

## DAFTAR ISI

LEMBAR PENGESAHAN.....	ii
LEMBAR PERNYATAAN ORISINALITAS.....	iii
ABSTRAK.....	iv
ABSTRACT.....	v
KATA PENGANTAR.....	vi
UCAPAN TERIMA KASIH.....	vii
DAFTAR ISI.....	ix
DAFTAR GAMBAR.....	xii
DAFTAR TABEL.....	xiii
DAFTAR SINGKATAN.....	xiv
BAB I PENDAHULUAN.....	1
1.1. Latar Belakang.....	1
1.2. Rumusan Masalah.....	1
1.3. Tujuan.....	2
1.4. Manfaat.....	2
1.5. Batasan Masalah.....	2
1.6 Metode Penelitian.....	3
1.7 Sistematika Penulisan.....	4
BAB II TINJAUAN PUSTAKA.....	5
2.1. Prinsip Kerja Konsep.....	5
2.2. <i>Autonomous UVC Mobile Robot</i> .....	5
2.3. Fuzzy Logic Controller (FLC).....	6
2.4. <i>Differential Drive and Forward Kinematics</i> .....	9
2.4.1 <i>Forward Kinematics for Differential Drive</i> .....	10
2.5. Sensor Magnet.....	11

2.6. Rotary Encoder.....	12
2.7. Mikrokontroler.....	13
2.8. Motor DC.....	14
BAB III PERANCANGAN SISTEM.....	15
3.1 Desain Sistem.....	15
3.1.1 Diagram Blok.....	15
3.1.2 Diagram Alir.....	16
3.2 Desain Perangkat Keras.....	18
3.2.1 Desain Mekanik Sistem.....	18
3.2.2 Spesifikasi Komponen.....	19
3.2.2.1 Arduino Mega.....	19
3.2.2.2 Magnetic Sensor MGS1600GY.....	20
3.2.2.3 <i>Incremental Rotary Encoder E4056-600-3T-24</i> .....	21
3.2.2.4 Driver Motor BTS7960.....	22
3.2.2.5 Brushed Motor K90 60W.....	22
3.2.2.6 Aki 12V 18Ah.....	23
3.2.2.7 Aki 12V 70Ah.....	24
3.2.2.8 Inverter 900VA 12V.....	24
3.2.2.9 UBEC 5V 3A.....	25
3.2.2.1 Relay 2 Channel.....	25
3.2.2.2 Flysky FS-I6S.....	26
3.3 Desain Sistem Perangkat Lunak.....	27
3.3.1 Perancangan FLC (Fuzzy Logic Controller).....	27
3.3.2 Perancangan <i>Forward Kinematics for Differential Drive</i> .....	30
BAB IV HASIL DAN ANALISA.....	31
4.1 Pengambilan Data.....	31

4.2 Pengujian <i>Incremental Rotary Encoder</i> .....	31
4.3 Pengujian Sensor <i>Magnetic Sensor MGS1600GY</i> .....	33
4.4 Pengujian <i>Fuzzy Logic Control</i> pada Matlab dan Robot.....	33
4.5 Pengujian <i>Forward Kinematic</i> terhadap lintasan.....	35
4.6 Pengujian Sinar UVC Menggunakan UV Meter.....	36
<b>BAB VKESIMPULAN DAN SARAN.....</b>	<b>38</b>
5.1 Kesimpulan.....	38
5.2 Saran.....	39
<b>DAFTAR PUSTAKA.....</b>	<b>40</b>
<b>LAMPIRAN.....</b>	<b>42</b>
❖ Lampiran 1 (Source Code).....	42
❖ Lampiran 2 Penurunan Rumus FLC.....	80
❖ Lampiran 3 Penurunan persamaan <i>Forward Kinematics of Differential Drive</i> .....	88
❖ Lampiran 4 Gambar alat.....	89