

## Tutoriels MAX7219 avec matrice 8X8



### Liens web tuto MAX7219

- [Montage Kit MAX7219 EN](#)
- [Montage Kstart:arduino:max7219:FRit MAX7219 FR](#)
- [Concevez des matrices de LED](#)
- [Tuto MAX7219 Arduino](#)
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- [MAX 7219](#)
- [LED Matrix Kit](#)
- [64 LEDS et MAX7219](#)
- [MAX7219 avec 4 matrices de LEDS 8X8 en cascade](#)
  - [Matrice LEDS 5 fois 8x8](#)
- [LEDS 8X8 par internet](#)
- [Une Video](#)

### 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.

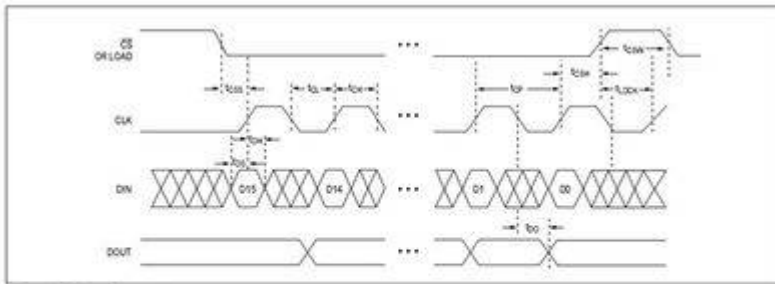


Figure 1. Timing Diagram

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<sub>CC</sub> = 5V ± 10%, R<sub>EXT</sub> = 0.5kΩ ± 1%, T<sub>A</sub> = Tamb to TMax, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
<b>LOGIC INPUTS</b>						
Input Current (DN, CLK, LOAD, CS)	I <sub>in, I<sub>i</sub></sub>	V <sub>in</sub> = 0V or V <sub>CC</sub>	-1	1		µA
Logic High Input Voltage	V <sub>IH</sub>		3.5			V
Logic Low Input Voltage	V <sub>IL</sub>			0.8		V
Output High Voltage	V <sub>OH</sub>	I <sub>O(OUT, I<sub>OL</sub>)</sub> = -1mA	V <sub>CC</sub> - 1			V
Output Low Voltage	V <sub>OL</sub>	I <sub>O(OUT, I<sub>OL</sub>)</sub> = 1mA		0.4		V
Hysteresis Voltage	ΔV <sub>I</sub>	DN, CLK, LOAD, CS	1			V
<b>TIMING CHARACTERISTICS</b>						
CLK Clock Period	T <sub>CLK</sub>			100		ns
CLK Pulse Width High	T <sub>CLKH</sub>			50		ns
CLK Pulse Width Low	T <sub>CLKL</sub>			50		ns
CS Fall to DOUT Rise Setup Time (MAX7219 only)	T <sub>CS2D</sub>			25		ns
CLK Rise to CS or LOAD Rise Hold Time	T <sub>CLKH</sub>			5		ns
DN Setup Time	T <sub>DN</sub>			25		ns
DN Hold Time	T <sub>DNH</sub>			5		ns
Output Data Propagation Delay	t <sub>prop</sub>	C <sub>LOAD</sub> = 50pF			25	ns
Load-Rising Edge to Next-Clock-Rising Edge (MAX7219 only)	t <sub>CLK</sub>			50		ns
Minimum CS or LOAD Pulse High	t <sub>CSW</sub>			50		ns
Data-to-Segment Delay	t <sub>DPD</sub>				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 disp1[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 EOT 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 librairies à inclure

- afficheur8x8.zip
- max7219\_dot\_matrix\_scroll\_text.ino.zip
- web-scroll-matrix-master.zip
- max7219\_100.ino.tar.gz

### Librairies


Différentes librairies à tester

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

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

- ledcontrolms\_f79uc7xhkjcmgmv.zip

Une autre librairie 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 librairies ci-dessous

### [Matrix 32x8 Max7219](#)



- exemple 002 programme 32X8
  - Librairie Adafruit\_gfx
  - Librairie Max72xx

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