

DR-4020 DUAL BAND QRP DIGITAL RADIO

Assemble Instructions



The kit consists of two PCBs, one for the control board and the other for the mainboard. All components on the control board have been installed and tested. There are two integrated circuits and four crystals on the main board are patch components, and the rest are common leaded components. It is easy to install. There are only four inductors to be adjusted in the kit. It can be worked as long as there is no error in the component soldering, and no components issues.

Components List

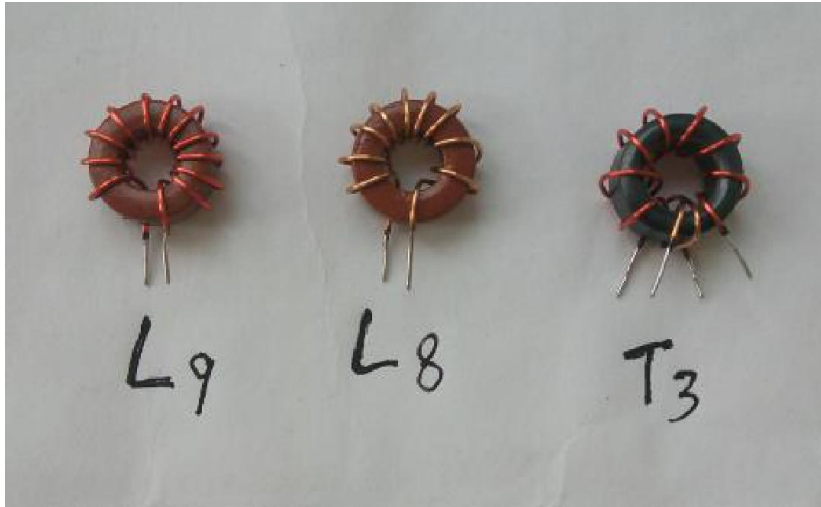
ITEM	Part number		QTY	Marks
PCB			1	
IC	SA602	Polar	2	IC1、 IC2
Resistor	33		2	R5、 R6
Resistor	220		1	R8
Resistor	470		1	R7
Resistor	1. 2K		1	R9
Resistor	2. 2K		2	R1、 R2
Resistor	10K		3	R4、 R10、 R11
Resistor	2. 2M		1	R3
diode	1N4148	Polar	4	D2、 D3、 D4、 D5
diode	1N5817	Polar	1	D1
IC	NE5532	Polar	1	IC3
Crystal	4. 9152M		4	X1、 X2、 X3、 X4
Resistor row	B06-222		1	PR1
Resistor row	B08-223		1	PR2
Relay	EA2-12NU	Polar	4	K1、 K2、 K3、 K4
3.5 jack	PJ-3001S		2	IN、 OUT
Ceramic capacitor	4. 7P		3	C7、 C32、 C35
Monolithic capacitor	10P		2	C14、 C15
Monolithic capacitor	15P		1	C13
Monolithic capacitor	27P		3	C2、 C19、 C37
Monolithic capacitor	30P		1	C1
Monolithic capacitor	47P		3	C34、 C36、 C48
Monolithic capacitor	68P		3	C6、 C31、 C33
Monolithic capacitor	100P (101)		3	C5、 C12、 C21

Monolithic capacitor	150P (151)		2	C3、C46
Monolithic capacitor	220P (221)		1	C49
Monolithic capacitor	330P (331)		1	C51
Monolithic capacitor	470P (471)		1	C47
Monolithic capacitor	1000P (102)		3	C26、C50、C52
Ceramic capacitor	0.01 (103)		5	C22、C24、C39、C40、C45
Monolithic capacitor	0.1 (104)		10	C8、C9、C10、C17、C18、C20
				C25、C27、C41、C42

ITEM	Part number		QTY	Marks
Electrolytic capacitor	10uF	Polar	2	C23、C28
Electrolytic capacitor	100uF	Polar	3	C29、C30、C43
Inductor	4.7uH		2	L1、L2
Transistor	DTC143ZSA	Polar	7	Q1、Q2、Q3、Q4、Q5、Q6、Q7
Transistor	2N4401	Polar	3	Q8、Q9、Q10
Regulator	78L05	Polar	1	78L05
Regulator	78L06	Polar	1	78L06
AF transformer	600:600		2	T1、T2
Inductor	10uH		1	L7
Power switch	PS-22F02		1	S1
Toroid inductor	T37-2		2	L8、L9
Toroid inductor	8:2		1	T3
Enameled wire	0.4mm		2	Red and Yellow(inductor/tranfo)
Power jack	005/022B		1	(+V12)
40 inductor	7*7	marks 5	2	L3、L4
20 inductor	7*7	marks 2	2	L5、L6
BNC	BNC-KWYE		1	ANT
Transistor	IRF510	Polar	1	Q11
M3*8 screw			1	fix Q11
M3 nut			1	fix Q11
Insulation pad			1	fix Q11
Insulation grain			1	fix Q11
Power switch cap			1	
Encoder knob			1	
Control board			1	Assemble and tested
M3*5 screw	平头		9	Fix enclosure/front panel
Enclosure			1 set	Panels + enclosure
Power cord			1	
AF cable			2	

The component list has been arranged according to the order of the components, as long as they are installed in the order of the list. The components with the direction indicated in the list must be soldered in the direction of the silk screen on the PCB. Do not solder Q11 first!

The kit has three inductors that require the user to wind it first:



The inductor L8 is wound with a yellow enamel wire 10 turns, and the inductor L9 is wound with a red enamel 12 turns, see photo.

The T3 transformer is an 8:2 transformer with a primary red envelope wrapped around 8 turns, a secondary with a yellow enameled wire wound around 2 turns, and a primary (red wire) welded to the two pads near the front panel (near C39), secondary (Yellow) soldered to the two pads near the back panel (near 78L05).

L8, L9 and T3 should be soldered with a soldering iron before the PCB is mounted on the PCB and soldered to ensure reliable soldering.

Install the middle of the mark "5" at the positions of L3 and L4, and the middle of the mark "2" at the positions of L5 and L6.



After installing the components on the mainboard, mount the rear panel and fix the Q11, solder the Q11, and subtract the excess pins. The Q11 should be insulated from the panel with insulating pads and insulating particles. Please refer to the photo below.



Solder the control board and cut off the excess pin section to install the front panel. The photo of the installed kit is as follows:



Now you can start debugging the kit. Check the installation and soldering, then turn on the power switch. If the current is about 50mA, it is normal. If the current is too large or too small, it indicates that there is a fault. After the subsequent debugging.

The receiving of the radio does not need to be adjusted.

The transmitting only needs to adjust the core of the inductors L3 and L4 to maximize the transmitting power on 40-meter band, and adjust the core of inductors L5 and L6 to maximize the transmitting power on 20-meter band. .

After that, you may connect the radio to the computer according to the instruction manual.

Better to connect to a dummy load, if you don' t have a dummy load so may connect to the resonate antenna.

Use the tuning function in the data communication application software to adjust the volume to the appropriate position. The power should not be overloaded. As long as the TX can be triggered, adjust the core of L3 and L4 to maximize the transmit power on 40-meter band. In the same way, the cores of L5 and L6 are adjusted to maximize the transmission power on 20-meter band. If there is no power meter, the power can be judged according to the current of the power supply, and the current can be adjusted to the maximum. The current meter can not only see the brightness of the transmission indicator TX is roughly adjusted.

Please refer to the instruction manual for adjustment and operation of the kit.