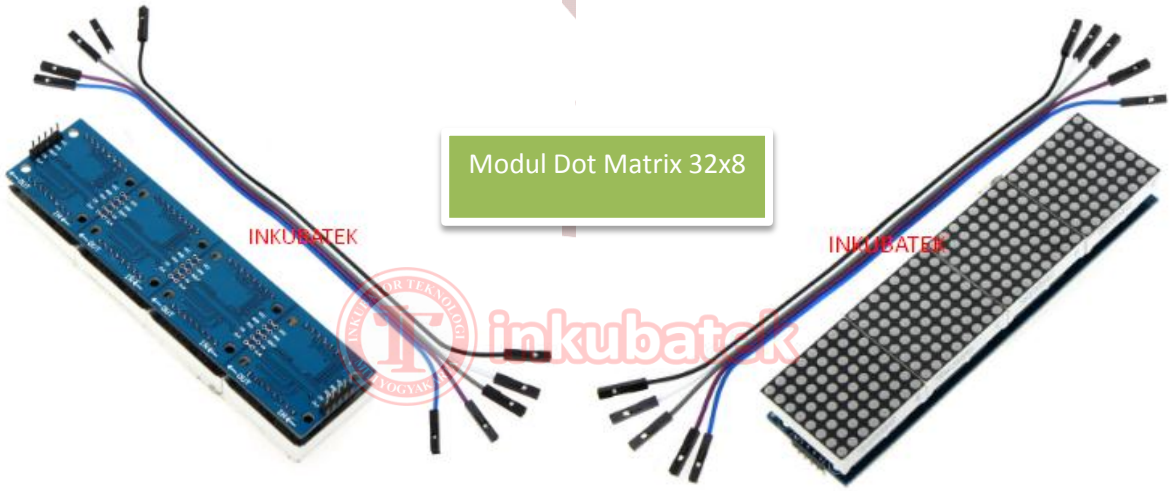
JAM DIGITAL TAMPILAN DOT MATRIX

Sistem Kerja Alat:

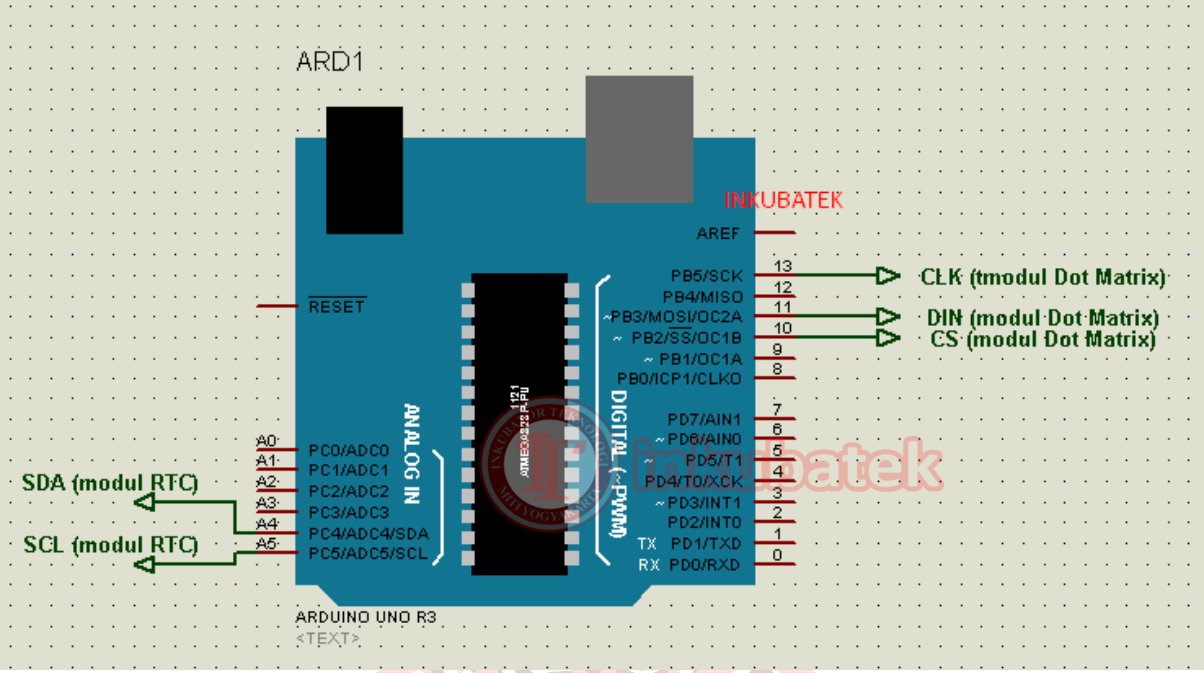
Arduino UNO digunakan untuk membuat jam digital dengan modul LED dot matrix 32x8 dan RTC (*Real Time Clock*) DS3231.

Kebutuhan Hardware :

- Arduino UNO Board
- Modul LED Dot Matrix ukuran 32x8 dengan driver MAX7219
- Modul RTC DS3231
- Power Supply 7-9 Vdc

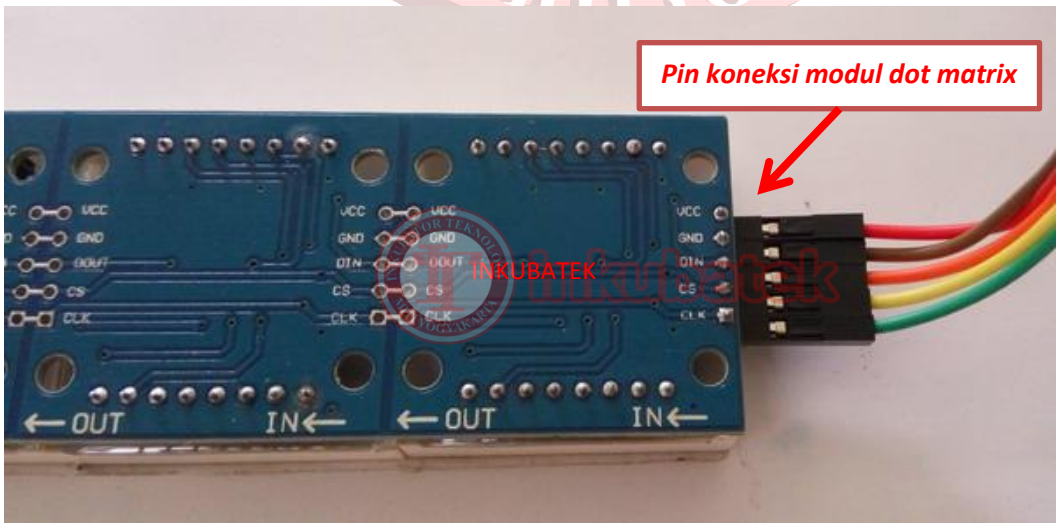


Schematics



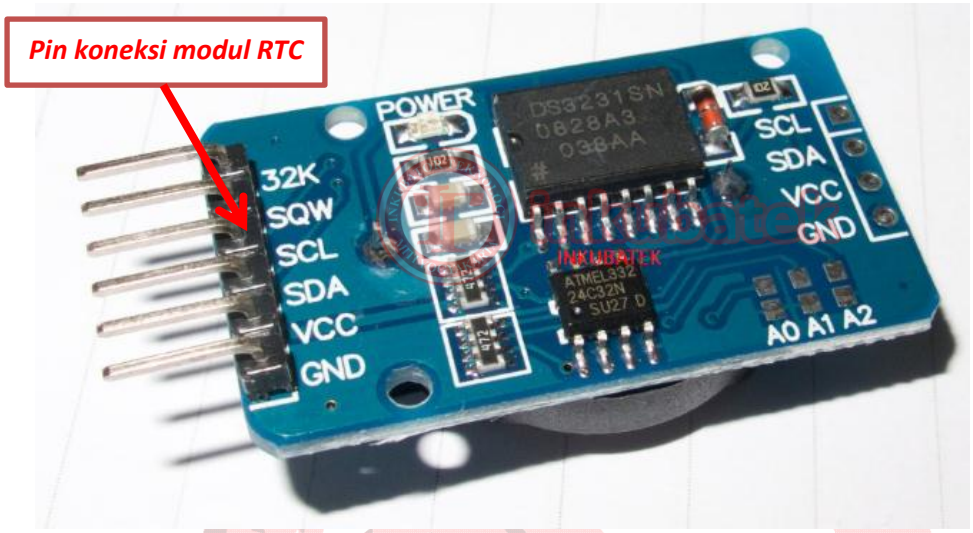
Koneksi Arduino UNO dengan modul LED Dot Matrix 32x8 :

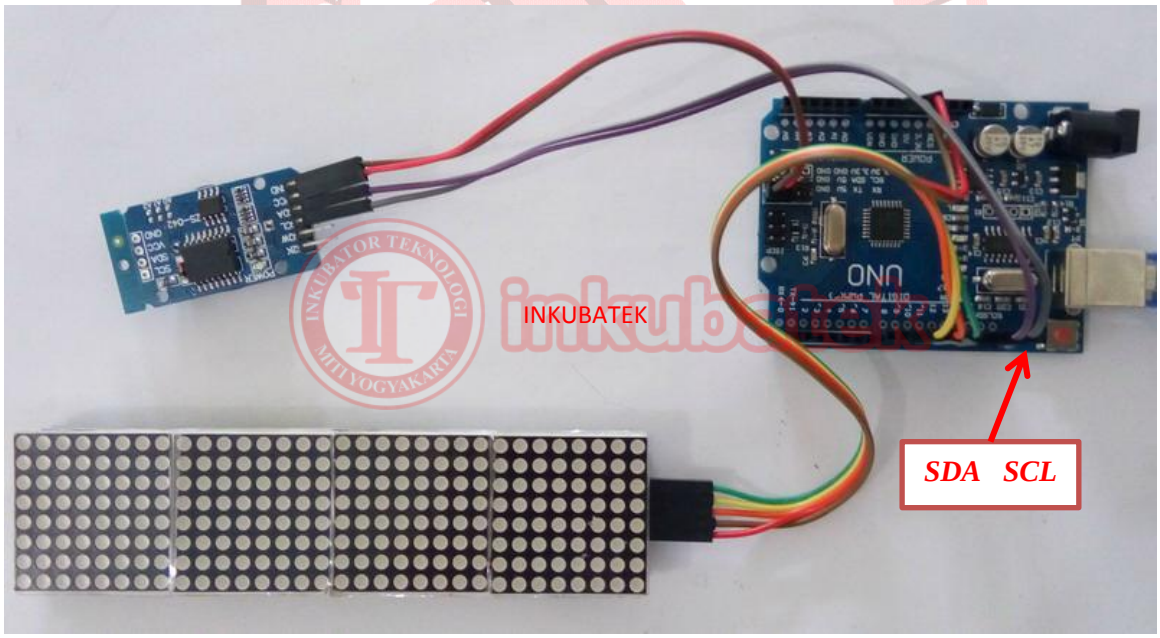
Pin ARDUINO	Pin modul LED Dot Matrix
5V	VCC
GND	GND
13	CLK
11	DIN
10	CS



Koneksi Arduino UNO dengan modul RTC DS3231 :

Pin ARDUINO	Pin modul RTC DS3231
5V	VCC
GND	GND
SCL	SCL
SDA	SDA





Source Code/Sketch :

```
/************************************
 * Program : Project 46. Jam Digital Dot Matrix
 * 125 Proyek Arduino Inkubatek
```

```
 * www.inkubator-teknologi.com
 * www.tokotronik.com
 * ********************************/
#include <MD_MAX72xx.h>
#include <SPI.h>
#include <Wire.h>
#include <DS1307.h>

#define  MAX_DEVICES  4
#define  CLK_PIN     13  // or SCK
#define  DATA_PIN    11  // or MOSI
#define  CS_PIN      10  // or SS

// SPI hardware interface
MD_MAX72XX mx = MD_MAX72XX(CS_PIN, MAX_DEVICES);
#define  CHAR_SPACING  1  // pixels between characters
#define  BUF_SIZE  75
char str[12];

//=============================================================
void printText(uint8_t modStart, uint8_t modEnd, char *pMsg)
{
 uint8_t  state = 0;
 uint8_t  curLen;
 uint16_t  showLen;
 uint8_t  cBuf[8];
 int16_t  col = ((modEnd + 1) * COL_SIZE) - 1;

 mx.control(modStart, modEnd, MD_MAX72XX::UPDATE, MD_MAX72XX::OFF);

 do
 {
```

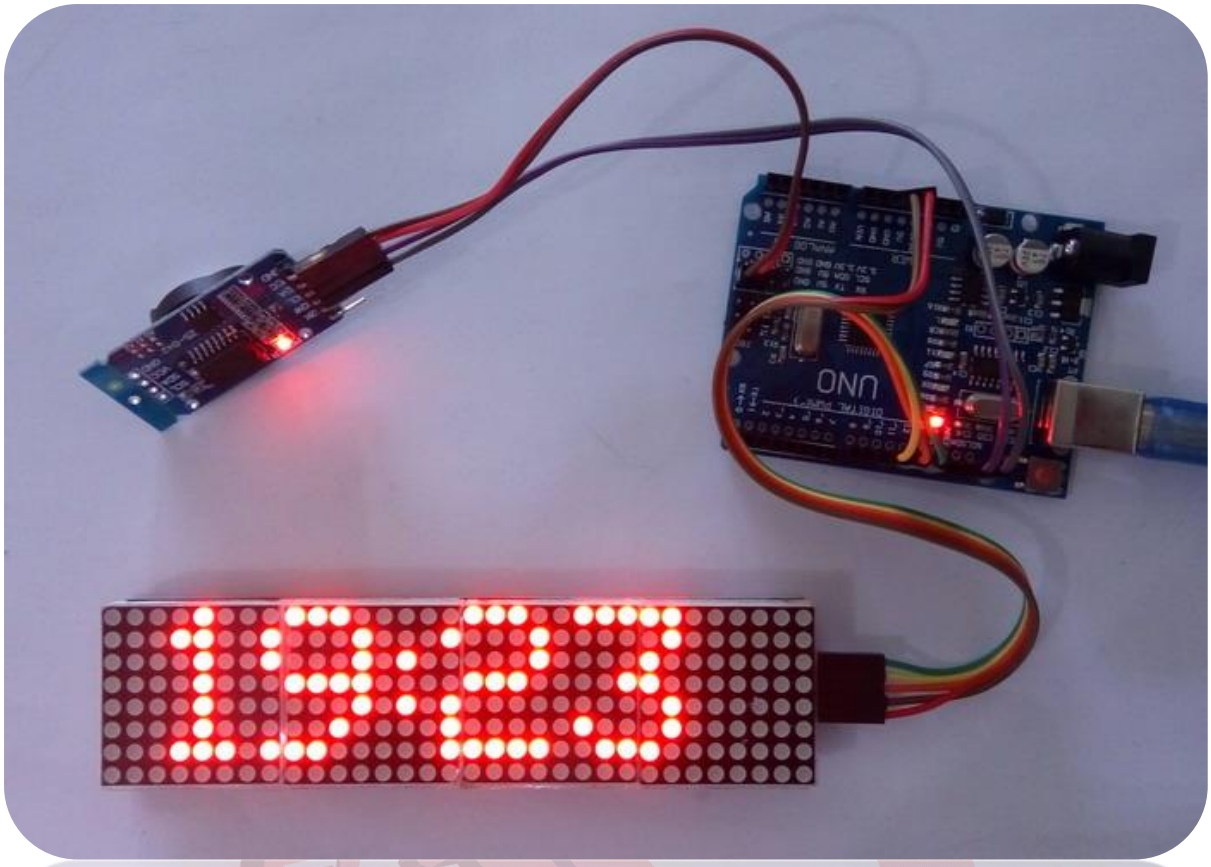
```
switch(state)
{
 case 0:

  if (*pMsg == '\0')
  {
   showLen = col - (modEnd * COL_SIZE);  // padding characters
   state = 2;
   break;
  }


  showLen = mx.getChar(*pMsg++, sizeof(cBuf)/sizeof(cBuf[0]), cBuf);
  curLen = 0;
  state++;

 case 1:
  mx.setColumn(col--, cBuf[curLen++]);


  if (curLen == showLen)
  {
   showLen = CHAR_SPACING;
   state = 2;
  }
  break;

 case 2:
  curLen = 0;
  state++;
  // fall through
```

```
    case 3:
      mx.setColumn(col--, 0);
      curLen++;
      if (curLen == showLen)
        state = 0;
      break;

    default:
      col = -1;
   }
 } while (col >= (modStart * COL_SIZE));

 mx.control(modStart, modEnd, MD_MAX72XX::UPDATE, MD_MAX72XX::ON);
}

void setup()
{
 mx.begin();
 delay(1000);
}

void loop()
{
  //------------------------------ baca jam & menit
  char h(RTC.get(DS1307_HR,true));
  char m(RTC.get(DS1307_MIN,false));
  //------------------------------
  sprintf(str," %d:%d",h,m);
  printText(0, MAX_DEVICES-1,str);
  delay(900);
}
```

Jalannya Alat :

Pada modul LED Dot Matrix 32x8 akan tampil Jam dan Menit yang akan ter-update secara *real time*.


UNO
Supported by www.tokotronik.com


UNO