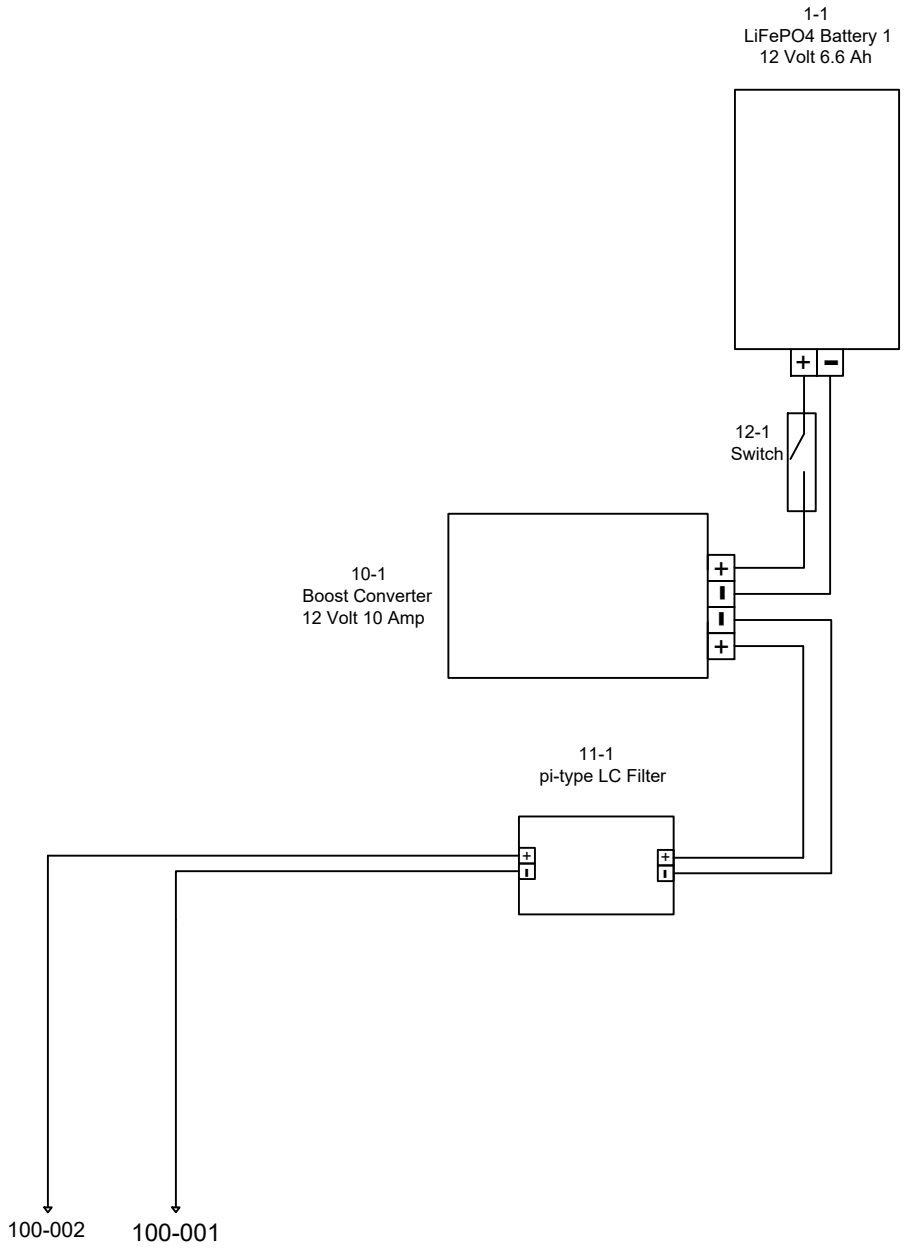
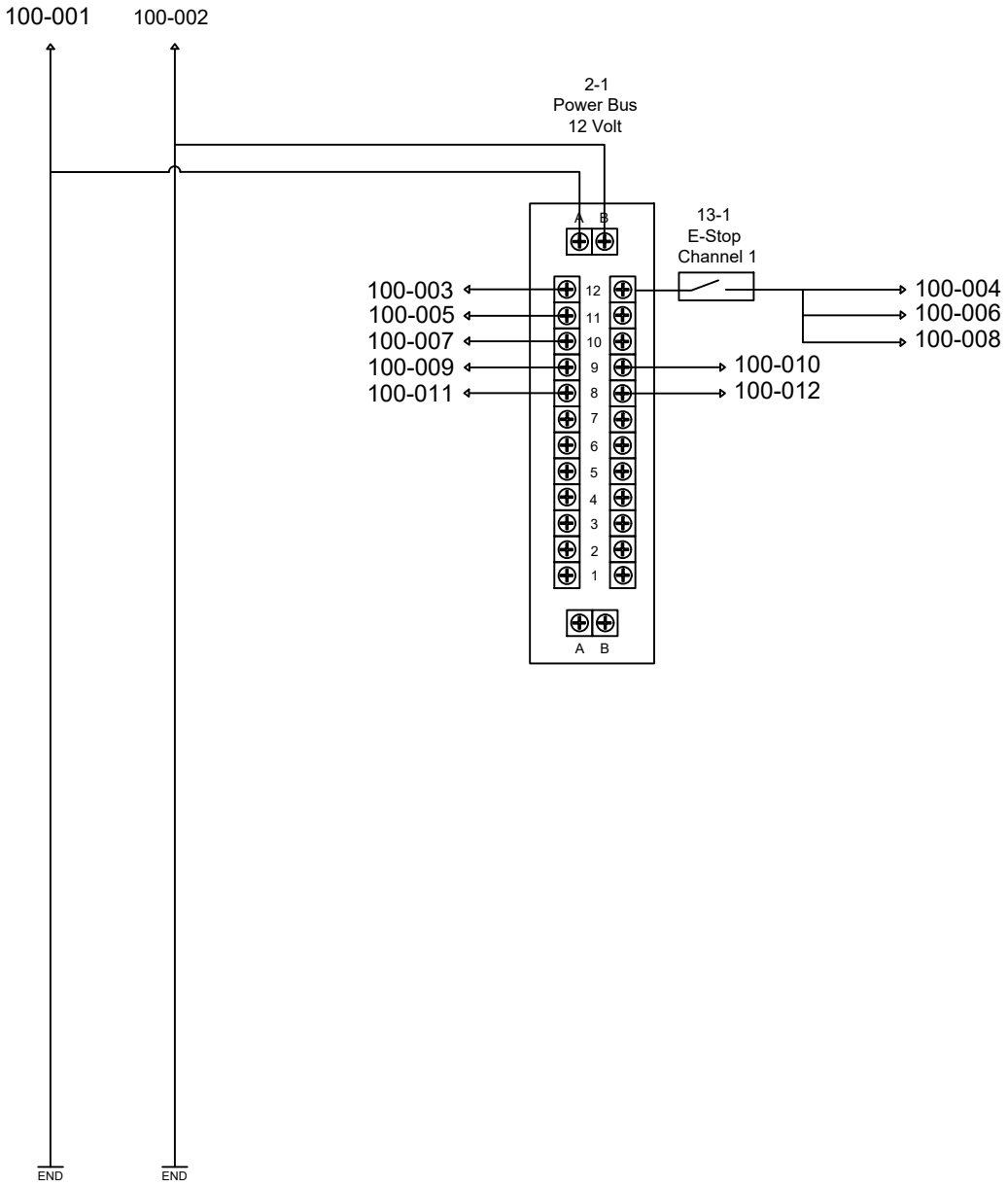
SouthEast Con Robotic Competition 2022 Robotic Drawing Package

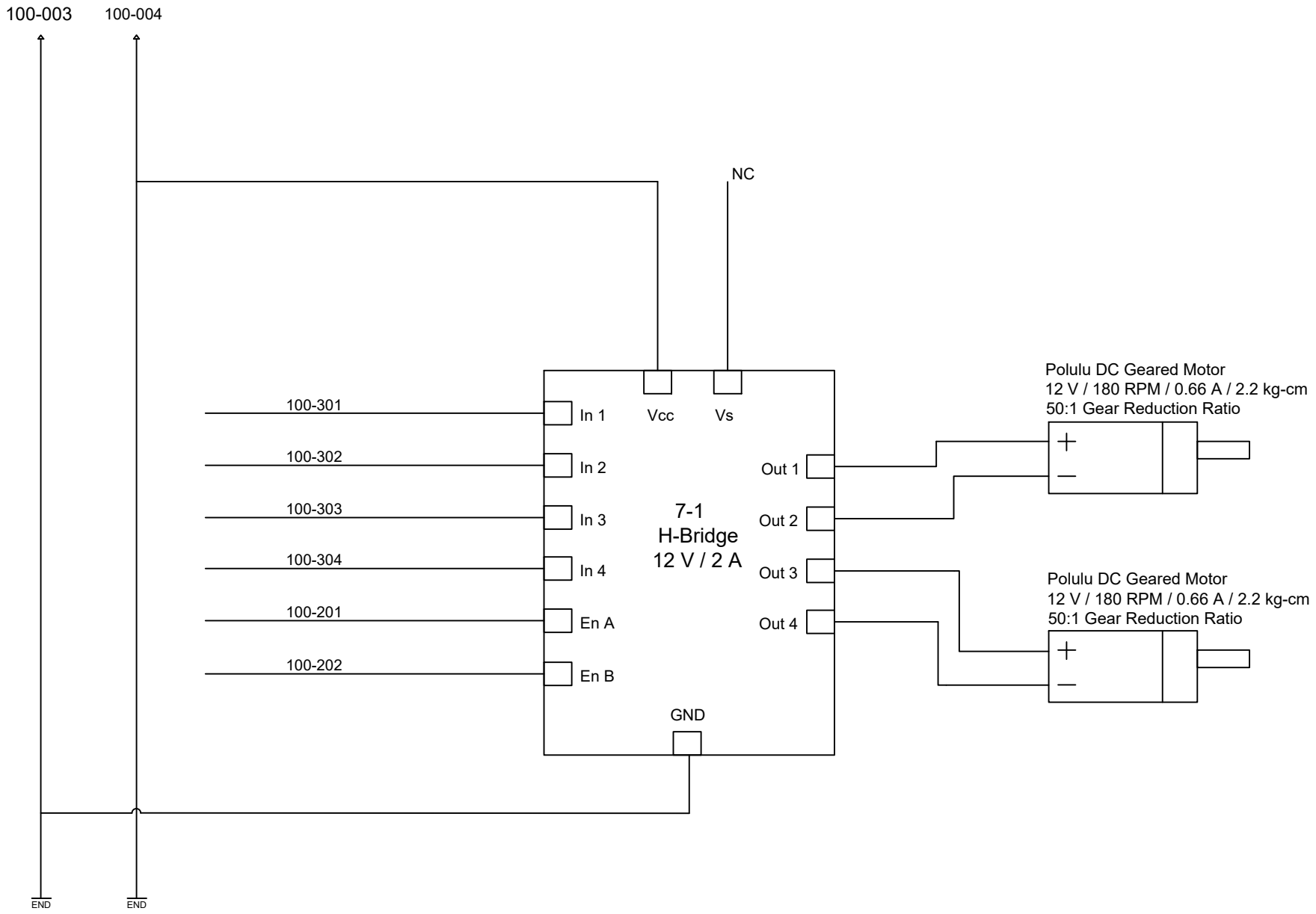
#	Product Name	Quantity	#	Product Name	Quantity
1	LiFePO4 Battery 12 V 6.6Ah	1			
2	Power Bus	3			
3	Buck Convertor	2			
4	Raspberry Pi 4B	1			
5	USB-C cord to Raspberry Pi	1			
6	Adafruit 16-Channel 12-bit PWM/Servo Shield	1			
7	H-Bridge L298N Motor Drive Controller Board	3			
8	Arduino Mega 2560	2			
9	Arduino Mega 2560 Power Cord	2			
10	Boost Converter	1			
11	Pi-type LC filter	3			
12	Switch	2			
13	2-Channel Emergency Stop	1			
14	Line Following Array	3			


1-1
LiFePO4 Battery 1
12 Volt 6.6 Ah
+
-
12-1
Switch
10-1
Boost Converter
12 Volt 10 Amp
+
-
-
+
11-1
pi-type LC Filter
+
-
+
-
100-002
100-001

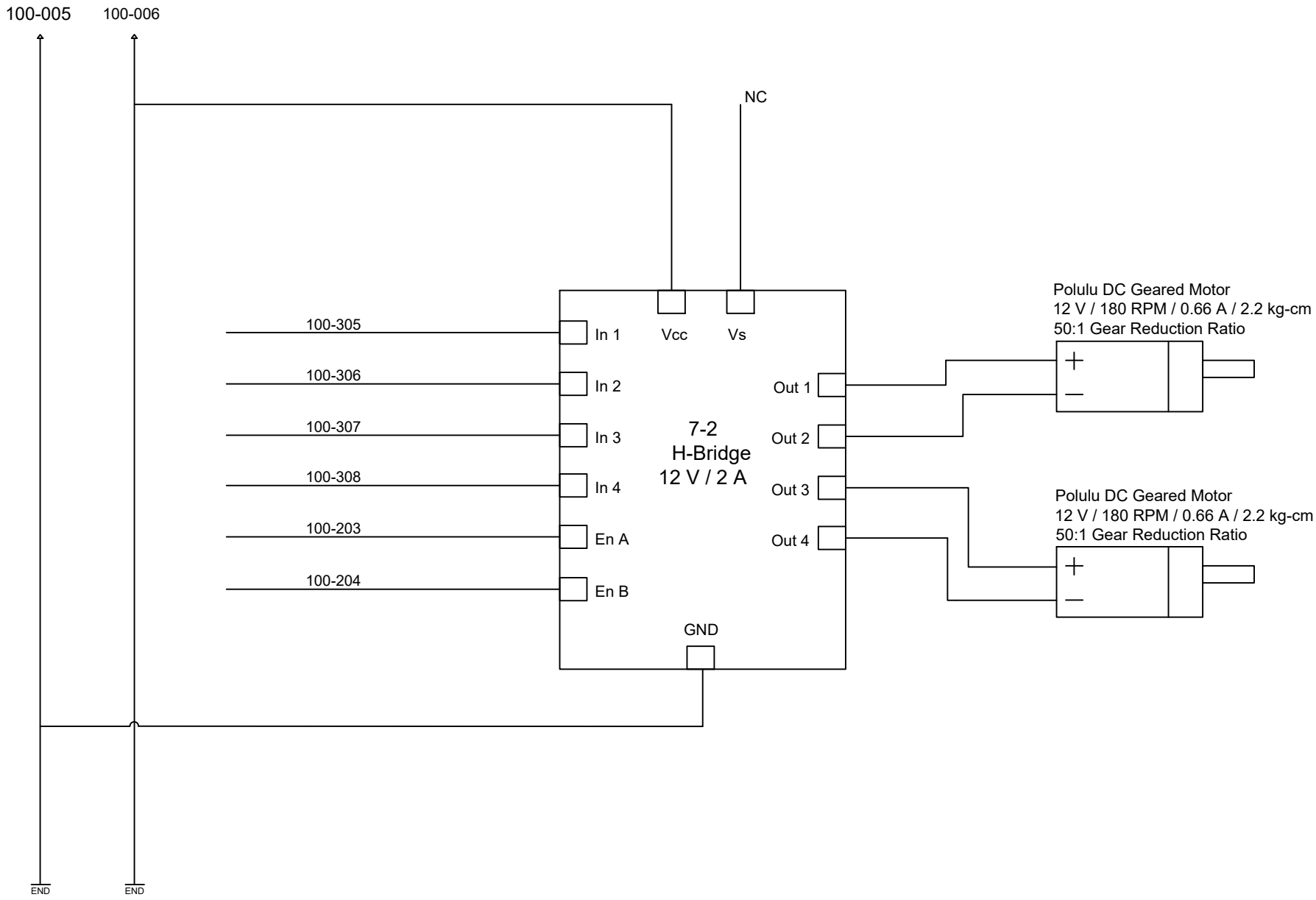
100-001


100-001
100-002
2-1
Power Bus
12 Volt
A B
13-1
E-Stop
Channel 1
100-003
100-005
100-007
100-009
100-011
12
11
10
9
8
7
6
5
4
3
2
1
100-004
100-006
100-008
100-010
100-012
A B
END
END

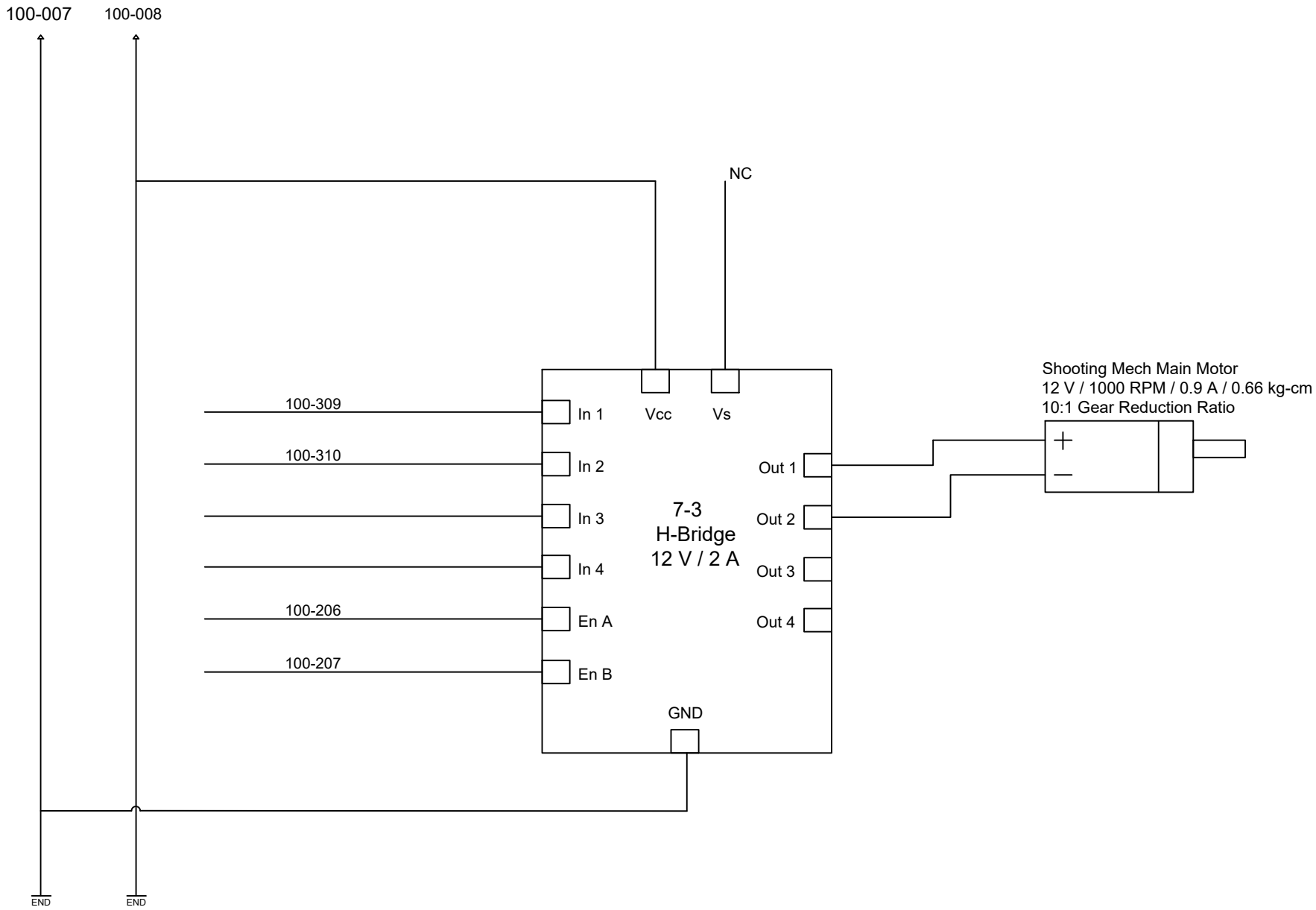
100-002


100-003
100-004
NC
100-301
100-302
100-303
100-304
100-201
100-202
In 1
In 2
In 3
In 4
En A
En B
Vcc
Vs
GND
7-1
H-Bridge
12 V / 2 A
Out 1
Out 2
Out 3
Out 4
Polulu DC Geared Motor
12 V / 180 RPM / 0.66 A / 2.2 kg-cm
50:1 Gear Reduction Ratio
Polulu DC Geared Motor
12 V / 180 RPM / 0.66 A / 2.2 kg-cm
50:1 Gear Reduction Ratio
END
END

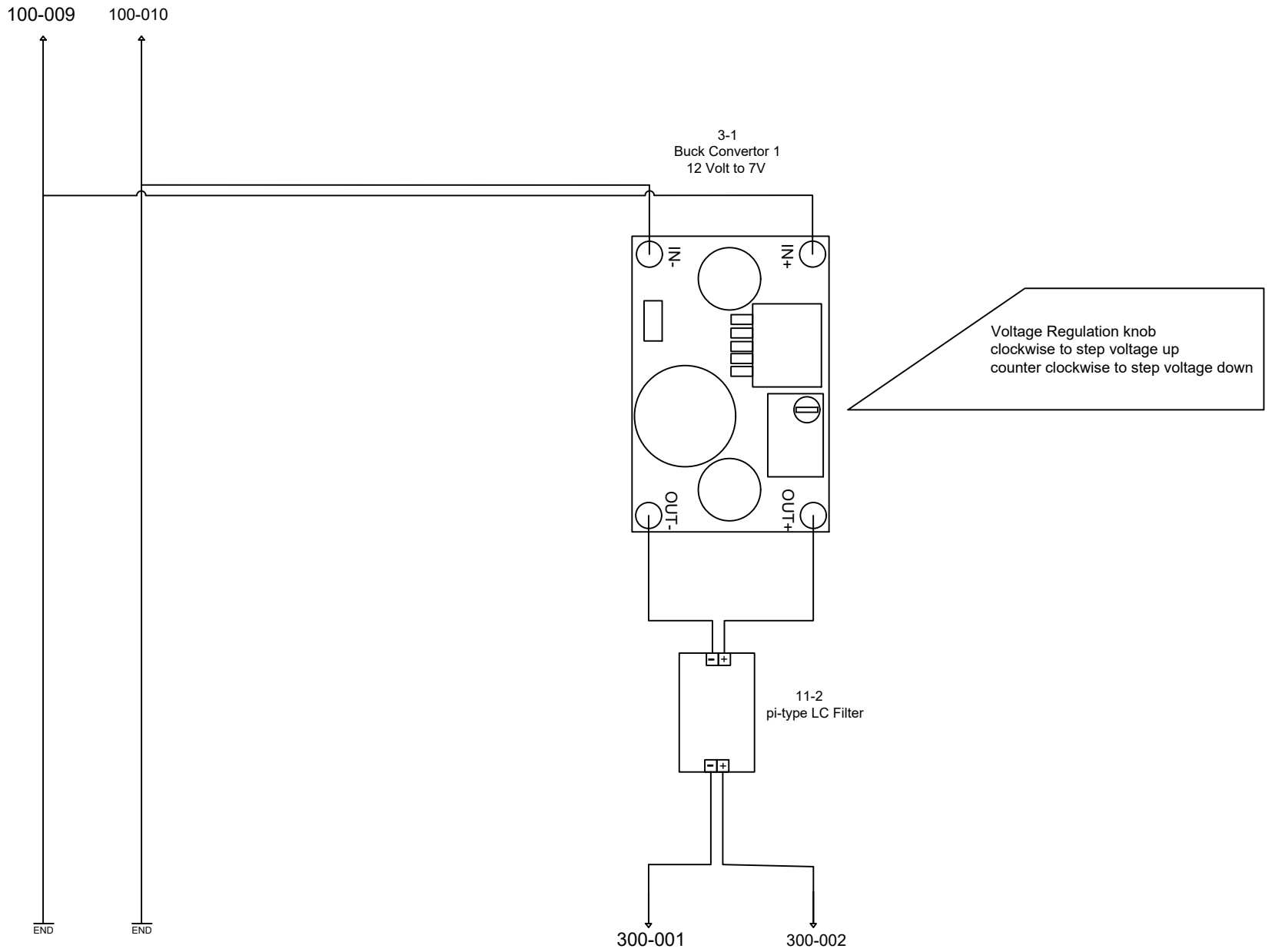
100-004


100-005
100-006
NC
100-305
100-306
100-307
100-308
100-203
100-204
In 1
In 2
In 3
In 4
En A
En B
Vcc
Vs
GND
7-2
H-Bridge
12 V / 2 A
Out 1
Out 2
Out 3
Out 4
Polulu DC Geared Motor
12 V / 180 RPM / 0.66 A / 2.2 kg-cm
50:1 Gear Reduction Ratio
Polulu DC Geared Motor
12 V / 180 RPM / 0.66 A / 2.2 kg-cm
50:1 Gear Reduction Ratio
END
END

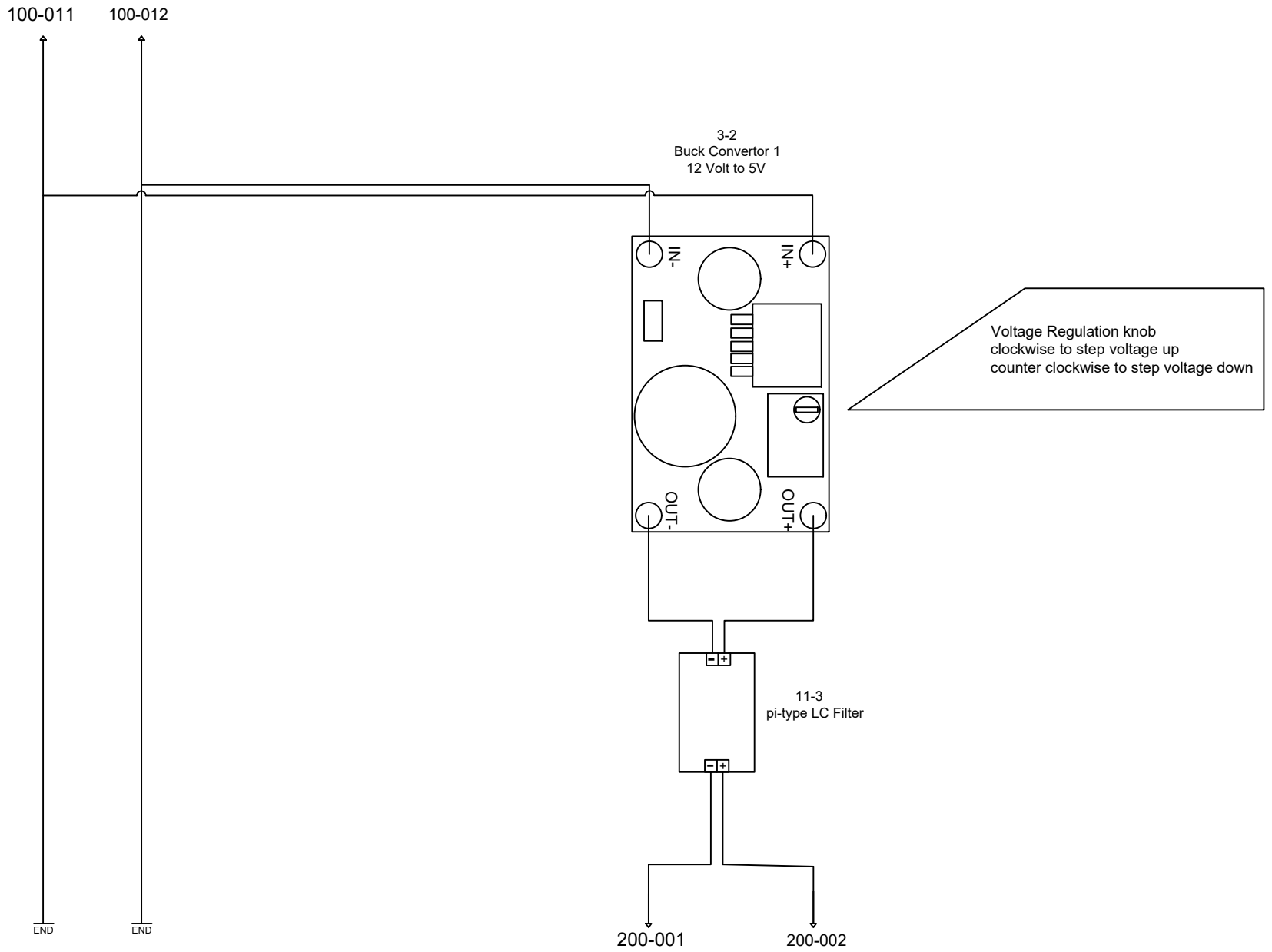
100-006


100-007
100-008
NC
100-309
100-310
100-206
100-207
In 1
In 2
In 3
In 4
En A
En B
Vcc
Vs
GND
Out 1
Out 2
Out 3
Out 4
7-3
H-Bridge
12 V / 2 A
Shooting Mech Main Motor
12 V / 1000 RPM / 0.9 A / 0.66 kg-cm
10:1 Gear Reduction Ratio
+
–
END
END

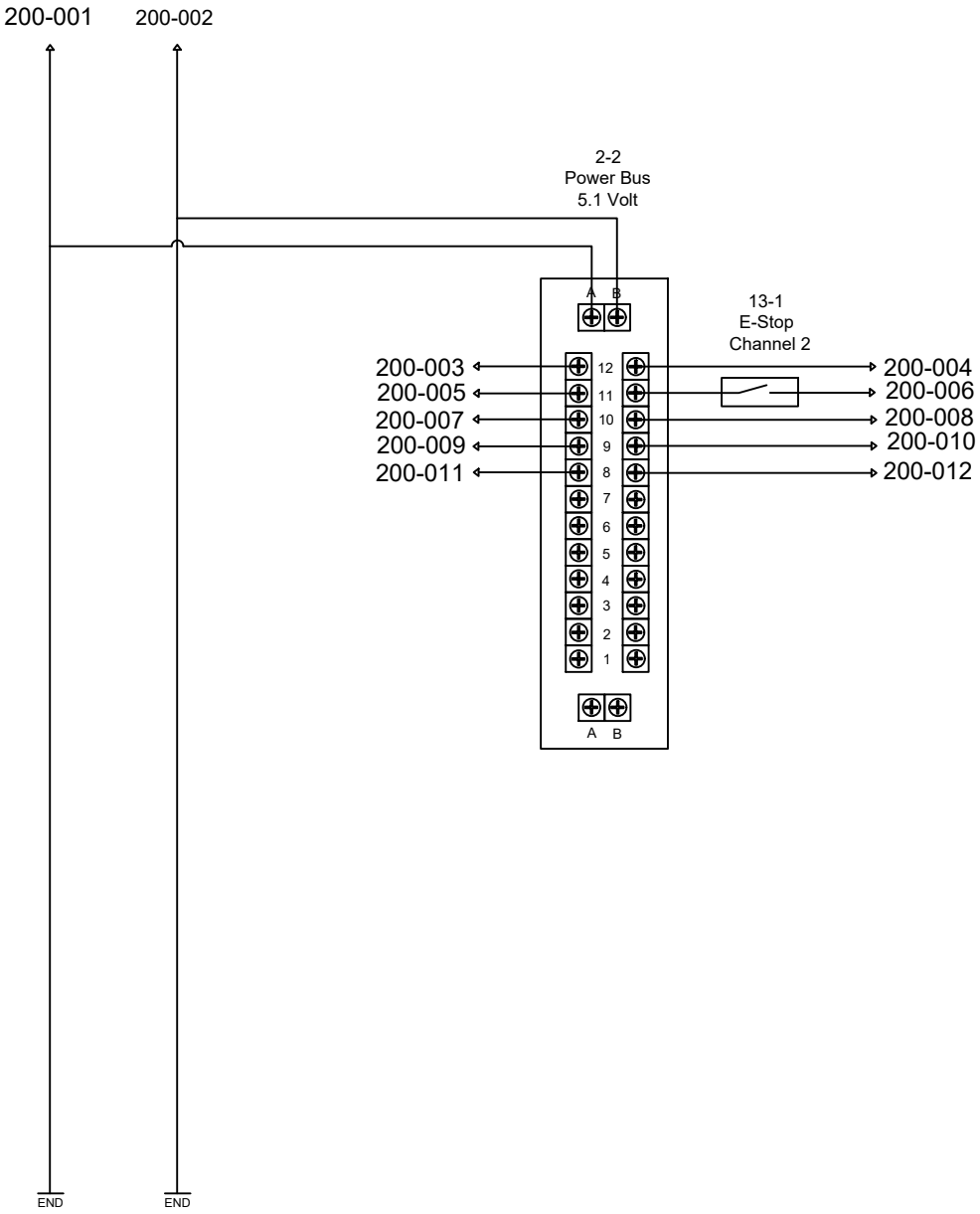
100-008


100-009
100-010
3-1
Buck Convertor 1
12 Volt to 7V
IN-
IN+
OUT-
OUT+
Voltage Regulation knob
clockwise to step voltage up
counter clockwise to step voltage down
11-2
pi-type LC Filter
END
END
300-001
300-002

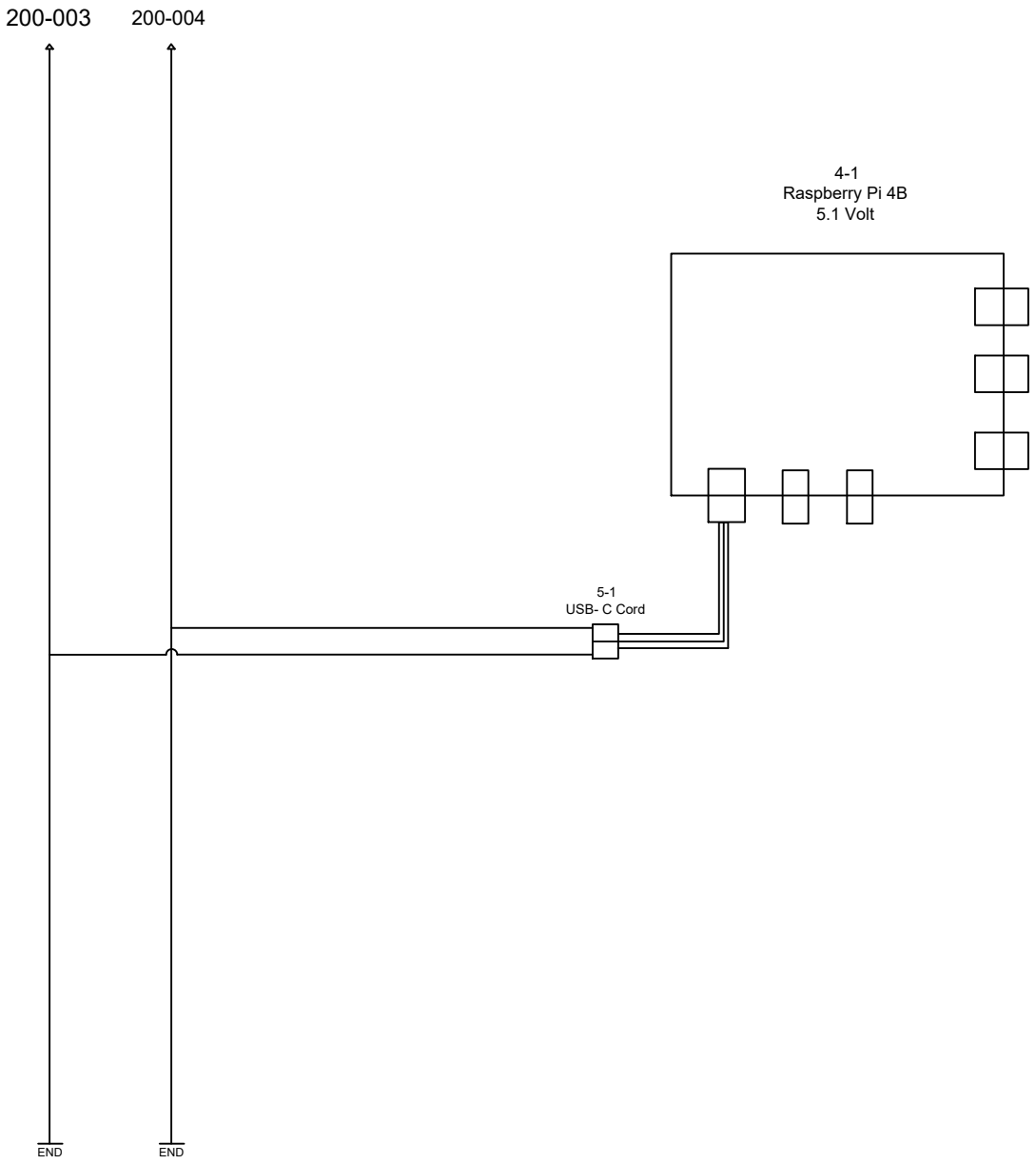
100-010


100-011
100-012
3-2
Buck Convertor 1
12 Volt to 5V
IN-
IN+
OUT-
OUT+
Voltage Regulation knob
clockwise to step voltage up
counter clockwise to step voltage down
11-3
pi-type LC Filter
END
END
200-001
200-002

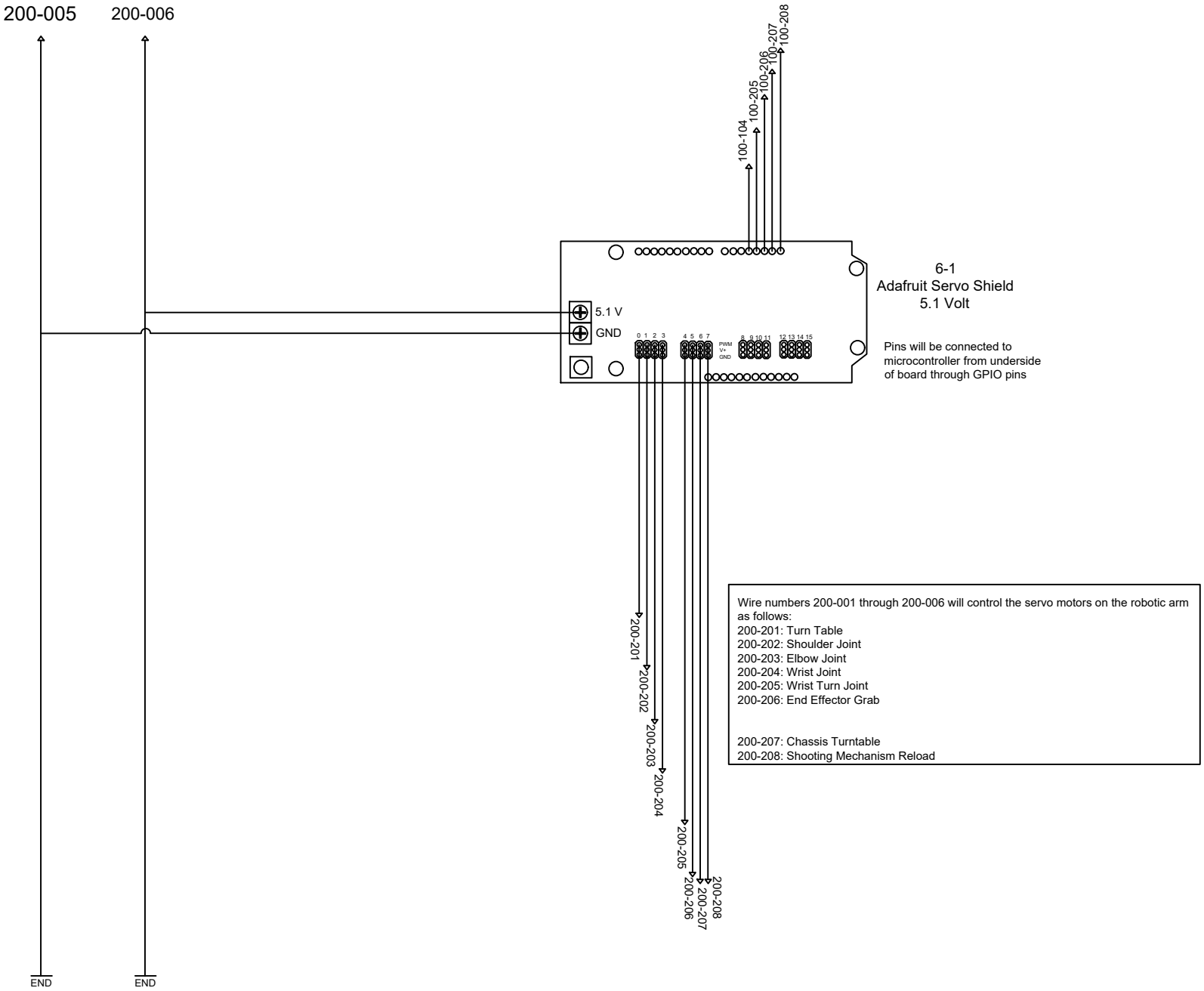
100-012


200-001
200-002
2-2
Power Bus
5.1 Volt
A B
13-1
E-Stop
Channel 2
200-003
200-005
200-007
200-009
200-011
200-004
200-006
200-008
200-010
200-012
12
11
10
9
8
7
6
5
4
3
2
1
A B
END
END

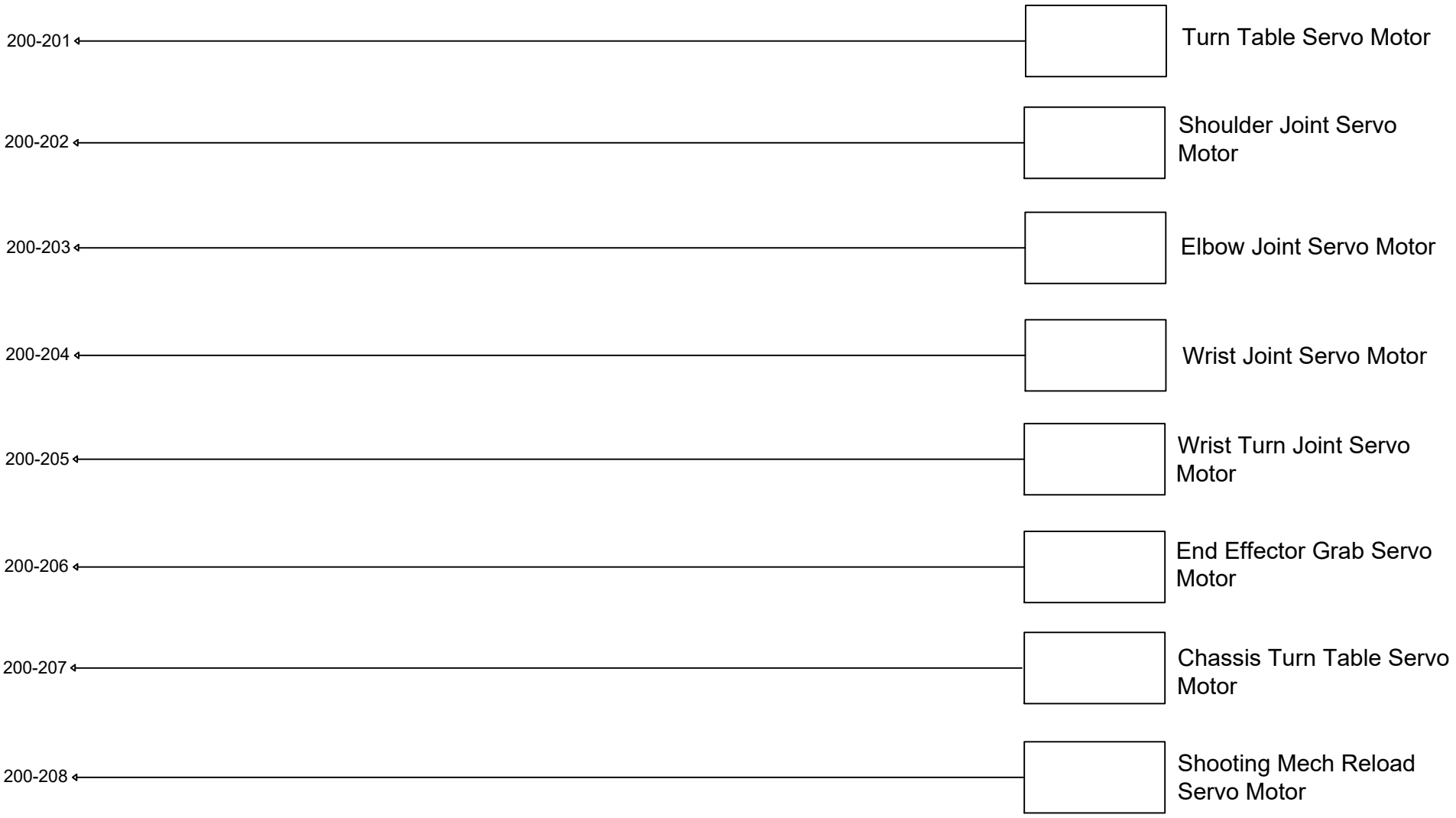
200-002



200-004

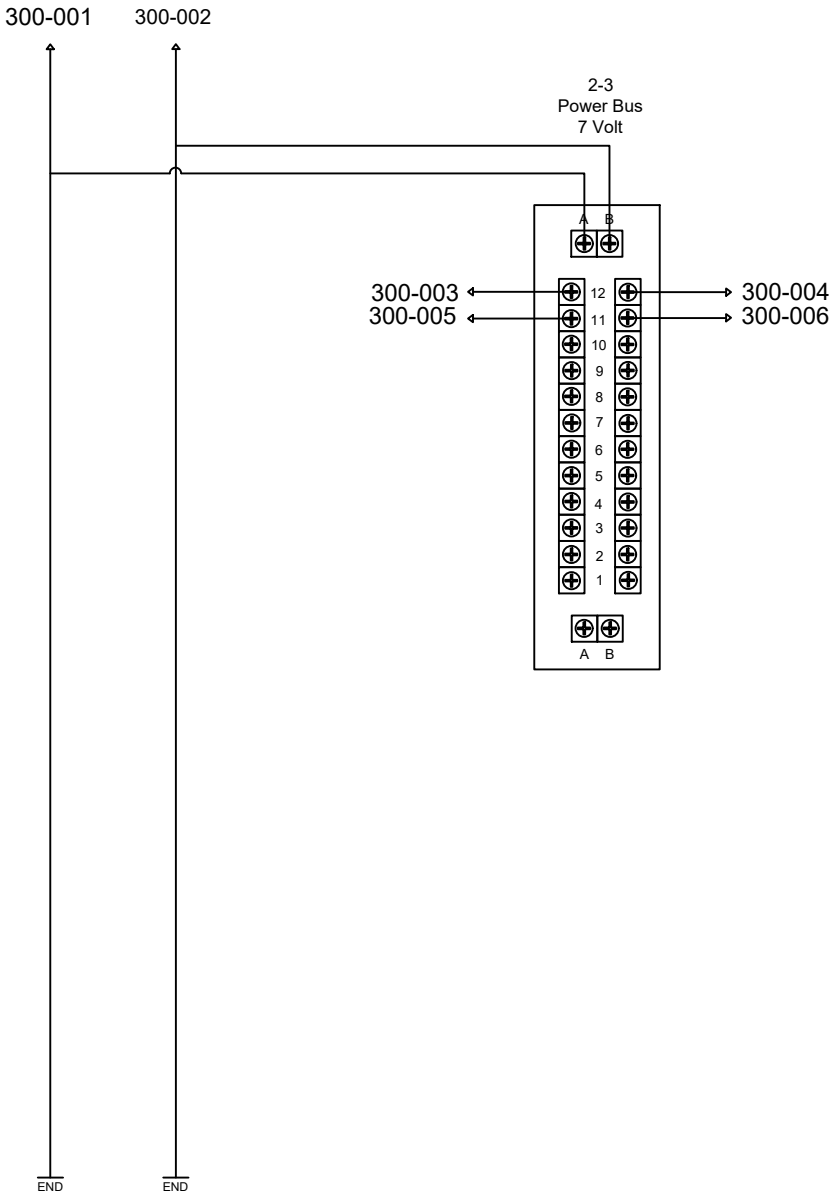

200-005
200-006
100-208
100-207
100-206
100-205
100-104
6-1
Adafruit Servo Shield
5.1 Volt
5.1 V
GND
0 1 2 3
4 5 6 7
PWM
V+
GND
8 9 10 11
12 13 14 15
Pins will be connected to microcontroller from underside of board through GPIO pins
200-201
200-202
200-203
200-204
200-205
200-206
200-207
200-208
Wire numbers 200-001 through 200-006 will control the servo motors on the robotic arm as follows:
200-201: Turn Table
200-202: Shoulder Joint
200-203: Elbow Joint
200-204: Wrist Joint
200-205: Wrist Turn Joint
200-206: End Effector Grab
200-207: Chassis Turntable
200-208: Shooting Mechanism Reload
END
END

200-006



Wire numbers 200-001 through 200-006 will control the servo motors on the robotic arm as follows:
200-201: Turn Table
200-202: Shoulder Joint
200-203: Elbow Joint
200-204: Wrist Joint
200-205: Wrist Turn Joint
200-206: End Effector Grab
200-207: Chassis Turntable
200-208: Shooting Mechanism Reload

200-201

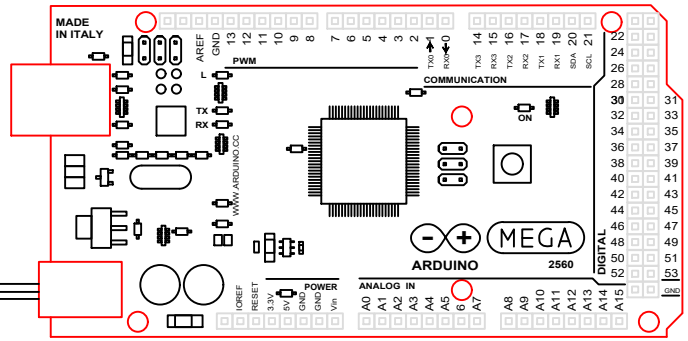

300-001
300-002
2-3
Power Bus
7 Volt
A B
300-003
300-005
300-004
300-006
12
11
10
9
8
7
6
5
4
3
2
1
A B
END
END

300-002

300-003

300-004

8-1
Arduino Mega
7 Volt

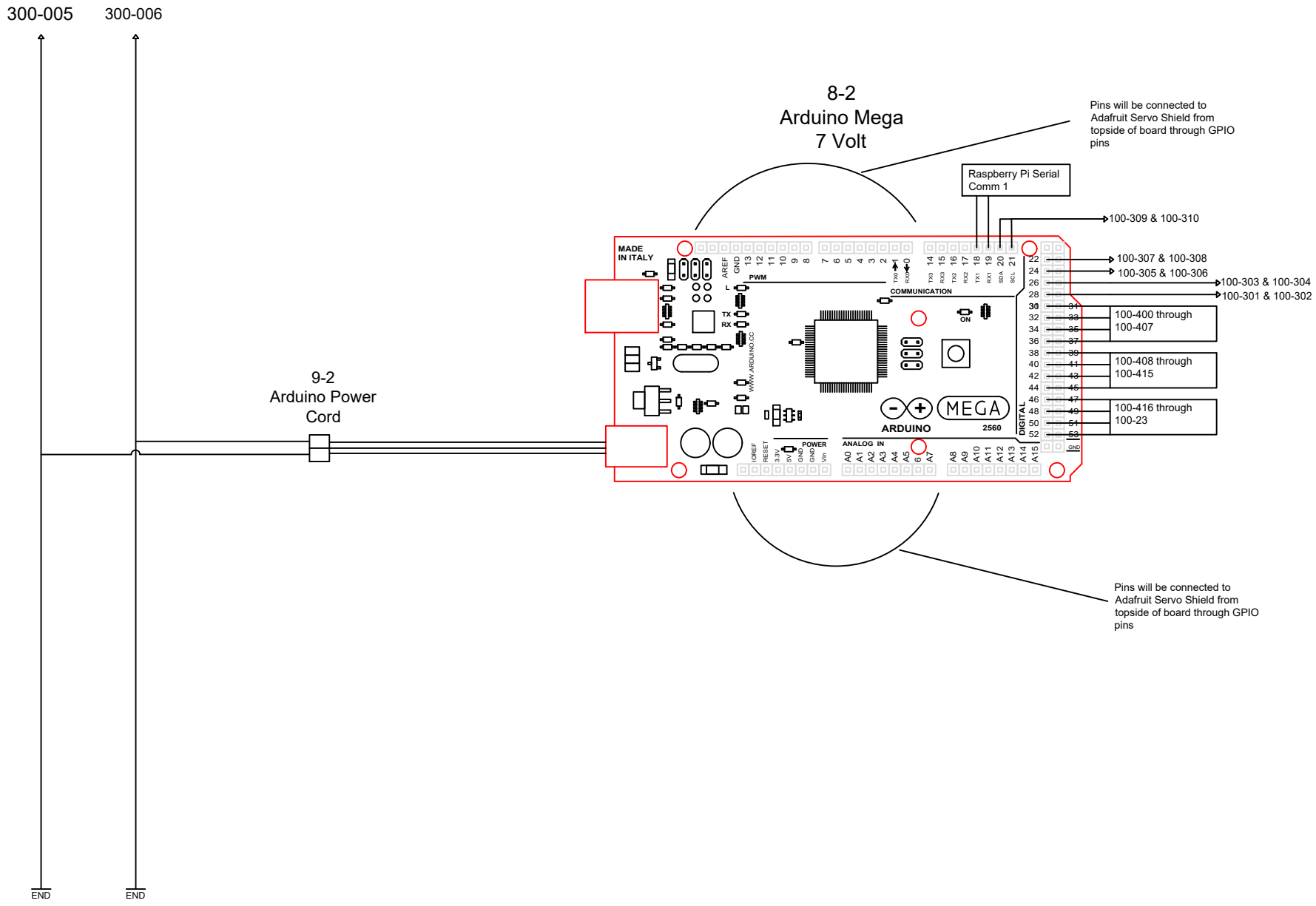


9-1
Arduino Power
Cord

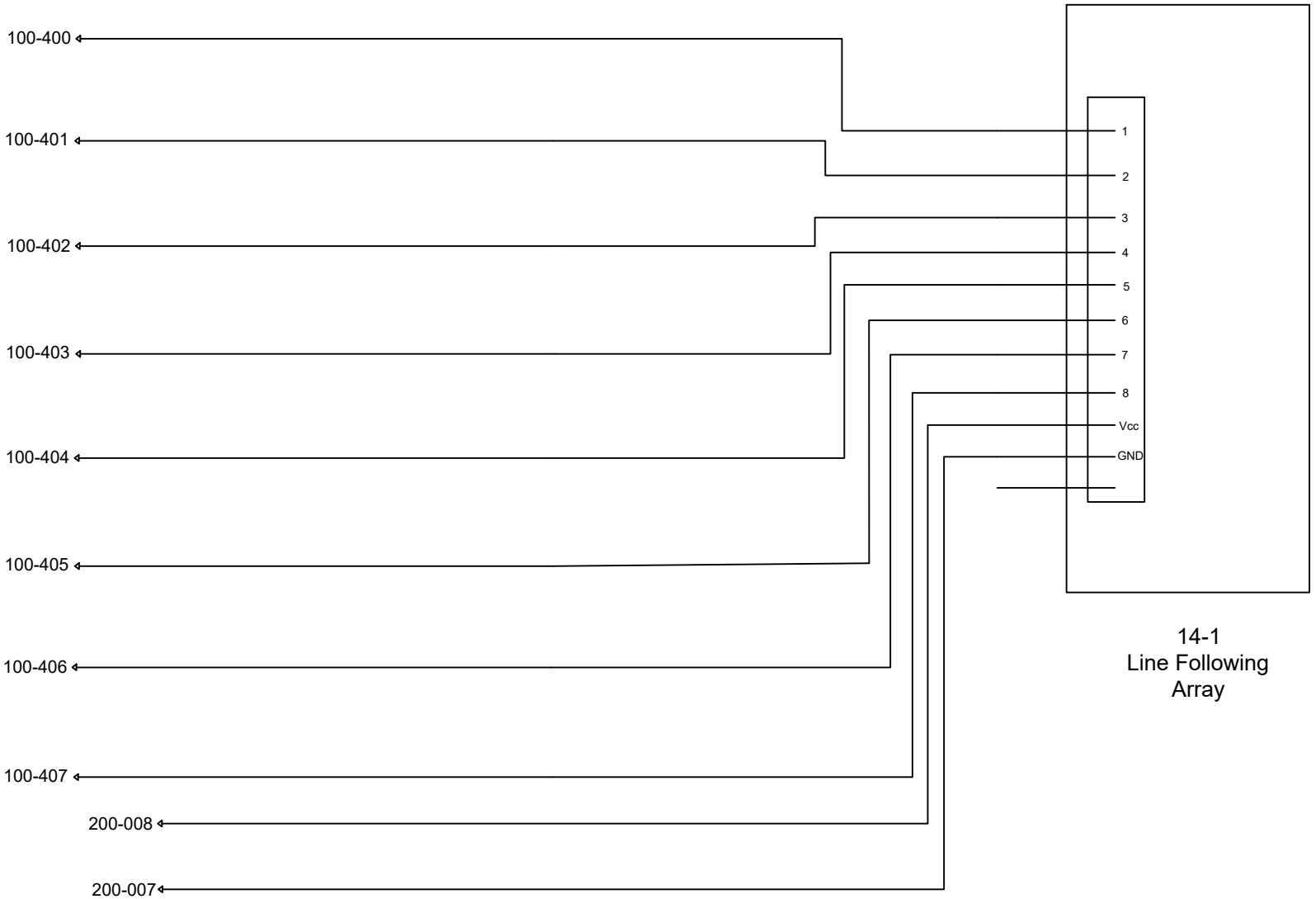
END

END

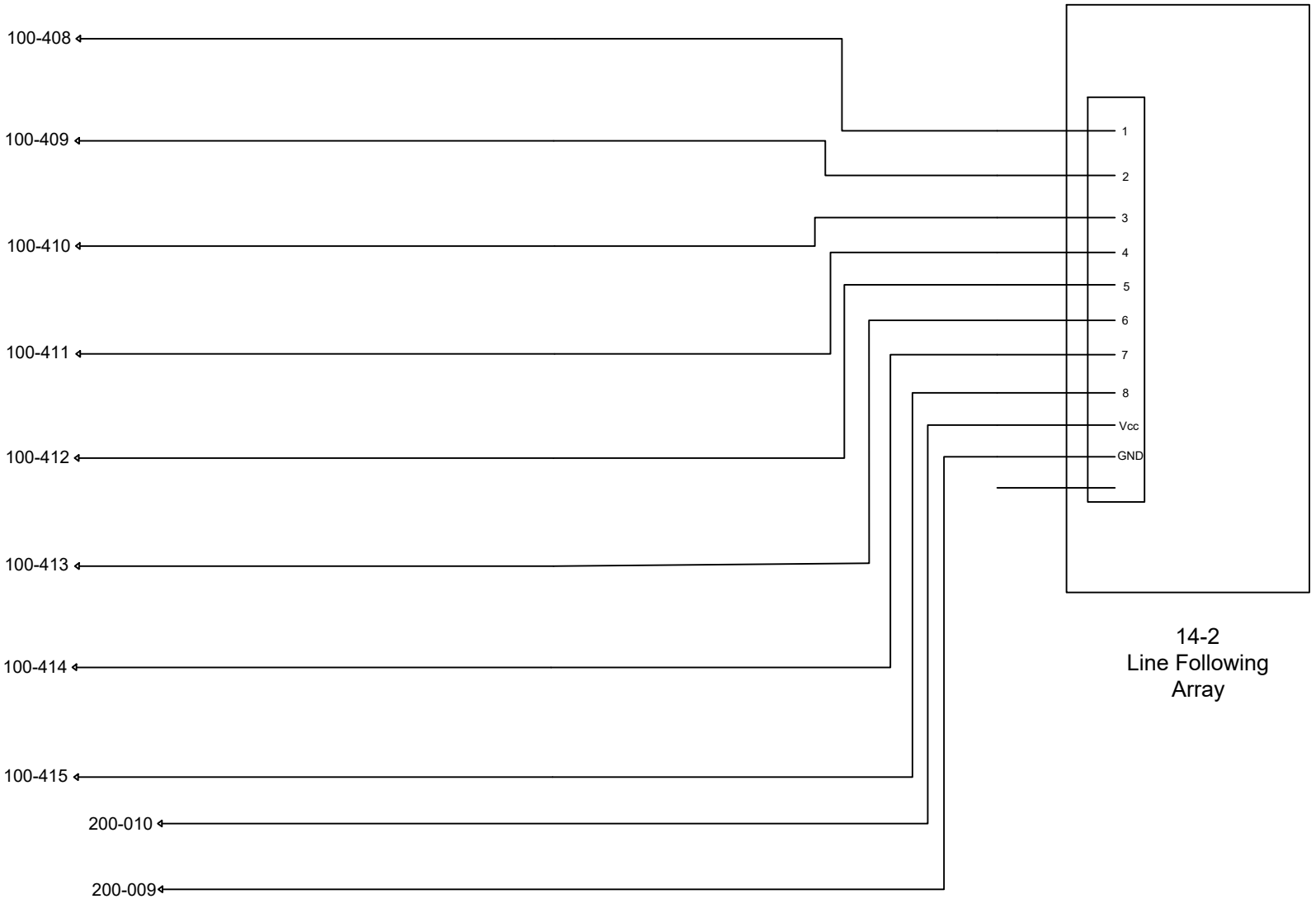
300-004


300-005
300-006
8-2
Arduino Mega
7 Volt
Pins will be connected to Adafruit Servo Shield from topside of board through GPIO pins
Raspberry Pi Serial Comm 1
100-309 & 100-310
100-307 & 100-308
100-305 & 100-306
100-303 & 100-304
100-301 & 100-302
100-400 through 100-407
100-408 through 100-415
100-416 through 100-23
9-2
Arduino Power Cord
MADE IN ITALY
MEGA
ARDUINO
2560
Pins will be connected to Adafruit Servo Shield from topside of board through GPIO pins
END
END

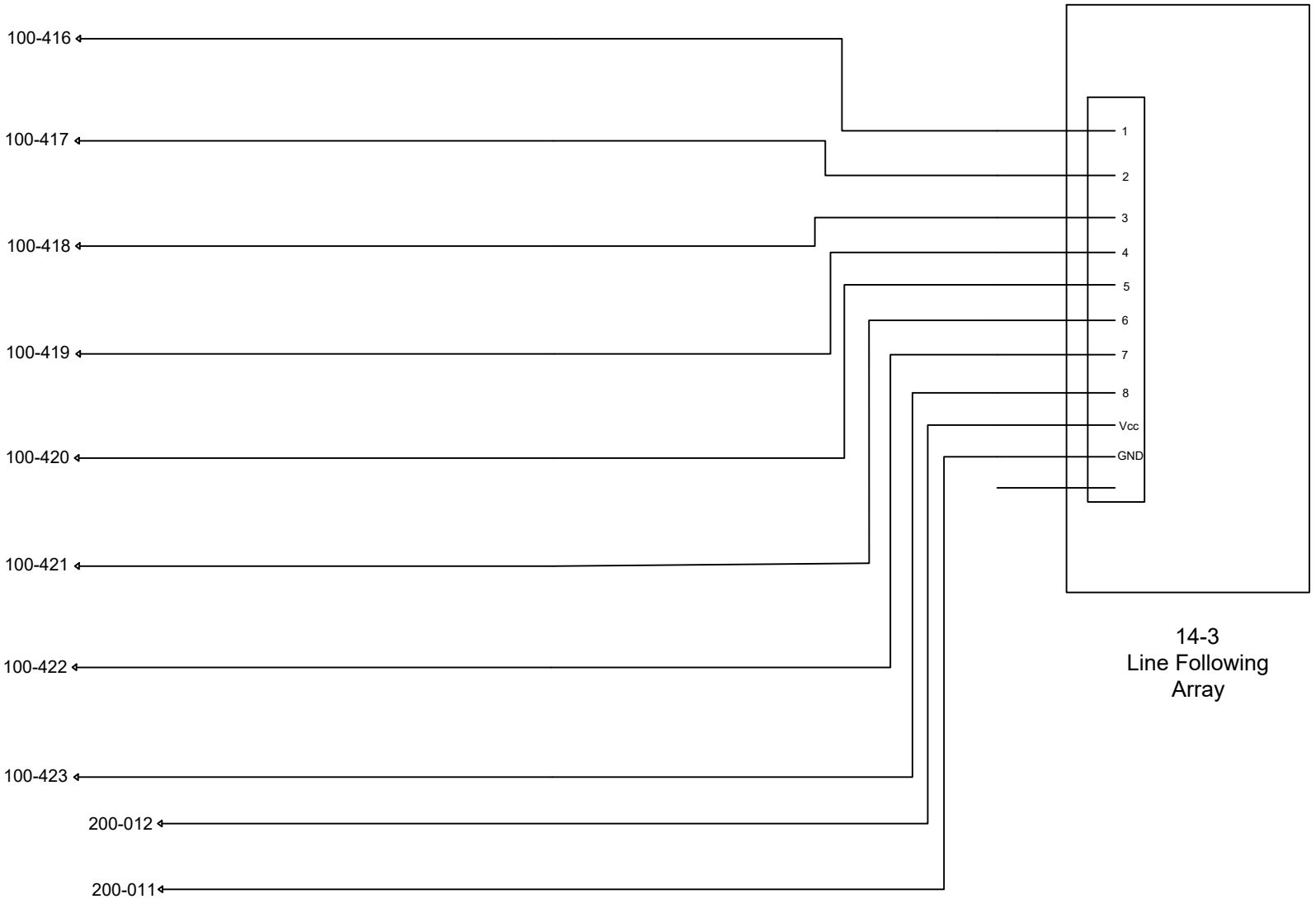
300-006


100-400
100-401
100-402
100-403
100-404
100-405
100-406
100-407
200-008
200-007
1
2
3
4
5
6
7
8
Vcc
GND
14-1
Line Following
Array

100-400


100-408
100-409
100-410
100-411
100-412
100-413
100-414
100-415
200-010
200-009
1
2
3
4
5
6
7
8
Vcc
GND
14-2
Line Following
Array

100-408


100-416
100-417
100-418
100-419
100-420
100-421
100-422
100-423
200-012
200-011
1
2
3
4
5
6
7
8
Vcc
GND
14-3
Line Following
Array

100-416