IDC-136II-KIT 136kHz DC RX Assembly Guide

ICAS Enterprises

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The IDC-136II-KIT is a 136kHz direct conversion receiver. Most of the SDR software can be used with this receiver. It is quite easy to build within a couple of hours and you can get ready to start receiving on the spot.

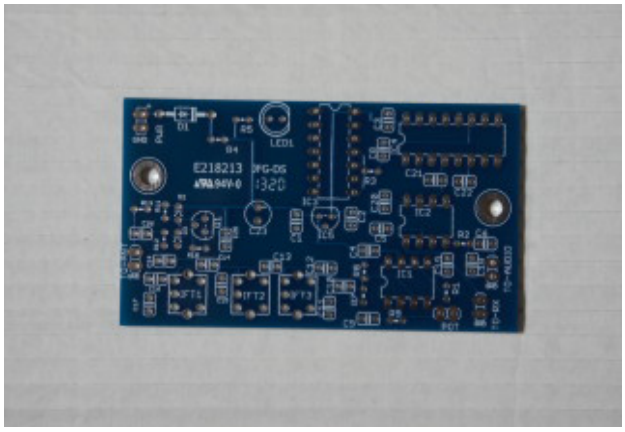
Specifications (subject to change without prior notice):

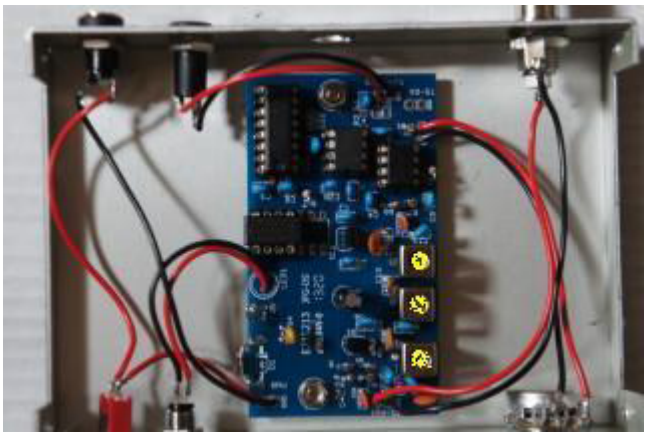
RX Coverage: 101kHz ~ 149kHz (when a 48kHz sound card is used)

LO Frequency: 125kHz (8MHz ÷ 64)

Operational Voltages: 9 ～ 13.8VDC

(The enclosure shown is not bundled. You need to prepare separately.)





Case History

The IDC-136II-KIT runs 24/365 as a 2200m grabber at:

http://icas.to/argo

Parts List

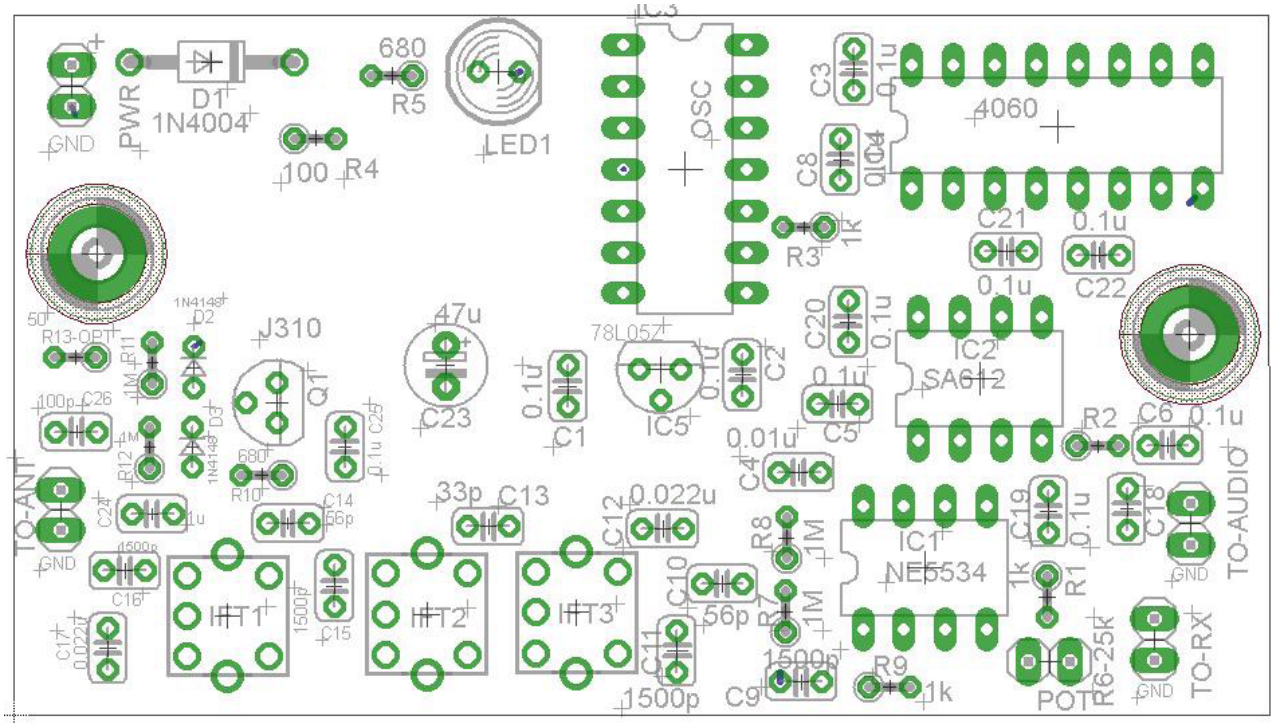
Mark	Value	Description	Remarks	Check
C1	0.1uF	Ceramic Capacitor	104	
C2	0.1uF	Ceramic Capacitor	104	
C3	0.1uF	Ceramic Capacitor	104	
C4	0.01uF	Ceramic Capacitor	103	
C5	0.1uF	Ceramic Capacitor	104	
C6	0.1uF	Ceramic Capacitor	104	
C7	N/A	Ceramic Capacitor	Not used	
C8	0.1uF	Ceramic Capacitor	104	
C9	1500pF	Ceramic Capacitor	152	
C10	56pF	Ceramic Capacitor	56	
C11	1500pF	Ceramic Capacitor	152	
C12	0.022uF	Ceramic Capacitor	223	
C13	33pF	Ceramic Capacitor	33	
C14	56pF	Ceramic Capacitor	56	
C15	1500pF	Ceramic Capacitor	152	
C16	1500pF	Ceramic Capacitor	152	
C17	0.022uF	Ceramic Capacitor	223	
C18	N/A		Not used	
C19	0.1uF	Ceramic Capacitor	104	
C20	0.1uF	Ceramic Capacitor	104	
C21	0.1uF	Ceramic Capacitor	104	
C22	N/A		Not used	
C23	47uF	Electrolytic Capacitor	47uF	
C24	1uF	Ceramic Capacitor	105	
C25	0.1uF	Ceramic Capacitor	104	
C26	100pF	Ceramic Capacitor	101	
R1	1kΩ	Resistor		
R2	1Ω	Resistor	May be jumpered instead.	
R3	1kΩ	Resistor		
R4	100Ω	Resistor		
R5	680Ω	Resistor		
R6	25kΩ	Potentiometer	0 – 25kΩ variable	
R7	1MΩ	Resistor		
R8	1MΩ	Resistor		
R9	1kΩ	Resistor		
R10	680Ω	Resistor		
R11	1MΩ	Resistor		
R12	1MΩ	Resistor		
R13	51Ω	Resistor	Read notes on the following pages.	
IC1	NE5534	Op AMP		
IC2	SA612	Mixer IC	NE612 may be supplied.	
IC3	OSC	Oscillator	8MHz	
IC4	74HC4060	Division IC		
IC5	78L05	3-Term Regulator		
Q1	J310	FET		
D1	1N4004	Diode	1N4001, 4002, or 4003 maybe supplied.	
D2,D3	1N4148	Diode		

Parts List （continued from the previous page)

Mark	Value	Description	Remarks	Check
IFT1,2,3	Yellow	IFT	slug coil	
IC Socket		16-pin DIP IC Socket		
IC Socket		8-pin DIP IC Socket	3 pieces	
LED		LED	+/- leads must be connected correctly	
Switch		2P toggle switch	3P S/W may be supplied	
Connector		BNC Connector, female		
Connector		PWR Connector, male	2.1mmφ	
Jack		3P Mini-Stereo Jack	3.5mmφ	
Cable		Audio Cable	3.5mmφ* 2 harnessed	

Assembly Instruction

Please follow the schematic when to proceed to assembly. The schematic is attached to the end of this guide.



IC Sockets

You can install IC sockets if necessary for easier maintenance. If you install the socket for the oscillator, you can later swap the oscillator chip easily.

IFT (Slug Coil)

Solder IFT's in the right positions.

Resistors

Start soldering from R1 to R12 except R6. It's advisable to measure the actual value using a multi-meter before soldering.

R6 - Resistor

Connect two leads to the center and either right or left terminal of potentiometer (25kΩ). This POT is used to adjust the gain.

R13-OPT - Resistor (51Ω)

This resistor is intended for a low impedance antenna. If your antenna is a resonated one, place this resistor in position. If your antenna is a high impedance one such as active mini-whips, etc., then R13 is not required. So, don't install it.

Capacitors

Start soldering from C1 to C26. C23 is an electrolytic cap, so make sure that the positive lead goes to [+] hole. Note that ~~C18~~ and ~~C22~~ are ~~NOT~~ used.

PWR

Connect the positive lead from the power socket to the hole marked [+], and the negative (ground) lead to [GND] respectively.

LED

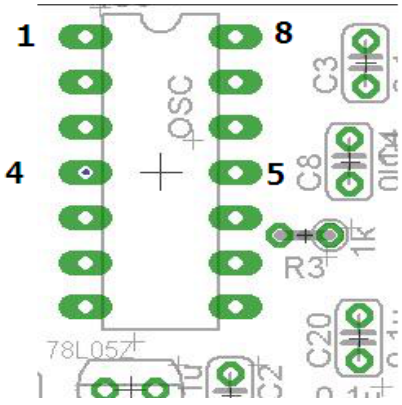
The bundled LED does have positive (+) and minus (−) markings on the back. The (+) LED lead must be connected to the LED1 hole connected to R5.

IC 1, 2, and 4

Make sure to install IC's with the correct orientation as marked on the PCB.

IC 3 (OSC)

The bundled oscillator is of a 8-pin DIP shape. Before installing the OSC, it is highly recommend to install a 8-pin DIP socket. The Pin 1 of the socket must come to the marking [1] of OSC. (For future use, there are extra holes available to install 14-pin socket, but this time you can please ignore the extra holes.) Once the socket is installed, then you can insert the oscillator. There is an orientation ditch on the oscillator, and it must be in line with the marking on the PCB.



REG

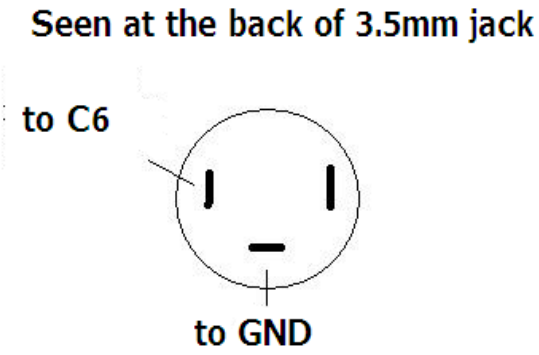
Solder the 78L05 3-terminal voltage regular as marked on the PCB. Follow the marked orientation carefully.

TO ANT

Connect the center lead from the BNC connector to the terminal connected to C26, and the ground lead to [GND] as marked on the PCB.

TO-AUDIO

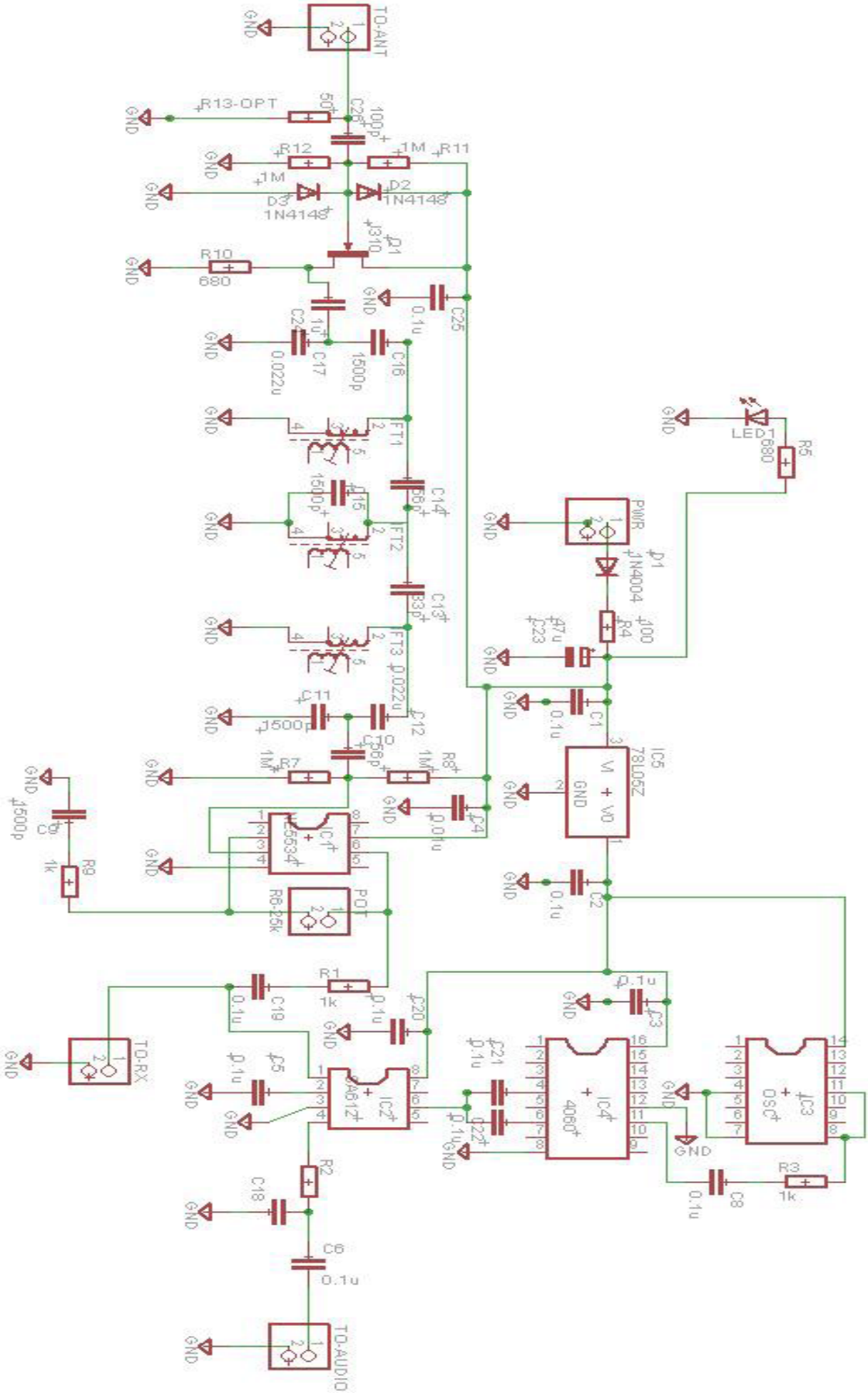
Wire to the left terminal to the output of C6, and the "GND" terminal to the [GND] hole at TO-AUDIO as per the fig below:



TO-RX

The holes at TO-RX may be used when you would like to make this kit as a pre-amp. Usually, the holes are not utilized for DC receiver operation.

Adjustment

Once all of the soldering is done, make sure that there is NOT any bad soldering or premature contacts or wrong-wiring. After then, set up the IDC-136II-KIT with a SDR software and adjust IFT's (slug coils) alternatively so the signal received around 137kHz become strongest. You can adjust the gain by the POT.

IDC-136II-KIT Schematic