REPUBLIK INDONESIA
KEMENTERIAN HUKUM DAN HAK ASASI MANUSIA

SURAT PENCATATAN CIPTAAN

Dalam rangka pelindungan ciptaan di bidang ilmu pengetahuan, seni dan sastra berdasarkan Undang-Undang Nomor 28 Tahun 2014 tentang Hak Cipta, dengan ini menerangkan:

Nomor dan tanggal permohonan	:	EC00201808802, 11 April 2018
Pencipta		
Nama	:	**Dr. Leonardus Heru Pratomo, ST.,MT**
Alamat	:	Karangrejo Gang IV. No. 135 RT 02/RW 02 Kelurahan Karangrejo, Semarang, Jawa Tengah, 50234
Kewarganegaraan	:	Indonesia
Pemegang Hak Cipta		
Nama	:	**LPPM Universitas Katolik Soegijapranata**
Alamat	:	JL. Pawiyatan Luhur IV/1, Bendan Dhuwur, Semarang, Jawa Tengah, 50234
Kewarganegaraan	:	Indonesia
Jenis Ciptaan	:	**Program Komputer**
Judul Ciptaan	:	**Program Mikrokontroller ATMega 8535 Menggunakan Modulasi Lebar Pulsa Digital Sinusoidal Satu Panjang Gelombang Untuk Inverter Tipe H-Bridge Dengan Strategi Kendali Bipolar**
Tanggal dan tempat diumumkan untuk pertama kali di wilayah Indonesia atau di luar wilayah Indonesia	:	23 Maret 2018, di Semarang
Jangka waktu pelindungan	:	Berlaku selama 50 (lima puluh) tahun sejak Ciptaan tersebut pertama kali dilakukan Pengumuman.
Nomor pencatatan	:	000105320

adalah benar berdasarkan keterangan yang diberikan oleh Pemohon.
Surat Pencatatan Hak Cipta atau produk Hak terkait ini sesuai dengan Pasal 72 Undang-Undang Nomor 28 Tahun 2014 tentang Hak Cipta.

a.n. MENTERI HUKUM DAN HAK ASASI MANUSIA
DIREKTUR JENDERAL KEKAYAAN INTELEKTUAL

Dr. Freddy Harris, S.H., LL.M., ACCS.
NIP. 196611181994031001

PROGRAM KOMPUTER

Program Mikrokontroller ATMega 8535 Menggunakan Modulasi Lebar Pulsa Digital Sinusoidal Satu Panjang Gelombang untuk Inverter Tipe H-Bridge dengan Strategi Kendali Bipolar

Oleh

Dr. Leonardus Heru Pratomo, ST. MT

UNIVERSITAS KATOLIK SOEGIJAPRANATA SEMARANG

Maret 2018

Listing Program Mikrokontroller ATMega 8535

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This program was produced by the
CodeWizardAVR V2.05.0 Professional
Automatic Program Generator
© Copyright 1998-2010 Pavel Haiduc, HP InfoTech s.r.l.
http://www.hpinfotech.com

Project :
Version :
Date    : 11/11/2016
Author  :
Company :
Comments:


Chip type               : ATmega8535
Program type            : Application
AVR Core Clock frequency: 11.059200 MHz
Memory model            : Small
External RAM size       : 0
Data Stack size         : 128
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#include <delay.h>


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};

void main(void)
{
// Input/Output Ports initialization
// Port A initialization
// Func7=Out Func6=Out Func5=Out Func4=Out Func3=Out Func2=Out Func1=Out Func0=Out
// State7=0 State6=0 State5=0 State4=0 State3=0 State2=0 State1=0 State0=0
PORTA=0x00;
DDRA=0xFF;
```

```
// Port B initialization
// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In Func0=In
// State7=T State6=T State5=T State4=T State3=T State2=T State1=T State0=T
PORTB=0x00;
DDRB=0x00;

// Port C initialization
// Func7=Out Func6=Out Func5=Out Func4=Out Func3=Out Func2=Out Func1=Out
Func0=Out
// State7=0 State6=0 State5=0 State4=0 State3=0 State2=0 State1=0 State0=0
PORTC=0x00;
DDRC=0xFF;

// Port D initialization
// Func7=In Func6=In Func5=In Func4=In Func3=In Func2=In Func1=In Func0=In
// State7=T State6=T State5=T State4=T State3=T State2=T State1=T State0=T
PORTD=0x00;
DDRD=0x00;

// Analog Comparator initialization
// Analog Comparator: Off
// Analog Comparator Input Capture by Timer/Counter 1: Off
ACSR=0x80;
SFIOR=0x00;

while (1)
    {
    // Place your code here

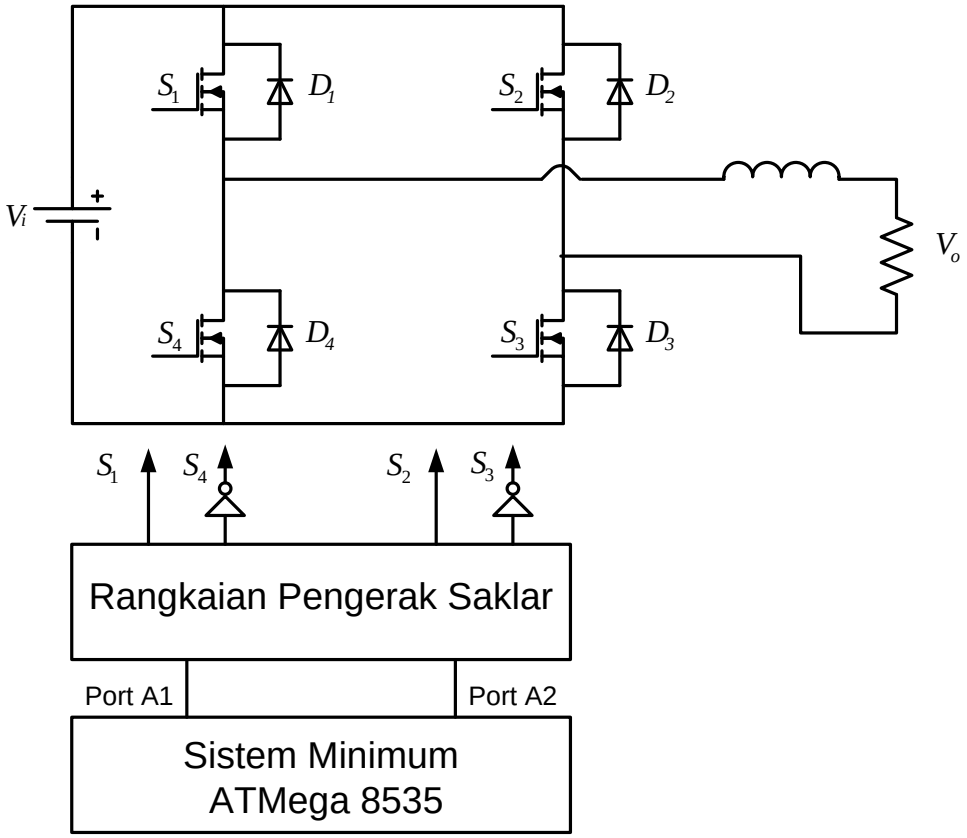
    for(a=0;a<4096;a++)
      {
        PORTA.1=data1[a];
        PORTA.2=!data1[a];
        delay_us(2);
      }

}
```

MANUAL PROGRAM

Berikut ini adalah cara mengoperasikan program mikrokontroller diatas.

1. Tuliskan listing program diatas dengan aplikasi program berbasis mikrokontroller keluarga ATMega.
2. Jalankan program tersebut dan pastikan tidak ada kesalahan (tidak ada error)
3. File yang telah dijalankan akan berupa file . hex
4. Downloadkan program tersebut ke sistem minimum mikrokontroller ATMega 8535
5. Jalankan sistem minimum mikrokontroller ATMega 8535 pastikan keluaran di port A1 mengeluarkan data modulasi lebar pulsa digital sinusoidal dengan oscilloscope.
6. pastikan keluaran di port A2 mengeluarkan komplemen data modulasi lebar pulsa digital sinusoidal dengan oscilloscope.
7. Setelah pasti keluar datanya hubungkan port A1 dan Port A2 ke rangkaian pengerak saklar dengan konfigurasi seperti gambar dibawah ini.



8. Ukur keluaran inverter dan pastikan keluarannya (Vo) berbentuk gelombang sinusoidal 50 Hz dengan oscilloscope.