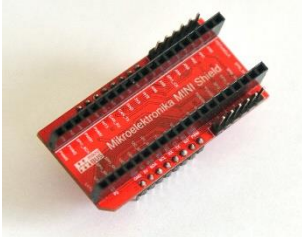


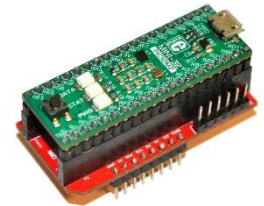
MINI (DIP40) Shield



The **MINI (DIP40) Shield** is an adapter that allows you to install MikroElektronika™ MINI modules in the mikroBUS™ slot or connect mikroBUS™ modules (such as [MikroElektronika's Click®](#)) to MikroElektronika™ MINI modules.

The list of modules installed in the MikroElektronika™ MINI slot of this shield:

- MINI-M4™ for MSP432 (MSP432P401RIRGC microcontroller)
- MINI-M4™ for Stellaris® (LX4F230H5QR microcontroller)
- MINI-M0™ for STM32 (STM32F051R8 microcontroller)
- MINI-M4™ for STM32 (STM32F415RG microcontroller)
- MINI-M4™ for Tiva™ C Series (TM4C123GH6PM microcontroller)
- MINI-32™ for PIC32MZ (PIC32MZ microcontroller)
- MINI-M4™ for Kinetis (MK64FN1M0VDC12 microcontroller)



with all software and services from specified companies.

The correspondence of MikroElektronika™ MINI module contacts and **MINI (DIP40) Shield** connectors is as follows:

	MINI	mikroBUS LEFT	mikroBUS RIGHT	AUX1	AUX2
LEFT	1	RST\nMCLR	RST		
	2	AN0	AN		
	3	AN1		1	
	4	AN2		2	
	5	AN3			
	6	AN4			
	7	SPI1-CS			4
	8	AN5		3	
	9	AN6		4	
	10	INT2	RST		
	11	3.3V Power Supply	3V3		
	12	GND	GND	GND	
	13	CAN-TX		3	
	14	CAN-RX		4	
	15	INT3			
	16	PWM0		PWM	
	17	PWM1		5	
	18	SPI1-SCK	SCK		3
	19	PWM2			
	20	PWM3			
RIGHT	1	SPI0-MISO	MISO		
	2	SPI0-MOSI	MOSI		
	3	SPI0-SCK	SCK		
	4	SPI0-SS	CS		
	5	TCK/SWC			
	6	TMS/SWD			
	7	INT0		INT	
	8	INT1			6
	9	3.3V Power Supply	3V3		
	10	GND	GND		
	11	TDI			
	12	TDO			
	13	I2C-SCL		SCL	
	14	I2C-SDA		SDA	
	15	U0RX		RX0	
	16	U0TX		TX0	
	17	SPI1--MOSI			1
	18	SPI1-MISO			2
	19	U1RX			5
	20	U1TX		GND	6

Signals RST, AUX1 pin 3, AUX1 pin4 have use cases. The following table provides information on which MikroElektronika™ MINI signals are supplied to them:

Signal	RST	AUX1-3	AUX1-4
Default	Left MINI, pin 1	Left MINI, pin 13	Left MINI, pin 14
Alternative	Left MINI, pin 10	Left MINI, pin 8	Left MINI, pin 9

The bottom-side shield has a Qwiic connector for I²C. The bottom-side also houses pull-up resistors for I²C. They are switchable (using JP jumpers on bottom-side), resistors are connected by default.

On the bottom-side there are also jumpers to select direct and cross-connect RX and TX to the corresponding mikroBUS™ signals.

List of jumpers on the bottom-side and their default states:

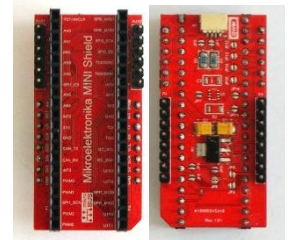
	Description	Default
JP1	I2C pull-up	CLOSE
JP2		CLOSE
JP3	direct or cross-connect for TX0 (default is direct)	CLOSE
JP4		OPEN
JP5	direct or cross-connect for RX0 (default is direct)	CLOSE
JP6		OPEN
JP7	BME280 i2c address	OPEN
JP8	3V3 source for mikroBUS (JP8 - MINI, JP9 - shield), MINI default	CLOSE
JP9		OPEN
JP10	mikroBUS RST source (JP10 - pin1, JP11 - pin10), pin1 by default	CLOSE
JP11		OPEN
JP12	AUX1 pin3 source (JP12 - pin8, JP13 - pin13), pin13 by default	CLOSE
JP13		OPEN
JP14	AUX1 pin4 source (JP14 - pin9, JP15 - pin14), pin14 by default	CLOSE
JP15		OPEN

The **MINI (DIP40) Shield** contains (on the bottom-side) the voltage regulator [AMS1117-3.3](#) and the necessary capacitors. On the bottom-side there is a jumper defining the 3V3 source on the mikroBUS™ (from the installed to MikroElektronika™ MINI slot module or from AMS1117-3.3). By default - from the installed module.

Optionally, a [BME280](#) is installed on the bottom-side of the module (7-bit address on I²C = 111011x). The address for BME280 is selected with jumpers on the bottom-side. The default address should be 1110111.

MINI (DIP40) Shield size - 50.8 x 25.4 mm.

[MikroElektronika™](#) manufactures numerous modules with mikroBUS™ interface - Click® modules.



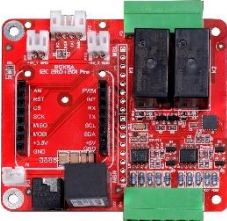
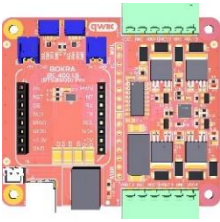
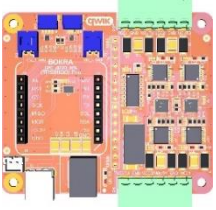


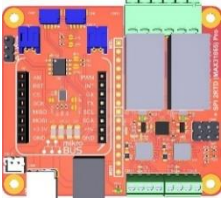
All these modules can be easily connected directly to the MikroElektronika™ MINI module using the **MINI (DIP40) Shield**.

The main areas of application of the shield:

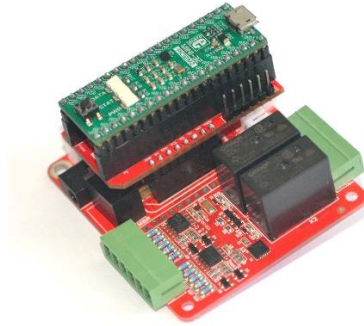
- Industry and transport automation
- Data acquisition systems (DAS) and PLC
- Scientific and medical equipment
- Digital Signal Processing (DSP)
- Heating, Ventilation, & Air Conditioning (HVAC)
- Motor control
- Smart home

With **MINI (DIP40) Shield**, it is easy to use MikroElektronika™ MINI compatible modules to control the following Pro Series I/O modules:

Image	Name	Characteristics
	I2C 4AI ADS1x15 Pro	4 channels differential analog input based on 16-bit ADS1115 and 12-bit ADS1015 ADC. The two Texas Instruments $\Delta\Sigma$ (delta-sigma) ADCs installed on the module. Voltage measurement ranges: 0-0.5V, 0-5V, 0-10V, $\pm 0.5V$, $\pm 5V$, $\pm 10V$. Current measurement ranges: 0-20mA, 4-20mA, $\pm 20mA$, 0-40mA. Measurement speed: up to 860 measurements per second for ADS1115 and up to 3300 measurements per second for ADS1015.
	I2C 2RO+2AI Pro	2 Omron G5Q-14 relays and 2 analog input channels based on an ADC from Texas Instruments (either ADS1115-Q1 or ADS1015). Voltage measurement ranges: 0-0.5V, 0-5V, 0-10V, $\pm 0.5V$, $\pm 5V$, $\pm 10V$. Current measurement ranges: 0-20mA, 4-20mA, $\pm 20mA$, 0-40mA. Measurement speed: up to 860 measurements per second for ADS1115 and up to 3300 measurements per second for ADS1015.
	I2C 2RO+2DI Pro	2 Omron G5Q-14 relays and 2 digital input channels (based on Texas Instruments ISO1211). The modules allow you to enter the values of 2 digital signals, both DC and AC. Supports 9-V to 300-V DC and AC digital input. Compliant to IEC 61131-2; Type 1, 2, 3 characteristics for 24-V isolated digital inputs. Accurate Current Limit for Low-Power Dissipation: $- 2.2\text{ mA}$ to 2.47 mA for Type 3. Maximum transient isolation voltage (up to 60s) – 3600V.
	I2C 4DO LS (BTS3160D) Pro	4 channels low-side digital output, based on BTS3160D.
	I2C 4DO HS (TPS1H100) Pro	4 channels high-side digital output, based on TPS1H100.

	<p>I2C 2RO + SPI 2RTD Pro</p>	<p>2 Omron G5Q-14 relays and 2 digital input channels (based on Texas Instruments ISO1211).</p>
---	-------------------------------	---

You can also learn more about the **I2C 2RO + 2DI Pro** module on the [loThings Digital](#) page at Crowd Supply.



MINI-32™ for PIC32MZ, MINI (DIP40) Shield and loThing Digital

MINI (DIP40) Shield schematic:

