

Scratch for Arduino Protocol Specification

Actuators messages (Data from Scratch to Arduino)

S4A Name	Motor 4	Analog 5	Analog 6	Motor 7	Motor 8	Analog 9	Digital 10	Digital 11	Motor 12	Digital 13
Type	Continuous rotation Servomotor	Pseudo analog (PWM) Output	Pseudo analog (PWM) Output	Continuous rotation Servomotor	Servomotor (Angle control)	Pseudo analog (PWM) Output	Digital Output	Digital Output	Servomotor (Angle control)	Digital Output
Arduino I/O Pin	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13
HEX value	A0 0d	Ap pp	Bp pp	B8 0d	Ca aa	Cp pp	D0 0v	D8 0v	Ea aa	E8 0v
BIN value	1010 0000 0000 00dd	1010 100P 0PPP pppp	1011 000P 0PPP pppp	1011 1000 0000 000d	1100 00AA 0AAA aaaa	1100 100P 0PPP pppp	1101 0000 0000 000v	1101 1000 0000 000v	1110 00AA 0AAA aaaa	1110 1000 0000 000v

Sensors messages (Data from Arduino to Scratch)

S4A Name	Analog 0	Analog 1	Analog 2	Analog 3	Analog 4	Analog 5	Digital 2	Digital 3
Type	Analog input	Analog input	Analog input	Analog input	Analog input	Analog input	Digital Input	Digital Input
Arduino I/O Pin	A0	A1	A2	A3	A4	A5	D2	D3
HEX value	8R Rr	8R Rr	9R Rr	9R Rr	AR Rr	AR Rr	BR Rr	BR Rr
BIN value	1000 0RRR 0RRR rrrr	1000 1RRR 0RRR rrrr	1001 0RRR 0RRR rrrr	1001 1RRR 0RRR rrrr	1010 0RRR 0RRR rrrr	1010 1RRR 0RRR rrrr	1011 0RRR 0RRR rrrr	1011 0RRR 0RRR rrrr

red = channel number
 blue = channel data (CAPITAL means MSBs)
 green = LSB of each channel
 orange = protocol defined bit values
 grey = padding bytes

d = direction (00=motor off, 01=clockwise, 10=anticlockwise)
 P/p = pwm value (values from 0 to 255)
 A/a = angle (values from 0 to 360)
 R/r = reading from sensor