MATRIXblock

Visualize Your Code in Action

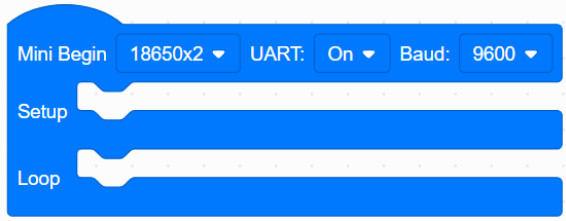
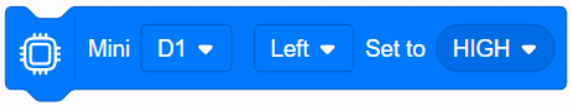
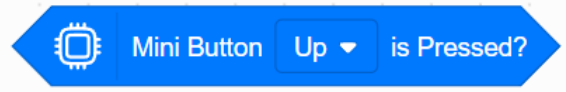
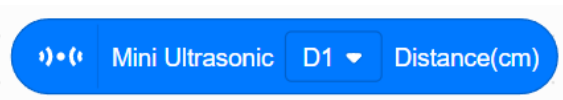
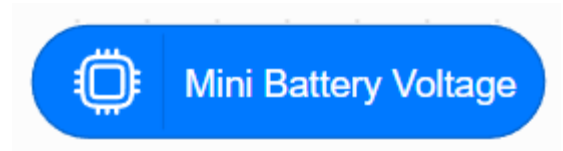
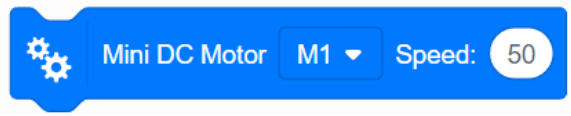
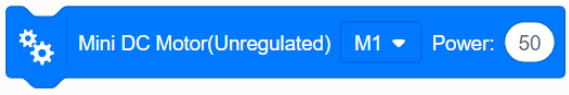
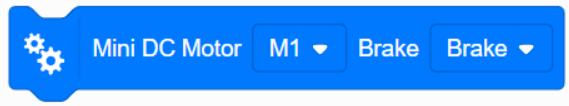
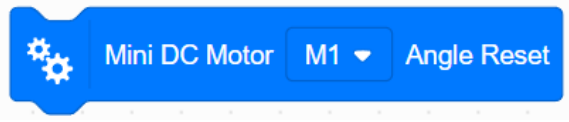
MATRIXblock R4 Block API Documentation

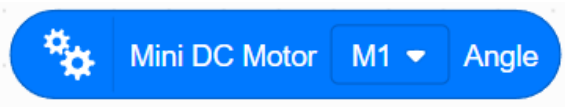
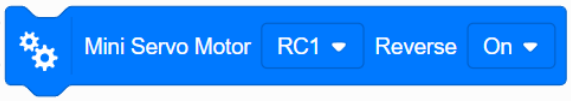
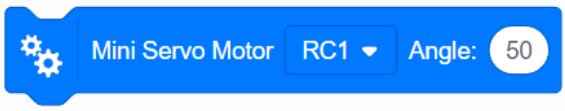
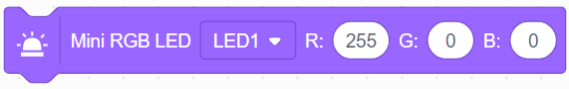
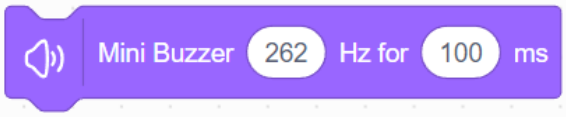
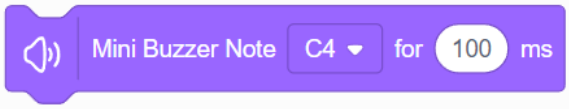
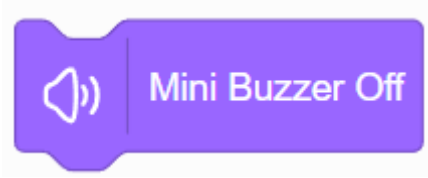
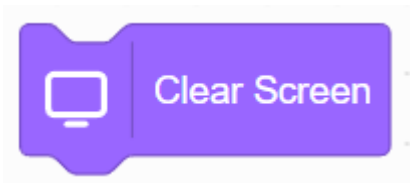
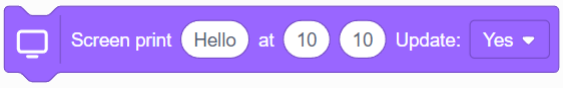
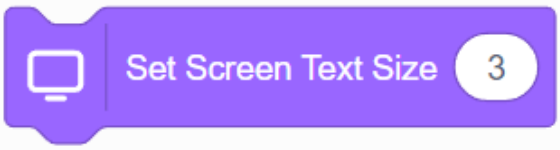
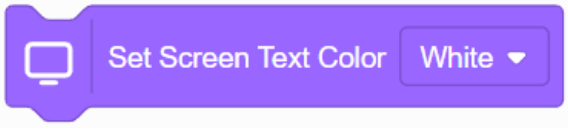
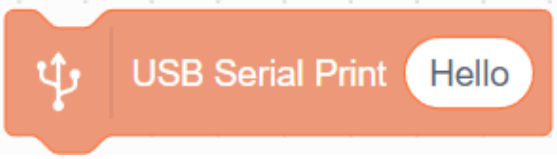
Software Version: v1.0.3

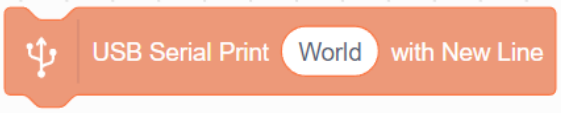
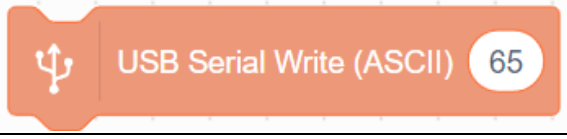
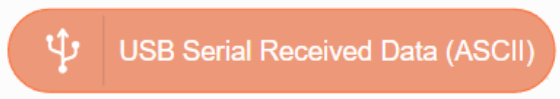
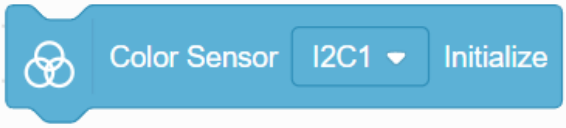
Firmware Version: 3.2

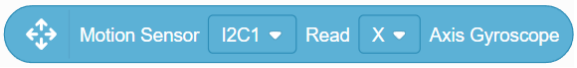
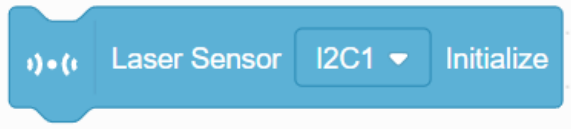
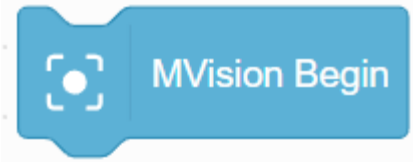
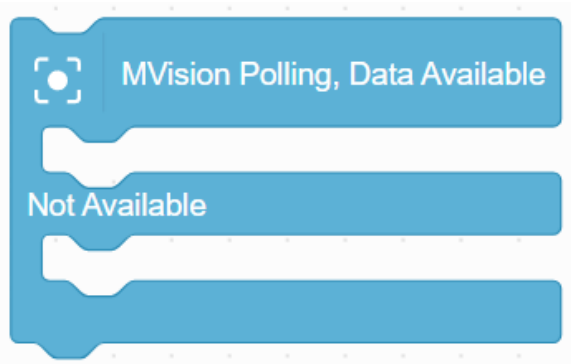
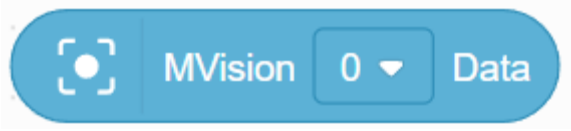
Language: English

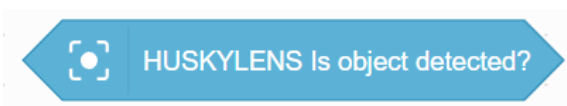
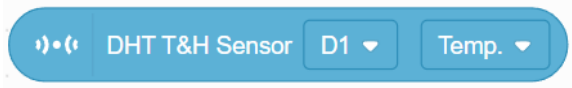
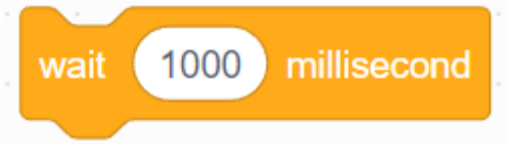
MATRIX
ROBOTICS SYSTEM

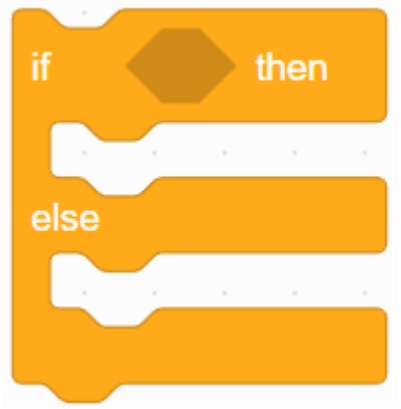
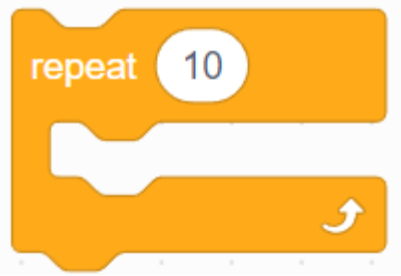
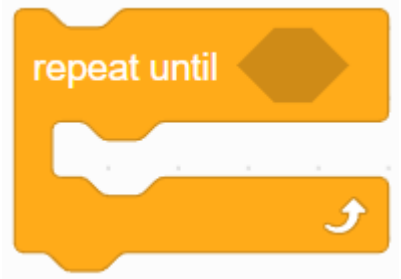
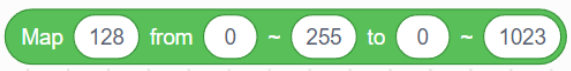
Series	Image	Description
Mini Core		Initialize the Matrix Mini R4 controller, set up the serial port, configure baud rate, and the number of batteries. Provides the main program structure.
		Set Digital (D1~D4) ports to high/low state.
		Read digital signals from the Digital (D1~D4) (Left/Right) ports.
		Read analog signals from Analog (A1~A3) ports.
		Detect button press status (Up/Down).
		Read the feedback distance from the ultrasonic sensor connected to Digital (D1~D4) ports (unit: cm).
		Read battery voltage (unit: V).
DC Motor		Set the rotation direction for DC motors (M1~M4), No for forward, Yes for reverse.
		Set DC motor speed (M1~M4), range: -100~100
		Set DC motor power (PWM) (M1~M4), range: -100~100
		Set DC motor braking (M1~M4), Brake for immediate stop, Coast for coasting.
		Reset the encoder's angular reading for DC motors (M1~M4) to zero.

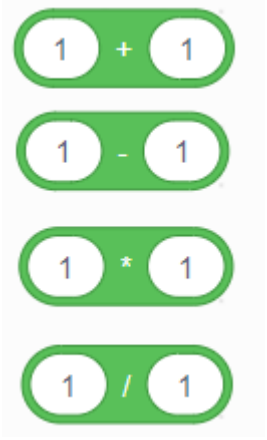
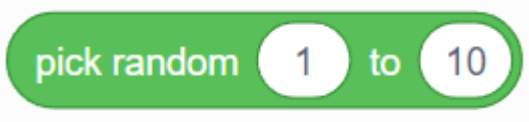
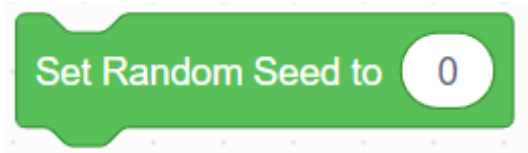
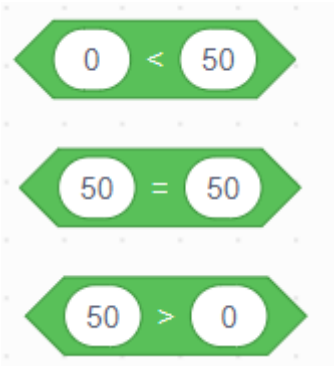
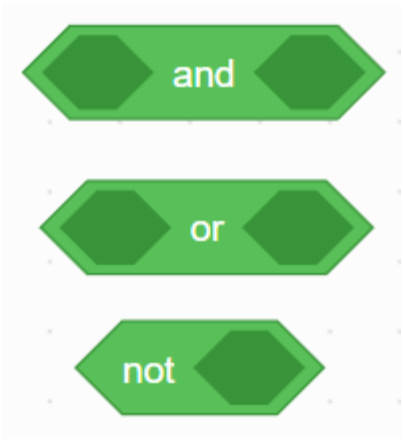
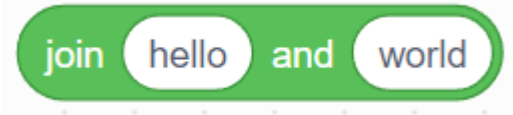
		Read the encoder's angular value (unit: degrees) for DC motors (M1~M4).
RC Servo		Set the rotation direction for servos (RC1~RC4), On for clockwise, Off for counterclockwise.
		Set the angle for servos (RC1~RC4) (unit: degrees).
Looks		Control the brightness and color of the RGB LED.
		Set the frequency 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.

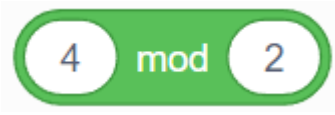
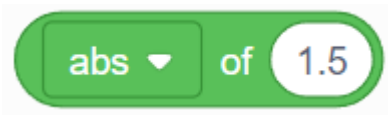
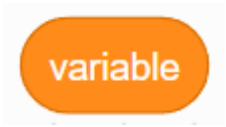
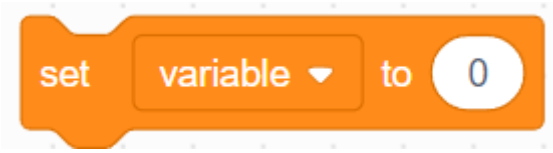
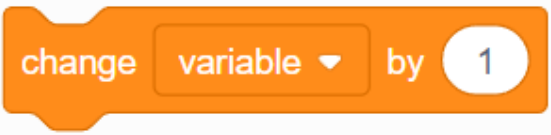
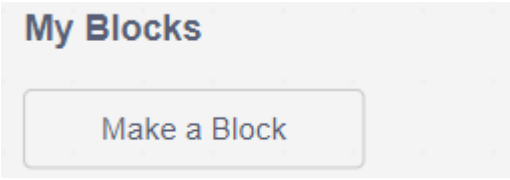
		Display parameters or text and add a new line in the serial monitor.
		Write data to the serial port.
		Use the graphing function (bottom right) to display graphical data on the computer screen.
		Check if data is available on the serial port.
		Read data received via the serial port.
MJ2 Joystick		Receive data from the Matrix joystick.
		Detect button press status on the joystick.
		Read the joystick's stick value (0~256).
Built-in IMU		Reset the Matrix Mini R4 controller's built-in IMU module to the current orientation.
		Read acceleration on the X, Y, Z axes (unit: cm/s²).
		Read angular velocity on the X, Y, Z axes (unit: degrees/s).
		Read Euler angles (Pitch, Roll, Yaw) (unit: degrees).
M-Color		Initialize the color sensor (I2C1~I2C4).
		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.
3rd 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.