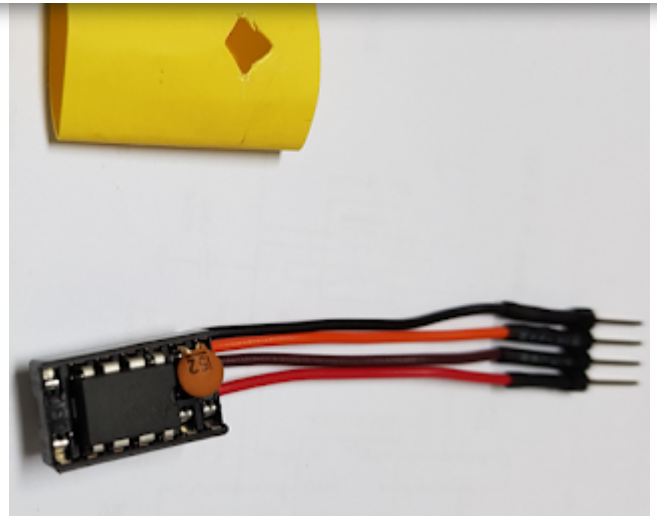
KD8CEC AMATEUR RADIO SEARCH

Creating a simple S-Meter Sensor for uBITX (LM358 Version)

June 27, 2018

(LM358 Version)

If you are already using S-Meter, you do not need to view this document. ***This document is for those who do not have an S-Meter Sensor or want to use some of the features using S-Meter on the Nextion LCD****. There are various ways to attach S.Meter to uBITX. You can find things on the Internet that are far superior to what I have created.*



uBITX Firmware CEC version is based on unmodified uBITX. However, to see the strength of the received signal, you have to attach the sensor. Of course, there is **no problem in using CEC firmware without a signal meter sensor**. Most people I know have not installed an S-meter yet.

using the LM358 which is a bit cheaper than the LM386. This circuit is a modification of the basic form of the OP-amp, which is very common. This model set the offset voltage to 0Volt. (The previous version using LM386 was 2.5~3Volt), So one more part was added and five were used.

1. Parts list

LM358 * 1

1n4148 * 1

Resistor 1K * 1

Resistor 10K * 1

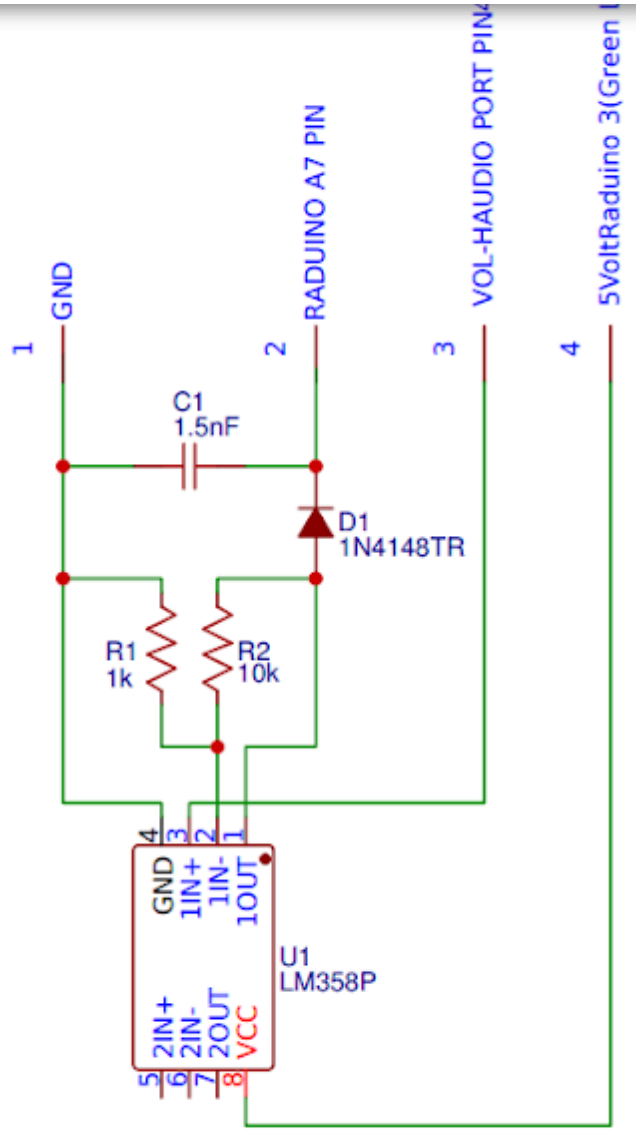
Capacitor 0.3nF ~ 40nF

(I recommended 0.3nF if you use Nextion (or TJC) LCD, 0.3nF => marked 301 on capacitor)

2.Schematic

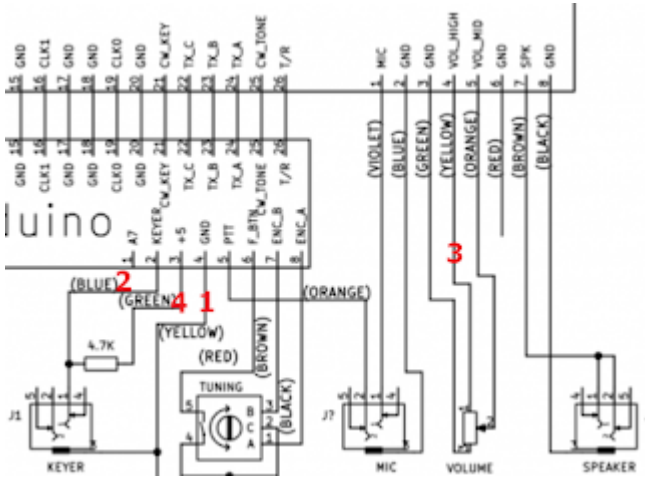
The LM358 has been rotated 90 degrees.

attention to the Pin number.


1
GND
2
RADUINO A7 PIN
3
VOL-HAUDIO PORT PIN
4
5VoltRaduino 3(Green
C1
1.5nF
D1
1N4148TR
R1
1k
R2
10k
4
3
2
1
GND
1IN+
1IN-
1OUT
U1
LM358P
2IN+
2IN-
2OUT
VCC
5
6
7
8

3.Wire UP

hfsignals.com. I added a number to connect to it. (Red color number)



http://www.hfsignals.com/index.php/ubitx-wire-up/

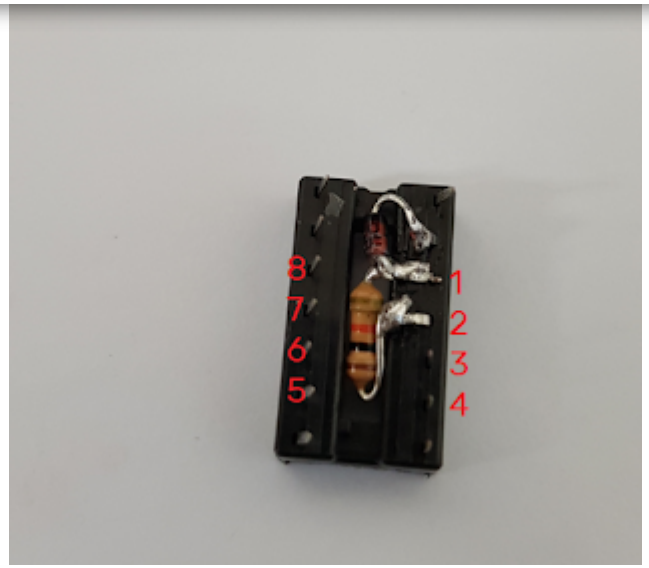
4.Test

I made it again with IC Socket.

Connect 1N4148 to pin 1

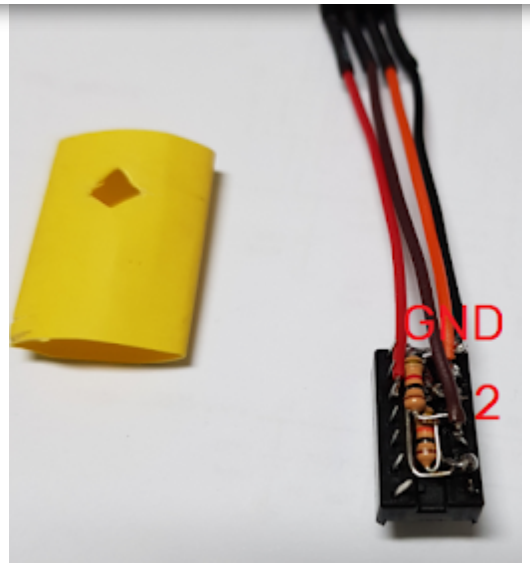
Connect 10k to Pin2 and Pin1

The pin numbers of the LM358 are shown in red.

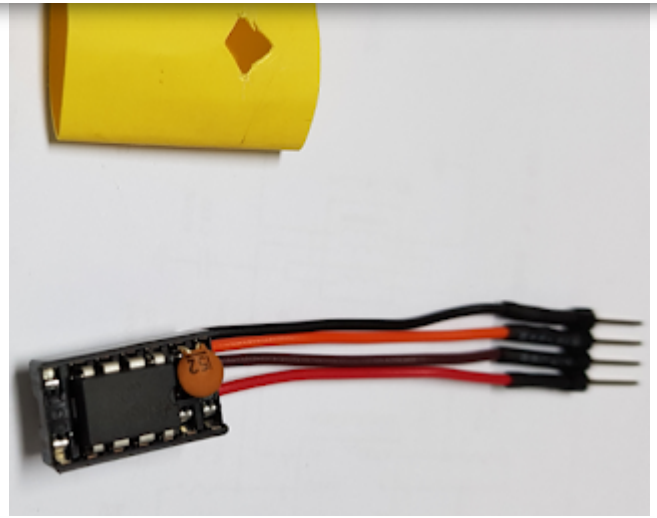


Connect 1k to Pin2 and GnD

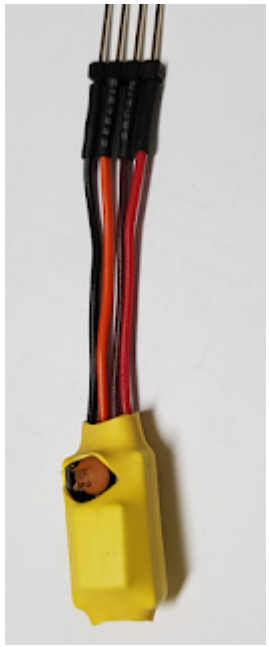
Connect C1 to GND and 1N4148



I have made it possible to replace the capacitors as shown below to do some experiments.



It is the final finished.



5.Conclusion

Maybe if you use C1 at 1.5nF, the S-Meter may not be accurate.

In this case, if you replace C1 a little bigger, it will probably work stably.

However, if you are using Nextion LCD or TJC LCD, we recommend 1.5nF. In the next beta version, I will introduce some fun features using this S-Meter.

My plan is to introduce one or two different versions of S-Meter in the future.

It costs maybe $ 3 to $ 9, but it is not expected to be so difficult to make.

Comments

Juddie Burgess · June 29, 2018 at 12:17 PM

Looking forward to newer versions of S-Meter! I just got into uBitx and I have been researching all you have done!! I have already updated my firmware for my 2 line factory display with version 1.08. I have a uBitx version 3 that I just put together and waiting on my uBitx version 4 from India. I just ordered and received the Nextion 2.8 enhanced display and plan on installing it. I need to get some components that I do not have like the pins to add to the cable to plug into the uBitx board. This is all new to me!! Please forgive if I don't use the right terminology.

REPLY

Juddie Burgess · July 1, 2018 at 11:21 AM

Can this S-Meter be made using the LM386N??? I have a couple of these that I bought when I was building a Pixie kit. Is the wiring the same???
Thanks for any response.

Ian Lee · July 1, 2018 at 5:42 PM

Juddie

Thanks for your interresting
Please refer to Link below for LM386

ing-simple-s-meter-sensor-for-ubitx.html
But if you plan to use Nextion LCD, I recommend the LM385 version.

The Signal Meter will also display the same version of LM386.
But I have added some fun features that we can use to study with Signal Meter.
I made it based on the LM385 version.

The LM386 version is planned to be tested in the future, but until now we have only tested with the LM385 version.

Ian KD8CEC

Juddie Burgess · July 4, 2018 at 7:20 PM

Thank you sir. I am going to build the circuit you have here using the LM358. I am going to order the chip on Friday. I have resistors and capacitors and well as diodes to do the build. Again, and I know I have said it before, I really appreciate all this work you have been doing!! It is like having an elmer right here to learn from and ask questions. So again, THANK YOU!
73 have a good 4th of July from Juddie WD8WV

joeman · July 2, 2018 at 9:50 AM

Made the S-meter ctt and it works fine... Simple but effective!!
Joe
VE1BWV

Ian Lee · July 5, 2018 at 7:44 PM

Joe
I am going to make one more improvement in relation to S-Meter in the future. I think the price is less than $ 8.
Ian

Unknown · August 3, 2018 at 1:24 PM

I built this and it trips my TX on and off!
Will try the NANO version soon.

REPLY

californiakayaker · July 3, 2018 at 9:24 PM

interesting that you have a lm386 version. 386 is a 1 watt amp. 358 is basically a voltage amp, low power. I expect that the Nextion is basically an A to D voltage sensing system so the 358 or any low power amp should be fine. A voltage amp, no "wattage" really required. But, one thing that bothers me is that when you incorporate an AGC similar to the one that ND6T uses it basically

http://www.nd6t.com/uBITX/AGC.htm } your leveling the audio, strong signals have the same volume as weak signals. He is doing that by sampling the audio level at the high side of the audio volume control and sending a representation of that audio level to a RF attenuator, thus, keeping most all audio at the same level regardless. So, the levels read by an S meter would be very much affected by that circuit {which samples at the same high side volume control point) , yet, the uBITX very much needs an AGC.

Ian Lee · July 5, 2018 at 7:55 PM

I have not found the Reply button for a while :)

because it's easy to get around. I used the LM386 by subtracting it from the Pixie qrp rig, I used the LM358 to lower the offset voltage.
I have not used ND6T's nice AGC yet, I will use it sooner or later, I know KIT has been released recently and I think it will be easy to use.

Ian KD8CEC

REPLY

Juddie Burgess · July 11, 2018 at 6:45 PM

Another question Ian. I have everything now to build the s-meter. I was reading your document and discovered I don't have the right capacitors. But, what puzzled me is that in red text you say to use the 301 capacitor if using a Nextion display, but further down in conclusion you say if you are using the Nextion display to use the 152 capacitor. I have to order the capacitor and just want to verify actually which one I need.

REPLY

Juddie Burgess · July 17, 2018 at 8:16 PM

Good evening Ian. I just wanted to let you know that I built the s-meter circuit, but I have not been able to get it to work. I used the exact components

reason running uBitx Manager and doing your steps all I would get by reading the min value from uBitx was 0 - 1 and when I did the max value from uBitx I got the same reading. Not sure what is going on. I have tried 3 times in the past 3 days to get it to work. So I don't know what else to do. I removed the circuit (which was hooked up temporarily) and turned the s-meter off. I run the ADC and get the following readings:

A2 (F Switch) 1020
A3 (PTT) 1020
A6 (CW-Key) 1023
A7 (S-Meter) 766

When I start the ADC the A7 starts around 668 and goes up to 766 and floats there between 766 and 765. I am just wondering if I have screwed something up.

Hope you may have a suggestion. Wish your circuit pictures showed more of the hook up of the components, and then where you hooked it onto the uBitx.

73
Juddie WD8WV

LUIGI BERTOLA · July 21, 2018 at 9:32 PM

IO HO LO STESSO PROBLEMA ANCHE CON SOFTWARE 1.081....AIUTO.

Keikkareppu · September 23, 2018 at 12:34 PM

I hooked the 4148 diode's cathode to VIOLET wire of Raduino connector which actually goes to A7 pin of Arduino board. Similar symptoms here, too. Wandering numbers, no matter how big signal I am feeding to radio.

The violet wire is working, Using ADC monitor function you can see its leveln on the screen.
Perhaps we just should use a single fet or transistor to amplify the VOL HI signal, rectify it to a cap and forget all op-amp bells and whistles.

Keikkareppu · September 23, 2018 at 1:05 PM

Well, this is embarrassing...I had Vol HI and M reversed. Had to replace a faulty potentiometer and messed the yellow and orange wire.
After reversing them all works.

Thank you, Ian.

REPLY

Daniel Tickell · January 11, 2019 at 4:04 PM

do they require connection to the wires as per the diagram. I am not sure if the sockets left after the LCD removal for the nextion are used for connecting this/

REPLY

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There are two ways to upgrad ...

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