Double H bridges

IC1 — L293D

1	1-2EN	VCC1	16
2	1A	4A	15
3	1Y	4Y	14
4	GND1	GND3	13
5	GND2	GND4	12
6	2Y	3Y	11
7	2A	3A	10
8	VCC2	3-4EN	9

12V · 5V · MOT1_1 · MOT1_OUT1 · MOT1_OUT2 · MOT1_2 · GND · MOT2_2 · MOT2_OUT2 · MOT2_OUT1 · MOT2_1

IC2 — L293D

1	1-2EN	VCC1	16
2	1A	4A	15
3	1Y	4Y	14
4	GND1	GND3	13
5	GND2	GND4	12
6	2Y	3Y	11
7	2A	3A	10
8	VCC2	3-4EN	9

12V · 5V · MOT3_1 · MOT3_OUT1 · MOT3_OUT2 · MOT3_2 · GND

Battery Connections

BATT — 12V — GND
BATT_CELL — VDD — CELL1 — CELL2 — CELL3
R8 470k · R9 150k · R10 470k · R11 150k · GND

SHARP Connections

SHARP_1 — C2 10uF — SHARP1 — GND — 5V
SHARP_2 — C3 10uF — SHARP2 — GND — 5V
SHARP_3 — C4 10uF — SHARP3 — GND — 5V
SHARP_4 — C5 10uF — SHARP4 — GND — 5V
SHARP_5 — C6 10uF — SHARP5 — GND — 5V
SHARP_6 — C7 10uF — SHARP6 — GND — 5V

with bypass capacitors to remove electrical noise introduiced by SHARP sensors

Teensy 3.2/3.5 Connections

TEENSY_3.2/3.5 — TEENSY_3.5_ALL_PINS

Left pin	Function
BT_RX	0/RX1/MOSI1
BT_TX	1/TX1/MISO1
BTN_UP	2/PWM
BTN_LEFT	3/CAN0-TX/SCL2/PWM
BTN_CENTER	4/CAN0-RX/SDA2/PWM
BTN_RIGHT	5/PWM
BTN_DOWN	6/PWM
BUZZER	7/RX3/PWM
SPI_CS1	8/TX3/PWM
SPI_CS2	9/RX2/PWM
SPI_CS3	10/TX2/PWM
SPI_MOSI	11/MOSI0
SPI_MISO	12/MISO0
SPI_SCK	13/SCK0/LED
COD1_B	14/A0/PWM
COD1_A	15/A1
COD2_B	16/A2
COD2_A	17/A3/PWM
SDA	18/A4/SDA0
SCL	19/A5/SCL0
MOT2_2	20/A6/PWM
MOT2_1	21/A7/PWM
MOT1_2	22/A8/PWM
MOT1_1	23/A9/PWM
T_IRQ	24
T_CS1	25
T_CS2	26
COD3_B	27
COD3_A	28
MOT3_2	29/PWM
MOT3_1	30/PWM
SHARP6	31/A12/RX4
SHARP5	32/A13/TX4/SCK1
SHARP1	33/A14/TX5
SHARP2	34/A15/RX5
SHARP3	35/A16/PWM
SHARP4	36/A17/PWM
RADIO_CE	37/A18/SCL1/PWM
RADIO_CS	38/A19/SDA1/PWM
CELL3	39/A20

Function	Right pin
VUSB	5V
VIN	5V
3.3V	3.3V
VBAT	
GND	GND
RESET	BTN_RST
PGM	
AREF	
AGND	
A26	
A25	
A22/DAC1	CELL1
A21/DAC0	CELL2
A11	
A10	

User interface

IU

1		2
3		4	BTN_UP
5		6	BTN_LEFT
7		8	BTN_CENTER

BTN_DOWN · BTN_RIGHT
R12 1k · R1 1k · 12V · VDD · GND

RESET — BTN_RST — GND

Power Regulation 5V

U$1 — DC-DC-STEP-DOWN-LM2596

| IN+ | OUT+ |
| IN- | OUT- |

12V · 5V · GND · GND

LS1 — BUZZER-PTH — BUZZER — GND

Motor Connections

MOT_1 — MOT1_OUT1 — MOT1_OUT2 — R2 1k — R3 1k — GND — COD1_A — COD1_B — 5V
MOT_2 — MOT2_OUT1 — MOT2_OUT2 — R4 1k — R5 1k — GND — COD2_A — COD2_B — 5V
MOT_3 — MOT3_OUT1 — MOT3_OUT2 — R6 1k — R7 1k — GND — COD3_A — COD3_B — 5V

UPH Robotics
main_shield
26/01/17 15:15 — O. LEVEQUE
Sheet: 1/2 — Rev:1.0

5V

I2C_1
- SCL — 4 — SCL
- SDA — 3 — SDA
- VCC — 2
- GND — 1

GND

5V

I2C_2
- SCL — 4 — SCL
- SDA — 3 — SDA
- VCC — 2
- GND — 1

GND

5V

I2C_3
- SCL — 4 — SCL
- SDA — 3 — SDA
- VCC — 2
- GND — 1

GND

Hardware I2C buses without external pullup

5V

- 1
- 2
- 3
- SPI_CS1 — 4
- SPI_MOSI — 5
- SPI_SCK — 6
- SPI_MISO

SPI_1

GND

5V

- 1
- 2
- 3
- SPI_CS2 — 4
- SPI_MOSI — 5
- SPI_SCK — 6
- SPI_MISO

SPI_2

GND

5V

- 1
- 2
- 3
- SPI_CS3 — 4
- SPI_MOSI — 5
- SPI_SCK — 6
- SPI_MISO

SPI_3

GND

SPI buses with independant Slave Select signals for each connector

3.3V

100nF

C1

RADIO
- 1 — 2
- RADIO_CE — 3 — 4 — RADIO_CS
- SPI_SCK — 5 — 6 — SPI_MOSI
- SPI_MISO — 7 — 8

GND

nRF24L01 Module Connections
with bypass capacitor

- T_IRQ — 1
- T_CS1 — 2
- T_CS2 — 3

TACTIL

Tactil Screen Connections

5V

- 1
- 2
- 3
- BT_RX — 4
- BT_TX

BT

GND

HC-06 Bluetooth Module

UPH Robotics	
main_shield	
26/01/17 15:15	O. LEVEQUE
Sheet: 2/2	Rev:1.0