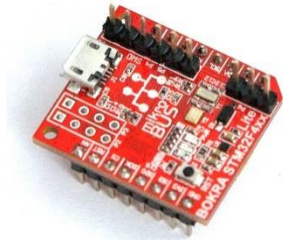


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STM32F4xx Lite



The **BOKRA STM32F4xx Lite** module is based on the following microcontrollers with the Cortex M4 architecture (extended with FPU):

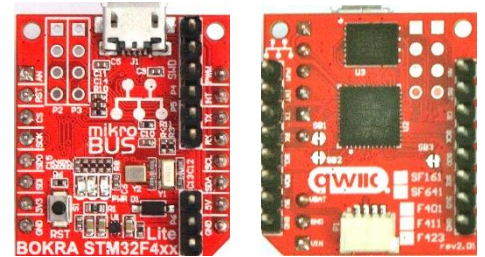
- STM32F401CEU6 (abbreviated - STM32F401)
- STM32F411CEU6 (abbreviated - STM32F411)
- STM32F423CHU6 (abbreviated - STM32F423)

The module can accommodate additional 4Mx8 or 16Mx8 flash memory.

Debugging interface - SWD. External connectors - I²C, USB, mikroBUS and two auxiliary 4-pin connectors.

Input Power – 5V. The voltage regulator is Microchip's MIC528, which provides 500 mA output current. The module has a RESET button and three LEDs (power and two program-controlled).

BOKRA STM32F4xx Lite makes it easy to implement IoT projects (smart sensors, climate control, industrial automation) using expansion modules with mikroBUS interface, Grove Systems peripherals (sensors and devices), as well as any other I²C bus-controlled modules. You no longer need to mockup the system, and then think first about how to make a prototype, and then how to start serial production. You can assemble the desired configuration and after debugging you only need to put the system into the case and buy the selected boards to start production.



Install your **BOKRA STM32F4xx Lite** on a BOKRA BaseA + 5W module or similar, add one of the many wireless boards, LED or OLED control, a stepper motor driver and much, much more. Almost everything that may be required for your project is already in the range of modules with the mikroBUS interface.

The site STMicroelectronics - manufacturer of the microcontroller - indicated that it is designed for a wide range of applications, such as:

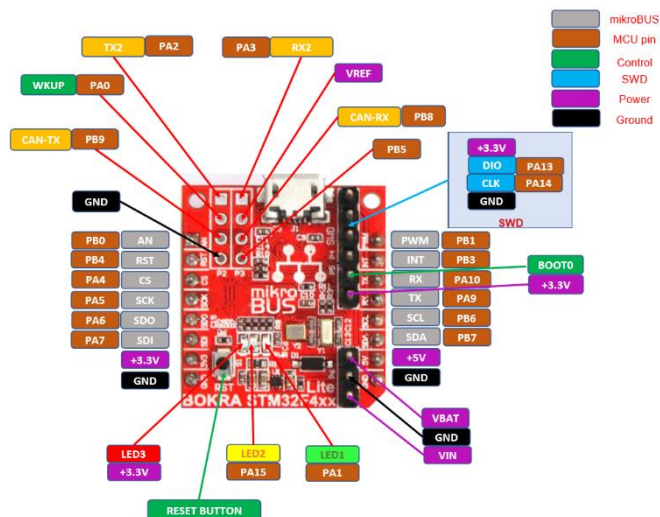
- Industrial Applications
- PLC
- Inverters
- Circuit breakers
- Medical devices
- Electric drives
- Sensor hubs
- HVAC
- Security systems

Specifications

The main characteristics of the **BOKRA STM32F4xx Lite** are as follows:

Name	BOKRA STM32F4xx Lite		
Microcontroller	STM32F401CEU6	STM32F411CEU6	STM32F423CHU6
Core	Cortex-M4F		
Frequency, MHz	84	100	100
Flash Memory, KB	256	512	1500
RAM, KB	96	128	320
Interface for debugging	SWD		
Serial interfaces	SPI, I ² C, USART, CAN, LIN		
External connectors			
mikroBUS	1	1	1
I ² C	1	1	1
USB	1	1	1
Input power	5V (Vin)		
Voltage regulator	MIC5528 компании Microchip		
Output current	500 mA		
Button	RESET		
LEDs	Красный (питание), желтый и зеленый (программные)		
Size	28,6 x 25,4 мм		

The matching of the **BOKRA STM32F4xx Lite** contacts and the microcontroller contacts is as follows:



The module has a P5 connector with a pin for supplying the BOOT0 signal to the microcontroller for initial loading of the program (just connect it with a jumper with a pin for 3.3VDC), as well as a P6 connector with pins for external power supply 5V and VBAT. In addition, using jumpers J1 and J2, you can enable and disable pull-up resistors for I²C.

The pin assignment (contacts) in the **BOKRA STM32F4xx Lite** is almost the same as the assignment in other popular boards based on the STM32F4xx microcontroller. Comparison in the following table:

Pin	BOKRA STM32F4xx Lite	MicroPython pyboard PYBv1.1	BluePill	Low cost STM32F103C8T6
PA0	AUX WKUP / PA0	GPIO	ADC0 / WKUP	A0
PA1	LED1 (green)	GPIO	ADC1	A1
PA2	AUX TX2 / PA2	GPIO	ADC2 / TX2	A2 / TX2
PA3	AUX RX2 / PA3	GPIO	ADC3 / RX2	A3 / RX2
PA4	CS	SS1 / DAC	NSS1	NSS
PA5	SCK	SCK1 / DAC	SCK1	SCK
PA6	SDO	MISO1	MISO1	MISO
PA7	SDI	MOSI1	MOSI1	MOSI
PA8	F-IO2 (WP)	LED R1	GPIO	GPIO
PA9	TX	VBUS	TX1	TX1
PA10	RX	USB ID	RX1	RX1
PA11	D-	USB DM	USB-	USB DM / CAN RD
PA12	D+	USB DP	USB+	USB DP / CAN TD
PA13	DIO	SWDIO	SWDIO	SWDIO
PA14	CLK	SWCLK	SWCLK	SWCLK
PA15	LED2 (yellow)	GPIO	NSS1	NSS1
PB0	AN	ADC	ADC8	PWM / Analog
PB1	PWM	ADC	ADC9	PWM / Analog
PB2	-	MMA_INT	BOOT1	-
PB3	INT	GPIO / USR	SCK1	SCK1
PB4	RST	GPIO	MISO1	MISO1
PB5	PB5	SMBA1	MOSI1	MOSI1
PB6	SCL	SCL1 / TX1	SCL1	SCL1
PB7	SDA	SDA1 / RX1	SDA1	SDA1
PB8	AUX CAN-RX / PB8	CAN1-RX	CAN-RX	CAN1-RX / SCL1
PB9	AUX CAN-TX / PB9	CAN1-TX	CAN-TX	CAN1-TX / SDA1
PB10	F-IO3 (HOLD)	SCL2	SCL2	SCL2 / TX3
PB11	-	SDA2	SDA2	SDA2 / TX3
PB12	F-CS	CAN2-RX / SS2	NSS2	SS2
PB13	F-SCK	CAN2-TX / SCK2	SCK2	SCK2
PB14	F-IO1 (SO)	MISO2	MISO2	MISO2
PB15	F-IO0 (SI)	MOSI2	MOSI2	MOSI2
PC13	LED1 (green)	GPIO	PC13 LED	LED1

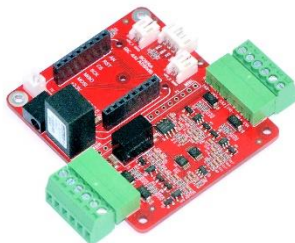
On the bottom side of the module is a QWIIC I²C connector.

MikroElektronika manufactures numerous modules with a mikroBUS interface - Click[®] modules:



Attention! **BOKRA STM32F4xx Lite** is compatible with Click[®] modules that use 3.3V, compatibility with 5V Click[®] modules is not guaranteed.

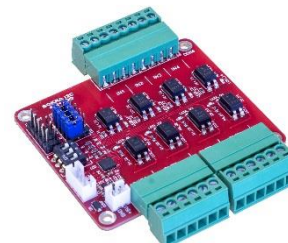
Any modules managed via the I²C bus can be connected to the I²C connector, for example, those we produce in BOKRA.



Analog input
BOKRA I²C 4AI ADS1x15 Pro

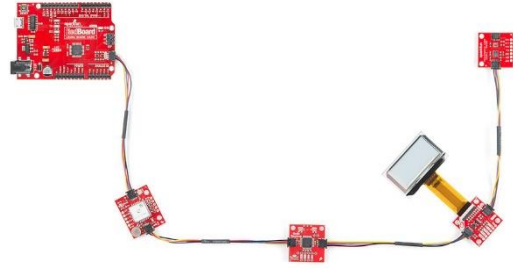


Relay
BOKRA I²C 4RO SRD



Digital input and output
BOKRA I²C 4DI+4DO

It is also easy to connect numerous sensors, peripherals and modules from Grove Systems or from SparkFun's Qwiic Connect System compatible modules to the **BOKRA STM32F4xx Lite** via the I²C connector.



BOKRA STM32F4xx Lite, along with several mikroBUS form factor modules, can form stackable or flat designs.

The **BOKRA STM32F4xx Lite** package includes contact headers for forming the mikroBUS slot. Before connecting modules with the mikroBUS interface, these headers must be soldered to **BOKRA STM32F4xx Lite**. When ordering, you can also optionally indicate the need for presetting these contact headers.

The **BOKRA STM32F4xx Lite** scheme is as follows:

