

## 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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- [MAX 7219](#)
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- [LEDs 8X8 par internet](#)
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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.

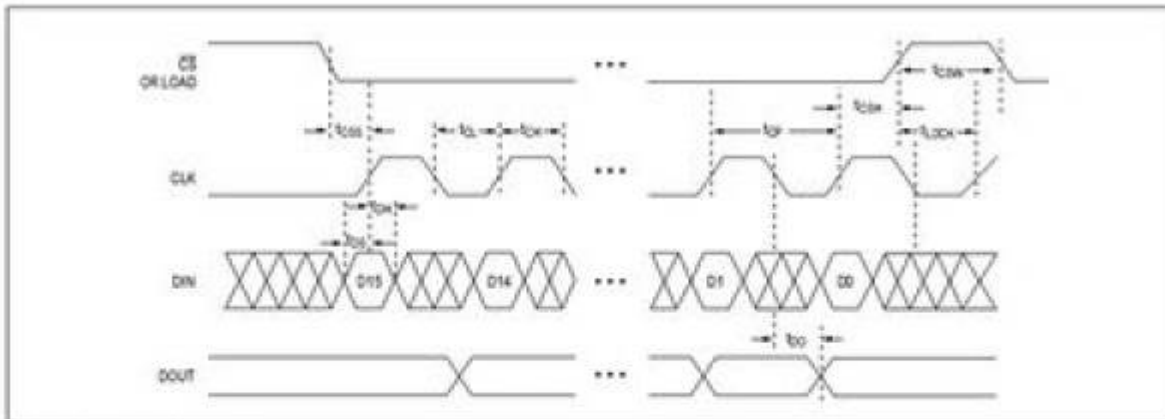


Figure 1. Timing Diagram

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)

( $V^+ = 5V \pm 10\%$ ,  $R_{SET} = 9.53k\Omega \pm 1\%$ ,  $T_A = T_{MIN}$  to  $T_{MAX}$ , unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
<b>LOGIC INPUTS</b>						
Input Current DIN, CLK, LOAD, CS	$I_{IH}, I_{IL}$	$V_{IH} = 0V$ or $V^+$	-1		1	$\mu A$
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, $I_{SENK} = 1.6mA$			0.4	V
Hysteresis Voltage	$\Delta V_I$	DIN, CLK, LOAD, CS		1		V
<b>TIMING CHARACTERISTICS</b>						
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 (MAX7219 only)	$t_{CSS}$		25			ns
CLK Rise to CS or LOAD Rise Hold Time	$t_{CSH}$		0			ns
DIN Setup Time	$t_{DS}$		25			ns
DIN Hold Time	$t_{DH}$		0			ns
Output Data Propagation Delay	$t_{DO}$	$C_{LOAD} = 50pF$			25	ns
Load-Rising Edge to Next Clock Rising Edge (MAX7219 only)	$t_{LDCK}$		50			ns
Minimum CS or LOAD Pulse High	$t_{CSW}$		50			ns
Data-to-Segment Delay	$t_{DSFD}$				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 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\_f79uc7xhkcyjmgv.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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