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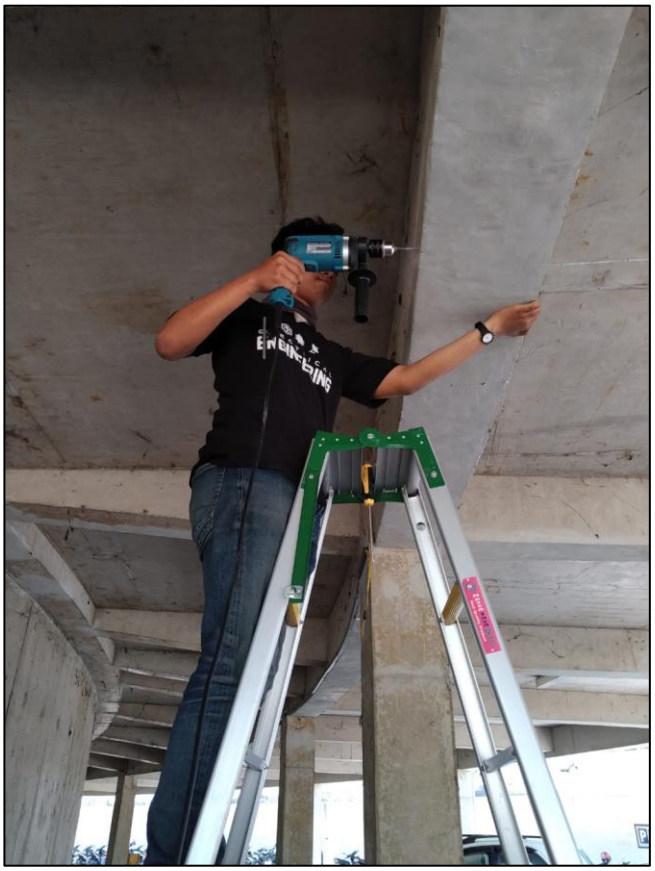
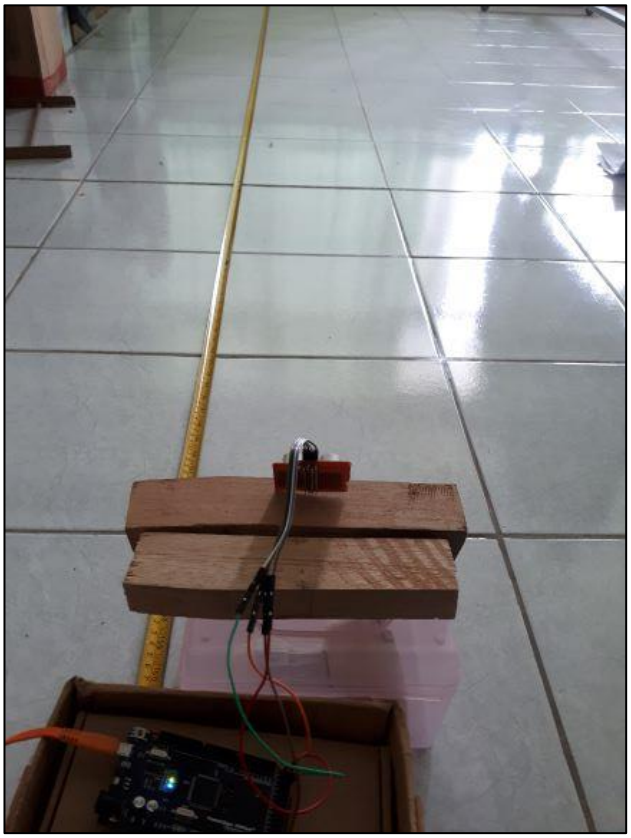
LAMPIRAN

Lampiran 1. Implementasi Sensor pada Lahan Parkir

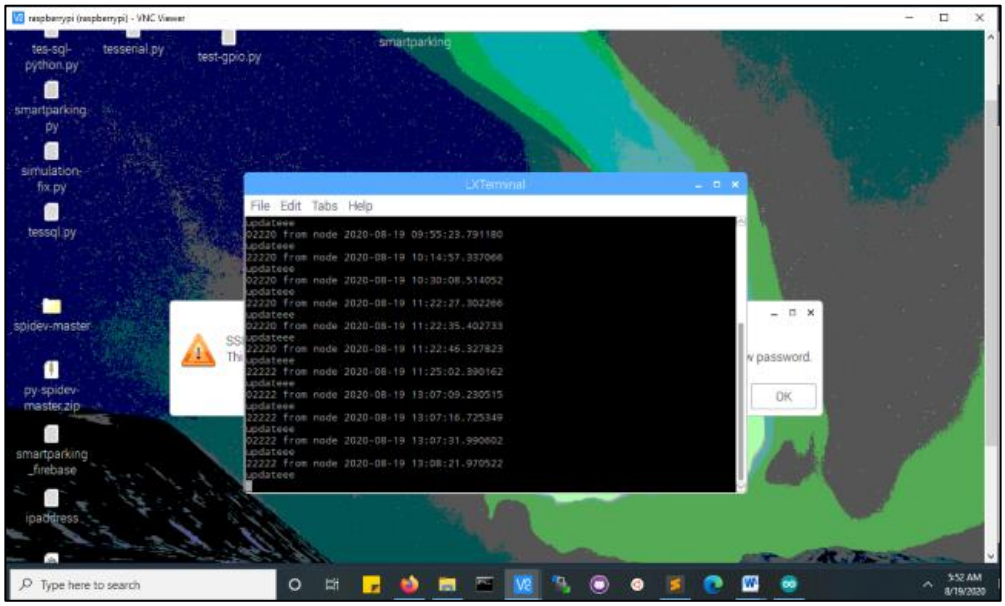


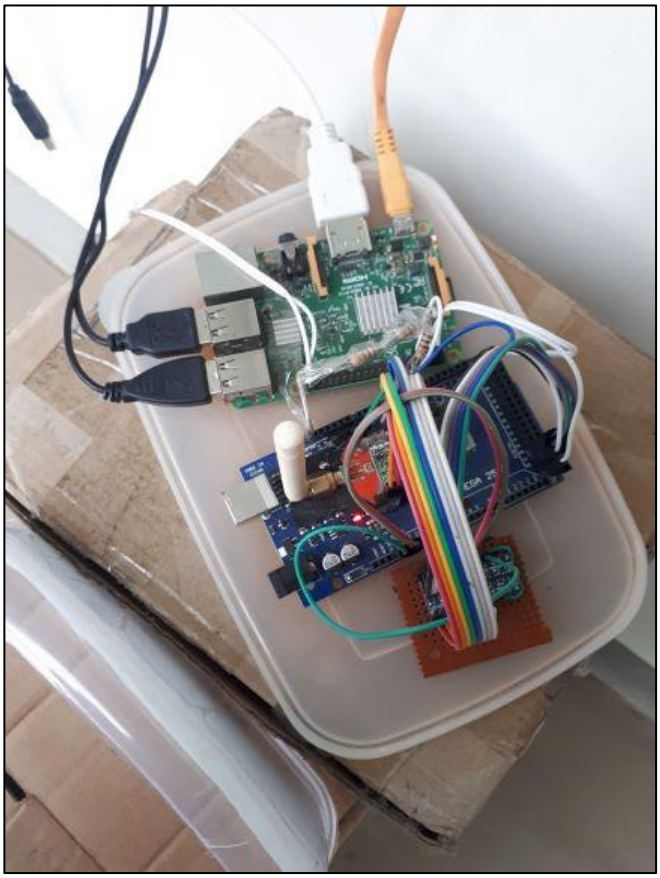
PANEL BOX
NODE

Lampiran 2. Pengujian Sensor



Lampiran 3. Pengujian Waktu Tunda





Lampiran 4. Datasheet Sensor HC-SR04a

User's Manual

V1.0

May 2013

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1.0 INTRODUCTION

The HC-SR04 ultrasonic sensor uses sonar to determine distance to an object like bats or dolphins do. It offers excellent non-contact range detection with high accuracy and stable readings in an easy-to-use package. From 2cm to 400 cm or 1" to 13 feet. It operation is not affected by sunlight or black material like Sharp rangefinders are (although acoustically soft materials like cloth can be difficult to detect). It comes complete with ultrasonic transmitter and receiver module.

Features:

- Power Supply :+5V DC
- Quiescent Current : <2mA
- Working Currnt: 15mA
- Effectual Angle: <15°
- Ranging Distance : 2cm – 400 cm/1" - 13ft
- Resolution : 0.3 cm
- Measuring Angle: 30 degree
- Trigger Input Pulse width: 10uS
- Dimension: 45mm x 20mm x 15mm

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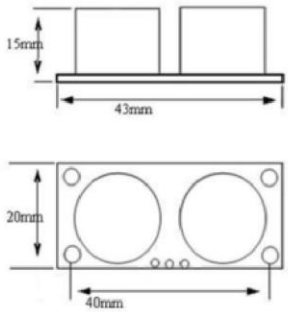
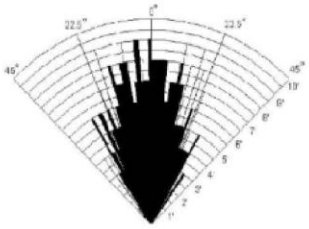
2.0 PACKING LIST

1. 1 x HC-SR04 module

3.0 PRODUCT LAYOUT

VCC = +5VDC
Trig = Trigger input of Sensor
Echo = Echo output of Sensor
GND = GND





Practical test of performance,
Best in 30 degree angle

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4.0 PRODUCT SPECIFICATION AND LIMITATIONS

Parameter	Min	Typ.	Max	Unit
Operating Voltage	4.50	5.0	5.5	V
Quiescent Current	1.5	2	2.5	mA
Working Current	10	15	20	mA
Ultrasonic Frequency	-	40	-	kHz

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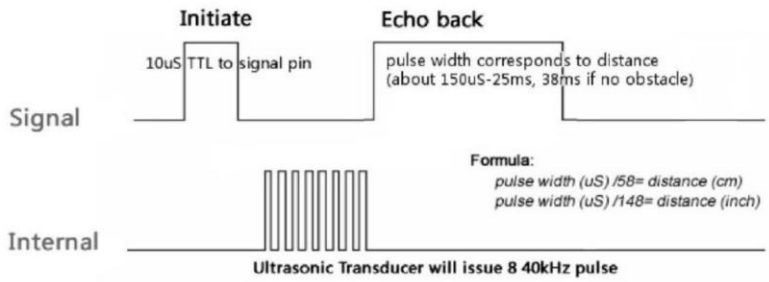
5.0 OPERATION

The timing diagram of HC-SR04 is shown. To start measurement, Trig of SR04 must receive a pulse of high (5V) for at least 10us, this will initiate the sensor will transmit out 8 cycle of ultrasonic burst at 40kHz and wait for the reflected ultrasonic burst. When the sensor detected ultrasonic from receiver, it will set the Echo pin to high (5V) and delay for a period (width) which proportion to distance. To obtain the distance, measure the width (Ton) of Echo pin.

Time = Width of Echo pulse, in uS (micro second)

- Distance in centimeters = Time / 58
- Distance in inches = Time / 148
- Or you can utilize the speed of sound, which is 340m/s



Note:

- Please connect the GND pin first before supplying power to VCC.
- Please make sure the surface of object to be detect should have at least 0.5 meter^2 better performance.

Lampiran 5. Daftar Harga Smartparking

No	Nama Item	Satuan	Jumlah	Harga per unit	Total Item
1	Kabel Flat 6 pin	roll	1	Rp 350,000.00	Rp 350,000.00
2	White Housing 3 pin	buah	25	Rp 2,000.00	Rp 50,000.00
3	Pin Header Female Siku 40 pin	buah	3	Rp 2,000.00	Rp 6,000.00
4	Skrup Fischer	pak	1	Rp 23,000.00	Rp 23,000.00
5	Mata Bor Beton	buah	4	Rp 15,000.00	Rp 60,000.00
6	PCB Lubang	buah	4	Rp 9,000.00	Rp 36,000.00
7	Raspberry Pi 3 B +	buah	1	Rp 900,000.00	Rp 900,000.00
8	Arduino Mega 2560	buah	2	Rp 150,000.00	Rp 300,000.00
9	LoRa Dragino V.1	buah	2	Rp 450,000.00	Rp 900,000.00
10	Isolasi Kabel	buah	5	Rp 5,000.00	Rp 25,000.00
11	Panel Box 20 x 30	buah	1	Rp 100,000.00	Rp 100,000.00
12	Spacer	buah	15	Rp 1,500.00	Rp 22,500.00
13	Kabel Duct PVC Putih	rak	5	Rp 8,000.00	Rp 40,000.00
14	Kabel Duct PVC Abu-abu	rak	10	Rp 16,000.00	Rp 160,000.00
TOTAL					Rp 2,972,500.00