Schütytplŵva!íßn

Autonomous Line Tracking Robot Datasheet

General Description

The Schütytplŵva!íßn is an autonomous line following robot which has two modes of maze traversal and a remote control mode. These modes are selected using the on-board switches, where different configurations determine different modes. The best operational voltage is anywhere between 7.0 to 7.5 volts, drawing up to 500mA during operation. The recommended power supply is 6 x 1.2V NiMH batteries.

Robot Features

6 x 1.2V NiMH AA battery operation
Three switchable operation modes
Autonomous maze traversal

Travel speed range: **50~70 cms^{-1}**

Rotational speed range: **120~200 rpm**

Operation Mode Description

1. Full maze traversal algorithm
2. Targeted maze traversal algorithm
3. Remote controlled operation

Operation Mode Selection

Each mode selection is chosen with specific on/off combinations of the on-board switches. Mode switches are located at on the rear left flank of the robot, while the localization LED enable switch is located at the left rear flank of the robot. The on/off switch for the surface PCB is located at the centre left. Remote controlled operation is activated by setting the correct mode switch and then connecting to the robot's Bluetooth interface from a terminal window. The robot can then be controlled using the WSAD keys.

Operation Mode Switch Array

Top view
Switches 0~3 from left to right

Level	SW0	SW1	SW2	SW3
One	1	0	1	0
Two	0	1	1	0
Three	1	1	1	0

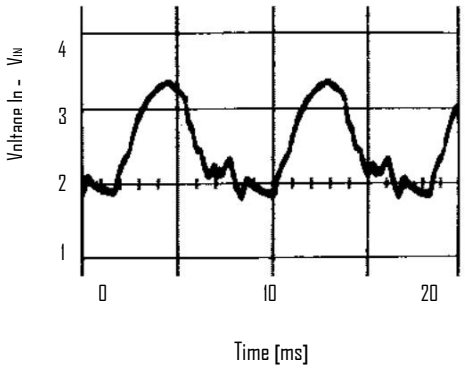
Operation Characteristics

(all under temperature conditions of T = 25˚C)

Parameter	Test Condition	Min	Max	Unit
Operating Supply Voltage (V_s)		6.8	8.4	V
Quiescent Current (I_q)	Vs = 7.2V	150		mA
Operating Power (P_{op})	Vs = 7.2V	2.5		W
Travel Speed (V_t)	Vs = 7.2V	50	70	cms^{-1}
Rotational Speed (θ_t)	Vs = 7.2V	120	200	rpm
Line reaction speed (τ_L)	Vs = 7.2V	28	31	ms
Wall reaction speed (τ_W)	Vs = 7.2V	14	15	ms

Application Example: Wall Signal

Voltage at Sensor vs Time



Projector White Signal
Condition T =25 °C

Robot Diagram and Peripherals