



MATRIXblock

Visualize Your Code in Action

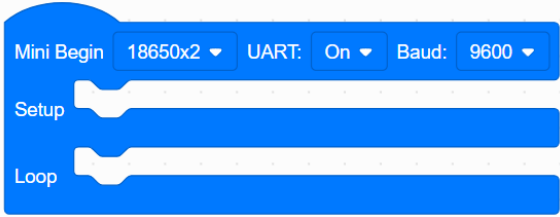
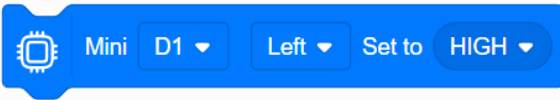



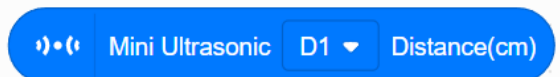
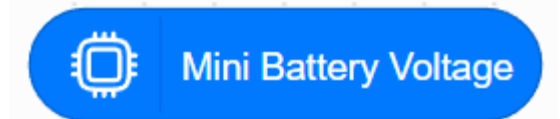

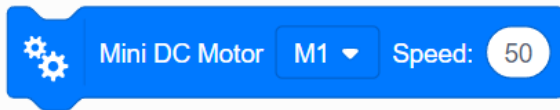
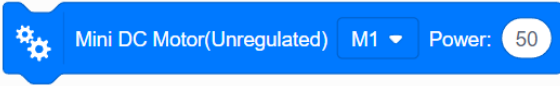
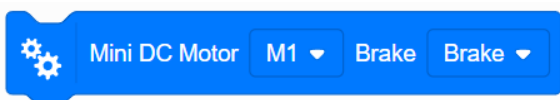
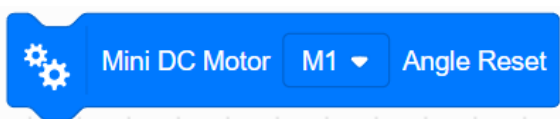
MATRIXblock R4 Block API Documentation


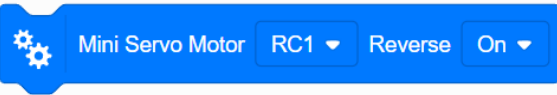
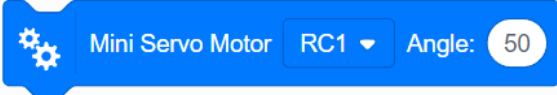
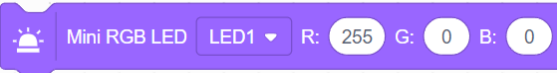
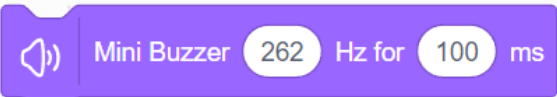
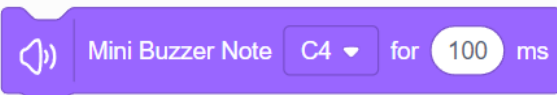
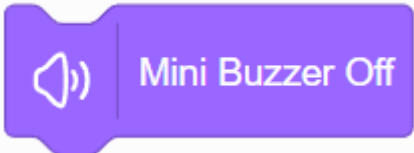
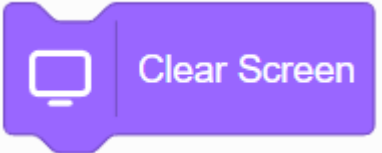
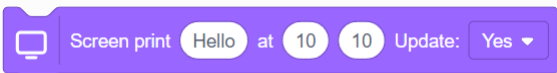
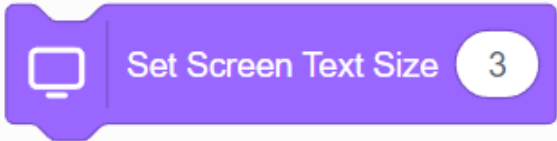
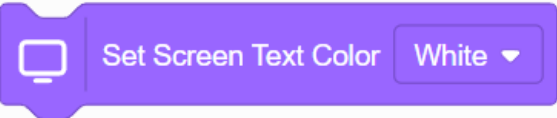
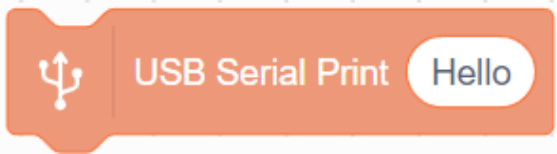
Software Version: v1.0.3

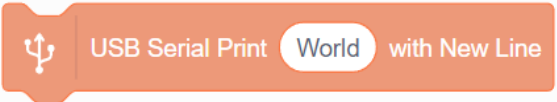
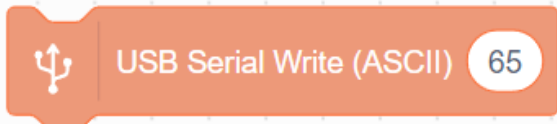

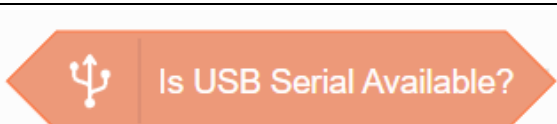







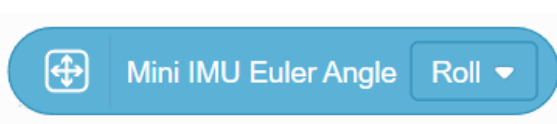
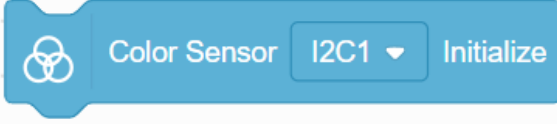

Firmware Version: 3.2


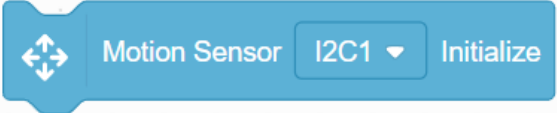



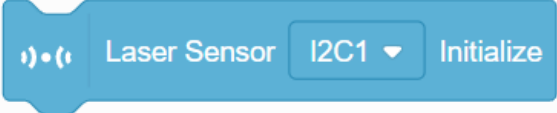

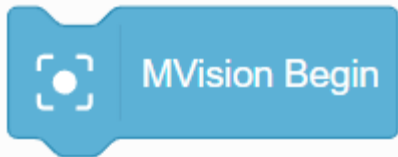
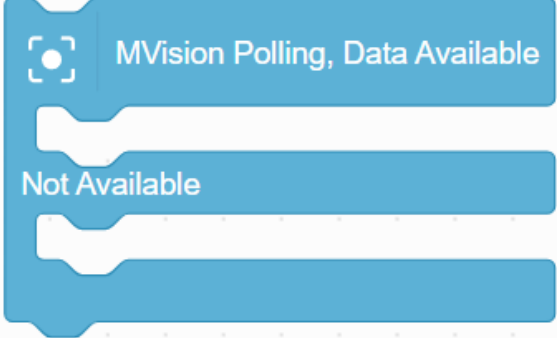


Language: English








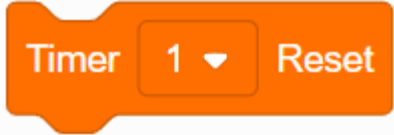

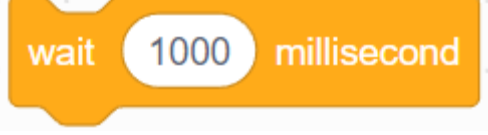




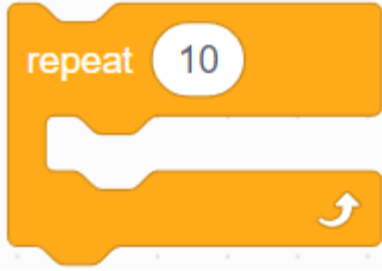
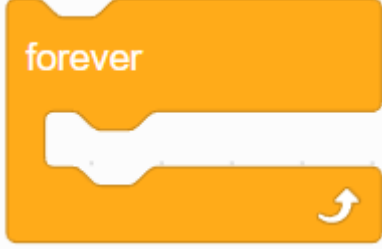

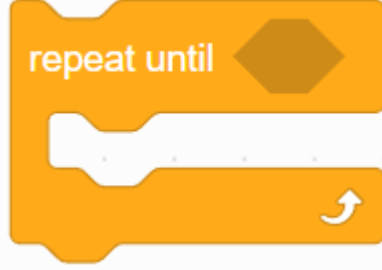



Series	Image	Description
Mini Core	 A blue block with a microcontroller icon. It contains three sections: 'Mini Begin' with dropdowns for '18650x2', 'UART: On', and 'Baud: 9600'; 'Setup' with a long horizontal bar; and 'Loop' with another long horizontal bar.	Initialize the Matrix Mini R4 controller, set up the serial port, configure baud rate, and the number of batteries. Provides the main program structure.
	 A blue block with a microcontroller icon. It contains dropdowns for 'Mini', 'D1', 'Left', and a 'Set to' dropdown set to 'HIGH'.	Set Digital (D1~D4) ports to high/low state.
	 A blue block with a microcontroller icon. It contains dropdowns for 'Mini', 'D1', 'Left', and a 'Digital Signal' output.	Read digital signals from the Digital (D1~D4) (Left/Right) ports.
	 A blue block with a microcontroller icon. It contains dropdowns for 'Mini', 'A1', 'Left', and an 'Analog Signal' output.	Read analog signals from Analog (A1~A3) ports.
	 A blue block with a microcontroller icon. It contains dropdowns for 'Mini Button', 'Up', and an output 'is Pressed?'.	Detect button press status (Up/Down).
	 A blue block with an ultrasonic sensor icon. It contains dropdowns for 'Mini Ultrasonic', 'D1', and an output 'Distance(cm)'.	Read the feedback distance from the ultrasonic sensor connected to Digital (D1~D4) ports (unit: cm).
	 A blue block with a microcontroller icon. It contains the text 'Mini Battery Voltage'.	Read battery voltage (unit: V).
DC Motor	 A blue block with a gear icon. It contains dropdowns for 'Mini DC Motor', 'M1', 'Reverse', and a 'No' dropdown.	Set the rotation direction for DC motors (M1~M4), No for forward, Yes for reverse.
	 A blue block with a gear icon. It contains dropdowns for 'Mini DC Motor', 'M1', and a 'Speed' input set to '50'.	Set DC motor speed (M1~M4), range: -100~100
	 A blue block with a gear icon. It contains dropdowns for 'Mini DC Motor(Unregulated)', 'M1', and a 'Power' input set to '50'.	Set DC motor power (PWM) (M1~M4), range: -100~100
	 A blue block with a gear icon. It contains dropdowns for 'Mini DC Motor', 'M1', 'Brake', and a 'Brake' dropdown.	Set DC motor braking (M1~M4), Brake for immediate stop, Coast for coasting.
	 A blue block with a gear icon. It contains dropdowns for 'Mini DC Motor', 'M1', and the text 'Angle Reset'.	Reset the encoder's angular reading for DC motors (M1~M4) to zero.



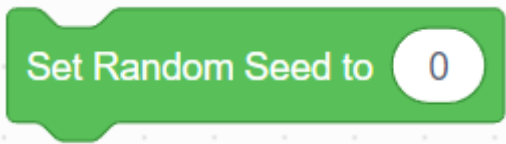
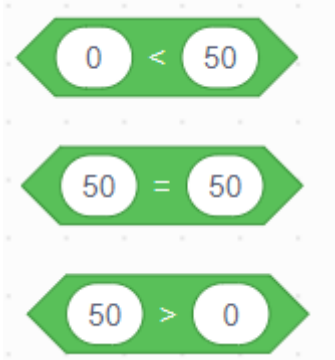
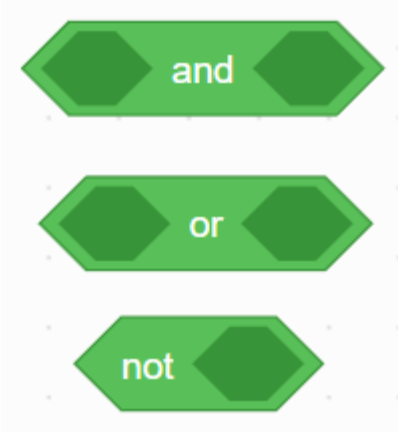
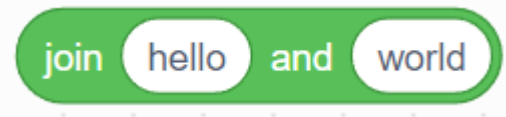
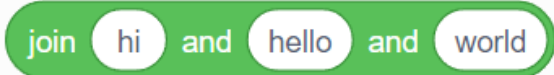
		Read the encoder's angular value (unit: degrees) for DC motors (M1~M4).
RC Servo		Set the rotation direction for servos (RC1~RC4), On for clockwise, Off for counterclockwise.
		Set the angle for servos (RC1~RC4) (unit: degrees).
Looks		Control the brightness and color of the RGB LED.
		Set the frequency and duration for the buzzer.
		Set the tone and duration for the buzzer.
		Mute the buzzer.
OLED		Clear the previous display on the OLED screen.
		Display text strings on the OLED, setting positioning and screen refresh options.
		Set text font size.
		Set text color.
USB Serial		Display parameters or text via the serial monitor.




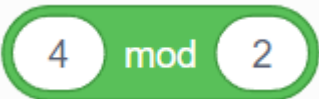



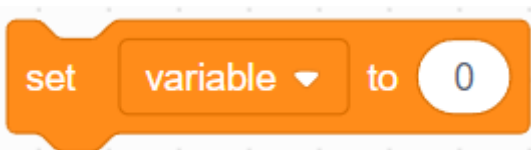

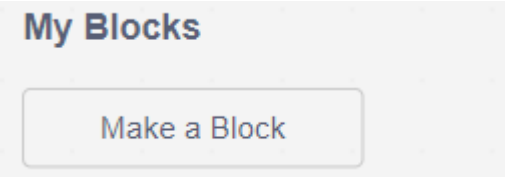
	 USB Serial Print World with New Line	Display parameters or text and add a new line in the serial monitor.
	 USB Serial Write (ASCII) 65	Write data to the serial port.
	 USB Serial Chart DataSet 32 64 128 , Interval 500 ms	Use the graphing function (bottom right) to display graphical data on the computer screen.
	 Is USB Serial Available?	Check if data is available on the serial port.
	 USB Serial Received Data (ASCII)	Read data received via the serial port.
MJ2 Joystick	 MJ2 Joystick Polling Data	Receive data from the Matrix joystick.
	 Is MJ2 Joystick L1 Button Pressed?	Detect button press status on the joystick.
	 MJ2 Joystick Left X Stick Value	Read the joystick's stick value (0~256).
Built-in IMU	 Mini IMU Reset	Reset the Matrix Mini R4 controller's built-in IMU module to the current orientation.
	 Mini IMU X Axis Acceleration	Read acceleration on the X, Y, Z axes (unit: cm/s ²).
	 Mini IMU X Axis Gyroscope	Read angular velocity on the X, Y, Z axes (unit: degrees/s).
	 Mini IMU Euler Angle Roll	Read Euler angles (Pitch, Roll, Yaw) (unit: degrees).
M-Color	 Color Sensor I2C1 Initialize	Initialize the color sensor (I2C1~I2C4).
	 Color Sensor I2C1 Read Color Number	Read the current color code from the color sensor (I2C1~I2C4).

		Read the current color values (R, G, B, etc.) from the color sensor (I2C1~I2C4).
M-Motion		Initialize the motion sensor (I2C1~I2C4).
		Read acceleration on the X, Y, Z axes from the motion sensor (I2C1~I2C4).
		Read angular velocity on the X, Y, Z axes from the motion sensor (I2C1~I2C4).
		Read Euler angles (Pitch, Roll, Yaw) from the motion sensor (I2C1~I2C4).
M-Laser		Initialize the laser distance sensor (I2C1~I2C4).
		Read the current distance from the laser distance sensor (I2C1~I2C4) (unit: mm).
M-Vision		Initialize the M-Vision camera (UART).
		Check if the M-Vision camera is transmitting data (UART).
		Read data (0~10) transmitted by the M-Vision camera (UART).
HuskyLens		Initialize the Husky Lens.

		Receive data from the Husky Lens.
		Read coordinates of the bounding box center (X, Y).
		Read arrow values.
		Detect if an object is present.
3 rd Party Sensors		Read current temperature and humidity data from the DHT temperature and humidity sensor (D1~D4).
		Read current temperature data (unit: °C) from the DS18B20 temperature sensor (D1~D4).
		Read current distance (unit: cm) from the Grove ultrasonic sensor (D1~D4).
Timer		Reset timers (1~6).
		Read timer values (1~6).
Control		Pause the program.
		Conditional statement: execute commands if the condition is met; otherwise, ignore.

		Conditional statement: execute command one if the condition is met, else execute command two.
		Repeat commands a set number of times.
		Repeat commands indefinitely.
		Wait until a condition is met.
		Repeat commands until a condition is met.
		Program execution time.
Operators		Map a value from one range to another (scale up/down).
		Constrain a value within a specified range.

		Perform basic arithmetic operations.
		Generate a random number within a specified range.
		Set a random seed.
		Compare two values.
		Boolean logic operations.
		Concatenate two strings into one.
		Concatenate three strings into one.

		Read a specific character from a string.
		The length of characters in the output string.
		Convert a number to a string.
		Find the remainder.
		Round a number.
		Perform various math functions (Abs, Trigonometry, square root, etc.).
Variable		Create variables.
		Assign a value to a variable.
		Increment a variable.
My Blocks		Create custom functions by defining your own functional blocks.