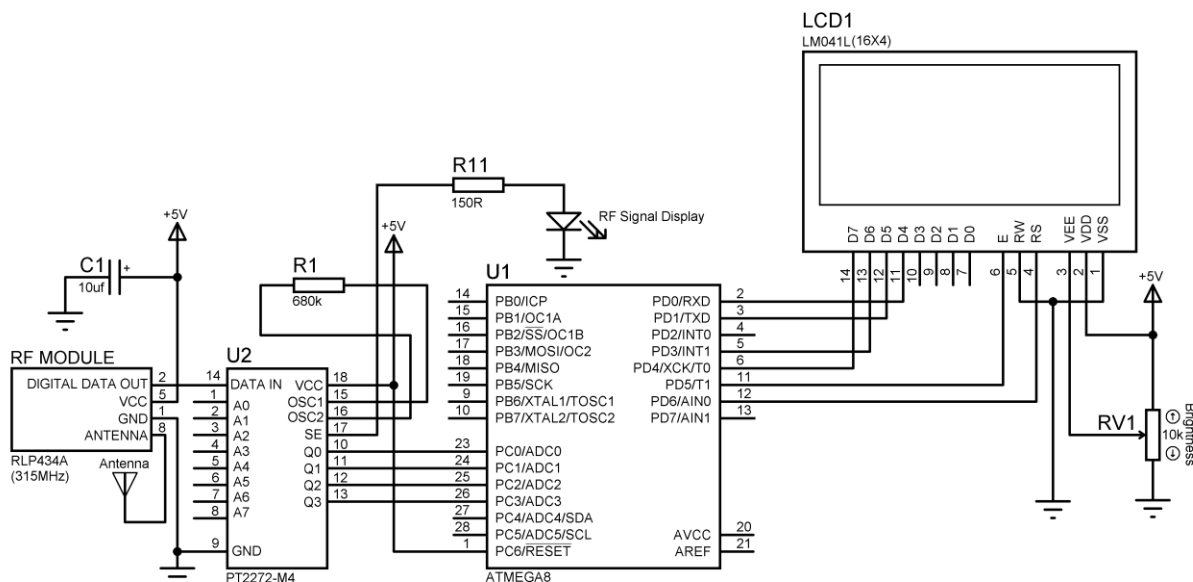


# پروژه ارسال SMS با میکرو و ماژول RF Melec.ir

تشریح عملکرد قسمت گیرنده مدار :

در ابتدا عبارت **RF REMOTE RECIVER** بر روی نمایشگر نوشته می شود سپس ورودی چک می شود و به محض اینکه دیتای ورودی 12 شد اجرای برنامه به برچسب **RECVIE** منتقل میشود , تا وقتی ورودی برابر 0 نشده اجرای برنامه در این قسمت متوقف می شود پس از 0 شدن ورودی 200 میلی ثانیه تاخیر ایجاد میشود سپس دیتای ورودی در متغیر **RECVIE-DATA** قرار داده می شود.

شماتیک مدار گیرنده :



برنامه اصلی مدار به زبان BASIC :

```

$regfile = "M8DEF.DAT"
$crystal = 8000000
Config Lcd = 16 * 4
Config Lcdpin = Pin , Db4 = Pind.0 , Db5 = Pind.1 , Db6 = Pind.3 , Db7 = Pind.4 , _
                E = Pind.5 , Rs = Pind.6
Dim Lcd_data As String * 1 , X As Byte , Y As Byte , Rs As Byte
Dim Cls_lcd As Bit , Recv_data As Byte , R1 As Byte , R2 As Byte , R As Byte
Config Pinc.0 = Input
Config Pinc.1 = Input
Config Pinc.2 = Input
Config Pinc.3 = Input
Declare Sub Wireless_recive
Declare Sub Message_code
Declare Sub Synchronous_program
    
```

Y = 1 : X = 1

Cls : Home : Cursor Off

Lcd "RF MESSAGE"

Locate 2 , 1 : Lcd "RECIVER"

Do

Call Wireless\_recive

Waitms 50

Decr Recive\_data

If Recive\_data = 12 Then

Cls : Home

Goto Recive

End If

Loop

'START OF RECIVE MESSAGE-----

Recive:

Do

Call Wireless\_recive

If Recive\_data = 0 Then Goto Level1

Loop

Level1:

Waitms 200

Call Wireless\_recive

Decr Recive\_data

R1 = Recive\_data

Rs = R1 : Call Synchronous\_program

Do

Call Wireless\_recive

If Recive\_data = 0 Then Goto Level2

Loop

Level2:

Waitms 200

Call Wireless\_recive

Decr Recive\_data

R2 = Recive\_data

Rs = R2 : Call Synchronous\_program

Do

Call Wireless\_recive

If Recive\_data = 0 Then Goto Level3

Loop

Level3:

R2 = R2 \* 10

R = R1 + R2

Call Message\_code

If Cls\_lcd = 1 Then

Cls : Cls\_lcd = 0

Y = 1 : X = 1

End If

Locate Y , X

If Lcd\_data = "\$" Then

Incr Y : X = 1

```

Goto Recive
End If
'-----
Lcd Lcd_data
'-----
Incr X
If X > 15 Then
If Y = 4 Then
Y = 4 : X = 15
Else
X = 1 : Incr Y
End If : End If
'-----
Goto Recive
'END OF RECIVE MESSAGE-----
'START OF WIRELESS_RECIVE SUB-----
Sub Wireless_recive:
Recive_data = &B00001111
If Pinc.0 = 0 Then Recive_data = Recive_data And &B00001110
If Pinc.1 = 0 Then Recive_data = Recive_data And &B00001101
If Pinc.2 = 0 Then Recive_data = Recive_data And &B00001011
If Pinc.3 = 0 Then Recive_data = Recive_data And &B00000111
End Sub Wireless_recive
Return
'END OF WIRELESS_RECIVE SUB-----
'START OF MESSAGE_CODE SUB-----
Sub Message_code:
Select Case R:
Case Is = 0 : Lcd_data = "0"
Case Is = 1 : Lcd_data = "1"
Case Is = 2 : Lcd_data = "2"
Case Is = 3 : Lcd_data = "3"
Case Is = 4 : Lcd_data = "4"
Case Is = 5 : Lcd_data = "5"
Case Is = 6 : Lcd_data = "6"
Case Is = 7 : Lcd_data = "7"
Case Is = 8 : Lcd_data = "8"
Case Is = 9 : Lcd_data = "9"
Case Is = 10 : Lcd_data = "A"
Case Is = 11 : Lcd_data = "B"
Case Is = 12 : Lcd_data = "C"
Case Is = 13 : Lcd_data = "D"
Case Is = 14 : Lcd_data = "E"
Case Is = 15 : Lcd_data = "F"
Case Is = 16 : Lcd_data = "G"
Case Is = 17 : Lcd_data = "H"
Case Is = 18 : Lcd_data = "I"
Case Is = 19 : Lcd_data = "J"
Case Is = 20 : Lcd_data = "K"
Case Is = 21 : Lcd_data = "L"
Case Is = 22 : Lcd_data = "M"
Case Is = 23 : Lcd_data = "N"
Case Is = 24 : Lcd_data = "O"
Case Is = 25 : Lcd_data = "P"
Case Is = 26 : Lcd_data = "Q"
Case Is = 27 : Lcd_data = "R"
Case Is = 28 : Lcd_data = "S"

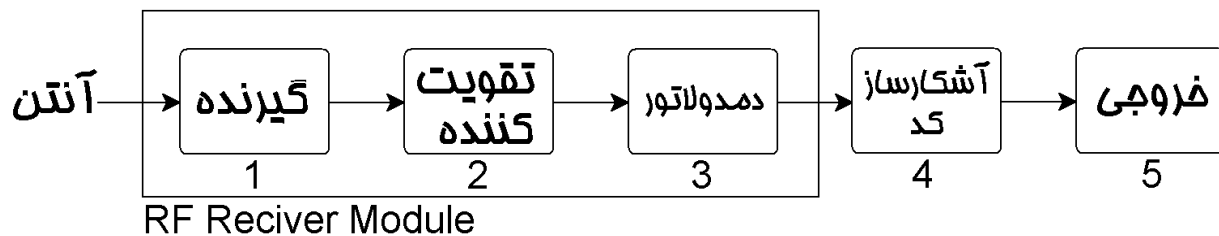
```

```

Case Is = 29 : Lcd_data = "T"
Case Is = 30 : Lcd_data = "U"
Case Is = 31 : Lcd_data = "V"
Case Is = 32 : Lcd_data = "W"
Case Is = 33 : Lcd_data = "X"
Case Is = 34 : Lcd_data = "Y"
Case Is = 35 : Lcd_data = "Z"
Case Is = 36 : Lcd_data = "$"
Case Is = 37 : Lcd_data = "."
Case Is = 38 : Lcd_data = " "
End Select
Return
End Sub Message_code
'END OF MESSAGE_CODE SUB-----
'START OF Synchronous_program SUB-----
Sub Synchronous_program:
If Rs = 12 Then
Cls_lcd = 1
Do
Call Wireless_recive
If Recive_data = 0 Then Goto S1
Loop
S1:
Do
Call Wireless_recive
Waitms 50
Decr Recive_data
If Recive_data = 12 Then
Cls : Home
Goto Recive
End If
Loop
End If
Return
End Sub Synchronous_program
'END OF Synchronous_program SUB-----

```

بلوک یک مدار گیرنده :



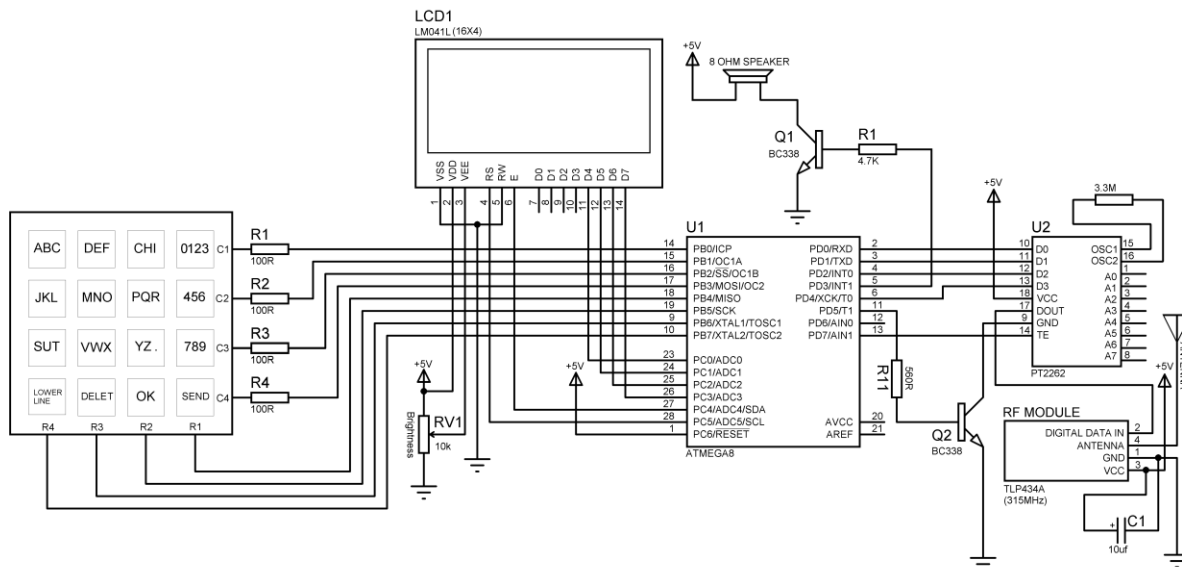
تشریح عملکرد قسمت فرستنده مدار :

برای هر کدام از کلید های مدار یک شمارنده در نظر گرفته شده که پس از هر بار فشار کلید یک واحد به شمارنده اضافه میشود به عنوان مثال کلید CBA اگر بیش از 3 بار فشار دهیم شمارنده RESET میشود و مقدار آن 0 است و با توجه به مقدار شمارنده رشته یا حرف مربوطه در متغیر LCD-DATA قرار می گیرد و رشته مربوط پس از قرار گرفتن در متغیر LCD-DATA بر روی LCD نمایش داده میشود .

# جدول کدهای ارسالی توسط KEYPAD :

کد ارسالی	کاراکتر	کد ارسالی	کاراکتر	کد ارسالی	کاراکتر	کد ارسالی	کاراکتر	کد ارسالی	کاراکتر
1	1	31	V	24	O	17	H	10	A
2	2	32	W	25	P	18	I	11	B
3	3	33	X	26	Q	19	J	12	C
4	4	34	Y	27	R	20	K	13	D
5	5	35	Z	28	S	21	L	14	E
6	6	36	\$	29	T	22	M	15	F
7	7	0	0	30	U	23	N	16	G
		37	فاصله	0	0	9	9	8	8

## شماتیک فرستنده مدار :



## برنامه اصلی مدار به زبان BASIC :

```
$regfile = "M8DEF.DAT"
$crystal = 8000000
Config Kbd = Portb , Debounce = 50 , Delay = 100
Config Lcd = 16 * 4
Config Lcdpin = Pin , Db4 = Pinc.0 , Db5 = Pinc.1 , Db6 = Pinc.2 , Db7 = Pinc.3_
    , E = Pinc.4 , Rs = Pinc.5
Dim Lcd_data As String * 1 , X As Byte , Y As Byte , Recive_data As Byte
Dim C1 As Byte , C2 As Byte , C3 As Byte , C4 As Byte , Code As String * 1
Dim C5 As Byte , C6 As Byte , C7 As Byte , C8 As Byte , S1 As String * 1
Dim C9 As Byte , C10 As Byte , C11 As Byte , C0 As Byte
Dim S(81) As String * 1 , Count As Byte , Send As Byte , S2 As String * 1
Dim X1_save As Byte , X2_save As Byte , X3_save As Byte , Send_data As Byte
Dim Synchronous_data As Byte , String_of_send_data As String * 2 , H As Byte
Config Portd = Output
Declare Sub Wireless_send
Declare Sub Message_code
Pt_power Alias Portd.5 : Pt_enable Alias Portd.7
'-----
Cursor Off
Cls : Home
Lcd "PLEASE ENTER"
Locate 2 , 1
Lcd "YOUR MESSAGE"
Wait 1
Cls : Cursor On : Y = 1 : X = 1
'START OF WRITEING MESSAGE PROGRAM-----
H1:
Recive_data = Getkbd()
If Recive_data = 16 Then Goto H1
Select Case Recive_data:
'-----
Case Is = 0
Incr C0
If C0 = 1 Then Lcd_data = "0"
If C0 = 2 Then Lcd_data = "1"
If C0 = 3 Then Lcd_data = "2"
If C0 = 4 Then
C0 = 0 : Lcd_data = "3"
End If
'-----
Case Is = 4
Incr C4
If C4 = 1 Then Lcd_data = "4"
If C4 = 2 Then Lcd_data = "5"
```

If C4 = 3 Then  
C4 = 0 : Lcd\_data = "6"  
End If

-----  
Case Is = 8  
Incr C8  
If C8 = 1 Then Lcd\_data = "7"  
If C8 = 2 Then Lcd\_data = "8"  
If C8 = 3 Then  
C8 = 0 : Lcd\_data = "9"  
End If

-----  
Case Is = 3  
Incr C3  
If C3 = 1 Then Lcd\_data = "A"  
If C3 = 2 Then Lcd\_data = "B"  
If C3 = 3 Then  
C3 = 0 : Lcd\_data = "C"  
End If

-----  
Case Is = 2  
Incr C2  
If C2 = 1 Then Lcd\_data = "D"  
If C2 = 2 Then Lcd\_data = "E"  
If C2 = 3 Then  
C2 = 0 : Lcd\_data = "F"  
End If

-----  
Case Is = 1  
Incr C1  
If C1 = 1 Then Lcd\_data = "G"  
If C1 = 2 Then Lcd\_data = "H"  
If C1 = 3 Then  
C1 = 0 : Lcd\_data = "I"  
End If

-----  
Case Is = 7  
Incr C7  
If C7 = 1 Then Lcd\_data = "G"  
If C7 = 2 Then Lcd\_data = "H"  
If C7 = 3 Then  
C7 = 0 : Lcd\_data = "I"  
End If

-----  
Case Is = 6  
Incr C6

```
If C6 = 1 Then Lcd_data = "M"  
If C6 = 2 Then Lcd_data = "N"  
If C6 = 3 Then  
C6 = 0 : Lcd_data = "O"  
End If
```

'-----

```
Case Is = 5  
Incr C5  
If C5 = 1 Then Lcd_data = "P"  
If C5 = 2 Then Lcd_data = "Q"  
If C5 = 3 Then  
C5 = 0 : Lcd_data = "R"  
End If
```

'-----

```
Case Is = 11  
Incr C11  
If C11 = 1 Then Lcd_data = "S"  
If C11 = 2 Then Lcd_data = "T"  
If C11 = 3 Then  
C11 = 0 : Lcd_data = "U"  
End If
```

'-----

```
Case Is = 10  
Incr C10  
If C10 = 1 Then Lcd_data = "V"  
If C10 = 2 Then Lcd_data = "W"  
If C10 = 3 Then  
C10 = 0 : Lcd_data = "X"  
End If
```

'-----

```
Case Is = 9  
Incr C9  
If C9 = 1 Then Lcd_data = "Y"  
If C9 = 2 Then Lcd_data = "Z"  
If C9 = 3 Then  
C9 = 0 : Lcd_data = "."  
End If
```

'START OF LOWERLINE BUTTON PROGRAM-----

```
Case Is = 15  
If S(count) <> Lcd_data Then Lcd_data = " "  
Locate Y , X  
Lcd Lcd_data
```

'-----

```
Incr Count  
S(count) = "$"  
If Y = 4 Then Goto H2
```



```

Lcd_data = " "
If Y = 1 Then X1_save = X
If Y = 2 Then X2_save = X
If Y = 3 Then X3_save = X
Incr Y : X = 1
H2:
'END OF LOWERLINE BUTTON PROGRAM-----
'START OF DELETE BUTTON PROGRAM-----
Case Is = 14
S(count) = " "
If Count > 0 Then Decr Count
Decr X
'-----
If Y = 1 Then
If X = 0 Then X = 1
End If
'-----
If Y > 1 Then
If X = 0 Then
If Y = 4 Then X = X3_save
If Y = 3 Then X = X2_save
If Y = 2 Then X = X1_save
Decr Y
End If : End If
'-----
Lcd_data = " "
Locate Y , X
Lcd Lcd_data
'END OF DELETE BUTTON PROGRAM-----
'START OF OK BUTTON PROGRAM-----
Case Is = 13
Incr Count
S(count) = Lcd_data
Lcd_data = " "
'-----
Incr X
If X > 15 Then
If Y = 1 Then X1_save = 15
If Y = 2 Then X2_save = 15
If Y = 3 Then X3_save = 15
If Y < 4 Then
X = 1 : Incr Y
Else
X = 15
End If : End If
'END OF OK BUTTON PROGRAM-----

```

'START OF SEND BUTTON PROGRAM-----

Case Is = 12

Sending:

'-----

Synchronous\_data = 12

Send\_data = Synchronous\_data

Call Wireless\_send

'-----

For Send = 1 To Count Step 1

Code = S(send)

Call Message\_code

String\_of\_send\_data = Str(send\_data)

H = Len(string\_of\_send\_data)

If H = 1 Then

Send\_data = Val(string\_of\_send\_data)

Call Wireless\_send

Send\_data = 0

Call Wireless\_send

End If

If H = 2 Then

S1 = Mid(string\_of\_send\_data , 2 , 1)

Send\_data = Val(s1)

Call Wireless\_send

S2 = Mid(string\_of\_send\_data , 1 , 1)

Send\_data = Val(s2)

Call Wireless\_send

End If

Next Send

'-----

Synchronous\_data = 12

Send\_data = Synchronous\_data

Call Wireless\_send

'END OF SEND BUTTON PROGRAM-----

End Select

'-----

Locate Y , X

Lcd Lcd\_data

Sound Portd.3 , 100 , 80

'-----

H3:

Recive\_data = Getkbd()

If Recive\_data <> 16 Then Goto H3

'-----

Goto H1

'END OF WRITEING MESSAGE PROGRAM-----

'START OF WIRELESS\_SEND SUB-----

Sub Wireless\_send:

Reset Pt\_power : Set Pt\_enable

Incr Send\_data

Select Case Send\_data:

Case Is = 1

Set Portd.0 : Reset Portd.1 : Reset Portd.2 : Reset Portd.4

'-----

Case Is = 2

Reset Portd.0 : Set Portd.1 : Reset Portd.2 : Reset Portd.4

'-----

Case Is = 3

Set Portd.0 : Set Portd.1 : Reset Portd.2 : Reset Portd.4

'-----

Case Is = 4

Reset Portd.0 : Reset Portd.1 : Set Portd.2 : Reset Portd.4

'-----

Case Is = 5

Set Portd.0 : Reset Portd.1 : Set Portd.2 : Reset Portd.4

'-----

Case Is = 6

Reset Portd.0 : Set Portd.1 : Set Portd.2 : Reset Portd.4

'-----

Case Is = 7

Set Portd.0 : Set Portd.1 : Set Portd.2 : Reset Portd.4

'-----

Case Is = 8

Reset Portd.0 : Reset Portd.1 : Reset Portd.2 : Set Portd.4

'-----

Case Is = 9

Set Portd.0 : Reset Portd.1 : Reset Portd.2 : Set Portd.4

'-----

Case Is = 10

Reset Portd.0 : Set Portd.1 : Reset Portd.2 : Set Portd.4

'-----

Case Is = 11

Set Portd.0 : Set Portd.1 : Reset Portd.2 : Set Portd.4

'-----

Case Is = 12

Reset Portd.0 : Reset Portd.1 : Set Portd.2 : Set Portd.4

'-----

Case Is = 13

Set Portd.0 : Reset Portd.1 : Set Portd.2 : Set Portd.4

'-----

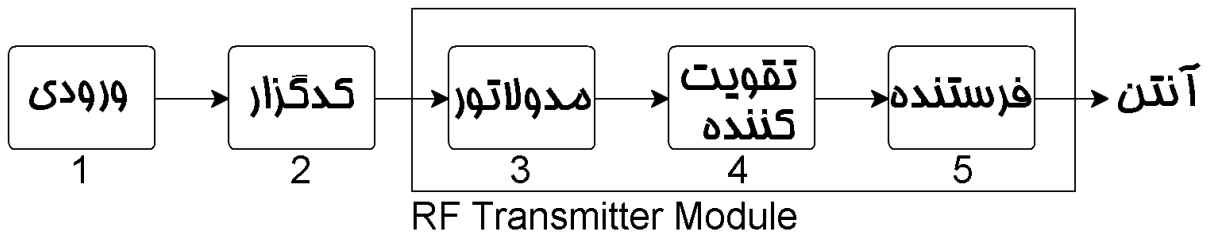
```
End Select
Waitms 50
Set Pt_power
Reset Pt_enable
Waitms 400
Reset Pt_power
Set Pt_enable
Waitms 100
Return
End Sub Wireless_send
'END OF WIRELESS_SEND SUB-----
'START OF MESSAGE_CODE SUB-----
Sub Message_code:
Select Case Code:
Case Is = "0" : Send_data = 0
Case Is = "1" : Send_data = 1
Case Is = "2" : Send_data = 2
Case Is = "3" : Send_data = 3
Case Is = "4" : Send_data = 4
Case Is = "5" : Send_data = 5
Case Is = "6" : Send_data = 6
Case Is = "7" : Send_data = 7
Case Is = "8" : Send_data = 8
Case Is = "9" : Send_data = 9
Case Is = "A" : Send_data = 10
Case Is = "B" : Send_data = 11
Case Is = "C" : Send_data = 12
Case Is = "D" : Send_data = 13
Case Is = "E" : Send_data = 14
Case Is = "F" : Send_data = 15
Case Is = "G" : Send_data = 16
Case Is = "H" : Send_data = 17
Case Is = "I" : Send_data = 18
Case Is = "J" : Send_data = 19
Case Is = "K" : Send_data = 20
Case Is = "L" : Send_data = 21
Case Is = "M" : Send_data = 22
Case Is = "N" : Send_data = 23
Case Is = "O" : Send_data = 24
Case Is = "P" : Send_data = 25
Case Is = "Q" : Send_data = 26
Case Is = "R" : Send_data = 27
Case Is = "S" : Send_data = 28
Case Is = "T" : Send_data = 29
Case Is = "U" : Send_data = 30
Case Is = "V" : Send_data = 31
```

```

Case Is = "W" : Send_data = 32
Case Is = "X" : Send_data = 33
Case Is = "Y" : Send_data = 34
Case Is = "Z" : Send_data = 35
Case Is = "$" : Send_data = 36
Case Is = "." : Send_data = 37
Case Is = " " : Send_data = 38
End Select
Return
End Sub Message_code
'END OF MESSAGE_CODE SUB-----

```

بلوک مدار فرستنده یا SENDER :

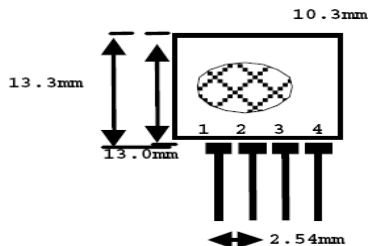


طرز کار مدار :

این مدار با میکرو کنترلر **AVR ATMEGA 8** و LCD کاراکتری 16X4

و یک ماژول فرستنده و گیرنده RF به شماره TLP434 که در باند فرکانسی zHM 315 کار میکند ساخته شده است بلوک دیاگرام ماژول به شکل زیر است :

## TLP434A Ultra Small Transmitter

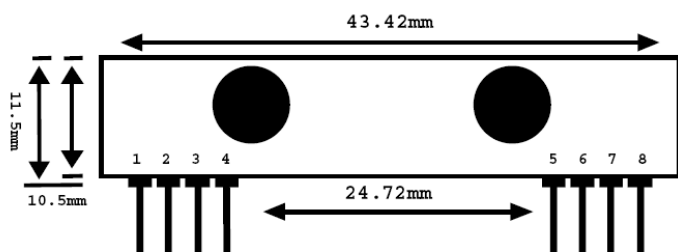


pin 1 : GND  
pin 2 : Data In  
pin 3 : Vcc  
pin 4 : Antenna ( RF output )

**Frequency 315, 418 and 433.92 Mhz**  
Modulation : ASK  
Operation Voltage : 2 - 12 VDC

ایم ماژول ها هم به صورت تک و هم با IC دکودر در بازار موجود است :

## RLP434A SAW Based Receiver



pin 1 : Gnd  
pin 2 : Digital Data Output  
pin 3 : Linear Output /Test  
pin 4 : Vcc  
pin 5 : Vcc  
pin 6 : Gnd  
pin 7 : Gnd  
pin 8 : Antenna

**Frequency 315, 418 and 433.92 Mhz**

Modulation : ASK

Supply Voltage : 3.3 - 6.0 VDC

Output : Digital & Linear

طریقه ارسال SMS :

بعد از کد گذاری هر دو IC دکودر مدار که باید هر دو کد یکسان باشند شروع به تایپ SMS میکنیم برای اصلاح نوشته از کلید DELETE و سپس OK و برای ارسال از کلید SEND استفاده میکنیم .

برد مدار به عوامل گوناگون بستگی دارد اما با استفاده از همین ماژول و در فضای باز برد 3 الی 4 کیلومتر را می توان انتظار داشت.

این مدار فقط جرمه آموزشی داشته و برای حل مشکلات دانشجویان عزیز برای ارائه پروژه بوده و هر گونه استفاده نا بجا و سو استفاده از مدار به عهده شخص سازنده میباشد.

برای ارائه هر گونه پیشنهاد یا سوال در مورد مدار با EMAIL اینجانب تماس گرفته یا سری به سایت تکنو الکترو بزیند با تشکر امین

Email:LP.AMANA1@Gmail.com

[Melec.ir](http://Melec.ir)

نام کاربری من : AMANA

# موفق و پیروز باشید