

Tutoriels MAX7219 avec matrice 8X8



Liens web tuto MAX7219

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- [Montage Kstart:arduino:max7219:FRit MAX7219 FR](#)
- [Concevez des matrices de LED](#)
- [Tuto MAX7219 Arduino](#)
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Programmes

Préparation Logiciels



Utiliser ou télécharger la dernière version de [l'IDE Arduino](#)

Le diagramme de synchronisation pour Max7219 et son format de données série sont joints ci-

dessous avec ses caractéristiques électroniques.

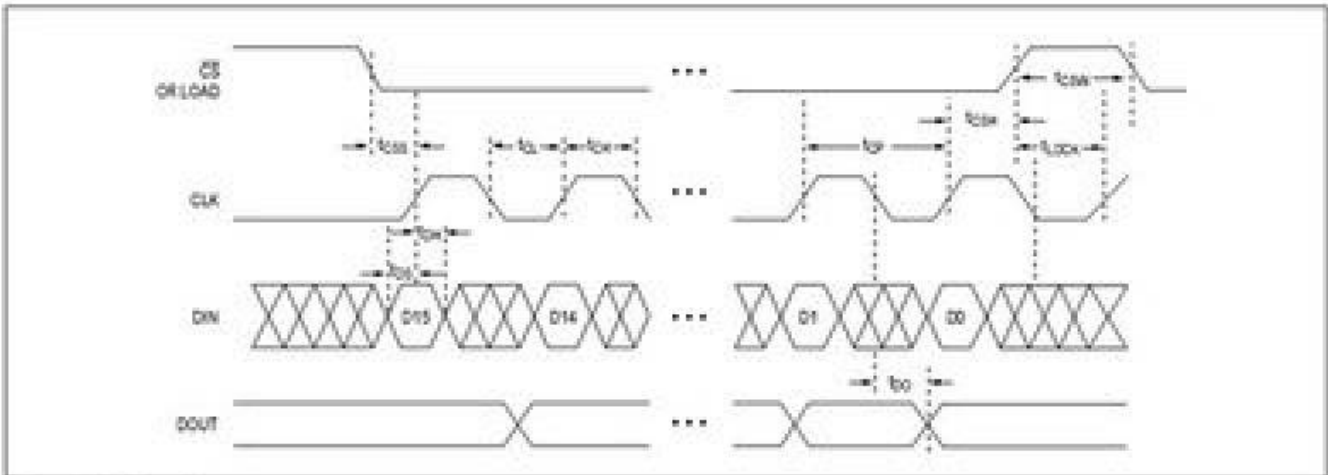


Figure 1. Timing Diagram

Table 1. Serial-Data Format (16 Bits)

D15	D14	D13	D12	D11	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D0
X	X	X	X	ADDRESS				MSB	DATA						LSB

ELECTRICAL CHARACTERISTICS (continued)

(V+ = 5V ± 10%, R_{SET} = 9.53kΩ ± 1%, T_A = T_{MIN} to T_{MAX}, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
LOGIC INPUTS						
Input Current DIN, CLK, LOAD, CS	I _{in, IL}	V _{in} = 0V or V+	-1		1	μA
Logic High Input Voltage	V _{ih}		3.5			V
Logic Low Input Voltage	V _{il}				0.8	V
Output High Voltage	V _{oh}	DOUT, I _{source} = -1mA	V+ - 1			V
Output Low Voltage	V _{ol}	DOUT, I _{sink} = 1.6mA			0.4	V
Hysteresis Voltage	ΔV _t	DIN, CLK, LOAD, CS		1		V
TIMING CHARACTERISTICS						
CLK Clock Period	t _{CP}		100			ns
CLK Pulse Width High	t _{CH}		50			ns
CLK Pulse Width Low	t _{CL}		50			ns
CS Fall to SCLK Rise Setup Time (MAX7221 only)	t _{CSS}		25			ns
CLK Rise to CS or LOAD Rise Hold Time	t _{CSD}		0			ns
DIN Setup Time	t _{DS}		25			ns
DIN Hold Time	t _{DH}		0			ns
Output Data Propagation Delay	t _{DPO}	C _{LOAD} = 50pF			25	ns
Load-Rising Edge to Next Clock Rising Edge (MAX7219 only)	t _{DCKR}		50			ns
Minimum CS or LOAD Pulse High	t _{CSW}		50			ns
Data-to-Segment Delay	t _{DSD}				2.25	ms

Un programme de test sans librairie à inclure

exemple_code_MAX7219.ino

```

    unsigned char i;
    unsigned char j;
    /*Port Definitions*/
    int Max7219_pinCLK = 10;
    int Max7219_pinCS = 9;
    int Max7219_pinDIN = 8;

    unsigned char displ[38][8]={
    {0x3C,0x42,0x42,0x42,0x42,0x42,0x42,0x3C},//0
    {0x10,0x18,0x14,0x10,0x10,0x10,0x10,0x10},//1
    {0x7E,0x2,0x2,0x7E,0x40,0x40,0x40,0x7E},//2
    {0x3E,0x2,0x2,0x3E,0x2,0x2,0x3E,0x0},//3
    {0x8,0x18,0x28,0x48,0xFE,0x8,0x8,0x8},//4
    {0x3C,0x20,0x20,0x3C,0x4,0x4,0x3C,0x0},//5
    {0x3C,0x20,0x20,0x3C,0x24,0x24,0x3C,0x0},//6
    {0x3E,0x22,0x4,0x8,0x8,0x8,0x8,0x8},//7
    {0x0,0x3E,0x22,0x22,0x3E,0x22,0x22,0x3E},//8
    {0x3E,0x22,0x22,0x3E,0x2,0x2,0x2,0x3E},//9
    {0x8,0x14,0x22,0x3E,0x22,0x22,0x22,0x22},//A
    {0x3C,0x22,0x22,0x3E,0x22,0x22,0x3C,0x0},//B
    {0x3C,0x40,0x40,0x40,0x40,0x40,0x3C,0x0},//C
    {0x7C,0x42,0x42,0x42,0x42,0x42,0x7C,0x0},//D
    {0x7C,0x40,0x40,0x7C,0x40,0x40,0x40,0x7C},//E
    {0x7C,0x40,0x40,0x7C,0x40,0x40,0x40,0x40},//F
    {0x3C,0x40,0x40,0x40,0x40,0x44,0x44,0x3C},//G
    {0x44,0x44,0x44,0x7C,0x44,0x44,0x44,0x44},//H
    {0x7C,0x10,0x10,0x10,0x10,0x10,0x10,0x7C},//I
    {0x3C,0x8,0x8,0x8,0x8,0x8,0x48,0x30},//J
    {0x0,0x24,0x28,0x30,0x20,0x30,0x28,0x24},//K
    {0x40,0x40,0x40,0x40,0x40,0x40,0x40,0x7C},//L
    {0x81,0xC3,0xA5,0x99,0x81,0x81,0x81,0x81},//M
    {0x0,0x42,0x62,0x52,0x4A,0x46,0x42,0x0},//N
    {0x3C,0x42,0x42,0x42,0x42,0x42,0x42,0x3C},//O
    {0x3C,0x22,0x22,0x22,0x3C,0x20,0x20,0x20},//P
    {0x1C,0x22,0x22,0x22,0x22,0x26,0x22,0x1D},//Q
    {0x3C,0x22,0x22,0x22,0x3C,0x24,0x22,0x21},//R
    {0x0,0x1E,0x20,0x20,0x3E,0x2,0x2,0x3C},//S
    {0x0,0x3E,0x8,0x8,0x8,0x8,0x8,0x8},//T
    {0x42,0x42,0x42,0x42,0x42,0x42,0x22,0x1C},//U
    {0x42,0x42,0x42,0x42,0x42,0x42,0x24,0x18},//V
    {0x0,0x49,0x49,0x49,0x49,0x2A,0x1C,0x0},//W
    {0x0,0x41,0x22,0x14,0x8,0x14,0x22,0x41},//X
    {0x41,0x22,0x14,0x8,0x8,0x8,0x8,0x8},//Y
    {0x0,0x7F,0x2,0x4,0x8,0x10,0x20,0x7F},//Z
    };

    void Write_Max7219_byte(unsigned char DATA)

```

```
{
    unsigned char i;
    digitalWrite(Max7219_pinCS,LOW);
    for(i=8;i>=1;i--)
    {
        digitalWrite(Max7219_pinCLK,LOW);
        digitalWrite(Max7219_pinDIN,DATA&0x80); // Extracting a bit
data
        DATA = DATA<<1;
        digitalWrite(Max7219_pinCLK,HIGH);
    }
}

void Write_Max7219(unsigned char address,unsigned char dat)
{
    digitalWrite(Max7219_pinCS,LOW);
    Write_Max7219_byte(address); //address=code of LED
    Write_Max7219_byte(dat); //data=figure on LED
    digitalWrite(Max7219_pinCS,HIGH);
}

void Init_MAX7219(void)
{
    Write_Max7219(0x09, 0x00); //decoding =BCD
    Write_Max7219(0x0a, 0x03); //brightness
    Write_Max7219(0x0b, 0x07); //scanlimit=8 LEDs
    Write_Max7219(0x0c, 0x01); //power-down mode=0=normal mode=1
    Write_Max7219(0x0f, 0x00); //test display=1=E0T=display=0
}

void setup()
{
    pinMode(Max7219_pinCLK,OUTPUT);
    pinMode(Max7219_pinCS,OUTPUT);
    pinMode(Max7219_pinDIN,OUTPUT);
    delay(50);
    Init_MAX7219();
}

void loop()
{
    for(j=0;j<38;j++)
    {
        for(i=1;i<9;i++)
            Write_Max7219(i,displ[j][i-1]);
    }
}
```

```
    delay(500);  
  }  
}
```

Programmes avec bibliothèques à inclure

- afficheur8x8.zip
- max7219_dot_matrix_scroll_text.ino.zip
 - web-scroll-matrix-master.zip
 - max7219_100.ino.tar.gz

Bibliothèques

Différentes bibliothèques à tester

- ledcontrol.zip
- ledcontrol-master.zip
- maxmatrix.zip

Une bibliothèque pour les matrices en cascade (à essayer ...)

- ledcontrolms_f79uc7xhkcyjmgv.zip

Une autre bibliothèque mais pour le Raspberry (A voir lors d'une autre soirée ...)

- luma.led_matrix-master_raspberry.zip
- On peut y voir une demo en image animée...

Pour la création de codes pour matrices de LEDs

Envoyer par Fernand

[8x8 Matrix Character Creator](#)

Pour la création de caractères 8x8 sur la matrice de LEDs

- [Leds Matrice editor](#)
- Le programme qui va avec :
- [Programme pour matrice](#)

Toujours envoyer par Fernand : un programme de test, ne pas oublier d'inclure les 2 bibliothèques ci-dessous

Matrix 32x8 Max7219



- - exemple 002 programme 32X8
 - Librairie Adafruit_gfx
 - Librairie Max72xx

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