Small Bot Motor Control Shield Hardware Manual

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1 Introduction

This document contains information relevant to the design of the Small Bot Motor Control Shield (SBMCS). The SBMCS is being developed by the Kentcuky Organization of Robotics and Automation (KORA) student led club at the University of Kentucky.

A SBMCS Arduino Pin Assignment

DEVICE PIN	ARDUINO PIN	NET	COMMENT
PA02	A0 (14)	IM1_SENSE	motor 1 current sense, 0.24% of motor current is output across a 270 ohm resistor
PA05	A1 (15)	INT	ICM20948 imu interrupt pin
PA06	A5 (19)	ACT	ACT LED, active high
PA08	36	STAT	STAT LED, active high
PA09	37	EN/D4	M2 enable pin, active high
PA10	38	D3	M2 disable pin, active high
PA11	39	EN/D2	M1 enable pin, active high
PA12	22	SDA	I2C data
PA13	21	SCL	I2C clock
PA14	4	M1_ENC_A	motor 1 encoder channel a
PA17	25	M1_STATUS	status (low=fault condition)
PA18	6	SERVO	servo header signal pin
PA19	9	IN1	M1 input control pin 1
PA20	10	IN2	M1 input control pin 2
PA21	11	IN4	M2 input control pin 2
PA22	12	IN3	M2 input control pin 1
PA23	13	M2_STATUS	status (low=fault condition)
PB01	A6 (20)	I5V_SENSE	current sense on 5v rail
PB08	A2 (16)	IM2_SENSE	motor 2 current sense, 0.24% of motor current is output across a 270 ohm resistor
PB09	A3 (17)	VBAT_SENSE	voltage divider output from battery sensing.300k to vbat, 85k to gnd
PB10	34	D1	disable m1 (active high, high=motor pins are three stated
PB11	35	M1_ENC_B	motor 1 encoder channel b
PB17	0	SERIAL_RX	serial header on board (Serial1 object in arduino)
PB16	1	SERIAL_TX	serial header on board (Serial1 object in arduino)
PB22	23	M2_ENC_A	motor 2 encoder channel a
PB23	24	M2_ENC_B	motor 2 encoder channel b

B Feather M4 Arduino Reference

Courtesy of Adafruit Industries