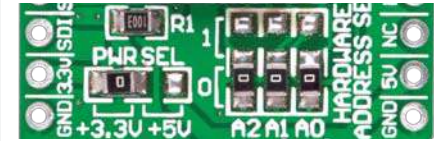
EXPAND click Manual  
ver. 1.00



## 5. EXPAND click Board Schematics



## 6. SMD Jumpers



There are four zero-ohm resistors (SMD jumpers): **PWR SEL** is used to determine whether 5V or 3.3V power supply is used, and three **HARDWARE ADDRESS SEL** for selecting the device address.

## 7. Code Examples

Once you have done all the necessary preparations, it's time to get your click board up and running. We have provided the examples for mikroC, mikroBasic and mikroPascal compilers on our **Libstock** website. Just download them and you are ready to start.



## 8. Support

MikroElektronika offers **Free Tech Support** ([www.mikroe.com/esupport](http://www.mikroe.com/esupport)) until the end of product lifetime, so if something goes wrong, we are ready and willing to help!