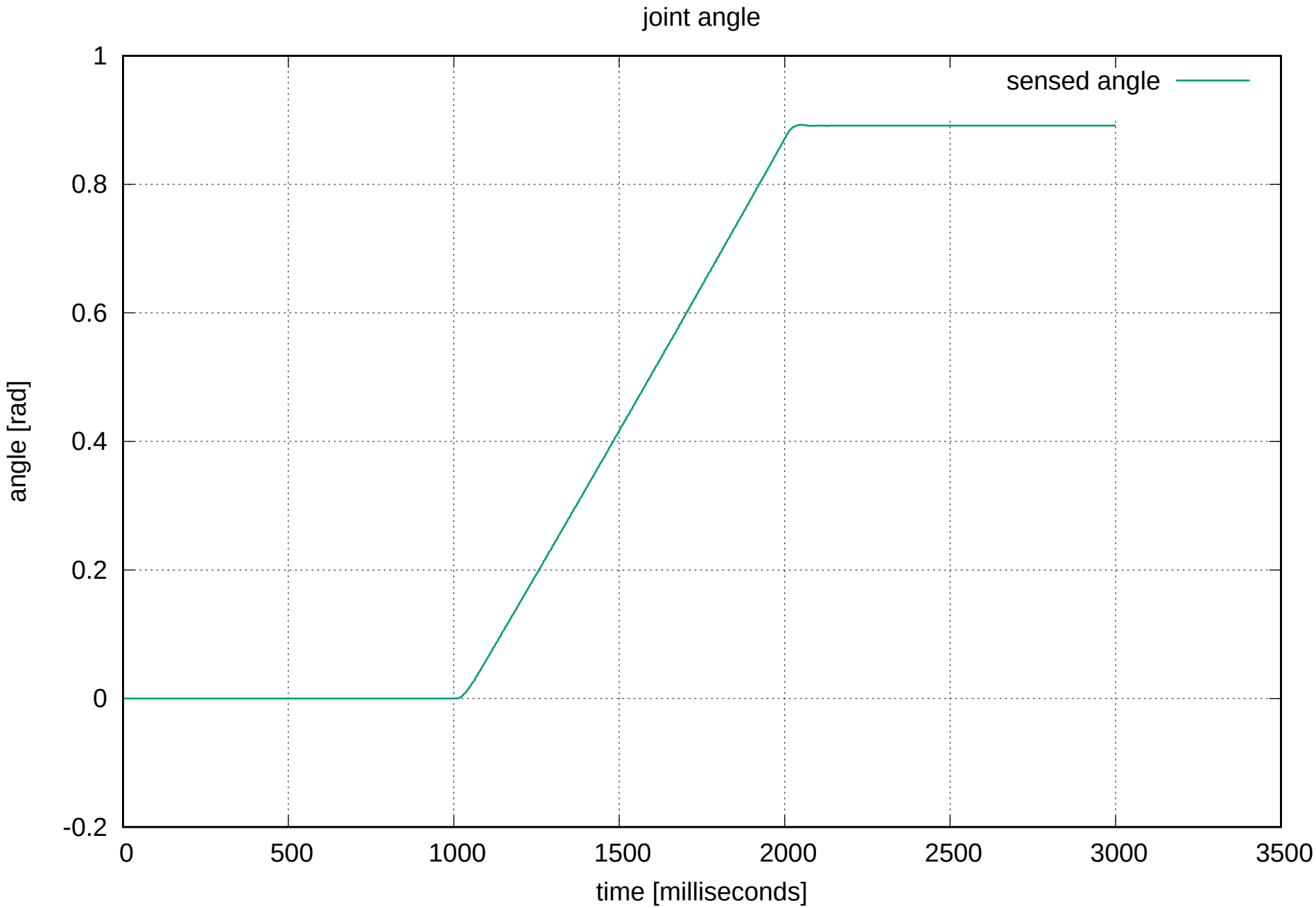
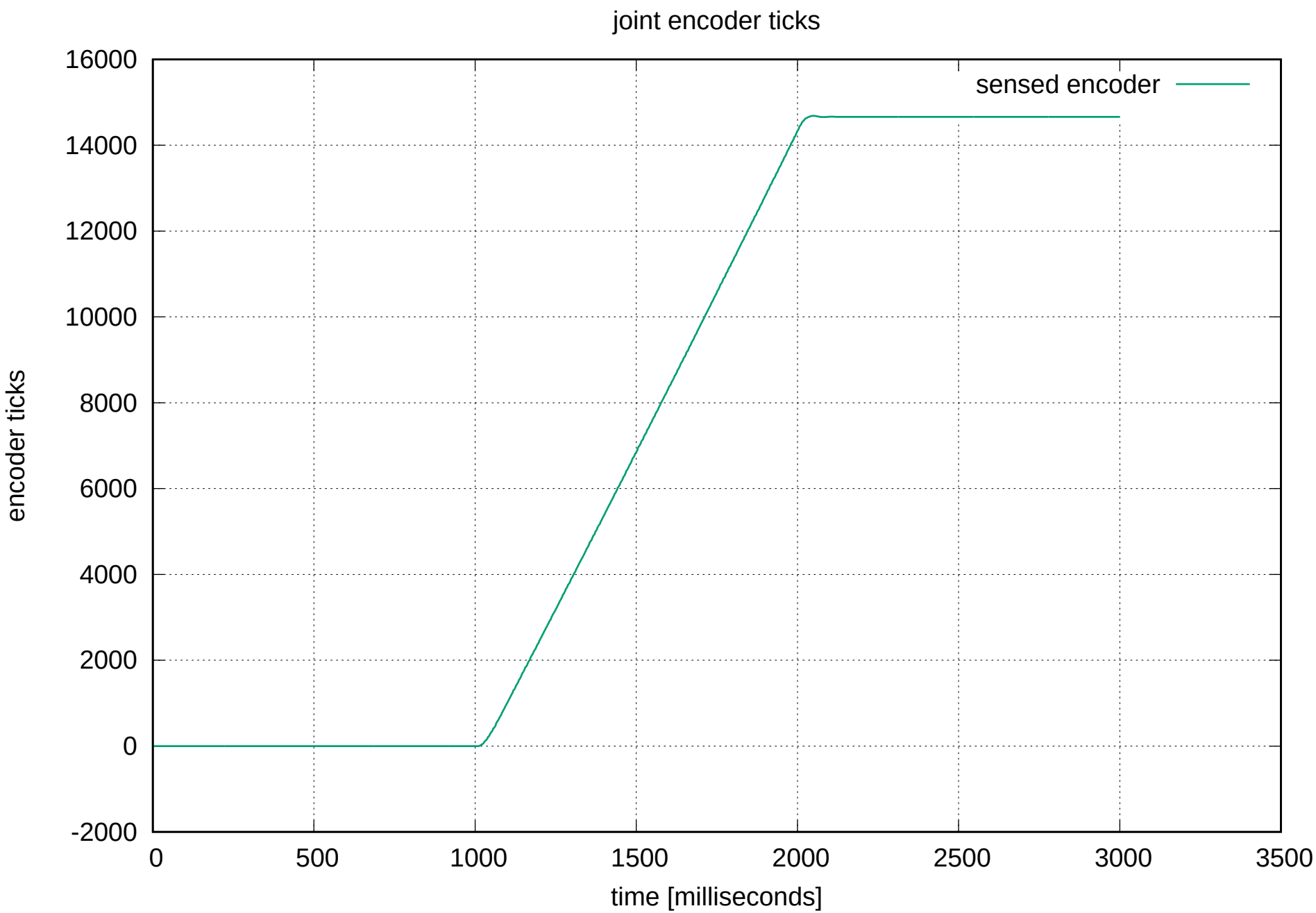
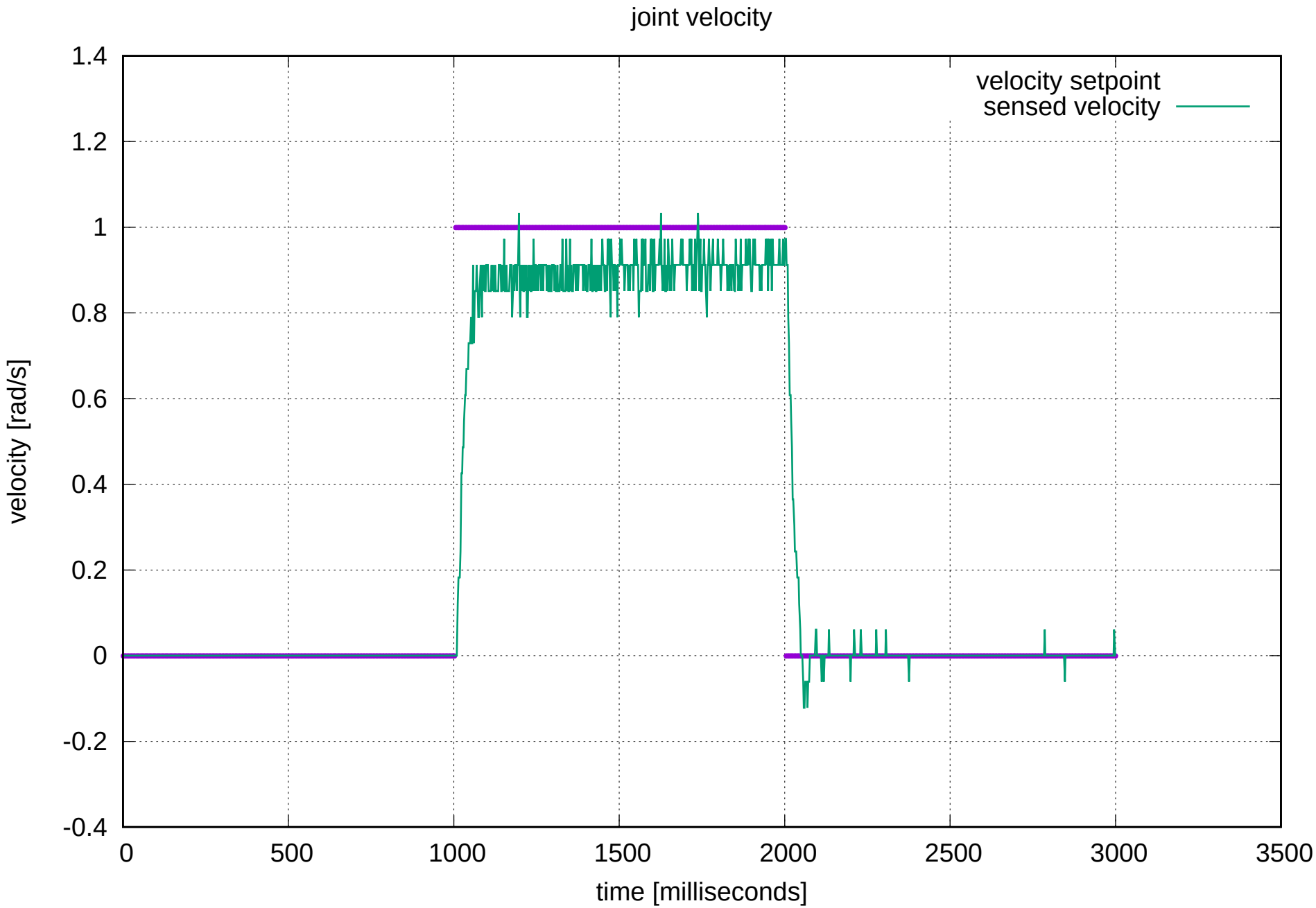
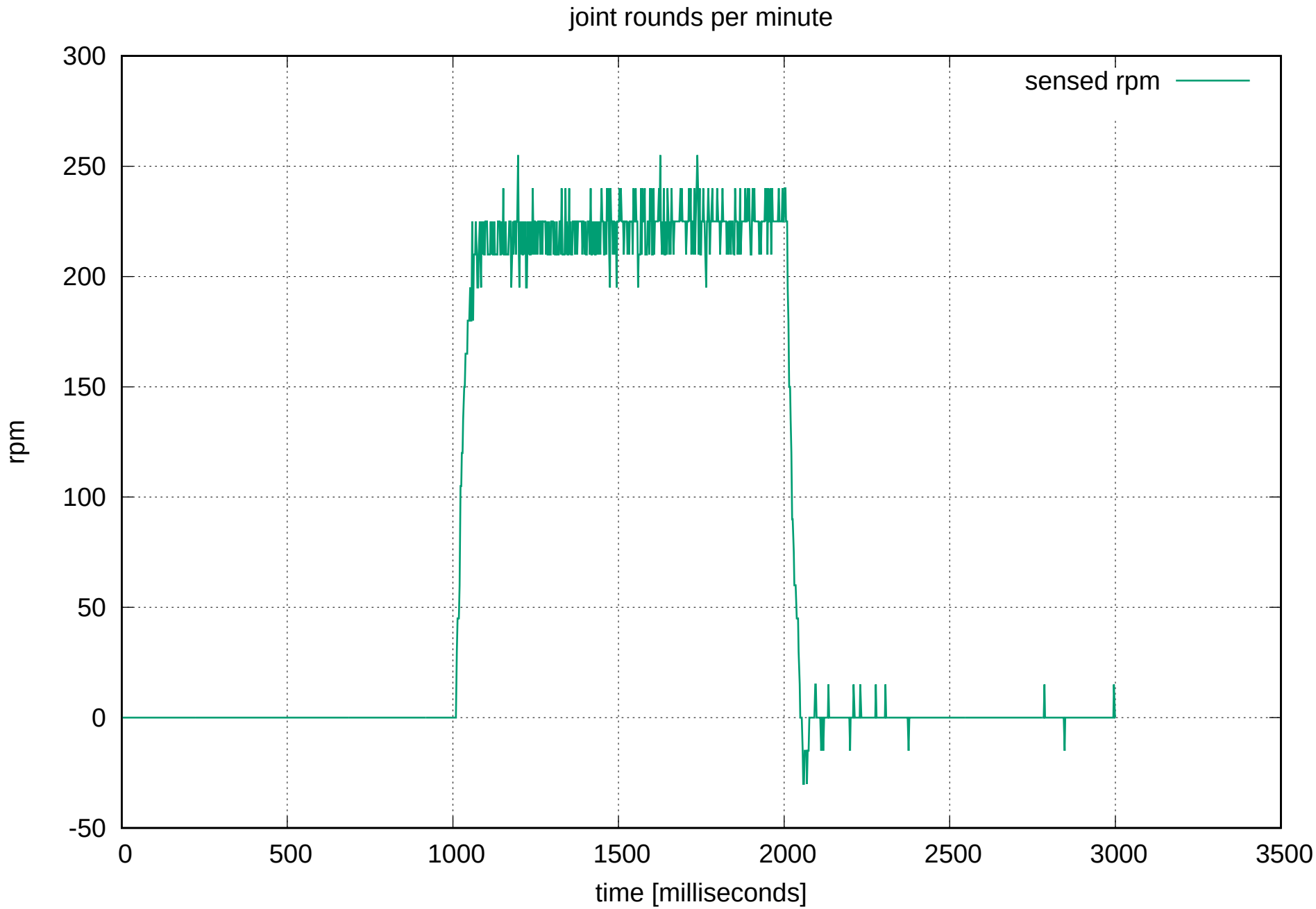
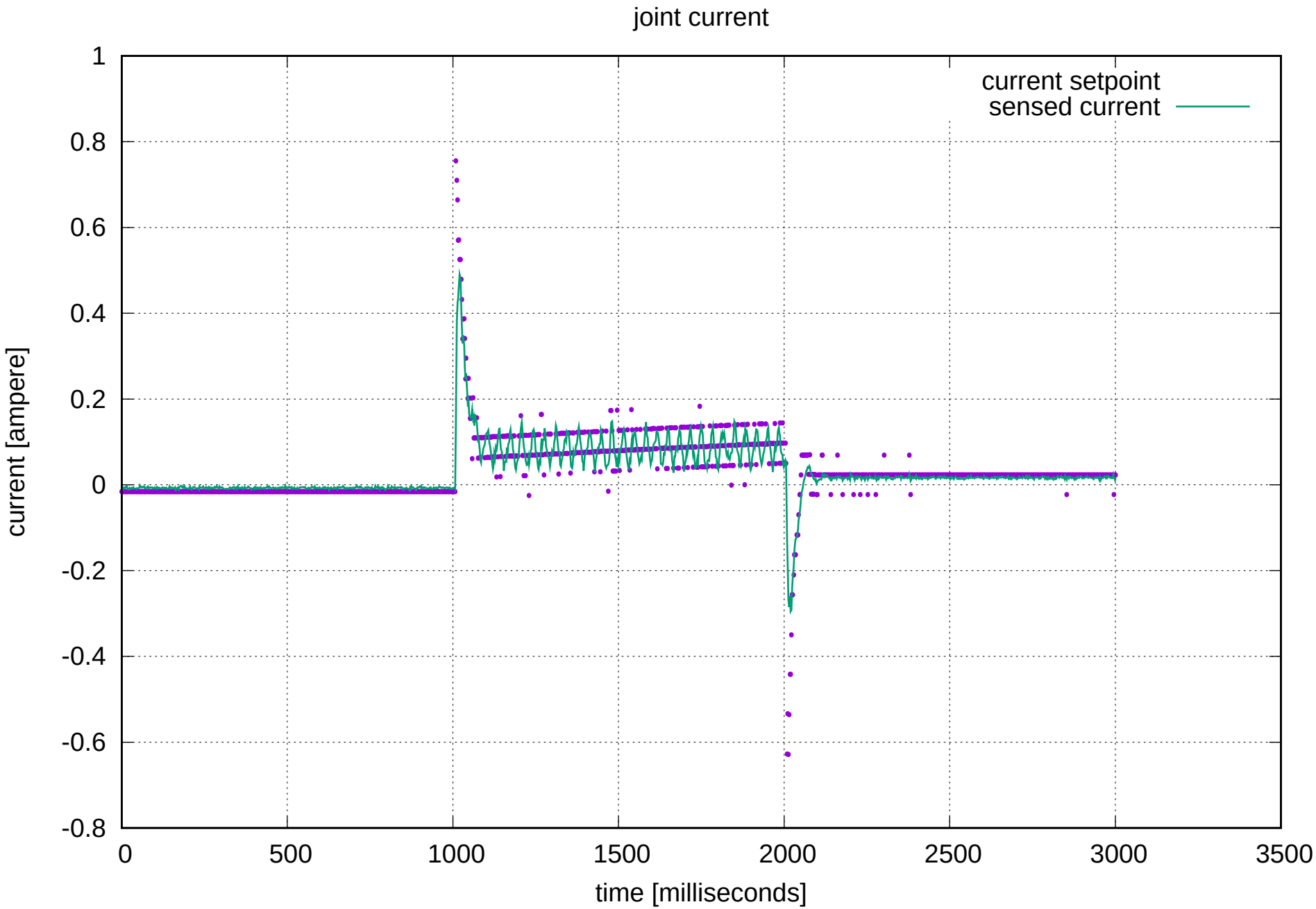
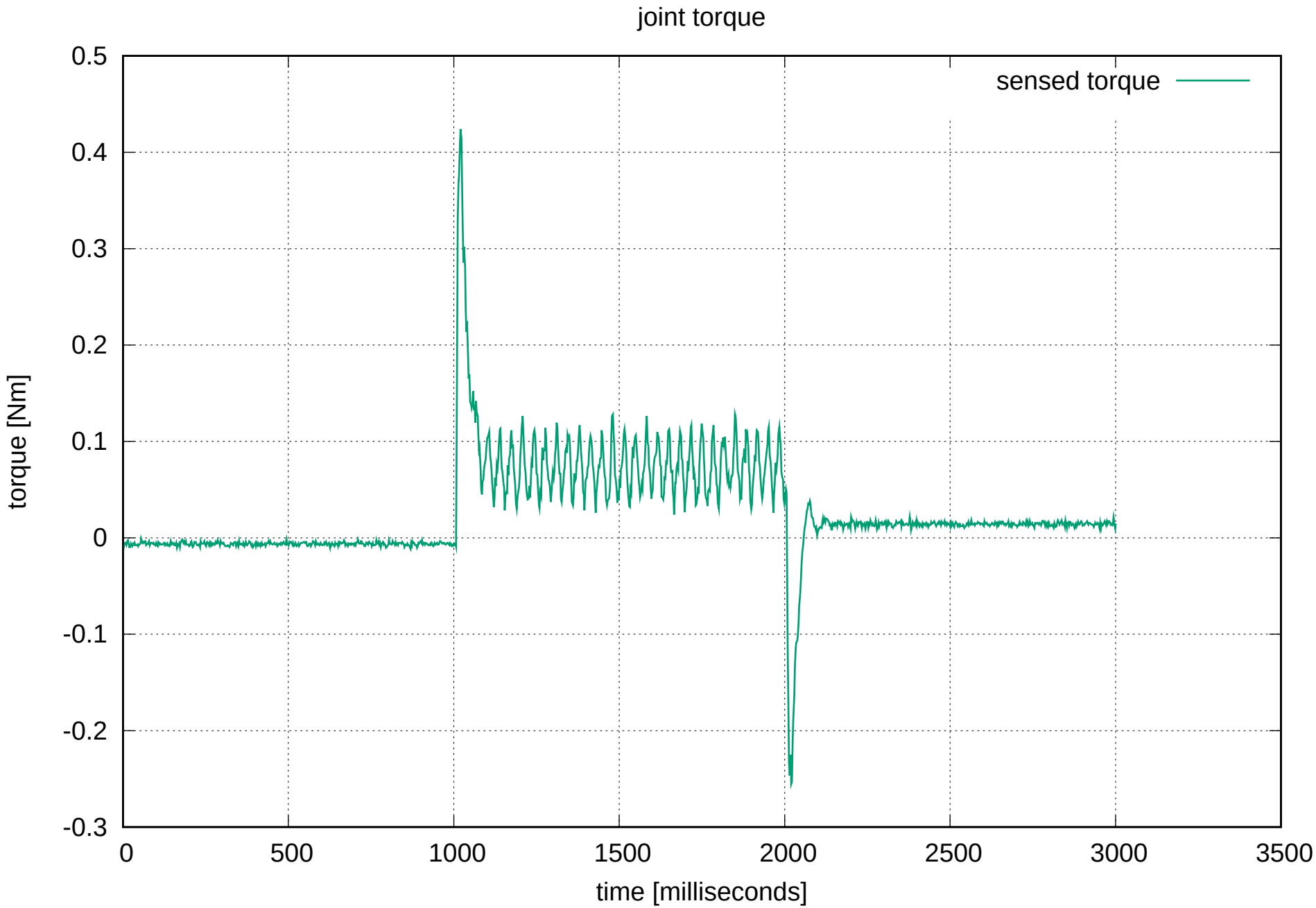

joint angle
sensed angle
angle [rad]
time [milliseconds]
1
0.8
0.6
0.4
0.2
0
-0.2
0
500
1000
1500
2000
2500
3000
3500

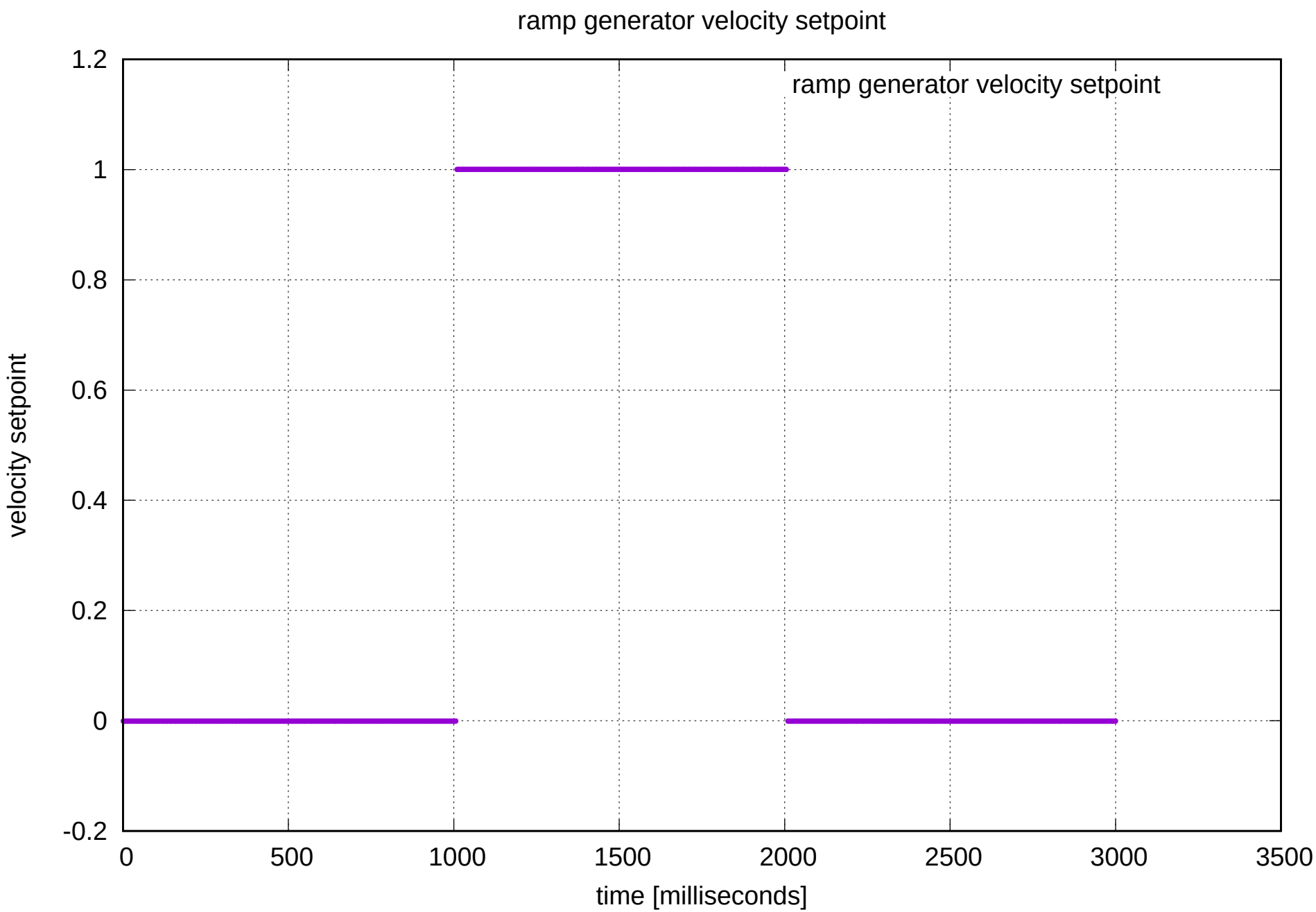

joint encoder ticks
sensed encoder
encoder ticks
time [milliseconds]
16000
14000
12000
10000
8000
6000
4000
2000
0
-2000
0
500
1000
1500
2000
2500
3000
3500

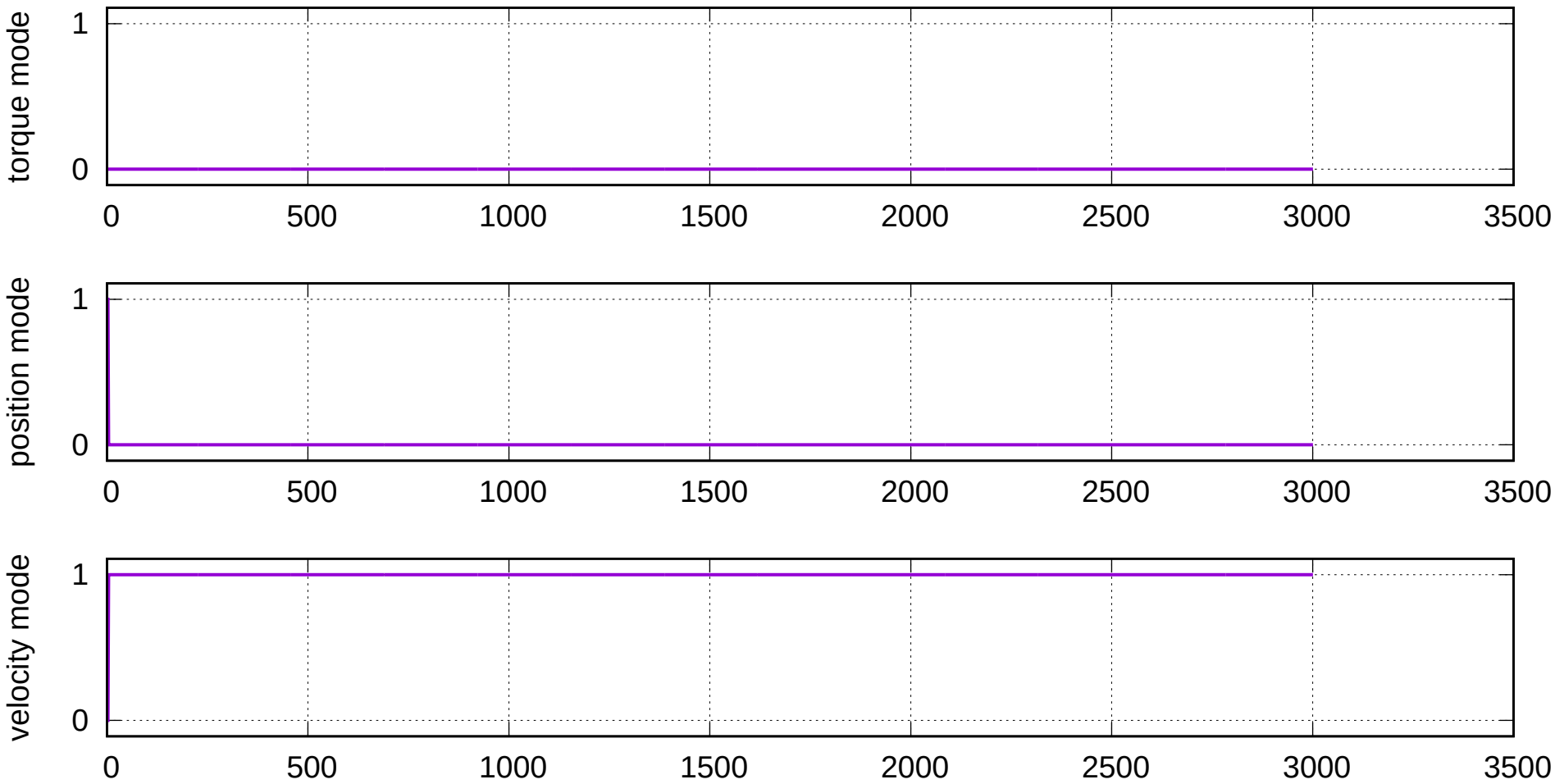

joint velocity
velocity setpoint
sensed velocity
velocity [rad/s]
time [milliseconds]
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
0
500
1000
1500
2000
2500
3000
3500

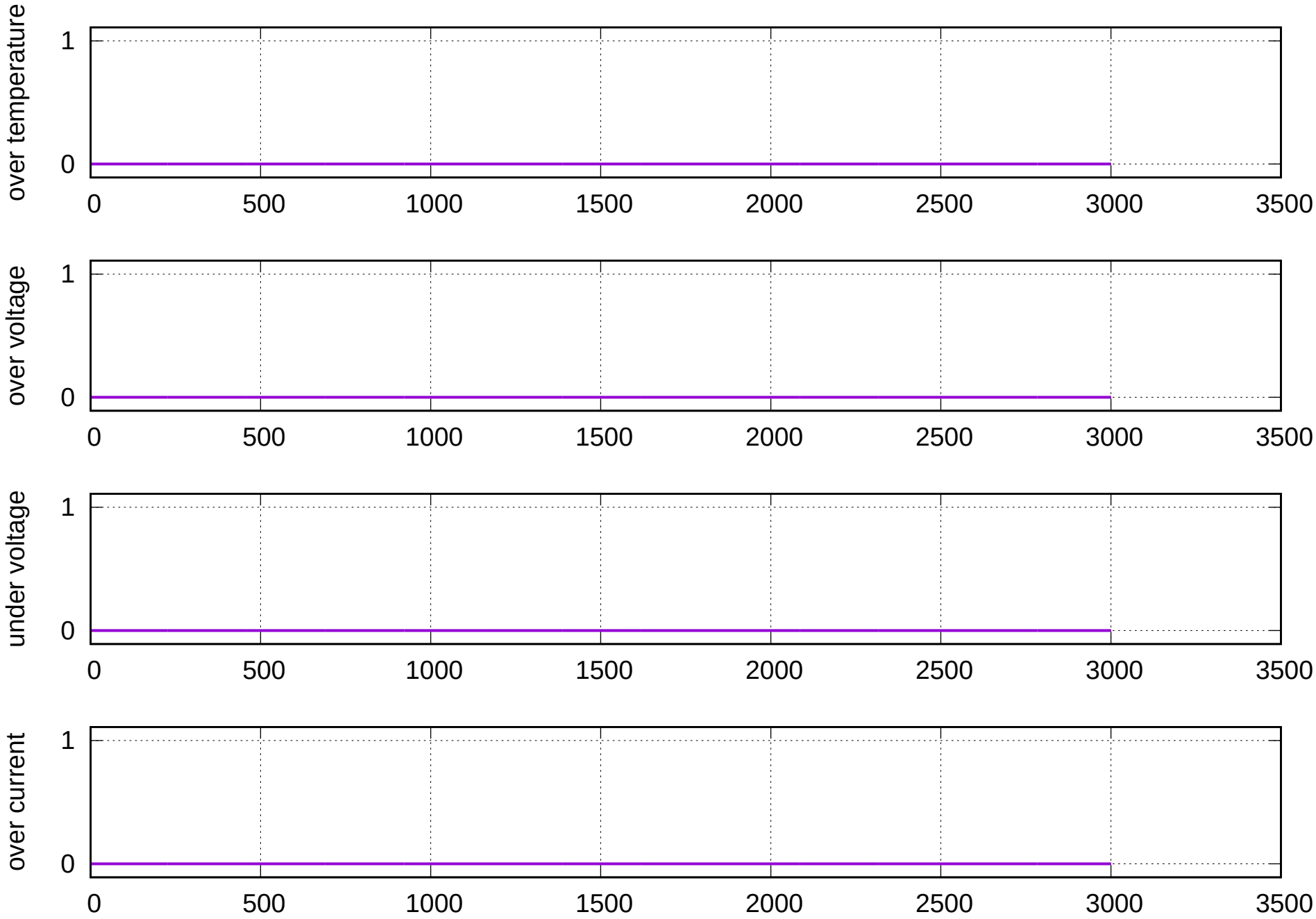

joint rounds per minute
sensed rpm
rpm
time [milliseconds]
300
250
200
150
100
50
0
-50
0
500
1000
1500
2000
2500
3000
3500

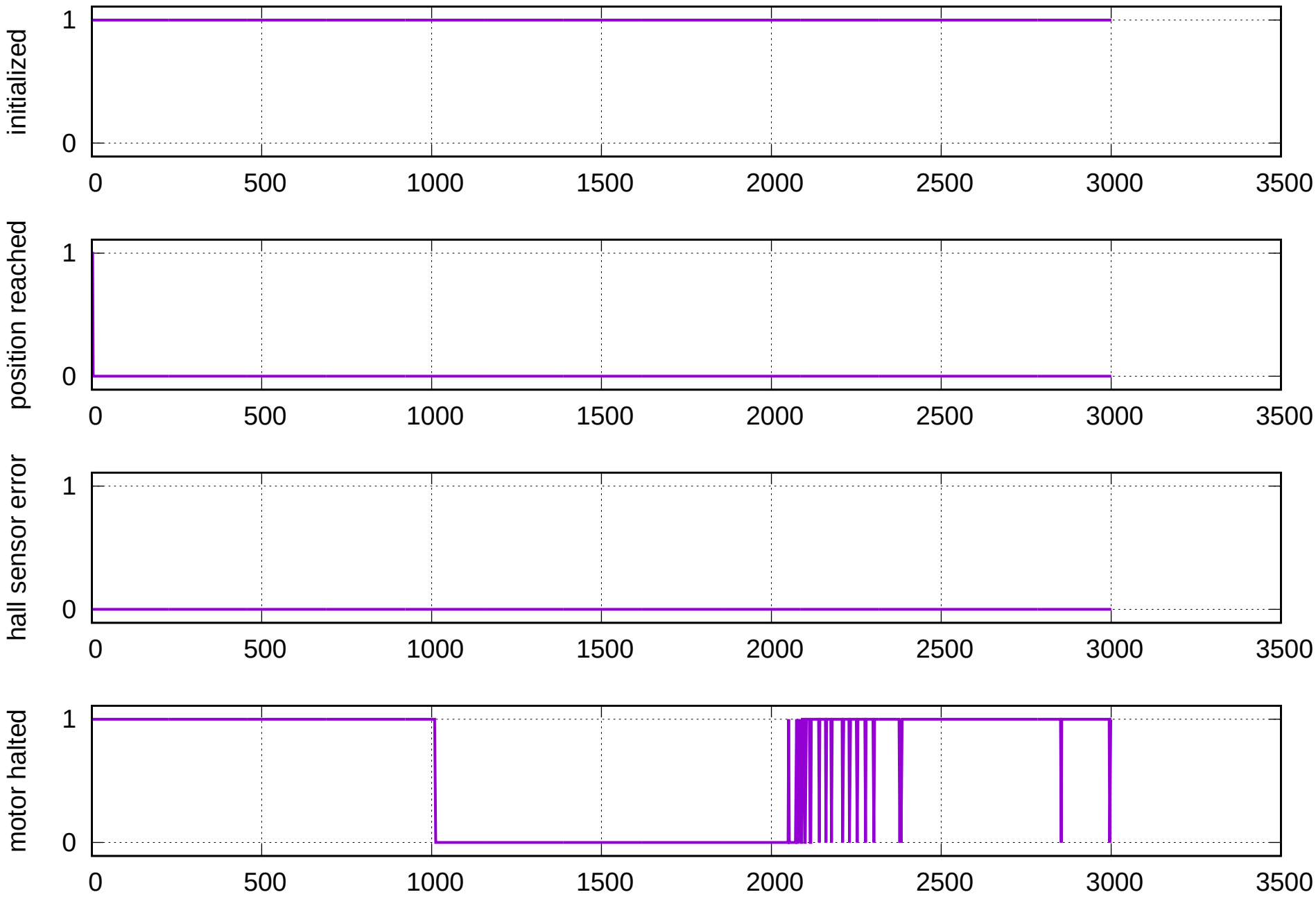

joint current
current setpoint
sensed current
current [ampere]
time [milliseconds]
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
0
500
1000
1500
2000
2500
3000
3500

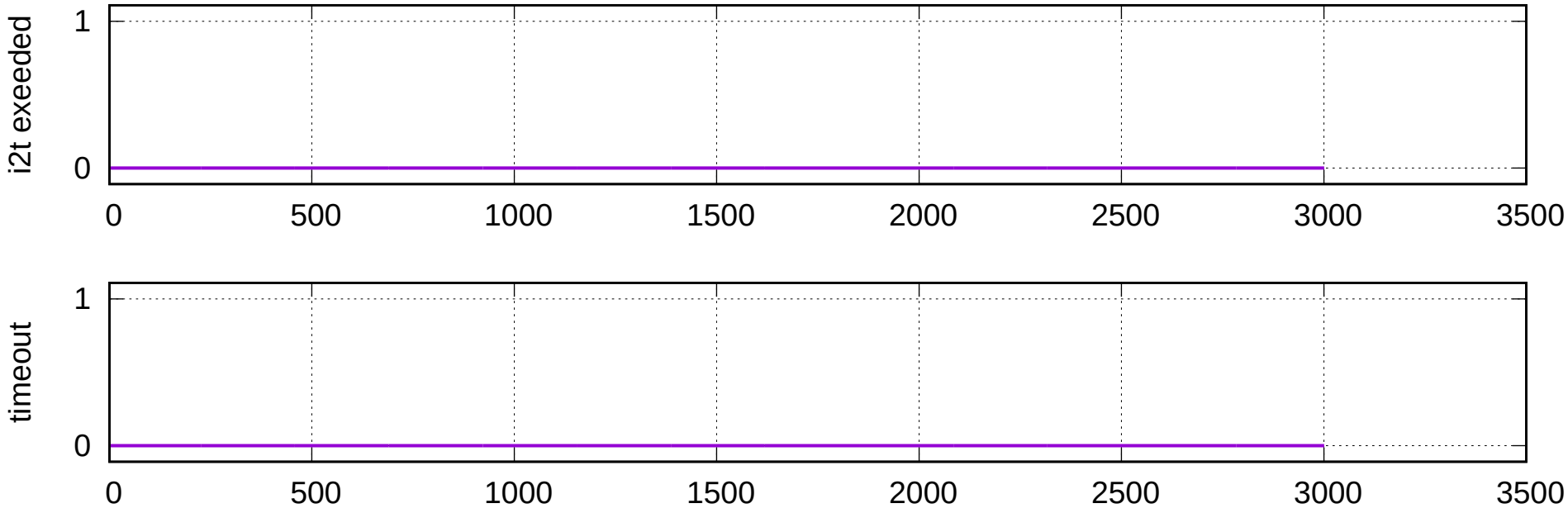

joint torque
sensed torque
torque [Nm]
time [milliseconds]
0.5
0.4
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
0
500
1000
1500
2000
2500
3000
3500


ramp generator velocity setpoint
ramp generator velocity setpoint
velocity setpoint
time [milliseconds]
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
0
500
1000
1500
2000
2500
3000
3500


torque mode
1
0
0
500
1000
1500
2000
2500
3000
3500
position mode
1
0
0
500
1000
1500
2000
2500
3000
3500
velocity mode
1
0
0
500
1000
1500
2000
2500
3000
3500


over temperature
1
0
0
500
1000
1500
2000
2500
3000
3500
over voltage
1
0
0
500
1000
1500
2000
2500
3000
3500
under voltage
1
0
0
500
1000
1500
2000
2500
3000
3500
over current
1
0
0
500
1000
1500
2000
2500
3000
3500


initialized
position reached
hall sensor error
motor halted
1
0
0
500
1000
1500
2000
2500
3000
3500


i2t exeeded
1
0
0
500
1000
1500
2000
2500
3000
3500
timeout
1
0
0
500
1000
1500
2000
2500
3000
3500