

IDC-136-KIT 136kHz DC RX Assembly Guide

ICAS Enterprises

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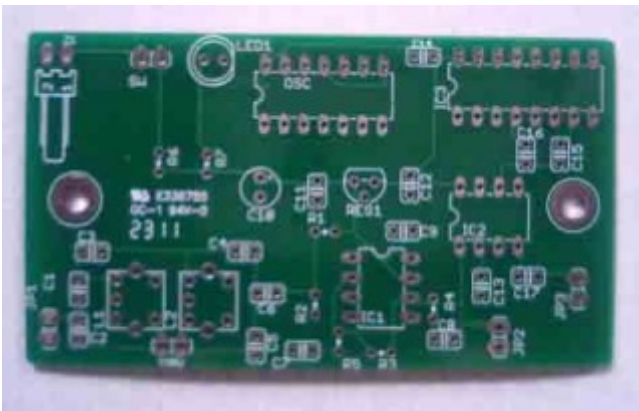
The IDC-136-KIT is a 136kHz direct conversion receiver. Most of the SDR software can be used with this receiver. It is quite easy to build within a couple of hours and you can get ready to start receiving on the spot.

Specifications (subject to change without prior notice):

RX Coverage: 106kHz ~ 154kHz (when a 48kHz sound card is used)

LO Frequency: 130kHz ($8.32\text{MHz} \div 64$)

Operational Voltages: 9 ~ 13.8VDC



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

Case History

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

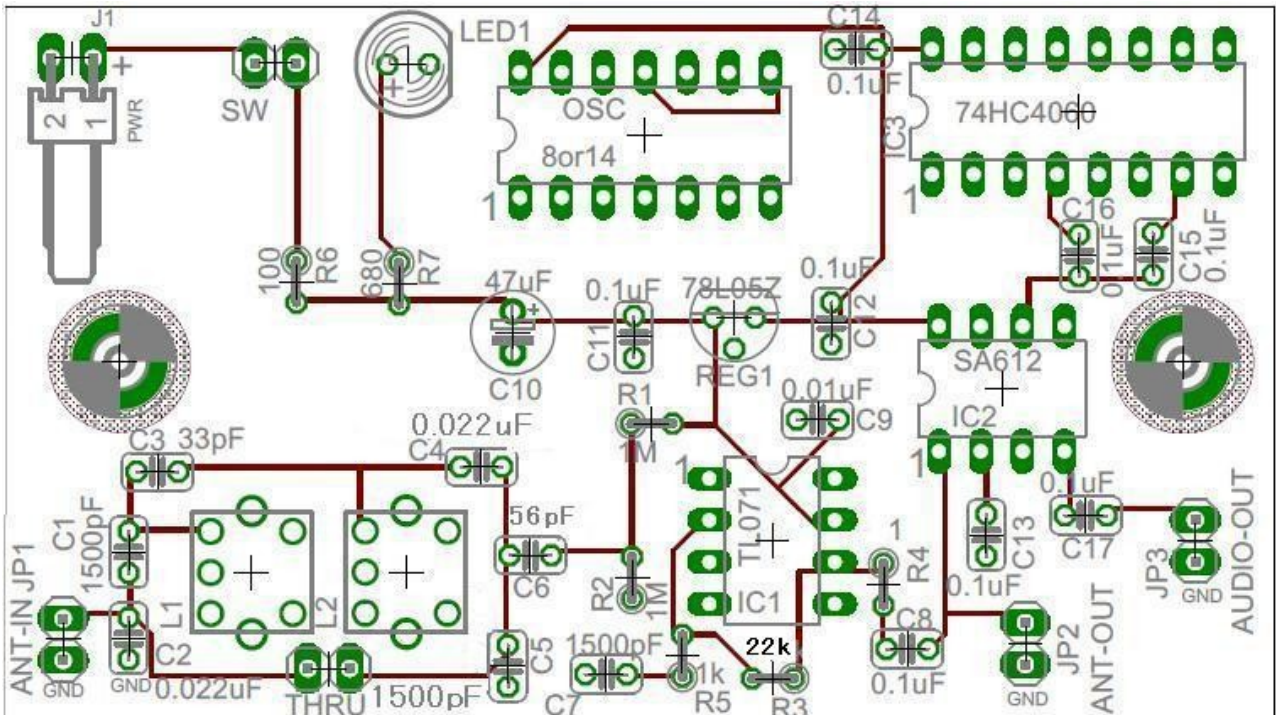
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Parts List

Marking	Value	Description	Remarks	Check
C1	1500pF	Ceramic Cap	152 (1,800pF may be supplied -182)	
C2	0.022uF	Ceramic Cap	223	
C3	33pF	Ceramic Cap	33	
C4	0.022uF	Ceramic Cap	223	
C5	1500pF	Ceramic Cap	152 (1,800pF may be supplied - 182)	
C6	56pF	Ceramic Cap	56	
C7	1500pF	Ceramic Cap	152 (1,800pF may be supplied - 182)	
C8	0.1uF	Ceramic Cap	104	
C9	0.01uF	Ceramic Cap	103	
C10	47uF	Electrolytic Cap		
C11	0.1uF	Ceramic Cap	104	
C12	0.1uF	Ceramic Cap	104	
C13	0.1uF	Ceramic Cap	104	
C14	0.1uF	Ceramic Cap	104	
C15			Not used	
C16	0.1uF	Ceramic Cap	104	
C17	0.1uF	Ceramic Cap	104	
R1	1MΩ	Resistor		
R2	1MΩ	Resistor		
R3	22kΩ	Resistor	Can use the bundled 25kΩ pot instead.	
R4	1Ω	Resistor	A jumper wire will do.	
R5	1k	Resistor		
R6	100Ω	Resistor		
R7	680Ω	Resistor		
IC1	TL071	OP AMP IC		
IC2	SA612	Mixer IC	NE612 may be supplied instead.	
IC3	74HC4060	Divider IC		
REG	78L05	3-Terminal Regulator		
L1/L2		IFT	2pcs	
OSC	8.32MHz	8.32MHz OSC	8MHz may have been supplied in the past prior to Nov. 21 st , 2011	
IC Socket		16-pin DIP IC socket		
IC Sockets		8-pin DIP IC socket	3pcs	
LED		LED		
Switch		2P toggle switch	3P toggle switch may be supplied	
Connector		BNC connector		
Connectors		Power plug and socket	2.1mm dia.	
Socket		3P mini-stereo socket	3.5mm dia.	
Cable		Audio Cable	with 3.5mm dia plug at both ends	

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 (Coil)

Solder IFT's in the right positions.

Resistors

Start soldering from R1 to R7. It's advisable to measure the actual value using a multi-meter before soldering.

R3 - Resistor

You can either use the 22k Ω fixed resistor for R3, or the bundled 25k Ω pot if you want to variably control the gain.

Capacitors

Start soldering from C1 to C17. C10 is an electrolytic cap, so make sure that the positive lead goes to [+] hole. Note that **C15** is **NOT** used.

PWR

Connect the positive lead from the power socket to the hole marked [**1**], and the negative (ground) lead to [**2**] respectively.

SW

Wire to the switch terminals.

LED

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

IC 1-3

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

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 a black dot marking on the oscillator, and it must come to the Pin 1 of the socket.

REG

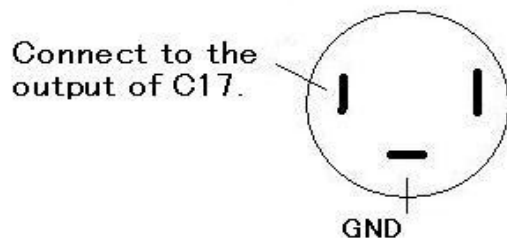
Solder the 78L05 3-terminal voltage regular as marked on the PCB. Follow the marked orientation carefully.

ANT-IN JP1

Connect the center lead from the BNC connector to the junction of C1 and C2, and the ground lead to "GND" as marked on the PCB.

AUDIO-OUT JP3

Mini-Stereo Socket - back face



Wire to the left terminal to the output of C17, and the “GND” terminal to the GND hole at AUDIO-OUT JP3.

ANT-OUT JP2

The holes at ANT-OUT JP2 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.

THRU

The “THRU” terminals can be shorted when you would like to make sure the receiver is working properly without the BPF functioning. With this setting, you can receive commercial stations such as Loran before starting to adjust the BPF.

Adjustment of BPF

Once the soldering is done, make sure that there are no wrong wirings or connections. Connect the antenna and power supply to the IDC-136-KIT and power on. Use SDR software such as HSDR and tune in around 137kHz. You may need to prepare a signal generator or TX. Transmit on 137kHz with SG or TX, and adjust the two IFT's alternatively so that received signal strength becomes maximum. If you don't have any transmission source, you can still adjust the IFT's so the noises coming out from the IDC-136-KIT become maximum.

Once the adjustment is done, you can enjoy listening to the 2200m band with the use of SDR software or Spectrum Lab.

IDC-136KIT Schematic

